FINODEX Handbook for Entrepreneurs

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FINODEX Handbook for Entrepreneurs

http://www.finodex-project.eu

We wish you good luck with the creation of new business models based on FIWARE and open data.

On behalf of the FINODEX project,
Miguel Garcia, Coordinator,
ZABALA Innovation Consulting

FINODEX Workbook Contents

Foreword

Micro, small and medium-sized enterprises (SMEs) are the engine of the European economy. In the 25 member states there are 23 million SMEs providing 75 million jobs and represent 99% of all enterprises. They SMEs strongly contribute to an entrepreneurial spirit and innovation in the EU and foster competitiveness.

This handbook has specifically been written in order to make it easier for micro, small and medium enterprises within Information and Communication Technology (ICT) to apply for funding in open calls in October 2014 and October 2015 under the EU project FINODEX (www.finodex-project.eu). The handbook provides practical advice and helps the enterprises transform innovative ideas into business.

We look forward to receiving your application! The FINODEX team:

Zabala Innovation Consulting S.A. (Zabala), Spain, Associazione Trento Rise (TRISE), Italy, Europe Unlimited S.A. (EUN), Belgium, Engineering Ingegneria Informatica S.p.A. (ENG), Italy, Copenhagen Business School (CBS), Denmark, Federación Nacional de Empresas de Software Libre (ASOLIF), Spain

Editors: Rasmus Ulslev Pedersen, Ivan Häuser, Kim Balle

FIWARE TIP	**Throughout** this guide you will find these FIWARE TIPs that we – the FINODEX TEAM – provide to assist you, our customer so to say, in getting the very best out of this handbook and FIWARE!

1. How to use this handbook

The handbook provides short introductions to necessary knowledge for applicants in the two calls in October 2014 and June 2015 where they can present an idea for product development and apply for up to 10,000 Euro. Furthermore, the handbook is relevant for the next phase, where the selected approx. 50 projects elaborate detailed technical and market plans. Last, the handbook provides links to further study and information about how to get help in later phases.

The FINODEX project is a part of FP7 (*7th Framework Programme for Research and Technological Development)* being one of 16 projects that invite micro, small and medium sized enterprises to apply for funds in open calls. You can find links to the other projects with open calls on www.fiware.org/accelerators..

Important requirements to the application
There are two main requirements to the project applications:

- The applicant's solution must make use of FIWARE technologies such as the so-called *generic enablers, specific enablers or platforms*, i.e. software developed in the EU Future Internet Program (FI PPP). **Read in particular Chapter 4.**

- The applicant's solution must make use of *Open Data*, i.e. public accessible data. **Read in particular the Chapters 5 and 6.**

Other requirements pertain to the perceived usefulness of the idea (impact), the technical solution's quality and viability (excellence), the applicant's technical skills (qualifications), market knowledge (about target groups and competitors), and preliminary considerations about commercialization and financing.

All these requirements are explained in detail in the sections of the handbook and on the FINODEX website: www.finodex-project.eu.

It is recommended to read through the entire handbook, before you write an application.

[1] https://creativecommons.org/

2. Are you an entrepreneur and can you apply?

Prepared by: Ivan Häuser, Rasmus Pedersen, Kim Balle and Miguel García

Summary
You can apply, if you are a SME, i.e. a company, ranging from micro enterprises or start-ups with one employee to medium sized enterprises with up to 250 employees, and if you are from an EU member state or a state associated to the EU FP7 Programme.
You can also apply if you are an individual or being part of a group up to four individuals.

You are an SME, if you are in accordance with the Commission Recommendation 2003/361/EC and the SME user guide. The criteria which define a SME are:

- The first step to qualify as an SME is to be considered as an enterprise. An enterprise is 'any entity engaged in an economic activity, irrespective of its legal form'.
- Your headcount in Annual Work Unit (AWU) is less than 250.
- Your annual turnover less or equal to €50 million OR annual balance sheet total less or equal to €43 million.

SMEs with experience on the FP7 will have an EU PIC Number and a SME status validated by the European Commission

Only applicants legally established, and working, in the case of the individuals, in any of the following countries will be eligible:
EU-28 countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.
Associated countries: Albania, Bosnia and Herzegovina, Faroe Islands, FYR Macedonia, Iceland, Israel, Liechtenstein, Moldova, Montenegro, Norway, Serbia, Switzerland and Turkey.

Note that the official docs of the open call do have the full list of legal restrictions about participation in the call. Further information can be found at www.finodex-project.eu

3. Do you have a good idea for an application?

Prepared by: Ivan Häuser, Rasmus Pedersen and Kim Balle

Summary

Life is understood backwards, but it must be lived forward. We all know success stories about good ideas that have made their owners rich, and we understand why, when we hear the success-story. But it is extremely difficult to predict which new ideas will be successful.

Ideas can originate from observation of needs in society. They can as well originate by coincidence and from sheer technical experimentation without any user-perspective; later the new technological possibility can turn out to have a business potential.

However, in applications, you'll have to convince the evaluators that your idea (solution) is good, i.e., that it meets a need, and that enough people will buy it at a profitable price.

This handbook is meant to help you prepare an application. So we focus on creating ideas that are perceived interesting and useful from the point of view of customers and the society. Good ideas are: Desirable (solve a problem or exploit an opportunity) -Viable (can survive) - Feasible (are possible to realize).

How do you get a good idea? - By studying people's lives and seeing what is difficult for them and what opportunities they don't take. You'll have to define a target group, i.e. explain which organizations and/or people will see your solution as an advantage. Don't say that your solution is for everybody. Some will definitely need and want it more than others. How big is this target group, who are its members? - in your own country and other countries. How much is your solution worth for the target group (= what will they be willing to pay?)

If you are convinced that you already have a strong idea, you can skip this Chapter and go directly to the next one (about FIWARE)

FIWARE TIP

The goal is to help entrepreneurs to capture the opportunities coming from a new wave of digitalization in multiple sectors. This is achieved by creating a sustainable global open innovation ecosystem where entrepreneurs, domain stakeholders and technology providers fulfill their needs. All this will be possible using FIWARE!

Sources

Christian Madsbjerg (2014), *The Moment of Clarity* (About ideas in a company-costumer perspective)
Dan & Chip Heath (2007), *Make it Stick*
http://www.youtube.com/watch?v=u4ZoJKF_VuA (TedTalk about successful ideas by Simon Sinek)
Eduard de Bono: *Lateral Thinking* (1990) and *Six Thinking Hats* (1997)
The Osborn method (1957), en.wikipedia.org/wiki/Brainstorming (about the brainstorming technique)
Matthew Feinberg and Charlan Nemeth (2008), www. Irle.berkeley.edu/working papers/167-08.pdf. (comment on the brainstorm technique and the need for criticizing ideas)
FIWARE Accelerator Programme, *http://www.fi-ware.org/fiware-accelerator-programme/*, retrieved Sep. 2014

Introduction

Good ideas are highly desirable, and many books, articles and presentations are about how to get and test them, and why some succeed with their ideas, and others don't (see for example the Ted talk by Simon Sinek: "http://www.youtube.com/watch?v=u4ZoJKF_VuA).
In this handbook, we do not refer to successful business cases, but we try to provide general methods about how to generate ideas in groups and by yourself alone, and we give references to literature where you can read more. We introduce the following methods for idea generation, starting with the basics and ending up with the newest literature on the subject:

- Brainstorm
- Six Thinking Hats and Lateral Thinking
- Idea generation in a company-customer perspective
- Creating ideas that stick

FIWARE TIP 	Before you move on and read about the Brainstorm section below please take a minute to catch up on the teams that were selected to compete in the FIWARE-EXCELLENCE-CHALLENGE[2]. How do you think they brainstormed to arrive at their ideas using FIWARE?

Brainstorm

Imagine that you don't really have an idea, or that you would like to have a better one. Invite some people and work a couple of hours together. You can use post-its for writing ideas down, and a board where you can hang all the written ideas up. Alternatively, one of you will just write all ideas (just headlines) on the board.
Decide on the overall topic. Do you want to create an idea about: Transportation, home life, health, energy? etc. Then ask for contributions from your group.

Brainstorming has become a standard technique for developing ideas; it's supposed to broaden associations, spark unexpected connections, and get a lot of creative ideas on the table so that you can select the very best.

There are various forms of brainstorms; the technique developed by Osborn (1957) is specifically designed to foster idea generation by the usage of four rules:

(1) Come up with as many ideas as you can
(2) Do not criticize one another's ideas
(3) Free-wheel and share wild ideas
(4) Expand and elaborate on existing ideas.

[2] http://www.fi-ware.org/2014/09/22/selected-teams-to-compete-in-the-fiware-excellence-challenge/

FIWARE TIP 	Before we continue with an example on product development, you might want to skip ahead and take a quick look at the application form, which – among other things – call for a description of the generic enablers that you plan to use. In relation to the first (1) rule above on coming up with as many ideas as you can, it can make sense for you to actually skim the FIWARE catalogue of generic enablers (GE): http://catalogue.fi-ware.org/enablers and note some of them down as possible support for the ideas you and your team generate.

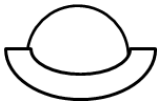
Example:
A company wants to design a new razor blade and has gathered a group of employees with different *backgrounds. However, none of them have been told, what kind of product they are going to brainstorm about.*
In the first phase, the facilitator leading the brainstorm session gives the audience an assignment: Please come up with ideas for "treatment of a surface". The participants write down catchwords about their ideas on post-its, which are placed on a big board. All ideas are welcome, and the audience is encouraged to produce wild ideas, too. The atmosphere is extremely positive and cheerful, verging on hilarious.
When all heads are emptied for ideas, the owners of the ideas can elaborate on their catchwords. All are invited to ask for explanations or to contribute to the idea, but no one is allowed to criticize the idea.
In the next phase, the facilitator narrows the subject in, saying: Please come up with ideas for "removing something growing on a surface", and the same procedure like in phase 1 is followed.
The brainstorm results in many ideas that broaden the concept of a razor blade adding new features to it and perhaps even replace the razor blade with better solutions.

The rule "not to criticize" is believed to lower people's concerns about how they are being evaluated by others and make them more active and uninhibited. In contrast to this view, there are some theoretical reasons and recent evidence to suggest that the rule "not to criticize" may actually inhibit creativity. Rather, there is evidence of the value of debate even criticism in the stimulation of creative thought (reference: Matthew Feinberg and Charlan Nemeth (2008), www. Irle.berkeley.edu/working papers/167-08.pdf.

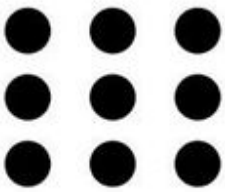
It should be added that a brainstorm can, of course, include criticism. It is up to you. When a selection of perceived good ideas has been made, you can try to shoot the ideas down, one after one. Those ideas that cannot be shot down convincingly, survive.

De Bono's Six Thinking Hats and Lateral Thinking

Another form of collective thinking and idea-generating process has been developed by Eduard de Bono.
You and your team members work on an idea by separating thinking into six clear functions and roles. Each thinking role is identified with a colored symbolic "thinking hat." By mentally wearing and switching "hats," you can easily focus or redirect thoughts, the conversation, or the meeting (reference: Eduard de Bono, Six Thinking Hats, 1999 and www.debonogroup.com):

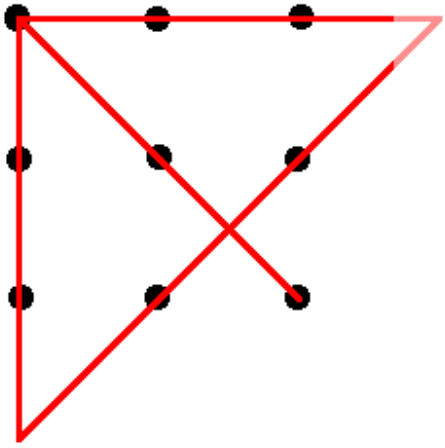
	The White Hat calls for information known or needed. "The facts, just the facts."
	The Yellow Hat symbolizes brightness and optimism. Under this hat you explore the positives and probe for value and benefit.
	The Black Hat is judgment - the devil's advocate or why something may not work. Spot the difficulties and dangers, where things might go wrong. Probably the most powerful and useful of the Hats but a problem if overused.
	The Red Hat signifies feelings, hunches and intuition. When using this hat you can express emotions and feelings and share fears, likes, dislikes, loves, and hates.
	The Green Hat focuses on creativity; the possibilities, alternatives, and new ideas. It's an opportunity to express new concepts and new perceptions.
	The Blue Hat is used to manage the thinking process. It's the control mechanism that ensures the Six Thinking Hats® guidelines are observed.

So, in a group you play roles in order to explore ideas and their desirability, viability, and feasibility.
Eduard de Bono has also written a guide to creativity with his book *Lateral thinking* (1990). This book contains many creativity exercises. One well-known old exercise is “thinking outside the box”, which is used in Lateral Thinking:



Using four straight lines and without lifting your pencil off of the paper, connect all nine circles.

Solution:



As the solution shows, you have to go outside the “box” in order to solve the problem.

FIWARE TIP FIWARE co-funded by	We recommend that you reserve one of the hats, namely the white “fact” hat, + fi-ware = ,as your FIWARE hat. Use this hat and role to think about the “facts, and just the facts” that your product or service will need from FIWARE.

Idea-generation in a Company-Customer Perspective

The rather old techniques developed by Osborn (1957) and de Bono (1999) are still valid. Some more recent publications look at idea-generation in a customer perspective, such as Christian Madsbjerg / Mikkel B. Rasmussen (2014): *The Moment of Clarity. Using the Human Sciences to solve your Toughest Business Problems* and Chip Heath & Dan Heath (2008*): Make it stick. Why some Ideas Survive and Others Die.*

A company, even a micro company, should have a perspective that reaches the industry’s market and the society at large.

In the market perspective, you should worry how the market will grow, shrink, or change otherwise. Who are the customers, and how can you satisfy their needs? What are the growth drivers in the industry?

In the societal perspective, you stretch beyond current industry boundaries and you are forced to think about the very meaning of your offerings. What is your role in people’s lives? How can you help make life better for people? Which societal changes should you pay attention to? What is your big WHY, the justification of your existence as a developer or a company? Try to look for the right metaphor to describe your perspective and write it down in a short statement (deep and easy to remember like a proverb). Look for a metaphor that is intuitively easy to understand and at the same time surprising and stretches people’s thinking.

Madsbjerg and Rasmussen (2014) suggest that you ask yourself the following questions (and make the necessary studies in order to answer them):

- Who are our customers?
- What are we helping our customers achieve?
- How do they experience our offerings?
- Do we know the logic of how customers adapt to new products?
- What will inspire and excite customers?
- What don't we know about our customers?

Ideas That Stick

Heath and Heath (2008) have studied ideas that stick, in particular successful ads, and believe that you can learn to reach your target group by using certain templates.
An idea is sticky when it is understandable, memorable, and effective in changing thought or behavior.

The templates, or principles of sticky ideas, are described below. In short, they function like this:

Characteristic of idea		**Impact of feature**
SIMPLE		understand why
CONCRETE		imagine how
CREDIBLE	*makes people*	believe
EMOTIONAL		care
STORY		act

FIWARE TIP As you – in a minute – read more about the five characteristics of an idea, take another look at the ideas proposed by Mapencil, Spring, Small Signals, Midnight VIP and Local Offer[3].

SIMPLE (SINGULARITY)
Find the core of your product idea, determine the single most important thing. Strip the idea down to its most critical essence. Weed out superfluous and tangential elements. Then share the core, create a pitch that is understandable for all, use analogies and metaphors. Analogies and metaphors make it possible to understand a complex message because they invoke concepts that you already know. Make it short (and deep) like a proverb

Examples:
A designer knows he has achieved perfection not when there is nothing left to add, but when there is nothing left to take away (Saint Exupéry).

Journalists use the principle of the inverted pyramid and start their stories with a so-called lead - containing the most important information. After the lead, information is presented in decreasing order of importance.

[3] http://www.fi-ware.org/2014/09/22/selected-teams-to-compete-in-the-fiware-excellence-challenge/

“If you say three things, you don’t say anything” is a communication principle in political campaigns. You should have one single message.

In the army, soldiers are told the commander’s intent, i.e. the goal or basic idea of the operation, but not his detailed plan, which would be difficult to remember and possibly have to be changed (“no plan survives contact with the enemy” is conventional military wisdom).

A bird in the hand is worth two in the bush.

UNEXPECTED

Get attention through curiosity. Create a knowledge gap (which generates curiosity) by asking a question people would like to get answered. Surprise your audience with new information.

Examples:

“Why hospitalize chronic patients when they don’t get getter?”

“How can green energy create more jobs?”

“How much time can you save in queues by means of smart traffic”?

CONCRETE

Help people understand and remember. Provide a concrete context. Make abstractions concrete. Put people into your story. The more hooks in your idea, the better. Talk about people, not only data.

The language in calls and application templates is abstract, because it must cover all thinkable situations. But when you describe your idea, it should be concrete, so that people can see what difference your product will make and imagine how your product will work in their environment and help them.

You can make your idea concrete by making a drawing, which shows what your product can do. You can also make a technical description, which should be understandable for non-specialists. If you need to account for the production process, break it down into goals and subgoals (by X time this element of the solution will be finished). The latter is also called “milestones”. The single elements of your solution are often called “deliverables”, i.e., tangible items.

The danger of being abstract is that you take for granted that other people know what you know and think of. Try for yourself to explain your idea to a non-specialist.

If you can examine something with your senses, it’s concrete and easy to remember. Especially if you appeal to more senses (visual, auditive, smell, touch, emotion), imagine how many hooks there are in a question such as: “Remember the house where you spent most of your childhood”. If you refer to people’s everyday surroundings and explain what difference your product will make here, it will help them understand.

Examples:

Goal-setting is mainly about concretizing the idea. Goals should be SMART, i.e.

- Specific (=concrete: Who will accomplish What?)
- Measurable (= the result can be quantified or counted, again = concrete: How much, how many?)
- Achievable (= realistic to achieve = concrete: How is it possible?)
- Timely (= to be achieved within a time-frame, again = concrete. When must it be accomplished?)

In order to teach a child subtraction, some teachers start with asking a question like this: Mum, Dad, you and your sister are sitting together in this room. How many are we? Now, Mum and Dad leave. How many are we now in the room. 4-2 = 2 would be abstract.

Even at universities, teachers try to make learning concrete. Accounting, for instance, can be learned by a case story (here is an example from the US): Two of your friends who have an idea for a new product called Safe Night Out, a device targeted at parents with teenagers who are old enough to drive. Installed in the car, the device would record the route and speed of the car. Parents could confirm, whether their car was being driven responsibly. At that point, the accounting students become part of the story. The two friends need your help. They ask, “Is your idea feasible? How many units would we have to sell in order to pay for tuition? How to track down the costs of the relevant materials (GPS receivers, storage hardware) and partnerships? (How much would it cost to sell it on eBay?)”.

CREDIBLE

What makes people believe ideas? We believe, because others who we trust believe and by force of our personal experience.

If you try to persuade a skeptical audience to believe a new message, you’re fighting an uphill battle against a lifetime of other people’s personal learning and social relationships. A particular problem is the so-called availability bias. It is a natural tendency that causes us, when estimating the probability of a particular event, to judge the event’s probability by its availability in our memory. We intuitively think that events are more likely when they are easier to remember. But things we remember are not an accurate summary of the world. For example, do more people die in homicides or in suicides (in the US)? Are more people killed by floods and tornadoes than by tuberculosis and asthma? Are European citizens more or less exposed to risk for being assaulted today than 10 years ago? Is Russia getting increasingly hostile towards the Western world? Etc. People remember things better, because they evoke more emotion, not because they are more frequent. And because the media spend more time covering them, not because they are more common.

So, you are up against people’s preconceptions (availability bias) with your new idea.

People in general trust authorities and research, so if your product idea can find support in policies and validated facts, it is opportune to refer to this. But we do not always have an external authority who can vouch for our message. Our message must have internal credibility. If you can document that you have excellent qualifications, it helps, and when explaining your idea, use convincing details. Make statistics accessible and understandable. Use testable credentials, i.e., allow people to try out your idea for themselves.

Examples

"Would it work for you to entrust a service provider to control your energy consumption on a contractual basis?"

"Would it work for you to share cars with other people?"

"Are you better off now than you were four years ago?" (Ronald Reagan's question to his audience in the 1980 presidential debate with Jimmy Carter. He could instead have focused on high inflation rate, the loss of jobs, rising interest rates, but he chose to defer to his audience and let them try out his assertion for themselves).

EMOTIONAL

Make people care. Use the power of association. Appeal to self-interest. Appeal to identity.

Emotions constitute our mental relation to the world. They are a result of a judgment and are critical in situations of choice: Is this phenomenon good or bad for me? Should I take care or go for it? Do I like it or not? Do I trust it? Am I skeptical?

For people to take action (and buy your product), they have to care. People care for other individuals, the groups they belong to, and for a higher cause. You can make people care by appealing to the things that matter to them. So you should invoke self-interest and appeal to self-categorization (how people see themselves).

You can create strong emotional associations by your choice of words. However, be aware of "semantic stretch", which happens when associations to certain terms are drawn repeatedly. When everybody paints with lime green, lime green no longer stands out. Word like "unique" and "edge" have been used so much that the power of these terms has eventually been diluted. You should think of some fresh words that can be used in the presentation of your product and evoke strong associations that can be easily remembered.

Examples

If your product can serve a higher purpose, it will attract people that want to change the world in the same direction. You want to protect the environment. "This product will help you do so every day!"

Many people prefer to make personal charitable contributions to needy individuals they meet or have heard about, not anonymous contributions to suffering masses or institutions helping these masses. (Paying taxes is an anonymous contribution which does not give you the feeling of being a good person, and it is not voluntary).

Instead of saying that your customer could avoid the hassle of leaving home by ordering cable, you can take the customer's perspective and say like this: "I can see myself watching a good movie at home with my hubby, and I can get up and check on the kids in the next room whenever I like … and think of all that babysitting money I'd save!"

This app can teach all children to read, even those with a dyslexia diagnosis, by force of its uncompromisingly phonetic reading method

STORIES

Tell people how to act, using your product.

Stories about events related to your product have twofold power: They provide simulation (knowledge about how to act) and inspiration (motivation to act).

The stories can be about “before and after”. They can also be about difficulties with the product, disasters (with similar products), wrong use of it, and improvements made. The stories can be about situations other people have been in and might occur to your audience, too.

In technical service many courses provide stories about problems with equipment, and typical mistakes. Some stories can be very entertaining.

Examples

Let’s imagine an elderly chronic patient with a lung disease who earlier spent much time and energy on repeated examinations and hospitalizations. When she came to hospital, it didn’t help, and when she came home she was exhausted. When she was alone at home and had fits of coughing and being short of breath, she got panicked and went to the hospital, where she wasted her own and the personnel’s time.

Now she has all necessary equipment at home; she can push a button and be in contact with health care personnel who can see her on their screen and give her advice on, how to calm down. She uses an inhalator on a daily basis, and her lung numbers are automatically being transferred to her doctor. If the numbers go beyond a certain limit, there is an alarm and the doctor intervenes.

In 2013 the Danish Food Inspection found too old meat in the fridges of several supermarkets. Many efforts were done to trace the meat back to the supplier. According to the Ministry’s policy, it should be possible to trace food from earth to table. The old meat was traced to Germany, but could not be traced to the specific wholesalers, let alone the farms where the meat came from. A new EU project is looking into the matter and must improve food traceability.

4. How can you create an application on FI-WARE making use of open data?

Prepared by: Stefano de Panfilis

Summary
FIWARE is a service oriented architecture based on a cloud environment. It is essentially composed of a number of services that cover a wide range of aspects (e.g. security, data management and storage, Internet of things, etc.). All these services are named Generic Enablers, they are based on open specifications (APIs) and they are implemented by actual components that are made available to the end users. These Generic Enabler implementations (GEis) are hosted in a cloud environment that, in addition to those services, provides infrastructure as a service (IaaS) capabilities.

Application development

To create an application that makes use of FIWARE technology it's possible to freely adopt the preferred development process and it's not mandatory to strictly follow a predefined process. Next are highlighted phases that are introduced by FIWARE in addition to the phases of a traditional development process.

Identify GEis

The starting point for integrating the FIWARE technology, into the application under development, is to understand what is available in terms of services and how these services (GEis)n can used through their APIs. All these information, at a different level of detail, are published in:

- **FIWARE Catalogue** – catalogue.fi-ware.org
  In the FIWARE Catalogue it is possible to browse the entire FIWARE offering. Every GEi entry provides a brief introduction and a description, together with the references from which a running instance is available. In a dedicated section it's described how to get access to the service whether it's a global instance or it's a personal instance.

- **FIWARE Academy** – edu.fi-ware.org
  The FIWARE Academy has been created to collect in a single place all the relevant training material that can support developers in using GEis. As in the FIWARE Catalogue each entry in the FIWARE Academy is a course for a GEi. The content of a course is made available in different formats that vary from a video, a web seminar (slides with a voice over), documents (texts, slides), and links.

- **FIWARE wiki – wiki.fi-ware.org**
  In the FIWARE wiki the last version of the Open Specifications (APIs) ís published in order to understand how to use a GEi and integrate it into the application under development.

Integrated architecture

Once identified, the GEis that are useful to complement the application under development can be included in the overall architecture taking into account the interactions with the core business components. The *Open Data platform* chapter reports an example of architecture.

Environment setup

In order to start to work with the GEIs included in the application architecture it's mandatory to create an account in the FIWARE Lab at lab.fi-ware.org. This account is the same for all the services provided by the FIWARE platform.

Each of the selected GEis can be made available in two different ways: as global instance or as personal instance.

- Global instance: Some GEis are made available to end users as a service from the FIWARE platform. This means that no installation is required and the details on how to access the global end point of the services are described into the FIWARE Catalogue entry of the GEi under the tab “Instances”.
- Personal instance: The GEis that are made available with this option have to be installed by the user as virtual machine(s) instance hosted into the Cloud service. An automatic installation process is made available and all the information required to perform this operation are reported into the FIWARE Catalogue entry of the GEi under the tab “Creating Instances”. In many cases GEis that are available as personal instance are also published as global instance but only for testing purposes.

FIWARE TIPS

CEP: The CEP GE analyses event data in real-time, generates immediate insight and enables instant response to changing conditions. While standard reactive applications are based on reactions to single events, the CEP GE reacts to situations rather than to single events.

CKAN: CKAN is a powerful data management system that makes data accessible – by providing tools to streamline publishing, sharing, finding and using data.

GIS: A geographic information system (GIS) is a computer system designed to capture, store, manipulate, analyze, manage, and present all types of spatial or geographical data.

IDM: Fi-WARE identity manager generic enabler.

Open Data platform

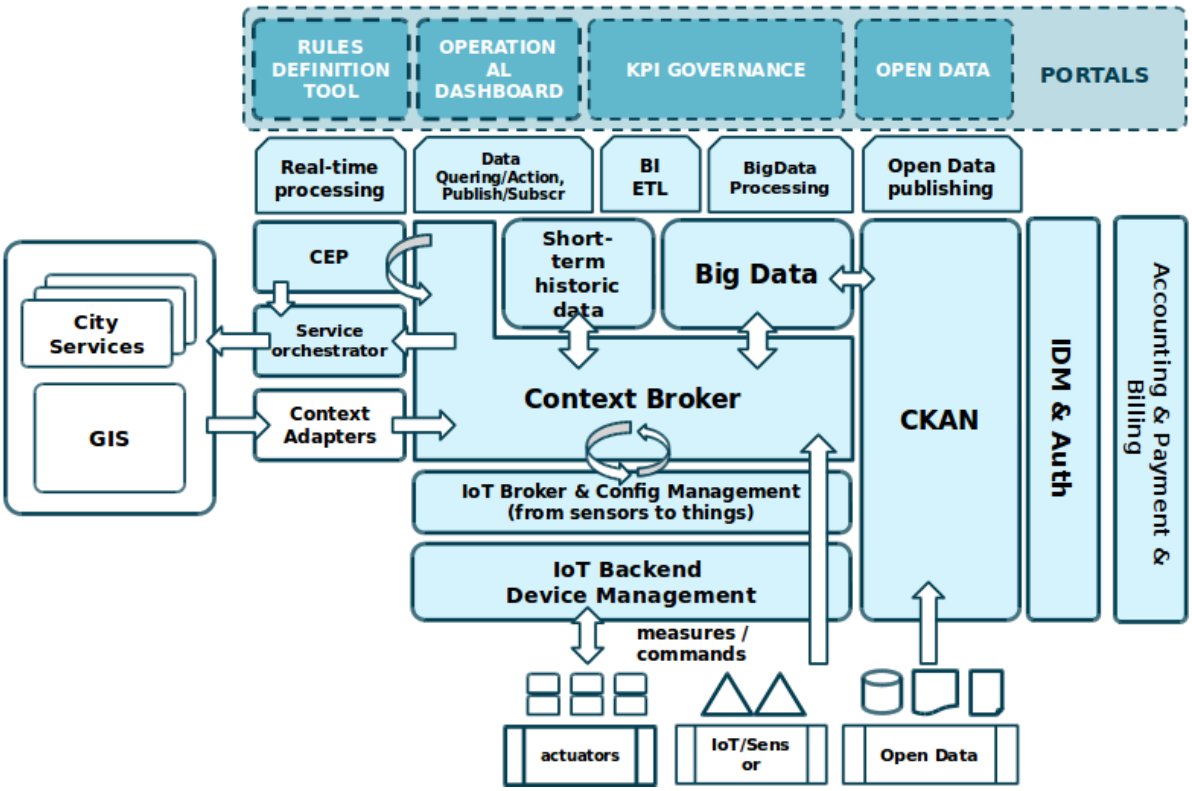
For what regards the aspects related to the Open Data management in general, the offering from FIWARE can be structured in a way that can help from collecting to analyzing and publishing data.

Every application will have its own business logic. Here we focus on the software components (GEis) that are directly related to the management of data.

The FIWARE platform is able to provide support to host data of different nature:

- Datasets – existing data (census, geographical, tourism, …); historic data (sensors, events, …)
- Real Time – Vertical systems (mobility, events, …); Internet of Things (sensors, meters, …)
- Media – Video streams (traffic, surveillance, …); Audio (microphones, speeches, …)

The reference architecture that integrates the most relevant component in the Open Data domain is reported in the diagram below.



This data/knowledge hub is a non-intrusive system that can be integrated with existing components while remaining open to third parties extensions.

The architecture diagram highlights the central role of the Context Broker GE as an element that connects the data gathering from the external sources, the storage into short term and big data repositories, the analytical services and the front end services for data publication. The interaction between all these components is based on the OMA NGSI specifications.

In the case that Open Data sets are already available (and most probably hosted in a CKAN infrastructure), it's possible to mirror or migrate those datasets inside the CKAN component hosted in the FIWARE platform (the CKAN component will be released as Generic Enabler implementation as planned in the evolution of the FIWARE platform).

The FIWARE Open Data portal is available at opendata.lab.fi-ware.org, and it's integrated with the overall FIWARE Lab identity management system.

The availability of a Big Data system enables you to store relevant amount of data coming from heterogeneous sources and perform analysis over those (historic) data in order to generate new insight.

User and Programmer guides

Refer to the User and Programmer Guide, and to the API Specifications, for detailed information on the how to use the Generic Enablers presented in this architecture example.

Context Broker

U&P Guide	http://forge.fi-are.org/plugins/mediawiki/wiki/fiware/index.php/Publish/Subscribe_Broker_-_Orion_Context_Broker_-_User_and_Programmers_Guide
API	http://forge.fi-ware.org/plugins/mediawiki/wiki/fiware/index.php/FI-WARE_NGSI_Open_RESTful_API_Specification
FIWARE Catalogue	http://catalogue.fi-ware.org/enablers/publishsubscribe-context-broker-orion-context-broker

Big Data Analysis

U&P Guide	http://forge.fi-ware.org/plugins/mediawiki/wiki/fiware/index.php/BigData_Analysis_-_User_and_Programmer_Guide
API	http://forge.fi-ware.org/plugins/mediawiki/wiki/fiware/index.php/BigData_Analysis_Open_RESTful_API_Specification
FIWARE Catalogue	http://catalogue.fi-ware.org/enablers/bigdata-analysis-cosmos
FIWARE Academy	http://edu.fi-ware.org/course/view.php?id=69

Complex Event Processing

U&P Guide	http://forge.fi-ware.org/plugins/mediawiki/wiki/fiware/index.php/CEP_-_User_and_Programmer_Guide
API	http://forge.fi-ware.org/plugins/mediawiki/wiki/fiware/index.php/Complex_Event_Processing_Open_RESTful_API_Specification
FIWARE Catalogue	http://catalogue.fi-ware.org/enablers/complex-event-processing-cep-ibm-proactive-technology-online
FIWARE Academy	http://edu.fi-ware.org/course/view.php?id=58

Backend Device Management

U&P Guide	http://forge.fi-ware.org/plugins/mediawiki/wiki/fiware/index.php/Backend_Device_Management_-_IDAS_-_User_and_Programmers_Guide
API	http://forge.fi-ware.org/plugins/mediawiki/wiki/fiware/index.php/FIWARE.OpenSpecification.IoT.Backend.DeviceManagement
FIWARE Catalogue	http://catalogue.fi-ware.org/enablers/backend-device-management-idas

Media streams processing

U&P Guide	http://forge.fi-ware.org/plugins/mediawiki/wiki/fiware/index.php/StreamOriented_-_Users_and_Programmers_Guide
API	http://forge.fi-ware.org/plugins/mediawiki/wiki/fiware/index.php/StreamOriented_Open_API_Specification
FIWARE Catalogue	http://catalogue.fi-ware.org/enablers/stream-oriented-kurento
FIWARE Academy	http://edu.fi-ware.org/course/view.php?id=62

Web applications Development and mashups

U&P Guide	http://forge.fi-ware.org/plugins/mediawiki/wiki/fiware/index.php/Application_Mashup_-_Wirecloud_-_User_and_Programmer_Guide
FIWARE Catalogue	http://catalogue.fi-ware.org/enablers/application-mashup-wirecloud
FIWARE Academy	http://edu.fi-ware.org/course/view.php?id=53

5. How can you develop your open data business?

Prepared by: Paolo Lombardi, Veronica Barchetti, Francesca de Chiara and Maurizio Napolitano

Summary
In this chapter we provide basic knowledge regarding how you can develop your business using open data. We'll show how to generate a business model, exploring the components of the Business Model Canvas in detail. In particular, we'll offer an overview of open data business models. In the case of reuse of PSI (Public sector information) Osella & Ferro have developed an interesting framework "that focuses on decision-making levers that a business developer has at his/her fingertips for molding the overarching architecture of a business venture hinged on public data re-use". They combined the framework with the business model ontology by employing the Business Model Canvas in order to visualize archetypal business models at an enterprise level. The tool has been proven very useful and could probably be adopted in the development and assessment of any data intensive business venture. After exploring eight business models we introduce the importance of the adoption of the Lean methodology for business development, offering a case study of open data business development in which the Lean approach has been used. Moreover, defining and setting your business goals need a competitor analysis, which is also explained. Last but not least, we describe the rights connected to using open datasets. Licensing and related issues of compatibility between licenses are crucial when you deal with open data.
In this chapter we talk about, business Modeling, open data business models, lean methodology, competitor analysis and intellectual property rights.

Introduction

In this chapter we provide essential knowledge regarding how you can develop your open data business. We'll show how to generate a business model, exploring the components of the Business Model Canvas in detail. In particular, we'll offer an overview of open data business models. In the case of reuse of PSI (Public Sector Information) Osella & Ferro have developed an interesting framework "that focuses on decision-making levers that a business developer has at his/her fingertips for molding the overarching architecture of a business venture hinged on public data re-use". They combined the framework with the business model ontology by employing the Business Model Canvas in order to visualize archetypal business models at an enterprise level. The tool has been proved very useful and could probably be adopted in the development and assessment of any data intensive business venture. After exploring eight business models we introduce the importance of the adoption of the Lean methodology for business development, offering a case study of open data business development in which the Lean approach has been used. Moreover, defining and setting your business goals need a competitor analysis, which is also explained. Last but not least, we describe the rights connected to using open datasets. Licensing and related issues of compatibility between licenses are crucial when you deal with open data.

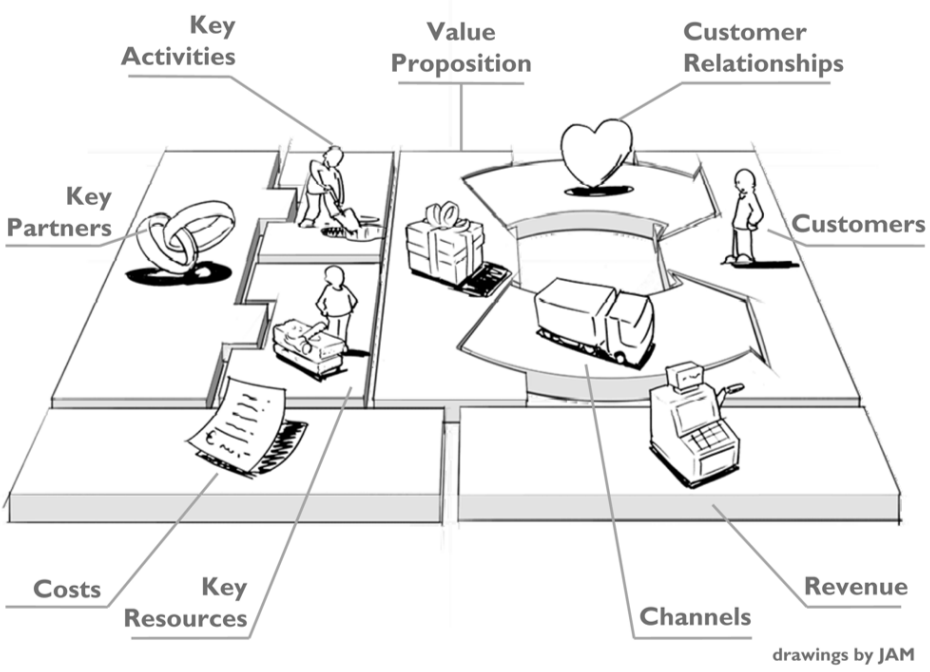
FIWARE TIP As you read this chapter on developing your business using open data it would make good sense to take a look at one of the fundamental generic enablers called the Orion Context Broker. You can find the link in the previous chapter

in the table titled “Context Broker”.

Business Modeling

A business model is a strategic tool that indicates how the company makes money specifying the sources of the company’s revenues as well as how much and how often these sources are willing to do that. Since its publication in 2004, the book “Business Model Generation” by Osterwalder and Pigneur, soon has become the bible for startups and SMEs. In their book the authors explain the so called Business Model Canvas (Figure 1), which is a tool that will help you to visually capture the components of a business model, and will assist you in the business model generation process.

In order to keep track of all of your steps in creating your business model, you may want to download the “canvas” and start to write down all the assumptions and progress that you make!



[Source: http://www.zebramc.com/wp-content/uploads/2012/02/bmcanvas-basic-model3.jpg]

Figure 1. Business Model Canvas

Source: *“A business model describes the rationale of how an organization creates, delivers, and captures value”* in Osterwalder & Pigneur, Business Model Generation, 2004.

According to Osterwalder, in order to build an effective business model you have to identify several blocks. In the following points we briefly list them. For each of them, rather than a theoretical description, we provide a set of practical questions for you to answer.

1. **Customer segments**

First of all, you need to define which customers you aim to reach. You have to answer two important questions:

- For whom are we creating value?
- Who are our most important customers?

2. Value Proposition

You should provide to your customers a product or a service with an added value. The "value proposition" is a statement that summarizes why potential consumers should buy your particular product or service, and prefer it to similar offerings. In this case, you should answer the following questions:

- What value do we deliver to the customer?
- Which one of our customer's problems are we helping to solve?
- Which customer needs are we satisfying?
- What bundles of products and services are we offering to each Customer Segment?

Factors such as newness, performance, customization, design, brand/status, cost reduction, risk reduction, accessibility, and convenience/usability can add value to your business. Your value proposition may be qualitative (privileging customer experience and outcome) and/or quantitative (price and efficiency).

3. Sales Channels

Once you have understood your value proposition and your customer segment, you need to take care of channels able to deliver the value to your clients. You should ask yourself:

- Through which channels do our customer segments want to be reached?
- How are we reaching them now?
- How are our channels integrated? Which ones work best?
- Which ones are most cost-efficient?
- How are we integrating them with customer routines?

You can reach your clients either through your own channels (store front), your partner channels (major distributors), or a combination of both.

4. Customer Relationships

Another important step: you have to identify the kind of relationship you establish with each of your customer segments. These are the main questions you should answer:

- What type of relationship does each of our customer/segments expect us to establish and maintain with them?
- Which ones have we established?
- How costly are they?
- How are they integrated with the rest of our business model?

The different types of customer relationships are: personal assistance, automated service, communities and so on.

5. Revenue streams

You need to plan how you are going to generate cash through the customer segment (costs must be subtracted from revenues to create earnings). The meaningful questions are:

- For what value are our customers really willing to pay?
- For what do they currently pay?
- How are they currently paying?
- How would they prefer to pay?
- How much does each Revenue Stream contribute to overall revenues?

There are several possibilities to generate revenue streams such as asset sales, usage fee, subscription fees, lending/leasing/renting, licensing, etc.

6. Key resources & key activities

You need then to understand what the assets are that will make your business model work. Hence, answer the following questions:

- What Key Resources do our Value Propositions require?
- Our Distribution Channels?
- Customer Relationships?
- Revenue Streams?
- What are then the action you can do in order to make your business model work.
- What Key Activities do our Value Propositions require?
- Our Distribution Channels?
- Customer Relationships?
- Revenue streams?

7. Key partnerships

You will probably need to require the help of external help of partners and/or suppliers in order to make your business model to work properly:

- Who are our Key Partners?
- Who are our key suppliers?
- Which Key Resources are we acquiring from partners?
- Which Key Activities do partners perform?

FIWARE TIP FIWARE can actually support you in managing your economic relationships within your new ecosystem. The **Revenue Sharing System (RSS) GE** is in charge of distributing the revenues originated by the usage of a given service among the involved stakeholders. In particular, it focuses on distributing part of the revenue generated by a service between the Marketplace Provider and the Service Provider(s) responsible for the service.

8. Cost structure

Last but not least, you want to consider what costs you will incur as well as the consequences, when you start applying your business model on your product.

- What are the most important costs inherent in our business model?

- Which Key Resources are most expensive?
- Which Key Activities are most expensive?

Further reading
Osterwalder & Y. Pigneur, Business Model Generation, 2004
Elements of a Business Plan, available online

Open data business models

In the case of PSI (Public Sector Information) reuse performed by private sector entrepreneurs, many inherent roadblocks, coupled with a certain vagueness surrounding the rationale underlying business endeavors, keep slowing the process down. The advent of the Open Data framework, oriented towards data openness (i.e. open by default), poses new issues regarding the access to information which occurs free of charge and different forms of payment may be required for restricting the access to derivative works.
Two Italian researchers Michele Osella and Enrico Ferro (2012) developed a framework "that focuses on decision-making levers that a business developer has at his/her fingertips for molding the overarching architecture of a business venture hinged on public data re-use".

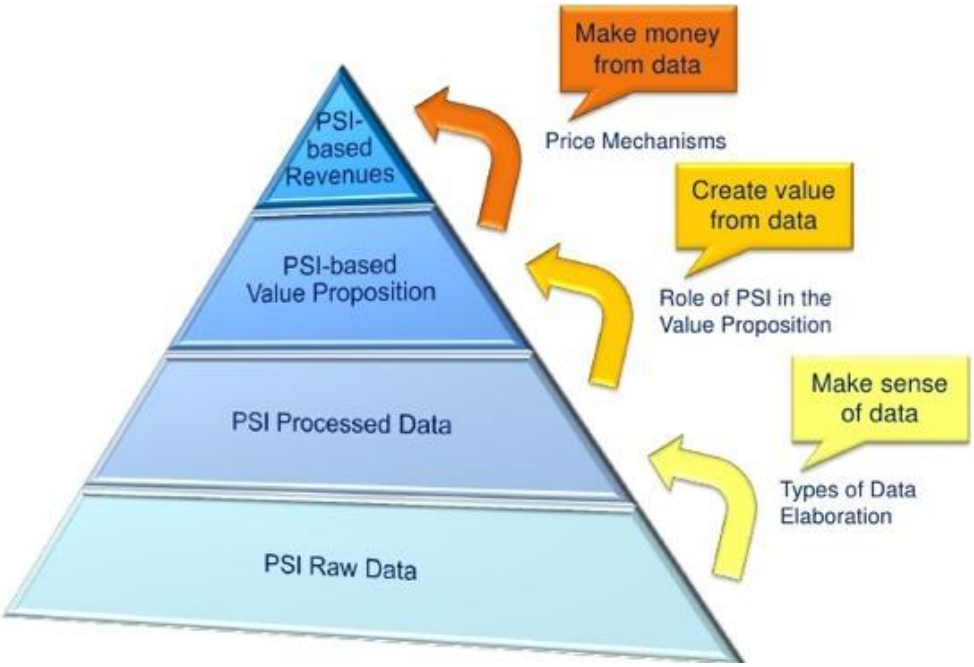


Figure 2. Framework for PSI business model analysis by Osella & Ferro
Source: Osella & Ferro, "Business Models for PSI Re-Use: A Multidimensional Framework", 2012

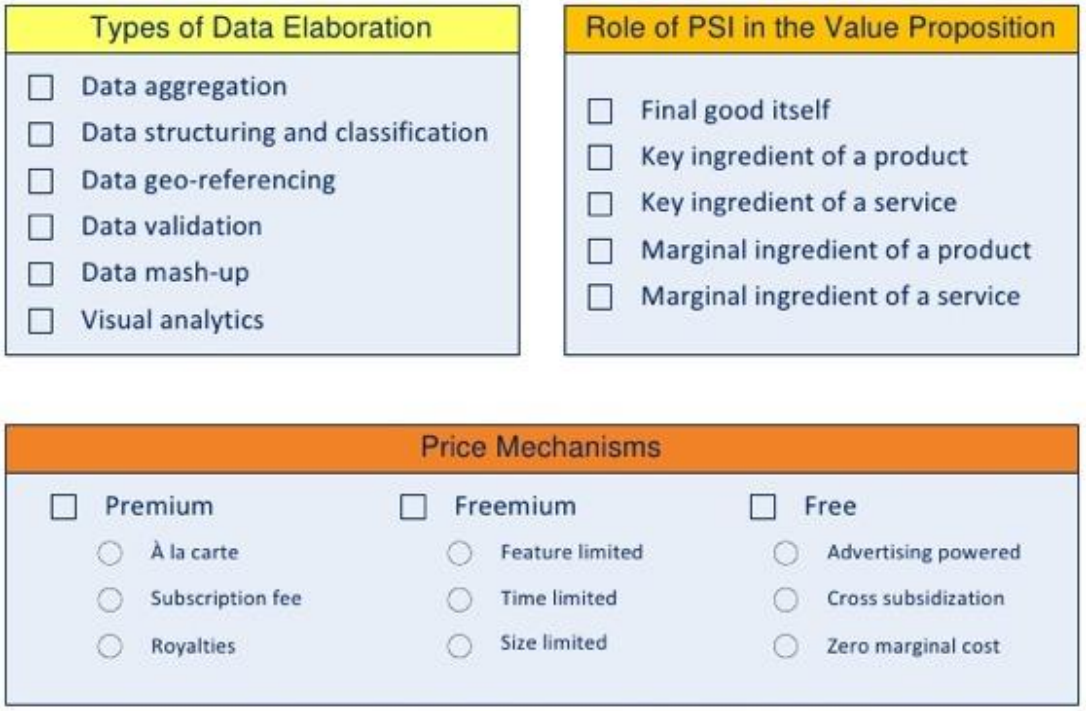


Figure 3. Framework for PSI business model analysis by Osella & Ferro
Source: Osella & Ferro, "Business Models for PSI Re-Use: A Multidimensional Framework", 2012

While developing the framework surrounding the PSI reuse, they realized that it did not sufficiently grasp the business logic and the mechanisms needed to build an effective strategy. A solution came from the combination with Osterwalder's business model ontology, by employing the Business Model Canvas (explained in the previous paragraphs) in order to visualize archetypal business models at an enterprise level. The tool has been proved very useful and could probably be adopted in the development and assessment of any data intensive business venture.
The result is the identification of eight business models currently employed by the actors present in the Public Sector Information centric (PSI-centric) ecosystem.
Why are they useful?
From a business model viewpoint, which is one of the perspectives on the PSI realm showed by Osella, our interest is to identify the steps needed to maximize the benefits for re-use of open data, "a profit-driven reuse and value creation".

You can find, in the following list, the eight business models as described by Osella and Ferro:

1. **Premium Product / Service**.
2. **Freemium Product / Service**. A classic example in this vein is represented by mobile apps related to public transportation in urban areas.
3. **Open Source**. OpenCorporates and OpenPolis
4. **Infrastructural Razor & Blades**. Public Data Sets on Amazon Web Service
5. **Demand-Oriented Platform**. DataMarket and Infochimps
6. **Supply-Oriented Platform**. Socrata
7. **Free, as Branded Advertising**.
8. **White-Label Development.** This business model has not consolidated yet, but some embryonic attempts seem to be particularly promising.

In this paragraph we are exploring the identified eight business models in more detail. The main references are two papers co-authored by Ferro and Osella: “Business Models for PSI Re-Use: A Multidimensional Framework” (2012) and “Eight Business Model Archetypes for PSI Re-Use” (2013).

#1 Premium Product / Service: While implementing this business model, a core re-user offers to end-users a product or a service presumably characterized by high intrinsic value in exchange for a payment that could occur *à la carte* or in the guise of a recurring fee: while the former implies the payment of an amount of money for each unit of product purchased (pay-per-use), the latter has an "all-inclusive" nature since it grants a given timeframe to access certain features in accordance with contractual terms. In this business model, probably associated to the “mainstream” model by the majority of analysts, the high intrinsic value, coupled with the price mechanism, calls for B2B customers (often called “high-end market”) and for long or medium terms relationships going beyond single transactions (Osella & Ferro, 2013).

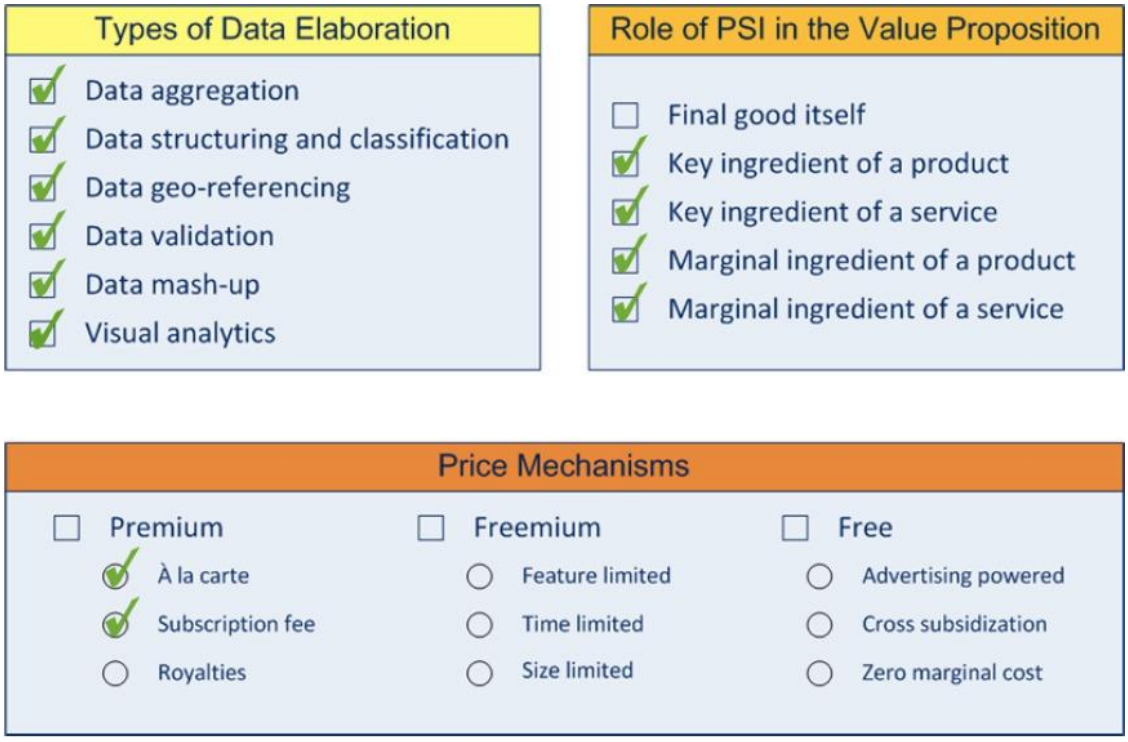


Figure 4. Premium Product / Service (framework view)
Source: M.Osella & E.Ferro, Eight Business Model Archetypes for PSI Re-Use, 2013

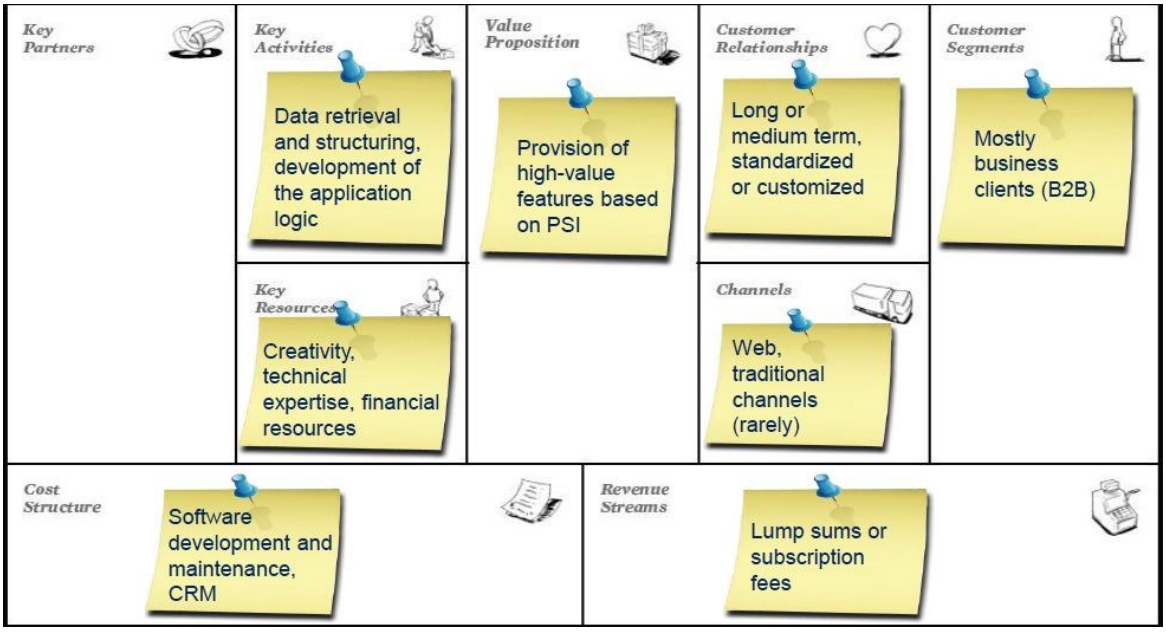


Figure 5. Premium Product / Service ("Canvas" view)

Source: M.Osella & E.Ferro, Eight Business Model Archetypes for PSI Re-Use, 2013

#2 Freemium Product / Service. Core re-users resorting to this business model offer to end-users a product or a service in accordance with freemium price logic: one of the offerings is free-of-charge and entails only basic features, while customers willing to take advantage of refined features or add-ons are charged. In the PSI realm, the implementation of this business model has its roots in limitations deliberately imposed by the core re-user in terms of data access: as a result, ad-hoc payments may be required to enjoy advanced features, to have recourse to additional formats or, sometimes, to weed out advertising. In contrast with the previous model, here the prominent target market is the consumer one (often called "low-end market") with which the firm establishes medium or short terms relationships that usually do not involve the customization. Target customers are generally reached via the Web or via the mobile channel, which both promise to "hit" a considerable number of installed bases. (Osella & Ferro, 2013).

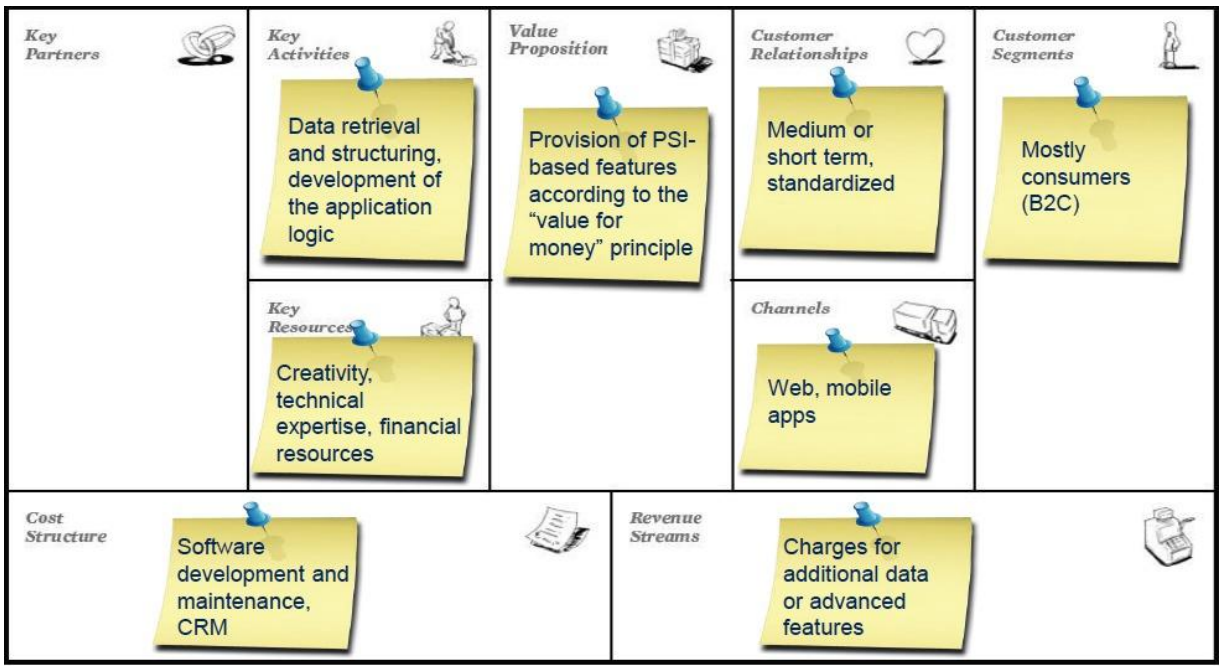


Figure 6. Freemium Product / Service ("Canvas" view)
Source: M.Osella & E.Ferro, Eight Business Model Archetypes for PSI Re-Use, 2013

#3 Open Source Like. This very peculiar business model takes place on top of products, services, or simple unpackaged data that are provided for free and in an open format. In terms of economics, a cross-subsidization occurs in the enterprise under examination since the costs incurred for free offering of data are covered by revenues stemming from supplementary business lines that are still PSI-based: in fact, trickles of revenue for the core re-users may stem only from added-value services or from license variations (dual licensing). The resemblance with Open Source software is given by the fact that in this circumstance, data is provided in a totally open format that allows free elaboration, usage and redistribution without any technical barrier (Osella & Ferro, 2013).

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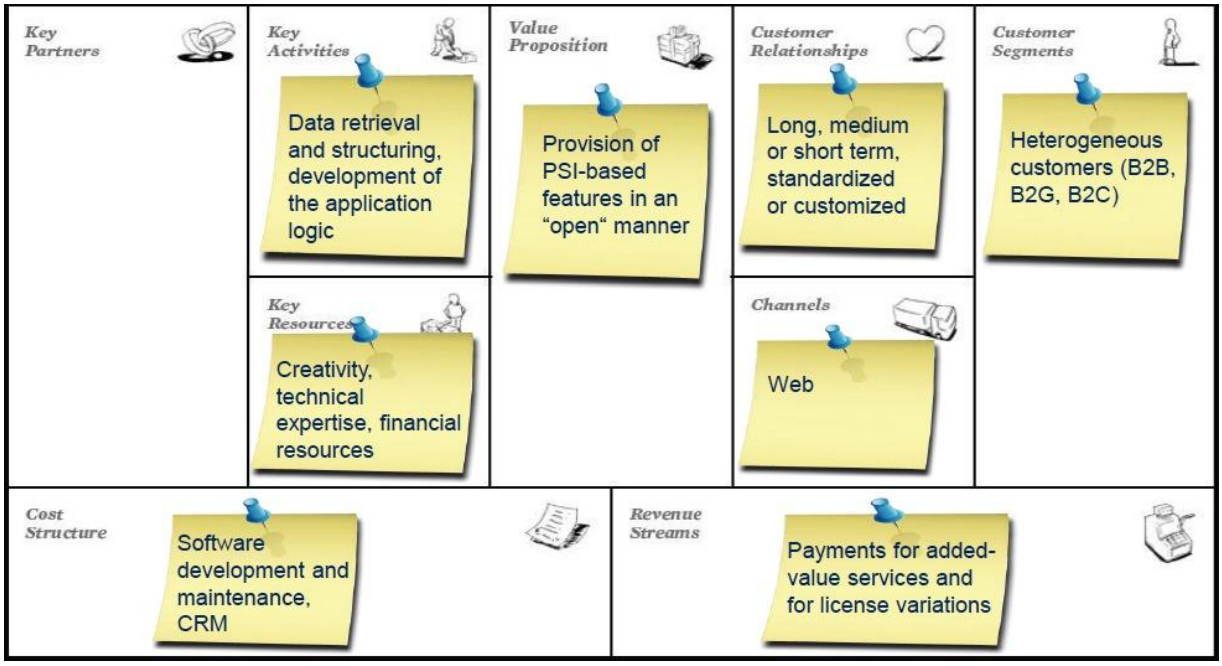

Figure 7. Open Source Like. ("Canvas" view)

Source: M.Osella & E.Ferro, Eight Business Model Archetypes for PSI Re-Use, 2013

#4 Infrastructural Razor & Blades. Entering in the realm of enablers, this business model is chosen by enterprises acting as intermediaries that facilitate the access to PSI resources by profit-oriented developers or scientists not driven by commercial intent. As it happens in the well-known model "razor & blades", the value proposition hinges on an attractive, inexpensive or free initial offer ("razor") that encourages continuing future purchases of follow-up items or services ("blades") that are usually consumables characterized by inelastic demand curve and high margins. Applying this model in the PSI environment, datasets are stored for free on cloud computing platforms being accessible by everyone via APIs ("razor") while re-users are charged only for the computing power that they employ on-demand in as-a-service mode ("blades"). This business model exhibits another case of cross-subsidization whereby profits accrued from the provision of on-demand computing capacity cover costs attributable to the storage and maintenance of data. Finally, it goes without saying that application of this model is limited to contexts and domains in which the computational costs are significant (Osella & Ferro, 2013).

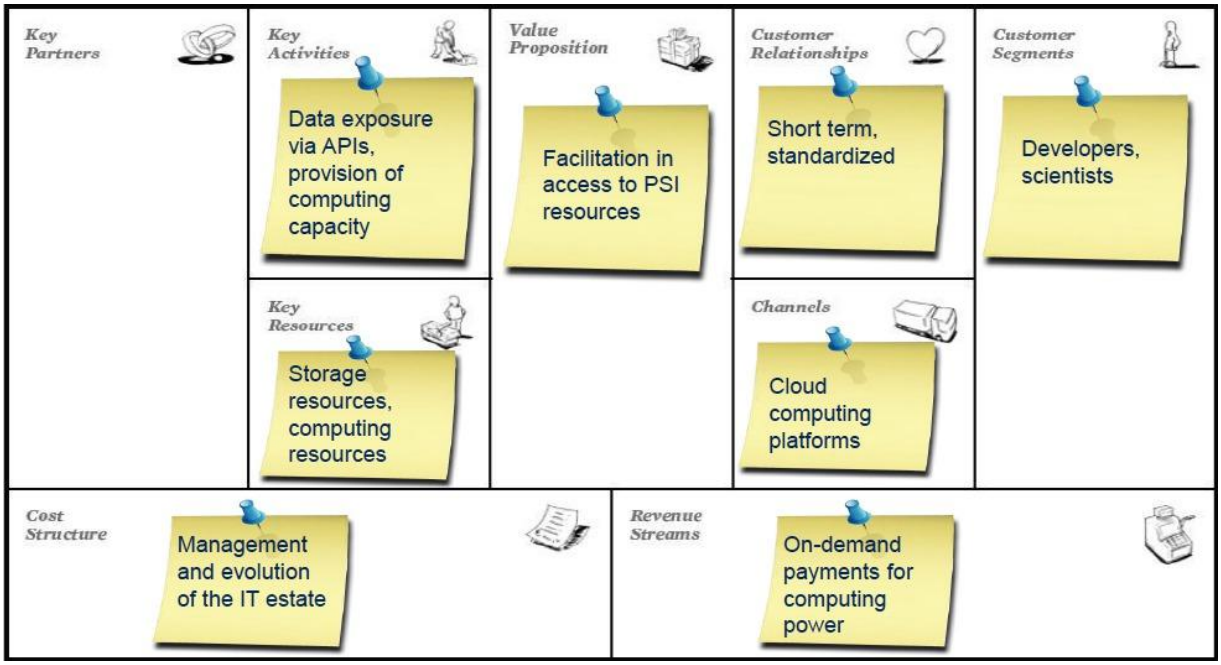

Figure 8. Infrastructural Razor and Blades ("Canvas" view)
Source: M.Osella & E.Ferro, Eight Business Model Archetypes for PSI Re-Use, 2013

#5 Demand-Oriented Platform. Following this business model, the enabler acting as intermediary provides developers with easier access to PSI resources that are stored on proprietary servers having high reliability. Once collected, PSI datasets are subsequently catalogued using metadata, harmonized in terms of formats and exposed through APIs, making it easier to dynamically retrieve data in meaningful way. As a result, a wide range of critical issues pertaining to original raw data are made irrelevant due to the usage of platforms capable to convert datasets in data streams, contributing significantly to the "commoditization" and "democratization" of data. In addition, developers may reap the benefits given by the "one stop shopping" nature of such platforms: they may resort to one supplier and access a variety of information resources through standardized APIs - even beyond the borders of the PSI - without having to worry about interfaces connecting to each original source. This "procurement" approach is crucial to minimize search costs and, by consequence, transaction costs. In terms of pricing, as a good that was born free and open (such as Open Government Data) cannot be charged in absence of added value on top of it, enablers adopting this business model earn revenues in exchange for advanced services and refined datasets or data flows. To sum up, re-users are charged according to a freemium pricing model that sets the boundary between free and premium in light of feature limitations (Osella & Ferro, 2013).

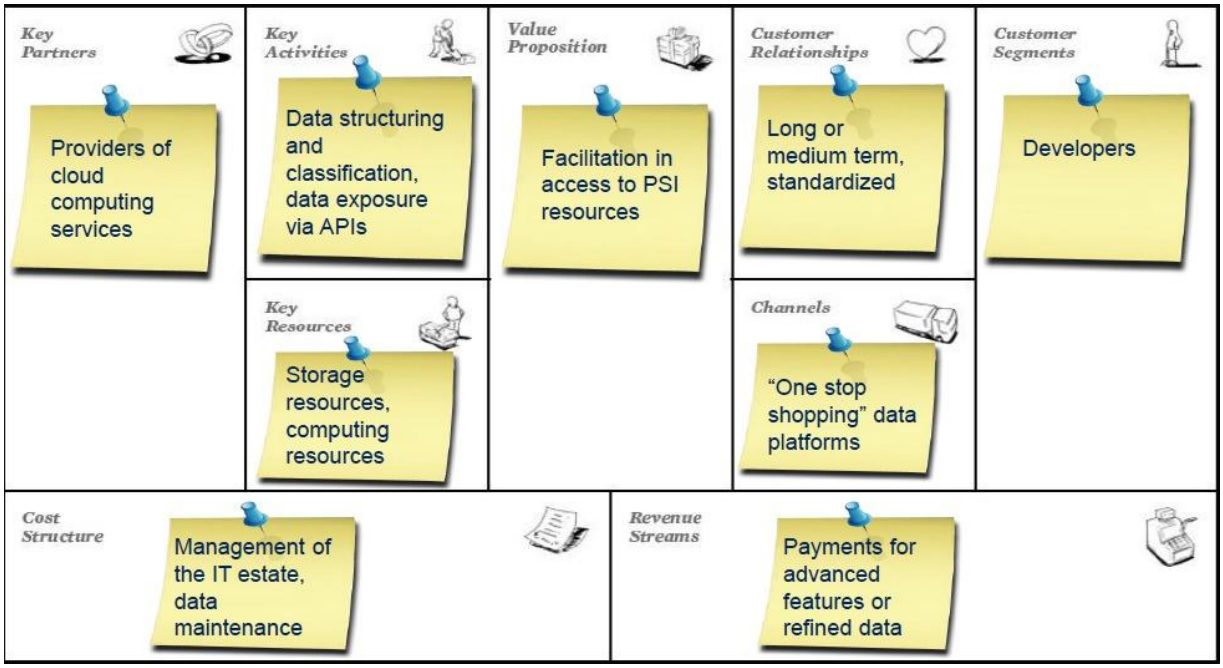

Figure 9. Demand-oriented platform ("Canvas" view)
Source: M.Osella & E.Ferro, Eight Business Model Archetypes for PSI Re-Use, 2013

#6 Supply-Oriented Platform. To conclude with enablers, this business model entails the presence of an intermediary business actor having an infrastructural role again. However, on the contrary of the previous case, according to this logic, PSI holders are charged in lieu of developers. In fact, the enabler, following the golden rules of two-sided market, fixes the price according to the degree of positive externality that each side is able to exert on the other one. Consequently, this approach is beneficial for both sides of the resulting arena: from developers' perspective, their barriers are wiped out (i.e., they can retrieve data without incurring cost) while, from the governmental angle, PSI holders become platform owners taking advantage of some handy features such as cloud storage, rapid upload of brand-new datasets by public employees, standardization of formats, tagging with metadata and, above all, automated external exposure of data via APIs and GUI. Public agencies that adhere to such programs in order to dip their toes into the water of Open Data establish long-term relationships with providers and are required to pay a periodic fee that depends on the degree of sophistication characterizing the solutions purchased and on some technical parameters (Osella & Ferro, 2013).

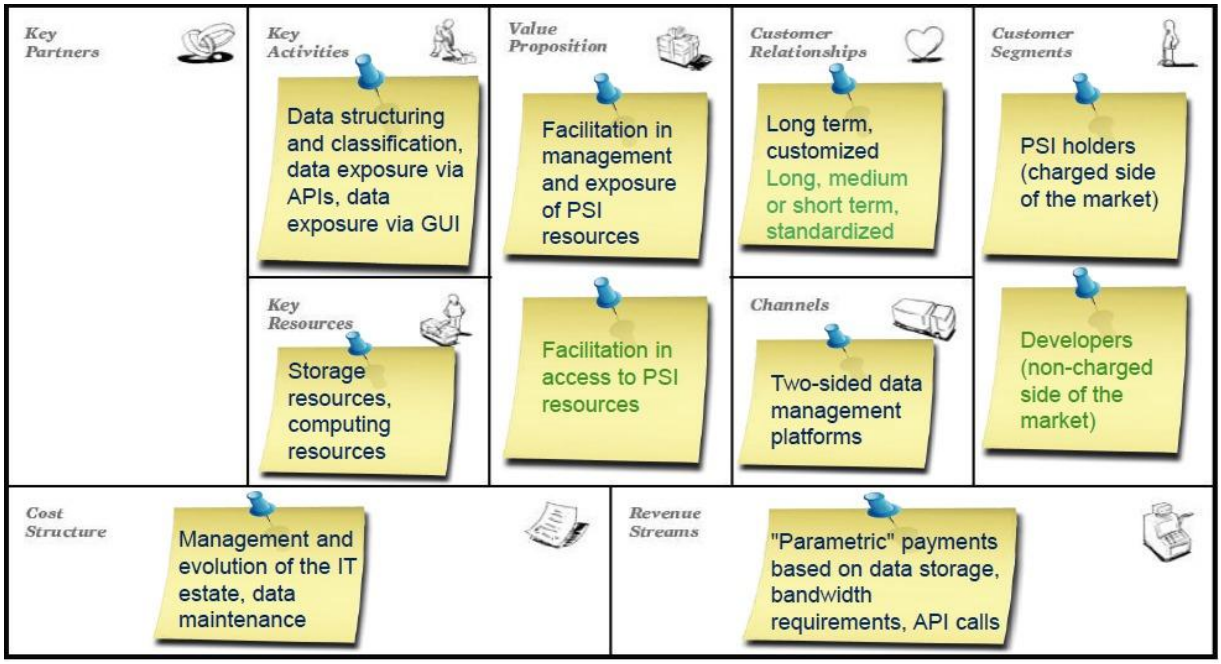

Figure 10. Supply-oriented platform ("Canvas" view)
Source: M.Osella & E.Ferro, Eight Business Model Archetypes for PSI Re-Use, 2013

#7 Free as Branded Advertising. Service advertising is an emerging form of communication aimed at encouraging or persuading an audience towards a brand or a company. Conversely to the more famous "display advertising", where commercial messages are simply visualized, in service advertising the advertiser strives to conquer the customer by providing him or her with services of general usefulness. That said, in the PSI realm, services offered in this way do not generate any direct revenue but they are supposed to bring positive return in a broad sense, driving economic results on other business lines - unrelated to PSI - that represent the enterprise's core business. The rationale fuelling this "enlightened" business model is twofold. Firstly, it may be based on a powerful advertising boost that leads the company to consider the cost as a promotional investment in the marketing mix. Secondly, it seems to be very convenient in presence of zero marginal costs, a situation that occurs when the costs of distribution and usage are not significant (Osella & Ferro, 2013).

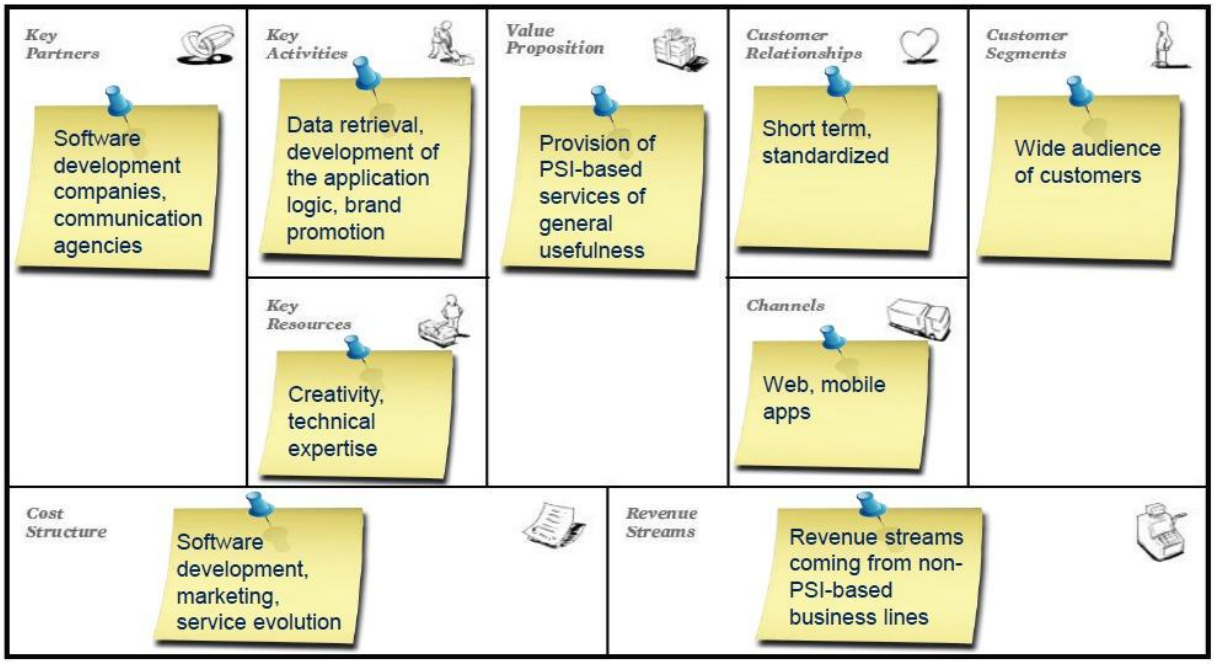

Figure 11. Free as Branded Advertising. ("Canvas" view)
Source: M.Osella & E.Ferro, Eight Business Model Archetypes for PSI Re-Use, 2013

#8 White-Label Development. Last but not least, if service advertisers do not have in-house sufficient competencies required to develop their business endeavors, they can knock the door of advertising factories. Such firms, in fact, come into play as outsourcers carrying out duties that otherwise would be handled by service advertisers. Hence, the development of PSI-based solutions is particularly compelling for companies willing to use PSI as "attraction tool" but not equipped with competencies required to do so (e.g., data retrieval, software development, service maintenance, marketing promotion). In order to let the service advertiser's brand stand out, solutions are developed in a white-label manner, i.e., shadowing the outsourcer's brand and giving full visibility to the sole service advertiser's brand. Taking into account the "one stop shopping supply" and the business-criticality of the solutions in terms of corporate image, the resulting one-to-one relationship between provider and customer is tailor-made and "cemented". Concerning financials, advertising factories collect lump-sum payments or recurring fees in exchange for turn-key solutions so developed, depending on whether the crafted solution takes the form of product or service: whilst in the former case service advertisers perceive the cost as CAPEX, in the latter one the respective cost assumes an OPEX nature (Osella & Ferro, 2013).

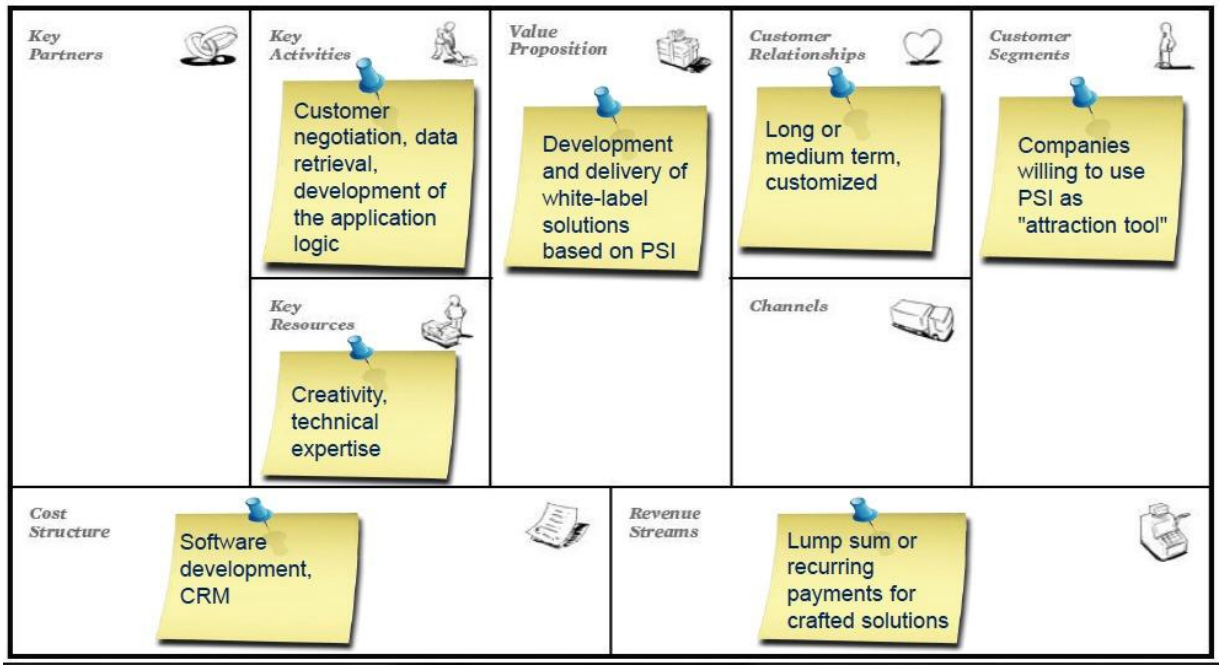

Figure 12. White Label Development. ("Canvas view")
Source: M.Osella & E.Ferro, Eight Business Model Archetypes for PSI Re-Use, 2013

Case studies

You can find a lot of examples of companies that employ the business models described above. Herein we describe one example of the freemium model. A variety of web applications use the freemium business model. The free product or service here is subsidized through a paid-for product or service that offers some kind of added value on top of what is made available as open data. The free product acts as marketing, establishing the provider in the marketplace and increasing the take-up of the paid-for product (The ODI Guide, How to make a business case for open data). One way of using a freemium model is to release your open data using a **share-alike license**. This ensures that organizations who do things with your data have to either openly share their results (which means you can benefit from what they do) or have to negotiate with you to be able to use the data under a different (potentially charged) license.

OpenCorporates uses this business model, licensing their database with a share-alike license while offering paid-for licenses for companies who do not want to share their data.

Another approach to a freemium model is to offer a paid-for product that:

- Incorporates additional data, perhaps from third-party sources,
- is provided in a different format from the open data,
- is more up-to-date, complete or detailed than the open data,
- is the result of an analysis or model based on the released open data or
- is a dump of data that can otherwise be accessed through an API.

Alternatively, you could offer a paid-for service based on the open data you are publishing that:

- Provides an API over open data that can otherwise be accessed as a dump or
- provides availability guarantees through a Service-Level Agreement

- removes rate limits

Recently the U.S. Government has launched a new section of the open government data catalog, data.gov. The new sub-domain “Impact” profiles companies that are making use of open government data.

References and further reading

- The Open Data Institute, How to make a business case for open data, available on line.
- Alex Howard, Open data economy: Eight business models for open data and insight from Deloitte UK, available here.
- Elements of open data startups, presentation available here.
- Enrico Ferro, Emerging Business models in PSI reuse, available here.
- E.Ferro & M.Osella, Business Models for PSI Re-Use: A Multidimensional Framework, 2012 available on line.
- E.Ferro & M.Osella, Eight Business Model Archetypes for PSI Re-Use, 2013 available on line.

Lean methodology

After exploring the eight business models on which the PSI reuse relies on, we introduce the importance of the adoption of the Lean methodology for business development. You have already identified the opportunities offered by the reuse of open data by employing the Business Model Canvas and the framework developed by Osella and Ferro and now you want to start developing your own business.
Lean methodology is a method for developing businesses and products with the goal of finding a product-market fit, making a cash flow positive and creating a sustainable company before it runs out of money. “Validated learning,” experimentation, testing, measurement of actual progress and learning what customers really want are the main pillars of the methodology. All of the process, then, should be accomplished as fast as possible and as cheap as possible. Pioneers of the Lean Startup movement are Steve Blank (*The startup owner’s manual: the step by step guide for building a company*, 2012; *The four steps to the epiphany*, 2006) and Eric Ries (*The Lean Startup*, 2011).

The lean approach aims at being as effective as possible in achieving your final goal. According to lean methodology you should follow a build-measure-learn feedback loop.

Ideas > build > product > measure > data > learn > ideas > and so on (circle)

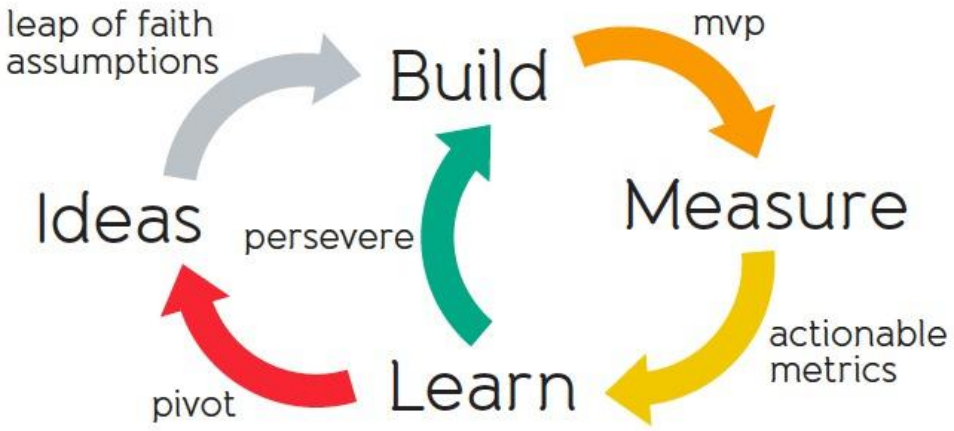

Figure 13. Build-measure-learn feedback loop
Image source: Andrew Walpole, Build - Measure - Learn Feedback Loop infographic, 2013

Here we explain the loop step by step:

1) **Idea:**

When you process your idea, keep in mind that the final goal is to provide benefit to your customer, the rest is just waste of time. So, first of all, ask yourself:

- Can I build a sustainable business around this set of products and services?

What you want to achieve is, in fact, a compromise between your vision and what your customers would accept.
Hence, you want to focus on an idea that answers a problem that really needs a solution. You want also to make explicit all implicit assumptions you are making on how you can create a business on that idea.

Please, answer at the following questions before building your product:

- Do consumers recognize that they have the problem you are trying to solve?
- If there was a solution, would they buy it?
- Would they buy it from you?
- Can you build a solution for that problem?

"Success is not delivering a feature; success is learning how to solve the customer's problem." (Eric Ries*, The Lean Startup,* 2011).

2) **Build:**

Develop a minimum viable product (MVP) in order to start learning process as soon as possible.

- MVP

A minimum viable product is a version of a new product or feature, which allows to test the assumptions you made. When you are building your MVP, remove any feature, process or effort

that does not contribute directly to the learning you seek. When you will test your MVP you will learn which elements of your product or strategy are not appropriated.

3) Measure:

When MVP is established, measure how your customer responds and build on metrics that can lead to cause and effect questions. Metrics have to show a clearly defined action to take once analyzed.

Examples:

- A/B Split-Test Results
- Per-customer metrics
- Direct customer feedback

FIWARE TIP	FIA Project Management Plugin enables FI-CoDE users to create Future Internet Applications that use instances of FIWARE generic enablers. This plugins allows to create Java-based FIA projects, browse and select instances of FIWARE GEs available in the Catalogue, which are associated to the FIA project configuration.

4) Learn:

Analyze your product, feedback and metrics to assess your progress in an objective way.

- Validated learning

“Validated learning” means that you need to run experiments and scientifically validate them based on empirical data collected from real customers. This allows you to test each element of your vision.

During the process you should utilize an investigative development the so called "Five Whys"- asking yourself simple questions to study and solve problems along the way. When this process of measuring and learning is done and you made small changes for optimizing your product, you should be able to understand whether the drivers of your business model are appropriate or not and decide to pivot or persevere.

Figure 14. Description Step by Step of the feedback loop
Image source: Andrew Walpole, Build - Measure - Learn Feedback Loop infographic, 2013

Pivot:
If you decide to **pivot** you need to take a big change in the direction or make structural course correction to test new ideas/hypotheses about the product, strategy and engine of growth and start the cycle once again from the beginning. If your new experiment runs in a more productive way than the experiments you were running before, it is probably a sign that you made a successful pivot.

Persevere:
If you think that your test is going in the right direction, then you should continue to test more assumptions and build towards executing your current vision.

The lean methodology underlines the importance of experimenting in order to learn. Pivoting is just a part of the process - *"if you cannot fail, you cannot learn."* (Eric Ries, The Lean Startup, 2011). Until a precise business model is found, it is important to keep your initial vision. This way, adjustments can be made to the model without reassessing the entire market.

Lean approach in open data business development: a case study

Steve Blank mentions a story of a startup called Tidepool as the perfect example to be studied in order to demonstrate the power of the customer development, one of the key parts in Lean Methodology. Tidepool's team was severely criticized about their business model. They began

believing they were selling an open data and software platform for people with Type 1, Diabetes into a multi-sided market comprised of patients, providers, device makers, app builders and researchers. They firstly reduced what they thought was a five-sided market to a simpler two-sided one. But the big payoff came when their discussions with medical device customers revealed an entirely new way to think about pricing - potentially tripling their revenue.

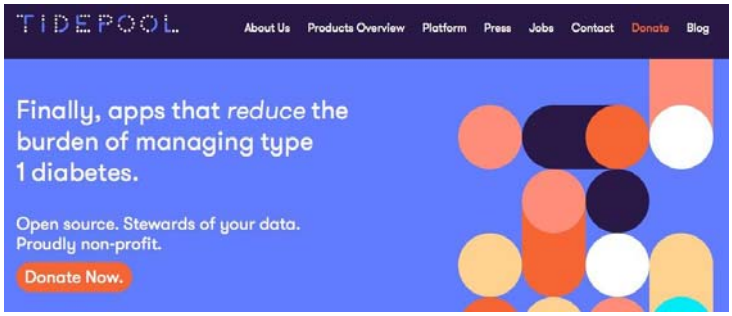

Figure 15. Screenshot of Tidepool home page
Image source: http://tidepool.org

Further reading

- Eric Ries, The Lean Startup, available online
- Steve Blank, The Four Steps to the Epiphany, available online
- Steve Blank & Bob Dorf, The Startup Owner Manual: The Step by Step Guide for Building a Great Company, available online
- Steve Blank, When Customer Make you Smarter, available online.
- Andrew Walpole, Build - Measure - Learn Feedback Loop, available online
- The Lean Startup Methodology, available online

Learning resources

- Steve Blank, How to Build a Startup, available online
- Steve Blank, Lean Customer Development - Part 1, available online
- Steve Blank, Lean Customer Development - 3 tool for startups, Part 2, available online
- Steve Blank, Lean Customer Development - Customer Development in action, Part 3 - 3 tool for startups, available online
- Steve Blank, Lean Customer Development - Closing, Part 3, available online

Competitor analysis

Providing benefit to your customer is crucial for your business goals. Unfortunately, that's not enough. You need to constantly compare your products, prices, channels and promotional efforts with your competitors, to identify areas of competitive advantage and disadvantage. Basically, you have to conduct a competitor analysis (Cuellar-Healey, 2013).
The scopes of conducting a competitor analysis are:

- obtaining information about your important competitors
- using that information to product competitors behavior

The steps you should follow are:

1) **Identify all your current and potential competitors**

On one hand you need to take care of the industry approach that focuses on the structure of the industry and the products offered by all competitors. On the other hand you also have to take

care of the market approach that focuses on the customer needs and the companies that are trying to satisfy those needs.

Elements you need to consider:

- How many competitors are on the market and what are their product differentiation,
- their entry/exit barriers,
- their cost structure,
- their degree of vertical integration and
- extent of globalization.

2) Make a profile of each of your competitor

You want to understand:

- Their objectives - e.g. size, history, current management, and economics...
- Their strategies - e.g. product quality, product features and product mix, target marketing and positioning, customer service, pricing policy, distribution coverage, sales force strategy, advertising and sales promotion programs, research and development (R&D), manufacturing, purchasing, financial and marketing strategies...
- Their strengths and weaknesses - e. g. personnel, firm's culture, finance, manufacturing capabilities, the 4Ps, … SWOT analysis can be an interesting tool that you may utilize).

Examples of analytical methods used in strategic analysis include:

- SWOT analysis
- PEST analysis
- Porter's five forces analysis

According to David A. Aaker, before designing a strategy, it is important to be fully aware of:

- The reasons behind successful as well as unsuccessful firms that compete with you
- Prime customer motivators
- Major component costs
- Industry mobility barriers

3) Design a Competitor Strategy

At this point you should understand the assets and skills needed to identify your competitive advantage, so now it is time to develop strategies and react based on what you have learned.

Competitor strategies usually fall into these five areas:

- Product
- Distribution
- Pricing
- Promotion
- Advertising

Useful questions that may help you to design a competitive strategy:

- Who are your competitors?
- What products or services do they sell?
- What is each competitor's market share?
- What are their past strategies?
- What are their current strategies?
- What type of media are used to market their products or services?
- How many hours per week do they purchase to advertise through the media used in this market?
- What are each competitor's strengths and weaknesses?
- What potential threats do your competitors pose?
- What potential opportunities do they make available for you?

Further reading

- S. Cuellar-Healey, Competitor Analysis, available online
- J. Downey, Strategic Analytic tools, available online
- Entrepreneur, Competitive Analysis, available online
- Entrepreneur, Competitive Analysis, available online
- D. Aaker, Developing Business Strategies, Wiley 2001

Intellectual Property Rights

Disclaimer: *The content of this document does not constitute legal advice. If in doubt, you should contact a lawyer to evaluate your specific needs and use cases before starting any activities.*

6. Rights connected to using open datasets

Prepared by: Paolo Lombardi, Veronica Barchetti, Francesca de Chiara and Maurizio Napolitano

Summary
The products and solutions in the FINODEX project are supposed to draw on Open data. Open data is information that is available for anyone to use, for any purpose, at no cost (The Open Data Institute definition). In the words of the Open Definition, open data is defined as data that "can be freely used, modified, and shared by anyone for any purpose". Open data has to have a license that says it is open data. Without a license, the data can't be reused. In most jurisdictions, there are intellectual property rights in data that prevent third-parties from using, reusing and redistributing data without explicit permission. Applying a license is important, even in places where the existence of rights is uncertain.

What do you mean by open data?

A dataset is open when it satisfies the following requirements in its distribution: open license, access, and open format. Publishing data in a machine-readable format does not necessarily make it reusable. In particular, if the machine-readable format is a proprietary format that is only readable when using expensive proprietary software from a single vendor, particularly if it cannot be easily exported to other formats, then it is not practically re-usable. Formats defined by open standards are: CSV, XML, JSON and RDF, where there is good availability of open source tooling, such as readers, parsers and converters, for processing the data.

The term **license** refers to the legal conditions under which the work is made available. Where no license has been offered this should be interpreted as referring to default legal conditions governing use of the work for the particular data provider (for example, copyright or public domain).

The license might also say:

- That people who use the data must credit whoever is publishing it (this is called **attribution**)
- That people who mix the data with other data have to also release the results as open data (this is called **share-alike** or **copyleft**)

What are the licenses conformant with the principles set forth in the Open Definition?

This list of the licenses conformant with the principles set forth in the Open Definition can be found at: http://opendefinition.org/licenses/

These licenses are:

- **Reusable**: Not specific to an organization or jurisdiction.
- **Compatible**: Must be compatible with at least one of GPL-3.0+ (for software), CC-BY-SA-4.0 (for content), and ODbL-1.0 (for data). Permissive/attribution-only

licenses must be compatible with all 3 of the aforementioned licenses, and at least one of Apache-2.0, CC-BY-4.0, and ODC-BY-1.0.

- **Current**: Widely used and generally considered best practice by a broad spectrum of projects and actors within the domains of applicability of the license.

The following table presents the most commonly used open licenses:

License	Domain	By	SA	Comments
Creative Commons CCZero (CC0)	Content, Data	N	N	Dedicate to the Public Domain (all rights waived)
Open Data Commons Public Domain Dedication and License (PDDL)	Data	N	N	Dedicate to the Public Domain (all rights waived)
Creative Commons Attribution 4.0 (CC-BY-4.0)	Content, Data	Y	N	
Open Data Commons Attribution License (ODC-BY)	Data	Y	N	Attribution for data(bases)
Creative Commons Attribution Share-Alike 4.0 (CC-BY-SA-4.0)	Content, Data	Y	Y	
Open Data Commons Open Database License (ODbL)	Data	Y	Y	Attribution-ShareAlike for data(bases)

Table 1. The list of licenses conformant with the principles set forth in the OpenDefinition Source: http://opendefinition.org/licenses/

Open licenses are classified in Table 1, according to these characteristics:

- Domain: domain of application, i.e. what type of material this license should/can be applied to. Note if you are looking for an open license for software, please see Open Source Definition conformant licenses.
- BY: the license requires attribution
- SA: copyleft license

In Europe there are two kinds of rights that publishers, who make available content or data, are automatically granted over things they created: copyright over works (**content**); database rights over collections of **data**. Copyright and database right are types of Intellectual Property Rights (IPR). There are other kinds of IPR that you can get, such as patents, trademarks and (some) design rights, which must be registered.

There are other licenses conformant to the Open Definition, but do not meet reusability or compatibility requirements for recommended licenses, or have been superseded by newer license versions or newer licenses with similar use cases, or are little-used. These licenses may be reasonable for the particular organization they were crafted for to use, or to use for legacy

Compatibility between Licenses

The popularity of open licenses means that compatibility between the licenses can be a problem for users who wish to combine two or more works that have been made available under open licenses. While basic technical interoperability is required when combining digital works, 'legal interoperability' is a term used to describe the ability to compile works made available under different open licenses in such a manner that the legal status of the resulting compilation is clear. This can be surprisingly challenging.

	Licenses Derivative work			
Licenses Original work (below)	**CC0**	**CC-BY**	**CC-BY-SA**	**ODbL**
CC0				
CC-BY				
CC-BY-SA				
ODbL				

Table 2. Compatibility between licenses[4]

[4] This table is a new version of the table compiled by Federico Morando in "Interoperabilità giuridica: rendere i dati (pubblici) aperti compatibili con imprese e comunità online", JLIS.it Italian Journal of Library and Information Science, Gennaio 2013, available here; another updated version is available in "Linee guida nazionali per la valorizzazione del patrimonio informativo pubblico - 2014" available here.

	Creation of derivative works possible
	Uncertainty (in the case of ODbL you have to use the same license, while you can use any other license for other derivative works and maps
	Creation of derivative works not possible

Given that open licenses are generally designed to be accessible and user-friendly so as not to stifle creativity under a blanket of legalese, it can be a problem if creators are left having to determine the compatibility of the different rights and permissions set out in a variety of open licenses. This is what makes the newly launched website **clipol.org** an interesting and potentially important resource. The website contains a catalogue of open licenses from around the world and from a range of different contexts. In Table 2 you can find some indications.

Which license should you use?

You can find useful tips and suggestions in the Publisher's Guide to Open Data Licensing released by The Open Data Institute. In the ODI Guide, the authors say that: the license that you use is crucial and should support your open data business model. It is unusual for organizations to place content or data in the public domain as being given attribution for the content or data usually helps to achieve some of the goals of opening it up. It is possible to license content or data under more than one license, and to let re-users choose which license to use it under. Typically you would dual-license some content or data by making it available under an open license *and* under a paid-for license that does not have the same restrictions. OpenCorporates is a good example. Dual-licensing is typically used with a share-alike license, as outlined below.

Some open data business models work best with a share-alike license. For example:

- a share-alike license will usually be unattractive to commercial businesses who don't want to open up their own data, so using a share-alike license coupled with a charged license can be a good basis for a freemium business model
- when you are collaborating with others to create a shared resource, a share-alike license can help to ensure that you can bring back into that resource any work that others do on their own copies

On the other hand, if you are hoping to gain other benefits for your business through the reuse of your data, using a cross-subsidy business model, you may find that a share-alike license prevents people from reusing it, and therefore want to avoid having a share-alike restriction. There are some cases where you have no choice over what license you can use for the content or data that you publish. For example: If you are publishing content or data that is derived from content or data that was licensed to you using a share-alike license, then you must publish your content or data using that same license.

You can find more details about licensing guidelines for potential re-users in the Reusers Guide for Open Data Licensing.

Patenting opportunities in open data systems (open source)

No software patents exist in Europe. You can find more details about Software Patents under the European Patent Convention.

References and further reading:

- Open Knowledge Foundation, Open Definition, Guide to Open Data Licensing, available on line.
- The Open Data Institute, What is open data - Guide, available on line.
- The Open Data Institute, Reuser's Guide to Open Data Licensing, available on line.

Useful links

http://theodi.org/consultation-responses/code-practice-datasets
http://www.engagedata.eu/opendatasites#tabs-license
http://opendefinition.org
http://opendatacommons.org
http://opendefinition.org/licenses/
http://opendatacommons.org/faq/licenses/

7. How do your finance your product development?[5]

Prepared by: Myrna Rodriguez-Hausséguy

Summary
For dynamic R&D driven businesses, support is available from a mix of private and public organizations. You should therefore pay special attention to your funding needs for market validation and technology deployment.
Do not expect that you can get your initial work with product development funded, so that you can concentrate on this only. It is advisable that you have other income, so that you can pay your bills and not being dependent on external financing to begin with.
In short,
How do your finance your product development, and how do you get funding and approach investors?

Key Points to Consider

To simplify your work, we advise you to carefully consider the following points before committing your business to one of these sources of funding:

1. Define deployment and rollout plans.
Start discussions about the deployment and roll out plans of your venture with your business partners (if you have any) as early as possible. Clearly define the preferred outcome of the company or technology development and focus on the most promising business activity

2. Spell out consequences of potential follow-up:
- Which of your business partners are willing and capable to support the deployment phase?
- Who has the intellectual property rights and the know-how and how can these be managed within your venture?
- Is the business model you favor a normal marketing concept or more based on licensing and royalties, franchising, etc.?
- Which legal incorporation will be the most appropriate for the type of business you are launching?
- How would you prefer to split responsibilities (leadership), investments and shares (paid-in or in kind) between you and your business partners?
- Estimate your outside funding needs and the percentage of shares you are happy to pass on to the outside investors.

3. Establish the type of funding that will be the most appropriate and suitable for your business plan:
- Create a profile of the characteristics of your business with regard to your business area, your potential customer base and staff as well as the anticipated investment horizon.
- Collect information on available funding schemes (subsidized loan programs, equity, debt, quasi-equity, other).
- Consider what type of investors would be the most appropriate for your business:
  - Venture capital
  - Corporate venture capital funds of large conglomerates

[5] This section is extracted from the Fundraising Manual published by Europe Unlimited. The full version is available upon request.

- Banks, “green” and other specialized loan funds
- Public or semi-public organization such as national or regional funds
- Business angels, family, friends
- Factoring and invoice discounting, leasing
- Crowdfunding

4. Make a decision with regard to your preferred investor type. According to your choice your approach will have to vary significantly. Make sure that you fully understand what the appropriate requirements are or you will waste your time and money. On the following pages we will give you an introduction to the overall issues of raising venture capital.

Understanding Venture Capital

Venture capital is, broadly speaking, a form of equity capital provided to companies that are not quoted on a stock market. Usually, this form of investment is used for product or technology development, as an expansion of working capital or to make acquisitions of products or companies. In some cases it is used to resolve ownership or management issues. Overall, it aims to provide long-term share capital fostering growth and success.

Venture capital is particular in so far that it is an equity investment aimed to accelerate value creation within start-ups or smaller high growth companies – often but not always with a technology focus. It is usually raised for the launch, early development, or expansion of a business. The term private equity is sometimes applied as an overall category for investments in unquoted equity, but the common use for it is to describe buyout investments or restructurings of larger companies. Venture capital is frequently understood as a sub-set of private equity. Overall we can distinguish between:

- Early stage (venture capital)
- Expansion/development stage (development capital)
- Buyouts/restructuring (buyout capital)

For our purpose, early stage investments are the typne we will focus on. They are made in young companies that have just been created or are starting to take their first steps as a business entity. However, there is no clear-cut distinction between the following segments, neither by size nor by type of investors, and they are not singular events. Any given business is likely to receive multiple investment rounds from different kind of investors as the business develops, often more than four or five. We can identify three investment areas for early stage companies that venture capital investors might consider:

- Seed
- Start-up
- Early stage

A seed investment is appropriate if a company’s product is not yet finished or tested and a modest amount of funding is necessary to complete the product development, to create a prototype and/or to prepare a sophisticated business plan. Typically, the seed capital comes from family, friends or so called ‘business angels’. Some specialized or regional venture capital funds also pursue this type of funding as part of their overall business strategy. A start-up investment is appropriate at a later stage of a company’s development. Frequently the business will already make some revenue, though no or limited profits.

This is the point where venture capital investors become more interested and many technology-focused funds specialize in this area. Other, non-specialized venture capital funds in general invest only a small percentage of their capital in start-up companies. Only when a business generates profits, or is distinctly set to generate profits, larger private equity funds start to become interested. In order to reduce risk, a venture capitalist usually will provide capital in steps according to a company’s development. Following a successful start-up investment, for example, your business is likely to need further capital to grow its revenues; this is frequently also called early stage investment.

Venture capital fund managers most often manage private money on behalf of institutional investors, such as banks, insurance companies and pension funds, or of wealthy families. Their value proposition is to return interest well above other investment opportunities, such as the stock market. They therefore only invest in companies that have a strong business model; the potential for high growth and that can be sold within three to seven years at a substantial profit, usually on the stock market or to a competitor. However, there are also venture capital funds that manage public money, often with a specific regional or industry focus, which provide money on partly less strict terms.

Before approaching a venture capital fund make sure that your business is in the right industry, that is has realistic high growth expectations and that you and your management are prepared to work hard for the money they might give you. To satisfy a venture capitalist's expectations is not simple, but if it is, he might not be the right investor for you. Throughout the following pages we will help you to first define your business and your needs and then to prepare for a potential venture capital investment. This is theory, but always expect the unexpected.

Define your Business

Be clear about what you want, your success in raising funds stems from more than a 'great idea'. Your idea does need a sound business plan, we will come to that in a minute, and it needs an identity and place in this world. So, how does your business relate to the world? What is its purpose?

Think about values, such as ethics, integrity, care and compassion, quality, standards of behavior. Do the values resonate with your staff, customers, suppliers, partners and owners? Make sure that they are good and that people feel proud to be associated with them. Once you settled this, you might ask yourself how your business will change things for the better and if this vision is relevant and desired by your customers, staff and stakeholders. Be realistic and make your vision achievable – in the end it defines your relationship with the market place and all stakeholders. This will lead you to your mission, i.e. what is special about the business and how does it compare to other organizations – and how can this be achieved?

Set yourself goals and timelines by when you plan to achieve them. Define how you will measure your achievements and what will constitute success. This can change of course, and new goals are developed as old ones are achieved - but at all times you need to know what your business's main goal is, by when you aim to achieve it, and how its achievement will be measured. In summary, you need a strategy. Define criteria on how you can monitor execution and performance – and prepare for potential external influences and from where they likely to come.

Finally, analyze of what your strategies are comprised of, how responsibilities and activities are allocated across business functions, departments or teams. You need to know who does what, where, when, how, for what cost and with what required effect and result. Prepare timescales and methods for all the actions within the strategies, and who owns those responsibilities. Now translate them into performance and activity expectations – create internal standards, key performance indicators, service level agreements, etc.
Once you have done these steps, in cooperation with your management, employees, and partners as well as potentially, customers, you should have listed statements to next to the following points:

- Values
- Vision
- Mission
- Goals
- Strategies
- Targets and Objectives
- Performance Indicators

If you are satisfied, you are ready to think about your business plan. With a strong understanding of your own business, its position, capabilities and shortcomings you will find it much easier to write a convincing and well-founded proposal to potential investors.

Presenting your Business to Investors

The basis of every presentation of your business to professional investors must be an objective and structured business plan. The business plan is not the only document you will give to investors, but every other presentation must convey its key issues, too. After creating the business plan, you need an executive summary, a presentation (power point etc.) and a verbal 'elevator pitch' – short and poignant enough to interest a potential investor in your business during a ride in an elevator.

What not to do

Before we go into detail and discuss what you should be doing, let us quickly point out a few things that you definitely should be trying to avoid. By knowing what not to do, it will be easier for you to focus on the important aspects when presenting your company, because you have already cleared your head a little. Categorically, stay away from:

- Spreadsheet "diarrhea"
- Unspecific user benefits
- Generalist strategy
- Hockey stick sales forecast
- Lack of specific assumptions
- Phantom team members
- Advisors for window dressing

Be genuine if you talk about business or nobody will consider you a serious partner. In addition, and be honest with yourself about this, never:

- Let mediocre people present your company or negotiate on behalf of it
- Focus only on products and your technology
- Ignore potential competitors' reactions to your business and products

Now that we have quickly covered a number of things that you should avoid at all cost, let's look at the ground rules for presenting your business to potential customers, suppliers, strategic partners and investors. You should revisit these rules frequently or even better, set them in stone as part of your business philosophy. But let's move on, you are still a far cry from raising venture capital. You first need to write a good business plan.

Expectations

At this point, we would like you to always assume about potential strategic contacts and investors, that they

- Are not necessarily interested
- Have little time
- Cannot understand all product details
- Have no desire to solve your problems

With this in mind, we believe you are prepared to go ahead with your fundraising efforts, always making sure to:

- Actively raise curiosity and interest
- Allow people to reserve time
- Clearly explain your business
- Address weaknesses to build trust

Depending on the circumstance, you might present your business either to an audience that has already read the business plan, or – more likely – to an audience that has not read it in detail or not at all. In all likelihoods you already had difficulties restricting yourself to 20 to 40 pages in your business plan, so it will be a challenge to restrict yourself further. Your presentation should not be any longer than 15-20 slides. Overall, it should follow the structure of the business plan, but you should use this opportunity to really focus on the baseline. Your presentation should follow the structure below:

- Summary (1 slide)
- Company overview (1 slide)
- Products and market (2-3 slides)
- Competition and risks (2 slides)
- Strategy and business model (3 slides)
- Financial needs (2 slides)
- Management Team (1-2 slides)
- Contact details (1 slide)

Make it visually appealing. Use your logo and your company's colors, lightly. Make sure each slide contains your company name and contacts as well as the date of the presentation, in the footer for example, in case you are asked to print it out and distribute it. Use bullet points rather than whole paragraphs of text, leave excel spreadsheets out. Your presentation should be clean and the viewer should be able to understand each slide at the first glance. Once you have prepared a presentation, you need to work on the verbal presentation. The execution of your presentation needs to be:

- Well-structured, clear
- Enthusiastic
- Critical information only
- Professional
- Modular

When presenting, be yourself. Sometimes there might be a member of the management team that is naturally a better presenter, let this person give the presentation. Even the most sophisticated venture capitalists are only human, the first impression is very important. Don't forget, an investor's decision to give you money is only partly based on the technology or the idea, but also on the business strategy and the people behind it. A great idea with unenthusiastic and/or inexperienced management will not attract funding.

Executive Summary

Once you have a good business plan, you should also have an executive summary. However, putting together the presentation should make you revisit your summary. Improve it where you can, make it an interesting and informative two pages. Write and present figures or graphs in a way that creates interest from potential investor, while covering all major aspects discussed in your business plan. Restrict yourself and impart information wisely, clearly and to the point. The reader should be excited to ask for more information, but have a good idea of your business, its opportunities and its needs.

Once you are happy with the changes, the new executive summary should be placed at the beginning of your business plan, but make also a representative standalone copy that you can hand out to potential investors. They will ask you for it after you delivered a compelling elevator pitch. Whenever you can, have a printout of your stand-alone version of the executive summary with you. Keep it in mint conditions and up to date.

Elevator Pitch

The elevator pitch stands for a very short, 'verbal' introduction of your business. Imagine it to be delivered to an investor you have been introduced to, by chance, in an elevator on the way down to the ground floor. You have very little time to outline exactly those things that will stick in the other persons mind and

make him or her call you. It is very important that you do not move away from the topic or that you elaborate on one aspect too much. Do not forget, you might only have 20 seconds.

FIWARE TIP 	Be sure to check out the FI-WARE eLearning platform, where you can find training courses, lessons and many other contents regarding FI-WARE technology: http://edu.fi-ware.org/

Prepare this pitch once you have finished you presentation, you will already be familiar with the content of your business plan and you will have practiced verbalizing it. Write down in five bullet points of what you want to say, speaking should come naturally to you. Don't forget, the pitch contains five sentences, in this exact order:

1. The opportunity and market problem
2. The value proposition
3. The differentiating factors from competition
4. The achievements and the requirements for success
5. You and your contact details (always have a business card handy)

You will have to work on the execution. First impressions do not break a deal, but a good first impression will raise strong interest and curiosity. It will elevate your business plan towards the top of an investor's business plan pile. Investors receive hundreds of business plans a year, as many telephone calls, if not more, and a huge number of elevator pitches. Your pitch has two selling points: its content and its presentation. The content we trust you have been working on for some time now, but the presentation needs to be there too. And not just in a scheduled meeting. You need to be convincing even after standing for 10 minutes without cover in the rain, soaked, waiting for a taxi, when by surprise an investors comes along and taps you on your shoulder. Therefore, your presentation should be, at all times be:

- Clear & concise
- Well-articulated & passionate
- Memorable & believable

In general, the first five seconds of your elevator pitch are crucial. If you fail to deliver those, the remaining 20 or so won't matter too much neither. Be prepared.

Facing Reality – attracting Interest

With your highly convincing elevator pitch you will surely raise ample interest from venture capitalists; you are certain to hand out your business cards and executive summaries en mass; you will receive numerous invitations to portray your business plan and look forward to giving several cutting edge presentations to investors, to whom you will also bestow your pristine business plan for further evaluation.

It is at this stage that you will have to prepare for the fall. Chances are that your proposal will be rejected. Even if your business plan is a well-conceived and sound concept, and your business is led by a committed and competent management team, in reality, a venture capitalist will not invest in your business unless the expected financial return is in line with the risk of the proposed investment and the investment capital available.

The acceptance of a business plan is a very selective process for an investor. On average, you can assume that less than 5% of all business plans get funded. The best business presentation therefore does not guarantee you an investment. To engage an investor takes for most of us a lot of commitment, hard work, and persistency. There are venture capitalists out there that will fit your criteria, try them. Most are listed on the directories of their national or pan-European trade associations.

A good way of approaching venture capitalists is to select just a few funds initially. Your main considerations should be to assess:

- Geographical location of your business and the investor
- Development stage of your business
- Investment type required or preferred
- Your industry sector and specific know-how
- Amount you intend to raise at this stage

You should focus on those venture capitalists whose investment preferences match these features. But don't be shy to revisit someone a year later, their investment preference might have changed or your business might benefit from recent market trends.

Before you approach venture capitalists, make sure that your business uses its existing resources adequately, that you have good cash flow forecasting systems, that you give customers incentives to encourage quick payment, that you have ample credit control procedures, that you carefully plan payments to suppliers, that you maximize sales revenues (if you have any), that you control overheads and consider sub-contracting to reduce capital requirements (if this is appropriate for your business) as well as that you have assessed inventory levels and improve your quality control. These are points any potential investor will be very interested in.

At some point you should be lucky and your proposal will fit a venture capitalist's criteria and his risk and return profile. This is when business seriously begins, the prospective investors will move on to perform due diligence. In many cases he will send you an offer letter, which will outline broadly how a potential investment should be structured. The offer letter is usually not legally binding on either party, but it demonstrates the investor's interest in your business plan and that an investment is considered. You are strongly advised to involve your legal and financial advisers as of this stage at the latest.

Due Diligence

The venture capitalist is set to carry out a more detailed analysis of your business. You should be prepared for this phase, based on market trends and economic circumstance. This will last between 2 and 6 months, though negotiations might take up to 12 months. The due diligence will typically involve:

- Evaluation of the management team
- Audit of the financial accounts
- Evaluation of the technology
- Analysis of the intellectual property rights
- Evaluating existing customers' recommendations

Do not be afraid of the due diligence, which might involve external experts such as accountants, intellectual property lawyers, industry specialists and human resource councils. On the contrary, you should use this time to make your own enquiries about the potential investor. How do their portfolio companies speak about them? What say former portfolio companies, they might be more open to speak? Are they a member of trade associations or do their peers have anything to say worthwhile? How many funds has the investor previously raised and invested? Who are the investors behind the venture capitalist? Quite a few things can be found in the relevant industry media, see for example the relevant publications by Thomson Financial, Dow Jones, Investor Access, Incisive Media and Tornado Insider to name a few, which you should research.

Any investment from a venture capitalist is a long-term project. They will be involved with you for better or worse over the next two to seven years, so make sure you can stand them. Since they are likely to be actively involved in some of the aspects of your business and might spend considerable time at your offices, you need to get along with them on a personal level, too. With the right timing you might want to have a go and invite them to play golf with you. Only agree to an investment if you are happy with what they offer you. Once they own a large share of your company you have to live with them.

The due diligence analysis represents a significant investment of time and money for both you and the venture capitalist. It can therefore happen that a potential investor will ask for a binding agreement, in place of the offer letter, about how the investment will be structured if the results of the due diligence are satisfactory for both parties. If this is the case, you should ensure that you don't carry the whole risk of this agreement, for example the cost of a cancellation of the negotiations – you can also introduce a clause that allows you to solicit further investment proposals that might offer you a better value.

Finding the right structure for the investment

Both, you and the venture capitalist will aim to achieve an investment, which is structured to satisfy each other's objectives. There are a variety of financial and legal instruments at your disposal to fit the needs of your particular investment. In general venture capital investors offers a mix of the following:

- Equity
- Quasi-equity
- Debt

The first option any venture capitalist will offer you is an equity investment. It is the riskiest form of funding since its value depends on your company's success. If you fail to build your business, the investor loses his capital. However, he profits from the success of your company as equity shareholders, including you, receive the value of all assets minus the companies liabilities in the case of a sale. Venture capitalist prefer not only the possible high returns, equity shares also bring voting rights into his possession, which means he has control over you and your management. You should know the difference between ordinary shares and preferred ordinary shares. Ordinary shares have voting rights and are receiving all income and capital after your creditors have been satisfied. Ordinary shares are usually given to yourself, the management, family and other non-professional investors. Venture capitalists on the other hand like better-preferred ordinary shares, which rank ahead of ordinary shares when it comes to both income and capital distribution. Make sure you understand the differences in shares offered when it comes to agreeing on the deal structure. Always consult your financial adviser, especially if you are in doubt.

Apart from equity, you are likely to face some form of debt investment. Special forms of debt are the so-called quasi-equity instruments. They usually come as convertible loans (which generally have to be repaid if things go bad or which are converted into equity at a previously agreed price at the exit) or as convertible preferred shares (shares with preference rights, i.e. in a liquidation or a dividend distribution, compared to ordinary or common shares). Straightforward debt, on the other hand, is not offered by all venture capital funds. They might, however, be able to provide debt financing through third parties. It has the lowest risk, especially if it is secured against your company's assets – unless that is your family home. Debt is repaid at face value plus interest, but debt holders do not share any of the profits your company sets out to achieve. They also do not have voting rights or control over your management of the company. Its advantage is simple; debt is to be repaid before equity shares are repaid. Therefore, if your company is not going too well, and your sales price only covers you business's liabilities, equity owners will not receive capital.

Be vigilant, the result of any new round of financing is that shares issued to new investors can dilute the percentage of shares owned by you, if you are not able to participate with your own capital in such investment. If you are likely to have more than one investment round, take this into account when agreeing on the investment structure the first time around, you might perhaps need to keep some capital aside for the second and third round of investment. The precise percentage of shares in your company issued to new investors depends on the agreed value of the company. This is obviously subject to change. In order to capture your business's value, venture capitalists will use the terms pre-money and post-money valuations. The former refers to the value of the company before the new investment, while latter refers to its value after the investment. Quite simply, the post-money value is the same than the pre-money value plus the amount of the new investment.

Agreeing on the value of the business

Finding the appropriate valuation for a company is not an easy exercise and not based on (just) negotiation. There are techniques and models that the venture capitalist will use to generate a valuation of your business, based on fairly objective procedures. If you have no or limited experience with this, ask

your financial advisor. Widely accepted terms of the underlying processes are published free of charge in the International Private Equity and Venture Capital Valuation Guidelines, which are endorsed by more than 30 industry associations worldwide. They are written with the investor in mind though and leave a lot of room for interpretation.

Experienced venture capitalists – and be careful, not all are experienced – will generally use a couple of models that they deem appropriate for your business. They will generate a range of values based on different approaches. Those techniques may range from a plain comparison with similar businesses to a sophisticated financial analysis customized to the status and nature of your firm. Valuations might occur frequently, they certainly will happen at the time of every investment and at the time the venture capitalist sells his equity share.

With young companies it is quite normal that cash flows are not yet available at the time of investment, and a distinct risk of failure exists. Venture capitalist frequently use a valuation method based on the discounted cash flow. In this approach, the free cash flow of your business is assumed to be the same than the net increase in cash generated by its operations, minus any investment that might happen during the period. This gives some indication of the financial value created by your company for its shareholders, after the repayment of long-term debts.

However, the selection of appropriate ratios for a comparison of company values is open to subjective interpretation, and you should be cautious about taking any valuation at face value. For example, the price/earning ratio is used frequently for a company valuation. It is a multiple of profits after tax specified for your business in order to establish its capital value. You can find public price/earnings ratios for quoted companies on the back pages of the Financial Times. These are calculated by dividing the current share price of traded companies by historic post-tax earnings per share. But keep in mind that start-up companies will not be valued the same as traded companies.

To produce a reasonable valuation of your business is a key aspect of a successful investment. Unless you are extremely tight for cash, you should not be prepared to sell a stake in your business for an amount below a realistic valuation; this would in all likelihood not provide enough capital for the growth of your business and subsequently following investments would dilute your share in the business. On the other hand, if the valuation is set too high, it will be difficult to generate a satisfactory return for the venture capitalist even though an experienced investor can and should add value to your business during his involvement. Generally, venture capitalists take an active role in the strategic leadership of your business. Those investing in early stage companies regularly provide a lot of strategic assistance to help your business to grow in the right direction, something they like to call the hands-on approach.

The investor's involvement will usually also include a seat on the board of directors. Details are defined in the shareholder's agreement, which typically will provide venture capitalists with both seats on the board and veto rights on important decisions. If you have done your due diligence on the venture capitalist, you will see this as a benefit, rather than as an additional constraint. Therefore, ensure that the experience a particular investor can bring to your business is the know-how it needs.

Once you and the venture capitalist agree the terms, your lawyers will draw up the legally binding completion documents. As mentioned earlier, you should ensure that you take legal and financial advice and have a firm grasp of all the legalities and financial details within the documents. The cost of professional advice will usually be assumed by your business, while the investor will usually increase the financing to allow for these costs. This is money well spent, since even the best lawyer might not be able to secure your best interest at all times, you can be assured that without legal advice you will secure none of your interests.

Working with an Investor

An investor normally will not interfere in the operational functions of your business, if indeed business strategy is executed properly. Only under special circumstances should you expect him to take on some work of your management. But, while operational functions are left to your management, a good and experienced venture capitalist should have an extensive network of national and international contacts

that is useful to your business. In general, the following are the main aspects a venture capitalist will bring to your business:

- Planning potential future investments in your firm
- Helping you to recruit senior management
- Implementing reporting & information systems (finance, operations, sales etc.)
- Supporting you on strategic and, in crisis situations, on operational level
- Selling (their equity stake in) your firm

Nearly everything the investor will be doing for your business is focused on planning the exit of his investment. This is an integral part of the initial decision to invest and you should be absolutely clear about the potential consequences for your business. If you do not want to sell your company, it is unlikely that an investor will consider investing in your business.

Towards the exit

Even though the exit of the investment, i.e. when the venture capitalist sells his equity in your business, concludes the relationship between you and him, it is the starting point of all negotiations. The venture capitalist will not invest unless he sees a clear exit opportunity. For example, your business might be attractive to a large corporation, saving them R&D expenditure or provide new market access. However, a change in market conditions may force the investor to consider an exit via different means, but in the end, all his strategies are driven by the exit. This does not necessarily mean that the investor lacks commitment or is just a greedy money grabber – in fact, if he is, you should have found out during your due diligence. But the venture capitalist has a limited time horizon and potentially quite a different take on the future of your business than you might have – for him the investment is a way to increase his capital through a sale at a higher valuation than the investment. If you are not comfortable with this fact, you should consider other forms of financing for the growth of your business. A good venture capitalist would tell you so right from the beginning.

Managing the exit is where the venture capitalist's experience and contacts really can make a difference. However, early stage investments might take up to seven years before they are ready for an exit that suits the return expectations of a venture capitalist and there are many things that can go wrong in this period. There are quite a few ways for an investor to sell his equity stake in your company, but the most common forms are:

- Flotation on a public stock market (IPO)
- Selling the investment to another company (trade sale or merger & acquisition)
- Secondary sale/repayment of preference shares/loans
- Write off (simply the least preferred option)

A successful IPO (initial public offering) will be able to generate high profits. They are, according to academic research, often overvalued and thus generate the most capital. An IPO generally enables entrepreneurs, employees holding stock options, and venture capitalists to make significant returns. Appetite of stock market investors varies though, and it is not always a good time to list a company with a specific sector focus. At the same time the venture capitalist is under pressure to return his funds with a premium to his own investors, subsequently he might act opportunistically and try list your company when the market is right, but not the company. Though this does not happen every day, it has ruined a number of promising start-ups who after high valuations on the stock market saw their share price plummet and experienced long-term underperformance. In addition, this can also limit your personal return, as you and the venture capitalist usually will be subject to a lock-up period of several months after flotation for some of the shares in the company.

These issues are complex, if you feel that your business might be subject to this, you should study the interdependencies between private and public equity markets, especially the influence of capital overhang in the private markets on a venture capitalists fundraising, investment and exit cycles. There are a number of academic works published on this, but a good financial advisor should also be able to help you.

However, a quotation on a stock market has several advantages for your business, including:

- Publicity and a heightened profile
- Access to the public market for future capital increases
- Own publicly quoted stock as a currency for acquisitions
- Stock options can be valuable incentives for employees

Not every company is suitable to be quoted on a stock market. To do so successfully your business needs to have enough turnover and offer a unique future growth story to convince potential public investors. Unfortunately, 'future growth stories' are not always related to the actual potential of a company, and you might be advised to consult an experienced PR firm that has helped to list other companies in order to leverage your position. You can list your business on regional, national or sector specialized stock markets, though your business might not fit all of them. Make sure that the one you choose offers your firm the best growth potential at the time of the exit – be alert, the venture capitalist might push for the stock market offering the highest valuation in order to maximize his short term returns.

However, for some business an IPO is not an option. If this is the case with your company, the venture capitalist will aim for a trade sale. Here your business is sold to another company, either one within the same industry sector seeking to expand its activities or know-how or one from a different industry sector hoping to diversify its activities. Smaller transactions are usually not subject to much regulation and are executed in private, but if your business has undergone significant growth and gained a dominating market position in a particular sector, you might have to deal with the competition authorities. A trade sale is not a bad option, though the financial return can be lower compared to an IPO.

If neither of the two options above is possible, for whatever reason, the venture capitalist might try to sell his equity stake in your business to another financial investor. While he will be able to sell his share in your business, you might get stuck with another venture capitalist. Luckily, such secondary transactions are quite rare for start-up businesses - but not unheard of. The motives for a secondary sale might be that the risk/return profile of your business no longer matches the investor's requirements or that he has to dispose investments towards the end of his fund's lifespan. You will want to make sure that at the time of investment, the fund still has enough time left to invest, for a start-up you might need five to seven years to reach a mature status in which a successful exit is possible.
A secondary transaction can come in two forms; either the venture capitalist sells specifically the equity stake in your business to another investor or he sells his whole fund portfolio. The latter is more frequent during market downturns, though, as they return less capital to the investor than the previously mentioned scenarios. If the venture capitalist is selling his whole portfolio to another investor, it is likely that he was just not very good at what he was doing. You should have found this out during your due diligence.
If none of the above should be possible or if you don't want to give up the control of your business to a third party, an option is to repay the investor yourself. This would bring the control of the business back into your hands. Of course, if your business has grown well, you are unlikely to be able to pay the venture capital enough money and he will not be in favor of this option. Last but not least, the most undesirable exit for you as well as for the venture capitalist is to write the investment off. In general, this is a consequence of your business going into bankruptcy. Both you and the investor would lose your capital.

Crowdfunding

In the past years, we have seen the rise of new alternatives to funding startups. One of the most popular is crowdfunding. Crowdfunding is by definition, "the practice of funding a project or venture by raising many small amounts of money from a large number of people, typically via the Internet." Whereas before, the typical approach was to find funding by presenting one's business to a selected group of potential investors. In present days, for some start-ups it makes more sense to present their idea to the whole world. With the reach of social media and the internet, the abilities of entrepreneurs to find funding is considerably leveraged. Crowdfunding technology makes it easier for investors to choose projects and invest directly as it connects the source directly with the founders in real time - offering unprecedented

access and real ownership. This approach simplifies the process for participating investors and makes significant use of technology to increase the efficiency of the marketplace.

There are several platforms where start-ups can ask for money and where the average person can become an investor. The most used are Indiegogo, Kickstarter and Rockethub just to name a few. The principle is simple: Subscribe, create a profile (a video is highly encouraged) and try to reach as many people as possible with a simple yet compelling message as to 'why' you are doing what you are doing. As you are aiming to attract a large likeminded group of individuals, most of which don't have the same technical background as you, the 'how' is not so important at this point. Before or right after you launch the campaign, you may increase visibility by making use of other platforms, such as those for social media like Facebook, LinkedIn and Twitter to redirect as many 'investors' as possible towards your profile. Each project has a targeted amount and a limited quantity of days. According to Forbes, the most successful projects receive about 25-40% of their revenue from their first, second and third degree of connections (which includes friends, family, colleagues, etc). Once the company shows traction on the platform, unrelated consumers start paying attention and begin investing.

There are more than a few success stories that illustrate the power of crowdfunding. More interestingly, there are companies that have succeeded in making use of crowdfunding to raise other types of investment and thus having the right mix of funding sources. To illustrate the latter, Airtame a Danish company that recently succeeded in raising $1.26 million on Indiegogo, is now aiming to get funding from more typical sources such as Venture Capital firms. Their crowdfunding campaign was so successful that it garnered global attention from press and the public, allowing them to raise awareness and money at the same time.[6] In this sense, an added benefit to crowdfunding is that it can also serve as a validation of the general interest for your product as you can test directly the public's reaction and potentially even increase your customer base with the added visibility.

Conclusion

You might now feel better prepared to approach business angels, venture capital investors or investors on crowdfunding platforms. In all cases we advise you to fine tune your pitch and value proposition and to eventually consult further manuals that also offer advice on how to successfully approach investors. If you have contacts and friends that have been through this process before, consult them too. It is important that you consider both the good and the bad experiences, because every business is unique in its idea and its management. Therefore, there can be no one-fits-all solution and no single advice will capture your situation.

[6] http://tech.eu/features/330/airtame-wireless-hdmi-funding/

8. How do you apply for funds from FINODEX?

Summary
This last section of the handbook is a mock application for Phase 1. The applicants are encouraged to read the preceding sections first so that they better understand.

The application form consists of:

Administrative questions

- **What kind of applicant are you?** (select between: (1) A company registered with the authorities in your country. (2) An individual applicant, not registered. (3) A group of individuals, not registered.
- **How can we contact you?** (country, address, email-address, phone number)

Technical and business-oriented questions

- **Which domain does your idea pertain to?** (Health. Transport. Environment. Finance. Other)
- **What is your idea about?** What can the product or solution, you want to develop, do? What problem does your idea solve for whom? Or: What new possibility does it offer to whom?
- **Why do you think your idea is new or better?** Mention similar products and solutions and explain how yours will be different and better.
- **What is your product's or solution's target group?** Explain who in particular will buy and use your product/solution. If companies, which kind of companies? If people, what age, profession, life-style etc.?
- **What FI-Ware are you using for creating your product/solution?**
- **What kind of Open Data are you using?**
- **Make a clear technical description of your product/solution with a drawing**

Below is a copy of the application form for your information. But you must apply on-line on www.finodex-project.eu.

Copy of application form

Summary
[15 lines maximum]
Please write here a brief summary of the project.
The information contained in this summary will be made public on FINODEX project website.

Domain(s)
Please select the domains address by the project (delete the ones not applying):
1 - Transport
2 - Health
3 - Environment
4 - Financial
5 - Other: _____ (name it)

Copy of application form (to be found on-line on www.finodex-project.eu).

1. Technical Excellence

[4 pages maximum]

1.1. Background and concept

Please define where the project idea came from

1.2. Objectives

Please describe the general objective and specific ones pursued by the project
A general objective should answer the question "what is the project for?"
A specific objective should answer the question "what are we doing in the project?"

1.3. Technical description

Describe the activities that will take place in your project from the technical point of view.
This section should answer the question "how are we doing things in the project?"

1.3.1 FIWARE Requirement

Add the relevant information in the following table:

FIWARE technology	Use in the project
Name of the enabler	*We are using this enabler for this or that.*

1.3.2 Open data requirement

Dataset name	Dataset origin	Dataset license	Comments (if any)
Data on transport	*Whatever open data portal, website, link…*	*ODC-ODbL*	*Data on xxx format.*

2. Impact

[4 pages maximum]

2.1. Value proposition

Define what will be the product/service that will be generated thanks to the project. This section should answer the question "What am I going to sell?"

2.2. Market scope

Describe the market general status for your product/service. You should answer the question "what are the alternative/similar products in the market? Why mine is better?"

2.3. Customers

You should describe who are your users and/or customers. Who is willing to pay for your product or service and why?
Moreover, a clear definition on how you intend to reach those customers and users within the project must be defined.
Quantify how many users/customers are expected to be trying your product/services during the development and tuning phases.

2.4. Social impact

This section should answer why your product/service is good in a wider extent: good for society, for environment, for the creation of new business activities besides the project itself…

3. Experience

[2 pages maximum]

3.1. SME description

[only if the applicant is a SME]
Please provide a short description of the SME defining their activity, size and relevant information for the project.

3.2. Personnel description

List the names and relevant experience of the people that will be involved in the project. The first person must be the project coordinator. Avoid long descriptions (ie: knowing the languages

you speak might be not relevant as long as you understand/speak English and the project is not related to a language tool).
The personnel involved in this section will be the ones being part of the project.

3.3. Earlier projects

Add links and descriptions about past projects which might be interesting to prove your experience to accomplish this one.