

Becoming Adaptive through Social Media

Transforming Governance and Organizational Form in Collaborative E-government

Wang, Cancan

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BECOMING ADAPTIVE THROUGH SOCIAL MEDIA: TRANSFORMING GOVERNANCE AND ORGANIZATIONAL FORM IN COLLABORATIVE E-GOVERNMENT

PhD Series 13.2019

Cancan Wang

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Doctoral School of Business and Management

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HANDELSHØJSKOLEN

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*Transforming Governance and Organizational Form in
Collaborative E-government*

Cancan Wang

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Abstract

The increasing digitalization in the process and the end-result of public service, a phenomenon widely known as e-government, is changing the range and ways of collaboration among governments and their stakeholders. Especially with the pervasive use of social media for knowledge sharing, today's local governments are teaming up with their non-government stakeholders in an unprecedented width and depth to exchange knowledge and resources to build digital public services together. While these collaborative initiatives benefit from the complementation of knowledge and resources that are associated with extensive participation, these initiatives also exist under a shadow of confusion and conflict when organizing the changing range and relationships of stakeholders, aligning technology uses with divergent objectives of knowledge sharing, as well as coordinating different distributions of decision-making power and accountability.

To tackle these issues, in this dissertation I develop an understanding of the co-evolution of governance, organizational form of e-government collaboration through the mediation of social media. Here I define governance as the attempts to address the issue of coordination, and organizational form as the structural features of the e-government collaboration. And I define social media as the Internet-based collaborative technologies that are accessible to both government and non-government stakeholders for creating, circulating, sharing and exchanging knowledge. My primary research inquiry is thus *how do the governance and organizational form of e-government collaboration occur through the mediation of social media?*

To pursue this line of inquiry, I further explore the relationship between social media and the governance and organizational form of e-government collaboration. Specifically, I ask:

- *How does the governance of e-government collaboration occur through the mediation of social media?*
- *How does the organizational form of e-government collaboration occur through the mediation of social media?*

Conceptually I take an ensemble view to understand the relationship between social media and organizational changes (i.e., governance and organizational form) and argue that while social media has the potential to change social arrangements, these arrangements also influence the use of social media. In particular, I use the technology enactment framework as a conceptual map to identify the embeddedness of technology adoption in institutional, organizational and cognitive arrangements. Furthermore, I complement the framework with the theory of institutional logics, technology frames of references, and temporary organization, to operationalize the understanding of the institutional, organizational as well as cognitive arrangements.

I choose e-government in China as the empirical setting to address the research questions for its unique environment, including its recent strong policy push for e-government initiatives and public-private

collaboration, its complex public administration environment, as well as the pervasiveness of social media (i.e., WeChat) for work communication in both public and private spheres. Such an environment provides a good number of e-government collaboration cases that are characterized by the heterogeneity of stakeholders, mediation of social media, innovative administration arrangements, and that can be followed and studied from their early stages.

The dataset for this dissertation is collected from four cases of e-government collaboration in China. To better understand the development of e-government collaboration through the mediation of social media over time, I conducted a longitudinal study on one of the cases, of which the communication between the stakeholders is primarily mediated through the Chinese social media WeChat. For data collection, I used qualitative methods including interviews, participant observations, as well as document analysis.

For the first research question, the findings indicate the key dimensions in the governance of e-government collaboration center around the distribution of decision-making power and accountability between government and non-government stakeholders. And social media, as a knowledge-sharing platform, is crucial for achieving balances as such in an undefined collaboration, as it provides ambiguity between stakeholders' interests and needs, while still allowing stakeholders to develop a sense of consensus and informedness.

For the second research question, the findings indicate that e-government collaboration can be organized differently through the mediation of social media. Nevertheless, a long-term examination shows the organizational form of e-government collaboration has to accord with the institutional logics at play. The form changes as the dynamics of institutional logics change. During the transition of these organizational settlements, social media plays an important role as a sandbox for experimenting with configurations of organizational structures, as well as a repository for shared knowledge and experiences.

This dissertation makes three central contributions: First, it contributes to the conceptualization of governance in the era of e-government by highlighting the role of social media and its enactment in the occurrence of governance, and proposing an empirically driven typology of adaptive governance. Second, it contributes to the understanding of the organizational form of e-government collaboration by identifying the social media mediated hybridization process, and the characteristics of a social media enabled organizational form. Third, the findings extend the understanding of social media adoption in the context of e-government collaboration by providing a longitudinal account of social media enactment, and insights in the relationship between social media and government transformation.

Dansk Resume

Den stigende digitalisering af offentlige services, et fænomen bedst kendt som digital forvaltning, ændrer den måde, offentlige styrelser samarbejder med sine interessenter. Den tiltagende videndeling på sociale medier gør i særdeleshed, at styrelser i en hidtil uset grad indgår samarbejder med ikke-statslige interessenter for at udveksle viden og ressourcer med henblik på at bygge digitale forvaltningsløsninger i fællesskab. Disse fælles løsninger drager fordel af komplimenterende viden og ressourcer, der er en følge af den brede deltagelse, men de ligger også under for forvirring og konflikter om organiseringen af de skiftende roller, interessentrelationer og koordineringen af beslutnings- og ansvarstagning.

I denne afhandling behandler jeg disse problematikker ved at udvikle en forståelse af styring og de organisatoriske former af offentlige-private samarbejder, baseret på hvordan de medieres på og af sociale medier. Jeg definerer her styringsform som forsøg på at adressere koordineringsproblematikker og organisatorisk form som de strukturelle komponenter af det digitale forvaltningssamarbejde. Min forsknings primære undersøgelsesområde er derfor *hvordan forekommer styrings og organisatoriske former af digitalt forvaltningssamarbejde gennem mediering på sociale medier?*

For at udfolde dette spørgsmål vil jeg undersøge forholdet mellem sociale medier og styringen og de organisatoriske former for digitalt forvaltningssamarbejde. Jeg vil derfor undersøge følgende spørgsmål:

- *Hvordan forekommer styring af digitalt forvaltningssamarbejde gennem mediering på sociale medier?*
- *Hvordan forekommer organisatoriske former af digitalt forvaltningssamarbejde igennem gennem mediering på sociale medier?*

Konceptuelt antager jeg en holistisk tilgang i undersøgelsen af forholdet mellem sociale medier og organisatoriske forandringer (dvs. styring og organisatoriske former) og hævder at sociale medier har potentiale til at ændre sociale forhold, samt at disse forhold på samme tid påvirker brugen af sociale medier. Jeg bruger navnlig metoden 'enactment framework' som et konceptuelt landkort, og identificerer forankringen af teknologiadopter i institutionelle, organisatoriske og kognitive forhold. Ydermere supplerer jeg dette metodiske framework med institutionel logik-teori, teknologiske referencerammer og midlertidig organisering for at operationalisere forståelsen af institutionelle, organisatoriske og kognitive forhold.

Til at besvare forskningsspørgsmålet har jeg valgt digital forvaltning i Kina som empirisk case på grund af denne cases unikke forhold, herunder landets seneste politiske tiltag for at udbrede digital forvaltning og offentlig-privat samarbejder, landets komplekse offentlige administrationsmiljø og dets omsiggribende brug af sociale medier (WeChat) til daglig kommunikation i arbejdsdagen. Sådanne forhold resulterer i et udvalg af digitale forvaltningssamarbejder, der er karakteriseret ved heterogene interessenter, mediering på sociale medier og innovative administrative forhold, som kan studeres fra deres tidlige stadier. Datasættet brugt i denne afhandling er indsamlet fra fire tilfælde af digitalt forvaltningssamarbejde i Kina.

For bedre at opnå en forståelse af hvordan digitalt forvaltningssamarbejde gennem mediering på sociale medier udvikles over tid, foretog jeg et langvarigt casestudie af et af de voksende digitale forvaltningssamarbejder, som primært bliver medieret igennem det kinesiske medie WeChat. Dataene er indsamlet ved brug af kvalitative metoder, herunder interviews, deltagerobservering og dokumentanalyse. I besvarelsen af det første forskningsspørgsmål indikerer studiet, at i styringen af digitalt forvaltningssamarbejde centrerer de afgørende dimensioner omkring distribueringen af magt til beslutningstagning og ansvarstagning mellem statslige og ikke-statslige interessenter. Sociale medier som en vidensdelingsplatform er i denne sammenhæng afgørende for at opnå balance i udefinerede samarbejder da medierne skaber rum for en flertydighed af interessenteres interesser og behov imens de samtidig tillader interessenterne at udvikle en form for konsensus og indforståethed.

I besvarelsen af det andet forskningsspørgsmål indikerer studiet, at digitalt forvaltningssamarbejde kan organiseres forskelligt igennem mediering på sociale medier. Ikke desto mindre viser den langvarige undersøgelse, at de organisatoriske former af digitalt forvaltningssamarbejde skal være i overensstemmelse med de institutionelle logikker, der er i spil. De organisatoriske former forandres, når dynamikkerne omkring de institutionelle logikker ændres. Som disse organisatoriske forhold forandres, spiller sociale medier en vigtig rolle som en sandkasse, hvor der kan eksperimenteres med organisatoriske strukturer, ligesom de er et bibliotek af viden og erfaringer.

Denne afhandling bidrager med tre centrale aspekter. Det længerevarende studie af forekomsten af mediering på sociale medier, og detaljeringen af sociale mediers rolle i digitalt forvaltningssamarbejdes styring og organisatoriske former, udbreder forståelsen af adoptering af sociale medier ind i informationssystemer. Dernæst bidrager afhandlingen til konceptualiseringen af styring i en digital forvaltningsæra ved at kortlægge en empiriske drevet tilpasningsdygtigt forvaltningstypologi. Slutteligt bidrager afhandlingen til forståelsen af de organisatoriske former af digitalt forvaltningssamarbejde ved at udfolde, hvordan krydsningsprocessen medieres igennem sociale medier.

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1 INTRODUCTION

It was on a very hot summer day in Shanghai when I started the second round of my fieldwork in 2016, and was ready to witness supposedly yet another success of a municipal level open data contest. Two days prior to my arrival in Shanghai, I received an invitation from one of my informants on WeChat – the platform I used to follow up with my informants on the progress of the contest preparation - to attend the opening ceremony of the contest. The ceremony was hosted in a renowned local university, where hundreds of public and private stakeholders from all over the country were supposed to attend.

By the time I arrived at the university, flocks of people were starting to enter the auditorium, while campaign videos of the two local district government partners were rolling on an enormous LED screen the size of a wall. And there he was, my primary informant and one of the main organizers of the contest, Bo (pseudonym). He stood in front of the stage, staring at the video, looking somewhat gloomy. Before I could greet him, he suddenly grabbed the arm of a passerby and said,

“David, do you know who put up the videos? And where? Where is the moderator?! When is she going to arrive?”

The passerby looked surprised, but soon calmed down and replied,

“Good, good morning, Bo. It is people from the district office. They gave the videos to me and asked me to put them up. I thought you knew... Is there anything wrong? And no, the moderator is still not here yet. The district office people are in contact with the moderator, I think...”

Bo let go of David’s arm, and nodded,

“I see, thank you.”

He then turned around, took a refrained deep breath, and paced slowly towards me at the audiences’ seats. When he got close enough that only I could hear him, he said through gritted teeth,

“I would really like to punch somebody in the face!”

This little incident encountered in 2016 is telling of the observations of my many field trips in China over the past four years (2015-2018) on the local Chinese governments’ transformation to e-government. Increasingly, local governments are teaming up with their non-government stakeholders, such as companies, universities and NGOs, to establish collaborative initiatives to exchange knowledge and resources to build digital public services together. As social media such as WeChat became a pervasive means for networking and daily communication in China, local governments also widely adopted social media to connect with their stakeholders and manage their relationships.

These collaborative initiatives benefit from the complementation of knowledge and resources associated with the participation of a wide variety of government and non-government stakeholders, as well as the mediation of social media. Nevertheless, these initiatives are also confronted with issues associated with increasing complexities and uncertainties in collaboration, such as expansive range and changing relationships of stakeholders, different decision-making and accountability systems, as well as misalignment of social media use with divergent knowledge sharing objectives. As my encounter has

illustrated, these issues lead to stakeholder confusion and conflict and may threaten the survival of the collaboration, thus require immediate attention from research and practice.

Opportunities and issues associated with the digital transformation of the public sector are not exclusive to the public administration in China, and are also experienced globally (Deloitte, 2015; McKinsey & Company, 2016). The recent UN E-government Survey (2018) has reported a global emergence of innovative partnerships between public and private stakeholders through the use of information and communication technologies (ICTs) in 127 countries. Social media is especially appraised for its transformative effects in changing the relationship between government and its stakeholders (Forbes, 2017; OECD, 2014). Meanwhile, we have also seen reports from consultancies and the World Bank warning of social (e.g., policy frameworks, stakeholder relationships) and technical issues (e.g., use of communication technologies) among these partnerships (infoDev, 2009; McKinsey & Company, 2014; PPP Knowledge Lab, 2016). Subsequently, international organizations, such as the OECD and UN, have called for research on new models of collaborative efforts (e.g., innovative multi-stakeholder partnerships) and coordinated governance (European Commission, 2016, p. 12; UN, 2018, pp. 121–122).

In response to this call, this dissertation investigates in depth the complexities and uncertainties in linking or sharing information, resources, activities and capabilities between government and non-government stakeholders to achieve a connected e-government, a phenomenon I refer to as e-government collaboration. In particular, I focus on the interplay of social and technical elements and the implications of these for this collaboration.

In the following, I will give an overall introduction to this dissertation, guiding the reader through its structure. I first frame the problem domain in the current research. I then delineate the conceptual underpinning of this dissertation. Lastly, I briefly introduce the included papers of this dissertation.

1.1 Framing the Issues in E-government Collaboration

In the past few decades, the phenomenon of e-government, that is “the use of information technology to enable and improve the efficiency with which government services are provided to citizens, employees, businesses and agencies” (Belanger and Carter, 2012; Carter and Bélanger, 2005, p. 5), has drawn a lot of research attention from the field of information systems and public administration.

In the presence of these emergent collaboration dynamics between government and non-government stakeholders, e-government researchers have argued that e-government development has led to fundamental changes in public governance (Dawes, 2009; Dunleavy et al., 2006; Janssen and van der Voort, 2016; Margetts and Dunleavy, 2013; Pardo et al., 2010). Here, governance refers to the attempts to improve coordination between relatively dependent actors for the purpose of solving societal problems (Klijn, 2008). In particular, these literatures are concerned with two paralleled trends in e-government development (Greve, 2015), including the increasing adoption of social media among governments, and the increasing pressure for governments to adapt to accelerating technology development.

The first stream of studies concerns the transformative potential of social media in public governance. Here social media refers to a group of Internet-based collaborative technologies that allows users to easily create, edit, evaluate, and link to content or to other creators of content (Kaplan and Haenlein, 2010; Kapoor et al., 2017; de Vreede et al., 2016).

Social media proponents, such as Margetts and Dunleavy (2013), argue social media has the potentials to alter the relationship between government and its stakeholders, and transform public governance by enabling knowledge sharing between government and non-government stakeholders. Other e-government scholars have also supported this argument by suggesting social media present opportunities for increased transparency and accountability (Bertot et al., 2010; Bertot, Jaeger and Grimes, 2012; Bonsón et al., 2012; Gunawong, 2015; Medina and Rufin, 2015; Song and Lee, 2016; Stamati et al., 2015), increased smartness of public action (Gil-Garcia et al., 2016), real time interaction (Mergel, 2013), as well as citizen participation and empowerment in decision-making (Bonsón et al., 2015; Porwol et al., 2016).

Nevertheless, a scrutiny of the existing literature reveals inter-related issues that undermine such claims, and require more research attention regarding the actual use of social media in the collaboration between government and its stakeholders.

For instance, the argument that social media can lead to change in public governance is made on the basis that social media enables knowledge sharing between government and non-government stakeholders (e.g., Margetts and Dunleavy, 2013; Stamati et al., 2015). While social media studies in information systems and communication studies (Leonardi, 2014; Leonardi et al., 2013; Leonardi and Vaast, 2017) have suggested the enabling potentials of social media for knowledge sharing, empirical observations that suggest otherwise have also emerged (Gibbs et al., 2013; Hwang et al., 2015; Majchrzak et al., 2013; Oostervink et al., 2016). These studies have found that the use of social media is embedded in the socio-cognitive structures of organizations. Stakeholders of different organizational experiences and institutional backgrounds can perceive and use social media in very different ways.

In the current e-government literature on social media and change in public governance, the embeddedness of the perception and use of social media is not yet sufficiently understood. One of the reasons why this is not well understood has to do with the majority of current social media studies have based their arguments in a “snapshot” of empirical evidence (Leonardi and Vaast, 2017). The long-term evolution of social media use for knowledge sharing and its implications in public governance have not received enough research attention. This issue shares the long-existing skepticism in e-government studies concerning the transformative potential of ICT and government collaboration, which suggest ICT will be eventually institutionalized by governments thus the transformation will be limited (Cinite et al., 2009; Norris, 2010). Therefore, to understand the relationship between social media and governance it requires research to understand the evolution of the perception and use of social media over time.

Another stream of research on public governance and e-government concerns how governance can address the accelerating uncertainties and complexities that are caused by recent technology development such as

data analytics, A.I., open data (Chatfield and Reddick, 2017; Hong and Lee, 2017, 2018; Janssen and van der Voort, 2016). This stream of research argues established governance mechanisms that values stability and accountability, hence enhancing control and inflexible procedures, cannot answer the accelerating technology innovation. In the case of e-government collaboration, the problem of decision-making rhythm as a result of various layers of governance is particularly explicit and needs to be dealt with in order for these collaborative initiatives to swiftly adapt to the changes in the environment.

In response to this issue, Janssen and van der Voort have proposed the concept of adaptive governance, emphasizing four core principles in coordinating e-government collaboration. These four principles are “decentralized decision-making, efforts to mobilize internal and external capabilities, bottom-up (and top-down) decision making, wider participation to spot and internalize developments, and continuous adjustment to deal with uncertainty” (2016, p. 4). While the concept of adaptive governance has provided insights into what appropriate public governance may be in the context of environmental turbulence, it does not sufficiently consider the mediating role of social media for collaboration between government and non-government stakeholders (Chatfield and Reddick, 2017; Hong and Lee, 2017, 2018). This is particularly important, as the use of social media for knowledge sharing can play an important role when coordinating the different decision-making rhythms in e-government collaboration.

In addition, the idea of adaptive governance also poses questions to the organizational form of e-government collaboration. Organizational form refers to “the structural features or patterns that are shared among many organizations” (Fulk and DeSanctis, 1999, p. 5). A majority of the studies that concern the organizational form of e-government collaboration have examined the effectiveness of common organizational form of e-government projects, such as, IT outsourcing (Duhamel et al., 2014; Gantman, 2011; Lacity and Willcocks, 1997; Lee, 2001; Moon et al., 2016; Ruzzier et al., 2008), and public-private partnership (Bertot et al., 2013; Hodge and Greve, 2007; Hui and Hayllar, 2010; Joha and Janssen, 2010; Khan et al., 2012; Villani et al., 2017).

Nonetheless, fewer e-government scholars have explored new organizational forms that can accommodate the changing relationships between government and non-government stakeholders, and that exploit the capacity of social media (Margetts and Dunleavy, 2013). Among the current e-government literature, it is not yet well-understood how new organizational form may occur amongst the complex institutional and organizational structures around the collaboration between government and non-government stakeholders. Communication technologies such as social media are in particular not accounted for. An in-depth account of the interplay between social and technical arrangement in e-government collaboration is thus needed to understand the organizational form of e-government collaboration.

In sum, while existing studies have started to shed light on the transformative potential of social media in the governance and organizational form of e-government collaboration, the realization of these potentials of social media to enact change remains unclear.

Along this line, this dissertation addresses the aforementioned research gaps, by examining

How do the governance and organizational form of e-government collaboration occur through the mediation of social media?

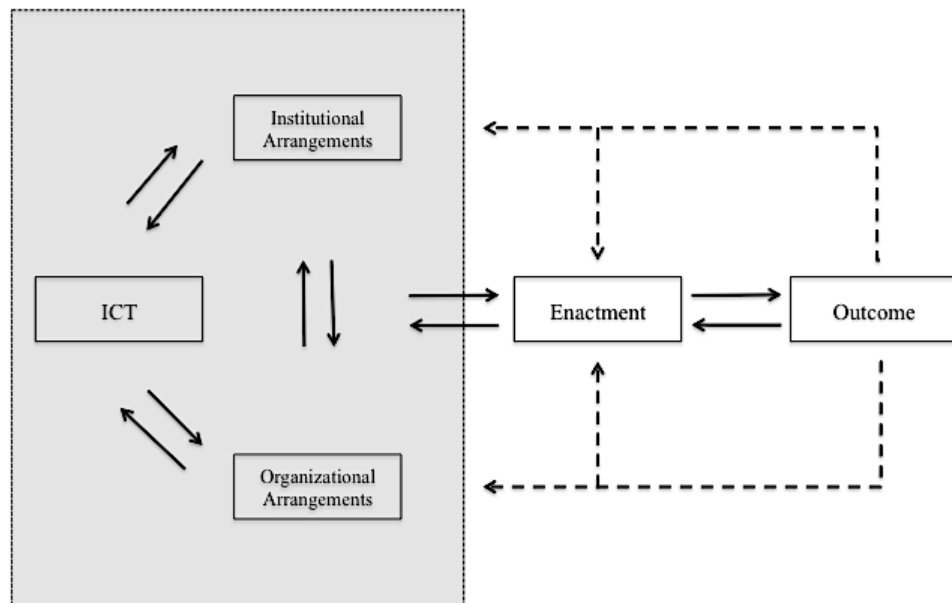
More specifically, the overall research question is split into two sub research questions:

- *How does the governance of e-government collaboration occur through the mediation of social media?*
- *How does the organizational form of e-government collaboration occur through the mediation of social media?*

1.2 Conceptual Mapping

To address the research questions, I draw on an adapted technology enactment framework (Cordella and Iannacci, 2010; Fountain, 2001), developed in the field of information systems and public administration, as a conceptual map for understanding the relationship between technology and organizational change in the context of e-government (See Figure 1).

Figure 1. Adapted technology enactment framework



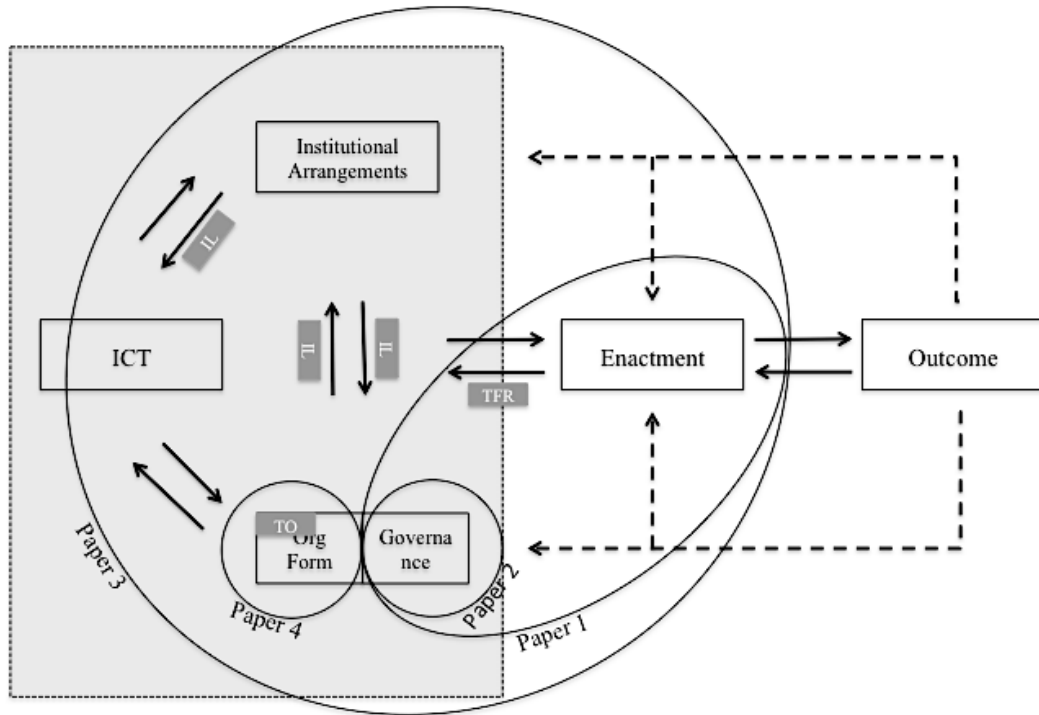
Technology enactment framework recognizes the interplay between information technology and social arrangements (i.e., institutional and organizational arrangements). In particular, the framework suggests stakeholders in e-government collaboration are embedded in cognitive, organizational, and institutional structures, and such embeddedness influences their perception and use of technology, hence the enactment. In turn, the enacted technology also influences the organizational and institutional arrangements of e-government collaboration.

In this dissertation, I see institutional arrangements as “the socially constructed, taken-for-granted prescriptions of appropriate conduct” (Greenwood and Suddaby, 2006, p. 28). And I see organizational

arrangements of e-government collaboration as coordinating and organizing practices of public-private collaboration, which covers both governance and organizational form.

Moreover, in order to account in depth for the relationship between social media, governance and organizational form (as part of the organizational arrangements), I operationalize the key elements and relevant links in the framework with a set of theories drawn from information systems, organizational science and project management. An illustration of the operationalization can be found in Figure 2.

Figure 2. Operationalized technology enactment framework



More specifically, I use the concept of institutional logics (IL) to operationalize the institutional arrangements, and its relationship with organizational arrangements (i.e., organizational form). I use the theory of technology frames of references (TFR) to operationalize the relationship between technology enactment and organizational arrangements (i.e., governance). I use the theory of temporary organization (TO) to operationalize the key dimensions of organizational form of a project.

Although these three theories are used separately in different papers (as seen in Figure 2), in combination they shed light on the overall understanding of the research question throughout the dissertation. I present the theories in detail in section 3, where I discuss how they contribute to the overall understanding of technology enactment in the context of e-government collaboration.

1.3 Research Design

I choose four cases of e-government collaboration in China as the empirical setting to address the research questions of this dissertation. I choose e-government in China as my research context for three reasons, including its recent strong policy push for e-government initiatives, its complex public administration

environment, as well as the pervasiveness of social media (i.e., WeChat) use for work communication in both public and private spheres. An environment as such provides a good number of e-government collaboration cases that are characterized by the heterogeneity of stakeholders, mediation of social media, and innovative administration arrangements.

The dataset for this dissertation is collected from four cases of e-government collaboration in China. I conducted a longitudinal study on one of the cases, of which the communication between the stakeholders is primarily mediated through the Chinese social media WeChat. Conducting a longitudinal study of this particular collaboration helps me to better understand the development of e-government collaboration through the mediation of social media over time. Furthermore, I used qualitative methods including interviews, participant observations, as well as document analysis for data collection. The data analyses are conducted during different periods of research for different research focuses.

1.4 Dissertation Structure

The dissertation consists of a cover chapter and a collection of four papers. In the cover chapter, I synthesize the research conducted in the papers. The cover chapter is not only meant to summarize the research but also to connect the papers. The cover chapter is divided into six sections.

In the current section, I present the motivation for the PhD project, and a brief introduction of the dissertation. Section 2 presents a review of existing literature on the governance and organizational form of e-government collaboration. This section is intended to review and evaluate existing studies and position my PhD research. Following the three identified research themes of this dissertation, this section elaborates on the existing knowledge on: 1) the phenomenon of e-government collaboration, 2) the governance of e-government collaboration, and 3) the organizational form of e-government collaboration. In each subsection, I also present the relationship between social media and each research theme.

Section 3 presents the theoretical lens I draw on for understanding the relation between technology and organizational change. I first introduce the technology enactment framework as a conceptual map to inform my overall view of technology and organizational change in the context of e-government. I then move onto present other theories (i.e., institutional logics, technology frames of references, and temporary organization) that are used in the dissertation, and argue how they contribute to operationalize the framework into understanding the relationship between social media, governance and organizational form.

In section 4, I present the overall research design of this dissertation. I first explain my ontological, epistemological and methodological considerations. I then present the research setting of my dissertation, detailing why China is a suitable field for addressing the research question by presenting the local development of public administration, e-government and social media use, as well as the four cases I have selected for this study. I also elaborate on my choice of data collection and analysis methods in the study, of which I evaluate the pros and cons at the end.

In section 5, I present the findings on the governance and organizational form of e-government collaboration. In section 6, I highlight how the research findings add to the overall understanding of the relationship between social media and changes in the governance and organizational form of e-government collaboration. Section 7 presents the conclusion of this dissertation, which is then followed by the four research papers included in this dissertation. An outline of the central aspects in each paper is provided in Table 1, with an abstract of each paper presented below.

1. Wang, C., Medaglia, R. & Jensen T. B. When Ambiguity Rules: How Incongruent Technological Frames Generate Governance in Inter-Organizational Collaboration

This paper is submitted and under review at the journal of Information Systems Frontiers.

Paper 1 unfolds the relationship between technology enactment and governance arrangements. More specifically, paper 1 investigates the stakeholders' frames of social media, and their relationships with the occurrence of governance in an e-government collaboration that lacks formal governance mechanism.

Through a case study of e-government collaboration, the findings suggest while the stakeholders share an overall view of social media as a tool for both enabling and constraining knowledge sharing, in practice the stakeholders do not always sync in their views and uses of social media. Rather, they enjoy a lot of autonomy in how they share knowledge based on their task and role-to-play at the time.

These ambiguous frames of social media allow the stakeholders to share knowledge to accelerate decision-making and exchange capabilities, while to retain control of the processes that cannot be shared with other stakeholders. The ambiguous frames of social media for knowledge sharing allows the stakeholders to develop a set of governance arrangements that are characterized by selective participation, ad hoc decision-making, and capability identification,

This study contributes to the understanding of the link between technology enactment and changes in organizational arrangements by highlighting the generative role of incongruent frames in governance formation, and challenges the major assumption that collaboration can only survive with consensus on knowledge processes and technological frames.

2. Wang, C., Medaglia, R. and Zheng, L. Towards a typology of adaptive governance in the digital government context: The role of decision-making and accountability

This paper is accepted and published as Wang, C., Medaglia, R., & Zheng, L. (2018). Towards a typology of adaptive governance in the digital government context: The role of decision-making and accountability. *Government Information Quarterly*, Vol. 35 Issue: 2, pp.306-322.

Paper 2 takes an in-depth look at the key dimensions of the resulted governance arrangements. To address this, paper 2 draws on the notion of adaptive governance and investigates the key dimensions for governance to become adaptive in the context of e-government. Looking into four cases of e-government collaboration in China, I put forward that the distributions of decision-making power and accountability between government and non-government stakeholders are critical to the development of governance arrangements of e-government collaboration. Findings show that different distributions of decision-making power and of accountability among government and non-government stakeholders gives rise to different balances between adaptiveness and stability, which I categorize into three types of adaptive governance – namely polycentric, agile, and organic governance. This study contributes to the understanding of adaptive governance by breaking the previous assumption of accountability and decision-making as coupled concepts, and by detailing the notion of adaptive governance in an e-government context with the proposed typology.

3. Wang, C. Identifying the organizational form of digital public service projects: Technology-mediated hybridization processes amongst competing institutional logics

This paper is completed, and to be submitted to the International Journal of Project Management.

Paper 3 focuses on organizational form and technology enactment. Drawing on the concept of institutional logics, paper 3 investigates how the organizational form of e-government collaboration co-evolves with institutional arrangements through the mediation of social media.

Through a longitudinal study, the findings indicate that the organizational form of e-government collaboration is in fact a series of organizational settlements that can be largely different from each other (i.e., project networks, company with different board structures). A further examination shows the change in organizational settlements is a result of a hybridization process that is driven by changes in institutional logics and mediated through social media. The hybridization process broadly includes three steps, including the evaluation of existent demands, coping and temporary combination of demands. In particular, the stakeholders adopt three coping strategies, namely prototyping, selective coupling and managing internal tensions, to deal with the different demands at play. Social media played two primary roles in enabling these coping strategies: one as a virtual sandbox with a suite of tools for building organizational structures, and the other as a knowledge repository of shared knowledge and experiences. This paper contributes to the understanding of organizational form of e-government collaboration, and extends the understanding on the institutional logics and organizational form by highlighting the role of social media in the hybridization process.

4. Wang, C., & Medaglia, R. Governments' social media use for external collaboration: Juggling time, task, team, and transition, with technology.

This paper is accepted and published as Wang, C., & Medaglia, R. (2017). Governments' social media use for external collaboration: Juggling time, task, team, and transition, with technology. *Transforming Government: People, Process and Policy*, Vol. 11 Issue: 4, pp.572-595.

Paper 4 investigates the characteristics of the resulting organizational form of e-government collaboration through the mediation of social media, with a particular focus on the form of the collaboration when it was informal and without a physical presence. Drawing on the notion of temporary organization, this study views collaboration as an array of practices organized around the key dimension of time, task, team and transition.

Through a single case study, I identify the key characteristics of the organizing practices of particular e-government collaborations. The findings show that in comparison to the bureaucratic form of government, the form of e-government collaboration is reconfigured along the lines of (1) an ad hoc and non-linear management of time; (2) discursive task creation, assignment and engagement among stakeholders; (3) a serendipitous engagement of team members based on expertise; and (4) a shift in formal and informal organizing practices. These findings provide insights into the potential new organizational form of e-government collaboration that is mediated through social media.

Table 1. Overview of papers and foci

Paper Title	Research Focus	Research Question in the Paper	Outcome
1. When ambiguity rules: how incongruent technology frames generate governance in inter-organizational collaboration	Technology enactment, organizational arrangements (i.e., governance)	How do differences in the framing of social media shape governance arrangements?	Developed the understanding that ambiguous social media frames are generative of governance of e-government collaboration
2. Towards a typology of adaptive governance in the digital government context: the role of decision-making and accountability	Organizational arrangements (i.e., governance)	How can decision-making power and accountability be distributed among government and non-government actors in adaptive governance arrangements in the context of digital government?	Identified a typology of governance of e-government collaboration that features different distributions of decision-making power and accountability among government and non-government actors
3. Identifying the organizational form of digital public service projects: technology-mediated hybridization processes amongst competing institutional logics	Institutional arrangements, technology enactment, organizational arrangements (i.e., organizational form)	How does organizational form occur and develop in a digital public service project through hybridization, and what is the role of social media in the process?	Identified a social media mediated hybridization process that explains how organizational form of e-government collaboration arises through the mediation of social media. The hybridization process centers around three coping strategies: prototyping, selective coupling, and mitigating internal tensions
4. Governments' social media use for external collaboration: juggling time, task, team, and transition, with technology	Organizational arrangements (i.e., organizational form)	What are the characteristics of public-private collaboration enabled by social media?	Identified characteristics of the organizational form of social media enabled collaboration, along the dimension of time, team, task and transition

2 LITERATURE REVIEW

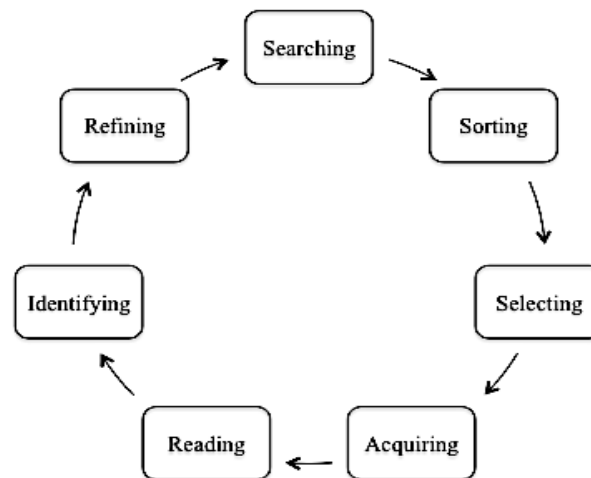
In this section, I position this study in relation to the previous literature on governance, organizational form, and social media in the context of e-government. The literature is primarily drawn from the research area of e-government in the field of information systems and public administration, but also complemented with studies from other research fields (e.g., communication studies, organizational science and project management).

I begin this section by introducing the review method and its application in the process of literature review. I then present the result of my literature review in relation to three areas: the overall understanding of e-government collaboration, and its governance and organizational form. In each area, I also present the opportunities and challenges brought by social media. I end this section by summarizing the research gaps in the existing literature.

2.1 Review Method

The literature review of this dissertation is conducted following a hermeneutic process (Boell and Cecez-Kecmanovic, 2011) illustrated in Figure 3.

Figure 3. The hermeneutic process for conducting literature review (Boell and Cecez-Kecmanovic, 2011, p. 9)



The review starts with the search for publications based on the initial concepts (e.g., e-government, social media, government transformation) that I have inductively constructed from my preliminary fieldwork. Given the large body of literature involving e-government collaboration and social media, I used a “snowballing” strategy (Jalali and Wohlin, 2012; Webster and Watson, 2002) to identify the relevant literature sources. More specifically, I sought the concepts in a series of leading journals and conference proceedings in the field of information systems and public administration. I then went “backward” by reviewing the citations in the selected articles to find prior milestone works, as well as “forward” using Google Scholar to find articles that have identified these key pieces of works, and determine which are relevant to include.

My understanding of e-government collaboration and social media deepened after reading the research papers that are found from the first round of search. To further my understanding, I then started to refine my searches. During this process, I have continuously gone back and forth between research papers, policy documents, and the collected data. This is an iterative process in which the literature review and empirical analysis are inherently intertwined, aimed at identifying interesting themes, contrasts and gaps in the existing body of literature. The refinement of my literature search enabled me to refocus my research on social media and the governance, organizational form of e-government collaboration.

I have searched for publications on governance, organizational form and social media use in the context of e-government, both in isolation and in various combinations in order to develop a more comprehensive understanding of these concepts and their relationships; thus, moving back and forth between the whole (i.e., e-government collaboration) and the parts (i.e., governance, organizational form, social media) of my research interests. The literature review have been guided by the following inquiries:

- What are the organizational characteristics of e-government collaboration?
- What are the existing paradigms of public administration research? And how to position e-government in relation to these paradigms?
- What are the existing organizational forms of e-government collaboration?
- How to understand social media use in e-government collaboration as an inter-organizational phenomenon? What are the opportunities and challenges social media brought to the governance and organizational form of e-government collaboration?

These iterations of literature review resulted in a series of literature not only in information systems, public administration, but also, organizational science, communication studies, as well as project management. Literatures from different research fields provided distinctive perspectives in understanding the overall phenomenon of governance and organizational form of e-government collaboration through the mediation of social media.

During the process, I have continuously synthesized and written up part of my findings for presentation at workshops and conferences (Wang et al., 2015, 2016) as well as in research papers (e.g., paper 1-4 included in the apprentices). Comments from scholars and colleagues of information systems and public administration, have been fed back into the literature in terms of refinement of the search criteria, and have increased my understanding of e-government collaboration.

In the following, I will review the existing literature on the governance and organizational form of e-government collaboration in the field of information systems and public administration, where I will also present the opportunities and challenges brought by the mediation of social media.

2.2 Understanding E-Government Collaboration

In recent decades, we have seen an increase in e-government implementation, which is “the use of information technology to enable and improve the efficiency with which government services are provided

to citizens, employees, businesses and agencies” (Belanger and Carter, 2012; Carter and Bélanger, 2005, p. 5). The complexities of these e-government implementations have led to an increase and a variety of collaborations between government and non-government stakeholders (Sullivan and Skelcher, 2017), which are increasingly facilitated by ICTs, such as social media (Chun et al., 2012; Pardo et al., 2010). Here, I refer to the ICT-facilitated process or activities in which government and (one or more) non-government stakeholders work together to implement e-government initiatives as e-government collaboration (Chun et al., 2012; Dawes, 2009).

In more recent years, social media - a group of Internet-based collaborative technologies that allow users to easily create, edit, evaluate, and link to content or to other creators of content (Kaplan and Haenlein, 2010; Kapoor et al., 2017; de Vreede et al., 2016), have become prevalent in governments’ collaboration with their stakeholders, and have caught the attentions of e-government researchers. In comparison to other commonly used technologies such as email, intranets, and websites, social media affords distinctive possibilities for knowledge sharing across organizational boundaries, which can potentially expand the range of networks, content, and ideas from which people can solicit and learn across organizations (Ellison et al., 2015; Huang et al., 2013; Leonardi et al., 2013; Schlagwein and Hu, 2016).

The phenomenon of e-government collaboration has drawn a lot of research attention from the public administration researchers on the impacts of ICT and the organizational changes of these collaborations. These research efforts have, however, led to different and even contradictory conclusions.

On the one hand, there are researchers who proclaim that ICT has the potential to create radical changes in the governance regime (Dunleavy et al., 2006; Pardo, 2010), and challenge the classic bureaucratic structures of public organizations (Bekkers, 2003; Bellamy and Taylor, 1998; Ho, 2002; Kim et al., 2007; O’Donnell et al., 2003; Pollitt, 2010; Traunmueller, 2009; Weerakkody and Reddick, 2013). More recently, scholars particularly suggest that the deepening government transformation is powered by the wide adoption of social media (Bertot, Jaeger and Hansen, 2012; Criado et al., 2013; Linders, 2012; Mainka et al., 2014; Margetts and Dunleavy, 2013; Picazo-Vela et al., 2012; Zheng and Zheng, 2014). These studies have suggested that social media have presented opportunities for collaborations between government and non-governments stakeholders, including increased transparency, trust and accountability (Bertot et al., 2010; Bertot, Jaeger and Grimes, 2012; Bonsón et al., 2012; Gunawong, 2015; Medina and Rufin, 2015; Song and Lee, 2016), real time interaction (Mergel, 2013), as well as citizen participation and empowerment (Bonsón et al., 2015; Porwol et al., 2016).

On the other hand, there are also researchers that propose skepticism towards whether such changes have been documented empirically (Andersen et al., 2010; Cinite et al., 2009; Fountain, 2001; Kraemer and King, 2006; Luna-Reyes and Gil-Garcia, 2014; Nograšek and Vintar, 2014; Norris, 2010; Scholl, 2005; Wert, 2002). For instance, in envisioning the future form of e-government, Norris (2010) suggests that IT will be largely predetermined, institutionalized and routinized by government, so the transformation is limited. Using empirical examples from recent decades, Cinite, Duxbury and Higgins (2009) demonstrated

that IT-enabled changes to public sector organizations are not always self-evident. Many attempts to transform the public sector failed due to existing organizational and institutional arrangements (Luna-Reyes and Gil-Garcia, 2011), such as, embedded norms, jurisdictions, bureaucracy, poor senior leadership, and the complexity of the public reforms.

A critical analysis of the available e-government research literature indicates the impacts of ICT, such as, social media, on the coordination and organization of collaborations still remain as a blackbox, and clear explanations of how organizational change of government occur through the mediation of social media are still lacking. In the following, I take this debate as a departure, and look into the governance and organization of e-government collaboration, and their relationship with government's use of social media.

2.3 Governance of E-government Collaboration

Many researches in public administration, especially in the research area of e-government, have focused on the relationship between e-government and changes in governance. Here, governance refers to attempts to improve coordination between relatively dependent actors for the purpose of solving societal problems (Klijn, 2008). In the context of information systems, governance refers to the solution that individuals and organizations devise for addressing issues of coordination (Markus and Bui, 2012).

In this section, I detail the understanding of governance by first mapping out three fundamental regimes of public administration research in regard to public policy implementation and public services delivery. I then move on to the current understanding of governance in the era of e-government and the opportunities and challenges provided by social media. In the end of this section, I present the research gaps in the understanding of governance of e-government collaboration and position this dissertation accordingly.

2.3.1 Mapping Paradigms of Public Administration Research

In the field of public administration, there have broadly been three different regimes in the field of “the design and implementation of public policy and the delivery of public services” (Osborne, 2010, p. 1), ranging from the traditional ideas of public administration (PA), to new public management (NPM), and new public governance (NPG). A comparison of the key elements of three paradigms can be found in Table 2.

In this section, I revisit the three different regimes and their fundamental assumptions on the view of state, resource allocation, value base and technology. Of course, elements of each regime can overlap and may co-exist with each other in practice. And the question remains contested in the field whether NPM and NPG are actually regimes (Dawson and Dargie, 1999; Osborne, 2010). Nevertheless, the intention here is to tease out some “archetypes” that are at play in the practice of public administration today, in order to assist the understanding of the complexity of challenges in the governance of e-government collaboration.

Table 2. Characteristics of the three paradigms of public administration research

	Public Administration	New Public Management	Post-NPM Regime		
			New Public Governance	Digital-Era Governance	Adaptive Governance
The view of state	Statist and bureaucratic tradition	Disaggregated state	Plural and pluralistic state	Plural and pluralistic state	Plural and pluralistic state
Resource-allocation mechanism	Hierarchy with a focus on line-management of accountability for public spending	A variable combination of competition, the price mechanism, and contractual relationships	Inter-organizational network, with accountability to be negotiated at the inter-organizational and inter-personal level within the networks	A combination of hierarchy, competition and network, with accountability to be negotiated based on the specific combination	A combination of hierarchy, competition and network, with the state held accountable for stewarding resource distribution
Value base	Assumes the hegemony of the public sector	Assumes the marketplace and its workings as the most appropriate place for service production	Dispersed and contested value bases	Dispersed and contested value bases	Assumes learning, rather than control, as the core mechanism towards governments' adaptations
The view of technology	N/A	ICT is a supportive tool for the NPM and will be eventually institutionalized by public organizations	ICTs play a facilitating role for networking and knowledge sharing	Digitalization and social media play a central role in changing how public services are delivered	Disruptive technology innovation requires government to act fast in order to adapt to changes

	Public Administration	New Public Management	Post-NPM Regime		
			New Public Governance	Digital-Era Governance	Adaptive Governance
Key Elements	1) The supremacy of law; 2) An emphasis of administering rule and guideline sets; 3) Bureaucracy as the central structure in making and implementing policy; 4) The split of politics and administration within public organizations; 5) A promise of incremental budgeting; 6) The dominance of the professional in public services delivery	1) Emphasizing learning from private-sector management; 2) Distancing of policy implementation from the policy-makers; 3) Focusing upon entrepreneurial leadership within public service organization; 4) Emphasizing punitive incentivization; 5) The disaggregation of public services and a focus on their cost management; 6) The growing use of markets, competition, and contracts for resource allocation associated	1) Emphasizing inter-organizational relationships (e.g., partnership, networks, and new ways to work together); 2) Focusing on processes, which stress the interaction of public service organizations with their environment as the basis of service effectiveness and outcomes	1) The reintegration of government agencies, and simplification of public sector networks 2) Altering relationship between government and the citizens 3) Agile government processes	1) A focus on the coordination across governance mechanisms; 2) An emphasis on the balancing between stability and adaptiveness; 3) Decentralization of decision-making, which allows for both top-down and bottom-up decision-making; 4) Mobilization of capabilities between government and their stakeholders; 5) Widening participation of stakeholders for government to spot and internalize developments 6) Continuous adjustment to deal with uncertainty

2.3.1.1 Public Administration

The traditional ideas of PA started from the late nineteenth century to the late 1970s/early 1980s. It emphasizes a strong statist and bureaucratic tradition, which dwells on the core concern with the unitary state where policy-making and implementation are vertically integrated as a closed system within government (Osborne, 2010). Due to its vertically integrated nature, hierarchy is the key resource-allocation mechanism for PA with a focus upon vertical line-management to ensure accountability for public spending (Day and Klein, 1987; Simey, 1988). The value base primarily assumes the hegemony of the public sector for the public policy implementation and public services delivery.

The key elements of PA (Hood, 1991; Osborne, 2010, pp. 2–3) center on: 1) the supremacy of law; 2) an emphasis of administering rule and guideline sets; 3) bureaucracy as the central structure in making and implementing policy; 4) the split of politics and administration within public organizations; 5) a promise of incremental budgeting; and 6) the dominance of the professional in public services delivery.

In the face of failure of the welfare state in the UK, PA came under strong criticism for being a “bystander” to the actual practice in public policy implementation and public services delivery (Chandler, 1991; Dunleavy, 1985; Rhodes, 1997), paving the way for the rise of the NPM.

2.3.1.2 New Public Management

The idea of NPM burgeoned from the late 1970s onwards, which assumed the application of private-sector management techniques to public services delivery would lead to improvements in the efficiency and effectiveness of these services. The idea of NPM derived from neo-classical economics and particularly of rational choice theory (Niskanen, 1971; Tiebout, 1956). The value base of NPM assumes the marketplace and its workings as the most appropriate place for the production of public services.

In comparison to the statist tradition of PA, the NPM is concerned with a disaggregated state. This means policymaking and policy (and public service) implementation are partially disengaged (Dunleavy et al., 2006; Osborne, 2010). And the implementation takes place through a collection of independent service units, which are ideally in competition with each other in a horizontally organized marketplace. As a result, the key resource-allocation mechanism of the NPM is based on a variable combination of competition, the price mechanism, and contractual relationships.

NPM emphasizes six key elements (Dunleavy et al., 2006; Osborne, 2010, pp. 3–4), including 1) an emphasis on learning from private-sector management; 2) the distancing of policy implementation from the policy-makers; 3) a focus upon entrepreneurial leadership within public service organization; 4) an emphasis on punitive incentivization, such as inputs and output control and evaluation, and performance management and audit; 5) the disaggregation of public services and a focus on their cost management; and 6) the growing use of markets, competition, contracts for resource allocation associated with public services delivery.

While some scholars have advocated for the NPM over the years (Barzelay, 2001; Hughes, 2012), a majority has criticized it on a range of grounds (Farnham and Horton, 1996; Flynn, 2002; Hood and Jackson, 1992; McLaughlin et al., 2005; Metcalfe and Richards, 1990), of which the critics mostly focus on the disaggregating of government organization in public services delivery, and the application of outdated private-sector techniques to public policy implementation and public services delivery.

2.3.1.3 Post-NPM regime

In response to (and as a product of) the increasingly complex, plural and fragmented nature of public policy implementation and public services delivery, multiple theoretical perspectives on public governance and public value management have mushroomed in the past two decades, marking the rise of a post-NPM regime (Greve, 2015). Although public governance and public value management are both important conceptual alternatives to NPM, due to the scope of this dissertation, I only present the selective key ideas on public governance, including New Public Governance (NPG), Digital-Era Governance (DEG), and Adaptive Governance.

New Public Governance

The NPG, also referred by some as collaborative governance (Greve, 2015), is rooted firmly within institutional and network theory (Nohria and Eccles, 1992; Ouchi, 1980; Powell, 1990; Powell and DiMaggio, 2012). The NPG posits today's state both as *plural* – where multiple interdependent actors contribute to the delivery of public services, and *pluralistic* – where multiple processes inform the policy-making system. Consequently, the central resource-allocation mechanism is the inter-organizational network, with *accountability* being something to be negotiated at the inter-organizational and inter-personal level within these networks (Osborne and Kaposvari, 1997). The key elements of the NPG include: 1) a focus on the inter-organizational relationships, and 2) an emphasis of the governance of processes, which stress that service effectiveness and outcomes rely on the interaction of public service organizations with their environment. In addition, such networks are often riven with power inequalities that must be navigated successfully for their effective working. Subsequently, the value base is rather dispersed and contested.

The theorizing among the NPG literature is built upon several strands of public governance literature: socio-political governance (Kooiman, 1999, 2003), public policy governance (Börzel, 1997; Jessop, 2003; Klijn and Koppenjan, 2000; Marsh and Rhodes, 1992), administrative governance (Frederickson, 1999; Lynn Jr et al., 2001; Salamon, 2002), contract governance (Kettl, 2006, 2011), and network governance (Entwistle and Martin, 2005; Provan and Kenis, 2008; Rhodes, 1996). These NPG literature have provided an array of solutions for real-world challenges, they address narrowly defined categories of concern, such as the development of key management skills (Getha-Taylor, 2008), or inter-operability (Popescu et al., 2013) in an inter-organizational context, and the governance of inter-organizational relationships (Hudson, 2004; Huxham and Vangen, 2013; Jarvenpaa and Majchrzak, 2015; Jarvenpaa and Välikangas, 2016).

Digital-era Governance

While the research on NPG focus on networks and collaboration and new ways for government engaging active citizens, the influence of pervasive adoption of digital technologies in public service and its production, namely e-government, still largely remains peripheral in the NPG literature and its consequences are not well addressed (Pollitt, 2010). In more recent years, a stream of research work (Dunleavy et al., 2006; Margetts and Dunleavy, 2013) has focused on the relation between e-government (with a focus on the implementation of digital technologies in public services) and public governance, namely, Digital Era Governance (DEG).

Research on DEG puts digitalization, or e-government, at the center of changes in the institutions of public governance and management. They argue e-government has more profound effects on governance practices than a supportive tool for the NPM, and demands a more holistic and flexible perspective to address these changes. Dunleavy, Margetts, Tinkler, Bastow (2006) have strongly argued e-government as the driving force for reversing NPM-induced changes in government organization, including the reintegration of government agencies, changing relationship between government and the citizens, agile government processes that can swiftly respond to changes, as well as digitization of administration and provision of public services.

As social media becomes prevalent in governments' connection with their stakeholders, Margetts and Dunleavy (2013) have highlighted the powering effects of social media as an important trigger of a second wave of DEG, namely DEG 2.0. The DEG 2.0 focuses on the transformative potentials of social media in altering the relationship between governments and their stakeholders, especially in regard to transparency, accountability, trust, and citizen empowerment.

Nevertheless, a majority of these research works have focused on social media use for one-way information sharing from government to citizens, and how that may provide opportunities for changes in public governance. Very few have looked into the effects of social media use for two-way knowledge exchange between government and their stakeholders for actual collaboration, that is, the joint working between government and their stakeholders – e.g., for-profit and non-profit organizations, groups, and individuals, where government and these stakeholders cooperate in some endeavor (O'Flynn and Wanna, 2008). While one may argue this is due to the limited empirical cases on social media use for public-private collaboration, as the recent UN E-government Survey (2018) has indicated, there is a global emergence of innovative partnerships between public and private stakeholders through the use of ICTs, providing opportunities for understanding the mediating effects of social media, as part of ICT in public governance in the context of e-government.

Adaptive Governance

In addition, as technology innovation (e.g., open data, data analytics, A.I., cybersecurity) accelerates in the recent years, another stream of literature on adaptive governance (Janssen and van der Voort, 2016) emerges to focus on the increasing pressure of response time for the public service organizations. Janssen

and van der Voort have pointed out that established public governance mechanism that emphasize enhancing control, or that aim at ensuring stability through alignment (Almarabeh and AbuAli, 2010; Gauld, 2007; Luk, 2009), or consensus building (Ansell and Gash, 2008; Pardo et al., 2010), are not necessarily fit for adapting to fast-changing developments.

The reason, as Janssen and van der Voort (2016) have argued, lies in the incompatible *organizational speed* across different levels of government as a result of different governance schemes at play across different levels of government in practice. As we have learnt previously, the conceptual shifts of PA, NPM, NPG, and DEG have significantly influenced the present-day practice of public services delivery. This means the design, implementation, and delivery of public services is confronted with complex decision-making systems among a plurality of stakeholders with different objectives (Almarabeh and AbuAli, 2010). While ensuring sound and accountable decision-making is a must for the stability of government organization, coordinating different decision-making systems takes time and may lead to the failure of an e-government project. The key issue here is thus how the government can develop the ability to make fast yet still accountable decisions when producing digital public services.

To deal with this problem of rhythm in coordinating across governance schemes, Janssen and van der Voort (2016) have lent the concept of adaptive governance (AG) from studies on socio-ecological systems (SES) (Duit and Galaz, 2008). Adapting the research in SES to the context of e-government, Janssen and van der Voort have proposed an array of strategies centered on the core characteristics of “decentralized decision-making, engagement of many stakeholders in decision-making, the use of tacit decentralized knowledge, and continuous adjustment to deal with uncertainty” (Janssen and van der Voort, 2016, p. 4). While empirical studies of adaptive governance have recently started to emerge (Chatfield and Reddick, 2018; Hong and Lee, 2017, 2018), it still remains unclear if these strategies solve the tension between fast and accountable decision-making in practice, and how they may actually occur.

In addition, there is also a neglected aspect in the current conception of adaptive governance – that is the very tool government organizations use to engage stakeholders, share knowledge and coordinate decision-making. This is particularly important because learning, or the use of decentralized knowledge, plays a central role in adaptive governance, and today intra- and inter-organizational knowledge sharing is increasingly mediated through collaborative technologies - in particular, social media.

Along this line, by delineating the development of different paradigms of public administration research, in this section I have showcased how public governance literature have provided different perspectives to understand and potentially solve the coordination issues in e-government collaboration. While the three streams of research work (i.e., NPG, DEG, and adaptive governance) have complemented each other by looking at e-government collaboration at different perspectives, they have also revealed a pressing need for unfolding the blackbox of social media use for knowledge sharing in e-government collaboration.

In the following, I draw on the literature in information systems on social media use for inter-organizational knowledge sharing to shed light on the opportunities and challenges social media may provide for public governance in the context of e-government.

2.3.2 Public Governance and Social Media

As Dawes (2009) has argued, governance in the digital age consists of technological elements and social elements, which play both independent and mutually influential roles. In this sense, there is a need to explore both technical and social elements of the conception of governance by investigating the relationship between social media for knowledge sharing and the governance of e-government collaboration. As I have mentioned in the previous sections, the stakeholders' use of social media remained as a blackbox in the current e-government studies, among which few have addressed the use of social media for knowledge sharing in the collaboration between governments and their stakeholders.

Thus, to better understand the use of social media for knowledge sharing and its potential impacts for the governance of e-government collaboration, I have drawn on the social media studies in the field of information systems, which have primarily focused on the use of enterprise social media for knowledge sharing in the context of private organization.

Similar to the e-government studies, a stream of social media research in information systems have argued for the potentials of social media for enabling information or knowledge sharing (Leonardi, 2014; Leonardi et al., 2013; Leonardi and Vaast, 2017). Nonetheless, another stream of studies on social media adoption in collaboration suggest social media use in practice do not always lead to shared knowledge. In fact, social media can also be used to constrain knowledge sharing (Gibbs et al., 2013; Hwang et al., 2015; Majchrzak et al., 2013; Oostervink et al., 2016). These studies find that the stakeholders of collaboration - embedded in their distinctive organizational and institutional arrangements - may view and choose to use social media differently to accomplish their own strategic goals (Gibbs et al., 2013; Oostervink et al., 2016). In addition, longitudinal observations also suggest as the collaboration develops and the stakeholders' relationships change, the stakeholders' view and use of social media for knowledge sharing may change as well (Hwang et al., 2015). In this sense, the stakeholders' interests, their views of technology (i.e., what it can do and what it cannot do), and the nature of knowledge shared (i.e., what can be shared and what cannot be) vary from stakeholder to stakeholder, together influencing the way in which knowledge is shared through social media (Charband and Navimipour, 2016; Dulipovici and Vieru, 2015; Treem et al., 2015).

Moreover, previous studies have also embarked on the consequences of divergent ways of knowledge sharing. Some studies have argued that the divergent ways of knowledge sharing could potentially forestall collective actions (Jarvenpaa and Majchrzak, 2010; Majchrzak et al., 2013). Nevertheless, another stream of studies has also suggested that inconsistency as such may be generative rather than constraining of governance arrangements in inter-organizational network (Faraj et al., 2011).

In this sense, social media based knowledge sharing needs to be better understood in the governance of e-government collaboration, not only on the divergence and convergence in the nature of knowledge shared, but also on the views and use of the technologies for knowledge sharing. Given the stakeholders' organizational backgrounds and experiences, they may have distinct views of what needs to be shared, how knowledge needs to be shared, or whether they should share or control the access to certain knowledge (Dulipovici and Robey, 2013; Leonardi and Vaast, 2017). Considering the central role of learning – that is the use of decentralized knowledge - in the conception of governance (i.e., adaptive governance), there is especially a need to understand the relationship between the convergence and divergence in the views and use of social media for knowledge sharing and the governance of e-government collaboration. As the relationships between stakeholders may change as the collaboration develops, it is also important to engage with longitudinal research design, in order to follow the long-term evolution of the views and uses of social media for knowledge sharing and its effects in the governance of e-government collaboration.

In this section, I have delineated three paradigms of public administration research, and positioned the governance of e-government collaboration accordingly. The review has revealed three relevant streams of governance literature, namely NPG, DEG and adaptive governance, and identified three key elements in understanding the governance of e-government collaboration: 1) inter-organizational relationships; 2) the role of social media for knowledge sharing; and 3) the balance between accountability and fast decision-making.

In particular, I drew on the studies on social media use for inter- and intra- organizational collaboration in the field of information systems to show the opportunities and challenges that social media use for knowledge sharing may provide for public governance in the context of e-government. The findings revealed a need to base the discussion of public governance and social media in a better understanding of the embeddedness of social media use in e-government collaboration, based on which I have framed sub research question 1:

How does the governance of e-government collaboration emerge through the mediation of social media?

In the next section, I move onto the literature on the organizational form of the inter-organizational relationships in the context of e-government.

2.4 Organizational Form of E-government Collaboration

The influence of public management reforms in practice (Skelcher and Smith, 2015), together with the increasing need for governments to answer to disruptive technological innovation (Janssen and van der Voort, 2016), and governments' adoption of social media for connecting with their stakeholders (Margetts and Dunleavy, 2013), have stimulated the emergence of a variety of organizational forms of e-government projects, to which the label 'hybrid' is often attached.

While these organizational forms have presented different options for the stakeholders of e-government collaboration, they also raised the question of what makes an appropriate form for e-government

collaboration. In this section, I present the existing literature to provide two perspectives to understand the organizational form of e-government collaboration, one focusing on organizational form as institutional hybrid, one focusing on organizational form as socio-technical hybrid. In the end of this section, I identify the existing research gaps on the organizational form of e-government collaboration.

2.4.1 Organizational Form as Institutional Hybrid

Organizational form refers to “the structural features or patterns that are shared among many organizations” (Fulk and DeSanctis, 1999, p. 5). As a result of government management reforms and changes in governance schemes, governments increasingly engage in collaboration with non-government stakeholders in producing digital public services, which have taken on different ‘hybrid’ organizational forms. These ‘hybrid’ organizational forms take on different structural features from markets, hierarchies, and networks (Powell, 1990), and range from short-term contractual agreements, such as IT outsourcing, to more voluntary long-term inter-organizational arrangements, such as public-private partnerships or strategic alliances.

More specifically, closely linked to the application of NPM-like ideas in practice, IT outsourcing refers to the contrast-based transfer of IT-related activities and tasks from government to an external private provider (Duhamel et al., 2014; Gantman, 2011; Lacity and Willcocks, 1997; Lee, 2001; Moon et al., 2016; Ruzzier et al., 2008). Together with the emergence of NPG agenda, public-private partnerships have also flourished as an organizational form of digital public services delivery. Public-private partnerships broadly refer to “institutionalized cooperative arrangements between public-sector actors and private-sector actors” (Greve and Hodge, 2010, p. 149), where government and non-government stakeholders share risks and resources in order to produce value over time for the benefits of all (Bertot et al., 2013; Greve, 2015; Hodge and Greve, 2007; Hui and Hayllar, 2010; Joha and Janssen, 2010; Khan et al., 2012; Villani et al., 2017). Similarly, organizational forms, such as strategic alliances have also emerged. Strategic alliances involve “collaborative inter-organizational relationships involving voluntary efforts and significant resources of two or more organizations to create, and to, or maximize, their joint value” (Markus and Quang, 2011; McMullen and Warnick, 2016; Willcocks and Choi, 1995, pp. 67–68).

While these organizational forms that suggest consistency and long-term sustainability become institutionalized in practice, studies have also reported on the difficulties for stakeholders when choosing the appropriate organizational configurations for handling the increase in organizational and technological complexities in e-government implementation (Axelsson et al., 2010; Feller et al., 2011; Heimstädt et al., 2014; Lindgren et al., 2015), and the consequential risks of project failures (Anthopoulos et al., 2016; Joha and Janssen, 2010; Langford and Roy, 2006).

In reaction to this, in recent years a new stream of thoughts on the organizational form of e-government collaboration that stresses organizational speed and adaptability, has started to emerge, together with the adaptive governance agenda (Janssen and van der Voort, 2016; Pilemalm et al., 2016). These studies

emphasize that the implementation of ‘advanced’ technologies in public services result in turbulent and unpredictable collaboration dynamics that are characterized by an extensive and expansive network of stakeholders (Axelsson et al., 2010; Feller et al., 2011), uncertainty and constant revision of project goals (Lindgren et al., 2015), as well as emergent roles and relationships among the stakeholders (Cordella and Hesse, 2015; Heimstädt et al., 2014; Lindgren et al., 2015). These studies converge with research work in the field of information systems on the organizing of digital innovation (Afuah and Tucci, 2012; Nambisan et al., 2017), and start to contour forms of highly flexible and fluid organizing that is based on relentlessly changing templates, quick improvisations and ad hoc responses. Nevertheless, the organizational processes that give rise to these emergent organizational forms are still not sufficiently understood among e-government research.

By contrast, research from organizational science, public administration, and project management have looked more in-depth into the organizational processes that are apt to handle complexities and environmental turbulence (Gulati and Puranam, 2009; Matinheikki et al., 2018; Schildt and Perkmann, 2017; Schreyögg and Sydow, 2010; Skelcher and Smith, 2015). These studies have revealed that to understand changes in organizational form, a better understanding of the relationship between organizations and institutions is needed. This stream of research suggests situating the discussion of organizational form among broader institutional demands, and stresses organizational form as “an archetypical configuration of structures and practices given coherence by underlying values regarded as appropriate within an institutional context” (Greenwood and Suddaby, 2006, p. 30). In this sense, organizational forms can be understood as a series of organizational settlements that result from turbulent institutional dynamics, thus highly flexible and fluid (Schildt and Perkmann, 2017).

Furthermore, in consistent with the call for new organizational form to answer to disruptive technology innovation in the conception of adaptive governance (Janssen and van der Voort, 2016), research from organizational science also suggests that organizing should strike a balance between stability and adaptiveness (Gulati et al., 2012; Gulati and Puranam, 2009; Schreyögg and Sydow, 2010). This implies a need to better understand not only the consistent, but also inconsistent and contradictory organizational processes, when investigated the organizing processes that give rise to organizational form.

While what we have seen advocates for more integrated institutional analysis on government transformation among the e-government literature in the recent years (Luna-Reyes and Gil-Garcia, 2011, 2014), the question of how organizational forms of e-government collaboration occur and develop to strike the balance between stability and adaptiveness still remains unanswered, and needs to be better understood empirically.

In addition, as mentioned above, the discussion of organizational form is further complicated in the digital age, as organizational communication is increasingly mediated by social media, which I will elaborate on next.

2.4.2 Organizational Form as Socio-technical Hybrid

Studies in information systems and organizational science have long suggested the socio-technical nature of organizational form (Child and McGrath, 2001; Faraj et al., 2011; Foster and Flynn, 1984; Fulk and DeSanctis, 1999), as communication – “the connective mechanism that enables parts of the organization to coordinate with one another and with other organizations” (Fulk and DeSanctis, 1999, p. 5), becomes increasingly mediated by ICTs. Since the advent of social media, social media have arguably become the new ‘hybrid’ elements in all organizations, and have led to a series of research on the potential impacts on transforming intra- and inter-organizational collaboration and coordination (Aral et al., 2013; Kapoor et al., 2017; Leonardi et al., 2013; Leonardi and Vaast, 2017).

As mentioned above, social media have gained a lot of attention among the e-government research (e.g., Bertot et al., 2010; Mergel, 2013; Mergel and Bretschneider, 2013). While the majority of the studies have focused on how social media are implemented (Mergel and Bretschneider, 2013), to what extent social media are helpful for strengthening existing government capabilities and how they offer new government capabilities (Krishnamurthy, 2015; Linders, 2012), only a few have focused on how the form of the collaboration is being reconfigured (Meijer and Torenvlied, 2016).

Although the majority of these e-government studies do not focus directly on social media and changes in the organizational form of e-government collaboration, they do seem to imply a decentralizing effect of social media use, (e.g., Chun et al., 2010), which may undermine the foundation of government as a bureaucratic organization (Powell, 1990). This voice echoes the core argument for public organizations to be modernized to the post-bureaucratic and networked organization (Brafman and Beckstrom, 2006; Shirky, 2008), in order to adapt to the dynamic and complex nature of information society (Meijer, 2008; Osborne and Plastrik, 1997).

Nevertheless, in a more recent examination of Dutch police departments’ use of Twitter, Meijer and Torenvlied (2016) found the organization of police social media communication is hybrid rather than radically different from the bureaucratic model. They emphasise that the hybrid organization emerges due to conflicting institutional demands that are at play (Pache and Santos, 2012). This finding suggests a link to other institutional demands that are at play and a reconfirmation of the Luna-Reyes and Gil-Garcia (2014)’s appeal to integrate the analysis of technology, organization and institution in order to attain a better understanding of the link between ICT and transformative change in the public sector. That is to say, in order to understand the link between social media and the changes in organizational form, one needs to embed the discussion of social media and organizational form in a broader institutional context.

The institutional focus can also provide an opportunity to solve the skeptics in e-government studies about whether social media enabled organizing is able to evolve over time towards genuine government transformation, that is, to enact changes in organizational form of public-private collaboration in the long run (Bryer and Zavattaro, 2011; Norris, 2010). For instance, scholars such as Norris (2010) suggest that,

over a long period of time, IT will eventually be predetermined, institutionalized and routinized by government, so the transformation may be limited.

The literature review on organizational form suggests that among the current e-government literature, it is still not clear whether or not technology implementation in public services would trigger new organization form under different institutional demands, and whether or not communication technology such as social media can further facilitate the transformation over time. To understand the impacts of e-government on government transformation, I need to look in-depth into the interplay between institutional demands, organizational arrangements, and communication technologies (e.g., social media), hence the sub research question 2:

How does the organizational form of e-government collaboration occur through the mediation of social media?

In the next section, I summarize the literature review and map out the research gaps for this dissertation.

2.5 Summary

In general, a review of the available literature on e-government collaboration in information systems and public administration shows that as public problems become more complex, governments seek new ways to collaborate with stakeholders of various backgrounds to harness knowledge and resources for public problem solving. Subsequently, new governance arrangements and organizational forms are sought to coordinate the changing organizing practices around these collaborations. As scholars embark on the search for new ways of governance and innovative organizational form of public-private collaboration, the effects of social media – an integral part of organizing in present-day public-private collaboration - remain overlooked. It is unclear how organizational actors negotiate their divergent views and use of social media in inter-organizational collaboration, how the result of this negotiation influences the organizational form of the collaboration and its development, and how these social media mediated collaborations are governed. This dissertation sets to fill in these gaps by addressing these three aspects.

In addition, the literature review also shows while “technological change creates new challenges and opportunities for social and political organizations, the response to those challenges depends on history, culture, institutions, and paths already taken or forgone” (Kamarck and Nye, 2002, p. 2). Following this thought, I draw on an integrated framework of technology, organization and institution to understand the research questions, which I will elaborate next.

3 THEORETICAL PERSPECTIVES

Theoretically, I took departure from the technology enactment framework (Cordella and Iannacci, 2010; Fountain, 2001; Gil-Garcia, 2012; Luna-Reyes and Gil-Garcia, 2011, 2014) to develop an overall understanding about the relation between technology and organizational change in the public context. Technology enactment framework emphasizes the complexities of technology adoption in the public sector reform, and argues technology is the result of the negotiation of social, political and institutional arrangements, hence the enactment.

The current technology enactment framework suffers from several weaknesses. To overcome these weaknesses, I complement the framework with institutional logics (Thornton et al., 2012; Thornton and Ocasio, 2008), technological frames of reference (Davidson, 2006, 2002; Orlikowski and Gash, 1994; Young et al., 2016), and temporary organization (Bakker, 2010; Burke and Morley, 2016; Jones and Lichtenstein, 2008; Lundin and Söderholm, 1995).

In this section, I begin by introducing the technology enactment framework. I then move on to introducing the theory of institutional logics, technological frames of reference, and temporary organization, and elaborate on how these theories inform the understanding of the co-evolution between technology, organization and institution.

3.1 Technology Enactment Framework

Organizational transformation involving ICT is a widely explored phenomenon in the field of information systems. There are in general three dominant views in the research area: 1) technological determinism, 2) social determinism, and 3) the ensemble view. Technology determinism assumes technology as an autonomous tool that can change social structures (Leavitt and Whisler, 1958; Smith and Marx, 1994). Social determinism assumes social groups assign specific meanings to technology (Bijker et al., 1987; Jackson et al., 2002). The ensemble view combines both and argues ICTs have the potential to change social and organizational arrangements, but at the same time these structures influence the design, implementation and use of ICTs (Orlikowski and Iacono, 2001).

As the literature review has shown above, the effects of social media adoption on government transformation are not always straightforward. Rather, they are at times shaped by the organizational and institutional arrangements at play. Thus, in this dissertation, I follow the ensemble view (Orlikowski and Iacono, 2001), which focuses on the dynamic interaction between social arrangements and ICT. Scholars have developed different approaches (e.g., structuration theory, socio-technical system theory, and institutional theory) (Gil-Garcia, 2012) to account for the complex relationship between technologies and social and organizational arrangements, among which I adopt an institutional approach (Greenwood et al., 2008; Lawrence et al., 2002; Powell and DiMaggio, 2012).

The institutional approach builds on the understanding of how organizations operate in a certain institutional field, in which organizational actors' actions are affected by the taken-for-granted rules and

norms in the field. These relatively widely diffused, taken-for-granted, practices, rules, and norms are institutions. I choose the institutional approach, as it offers an opportunity to examine the role of macro social forces in understanding the impacts of technology (Barley, 1990), and as it has the potential to identify the macro social arrangements and their co-alignment with organizational structure and technological systems (Battilana et al., 2009).

Following the institutional tradition, I draw on the technology enactment framework (Cordella and Iannacci, 2010; Fountain, 2001; Gil-Garcia, 2012; Luna-Reyes and Gil-Garcia, 2014) as the basis of the theoretical framework of my dissertation. Technology enactment framework was first developed by Fountain (2001, p. 88) to understand how “the embeddedness of government actors in cognitive, cultural, social, and institutional structures influences the design, perceptions, and uses of the Internet and related [information technology]”. The framework recognizes the complex relations between information technology and social arrangements, including organizational form and institutional arrangements. The framework has gained wide recognition in the field of information systems (Chan et al., 2011; Cordella and Iannacci, 2010) and the research area of e-government (Gil-Garcia, 2012; Luna-Reyes and Gil-Garcia, 2011, 2014) for its analytical power of the complex relations between information technology and social arrangements in public sector organizations.

From Fountain (2001)’s perspective of the technology enactment framework, there are three key elements in understanding organizational transformation and ICT: technology, organization and institution. To understand technology, Fountain’s framework is built on an analytical distinction between “objective technology” and “enacted technology”. “Objective technology” refers to the capacity and functionality of technology regardless of how people use it. In contrast, “enacted technology” refers to the way in which users perceive and react to objective technology, emphasizing the influence of institutional and organizational arrangements on the selection, design, implementation and use of information technologies in government agencies.

Nevertheless, Cordella and Iannacci (2010)’s study on the choice and design of new technologies in the context of e-government reforms have showed what Fountain would call the “objective technologies” have been shaped over time to accommodate different interests that underpin the e-government reform. Similar to the research setting of Cordella and Iannacci’s study, the adoption of social media in e-government collaboration is also subject to the divergent interests of different stakeholders. Although the social media in use is not necessarily designed by the stakeholders of e-government collaboration, the open nature of social media platforms (e.g., WeChat) allows for the regrouping and reconfiguration of the features, thus providing opportunities to accommodate different logics among the stakeholders.

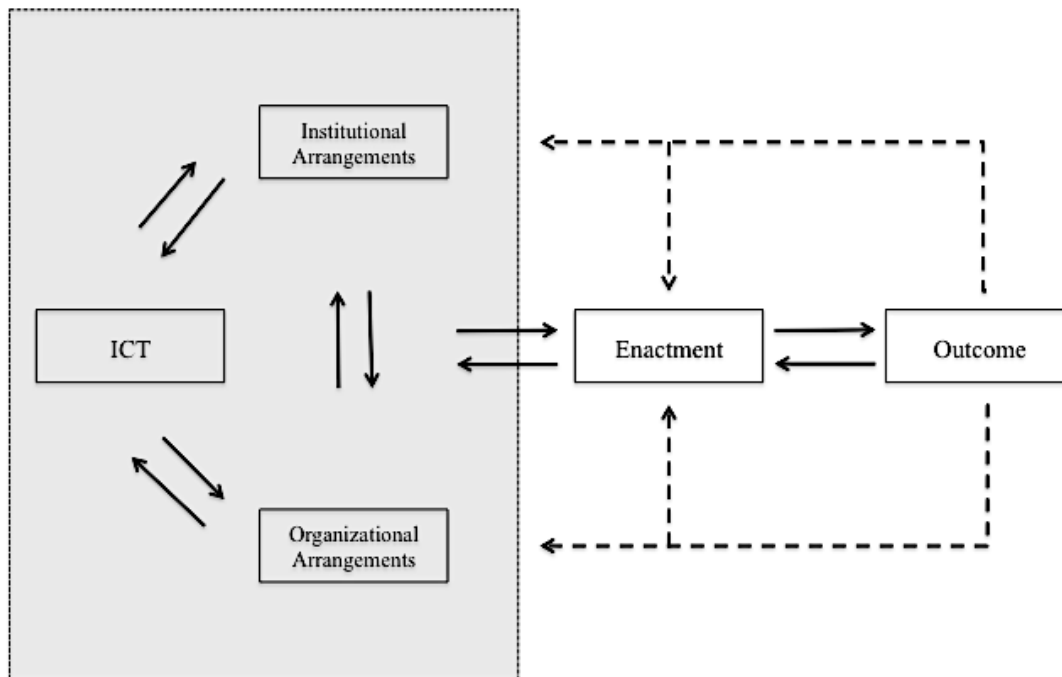
In this sense, I subject to the view that technology enactment is not only shaped by pre-existing institutional and organizational arrangements as argued by Fountain (2001). Different organizational and institutional influences are also embedded in the configurations of the features. Thus, I do not separate “objective technology” and “enacted technology” as two clear constructs.

Moreover, in Fountain (2001)'s technology enactment framework, organizational form broadly refers to the structural characteristics of organizations. Organizational form, such as bureaucratic characteristics of the organizations that design, implement and use technology, has a direct effect on the enacted technology. In the context of e-government collaboration, stakeholders are influenced by multiple organizational arrangements – the ones of stakeholders' affiliated organization, as well as the emergent collective arrangement of the inter-organizational collaboration, including both governance and organizational form. And especially considering the organizational form and governance may not be clearly separated at the inter-organizational level, in this dissertation, I use "organizational arrangements" instead of "organizational form" to refer to the organizational element in the framework. Here the organizational arrangements consist of both governance and organizational form of inter-organizational collaboration, and the ones of stakeholders' affiliated organization. These different organizational arrangements influence the enactment of technology, which in turn also exerts its influence on the organizational arrangements.

As mentioned above, I see institutional arrangements as widely diffused, taken-for-granted, practices, rules, and norms. Institution exerts influence by co-aligning with organizational structure and technological systems

Along this line, I adapt Fountain's technology enactment framework to its recent conceptual developments, and the need for research the empirical phenomenon of e-government collaboration. The illustration of the adapted technology enactment framework can be found in Figure 4.

Figure 4. Adapted technology enactment framework



While technology enactment framework has received wide appraisal for identifying the key elements that shape the enactment of information technology, critiques also follow. First, the framework is criticized of

its neo-institutional foundation, which lacks explanatory power on how agents overcome institutional barriers (Bretschneider, 2003; Yang, 2003). Scholars have called for more nuanced discussion of institutional theory (Danziger, 2004; Gil-Garcia, 2012), especially on the balance between agent and institution, between strategic choice and institutional constraint (Yang, 2003, p. 432).

Second, the framework has been considered too abstract and general in discussing certain links (Bretschneider, 2003; Danziger, 2004). In particular, Danziger (2004) pointed out that the framework paid less attention to explaining the role of institutional arrangements in influencing organizational forms, as well as the dynamics by which IT generates impacts on organizational forms and institutional arrangements. Third, empirically, the main arguments of the original framework (Fountain, 2001) were drawn from very limited contexts (e.g., US federal governments). Scholars have called for more attention to research of other contexts, e.g., national, regional, or local, in order for new variable to emerge (Yang, 2003; Yildiz, 2007).

Building on these critiques, in the following I operationalize the adapted technology enactment framework, which overcomes these barriers and facilitates the understanding of technology and organizational changes (i.e., governance and organizational form). I do so by drawing on different concepts in information systems, organizational science and project management, to update the understanding of the key elements in the framework and unfold the relations among these key elements.

3.1.1 Understanding Institutional Arrangements and Organizational Form

As mentioned previously, Fountain (2001)'s technology enactment framework is criticized for overemphasizing the persistence of institutions, and largely overlooking the potential of human agents' strategic choice (Yang, 2003). Thus, in this dissertation I draw on other theoretical developments in institutional theory – institutional logics (Friedland and Alford, 1991; Skelcher and Smith, 2015; Thornton et al., 2012) - to put the agency back in the technology enactment framework. Adopting an institutional logic approach also helps to explain the role of institutional arrangements in influencing organizational form (Skelcher and Smith, 2015), which is a weaker explanatory link in Fountain's technology enactment framework, as suggested by Danziger (2004).

The approach of institutional logics is developed within the field of institutional theory to explain the interactions between normative societal structures, organizational forms and individual behavior. The central argument here is that society is understood as an inter-institutional system that consists of theoretically distinctive normative structures, each with its own logic (Friedland and Alford, 1991). In general, scholars have described seven ideal types of institutions: family, community, religion, state, market, profession and corporation (Thornton et al., 2012). Institutional logics refer to the entirety of "socially constructed, historical patterns of material practices, assumptions, values, beliefs and rules by which individuals [or organizations] produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality" (Thornton and Ocasio, 1999, 2008, p. 804). These logics

give meanings to actors, and are ideal-typically expressed through distinctive discourses and actions around legitimacy, authority, and identity (Thornton et al., 2012).

Theoretical development on institutional logics increasingly recognizes the plurality of institutional logics bearing on organizations and individuals (Dunn and Jones, 2010; Kraatz and Block, 2008; Schildt and Perkmann, 2017), and the different ways in which groups and individuals respond (Greenwood et al., 2011; Schildt and Perkmann, 2017), providing a conceptual explanation of the actors' agency. As these logics may be highly divergent or even in conflict, actors exercise agency as they make sense of the relationship between the institutional logics and the organizational context in which they find themselves.

Organizations are an important medium through which logics interact with the actors' agency. While situated actors are enabled and constrained by prevailing institutional logics, they also creatively respond by adapting organizational forms in order to better fit a complex institutional environment (Kraatz and Block, 2008; Pratt and Foreman, 2000; Schildt and Perkmann, 2017). Following this line, organizational form can be understood as a series of temporary settlements that permit the co-existence of organizational principles and practices adhering to different logics (Rao and Kenney, 2008; Schildt and Perkmann, 2017). To understand the relation between institutional arrangements and organizational form is therefore to understand the process of how one organizational settlement transitions to another in the face of changing dynamics of institutional logics, a process here I refer to as *hybridization*. Hybridization is defined as the process where stakeholders adjust the organizational form of project by re-configuring and integrating different structures, practices, and cognitive elements to meet the demands of different logics (Battilana et al., 2017; Battilana and Dorado, 2010; Battilana and Lee, 2014; Schildt and Perkmann, 2017; Skelcher and Smith, 2015). In turn, these temporary organizational settlements, although occasional, can also lead to an institutional hybrid organizational form, or even the creation of new institutional logics at a societal level in the long run (Schildt and Perkmann, 2017).

More specifically, hybridization consists of two interlinked approaches: selective coupling (Mair et al., 2015; Pache and Santos, 2012) and integration (Battilana and Dorado, 2010; Schildt and Perkmann, 2017). Selective coupling refers to the adoption of selected practices from different demands of existent institutional logics, and helps the resulted organization gain legitimacy. Integration refers to the active socialization and understanding of the hybridized goals and practices in order for actors of different institutional backgrounds to establish shared ways of thinking and acting. Integration is crucial for the sustainability of the hybrid organization as it reduces the tensions caused by the differences in the stakeholders' perception of legitimate goals and actions.

Although there are studies suggesting a link between technology, institutional change, and hybridization (Gawer and Phillips, 2013; Hultin and Mähring, 2014; Oostervink et al., 2016; Raviola and Norbäck, 2013), the role of enacted technology in hybridization is still not well-understood, requiring further research attention

Along this line, e-government collaboration can be understood as an inter-institutional system where divergent institutional logics co-exist, of which the organizational form of e-government project is an important medium for the actors to exercise their agency. Previous studies on cross-sector or public-private collaboration indicate that these collaboration projects are subject to competing logics of public good (or state) and market (Ashraf et al., 2017; Beck et al., 2015; Mars and Lounsbury, 2009). Moreover, e-government collaboration can also expose new logics that have previously not been part of institutional systems, or different dynamics between logics, as the range and interaction of stakeholders change (Beck et al., 2015). In this sense, we need to understand organizational form in the technology enactment framework as contingent settlements that are in flux rather than as a static normative category.

In addition, the approach of institutional logics also suggests a need for a richer framework to understand the complexities of technological adoption in public sector reforms, which I will elaborate as follows. In the next section, I first unfold the relationship between technology enactment and organizational arrangement, and then move on to the need for the conceptual understanding of the direct link between institutional arrangements and technology enactment.

3.1.2 Understanding Technology Enactment

From the perspective of the technology enactment framework (Fountain, 2001), the institutional arrangement exerts its influences on the technology enactment through the organizational context that situates the actors. Nevertheless, in an increasingly dynamic environment such as e-government collaboration, where individuals, groups and organizations face a constant challenge to make sense of and respond to changes in technology evolvement and the range and dynamics of stakeholders, the technology enactment framework cannot sufficiently account for the process of changes in technology enactment (Danziger, 2004).

To unfold the process of change in technology enactment, in this dissertation I draw on the literature on technological frames of references (TFR) from information systems (Davidson, 2002; Orlikowski and Gash, 1994; Young et al., 2016). TFR was first developed by Orlikowski and Gash (1994) to understand the difficulties of managing IT-enabled changes in contemporary organization that involve multiple stakeholder groups – that is, the conflicting interpretations of “how” and “why” certain technologies are introduced and used. In particular, TFR was developed to help researchers investigate “how stakeholder groups perceive information systems practices and opportunities, how these perceptions shift over time, and how stakeholders may impact or leverage them to facilitate change” (Young et al., 2016, p. 495).

Conceptually, TFR was established based on the social construction of technology (Bijker, 1997; Bijker et al., 2012) and social cognitive processes (Bartunek, 1984; Bartunek and Moch, 1987; Daft and Weick, 1984) in organizations. Following this line, TFR (Orlikowski and Gash, 1994) assumes stakeholders with similar experiences and relationships (e.g., users, managers, and designers) related to technology often share similar technological frames – that is the knowledge and expectations that guide actors’

interpretations and actions related to IT. This concept of technological frames is compatible with Fountain's (2001) view that technology enactment is affected by pre-existing cognitive, cultural, socio-structural and formal arrangements.

What's more, Orlikowski and Gash (1994) have identified three frame domains that influenced organizational members' understanding of technology and their appropriation of it: nature of technology, technology strategy, and technology-in-use. The first domain, *nature of technology*, refers to people's images of what the technology is, including their understanding of its functionalities and capabilities. The second domain, *technology strategy*, refers to people's view on why a particular technology is implemented, including their views on the vision, value, and motivation behind the decision to adopt and use the technology. The third domain, *technology-in-use*, refers to stakeholders' understanding of how the technology is or will be used, including conditions and consequences with such use. In table 3, I provide an overview of the domains and contextualization of these domains in this study.

Table 3. Overview of the TFR domains and contextualization

	Questions	Key Domain	Contextualization
Nature of Technology	What is the technology?	Functionalities and capabilities of the technology	The knowledge-sharing related functionalities and capabilities of social media
Technology Strategy	Why adopt the technology?	Motivation and vision behind the adoption and its likely value to the organization	The organizational values/visions/ motivations that drive individuals/groups to adopt social media for knowledge sharing
Technology-in-Use	How is the technology used to create changes on a day-to-day basis?	The actual conditions and consequences associated with the daily use of the technology	The situated use of social media for knowledge sharing and its consequences (i.e., enabling or constraining knowledge sharing)

In addition, recent studies in organizational science and information systems have revealed richer complexities of technology enactment (Cordella and Iannacci, 2010; Gawer and Phillips, 2013; Kandathil et al., 2011; Raviola and Norbäck, 2013). These studies emphasized that technology is not only an outcome of the negotiations among organizational actors (i.e., users), it is also a carrier of the institutional logic that is inscribed into the choice and design of technology (Cordella and Iannacci, 2010; Gawer and Phillips, 2013). For instance, as mentioned above, Cordella and Iannacci (2010) have demonstrated in a case study that the technological characteristics of e-government systems are carriers of specific e-government reform aims, as these political interests are inscribed in the choice and design of the systems.

While this dissertation is not directly concerned with the design process of social media, as I have argued previously, the inscription of institutional logics in technology is still a relevant link to consider to understand the relation between organizational change and social media as an open platform for reconfiguration and content creation. As the stakeholders interact on social media, the platforms of social media, together with the content the users created on the platform, have also become physical instantiation of different institutional logics, embodying a set of tacit knowledge, experience and collective memory. So far, the role of social media as a carrier of institutional logics, in enabling changes in organizational form and institutional arrangements, is still not sufficiently understood among the information systems literature, nor among the e-government literature. Thus, in this dissertation I am also interested in unfolding the macro-institutional influences on technology enactment, and the effects of enacted technology on configuring institutional arrangements.

Along this line, to understand how social media affects the governance and organizational form of e-government collaboration, it is critical to understand how different groups of stakeholders make sense of technology in their own organizational context, as well as in relation to different institutional logics at play. In the dissertation I have engaged with the three domains of technology frames to characterize the interpretations of different stakeholder groups about social media. I took the normative organizational category of government, university and industry as the divide for stakeholder groups. In addition, I have also investigated the role of social media as a carrier of different logics in enabling changes in organizational form and institutional arrangements.

In the following, to be able to capture the link between enacted technology and changes in governance and organizational form, I adopt the concept of frame (in) congruence from TFR to understand the link between enacted technology and governance (in section 3.2). I also adopt the concept of temporary organization to characterize the temporary changes in the organizational characteristics of e-government projects, and the concept of hybridization to understand the transition from one organizational settlement to another (in section 3.3).

3.2 Enacted Technology and Governance

As showed in the literature review, public and private stakeholders have increasingly adopted social media to facilitate knowledge sharing in the collaboration, in the hope of reaching enhanced knowledge sharing and consensus amongst each other. Nonetheless, stakeholders can in fact use social media in very different ways according to their own interests, adding another layer of complexity to the collaboration.

To further understand the relationships between consensus on views and uses of social media adoption, and the resulting governance arrangement, I engage with the concept of congruence and incongruence to further the domain analysis of technological frames. Here, *congruence* refers to the consensus on the frames, that is the expectations, assumptions, or knowledge, concerning technology between different groups of stakeholders, and *incongruence* refers to the lack of consensus on the frames of technology.

Subsequent TFR studies have examined the frame content in different organizational settings by identifying stakeholder groups, investigating the congruence and incongruence in technology frames and assessing the consequences of certain pattern of congruence and incongruence (Azad and Faraj, 2008; Barrett, 1999; Hsu, 2009; Mazmanian, 2013; Young et al., 2016). One group of TFR studies posited that social groups have shared frames and those differences in these groups' frames (i.e., incongruent frames) can inhibit effective deployment of a technology (Azad and Faraj, 2008; Barrett, 1999). Later examination of TFR suggested that frame incongruence among groups may not always be problematic and may even be beneficial at some points for enabling organizational change (Hsu, 2009; Mazmanian, 2013; Van Burg et al., 2013; Young et al., 2016).

While these analyses of incongruence of technology frames and its consequences can provide valuable insights into how a lack of consensus on social media frames may influence emergent governance practices, they only provide point-in-time snapshots of stakeholders' technology frames. Davidson (2002)'s longitudinal study of requirements determination illustrates that organizational turbulence can lead to frequent frame shifts. Failing to stabilize the frames also contributes to the project's failure. In the phenomenon I am interested in – e-government collaboration - organizational circumstances are often developing, especially at the beginning of the collaboration. Therefore, to yield a better and more informative analysis, I incorporate a more dynamic perspective of frame change as an ongoing interpretive process into the classic TFR analysis.

Following this line, in this dissertation I examine the association between interpretations around social media and the emergent governance by, firstly, engaging with the three domains of frames around social media. Taking a dynamic perspective, I then detail on the change of frame content and identify the pattern of congruence and incongruence between frame contents at different time of collaboration. Finally, by accounting for the development of frame (in)congruence, I assess the consequences of (in)congruence of technology frames and discuss the implications for the emergent governance practice.

3.3 Enacted Technology and Organizational Form

In section, 3.1.2, I have already elaborated on how the perceptions of technology are enacted through organizational arrangements. In this section, I zoom in on the characteristics of the resulting organizational form. In particular, I draw on the concept of temporary organization to characterize the emergent changes in the organizational form of e-government collaboration through the mediation of social media (Bakker et al., 2016; Burke and Morley, 2016; Jones and Lichtenstein, 2008; Lundin and Söderholm, 1995).

The concept of temporary organization emerges out of an ongoing trend in inter-organizational projects across public and private sectors (Jones and Lichtenstein, 2008; van Marrewijk et al., 2016; Stjerne and Svejenova, 2016; Swärd, 2016). It refers to a form of inter-organizational collaboration, in which “multiple organizations work jointly on a shared activity for a limited period of time...to coordinate complex products/services in uncertain and competitive environments (Jones and Lichtenstein, 2008, p. 1).”

Temporary organization scholars argue time is the key distinction that distinguishes temporary organization from other more commonly studied forms of joint collaboration (e.g., joint venture and alliances). While temporary organizations often operate within a limited amount of time, permanent organizations are often assumed to operate within unlimited time. The temporary organization scholars argue a different conception of time has a significant influence over emergent organizing practices (i.e., coordination techniques) of collaboration, which are manifested through four dimensions: time, task, team, and transition. *Time* refers to the limited project duration and time management activities; *Task* refers to the content and allocation of tasks in relation to the completion of the project goal; *Team* refers to the recruitment and legitimization of team members; and *Transition* refers to the changing work practices during the project and the development of collaboration after the completion of the project.

While previous empirical studies have addressed an emergent form of temporary organization in various industrial settings (Bakker, 2010; Bechky, 2006; Cacciatori, 2008; Ebers and Maurer, 2016; Jones and Lichtenstein, 2008; Perretti and Negro, 2006; Saunders and Ahuja, 2006; Sorenson and Waguespack, 2006; Stjerne and Svejenova, 2016; Swärd, 2016; Xu et al., 2007), it is not clear how the use of social media may influence the organizational form of e-government collaboration. Building on the identified dimensions of temporary organizations, in this study I explore the characteristics of organizational form of e-government collaboration that is mediated through social media.

As the project comes to an end, an important concern of temporary organization is the transition of the project. In this dissertation, I am also concerned how e-government collaboration can sustain itself in a long run, especially in the face of a growing range of stakeholders and changing dynamics among these stakeholders. In order to understand this process of transition, I draw on the concept of hybridization from the approach of institutional logics, which was previously introduced in the section 3.1.1.

In sum, in this dissertation I examine how organizational form of e-government collaboration occurs and develops through social media using the concept of temporary organization and hybridization. In particular, I use the concept of temporary organization to characterize the emergent form of e-government projects through the facilitation of social media. And I use the concept of hybridization to understand the transitioning process of social media enabled e-government projects.

3.4 Summary

Along this line, to understand the complex relation between technology, organization and institution in the occurrence and development of the governance and organizational form of e-government collaboration, I have drawn on an adapted technology enactment framework. Taking a different spin on the institutional approach, this section shows how adopting an institutional logics approach to understand the technology enactment framework can potentially enable a non-deterministic analysis that provides analytical space for both agent and constraint, as well as strengthened explanatory power of the links between institutional arrangement, organizational form, and technology enactment. Furthermore, drawing on concepts such as

technology frames of references, temporary organization, and hybridization, we are able to unfold the processes of changes amid the complex relations between these key elements.

The use of institutional logics as an overall institutional approach makes it possible to develop a comparative analysis across different contexts. In section 4, I move on to introduce the overall research design of this dissertation including philosophy of science, data collection and analysis methods, as well as the empirical contexts of the dissertation. Based on the detailed account of the research design, I also evaluate the research design and argue how the resulted research insights can be used for comparative analysis across different contexts.

4 RESEARCH DESIGN

To address the research questions, I have carefully chosen a research paradigm to guide the research design of this study. Research paradigm refers to the basic belief system or worldview that guides the researchers' ontological, epistemological and methodological assumptions (Guba et al., 1994). In particular, ontological assumption concerns the nature of reality - that is, what constitutes reality; epistemological assumption concerns the nature and form of knowledge, that is, the relationship between the researcher and the object of investigation; and methodological assumption concerns the means of research (Gray, 2013, p. 19). These three assumptions are interconnected and constrain the position of each other. The choice of research paradigm is fundamental to research design, as it influences the way that research inquiries are casted, approached and analyzed.

Overall, I take an interpretivist approach to understand the occurrence of the governance and organizational form of e-government collaboration through the mediation of social media. The interpretivist approach refers to "the systematic analysis of socially meaningful action through the direct detailed observation of people in natural settings, in order to arrive at understandings and interpretations of how people create and maintain their social worlds" (Neuman, 2006, p. 88).

In the following, I will clarify my choice of research paradigm by elaborating on the ontological, epistemological and methodological premises of this study. I then presented the empirical settings of this dissertation, including the administrative reform and e-government development in China, as well as the details of the cases used in this study. Finally, I evaluate the study by recounting the research development (i.e., data collection and analysis), and discussing the limitations and implications of these developments to the generalization of the findings.

4.1 Ontology

Ontological assumption concerns the fundamental nature of reality. From an interpretivist point of view, I view reality not as a "given", but socially constructed – produced and reinforced by human through their actions and interactions (Orlikowski and Baroudi, 1991). Reality, in this sense, is what people perceive it to be, and only exists as people experience it and attribute meaning to it. It is thus possible to have multiple interpretations of human realities or experiences (Neuman, 2006). As circumstances change, interpretations of reality may shift over time as well (Orlikowski and Baroudi, 1991).

From this perspective, the objects of my investigation – the occurrence of governance and organizational form and of e-government collaboration through the mediation of social media – are not taken-for-granted realities. Rather, they are products of social processes, and are constructed through people's actions and interactions. Similarly, technologies (i.e., social media), or information systems, are also products of social construction, which do not exist apart from human interactions. To understand technology thus means to

understand “the context of the information systems, and the process whereby the information system influences and is influenced by the context” (Walsham, 1993, pp. 4–5).

Taking an interpretivist stance also means to reject the deterministic view of technology and organizing. Rather, I argue in this dissertation that technologically occasioned change is a social construction. In particular, I view social construction from a social constructivist point of view, which highlights *cognitive processes* that are informed by influences from the subject’s social relationships, and “by which people construct unique understandings and interpretations of the world” (Leonardi and Barley, 2008, p. 168). From this viewpoint, each person or organization is situated in local contingencies and improvises their practices and understandings accordingly. This means people or organizations can view and experience the same technology in very different ways.

Moreover, as technological advancement accelerates, and organizational circumstances change, people’s perception of governance and organizational form of e-government collaboration, social media, as well as the relation between technology and organizing can also change, which also demands attention from researchers.

4.2 Epistemology

Epistemological assumption concerns the nature and form of knowledge, as well as the relationship between the researcher and the objects of investigation (Orlikowski and Baroudi, 1991). Stemming from the interpretivist ontological assumption of reality as a social construction, epistemologically understanding social process involves “getting inside the world of those generating it” (Rosen, 1991, p. 8). From an interpretivist position, social practices are constituted through the language humans use to describe social practices. Thus, knowledge of social reality bases its account on language and meanings (Silva, 2007), and concerns “how practices and meanings are formed and informed by language and tacit norms shared by humans working toward shared goals” (Orlikowski and Baroudi, 1991, p. 14).

In this sense, constructs such as governance and organizational form cannot be researched as “wholly objective phenomena” (Magalhães, 2004, p. 10). Rather, they need to be understood as the result of joint actions of their members, as the members make sense of the reality among and around them. In a similar light, constructs such as information systems and digital technologies also cannot be understood as merely material artifacts. Instead, they need to be understood as human perceptions around the activities that design and make use of those artifacts. This means, rather than imposing externally defined categories on a phenomenon, as a researcher I derive my understandings of these constructs from the field by in-depth examination and exposure to my phenomenon of interest: e-government collaboration, that is to say, to create the understandings in interaction with the subjects.

4.3 Methodology

To generate valid interpretive knowledge, I choose field studies as my research method, as they “examine humans within their social settings” (Orlikowski and Baroudi, 1991, p. 14). In particular, I take a multiple case study approach with a combination of qualitative methods to understand the variations of the relationships between social media and the changes in the governance and organizational form of e-government collaboration (Eisenhardt and Graebner, 2007; Santos and Eisenhardt, 2004). In addition, interested in the evolvement of the stakeholders’ perception and use of social media over time, I followed one of the cases in a longitudinal manner (Walsham, 1995, 2006). The case study approach allows me to investigate in depth the key components of a large phenomenon by observing the actual governance and organizing practices in a variety of contexts, and over a period of time.

In the following, I further elaborate on the rationales behind the choice of case study approach (i.e., multi case study and longitudinal study), in relation to addressing the research question in section 4.3.1 and 4.3.2. I then move on to detailing the macro and case contexts, as well as the deployment of research methods in each case in section 4.4 and 4.5.

4.3.1 Multiple Case Study

To answer the overall research question “how do the governance and organizational form of e-government collaboration occur through the mediation of social media”, I chose to take a multiple case study approach, as it allows wider exploration of the research questions and theoretical evolution (Eisenhardt and Graebner, 2007; Pettigrew, 1990; Santos and Eisenhardt, 2004). The varieties of contexts presented in these cases allow me to observe the variation of relationships between technology and organizational change.

I selected the cases by three criteria: 1) case relevance; 2) diversity across contexts; and 3) opportunities to learn about complexity and contexts (Stake, 2013). This means I start selecting the cases with recognition of the overall concept that I need to look into. Each case study addresses and emphasizes different aspects of the concept, namely the target that I intend to study. In addition, as the intention is to understand the occurrence of governance and organizational form of e-government collaboration, the cases I selected for this study are the ones that I have accessibility to either learn about the history of the project from the key stakeholders, or to follow up on the process of project development. In the section 4.4.2, I will detail how each case links to the research topic of this thesis, and characteristics that are shared across the cases, in doing so I provide an overview of the research context.

4.3.2 Longitudinal Study

Interested in the co-evolution of the governance and organizational form of e-government collaboration and the stakeholders’ perception and use of social media, I also took a longitudinal approach (i.e., case 3, see section 4.4.2.3) (Pettigrew, 1985, 1990). This allows me to follow up on the development of the

organizational and institutional arrangements of e-government collaboration, as well as the changes in the enactment of social media over time.

In designing longitudinal study, time is a particularly important issue, as it is crucially linked to the researcher's perspective on what changes are seen and how changes are explained (Pettigrew, 1990). During my fieldwork, I have paid particular attention to: 1) when to start and stop our observations of the case; and 2) the choice of time series, that is the time cycle of my observation.

4.4 Research Settings

From an interpretivist point of view, the features of specific contexts are essential to understand social meaning (Neuman, 2006). It is thus important to understand the context in which the social actions occur and to which the involved social actors assigned meanings. In this section, I start with a brief introduction of the macro contexts of this dissertation, in regard to the public administration, development of e-government, and social media use in China. I then move on to highlight the features of each case in order to provide a comparative perspective on the similarities and differences of these cases.

It is important to note that these “facts” on the social and historical development regarding public administration and e-government in China presented in this section are weaved together following the “clues” that are revealed in my informants' narratives and daily organizing practices, as well as my synthesis of the existing literature. Informed by the interpretivist tradition, the context of this study is constructed between my informants and me in making sense of what is going on regarding e-government and public administration in China. It also caters to the call in the field of information systems to pay more attention to the time dimension in providing context information in information systems study. As Martinsons and Davison (2016, p. 267) have remarked “the (People's Republic of) China that we study in 2016 is decidedly different from the country in 1996 [...] It is legitimate to ask if the management information systems in the current Chinese [...] culture are still the same”.

4.4.1 Administrative Reform, E-Government Development, and Social Media Use in China

In recent decades, the development of digital innovation underpinning China's development across all sectors has caught scholars' attentions in the research communities of information systems (Chen et al., 2009; Davison et al., 2008; Hsu et al., 2018; Martinsons, 2005; Martinsons and Westwood, 1997) and public administration (Chen et al., 2017; Gao et al., 2013; Holliday and Yep, 2005; Ma et al., 2005; Yu, 2018). Several special issues in information systems have highlighted the role of ICT as a transforming agent for the nation (Davison et al., 2008; Hsu et al., 2018; Martinsons, 2005).

In this section, I introduce the Chinese context that embeds my cases. In particular, I focus on three aspects: 1) the administrative reform in China; 2) the e-government development in China; and 3) social media use in China. A summary of the characteristics of administrative reform and e-government development in China can be found in Table 4.

Table 4. Characteristics of administrative reform and e-government development in China

		Administrative Reform	E-government Development
Stage 1 (1980s)	Aim	Government internal structure reform	N/A
	Actions	<ul style="list-style-type: none"> - Improving internal government management; - Clarifying functions between central versus local governments 	N/A
Stage 2 (1990s)	Aim	Shift public services and monitoring functions from government to social intermediate organizations	Develop a network for e-government applications, and an Internet infrastructure
	Actions	<ul style="list-style-type: none"> - Systematic efforts on standardization, coordination, transparency and efficiency - Reducing the size of the civil service at all levels 	<ul style="list-style-type: none"> - Three “Golden” projects; - Three “Online” projects;
Stage 3 (2000-2005)	Aim	Transform government functions and processes	Improve the efficiency and quality of government decision-making processes
	Actions	<ul style="list-style-type: none"> - Eliminating overlapping functions within government agencies - Delegating decision-making to lower-level government - Increasing evaluation of civil servants’ performance 	<ul style="list-style-type: none"> - The “Twelve Golden” Initiatives to converge important functions and government internal operations
Stage 4 (2006-present)	Aim	Transform government functions and processes, and stimulate innovation	Infuse and integrate advanced Internet applications into government design and operations
	Actions	<ul style="list-style-type: none"> - Delegating more functions from central government to lower-level government - Specifying the jurisdictions of government organizations in terms of services, activities and approvals 	<ul style="list-style-type: none"> - The “Internet Plus” program (2015) - A series of public social service projects centered on the application of big data and open government data and other edge-cutting technologies

4.4.1.1 Administrative Reform in China

Since the “reform and opening up” that took place since 1978, China has undergone a series of political system reforms and economic developments, of which an essential element is administrative reform. The administrative reform in China has undergone four stages during the reform and opening up period (Chen et al., 2017; Ma et al., 2005; Yu, 2018). The focus of this administrative reform has gone from an initial focus on the internal structures of government (stage 1), to shifting public services and monitoring functions from governments to social intermediate organizations (stage 2), and then to today’s focus on public services and the citizens’ experience of interacting with the government (stage 3 and 4).

The first stage of administrative reform took place during the 1980s, which centers on government internal structural reform, including improvement of internal government management and clarifying functions between central versus local governments (Ma et al., 2005).

The second stage took place during the 1990s. The administrative reform during this period was strongly associated with the deepening economic reform, which emphasized on transforming state-owned enterprises, adjusting resources to the market. At this stage, the administrative reform entails systematic efforts on standardization, coordination, transparency and efficiency. This period has also seen an increase in shifting public services and monitoring functions to social intermediate organizations.

The third stage took place between 2000 and 2005. At this stage, administrative reform had become the core element of political system reform and economic development. While central government aimed to eliminate overlapping functions within government agencies, decision-making was also increasingly delegated to a lower level of government. Civil servants also began to be evaluated based on their performance rather than their adherence to formal processes. The reform at this stage aimed to transforming and clarifying functions, reinventing processes, reorganizing structures, reducing administrative examination and approval requirements, and improving management in the government.

The last stage, and also the current stage, has been ongoing since 2006. This stage is partly a continuation of the reform in the previous stage. The focus is on delegating more functions from central government to local authorities, and specifying the jurisdictions of government organizations in terms of services, activities and approvals. The purpose of the reform at this stage is to accelerate the modernization of the national governance system, and to promote streamlining with decentralization, delegation, and transformed government functions.

In general, the goals and types of administrative reform in China during the reform and opening up period have shifted from internal government operations towards open and transparent public services. These goals stimulated strategies and changes in four areas: 1) *policy shifts* from rule-orientation to service-orientation; 2) *structural changes* to streamline bureaucracy, processes, and the divide of functions; 3)

changes in organizing norms to better meet the needs of the public; and 4) *improvements in public services* to meet the demands for solutions to complex problems.

4.4.1.2 E-government Development in China

The e-government development in China started in the early 1990s, and is among the country's core efforts to bring about administrative reforms by transforming government functions, streamlining procedures, and enhancing transparency (Du and Wang, 2009, 2009; Holliday and Yep, 2005; Ma et al., 2005; Schlæger, 2013; Wu and Bauer, 2010). These reforms were designed to support China's long-term economic development agenda (Ma et al., 2005). The e-government development in China supports the administrative reforms in relation to three goals: transforming government functions, streamlining and reinventing processes, and enhancing transparency of internal processes and citizen engagement in public services.

As China's administrative reform entered its second stage, China's e-government development started to take place with a series of "Informatization" plans in the 1990s, known as the "Golden" projects (China Internet Network Information Center, 2016a). In 1993, China initiated three Golden Projects (i.e., Golden-Bridge, Golden-Customs, and Golden-Card) to implement information technology management in the government, the result of which is a sophisticated network for e-government applications. In 1999, three "Online" Projects (i.e., Government Online Projects, Enterprise Online Projects, and Family Online Projects) were announced, where all levels of government are required to build websites as windows to the public to deliver government information. The overall aim of these three Golden projects is to ensure Internet accessibility in the country by developing country-wise Internet infrastructure and personal computer facilities (Du and Wang, 2009; Holliday and Yep, 2005; Lovelock and Ure, 2003; Ma et al., 2005).

In 2002, as the administrative reforms entered their third stage, the "Twelve Golden" initiatives were announced in the State Council No.17 Guidance on the Development of E-government, which aimed to converging three types of internal operations: government internal management and supervision; revenue and expenditure improvements; and social management and public services (Du and Wang, 2009; Lovelock and Ure, 2003). During the "Golden" project period, the e-government agenda in China was driven by the central government's push to reduce the cost of public transactions and service delivery in order to facilitate business development (Holliday and Yep, 2005). Thus, these initiatives were largely aimed to improve the efficiency and quality of government decision-making processes.

Entering into the current stage of administrative reform, China has launched a new wave of informatization plan – the "Internet Plus" program, focusing on the infusion and integration of advanced Internet applications into government design and operations, and to upgrade existing systems, processes, and services in various industries (The State Council of the People's Republic of China, 2015a). After the "Implementation Plan of Promoting Internet Plus Government Services" and the "Information People-

benefitted Experimental Projects”, published in 2016, a series of public social service projects were announced. Many of these projects centered on the application of big data and open government data (Chen et al., 2017).

These two “data” foci represent a new trend in Chinese e-government development to use data as a bridge to foster collaborative governance between government and society, in particular to better inform the public, improve accountability and decision-making, and make new forms of value production possible (People’s Daily, 2018). While the implementation of new e-government initiatives can potentially support a deepening administrative form, they can be difficult to achieve, as realizing these goals would require cross-agency and cross-sector sharing and collaboration that are supported by specific policies, skills and new organizational structures (Chen et al., 2017). In addition, given the sophisticated power structures and diverse interest groups within China’s public administration (Schlæger, 2013), the dynamics that unfold after the implementation of these new “Internet Plus” programs are hard to predict. In other words, to realize the potential of these latest e-government development efforts, these efforts need to be coordinated with the administrative reform agenda in order to ensure the compatibility between the required social arrangements for e-government development, and the actual public administration environment.

Till the present, the efforts of e-government implementation in China have resulted in further integration of e-government programs in administrative processes in both central and local governments in China. The technologies involved in China’s current e-government application range from Web 1.0 technology, such as webpage, to Web 2.0 technology such as social media, data-related technologies such as big data and open government data, as well as other advanced technologies such as artificial intelligence and blockchain. In 2018, the UN placed China at 65 on its e-government index among 193 UN member states (UN, 2018), marking it significantly more mature in comparison to previous documentations in the past decades (Holliday and Yep, 2005).

4.4.1.3 Social Media in China

In the past decades, China has seen an emergence of unique social media applications (e.g., WeChat and Weibo), which represents a rapidly evolving digital ecosystem that governments have to respond to when envisioning new modes of collaboration for public policy implementation and public services delivery (Chen et al., 2016; Yang, 2015)

In particular, WeChat - more often known as Weixin in Chinese, is one of the most popular social media applications in China with approximately 1 billion Monthly Active Users (MAU) as of Mar 2018 (Tencent Holdings Ltd., 2018). WeChat is a multi-functional social media platform operated by Tencent Holdings Ltd. since 2011. It integrates multiple built-in apps that can serve a wide variety of purposes, including daily communication, news, and peer-to-peer digital payments.

With its huge user base and an increasing number of features enabling work-related tasks, WeChat has become the “go-to” app for work communication. In the annual WeChat user behavior report released by

Penguin Intelligence, a Tencent research arm, 87.7 percent of WeChat users use the app for daily work communication (South China Morning Post, 2017). By contrast, only 22.6 percent of the respondents of the survey report email as their primary means of work communication. These statistics indicate that unlike previous studies on e-government that suggested face-to-face is still a much-preferred channel for communication between government and citizens (Reddick and Anthopoulos, 2014; Reddick and Turner, 2012), social media has become a common choice for communication and collaboration between government and non-government stakeholders in China. The pervasiveness of WeChat as a work communication technology provides great opportunities for deep and sustainable incorporation of ICT in the governments' engagement and collaboration with their stakeholders to provide and improve public services.

In sum, the administrative reform, e-government development, as well as the prevalent use of social media for daily work communication in China makes it an interesting field to study the governance and organizational form of e-government collaboration through the mediation of social media. In addition, recent policy promotion on further public digitalization (i.e., "Internet Plus") led to a surge of e-government collaboration, providing a good number of cases on e-government collaboration that can be observed from an early stage.

4.4.2 Case Settings

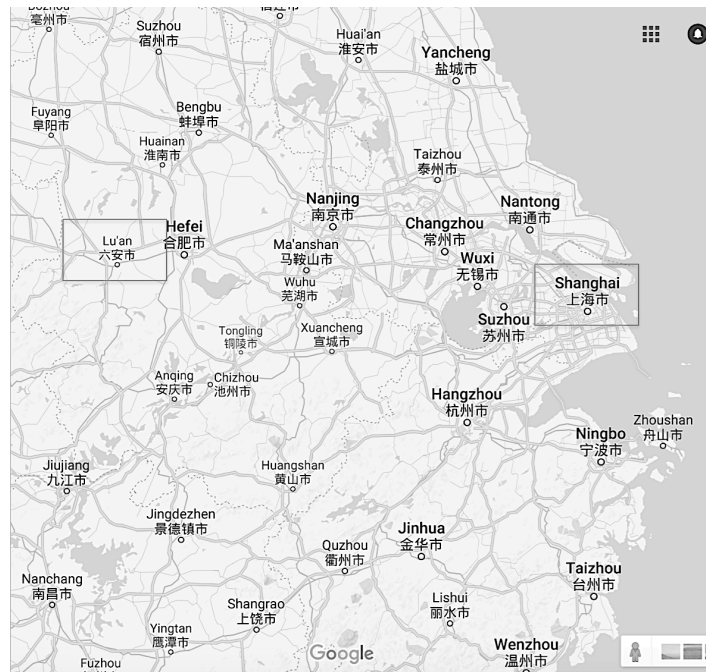
Against this backdrop, I selected four cases of e-government collaboration that were initiated and carried out through different periods of administrative reform (i.e., the third and fourth stages) and e-government development in China (i.e., the second and third stages) as my cases. These e-government collaborations are primarily IT projects, aimed "to develop products and services such as new software, hardware, networks, research reports and training on new systems" (Schwalbe, 2015, p. 59).

The selected cases are located in two cities in China, one is Lu'an and the other is Shanghai. Lu'an is a prefecture-level city, located in the western Anhui Province in China, with a total population of more than 5.8 million as of 2018. Lu'an Municipality administers seven county-level divisions including three districts (i.e., Jin'an, Yu'an, Yeji) and four counties (i.e., Huoqiu, Shucheng, Jinzhai, and Huoshan). Lu'an Municipality and their county-level divisions have ranked high in the overall ranking of e-government index among Chinese prefecture-level municipalities (e.g., 19 among 154 prefecture-level cities in 2014) (E-government Research Center, Chinese Academy of Government, 2014), and have made top-rank in both provincial and national evaluation (E-gov.org.cn, 2018; Lu'an Municipality, 2018). I chose a series of public IT projects in Lu'an Municipality (including Jin'an District Municipality) as an example to showcase the common development of e-government projects in China.

Shanghai is one of the four municipalities under the direct administration of the central government of China. Shanghai sits in the middle portion of the East China coast, with a total population of more than 24 million as of 2018, making it the largest city in China by population. Shanghai is one of the most invested

in cities by the central government of China. In the area of e-government, this intense investment has translated into a more developed Internet infrastructure, more pilot projects on the application of advanced technologies, as well as more room for experimentation of new e-government development models. In December 2017, the central government of China announced a “Notice on the Development of National Comprehensive Pilot Projects on E-government”, listing Shanghai as one of the five regions to develop exemplary and systematic e-government solutions by the end of 2019, and showcased these solutions country-wide (Ministry of Industry and Information Technology of the People’s Republic of China, 2017). This notice affirms the top-rank position of Shanghai in China’s e-government development, making its administration an interesting field to study new ways of governing and organizing e-government collaboration. Figure 5 indicates the geographical location of the cases.

Figure 5. Case location (source: Google Maps)



In particular, I have chosen four cases of e-government collaboration, among the ongoing e-government projects in Lu'an and Shanghai. These four cases are selected primarily based on the extent of complexities and uncertainties in regard to the organizational form and governance of the projects, including:

First, all of the projects are the results of *public-private collaboration* that involve exchange of knowledge between government and non-government stakeholders.

Second, all of the projects have experienced *changes in the range of stakeholders*. The range of stakeholders may vary from less than 5 organizations to more than 50 stakeholders (both individuals and organizations).

Third, all of the projects have had *multiple decision-making authorities*, which may have shifted, either from one organization to another organization, or from one stakeholder to other stakeholders during the project development.

Fourth, the majority of the project stakeholders in the four cases have experienced different degrees of *ambiguities in role and task assignment* during project development.

Fifth, most of the projects have shown signs of *changes in organizing practices* (e.g., use of technology, ways of decision-making and role assignment). Some of the projects have even undergone *revisions of project forms*, for instance changing from IT outsourcing contract to IT service contract, or from informal network to IT service contracts.

Moreover, my choice of cases was also influenced by the accessibility of the project. I had access to some of the e-government projects even prior to my choice of the research field. Accessibility as such helps me to attain a more comprehensive understanding of the local e-government environment.

In the following, I will briefly introduce each case and highlight the primary issues in the collaboration. An extended account of the cases can also be found in each paper. Table 5 summarizes the overview of the cases.

Table 5. Overview of the characteristics of the four cases (Adapted from (Wang et al., 2017))

	Case 1 Lu' an Municipal and District E-government Implementation	Case 2 Shanghai WeChat Service	Case 3 Shanghai Open Data Application (SODA)	Case 4 Observe Network
Project Drive (Presented in order of priority)	Top-down policy mandate	Top-down policy mandate; Growing need for mobile service apps among local governments	Growing need for developing open data based initiatives among local governments and open data community Top-down policy mandate	Growing need for understanding the application of advanced technologies among all- levels of governments across the country
Project Goal	Developing and Managing - Government Portal Websites, Office - Administration Systems - Online Forum for Government-Citizen Information Exchange - Government Social Media (e.g., Weibo and WeChat) Accounts for Government Information Sharing	Developing and Managing - Governments' public accounts - WeChat based Government Service Platform (i.e., City Services Platform)	Developing and Managing - Potential Open Data Service Infrastructure - Open Data Driven Service Ideas	Developing - Evaluation of implemented advanced technologies in public services - Understanding the potential of implementing advanced technologies in public services

	Case 1	Case 2	Case 3	Case 4
	Lu' an Municipal and District E-government	Shanghai WeChat Service	Shanghai Open Data Application (SODA)	Observe Network
Project Duration	9 years (2004-2016)	2 years (2015-2016)	3 years (2015-2017)	2 years (2015-2016)
Organizational Form	IT outsourcing contract	Public-Private Partnerships	Interest Network; IT service contract; IT outsourcing contract	Interest Network
Number of Government Organizations	4 +	14 +	Expanding membership with 8 reported initial participating government organizations	Expanding membership with 6 reported participating government organizations
Nature of Government Organizations	Municipal Government and Bureau District Government and Bureau	Municipal Government and Bureaus (under the direct administration of the central government)	Central Government Municipal Government and Bureaus (under the direct administration of the central government) District Government	Provincial and Municipal Government and Bureaus across the country

	Case 1 Lu' an Municipal and District E-government Implementation	Case 2 Shanghai WeChat Service	Case 3 Shanghai Open Data Application (SODA)	Case 4 Observe Network
Number of Non-Government Organizations	2	1	Expanding membership with 7 reported initial participating non-government organizations	Expanding membership with 6 participating non-government organizations
Nature of Non-Government Organizations	Private Company (Small and Medium Sized Companies)	Private Company (Mega Corporation)	Private Company (State-owned Enterprise, Small and Medium Companies, Start-ups) University NGO	Private Company (State-owned Enterprise, Small and Medium Companies, Start-ups) University NGO
Collaborative Technology	N/A	N/A	WeChat	WeChat and other real-time engagement platforms

4.4.2.1 Case 1 Lu'an Municipal and District E-government Implementation

The Lu'an project is a series of IT outsourcing projects on the implementation of municipal and district level e-government platforms, in response to a series of top-down policy mandates regarding administrative reform and e-government development starting in the 2000s (see above). The project goal includes the development and management of government portal websites, office administration systems, online forum for government-citizen information exchange, and government social media (e.g., Weibo and WeChat) accounts for government information sharing with the citizens.

These e-government implementation projects concern four municipal and district level governments and bureaus (i.e., Lu'an Municipality E-government Office, Lu'an Municipality Internet Propaganda Office, Jin'an District Organization Department, Jin'an District Informatization Office), as well as two private companies (i.e., Longsun and Lu'wang Forum). Longsun is in charge of developing and managing the government portal websites, office administration systems, and government social media accounts for government information sharing. Lu'wang is in charge of developing and managing the Lu'an Online Forum for government information exchange.

The primary conflict in case 1 is around the distribution of work (e.g., Who is doing website design? And who is doing content creation?), and the decision-making authorities (e.g., Who would have a say in deciding which server is the best for hosting governments' websites? And who has a say in deciding what to do when citizens complain about local public organizations in an online forum?) between government and non-government stakeholders. The government stakeholders showed a particularly strong interest in retaining the in-house expertise and authority on both social and technical matters, while the non-government stakeholders also needed to retain their expertise and authority on technical matters in order to secure their contract. The non-government stakeholders may also be concerned about social matters, as the users (i.e., citizens)' satisfaction with the platform also influences the sustainability of their product. These conflicts especially become more acute when the projects are under time or budget pressure.

4.4.2.2 Case 2 Shanghai WeChat Service

The Shanghai WeChat Service project operates under a strategic public-private partnership agreement between Shanghai Municipality and one of the largest IT companies in the country, Tencent Holdings Limited. The partnership started in 2015 in response to a top-down policy mandate to mobilize public services, and a growing need among local government to develop mobile service apps. Under the agreement, Tencent assists Shanghai Municipality and its subordinated units (such as the Shanghai Meteorological Bureau, Shanghai Police, and the Shanghai Municipal Administration of Taxation) in managing the governments' public accounts on Tencent's major social media platform, WeChat. In addition, Shanghai Municipality and its subordinated units have agreed to co-develop a digital public service provision platform on WeChat, named City Services Platform.

The primary conflict in case 2 is around the distribution of work and decision-making authorities in different occasions. For instance, for the management of government accounts on WeChat, while government units have full decision-making power over content creation on public accounts, the content publishing process is limited by the framework design of WeChat, which has on occasion made Tencent more than just technical support in the management of public accounts. As for the public service provision platform, although government units can apply to provide their services on the WeChat public service provision platform, WeChat has the decision-making power to deny the request based on their evaluation of the potential traffic for a certain service.

4.4.2.3 Case 3 Shanghai Open Data Application (SODA)

The Shanghai Open Data Apps (SODA) project is a contest organized by Shanghai Municipality to award the best applications developed using open government data and among the first attempts to implement open data initiatives in China. The contest was at first driven by a growing need for developing open data based initiatives among local governments and open data community. The need was heated, as the premiere Li Keqiang made a public statement on open data in 2015. The first contest started in 2015, aiming to help the local government to establish potential open data service infrastructure, and to develop open data driven service ideas.

The contest was initiated and organized by a group of open data advocates that are affiliated with government organizations (i.e., Shanghai Municipal Commission for Economy and Informatization (SMCEI)), companies (i.e., China Industrial Design Institute (CIDI) Shanghai, Enerlong, Kesci), universities (i.e., the Open Meta Nexus Innovation Lab (OMNIlab) at Shanghai Jiaotong University and the Lab for Digital and Mobile Governance (DMG) at Fudan University), and NGOs (i.e., Open Data China). The scope of stakeholders has grown in scale as SODA turned out to be a huge success, and praised by state and regional media in 2015. New stakeholders such as district government, incubators, and investors have joined the organization of SODA in subsequent years.

It is important to note that in case 3, stakeholders adopted WeChat as the main platform for communication in the collaboration, especially during the first two years of the project. The organization of SODA at first took place in a chat group on WeChat where these advocates are members. In the chat group, each member shares his or her resources (e.g., knowledge, financial, and human resources) to drive the project forward. The coordination for planning the project also takes place in the chat group, where all the stakeholders take part in making decisions on a wide array of issues, ranging from budget allocation to daily operations. The organizing group expands each year with new contributors from governments, companies, universities, and NGOs.

In case 3, the start of the collaboration among the initial stakeholders was harmonious, where stakeholders made decisions collectively, and shared knowledge and resources in a voluntary manner. As the scope of stakeholders increased, stakeholders from different levels of government started to participate in the

collaboration, and the interaction among the original stakeholders has also changed. Tensions started to emerge around the distribution of decision-making authorities, ways of interaction, and ideas of ownership.

4.4.2.4 Case 4 Observe Network

The Observe project is a series of network-based workshops initiated in 2015, in response to the growing need to understand the application of advanced technologies among all-levels of government across the country. The main goals of these workshops were to evaluate the implemented advanced technologies in public services, as well as understanding the potential of upcoming advanced technologies in public services. The network consists of government, university, and NGO actors across the country. The Observe project broadens the network of participants through both online (i.e., WeChat group) and offline participation in discussions, providing opportunities for governments to evaluate and control implemented IT projects and acquire new knowledge and potential human resources from the network of participants. The workshops started with a close collaboration between Zhaoqing Municipality in Guangdong Province and Fudan University in Shanghai, and then moved on to other regions and a broad network-based collaboration. By 2017, the “observe” workshop had taken place in 7 municipalities (i.e., Zhaoqing, Nanhai, Shanghai, Tianjin, Guizhou, Chongqing, Yuxi) in China. Sometimes the local government proposed to host the workshop with a relevant topic in regard to technology implementation in government for discussion. Sometimes the discussion themes were chosen based on the needs of both government and non-government stakeholders. The topics could range from big data, open government data, to smart cities, and mobile services. Once the network agreed on the topic, the workshop took place in the hosting city. At the workshop, the hosting municipality gave a full introduction to local e-government initiatives and addressed plans for next steps. The participants then gave feedback in regard to these projects. Interaction between participants is further supported by open online chat groups, which enable new participants to ask questions and give feedback on the implementation of IT-related public projects.

In case 4, the collaboration among stakeholders was characterized by multiple decision-making authorities among a network of governments, companies and universities and NGOs. The stakeholders also share knowledge and resources on a voluntary basis. Although there is collaboration behind “observe”, there are also concerns around the sustainability of the self-governing network.

4.5 Data Collection

I collected data using a combination of qualitative methods, including semi-structured and unstructured interviews, participant observation, and document analysis. These three data collection methods compensate each other and provide a holistic picture on the relation between social media and the governance and organizational form of e-government collaboration. The data collection on these four cases took place from June 2015 to Dec 2017.

4.5.1 Interviews

In conducting the four case studies, I have used both semi-structured and unstructured interviews as my primary research methods for data collection. All interviews were conducted in Mandarin Chinese, and later on transcribed and translated to English.

Semi-structured interview is defined as “an interview with the purpose of obtaining descriptions of the life world of the interviewee in order to interpret the meaning of described phenomena” (Kvale and Brinkmann, 2009, p. 3). I use semi-structured interviews for uncovering government and non-government stakeholders’ experiences of developing e-government projects in all of the four cases.

I prepared the interviews with a series of open-ended questions framed around the collaboration and coordination experiences, the responsibility of each stakeholder in their own organization as well as in the collaboration, and the IT capacity of the stakeholder. Examples of the questions include: How do you experience the ownership of this project? Were there any conflicts? How did you experience these conflicts and deal with them? The semi-structured interviews were carried out with the key stakeholders of each case. Table 6 presents an overview of the interview data sources. An example of the interview guide can be found in the Appendix 1.

The semi-structured interviews in the four cases were conducted face-to-face in the informants’ work settings, often after a tour of their work place, and an introduction to the relevant departments and staff. These work place tours and introductions helped me to establish a better understanding of the environment where the informants’ work takes place, and contextualize why they make sense of production process of digital public services in one way or another. The interviews were then conducted in a formal meeting room with the project team members. Moreover, I have also interviewed the key informants multiple times over the course of the fieldwork (for instance in case 3, where I have followed the case for three years), to follow up on the changes in the way they view the processes they are in, and their reflections of what has happened previously.

In addition, I also conducted unstructured interviews with the informants in case 3 and case 4. Unstructured interviews are conversations that appear to be “naturally occurring conversation”, yet in which “the researcher still has particular questions or directions of inquiry in mind” (Davies, 2008, p. 71). These unstructured interviews emerged as I conducted participant observation, which I will elaborate in detail in the following section. These unstructured interviews appeared when I found my informants engaging in unexpected practices, as a natural conversation to inquire about the informant’s rationale behind certain practices.

As Brinkmann pointed out, “‘meanings’ that qualitative interviewers are commonly looking for are often multiple, perspectival, and contradictory” (2013, p. 24). Given the phenomenon I investigated situates in an inter-organizational setting, it is important for me to pay careful attention to what is said and done in the interviews. Asking the informants to recount their experiences at a different time or in a different setting,

in this sense allows me to capture and make sense of the changes and contradictions in the meaning informants assign to organizing processes as the project develops.

Table 6. Overview of data sources - semi-structured interviews

Case	Informant	Organizational Affiliation	Position	Interview N
1 – Lu'an	Government 1	Lu'an Municipality E-government Office	Vice Director	1
	Government 2	Lu'an Municipality Internet Propaganda Office	Vice Director	1
	Government 3	Jin'an District Organization department	Department head	1
	Government 4	Jin'an District Informatization Office	Vice Director	1
	Non-government 1	Longsun	Project manager	1
	Non-government 2	Lu'wang Forum	CEO	1
2 – Shanghai WeChat Service	Government 1	Internet Propaganda Office, Shanghai Police Department	Vice Director	1
	Government 2		Employee	
	Government 3		Employee	
	Government 4	Technology Service Centre, Shanghai Meteorological Bureau	Vice Director	1
	Government 5		Employee	
	Government 6		Employee	
	Government 7	Shanghai Release, Shanghai Municipal Government	Director	1
	Government 8		Employee	
	Non-government 1	eGov Media Cooperation Office, Tencent Dashen	Chief eGov Media Cooperation Officer	1
3 – SODA	Government 1	Shanghai Municipal Commission of Economy and Informatization (SMCEI)	Information Chief	2
	Non-government 1	China Industrial Design Institute (CIDI) Shanghai	Vice-CEO	2
	Non-government 2	Kesci	CEO	2
	Non-government 3	Opendatachina.com	Director	7

Case	Informant	Organizational Affiliation	Position	Interview N
	Non-government 4	China Industrial Design Institute (CIDI) Shanghai	Secretary	1
	Non-government 5	Enerlong	CEO	1
	Non-government 6	021 Incubator	CEO	1
	Non-government 7	Shanghai Jiaotong University	Lab member	1
	Non-government 8	Fudan University	Professor	3
	Non-government 9	Fudan University	Lab member	1
	Non-government 10	Open Data Taiwan	Ambassador	1
4 – Observe	Government 1	Technology Service Centre Shanghai Meteorological Bureau	Director	1
	Non-government 1	Fudan University	Professor	1
	Non-government 2	Opendatachina.com	Director	1
	Non-government 3	Enerlong	CEO	1
	Non-government 4	Taiwan Open Data Activist		1
Total				37

4.5.2 Participant Observation

I also chose participant observation as one of my primary methods in case 3 and 4. Participant observation refers to the “long-term personal involvement with those being studied, including participation in their lives to the extent that the researcher comes to understand the culture as an insider” (Davies, 2008, p. 71). In an organizational context, participant observation helps to reveal contextualized and otherwise inaccessible data to understand the tacit knowledge shared in organizations (Locke, 2011). In particular, recognizing the importance of ICT in modern organizations, I also engage with a “symmetric” observation, paying attention to both “the human and non-human agents involved in an activity” (Czarniawska-Joerges, 2007, p. 8), that is to say, to observe both the social and the technical elements in the organization of e-government projects. The observations resulted in field notes (Emerson et al., 2011; Locke, 2011), which served as the basis of data analysis at a later stage.

In case 3, I initially participated in the first year of SODA as a “student help”, which allowed me to attend offline meetings and informal gatherings among different groups. Shortly after I became part of the evaluation team of SODA, which has helped me to follow up on group discussions on WeChat and gain access to relevant events. An important note here is that during this transition from complete ‘outsider’ to

member, I have realized the importance of the use of WeChat groups in holding together the stakeholders behind the collaboration.

During this period, I have also developed my key informants, the organizers in charge of core operations, who are simply more willing to take the time to describe and explain their experiences. Having these key informants was critical for the development of my understanding, as it was difficult for me as one person to study an organizational phenomenon like SODA which has multiple online and offline presences simultaneously. In the subsequent years of fieldwork, I have been involved in associated events of SODA, invited into different open data community gatherings, and joined different WeChat groups, many of which are based on the invitation of these informants. My role has also shifted between ‘expert’, ‘community supporter’ and even local guide for the international stakeholders, each of them giving me a different angle to understand how a stakeholder, or an organizer experiences the collaboration behind SODA.

In case 4, I participated in two “observe” workshops (i.e., in Guizhou Province and Shanghai) as a community member. As some community members are also organizers of SODA or informants interviewed for the WeChat public service provision platform, participating in these workshops allowed me to conduct more of the unstructured interviews with the informants I came across before. It also allowed me to observe how the interactions took place in a WeChat group and how they differentiate from the interactions taking place offline among the network members, especially how people may be aware of different crowds and their distinctive interests, and behave in different ways.

4.5.3 Document Analysis

In addition, I have also used document analysis as a complementary data collection method. Document analysis refers to “a systematic procedure for reviewing or evaluating documents – both printed and electronic (computer-based and Internet-transmitted) materials” (Bowen, 2009, p. 27). By “systematic procedure”, it is implied that document analysis often involves iterative processes between “skimming (superficial examination), reading (thorough examination), and interpretation” (Bowen, 2009).

On the one hand, I use document analysis as an important means of triangulation – “the combination of methodologies in the study of the same phenomenon” (Denzin, 1973, p. 291; Lincoln and Guba, 1985, p. 306), to seek convergence and divergence in-between different data sources (Bowen, 2009). On the other hand, with archival documents, document analysis also helps me to further contextualize the observation and interview data (for example, in case 1 where the project started way before my fieldwork) (Davies, 2008). With documents generated during my fieldwork, document analysis helps to construct event sequences (for example, in case 3, where the project is studied over a course of 3 years).

The collected documents in this dissertation include official government policy reports, national e-government evaluation reports, official introduction materials for different projects, presentation slides used for stakeholder meetings, and meeting minutes. The documents were partly referred by my informants

in the interviews, where I later on searched for copies, and acquired from credible sources (e.g., databases or government websites). Table 7 presents an overview of document sources.

Table 7. Overview of data sources - documents

Type	Name	Source
National government policy documents	Announcement of National Comprehensive Pilot Projects on E-government	(Ministry of Industry and Information Technology of the People's Republic of China, 2017)
	Notice on the Development of the "Internet Plus" program and the Development of Big Data	(The State Council of the People's Republic of China, 2015a, 2015b)
National and regional e-government evaluation reports	National Informatization Evaluation Report	(China Internet Network Information Center, 2016a)
	Statistical Report on Internet Development in China 2014-2017	(China Internet Network Information Center, 2014, 2015a, 2015b, 2016c, 2016b, 2017a, 2017b)
	China E-government Development Index 2014-2017	(E-government Research Center, Chinese Academy of Government, 2014, 2015, 2016, 2017)
	China Open Data Index 2016-2018	(Fudan University, 2017a, 2017b 2018a)
Official introduction materials for different cases	On case 1 Lu'an	Longsun government IT project catalogue
	On case 3 SODA	Website: http://soda.shdataic.org.cn/ Slides of two public presentations for SODA 2015 and 2016
	On case 4 Observe	(Fudan University, 2018b; Tsinghua University, 2015)
Project evaluation reports	On case 3 SODA	Open Data Shanghai service evaluation 2015-2017 SODA evaluation report 2015
Meeting minutes	On case 3 SODA	Minutes of one offline key stakeholder meetings of SODA 2015, and of several university lab meetings of SODA 2015 and 2016

4.6 Data Analysis

In this dissertation, I conducted data analyses during different periods of research (i.e., in paper 1-4) for different research foci. For the analysis of the non-longitudinal, single-case study, I engaged with within-

case analysis (Eisenhardt, 1989). For the analysis of the longitudinal study, I adopted a process theorizing approach, with the aim of tracking the changes of events in descriptive narratives over time (Langley, 1999). Although the focus of the coding varies from paper to paper, the coding was based on the data sets described above. I coded the transcripts from the interviews, field notes from participant observation, and the collected documents using the software NVivo version 11.

In general, I coded my data following three steps. For the first step, I conducted open coding on the collected data, which was organized according to different research foci. At this stage the codes are constructed inductively from raw data. In paper 1 and 3, I have also captured an event-time series to document the changes over time (Pettigrew, 1985; Poole et al., 2000). These event-time series helped me to build a connection between events and the emergent analytical themes at a later stage of coding. The initial open coding results in a wide range of unstructured first-order codes that are used as the basis for future coding and analysis.

For the second step, I zoomed out of the data and turned to different sets of relevant literature. During this stage, I used analytical concepts (e.g., institutional logics, temporary organization, technological frames of references, knowledge sharing, and adaptive governance) as my interpretive device (Bowen, 2006), or sensitizing device (Klein and Myers, 1999) to abstract patterns from the first-order codes. The process of second-order coding was reconfigured throughout the data collection, iterating between empirical materials and the research literature. By repeating the cycle of coding, I was able to generate theoretically informed and empirically driven insights of the focus of each study, improving the transferability of these theoretical insights (Lincoln and Guba, 1985).

For the third step, I revisited the second-order codes and aggregated them into analytical dimensions. I then linked these dimensions to build the final theoretical insights. Examples of the code tables and detailed descriptions of coding procedures can be found in each paper.

4.7 Evaluation

In this section I evaluate this study by recounting the development of research (i.e., data collection and analysis), and discussing the limitations and implications of these developments to the generalization of the findings. In particular, I draw on a set of interdependent principles proposed by Klein and Myers (1999, p. 72) to evaluate interpretivist field studies, namely, hermeneutic circle, contextualization, interaction between the researchers and the subjects, abstraction and generalization, dialogical reasoning, multiple interpretations, and suspicion. I also draw on other viewpoints from information systems research to provide supplementary perspectives (Lee and Baskerville, 2003; Lincoln and Guba, 1985; Walsham, 1995).

In the following, I will start with the evaluation of data collection and then move onto data analysis. Although the knowledge I acquired from data collection and analysis informed each other during the

research process, and each of them also include other issues such as theorization and literature review, I will split the evaluation in two for the clarity of writing.

4.7.1 Data Collection Evaluation

During data collection, I paid particular attention to the interaction between my informants and me as a researcher (Klein and Myers, 1999, p. 74) to improve the trustworthiness of the collected data.

More specifically, in case 1 and case 2 where I conducted a single case study and had limited time to engage with the informants, I did what Guba and Lincoln called “prolonged engagement” (1985, p. 301), that is to invest time in building trust with the informants, and learn about the surroundings where the collaboration takes place. I asked my informants to give me a tour of their work settings prior to the interviews, to expose myself to the multiple contextual influences (i.e., the space where servers are located, the way of communication between government and their stakeholders) that impinge on the informants’ daily organization. On occasion, where possible, I also asked for the opportunity to visit the site again and to talk with some of the informants.

In case 3, where I conducted longitudinal studies, and case 4 where I had more time to engage with the informants, I further combine “prolonged engagement” with “persistent observation” (Lincoln and Guba, 1985, p. 32) to identify among the contextual characteristic and elements that are most relevant to the problem and focusing on them in detail. It is among these observations at the beginning of my fieldwork where I uncovered the significance of WeChat groups in holding together the collaboration among stakeholders.

Nonetheless, approaches such as “prolonged engagement” and “persistent observation” may also suffer from potential systematic “distortions” in the informants’ narratives (Klein and Myers, 1999, p. 77). Especially considering I was introduced as an “evaluation researcher” in case 1, 2 and the first year of fieldwork in case 3. And there was a noticeably positive tone in the initial narratives among our initial contacts. To reduce these possible “biases”, I have triangulated different data methods and sources (Lincoln and Guba, 1985, p. 306) by, for instance, including accounts of the same events from different project stakeholders, or comparing some of the accounts in interviews and in official documents.

4.7.2 Data Analysis Evaluation

In analyzing the collected data, I carefully related theoretical abstractions and generalizations to the details of the cases as I experienced them during data collection. For instance, after the initial coding of the data collected from the preliminary interviews, I observed group differences in terms of perceptions, the use of WeChat, as well as opinions about ownership among the stakeholders, which had to do with the sectorial differences between government and non-government organizations. These emergent categories and relationships inspired my interest in the concept of institutional complexities, which informed my interview design and observation focus later on.

These iterative processes between theoretical abstractions and empirical findings also lead to the detection of “possible contradictions between pre-conceptions and actual findings” (Klein and Myers, 1999, p. 72), resulting in the revision of theoretical preconceptions of this dissertation, and increasing the generalizability of the research findings. For instance, derived from the literature review, my initial focus was to understand how congruence on social media use contributes to the governance of the collaboration, which was later on proved otherwise in the empirical data.

In addition, I also paid attention to the critical reflection of the social and historical backgrounds of the research setting (Klein and Myers, 1999, p. 73). For instance, I investigated the historical setting of the administrative reform and e-government development in China (e.g., in section 4.4.1.2 and 4.4.1.3). The results showed that although China has undergone a different path of public administration reform compared to Western countries, the Chinese context has showcased a compatible level of institutional complexities, which provides a suitable context to understand the government transformation in a fast-changing e-government environment.

I also contextualized my understanding of each case during data analysis by digging into the historical setting of each case, in order to understand how the current situation under investigation emerged. For example, in case 1, the story on the turn of the project – Lu’an governments feeling threatened by the Longsun company request for fees for every change they make - did not surface until I looked into the historical development of the case. This particular incident informed me about the dynamic nature of the governance practice of these collaborations.

During data analysis, I also tried to engage with these social and historical details by providing thick description of the case context in each paper. The descriptions present to the readers a more balanced picture about how the governance and organizational form of e-government collaboration changed as it developed.

In general, the development of the research design follows a hermeneutic circle (Klein and Myers, 1999, p. 71) by iterating between the phenomenon of e-government collaboration, empirical data within the local context, as well as the theoretical perspectives of IT and organizational change. As showed above, during data collaboration and analysis, I engaged in research efforts to contextualize the cases, iterating between empirical details and existing theoretical insights of meta-phenomenon, as well as including multiple accounts of my inquiries from a variety of informants and over a span of time. These efforts helped me produce empirically rich data (Lincoln and Guba, 1985), and generalize the empirical details to theoretical insights (Klein and Myers, 1999; Lee and Baskerville, 2003; Walsham, 1995) on the governance and organizational form of e-government collaboration through the mediation of social media.

In sum, in section 4, I have explained the ontological, epistemological and methodological choices of this dissertation to help the readers to understand the research paradigm that guides the research design of this dissertation. I then presented the administrative reform and e-government development in China, as well as the details of each case to give an overview of the empirical settings of this dissertation. In the end, I

have evaluated the development of the research design to show the limitations and implications of these developments to the generalization of the findings. In the next section, I present the findings based on the empirical cases and explain how they answer to the research questions.

5 FINDINGS

In this dissertation, I used four papers to address the overall research question of this dissertation:

- *How do the governance and organizational form of e-government collaboration occur through the mediation of social media?*

In this section, I will address the overall research question by answering to the two sub research questions in the following.

- *How does the governance of e-government collaboration occur through the mediation of social media?*
- *How does the organizational form of e-government collaboration occur through the mediation of social media?*

In section 5.1, I address the first sub research question by unfolding the relation between governance of e-government collaboration and enactments of social media. In section 5.2, I address the second sub research question by unfolding the relation between the organizational form of e-government collaboration and enactments of social media.

5.1 Governance of E-Government Collaboration

5.1.1 Social Media Enactment and the Governance of E-government Collaboration

To address the sub research question 1 - *how does the governance of e-government collaboration occur through the mediation of social media*, I draw on the findings in paper 1 (Wang, Madaglia and Jensen, 2018) and paper 2 (Wang et al., 2017).

Conceptually, I drew on technology frames of references to account for the relationship between the enactment of social media and the governance arrangements of e-government collaboration. I took the affiliated organizational backgrounds of the stakeholders as their references of technology frames, and unfolded their enactment of social media at three dimensions: nature of technology, technology strategy, and technology-in-use. By identifying the congruence and incongruence of technology frames at different dimensions, I accounted for the impacts of consensus and lack thereof on technology frames on the emergent governance of e-government collaboration. The analysis was based on the data collected from case 3 on SODA.

The findings (Wang, Madaglia, and Jensen, 2018) show that despite the stakeholders' intention of social media adoption, the stakeholders of e-government collaboration can develop different frames of social media as the collaboration develops. For instance, in case 3, the collaboration of SODA consisted of three groups of stakeholders: government, university and industry. At the very beginning of the collaboration, when the stakeholders decided to adopt WeChat as the knowledge sharing platform for the collaboration, the stakeholders were, in fact, congruent about the nature of WeChat, as a social media platform that can both enable and constrain knowledge sharing. All three groups of stakeholders were interested in sharing

their knowledge and experiences with each other, while ensuring about the privacy of their discussions with in one chat group.

Nevertheless, as the collaboration developed and the stakeholders started to interact intensively in the daily planning and operation of SODA, the stakeholders started to identify their own roles in the collaboration. Subsequently, stakeholders started to frame their strategy and use of social media differently in order to meet their own needs in various situations. A summary of the stakeholders' frames of WeChat for knowledge sharing can be found in table 8.

In particular, as the government and non-government stakeholders possessed different sets of resources, the government stakeholders gradually took a steering role, and the non-government stakeholders took an operational role in the collaboration. The government and non-government stakeholders started to develop some incongruent frames on the strategy and use of WeChat, while remaining congruent on others.

Interestingly, such mix of congruent and incongruent frames of WeChat did not cause explicit conflicts and confrontations amongst the stakeholders in the collaboration of SODA. Rather, these stakeholders maintained the ambiguity of their views of WeChat in this way, which was in fact beneficial for the continuation of the collaboration. The reason, I argue is because the ambiguity of the frames around WeChat, especially the fact that the stakeholders still share similar uses of WeChat (i.e., using WeChat for task-related activities), gives a sense of consensus among the stakeholders on knowledge sharing as the fundamental value of the collaboration, ensuring the coherence of the collaboration. In the meantime, such ambiguity also leaves room for the stakeholders to develop their own strategy and use of WeChat in order to find the means (e.g., which stakeholders to include, or exclude to solve certain tasks) and ways of decision-making (e.g., whether to go upward following organizational hierarchy, or to include all the stakeholders in joint decision-making) that can meet the specific needs in various tasks.

Overall, facilitated by the ambiguity around the frames of WeChat for knowledge sharing, the government stakeholders manage to develop governance arrangements that help to deliver the open data projects in a fast and effective manner, among which I have identified three main characteristics: selective participation, ad-hoc decision-making, and role and capacity identification. In particular, these characteristics are compatible with the characteristics of adaptive governance, including “decentralized bottom-up decision-making; efforts to mobilize internal and external capabilities; participation to spot and internalize developments; and continuous adjustments to deal with uncertainty” (Janssen and van der Voort, 2016, p. 4). A summary of the relation between technological frames and the emergent governance arrangement can be found below (see table 9).

Table 8. Technological frames of WeChat for knowledge sharing (Wang, Medaglia, and Jensen, 2018)

	Nature of technology		Technology strategy		Technology-in-use	
	Enable knowledge sharing	Constrain knowledge sharing	Enable knowledge sharing	Constrain knowledge sharing	Enable knowledge sharing	Constrain knowledge sharing
Government	Grouping; Instant Messaging; File transfer and preview; Notification alert;	Grouping	Connectivity; Idea mining and resource exchange	N/A	Participatory task assignment	N/A
Industry	Grouping; Instant Messaging; File transfer and preview; Notification alert;	Grouping; Personal addressing (“@”)	Connectivity; Idea mining and resource exchange	Effective task management	Task development	Targeted task assignment; Triggered attending; Task division;
University	Grouping; Instant Messaging; File transfer and preview; Notification alert;	Grouping	Connectivity; Idea mining and resource exchange	Effective task management	Task development	Information protection

**Table 9. Emergent governance arrangement as response to patterns of framing (in)congruence
(Adapted from (Wang, Medaglia, and Jensen, 2018))**

Frame	Congruence /Incongruence	Emergent Governance Strategies	Examples
Nature of technology	<i>Overall congruence</i>	Selective participation	Existing group members introduce new members to the group to harness the diversity of knowledge and resources; Existing group members place new members into different groups to avoid potential conflicts of interests
	All the stakeholders are aware WeChat can be used to both enable and constrain knowledge sharing		
Technology strategy	<i>Mix of congruence and incongruence</i>	Role and capability identification	Stakeholders draw on each other's identified capacities to complete tasks at the beginning of the collaboration; Stakeholders identify their roles as collaboration develops, and specify their needs for new capacities
	At the beginning of the collaboration, all the stakeholders are motivated to adopt WeChat to enable knowledge sharing in order to improve connectivity and share ideas; As collaboration develops, industry and university stakeholders are motivated to adopt WeChat for constraining knowledge sharing in order to manage operational tasks.		
Technology- in-use	<i>Overall incongruence</i>	Ad hoc decision-making	At the beginning of the collaboration, there is no pre-determined decision-maker within the network; As collaboration develops, multiple decision-making authorities emerge
	Government stakeholders use WeChat for enabling knowledge sharing to assign tasks to other stakeholders; Industry and university stakeholders use WeChat for constraining knowledge sharing to complete tasks		

Another interesting finding regarding the governance arrangements of SODA that caught my attention is that while government and non-government stakeholders jointly make most of the decisions during the collaboration, there is a clear divide in the distribution of accountability between government and non-government stakeholders. The government stakeholders are held accountable for resource and networking related tasks, and the non-government stakeholders are held accountable for the operation of SODA (Identified in the finding of paper 2). That is to say, there is a decoupling between the distribution of decision-making power and accountability across government and non-government stakeholders.

Nevertheless, it is not clear whether this pattern is only specific to SODA, or also exists in the governance of other types of e-government collaborations. In order to answer this question, in addition to the case of SODA (i.e., case 3), I have drawn data from another three case studies (i.e., case 1, 2, and 4) on e-government collaboration to observe the distribution of decision-making power and accountability among the government and non-government stakeholders. These three cases are selected as they also carry similar characteristics of adaptive governance. I present the finding in the next section.

5.1.2 Adaptive Governance of E-government Collaboration

Based on these four cases of e-government collaboration (i.e., case 1, 2, 3 and 4), the findings suggest that there is a decoupling between the distribution of decision-making power and accountability in all of the four cases. That is to say, the stakeholder (or an organization, or a group of organizations) that has the decision-making power in the collaboration may or may not be held accountable for the processes and outcomes of that decision.

In particular, I have identified two types of configurations in the distribution of decision-making power and accountability between government and non-government stakeholders: one is *polarized* distribution; the other is *polycentric* distribution. Polarized distribution refers to the distribution of decision-making power (or accountability) that is concentrated on *either* government actors *or* non-government actors. Polycentric distribution refers to the distribution of decision-making power (or accountability) that is shared, at least at some point in time, between at least one government and one non-government actor. Figure 6 shows four abstract examples of the distribution of decision-making and accountability between government and non-government actors.

To understand the significance of the distributions for the nature of governance, I combine them in a two-dimensional framework. The combination of these two dimensions defines four types of governance between government and non-government actors, among which three feature polycentric distribution of decision-making power or accountability. I see the polycentric distribution as an indicator of ensuring adaptiveness, thus identify these governance practices as three types of adaptive governance, including *polycentric governance*, *agile governance*, and *organic governance* (illustrated in Table 10).

Figure 6. Examples of polarized (a. & b.), and polycentric (c. & d.) distributions between government (G) and non-government (NG) organizations (Wang et al., 2018)

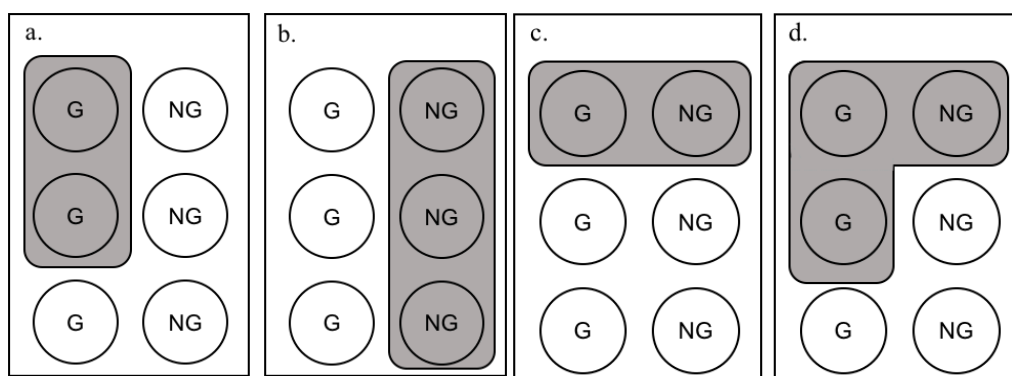


Table 10. A typology of adaptive governance (Wang et al., 2018)

		Distribution of decision-making power	
		Polarized	Polycentric
Distribution of accountability	Polarized	N/A	<i>Polycentric governance</i> <ul style="list-style-type: none"> Case 2 – Shanghai WeChat Service Case 3 – Shanghai Open Data Application (SODA)
	Polycentric	<i>Agile governance</i> <ul style="list-style-type: none"> Case 1 – Lu'an 	<i>Organic governance</i> <ul style="list-style-type: none"> Case 4 – Observe

Exemplified by case 1, the Lu'an project, *agile governance* is characterized by a polarized distribution of decision-making power and a polycentric distribution of accountability. Case 1 exemplifies governance arrangements aimed at adapting to rapid changes in an environment by flexibly sharing accountability across government and non-government actors, while maintaining decision-making power only on one side.

Exemplified by case 2, the Shanghai WeChat project, and case 3, the Shanghai Open Data Application (SODA) project, *polycentric governance* is characterized by a polycentric distribution of decision-making power and a polarized distribution of accountability. Both cases exemplify governance arrangements aimed at adapting to rapid changes in the environment by flexibly sharing decision-making power across government and non-government actors, while maintaining accountability only on one side.

Exemplified by case 4, the Observe project, *organic governance* is characterized by a polycentric distribution of decision-making power and a polycentric distribution of accountability. Case 4 exemplifies

governance arrangements aimed at adapting to rapid changes in the environment by flexibly sharing both decision-making power and accountability across government and non-government actors.

In sum, the findings answer the sub research question 1 by showing how social media facilitates the occurrence of adaptive governance in e-government collaboration by giving rise to ambiguous (i.e., a mix of congruent and incongruent) frames around knowledge sharing in the collaboration.

While the congruent frames of social media for knowledge sharing help to deliver a sense of consensus on the fundamental value of the collaboration, which ensures the coherence of the collaboration, the incongruent frames in strategizing and using social media for knowledge sharing leave space for the stakeholders to develop their own means to accomplish different tasks. These frame dynamics allows the stakeholders to develop adaptive governance arrangements that are characterized by selective participation, ad hoc decision-making and role and capacity identification.

Zooming in on decision-making, the findings further revealed a decoupling between the distributions of decision-making power and accountability across government and non-government stakeholders in these adaptive governance arrangements. Building on the configurations of these two dimensions, I have identified three types of adaptive governance arrangements (i.e., polycentric, agile and organic governance) that can ensure government's adaptiveness and stability at the same time.

While governance is concerned with the ways in which stakeholders can coordinate knowledge and resources for the realization of a common goal, organizational form concerns the ways in which the collaboration can be structured more effectively and appropriately given the changing nature of e-government collaboration. Both are necessary for the realization and continuation of e-government collaboration in a turbulent environment such as technology innovation. In the next section, I focus on the organizational form of e-government collaboration and address the sub research question 2.

5.2 Organizational Form of E-Government Collaboration

To address sub research question 2 - *how does the organizational form of e-government collaboration occur through the mediation of social media*, I draw on the findings from paper 3 (Wang, 2018) and paper 4 (Wang and Medaglia, 2017).

Conceptually, I took an *institutional logics* approach to understand the organizational form of e-government collaboration as a result of hybridization process between institutional logics. In addition, I also engage with the concept of *temporary organization* to characterize the emergent organizational form of e-government collaboration through the mediation of social media. The findings presented here are based on the longitudinal data of SODA (i.e., case 3), which I followed from the beginning of the project formation (i.e., from 2015 to 2017).

The findings have revealed that in a turbulent environment where the range and dynamics of stakeholders change frequently, the organizational form of e-government collaboration can be a development of organizational settlements that are largely different from each other. For instance, in case 3, the

organizational form of SODA has undergone a transition over the project course, changing from a social media supported temporary project network (identified in the findings of paper 4), to a permanent private organization with different share distributions (identified in the findings of paper 3).

Initially, SODA was established as a pilot project among a network of open data advocates from both government and non-government stakeholders in Shanghai without a clear contractual agreement and a loose goal to “organize something like BigApps”. Considering the project is inter-organizational by nature, and does not have a physical presence, the communication and coordination is primarily done within and across WeChat groups. The social media based temporary project network is characterized by four characteristics along the dimension of time, task, team and transition (identified in the findings of paper 4).

First, the project is developed simultaneously and virtually by different stakeholders in order to meet the deadline as agreed by the stakeholders, thus the project timeline is managed in an ad-hoc and non-linear manner. Second, the tasks are created, assigned and engaged with among the stakeholders based on the stakeholders’ availability and their self-identified capabilities. Third, the selection of project team members is continuous, and is based on the accessibility and expertise of the person rather than their formal organizational affiliations. Fourth, the project is in general organized informally among the stakeholders without following hierarchical relations. Nonetheless, due to the public nature of the project, the project collaboration is at times characterized with formal organizing practices in the interaction with high-ranking government officials. A summary of the characteristics of social media supported temporary project organization can be found in table 11.

As SODA developed, another organizational form of the collaboration - a permanent organization, a private company with a physical presence - emerged in 2016, in parallel to the project network. By contrast, this private company was established to exist in the long run, with a clear aim to operate SODA-related affairs and a clear structure of CEO, shareholders, and manager(s); each having their own official responsibilities and tasks. The shareholders and CEOs were selected based on their previous engagement with SODA. The shareholders, including the CEO, are the core stakeholders of SODA and were involved from the beginning of the project. The manager in the organization was hired through a formal recruitment procedure. At a later stage (in 2017), the private company changed its share distribution, and has also started to develop new business areas (identified in the finding of paper 3).

A further examination of the data shows that the emergence and transition of organizational forms is, in fact, a hybridization process that is mediated through social media, and embedded in the institutional environment of the collaboration. The changes in the organizational form of e-government collaboration are driven by the changing dynamics of institutional logics (identified in the finding of paper 3).

Table 11. Characteristics of social media based temporary project organization (Wang and Medaglia, 2017)

Dimensions of temporary organization	Sub-dimensions	Emergent organizing practices through the mediation of social media
Time	Project duration	Fixed duration of project based on agreement among stakeholders
	Project pacing	Ad-hoc, non-linear management of time through virtual co-presence of team members
Task	Project goal	Following top-down, centralized e-government strategy
	Team member responsibilities	Discursive task creation, assignment and engagement among team members (stakeholders)
Team	Individual to team	Serendipitous recruitment of stakeholders based on expertise; The team members are not necessarily affiliated with known organizations
	Team to team environment	Legitimization of the team through shared reference to social media
Transition	Post goal Achievement	Termination or another iteration of the project;
	Shifting ways of organizing	Shifting formal and informal organizing practices

For instance, in the case of SODA, I have identified three institutional logics (i.e., community, local government and corporate) that are at play based on the different sources of legitimacy, authority, and identity in the collaboration (See table 12). In particular, the logic of community underlines the unity of will as a source of legitimacy, commitment to community value as a source of authority, and voluntary and cooperative engagement as a source of identity. The logic of local bureaucracy underlines the top-down authority across levels of government as a source of legitimacy, upward accountability from local government to national government as well as rules and procedures as a source of authority, and bureaucratic roles as a source of identity. The logic of corporate is concerned with consolidating and advancing the market position as a source of legitimacy, board of directors as a source of authority and organizational roles as a source of identity.

Table 12. The three identified institutional logics in SODA (Wang, 2018)

	Logic of Community	Logic of Local Bureaucracy	Logic of Corporate
Source of Legitimacy	Unity of will; Belief in trust and reciprocity	Top-down authorities	Market position
Source of Authority	Commitment to community values and ideology	Upward accountability; Rules and procedures	Board of directors/top management
Source of Identity	Emotional connection; Ego-satisfaction and reputation	Bureaucratic roles	Organizational roles

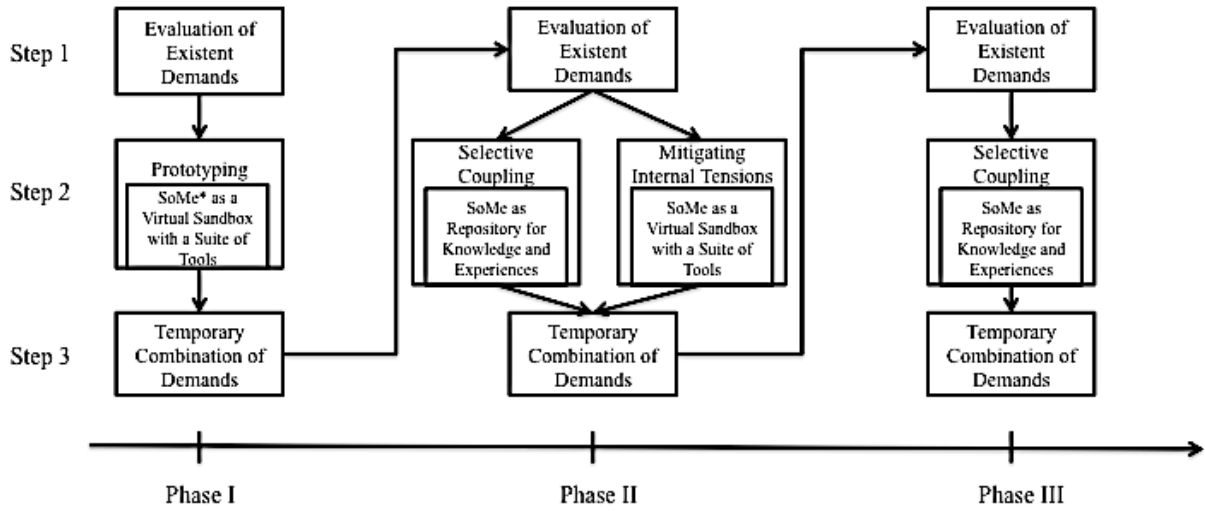
The findings indicate a strong presence of community logic among the stakeholders during the initial phase of SODA (in 2015). As new stakeholders join the collaboration in 2016 and 2017, following the success of SODA 2015, the presence of the logics of local bureaucracy and corporate has strengthened. The stakeholders thus found themselves caught up in the conflicts of the demands of different logics during the development of SODA, which resolve around three aspects. The first conflict concerns the different perceptions of ownership. The second conflict concerns the differences in the perceptions of leadership. And the third conflict concerns the divergence in working norms, boundaries of membership, and the perceptions of responsibilities.

The findings indicate that in order to cope with these conflicts, the stakeholders undergo a three-step hybridization process to shape the organizational form by hybridizing the existent demands of different institutional logics (See figure 7), starting with stakeholders' evaluation of the existent demands. The evaluation phase is triggered by confusion or pressures to respond to conflicting demands, and can take forms such as official evaluations or group discussions. Following the evaluation, there comes the actual coping phase, where I have identified three coping strategies in response to different institutional logics: *prototyping*, *selective coupling* and *mitigating internal tensions*.

In particular, prototyping concerns assembling preliminary organizational arrangements, and is a response to the logic dynamics in a domain that is not yet mature enough to impose demands over another on the form and ways of project organizing. Selective coupling concerns the combination of structural elements of different logics at play, and is a response to the competition between these logics. While the stakeholders engage with selective coupling, they also actively mitigate internal tensions to integrate stakeholders of different institutional backgrounds through a “divide and dissent” approach. For instance, in case 3, the

stakeholders use WeChat groups to segregate different working norms, create different levels of membership, and accommodate different decision-making processes.

Figure 7. Social media mediated hybridization process (Adapted from (Wang, 2018))



* SoMe = social media

More importantly, the finding indicates two important roles of social media in the hybridization process: one as a virtual sandbox with a suite of tools, and the other as a repository of knowledge and experiences. As a virtual sandbox, social media allows the stakeholders to experiment with different organizational structures that accord to different combination of logics, by using different features. For instance, in the collaboration of SODA, the stakeholders have experimented with different kinds of grouping configurations in order to figure out what would be a more appropriate configuration of the relationships between the stakeholders. In addition, the very virtual presence of social media also creates a sense of segregation for the stakeholders, and shields the stakeholders from the organizational manifestations of other institutional logics.

An important note here is that the features of social media do not necessarily determine how the stakeholders use them. For instance, in the collaboration of SODA, the stakeholders engage the group feature in opposing ways. While the stakeholders use certain WeChat groups to be inclusive of other stakeholders and enable joint decision-making, they also create paralleled groups to exclude some other stakeholders, and create exclusive groups with higher-ranking government officials to accommodate bureaucratic decision-making.

In this sense, the resulting content (i.e., chat history) and structure (i.e., combination of memberships and groups) on social media becomes a repository of knowledge and experiences associated with the negotiation of institutional logics, hence the inscription of multiple institutional logics. And by engaging with the group structures, as well as attending to the previous content created on social media, the enacted social media also reproduces these inscribed institutional logics and their temporary combinations. The finding also indicates that even though the original project network was primarily formed through social

media, once the organizational structure and practices becomes settled, hence the combination of institutional logics stabilized, social media may no longer be of use for the collaboration as a primary communication platform.

In sum, the findings show in a highly turbulent environment where the range and dynamics of stakeholders change frequently, the organizational form of e-government collaboration can be a series of organizational settlements that are largely different from each other. The findings indicate the changes in organizational form are partly driven by the changing dynamics of the institutional logics at play, and the settlements are the results of a hybridization process of the institutional logics. In particular, the findings point to the two roles of social media in the occurrence of the organizational form, as a virtual sandbox for the stakeholders to experiment with different organizational structures, and a repository of knowledge and experiences that reproduce the temporary combinations of institutional logics.

5.3 Summary of Findings

The findings above suggest how governance and organizational form are coordinated in order to realize the e-government collaboration among various organizational and institutional arrangements in implementing a 'new' digital public service that is not previously familiar to the government stakeholders and requires the participation of non-government stakeholders. In particular, these papers have focused on the e-government collaboration that is mediated through social media, and investigated the occurrence of governance and organizational form of e-government collaboration through the mediation of social media. As we have seen above, the findings indicate the adoption of social media for knowledge sharing between government and non-government stakeholders is critical for the realization of e-government collaboration aimed to implement a 'new' technology-based public service, especially at the beginning of the collaboration when learning and identification of available resources is at the core of the collaboration.

Nevertheless, our findings suggest social media contributes to the realization of e-government collaboration not only because its potentials in enabling knowledge sharing, but also its potentials in constraining knowledge sharing. This is because the stakeholders' roles, relationships, and assigned tasks are not yet stabilized at the beginning of the collaboration. Thus, according to the different tasks the stakeholders need to address, the stakeholders at times need to find their own means (i.e., who to include and exclude, and the ways in which to make decisions) to accomplish tasks, thus enacts social media for knowledge sharing differently. In this sense, the stakeholders in fact maintain ambiguity around their views and uses of social media for knowledge sharing. While they are partly congruent about the views and uses of social media, hence creating a sense of consensus that sustains the coherence of the collaboration, they also customize their strategies and uses of social media according to their own needs in accomplishing various tasks.

The ambiguity around knowledge sharing allows the stakeholders to develop a set of adaptive governance arrangements, characterized by selective participation, ad hoc decision-making and role and capability

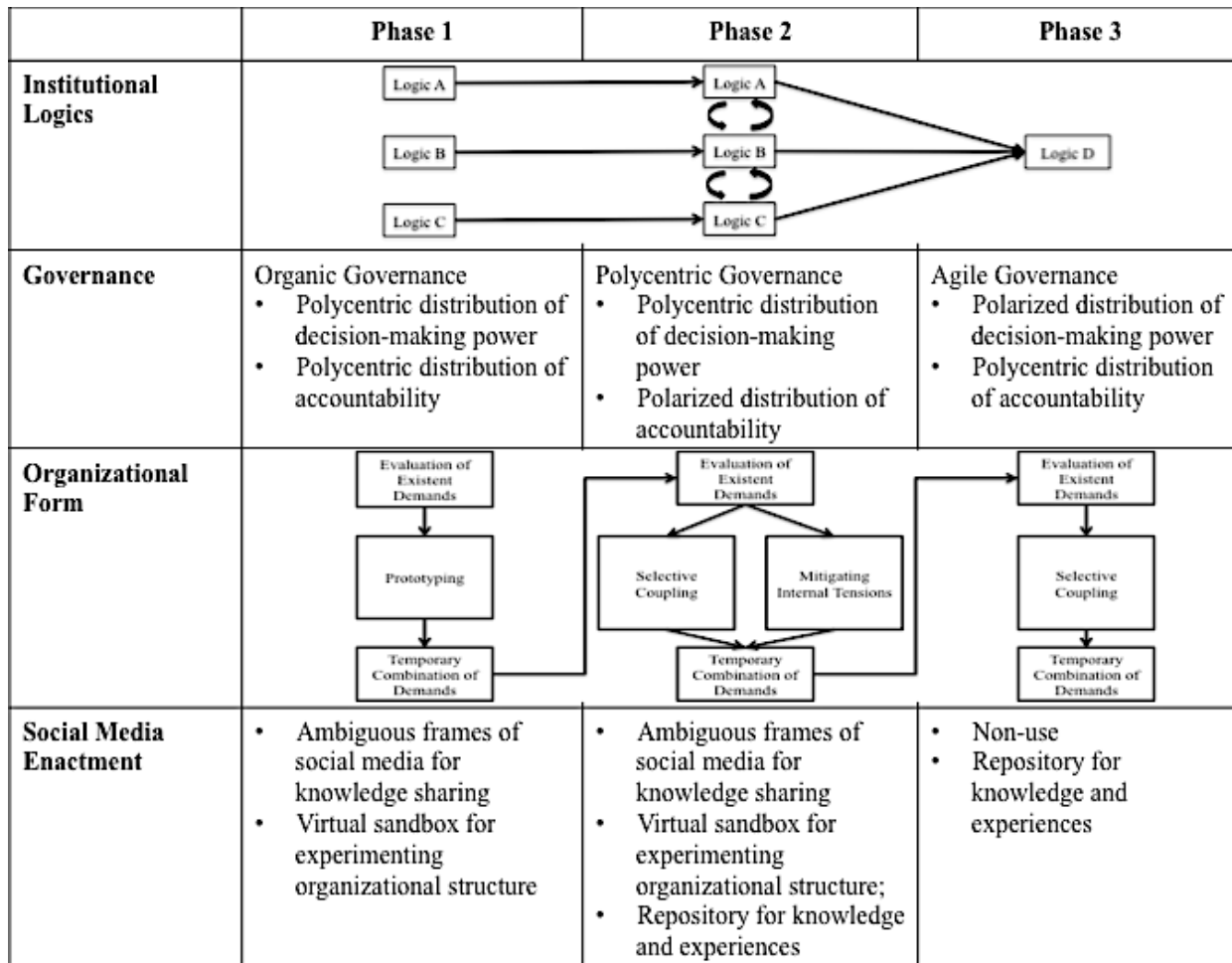
identification, that help the stakeholders to rapidly coordinate resources and knowledge for the realization of e-government collaboration. A detailed examination of the decision-making in the collaboration reveals a decoupling between the distribution of decision-making power and accountability across the government and non-government stakeholders, which helps the collaboration to remain stable while responding fast to the changes in the collaboration environment.

While social media and its enactment for knowledge sharing makes possible the realization of e-government collaboration for digital public service that is not previously known to the government stakeholders, the resulted changes in the range and dynamics of stakeholders also bring in conflicting interests that need to be addressed. The findings of this dissertation suggest there are competing institutional logics at play in e-government collaboration that features stakeholders of heterogeneous backgrounds, presenting conflicting demands that have to be dealt with in order to sustain the collaboration. The findings suggest the stakeholders can in fact accommodate these conflicts by changing the organizational form of e-government collaboration through a three-step hybridization process (i.e., evaluation of existent demands, coping, and temporary combination of demands) that combined different demands of various institutional logics.

In particular, social media plays an important role by providing a virtual sandbox for the stakeholders to experiment with different combinations of institutional demands. In doing so, the stakeholders reconfigure the features of social media, thus enacts social media differently. In the meantime, the stakeholders also inscribe their temporary combination of institutional demands into these reconfigurations of social media, allowing for the reproduction of the elements of the competing institutional logics. In addition, social media also documents the stakeholders' shared knowledge and experiences in negotiating these competing institutional logics, which reenacts the temporary combination of institutional logics, and might lead to institutional change over time. The findings indicate, social media as a virtual sandbox and a repository for shared knowledge and experiences, allows for the emergence of three coping approaches, that is, prototyping, selective coupling and mitigating internal tensions.

Based on the findings, I present a figure to illustrate the occurrence of the governance and organizational form of e-government collaboration through the mediation of social media in a hypothetical situation (See figure 8). In the figure, Phase 1, 2, 3, indicate the different phases of the development of e-government collaboration. Logic A, B, C and the recycle arrows represent the competing institutional logics and their dynamics in the collaboration. Logic D represents an emergent new institutional logic that resulted from the combination of the existing logics.

Figure 8. Illustration of the occurrence of the governance and organizational form of e-government collaboration through the mediation of social media



The figure illustrates that in implementing a ‘new’ digital public service that is not previously familiar to the government stakeholders and requires the participation of non-government stakeholders, how social media, governance and organizational form are coordinated in order to realize the e-government collaboration among various organizational and institutional arrangements. As the organizational and institutional arrangements of e-government collaboration develop, the governance and organizational form of e-government collaboration changes in order to adapt to the development of organizational and institutional arrangements at different phases of the collaboration. Social media and its enactment also play different roles as the collaboration becomes adaptive. While social media play a critical role in providing infrastructures for knowledge sharing in collaboration, mediating opposing needs of knowledge sharing, and accommodating the competing institutional logics at the beginning of the collaboration. As the collaboration stabilizes, social media may no longer be of use for the collaboration, yet continues to be a repository for shared knowledge and experiences that reproduces the emergent institutional logic and organizational arrangements whenever re-enacted.

Overall, in section 5, I have showed how the findings of this dissertation answer to the research question: how do the governance and organizational form of e-government collaboration occur through the mediation of social media. In the next section, I present how these findings add to the existing e-government literature in the field of information systems and public administration, as well as the implications of these findings for practice. In addition, I also identify the limitations of this study and the avenues for future research.

6 DISCUSSION

In this section, I discuss the findings of this study in relation to the existing e-government literature in the field of information systems and public administration, and show how the findings contribute to the existing literature on the understanding of governance, organizational form and social media in the context of e-government collaboration. I also present the implications of the findings for practice. At the end of this section, I present the limitations of this dissertation and highlight the avenues for future research.

6.1 Contributions to Research

6.1.1 Advancing the Understanding of Governance in E-government Collaboration

The findings of this dissertation make three contributions to the governance literature in the context of e-government by 1) foregrounding the role of social media enactment for knowledge sharing in the notion of adaptive governance and digital era governance, 2) identifying the key dimensions to achieve the balance between adaptiveness and stability in the notion of adaptive governance, and 3) identifying a typology of adaptive governance.

First, the findings have brought to the foreground the role of social media enactment in understanding public governance in the context of e-government (Janssen and van der Voort, 2016; Margetts and Dunleavy, 2013; Pollitt, 2010). Given the attributed significance of knowledge sharing in the notion of adaptive governance, in this dissertation, I have particularly paid attention to the influence of social media as a knowledge-sharing platform in the emergence of adaptive governance arrangements in e-government collaboration.

The findings on the relationship between social media enactment and governance of e-government collaboration highlight the role of social media enactment for knowledge sharing and the occurrence of adaptive governance, which fills in the gap in the current adaptive governance literature (Chatfield and Reddick, 2017; Hong and Lee, 2017, 2018; Janssen and van der Voort, 2016).

In particular, the findings revealed that while social media play a critical role in providing opportunities for knowledge sharing in e-government collaboration, the stakeholders in fact enact social media for both enabling and constraining knowledge sharing. These different social media enactments create a sense of ambiguity around knowledge sharing, which helps to sustain the coherence of the collaboration, while allows the stakeholders to develop their own means (e.g., who to include and exclude, and the ways in which to make decisions) to accomplish tasks. In doing so, the ambiguous frames of social media allow the stakeholders to develop a set of adaptive governance arrangements.

The findings on social media enactment also advance the understanding of learning in the current notion of adaptive governance. While Janssen and van der Voort (2016) have emphasized learning as the core value of adaptive governance, the finding of this dissertation shows at some occasions, the stakeholders deliberately constrain knowledge sharing in practice to avoid potential conflicts of interests, while subscribing to the value of learning in general (i.e., by using social media in collaboration). This finding

adds more nuances to the relationship between learning and achieving the balance between the adaptiveness and stability of e-government collaboration in the current notion of adaptive governance.

In addition, the finding on the different social media enactments for knowledge sharing in e-government collaboration also adds more nuances to the view of social media in Margetts and Dunleavy (2013)'s notion of DEG 2.0. The findings have partially supported Margetts and Dunleavy (2013)'s argument that social media has altered the relationships between government and their stakeholders. For instance, in the case of SODA, social media adoption for knowledge sharing has brought even deeper interactions between government and their stakeholders, in comparison to the governments' one-way information sharing with citizens. Meanwhile, this dissertation also adds more nuances by showing that the existing organizational arrangements also enact social media, and make social media more adaptive to accommodate the co-existence of different relationships among the stakeholders.

Second, the findings of this dissertation demonstrated that the distribution of decision-making power and accountability can be decoupled and distributed differently across government and non-government stakeholders in the governance arrangement of e-government collaboration. This finding contributes to the current conceptualization of adaptive governance, by identifying the distribution of decision-making power and accountability as the key dimensions for e-government collaboration to balance between adaptiveness and stability.

In Janssen and van der Voort (2016)'s conceptualization of adaptive governance in the context of e-government, they highlight the importance of ensuring the stability of e-government collaboration, as governments absorb knowledge and resources, as well as share decision-making with external stakeholders. Janssen and van der Voort (2016) have suggested a series of strategies to achieve the balance between adaptiveness and stability of e-government collaboration, nevertheless, the idea of balancing between adaptiveness and stability remained an abstract one in their account.

Drawing on the four empirical case studies, this dissertation contributes to the conceptualization of adaptive governance by identifying the distribution of decision-making power and accountability across government and non-government stakeholders as the key to maintain the balance between adaptiveness and stability of e-government collaboration. By identifying the different combinations of the distributions, the case further shows that the balance between adaptiveness and stability is not a singular status that applies to all the e-government collaboration. Rather, given the different environmental conditions (e.g., time pressure, budget cut), there can be variations of balance between adaptiveness and stability that are based on the distributions of decision-making power and accountability between government and non-government stakeholders.

Third, based on the combination of the distribution of decision-making power and accountability across government and non-government stakeholders, I have identified a typology that consists of three types of adaptive governance: agile, polycentric and organic governance. The typology sets to establish a common framework for understanding adaptive governance studies in the context of e-government in a systematic

fashion. Although existing studies on the concept of adaptive governance have so far addressed various aspects of adaptive governance (Chatfield and Reddick, 2018; Hong and Lee, 2017, 2018), the conception of adaptive governance in these studies remain an ambiguous one, and may risk resulting in ‘theoretical multiplicity’ (Karpouzoglou et al., 2016) in the future adaptive governance research. By putting forward the typology based on identified dimensions, this dissertation also contributes to reducing the ambiguity of the notion of adaptive governance, and advances the conceptualization in a structured manner.

Along this line, the findings contribute to the conceptualization of governance, in particular adaptive governance, in the context of e-government. As the findings of this dissertation have unfolded the occurrence of governance in e-government collaboration through the mediation of social media, the findings have also provided insight into the organizational form of e-government collaboration, which I will discuss in the following.

6.1.2 Advancing the Understanding of Organizational Form in E-government Collaboration

This dissertation also contributes to the understanding of the organizational form of e-government collaboration and its transformation over time, by providing insights on 1) a social media mediated hybridization process that results in different organizational forms of e-government collaboration, 2) the characteristics of the organizational form of social media based collaboration, and 3) the institutional logics that are at play in the field of e-government collaboration.

First, the findings of this dissertation show that the organizational form of e-government collaboration is a series of organizational settlements that result from a hybridization process amongst competing institutional logics. The findings of this dissertation have also foregrounded the role of social media in the hybridization process, as a virtual sandbox for experimenting with organizational structure and a repository for shared knowledge and experiences. These findings add to the current understanding of organizational form of e-government collaboration among e-government research.

Previous e-government research on governance has implied changes in the organizational form of public-private collaboration in the era of e-government, especially after the advent of social media. For instance, Dunleavy and Margetts (2006; 2013) have suggested a shift away from bureaucracy in the era of e-government. Janssen and van der Voort (2016) proposed the need of ambidextrous organizational forms of public-private collaboration in order to answer disruptive innovations. Literature on collective governance, or new public governance, especially have focused on network as the organizational form, and its close connection with networked technologies (Ansell and Gash, 2008; Jarvenpaa and Majchrzak, 2010; Jarvenpaa and Välikangas, 2016; Pardo et al., 2010). Nevertheless, current discussions on the appropriate organizational form of e-government collaboration is still largely based on established project form, such as, IT outsourcing or Public Private Partnerships. The occurrence of the organizational form of e-government collaboration through the mediation of social media is still not sufficiently understood. The

social media mediated hybridization process contributes to this line of literature by filling in this research gap.

Second, the findings have identified two different organizational forms of e-government collaboration as a result of the hybridization process. Both are divergent from the bureaucratic form of government organization, with one being social media based network, another being permanent private organization. These findings are partly in agreement with previous e-government studies that suggest the potential decentralizing effects of social media use in public-private collaboration (Chun et al., 2010). In this sense the findings also add to the debate in public administration on the organizational form of government in the information society (Meijer, 2008; Osborne and Plastrik, 1997), by providing evidence of how the mediation of social media may undermine the foundation of government as a bureaucratic organization. Nonetheless, the transition of the organizational forms of social media mediated e-government collaboration (i.e., from network to permanent private organization) also add nuances to this understanding, as the organizational form is temporary and may change as the institutional and organizational environments change.

Third, the findings of this dissertation identify a rising presence of community logic in the field of e-government collaboration, in addition to the logics of state and corporate. This finding adds a more complex picture to the current institutional understanding on IT public-private collaboration in information systems and management, which suggest IT public-private collaboration are subject to the competing logics of public good (state) and market (Ashraf et al., 2017; Beck et al., 2015; Mars and Lounsbury, 2009). The logic of community could also be understood as a source of new organizational form that combines elements of network in the field of e-government collaboration.

The identified hybridization process also indicates that the existence of competing logics in the field of e-government collaboration do not necessarily result in one logic dominating to another, but a negotiation process that is constantly in flux. This finding opposes studies in management and organizational science that suggest the inevitable dominance of one logic over the others in a field (Reay and Hinings, 2005; Swan et al., 2010), and supports the argument that competing logics may co-exist in the long term (Battilana and Dorado, 2010; Dunn and Jones, 2010; Lounsbury, 2007; Reay and Hinings, 2009).

6.1.3 Advancing the Understanding of Social Media Adoption in E-government Collaboration

This dissertation also contributes to the understanding of social media adoption in the context of e-government collaboration, by showing the embeddedness of social media adoption in both organizational and institutional arrangements, and the changes in social media enactment as the organizational and institutional arrangement of e-government collaboration develops over time.

First, on the organizational enactment of social media, the findings of this dissertation suggest different organizational experiences shape stakeholders' perceptions and use of social media differently in order to accomplish their distinctive strategic goals. As collaboration develops, and stakeholders make sense of

their roles and capabilities in the collaboration, the stakeholders' frames of the nature, strategy and use of social media strategically for knowledge sharing change accordingly. This finding supports the stream of information systems research, which takes a critical stance on social media and its organizational impacts (Gibbs et al., 2013; Hwang et al., 2015; Majchrzak et al., 2013).

The findings on the relationships between the ambiguous frames of social media and the occurrence of adaptive governance arrangements demonstrate the incongruent technology frames can also be generative of governance. This finding opposes the previous TFR studies that suggest incongruent technology frames may cause conflicts among the stakeholders and lead to the collapse of collaborative project (Azad and Faraj, 2008; Barrett, 1999; Orlikowski and Gash, 1994). Rather, the findings suggest generative effects of a mix of congruent and incongruent frames to the occurrence of governance, which is in line with the TFR studies that focus on the roles of partial congruence (Hsu, 2009; Mazmanian, 2013; Van Burg et al., 2013; Young et al., 2016).

Second, on the institutional enactment of social media, the findings indicate that as stakeholders make sense of the existent institutional demands around the organizational form of e-government collaboration, the stakeholders configure the features of social media differently in order to accommodate competing institutional demands. Meanwhile, these configurations are also inscribed in social media, and reproduce different combinations of institutional demands.

Along this line, the findings on the institutional enactment of social media over time provides a more nuanced picture on the link between social media and government transformation than the technology deterministic tone featured in some of the e-government research on social media (Bertot et al., 2010; Criado et al., 2013; Margetts and Dunleavy, 2013). The findings of this dissertation also reject the skepticism among e-government researchers, such as Norris (2010) and Bryer and Zavattaro (2011), regarding whether the adoption of ICT can generate genuine government transformation. Our finding on the relation between institutional logics and social media enactment shows ICT are not necessarily institutionalized and routinized by government, especially in a collaborative context. Rather, the views and uses of technologies are shaped in the negotiation between multiple logics, and by engaging with these configurations of technologies, different combinations of institutional logics are reproduced. In this sense, the government transformation induced by communication technologies does not necessarily take place in a radical manner, but manifests in a hybrid form that accommodates different institutional logics.

6.2 Implications for Practice

Based on the findings of this dissertation, I propose four implications for practice that concerns 1) the project form of e-government collaboration, 2) the distribution of decision-making power and accountability, 3) the adoption of social media for knowledge sharing, and 4) the evaluation of the collaboration dynamics and the reiteration of project form.

The findings on the organizational form of e-government collaboration suggest that when a new digital public service that is not familiar to the government stakeholders is being implemented in practice, governments should allow for an experimental phase of the e-government project. This is done to ensure a range of stakeholders and role divisions can emerge and settle. An experimental period as such would help both government and non-government stakeholders to understand the nature of collaboration dynamics, based on which the stakeholders can decide on whether certain organizational forms, such as IT outsourcing or public-private partnership, match the collaboration dynamics, and whether different contracts should be made with different stakeholders depending on their emergent roles and commitments. During the experimental period, government and non-government stakeholders should share decision-making power and accountability in strategic and dynamic ways, in order for the collaboration to be able to act fast in the face of changes. For instance, in situations where the government has experienced a budget cut on an e-government project, government stakeholders may need to renegotiate the decision-making authorities with the non-government stakeholders in order to take control of the project and for it to survive the budget cut. It is important to note that the sharing of decision-making power and accountability does not always concern government stakeholders transferring or distributing decision-making power and accountability to non-government stakeholders. In cases, for example, where the collaboration involves lower-level government and overpowering large enterprises, or government lacking IT capacities and professional IT service providers, the decision-making power and accountability actually needs to be transferred or distributed from the non-government stakeholders to government stakeholders.

Meanwhile, it is also important for stakeholders to have a shared space (be it virtual or physical), artifact, and/or common activities to bound and develop shared identities, goals and values amongst each other. Based on the findings of this dissertation, adopting social media for knowledge sharing could be a good option for doing so at an early stage of the collaboration. In particular, the government stakeholders should allow, rather than regulate, different uses of social media, as the findings suggest it is important for the collaboration to stay flexible, and for the stakeholders to reflect on their role and responsibility in the collaboration, especially during the formation of the collaboration.

Evaluation of e-government projects should also be conducted regularly (e.g., annually), not only to focus on the project performance, but also to understand changes in collaboration dynamics (e.g., range of stakeholders, and relationships among the stakeholders) and to adjust the project form accordingly. Government and non-government stakeholders should be especially cautious around making long-term contractual agreements with a specific service provider(s), and be prepared to shift between different contractual arrangements even on a yearly basis. As the form of e-government project may change, it is also important to maintain the shared space and continue common activities in order to keep the project stakeholders integrated, and for the project to survive during these turbulent times.

6.3 Limitation and Future Research

As this dissertation contributes to research and practice, it also suffers from several limitations. In this section, I point to the limitations that should be taken into consideration by readers when applying the findings in practice, and detail how these limitations open up avenues for future research.

First, due to the research scope of this study, I have paid particular attention to the mediation of social media, and its influence in the occurrence of governance and organizational form of e-government collaboration. This does not mean that in understanding the findings of this dissertation, one should attribute the occurrence of adaptive governance arrangements and organizational settlements solely to social media and its enactment. Future research should thus embark on comparative case studies on how the same types of e-government initiatives (e.g., open data projects) are governed and organized without heavy reliance on the mediation of social media for knowledge sharing, in order to understand the similarities and differences between the e-government collaboration that is with and without the mediation of social media.

Second, one can argue that the phenomenon investigated in this dissertation – the mediation of social media in e-government collaboration - is one that is specific to China, as the prevalence of social media adoption in the actual collaboration (not only information sharing and participation) between groups of government and non-government stakeholders is yet to be documented statistically in other contexts. Nevertheless, we have seen an increase in research on various policy and research networks in recent decades (Klijn and Koppenjan, 2000; Rhodes, 1997; Sørensen and Löfgren, 2009), and the mediation of information systems in network-based collaboration (Nambisan et al., 2017; Wastell et al., 2004; Wastell, 2006). One can thus speculate the mediation of communication technologies, such as social media in the collaboration between government and non-government stakeholders, as a relevant and important scenario of e-government collaboration in the future that requires further understanding. Future studies should embark on identifying other communication technologies (e.g., crowdsourcing platform) are adopted in e-government collaboration, as well as the enactment of these technologies to understand the similarities and differences in the needs of adopting communication technologies in e-government collaborations.

One may also question the generalizability of these research findings, as these cases were taken in the very particular context of public reform and e-government development in China. As I have argued in the section 4.7.2, the Chinese context bears a compatible level of complexities that characterize public reform in Western societies, and is thus a suitable context for studying the dynamics of e-government collaboration in response to a complex and fast-changing environment. Having said that, future studies should account for differences in national context and embark on comparative analyses to observe the similarities and differences in the dynamics of e-government collaboration in response to a fast-changing environment.

Third, this dissertation is conducted based on a specific operationalization of an adapted technology enactment framework. The operationalization has demonstrated the strength of the adapted framework in unfolding the process of technology enactment in the context of public reform, and the link of technology

enactment to changes in the governance and organizational form of e-government collaboration. Future studies should carry on the institutional logics approach to technology enactment to better understand the interaction of institutional, organizational, technological and cognitive elements and the consequences of this interaction.

Nevertheless, there are also links in the framework that require further examination. For instance, the interplay between institutional enactment and the organizational enactment of technology, as well as the consequences of such interplay at a field level, can be interesting for future studies to look into. The findings of this dissertation have already shown signs of reconfiguration of organization-related identities – an important signifier of changing institutional logics during the collaboration.

Future studies should also engage with other institutional approaches in order to yield richer discussion on technology enactment and organizational outcome in the context of e-government collaboration. For instance, an institutional entrepreneur perspective (Greenwood and Suddaby, 2006; Maguire et al., 2004) can be interesting. As shown in the case studies in this dissertation, unlike the significance attributed in previous IS and e-government studies (Hussain et al., 2016; Khallaf and Majdalawieh, 2012; Obi, 2010), the stakeholders that proactively push for collaboration are not necessarily CIOs in governments or companies in every case. An exploration of the reasoning behind why different institutional entrepreneurs occur in different contexts, and what they may do differently to push for changes, would be very useful for both conceptual understanding and practical guidelines of e-government collaboration.

Fourth, in this dissertation I have only managed to focus on the benefits regarding the adoption of adaptive governance and organizational form, due to the scope of the research design. Future research should in particular embark on the potential barriers and concerns of adopting the adaptive approach to governance and organizational form in practice. The findings of this dissertation suggest stakeholders may decouple the distribution of decision-making power and accountability in order to respond in a timely manner. Nevertheless, an important practical concern is that the reality of government may always be held accountable when it comes to decision-making in the terrain of public affairs. Therefore, it is relevant to ask in the future how concerns such as these would impact the government stakeholders' choice of governance and organizational form of digital public service provision in the long run? Would the government stakeholders still opt for long-term collaboration with networks and private stakeholders? Would bureaucracy be reappraised for its functional simplification and closure in e-government implementation, as Cordella and Tempini (2015) suggested?

7 Conclusion

Public sector digitalization, that is, the adaptation of the public sector to imbed digital public services delivery, has taken center stage in government operations in the past decade. This has resulted in an increasing amount of collaboration between government and non-government stakeholders. The

government's adoption of social media for knowledge sharing especially has brought such collaboration to an unprecedented width and depth. While the social media mediated collaboration has provided opportunities for knowledge and resource exchange between governments and their stakeholders, these collaborations are also experiencing confusion and conflicts as the collaboration develops.

To tackle these issues, this dissertation has investigated in depth the complexities and uncertainties of e-government collaboration by unfolding the occurrence of the governance and organizational form through the mediation of social media. Taking the technology enactment framework to inform the conceptual underpinning of this dissertation, I see social media mediated e-government collaboration as interplay of social media and the organizational and institutional arrangements of the collaboration.

Based on four case studies of e-government collaboration in China, the findings of this dissertation have shown that in implementing a 'new' digital public service, which is not previously familiar to the government stakeholders and requires the participation of non-government stakeholders, social media, governance and organizational form need to be coordinated in order for e-government collaboration to realize its goals amongst competing organizational and institutional arrangements. While adaptive governance arrangements need to be in place in order to identify and coordinate deployable knowledge, resources, as well as the distributions of decision-making power and accountability, the organizational form of the collaboration also needs to become adaptive in order to accommodate the competing institutional logics that are at play among the stakeholders. Social media and its enactment are especially important enablers for the collaboration to become adaptive, for providing infrastructures for knowledge sharing in collaboration, mediating opposing needs of knowledge sharing, and accommodating the competing institutional logics. As social media allows for reconfiguration of features and creation of contents, the inscription of these shared knowledge and experiences in turn reproduce and might induce organizational and institutional changes of e-government collaboration in producing a particular digital public service.

The findings make three primary contributions. First, the findings contribute to the conceptualization of governance in the era of e-government by highlighting the role of social media and its enactment in the occurrence of governance, and proposing an empirically driven typology of adaptive governance. Second, the findings contribute to the understanding of organizational form of e-government collaboration, by identifying social media mediated hybridization process, and unfolding the characteristics of social media enabled organizational form. Third, the findings extend the understanding of social media adoption in the context of e-government collaboration by providing a longitudinal account of social media enactment and insights in the relation between social media and government transformation.

Along this line, this cover chapter has provided a synthesis of my research efforts in the investigation of the governance and organizational form of e-government collaboration through the mediation of social media. The overall threads and contributions of the dissertation drawn above have been based on the work in the four papers that follow. The papers provide further details of the work and offer the opportunity for

a closer look at specific areas and cases. I hope to have inspired the reader to engage with these papers and reflect on the research efforts as well as their contribution to knowledge concerning the governance, organizational form, and the mediation of social media in the context of e-government collaboration.

8 References

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When Ambiguity Rules
*How Incongruent Technological Frames Generate
Governance in Inter-Organizational Collaboration*

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ABSTRACT

Organizations are facing challenges in devising effective governance arrangements when collaborating with heterogeneous actors. One of the key challenges is the divergence in stakeholders' view and use of collaborative technology. This study reports on a collaborative project between government, industry, and university stakeholders in China, in which the stakeholders use the social media platform WeChat extensively for knowledge sharing. Drawing on the concept of Technological Frames of Reference, we compare stakeholders' framings of the nature, strategy, and use of social media, and investigate how congruent and incongruent technological framings affect the stakeholders' governance practices. Our findings suggest that the mix of congruence and incongruence in social media framings brings ambiguity, with which stakeholders engage in governance practices to balance between learning and control. Our findings contribute to the conceptualization of governance of inter-organizational collaboration, i.e., adaptive governance, by highlighting the importance of ambiguous technology framings in generating governance practices.

Keywords: Inter-organizational Collaboration, Social Media, Technological Framing, Knowledge Sharing, Adaptive Governance

1. INTRODUCTION

Today, inter-organizational collaboration increasingly relies on knowledge sharing that is facilitated by *social media*, i.e., a group of Internet-based collaborative technologies that allows users to easily create, edit, evaluate, and link to content or to other creators of content (de Vreede et al. 2016; Kaplan and Haenlein 2010; Kapoor et al. 2017). In spite of a common intention to adopt social media, different groups of actors view and use social media differently (Dwivedi et al. 2018; Ellison et al. 2015; Gibbs et al. 2013; Kapoor et al. 2017; Majchrzak et al. 2013; Treem et al. 2015). Existing research on social media and collaboration considers this divergence in views and usage of social media as a possible cause of conflict, which may in turn forestall collective action and lead to the failure of collaborative projects (Buuren 2009; Majchrzak et al. 2013).

This concern is particularly relevant in the public context. As public service increasingly relies on information technology, governments engage in different collaborations with non-government stakeholders such as private companies, universities, and NGOs (Klievink et al. 2016; Klievink and Janssen 2014), among which many collaborations are formed and developed through social media (Chun et al. 2010). With varied interests, stakeholders in these collaborations may have different views and uses of social media (Dulipovici and Vieru 2015; Treem et al. 2015). Therefore, *governance arrangements*, namely “the solutions that individuals and organizations devise for problems of coordination”, are sought to ensure the effectiveness of inter-organizational collaboration (Markus and Bui 2012, p. 165).

Earlier governance literature argues that the effectiveness of inter-organizational collaboration relies on consensus regarding clear rules and decision-making architects to obtain three outcomes: clarify authority relations, mediate the conflicts of interests, and allocate resources (Ansell and Gash 2008; Buuren 2009). Recent governance studies on newly formed inter-organizational collaboration networks have discovered that collaboration can also materialize without overall consensus (Jarvenpaa and Välikangas 2016). Instead, stakeholders engage proactively in governance practices as the collaboration evolves. Literature on *adaptive governance*, which deals with projects that are complex, uncertain, and in which many actors are involved, has addressed the emergence of these governance practices in the public context (Chatfield and Reddick 2018; Ganapati and Reddick 2018; Hong and Lee 2018a, 2018b; Janssen and van der Voort 2016; Soe and Drechsler 2018; Wang et al. 2018). However, few of these studies have looked into the shaping effects – in particular regarding the consensus on the views and uses – of social media on the emergent governance practices.

To fill this gap, in this study, we investigate how heterogeneous groups of stakeholders, who frame social media in different ways, develop governance practices in inter-organizational collaboration. The research question driving our study is thus: *how do differences in framings of social media shape governance arrangements in inter-organizational collaboration?*

We address this research question through a case study of a collaborative project between government, industry, and university stakeholders in China, in which the social media platform WeChat is used to

support knowledge sharing. Drawing on the concept of Technological Frames of References (TFR), we explore the dimensions of nature of technology, technology strategy, and technology use involved in how stakeholders frame technology for collaboration. In addition, we engage with the concept of congruent and incongruent technology framings to account for the relation between the consensus on technology framings (or lack thereof) and emergent governance practices.

The remainder of this paper is structured as follows. In the next section, we present existing literature on social media and organizational knowledge sharing, as well as adaptive governance, to identify research gaps that help position our study. We then introduce and discuss the theoretical lens of TFR as an analytical framework. In the research design section, we present the case study along with the data collection and analysis methods. In the findings section, we present the mapping of the technological framing of social media among the three stakeholder groups to identify the patterns of congruence and incongruence. We then unfold the connection between the emergent governance practices and the observed patterns of congruence and incongruence between framings of social media. Comparing the emergent governance practices to the existing conceptualization of adaptive governance, in the discussion section, we showcase how foregrounding the influence of technology can update the conceptualization of adaptive governance. We conclude the paper by highlighting our study's contributions to research and practice, and by identifying limitations and avenues for future research.

2. BACKGROUND

2.1 Social Media and Knowledge Sharing

Collaborative technologies (from email, text messaging, social media to sophisticated knowledge management systems) are widely present in today's organizational environments (de Vreede et al. 2016). They are used to support a variety of collaborative activities where actors within and across organizations connect and interact with each other to create, store, search, and share information and knowledge (Dulipovici and Vieru 2015).

Recently, considerable attention in research on collaborative tools has been directed towards social media and its prospects, as social media is increasingly adopted at work to facilitate knowledge sharing (Dwivedi et al. 2018; Ellison et al. 2015; Gibbs et al. 2013; Kapoor et al. 2017; Majchrzak et al. 2013; Treem and Leonardi 2013). *Knowledge sharing* concerns the "activities involved in disseminating or transferring knowledge among individuals, groups, or organizations, where individuals exchange their tacit and explicit knowledge and create new knowledge" (Charband and Navimipour 2016, p. 1131). The knowledge shared mainly concerns how to do something (i.e., instrumental knowledge), as well as what and whom other people know in and across organizations (i.e., meta-knowledge) (Leonardi 2014; Leonardi et al. 2013).

Despite the intention of adoption, social media is observed to have evoked different views, uses, and effects for knowledge sharing in practice. For example, a majority of empirical studies have found that social media is used to *enhance* knowledge sharing using blogs (Chai and Kim 2010; Papadopoulos et al. 2013),

wikis (Wagner, 2004; Wang and Wei, 2011), public social networking sites (Jarrahi and Sawyer 2013), and enterprise social networking sites (DiMicco et al. 2008). In comparison to other commonly used technologies such as email, intranets, and websites, social media affords distinctive possibilities for knowledge sharing within and across organizations (e.g., the visibility and persistence of communicative actions), which can potentially expand the range of people, networks, content, and ideas from whom people can solicit and learn (Ellison et al. 2015; Huang et al. 2013; Leonardi et al. 2013; Schlagwein and Hu 2016).

Meanwhile, a smaller amount of studies has highlighted the divergence in the strategies behind knowledge sharing in collaboration, and the influence of these strategies on social media use (Gibbs et al. 2013; Hwang et al. 2015; Majchrzak et al. 2013). These studies find that organizational users at times view and strategically use social media to *constrain* knowledge sharing in accordance with their own needs. For example, Hwang, Singh, and Argote (2015) conclude that employees tend to only share with peers that have similar views on social media, thus constraining rather than enabling the scope of knowledge sharing. Similarly, Gibbs, Rozaidi, and Eisenberg (2013) find that in a distributed working environment, workers deliberately choose to use social media for enhancing as well as limiting knowledge sharing to preserve ambiguity to meet task-related needs.

These studies demonstrate that the use of social media for knowledge sharing is highly contextualized and revolves around the dialectic tension between learning and control (Gibbs et al. 2013). Stakeholders view and choose to use social media differently to accomplish their own strategic goals. Stakeholders' interests, their views of technology (i.e., what it can and cannot do), and the nature of the knowledge shared (i.e., what can and cannot be shared) vary, thereby influencing the way they share knowledge by use of technologies (Charband and Navimipour 2016; Dulipovici and Vieru 2015).

In the context of collaboration among government and non-government stakeholders, social media based knowledge sharing can hence be challenging. Each stakeholder can have distinct views of what needs to be shared, how knowledge needs to be shared, or whether they should share or control access to certain knowledge (Dulipovici and Robey 2013; Leonardi and Vaast 2017). These divergent views and ways of knowledge sharing could potentially forestall collective actions (Majchrzak et al. 2013; Treem et al. 2015). Therefore, governance arrangements, namely coordination activities, are required to resolve these divergences (Markus and Bui 2012). Current studies on social media and governance mainly concern how formal organizational governance mechanisms (e.g., policy and guidelines) shape the use of social media (Berg and Verhoeven 2017; Bertot et al. 2012; Obar and Wildman 2015). Very few studies have captured the influence of social media use on the coordination practices among stakeholders across organizations (Maldonado et al. 2010; Pardo et al. 2008; Vaast and Kaganer 2013). In the next section, we draw on the governance literature to inform the emergence of governance practices in technology-mediated inter-organizational collaboration.

2.2 Adaptive Governance of Inter-Organizational Collaboration

Confronted with complex public problems and abrupt changes (e.g., financial crisis, IT disruption), actors in a public context increasingly establish interest-driven networks to connect interested parties, such as local government actors, service providers, and community leaders. These networks are formed to mobilize different knowledge systems and experiences in order to better understand and deal with the complexity and uncertainty of public problems, and improve the speed of decision-making (Weber and Khademian 2008). However, these collaborations also suffer from governance issues (Jarvenpaa and Välikangas 2016) because a lack of clarity and consensus on key elements of governance – such as authority relations, conflict resolution mechanisms, and resource allocation (Grandori 1997; Harrison 1960; Nickerson and Zenger 2004) – may result in instability of the collaboration (Ansell and Gash 2008; Buuren 2009).

Recent governance studies addressed this challenge in the public context with the notion of *adaptive governance*. The notion originates from research on the governance of socio-ecological systems (Dietz et al. 2003; Folke et al. 2005) and has been recently conceptualized in the area of e-government (Janssen and van der Voort 2016). The overall idea behind adaptive governance is that organizations need to engage simultaneously in both learning and control in order to ensure both the adaptability and stability of the collaboration. The concept proposes four governance strategies: “decentralized bottom-up decision-making, efforts to mobilize internal and external capabilities, wider participation to spot and internalize developments, and continuous adjustments to deal with uncertainty” (Janssen and van der Voort 2016, p. 4). More specifically, *decentralized bottom-up decision-making* refers to stakeholders’ engagement in decision-making and multiple authorities of decision-making during project development making use of tacit decentralized knowledge. *Efforts to mobilize internal and external capabilities* means that stakeholders exchange skills (e.g., technical or managerial ability) or processes (e.g., systems development or integration) across the network to spot changes early. *Wider participation to spot and internalize developments* means that the project is developed on the basis of an expanding range of stakeholders to bring in and absorb new resources and knowledge. *Continuous adjustments to deal with uncertainty* means that the network engages in continuous learning through trial and error to adjust to abrupt changes.

Recent studies embark on these governance strategies empirically. Largely based on technology-mediated collaboration between heterogeneous stakeholders, these studies have found that the proposed governance strategies do not always lead to desired results, unless certain conditions are met (Chatfield and Reddick 2018; Hong and Lee 2018a, 2018b; Soe and Drechsler 2018). For example, existing studies on decentralized bottom-up decision-making (Hong and Lee 2018a, 2018b) show that decentralization of an entire government structure (including decision-making) does not necessarily lead to effective adaptive governance unless the interests of different groups of stakeholders (i.e., between different levels of governments) are balanced. A study by Ganapati and Reddick (2018) on the implementation of sharing economy services in the public sector finds that wider participation with private partners can help public

organizations to achieve their common goals (e.g., accelerate innovation, deliver public services) by bringing in additional resources and knowledge. Nonetheless, disparity between public goals and private goals can hinder the effectiveness of the collaboration, thus requiring alignment amongst the stakeholders. Chatfield and Reddick (2018) have focused on the enabling role of social media in mobilizing citizens to enhance government's information-processing and communication capabilities in emergency response operations. They point out that the actual enactment on social media for knowledge sharing is critical for the effectiveness of the collaboration between government and citizens. In this sense, government may also need to steward citizens' use of social media to produce better results from the collaboration.

These empirical studies acknowledge the need to balance between learning and control to ensure the adaptiveness and stability of inter-organizational collaboration. However, these studies only address some aspects of the governance strategies. It is still not clear what actual governance practices emerge in inter-organizational collaboration, and how these practices change as the collaboration develops. In addition, the stakeholders' need to simultaneously engage in learning and control in inter-organizational collaboration seems to be in consonance with their divergent views and uses of social media for enabling and constraining knowledge sharing in collaboration. Nonetheless, only a few of the studies (Chatfield and Reddick 2018) have looked into the impacts of different enactments of technology (i.e., social media) in the emergence of adaptive governance practices.

In this study, we aim to fill these two gaps by looking into the emergent governance practices in technology-mediated inter-organizational collaboration, and the influence of different views and uses of social media on such collaboration.

3. THEORETICAL FRAMING

Interested in understanding how different views and uses of social media shape governance arrangements, we draw on the lens of *technological frames of reference* (TFR). Orlikowski and Gash (1994) first proposed the TFR theoretical lens to study different stakeholders' interests and their technology adoption behaviors, as well as the consequences of the consensus (or lack thereof) among the stakeholders' technology adoption. TFR originates from the concept of frames, or frames of reference, in socio-cognitive research (Bartunek 1984; Bartunek and Moch 1987; Goffman 1974). In an organizational context, the frames of reference refer to actors' implicit definitions of their organizational reality that serve to shape their interpretations of and actions around organizational phenomena (Gioia 1986).

Accommodating the idea of *frames of reference* in the context of technology adoption, the body of literature on TFR addresses how different stakeholders make sense of technology in an organization, and how the alignment of their interpretations affects their technology-related actions (Barrett et al. 2013; Kaplan and Tripsas 2008; Leonardi 2010). Instead of assuming technology as a monolith for every stakeholder, TFR considers technology as something formative in an ongoing interpretive process by which different stakeholders assign meaning to the technology according to their own frame of references,

and develop a trajectory for its use in a particular setting (Cornelissen and Werner 2014; Davidson 2002; 2006; Kaplan and Tripsas 2008). In particular, a recent TFR study on social media use (Treem et al. 2015) shows that the context in which stakeholders come to learn about social media influences their expectations and assumptions of the technology. Consequently, stakeholders who have adopted similar or identical technologies before in other contexts can have different expectations of social media utility, and hence such differences may pose problems for social media adoption in a new context. Along this line, in our study, we divide the stakeholders into three groups; i.e., government, industry, and university. Our analysis confirms existing studies on government-university-industry collaboration (Bjerregaard 2010; Etzkowitz and Leydesdorff 2000; Etzkowitz and Ranga 2015), and indicates that each stakeholder group is subject to certain institutional logics, forming different frames of reference.

We engage with TFR along the three frame domains identified by Orlikowski and Gash (1994) to characterize the interpretations that government, industry, and university stakeholders make about social media. The first domain, *nature of technology*, refers to people's images of what the technology is, including their understanding of its functionalities and capabilities. The second domain, *technology strategy*, refers to people's view on why a particular technology is implemented, including their views on the vision, value, and motivation behind the decision to adopt and use the technology. The third domain, *technology-in-use*, refers to people's understanding of how the technology is or will be used, including conditions and consequences with such use. While we believe these three frame domains interact and overlap, for analytical purposes, we separate them to gain an in-depth understanding of the dimensions on which each stakeholder group interprets technology. We contextualize the three domains in relation to social media use for knowledge sharing in inter-organizational collaboration. In Table 1, we provide an overview of the three TFR domains and our contextualization of them in relation to our study.

Table 1. Overview of the TFR domains and our contextualization

	Questions	Key domain	Our contextualization
Nature of technology	<i>What</i> is the technology?	Functionalities and capabilities of the technology	The knowledge-sharing related functionalities and capabilities of social media
Technology strategy	<i>Why</i> adopt the technology?	Motivation and vision behind the adoption and its likely value to the organization	The organizational values/visions/ motivations that drive individuals/ groups to adopt social media for knowledge sharing
Technology-in-use	<i>How</i> is the technology used to create changes on a day-to-day basis?	The actual conditions and consequences associated with the daily use of the technology	The situated use of social media for knowledge sharing and its consequences (i.e., enabling or constraining knowledge sharing)

Based on the analysis of the three frame domains, we engage with the notion of inter-group congruence and incongruence. We use *congruence* to single out the consensus on the three technological frames, and *incongruence* to describe the lack of consensus on the technological frames between different groups of stakeholders. Previous studies emphasize that incongruence between groups would lead to radically different patterns of technological implementation and result in project failure or ineffectiveness (Barrett 1999; Hsu 2009). Therefore, a certain extent of congruence in frames across stakeholders is critical to align behaviors into similar patterns of use, and to ensure that IS development projects and associated organizational change efforts will likely be more successful (Davidson 2006). For example, Barrett (1999) found that incongruence between IT innovators and insurance brokers' frames for an electronic trading system is the main contributor to high levels of resistance to and nonuse of the system. Hsu (2009) examined how frame incongruence stimulated sense making about the need for the implementation of IS security certification, and emphasized the need of early intervention to align frames in order to achieve security effectiveness in the organization.

Nonetheless, some TFR studies also argue for a more nuanced understanding of ambiguity, incongruence, and inconsistency in technological frames (Azad and Faraj 2008; Mazmanian 2013; Van Burg et al. 2013; Young et al. 2016). For instance, Mazmanian (2013) showed that even though groups may broadly share a congruent frame about a technology, very different trajectory of uses and consequences can still emerge. Focusing on the ambiguity in technological frames, Van Burg et al. (2013) highlighted the importance of ambiguity rather than strict congruence in technological frames in enabling knowledge exchange and innovation. Their study showed that ambiguity in frames helps to create a minimum level of agreement about the general goal and direction of actions, yet still leaves ample space for situated actions and motivations. Azad and Faraj (2008) added to the understanding of frame evolution process and found that an aligned "truce frame" around a new technology can reduce ambiguity, foster joint understanding, and direct patterns of use. Young et al.'s study (2016) took the challenge even further by highlighting how between-group incongruences can interact with within-group inconsistencies in meaningful and influential ways in IT-enabled organizational change.

These recent studies on the productive role of incongruence in technology nature, strategy, and use accords with the literature on adaptive governance, which advocates the importance of ambidextrous strategies towards learning and control in ensuring the adaptiveness and stability of inter-organizational collaboration. TFR allows for a more in-depth account of the alignment between organizational interests and technology by unfolding stakeholders' congruence and incongruence on different dimensions of technology adoption. In this sense, we find the concept of TFR insightful and complementary for understanding the effects of ambivalent views and uses of social media for knowledge sharing on shaping the emergent arrangement of adaptive governance.

4. RESEARCH DESIGN

To address our research question of how differences in framings of social media shape governance arrangements in inter-organizational collaboration, we draw on a case study of the collaboration behind the first Shanghai Open Data Apps (SODA) contest. SODA is a municipal level contest organized in Shanghai, China by a variety of stakeholders, including government, industry, and university. The contest, officially launched in August 2015, aims at awarding the best applications developed using open government data. The organizers are responsible for several tasks: identifying the theme of the contest; disseminating, planning, and managing contest-related events; and selecting the contest winners.

The organization of SODA has gone through two phases – idea formation and actual organization – during which the range of stakeholders has expanded. In the first phase, the idea of SODA was formed among a group of seven active open data promoters in Shanghai. These promoters were affiliated with the municipal government (i.e., Shanghai Municipal Commission of Economy and Informatization (SMCEI)), universities (i.e., Open Meta Nexus Innovation Lab (OMNILab) at Shanghai Jiaotong University, and Lab for Digital and Mobile Governance (DMG) at Fudan University), state-owned enterprises (i.e., China Industrial Design Institute (CIDI) Shanghai, 021 Incubator), small IT companies (i.e., Enerlong), IT start-ups (i.e., Kesci), or NGOs (i.e., Open Data China). All of the seven initial organizers were at a high management level, which meant they had access to key resources and knowledge in their affiliated organization. The four organizers from the private sector (i.e., CIDI Shanghai, 021 Incubator, EnerLong and Kesci) were either CEOs or vice CEOs of their company. The two university professors were heads of labs (i.e., OMNI Lab and DMG Lab), and were both in collaboration with government and industry. The organizer from the municipal government (i.e., SMCEI) was a Deputy Division Director and connected to both a vast network of local companies as well as local bureaus in Shanghai. The participant from the NGO was the organization's founder, connected to a wide range of experts, and specialized in the area of open data.

In the second phase of the SODA project, the organizers reached out through their personal or professional network, seeking partners and resources. The range of stakeholders grew considerably during this phase, and the relations between these stakeholders became complex. The collaboration in this phase developed into an organizing network that now consists of approximately 50 stakeholders. Depending on their level of engagement, the stakeholders can be categorized into 4 clusters: 1) the core organizing committee (i.e., the original seven organizers); 2) data providers; 3) other operational organizers (i.e., technology providers); and 4) general supervisors from central government.

The communication between the stakeholders took place both online and offline. The online communication mainly occurred on the platform WeChat, which is one of the most popular social media applications in China with approximately 1 billion Monthly Active Users (MAU) as of Dec 2017 (Tencent Holdings Ltd. 2018). WeChat is a multi-functional social media platform created by Tencent Holdings Ltd.

in 2011. It integrates multiple built-in apps that can serve a wide variety of purposes, including daily communication, news, and peer-to-peer digital payments. The organizers used several of the features during the SODA preparation. Among the features the organizers used are: 1) instant messaging – an online chat function that allows and archives real-time text transmission over the Internet; 2) notification alert – a notification appears when the recipient receives a message; 3) file transfer and preview – files can be sent and previewed as a message; 4) grouping – chat with a group of selected people where the host of the group holds the admin rights of the group; 5) personal addressing via the “@” feature – a specific group member can be addressed within a group chat and will receive a notification alert.

The core organizing committee used WeChat as the main coordination platform during both phases. A chat group was set up by one of the initiators (i.e., the vice CEO of CIDI) as soon as some initial organizers showed their interest in the project. Members were invited to the group, of which the size has settled at seven members. The group was named ‘the organizing committee of SODA’. All members have emphasized that their communication in the chat group outweighs their offline communication during the preparation. Most of the coordination and tasks were communicated on WeChat among the core organizing committee with only two offline meetings. Given the success of the first year’s SODA contest, it was decided that SODA would become an annual event. At the time of writing, the fourth SODA is in preparation. However, for this study, we only analyzed data concerning the first year of the SODA project. We choose SODA as our case for two reasons. First, it is a bottom-up project that is established by actors from heterogeneous organizational backgrounds, namely government, university, and industry. The diversity of the SODA participants provides distinguishable grounds to observe frame congruence and incongruence of the social media platform among different groups of stakeholders. Second, social media is a vital part of the organization of SODA, in which the core organizers engage in the discussion of preliminary ideas and the distribution of operational tasks in an exclusive chat group on WeChat. As a platform that is widely used for daily private communication among individuals, WeChat enables us to analyze the collaboration among different groups of stakeholders and has the potential to provide deep insights into the relationship between technology framing and adaptive governance practices.

4.1 Data Collection

We conducted an in-depth case study (Walsham 2006), in which we employed a variety of data sources in order to capture stakeholders’ framings of WeChat use in the organization of SODA. We focused on retrieving stakeholders’ ideas and experiences to understand how they framed their use of WeChat in vision and in practice (Feldman et al. 2004; Kendall and Kendall 2012). Sources of data included fourteen semi-structured interviews with the stakeholders, participant observations of meetings and daily work conversations, as well as documents linked to SODA’s official promotion. We provide an overview of the data sources in Table 2.

Table 2. Overview of Data Sources

Interviews	Informant	Organizational affiliation	Title	Interviews N	Duration (minutes)
	Government 1 (GI1)	SMCEI	Information Chief	2	21
					27
	University 1 (UI1)	DMG Lab	Professor	1	120
	University 2 (UI2)	DMG Lab	Lab member	1	63
	Industry 1 (II1)	CIDI Shanghai	Vice-CEO	2	43
					58
	Industry 2 (II2)	Kesci	CEO	1	78
	Industry 3 (II3)	Opendatachina.com	Director	4	30
					120
					70
					120
Industry 4 (II4)	CIDI	Secretary	2	30	
Industry 5 (II5)	Enerlong	CEO	1	106	
Observations	Duration (minutes)	Duration (minutes)	Duration (minutes)		Duration (minutes)
	Initial meetings	Review 1 st SODA Initial plan for 2 nd SODA	SMCEI, CIDI Shanghai, OMNI Lab, DMG Lab, Kesci, Enerlong		180
	Meetings	Regular DMG Lab meeting	DMG lab members		180
	SODA Road Show	SODA finals	All stakeholders, contest participants, public audience		720
	Informal communication	During daily work, and via WeChat	All stakeholders		600
Documents	Official campaign plan				
	Campaign materials				
	Stakeholder presentation slides				
	Evaluation reports				

Interview questions were preliminarily framed around the planned and actual use of WeChat in order to capture the nuances of its use in the actual collaboration between stakeholders. During the interviews, it emerged that the stakeholders use social media for knowledge sharing amongst each other. Open-ended questions were then asked regarding the social format of how knowledge is shared, such as the perceived ownership of the project, the collaboration experiences with stakeholders from specific sectors, and the generic impression of the role of social media in collaboration. All interviews were carried out in Chinese. The duration of the interviews varied from 15 minutes to 3 hours. Shorter interviews were followed-up by informal chats. The interviews were documented and transcribed with the informants' consent and then translated to English. The protocols used for the interviews are available from the authors upon request. Participant observation, documented in the form of field notes, was conducted to uncover contextualized and otherwise inaccessible data to understand multiple realities of organizational life introduced by the use of technology (Locke 2011). The online observations included unobtrusive observation of some of the chat groups used by the main coordination group. Offline observations included the following: the wrap-up meeting, where all organizing members presented and reviewed the organizing processes; the internal meetings that took place among the university stakeholders; and the road shows of SODA, where we engaged in informal conversations with different stakeholders. While the online observation gives evidence of the acclaimed interaction amongst the group members, the offline observation provides access to the offline interaction that reveals divergent dynamics between the group members.

4.2 Data Analysis

We conducted our data analysis in three broad steps with distinct objectives. The first step consisted of “within-case analysis” (Eisenhardt 1989). Here we applied an open-coding procedure to familiarize ourselves with the data and capture an event-time series (Pettigrew 1985) regarding the framing of WeChat among the three groups of actors. Coding categories included generic process codes (e.g., events, actions, decisions, and outcomes) to determine primary analytical topics (e.g., phases, technologies, policies, stakeholders) and their properties (e.g., initial/final). The outcome of the first coding step was a timeline depicting the unfolding of the SODA project with an unstructured list of relevant concepts.

In the second step, we looked for patterns across the three groups of stakeholders involved. We turned to the literature in order to provide dimensions around which we could cluster codes from our first phase of analysis. We applied the TFR lens (Orlikowski and Gash 1994) and the operational definition of knowledge sharing (Charband and Navimipour 2016) as sensitizing devices (Klein and Myers 1999). To understand the technology, we systematically mapped the analytical topics related to the use and perceptions of WeChat that were identified in the first step, in light of the three key dimensions of framing (i.e., nature of technology, technology strategy, technology-in-use) for either enabling or constraining knowledge sharing. For example, the code “general statement about WeChat capabilities” was labeled as “nature of technology”, “motivation” and “vision” as “technology strategy”, and “events” and “activities” as

“technology-in-use”. We were thus able to compare across the three groups of stakeholders and to identify relevant categories.

In the third step, we linked the patterns of congruence and incongruence in the framing of WeChat to the governance practices observed among the three groups of stakeholders involved in the project, and compared the linkages to the identified four characteristics of adaptive governance (Janssen and van der Voort 2016).

5. FINDINGS

In this section, we first identify each of the three stakeholder groups’ technological frames of social media (Table 3). We then highlight the patterns of congruence and incongruence between the technological frames. Finally, we suggest the emergent governance practices that are linked to the patterns of congruence and incongruence.

5.1 Mapping Social Media Technological Frames

5.1.1 Nature of technology: Framing social media functionalities

During both our interviews and observations, government, university, and industry stakeholders exhibit similar views regarding the functionalities of social media, reflecting a common need to both enable and constrain knowledge sharing. They see social media as a collaborative platform that primarily consist of five functionalities: *grouping*, *instant messaging*, *file transfer and preview*, *notification alert*, and *personal addressing*.

Among these features, the stakeholders view *grouping* as a fundamental one that allows knowledge sharing to happen. From the government’s point of view, the grouping feature allows stakeholders to connect, and thus open up for participation that was previously external to the organizational boundaries of government. Similarly, industry and university stakeholders believe that the grouping feature enables knowledge sharing by providing a common platform for different organizations to communicate across time and space. At the same time, the stakeholders also see grouping as an important feature for constraining the range and extent of knowledge exchange. As university informant UI1 mentioned, “Because of social media, the big pyramid of organization is opening up to the world today. But we need to remember it is always easier to open up than to control. In a way, the big world is made up of all these parallel, small worlds. For example, our lab is one of these small worlds that support the broader collaboration of SODA, and we need to distinguish these small worlds from each other in order for the collaboration to function”. Similarly, government and industry stakeholders view grouping as an important feature of WeChat to help the stakeholders oversee and control the resources in the network. For instance, SMCEI manages some of its contacts with industrial partners through separate chat groups that are parallel to the SODA core-organizing group. For the industry stakeholders, the grouping feature allows stakeholders to control the direction and extent of knowledge exchange between the core organizers and the other stakeholders.

Table 3. Technological frames of WeChat use for inter-organizational knowledge sharing

	Nature of technology		Technology strategy		Technology-in-use	
	Enable knowledge sharing	Constrain knowledge sharing	Enable knowledge sharing	Constrain knowledge sharing	Enable knowledge sharing	Constrain knowledge sharing
Government	Grouping; Instant Messaging; File transfer and preview; Notification alert;	Grouping	Connectivity; Idea mining and resource exchange	N/A	Participatory task assignment	N/A
Industry	Grouping; Instant Messaging; File transfer and preview; Notification alert;	Grouping; Personal addressing (“@”)	Connectivity; Idea mining and resource exchange	Effective task management	Task development	Targeted task assignment; Triggered attending; Task division;
University	Grouping; Instant Messaging; File transfer and preview; Notification alert;	Grouping	Connectivity; Idea mining and resource exchange	Effective task management	Task development	Information protection

For example, as noted by industry informant II1: “[Within the group] we do not have to be concerned about privacy. If we don’t invite other people, then the conversation just stays between us”.

When it comes to group communication, the stakeholders see the *instant messaging*, *file transfer and preview*, and *notification alert* as important features for enabling knowledge sharing, by supporting active communication, creating common working space, and fostering equal membership. For example, government stakeholders report that the *instant messaging* feature can enable real-time interactions among the stakeholders. As government informant 1 (GI1) put it: “Especially at the beginning of initiating contacts with companies or institutions, instant messaging in WeChat is a good way to initiate conversations and to bring the discussion to some depth.”

As the project develops, the stakeholders also rely on the *file transfer and preview* feature to archive, access, and get feedback on work-in-progress. Describing the process of task development, GI1 noted: “People who come up with an idea, they take home the tasks with them. Once it is done, they can put it back in the group [as a document file] and we all can contribute to improving it. Then they take it back and have a second revision, and so on. People usually give feedback quite fast”. By doing this, the stakeholders can co-develop tasks via real-time interactions between stakeholders. Comparing the functionalities of WeChat with a previously used project management app named Trello, industry informant 1 (II1) stated: “We used this app called Trello at the beginning to organize the project, but WeChat is more efficient. It is real-time interaction on WeChat. With it, we can discuss things more thoroughly”.

Stakeholders perceive the importance of the *notification alert* feature when real-time interaction is not possible. It particularly helped to enhance the visibility of stakeholders’ interactions to those not participating in the discussions. As put by GI1: “People are often busy with their own tasks, which makes it difficult to have meetings. The chat group makes it rather flexible because we can see the notifications when we come back from meetings and get informed on what is going on”.

Stakeholders also value *personal addressing*, namely the “@” symbol in constraining sharing task-related information. The stakeholders point out that by labeling the message with the “@” symbol, a task can be assigned directly to a specific person, while the assignment is visible to the whole group. For example, during observation, we have witnessed that industry stakeholders frequently use the “@” symbol in task-related conversations in the group to directly appoint the secretary or related parties to certain tasks. In this sense, personal addressing makes it easier for the stakeholders to control the process of task assignment and execution, and keep each other informed about the progress.

5.1.2 Technology strategy: Developing social media strategies

At the beginning of the collaboration, government, university, and industry stakeholders expressed their shared aspiration to *connect* across working spaces and time, regardless of their organizational affiliation and work norms. This vision drove all three groups of stakeholders to engage with WeChat for enabling knowledge sharing by creating a common online space (i.e., the chat group) for real-time interaction.

Government informant GI1 expressed this vision with a real-life example: “We are all very busy and we have to attend other work or go on business trips. With WeChat, we no longer need to have [physical] meetings all the time. So, WeChat is good in the sense that if we were not present when things were discussed, we can always come back and comment on what other people said. It happened a lot. For instance, once Prof. Z. was attending a conference in Beijing, we could still discuss via WeChat when he had time. We didn’t have to pick and decide on a time anymore.”

As the quotation from GI1 suggests, connectivity is closely linked to *idea mining and resource exchange* as another important value behind the stakeholders’ adoption of WeChat. By connecting stakeholders from different organizational backgrounds, WeChat is adopted as an important platform for pooling together ideas and resources among the stakeholders. As GI1 explains, “The main idea of using WeChat is to share ideas among us, plan together, and contribute together”. As the collaboration develops and the amount of tasks increase, *idea mining and resource exchange* are particularly valued by industry stakeholders and university stakeholders, who are mostly in charge of task management and project coordination. Driven by the need to collect feedback and allocate resources for task development, industry stakeholders use WeChat intensively for enabling knowledge sharing. Considering that SODA was an informal collaboration at the time, it was particularly important for the industry stakeholders to expand their networks to channel financial and human resources. As UI1 mentioned: “For CIDI, they don’t have money or people to work on SODA. In a way, it doesn’t matter to CIDI which organization these people come from, as long as they are trusted [...]. And WeChat provides a platform for these people of different organizational backgrounds to chip in their ideas”.

In the meanwhile, constant connectivity and participation has also caused concerns among industry stakeholders. Increasingly involved in task management and coordination, industry stakeholders have difficulty attaining task overview. As II1 repeatedly brought up in the interviews: “The thing about WeChat is that it is very efficient for discussion. But WeChat is more of a laundry list of details. As a coordinator, I need to understand what has been discussed, and sort out the thread in the chat. I need to be clear about what events have been discussed and at what time to finish which tasks. I just need to keep an account of what took place on WeChat, and this can really give you a headache!” Similarly, industry informant 3 (II3) emphasized the expanding sharing and participation as a challenge: “This [using instant messaging for collaboration] is a new organizational challenge. The organizational structure becomes very flat. The information flows to everywhere”.

As the collaboration develops, the industry stakeholders’ concern regarding decentralized information flows as a potential hazard for project coordination drove them to shift their strategies to *effective task management* by constraining knowledge sharing between the stakeholders. As the university stakeholders also partake in task execution, they experienced a strategy shift in a similar direction. We have observed university and industry stakeholders now more actively engaged with the grouping and personal addressing features in order to control knowledge flow. We discuss the details of the observation in the next section.

5.1.3 Technology-in-use: Agreeing on daily usage of wechat

Despite having different motivations for adopting WeChat, stakeholders have been observed using WeChat in a variety of occasions at daily work, such as *participatory* and *targeted task assignment*, *task division*, *task development*, and *information protection*.

Government stakeholders mostly use WeChat for *participatory task assignment* among the stakeholders. The creation and assignment of the tasks rely on the sharing of project-related information in the chat group. As GI1 mentioned, “We chat a lot on WeChat. It is often so that whoever comes up with a certain idea in the group claims the task. We are quite lucky to have committed people this year; people didn’t stop contributing because of the task they had to complete”. In the meanwhile, as the university and industry stakeholders actively partake in *co-developing tasks*, they also report occasions in which the responsible stakeholder did not execute the task that was discussed among the core stakeholders. This is partly because tasks are often executed outside the SODA core group, the details of which are hidden to other group members. Therefore, it has become difficult for the university stakeholders to control whether the discussed ideas are actually implemented in practice or not, especially when they are inundated by other ongoing discussions and task assignments.

To better supervise task execution, industry stakeholders report using WeChat for *targeted assignment of tasks*. For instance, as a secretary, II5 reports that she often gets addressed via the “@” symbol when there is a specific task targeted at her. Whenever she is addressed with the “@” symbol, she receives a notification alert from WeChat saying: “you have been mentioned in a group chat.” Then she knows the information is directed to her specifically. Sometimes stakeholders use the “@” symbol to disengage from the discussion, and respond only when directly addressed, and ignore the rest of the conversations – a social media-enabled phenomenon also labeled as *triggered attending* (Majchrzak et al. 2013, p. 42). II5 for instance reports that, even though she was included in the SODA core chat group, she did not participate in the conversation as much as the other members of the group who were in the leading positions. She only responded when directly mentioned with an “@” symbol in the group. It was partly because she did not feel as involved as others did, partly because she also had other tasks to attend to.

As collaboration develops, the amount of tasks also increases. To manage the tasks more efficiently, industry stakeholders used the grouping feature for *task division*. For example, at the beginning of the study, we were introduced to the industry stakeholder as a research group brought in to evaluate the collaboration of SODA. The industry stakeholders who are in charge of task management then placed us into a separate chat group with task-related parties – i.e., the vice CEO of CIDI, his secretary, and sub-contractor – to keep us in contact with other stakeholders and to update us with only relevant project information. This effectively divided task-related communication into small groups for the industry stakeholders, without jamming the main SODA communication. The university stakeholders emphasized the importance of group division for *information protection*. From the university stakeholders’ point of

view, as new stakeholders join the collaboration, it is important to “respect and protect different stakeholders’ interests” (UI2). And the way to protect different stakeholders’ interests is by segregating stakeholders into different groups based on their shared interests, and constraining the shared knowledge within certain groups. For example, when new government officials proposed to partake in the preparation discussion of SODA, the existing stakeholders invited the officials into a new chat group. Meanwhile, the existing stakeholders continued previous discussions in the old chat group among the original stakeholders. By doing so, the existing stakeholders temporarily constrained knowledge sharing within a group of stakeholders with shared interests, and prevented potential conflicts of interests between the newcomers and existing stakeholders.

5.2 Congruence and Incongruence in Social Media Framing

Based on the analysis, we have identified patterns of congruence and incongruence in the three framings. Regarding *nature of technology*, we observe that there is an overall congruence between the framings of government, industry, and university stakeholders. The three groups of stakeholders agree that the functionalities of WeChat can enable but also constrain knowledge sharing. There are only small differences on the emphasis of which features of WeChat can constrain knowledge sharing, depending on the tasks the stakeholders engage with. For instance, in charge of most of the operational tasks, industry stakeholders exhibit more specific ideas on the features that constrain knowledge sharing (i.e., grouping and personal addressing feature “@”).

Regarding *technology strategy*, there is a mixture of congruence and incongruence between the three groups of stakeholders. While all three groups agree about the visions and motivations (i.e., connectivity and idea mining and exchange) for adopting WeChat to enable knowledge sharing, only the government stakeholder group does so throughout. The industry and university stakeholders report a shift of strategies at a later stage of collaboration. The industry and university stakeholders’ involvement in task management pushed them to constrain task-related knowledge sharing between them and specific task executors to ensure effective communication, making their strategy incongruent with that of government stakeholders. Regarding *technology-in-use*, the three groups feature marked incongruence between their framings. Government stakeholders use WeChat mostly for participatory assignment of tasks, making them inclined to use WeChat for enabling knowledge sharing. Industry and university stakeholders also draw on features that enable knowledge sharing to collect feedback and co-develop tasks, but their use of WeChat is largely geared towards activities that constrain knowledge sharing – such as targeted tasks assignment through the use of “@” symbol, and information protection through segregation of chat groups – as collaboration develops.

5.3 Governance Response

As the project evolved, we saw a growing divergence in the stakeholders' framings of technology strategy and technology-in-use. Nonetheless, the stakeholders were still able to deliver tangible results as the collaboration developed. To understand how, we looked into the stakeholders' governance practices, and highlighted the links between the pattern of congruence and incongruence of framings and the emergent governance practices. We found that the stakeholders engage in three governance practices – selective participation, role identification, and ad hoc decision-making – through which they make sense of, and reconcile the mix of congruence and incongruence in technology framings. Table 4 summarizes the relationship between patterns of framing congruence and incongruence, as well as the emergent governance practices.

5.3.1 Selective participation

One of the governance practices that emerged among the three groups is *selective participation*. At the beginning of the collaboration, the existing stakeholders bring in additional knowledge and resources by expanding the range of stakeholders and encouraging the participation of new stakeholders. However, to prevent potential conflicts of interests, the existing stakeholders also control what knowledge to share and whom to share it with. The stakeholders' views are congruent on the nature of WeChat (i.e., enabling and constraining knowledge sharing), reflecting stakeholders' expectations on the range and the ways of participation.

Our study found that the stakeholders (i.e., GI1, II3, II4, UI1) shared a strong sense of SODA as a collaborative project. From the government group's perspective, SODA is a project that is co-developed by the stakeholders in the core-organizing group. As GI1 clearly articulated, "there is no owner of SODA among us. We all contribute and we co-own it". Similar views have come across in our interviews and informal conversations with the director of the NGO II3 and the university professor UI1. They both emphasized that SODA is a "collaborative work of a whole committee (i.e., the core-organizing group)" (II3), rather than "the work of a single organization" (II3). Moreover, industry stakeholder II4 also mentioned that the expansion of the network is necessary for the project development: "The six, seven people at the core group have brought their own resources [...] these people are like hubs in networks, they all have their own circles and networks that they can introduce." II4 specifically emphasized the importance for the network to stay open in developing the project: "I don't really care about whether it is a specific type of organization or an individual. As long as they can make things work, we welcome them all. It is really about this idea of being open."

Table 4. Emergent governance practices as response to patterns of framing (in)congruence

Framing dimension	Congruence/Incongruence between stakeholders' framings	Emergent governance practices	Examples
Nature of technology	<i>Overall congruence</i>	Selective participation	Existing group members introduce new members to the group to harness the diversity of knowledge and resources; Existing group members place new members into different groups to avoid potential conflicts of interests
	All the stakeholders are aware that WeChat can be used to both enable and constrain knowledge sharing		
Technology strategy	<i>Mix of congruence and incongruence</i>	Role and capability identification	Stakeholders draw on each other's identified capabilities to complete tasks at the beginning of the collaboration; Stakeholders identify their roles as collaboration develops, and specify their needs for new capabilities
	At the beginning of the collaboration, all the stakeholders are motivated to adopt WeChat to enable knowledge sharing in order to improve connectivity and share ideas; As collaboration develops, industry and university stakeholders are motivated to adopt WeChat for constraining knowledge sharing in order to manage operational tasks		
Technology -in-use	<i>Overall incongruence</i>	Ad hoc decision-making	At the beginning of the collaboration, there is no pre-determined decision-maker within the network; As collaboration develops, multiple decision-making authorities emerge.
	Government stakeholders use WeChat for enabling knowledge sharing to assign tasks to other stakeholders. Industry and university stakeholders use WeChat for constraining knowledge sharing to complete tasks		

Stakeholders also value WeChat's ability to control knowledge sharing. As industry stakeholder II3 put it, "people know WeChat is OK to use for this [SODA] because it is in many ways convenient. Things stay in the group, and if there are new members to join, we can create twin groups to include them while the old one remains exclusively for the old members. And if there are old members who may be not that relevant anymore, we could also do the same so things won't turn awkward. [...] Things don't always stay the same when it concerns this [open data], so one needs to learn to be flexible." Stakeholders adopted WeChat in the first place because it was viewed as a controllable platform for knowledge sharing, even as the range of stakeholders expands and the dynamics of the collaboration changes.

Stakeholders frame WeChat as a networking platform that both enables and constrains knowledge sharing. This reveals that the stakeholders share two related but somewhat opposing interests. On the one hand, the stakeholders view WeChat as a social networking platform that can enable knowledge sharing through features such as instant messaging, file transfer and preview, notification, and grouping. Such a congruent framing reflects and reinforces the stakeholders' shared interest to expand participation during the collaboration in order to spot and internalize developments for the collaboration. On the other hand, as stakeholders expect changes in the membership and dynamism of collaboration as participation increases, a control mechanism is also implied in the framing of WeChat's functionality (i.e., through the grouping feature). The control mechanisms go hand in hand with the expanding participation, and are equally important in the emergent governance practices.

5.3.2 Role and capability identification

As collaboration develops, another governance practice that emerges between the three stakeholder groups is *role and capability identification*. This means that, during the collaboration, stakeholders not only identify but also constantly modify their emergent roles and the skills (e.g., technical or managerial ability) they need to fulfil these roles. We observed this governance practice in relation to the mix of congruent and incongruent framings of *technology strategy*.

At the beginning of the collaboration, all three groups of stakeholders recognized that they rely on each other's capabilities to co-develop the project. As mentioned by government stakeholder GI1: "Government follows formal procedures, where we don't consider sponsorship, don't publish advertorials, and we don't use the kind of language that the market uses. The government's campaign is often more formal. Companies don't have enough credibility to motivate other agencies to open their data. And university has all the novel ideas. We therefore need to bridge these needs". This is echoed by industry stakeholder II2's view that the exchange of capabilities between different groups of stakeholders is a "win-win" approach. University stakeholders UI1 and UI2 also share a similar view by emphasizing the importance of "crowdsourcing" processes across the network.

As the collaboration develops, a division of roles between the stakeholders starts to emerge, where government stakeholders take the steering role and the non-government stakeholders take the operational roles. Identifying different roles, the stakeholders start to see different values in adopting WeChat. Government stakeholders use WeChat to engage other groups of stakeholders to partake in tasks; consequently, they use WeChat to enable knowledge sharing by sharing resources and contacts with the other stakeholders. Both industry and university are more inclined to use WeChat for constraining knowledge sharing with a specific task-executer in mind (e.g., targeted task assignments) because their role is to manage the operation of the project and complete tasks. The divergence widens at the end of the project, as the number of operational tasks increases.

We see the mix of congruent and incongruent framings of technology strategy as a manifestation of different visions of collaboration and need for managing the collaboration. As we have seen above, the framings of technology strategy for knowledge sharing are congruent in terms of the vision of collaboration; i.e., to exchange skills and processes in order to realize the co-development of the project. As networking and knowledge-exchange is fundamental for realizing this vision, strategically it is a must for the stakeholders to adopt WeChat to realize connectivity and idea mining and exchange (See table 3). However, when it comes to the operation of the project, government and non-government stakeholders identify with different roles and capabilities, based on which they engage in different efforts and different strategies for adopting WeChat.

5.3.3 Ad-hoc decision-making

The third emergent governance practice is *ad-hoc decision-making*. This means that there are multiple authorities of decision-making during project development, which ensures the stakeholders' autonomy to make use of tacit decentralized knowledge to solve problems in a timely manner. This particular governance practice is manifested in the overall incongruence among stakeholders' framings of *technology-in-use*.

As the range of stakeholders expands, and the dynamics among stakeholders changes, the stakeholders' roles and relations also shift from time to time. For example, industry stakeholder II1 used WeChat to enhance knowledge sharing among stakeholders in situations where they need ideas to co-develop tasks. But in other situations where the industry stakeholders need to manage the collaboration, II1 used WeChat for more targeted knowledge sharing in order to facilitate task assignment in the group.

These varied uses of WeChat during collaboration show contingent use of WeChat and give rise to multiple decision-making authorities and discursive decision-making processes in the collaboration. In our case, there is no pre-determined decision-maker or a formal reporting procedure in the collaboration. Even though in a local context, government stakeholders often have decision-making authority in the collaboration with non-government stakeholders, during the collaboration of SODA, decision-making is organized in a more ad-hoc way. As government stakeholder GI1 stated: "People who do it the old way in

the government, they always have meetings. You don't often see people doing other things but talking. [...] But what we have here is a much more diverse team where people come with a lot of different backgrounds. What we do is just chatting on the Internet [i.e., WeChat] all the time, yet we are still very efficient, and we get things done!"

Our observations suggest that original stakeholders often contingently decide on whether or not to share certain knowledge, depending on their role and relations with other stakeholders in a particular situation. These original or higher-level stakeholders may also impose control and evoke hierarchical order when it is perceived necessary. As the project develops, there may be some important decisions that higher-level officials need to make. In order to accommodate this situation, in our case, the stakeholders established a new group with the original group members and higher-level officials. They maintained the discussions in the original group and only summarized the relevant information in the new group to inform the higher officials.

Overall, our observation shows that, as the range of stakeholders expands and interaction among stakeholders changes, the stakeholders have to juggle different roles, giving rise to contingent framings of technology use. These incongruent framings result in multiple decision-making authorities in the network so that the stakeholders can make use of their tacit knowledge in a timely manner. The stakeholders can sometimes also voluntarily evoke hierarchical order and impose control on the decision-making process when it is necessary, making the emergent governance arrangement more adaptive.

6. DISCUSSION

6.1 Summary of Findings

In response to the mix of congruent and incongruent framings of WeChat, we identify three governance practices: selective participation, role and capability identification, and ad hoc decision-making. Stakeholders engage in these practices to effectively internalize new developments, avoid potential conflicts of interests, mobilize capabilities, and identify authorities. Based on these insights, we can compare these emergent governance practices with the previous conceptualization of adaptive governance and update that conceptualization in three respects.

First, our findings show that, with a congruent understanding of the nature of WeChat, the stakeholders come to a shared practice of selective participation in developing the collaboration. In our case, while all the stakeholders recognize that an important functionality of WeChat lies in enabling knowledge sharing, they also emphasize the necessity of WeChat having features that can be used for constraining knowledge sharing. It is very important for the stakeholders to maintain control of the range and extent of knowledge sharing as participation widens. This means that existing stakeholders can continuously internalize external developments by absorbing new stakeholders to increase the adaptability of the collaboration, while avoiding potential conflicts of interests to ensure the stability of the collaboration. Our findings concur with previous studies on the importance of widening participation in inter-organizational collaboration to

spot and internalize developments (Janssen and van der Voort 2016). Our findings also show the importance of control in the stakeholders' efforts to widen participation as the disparity between the goals of public and private actors can hinder the effectiveness of adaptive governance (Ganapati and Reddick 2018). By widening participation and controlling knowledge sharing, the stakeholders can ensure both the adaptability and the stability of the collaboration.

Second, our findings show the stakeholders' motivations in using WeChat change as the collaboration develops, resulting in a mixed pattern of congruent and incongruent framings of technology strategy. We argue that the development of adoption strategies has triggered the governance practice of role and capability identification. In our case, even though the stakeholders adopt WeChat for similar reasons at the beginning of the collaboration, as the collaboration develops, different patterns of social media use emerge among the stakeholders. These different uses bring awareness to the stakeholders in regard to the different roles they play and the capabilities they possess in developing the collaboration, and drive them to reflect and adjust their motivations to adopt WeChat for knowledge sharing. Previous conceptualization of adaptive governance argues that mobilizing capabilities is important for the stakeholders to spot changes (Janssen and van der Voort 2016). Our findings show that prior to capability mobilization, the stakeholders identify their roles and capabilities, forming the basis for adapting to changes in the collaboration.

Third, our findings show that stakeholders use WeChat differently in daily practice, which allows decisions to be made in an ad hoc fashion in the collaboration. Previous conceptualization of adaptive governance suggests that bottom-up decentralized decision-making is key to ensuring the adaptability of the collaboration as it allows stakeholders to act fast based on the knowledge they have in hand. Yet, empirical studies have informed us that bottom-up decentralized decision-making does not always lead to effective collaboration (Hong and Lee 2018a, 2018b). Our findings suggest that decision-making authority depends on what types of decisions are at stake and who the stakeholders are in relation to that specific decision. For instance, when it comes to daily operations, the stakeholders often have the autonomy to decide on what actions to take and use social media accordingly. Nonetheless, when it comes to important decisions that may undermine government's accountability, the stakeholders refer to higher-ranking officials as the decision-making authority by sharing information in a specific chat group. Therefore, we argue that the incongruent uses of social media allow stakeholders to engage in ad hoc decision-making in which both decentralized or centralized decision-making are crucial for the adaptability of collaboration.

6.2 Implications for Research

By revealing how the stakeholders' framings of social media have shaped the emergent governance practices in an inter-organizational collaboration, this study contributes to research in four ways.

First, we contribute to research on adaptive governance. The notion of adaptive governance has only been recently conceptualized in the context of digital government (Janssen and van der Voort 2016). Empirical studies suggest that the proposed adaptive governance strategies do not always ensure effective inter-

organizational collaboration in practice (Ganapati and Reddick 2018; Hong and Lee 2018a, 2018b). We contribute to the conceptualization of adaptive governance by mapping out the emergent governance practices in an empirical case of technology-mediated inter-organizational collaboration. We update the conceptualization by comparing the identified governance characteristics to the emergent governance practices. The findings show that, consistent with the previous conceptualization (Janssen and van der Voort 2016), the stakeholders have a strong interest in learning at the beginning of the collaboration, for example to widen participation, diversify capabilities, and decentralize decision-making. However, as collaboration develops, the stakeholders emphasize more control in the governance practices by engaging in targeted participation, group segregation, role identification, and centralized decision-making. These findings support the previous conceptualization of adaptive governance as a range of practices on participation, capability building, and decision-making that move along a spectrum between learning and control. These practices may also change as collaboration develops and as stakeholders identify with emergent roles, relevant capabilities, and the goals of the collaboration.

Second, our findings shed light on the emergence of adaptive governance by unfolding the shaping effects of collaborative technology. Previous studies on governance and social media do not fully account for the diverse views and uses of collaborative technology among the stakeholders and their impacts on collaboration, as suggested by Chatfield and Reddick (2018) and Treem et al (2015). To address such diversity, we draw on the theoretical lens of TFR and compare stakeholders' views and uses of collaborative technology along the three dimensions of nature of technology, technology strategy, and technology-in-use. We argue that a mix of congruence and incongruence on technology frames delivers a certain degree of ambiguity, which allows stakeholders to identify their roles and capabilities, craft local interests, and develop their own means to achieve these interests, and yet still maintain coherence amongst each other. In doing so, the collaboration is adaptive to changes, yet retains stability to sustain the collaborations. By bringing collaborative technology to the forefront, we are among the first to shed light on how collaborative technology may shape adaptive governance practices. Our findings suggest that ambiguity in the frames of collaborative technology, rather than an overall consensus or congruence, is more important for cultivating governance practices, especially in a newly formed collaboration.

Third, our case study findings allow us to articulate some contested points regarding the theory of TFR (Davidson 2006). Incongruence of technological frames has been normatively linked to negative effects in the original formulation of the theoretical framework (Azad and Faraj 2008; Barrett 1999), including social media adoption (Treem et al. 2015). Our study critically revisits this assumption by providing evidence of a case of an effective – and so far sustainable – use of social media for inter-organizational collaboration that stems from a mix of congruent and incongruent technological frames. We concur with the recent TFR studies that advocate for the enabling role of ambiguity (Hsu 2009; Mazmanian 2013; Van Burg et al. 2013; Young et al. 2016) by demonstrating that the effects of incongruence can be productive.

Fourth, our findings contribute to research on the organizational use of social media by focusing on the comparatively overlooked aspects of social media use for constraining knowledge sharing. Our findings concur with the previous studies on the effects of ambivalent use of social media (Huang et al. 2015; Majchrzak et al. 2013) and highlight the productivity of using social media for constrained knowledge sharing (Ellison et al. 2015; Gibbs et al. 2013). Our study demonstrates that using social media to both enable and constrain knowledge sharing is important for generating effective governance arrangements during inter-organizational collaboration.

6.3 Implications for Practice

Our study provides the following three implications for practice. First, our study shows that the emergent governance practices are derived from actual interactions between different groups of stakeholders as well as the social and technological components of knowledge sharing. Thus, when managing an inter-organizational project in the future, public and private stakeholders should observe closely the interactions in the network and facilitate emergent ways of coordination rather than imposing top-down policies to unify social media use among the stakeholders.

Second, from the findings we know that incongruence, or lack of consensus, on views and uses of social media-based knowledge sharing can play a productive role in ensuring the network effectiveness in solving complex public issues. Thus, during the initial phase of collaboration, public and private managers should allow stakeholders to explore ways of social media use that are suitable for their own needs. Nonetheless, it is also worth noticing that the ambivalent uses of social media for knowledge sharing might introduce unintended outcomes such as conflicts and confusion as the project moves along and new stakeholders take part. Project participants thus need to take into consideration the different situations and facilitate the articulation and reflection of the shifting roles in the network.

Third, the emergent technological framings of social media also have implications for the design of the technology. By eliciting what social media means to different users in the collaboration, developers can gain a better understanding of how to enhance the collaboration-specific features in the design of social media. For example, the developer could diversify the options of grouping features to accommodate different needs of access control, to organize the relations between groups, and to prioritize the notification of activities in certain groups.

6.4 Limitations and Future Research

It is important to note that our findings in this study are based on a particular kind of inter-organizational collaboration and a specific social media platform. Thus, we should be careful in generalizing to other types of inter-organizational collaboration and collaborative platforms (e.g., other social media platforms, sharing economy platforms). Future research should look into the framings of other types of collaborative

technology, or collaboration at a different scale, to understand how the framings of collaborative technology shape the emergent governance practices of inter-organizational collaboration.

In addition, future research can extend our findings on the emergent governance practices by taking a longitudinal approach to observe the changes over time. One aspect to investigate could be how public and private actors can reconcile the disparity between their goals with social media as new stakeholders join the collaboration. Another aspect could be what motivates stakeholders to exchange capabilities as the collaboration develops and the stakeholders' roles change in the network. In our findings, we already start to see the signs of stakeholders combining different existing governance arrangements (i.e., centralized and decentralized decision-making). Future research should extend our understanding of the different configurations of governance that are enabled by collaborative technology, and how they may develop over time.

Some of our data suggest that stakeholders have become aware of the inconsistent framings within their own group, as well as the similarity with members of other groups as collaboration develops. These within- and cross-group inconsistencies can potentially lead to the reconfiguration of grouping across the network. Recent research has just started to embark on the effects of interaction between intra- and inter-group TFRs in a dynamic environment (Young et al. 2016). Future research should investigate the implications of the interactions between intra- and inter-group TFRs on the emergent governance arrangement.

7. CONCLUSION

Using a case study of a newly formed collaboration between government, university, and industry stakeholders, we investigated how these stakeholders' adoption of social media for knowledge sharing shapes the governance arrangements in inter-organizational collaboration. Drawing on the concept of technological frames of reference, we compared stakeholders' adoption of social media along the dimensions of technology nature, strategy, and use, and mapped how congruent and incongruent interpretations of social media affect the stakeholders' governance practices. Our findings suggest that stakeholders benefit from the mix of congruence and incongruence in social media framings because it delivers a certain level of ambiguity within which stakeholders can identify their roles and capabilities, craft local interests, and develop their own means to achieve these interests, while still maintaining coherence with each other. As a result, we have identified three emergent governance practices in technology-mediated inter-organizational collaboration: selective participation, role and capability identification, and ad hoc decision-making. Our findings contribute to four streams of research: research on adaptive governance of inter-organizational collaboration; research on the relation between collaborative technology and the emergence of adaptive governance; research on the consequences of congruence and incongruence of technology framing; and research on the organizational use of social media for knowledge sharing. We call for future studies to extend our findings by looking into the effects

of other contingencies – such as types of collaborative technology and project stages – on the emergent adaptive governance arrangements.

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**Towards a Typology of Adaptive Governance in the
Digital Government Context**
The Role of Decision-Making and Accountability

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ABSTRACT

The notion of adaptive governance was originally created to capture forms of collaboration in socio-ecological systems that can respond to rapid changes in the environment. However, such a notion also has a great potential to be transferred and understood in the digital government context, where there is an increasing need to establish forms of collaboration that can respond to swift changes in the environment related to technology and citizen demands. Drawing on the analysis of four cases of IT-related project collaboration, we put forward that the degree of sharing of decision-making power and of accountability between government and non-government actors is critical to developing different types of adaptive governance. Findings show that the distribution of decision-making power and of accountability can be decoupled, resulting in three types of adaptive governance – namely polycentric, agile, and organic governance. We contribute to research by detailing and empirically testing the notion of adaptive governance in a digital government context, and to practice by highlighting the role of the distribution of decision-making power and of accountability in devising adaptive governance strategies.

Keywords: Adaptive governance, digital government, decision-making, accountability

1. INTRODUCTION

The increasing complexity of public issues and the rapid advancement of Information Technology (IT) and services (e.g., social media, big data, smart cities) put high demands on governments to develop the capacity to evaluate, respond to, and implement new technologies and processes. Moreover, as governments in the last decades have increasingly transferred their capabilities externally through outsourcing projects (Cordella & Willcocks, 2010), they are often left with reduced skill sets and limited capacity. This has created challenges for governments to adapt to swift changes, especially in the implementation of IT-related projects (Gil-Garcia, Zhang, & Puron-Cid, 2016; Mergel, 2016; Tassabehji, Hackney, & Popovič, 2016).

Confronted with such challenges, governments have sought to deliver public services through new working relationships with private organizations (Klievink, Bharosa, & Tan, 2016). These relationships are characterized by the voluntary combination of separate private and public organizations into a coherent service delivery system (Bertot, Estevez, & Janowski, 2016; Scupola & Zanfei, 2016). In such new organizational set-ups, established governance mechanisms for enhancing control and enforcing procedures are no longer suitable for reacting and adapting quickly to changes in the environment (Gong & Janssen, 2012; Janowski, Pardo, & Davies, 2012). Governments are thus expected to adopt new governance practices to accommodate the evolving and dynamic collaborative relationships around government (Ojo & Mellouli, 2016).

This emphasis on devising flexible arrangements that can adapt to changes in the environment is echoed in the principles of adaptive governance. The concept of adaptive governance has been formulated within studies on social-ecological systems (SESs) (Chaffin, Gosnell, & Cosens, 2014), but has the potential to be applied to different contexts. Recently, a call has been made to use the notion of adaptive governance in investigating government IT initiatives (Janssen & van der Voort, 2016). The notion of adaptive governance in the context of digital government has been tentatively characterized by “decentralized bottom-up decision-making, efforts to mobilize internal and external capabilities, wider participation to spot and internalize developments, and continuous adjustments to deal with uncertainty” (Janssen & van der Voort, 2016, p. 4). This type of governance aims at making governments more adaptable to changes in their surrounding environment, while also preserving stability and accountability, which are highly valued by government organizations.

While potentially suitable to capture the need of governments to establish governance practices that can respond to swiftly changing environments at a conceptual level, the notion of adaptive governance still needs to be further detailed and empirically tested in the context of digital government practices. Further research is required to identify, stemming from the abstract principles of adaptive governance, the key dimensions across which adaptive governance can vary in the specific contexts of IT-related project collaboration.

When transferred to a digital government context, the dimensions of decision-making power and of accountability become of key importance. To find a balance between achieving greater adaptability and maintaining stability (Janssen & van der Voort, 2016), governments engaged in IT-related project collaboration need to move away from hierarchical principles of governance, and rethink the way decision-making power and accountability are distributed among government and non-government organizations. Existing research on governance of collaboration between government and non-government actors shows the importance of the distribution of decision-making power (Doberstein, 2016), and of accountability (Papadopoulos, 2007) in governance arrangements. However, it's still unclear how different configurations of distribution of decision-making power and accountability across government and nongovernment actors provide a ground for the adaptiveness of governance arrangements. This study thus aims at tackling this gap by answering the following research question: How can decision-making power and accountability be distributed among government and non-government actors in adaptive governance arrangements in the context of digital government?

Drawing on an analysis of four cases of collaboration between government and non-government actors in IT-related projects, we aim to refine the conceptualization of adaptive governance in a digital government context by proposing a typology based on the two dimensions of distribution of decision-making power and of accountability.

The article is structured as follows. In the next section, we discuss existing research on the governance of collaboration between government and non-government actors, and the emergence of the concept of adaptive governance in a digital government context. We highlight the gaps in current research, arguing for the need to focus on the role of decision-making power and accountability in investigating the notion of adaptive governance. In Section 3, we explain four cases of IT-related project collaboration between government and non-government actors in China as our sources of empirical data, and illustrate the methods of data collection and analysis used in our study. In Section 4, we present the findings from the analysis of the four cases, focusing on the distribution of decision-making power and of accountability between government and non-government actors. Drawing on these findings, in Section 5, we propose a typology of adaptive governance based on the nature of the distribution of decision-making power and of accountability, putting forward three types of adaptive governance. In Section 6, we present the implications of our study for both the research and practice of adaptive governance in a digital government context, and discuss the limitations of the study. In the concluding section, we summarize our study and identify avenues for future research.

2. BACKGROUND

2.1 Adaptive Governance in the Digital Government Context

Governance has been defined as an attempt to improve coordination between relatively dependent actors for the purpose of solving societal problems (Klijn, 2008) and, within research on Information Systems, as

the solution that individuals and organizations devise for addressing issues of coordination (Markus & Bui, 2012).

The wide array of studies on governance has been clustered around four main views of governance (Klijn, 2008) which – rather than emphasize the structure of government or the limit of government capacity – emphasize the process of governing: 1) the good governance perspective, focusing on the principles of a properly governed state and how government operates; 2) governance as New Public Management, focusing on how to improve the performance of government by shifting the role of implementation to non-state actors (Dunleavy & Hood, 1994); 3) multi-level governance, focusing on the use of networks crossing agency boundaries and levels of government (Rukanova, Wigand, van Stijn, & Tan, 2015); and 4) network governance, focusing on the complex processes taking place in networks of public and nonpublic actors (Provan & Kenis, 2008).

The two perspectives of governance as New Public Management and of network governance (Lecy, Mergel, & Schmitz, 2014) have aimed at capturing how government and non-government actors concur in the design, implementation, and management of policies through different forms of collaboration (Bovaird, 2005; Provan & Kenis, 2008). This has in turn characterized the increasing complexity of contemporary policymaking. Empirical research on governance shows how established mechanisms of governance that imply enhancing control and enforcing procedures are found no longer suitable for reacting and adapting to swift changes in the environment (Chatfield & AlAnazi, 2015; Gong & Janssen, 2012). Established approaches to the governance of the interactions between government and non-government actors, such as the ones inspired by the New Public Management, fail to capture the complexity and the change introduced by digital networks (Dawes, 2009; Dunleavy, Margetts, Bastow, & Tinkler, 2006; Margetts & Dunleavy, 2013). In particular, collaboration between public and private actors in IT-related projects is found to require new governance practices that can respond to rapidly changing environments (Janowski et al., 2012).

The need to adapt to swiftly changing environments lies at the core of the concept of adaptive governance. The term adaptive governance originated within research on socio-ecological systems (Dietz, Ostrom, & Stern, 2003) and was coined to indicate a new approach to governance for managing uncertainty and complexity stemming from critical environmental challenges, such as transboundary pollution, tropical deforestation, and climate change (Chaffin et al., 2014). As such, the concept of adaptive governance has been fruitfully employed to describe strategies to cope with transformations linked to climate change (Brunner & Lynch, 2013), community relocation (Bronen & Chapin, 2013), and ecological systems (Folke, Hahn, Olsson, & Norberg, 2005; Robertson & Choi, 2010).

In recent years, the concept of adaptive governance has been applied to areas other than socio-ecological systems. These include international trade (Cooney & Lang, 2007), health research (Andrew & Kendra, 2012), political science (Heilmann & Perry, 2011), disaster research (Djalante, 2012; Djalante, Holley, & Thomalla, 2011), and law (Garmestani & Allen, 2014). As a result, the concept of adaptive governance

has developed to include a variety of dimensions, depending on the specific context of study. These dimensions include: flexibility in response and adjustment (Bodin & Crona, 2009; Bodin, Crona, & Ernstson, 2006; Folke et al., 2005; Lebel et al., 2006), learning (Pahl-Wostl, 2009), individual leadership and trust building (Folke et al., 2005; Olsson, Folke, & Berkes, 2004; Olsson, Folke, & Hahn, 2004), and power sharing (Folke et al., 2005). This abundance of dimensions had contributed to the concept's popularity but has also defused clarity on the topic and resulted in the absence of a shared definition.

Surprisingly, to date the promising concept of adaptive governance has not yet been applied to the area of digital government. Only recently there has been a call to unfold the potential of the concept of adaptive governance to be used in the context of digital government (Janssen & van der Voort, 2016).

Since *adaptive governance in the context of digital government* is only loosely referred to as “a principle providing strategies for dealing with uncertainty and adapting to changes originating from the environment” (Janssen & van der Voort, 2016, p. 3), it has no established definition yet. Nevertheless, from the perspective of government, four key characteristics of adaptive governance in the context of digital government have been posited: “decentralized bottom-up decision-making, efforts to mobilize internal and external capabilities, wider participation to spot and internalize developments, and continuous adjustments to deal with uncertainty” (Janssen & van der Voort, 2016, p. 4).

While potentially able to cope with uncertainty at a conceptual level, the notion of adaptive governance still needs to be detailed and empirically tested in the context of digital government. Further research is required to identify, stemming from the abstract principles of adaptive governance, the key dimensions across which adaptive governance can vary in the specific contexts of collaboration between government and non-government actors engaged in IT-related projects.

In particular, as noted by Janssen and van der Voort (2016), transferring the concept of adaptive governance to the digital government context requires bringing to the foreground the need to achieve flexibility and responsiveness, while at the same time maintaining the attributes of stability and accountability required in public action. Governments that collaborate with non-government actors, in fact, should carefully distribute decision-making power and accountability to allow responsiveness and, at the same time, maintain mechanisms that ensure reasonable stability and accountability of the public action.

2.2 The Role of Decision-making Power and of Accountability

Studies on governance of government and non-government actors engaged in collaborative policy initiatives have focused on the key aspect of decision-making power and its changing nature (Edelenbos & Klijn, 2006). We see decision-making as “the process of making choices from among alternatives” (Lunenburg, 2011, p. 1). The study of decision-making power focuses on the actors, or groups of actors, that have the main influence on choices that affect other participants in a governance arrangement.

These studies highlight that many actors are involved in decision-making, and that these actors not only possess vital resources to realize policy goals and outcomes, but also have different perceptions of the

problem and the solutions (Hanf & Scharpf, 1978; Kickert, Klijn, & Koppenjan, 1997; Marsh & Rhodes, 1992; Rhodes, 1997; Scharpf, 1997). In particular, since the governance of public digital projects is a complex socio-technical phenomenon (Dawes, 2009), a key to defining different types of governance arrangements in public-private collaboration is to investigate how decision-making power is distributed among the actors engaged in collaboration (Doberstein, 2016).

The balancing of decision-making power is found to be the key element in the governance of public-private platforms (Klievink et al., 2016; Klievink & Janssen, 2014). Recent research on the distribution of decision-making power in the governance of public-private collaboration in IT-related projects has focused on the extent to which governments retain decision-making power after entering into collaboration with non-government actors. Among the various actors involved in digitally-enabled public-private collaboration, governments have been found to control governance networks (Ojo & Mellouli, 2016).

On the other hand, with shifts in the distribution of decision-making power between government and non-government actors introduced by different governance practices, the other key issue of accountability emerges. Accountability is defined as “a process in which a person has a potential obligation to explain his/her actions to another party who has the right to pass judgment on those actions and to administer potential positive or negative consequences in response to them” (Vance, Lowry, & Eggett, 2015, p. 347). In this study, we refer to the accountability of each organizational actor to the collaboration they are part of, and not to the general accountability of public officials to citizens (Stivers, 2010).

Common among studies using the governance lens is the observation that, with the changes in the distribution of decision-making power between government and non-government actors, it becomes more complex to identify the accountable agents within a collaboration setting (Papadopoulos, 2007; Schedler, 1999). Governments are often not prepared to adjust to governance arrangements. Accountability, in fact, is found to be based on self-referential organization decisions, rather than on joint inter-organizational policy making (Teisman & Klijn, 2002). Similarly to the distribution of decision-making power across actors participating in collaboration, accountability is often found to still reside with government actors (Johnston, Hicks, Nan, & Auer, 2011; Rummery, 2006). Recent research has identified tensions between individuals' accountability to their own organizations, and the organizations' accountability to the collaboration arrangements they are part of (Vangen & Winchester, 2014), especially in cross-sector collaborations (Vangen, Hayes, & Cornforth, 2015).

Overall, existing research on the role of decision-making power and of accountability in governance shows notable gaps. The distribution of decision-making power and of accountability is often simply conceptualized as attributed either to government actors, or to non-government actors. While many studies highlight the process of transfer of decision-making power and accountability from government to nongovernment actors, the different configurations of how decision-making power and accountability are shared across actors is still under-investigated (Osborne, Radnor, & Nasi, 2013).

In addition, the dimensions of decision-making power and accountability require a special focus when we aim at transferring the notion of adaptive governance to the digital government context. Understanding the way decision-making power and accountability are distributed enables governance arrangements that can balance between adaptiveness and stability; and such balance is what characterizes adaptive governance in the context of digital government (Janssen & van der Voort, 2016). The dimensions of decision-making power and accountability are in fact central to each of the before-mentioned four characteristics of adaptive governance in digital government: 1) decentralized bottom-up decision-making; 2) efforts to mobilize internal and external capabilities; 3) wider participation to spot and internalize developments; and 4) continuous adjustments to deal with uncertainty (Janssen & van der Voort, 2016, p. 4). These four aspects need further specification. In decentralized bottom-up decision-making, since hierarchy-based mechanisms of collaboration are discarded, it is very important to articulate how decision-making power and accountability are distributed across participants in collaboration. In making efforts to mobilize internal and external capabilities, the exchange of knowledge and redistribution of resources creates overlaps that need new distribution of decision-making power and accountability.

Since wider participation to spot and internalize developments implies that the pool of participants in the collaboration can expand, there is a need to understand how decision-making power and accountability are distributed when new participants join the collaboration. To implement continuous adjustments to deal with uncertainty, project revisions and renegotiations require rapid responses that are incompatible with rigid distribution procedures of decision-making power and accountability. Therefore, there is a need to understand how decision-making power and accountability are distributed in practice in such contexts.

In this study, we aim at filling these gaps by focusing on how adaptive governance can be devised with different configurations of distribution of decision-making power and of accountability between government and non-government actors engaged in digital government projects. While we acknowledge that there are multiple dimensions of adaptive governance in the socio-ecological systems literature, we argue that decision-making power and accountability are of the outmost importance when transferring the concept of adaptive governance to the context of digital government. Understanding the way decision-making power and accountability are distributed enables governance arrangements that can balance between adaptiveness and stability; such balance is what characterizes adaptive governance in the context of digital government (Janssen & van der Voort, 2016).

3. METHOD

3.1 Case Description

Our research question is as follows: “How can decision-making power and accountability be distributed among government and nongovernment actors in adaptive governance arrangements in the context of digital government?” To answer it, we selected four case examples of adaptive governance arrangements, i.e., collaborations between government

and non-government organizations engaged in IT-related projects in China. We define IT projects as projects “used to develop products and services such as new software, hardware, networks, research reports and training on new systems”, and which consist of the four broad phases of initiating, planning, executing, and controlling (Schwalbe, 2015, p. 59).

We selected the four cases based on the four key characteristics of adaptive governance in the digital government context. We operationalized each characteristic as follows: decentralized bottom-up decision-making as the presence of multiple decision-making authorities during project development, and of decision-making processes that do not follow a hierarchical order; efforts to mobilize internal and external capabilities as the presence of exchange of knowledge between participants in the collaboration, and the presence of distribution and redistribution of project-related resources (e.g., budget, human resources) between participants in the collaboration; participation to spot and internalize developments as the presence of expanding networks of stakeholders during the project development (i.e., new stakeholders joining the project over time); and continuous adjustments to deal with uncertainty as the presence of revisions of various aspects of the project based on collected feedback, or of negotiation between stakeholders.

Below we present the four cases by detailing on the manifestations of the operationalized characteristics of adaptive governance in the digital government context (Janssen & van der Voort, 2016, p. 4). Table 1 provides an overview of the characteristics of the four cases.

Table 1. Overview of the characteristics of the four cases

	Case 1 Lu'an	Case 2 Shanghai WeChat Service	Case 3 Shanghai Open Data Application (SODA)	Case 4 Observe
Purpose of the collaboration	Software development and maintenance	Application development	Application design and development based on government open data	Evaluation and revision of implemented IT-related government projects
Number of government organizations	4 +	14 +	8 +	6 +
Number of non-government organizations	2	1	7 +	6 +

Duration	9 years +	2 years	2 years	2 years
Motivation for adaptiveness	Need to adjust to the rapid change of technology within available resources	Need for governments to adapt to the complexity of the platform technology; Need for the platform owner to understand the complexity of the available public services	Heterogeneity of stakeholders; Uncertainty on which stakeholders should be involved	Amount and heterogeneity of the stakeholders
Decentralized bottom-up decision-making	Multiple decision-making authorities both at the level of district-government and company; Decision-making processes do not follow a hierarchical order	Multiple decision-making authorities at municipal-level government and bureau, district-level government and bureau, and company; Decision-making processes do not follow a hierarchical order	Multiple decision-making authorities at municipal-level governments and bureaus, companies, universities, and NGOs; Decision-making processes do not follow a hierarchical order	Multiple decision-making authorities among the network of governments, companies, universities, and NGOs; Decision-making processes do not follow a hierarchical order
Efforts to mobilize internal and external capabilities	Active redistribution of knowledge, human, and financial resources in district government	Active redistribution of knowledge, human, and financial resources in each involved	Active redistribution of knowledge, human, and financial resources among members of the open data interest group	Active redistribution of knowledge and human resources among the network of governments, companies,

		government and bureau		universities, and NGOs
Wider participation to spot and internalize developments	Expanding network of potential partners and IT professionals from the government side	Expanding network among previously independent government units	Expanding network in the open data interest groups as well as among the participants	Expanding network through both online and offline participation
Continuous adjustments to deal with uncertainty	Government actors adjust the project based on the new knowledge and requirements on public-related IT gathered from training programs, conferences, and seminars	Government and non-government actors constantly adjust functionalities of the digital service platform based on user feedback and the development of services among government units	Through the annual contest, the government improves public services based on new demands extracted from open government data	In the periodical events, the participating stakeholders adapt and react to new developments in the relevant IT field

Case 1. A website development and social media management project in Lu'an city, China.

The Lu'an project is an IT project between the informatization office of the Jin'an District government in Lu'an Municipality, Anhui Province, and a local medium-sized IT company, named Longsun. The project is carried out under a service contract where Longsun provides a set of IT services to the Jin'an District government, including handling the technical development and maintenance of the municipal website, the IT infrastructure, and the office administration (OA) systems. According to the contract, Longsun charges fees for additional services required by the Jin'an District government.

Initially, Longsun carried out the development of websites and OA systems. The Jin'an District government was under pressure to pay Longsun for any changes the government required, which in total exceeded the original budget for the project. To turn the situation around, the Jin'an District government improved its IT capabilities by hiring new IT staff and actively seeking new knowledge on IT public services through training programs, conferences, and seminars. During this process, the Jin'an district government also

expanded its network of potential partners for new IT services by taking notice of companies and IT professionals that were present at the conferences and seminars.

Through these networks, the Jin'an District Informatization Office became equipped with an updated set of knowledge on the new development of public-related IT and broader options for IT service providers. The increasing IT capabilities in government and the broadened network of potential partners and IT professionals set the interaction between the Jin'an District Informatization Office and Longsun on a more balanced track. At the time of our data collection, the Jin'an District Informatization Office was co-developing the OA system and the website with Longsun, and managing the content on these platforms. Without changing the contract, the Jin'an District government now has a more flexible way to interact with Longsun, where the government partakes in the development of website and OA systems with Longsun, bolstered with their own IT expertise and extended assistance from the network that they are part of. Their authority in IT expertise grants them with more decision-making power in their negotiations with Longsun, and enables them to fully takeover the project, if necessary, under certain critical situations (e.g., when financial resources are very limited). When the Jin'an District Informatization Office needs more capacity to attend to tasks other than system development, the government is comfortable having Longsun solely make decisions in carrying out the project.

We recognize Case 1 as an example of adaptive governance, as the case reflects aspects of the four key characteristics of adaptive governance: 1) multiple decision-making authorities both at the level of district-government and company, as well as non-hierarchical decision-making processes; 2) active redistribution of knowledge, human and financial resources in district government over time; 3) an expanding network of potential partners and IT professionals from the government side; 4) constant adjustments on project by government actors based on the new knowledge and requirements on public-related IT gathered from training programs, conferences and seminars.

Case 2. A social media management project in Shanghai, China.

The Shanghai WeChat Service project operates under a strategic partnership agreement started in 2015 between Shanghai Municipality and one of the largest IT companies in the country, Tencent Holdings Limited. Under the agreement, Tencent assists the Shanghai

Municipality and its subordinated units (such as the Shanghai Meteorological Bureau, Shanghai Police, and the Shanghai Municipal Administration of Taxation) to manage the governments' public accounts on Tencent's major social media platform, WeChat. While these government units have full decision-making power over content creation on the public accounts, the publishing process is limited by the framework design of WeChat, which has made Tencent more than just a technical supporter in the management of public accounts in some occasions. In addition, the Shanghai Municipality and its subordinated units have also agreed to co-develop a digital public service provision platform on WeChat, named City Services Platform.

In planning the project, Tencent started with a list of public services it wanted to launch and took the initiative to negotiate with the relevant departments and bureaus. This act started to integrate different levels of government and bureaus, as they previously operated rather independently from each other. These government units started to connect with each other, forming a network of government units under the umbrella of City Services Platform. Once the agreement was reached, Tencent provided these government units with technical support to develop digital service functionality on the platform. Each government unit redistributed human and financial resources from developing standalone apps to the City Services Platform on WeChat, which is less costly and has a significantly larger user base. In April 2015, Tencent launched the first version of the City Services Platform, including fourteen functionalities. These fourteen functionalities were re-ordered and improved after a short trial period, based on user engagement, as well as on the development of services across government units.

In the same year, in August, WeChat launched the application function of City Service Platform for existing government accounts on WeChat. This application feature invites any government agency that wants to establish a digital service functionality on WeChat to apply for it from Tencent. As a result, the establishment of new functionalities on the City Services Platform can be initiated either by Tencent or by government. Tencent uses specific criteria (e.g., volume of service traffic) to evaluate whether a certain proposed service can be established, which increases their decision-making power in the relationship with government. This especially disadvantages lower-level government units (e.g., district-level government), which may draw a smaller set of users.

We recognize Case 2 as an example of adaptive governance because it caters to the four characteristics of adaptive governance by having: 1) multiple decision-making authorities at municipal-level government and bureaus, district-level government and bureaus, and the company as well as non-hierarchical decision-making processes; 2) active redistribution of knowledge, human, and financial resources in each involved government and bureau; 3) expanding network among previously independent government units; and 4) constant adjustments by government and non-government actors of the functionalities of digital service platform based on user feedback and the development of services among government units.

Case 3. An open data-related contest project in Shanghai, China.

The Shanghai Open Data Apps (SODA) project is a municipal-level case competition organized in Shanghai, to award the best applications developed using open government data. An annual event that started in 2015, it aims to help the government to identify new digital public services based on open government data. The contest is initiated and organized by a group of open data advocates that are affiliated with government units, IT-related businesses, universities, and NGOs. The organization of SODA mainly resides in a chat group on the social media platform WeChat where these advocates are members. In the chat group, each member shares his or her resources (e.g., knowledge, financial, and human resources) to drive the project forward. The coordination for planning the project also takes place in the chat group,

where all the stakeholders take part in making decisions on a wide array of issues, ranging from budget allocation to daily operations.

The organizing group expands each year with new contributors from governments, companies, universities, and NGOs. Like the members of the organizing group, the contest participants also come from very diverse backgrounds, including private companies, government agencies, and research institutes. They participate in the contest in teams. Each year, the contest revolves around a public service area (e.g., public transportation), soliciting teams to develop applications based on open government data. The teams submit their work based on the selected topic and, after three rounds of evaluation, the contest winners are selected. The winning teams are awarded and their projects are forwarded to the relevant government units and investors to implement their proposal.

The SODA project works as a form of IT project crowdsourcing, where the government involves external organizations (the contest participants) in initiating and planning feasible applications to extract value from the open government datasets. Each year, the number of participants increases and is pooled into an existing network through the contest's digital platform. Given knowledge gained from both the increasing number of participants and prototypes submitted each year, the government is able to stay updated with new demands in public service, benefiting all the stakeholders in the network.

We recognize Case 3 as an example of adaptive governance arrangement, as it caters to the four characteristics of adaptive governance by having: 1) multiple decision-making authorities at municipal-level government and bureaus, companies, universities, and NGOs, as well as non-hierarchical decision-making processes; 2) active redistribution of knowledge, human, and financial resources among the open data interest group; 3) an expanding network of members in the contest organizing group, as well as among the contest participants; and 4) regular adjustments on themes and suitable form of collaborative activities, where government improves public services based on new demands extracted from open government data each year.

Case 4. A digital-service provision-related workshop project in Shanghai, China.

The Observe project is a series of IT project workshops initiated by a network of government, university, and NGO actors across China in 2015. The workshop participants give feedback to each other on ongoing local IT projects, including digital-service provision issues (i.e., big data, open data, and smart city projects), in the form of seminars, lectures, and open discussions. The discussion themes are chosen based on the needs of both government and non-government stakeholders. Interaction between participants is further supported by open online chat groups, which enable new participants to ask questions and give feedback on the implementation of IT-related public projects.

The Observe project broadens the network of participants through both online and offline participation in discussions, providing opportunities for governments to evaluate and control implemented IT projects and acquire new knowledge and potential human resources from the network of participants.

The IT project workshop series started with local government units in Zhaoqing City and Fudan University in Shanghai that were both already involved in the network, and spread over time to other local government units and regions, accompanying the widening of the participants. The series of workshops and seminars of Observe are an umbrella IT project (Schwalbe, 2015) for government and non-government actors to control their independently implemented projects. While non-government IT service providers participate in Observe to

improve the implementation of their IT service provision based on the government actors' feedback, government actors improve the adaptation of the IT services based on the non-government actors' suggestions. Through these periodical events that take place several times a year, the expanding network of participants who work on similar IT projects are able to adapt and react to new developments in the IT field.

We recognize Case 4 as an example of adaptive governance arrangement, as it caters to the four characteristics of adaptive governance by having: 1) multiple decision-making authorities among the network of governments, companies, universities, and NGOs as well as non-hierarchical decision-making processes; 2) active redistribution of knowledge and human resources among the network of governments, companies, universities, and NGOs; 3) expanding network of participants through both online and offline participation; and 4) regular adjustments on themes and suitable activities for discussion through periodical events, where the participating stakeholders adapt and react to new developments in relevant IT field.

Lastly, the cases have also been selected based on the unique characteristics of the wider context that they share, that is the rapidly changing environment of China. This can be divided into China's macro-environment, the IT ecosystem of China, and its institutional context. The macro-environment of China that forms the context of the four cases is characterized by a rapidly developing economy, along with swift societal changes. The increase in demand from citizens and businesses for digital public services linked to the boom of the Chinese economy represents an ideal example of a fast-changing environment that a government needs to face. Regarding the Chinese IT ecosystem, the Chinese Internet is characterized by an ecosystem of IT applications that is rich, unique, and rapidly evolving (Yang, 2015). The emergence of unique social media applications such as WeChat and Weibo, and of innovative e-commerce platforms such as Taobao and Alibaba, represent a rapidly expanding digital ecosystem that public actors have to respond to when envisioning public policies and new modes of cooperation with digital private enterprises (Chen, Xu, Cao, & Zhang, 2016; Medaglia & Zheng, 2017). In its institutional context, China is a case of hybrid transition between a command economy and a relatively newly-established market economy. This implies that the boundaries between the public and the private sector are in a state of rapid change and continuous negotiation, as new governance practices are devised to respond to the challenges posed by the environment (Gao, Song, & Zhu, 2013; Zhang, Zhao, Zhang, Meng, & Tan, 2017).

3.2 Data Collection and Analysis

To investigate how decision-making power and accountability are distributed in the adaptive governance practices of the four cases of collaboration between government and non-government organizations in IT-related projects, we collected data using several qualitative methods, including semi-structured interviews, observation, and participant document analysis. The data collection on these four cases took place from June 2015 to August 2016.

The semi-structured interviews were carried out with the main stakeholders of each case. Table 2 presents an overview of the interview data sources.

Table 2. Overview of interview data sources

Case	Informant	Organizational Affiliation	Position	Informant code	Interview N
1 – Lu'an	Government 1	Lu'an Municipality E-government Office	Vice Director	1G01	1
	Government 2	Lu'an Municipality Internet Propaganda Office	Vice Director	1G02	1
	Government 3	Jin'an District Organization department	Department head	1G03	1
	Government 4	Jin'an District Informatization Office	Vice Director	1G04	1
	Non-government 1	Longsun	Project manager	1NG01	1
	Non-government 2	Lu'wang Forum	CEO	1NG02	1
2– Shanghai WeChat Service	Government 1	Internet Propaganda Office, Shanghai	Vice Director	2G01	1
	Government 2		Employee	2G02	
	Government 3		Employee	2G03	
	Government 4	Technology Service Centre, Shanghai	Vice Director	2G04	1
	Government 5		Employee	2G05	
	Government 6		Employee	2G06	
	Government 7	Shanghai Release, Shanghai Municipal Government	Director	2G07	1
	Government 8		Employee	2G08	

Case	Informant	Organizational Affiliation	Position	Informant code	Interview N
	Non-government 1	eGov Media Cooperation Office, Tencent Da Shen	Chief eGov Media Cooperation Officer	2NG01	1
3– SODA	Government 1	Shanghai Municipal Commission of Economy and Informatization (SMCEI)	Information Chief	3G01	2
	Non-government 1	China Industrial Design Institute (CIDI) Shanghai	Vice-CEO	3NG01	2
	Non-government 2	Kesci	CEO	3NG02	1
	Non-government 3	Opendatachina.com	Director	3NG03	4
	Non-government 4	China Industrial Design Institute (CIDI) Shanghai	Secretary	3NG04	1
	Non-government 5	Enerlong	CEO	3NG05	1
	Non-government 6	021 Incubator	CEO	3NG06	1
	Non-government 7	Shanghai Jiaotong University	Lab member	3NG07	1
	Non-government 8	Fudan University	Professor	3NG08	1
	Non-government 9	Fudan University	Lab member	3NG09	1
4– Observe	Government 1	Technology Service Centre Shanghai Meteorological Bureau	Director	4G01	1
	Non-government 1	Fudan University	Professor	4NG01	1
	Non-government 2	Opendatachina.com	Director	4NG02	1
	Non-government 3	Enerlong	CEO	4NG03	1
	Non-government 4	Taiwan Open Data Activist		4NG04	1
Total					28

The interviews consisted of open-ended questions framed around the formation of the partnership, the collaboration process in the partnership, the responsibility of each actor in their own organization as well as in the collaboration, and the IT capacity of the organizational actors. Examples of the questions include: what is your main responsibility in the collaboration? Who is responsible if certain issues start to emerge around the platform? Who calls the action in this project?

All interviews were recorded, transcribed, and translated from Mandarin Chinese to English. The protocols used for the interviews are available from the authors upon request. Transcriptions were coded using the software NVivo version 11, and put through a 3-stage coding process. First, we conducted open coding on the interview data, the field notes from the participant observation, and the documents (Strauss & Corbin, 1998). To trace instances of adaptive governance, our open coding was organized based on each organization's responsibilities in the collaboration, each organization's IT capabilities, and the transitional events that indicate the shift of responsibilities and IT capabilities between the government and non-government actors. The initial open coding has provided a wide range of first-order codes, such as “government's responsibility”, “shared responsibility” and “backlash event”.

Second, we re-grouped the first-order codes into more abstract second-order codes based on the identification of common features, of adaptive governance. This resulted in second-order codes such as “task distribution”, “dominant decision-making power of professional expertise”, and “transferred decision-making power”.

Third, with a refined understanding of adaptive governance from a broader review of existing literature, we re-visited the common features between the second-order codes and the two identified key dimensions of adaptive governance in the digital government context (decision-making power and accountability). Subsequent iterations led to two third-order themes: the distribution of decision-making power and the distribution of accountability. For instance, the interview quote “Yes. If there needs to be big adjustment, we will definitely find them. We will contact them if there are big problems with the whole software platform” [1G04] was classified under the first-order code “shared responsibility”, and further grouped into the second-order code “actual task distribution”. This latter coding eventually was grouped in the dimension of “distribution of accountability”.

In addition to the interviews, the first author also conducted participant observation in Cases 3 and 4. Participant observation is useful for revealing contextualized and otherwise inaccessible data to understand the tacit knowledge shared in the organizations (Locke, 2011). The observations included attending benchmark meetings, workshops, and seminars, and shadowing the daily working scenarios in different organizations. We also conducted online observations including unobtrusive observation of some of the chat groups used to coordinate the collaborations.

Document analysis for each case included event reports, meeting minutes, and company and event brochures. Table 3 provides an example of the data coding procedure.

Table 3. Example of the data coding procedure

Empirical data	First-order coding	Second-order coding	Third-order coding
<i>“Back then (2007) our whole website was in the company. The IT equipment room was very small and outdated. That was actually common across the government, nobody was in a good shape. Because [the handling of website and other tasks] were in the company, basically what you did was to help the company.” [1G04]</i>	Company’s responsibility	Actual task distribution	Distribution of accountability
<i>“There were two of us recruited in 2007. The other one is a programmer. We two people basically did what a company needed to do. That was so much pressure. We even rebuilt the IT equipment room, and also managed and maintained it afterwards. It took us around two years to build the IT infrastructure in the government. This also includes the website, etc.” [1G04]</i>	Government’s responsibility		
Observation: The company informant often flatteringly called the government informant as "expert"			
<i>“The other colleague of mine left his position afterwards because this was such a tiresome job. Two people do what a company should do. Back then we always stayed at work till around midnight.” [1G04]</i>	Backlash event		
<i>“Yes. If there needs to be big adjustment, we will definitely contact them. We will contact them if there are big problems with the whole software platform.” [1G04]</i>	Shared responsibility		

Empirical data	First-order coding	Second-order coding	Third-order coding
<i>“There were times when the district mayor wanted to change something, or relaunch something with additional contents, for example, add a propaganda theme, and the company would charge us for it.” [1G04]</i>	Public-private interaction T1	Dominant decision-making power of professional expertise	Distribution of decision-making power
<i>“They [Longsun] were so pissed off [1G04 said smiling]. They even closed off their on-site office in our government building. The three people who used to work in the on-site office moved to other district or county to carry out new business! They really didn’t earn anything in the first couple of years.” [1G04]</i>	Public-private interaction T2	Transferred professional decision-making power	
Observation: sometimes the company informant said directly to the government informant that “deputy director Li, you are the expert in doing this. You probably even know what to do better than us”	Public-private interaction T3		
Observation: There is prevalent use of the word “leader (领导)” throughout the interviews, when government informants address the higher management in the government, or company informants address anybody in the government	Public-private interaction T3	Institutional authority of government to the company	

4. FINDINGS

In this section, we present the analysis of the four cases focusing on the distribution of decision-making power and of accountability across government and non-government organizations involved in collaboration. In relation to the distribution of decision-making power, we analyze which organizations hold actual power to make decisions that affect the processes and outcomes of the collaboration between the organizations involved in each case. In relation to the distribution of accountability, we analyze which organizations are formally or informally held accountable for the collaboration of the processes and

outcomes of the collaboration in each case. In presenting the findings, we use G in the informants' code name to refer to a government stakeholder, and NG to a non-government stakeholder.

4.1. Case 1 – The Lu'an Project

4.1.1. Distribution of decision-making power

In the case of Lu'an city, there are two main groups of actors: the local private IT companies, and the Lu'an government units at municipal and district level. Among these actors, the private company Longsun and the government Jin'an District Informatization Office are the two organizations that are closest to the operation of the project. The decision-making power in this case has been shifting between the Jin'an District Informatization Office and Longsun. Initially, in 2007, the Jin'an District Informatization Office was in an IT service contract with the Longsun company, which mainly worked on the development and maintenance of the municipal website, the IT infrastructure of the Jin'an district authority, and the office automation systems. During this period, the informatization office assumed a passive role in negotiations with Longsun. Longsun often made decisions for the Jin'an District government. As stated by the Vice-Director of the Jin'an District Informatization Office:

There were times when the district mayor wanted to change something, or re-launch something with additional contents – for example, adding a propaganda theme on the website – and the company would charge us for it. This put the government in a very passive position. So, when we [two employees] were recruited, the district mayor said to us: 'you have to break the deadlock', that is to say, we have to develop our own 'brand'.

[1G04]

Giving an overview of the development of informatization in the whole Lu'an Municipality, the Vice-Director of the Lu'an Municipality E-government office also remarked on the issue of the government lacking IT capabilities and resources, and its potential impact on the government's dynamics with the contracted IT company:

The government website builders like us often use websites from municipalities such as Shanghai for references. But we have to admit that informatization is a money-burning process. Compared to municipalities like Shanghai, we have much more limited resources. Even compared to our district governments, where the informatization office is relatively small, we have almost as many IT experts as they do. This surely has some consequences on the things we can demand from the company, and on the dynamics with them.

[1G01]

In this phase, the decision-making power rested with the company, primarily due to the lack of internal capabilities in the government. Subsequently, two government employees, including informant 1G04, were hired to change the situation in the Jin'an district Informatization Office. In three years, the two government employees managed to take over the maintenance of the IT projects by self-training on programming and the implementation of hardware. They also attended seminars and conferences on IT and public service,

and reported to take notice of the companies who approached them with new services to keep themselves in the loop on new technology development. For a period of time, the Jin'an District Informatization Office managed to marginalize the Longsun company from making decisions for the government on what new technologies they need to purchase. As stated by the government informant: "With my colleague and my efforts, the company didn't even manage to earn a penny out of us on our web portals for three years" [1G04]. Referring to the collaboration, the same person said:

They [the Longsun company] were so pissed off. They even closed off their on-site office in our government building. The three people who used to work in the on-site office moved to another district or county to carry out new business! [...] They really didn't earn anything in the first couple of years.

[1G04]

The head of the Jin'an District Organization Department, who is also the superior of the Jin'an District Informatization Office, also praised the informatization office for the work they have done:

Thanks to the hard-working people in the informatization office, we have a more balanced interaction with the company now. We don't have to agree to everything they suggest, and we have a better idea of what we need and what we don't need... This is not to say no to the new things, it is about how to stay updated with the world within a reasonable budget... If you look at the evaluation results of informatization of our district government, we actually rank quite high across the district and county governments, but with a very low spending.

[1G03]

So, over time, decision-making power slowly shifted to the government side. Ever since then, the decision-making power has been almost solely consolidated in the hands of the government. As an example of this, during the interviews with the company, whenever company employees addressed anybody in the government, they always referred to them as a "leader", indicating a formal recognition of their authority, but also an informal recognition of the "leader of IT" [1NG01], as they put it themselves. For example, when informant 1NG01 was introducing the company's service for the government, he mentioned that "the last time the leader came, he gave more guidance on this aspect."

In summary, in this case, over the course of project development, the distribution of decision-making power either rested in the hands of the government actors or the non-government actors.

4.1.2. Distribution of accountability

Initially, in 2007, accountability was clearly divided between the Jin'an District government and the Longsun company. The company took full care of the technical development of the portal website, office administration systems, and other tasks, and the district government had an assisting role in the collaboration. As stated by a government informant:

Back then [in 2007] our whole website was in the company. The IT equipment room was very small and outdated. That was actually common across the government. Nobody was in a good

shape, because [the handling of the website and other tasks] were in the company. Basically what we did was to help the company.

[1G04]

In this phase, the company was accountable for the technical tasks, while the government was accountable for the assisting tasks. Then, in 2007, two IT professionals were hired into the government and started to take over all the technical development tasks from the company side. In two years, they managed to finish the technical development all by themselves without the help of the company. As one of them explained:

There were two of us recruited in 2007. The other one is a programmer. We two people basically did what a company needed to do. That was so much pressure. We even rebuilt the IT equipment room, and also managed and maintained it afterwards. It took us around two years to build the IT infrastructure in the government. This also includes the website.

[1G04]

In this phase, the government took over the technical tasks and the company was driven out of the scope in the project. However, pressured by the workload of both technical development and content management, the government turned back to the company and started to reinstitute the collaboration.

But when things started to develop, we as government, especially the informatization office, realized that we couldn't just rely on two people to make the whole informatization process mature. When it comes to technical terms, we still need to rely on the company.

[1G01]

The Vice-Director from the Lu'an Municipality Internet Propaganda Office made a similar observation on the division of labour between government and the company in the process of informatization:

Our type of office needs more than just a few IT people. There are a lot of different kinds of tasks that we, or an informatization office, or an e-government office, needs to handle. It is necessary to divide the labour between the company and the government so that each can focus with its best expertise.

[1G02]

In a year's time, the government agency had changed from bearing the technical task of building platforms, to the current management task that focuses more on content creation and, in the words of the government informants, "to have the market cooperation". A government informant explained, "market cooperation" as follows:

I mean, to collaborate with company, you know, cooperate with market. The company provides technology and service, and we take care of the management of the platform, maintain it, and make it come into play, as it should be.

[1G04]

However, in this phase, the government's previous IT development experiences enabled it to jump in and take over the technical tasks from time to time. For example, as a government informant said:

Last time I wanted to add a theme or what not, I just did it myself. There was also a time when I had something that needed their help, our employees went out to the company and told them what needed to be added where. And they [the company] couldn't even pull it together. They just don't know how to use it.

[1G04]

An informant from Longsun also reconfirmed the exchange of ideas on tasks and saw the IT expertise of 1G04 as a merit for enabling collaboration to develop projects:

It is easier with people, like 1G04, who have more expertise in IT in general. When we have a new system in place, he just needs to have a few training sessions, and he can easily start to use our new services or platforms... Sometimes he can even 'lead' us with new ideas to improve stuff. This is much more difficult for the officials who don't have a background in IT. We don't mind giving a lot of training sessions, but most of the time, the government officials are just not getting it.

[1NG01]

In summary, in this case, the distribution of accountability has been shared in different forms between the government actors and the nongovernment actors throughout the project development.

4.2. Case 2 – The Shanghai WeChat Service Project

4.2.1. Distribution of decision-making power

In the case of Shanghai WeChat, there are two main groups of actors: the Tencent corporation, and the group of Shanghai government units at municipal and district level. Initially, in the collaboration with WeChat, the group of Shanghai government units occupied a dominant position in decision-making. The Chief eGov Media Cooperation Officer of Tencent used the metaphor of “half-life” to describe their position in the collaboration with the government units: “Tencent actually has only half-life. The other half is in the partners' hands [...] the other half of our life is in each government unit's hands. That is how it actually is” [2NG01]. This was especially true in the beginning, when Tencent was proposing the city service platform project to the municipal government. As stated by 2NG01:

We actually had a lot of solutions, but whether they were accepted or not, it depended on the government. From a technical perspective, we had a very mature framework and solutions. But whether such kind of solutions were accepted or not, or whether this would be pushed through or not, the final decision was made by the government.

[2NG01]

The government units expressed their initial concerns behind whether to join the platform or not. As an informant from Shanghai Police said:

Of course we'd like to make our service better, the more channels to open up the service, the merrier... but we can't just agree with everything, it is not possible either. As the police, we are

always very concerned about the security of our data, and we need to evaluate what services we can provide and what we can't.

[2G02]

The comment by Shanghai Police is indicative of a general concern among public agencies about the security of government-owned data. The government units are also concerned about the synchronization of agreement among the service-related bureaus. As stated by an informant from Shanghai Police:

Tencent has to negotiate this with each department and bureau. Take us as an example, the tasks we work with, such as collecting fines, handling entry and exit documents, they are not only done in the police system. Sometimes it is actually more connected to the tax bureau, or other subordinated bureaus or governments. It is not that if we say yes to provide certain kind of services for the WeChat platform, then it is going to work. The agreement also has to be reached in sync with other connected bureaus. In a way, it is easier now than before; since the collaboration with WeChat is agreed at a municipal level, then other bureaus have to follow.

[2G01]

From the government's point of view, such synchronization is also related to the capacity of each bureau:

When you try to make a unified service platform like this, it is like making a bucket out of different wood boards of different length. It can only work when the one with the lowest capacity works, and that would significantly limit what services others may provide... Sometimes the proposed solution [by WeChat] sets such a high bar that it requires too much work and resources from us, that makes us less willing to cooperate too.

[2G02]

The distribution of decision-making power between Tencent and some of the government agencies changed when an application feature was established on WeChat. This application feature requires any government agency that wants to establish digital service functionality on WeChat to apply to Tencent, who then has the power to accept or reject the application, based on a loosely identified series of criteria. These criteria can include the volume of service traffic and the coverage of users. As described by one of the informants working for Tencent:

At first you apply at the backstage [of the platform], saying 'I'd like to integrate my functions'. Then WeChat would review and make a decision whether the functions you claim are true to what they are. For example, whether you have a wide reach, or potential coverage of users. [...] But this is only the first step, meaning that there is potential. There are other reviewing processes to make sure whether you actually covered most of these activities. The detailed reviewing procedure is in WeChat.

[2NG01]

The establishment of this application platform especially reduces the decision-making power of the "weaker" government units, namely those with less resources, that have a lower position in the government

hierarchy (such as district governments) or that are weaker because of the type of service they provide. The veto power obtained by Tencent after the establishment of the application platform is exemplified in the following instance, where Tencent refused to implement an information service functionality proposed by a Shanghai district government because Tencent felt that the provided services go beyond the competencies of a district:

Shanghai always has a relatively prosperous scene of cultural performances, but cultural performances are always scattered. Maybe each district has their own platform for cultural performances. As a district platform wanting to be connected to the city service platform, this does not meet our criteria. You [Shanghai district] can't be integrated.

[2NG01]

However, for larger and more powerful government units, the decision-making power is relatively unaltered, even after the establishment of the application platform. As claimed by one of the informants at Tencent, in reference to co-developing the platform:

When it comes to the realization of the functions, and what is to be launched online, we in fact need to constantly collide and negotiate.

[2NG01]

At the stage of deployment, the government units reported to have most of the decision-making power in their own hands, particularly when it comes to what kind of content the government units or bureaus would like to publish daily on the public account. However, government units also reported to being limited by the design frame of public service accounts on WeChat when it comes to, for example, the number of articles that they could present each day to their subscribers. The original design on WeChat public accounts allows each public service account to present a maximum of eight short articles to their subscribers per day all at once. This means that, when for example a typhoon forecast needs to be presented to subscribers, after the quota is exhausted, the government bureaus have to apply for extra room to WeChat before they can publish the forecast, despite its critical nature. Interviewee 2G04 from Technology Service Centre of Shanghai Meteorological Bureau and interviewees 2G07 and 2G08 from Shanghai Release of Shanghai Municipal Government have reported incidents where they had to apply for extra quota on the platform for forecasting sudden meteorological disasters. As 2G08 put it:

In theory, WeChat can deny our application. But usually they respond rather quickly, and give a fair evaluation. But no, we cannot really push them for the decision other than stating the severity of the situation.

[2G08]

In summary, in this case, the distribution of decision-making power is shared between the group of government agencies involved in the collaboration and the non-government actor, Tencent.

4.2.2. Distribution of accountability

Throughout the collaboration, the distribution of accountability between Tencent and Shanghai government units is clearly separated. Tencent plays a supporting role in the collaboration with the group of government units. The informant from Tencent sees himself as “commissioned to do the technical development” [2NG01]. As he further elaborates on company tasks:

We are actually the cooperation side; we are a platform to cooperate, support, and provide service, so it is more about how to do it. But first and foremost, whether the function should be developed or not, how it is wanted, what kind of effects we'd like to reach, this is actually up to each government organization.

[2NG01]

The same informant from Tencent also explicitly asserted: “we don't do framework design for the government. We can't arrange their affairs” [2NG01].

The government bureaus share a similar view on this, yet on a more positive note:

I am really happy that there is more collaboration from these new media platforms [WeChat] with us. I mean why would a meteorological bureau sign a strategic collaboration agreement with Tencent at all? I have my eyes on their platform, and I'd like them to release the latest information we have on weather and climate. Back then, we wanted to develop apps as well, but we didn't have the resources to develop or maintain an app. If we outsource it to a company, the company charges us on every single change, and the app may not even have a broad reach. We simply just cannot afford this... With the support from Tencent, we can now make changes rather easily, reach a lot of people, while paying very reasonable fees.

[2G04]

Overall, in this case the accountability is in the government actors' hands. The non-government actor acts solely as the service provider.

4.3. Case 3 – The Shanghai Open Data Apps (SODA) Project

4.3.1. Distribution of decision-making power

The Shanghai Open Data Apps (SODA) project includes a wide constellation of organizations. The group of government actors includes more than eight government agencies at the district, municipal, and national levels, who take roles in data provision, coordination, and supervision. The non-government actors include two universities and six companies who take care of the main coordination. There are also more companies who have played a supporting role in providing computing devices, campaign service, and data provision. In this case, the decision-making power is shared among the main coordinators in the collaboration, who come from both government and non-government. The informants were especially excited in telling us about the collaboration process because, in their opinion, it differs from the traditional style of project collaboration in which the government makes all the decisions in a hierarchical fashion. Both government and non-government informants vividly described how many major issues are discussed and agreed online

with “everybody's participation in making that decision” [3G01]. As one of the non-government actors elaborated:

The way the contest is organized is like open data itself. It is like when the government data is open to the public, you don't really control what they do with the data. You have your own way. You can use that.

[3NG04]

Some informants specifically attribute this decision-making style to the collaboration between the government actors and the non-government actors. As elaborated by the director of Opendatachina.com:

I would actually describe SODA as collaboration between government actors and the community of non-government actors. As a community of non-government actors, including companies, universities, and NGOs, we enjoy much more freedom and ease in decision-making. There is relatively more space for that.

[3NG03]

This shared decision-making style of collaboration co-exists with other situations in which the government maintains a strong role overseeing the decision-making processes. This co-existence can manifest itself in ambiguous ways. For example, the non-government actors reported inviting high level government officials into their online chat groups, just to ensure that the government officials are informed about the process and can grant permission to the tasks by giving a “silent agreement” [3NG08]. Sometimes, the ones who have the decision-making power can also change from event to event. As elaborated by one of the non-government actors:

It is difficult to say, maybe every participant, for example, government or the committee, thinks they are the ones who have the say on SODA. But in fact each participant decides on different things at different stages of SODA. In general, for those important offline events – for example, the final, or the road show, where government has a lot of presence – often the government side has more power in deciding things. And naturally the form of those events often turns out to be more government-like. But at other times, the governments' power weakens a lot, mainly because governments also don't have this kind of energy to constantly be the leading decision-maker for everything and for such a long period of time. Then, also most of the time, the committee, that is the rest of us, takes the job and decides on whatever that comes our way.

[3NG03]

In summary, in this case, the distribution of decision-making power is shared between the government and non-government actors. Government actors and non-government actors make decisions contingently depending on the criticality of the issue.

4.3.2. Distribution of accountability

In the case of SODA, the accountability is clearly divided between the government actors and the non-government actors. The government actors mainly take care of data provision for the open data contest,

and of “opening doors” and “bridging resources” for the non-government actors to ensure the progress of the collaboration. As both government and non-government informants recognized, “there is a clear line between government and the rest” [3NG04] “on how tasks are divided” [3G01].

Referring to the role of the government actors in the collaboration, government informants have specified that the main responsibility of the government side is to take care of resource and network provision, while the non-government actors are to take care of the management of these resources and of the actual contact with relevant parties. As a government informant stated:

The government's responsibility is very clear [...] We provided very limited amount of funds for SODA. I also help them to find sponsorships. The sponsorships are then settled at his layer [the private company China Industrial Design Institute (CIDI)], but I did introduce these people to his way.

[3G01]

Another related task of government (i.e., SHCEI) reported by the non-government stakeholders is the coordination among the government stakeholders. This was mentioned by several informants, such as [3NG06] and [3NG03], as “something we simply cannot do”. As elaborated by the director of Opendatachina.com:

When it comes to offline events, things just have to be organized around the bureaucratic system. For example, the schedule of the event has to be adjusted according to the availability of higher officials. The order of the presence of important government officials also needs to be attended. When it comes to the coordination of data, we need an official letter as an endorsement. There are even bureaus that refuse to communicate with the committee. They only communicate with people from SHCEI... We need to rely on SHCEI to open doors for us.

[3NG03]

Also, the government actors are reported to be in charge of “steering the boat” for the project, especially on major issues of principle. The divide occurs mainly among the ‘leading tasks’ that focus on decision-making and networking, and the coordination tasks that focus on daily operations. As a non-government informant puts it:

If we leave government alone and only look at the other side, then this competition is a pure coordination between us [non-government actors].

[3NG04]

Other non-government actors have made similar remarks and have detailed the divide of tasks between government and non-government actors when reflecting on how the planning of SODA was carried out. As stated by the CEO of KESCI, the developer for the digital platform of the contest:

We [referring to the non-government side] did most of the job, for example together with [3NG01], [3NG03], and [3NG05], especially during the planning stage, researching other countries' cases on open data, proposing the frames for the contest, creating the website, etc. [...] The government

side also contributes with a lot of ideas in the discussion, but for delivering the actual final product, like presentations of the proposal for the contest, and the digital platform, the higher officials, especially the ones who were not involved in the planning process, are mostly in the position of granting permissions [...] We as the developer see engineering as the fundamental support of the whole project, so we pay particular attention to the tech-tasks and actual operations.

[3NG02]

In summary, in this case, the distribution of accountability is clearly separated between the government actors and the non-government actors.

4.4. Case 4 – The Observe Project

4.4.1. Distribution of decision-making power

In the case of Observe, the actors include the government host of the IT project workshops, other relevant government agencies across different regions, private companies, and NGOs. By participating in the workshops, these actors gradually formed a community in which new ideas and resources are proposed for organizing new workshops. In this community, there is a loosely defined group of core actors. Most of these core actors have participated in the workshops from an early stage, and have followed up in the subsequent series of workshops. This core group consists of both government actors and non-government actors. Among these actors, one of the university actors who initiated the workshop [4NG01] has gradually taken up the role as a main coordinator. He facilitates the decision-making process in organizing the workshop by taking into consideration the opinions of other core actors. The decision-making power is thus distributed among the core actors of the workshop.

There are two ways to initiate a workshop: volunteered and pushed through. In the first scenario, either a member of the core community or a participant from a previous workshop proposes to the main coordinator [4NG01] that he/she would like to host the upcoming workshop. These initiators could be either government actors or nongovernment actors. Among government actors, they are often the ones involved in ‘newly’ implemented IT projects (e.g., related to big data or to open data), and are motivated to collect more feedback from society to “test the connection between the government's project and the market” [4G01]. Among non-government actors, they are the universities, companies, or NGOs who have novel solutions for existing public projects and would like to see these solutions implemented. Some of them are also involved in existing IT-related project collaboration. They are motivated to “cultivate government with leading knowledge in the field” [4NG04] and to “accelerate the process of converting new solution into actual practices in the public project” [4NG03].

Each workshop requires one government actor and one non-government actor as co-initiators to enable collaboration between the two sides, especially to align goals and interests among the stakeholders. After the co-initiators submit the proposal to the main coordinator, the main coordinator will then pass the information to the core actors and discuss the potential themes for discussion. The result of the discussion, often in the form of a list of potential themes, is then sent to the rest of the community to test for relevance

via online chat groups. Once the themes are agreed to within the community, the decision is made, and the initiators who proposed the event become the main contact people for the workshop. In one of the early workshops, an informant from the Technology Service Center in Shanghai Meteorological Bureau recalled this process:

In the workshop, we had an online group where people can just invite themselves in with a QR code. It is very open, and they can just make suggestions. Last time, when we had the workshop “Observe Meteorological Bureau”, people from the Caiyun app [a popular weather forecast app in China] just joined us in the group. As the Observe workshop ran both online and offline, we posted the real-time speeches in the group, and we put the interactions in these groups on live. That time they asked questions in the group, we discussed them offline and answered them in the online group.

[4G01]

In the second scenario, the main coordinator suggests a theme and plan for a workshop and persuades some known actors in the community to host it. Informant 4NG01 described this process as an “easy push”, as the coordinator only persuades the actors that he knows would be interested in hosting. The subsequent acts would be decided among the core actors and the community again.

As showed in the process above, the organization of the IT-project workshops is based on open decision-making processes, where several themes can be pre-approved, but still changed when new stakeholders join the network. The distribution of decision-making power is shared between the government actors and the non-government actors.

4.4.2. Distribution of accountability

In the case of Observe, the accountability is shared across the actors from the core group, and according to the resources each person has. For example, one informant has specifically mentioned that the rationale behind having a rather mobile workshop that changes host every time is to “avoid overloading any actor with immense responsibilities” [4NG01]. The accountability, in this sense, is transferred from one host to another host, which are always made up of two “co-chairs”, one from government and one from non-government.

Some informants also see it as part of the process to negotiate accountabilities between government and non-government stakeholders in controlling the development of IT-related project collaboration. As the Vice Director of the Technology Service Centre, from Shanghai Meteorological Bureau puts it:

We are all in this process of collision right now. Because, really, including myself, the governments think it is very difficult to integrate different kinds of needs. At least I think it is very difficult, because each bureau and industry has its own characteristics. And there are a lot of them. We need to have a division of labour on what governments should do, what the society should do

in running, for example, an open data project. All these have to be negotiated in detail, but how to do it? This form of meet-up is a good testing ground.

[4G01]

In summary, in this case, the distribution of accountability is shared contingently between the government and non-government actors, and revolves around the resources each actor possesses.

5. A TYPOLOGY OF ADAPTIVE GOVERNANCE

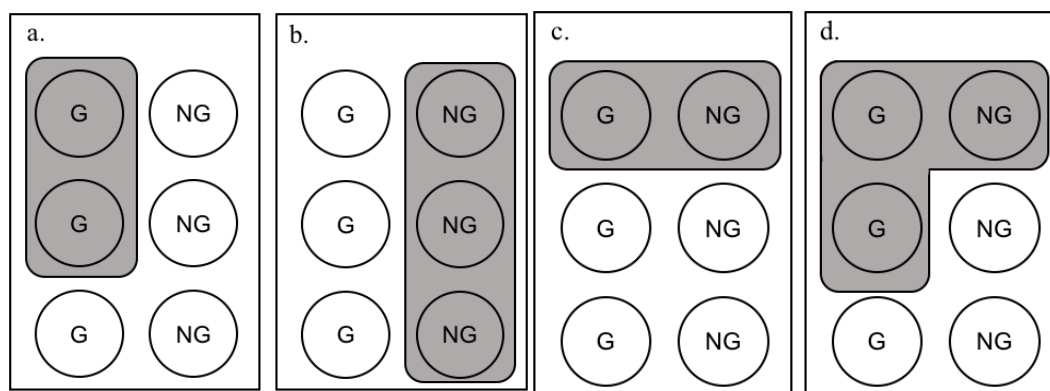
The observed distribution of decision-making power and of accountability across the four cases analyzed shows different patterns. Focusing on the modes of collaboration between government and nongovernment actors, we identify two types of configurations in the distribution of decision-making power and of accountability between government and non-government actors.

The first configuration encompasses all cases in which the distribution of decision-making power (or accountability) is concentrated in either government actors or non-government actors; in other words, cases where the separation between those with decision-making power (or accountability) and those without occurs with distinguishing between government and non-government actors. We label this type of distribution as polarized.

The second configuration encompasses all cases in which decision-making power (or accountability) is shared, at least at some point in time, between at least one government and one non-government actor. We label this type of distribution polycentric.

Fig. 1 shows four abstract examples of distribution between government and non-government actors involved in collaboration. The distribution configurations apply without difference to both decision-making power, and to accountability.

Figure 1 – Examples of polarized (a. & b.), and polycentric (c. & d.) distributions between government (G) and non-government (NG) organizations.



As illustrated in examples a. and b. in Fig. 1, a distribution is polarized when the decision-making power (or the accountability) is concentrated in either the government or non-government side. The two examples illustrate that the concentration does not necessarily need to involve all organizations of one type

(government or non-government) (example a.), and can be either concentrated on the government or on the non-government side (example b.).

On the other hand, a distribution is polycentric when the decision-making power (or the accountability) is shared between government and non-government actors. To qualify as a polycentric distribution, the sharing can occur between only two actors (example c.), or can involve any number of actors on the two sides (government and non-government) of the collaboration (example d.).

As evidenced in the case analysis, the distribution of decision-making power and the distribution of accountability are two distinct phenomena. An organization (or a group of organizations) that is held accountable for the processes and outcomes of a collaboration project might or might not hold the decision-making power. This gives rise to governance practices between government and non-government actors where there are different combinations of polarized and polycentric distributions of decision-making power and of accountability.

To understand the significance of the relationship between decision-making power and accountability for the nature of governance practices, we combine them in a two-dimensional framework. The combination of the two dimensions of distribution of decision-making power and of accountability defines four types of governance of collaboration between government and non-government organizations. Three of these types feature at least one of the dimensions of distribution of decision-making power or of accountability to be polycentric (that is shared across government and non-government actors). As these three types of governance arrangements are aimed at ensuring adaptiveness to rapid changes in the environment occurring in IT-related projects, we conceptualize them as different types of adaptive governance. The three types are illustrated in Table 4.

Table 4. A typology of adaptive governance: distribution of decision-making power and of accountability across government and non-government actors

		Distribution of decision-making power	
		Polarized	Polycentric
Distribution of accountability	Polarized		<i>Polycentric governance</i> <ul style="list-style-type: none"> Case 2 – Shanghai WeChat Service Case 3 – Shanghai Open Data Application (SODA)
	Polycentric	<i>Agile governance</i> <ul style="list-style-type: none"> Case 1 – Lu'an 	<i>Organic governance</i> <ul style="list-style-type: none"> Case 4 – Observe

The typology is descriptive and not normative, in the sense that it does not prescribe one type of adaptive governance as better than another.

One type of governance is characterized by a polarized distribution of decision-making power and a polycentric distribution of accountability. This type of governance is well-exemplified by case 1, the Lu'an project. This case exemplifies a governance practice aimed at adapting to rapid changes in the environment by flexibly sharing accountability across government and non-government actors, while maintaining decision-making power only on one side. We label this type of adaptive governance as agile governance.

A second type of governance is characterized by a polycentric distribution of decision-making power and a polarized distribution of accountability. This is exemplified by case 2, the Shanghai WeChat project, and case 3, the Shanghai Open Data Apps (SODA) project. Both cases exemplify governance practices aimed at adapting to rapid changes in the environment by flexibly sharing decision-making power across government and non-government actors, while maintaining accountability only on one side. We label this type of adaptive governance as polycentric governance.

A third type of governance is characterized by a polycentric decision-making power and a polycentric distribution of accountability. This is exemplified by case 4, the Observe project. This case exemplifies a governance practice aimed at adapting to rapid changes in the environment by flexibly sharing both decision-making power and accountability across government and non-government actors. We label this type of adaptive governance as organic governance.

In the next section, we discuss the findings and the implications of our analysis for research and practice of adaptive governance in the context of digital government.

6. DISCUSSION AND IMPLICATIONS

6.1. Implications for Research

The governance of digital projects is a complex socio-technical phenomenon (Dawes, 2009), and governments facing economic pressure, social tensions, and global competition have to work through networks of diverse actors to organize existing resources, knowledge, and capabilities in the pursuit of public goals (Janowski et al., 2012). While potentially able to capture the need of governments to establish governance practices that can respond to swiftly changing environments at a conceptual level, the notion of adaptive governance needs to be tested and understood in a context of digital government. Drawing on the analysis of four empirical cases, this study provides several contributions to research on adaptive governance in the context of digital government.

First, our study puts the role of digital tools at the center of the notion of adaptive governance. Existing research has started to investigate the notion of adaptive governance in a variety of policy areas, including climate change (Brunner & Lynch, 2013), community relocation (Bronen & Chapin, 2013), and ecological systems (Folke et al., 2005; Robertson & Choi, 2010). We bring the role of digital technologies to the forefront in enabling governance configurations that can ensure adaptiveness. Through our case analyses, we showed how the use, management, and implementation of a wide array of digital tools – including web

platforms, open government data platforms, and social media applications – represent a core element of adaptive governance arrangements.

Second, combining the stream of adaptive governance scholarship (Chaffin et al., 2014; Janssen & van der Voort, 2016) with the governance practices we observed, we articulated the complexity of the two dimensions of the distribution of decision-making power and accountability, which play a critical role in devising adaptive governance strategies in a digital government context.

Existing scholarship on governance of collaboration between government and non-government actors often views decision-making power and accountability as going hand-in-hand. Decision-making power and accountability have been conceptualized as attributed either to government actors, or to non-government actors. Our study, on the contrary, articulates that: a) decision-making power and accountability can be decoupled from each other in different contexts, and when they change, they do not necessarily change in the same direction; b) the distribution of decision-making power and accountability can run across the line of government/non-government distinction, and take the form of a polycentric distribution; and c) that distributions of decision-making power and of accountability across government and non-government actors vary independently, and can dynamically change over time. These observations provide empirical evidence to support the ambidextrous and dynamic nature of adaptive governance arrangements, as initially suggested by Janssen and van der Voort (2016).

Third, we propose a typology of adaptive governance based on empirical data analysis, which can provide clarification in further operationalizing the concept of adaptive governance. Research on the concept of adaptive governance so far has moved in various directions, resulting in a marked ‘theoretical multiplicity’ (Karpouzoglou, Dewulf, & Clark, 2016). The extant body of research does not share a common framework for classifying the different dimensions of adaptive governance in a systematic fashion. By putting forward our typology, we contribute to reducing the ambiguity of the adaptive governance notion and its multiple aspects, and aim at fitting it into the context of digital government in a more structured manner. This typology can function as a tool for better comparisons in research on cases of adaptive governance, and as a guide for practice in real-life contexts.

6.2 Implications for Practice

Our proposed typology of adaptive governance based on an analysis of real-life empirical cases also provides two keys insights for public managers engaged in the governance of IT-related project collaboration between government and non-government actors.

First, our findings suggest that adaptive governance may imply decoupling the distribution of decision-making power from the distribution of accountability. We showed that a relief of responsibilities is not necessarily equal to the loss of decision-making power. Rather, it can result in improved flexibility and adaptiveness. Public managers engaged in establishing collaboration with diverse non-government actors can consider distributing decision-making power and accountability across different constellations of actors, without jeopardizing the effectiveness of the adaptive governance arrangement. Moreover, these

distributions can also change over time, which requires government and non-government actors to pay constant attention to the emerging governance arrangements, as well as adjustment of expectations and practices.

Second, the case analysis shows that distributing decision-making power or accountability across the divide between government and non-government actors can be accommodated in different forms of adaptive governance arrangements. By experimenting with different configurations of distribution of decision-making power and accountability across government and non-government actors, public managers can actively design and fine-tune arrangements among agile, polycentric, or organic governance to best suit the challenges of adaptiveness at hand. This also requires public managers to pay more attention to contextual variables, such as the collaborative technologies employed and the configuration of government resources in comparison to non-government actors.

6.3. Limitations

As all studies, ours also has some limitations. The first concerns the focus of the study. When transferring the concept of adaptive governance from the research on social-ecological systems (Chaffin et al., 2014) to the context of digital government, we deliberately highlighted the dimensions of decision-making power and accountability. The dimensions of decision-making and accountability require a special focus when we aim at transferring the notion of adaptive governance to the digital government context. In fact, understanding how decision-making power and accountability are distributed enables governance arrangements that can balance adaptiveness and stability: such balance is what characterizes adaptive governance in the context of digital government (Janssen & van der Voort, 2016). However, there are other dimensions to be explored in adaptive governance arrangements, which we have not focused on in our study. These dimensions include the role of trust or distrust (Ansell & Gash, 2008), the distribution of resources (Cristofoli, Markovic, & Meneguzzo, 2014), and the extent to which different actors have different goals (Saz- Carranza & Ospina, 2011). We acknowledge this limitation, and put forward our proposed framework as a stepping stone for expanding future research foci to these other dimensions as well.

The second limitation concerns our unit of analysis. Because we aimed at investigating the distribution of decision-making power and accountability across the divide between government and non-government organizations, we deliberately chose not to focus on the characteristics of the distribution of decision-making power and accountability within groups of organizations of the same nature (governmental or non-governmental). For instance, regarding the distribution of decision-making power, in the case history of the Shanghai WeChat project, we observed some differences in the distribution of decision-making power between the Shanghai municipality and the smaller Shanghai districts, vis-à-vis the non-government actor, the Tencent company. Moreover, regarding the distribution of accountability, we focused on the accountability of each organizational actor to the collaboration arrangement, and not on the accountability of individuals to their own organization, or to society at large (Huxham & Vangen, 2005; Vangen &

Winchester, 2014). We acknowledge that these nuances were not at the forefront in our case analysis. However, our focus choice was motivated by our pursuit of a clear conceptualization of adaptive governance, and was aligned with the study's research question, which focused only on the principal divide between government and non-government actors engaged in collaboration.

Third, the choice of our cases may limit the generalizability of the findings. While we argue that the unique institutional, economic, and IT-related characteristics of China (Gao et al., 2013; Zhang et al., 2017) provide a very good context in which to test the key dimensions of adaptive governance, we acknowledge that there could also be downsides of such a choice. For example, the changing nature of the distinction between the public and private sector, which characterizes China as a country in transformation (Li, Gao, & Mao, 2014), could hinder the generalizability of our findings to cases in other countries, which are characterized by different institutional settings. However, it is to be noted that in this study we did not aim at providing generalizable findings applicable to other empirical settings, but rather at investigating theoretical concepts and principles (Lee & Baskerville, 2003).

The last limitation concerns the operationalization of the two dimensions of the typology. For the sake of conceptual clarity, the typology treats the polarized/polycentric dimension as a discrete variable; however, it could be argued that it would be more accurate to treat it as a continuum. We acknowledge that our representation of the two dimensions is a simplification of the complexity of adaptive governance arrangements. However, we deem the shortcoming of treating the polarized/polycentric dimension as a discrete variable to be mitigated by the fact that our proposed typology is dynamic in nature, meaning that a case of adaptive governance can shift over time between featuring the characteristics of an organic, polycentric, or agile governance arrangement, depending on the contextual demands.

7. CONCLUSION AND FUTURE RESEARCH

Governments are increasingly facing challenges that require them to envision collaboration with non-government actors in a responsive fashion, by being able to adapt to swiftly changing demands from the environment, especially in IT-related endeavors. The notion of adaptive governance aims at capturing new forms of collaboration between government and non-government actors that can respond to these challenges. However, while potentially useful, the nascent notion of adaptive governance still needs to be detailed and tested in the context of digital government.

In this study, we have aimed at refining and empirically testing the notion of adaptive governance by focusing on the two dimensions of the distribution of decision-making power and of accountability among government and non-government actors. Our analysis of four cases of IT-enabled project collaboration shows that different configurations of distribution of decision-making power and of accountability result in different types of adaptive governance – namely polycentric, agile, and organic. This articulation of the concept of adaptive governance can represent a starting point for future research on a number of issues related to this nascent notion, which in turn can be used to further inform research and practice.

Future research should thus be directed towards two goals. First, there is a need to understand what are the determining factors for the emergence of each of the specific types of adaptive governance. The very notion of adaptive governance implies that a governance arrangement between government and non-government actors should be shaped around the needs of a swiftly changing context. Contextual factors that can affect the need for adaptiveness include: the type of policy area (e.g., service provision, business model development, information provision) that a collaboration is required to tackle; the regulatory environment; the timeline of goals to be achieved by the collaboration; and the existence of a previous record of collaboration between participating actors. Further research is thus required to identify which contextual factors are more often linked to the emergence of a specific type of adaptive governance.

To capture these changing contexts, future studies should pay particular attention to the selection of empirical cases. It would be ideal if the selected cases feature shifting contextual factors, such as policy shifts, project timeline changes, or changing composition of stakeholders. By removing and reintroducing a certain contextual factor, such shifts can provide a unique natural experimental setting to test the link between certain contextual factor and the emergence of each of the specific types of adaptive governance. This also implies that the cases need to be studied in a longitudinal fashion to allow for observation of changes. Conceptually, the research results reported from such settings can increase the generalizability of the theoretical propositions derived from the identified dimensions of adaptive governance in this study. Practically, they would also help public managers to better understand which type of adaptive governance strategy can be expected to work better in which specific situation.

Second, findings from our study call for further research on the consequences of the adoption of a specific type of adaptive governance. The existing body of research on governance has already focused to some extent on assessing the impacts of governance arrangements between government and non-government actors, in terms of project success or failure. What need to be further investigated are the impacts of the adoption of each of the different types of adaptive governance on aspects other than project success. These can include the impacts on stakeholders participating in collaboration, and on external actors, such as the citizens affected by the outcomes of the collaboration projects.

In terms of impacts on stakeholders, future research should focus on understanding, for instance, how the adoption of a polycentric governance regime (characterized by a polycentric distribution of decision-making power, but a polarized distribution of accountability) affects the motivation and the levels of satisfaction of government and non-government stakeholders engaged in collaboration, in comparison with an agile governance regime (characterized by a polarized distribution of decision-making power, but a polycentric distribution of accountability). Stakeholder motivation and satisfaction levels are, in fact, key factors in making an adaptive governance arrangement desirable and sustainable over time.

In terms of impacts on citizens, future research could focus on investigating how the outputs of organic governance regimes of collaboration (where both the distribution of decision-making power and accountability are polycentric) are perceived by the recipients of the public services resulting from these

collaborations. While citizens use public services and interact with government and non-government actors, they have various assumptions on the differences between these sets of actors and on the role they should play in delivering public value (Chatfield & AlHujran, 2007; Cordella & Bonina, 2012; Cordella & Tempini, 2015). Understanding how each of the adaptive governance arrangements impacts citizens' perception of the legitimacy of public policies, for instance, will be key for assessing the value and sustainability of each governance arrangement.

The notion of adaptive governance possesses a strong potential for enhancing our understanding of the mechanisms of new governance practices, and for orienting the management of IT-related collaboration. By articulating this concept and testing it in revelatory empirical settings, in this study we aimed at providing a first step towards unleashing this potential in a digital government context.

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**Identifying the Organizational Form of Digital Public
Service Projects**

*Technology-mediated Hybridization Processes amongst
Competing Institutional Logics*

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ABSTRACT

As public service undergoes digital transformation, the collaboration behind the public service projects is becoming increasingly complex. With the growing range and dynamism of stakeholders and increasing mediation of information and communication technologies, digital public service projects are confronted with the burning problem of finding the appropriate organizational form. Taking an institutional logic approach, we address this problem by seeing organizational form as temporary settlements that result from a hybridization process of different institutional demands. To identify the appropriate organizational form thus requires understanding how hybridization occurs. Based on a longitudinal study of an open government data project in China, we derive a hybridization model that centers around three strategies - prototyping, selective coupling and mitigating internal tension - to manage the shifting institutional dynamics in digital public service projects. These hybridization strategies are enabled by the stakeholders' use of social media, acting as both a virtual sandbox for building organizational structure and a repository for shared knowledge and experiences.

Keywords: public-private collaboration, organizational form, hybridization, institutional logic, collaborative platform, open data project

1. INTRODUCTION

As digitalization of public services deepens, we have seen an increasing amount of digital public service projects that are delivered through *public-private collaboration* (Bertot et al., 2016), linking information, resources, activities, and capabilities from organizations of different sectors to jointly deliver a public service (Bryson et al., 2006; Narasimhan and Aundhe, 2014; Ruuska and Teigland, 2009; Sharma, 2007). In response to the rapid evolvement of digital public services (e.g., A.I., open government data, smart cities), government increasingly relies on knowledge sharing with non-government organizations, resulting in collaborations that are characterized by a growing range of stakeholders, emergent roles, and shifting relationships (Dawesa et al., 2016; Heimstädt et al., 2014; Lindgren et al., 2015), as well as increasing mediation through information and communication technologies (ICT) for knowledge sharing, such as, social media (Hui and Hayllar, 2010; Leonardi and Vaast, 2017; de Vreede et al., 2016; Wang and Medaglia, 2017). These changing dynamics of collaboration present digital public service projects with unprecedented structural and dynamic complexities, posing questions regarding the appropriate organizational form of these projects (Brady and Davies, 2014; Ramasesh and Browning, 2014).

From an institutional perspective, organizations operate within social domains, where there exist established patterns of material practices, including assumptions, values, beliefs and rules – that is the institutional logics (Friedland and Alford, 1991; Reay and Hinings, 2009; Thornton et al., 2012). In this sense, organizational form is “an archetypical configuration of structures and practices given coherence by underlying values regarded as appropriate within an institutional context” (Greenwood and Suddaby, 2006, p. 30). Finding an *appropriate organizational form* thus means to identify the configuration of organizational structures and practices that adhere to the set of logics within a certain institutional context (Greenwood and Suddaby, 2006).

As these public-private collaborations consist of stakeholders of heterogeneous organizational backgrounds (e.g., governments, companies, universities, and NGOs), these collaborations often face multiple institutional logics, from which complexities arise. Moreover, as the range of stakeholders may change during the development of digital public services, the collaboration can potentially expose to new institutional logics, placing more conflicting demands on the organizational form of these projects.

Previous organizational studies have argued divergence in institutional logics can cause organizational paralysis, with which organizations may engage different ways to cope. One way that has attracted a lot of research attentions is via *organizational hybridization*, which is a deliberate change process of adjusting the organizational form by re-configuring and integrating different structures, practices, and cognitive elements to meet the demands of different logics (Battilana et al., 2017; Battilana and Dorado, 2010; Battilana and Lee, 2014; Schildt and Perkmann, 2017; Skelcher and Smith, 2015).

While existing organizational studies have pointed to different strategies of hybridization, such as, selective coupling (Pache and Santos, 2012) and integration (Battilana and Dorado, 2010; Schildt and

Perkmann, 2017), the majority of these studies are based on empirical evidence of permanent organization (Reay and Hinings, 2009), such as established companies or social enterprises. The hybridization process of digital public service projects, which feature a high level of uncertainty in project goals, range and roles of stakeholders, as well as mediation of ICT for knowledge sharing, remain unknown (Dawesa et al., 2016; Heimstädt et al., 2014; Lindgren et al., 2015; Wang and Medaglia, 2017).

Conceptually, existent studies on organizational hybridization have not properly examined the role of ICT, such as, social media, in the process of hybridization. Although organizational studies have long suggested the importance of ICT in shaping organizational form (Child and McGrath, 2001; Faraj et al., 2011; Foster and Flynn, 1984; Fulk and DeSanctis, 1999), the role of technology in the occurrence and development of hybridization process is still not well understood.

The aim of this paper is thus to examine *how the organizational form of digital public service project occurs through technology mediated hybridization*, with a particular focus on *the role of ICT* in the process.

We answered our research question by investigating a longitudinal case study of the development of an open government data project in China – Shanghai Open Data Applications (SODA), which features an expanding collaboration between stakeholders of both public and private backgrounds. The collaboration behind the SODA project was initially premised in a chat group on the Chinese social media platform, WeChat, and then migrated offline to become an offline company with a board of directors.

Our finding suggested the collaboration behind SODA project is informed by an institutional complexity that consists of three competing institutional logics: logics of community, local bureaucracy, and corporate. The project stakeholders manage to identify three different project forms amidst the institutional complexity through a hybridization process that features three main strategies, *prototyping*, *selective coupling* and *mitigating internal tensions*.

The finding also showed these hybridization strategies are particularly made possible by the stakeholders' use of social media - WeChat. First, social media serves as a *virtual sandbox with a suite of tools*, as it provides a virtual space and different tools for the project stakeholders to build and negotiate different organizational structures that accords to different institutional logics at an early stage of the project. Second, in the process of building and negotiation, social media also documents these experiences, thus serves as *a repository of shared knowledge and experiences*, which materialize these organizational settlements, and in doing so reproduce and sustain certain combination of institutional logics.

Based on our findings, we argue ICT is critical to organizational hybridization in an inter-organizational setting, as it not only provides the stakeholders with space and tools to experiment with different combinations of logics, but it also reproduces different institutional logics by materializing these temporary organizational settlements.

The remainder of our paper is organized as follows. In section 2, we delineate the collaboration dynamics in digital public service projects, and argue for a need to identify appropriate organizational forms in this particular project context. In section 3, we look into the institutional logics perspective to understand

hybridization as a process for generating organizational form, and we try to map out the potential links between technology and the hybridization process. In section 4, we describe the research setting of this study, as well as the processes of data collection and analysis. In section 5, we present the findings from our longitudinal case study, detailing the logics at play, the conflicting demands the logics have presented, and the responses organizers took to cope with the conflicts in different phases of the project. In section 6, we review our findings, discuss its theoretical and practical contributions, and note the limitations of study and related suggestions for future research. And lastly, we finish with a brief conclusion.

2. COLLABORATION DYNAMICS IN DIGITAL PUBLIC SERVICE PROJECTS

As digitalization of public service deepens, recent research in the field of information systems (IS) and e-government have focused on the collaboration dynamics that are distinctive to digital public service projects.

These studies have demonstrated various technology advancements (e.g., mobile services, open-source software) in public services have reshaped the inherent dynamics of collaboration behind these digital public service projects (Axelsson et al., 2010; Bertot et al., 2016; Feller et al., 2011; Heimstädt et al., 2014; Lindgren et al., 2015). These studies suggest these collaborations are inter-organizational by nature, and often feature an extensive and expansive network of public and private stakeholders (Axelsson et al., 2010; Feller et al., 2011), uncertainty and constant revision of project goals (Lindgren et al., 2015), as well as emergent roles and relationships among the stakeholders (Heimstädt et al., 2014; Lindgren et al., 2015).

In particular, as governments increasingly adopt social media to connect with non-government stakeholders, a stream of studies have also highlighted the increasing mediation of social media and its transformative potentials for public-private collaboration (Chouikh et al., 2016; Hui and Hayllar, 2010; Linders, 2012; Wang and Medaglia, 2017). These studies have especially drawn on the literature on social media affordances for collaboration (e.g., visibility, edibility, persistence, and association) (Leonardi et al., 2013; Leonardi and Vaast, 2017; Treem and Leonardi, 2013), to explore the changes of public-private collaboration brought by social media (Chouikh et al., 2016; Wang and Medaglia, 2017). The research results have shown that social media can potentially facilitate non-linear project timing, ad hoc task assignment, and need driven team recruitment, which are different from the bureaucratic form of government (Wang and Medaglia, 2017).

To address such complexities inherent to digital public service projects, extant studies have predominantly focused on the coordination mechanism on issues, such as, decision-making, accountability, and information infrastructure across organizations (Dunleavy et al., 2006; Hong and Lee, 2017; Janssen and van der Voort, 2016; Klievink et al., 2016; Klievink and Janssen, 2014; Margetts, 2009; Wang et al., 2018). While these studies have provided valuable insights into how conflicts in public-private collaboration may be resolved to avoid organizational paralysis, only few have questioned whether the decided organizational form of digital public service projects, such as, IT outsourcing (Gantman, 2011; Lacity and Willcocks,

1997; Ruzzier et al., 2008), or public-private partnerships (Bertot et al., 2013; Joha and Janssen, 2010; Khan et al., 2012), are in fact *appropriate* for the changing dynamics of these collaborations.

Focusing on digital innovation management, recent research in IS may have provided a useful perspective to understand the organizational form of digital public service projects as such (Afuah and Tucci, 2012; Nambisan et al., 2017). These studies argue digital innovation related projects do not necessarily start with a decided organizational form, because the goals of technology innovation cannot always be clearly identified (Afuah and Tucci, 2012). Rather, they argue digital innovation can be understood as a series of emergent problems that wait to be paired with available capabilities within organization. Thus, the organizational form of digital innovation related project is a result of dynamic problem-solution pairing, and temporary by nature (Nambisan et al., 2017). In addition, these studies also argue ICT can play an important role in matching the problems and needs in digital innovation related projects such as digital public service projects.

While these studies have provided insights into the emergent organizational form of digital innovation and the enabling role of ICT, the inter-organizational aspect of digital public service project, and the link to the project form still remain unaddressed. A recent call in project management studies has highlighted a need for in-depth investigation of the inter-organizational attributes of projects, and their link with project as an organizational form in itself (Geraldi and Söderlund, 2018; Sydow and Braun, 2018). More specifically, they have emphasized the importance of understanding the embeddedness of inter-organizational project at different levels, such as, organizational field, industrial setting, institutional environment, or the organizations collaborating in the project.

In line with this call, we situate our study of the digital public service projects in the institutional environment surrounding the projects, and try to understand how the organizational form of digital public service project occur through the mediation of ICT in the institutional environment. In particular, we draw upon the concept of institutional logic to shed light on the occurrence of appropriate organizational form of digital public service project. This is explained in the following section.

3. THEORETICAL BACKGROUND

We draw on the perspective of institutional logics (Friedland and Alford, 1991; Greenwood and Suddaby, 2006; Thornton and Ocasio, 1999) to explain the occurrence of organizational form in the context of digital public service project. We choose the concept of institutional logics as an overall lens, as it not only recognizes the existence of broader normative frames, but also connects the understanding of organizational form to broader normative frames by way of the agency of actors (Skelcher and Smith, 2015).

3. 1 Institutional Logics and Organizational Form

The concept of institutional logics is developed within institutional theories to account for the relationship between normative social frames, organizational form and individual practices. The central argument here is organizations and individuals operate within certain social domains, in the presence of multiple *institutional logics* – defined as socially-constructed, historical patterns of material practices, including assumptions, values, beliefs and rules (Thornton et al., 2012, p. 2). These logics provide actors with rules of actions that guides actors' decision-making on particular issues and problems, determine which of these issues demand managerial attentions, and frame possible solutions (Gawer and Phillips, 2013; Thornton, 2002). Institutional logics are expressed through their distinctive sources, such as, legitimacy, authority, and identity. Based on these sources, scholars have identified fundamental types of institutional logics in the Western context (Thornton et al., 2012) and different variations in other contexts, such as China (Cai, 2014; Zhou, 1995, 2010; Zhou et al., 2013).

From an institutional perspective, *organizational form* can be understood as “an archetypical configuration of structures and practices given coherence by underlying values regarded as appropriate within an institutional context” (Greenwood and Suddaby, 2006, p. 30). This means the appropriateness of organizational form depends on the institutional logics that the organizational actors subscribe to within a certain field (Schildt and Perkmann, 2017).

Nonetheless, organizations often operate in an institutionally pluralistic setting, where the demands of some logics (i.e., the means and/or ends of organizing) may be highly divergent or even conflicting (Greenwood et al., 2011; Schildt and Perkmann, 2017). For instance, previous studies of public-private collaboration indicate that such collaboration projects often suffer from competition between the logics of public good and market (Ashraf et al., 2017), or the logics of public and private (Beck et al., 2015). In addition, organizations can be exposed to logics that have previously not been part of their structures and practices (Gawer and Phillips, 2013; Thornton and Ocasio, 1999), which may impose different demands upon the organizations.

Since organizational form adheres to the institutional logic at play, the multiple and dynamic nature of institutional logic necessitates frequent changes to organization form. Therefore, organizational form is more of a series of *organizational settlements* that permit the co-existence of organizational principles and practices adhering to different logics (Rao and Kenney, 2008; Schildt and Perkmann, 2017). And the process of transitioning from one settlement to another is what we refer to as *hybridization*; we elaborate on hybridization below.

3. 2 Hybridization

Faced with multiple and dynamic institutional logics, organizations must strive to avoid organizational paralysis (Pache and Santos, 2012). One way is via a *hybridization process*, i.e., adjusting the organizational form by re-configuring and integrating different structures, practices, and cognitive

elements to meet the demands of different logics (Battilana et al., 2017; Battilana and Dorado, 2010; Battilana and Lee, 2014; Schildt and Perkmann, 2017; Skelcher and Smith, 2015).

Recent research suggests hybridization broadly involves two approaches. One concerns the selective coupling of existent demands of divergent institutional logics (Mair et al., 2015; Pache and Santos, 2012), and the other concerns the integration of hybridized goals and practices among organizational actors (Battilana and Dorado, 2010; Schildt and Perkmann, 2017). *Selective coupling* implies the adoption of a creative mixture of selected practices to comply with the demands of divergent logics (Pache and Santos, 2012). *Integration* implies the active socialization and sensegiving of the hybridized goals and practices, in order for actors of different backgrounds to integrate and together establish shared ways of thinking and acting (Battilana and Dorado, 2010; Schildt and Perkmann, 2017). Both processes are important for the building of a new hybrid organization (Battilana and Dorado, 2010; Battilana and Lee, 2014; Raynard, 2016). While the selective coupling of existing demands helps the new hybrid organization to gain legitimacy with different groups of stakeholders, integration helps to reduce the internal conflicts caused by the differences in actors' perceptions of legitimate practices and goals. Therefore, both approaches are crucial for the sustainability of the hybrid organization.

While the above-mentioned studies have outlined potential ways of reconciling these competing institutional logics through hybridization, many have only focused on contexts where institutionally prescribed "archetypical" forms were available (Greenwood and Hinings, 1993; Matinheikki et al., 2018). Only few have investigated the hybridization process of competing logics in creating a new organizational form of project, where there is no "ready-to-wear" model to rely on (Battilana and Dorado, 2010; Tracey et al., 2010), among which the role of ICT has remain undiscussed. In the next section, we look into other streams of institutional studies to shed light on the relationships between technology, institutional logics and hybridization process.

3.3 Hybridization and Technology

Institutional studies have in general shown a connection between technology and institutional changes, indicating a potential link between technology, institutional logics, and hybridization. These institutional studies suggest that the design and adoption of technology—embodying a set of tacit knowledge, experience, and collective memory—can enact institutional logics (Hultin and Mähring, 2014), and ensure the persistence of institutional logics in the face of competition and environmental shifts (Gawer and Phillips, 2013; Raviola and Norbäck, 2013).

For example, Raviola and Norbäck (2013) have suggested certain institutional orders are inscribed into technologies, and the adoption of new technology (i.e., website) may trigger field-level institutional changes. Focusing on the software industry, Gawer and Phillips (2013) see the design of digital technologies as a material instantiation of a rising institutional logic in the field; the design of digital

technologies can influence other actors' behaviors in the field by the way in which it channels experience and knowledge, and connects different social worlds.

Another group of studies in IS and computer-mediated communication focuses on the relation between institutional logic and the use of technology. These studies suggest while organizational actors' use of technology is guided by certain shared systems of rules and norms (Davidson, 2006; Orlikowski and Gash, 1994), changes in the use of technology may also have repercussions for the dynamics of the institutional logics at play (Oostervink et al., 2016; Young et al., 2016). For instance, Oostervink and his colleagues (2016) have showed that organizational actors engage with enterprise social media differently in order to cope with multiple institutional logics at play.

Despite these two perspectives, we still lack detailed understanding of the interplay between technology and hybridization. As today's public-private collaborations, especially the ones behind digital public service projects, are increasingly mediated by ICT, such as, social media, this study explores the relationship between collaborative platform and hybridization, by examining the occurrence of hybridization through the mediation of social media in the context of digital public service projects.

In this section, we explained the need for an institutional logic approach on hybridization in understanding the occurrence of organizational forms for digital public service project through the mediation of ICT. We have shown that even though the concept of institutional logics provides a useful perspective to understand the embeddedness of organizational form and technology, the link between technology and hybridization still require more understanding, which we aim to contribute to this study. In the next section, we move on to introduce the empirical setting and research design of this study.

4. RESEARCH SETTING AND METHODOLOGY

To answer the research question, we chose Shanghai Open Data Apps (SODA) as our case context. We chose this case, as it is one of China's first municipal-level open data projects. And the organization of the project was initially premised in a chat group on the Chinese social media - WeChat. Given the country's reform history of public administration (Chen et al., 2017; Holliday and Yep, 2005), SODA provides a suitable environment to understand how organizational form occurs and develops among institutional complexities, and the role of ICT in the process. In this section, we first detail the empirical context of the case, and then describe the data collection and analysis methods deployed in this study.

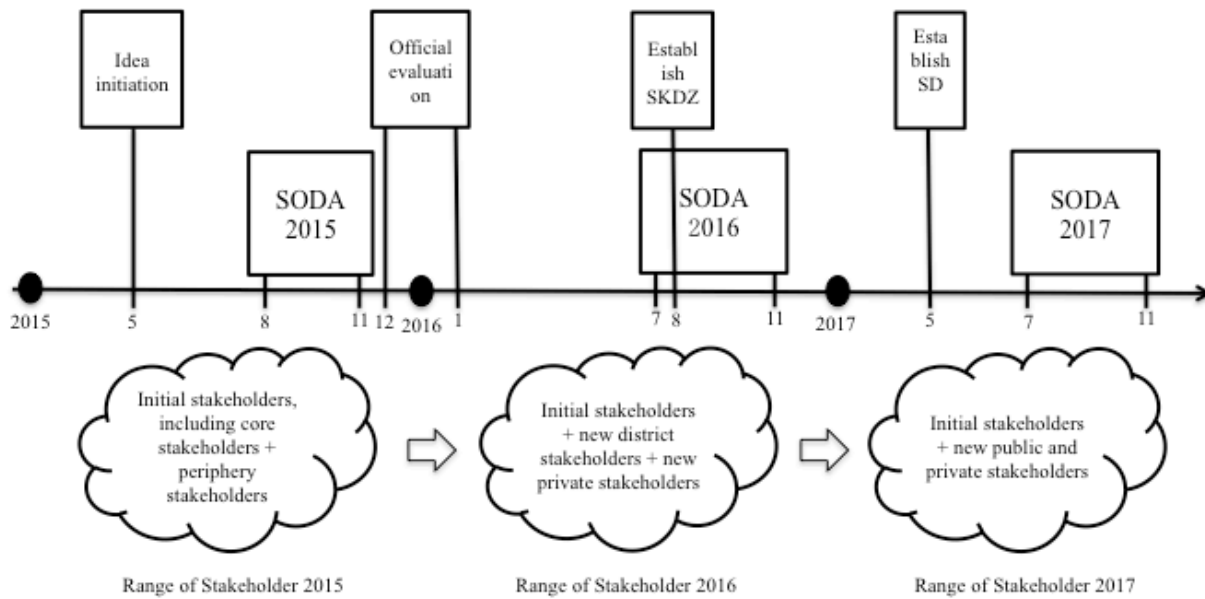
4.1 Case Setting

In 2015, the Chinese Premiere Li Keqiang proposed to develop the "Internet Plus" action plan to drive innovation in both private industries and public goods (The State Council of the People's Republic of China, 2015a). Focusing specifically on the effects of big data in the public service area, in the same year, the state council issued the Action Outline for Promoting the Development of Big Data, wherein the state council pointed out that the primary task is to accelerate the sharing and opening of government data, and

to push for the integration of resources and improve the governance capacity (The State Council of the People's Republic of China, 2015b).

Shanghai Municipality was among the first ones in the country to experiment with different ways to promote and utilize open government data, among which one major effort was to establish a municipal level contest – SODA, to award the best applications developed using open government data. The aims of SODA were three-fold: tap the potential of government data in public services; foster a community of data-related practitioners; and experiment with new ways of collaboration amongst the stakeholders. Figure 1 illustrates the timeline of SODA, and the changes in the range of stakeholders.

Figure 1. Timeline of SODA and change in stakeholder range



The contest was initially organized by a voluntary interest group, consisting of several core stakeholders from various types of institutions, such as: the municipal government (e.g., Shanghai Municipal Commission for Economy and Informatization (SMCEI)); universities (e.g., the Open Meta Nexus Innovation Lab (OMNIlab) at Shanghai Jiaotong University and the Lab for Digital and Mobile Governance (DMG) at Fudan University); state-owned enterprises (e.g., China Industrial Design Institute (CIDI) Shanghai); small IT companies (e.g., Enerlong); IT start-ups (e.g., Kesci); and NGOs (e.g., Open Data China).

The core stakeholders were at upper-management levels, which granted them certain decision-making powers as well as access to different sets of critical resources and knowledge. For instance, the stakeholders from the private sector (i.e., CIDI Shanghai, EnerLong and Kesci) were either CEO or vice CEOs in the affiliated companies. The stakeholders from universities were the head of their research lab (i.e., OMNIlab and DMG), both of which were in active collaboration with government and industry. The stakeholder from municipal government (i.e., SMCEI) was a Deputy Division Director and was connected to a vast network of local companies as well as local bureaus in Shanghai. The stakeholder from the NGO was the

founder of the organization, and is connected to a large network of experts specializing in the area of open data.

The interest group was initially assembled by the vice CEO of CIDI Shanghai and the Deputy Division Director of SMCEI in May 2015. After a brief offline contact, the two stakeholders vaguely agreed on starting an open data oriented project, and then looked to find other potential stakeholders for the project. The interested stakeholders were invited into a chat group on the Chinese social media platform WeChat, which is one of the most popular social media applications in China with approximately 1 billion Monthly Active Users (MAU) as of Dec 2017 (Tencent Holdings Ltd., 2018). During the SODA preparation, the stakeholders mainly engaged with the following five functions of WeChat: 1) grouping – chat with a group of selected people where the host of the group holds the admin rights of the group; 2) instant messaging – an online chat function that allows and archives real-time text transmission; 3) file transfer and preview – files can be sent and previewed as a message; 4) notification alert – a notification appears when the recipient receives a message; and 5) personal addressing via the “@” feature – a specific group member can be addressed within a group chat.

At the beginning of the project, the core stakeholders kept the majority of their online discussions on one chat group. As the preparation developed, the core stakeholders opened up more chat groups to include other relevant stakeholders, and used these chat groups for the daily communication and coordination. During the first year of SODA preparation, the communication among the core stakeholders in the chat group outweighed their offline communication. Overall, the core stakeholders engaged in activities such as fundraising, coordinating data from relevant bureaus, designing and managing contest-related events, as well as other operational tasks.

The contest was officially launched in August 2015, with a call for developing applications using open government data and focusing on the theme of “Public Transportation and Mobility”. The contest turned out to be a success in the eyes of local municipality and across the country, and yielded ten projects that could be connected with existing public services in the municipality. Several national news agencies reported on SODA and praised it for its innovative partnership with stakeholders of other sectors (Sohu, 2015).

After the success of SODA in 2015, an increasing number of the municipal bureaus agreed to open up more data and new actors requested to participate in the organization of the project. Therefore, the municipality decided to continue the project on a yearly basis. In 2016, four of the core stakeholders established a company called SKDZ (pseudonym) to solely manage the operation of SODA, where the four stakeholders became the shareholders of the company. In 2017, the stakeholders decided to restructure the share distribution by establishing a new company SD (pseudonym), with SKDZ and two stakeholders re-invested in the new company.

In this paper, we are particularly interested in the transition of organizational arrangements of SODA; in particular how the organizational arrangements developed from a WeChat-based informal network to an

offline company with a board of director. We conducted a longitudinal study of SODA, spanning a period of three years (2015-2017). We detail the process of data collection and data analysis below.

4.2 Data Collection

During our fieldwork, data collection and analysis proceeded iteratively. The iterative process in data collection and analysis allowed for themes to emerge and be examined more deeply at a later stage. Guided by the institutional logic approach, during data collection and analysis, we were sensitized to the importance of identity, authority and legitimacy in the stakeholders' organizing practices. For example, in describing their work, the stakeholders repeatedly referred to the importance of "we" as "open data hobbyist" rather than their professional affiliation, such as "government representative", or "university professor". This was further supported by participant observation, where we observed conflicts in the stakeholders' daily interactions on WeChat. We therefore focused our attention on documenting, exploring, and unpacking these conflicts, as well as the practices the organizers deployed to solve these conflicts.

Our primary data sources include the following: participant observation of the organizers' daily communication online, as well as their offline meetings, road shows, and informal meet-ups (documented in detailed field notes); and in-depth, semi-structured interviews of core organizers. Our secondary data sources include official campaign plan, campaign materials, presentation slides for stakeholders, and evaluation reports. Our data sources are summarized in Table 1 and then discussed in detail.

Table 1. Overview of data sources

Semi-structured Interviews	Informant	Organizational affiliation	Title	Interviews N	Duration (minutes)
	Government 1 (GI1)	SMCEI	Deputy Division Director	2	21
					27
	University 1 (UI1)	DMG Lab, Fudan University	Professor	3	120
					100
					60
	University 2 (UI2)	DMG Lab, Fudan University	Lab member	1	63
	Universtiy 3 (UI3)	Shanghai Jiaotong University	Lab member	1	103
	Industry 1 (II1)	CIDI Shanghai	Vice-CEO	2	43
					58
	Industry 2 (II2)	Kesci	CEO	2	78

					35
	Industry 3 (II3)	Opendatachina.com SKDZ SD	Director CEO CEO	7	30
					120
					70
					120
					93
					69
					86
Industry 4 (II4)	CIDI	Secretary	2	30	
Industry 5 (II5)	Enerlong	CEO	1	106	
Industry 6 (II6)	Open Knowledge Taiwan	Ambassador	1	180	
Observations	Duration (minutes)	Duration (minutes)	Duration (minutes)		Duration (minutes)
	Initial meetings	Review 1 st SODA Initial plan for 2 nd SODA	SMCEI, CIDI Shanghai, OMNI Lab, DMG Lab, Kesci, Enerlong		180
	Meetings	Regular DMG Lab meeting	DMG lab members		180
	SODA Road Show	SODA finals	All stakeholders, contest participants, public audience		720
	Informal communication	During daily work, and via WeChat	All stakeholders		600
Documents	Campaign materials				
	Project specifications				
	Presentation slides for stakeholders				
	Evaluation reports				
	Media reports				
	Blog articles				

4.2.1 Participant observation

We started our data collection with participant observation both online and offline. Participant observation refers to “long-term personal involvement with those being studied, including participation in their lives to the extent that the researcher comes to understand the culture as an insider” (Davies, 2008, p. 71). As members of the 2015 SODA evaluation team, we were granted access to the offline meetings and part of

the online conversation. Our role as part of the evaluation team was an interesting way to conduct participant observation; it turned us into temporary members of the organization, and allowed us to observe the organization from a member's point of view. The access gave us the opportunity to regularly interact with members of the organizing groups and develop several close relationships. We had partial access to the online communication history of some chat groups on WeChat. We also shadowed the organizing practices in real-time at different meetings, events, and informal gatherings where the preparation of SODA was discussed. During the observation, we paid particular attention to run-on conversation, repetitive practices, and moments of conflicts. When we found our informants engaging in unexpected practices, we also conducted unstructured interviews, which are the “naturally occurring conversation(s)” that are directed towards certain directions of research inquiry (Davies, 2008, p. 71). Weaving together these actions and conversations allowed us to capture multiple perspectives of our informants' sayings and doings, and thereby better understand their point of view (Nicolini, 2009). To document these observations, we took detailed field notes of both the online interactions between the stakeholders of SODA and their offline meetings, events, and gatherings (Emerson et al., 2011).

4.2.2 Semi-structured interviews

In addition to the spontaneous, unstructured interviews that regularly occurred during our observation, we also conducted semi-structured interviews (Kvale and Brinkmann, 2009) with the core stakeholders of SODA. The interviews lasted from 30 to 120 minutes and were recorded and transcribed afterwards. We retained the contact information of some interviewees, in case we needed more information from them later.

There were two phases for our interviews. The first was exploratory. At the beginning of our data collection, by using an open and flexible interview design, we tried to gather the information about the stakeholders' goals, interests and experiences in organizing SODA. We carefully phrased questions so that interviewees could narrate how they experienced the collaboration, what their routines involved, and what they valued about the project. This first phase allowed for the emergence of unexpected themes, such as identity conflicts in practice between the groups involved in the preparation of SODA; this in turn guided the interview design of the second phase of the interviews. The second phase was more targeted and structured given the identified themes, such as ownership, membership, and authority. A more structured interview design as such has formed a good basis for us to return and follow up on the development of the project.

4.2.3 Secondary data

We also collected different kinds of documentations (Bowen, 2009) in relation to SODA, to further complement and compare with our observations as well as the narratives of our informants. These include internal documents (e.g., slides from work meetings, project specifications, and evaluation reports) and

external sources (e.g., media reports and blog articles on SODA). These archival sources helped plot the dynamic development of SODA, and were critical for us to look for convergence and divergence inbetween different data sources.

4.3 Data Analysis

We considered the longitudinal nature of our data and adopted a process theorizing approach for data analysis, with the aim of tracking the flow of events and changes in descriptive narratives over time (Langley, 1999). The analysis consisted of multiple readings as well as open coding of the interview transcripts, field notes, and documentations.

The analysis began with open coding and category building. The open coding focused on the practices associated with identity enactment of different organizers at SODA. At the same time, we created an event list (Poole et al., 2000) based on the collected interviews, observations, and documents. A list of relevant events can be seen in Figure 1. By doing so, we are able to maintain a coherent database of empirical materials throughout the fieldwork, which later helped us to construct a descriptive narrative from the collected data regarding the development of SODA. It also helped us to identify linkages between different types of events (e.g., conflict, agreement, negotiation) as well as establish our analytical themes of organizational arrangements and institutional complexity at a later stage of coding. The result of open coding was an array of first-order concepts (See Table 2).

We then engaged with different sets of literature to further organize these first-order concepts. In particular, we used the concept of institutional logics as an interpretive device (Bowen, 2006), to help us make sense of the first-order concepts by identifying emergent patterns and group the concepts together into a series of second-order themes. This approach ensured the soundness of our findings and improved the trustworthiness and transferability of our theoretical insights. The process of second-order coding was repeated throughout the fieldwork, while moving between interview transcripts, field notes, the event list, and research literature. At the final stage of the analysis, the identified second-order themes were aggregated into analytical dimensions. An example of this coding process is given in Table 2.

Table 2. Sample of coding process

First-Order Concepts	Second-Order Themes	Aggregate Dimensions
Leadership style is based on equality, rather than based on power and coercive relations (legitimacy); Stakeholders' commitment is regarded as the source of authority in the stakeholders group (authority); Personal pursuit ("Qinghuai") is the common source of a new identity among the stakeholders (identity);	Demands of Community	Conflicting demands of multiple logics

Hierarchical decision-making structure where the project committee holds authority over other stakeholders on important issues; SODA's initial stakeholder shift their title to their positions in the new company; Project company has pressure to make profits	Demands of Corporate	
Decision-making has to follow a top-down hierarchy within the local government (authority); Some stakeholders' identities are linked to their positions in the government (identity)	Demands of Local Bureaucracy	
Stakeholders decide to start a collaborative project through WeChat chat group; Agreeing on common decision-making and no owners	Phase I: Prototyping new organizational arrangement on WeChat	Responding to conflicting demands with Technology
Stakeholders decide to start a company; Conflict arises from the different sources of authority and ownership	Phase II: Creating offline organizational arrangement	
Creating a new company in order to accommodate the open nature of the collaboration by adjusting the board structure of the company; Maintaining chat groups on WeChat as a backup in case of further changes	Phase III: Adjusting offline organizational arrangement	
Creating the identity of open data hobbyist; Shifting the identity between open data hobbyist and committee member	Enabling multiple identities with social media	Mitigating tensions
Segregating different interest groups; Enabling multiple overlapping definitions of membership to create a sense of inclusion	Adjusting membership	
Changing service contract to outsourcing contract	Redefining ownership	

5. FINDINGS

Our longitudinal study of SODA allows us to examine the history of the establishment of SODA - a far-reaching open government data project in China, organized by a wide variety of organizations (e.g., central and local governments, universities, state-owned enterprises, start-ups, and NGOs). We begin by presenting the institutional logics that are at play and the conflicting demands these logics have created. We then explain how the organizers cope with the conflicting demands of multiple logics through hybridization, and highlight the role social media plays in the hybridization process.

5.1 Conflicting Demands of Multiple Logics

Our observation suggests the SODA project is confronted by the demands of the three distinct logics of community, local bureaucracy and corporate over the course of project development. In the following, we unfold the three institutional logics by analyzing different sources of legitimacy, authority, and identity that are manifested in the organizers' organizing practices and narratives. We present the identified patterns of the three logics in Table 3.

Table 3. Examples of the three institutional logics in SODA

	Community Logic	Logic of Chinese Local Government	Corporation Logic
Source of Legitimacy	<p>Unity of will; belief in trust and reciprocity</p> <p><i>The collaboration is built upon mutual trust and voluntary sharing of knowledge and resources amongst the stakeholders.</i></p>	<p>Top-down authorities</p> <p><i>The official launch of the SODA project depends on the decision made by the host sponsor SMCEI, under the supervision of National Development and Reform Commission, Ministry of Industry and Information Technology of the People's Republic of China.</i></p>	<p>Market position</p> <p><i>In an attempt to gain new investment, one of the initial service providers in the SODA project claimed their ownership of SODA in a meeting with potential investors.</i></p> <p><i>The company SD aims not only to provide services for organizing SODA, but also to engage in developing other profit-generating open data related public projects in order to establish itself as one of the primary open government data solution providers for municipalities in China.</i></p>

Source of Authority	<p>Commitment to community values and ideology</p> <p><i>The SODA project is initiated due to the stakeholders' shared belief in the public value of open government data, and a strong will of promoting these benefits at a municipal level.</i></p>	<p>Upward accountability; rules and procedures</p> <p><i>The funding of the SODA 2016 was competed between a one-year sponsorship co-funded by two district governments, and a three-year sponsorship solely funded by a company. The funding was eventually raised by the two district governments due to the municipality's opposition concerning the potential long-lasting private influences on the interest of public projects.</i></p>	<p>Board of directors/top management</p> <p><i>The board of the company SD made decisions on most of the operational tasks in the project of SODA (2016, 2017).</i></p>
Source of Identity	<p>Emotional connection; ego-satisfaction and reputation</p> <p><i>Shared "Qinghuai (i.e., personal pursuit)" among stakeholders is regarded as the common value that bonds the stakeholders into a close-connected group.</i></p>	<p>Bureaucratic roles</p> <p><i>As the project develops, one of the government stakeholders (from SMCEI) takes on other roles and leaves the actual organization of the project. A new government stakeholder fills the vacant role.</i></p>	<p>Organizational roles</p> <p><i>The CEO of the company SD, who was originally the CEO of an NGO, became the spokesperson of SODA 2016 and 2017 committees.</i></p>

5.1.1 Logic of community

We have identified a strong drive of community logic amongst the core stakeholders of SODA (i.e., in 2015), which underlines the significance of unity of will, commitment to community value, and voluntary and cooperative engagement in project organizing. The core stakeholders are expected to contribute to the

development of open data projects on a voluntary basis in pursuit of common interest and shared values, despite their varying professional backgrounds and organizational affiliations.

The core stakeholders view themselves as members of a voluntary interest group. The stakeholders explicitly break away from their original organizational affiliation, by refusing to be referred as “government officials” or “university professors” in communication amongst each other. Instead, the core stakeholders labeled themselves as “open data advocates”, and emphasized they are driven by a shared “Qinghuai (i.e., a Chinese word that is widely used by my informants to emphasize their personal pursuit)” in the public value of open government data, and a strong commitment to promoting these values at the municipal and national level.

Moreover, as University Informant #1 (UI1) remarked, sharing a common “Qinghuai” helps the stakeholders to form a “friend-like” bond amongst each other:

“Our working relationships [among the initial organizers] are more friend-like. We organize different activities [workshops and seminars] to try to create a community around open data. We get inspired a lot in these activities, and are constantly discussing with each other in our chat group. By doing these things we start to understand what we each want from open data, and work together towards these goals.”

For the core stakeholders, the collaboration is thus built upon common interest and shared bond, rather than policy mandate or economic incentives, resulting in voluntary sharing of resources and active engagement amongst the stakeholders. The core stakeholders particularly remarked on the active engagement in the WeChat chat group, which is notably distinctive from the working norms in conventional public procurement projects. As Industry Informant #3 (II3) pointed out,

“I am really surprised by our working style at SODA, especially how some of the main government stakeholders worked together with us [...] we constantly discussed and worked on WeChat, whenever people had time. We almost just kept it going 24/7. This is different from the “from nine in the morning to five in the afternoon” government working time where they are not reachable out of these time slots, or when you have to wait for them to call before you can go meet them.

The active engagements of stakeholders resulted in a relatively short project cycle; in May 2015, preparations for the contest began in May and the result of contest delivered by the end of July the same year.

In addition, with the voluntary sharing of resources, operational costs, such as, advertising costs for major city billboards, transportation media, and newspapers, were covered by organizations or individuals who were interested in partaking in the preparation of SODA. These voluntary sharing also resulted in an initial idea of “co-ownership” amongst the initial project organizers, where the initial organizers believed the ownership of the project SODA is shared with the community.

5.1.2 Logic of local bureaucracy

The logic of local bureaucracy underlines the importance of upward accountability from the local government to the national government, and the jurisdiction of bureaucratic titles in organizing public service project, as well as public ownership of the contest. The logic of local bureaucracy is largely reflected among the government stakeholders, in particular the ones engaged in the organization of SODA at a later stage (in 2016 and 2017).

As open government data requires the engagement of different government units to coordinate data sources and formats, SODA has to attend to a chain of government stakeholders, including both municipal and national governments and bureaus, as well as district governments. For instance, as the host organizer of SODA, the SMCEI is the municipal bureau responsible for the implementation of the laws, rules, regulations, guidelines, and policies related to the work of industry and information. It operates under the National Development and Reform Commission, Ministry of Industry and Information Technology of the People's Republic of China. This implies that the decision-making in SODA needs to involve a chain of government authorities, which is in particular marked by a long decision-making cycle. As GI1 remarked regarding the 'old way' of working in government,

“People who do it the old way in the government, they always have meetings. You don't often see people doing anything else but talking [...] Without top-down mandate, it can take a long time for people to make decisions and act on them.”

In addition, the non-government stakeholders also remarked on how government organizers only take tasks within the jurisdiction of their bureaucratic role in organizing the project. For instance, a new Deputy Division Director of SMCEI took office in 2016, with the original deputy director ([GI1]) in 2015 transferring to other positions. This personnel change resulted in the original deputy director's withdrawal from the organizing activities (though still remained in the chat group), and new directors' engagement in the open data chat group.

Moreover, a number of government stakeholders are also concerned with the “public-ness” of the project. This means the project has to be publicly funded in order to ensure the public ownership of the service produced (i.e., the contest). This concern was especially reflected in the struggle of choosing a funding agency in 2016 and 2017, where the municipal organizers had problems of whether or not it was legitimate to take private sponsorship to fund public projects. For instance, in 2016, there were two different funding proposals offered from both public and private organizations: one was a one-year sponsorship co-funded by two district governments, and the other one was a three-year sponsorship solely funded by a private company. Though the majority of the core stakeholders preferred a long-term and stable funding scheme, SODA was eventually funded by the two district governments, due to the municipality's concern over the ownership of the contest.

5.1.3 Logic of corporate

The logic of corporate is primarily concerned with creating monetary values of the end service, and consolidating and advancing the position of the corporation in the market. In our case, the logic of corporate is reflected in some of the private stakeholders' concerns with the project ownership, as well as in the established companies of SKDZ and SD.

During the preparation of SODA 2015, ownership was a lingering issue, with the government stakeholders at the time claiming, "there is no owner of SODA" [GI1], and the non-government stakeholders saying "we co-own it" [II1, II2, II3, UI1] yet without clear specifications of who "we" are. After SODA turned out to be a nation-wide success, a service provider of SODA, also a core stakeholder, claimed the ownership of the contest in a meeting with its investors in order to strengthen the company's profile, though the ownership was still unsettled among the core stakeholders at the time. This complicated the relationship among the SODA stakeholders. Because the start-up company's service was bought through a service contract instead of outsourcing contract, the ownership of the provided service is thus owned by the start-up, rather than SODA. Because the start-up had a few of investors who were not part of the committee, this meant these investors would partially own the service, thereby sabotaging the shared ownership of SODA.

At a later stage, the corporate logic is also reflected on the operational principals of the companies SKDZ and SD, which were originally established by the core stakeholders of non-government backgrounds, to provide operational services for SODA. Since the establishment of the company SKDZ in 2016, four of the core stakeholders have formed the board of the company, taking over the decision-making power regarding the daily operations of SODA from the original seven-people committee. The board has assigned the core stakeholder of the NGO background to become the CEO of both companies, SKDZ and SD. This resulted in a change of his title to "*Zong* (i.e., General Manager)", as addressed by the other stakeholders who joined in 2016 and 2017, indicating a change from his association with the NGO, to his position at the companies.

The original goal of these two companies was to provide operational services for SODA. However, soon after their establishment, they started to develop open data oriented public projects (i.e., contests) for other regions to generate profits as well as to sustain the company SD as one of the primary open government data solution providers for municipalities in China.

5.1.4 Conflicts of existent demands

As our empirical analysis has demonstrated, we have identified the existence of three logic of community, local bureaucracy and corporate amongst the stakeholders. As the range and dynamics of stakeholders changes, the logics of local bureaucracy and corporate start to have a stronger presence among the stakeholders. The three logics created different institutional dynamics at different stages of the project, and presented puzzles for the organizers of SODA to solve.

The conflicts mainly revolve around three aspects. One conflict, manifested as different perceptions of *ownership*, lies in the different *goals* of the three logics. While the community rationale aims to pursue the promotion of open data and an open culture (i.e., equally shared ownership) through the contest, the logic of local bureaucracy focuses on producing a publicly-owned service that accords with the policy mandate. In addition, the corporate logic is primarily concerned with generating profits in the long run through the open data contest, thus interested in claiming private ownership of SODA. These different perceptions of ownership emerged after the success of SODA in 2015, and resulted in successive frictions between the core stakeholders.

A second conflict, manifested as different perceptions of *leadership*, resides in the different sources of *authority* in the logics of community and local bureaucracy. While the logic of community focuses on the equal leadership that is based on the spontaneous engagement of organizers and rapid decision-making, the logic of local bureaucracy emphasizes upward accountability, resulting in cumbersome bureaucratic procedures and a long decision-making cycle.

Third, the divergent *working norms* (i.e., levels of engagement), boundaries of *membership*, and perceptions of *responsibilities* that are associated with different logics have also increased the complexities in project organizing. As these norms, perceptions, and boundaries do not necessarily follow the organizers' organizational backgrounds, they can at times be difficult for organizers to identify and cope with. For instance, the industrial organizers II2 and II3 mentioned two types of government organizers: one that "understands and is more inclined to accept the open culture", and the other that "follows more traditional software procurement thinking".

In this sense, as the range and dynamics of stakeholders change over the project course, the stakeholders are periodically caught up in these three conflicts. Since there was no similar open data project that took place in China before, it was unclear for the stakeholders what are the legitimate forms of open data project, and what are the means to deal with these conflicts. Rather, at times it seems that the strongest party (e.g., the rationale that is shared by the most stakeholders, or the stakeholders who have the most power) dictates the rules.

To manage the seemingly discursive institutional dynamics, the stakeholders of SODA have adopted different coping approaches with the help of WeChat, through which they have managed to develop three hybrid organizational arrangements, each with a different combination of structural and cognitive elements of the three logics. In the following, we explain the process of how the SODA stakeholders construct three different hybrid organizations to respond to existent demands and mitigate internal tensions.

5.2 Coping with Institutional Dynamics

In the case context of SODA, the dynamics between different logics change as the project develops and new stakeholders participate in the collaboration, evoking conflicting demands. In order to respond to the emergent conflicts and shifting institutional dynamics, the stakeholders took different hybridization

approaches to shape the organizing form of the project. In this section, we unfold these approaches by explaining how the SODA stakeholders have shaped the organizational form of the project in the presence of conflicting demands of institutional logics. In doing so, we highlight the role of WeChat.

In general, we divide the project development of SODA into three phases, which we name as 1) prototyping a new project arrangement, 2) creating offline organizational arrangements, and 3) adjusting offline organizational arrangement. In each phase, we detail the approaches the stakeholders employed to deal with the conflicting demands of different logics, and the distinctive organizational arrangements the stakeholders settled on.

5.2.1 Phase I: Prototyping a new project arrangement

During the Phase I of SODA, the stakeholders' goal was to build a vanguard project of open government data at the municipal level, without a specific focus on what the project should be about. The content of the contests only emerged later when the stakeholders have developed an overview of the available data sources. As there was no large-scale open government data project held in Shanghai prior to SODA, the stakeholders aimed to mobilize the resources, identify and build the collective capacities across sectors for hosting open data projects in Shanghai. During this phase, we have identified three main steps stakeholders took to organize the collaboration to achieve these goals. These three steps are: evaluation of existent demands, prototyping, and temporary combination of demands, which we describe in detail as follows.

Evaluation of Existent Demands

The SODA project was initiated due to GI1's and II1's strong interests in the benefits of open government data for public service. As data-driven public service was a young sector at the time (i.e., 2015), neither public nor private sectorial actors were clear about the project's scope, goal, or range of stakeholders. To cope with this situation, the stakeholders held discussions and meetings in order to evaluate and align expectations amongst each other. For instance, in the first meetings between GI1 and II1, they decided to keep the collaboration informal in 2015, without seeking for large-sum public or private funding. They decided to establish informal networks to seek committed organizers that were willing to share resources and knowledge, and co-develop a new project arrangement.

Prototyping

Given the unclear landscape of stakeholders and their demands, at the beginning of SODA, GI1 and II1 set out to recruit the right group of stakeholders. They searched for potential stakeholders who may possess the resources and capacities that fit the development of a government data related project, and who would endorse the value of open data and the idea of starting a municipal-level project, forming an initial interest group. Through their professional network, GI1 and II1 established contacts with a few potential stakeholders that were of different organizational backgrounds, and with the right "mindsets" (II1). A number of stakeholders affiliated with start-ups or small-sized NGOs – who are often unlikely to become

direct organizers of public service projects due to public procurement limits – were absorbed into the collaboration for their shared commitment and relevant knowledge and resources.

While the assembling of the interest group took place, the stakeholders looked for an alternative working space where the newcomers could be segregated from the existing preconceptions of how a public project is organized, and started to explore and experiment new ways of working in the interest group. To do so, the stakeholders established a chat group on WeChat, which consisted of the core organizers, and was used primarily for discussion and coordination amongst the core stakeholders.

In addition, the core stakeholders also actively engaged with socialization efforts, which revolved around identity unification and work norm building, and was partly enabled by the use of WeChat chat group. During the interviews in 2015 (i.e., the first year of the project), when articulating the role of government, university, and industry organizers in the collaboration, the majority of the stakeholders subscribed to the shared identity of “open data advocates”, instead of their original organizational affiliations. For instance, as UI1 remarked,

Which of us takes which roles...I don't think we really differentiate from each other by our organizational backgrounds, like government, or company. We are all open data advocates. It even says so in our group name [on WeChat].

A common identity helps to create a state of “tabula rasa” among the stakeholders, and helps actors to navigate and assume new roles as the project develops. The labeling of the chat group particularly enables the establishment of the new identity “open data advocate” by providing a shared reference for the organizers.

In addition, the stakeholders also engaged in efforts to foster a working rhythm that is characterized by flat organizational structure. The stakeholders stress that the leadership style within the group is one of equality and everybody contributes to the development of the initiative. For instance, as II2 remarked:

We are all positioned quite differently in relation to each other. Some are from higher positions in the government and companies, or professors, and some are still students, or somewhere lower in their own organization. But [...] we are just all in this together. People are really dedicated to this project.

Temporary combination of demands

At this phase, the two initial stakeholders began the project by recruiting people with the relevant set of capacities, and a common perspective of WeChat. Subsequently, the stakeholders were segregated in a virtual sandbox - the chat group on WeChat, to develop new ways of working. Furthermore, the emergent socialization process within the chat group also helps to further minimize the risks of conflicts and tensions among the organizers.

These efforts (recruiting, segregating, and socializing) resulted in a prototype of a new project arrangement, which was a chat group based network. The stakeholders who were the most engaged in discussion and resource coordination became the core decision-makers. And other stakeholders who did not engage as

much were seen as not subscribing to the shared value and were gradually pushed to the periphery of the collaboration. This center-periphery relation formed the preliminary organizational structure of the project.

5.2.2 Phase II: Creating offline organizational arrangements

During the Phase II of SODA, the project goal was more specific in comparison to the previous year. The project goal in 2016 was to focus the open data contest on the specific topic of city safety, and by doing so to involve more stakeholders and mobilize more municipal bureaus and district levels of government to make their data available to the public. During this phase, we have identified three main steps stakeholders took to organize the collaboration to achieve these goals. These three steps are: evaluation of existent demands, selective coupling and mitigating internal tensions, and temporary combination of demands, which we describe in detail as follows.

Evaluation of Existent Demands

Prior to the start of SODA 2016, the university stakeholder [UI1] and his team have conducted an evaluation of the SODA project to analyze its mode of collaboration and the value chain of the contest. Based on the evaluation results, the stakeholders decided to maintain the open partnership among the stakeholders on WeChat. In the meanwhile, the success of SODA 2015 had drawn attention from different levels of municipal governments and bureaus as well as companies. New stakeholders were identified and invited into different WeChat groups. At this phase, WeChat was particularly used for knowledge sharing among the stakeholders to discuss and align expectations. In general, as the range of stakeholders expanded, the presence of local bureaucracy logic and corporate logic started to become strong in project organizing, presenting different demands for the project to appear legitimate among the stakeholders.

Selective Coupling

In this context, the stakeholders tried to balance their divergent demands by selectively coupling elements of the logics of corporate, local bureaucracy, and community. As we have mentioned previously, the fundamental conflict between the three logics lies in the different perceptions of ownership of the SODA project. To resolve the dispute, the core stakeholders decided to establish a private company (i.e., SKDZ) in 2016, with four non-government stakeholders from the core stakeholder group as the board directors and II3 as the CEO. The company SKDZ signed a service contract with the municipality to ensure the non-government stakeholders owned the organizing service of the contest; and the government organizers owned the end product of the contest.

Moreover, driven by the rationale of local bureaucracy, which emphasizes the ‘public-ness’ of the public project, the municipal stakeholders settled on a public funding scheme in 2016, even though the amount of funding provided by private stakeholders is much larger and for a longer period of time (i.e., 3 years).

In addition, to extend the community logic, the core stakeholders included the new stakeholders (i.e., the new deputy director from SMCEI, and the organizers from the district government) in the WeChat chat

group, to engage with them in daily decision-making and update them of the progress in project organizing. Overall, these activities helped to legitimize the project organizing of SODA by combining different elements of the three logics.

Mitigating Internal Tensions

While the stakeholders tried to combine different elements of the logics for the project to appear legitimate among different stakeholders, there are also emergent tensions between the existing and new stakeholders. These tensions revolve around working norms, membership and decision-making, and are particularly visible in the interactions on WeChat.

Soon after the new stakeholders from district governments were invited into the core-organizing group on WeChat, the core stakeholders realized the new stakeholders do not engage in the same way as the core stakeholders do in the chat group. For instance, the core stakeholders from district government are not aware of what or how they are expected to engage with the discussion in the group. As II2 remarked,

I just don't understand what they [new government stakeholders] are doing sometimes. Like, there is one time we agreed to write a campaign article together. I finished the draft and put it in the group, expecting them to comment on it. But they dragged for days to respond, and when they responded I don't even think we are on the same page.

These miscommunications reportedly slowed down the work and created a lot of frustrations in the group. After a period of time, the core stakeholders decided to solve this situation by dividing the organizing group on WeChat into two: one with the core stakeholders from 2015; and the other one with all the new stakeholders. While daily decisions are made in the core stakeholders' group, critical decisions are discussed in the core stakeholders' group first, and then forwarded to the bigger group for discussion with other stakeholders. By doing so, the core stakeholders kept all the stakeholders involved, while ensuring the tasks can be completed within a limited period of time.

Some core stakeholders also remarked that the involvement of high-level government officials in decision-making cycle can be "tricky" because they are "too busy to be involved in every petite discussion", yet "their opinions are important" (UI1). To solve this dilemma, the core stakeholders strategically invited high-level government officials into the chat groups, to ensure the high-level government stakeholders are informed about the process and can grant permission to the tasks by giving a "silent agreement". In this way, the organizers managed to combine the equal, participatory decision-making in the core-organizing group, with the hierarchical, bureaucratic decision-making.

By engaging with WeChat grouping strategically, the stakeholders managed to accommodate different rationales. As II3 indicated:

It is difficult to say, maybe every participant, for example, government or the committee, thinks they are the ones who have the say on SODA. But in fact, each participant decides on different things at different stages of SODA. In general, for those important offline events – for example,

the final, or the road show, where government has a lot of presence – often the government side has more power in deciding things. And naturally the form of those events often turns out to be more government-like. But at other times, the governments' power weakens a lot, mainly because governments also don't have this kind of energy to constantly be the leading decision-maker for everything and for such a long period of time. Then, also most of the time, the committee, that is the rest of us, takes the job and decides on whatever that comes our way.

Following the changes in grouping strategies, the stakeholders also strengthened the idea of center and periphery of the stakeholders. The core stakeholders changed the name of the original WeChat group to committee, and identified themselves as committee members. Along this line, by engaging with the activities (i.e., dividing groups and relabeling), the stakeholders manage to deal with the tensions on working norms, membership and decision-making.

Temporary Combination of Demands

At the second phase, under increasing pressure to conform to a legitimate project arrangement in the eyes of the government, the stakeholders combined different structural elements from the logics of community, local bureaucracy, and corporate. The stakeholders set up a joint-stake company SKDZ that is overseen by the board that consists of the core stakeholders from the network. The company subsequently signed a service contract with SMCEI, to become the private service provider of SODA, and run its operation solely based on public funding. In the meantime, the new stakeholders were also invited into the WeChat group to be part of the open data network and engage in daily decision-making of SODA, creating a paralleled combination of logics online to the offline company.

In addition, the stakeholders actively mitigated the internal tensions that emerged between the existing and new organizers. In particular, the stakeholders used the grouping feature of chat group strategically to manage the differences in working norms and decision-making procedure, and to redefine the center-periphery relationship among the stakeholders.

5.2.3 Phase III: Adjusting offline organizational arrangement

During the Phase III of SODA, the stakeholders' goal has become twofold, including both the continuation of SODA in Shanghai, and the expansion of open data contests to other municipalities in China. During this phase, we have identified three main steps stakeholders took to organize the collaboration to achieve these goals. These three steps are: evaluation of existent demands, selective coupling, and temporary combination of demands, which we describe in detail as follows.

Evaluation of Existent Demands

In 2017, the open government data movement expanded to other cities in China. Municipalities at different levels and across the whole country pushed to start initiatives like SODA and in particular to procure organizing services from experienced organizers of open data application competition, such as the SODA

committee. As the requests to procure organizing service of open data application completion increased, the original committee members consolidated the company SKDZ as an “Open Data Service Company” to design and deliver open data competition for other municipal governments. At this stage, (Shanghai) government’s role in the committee is reduced to the steering of the direction of the collaboration and acting as the local government data broker.

Selective Coupling

The primary concern at this phase is to find a profit-generating model to sustain the company, while maintaining the operation of SODA. In order to achieve this goal, the stakeholders have engaged in selective coupling to accommodate the conflicting demands of community, the local bureaucracy, and market.

For instance, the original stakeholders have changed the board structure by incorporating the “openness” of the community logic into the company. Furthermore, assuming that there may be more new stakeholders in the future, as what happened in 2016, the original shareholders of SKDZ decided to change the share distribution among the shareholders. The SKDZ reinvested in a new company SD with another two original shareholders, making a total three shareholders of SD. The three shareholders together hold 80% of the shares of SD. The additional 20% share was set-aside for the potential new stakeholders in the future, and was entrusted to the CEO of SD. Speaking of the reason, II3 remarked:

Well, things change very fast in the data line of business. Like how we engaged our stakeholders in the past, we may have new blood coming in in the future as well. It makes sense for us to take that into account and appropriate the openness into our board structure.

By changing the share distribution, the stakeholders incorporated the “open” character of the community logic into the company. This leaves space for SD to absorb emergent stakeholders as the ecosystem evolves, and establish new strategic partnerships.

In the meanwhile, the core stakeholders also noted the demands of the local bureaucracy in mind by using WeChat. The WeChat group for the SODA board members that was created earlier was retained as a way to maintain connections and the relations between (Shanghai) government stakeholders and the private ones, even though its use was significantly reduced in comparison to previous years. II3 explained the reason for retaining the chat group:

In a way, it is quite natural. As years passed by, things are more and more settled. There is a template; we know what to do now. We don’t need much discussion any more. But it is good to have it, when emergent things pop up; the connections are always there.

In this sense, the WeChat group becomes an extension of the overall SODA organization, which is loosely coupled to the formal organization of SKDZ and SD. Even though the stakeholders no longer actively engage with the chat group, its retention serves as a way to fulfill the bureaucratic demands for the stakeholders by providing access to the people and resources in the local governments.

Temporary Combination of Logics

At the third phase, as the variety and number of stakeholders has widened to include more regional stakeholders, the board members of SKDZ combined the open character of community logic into the share distribution of the company. The board members reduced their shareholding in order to leave space for the new stakeholders to be able to join the company SD and form new partnership. In addition, the WeChat group was maintained as a repository of knowledge and experience for the previous stakeholders, and a way to connect with the new stakeholders.

6. DISCUSSION

6.1 Summary of Findings

Our study investigates the occurrence and development of the organizational form of a digital public-service project (SODA), and reveals three main findings: a mapping of the institutional logics at play, a process model of technology-mediated hybridization, and the role of ICT in hybridization.

6.1.1 Mapping of institutional logics

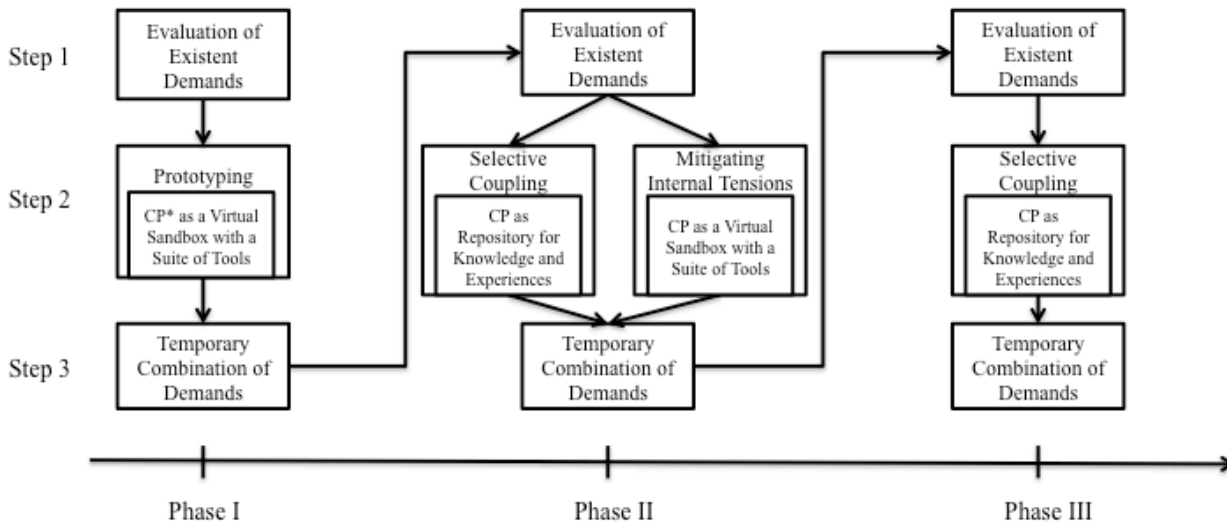
We first identified three institutional logics (i.e., community, local bureaucracy, and corporate) that are at play. Bearing similarities to other cross-sector partnerships, the logics of local bureaucracy and corporate are at the center of the institutional complexities of the collaboration, competing for the goals and the legitimate forms of the projects (Ashraf et al., 2017; Beck et al., 2015; Matinheikki et al., 2018).

What is different in the case of SODA is there is a strong manifestation of the community logics. The community logic provides an alternative set of structural elements that helps to shape the organizational form of the project into one that looks like a network. This finding interestingly echoes the studies on open-source technologies and network as a rising organizational form (Hippel and Krogh, 2003; O'Mahony and Bechky, 2008; O'Mahony and Lakhani, 2011), suggesting a link between the digital technology (i.e., open government data) involved in public services and the organizational form of the project. Nonetheless, the changes that occurred in the project form of SODA demonstrate that the impacts of digital technology are in fact filtered through the interplay of existent institutional logics.

6.1.2 A model of technology-mediated hybridization process

Second, we identified a three-phase process model of technology-mediated hybridization (see Figure 2). The hybridization process starts with the stakeholders' *evaluation of the existent demands*, where the stakeholders identify and reflect on the existing interests, goals, and working styles amongst each other. Our analysis shows the evaluation of existent demands is an iterative step, triggered by confusion, conflicts, or pressure to reevaluate the existent demands of the project. This confirms previous literature on the varied nature of institutional dynamics, for which organizations are required to adopt different approaches to cope (Besharov and Smith, 2014; Greenwood et al., 2011; Raynard, 2016).

Figure 2. Technology-mediated hybridization process



* CP = collaborative platform

Following evaluations of the existent demands, the stakeholders engage with three different coping methods: *prototyping*, *selective coupling* and *mitigating internal tensions*.

Similar to Battilana and Dorado's study (2010), our finding demonstrates that prototyping primarily entails three activities: recruiting, segregating, and socialization. The survival of vanguard projects brings legitimacy for the assembled organizational arrangements, and helps to endorse the establishment of a new logic (i.e., the logic of community in our case) in the domain.

Selective coupling refers to the combination of the elements of different logics at play, in response to the competition between these logics. The organizers of SODA combined the logics of community, local bureaucracy and corporate, by appropriating the network structure into a company and changing the nature of contracts. It is important to notice that with social media, the coupling takes place on a *dual-track*, meaning while the stakeholders appropriate network structure from the social media to an actual company, they also incorporate new organizers in the online group, creating two parallel combination of logics as the project proceeds.

As the stakeholders seek legitimacy of the project form by combining structural elements of different logics, they also actively *mitigate internal tensions*, to integrate stakeholders of different institutional backgrounds. Interestingly, rather than building consensus amongst the stakeholders as suggested by previous studies (Matinheikki et al., 2018; Ostrom, 1990), the stakeholders in our case took a "divide and dissent" approach to segregate different working norms, create different levels of membership, and accommodate different decision-making procedures.

Lastly, by adopting different coping measures, the project temporarily settled on two different organizational forms - that is, chat group based informal network to joint-stock companies with different share distributions, over the course of our observation. These settlements are *temporary combinations of logics*, and are challenged when the project experienced changes in institutional dynamics (for example,

new organizers start to impose a strong demand from the logic of local bureaucracy). In this way, our finding complements the view of organization as routinely adhering to multiple institutional logics (Rao and Kenney, 2008; Schildt and Perkmann, 2017), and concurs with a recent study that presents temporary hybridizations as an effective response to institutional complexity (Matinheikki et al., 2018).

6.1.3 Role of technology in hybridization

Our findings also highlighted the dual role of social media in the hybridization process as a virtual sandbox with a suite of tools and as a repository of shared knowledge and experiences.

Our study reveals that social media plays a critical role in prototyping and mitigating the internal tensions, as a virtual sandbox for the stakeholders to build organizational structure and demarcate new project arrangements from the existing ones. While the platform itself creates a sense of segregation from the existing logics, the features (i.e., grouping and labeling) of the platform provide a suite of tools for the organizers to shape the project arrangements and compartmentalize conflicting practices.

After the prototype of project arrangement was formed, social media became a repository of shared knowledge and experiences among the organizers. In the face of new institutional dynamics, social media as a repository of knowledge and experiences provides a pool of elements from the previous negotiations and interactions for the organizers to draw and combine. For example, at the second phase, the organizers appropriated part of the network structure from the WeChat group to the established company. In this way, our finding partly answered the question raised by previous research on temporary hybridization – “in what kind of structure will the knowledge of the process of temporary hybridization remain” (Matinheikki et al., 2018). Our findings suggest social media, or collaborative platform, as a repository of the shared knowledge and experiences among the organizers, could potentially retain the process of temporary hybridization.

6. 2 Contributions to Research

This study adds to literature by examining the occurrence and development of organizational form in the domain of digital public service projects, where the institutional dynamics are constantly in flux. Our findings contribute to the existing research in three aspects.

First, we present a process model of hybridization that is enabled by collaborative ICT (i.e., social media). Our study adds to the existing hybridization approaches by pointing out that prototyping (Battilana and Dorado, 2010; Lawrence et al., 2002) can be an important preliminary step when there is no dominant logic to impose demands on the legitimate project form. In terms of the coping approaches with competing logics that have strong presence in the domain, our model is broadly similar to the existing model of temporary hybridization (i.e., making use of selective coupling and mitigating internal tensions).

By focusing on the role of the collaborative platform, we have shown nuances in the already identified hybridization approaches. Using the collaborative platform, selective coupling takes place on a dual track,

creating two parallel combinations of logics as the project proceeds. Previous studies argue that building consensus is an important way to mitigate internal tensions in a hybrid organizational settlement (Matinheikki et al., 2018; Ostrom, 1990). However, our findings demonstrate that, when consensus is difficult, organizers can engage in a “divide and dissent” approach using the collaborative platform.

In particular, we have identified two roles of ICT (i.e., social media) in the hybridization process. As a virtual sandbox with a suite of tools, social media helps to virtually demarcate the proto-project arrangements while providing a suite of tools within the sandbox to configure different elements of the logics. As the interactions and negotiations among the organizers for project organizing takes place, social media also plays a repository for the knowledge and experience, documenting and instantiating the process of temporary hybridization. This role as a repository particularly helps the organizers to benchmark the hybridization process, and sustains the knowledge of the process of temporary hybridization in hybridization literature (Matinheikki et al., 2018). These findings confirm the instantiation effect of technology found in previous institutional studies (Gawer and Phillips, 2013; Raviola and Norbäck, 2013), and form the first step to understanding the role of technology in hybridization literature.

Second, our findings identify a rising presence of community logic as a public service project undergoes digital transformation, and suggest community logic as an important source of generating an innovative organizational form of public service project. Our findings add nuances to the institutional understanding of public-private collaboration projects, and break the previous assumption of the institutional logics (i.e., the logics of public goods and market) at play in the majority of studies on public-private collaboration (Beck et al., 2015). In addition, our findings complement the previous community studies on the relation between open source technology and the rise of different organizational forms (e.g., social movement) (Hippel and Krogh, 2003; O’Mahony and Bechky, 2008; O’Mahony and Lakhani, 2011).

Third, we contribute to the understanding of the occurrence and development of organizational form of digital public service projects. Our study demonstrates that, driven by the uncertainty associated with digital innovation, the organizational form of digital public service projects is a series of settlements (Rao and Kenney, 2008; Schildt and Perkmann, 2017), rather than pre-designed permanent organization. These settlements result from a temporary hybridization process that combines different elements of institutional logics (Matinheikki et al., 2018), and transitions as the institutional dynamics shift. This finding contributes to the project management literature by bringing emergent insights into the available forms of digital public service projects (Sydow and Braun, 2018).

6. 3 Implications for Practice

The findings of our study also provide practitioners of digital public service projects with the following three suggestions.

First, as technology innovation becomes integral to public service (e.g., open data, smart city, A.I.), the advent of new technology is likely to bring unexpected range and dynamics of stakeholders, as well as

doubts about what are the appropriate organizational forms to organize a digital public service project. Government stakeholders should therefore not be confined by traditional procurement-based public-private project models that facilitate price competition. Rather, government stakeholders should introduce more informal project forms (e.g., networks) that stress on trust building and mitigation of conflicts among different groups of stakeholders. In addition, government stakeholders should also be ready to adjust the project forms when project develops, as the range and dynamics of stakeholders may change along the way.

Second, in managing a digital public service project, project stakeholders should not take the public and private divide for granted. On the one hand, stakeholders from the same sector may have completely different attitudes about the project goals, interests, and even ways of working. On the other hand, stakeholders from different sectors can in fact share more common experiences and perceptions around IT projects, even though their professions may not be closely related to each other. Thus, it makes more sense for the project stakeholders to take into account the emergent pattern of organizing and coordinate the resources and knowledge accordingly.

Third, stakeholders in digital public service projects – particularly projects that involve a range of stakeholders connected through collaborative platforms – should pay attention to how the stakeholders actually use the collaborative platform. Even though the platform is intended to increase the openness of the collaboration, stakeholders can use the platform in different ways, which may cause ambiguities and conflicts among the stakeholders. To cope with these situations, the stakeholders should try to group the stakeholders, using features such as tags or blocks, and choose different ways of knowledge sharing with different groups of stakeholders accordingly.

6.4 Limitations and Future Research

Our study has several limitations, but these in turn reveal avenues for future research.

First, the technology-based hybridization model we have proposed in this paper is a context-specific model, which is sensitive to the local context; in this case, the context is open data as the specific type of digital public service. Future studies should address the hybridization process in different regional contexts or different types of digital public service projects, in order to allow for the emergence of other institutional logics that are at play, and to understand the similarities and differences in organizational responses to different combination of logics.

Second, our paper focuses on a very specific type of ICT, that is, WeChat. As today's collaboration is also mediated by other collaborative platforms, such as, crowdsourcing platforms, we believe it would yield interesting results to look into other platforms engaged in public-private collaboration and understand the role of these platforms in developing the organizational form of these collaborations.

Third, digital public service project – in particular data-related public service project – was not yet a mature field in China at the time of our investigation. Constrained by the scope of our study, we have only focused

on the hybridization process involved in the creation of a new organizational form in an immature field. Relevant questions for future research could be how such a hybridization process can be institutionalized in the field, and how a collaborative platform – as a repository of shared experience and knowledge – can contribute to the institutionalization of these changes in the field of open data projects.

7. CONCLUSION

This paper embarked on the creation of an organizational form of public-private collaboration in the context of digital public service project. We used a longitudinal case study of a municipal-level open data project in China, where stakeholders tried to build the first open data project in the country. Our findings demonstrate that project stakeholders had to struggle with the changing dynamics between three institutional logics of community, local bureaucracy and corporate, as the range of stakeholders changed. Consequently, building a new organization form for public-private collaboration in the field of open data involves a hybridization process the combines the logics at play. The hybridization process mainly revolves three approaches: prototyping, selective coupling and mitigating internal tensions. In particular, social media plays two important roles in the hybridization process: one is a virtual sandbox with a suite of tools; and the other is a repository of knowledge and experiences. Based on our findings, future studies should address three aspects: 1) other project contexts to verify the types of institutional logics at play; 2) the interplay between institutional logics and stakeholders' sensemaking around collaborative platform to further understand the relation between technology and institutional frames; and 3) the internal coordination mechanism or governance arrangements of public-private collaboration projects.

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**Governments' Social Media Use for External
Collaboration**
*Juggling Time, Task, Team, And Transition, with
Technology*

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ABSTRACT

Purpose – As social media technologies permeate public life, the current forms of collaboration between government and non-government stakeholders are changing. The purpose of this paper is to investigate how social media use reconfigures the organizing practices around such collaboration. A case study of a collaborative e-government project showcases how emergent organizing practices through external social media differ from existing ones along the dimensions of time, task, team and transition.

Design/methodology/approach – This paper presents a case study of a collaborative e-government project on open data, organized by Shanghai Municipality, local businesses, universities and non-governmental organizations, using an external social media platform, WeChat. Adopting the theoretical lens of temporary organization, the paper identifies the key aspects of change emerged in the organizing practices of this collaboration.

Findings – The findings outline how the use of external social media reconfigures the collaboration between government and non-government stakeholders along the four dimensions of time, task, team and transition. The new form of collaboration is reconfigured along the lines of (1) an ad hoc and non-linear management of time; (2) discursive task creation, assignment and engagement among stakeholders; (3) a serendipitous engagement of team members based on expertise; and (4) a shift in formal and informal organizing practices.

Originality/value – This paper provides insights on the use of external social media for collaboration in e-government research and develops the concept of temporary organization in a socio-material setting. It also provides practical suggestions on how to manage new forms of public projects leveraging on the capacity of external social media.

Keywords: Social media, e-government, temporary organization, inter-organizational collaboration

1. INTRODUCTION

Governments around the world increasingly seek to find innovative ways to deliver public services. Leveraging on the recent development of social media, new collaborative initiatives appear that aim at combining government and non-government stakeholders (e.g., citizens, businesses, and non-profit organizations) into a coherent service delivery system (Bertot et al., 2016; Scupola and Zanfei, 2016). Such development is often referred to as collaborative e-government (Chun et al., 2012). In particular, external social media (e.g., Facebook, Twitter, WeChat) that allow not only government employees but also individuals from other communities “to create, circulate, share, and exchange information in a variety of formats” (Leonardi and Vaast, 2017, p. 150) are used to enhance such collaboration efforts (Schlagwein and Hu, 2016).

The use of social media to deliver public services has reportedly brought benefits to various aspects of public governance (Aral et al., 2013; Baskerville, 2011; Baumer et al., 2013; Downey, 2012). However, it has also introduced concerns with respect to the potential damage it can cause to the collaboration process between governments and their external stakeholders (Landsbergen, 2010; Zavattaro and Bryer, 2016), which often features clearly defined goals (e.g., major product or service provision), organizational structure (e.g., particular modes of operation), and organizational boundaries (e.g., identification of key stakeholders) (Beynon-Davies, 2007). Nonetheless, recent studies on social media suggest that the use of external social media has brought fundamental changes to the organizing arrangement of collaboration. This includes identification of stakeholders from private networks (Hwang et al., 2015; Ollier-Malaterre et al., 2013; van Zoonen et al., 2016), evolving definition of project goals and alternative use of time (Subramaniam et al., 2013). Consequently, the organizing practices emerged through social media are often a result of “making it work” and produce specific organizing arrangements of governments’ collaboration with external stakeholders, which invites us to reframe our ways of looking at these collaborations.

Such development resonates with the rising discussion on information and communication technology (ICT)-enabled collaboration in e-government research (Bertot et al., 2012; Chun et al., 2012). However, these studies mostly rest on the assumption that changes take place along the line of established processes and often only focus on government-to-business (Liu et al., 2012) or government-to-citizen collaboration (Bertot et al., 2012). The actual organizing activities in collaborative projects that involve stakeholders with more heterogeneous backgrounds remain largely undiscussed. Therefore, it is still unclear how social media may reconfigure the organizing arrangements of collaboration between government and non-government stakeholders, particularly in an environment that features heterogeneous types of stakeholders. To understand this, it is therefore important to scrutinize the actual organizing practices that have appeared through social media in e-government projects and ask:

What are the characteristics of inter-organizational collaboration between government and non-government organizations enabled by social media?

To address this question, we build on a case study of a collaborative project on open data in Shanghai, China, where local municipality, businesses and universities and non-governmental organizations (NGOs) collaborate using an external social media platform, WeChat. Seeing collaboration as discursive activities of innovating around emergent situations, we adopt an action-oriented conceptualization of collaboration – “temporary organization” proposed by Lundin and Söderholm (1995) – to analyze our collected data. Along these lines, this study unfolds the characteristics of the emergent organizing configurations in external social media-facilitated collaboration between government and non-government stakeholders. By doing so, we contribute to the understanding of the use of external social media for collaboration in e-government projects and set out the first attempt to develop the theory of temporary organization in a sociomaterial setting. Such insights also provide public project managers with suggestions on how to manage new forms of public projects leveraging on the capacity of external social media.

This paper is structured as follows. The next section discusses existing studies on the impact of social media use on inter-organizational collaboration in e-government projects. Section 3 presents the theoretical lens of temporary organization to understand the key dimensions of inter-organizational collaboration. Section 4 presents the research setting along with the procedures of data collection and analysis. Section 5 presents our findings along the four dimensions of temporary organizations: time, task, team and transition. In Section 6, we discuss the findings in light of their implications to research and practice, as well as the avenues for future research. We conclude by summarizing the main findings and its implications.

2. LITERATURE REVIEW

A continuously growing body of e-government studies has investigated and discussed the implications of government innovation by the use of social media (Criado et al., 2013; Medaglia and Zheng, 2017). Social media is strategically used in various initiatives by governments around the world to co-produce public services with external stakeholders (i.e., citizens, non-profit and private organizations) (Criado and Rojas-Martón, 2013; Mainka et al., 2015; Zheng and Zheng, 2014). A common denominator of these studies is that social media, particularly external social media, is increasingly used as an organizing unit for collaboration among government and non-government stakeholders. Here, external social media refers to a particular type of social media that is run by providers outside the organization (e.g., Facebook, Twitter or WeChat) (Schlagwein and Hu, 2016). Different from internal social media that only allow certain organizational members to access (e.g., Yammer or corporate wikis), external social media, are accessible for individuals from other organizations and communities to create, circulate, share and exchange information.

The combination of the use of external social media and governmental reforms potentially brings about a new range of opportunities for governments, touching upon several aspects of public governance (Downey, 2012). These opportunities include increased transparency and accountability by the use of ICT, cost savings through citizen crowdsourcing (Brabham, 2008; Doan et al., 2011), increasing smartness of public action (Gil-Garcia et al., 2016), real time interaction (Mergel, 2013a), as well as citizen participation and

empowerment (Bonsón et al., 2015; Porwol et al., 2016). However, governments' use of external social media has also caused concerns in regard to security (Bertot et al., 2012), privacy (Bryer and Zavattaro, 2011) and productivity (Picazo-Vela et al., 2012).

Such concerns mainly occur against the backdrop of the conventional ways of collaboration in e-government projects (e.g., public–private partnership projects on IT infrastructure), where government and non-government organizations (often business organizations) are typically involved in a supply chain relationship – the government organization obtains goods and public services from non-government organizations. Collaborations as such are often assumed to take an organizing form of clearly defined goals (e.g., major product or service provision) organizational structure (e.g., particular modes of operation) and organizational boundaries (e.g., identification of key stakeholders) (Beynon-Davies, 2007). For example, the key stakeholders of a conventional collaboration are often identified through official collaborative arrangements (e.g., outsourcing contract or official agreement) (Dawes and Pardo, 2002; Lee and Kwak, 2012). The stakeholders' tasks and responsibilities are tied to their position in the affiliated organizations (Jaeger and Bertot, 2010; Mergel, 2013b). The involvement of government may also imply that the project management is prescribed by governments' institutional arrangements and features bureaucratic procedures of collaboration (Gil-Garcia, 2012; O'Leary and Vij, 2012). Hence, the assumption here is that external social media, ambidextrously used for both private and professional purposes by individual stakeholders, can pose threats to the coherence of the existing organizing arrangements around collaboration and jeopardize the outcome of collaboration (Picazo-Vela et al., 2012).

Nevertheless, recent studies on social media suggest that the use of external social media has more “subversive” impacts on organizational practices (Leonardi and Vaast, 2017). Rather than supporting existing organizing arrangements, the use of external social media can, in fact, generate organizing practices that evolve goals, unsettle existing organizational structures and blur existing boundaries, challenging the conventional assumptions about how collaboration should be organized. As the use of external social media in organizations diffuses largely from private to professional settings, it becomes increasingly difficult to define where ones' network begins and ends, and to what extent the connections formed feed into the development of professional needs (Henderson and Bowley, 2010; Ollier-Malaterre et al., 2013; van Zoonen et al., 2016). In addition, as knowledge is increasingly shared within and among organizations, employees are found to associate with each other more based on shared expertise rather than on other organizational categories (i.e., affiliation or hierarchy) (Hwang et al., 2015). This transforms the way key stakeholders are identified and affects the goal of collaboration. As the stakeholders often have disparate goals, new involvement of stakeholders can lead to changes in setting the common goal. Moreover, the constant availability of external social media makes it possible for people to be co-present in a virtual setting and organize across time and space (Subramaniam et al., 2013). Together with the affordance of social media for instantaneous and persistent communication (Treem and

Leonardi, 2013), the use of external social media can generate organizing practices that are “simultaneously transient and enduring and simultaneously virtual and material” (Leonardi and Vaast, 2017, p. 180). Such change in terms of how organizing practices emerge across time and space has particular implications for inter-organizational collaborations, especially those among organizations with heterogeneous backgrounds. This is mainly due to organizations often taking a different amount of time to respond (Janssen and van der Voort, 2016). By providing an alternative use of time, external social media can potentially change the way in which the collaboration is coordinated. These practices defy the typical understanding of collaboration as a clearly defined process. Rather, individuals using external social media have to constantly deal with emergent situations due to the fast-changing dynamics on external social media and invent solutions around these situations by capitalizing their resources through their networks. This shift from goal-oriented processes to emergent actions invites new ways to look at inter-organizational collaboration in an e-government context.

The current scholarship on collaborative e-government is amongst the early moving ones in understanding this shift (Chun et al., 2012). Collaborative e-government mainly refers to the ICT-facilitated collaboration environment between government and nongovernment organizations, where the use of ICT transforms the ways these stakeholders interact among each other (Chun et al., 2012). Seeing external social media as part of the environment, existing studies have looked into the motivation (Chun et al., 2012), outcome (Bertot et al., 2012), success/failure factors (Janssen and Klievink, 2012; Williams and Fedorowicz, 2012) of such transformations. Studies have also embarked on the changing organizing processes of collaborative e-government projects (Liu et al., 2012). However, most of these studies take the assumption of collaboration as goal-oriented processes and often focus on government-to-business or government-to-citizen collaboration. We are still at lost to understand how the use of external social media reconfigures organizing arrangements, particularly in the collaboration between government and stakeholders with heterogeneous backgrounds (i.e., government, businesses and non-profit organizations). In the next section, we illustrate on the concept of “temporary organization” to provide a theoretical lens to support this inquiry.

3. THEORETICAL LENS: TEMPORARY ORGANIZATION

As we indicated in the literature review, governments’ innovation through external social media results in a number of collaborative projects between government and external stakeholders that are open and dynamic. The organizing arrangements that occur through external social media can be largely different from the conventional organizing arrangements of such collaborations (Beynon-Davies, 2007), in regard to aspects, such as increasing involvement of stakeholders from private networks, changing definition of project goals, and alternative use of time.

To account for these attributes of change, we looked into the literature on different organizing forms of inter-organizational collaboration, where one form of inter-organizational collaboration, temporary organization, particularly speaks to these emergent attributes (Bakker et al., 2016; Burke and Morley, 2016;

Jones and Lichtenstein, 2008; Lundin and Söderholm, 1995). The concept of temporary organization emerges out of an ongoing trend in inter-organizational projects across business and industry settings, such as filming (Stjerne and Svejenova, 2016), architecture (Jones and Lichtenstein, 2008), public infrastructure construction (van Marrewijk et al., 2016) and public administration (Swärd, 2016). In particular, it refers to a form of inter-organizational collaboration, in which “multiple organizations work jointly on a shared activity for a limited period of time [. . .] to coordinate complex products/services in uncertain and competitive environments” (Jones and Lichtenstein, 2008, p. 1).

A key distinction between temporary organization and other more commonly studied forms of joint collaboration (e.g., joint ventures and alliances) is the dimension of time. The limited project duration has a significant influence over the kind of organizing practices (i.e., coordination techniques) that are used to pace the collaborative activities between multiple organizations. Along this line, scholars have looked into the framework for understanding the various types of temporary organization and how these different types of temporary organization facilitate the collaboration in different contexts (Bakker et al., 2016; Burke and Morley, 2016). While each framework features a specific angle that is related to a specific context, the forms of temporary organization in general vary along four basic dimensions: time, team, task and transition (Lundin and Söderholm, 1995).

The first dimension is time. As indicated above, projects are created for a specific goal within a predefined deadline; thus, the project duration is limited. Under such pressure, the coordination activities of projects revolve around the key management of time. The project organizers often use different pacing techniques, that is time-oriented markers (e.g. key milestones; timelines) to organize their activities and reduce the time to complete tasks (Jones and Lichtenstein, 2008).

The second dimension is task. A project is dependent on one or a limited number of tasks, and all of its resources are retrieved, planned and managed accordingly. This results in a discursive distribution of responsibilities among the team members that link individual responsibility directly to their capacity in accomplishing project goal-related tasks in daily operations.

The third dimension is team. Closely linked to the traits of time and task, the existence and development of teams is centered on the tasks that must be accomplished within a limited time. Team members are often brought together for their common interest in (a task of) the project (by force or by coincidence). While the team members commit to the tasks around the project, they also need to legitimize their engagement to their parent organization.

The fourth dimension is transition. As temporary organizations are created to achieve a specific project goal, there is a transition between the states of “before” and “after” the achievement of the goal. Transition can also concern changing behaviors about how certain work is done, as team members come from a different organization with their own distinctive way. A summary of the dimensions of temporary organization is provided in Table 1.

Table 1. Dimensions of Temporary Organization

Dimensions of temporary organization	Sub-Dimensions
Time	Project duration
	Project pacing
Task	Project goal
	Team member responsibilities
Team	Individual to team
	Team to team environment
Transition	Post goal Achievement
	Shifting ways of organizing

These four dimensions are developed by a series of empirical studies that often focus on one or some of these four dimensions (Bakker, 2010). Along the dimension of time, empirical studies have addressed the effect of time pressure on process, functioning, behavior and performance in temporary organizations – e.g., how variance of project duration affects the kind of coordination techniques that are used to manage uncertainty (Jones and Lichtenstein, 2008). Along the dimension of task, empirical studies have looked into the types of tasks temporary organizations perform (Bechky, 2006) and the effective execution of tasks (Saunders and Ahuja, 2006). Along the dimension of team, empirical studies have focused on how a team is formed (Ebers and Maurer, 2016; Perretti and Negro, 2006) and also on how team members resolve issues of vulnerability, uncertainty, and risk (Xu et al., 2007). Studies that focus on the dimension of transition discuss how temporary organizations can be sustained within the environment of the firm, for example, how a temporary organization is sustained in an enduring form (Cacciatori, 2008). In the broader context of society, empirical studies look at how different social, structural and institutional forces influence the coordination of temporary organization and its transition (Sorenson and Waguespack, 2006; Stjerne and Svejenova, 2016; Swärd, 2016).

Among these studies, there are some resemblances between the identified forms of temporary organization and the emergent attributes of the organizing arrangements in a collaborative e-government project, particularly on how some of the boundaries around time, task, team and transition are introduced and shape the project (Jones and Lichtenstein, 2008; Stjerne and Svejenova, 2016). Nevertheless, as Information Systems scholars, such as Orlikowski (2000), have argued, sociomateriality constitutes the shaping of everyday organizing. Therefore, in following this line of enquiry, we should not lose sight of how the use of objects, in particular ICT, is shaping these organizing arrangements and are used to manage the collaborative activities between multiple organizations. Recently, studies such as Sergi (2013) start to emerge, showing how objects (i.e., documents) contribute to the actuality of inter-organizational

collaboration projects. Nonetheless, very few studies have taken such inquiry empirically to examine the role of ICT, such as external social media, in shaping the forms of temporary organization and the organizing practices associated with them. Thus, in this study, we draw on the theoretical lens of temporary organization to shed light on the emergent organizing form of inter-organizational collaboration in a new context of collaborative e-government. We also aim to develop the concept through our empirical study by elaborating on the role of external social media in shaping the organizing arrangements that give rise to the temporary organization form.

4. RESEARCH METHOD

In this section, we outline the research design and illustrate the methods for data collection and analysis for investigating the emergent characteristics (i.e., time, task, team and transition) of the organizing practices that emerged through the use of external social media in the collaboration between government and non-government organizations. We start out by describing the research setting of our study.

4.1 Research Setting

To address the research question, we chose a collaborative project on open data in China – the Shanghai Open Data Apps (SODA) contest – as our case. SODA is a municipal level contest organized in Shanghai to invite citizens, businesses and communities to participate in the co-production of public services using government data. The contest was officially launched in August 2015 and has achieved a result of ten compelling new public service prototypes and several hundreds of elaborated ideas to improve the local public services in Shanghai. The result of the contest was particularly well received among the local governments and businesses. It is now developed into a brand project of the municipality, which takes place annually.

Comparing to the scale of the turnout, the organizing team behind the project appears to be much smaller in terms of headcount. The project was originally initiated by nine active open government data promoters in Shanghai, following the central government's advocates for open data in 2015 (Gao, 2015). These nine organizers are of very different organizational backgrounds, including the municipal government (i.e., SMCEI[1]), universities (i.e., OMNI Lab[2] and DMG[3]), a state-owned enterprise (i.e., CIDI Shanghai[4]), a small IT company (i.e., Enerlong), an IT start-up (i.e., Kesci) and an NGO (i.e., Open Data China). They are also associated with different positions in their own organizations, with not only CEOs, Chief of Offices and Head of Labs, but also secretary and students.

These nine organizers take charge of all the project management tasks during project planning, execution, control and follow-up. These range from repetitive tasks, such as correcting press release manuscripts, to more unique tasks, such as envisioning the future state of the project. The preparation lasted for three months, during which the nine organizers had two face-to-face meetings for general discussion and updates. Most of the other coordination activities took place and were acted upon in an exclusive chat group of an external social media platform, WeChat.

We deem the collaborative project SODA as an excellent setting to study the use of external social media in collaborative government projects. First, the interest in local collaborative e-government projects is growing. There is an active search for innovative solutions to public issues from local governments, citizens, NGOs and businesses. Second, WeChat is prevalently used in both private and professional settings. By May 2017, there were 768 million daily active users (private and professional) on WeChat (China Internet Network Information Center, 2016). This prevalence of WeChat represents a digital ecosystem in swift expansion that public actors need to respond to when envisioning new modes of collaboration with external stakeholders (Chen et al., 2016). Third, the boundaries between the public and the private sector in China are in a state of rapid change and continuous negotiation. China is a case of hybrid transition between a command economy and a relatively newly established market economy. While bureaucratic modes of governance persist, new governance practices are also devised to respond to the challenges posed by the environment (Gao et al., 2013; Zhang et al., 2016).

4.2 Data Collection

Considering that this study focuses on capturing the actual organizing practices emerged in the daily work scenarios, it requires us to provide a detailed account of the real-life contexts where practices take place. We therefore chose to base our data collection on a single case study (Walsham, 2006) of the SODA project, as it provides a more in-depth account of the emergent dynamics in inter-organizational collaboration within its real-life context. The data analyzed belong to a study of SODA, where we follow the informants from April 2015 to September 2015. We collected our data using a combination of qualitative methods (i.e., participant observation, semi-structured interviews and document analysis). The data sources for this paper consist of 15 semi-structured interviews with the 9 stakeholders, participant observation of meetings and daily organizing practices through WeChat, as well as documents that are linked to SODA's official promotion. These sources are listed in Table 2.

Table 2. Overview of data sources

Interviews	Informant	Organizational Affiliation	Position	Informant code	Interview N
	Government 1	Shanghai Municipal Commission of Economy and Informatization (SMCEI)	Information Chief	G01	2
	Non-government 1	China Industrial Design Institute (CIDI) Shanghai	Vice-CEO	NG01	2
	Non-government 2	Kesci	Co-founder	NG02	1
	Non-government 3	Opendatachina.com	Director	NG03	4
	Non-government 4	China Industrial Design Institute (CIDI) Shanghai	Secretary	NG04	1

	Non-government 5	Enerlong	CEO	NG05	1
	Non-government 6	021 Incubator	CEO	NG06	1
	Non-government 7	Shanghai Jiaotong University	Lab member	NG07	1
	Non-government 8	Fudan University	Professor	NG08	1
	Non-government 9	Fudan University	Lab member	NG09	1
Observations		Content	Participants		
	Initial meeting	Review 1 st SODA Initial plan for 2 nd SODA	SMCEI, CIDI Shanghai, OMNI Lab, DMG Fudan, Kesci, Enerlong		
	Other meetings	Regular DMB Lab meeting Task assignment and report	DMG lab member		
	SODA Road Show	SODA final	All stakeholders, contest participants, public audience		
	Informal communication	During daily work Via WeChat	All stakeholders		

These three methods complement each other by providing different types of data. Participant observation (Locke, 2011) provides us with an opportunity to uncover the organizing practices that are contextualized in different work scenarios. In this regard, we conducted both online observations on WeChat and offline observations of the meet-ups between the stakeholders. Online observations included unobtrusive observation of several chat groups on WeChat used by the organizing team for coordination. This gives a sense of the actual working dynamics on WeChat between the stakeholders in the SODA project. Offline observations included participation in the wrap-up meeting, where all the stakeholders presented and reviewed the organizing processes; the internal meetings that took place among the university stakeholders; and the final event of SODA, where one of the authors engaged in informal conversations with different stakeholders (Table II). The observations of the organizing practices in SODA were documented in the form of field notes. In addition, we also used document analysis to verify some of the statements that are posed by the informants and to shed light on the (in)coherence between the public address and the private reflections, which provided us with cues for our interview questions at a later stage of data collection.

We also conducted semi-structured interviews with the nine organizers of SODA to probe into the informants' motivations and reflections on their experiences. They were chosen as the key informants, because they recognized themselves as the core organizing team of SODA and because their engagement with the project and with each other started from the beginning of the project. The interviews followed two primary inquiries:

- (1) How do the stakeholders organize around the collaboration using WeChat; and
- (2) What are the differences between their organizing practices in SODA and their previous collaboration experiences with government?

The specific interview questions were tailored to each informant's background and experiences. All interviews were carried out in Chinese. The duration of the interviews varies from 40 minutes to 3 hours, because of the circumstances of the interview. They were documented and transcribed with the informants' consent and then translated into English. The protocols used for the interviews are available from the authors upon request. An interview guide sample is included in the appendix (Appendix 1).

4.3 Data Analysis

The data analysis was conducted in three broad steps with distinct objectives. In the first step, we applied "within-case analysis" (Eisenhardt, 1989) to our data. Here we used an open coding procedure to familiarize with the data and capture the differences between emergent organizing practices through WeChat and the perceived ways of collaboration with government. Coding categories included generic codes related to project management, such as parallel work, meeting, private/professional networking, dispersive assignment of tasks, recruitment of new members and conflicts. The outcome of the first coding step was a mapping of emergent organizing practices in the SODA project and a mapping of perceived ideas of conventional collaboration with government. In the second step, we looked for more structured patterns of these two mappings. This step started out as an iterative process, where we first used the codes generated from the first step of the analysis as clues to identify a pool of relevant theories and concepts. We then turned to the literature to provide dimensions around which we could cluster codes from our first phase of analysis. Eventually we chose the concept of temporary organization (Lundin and Söderholm, 1995) as our sensitizing device (Klein and Myers, 1999) to systematically categorize the two mappings that were identified in the first step, by relating them to the sub-dimensions of temporary organization. For example, the first-level code "parallel work" was coded as "project pacing", "private/professional networking" as "individual to team", "dispersive assignment of tasks" as "stakeholder responsibilities", and "conflicts" as "shifting ways of organizing". In the third step, we compared the conventional ideas of collaboration with government and the emergent organizing practices through external social media to understand how the use of external social media reconfigures the inter-organizational collaboration between government and non-government organizations.

5. FINDINGS

During the interviews, our informants exhibited an overwhelmingly positive attitude toward their collaboration experience during the first year of SODA. They expressed that the coordination on WeChat was "smooth", "convenient" and very different from their previous collaboration experiences with government agencies. It has become clear that time pressure is a central issue in the organizing experiences for the stakeholders and has various implications along the inter-connected dimensions of task creation, assignment and engagement, team formation and transition of the project. In the following, we detail on

the organizing practices that emerged through WeChat and showcase how the use of WeChat reconfigured the conventional ways of collaboration between government and nongovernment organizations.

5.1 Time: Alternative Mode of Temporality

The interviews with the stakeholders of SODA show that time appears to be one of their primary concerns in the coordination efforts, and that there seems to be two contrasting views. On the one hand, all the stakeholders from government, university and that industry expressed a sense of “lacking time” during the coordination. Expressions such as “hectic” or “short of time” frequently came across in the interviews. The experience of “lacking time” was mainly linked to the pressing deadline of the project, which was set by the stakeholders to limit the preparation time within three months. On the other hand, the stakeholders also express that time is flexible here in comparison to the “traditional” collaboration project with government. The Information Chief of SHCEI [G01] provides an example in her account of time in organizing SODA:

We are all very busy, and we have to attend to other work, or go on business trips. With WeChat, we no longer need to have meetings all the time. So, WeChat is good in the sense that if we were not present when things were discussed, we can always come back and comment on what other people said. It happened a lot [. . .] We don’t have to pick and decide on a time any more. Time is really flexible on WeChat. [G01]

Similarly, the co-founder of KESCI [NG02] has expressed his surprise on how agile some of the government stakeholders have become during the preparation of SODA:

I am really surprised by our working style at SODA, especially how some of the main government stakeholders worked together with us. I mean, it has become more entrepreneur-like. We constantly discussed and worked on WeChat, whenever people have time. We almost just kept it going 24/7. This is different from the “from nine in the morning to five in the afternoon” government working time where they are not reachable out of these time slots. Or when you have to wait for the call to go meet them in the government. [NG02]

The use of WeChat seems to release some of the time pressure from stakeholders by providing a different way of project pacing from the government. Instead of using regular meetings as the marker for project progression, external social media enables virtual co-presence of team members to be constantly online across time and space, which is described by some informants as [G01], “just chat on the internet”. Being able to organize the discussion in a virtual space also means that the stakeholders can respond to the discussions more instantaneously and that therefore, it becomes more efficient in terms of their use of time. Seen from the quotes, WeChat appears to enable an alternative mode of temporality in organizing collaboration compared to the perceived mode of collaboration in government, which is characterized by cyclical meetings, standard procedures and, overall, an implicit expectation of time as “eternal” (Lundin and Söderholm, 1995, p. 439). Under the pressure of project deadlines, the stakeholders experience time as a scarce resource. However, the stakeholders are able to leverage on external social media as a project pacing technology to relieve their organizing practices from the spatial and temporal constraints. Rather

than working with serial timelines and formal milestones, the stakeholders use external social media to organize working time based on ad hoc, task-related emerging schedules. With the external social media platform of WeChat, the organizers have the possibility of constantly being present at a virtual space and of engaging in a continuous stream of discussions and actions. In a project setting where time is limited, the use of WeChat enables a new set of organizing practices that are free from temporal and spatial constraints and, to some extent, free the stakeholders from the pressure of project deadlines.

5.2 Task: Informal Task Distribution

As indicated in the research setting, the overall goal of SODA was agreed by the stakeholders following the central government's advocate for open data in China in 2015. Though without an official agreement, this still resembles how a project goal is set in conventional collaborative e-government in China. In countries such as China, the municipal e-government design has to follow a centralized e-government strategy, which means the organizational and procedural standards are reinforced in a top-down manner in government-issued regulations or by government-endorsed advocates (Chen et al., 2009). This also indicates that in inter-organizational projects, the roles and responsibilities of each stakeholder need to be spelled out in policies.

Nonetheless, during the observation, it seems that WeChat has triggered a set of changing organizing practices around the assignment of responsibilities among stakeholders. Enabled by the persistent communication on WeChat, new tasks emerge in the on-going conversation between stakeholders, and are adopted contingently based on people's availability, expertise, even willingness, rather than fixed assignment. The Vice CEO of CIDI [NG01] has illustrated in details how tasks emerge through WeChat:

If people have questions or ideas, they can just throw them in the group. And then the others will come, discuss how to approach this, and claim the tasks themselves once the tasks are clear. People who claimed the tasks will complete the tasks offline, and then throw the end product back into the group. If others are OK with the end product, then it is done. Otherwise, we will just fix it altogether. [NG01]

What we see here is that tasks emerged through the on-going communication on WeChat and their assignment are highly discursive. While WeChat allows for on-going negotiation of task responsibilities through joint decision-making, taking such responsibility also depends on individual engagement in the group. During our observation, we have noticed that emergent task-making relies on a shared belief among the stakeholders. In the interviews, one of the recurring expressions the informants used to describe the bonds between the stakeholders is *qinghuai*, which can be translated as "felt interest". Many of the organizers remarked that the assignment of tasks could, at times, be quite imbalanced and intense. What motivates them to complete these tasks is the *qinghuai* – their felt and shared interest in open data. The co-founder of Kesci [NG02] has particularly appraised that tasks are adopted in the WeChat group despite of individuals' positions in the organizational hierarchy:

Well, we are all positioned quite differently in relation to each other. Some are from higher positions in the government and companies, or professors, and some are still students, or somewhere lower in their own organization. But when it comes to taking tasks, we are just all in this together. People are really dedicated to this project. [NG02]

The way [NG02] described how tasks are adopted in the WeChat group is very different from how tasks are assigned in the government, where individuals' tasks and responsibilities are typically fixed to their organizational position (Jaeger and Bertot, 2010; Mergel, 2013b). The use of WeChat, in combination with a dedicated team who shared a common interest, has enabled changes in how tasks emerge and are adopted in such collaborative project. However, it does not mean that stakeholders would organize in an identical fashion. In fact, stakeholders also use external social media to avoid unwanted engagement with the collaboration.

For example, the secretary of CIDI Shanghai [NG04] mentioned in the interview that even though she was also included in the WeChat group, she did not participate in the conversation as much as the other members of the group who were all in leadership positions. She only responded when directly mentioned with an "@" sign in the group, which meant that she had been assigned to a very specific task. Otherwise, she felt she only needed to be informed about the progress of the project preparation and that she would not necessarily share as much qinghuai as the others. This example shows that, while the use of WeChat enables new task creation, assignment and execution practices to emerge, it can still accommodate less engaged ways or more conventional ways of task assignment and execution. WeChat makes it possible for stakeholders to juggle between the emergent organizing practices and the conventional processes around collaboration.

5.3 Team: Allowing New Stakeholders to Participate

The conventional collaborative e-government project in China often rests on government business partnership. The municipal governments would engage local private-sector partners based on their specialized technological resources. They would also engage local research institutes and universities based on their shared interests in solving public needs and building possibilities for innovation. These potential partners are also often well-known organizations (Chen et al., 2009).

In our case, while the nine stakeholders may have identified each other based on their matching needs and resources, we also start to see a new way of engaging partners/ stakeholders that is enabled by external social media. During our observation, the ad hoc tasks created on WeChat result in stakeholders capitalizing the available resources in their private networks to complete these tasks. The boundary of project team in this sense becomes very malleable. With the prevalence of other external social media platforms, such as Weibo (an approximate equivalent platform of Twitter), we have seen possibilities to involve experts who were not part of any individual's private or professional network into the team.

For example, the director of Opendatachina.com [NG03], who is now regarded as one of the experts in open data in Shanghai, told us how he "stumbled upon" the opportunity to become a team member of

SODA. After obtaining his PhD in the UK in 2014, he developed an interest in open data in China and started out by following several open data-related hashtags on Weibo, where he found some posts on open data by the Head of the Lab for Digital and Mobile Governance at Fudan University [NG08]. After contacting [NG08], he was invited to different e-government collaboration groups on WeChat and gradually built a reputation of his expertise amongst the future team members of SODA.

What is interesting here is that as the founder of an online community, [NG03] did not have an affiliation with any known organization. The informal recruitment of [NG03] into the project team that happened through Weibo and WeChat contrasts to the conventional recruitment procedure in collaborative e-government project in China, where team members are often recruited through identified stakeholders in an existing contract or agreement. Moreover, other stakeholders (i.e., [G01], [NG01], and [NG08]) emphasized that they value more [NG03]'s expertise on open data than where he is affiliated. [NG03]'s shared interests on open data that are made visible on Weibo and WeChat are the main reasons why they have involved him into the project team. Such a dynamic shows that as stakeholders learn about other individuals' expertise through external social media, they tend to base the partnership on people's similarity of expertise rather than on well-known organization affiliations.

In addition, external social media also seemed to produce a reference for the team to legitimize their existence. In our case, the legitimacy of the team has become an interesting issue among the stakeholders. Even though the engaged stakeholders are mostly from higher management of municipal government and state-owned business, SODA is different from a conventional public-private partnership project by nature, as it did not start with an official partnership agreement. It is therefore difficult for the stakeholders to legitimize their project and the work they do for the project. In this sense, the chat group is sometimes used as a reference for the stakeholders to provide evidence for the existence of the project.

5.4 Transition: Shifting Between Formal and Informal Organizing Practices

While the stakeholders have praised WeChat for enabling agility in juggling tasks, time and team development, there are also growing tensions that concern the informality in the emerged organizing practices. These tensions become especially explicit when the project is coming to an end.

During a follow-up meeting that we have observed offline, one of the heated discussions was about how to raise sponsorship for next years' SODA. While most of the stakeholders celebrated the idea of "crowdsourcing" through WeChat, namely, to capitalize on their personal networks to scout for potential fundraisers, some other stakeholders (i.e., [NG08]) raised the concern that crowdsourcing can be "too much of a commercial behavior" for people who are affiliated with a university or government. This especially has to do with the fact that WeChat is often used for both private and professional purposes, hence becoming a grey zone where the boundary between private and professional activities becomes unclear. The dispute has led to further discussion on whether or not SODA should transition from a "temporary" organization that was, at the time of research, still a collaborative project between nine organizations, to a permanent organization that runs on its own. Some suggested a "milder" approach to increase the formality

of fundraising online by announcing the fundraising call on the official website or on an official social media account. These discussions often ended with a temporary solution with some stakeholders making a compromise with the others. However, the tensions persist and re-emerge when they are triggered by certain situations.

These examples showed that while external social media provide opportunities for stakeholders to juggle between new organizing practices and established processes around collaboration, it also reinforces the tensions between them, particularly around the boundary between formal and informal organizing practices. Once the tensions are triggered, they can lead to the collapse of the whole project, but they also bear the opportunity to transform the project into a new different form of organization.

Table 3 summarizes the key findings on the characteristics of inter-organizational collaboration enabled by the use of external social media.

Table 3. Summary of findings

Dimensions of temporary organization	Sub-Dimensions	Practices without External Social Media	Emerging Practices with External Social Media
Time	Project duration	Fixed duration of project based on official agreement	Fixed duration of project based on agreement among stakeholders
	Project pacing	Linear management of time through regular coordination activities	Ad-hoc, non-linear management of time through virtual co-presence of team members
Task	Project goal	Following top-down, centralized e-government strategy	Following top-down, centralized e-government strategy
	Team member responsibilities	Spelling out responsibilities for each team member (stakeholder) in policies and regulations	Discursive task creation, assignment and engagement among team members (stakeholders)
Team	Individual to team	Top-down engagement from government to business based on matching demands and resources; Top down engagement with research institutes/universities based on shared interests;	Serendipitous recruitment of stakeholders based on expertise; The team members are not necessarily affiliated with known organizations

		The identified team members are often affiliated with well-known organizations	
	Team to team environment	Legitimization of the team through official agreement	Legitimization of the team through shared reference to social media
Transition	Post goal Achievement	Termination or another iteration of the project	Termination or another iteration of the project
	Shifting ways of organizing	None	Shifting formal and informal organizing practices

6. DISCUSSION

6.1 A Research Agenda

In this study, we have analyzed the inter-organizational collaboration between government and non-government organizations facilitated by external social media. Based on our findings of how external social media enable change in collaborative projects along the dimensions of time, task, team and transition, we propose a five-point research agenda on how governments' use of external social media can benefit from re-addressing these fundamental dimensions of collaboration.

First, our findings show that in the context of inter-organizational collaboration, external social media platforms can enable a sense of “flexible time” in the presence of pressing project deadlines. What we have observed is that people's perception of time is largely connected to the change brought by external social media to the standardized organizing arrangement of collaboration in their “home” organization – the government. Previous studies have pointed out that increased efficiency is an outcome brought by external social media to inter-organizational collaboration between government and non-government organizations (Aral et al., 2013; Baskerville, 2011; Baumer et al., 2013). However, few studies have reflected on what exact changes have been brought to the organizing arrangements that lead to this increased efficiency. Our studies show that, compared to the conventional way of collaboration in the government, external social media enable more efficient collaboration by providing a virtual space for stakeholders to communicate across physical distances and allowing for these communications to persist over time. In the context of inter-organizational collaboration, future studies should unfold the nuances in stakeholders' perception and management of time and explore the changes enabled by external social media to the organizing processes of collaboration in governments.

Second, in existing e-government studies, stakeholders' tasks and responsibilities in inter-organizational collaboration are often taken for granted and tied to the individuals' positions in the organizational structure of government, such as Government Social Media Manager or Chief Information Officer (Jaeger

and Bertot, 2010; Mergel, 2013b) or official partnership agreements (Chen et al., 2009). Consequently, the distribution and execution of tasks are looked at in terms of organizational structure rather than actual interactions between individuals. However, our findings show that task creation, assignment and engagement in inter-organizational collaboration are a negotiation between the resources and power of one's organizational position and the individual commitment and expertise. With the needed expertise, stakeholders can move across hierarchy and organizational boundaries and take responsibilities that do not necessarily correspond to one's position in their "home" organization. Our findings show that individuals' responsibilities should be understood based on the stakeholders' actual actions, rather than on their organizational affiliations, or the nature of their affiliated organizations. The latter especially has important implications for governance as, for example, governments and businesses may not take on their traditional divide of labor in delivering public services in such collaboration. Future studies should look into how the boundary between sectors can be changed through the use of external social media in collaborative e-government projects.

Third, the on-going negotiation of tasks and responsibilities opens up opportunities for a team formation that is constantly developing based on needed expertise rather than on the pre-defined organizational arrangements. Our findings show that in inter-organizational collaboration, external social media can enable bottom-up team formation. The inclusion/ exclusion criteria for team formation do not only rely on organizational affiliation or formal agreement between organizations (Henderson and Bowley, 2010), but also increasingly on similarity of expertise and shared interest between individuals. This is markedly different from the recruitment tradition in governments, which often requires standardized recruitment procedures or identification through official organizational arrangements (e.g., a special task force) in the context of inter-organizational collaboration (Dawes and Pardo, 2002). These stakeholders are found through organizations that are involved in existing collaborative arrangements (Dawes and Pardo, 2002; Lee and Kwak, 2012). For example, in a public-private partnership project, the organizing team would typically only consist of stakeholders from industry and government. In a digitally enabled inter-organizational collaboration project, future studies should question the existing understanding of what it means to be a team. Attention is especially needed to the emerging group of project stakeholders on external social media, namely, the citizens and non-government organizations.

Fourth, as the stakeholders originally come from different organizational backgrounds, there are inherent tensions on goals and managerial norms in an inter-organizational collaboration. Our findings show that the open and fluid nature of external social media enables transitions by sparking these tensions. Once the tensions are triggered, they can lead the project to collapse, or they can become institutionalized into a "permanent" organization by the agreement among stakeholders. It is therefore sensible to infer that the institutionalization of an inter-organizational project can potentially lead to institutional changes in the "home" organizations of some stakeholders. This is particularly relevant for government, which often features strict bureaucratic procedures of collaboration. Previous studies have looked into institutions as

an external factor that facilitates or constrains the outcome of inter-organizational collaboration (Gil-Garcia, 2012; O’Leary and Vij, 2012). However, there is a need to further understand how the institutional arrangements of government can be changed using external social media in inter-organizational collaboration.

Fifth, by using the theoretical lens of temporary organization (Lundin and Söderholm, 1995), we showcase how e-government research can benefit from focusing on specific characteristics of inter-organizational collaboration. Our findings also reveal that external social media can potentially defy some of the conventional assumptions in temporary organization, such as how time can be managed. Based on this, this study also proposes that another “T” (Technology) should be added to the four dimensions of temporary organization. Future studies can feed into the refinement of this theoretical framework by focusing on how external social media can enable different forms of temporary organization along the four dimensions in different contexts. It could also be interesting to compare the organizing practices of collaboration enabled by external social media at different phases of the project.

The research agenda for future studies can be found in Table 4.

Table. 4 Research agenda for future studies

	Research Agenda
Time	How do team members' perceptions of time change through external social media in a collaborative e-government context? Which types of organizing practices of collaboration are enabled by the use of external social media that result in a certain perception of time?
Task	How can the boundary between sectors (i.e., public and private) be changed through the use of external social media in collaborative e-government project?
Team	What means to be a team in the era of social media, in particular, regarding the participation of citizens and non-government organizations through social media?
Transition	How can the institutional arrangements of government be changed using external social media in inter-organizational collaboration?
Technology	How social media can enable different forms of temporary organization along the four dimensions in different contexts? What are the organizing practices of collaboration enabled by social media at different phases of the project?
Other Factors	How do political, institutional, legal, economic, project setting factors interplay with social media use and together implicate in the context of collaborative e-government?

6.2 Implications for theory and research

Based on our discussion in our contribution for research, the findings of this study have significant implications for research in the following two areas. First, this study supplements existing research by unfolding the black box of the organizing practices around collaborative e-government project. In particular, this study showcases the emerging organizing form of collaboration that is enabled by social media along four fundamental dimensions. The identified organizing form of the collaboration can be used as a descriptive tool to organize and analyze the coordination activities involved in e-government projects.

Second, this study also has implications for the development of the theoretical lens of temporary organization, by shedding light on the role of ICT in enabling different forms of temporary organization. Through this case study, we have showed that a sociomaterial understanding of ICT use in organization can defy the previous assumptions in the temporary organization, where boundary-opening activities are seen as detrimental to the actuality of a collaborative project. Instead, our study shows that boundary-opening activities can also be beneficial for the actuality of the project, particularly in regard to the management of time and tasks during project work. In addition, by adding the fifth dimension of technology, the lens of temporary organization can be used as a more effective conceptual tool to account for sociomaterial phenomena.

6.3 Implications for Practice

This study also has significant implications for public managers. Our findings provide input for handling managerial challenges of social media use in government. Given the bottom-up, non-linear and non-hierarchical nature of the use of external social media, we recommend government project managers to rethink the one-dimensional view of external social media as a purely recreational, inappropriate and ultimately inefficient medium of collaboration (Baumer et al., 2013; Schlagwein and Hu, 2016). Government innovation requires tremendous amount of commitment and resources. Public project managers should be encouraged to experiment with the use of external social media to leverage on the potential resources from various sources.

In an open collaborative environment, the boundary between private and professional, formal and informal, seems to be a rising issue, particularly for public organizations. The potential tensions from the use of external social media highlighted by our study thus calls for an explicit discussion in the practitioner community on how to devise shared guidelines and appropriate training for project managers involved in collaborative initiatives. Moreover, governments may also need to embark on a rethinking of public governance regimes to account for such shifting boundaries (Wang et al., 2017).

6.4 Limitations and Future Research

There are a few limitations to this study, where we believe future studies can embark on.

First, this study chose to primarily focus on the characteristics of the inter-organizational collaboration practices analyzed in the cases that are linked to the use of external social media. Future studies can look into the influence of other contextual factors – political institutional, legal or economic – and investigate how these factors interplay with social media use in the context of collaborative e-government.

Second, our analysis starts to show that the way in which external social media change organizations is more complex than it seems. Some of the organization changes are enabled through a combination of social media use and other characteristics of project settings (i.e., shared interest in the project). Given the focus of this study, we did not look into other project management aspects in the analysis. Future studies can develop this line of research by operationalizing inter-organizational collaboration with regards to other aspects of project management, such as shared agreement on project charter, ownership of project tasks, knowledge sharing and resource sharing.

Third, due to the nature of participant observations, we recognize possible subjective biases in the collection and analysis of our data. Such biases are reflected in the uneven distribution of interview time among different stakeholders across industry, government, and university. This, however, can also be understood as a manifestation of the different engagement of the various stakeholders in the collaborative project. In the future, we would like to pursue the implications of stakeholders' use of external social media with regard to their engagement with the collaborative project.

Lastly, we acknowledge the limited generalizability of the current findings, given the uniqueness of the project and of the Chinese context. However, we did not aim at providing generalizable findings applicable to other empirical settings, but rather at generating theoretical concepts and principles that could be applied in similar contexts (Lee and Baskerville, 2003). Future research can test our findings in other settings and broaden generalizability.

7. CONCLUSION

The impacts of governments' use of external social media are spread over a wide range of areas; it covers not only service and information provision, but also inter-organizational collaboration practices. In particular, external social media, characterized by a blurred private/professional boundary, can potentially introduce changes and tensions to the well-established routines of collaboration in the public sector.

In this study, we have analyzed the characteristics of external social media-facilitated inter-organizational collaboration, by looking at the use of WeChat in a collaborative project between government, university, and businesses in China. Findings show a number of transformations enabled by external social media along the dimensions of time, task, team and transition. Specifically, we observed the emergence of new organizing practices around collaboration that are characterized by the following: an ad hoc and non-linear management of time; a sense of shared commitment to the accomplishment of tasks; a serendipitous recruitment of team members based on expertise rather than on organizational affiliation; and a transition from formal to informal collaboration. Our findings feed into the on-going research on collaborative e-government and on the impact of external social media on organizational practices in the public sector.

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13 Appendix 1 Sample of Interview Guide

Basic Information

- Name

Stakeholders and their relationships

- Which organizations have participated in the organization of SODA and sponsorship? Which organizations would you consider as the key organization?
- Which organization(s) are you affiliated with? What is your position in the affiliated organization(s)?
- How did you meet, or get in contact with other stakeholders?
- Which stakeholder would you consider as the main organizer of SODA? Why do you think so?
- What do you want to achieve by participating in the preparation of SODA? Do you think other stakeholders share similar goals as yours? Why?

Responsibilities/tasks

- What kind of tasks have you been doing in the preparation of SODA? Who assigned you the tasks?
- Do other stakeholders share the same tasks with you? Do they do other kinds of tasks? What are these tasks?
- Do you think you, or the other stakeholders, have done something that exceeded your responsibilities? Can you raise an example?
- How do you see your role in general in the collaboration?

Communication and coordination

- How do you and other stakeholders communicate with each other during the preparation of SODA?
- Do you communicate online or offline? How do you communicate? How often do you communicate online/offline?
- Is there any difference in terms of content between online and offline communication?
- How do you often communicate in your affiliated organization? Are there any differences between the way you communicate in your affiliated organization and the collaboration?

Description about the communication platform

- Which platform(s) do you use to communicate online with other stakeholders of SODA?
- How would you describe this platform to people who don't know about the platform?

- What types of communication do you think this platform is good for?
- Have you considered or tried other communication platforms in organizing SODA? What are the differences between this platform and other available platforms?
- Why do you choose to use this specific platform for communication?
- What kind of tasks do you think this platform is good for? Can you raise a concrete example to describe it? Why do you think so?
- What kind of tasks do you think this platform is not good for? Can you raise a concrete example to describe it? Why do you think so?

Actual use of the communication platform

- In organizing SODA, do you think it is effective to use the platform for communication? What criteria did you use to assess that? Can you raise a concrete example?
- Which type of tasks did you manage to complete using this platform? Could you maybe raise an example when this platform performed a task as expected? Could you maybe raise an example of when this platform did not perform an expected task?
- Which features do you usually use on this platform? In what circumstances do you use them?
- Have you noticed any changes in your way of using the platform during the preparation of SODA?
- Has using this platform brought any changes to the organization of SODA (Cue: the relationship among stakeholders, or the distribution of resources)? What are these changes? How do you think these changes have happened?

Authority, decision-making

- Who or which organization do you think is leading the collaboration?
- Who or which organization do you think makes decisions in the group? Why is that?

Macro Context

- During the preparation of SODA, do you recognize any specific policies that are driving the collaboration? Could you please raise an example about that?
- Based on your experiences with SODA, do you think stakeholders from different sectors have a different way to go about certain tasks? What about similar ways?

Follow up

- Is there anything you would like to add?

TITLER I PH.D.SERIEN:

– *a Field Study of the Rise and Fall of a Bottom-Up Process*

2004

1. Martin Grieger
Internet-based Electronic Marketplaces and Supply Chain Management
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*LIKENESS
A Philosophical Investigation*
3. Morten Knudsen
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En systemteoretisk analyse af moderniseringen af et amtskommunalt sundhedsvæsen 1980-2000*
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A product development strategy that is based on online communities and allows some firms to benefit from a distributed process of innovation by consumers*
5. Barbara Dragsted
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Norsk ph.d., ej til salg gennem Samfundslitteratur*

19. Thomas Lyse Hansen
Six Essays on Pricing and Weather risk in Energy Markets
 20. Sabine Madsen
Emerging Methods – An Interpretive Study of ISD Methods in Practice
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Om troværdige brand- og virksomhedsidentiteter i et retorisk og diskursteoretisk perspektiv
 24. Sidsel Fabech
Von welchem Österreich ist hier die Rede?
Diskursive forhandlinger og magtkampe mellem rivaliserende nationale identitetskonstruktioner i østrigske pressediskurser
 25. Klavs Odgaard Christensen
Sprogpolitik og identitetsdannelse i flersprogede forbundsstater
Et komparativt studie af Schweiz og Canada
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Markedets politiske fornuft
Et studie af velfærdens organisering i perioden 1990-2003
 28. Christine Mølgaard Frandsen
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