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# What Happens to a Robotic Startup While It Evolves

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**Abstract.** Digital transformation (DT) alongside the increasing use of robots in agriculture prompts at behaviors of startups developing them. This poster<sup>2</sup> presents a stable robotic startup AGROS<sup>3</sup> and draws upon the theory of dynamic capabilities (DC) together with perspectives on strategy from IS and management. It is noticed that collaboration with startup research partners cannot be neglected if we seek to understand startup trajectory over time. Several outcomes are possible depending whether it collaborates explicitly, relies unconsciously on collaboration or starts showing the intentions to cognitively collaborate. The contributions to strategy research and IS literature on entrepreneurship and DT are highlighted.

**Keywords.** Strategy, Startup, Robotics, Dynamic Capabilities, Entrepreneurship

## 1. Introduction

Despite the differences between types of farms they all face the challenge to produce more and better, with less, while ensuring productivity and improving biodiversity. Researchers still expect more agricultural innovation to stem from robotics, image recognition and smart farming technologies [1,2,3,4]. Yet, robots can be rented or sold, need software updates and adjustments for the use of new components and, finally, offer versatile functionalities for research on crops. Hence, multi-stakeholder approach becomes a necessary extension of the classical company-centered view to account for this complexity rooted in heterogeneous actor types engaged in robotic co-creation (cf. [5]). The current situation on the robotic market resembles a gold rush. *“Dozens of autonomous tractors and tool carriers – concepts, prototypes and full production models – have appeared in the past decade. Most of these come from start-up companies and research institutes”* [6]. Cases are understudied if a robotic network of multi-stakeholder innovation involves a startup. Ref. [7] note that digital innovation refers to *“the use of digital technology during the process of innovating...breaking up ... vertical industry silos and creating business ... where different players come together and innovate by combining and re-combining their digital technology components and knowledge.”* Digital entrepreneurship means *“the exchange, transfer and acquisition of knowledge through the use of technology to initiate new ways of doing business”* [8]. Industry 4.0,

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<sup>3</sup> AGROS is a pseudonym used for the robotic startup (est. 2015) and CROPROBOT is their product. Once the company's consent to use the real names will be obtained, I will replace it, also the foundations.

AI race among firms and digital artifacts places tech ventures into a high-paced and ambiguous environment [9,10,11]. In the previous IS research, the scholars' focus often was on entrepreneur's individual traits or creation of new ideas by a startup alone [12]. Yet, as startups usually depend on resources of many stakeholders, I choose to focus on forging research collaborations (as one of its DC) and investigate how they are built and maintained over time. **RQ: What are the DC enablers for a collaborating company at a startup phase to guarantee its survival over time?**

## 2. Methodology

Ref. [13] specified four steps for a research design, starting from selecting the case, defining the additional evidence necessary to strengthen the study and jointly analyzing the data from the case and additional evidence. The primary data was collected through interviews and additional evidence was found through press releases, also in archives of the company, news on Google and farmer online resources. Due to the exploratory nature of this work the initial step was to conduct a pilot case-study (ibid) based on several interviews with executives of a robotic startup and stakeholders, which took place between May 2023 and March 2024, were transcribed and coded.

## 3. Case and preliminary analysis; from a newborn to semi-mature startup

AGROS gradually loses characteristics of a newly founded startup and approaches the stage of semi-mature business. Its CROPROBOT platform is based on modularity of the 3 main entities of guidance and control system, tractor frame and implements connection. Today around 50 robots were sold. The bright outlook for AGROS was aptly put by its Board Chairman after the new investment deal in 2020: *“AGROS is in the process of a major transition from being an engineering house to ... an internationally leading company within the sustainable plant breeding of the future. With the new round of investment, ... [it] gets the opportunity to execute our international commercialization strategy.”*

## 4. Conclusions

I sought to demonstrate how the business of robotic startups depends on DC of forging strong collaborations with research-oriented institutions. Another goal was to shed light on different phases of startup development until it reaches a maturity stage. The case study enables depicting of personal values of management which shape managerial cognition in certain ways [14]. Focusing on research collaborations in robotics, I aim at stressing the role of interactions among actors in the process of digitally inspired innovation. In one of the workshops covering the umbrella of collaborators it was concluded that: *“[w]e introduced the added value of data-exchange between scanning devices –service providers – acting providers and the opportunities of a digital ecosystem between them.”* Thus, the next steps include conducting more interviews with the startup management and its research collaborators to find out the exact attitude changes to research projects and ecosystem perception in the 2nd relative to the 1st phase.

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