



STREAMS

Smart Technologies for eneRgy Efficient Active cooling in Advanced Microelectronic Systems



H2020-ICT-2015-688564

STREAMS

Smart Technologies for eneRgy Efficient Active cooling in advanced Microelectronic Systems

Start date of the project: 01/01/2016
Duration: 42 months

D7.8

Report on the business model concept definition as part of the Innovation management approach

WP	7	Exploitation & Dissemination
Task	7.1	Innovation management and exploitation roadmap

Dissemination Level¹	PU	Due Delivery Date	M27
Nature²	R	Actual Delivery Date	20/07/2018

Lead beneficiary	ST
Contributing beneficiaries	All partners
Author	Perceval COUDRAIN (ST)

¹ Dissemination level: **PU** = Public, **PP** = Restricted to other programme participants (including the Commission services), **RE** = Restricted to a group specified by the consortium (including the JU), **CO** = Confidential, only for members of the consortium (including the Commission services).

² Nature of the deliverable: **R** = Report, **D** = Demonstrator, **O** = Other.

Document version	Date	Author	Comments³
1	20/07/2018	Perceval Coudrain (ST)	Final version for evaluation

³ Creation, modification, final version for evaluation, revised version following evaluation, final.

Deliverable abstract

The objective of WP7 is to continuously monitor and provide means for the STREAMS partners to share their knowledge within the consortium and to integrate the research activities as well as to exploit the research results, and/or communicate and disseminate the results to the scientific community and to the wider audience. The goal of this deliverable is precisely to define the work needed to prepare and encourage the use and wide acceptance of project results after the end of the project. This deliverable will define the business model concept, explain the importance of choosing an adapted business model to capture value from innovation, and describe the main questions to be answered to conceptualize a business model for STREAMS main achievements.

Table of content

- 1 – CONTEXT 5**
- 2 – BUSINESS MODEL CONCEPT DEFINITION 5**
- 3 – THINKING BUSINESS MODEL CONCEPTS FOR STREAMS INNOVATIONS 7**
 - CUSTOMER SEGMENTS..... 7
 - VALUE PROPOSITION 7
 - INCOME FLOWS 7
 - KEY RESOURCES 7
 - KEY ACTIVITIES 7
 - CHANNELS..... 7
 - CUSTOMER RELATIONS 7
 - KEY PARTNERS 8
 - COST STRUCTURES..... 8
- 4 – REFERENCES 8**

1 – Context

The objective of the innovation management and exploitation roadmap task is to identify, qualify and protect the results generated by the consortium. It includes the coordination of project intellectual property rights (IPR) issues with partners and the continuous benchmark, identification and assessment of the results that could be the subject matter of protection, use or dissemination based on publications and progress reports issued by WP leaders. In addition, the Exploitation/Innovation Manager is in charge of implementing the innovation management approach.

Implementing an innovation management approach within STREAM is crucial and appears as a Key Success Factor to achieve defined results and maximize the chance for future products developed to reach the market. A three dimensional approach is followed, working successively on collaborative strategy, exploitation strategy and knowledge management. This innovation management process aims at identifying key strategic and technological partners to address, defining precisely targeted markets and benchmarking the technological project ecosystem. Expected results will speed up the development and strengthen the link with the final market addressed.



Figure 1: STREAMS project Innovation management

Innovation management implementation is conducted at the level of the General Assembly. Besides previous objectives, this work will provide several benefits to the project and partners, as for example:

- Brings fresh thinking and new value to the consortium,
- Helps identify and mitigate risks,
- Taps into the collective creativity and intelligence of the partners,
- Motivates partner involvement in the project success and fosters teamwork and collaboration,
- Proactively captures value from better understanding of future market needs and possibilities,
- Captures value from the collaboration with partners for innovation

The last two elements cited above are related to value creation from STREAMS innovations and partnership. They might be included in a more global approach that we will introduce as business model concept. In this deliverable, we will first define the concept of business models in general, then justify its interest for a project like STREAMS, and finally explore the practical questions to be answered toward a real business model for STREAMS innovations deployment.

2 – Business model concept definition

The term *Business Model* first came into widespread use with the advent of the personal computer and the spreadsheet ^[2] and became very popular since the development of the internet market in early 2000's. The term is now very often used, but still remains seldom defined explicitly ^[1]. We here describe the concept, based on a review of articles dedicated to the business model definition and analysis. Large passages from these articles will be quoted in this section.

A business model is not synonym of strategy, it is more the managerial equivalent of a scientific method with a starting hypothesis tested in action and revised when necessary [2]. It describes how an organization creates, delivers and captures value. It must considers two types of activities: the ones associated with making something: designing it, purchasing raw materials, manufacturing, and so on, and the activities associated with selling something: finding and reaching customers, transacting a sale, distributing the product, or delivering the service. Figure 2 gives an overview of business model concepts. Several authors purely define a business model as a system for making money (“Economic concepts” column), some other considers that it is mandatory to capture also the created value (“Economic – valued concepts” column).

Economic concepts			Economic – valued concepts	
Mullins - Komisar	A. Afuah	D. Watson	W. M. Johnson C. M. Christensen H. Kagermann	A. Osterwalder Y. Pigneur
1. Revenue model	1. Position	1. Competitors	1. Value for customer	1. Customer segments
2. Gross margin model		2. Customers		2. Value proposition
3. Operation model	2. Resources	3. Economy of company	2. Profit formula	3. Channels
		4. Management		4. Customer relationships
4. Model of working capital	3. Industrial factors	5. Products	3. Key resources	5. Revenue streams
5. Investment model	4. Costs			6. Suppliers
				8. Key partners
				9. Cost structure

Figure 2: Overview of Business Models concepts [3]

For Slavik and Richard, the business model is a system of resources and activities, which create a value that is useful to the customer and the sale of this value makes money for the company [3]. It generally answers questions such as “Who is the customer? What does the customer value? How do we make money in the business? What is the underlying economic logic that explains how we can deliver value to customers at an appropriate cost?” Chesbrough and Rosenbloom give an operational definition of a business model by means of elementary actions [4]:

- **Articulating a value proposition latent in the technology.** This requires a preliminary definition of what the product offering will be and in what form a customer may use it.
- **Identify a market segment.** The users to whom the technology is useful and for what purpose, and specify the revenue generation mechanisms for the firm. A customer can value a technology according to its ability to reduce the cost of a solution to an existing problem, or its ability to create new possibilities and solutions. A market focus is needed to begin the process in order to know what technological attributes to target in development, how to define and configure the offering
- **Define the structure of the value chain** within the firm required to create & distribute the offering, and determine the complementary assets needed to support the firm’s position in this chain.
- **Define the “architecture of the revenues”** or how a customer will pay, how much to charge and how the value created will be apportioned between customers, the firm itself and its suppliers. Estimate the cost structure and profit potential of producing the offering. Describe the position of the firm within the value network linking suppliers and customers, including identification of potential complementors and competitors.

3 – Thinking Business Model concepts for STREAMS innovations

The article by Chesbrough and Rosenbloom is an interesting basis for reflection on STREAMS, as it describes the role of business models in capturing the value of **path-breaking** innovations in an international business context (Xerox). Because discovery research often produces technologies that do not have a clear path to commercialization, discovering a viable business model is critical for creating value from technology. For the six cases examined in their article, the technologies were the result of inventions that did not have clear path to market within the company funding the research. They explain how this situation has been overcome by the implementation of alternative business models. A proposition now widely recognized is that technologies that make little or no business sense in a traditional business model may yield great value when brought to market with a different model ^[4]. It seems notable that among the examples of Xerox spin-off companies, while some business models were implicit from the outset in each of them, a different model was in place when the successful companies had demonstrated their viability.

We are not presenting a concrete Business Model for STREAMS innovations, but we now discuss the method we should consider to build it in the next months with the fulfillment of main technological parts.

We have chosen the comprehensive nine-part “business model canvas” established by Alexander Osterwalder, which constitutes a visual matrix of 9 blocks that describe the four main dimensions of an organization: customers, offer, infrastructure & financial sustainability. The canvas blocks are detailed here-below, based on a practical sheet proposed to start-up founders ^[5]. For each of the nine blocks a brief description and the major questions to be answered are given.

Customer segments

Groups of individuals or organizations that the company targets: mass, niche, segmented, diversified... For whom do we create value? Do we know the entire customer chain from buyer to end user? Who are important customers? Who are our non-customers? What is the limit to reach non-customers?

Value Proposition

Product/service combinations creating value for each segment: novelty, performance, customization... What value do we really bring to the customer? What do we not bring to our customers? What needs/problems are we addressing? What combination of products and services do we offer?

Income flows

The revenues generated: sales, subscription, rental/loan, licensing, brokerage fees and advertising For what value are our customers willing to pay? How would they pay? How would they prefer to pay? How does each income stream contribute to overall income?

Key resources

Most important assets required to run business model: physical, intellectual, human, financial. What key resources do our value propositions require?

Key Activities

Most important things to do to make its business model work: production, problem solving, network What key activities do our value propositions require?

Channels

Channels to discover products & services, evaluate, distribute & purchase the offer, deliver proposition... Which channels do our customers prefer? Which channels give the best results? How do we integrate them into our clients' activities?

Customer Relations

Relationships established on strategic objectives: acquire, retain, and achieve additional sales What kind of relationships do our clients want? What kind of relationships have we established? What are the key moments in customer relations for each customer segment?

Key Partners

Key partners/suppliers through which the business model works: alliances, cooperation, joint ventures
Who are indispensable partners and suppliers? What key activities do our partners/suppliers conduct?
What resources do we provide to our key partners/suppliers?

Cost structures

Costs inherent in the economic model: cost logic, value logic, fixed & variable costs, economies of scale
What are the most important costs inherent in our business model? Which key resources are the most expensive? Which key activities are the most expensive?

This canvas should be applied in the three main fields explored in the project: self-adaptive cooling technology, temperature monitoring and energy harvesting, every time value can be created from STREAMS achievements. It can deal with the technology itself, starting from the demonstrators and proofs of concepts, but it can also be linked to simulation or design methods associated to the developments. A full-scale exercise will be done by the consortium based on the Osterwalder canvas.

4 – References

- [1] Andrea Ovans, *What is a Business Model?*, Harvard Business Review, January 23, 2015
- [2] Joan Magretta, *Why Business Models Matter*, Harvard Business Review, R0205F, May 2002
- [3] Slavik Stefan and Bednar Richard, *Analysis of Business Models*, Journal of Competitiveness, Vol. 6, Issue 4, pp. 19-40, December 2014
- [4] Henry Chesbrough and Richard S. Rosenbloom, *The role of the business model in capturing value from innovation: evidence from Xerox Corporation's technology spin-off companies*, Industrial and Corporate Change, Volume 11, Issue 3, 1 June 2002, Pages 529–555
- [5] A. Thebaud and J.-F. Dubos, *Business Model Canvas*, practical sheet, 2012