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D3.5 AI REGIO DIHs
Business and Governance

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List of Acronyms and Abbreviations

Acronyms	Description
AI	Artificial Intelligence
ARPU	Average Revenue Per User
B2B	Business to Business
B2C	Business to Consumer
BM	Business Model
BMC	Business Model Canvas
CEO	Chief Executive Officer
CJ	Customer Journey
BEST	Business Ecosystem Skills Technology
DIH	Digital Innovation Hub
DR BEST	Data Remote Business Ecosystem Skills Technology
EC	European Commission
ERP	Enterprise Resource Planning
EU	European Union

IT	Information Technology
MVP	Minimum Valuable Product
ROI	Return Of Investment
SME	Small Medium Enterprise
VP	Value Proposition
VPC	Value Proposition Canvas
WP	Work Package

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Executive Summary

D3.5 – "AI REGIO DIHs Business and Governance V1" provides an initial description of the main components required to describe a Digital innovation Hub business model, taking into account its specificities that differentiate it from traditional organization model, such as being part of a multi-stakeholder network and driving the business under a non-profit perspective.

Actually, D3.5 is the first document associated to task WP3.4 - "AI DIH Business Model and Governance System", whose main goals are:

- to study and define possible Business Models (BMs) for AI DIH services (this is the main focus of D3.5);
- to study cross-regional sustainability, leveraging on results achieved in WP3.3 – "AI DIH Collaboration Scenarios" (just sketched in D3.5);
- to analyse the Governance dimension (to be addressed in D3.6).

The final goal is to elaborate an innovative and effective method for describing the complex business of a DIH, that will be included in METHODIH (the AI REGIO METHOdology for DIHs) together to the Service Portfolio and the Customer Journey analysis, previously described in WP3.1 and WP3.2 respectively.

The current document is a presentation of the activities that WP3.4, together with the AI REGIO DIH network, is running to achieve the Task's objectives. It includes both the analysis of the State of the Art in the field of Business Models, the collection of requirements and the design of a preliminary model to be validated in next months.

The topic of business model and governance for Digital Innovation Hubs is important and quite innovative, even because DIHs are a quite new type of organisation themselves. It means that, although we started our research with a desk analysis since the available literature regarding generic BM is vast, Business Model for DIHs is still an unexplored topic and very few papers dealing with are available. In addition, consider that a Digital Innovation Hub is an organization different from the standard company for which lot of BMs have been already described: for instance, it is non-profit but it provides some charged services, it has relationship with other DIHs both as customers and stakeholders, the major income in its revenue stream is represented by the third parties funding.

Hence, the **State of the Art analysis** (Section 2) has been followed by a direct confrontation with the Digital Innovation Hubs, in order to understand how they manage their current business and which tools they typically use (if any). Section 4 summarizes the main results, according to the different types of analysis that have been run in collaboration with the DIHs. In this regard, in WP3.4 we started to investigate the value proposition that the AI REGIO network can provide to external DIHs, both considering WP3.3's activities (dealing with cross-DIH collaboration activities) and, mainly, from the perspective of WP's7 joint exploitation plan.

However, the **core of the document is Section 3,** where the AI REGIO business model for Digital Innovation Hubs is presented, as the result of the combination of existing methods and DIHs' requirements, with the objective of providing an efficient tool for describing a non-profit, multi-stakeholder business also combining other aspects of the METHODIH methodology. The final canvas the came out as output of the discussion and interaction with the DIHs, is not completely new with respect to already existing ones, but it gathers together several relevant components useful to describe a DIH business.

1 Introduction

1.1 Scope of the deliverable

D3.5 – "AI REGIO DIHs Business and Governance V1" 's main purpose is to provide an initial description of a business model for Digital Innovation Hubs, by analysing the State of the Art of existing models, and to present the preliminary analysis run with the AI REGIO ecosystem of 13 DIHs.

It is the first deliverable associated to WP3.4 - "AI DIH Business Model and Governance System", whose objective is exactly to study possible business models for AI DIHs services. The goal of the current deliverable is to present the main activities and results achieved in the Task, which started at Month 3 and is expected to last till the end of the project (M36).

D3.5 perfectly reflects the exploratory stage of WP3.4: it presents the detailed analysis that has been conducted in the field of business models and its main components, trying to push the investigation from a general overview of models applicable to any domain toward a more "DIH-oriented" analysis. The final goal is to identify the components relevant for describing a Digital Innovation Hub's business: a first draft is presented as the result of a deep validation by the DIHs itself.

1.2 Impact and target audience

D3.5 is conceived as a public document with a great potential if accompanied with further validation activities that will be run in next months and presented in D3.6 - "AI REGIO DIHs Business and Governance V3" (Month 36), since the current document is only a partial analysis.

The combination of the two deliverables is expected to provide a complete description of a Digital Innovation Hub business model, which is quite a new topic, missing in the literature. In the future, the AI REGIO approach could represent a starting point for further exploitation and enhancement by other projects and/or organizations dealing with Digital Innovation Hubs. At the same time, the model could be adopted by the DIHs themselves.

D3.5 is addressed to a vast audience since it is easily understandable by anyone familiar with the concept of DIH and that does not require any specific background and/or expertise. Of course, the main target audience consists of Digital Innovation Hubs (both inside the AI REGIO ecosystem and external ones) for whom the model has been designed, but also of other projects and organizations who can leverage on D3.5's results to be disseminated in their communities.

1.3 Dependencies in AI REGIO

D3.5 – "AI REGIO DIHs Business and Governance V1" is strongly related with D3.6 – "AI REGIO DIHs Business and Governance V2", that is its sequel, expected at Month 36. If the former is a preliminary analysis of the State of the Art of existing business models, with the objective of identifying relevant aspects for DIHs, the latter will start from D3.5 to describe the main results achieved in its validation (and compilation) inside the AI REGIO community of Digital Innovation Hubs. Hence, the relationship is quite evident.

On the other direction, WP3.4's activities have been strongly influenced by WP3.1 – "AI DIH Service Catalogue and Observatory", WP3.2 – "AI DIH Customer Journeys Specification" and WP3.3 – "AI DIH Collaboration Scenarios".

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The METHODIH methodology defined in WP3.1 and WP3.2 has been adopted respectively in the definition of Value Proposition (DR BEST Service Portfolio) and of Customer Segments (Customer Journey analysis), both part of the final business model canvas. Furthermore, the model defined in D3.5 (and in WP3.4 in general) will be included in the METHODIH presentation.

Regarding WP3.3, the current document benefitted from its main achievements in the field of cross-DIH collaboration since the results obtained in WP3.3 have been used for defining stakeholders, customers and revenue streams, and they will be even more exploited in the second part of the deliverable (D3.6).

Finally, WP7 – "Beyond IMPACT: AI DIH exploitable assets from technological to regulatory sandboxes" that works on outlining an AI REGIO joint exploitation plan will benefit from the Governance model, whose definition will start in WP3.4 leveraging on the current document.

1.4   Document Structure

The document is organized in three main chapters (Section 2 – Section 4), beside the introductive chapter (the current **Section 1**, where the purpose of document, the target audience and the structure are described) and the conclusive one (**Section 6**, summarizing main achievements and addressing future activities).

Section 2 – Business Model overview provides an overview of the State-Of-the Art of the Business modelling. The objective is to identify the main components to be taken into account in the description of a business and to explore some popular tools supporting the activities. The main topics analysed are customers and stakeholders (with a specific focus on the governance), the Value Proposition and the Revenue Model; the main canvas presented are the St. Gallen Business Model Navigator, the Value Proposition Canvas, and the Business Model Canvas (Osterwalder, Innovation, Lean and Mission). This section provides a general overview of tools and concepts applicable to any business, even if references and mentions to DIHs are always present.

Section 3 – Toward a multi-stakeholder Business Model for DIHs presents the AI REGIO multi-stakeholder business model for Digital Innovation Hubs, starting from the key concepts identified in the analysis in Section 2 and from the METHODIH tools elaborated in WP3.1 and WP3.2. Three main aspects are taken into account: the Value Proposition and its relationship with METHODIH Service Portfolio, the possible Revenue Models that a DIH can implement, the final Business Model canvas to be proposed to Digital Innovation Hubs to describe their business.

Section 4 – The Business Model validation within AI REGIO ecosystem presents activities within WP3.4, with a specific focus on the final workshop run together with the 13 DIHs with the objective of validating what has been only "theoretically" analysed in previous chapters.

The Section is based on four main sub-sections. The first one is about the Value Proposition and the results collected with the compilation of several Value Proposition canvases (one for each Customer Segment) are presented and summarised, trying to identify commonalities and differences among the 13 DIHs. The second one is about the Revenue Model and aims at presenting the most popular revenue streams on which the DIHs business is based. The third one is about the Osterwalder Business Model Canvas validation and, similarly to the first sub-section, the objective is to present commonalities and differences among the 13 DIHs regarding the different aspects of their business models. The last one is about the exploration of further canvases, with the purpose of identifying additional relevant components to describe a DIH business.

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2 Business Model overview

A Business Model (BM) is a holistic framework to define, understand and design the entire business of an organization. It describes the logics and strategies according to which the **value proposition** of a company is created and shared for its **customers**, as well as the **stakeholders** that are involved in the process.

The business model strongly depends on the company's sector and on the type of product/service that generates revenue, but similar company may have completely different business models or conversely organizations acting in two different sectors may drive their business according to a similar strategy.

For instance, two companies that sell streaming movies and video contents can decide to make pay a fee for each movie watched by the client or to ask the user to subscribe and pay for a periodical fee (monthly, for example) and be allowed to see any content he/she wishes. Hence, "pay only what you consume" versus "subscribe and watch how many contents as you wish" are two different business models applied at the same product category. The same scenario can also be applied to restaurants, where you can pay what you eat or paying a fixed fee to eat whatever you wish.

Another example is the well-known "razor and blades model" that consists of selling at a very low price a base product (the razor) that can't work without an additional product sold at a high price (the blades). The same concept can be applied to a number of different sectors, for instance to printer and ink, since the latter is sold at a very high price (even too high) but without it, the former can't work because it is strictly necessary.

However, to define a complete business model, not only the revenue model (that is, the financial relationship with the client) should be taken into account, otherwise you risk to overlook a number of important components that may influence your business. Of course, the financial aspect is quite important (section 2.1.4 is dedicated to it), so much that sometime it conceptually replace the entire business model.

The purpose of T3.4 and D3.5 is to draft a full BM for Digital Innovation Hubs, considering not only the monetary aspect: the objective now is to explore the main components to be taken into account while defining a BM and to identify some relevant examples that could work as starting point.

There is no single methodology to describe the business and all its features, but several ones have been proposed in recent years.

In next paragraph, we describe the main components to be taken into account to evaluate the business (value proposition, revenue model and stakeholders) and, at the same time, we present three tools to ease the task and to visualise the features (the Business Model Triangle, the value proposition canvas and the Business Model canvas).

2.1 Main components for a Business Model

The first tool and methodology that we present to provide an overview of the main aspects to be taken into account is the St. Gallen Business Model Navigator that allows to describe in a triangular simple shape the main aspects of the business.

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The Business Model Triangle is based on four main pillars: the WHAT, the HOW and the WHY dimensions located on the three vertices, the WHO dimension positioned at the middle of the triangle, since it corresponds to the customer that is the centre of any business.
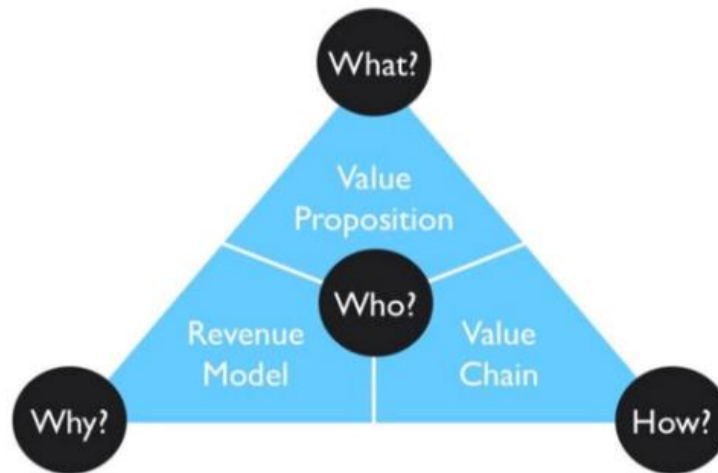

Figure 1 The St. Gallen Business Model Navigator

- The first dimension to be evaluated is **WHO**. It describes who are the customers to whom the company addresses, but also their characteristics, expectation, and issues.
- The second dimension to be evaluated is **WHAT.** It describes what is offered to the customers, the product/service provided by the company but also its intrinsic value.
- The third dimension to be evaluated is **HOW**. It describes how the company acts to provide the product/service to the customer, the set of activities that it performs in this regard, key resources and key partners who are involved in achieving it.
- The fourth dimension to be evaluated is **WHY.** It describes why the business model is financially viable, by considering both revenues and expenses.

The gap between the WHO and WHAT dimensions is covered by the **value proposition**, which represents the company's ability to provide a product/service (WHAT) able to intercept the customer needs (WHO). Hence, it very important to have clear in mind what are the client expectations and requirements and, on the other side, the added value that the product brings to be sure to match demand and offer. Of course there are few chances to have a successful business if even the best product ever is sold to the wrong customer segment.

The gap between the WHO and WHY dimension is covered by the **revenue model**, that describes the strategy used to get income (WHY) providing the product/service to the customer (WHO). It may be a direct sell or a subscription, an add-on model where main incomes derive from additional services or a system based on funding.

Also in this case, it is fundamental to match it with the targeted customer to be sure that it is affordable in terms of price but also that fits with the customer's ways of purchasing.

The gap between the WHO and HOW dimensions is covered by the **value chain**, that consists of the set of activities, relationship and resource that the company performs, establishes and needs (HOW) to deliver a valuable product/service the customer (WHO).

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2.1.1 The Stakeholders: partners and customers

This paragraph aims at describing all the stakeholders that have any kind of relationship with the company and that must be taken into account when the business is described since any change in their relation may impact the business itself.

Namely, the big set of the stakeholders can be split in two main groups:

- Private and public entities which represent for the company the final objective of the product/service provision. Usually, they are identified as the **customers or beneficiaries**.
- Private and public entities which collaborate with the company in the provision of the product/service, but they are not the final target. Usually, they are identified as **partners or third parties**.

Intuitively, we could describe the two groups as: those who pay for the product/service (customers) and those who don't (partners). However, this classification is not totally correct since, in case of private/public funding (very common talking about Digital Innovation Hubs), the payer doesn't coincide with the one who benefits from the product/service.

It is very important to keep separated these two categories since their role in the definition of the company's business is totally different. Referring to the St. Gallen Business Model Navigator, customers and beneficiaries are included in the WHO dimension, while partners and third parties are included in the HOW dimension.

Customers

Every business model serves a certain customer group and it is fundamental to have clear in mind who they are, their needs and expectations, to match the offering with them. It's key to have a good knowledge of your customers to build a successful business, otherwise the risk is to offer a high-quality product/service, which is addressed to wrong people not able to appreciate it or who don't require it.

Since usually a company serves a large number of customers, it is not possible to describe the needs of each of them. The best strategy to be adopted is client segmentation, that consists of grouping customers with similar behaviour and characteristics, creating a number of clusters that can be considered as a single entity. This preliminary activity definitely speeds up the analysis of customers' environment, experience, touchpoints, requirements, and expectations.

It is not mandatory to have more than one segment; just a single one is enough: the key point is to provide a product/service that fulfils its/their needs.

Segmentation is not an easy task at all, since it is not always evident which are the main features to define a cluster. The most common and intuitive information to be taken into account are the age, the gender, the salary and the education level. However, in same case it may be worth to take into account more complex parameters. For instance, special clusters may be represented by people who have a particular need which justifies the creation of a product/service to match; the group that needs a separate Distribution Channel to be reached; the groups that require relationships of different kinds.

There is a very clear difference in the level of profitability each group represents for the organization and each consumer group feels strongly enough to pay for a different version of the product or service, tailored to their preferences.

Pay attention that segmentation is not always required: a company that produces toilet paper is hundred percent sure that its product will be of interest independently from age, gender, salary and education, so there is no risk to propose the product to the wrong segment. However, to overcome

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its competitors, the effort must be spent in the analysis of channels and touchpoints with its customers.

Key Partners

Partners are the relationships that the company has with other business, governmental, or non-consumer entities that help its business model work. Typically, a company establishes a relationship with several different partners, with different roles: suppliers, manufacturers, business partners, funders (regional, national, European, private), office rental, etc. These partnerships that a company will undoubtedly create will be forces that help its business succeed in areas that would be inefficient to do itself.

On the other side, it is really important to have clear in mind who are all the partners since, besides being a support, they may represent a risk: a supplier who delivers its good with delay, a manufacturer who provides a damaged product, a funder who decides to stop funding can impact the business.

The company can establish different types of relationships with its partners. For instance,

- **Buyer-supplier relationships**: When one between the company and the partner plays the role of the buyer and the other of the supplier. Even if it is a commercial agreement, trust, quality and commitment between the two entities are required.
- **Strategic alliances between non-competitors**: In case both the company and the partner act in the same market domain, this means that they are not direct competitors but they collaborate together in ways that both of them will benefit.
- **Funding relationship:** When the company benefits from some (private or public) funding that are apparently donated for free. Actually, the funder has an economic return: if private, it foresees a future ROI, if public because it acts for the public interest.

A Digital Innovation Hub, probably more than other organizations, interacts in its daily activities with a huge number of stakeholders, besides the direct customers. For instance, Governments, Investors, Competence Centers, Incubators, other DIHs, Industry associations, but also SMEs, Start-ups, technology providers and research organizations that sometime play the role of customer and sometime of partner.

This is why, analysing the complex network of a Digital Innovation Hub, the most obvious next step is the definition of a proper Governance model, to manage both the internal and external structures.

2.1.1.1 Governance

The label "**Governance**" means the collection of mechanisms, processes and relations used by various parties to control and to operate a corporation. It refers both to internal organization, including management of people directly employed in the company, and to a set of agreements and structures required to interact with third parties and stakeholders.

Actually, the definition of an efficient Governance Model is fundamental in case the company is a multi-stakeholder organization, where multiple partners interact together. The multiple objective is to identify the distribution of rights and responsibilities among different participants, to define the rules and procedures for making decisions in corporate affairs, to avoid conflicts of interests, monitoring the actions, policies, practices, and decisions of corporations, their agents, and affected stakeholders.

The adoption of an effective Governance Model should guarantee some basic principles to the network, such as **equal treatment**, **stakeholders' interest**, **transparency**, **integrity** and **ethical behaviour**.

Governance structures and mechanisms can range from formalised legal entities to joint ventures and more informal networked organisations with no formal structure.

However, a very useful and well-known tool to manage and ensure the application of the Governance Model is the **Governance Board**, that is, a group of people with specific expertise that have the responsibility of monitoring it. Several different Governance Board structures have been conceived so far, with the objective of maintaining the fiduciary integrity of the organization, making sure the organization is achieving mission goals, and managing the employment of the CEO (if there is one).

Usually, the first model that comes to mind thinking about governance, is the presence of a board of directors and either a CEO or an executive director that have authority over a company. This typically applies to public and/or larger companies.

However, this is not the only possible applicable model, even because not all companies (mainly if small or non-profit) have at disposal a strong authoritative figure to lead it. Additionally, in a multi-stakeholder structure, the common sense suggests to involve multiple types of actors in the board, to make the consensual decision gain more legitimacy.

Also for Digital Innovation Hubs, it is fundamental to define a proper Governance Model: DIHs are made up of core partners who interact with multiple stakeholders within the ecosystem. In order to decide strategy and goals and effectively deliver services, it is therefore critical that there is a system to govern relationships, roles and responsibilities within the hub.

Board can be of different size and be regulated by different agreements. For instance:

- a board consisting of few representatives from all the organisations, with no formal legal agreements governing the relationships. This may be a good option in case of a small number of partners;
- a board consisting of the founding DIHs and some representatives for each typology of stakeholder (SME, large company, research institution,…). This may be a good option in case of a big cluster which is itself a legal entity, founded by DIHs and involving several partners.

In any case, the governance mechanisms are not fixed, but vary over time since they depend on the nature of the relationships between organisations, so it is important to be ready to change and develop it if required.

2.1.2 The value proposition

The value proposition analysis is a core part of the business model definition since it aims at identifying (and describing in the most appealing way as possible) **the value that the company can bring to its customer segments**. This is why the exploration of the value proposition typically follows the client analysis, since it is fundamental to have clear in mind to whom the product/service is addressed.

However, to properly define the business model, soon after the customer segments, the company is asked to evaluate what is its unique selling point, what it can offer to its clients and why they should choose its product/service.

A possible way to describe the company's value proposition is to refer to **what distinguishes it from its competitors**.

Making reference to the "razor and blades business model", the value proposition is to sell a high-quality but low-profit part of product (the razor) able to establish a loyalty relationship with the customer, who is locked-in purchasing the high-profit part (the blades) but is satisfied by the quality.

So, what makes the company interesting is the guarantee of a high-quality product, with one component at a very low price.

In the example of a "low-cost airline company", the value proposition is not related to the quality of the service and the luxury experience that it can offer during the flight, since it is not addressed to the upper-class. The value proposition is that a service, that before was mainly for rich people, is now offered at a very low price (and low add-on services, of course) to people that before couldn't afford a high expense to travel.

2.1.3 The value proposition canvas

To ease the value proposition analysis, the Value Proposition Canvas (VPC) may represent a useful tool to identify the advantages of the proposed solution and the requirements that it is able to fulfil.
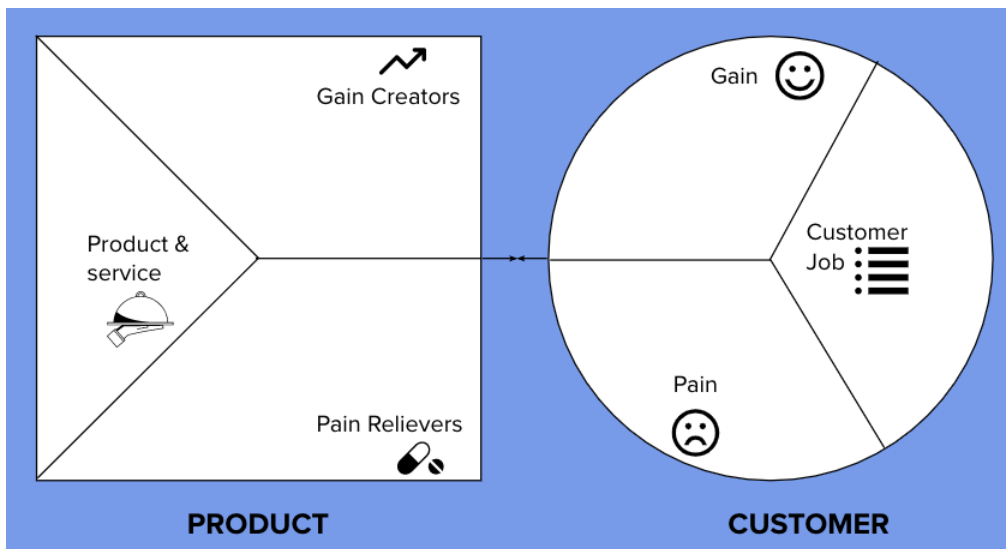

Figure 2 The value proposition canvas

The canvas consists of two main sections:

- the **circle panel** or **Customer Segment Profile** referring to the customer. To fill it, it is required to investigate about:
    - **Customer Jobs,** to summarize the activities that the client typically does and that can be impacted in any way by the company's product/service;
    - **Gain,** to describe the outcomes that the client wants to achieve or the concrete benefits he/she's seeking;
    - **Pain,** to describe the bad outcomes, risks and obstacles related to customer jobs;
- the **square panel** or **Value Proposition Map** referring to the product/service delivered by the company.
    - The first element to be evaluated is the **product and/or service** that is delivered to the customer. In case of a Digital Innovation Hub, it coincides with the Service Portfolio (DR BEST analysis);
    - Defining the **Gain Creator** means to describe how the (set of) product(s)/service(s) delivered helps customers to get their gains;
    - Defining the **Pain Reliever** means to describe how the (set of) product(s)/service(s) delivered helps customers to alleviate their pains.

Pay attention not to mistake "Gain" with "Gain Creator" and "Pain" with "Pain Reliever": even if the difference may seem slight, the perspective is totally different. "Gain" is from the point of view of the

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customer (What does the customer need to be happy?), while "Gain Creator" is from the point of view of the product (What can the product do to make the client happy? How does it pursue the goal?); and again, "Pain" is from the point of view of the customer (What makes the customer unhappy?), while "Pain Reliever" is from the point of view of the product (What can the product do to relieve the client's pains? How does it pursue the goal?).

To make the business work, of course "Pain Reliever" must answer to "Pain", "Gain Creator" must satisfy the "Gain" and "Product & Service" must meet the "Customer Job", so it is important to start the compilation from the Customer Segment Profile panel, to avoid defining only those "Pain" and "Gain" that match with the product without identifying the real "Pain" and "Gain".

Let's do an example: one possible segment inside a DIH's constituency are SMEs, hence the Digital Innovation Hub should compile a Value Proposition Canvas specifically for Small and Medium Enterprises (if required, it can be further segmented). Simplifying the context, an SME may be not interested at all in an innovation and transformation process; or it may be in an evaluation phase where it is aware of the benefit deriving from adopting new digital solutions; or it is already acting to introduce new technologies (**customer job**). It is quite evident that the relevant information to compile the customer job session are not the daily tasks of the SMEs, but those activities where the DIH can intervene. Moving forward, the SME wishes to increase production and revenue but doesn't know how to do it (**gain** and **pain**); or it would be part of a network but it needs information. Finally, it wishes to adopt the best solution ever but it doesn't have budget and expertise.

On the other side, the DIH can answer with a set of services (**Product & Service**) to establish a first contact with unwilling SME, to organise workshops and community events, to identify funding opportunities and upskill the workers (**pain reliever**). The same services will help to increase to ROI, to establish a network of SMEs, to develop an innovative solution (**gain creator**).

The value proposition canvas is a very useful tool that allows to collect all the information and to investigate about the match that must be reached between product/service offered and customer expectations and requirements. The first step is to understand the customer's needs and to put its pains in the centre of their focus: this is the winning strategy to deliver a product/service that can generate a successful business.

2.1.4 The revenue model

A revenue model is a framework for generating financial income. It identifies which revenue source to pursue, what value to offer, how to price the value, and who pays for the value.

Actually, to properly define a company revenue model, different aspects must be taken into account, some of them in common with the analysis described before. Such features can be summarized as follow:

- **WHO** pays for the product/service, that is, the person/organization who provides money.
  For instance, in the "razor and blade" case, the mass market (especially men).
  In the traditional business, this concept is strongly related with the **customer segment**; dealing with DIHs' business also partners and third parties (who are not the final user) may intervene, for example, in case of public funding.

- **FOR WHAT** it is paid, that is, the reason that convinces the person/organization to spend money. This concept is strongly related with the **value proposition**, since it describes the value that the company can bring to its customer, otherwise they wouldn't pay for it.
  For instance, in the "razor and blade" case, people pay for a high-quality product, that requires a periodical replacement. It is a "high-profit multiple sales guaranteed by the first low-profit single sale" revenue model. In case of a DIH, it is strongly related to the set of

services provided, that make the DIH quite a unique organization. Possibly, it could be equipped with an appealing slogan or motto.

- **WHAT** is paid, that is, the product/service offered by the company.
  We already analysed it, talking about the product/service block inside the value proposition canvas.
  For instance, in the "razor and blade" case, it coincides with the razor and blade themselves.
  In case of a DIH, all the services provided are described in the Service Portfolio.

- **HOW** the payment works, that is, the type of contract/agreement established between the company and the customer. There are a lot of different revenue patterns that a company may follow (even more than one at the same time) and the choice depends on a number of factors, including the product/service itself, the customer, etc. They are very well known: direct payment, subscription, add-on,…
  For instance, in the "razor and blade" case, the main income derives from selling additional products sold on top of the razor: it can be considered an hybrid model between direct payment and add-on. In case of a DIH, they are very common public and private funding, subscriptions and service fees.

- **HOW MUCH** is paid, that is, the price of the product/service: this aspect together with the previous one represents the core of the revenue model. To make the model more complex (and exhaustive), typically, the price is equipped with the frequency and some additional calculations and KPIs such us, the yearly estimated revenue, the average revenue per user (ARPU), life-time value of a customer…
  For instance, in the "razor and blade" case, it may be M euros for the razors only once and N euros for the blades twice per month.
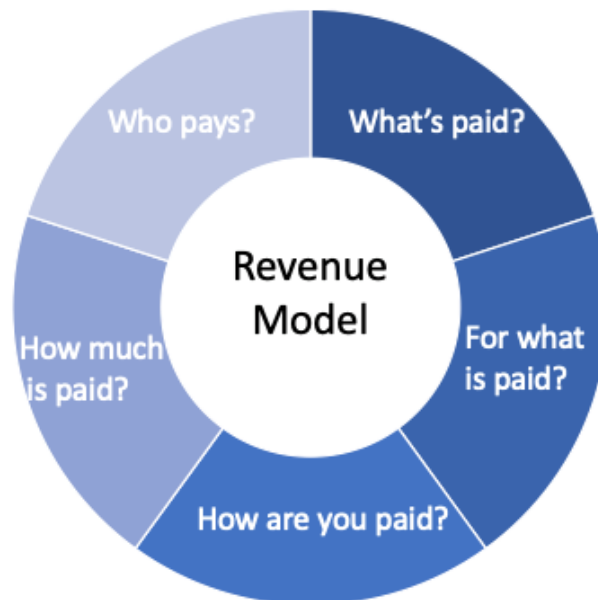

Figure 3 The revenue model's main components

As mentioned, a Digital Innovation Hub's revenue model is expected to take into account additional incomes, different from the direct payments that a user does when he/she benefits from a service or purchases a product. Actually, a DIH's main revenues may derive by the provision of services that

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are totally paid by the customer, by the provision of services that are partially paid by the customer by the provision of services that are totally financed with external funds.

More details will be provided in Section 3.2.

2.2 The Business Models Canvas (BMC)

To simplify the definition of a company business model, in order to summarize all the relevant aspects by providing only the relevant information, the Business Model Canvas has been introduced as a template.

It consists of a one-page canvas, storing all the key features to describe the BM. Even if the framework is quite simple, its compilation is not trivial at all and requires lot of time, to avoid to miss relevant aspects: typically it is compiled in group, involving different partners from the company, who brainstorm writing ideas and comments.

So far, different Business Model canvases have been designed, similar in structure but with different content: the goal of the current document is to identify the one that better describes the DIH's needs and activities.

In next paragraphs, four different canvas are presented, putting in light the main differences. The first one that will be described is, of course, the Osterwalder Business Model canvas followed by the Innovation, the Lean and the Mission canvas.

2.2.1 The Osterwalder Business Model canvas

The Osterwalder Business Model canvas, better known simply as Business Model Canvas (BMC), is probably one of the most used visual tool used to describe a company business model. It was proposed for the first time in 2005 by Alexander Osterwalder, with the objective of having at disposal a strategic management template that helps to visualise the several components that make the business.

Actually, the BMC is based on nine different blocks, in order to take into account all the different aspects that may concur to the company's success, in order to describe them and to identify the possible impact that can derive.

Figure 4 The Osterwalder Business Model canvas – empty model

Making reference to the St. Galler BM Navigator, the blocks can be grouped according to the WHO, WHAT, HOW, WHY macro-classification:

- **WHO** - Information related to **customers**: customer segments;
- **WHAT** - Information related to the **offering**: the value proposition;
- **HOW** - Information related to the **company** and **how the company runs the business**: key activities, key resources and key partners but also channels and customer relationship;
- **WHY** - Information related to **finances**: revenue streams and cost structure.

As said, the compilation of a Business Model Canvas is not trivial and requires time: each block must be properly evaluated to avoid to forget relevant information. There isn't a specific blocks' order to be followed for the compilation, even if there are some dependencies to be taken into account. Both "channels" and "customer relationship" can't be evaluated without having identified the customer segments; the definition of "cost structure" must follow the identification of "key resources".
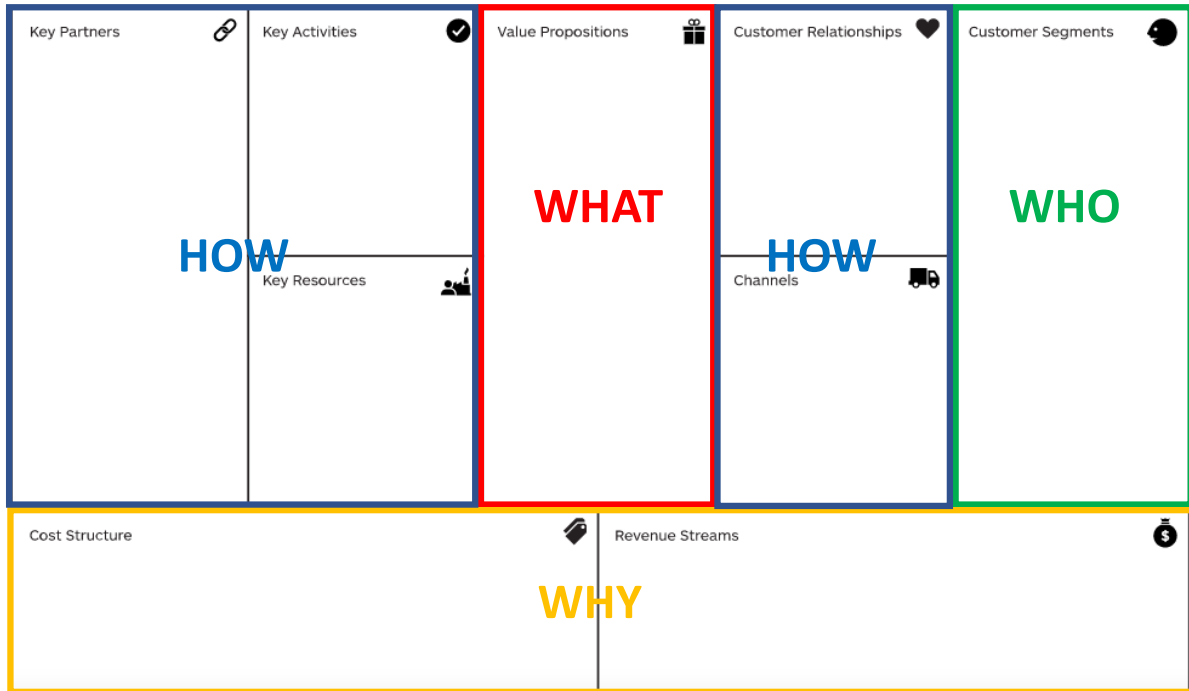
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Figure 5 The Osterwalder Business Model canvas – four main groups

Here below, the nine blocks will be presented in detail. With "company", we mean the enterprise that is compiling the BMC to describe its business.

- **Customer Segments:** To fill this block, it is required to list all the different typologies of customers and market segments to whom address the value proposition. It refers, for instance, to gender categories (men or women), to age classes (young, adult or old customers), to wealth classification (low, middle, upper class), to the mass market in general. This analysis helps, first of all, to adequately describe customers and their requirements to be sure that **the features of the delivered product/service match with their requirements**, but it is also a preliminary investigation to support the compilation of "customer relationship" and "channels" blocks (see below).
  For example, a company that sells an ERP software is interested into a B2B market; a company that sells luxury cars sells in the B2C market and it is addressed to the rich/upper-class.

  Regarding DIHs, the customer segments analysis is part of METHODIH customer journey framework. Six different typologies of customer have been described (technology user, technology provider, student, policy maker, start-up and experimenter) and for each one, DIHs have identified a number of related profiles that are equivalent to the concept of customer segment (more details are available in D3.1).
  For instance, a technology user, usually an SME, can be a user looking for Research and Innovation opportunities (segment 1) or looking for support in digitalizing its business (segment 2); a technology provider can be a user looking for Research and Innovation opportunities (segment 3) or looking for partnership (segment 4); etc.

- **Customer Relationship**: To fill this block, it is required to consider the different customer segments identified in the previous bullet point and to reflect on the type of relationship each one expects to establish with the company. For instance, commercial relationship (buyer and

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seller), online/physical assistance and support, becoming part of a community, signature of a subscription, signature of a long-term leasing contract, etc.

A meaningful example may be a company selling washing machines: it can have only a buyer/seller relationship with its client, but also to provide (charged or costless) assistance in case of failure. In case of a brokerage company, the customer relationship is entirely based on trustworthiness, since the company typically guarantees for the client.

Regarding a DIH, possible types of relationship are: being part of a Community (restricted working groups according to specific interests), supporting staff for dissemination and value creation, direct link with operative staff.

- **Channels**: To fill this block, it is required to identify the different channels used to reach the customers, taking into account the Customer Segments identified above. Since the contacts with the client may last longer than the sale itself, to properly evaluate the channels a number of phases should be considered. First of all, the company should make the customer aware about its product/service (**awareness**); then it should help him/her to evaluate the company's value proposition (**evaluation**); the third phase is the **purchase**, when the customer buys the product/service, followed by its **delivery.** After sales, the company may wish to keep in touch with the client and this is the last phase (**post-purchase**).
  For instance, companies selling mass-market products may use advertising (on radio, tv, online) in the awareness phase, the website in the evaluation phase and (small, medium big) shops and e-commerce platforms in the purchase phase.

  Regarding a DIH, possible channels go from "DIH specific" ones, such as the Cluster, or the EU projects (and associated events) to very common ones, like the website or newsletter.

- **Value Proposition**: The meaning and the reason for reflecting on "value proposition" has already been widely explained in previous section.
  However, for sake of completeness, we shortly summarize it.
  To compile this block, the company has to describe the value that it delivers to the customer, the problems and the needs that it helps to solve and to satisfy respectively.

- **Key Activities**: To fill this block, it is required to identify the activities that the company performs in order to deliver its value proposition. It includes a number of different activities, from the most obvious "creation of the product/service", to some side activities as "customer and/or suppliers contact".
  This analysis helps to list all the actions needed to get to the final result, keeping in mind the **time required to perform them and all the possible risks associated**, in order to identify also mitigation plans.

  Considering a DIH, the activities required for the provision of the (DR BEST) services Portfolio imply a large number of key activities performed by the Hub, not visible to the customers: for instance, access to finance promotion and technological investments in general.

- **Key Resources**: To fill this block, it is required to identify all the resources that the company needs to deliver its value proposition. It means to consider physical assets (for instance, tools, machinery, spaces,…), intellectual resources (such us, licence, copyrights, data,…), human workforce (that is, people directly employed in the activity), financial resources.

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This analysis helps to identify, firstly, requirements to be fulfilled, since key resources are of course fundamental to perform the activity and, secondly, also the main expense reasons related to them. As already seen in previous block, each of these analysis provides an interesting **point of reflection regarding possible risks and contingency plans** to be defined, in order to avoid issues.

For instance, a big company that provides online services, reports and assessment may need hundreds of employees, data and algorithms, computational resources and IT infrastructure; a company that produces furniture may need a factory, a deposit and trucks for delivery.

Regarding a DIH, possible key resources may be: the personnel and staff in general, the training material, etc.

- **Key Partners**: To fill this block, it is required to identify which are the main partners that help the company to sell its product/service, what kind of resource they provide and what kind of activity they perform.
  This analysis helps to clear the type of **product/service/activity that the company is not delivering itself**, since it is supposed to not have the right competencies, skills and tools. Additionally, knowing partners is fundamental to identify (and then to act for reducing) the **risks related to a collaboration with a third party**.
  For instance, the manufacturing company business strongly depends on the supply chain, so possible partners are suppliers and vendors. Any delay from their side will impact the company's production.

  Regarding a DIH, possible key partners may be: technology providers, industry partners, regional administration.

- **Cost Structure**: To fill this block, it is important to have clear in mind all the elements identified in "Key Resource" block, since the cost structure practically relates to the whole set of expenses that the company tackles.
  To make the analysis complete, it may be of interest also to evaluate which are the most/less expensive resources and activities and to rank them.
  This analysis is fundamental to have **the control of all the expenses** since they must be balanced with incomes.
  For example: a low-cost airline bases its business model on the minimization of all the ancillary costs in order to reduce to the minimum the cost structure; on the other side, a national airline has a higher cost structure since it provides more services to its clients.

  Regarding a DIH, the possible costs are those associated to the Key Resources seen before: costs of personnel and staff in general, cost of training material, but also cost of offices and events organisation.

- **Revenue Streams**: This block is strongly related to the concept of "revenue model" presented in Section 2.1.4. To fill it, it is important to identify all the possible activities/products/services that may provide any income to the company and they can be of different nature: from a direct sale to a usage/subscription fee, including licences, advertising,…
  For instance, a car dealer's revenue streams may be based on selling, renting and leasing; an online newspaper bases its revenue on selling, subscriptions and advertising.

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Regarding DIHs revenue streams, please refer to Section 3.2.

2.2.2 The Innovation Business Model canvas

The Innovation Business Model canvas is an alternative to the classical BMC. It is based on nine blocks as well, some in common to the previous one, others quite different.

The innovation canvas is used to describe the business of a company where innovation and innovative aspects play an important role. The same framework can be also used to support the activities of the R&I departments of a company, that typically acts in a different way with respect to the rest of the company since their main focus is to produce innovation.

Similarly to the BMC, the blocks can be grouped in four macro-category:

- **WHO** - Information related to **customers**: target groups;
- **WHAT** - Information related to the **offering**: the value contribution;
- **HOW** - Information related to the **company**: innovation activities, resources, stakeholders, go-to-market and customer involvement;
- **WHY** - Information related to **finances**: profitability and funding.

Highlighted in red, you can see the main differences with respect to the Osterwalder canvas's blocks: even if at first glance all of them seem to be different, deeper investigating it is just a matter of label.
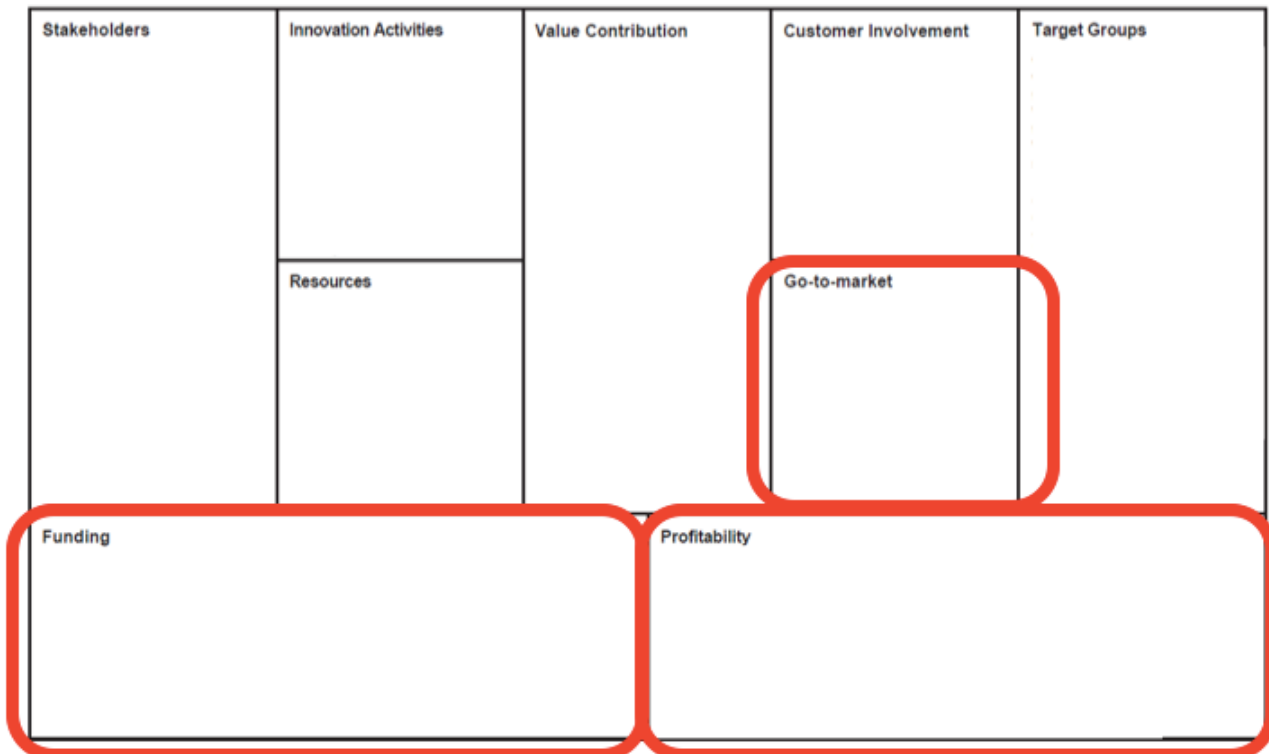

Figure 6 The Innovation Business Model canvas

Actually, besides the different labelling and the most "innovation-oriented" focus (that aims at identifying mostly the innovative features inside the business), some blocks are in common with the

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BMC analysed before. This is why we avoid repetitions and for a more detailed analysis, we invite to make reference to Section 2.2.1.

- **Target groups** are the equivalent of Customer Segments and it is useful to describe the main categories of users to whom the innovative solution is addressed.

- **Customer Involvement** corresponds to Customer Relationship and it is useful to describe the customers' role in the innovation activity. It is slightly different with respect to "Customer Relationship" described before, since here it is also foreseen an **active role of the customer**, who, for instance, is part of the community or of the crowdfunding organization, etc.

- <u>**Go-to-market**</u> replaces Channels block and it is useful to describe tools used to reach customer, keeping in mind that due to the innovative aspect of the product/service sold, new channels can be explored. In addition, in case of a completely new solution, it makes sense also to investigate the **market acceptance**.

- **Value contribution** is the equivalent of Value Proposition, but the innovative aspect must be taken into account, for instance focusing on a specific **market gap that the solution is aspiring to fill**.

- **Innovation Activities** is the equivalent of Key Activities and it also includes a number of **actions addressed to stimulate innovation** (inside and/or outside the company).

- **Key Resources** remain the same.

- **Stakeholders** are the equivalent of Key Partners, with a specific focus on stakeholders bringing innovation inside the company.

- <u>**Funding**</u> replaces Cost Structure, in case R&I activities are not the only main business of the company, but there is a special policy regulating them.

- <u>**Profitability**</u> is conceptually very close to the Revenue Streams block, but in this canvas (talking about innovation, usually never tested in the market) it is important to evaluate the new market approaches and the lifetime of the innovation. In addition, in case R&I activities are not the only main business of the company, to compile this block also the impact on the classical revenue stream of the company must be taken into account.

2.2.3 The Lean Business Model canvas

The Lean Model Canvas was introduced for the first time in 2010 and it was born specifically for start-ups.

It is strongly correlated to the Lean Start-up methodology, based on the concept that it is possible to make leaner (of course!) and to speed up the development of products/services by basing the implementation on cycles and iterative releases. It is important to have clear in mind which are the customer's problems to avoid investing time designing features or services that consumers do not want.

The Lean Model Canvas is the re-elaboration of the Osterwalder BMC, where Key Partners, Key Activities, Key Resources and Customer Relationship are respectively replaced by Problem, Solution, Key Metrics and Unfair Advantages.

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This structure has been conceived and optimised to describe the start-up business, which is usually very dynamic and must take into account the **customer's problem** to be sure of the acceptance of the **solution** that it is delivering. Since the implementation process is optimised leveraging on the Minimum Valuable Product (MVP), it is fundamental to periodically measure the customer response thanks to a set of **key metrics**, to adapt the solution accordingly. Additionally, since the start-up is approaching the market for the first time, having in mind its own unique strengths (**unfair advantages**) helps to be more competitive.

The Lean Model Canvas is also applicable to other domains different from the start-up business; actually, it can be used to describe any activity working according to the Lean methodology or to any company that is developing a new solution still in an embryonic stage.

Highlighted in red, you can see the main differences with respect to the Osterwalder canvas's blocks.
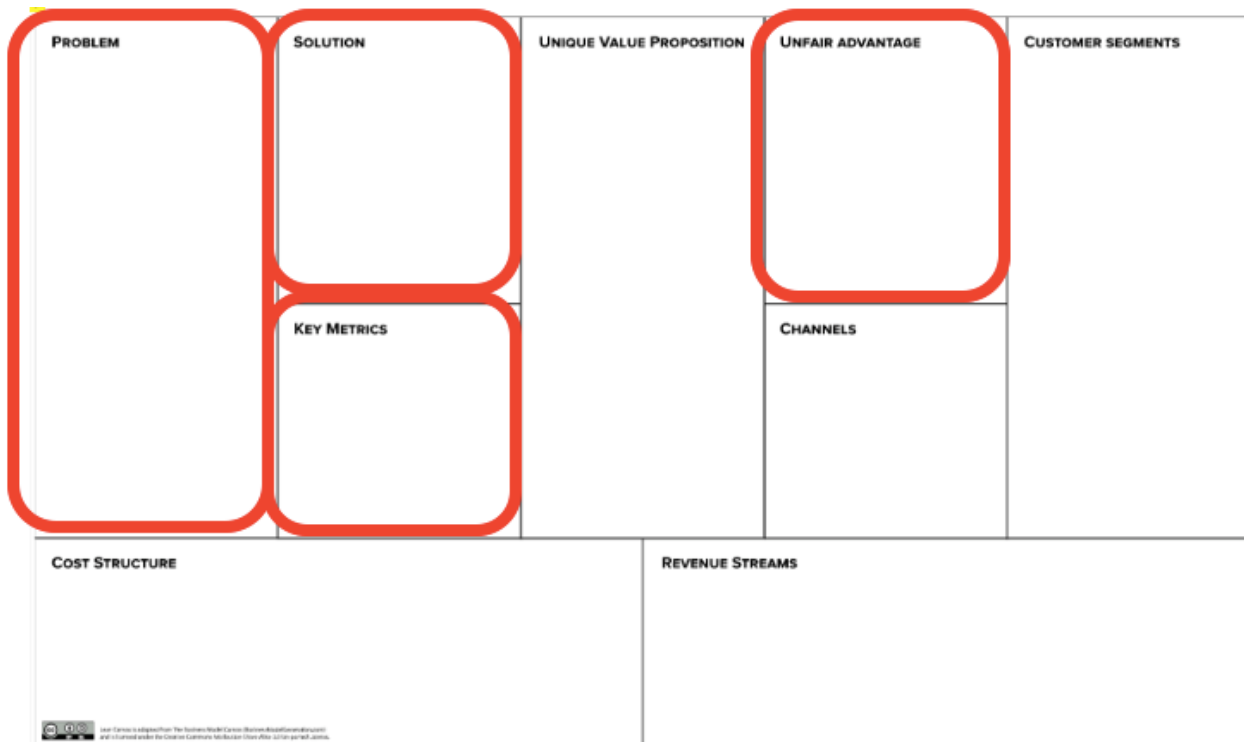
Figure 7 The Lean Business Model canvas

As you can guess from Figure 7, also the Lean Model Canvas is structured according to nine blocks but now the classification is slightly different since the four macro-categories WHO, WHAT, HOW, WHY are re-interpreted taking into account new components.

However, it is not so meaningless to cluster them as follow:

- **WHO** - Information related to **customers**: customer segments, problem;
- **WHAT** - Information related to the **offering**: the unique value proposition;
- **HOW** - Information related to the **company**: solution, key metrics, unfair advantages, channels;
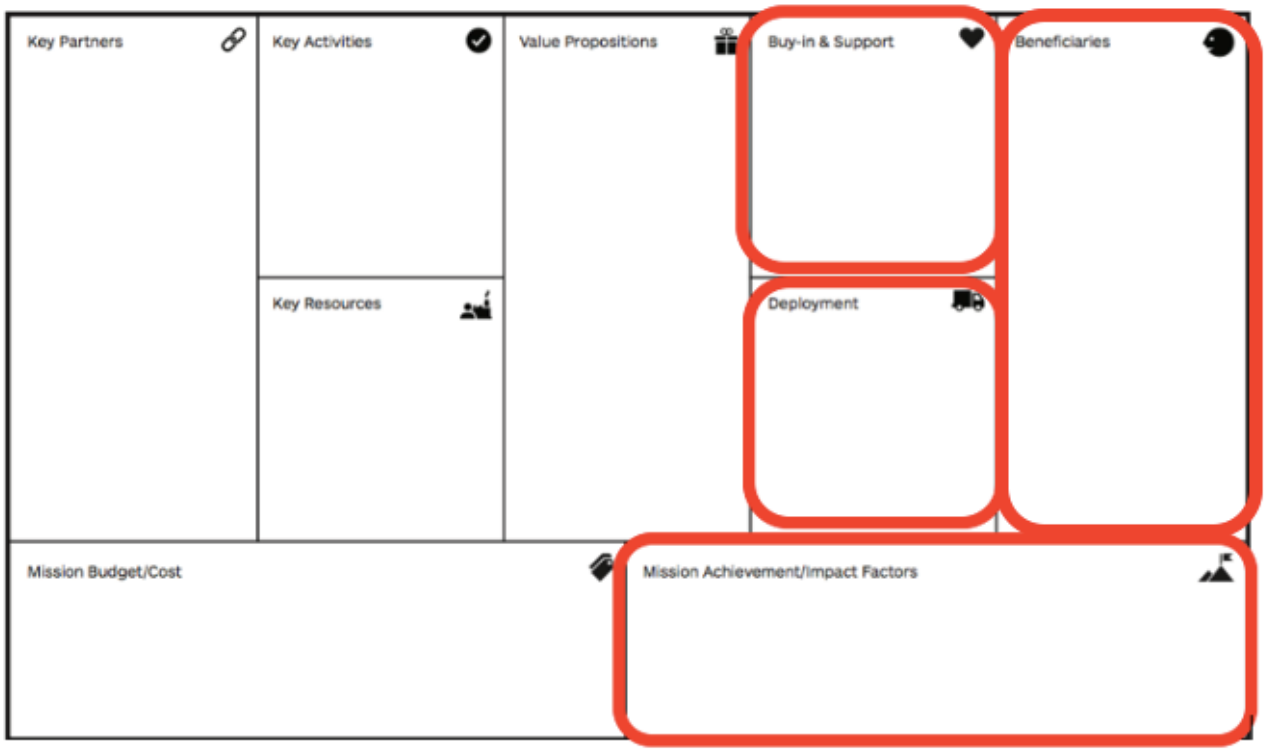- **WHY** - Information related to **finances**: revenue streams and cost structure.

Here below, the nine blocks will be presented in detail (the comparison is run with respect to the Osterwalder Business Model canvas).

- **Customer Segments** maintains the same label, but with a conceptual difference: in case of a start-up or of a company that has not approached the market yet, the customer may be "ideal".

- **Unfair Advantages** replaces the Customer Relationship block, introducing a completely new element inside the business model. To fill this block considered one of the most difficult to be answered, the company is required to evaluate which are **its strengths and an unfair advantage that can help in overcoming possible competitors**. To facilitate the compilation, one should think about its "competitive advantage which cannot be copied and cannot be bought".

- **Channels** maintain the same label and the same meaning. Keeping in mind the five touchpoints phases described in Section 2.2.1 (awareness, evaluation, purchase, delivery and post-purchase), of course, in this case the main focus goes on the initial stages while the final one may be described simply as a "nice-to-have".

- **Unique Value Proposition** is quite similar to Value Proposition, but not equivalent at all. Actually, in this case the addition of the "unique" adjective stresses the fact that the company who is compiling the canvas should reflect on **the main added value that is delivering** to the client, and no more on several ones risking of losing the focus.

- **Solution** replaces the Key Activities: according to this model, the company is required to think about the solution that it offers to be sure that it is the right answer to the customers' problems. The activities that the company has to perform to deliver the product/service solution (that was a block part of the Osterwalder canvas) derive automatically once the solution has been properly defined.

- **Key Metrics** replaces Key Resources, since having at disposal a set of metrics and KPIs to monitor the company performance is the best way to improve the solution, according to the Lean principles.

- **Problem** replaces Key Partners. Even if the analysis of the stakeholders who collaborates to the product/service creation is quite fundamental for the company, in the Lean canvas it has been removed, probably aware of the fact that at its early stage a start-up is usually not part of a wide network of partners. It has been replaced with the Problem block, that similarly plays a fundamental role in the analysis and it is one of the first block to be compiled: it represents **the problem for which it makes sense to create a solution** and its analysis helps to assess also the solution's effectiveness.

- **Cost Structure** maintains the same label and the same meaning.

- **Revenue Streams** maintains the same label and the same meaning.

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2.2.4 The Mission Model canvas

The Mission Model Canvas is a version of the Osterwalder Business Model Canvas, created by Steve Blank in 2016, for entities such as government agencies that have a predetermined budget instead of the goal of raising revenue.

In case of non-profit organizations whose activities are driven by a mission instead of by the goal or earning money, some blocks of the traditional BM canvas loose the meaning, such as the Revenue Streams.

Highlighted in red, you can see the main differences with respect to the Osterwalder canvas's blocks.

Figure 8 The Mission Model canvas

Here below, the nine blocks will be presented in detail (the comparison is run with respect to the Osterwalder Business Model canvas).

- **Beneficiaries** replace the Customer Segments block, to highlight that sometimes there is not only one direct customer but a number of different beneficiaries that may benefit from the company activity in an indirect way. Another important aspect to be taken into account is that in the for-profit business, customers are those who pay for the product/service; in this case of a non-profit business, they **benefit (typically free of charge) of the organization's mission** and so, they are beneficiaries.

- **Buy-in/support** replaces the Customer Relationship block and describes how the non-profit organization gets "buy-in" and support from all the beneficiaries. Since it is strongly related to the type of relationship that the company has with its beneficiaries, it appears clear why

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the most "financial related block" has been positioned in place of Customer Relationship, instead of in place of Revenue Streams.

- **Deployment** replaces the Channels block. Even if it may seem quite similar, since it describes which channels and how the organization will communicate its value with its beneficiaries, the main difference is that it is **focused mainly on the promotion phase**. To compile this block, it is important to list all that touchpoints that may have an economic return, since they stimulate funding and donations, useful for the survival of the company. Differently from the Channel block of the traditional BMC, it less refers to the moment when the service is provided to the beneficiaries, since usually it has a very low financial return.

- **Value Proposition** maintains the same label and the same meaning.

- **Key Activities** maintains the same label and the same meaning.

- **Key Resources** maintains the same label and the same meaning.

- **Key Partners** maintains the same label and the same meaning.

- **Costs** have the same meaning of Cost Structure, but with a more general label.

- **Mission Achievement** replaces the Revenue Streams block. It is quite intuitive to understand the reason for this choice, considering that the right-bottom block is the one that describes **the main objective of the company**. Talking about a for-profit company, of course the goal is to make revenue, to earn more money than you spend; talking about a non-profit organization, its goal is its mission. As already mentioned, here the "financial aspect" that describes the company incomes is moved in the Buy-in & Support block, compared to the relationship that for-profit enterprise has with its customers.

3 Toward a multi-stakeholder Business Model for DIHs

To describe a DIH's business model avoiding to reinvent the wheel, the starting point is the number of already existing tools presented in Section 2, with the objective to identify interesting features for Digital Innovation Hubs, customizing them according to the specific needs and to discard those not relevant (Section 3.3).

It is well-known that the description of a company business (even if speeded up by the compilation of a business model canvas) is a very time-consuming task. Hence, the second objective of the current Section is to identify which already existing tools and methods specific for DIHs (not necessarily related to the BMC) can be exploited in the definition of their business (Section 3.1 and 3.2).

3.1 Value proposition and METHODIH

METHODIH is the METHOdology for DIHs developed step-by-step in AI REGIO WP3. The objective is to provide a common framework and a set of guidelines to describe and manage the four main pillars of the DIH's offer, which are the Service Portfolio, the Customer Journey analysis, the Digital Transformation Pipelines and the Business and Governance Model.

So far, the first three pillars have been defined (in WP3.1 and WP3.2) and more details are available in D3.1 – "Service Portfolio and Customer Journeys" released at Month 9, while last one is the subject of the current deliverable and of WP3.4, as it can be easily guessed.

However, previous three techniques represent an important component to describe the DIHs' business models, if combined with "more traditional" tools outlined in Section 2.

Making reference to the Value Proposition Canvas (VPC) described in Section 2.1.3, it is evident that the Service Portfolio and the Customer Journey analysis can be exploited to compile the Value Proposition Map (left square) and the Customer Segment Profile (right circle) respectively.

The METHODIH **DR BEST Service Portfolio** is a three-levels taxonomy of services, aiming at describing in a structured way the full list of services that a Digital Innovation Hub offers to its customers. Its name DR BEST derives from 6 main top-level categories (Data, Remote, Business, Ecosystem, Skills, Technology); for each one, other two sub-levels are defined. Almost 70 services are identified; the DIHs use this framework to describe their services according to a standard taxonomy.

Referring to the Value Proposition Canvas, the compilation of the Service Portfolio is the starting point to fill the "Product & Service" section.

The Customer Journey (CJ) **and Pipelines analysis** has been conceived to understand typical needs, expectations and interaction workflows by the various DIH ecosystem stakeholders. The preliminary analysis dealt with the identification of the main **customer segments** and the definition, for each of them, of a 5-steps customer journey which highlights the customer activities (**customer job**, to use the same terminology of the Value Proposition Canvas) and the main blocking points and barriers (**pains**). Such journeys have a standard structure, common for all the DIHs; each Digital Innovation Hub customises those related to its customer base, by considering additional blocking points and mapping the services inside the journeys (Transformation Pipeline).

This exercise is conceptually equivalent to the double-check that is performed on the Value Proposition Canvas to verify the correspondence between customer's needs and DIH's offering.
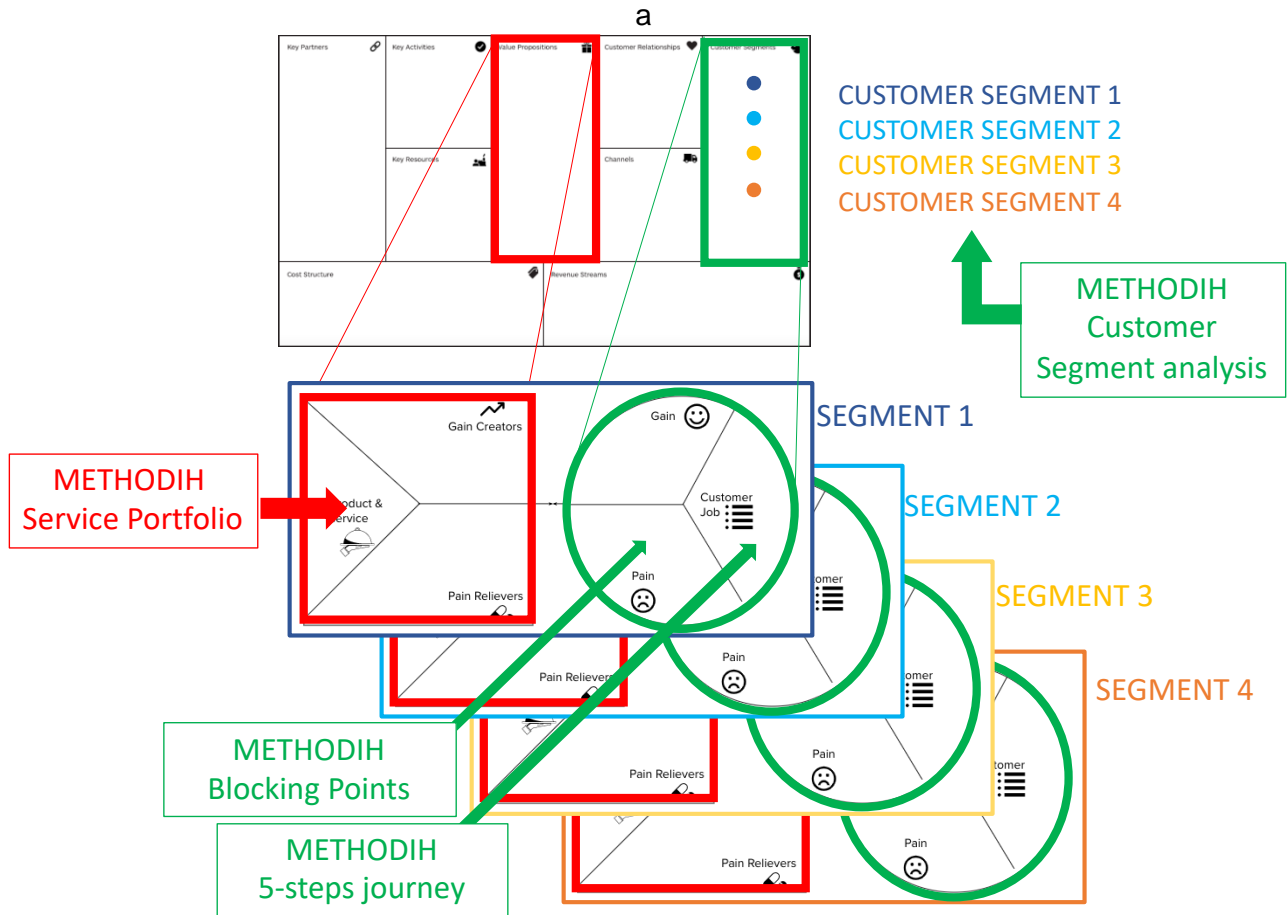
Figure 9 Schematic representation of the role of Service Portfolio and CJ Analysis in the VPC

Figure 9 highlights in which way the METHODIH Service Portfolio and Customer Journey Analysis can support the compilation of the Value Proposition Canvas.

First of all, it starts from the assumption that the Value Proposition Map (red square) and the Customer Segment Profile (green circle) are a deeper investigation of the Value Proposition and Customer Segments blocks of the Osterwalder canvas.

- The definition and analysis of the customer segments block is supported by the METHODIH Customer Segment Analysis, that so far has identified six different profiles: Technology User, Technology Provider, Student, Policy Maker, Start-up and Experimenter. Of course, a DIH's constituency may count only some of them but those six are the most relevant ones in general.
- For **each customer segment** identified above, the Digital Innovation Hubs should **fill one Value Proposition Canvas**. The Service Portfolio helps the compilation of the "Product & Service" section, while the 5-steps journey supports the identification of customer jobs. Finally, the Blocking Points analysis is useful for the "Pain" session.

The VPC is typically used for internal purposes (by the DIH to brainstorm on its activities and offering) and it is seldom presented directly to the customers.

To identify and describe a Digital Innovation Hub's Value Proposition in a shape comprehensible also by the customer who wishes to approach it, a simpler and more understandable tool is required.

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The Service Portfolio is a document rich of information (on average, a DIH provides about 25 services) and it is not the most direct tool that a DIH should use to approach the customer and to catch its attention. For specific purposes, just **a simple slogan** may be more effective and it is able to easily attract the customer without spending hours navigating across dozens of services.

Starting from the detailed analysis of services provided and activities performed, the goal is to reach a simple slogan to be presented to the customer and to be understood at first glance.

The schema below shows the pyramidal strategy for the definition of a single-sentence value proposition, by summarizing steps-by-step the services provided. The customer approach is the opposite: in case he/she is attracted by the slogan, he/she will further detail to discover what the DIH offers.
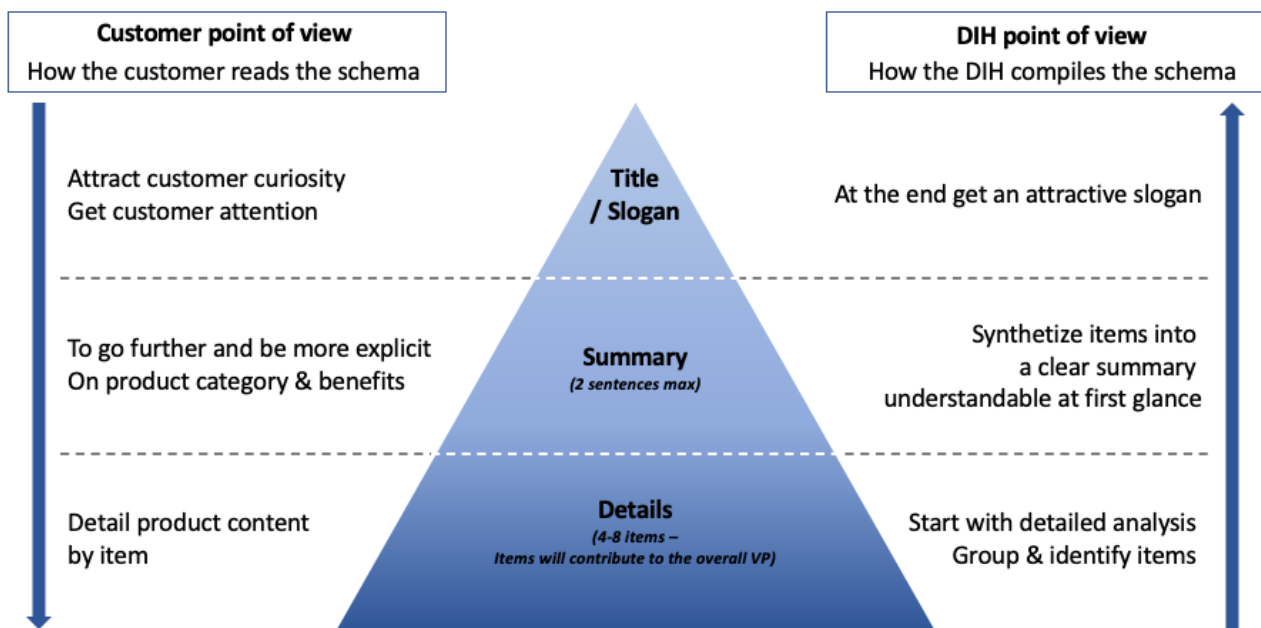
Figure 10 Steps to make the value proposition suitable for dissemination

3.2 Possible revenue streams for DIH

A Digital Innovation Hub is a complex multi-stakeholder and multi-purpose organization. It means that it daily collaborates with several partners and/or third parties and that it provides a number of different services, whose ROI changes from case to case.

It is important to keep in mind that a Digital Innovation Hub is a **non-profit organization** and so, the revenue model is conceived taking into account that the main purpose is not to make profit, but to operate for a collective, public or social benefit (typically, companies digitisation). However, to ensure a long-term financial sustainability, the financing plan should include both revenues from commercial services (fees) and investments in the DIH that cannot be easily recovered through service provision (e.g. promotion, awareness creation dissemination, pre-competitive R&D, etc.).

It is difficult to define a single revenue model to describe the different features that interact for the sustainability of the DIH. Here below, some possible revenue models are described: two main groups of revenues have been identified, "funding" and "service provision".

The **Funding** category includes all that revenues deriving from a fund; it means that who pays is not that one to whom the DIH's activity is directly addressed.

- **Public co-funding**: This type of revenue is provided directly by public organisations (at regional, national, European level), that are not the final users to whom the DIH's product/service is addressed.
    - **EU funding**: In the current funding period, EU funding with regard to DIHs was mainly targeting exploring and the establishment of DIHs (see I4MS[1]) as well as mapping of existing initiatives is usually project-based or provided via grants and co-funding.
    - **National funding**: Mostly in infrastructure and by dedicated funds to support general economic prosperity.
    - **Regional funding**: Regions are often willing to support DIHs as the individual Hubs are focused on supporting the regional development and SMEs. It is a win-win relationship where both actors involved earn.

- **Private and Partner co-funding**: This type of revenue is provided by single persons or private organizations, who invest in DIHs and regional DIH networks. Very often, the investors are partners of the DIH, who are collaborating to achieve a common challenge.

The **Service Provision** category includes all that revenues deriving from people and organizations who directly benefit from the DIH's product/service, when DIHs and DIH networks are able to charge for their services.

- **Subscription/membership**: The membership model consists in collecting small fees for general ecosystem and awareness service, with different tiers granting access to different services. It allows DIHs to sustain their operations and can help the creation of a funnel to attract further clients. Very often, the subscription fee is not enough to run all the activities and the DIH leverages on third parties funds.

- **Full/Partial cost service provision**: Individual services are fully/partially paid by the customer and they are not included in the membership. In case of a partial cost service, the DIH must pay the remaining part leveraging on other sources.

- **Performance based:** The service's fee is not established in advance but it depends on the success rate. It means individual services are directly paid by the customer, but the price varies according to the final result.

- **Add-on**: similarly to the "razor and blade" revenue model, it consists of providing a number of additional chargeable services connected to the membership.

- **Tit for tat:** This economic strategy is typically adopted in case of a collaborative activity: at step one, both the participants work for free, but in case one of them imposes or rises the tariff, the second one does the same.

- **(Indirect) branding:** It means to use the network brand as an income. Of course, this is not an automatic achievement but requires some time to be finalized. First of all, it is important to have defined a strong mission statement and value proposition to be promoted to further engage collaboration with users. The final aim is to create a brand to be added to (customers) products and services, in order to differentiate them (claiming that they have a special added value) and that makes them more appealing with respect to those of the other competitors.

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[1] https://i4ms.eu/

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- **Digitalization and mass customization:** This revenue model is based on the concept that is possible to save money by providing remotely some services that before were "physically" provided and required more time, people and physical spaces. Thanks to a more digital approach to service provision, a DIH may convert some consolidated services in order to reduce the delivery expenses.

- **Crowdsourcing:** it means that some services provided by the DIH are obtained from a large and open community of experts, who collaborate with a common purpose. "Ideas Competitions", "innovation context" or "open calls", for instance, represent two ways of enhancing crowdsourcing activities.
Similarly to the previous one, it is a revenue model based on the concept of saving money, since it replaces expensive activities with ones performed almost for free.

- **Commission fees:** It represents a revenue source in case the DIH asks for a fee to support two or more members of the community to perform a sale transaction. According to the DR BEST methodology, playing the role of sales office for the community is a service in "Ecosystem management" service and it represents a revenue stream in case it is charged.

- **Integrator/orchestrator**: One of the key roles of a Digital Innovation Hub qualified in Ecosystem services is to act as a broker, to connect suppliers with customers, business support services, collaborators, capital providers and others. In case this kind of service is chargeable, that is, the DIH is paid to put things together, it can represent an important revenue source.

The right revenue model is a "living-model" since it depends on the circumstances of the individual DIH and it is likely to be a combination of different models or mechanisms. It changes and evolves accordingly to new services added in the portfolio, new strong relationships established, new evidences to demonstrate the DIH's value, and other changes that allow the DIH to receive a greater proportion of funding or to increase the memberships/services' fee.

Given such a complex range of possible revenue streams and services provided, the best way to describe the overall revenue model is to match the revenues with services and customers:

1. Step one is to associate to each customer segment the services provided (METHODIH customer matrix);
2. Step two is to identify for each couple customer-service, the revenue streams that finance that activity (and in which percentage).

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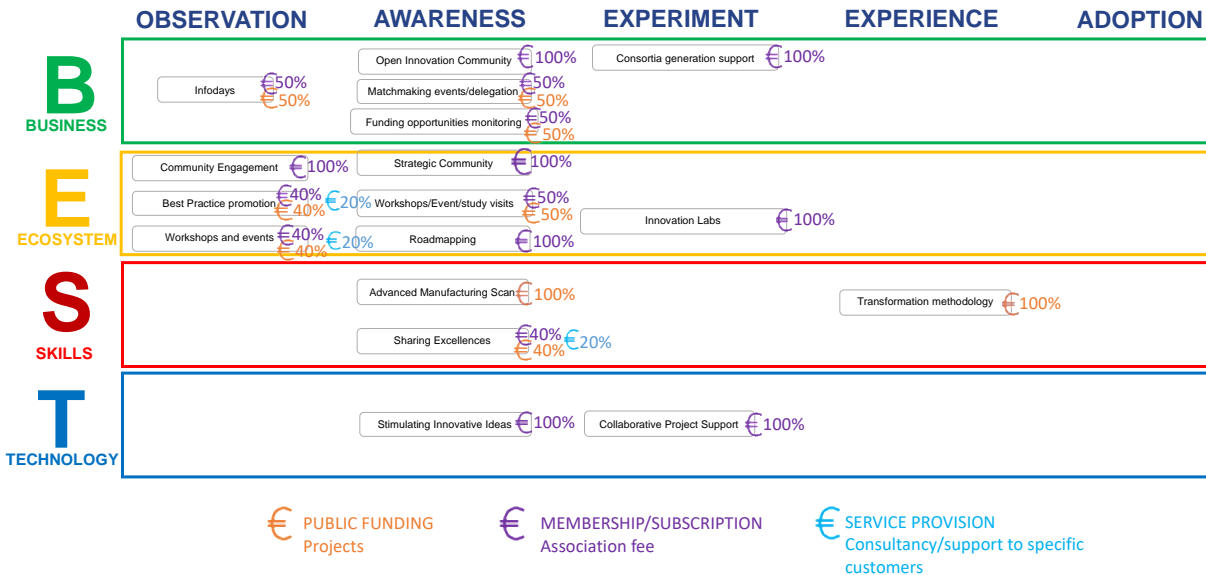
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CJ MATRIX– TECHNOLOGY USER

Figure 11 Example of a Revenue Model matrix for Technology User (AFIL DIH)

Figure 11 shows the METHODIH Customer Matrix containing the details of the different revenue streams. The customer segment selected is the Technology user: for each of the journey's 5-steps (observation, awareness, experiment, experience and adoption), related services are identified according to the BEST taxonomy.

In this specific case, three main streams have been outlined (Public Funding, Membership/Subscription and Service Provision Fee), with an evident predominance of the first two.

One matrix for each customer segment is expected, since services provided and revenue streams may vary accordingly.

Of course, this is just a simple visual tool that displays in a qualitative manner the different types of incomes deriving by the relationship with the specific customer. To perform a more complex analysis, the same information must be reported in a quantitative way on dedicated tools.

To summarize, the picture below shows the Revenue Model presented in Section 2.1.4 equipped with some suggestions to speed up and ease the compilation by Digital Innovation Hubs.
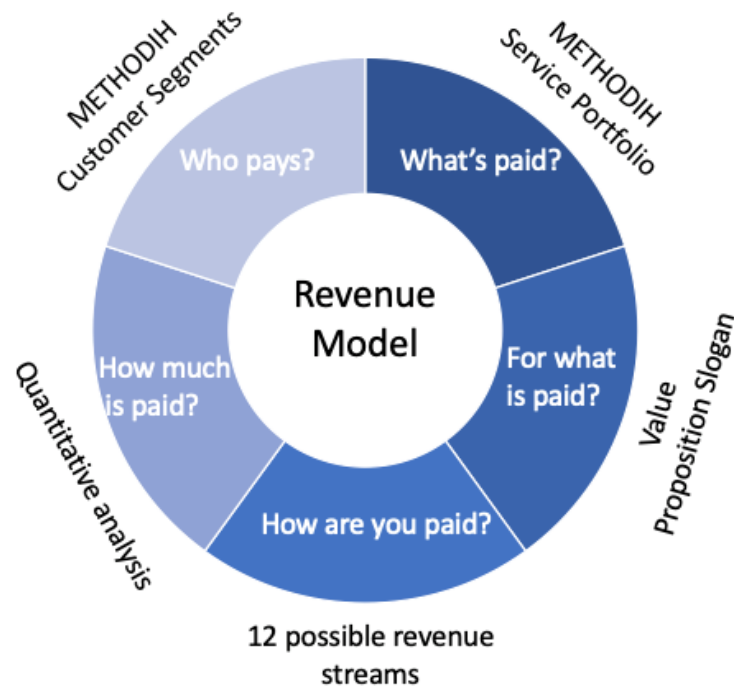
Figure 12 Hints to compile an effective Revenue Model for DIH

3.3 The AI REGIO multi-stakeholder Business Model canvas for DIHs

From the analysis run in collaboration with the AI REGIO ecosystem of DIHs, it came out that currently the Digital Innovation Hubs business is not properly described according to a standard methodology and that they have never compiled any canvas, related to the Hub's business.

However, the traditional tools described in Section 2 are valid also in the context of a multi-stakeholder non-profit organisation as DIHs are, given some changes and customization to better match their business.

As result of the validation activities run in collaboration with them, WP3.4 elaborated a new Business Model canvas, that keeps the same shape and content of the Osterwalder one, but with a more "DIH oriented flavour".

Since the tool is expected to be compiled by Digital Innovation Hubs that are organisations that, according with our experience, are not very familiar with the concept of Business Model Canvas, the DIH canvas presented below is equipped with guidelines (in form of questions) to ease the compilation.

Figure 13 The DIH Business Model Canvas

Similarly to the canvas analysed in Section 2.2, the blocks can be grouped according to the WHO, WHAT, HOW, WHY macro-classification and the labels are a mix of the different canvas:

- WHO - Information related to customers: customer and beneficiaries;
- WHAT - Information related to the offering: the value proposition;
- HOW - Information related to the company and how the company runs the business: key activities, key resources, stakeholders, channels and go-to-market and customer relationship/involvement;
- WHY - Information related to finances: revenue streams & profitability and cost structure & funding.

Such a canvas offers a broader perspective in the interpretation of business models of DIHs, as it proposes different interpretative frameworks for each dimension, and can be useful to develop more in-depth business model standards adaptable to different DIHs.

The compilation of such a wide BM referring to the DIH customer journey can prove useful in the development of activities within AI REGIO, because it formalises the activities to be carried out and favours proposition and collaboration among DIHs, but also in the view of a future extension of the AI REGIO experience to other DIHs, by framing them in the perspective of a customer.

Avoiding the repetition of the same description depicted in Section 2.2, the nine blocks of the DIH canvas can be detailed as follow (questions can be considered as guidelines to speed up and ease the compilation by the DIHs):

- **Customers & Beneficiaries:** to include both those who directly pay for a service and those who freely benefit from it.
  It answers the questions:
  - o Starting from METHODIH customer journey analysis, which are the main customer

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profiles supported by the DIH?
o Distinguish between customers (who pay for) and beneficiaries (who benefit for free)

- **Customer Relationship & Customer Involvement:** to highlight the fact that very often the customer is involved itself in the development of the service and it has a direct role in the innovation and community activities.
  It answers the questions:
    o Does the DIH have customers that are stakeholders as well?
    o What type of relationship does the DIH establish with its customers? Commercial, collaborative, part of an ecosystem?
    o Who contacts whom for the first approach? DIH or customer?
    o Does the DIH have a promotion strategy and is it consistent with our business?
    o Why do customers decide to collaborate with the DIH? What do they find appealing in the DIH propositions?

- **Channels & Go-to-market:** to include both the touchpoints with customers and the market analysis, to shape a better contact strategy.
  It answers the questions:
    o Starting from METHODIH customer journeys, what is the point of contact with the customer for each of the five steps?
    o How does the DIH deliver services? Remotely, in-house or at client premises?
    o Is the DIH delivering services one-to-one or as groups?
    o What are the barriers that make difficult the DIH-customer touchpoint?
    o Who are the DIH's competitors? To what extent can they impact the DIH business?
    o What type of market investigation does the DIH perform?

- **Value Proposition**: no changes in the label, but of course more "DIH-oriented" in its description.
  It answers the questions:
    o For each customer segment, what customer need is the DIH satisfying or what type of problem is it solving?
    o Summarize the services the DIH provides highlighting their added value
    o Find an appealing slogan to attract customer
    o How does the DIH culture stimulate innovation?
    o What gaps in the market is the DIH aspiring to fill?

- **Key Activities**: no changes in the label, but of course more "DIH-oriented" in its description.
  It answers the questions:
    o What are the DIH's key activities to create and bring value to the customers?
    o How often are training activities performed among the DIH's workers?

- **Key Resources**: no changes in the label, but of course more "DIH-oriented" in its description.
  It answers the questions:
    o What type of physical assets does the DIH need (tools, machinery, spaces,…)?
    o What type of know-how and intellectual resources (licence, copyrights, data,…) does the DIH need?

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- o How many people work in your DIH as own staff?
- o What type of risk does the DIH foresee associated with Key Resources? What is the related mitigation measure?

- **Stakeholders**: instead of Key Partners, to be more coherent with the goal of defining a "multi-stakeholder business model".
  It answers the questions:
  - o Who are the DIH's key partners? What do they provide to the DIH?
  - o Who are the DIH's suppliers? What do they provide to the DIH?
  - o Do you have other DIHs as Key Partners?
  - o How many partners are normally involved in a project, on average?
  - o For what type of activity the DIH needs support since it has not right competencies and skills? (Legal aspects,..)
  - o What type of risk does the DIH foresee associated with stakeholders? What is the related mitigation measure?

- **Cost Structure**: no changes in the label, but of course more "DIH-oriented" in its description.
  It answers the questions:
  - o For each Key Resource and Key Activity, identify their approximate % weight on total costs.
  - o What are the main costs associated with service provision? For instance, related to meeting organization,…
  - o Is there any expense for advertising / promotion?

- **Revenue Stream, Profitability & Mission**: to highlight all the main motivations that drive the DIH in its activity: "revenue" to guarantee the sustainability of its services, (long-term) "profitability" of innovative services provided, "mission" as the core reasons for which DIHs have been conceived.
  The final block combines the dimensions from the Osterwalder, the Innovation and the Mission canvas.
  It answers the questions:
  - o What is the main income for the DIH? Public/private funding, membership, charged service provision?
  - o For each of the streams listed before, provide its percentage
  - o What is the mission of the DIH in the country/region? What are its main objectives?

To summarise, the information achieved so far allow to include two main steps to the METHODIH methodology, regarding business model:

- **Step 1 – Value Proposition Canvas**: for each customer segment identified within the framework of customer journey analysis, the DIH fills the canvas taking into account already available information included in the Service Portfolio and in the customer journeys (such as barriers and obstacle), as presented in Section 3.1. In addition, the DIH is invited to extract from its Service Portfolio some meaningful key points to be used as an appealing and effective Value Proposition.
- **Step 2 – DIH Business Model Canvas**: the DIH compiles the canvas answering the questions presented above, that drive it to reflect on relevant points, without missing any key

aspect.

Please note that the Revenue models detailed in Section 3.2 may represent useful example to compile the Revenue Streams block; similarly also Step 1 described above will support the compilation of Value Proposition and Customer & Beneficiaries blocks.

Both steps are time-consuming and require the collaborative effort of more than one person, possibly with heterogeneous and complementary expertise inside the DIH; hence it is fundamental to dedicate the right amount of time to perform it.

4 The Business Model validation within AI REGIO ecosystem

In Fall 2021 POLIMI organized a workshop, in the frame of WP3.4, targeted to outline a suitable Business Model canvas for DIHs business, wrapping up and structuring several contributions from the DIHs.

Comments, thoughts, ideas and suggestions had, in fact, already been extensively developed and exchanged in these last months within the AI REGIO's DIH network, in the occurrence of many group meetings and one-to-one sessions devoted to other deliverables of AI REGIO, and in particular in those aimed to illustrate and develop the DR BEST Service Portfolio, a taxonomy catalogue of services that DIHs provide to their customers.

However, such contributions had always taken place in a spontaneous and informal way, while a thorough representation frame, like a BM Canvas, was still missing. In order to wrap them up and validate them into a common and structured context, a workshop was organized among AI REGIO's DIHs and other participants.

The workshop was attended by about 30 people: besides POLIMI, who organised it, DIHs actively took part to the meeting as core participants, together with two technology providers and three experimenters.

As already mentioned, the main objectives were:

- **to set up**, or at least draft, **a BM canvas tailored to the DIHs business**;
- to fill in the BM canvas with our partners' contributions and **share a common basis of understanding of DIHs business**.

A good understanding of DIH BM may have significant fallouts for the DIHs and for the AI REGIO project, such as:

- providing the DIHs with a **standardized business analysis tool**, same as it has been done with the Service Portfolio in the DR BEST approach;
- featuring if and how BM canvas can support DIHs in **understanding their market positioning** and in setting adequate business strategies;
- as a further development, to attract into AI REGIO network other DIHs, not belonging to AI REGIO at present, by properly framing the key features of their business and understanding their needing and potential offering.

In this concern, the main focus of the meeting was on deepening the Value Proposition and the Revenue Streams in a BM canvas. As already illustrated in Section 2.2, a BM canvas has nine dimensions: the central one (Value Proposition) can be considered the core of the BM, as it describes the value that the company brings to its customers (WHAT); then, three of them (right side) show the approach to the market (Customers Segments; Customer Relationships; Channels), three (left side) are about back operations and resources (Key Activities, Key Partners, Key Resources) and, finally, the bottom two are about profitability (Cost Structure and Revenue Streams).

Among all of these, we deemed of particular importance to investigate the Value Proposition and the

Revenue Streams, to which we dedicated the first and second mural session of the meeting; then, in the third mural, we gathered ideas and suggestions about the overall dimensions and, finally, in the fourth mural session we presented and commented other types of BM canvas, so as to understand if and how alternative BMs would better fit, at least to the extent of some of their features, the description of DIHs business.

The workshop was organized in the form of a mural, so as to allow a free and comprehensive discussion among the participants and a clear and smooth exchange of contributions.

Figure 14 The workshop on Business Models

Figure 14 presents the online board used to run the workshop, split into four main sessions, to cover the main topics to assess a DIH business model.

4.1 Value Proposition panel's result
As mentioned, the Value Proposition is the main dimension in a BM canvas and, for this reason, a

session was dedicated to it during the mural meeting.

In the first part of the session, it was presented the concept of Business Model, how to define it, which parts it is composed of and which are the main characteristics of a specific DIH BM, with particular reference to being a non-profit organisation - and therefore in need of funding, which is received in various forms (multi-revenues) - and to the presence of numerous stakeholders of different nature (multi-stakeholders).

Then, we asked the attendees to explain DIH Value Propositions (or Value Contribution if referred to innovation projects) from their points of view.

The exercise was carried out assuming SMEs as reference customers. It should be noted that the METHODIH methodology has been developed for the DIHs six different types of customers, and related customer journeys:

- SMEs/Technology users
- Technology Providers
- Students
- Policy Makers
- Start-ups
- Experimenters

Among these, it was chosen to carry out the mural on SME/Technology users, as they represent an important share within the DIHs client segment.

In order to facilitate comparisons and contributions from participants, it was proposed to use the Value Proposition canvas described in Section 2.1.3, as a convenient tool for defining a DIH offer.

The definition of value as a result of a gain-pain scheme is clearly not the only possible way; however, it certainly helped to have partners think in terms of the benefits provided and/or problems solved for customers.

The compilation started with profiling the customers, the benefits they expect and the problems to be solved (right-hand side); some hints for compilation were provided to the attendees, with reference to each box of the scheme (always assuming that the customer is an SME/Technology user).

Customer job: we asked participants to refer, rather than to a generic SME, to activities, processes, areas, levels, soft aspects on which the DIH service has an impact among the SMEs with which they collaborate; in this way, a better focus of the offered service is achieved with respect to the concrete benefits brought or problems solved.

Gains: suggested benefits can be in terms of bringing in new technologies and skills, R&D activities, inclusion in a European network of DIHs and SMEs, access to innovation.

Pains: among the problems to be described, we suggested the lack of infrastructures and laboratories for R&D and pilot testing, the lack of technical and management knowledge about specific problems or projects, and access to funding sources.

Once the right side (Customer Profile) was filled in, we asked the DIHs to fill in the Value Map (left

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side) inserting the services offered against the gains and pains identified in the Customer Profile.

In the compilation, it was made reference to the Service Portfolio structured according to METHODIH DR BEST standardisation, but we also asked to name, if any, ideas of new services that could be added.

This is what the canvas looked like after the compilation session:
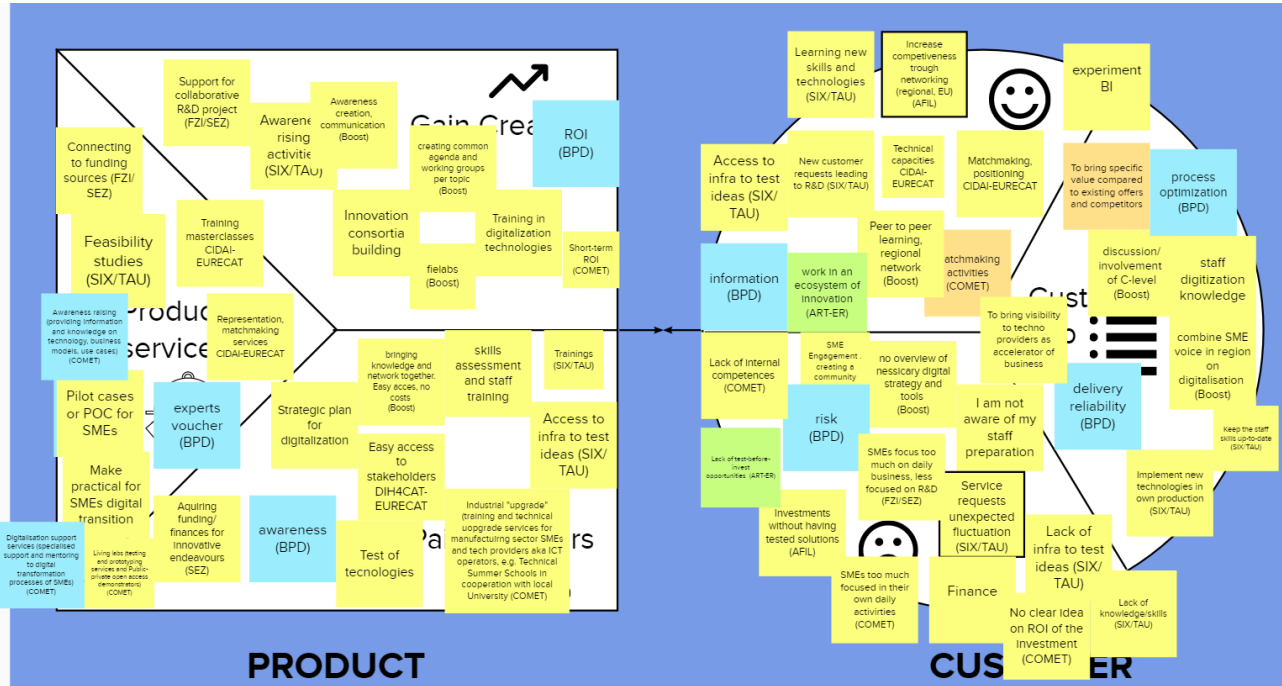
Figure 15 Value Proposition Canvas for SMEs - interactive session with AI REGIO DIHs

Rearranging the results, starting from the **Customer Job** (intended as processes, areas, activities that may be potentially impacted), the main themes that emerged were:

- interactions with C-levels
- production technologies and test/experimental technologies
- digitisation
- continuous improvement (of products and processes)
- commitment towards customers
- keep the staff skills up-to-date

These areas and activities can be improved with competitive advantages (expected **gains**):

- improvement of business processes
- learning new skills, technologies and technical capabilities
- innovation through working in an ecosystem, with visibility to technology providers (as a business accelerator), generation of ideas from customers and partners leading to R&D projects, access to infrastructure to test ideas
- increasing competitiveness through networking at regional and European level, through matchmaking, positioning, peer-to-peer learning
- networking: bringing together knowledge and networking with easy access and no/low cost

These are the areas where, at the moment, there are the most critical issues, which can be positively impacted by the services offered by DIHs (**pains** to be solved):

- lack/no overview of digital strategy and tools
- SME focused too much on daily business
- no clear idea of the returns of R&D investments
- lack of infrastructures to test ideas and of test-before-invest opportunities
- lack of knowledge, skills and competences
- difficult access to stakeholders
- financing and risks assessment

As far as the Value Map is concerned (that, as mentioned, we asked to fill in after the definition of the Customer Profile, face to the therein highlighted gains and pains) the answers showed that it is **not** possible to establish a **clear distinction between services offered as Gain Creators and services offered as Pain Relievers**, since actually most of them fulfil both functions, depending on the actual problem of the SME and the point of view of the DIH themselves.

Some clear strands emerge, however, among the services offered by the DIH to the SMEs and referable to the standardised DR BEST services, that were included as relevant in the Value Proposition evaluation:

Digitization Strategy

Offered services go through:

- creation and raising of the awareness among the SME of the potentialities of digitization (providing information and knowledge on technology, business models, use cases), as an answer to the pain of lack/no overview of digital strategies
- visioning and strategic plans for digitization
- digitalization and digital transformation/transition support services, such as specialised support and mentoring to digital transformation processes of SMEs, so as to make digital transition practical and smoother
- service packages on advanced AI expertise and capacities
- training in digital technologies.

Innovation & Technology

Services relevant to innovation were mentioned both as answers to expected gains (working in an ecosystem, visibility to techno providers, generation of ideas, access to infrastructures) and as pain relievers:

- feasibility studies to support innovation and investments
- support for collaborative R&D projects
- pilot and proof-of-concept cases for SMEs
- access to infrastructures and experiment facilities, such as living labs and didactic factories, to test ideas, prototypes and technologies
- standardised and secure data space in manufacturing

Skills development

Skills development is seen both as an answer to an urgent pain, since SMEs are aware of the important gaps between the state-of-the-art of digital technologies and their staff education, and as an opportunity to explore new opportunities and strategies that digitization can offer.

DIH services are thus very focused on assessments and training:

- digital maturity assessments
- digital skills assessment
- staff training masterclasses in digital technologies
- industrial "upgrade" (training and technical upgrade services for manufacturing sector SMEs and technology providers, also in cooperation with Universities)

EU and regional networking

Networking was seen as an important opportunity, and it was widely mentioned during the meeting. Networking services can be summarized as follows:

- representation and matchmaking services
- awareness raising activities, creation, communication
- creating common agendas and working groups
- network creation and innovation consortia building
- international network search for collaboration partners

Investment evaluation and financing

Finally, several contributions referred to financial support, both as professional support in investments evaluations and as access/connection to financing institutions.

As mentioned, the above analysis was carried out in reference to the customer journey of a Technology user / SME; however, since a number of other customer journeys have been identified and standardized in the METHODIH (Technology provider; Student; Policy maker; Start-up; Experimenter, as explained at the beginning of this paragraph), we asked the attendees to fill in also a Value Proposition panel for each of them. Additionally, we have identified another customer type in the DIH itself, because in the perspective of creating a wide AI REGIO network of Digital Innovation Hubs, the same DIHs can be customers of each other.

Figure 16 shows the panel containing the six Value Proposition Canvas compiled by the DIHs and referring to the other 5+1 customer types that were not discussed in the workshop. Last one, related to DIH, is highlighted in red, to distinguish it from the previous five that are part of the METHODIH customer journey analysis. As mentioned, the DIH-DIH Value Proposition Canvas (session 6) is compiled in the perspective sustaining their cross-regional activities as specified in WP3.3 and more details are provided in Section 4.5.

Figure 16 Value Proposition Canvas for other customer types

The compilation of a Value Proposition referring to the DIH customer journey is particularly important both in the development of activities within AI REGIO, because it formalises the activities to be carried out and favours proposition and collaboration among DIHs, but also in the view of a future extension of the AI REGIO experience to other DIHs, by framing them in the same perspective of a customer.

4.2 Revenue model panel's result

The second part of the mural session was dedicated to explore the revenue models of the DIHs.

Possible forms of revenues for DIH were illustrated to the attendees, as described in Section 3.2 above, with the objective of suggesting some interesting revenue models, besides the most common ones (such as public funding and membership) which is well-known that they are adopted by all Digital Innovation Hubs.

Participants were then asked to enter themselves the main sources of revenue for their respective DIHs; they were also asked, wherever possible, to quantify the different items according to a priority scale or by entering an approximate percentage of how much the revenue contributes to the total.

Figure 17 shows the online board after compilation.

The results of our workshop confirmed what we already guessed before the meeting; all DIHs use more than one source of funding, and the main three are:

- **Public co-funding** remains the most important revenue for practically all DIHs; in several cases it reaches and exceeds 50% of the total DIH funding;
- **Private and Partner co-funding** is almost as important;
- about half of the DIHs have started or are considering **Subscription/membership** funding.

A number of new forms of collection are also emerging stepwise the DIHs, by improving their offerings, acquire clients to whom they provide services that have economic returns, either in competition with other types of consultants or, in some cases, by offering almost unique services such as the Didactic Factories:

- charging **full/partial cost service provisions**, especially for consultancy, dissemination services, renting of show-room spaces in Didactic Factories, supports to experiments implementation
- **commission/success fees**: support to customers' projects & success fees.

Other forms of funding, such as **Indirect branding**, **Integrator/orchestrator** and **Crowdsourcing** exist, but are scarcely used.

No further revenue models have been identified by the participants, in addition to the twelve proposed.
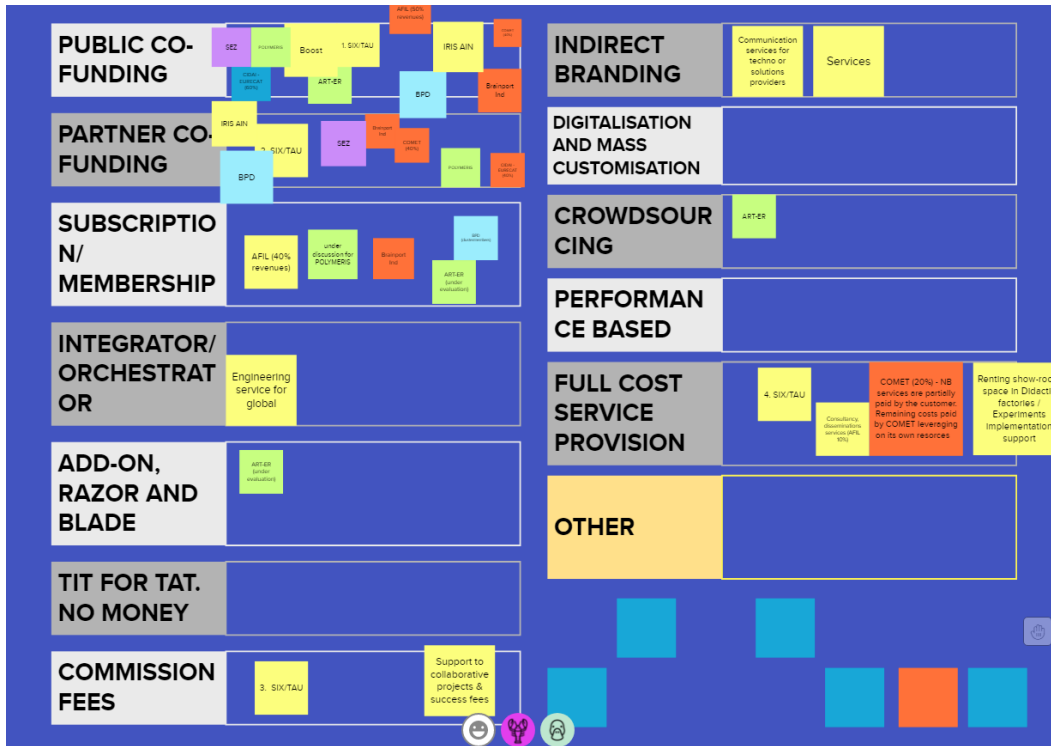
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Figure 17 Revenue Models evaluation - interactive session with AI REGIO DIHs

4.3 Business Model Canvas panel's result

The third mural session was a very dense one, because we decided to explore a whole BM canvas.

As a reference model, we took the Osterwalder Business Model canvas described in Section 2.2.1, which is probably one of the most used visual tools to describe a company business model and with which, therefore, most of the participants were already acquainted. However, given the peculiarities of the DIH business, we suggested to feel free to extend the interpretation of the dimensions to the descriptions of the other proposed models (the Innovation BM, the Lean BM and the Mission BM), so as to get a more exhaustive picture; e.g. the Customer Segments dimension can also be understood as Beneficiaries, where the recipient of the service - as it may happen in the case of DIHs, which are non-profit structures - does not have all the characteristics of a traditional paying customer; or, typically, in the case of DIHs, one can often speak of Stakeholders referring to the Key-partners.

In the compilation, we asked to focus mainly on the dimensions less explored so far: Key Partners, Key Activities, Key Resources, Cost Structure, Customer Relationships, Channels, while Value Proposition and Revenues Streams had already been the subject of the first two sessions, and Customer Segments already largely formalised with the METHODIH approach.

The result obtained can be seen in Figure 18.

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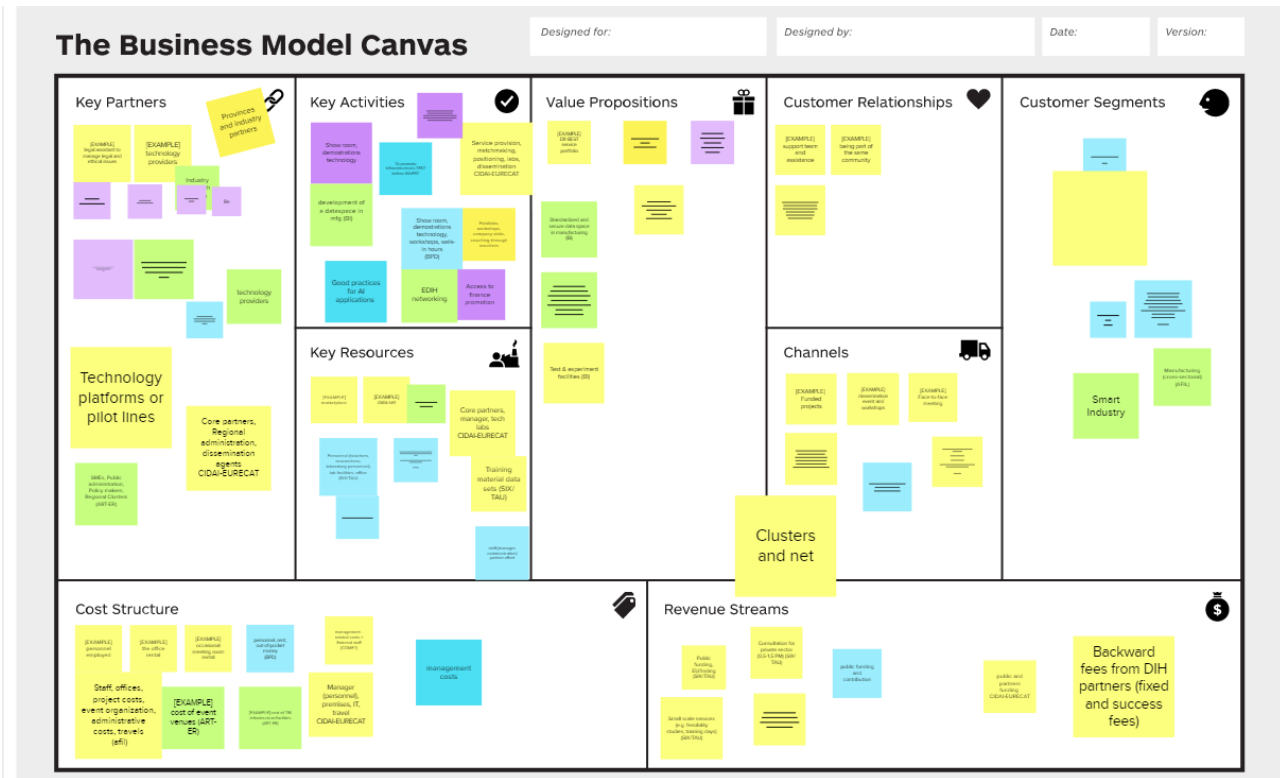
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Figure 18 Business Model Canvas - interactive session with AI REGIO DIHs

KEY PARTNERS / STAKEHOLDERS received a large number of answers and comments, demonstrating that DIHs are multi-stakeholders organisations, involving at least three institutionally different types of stakeholders.

- **Industrial partners**

  Industrial partners are present in most of the DIHs, both individually and as regional clusters or associations. They can be either large enterprises, SMEs or start-ups; each brings and receives technological knowledge according to its level of development and size. Industrial partners are an important element in the DIH activity because they constitute the main scope of the services offered by the DIH, but they also bring technology in a mutual exchange and provide funding.

- **Technology providers**

  Technology providers are present in a wide variety of situations and with different characteristics: they can be SMEs, start-ups or even local Didactic Factories or fieldlabs, or specialised technology providers such as data centres. They can also be other DIHs.

- **Policy makers & Regional Administrations**

  Of great importance are public authorities / political and administrative institutions / local governments, which normally refer to regional institutions or provinces.

  Institutions are often present within regional clusters, which include the participation of all types of stakeholders described above.

Let's see now what about the **KEY ACTIVITIES**, referred consistently to the Key Partners or Stakeholders: where the DIH has ongoing technological innovation projects, we have referred to them as innovation activities. It should be noted that also this part had already been very structured during the AI REGIO project, because key activities were defined along with the Service Portfolio.

It is very important to note that, at this stage, the DIHs are devoting a significant part of their activities to market penetration, followed by service development, market screening, networking activities and support in accessing funding.

Coherently with results obtained in the Value Proposition Canvas session (Section 4.1), the Key Activities highlighted are:

- **Marketing, dissemination, awareness creation**

  This includes dissemination events like presentation of DIH activities and of EU projects, workshops to understand and collect needs and priorities from the SMEs, contacts with the institutions (roadmapping), promotion of test-before-invest infrastructures like companies visits to show rooms, walk-in hours and technology demonstrations, coaching through vouchers.

- **Innovation and development**

  For instance, development of AI applications and dataspaces for manufacturing environments; fieldlabs.

- **Networking**

  Networking among DIHs and DIHs / SMEs, matchmaking services, positioning, network creation, good practices deployment.

- **Access to finance**

  Promotion of funding opportunities and EU projects by infodays, contacts with institutions.

After Key Partners and Key Activities, we examined the **KEY RESOURCES** dimension, where, by key resources, we mean the main assets, staff and knowledge the company needs to deliver its value proposition.

In this case, the most widely resource identified by the DIH, by far, are the human resources, mainly intended as their own staff, but not only: also external staff and partners are highly valued; answers go through internal personnel (managers, teachers, researchers, laboratory tech staff, project managers, communication), external personnel (from associates, universities and consultants) and partners, both in one-to-one relationship and in consortia.

As to the assets, it goes without saying that the lab facilities and training material represent the most valuable physical asset for the DIHs.

We then analysed together the dimensions of **CUSTOMER RELATIONSHIPS** and **CHANNELS**, because there is some overlapping between them, starting from their both referring to the customer journeys that have been identified in the METHODIH approach, where a customer analysis was proposed in order to understand typical needs, expectations and interaction workflows by the various ecosystem stakeholders.

In the case of DIH, it is very appropriate to speak, together with Customer Relationship, of Customers Involvement (typical definition of the Innovation BM canvas), since in many cases customer relationships are more identifiable as a collaborative or community relationship in the development

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of innovative solutions rather than as relationships typical of a mature stage of market penetration.

For the Channels, the scheme of awareness-evaluation-purchase-delivery proposed in Section 2.2.1 (characteristic of a product already on the market) is certainly valid, but a relevant definition of go-to-market can be added for innovative services and services in the launch phase. In fact, it should not be forgotten that, among the activities, the DIHs mentioned that they are dedicating part of their activities to launch their services.

- **Communities and clusters**

  The creation of clusters and communities was considered rather important by DIHs; within them, they can be organised general dissemination events such as workshops and meetings with regional authorities and other clusters/associations, or dedicated working groups according to specific interests.

- **Dissemination and awareness**

  They are obtained through websites (own and networked), LinkedIn, online newsletters, thematic workshops and meetings.

- **Provision of services**

  The provision of services (a typical element of the Channel dimension) takes the forms of consultancies, operational support to the SME staff, coaching through vouchers, workshops, working groups and one-to-one meetings.

Finally, we have to mention that the **COST STRUCTURE** can also take on the interpretation of **Funding** typical of the Innovation BM, since often, in DIH as in publicly funded research projects, there is a juxtaposition between project expenses and funding sources. We have therefore left it up to the participants to interpret this item in either way.

The listed cost items are consistent with the key activities and key resources highlighted earlier.

The main cost item, widely quoted by all, is staff and related expenses; then, expenses for facilities (premises and infrastructures) are also relevant and, coherently with the wide promotion and dissemination activity carried out by the DIHs, expenses for the organisation of events are mentioned, while expenses directly linked to projects are mentioned as marginal.

The **VALUE PROPOSITION** had already been investigated in the first session of this meeting and, as mentioned, it will be further deepened in next sessions by profiling it in respect to six other customer types according to the METHODIH customer journey analysis, with the addition of DIHs as a new type of customer.

For this, please refer to Section 4.1.

The **CUSTOMERS SEGMENTS** had already been the subject of important standardisation work in METHODIH.

Out of the 6 types of customers envisaged by METHODIH, it was detected that for all DIHs, Technology users are particularly relevant, and in particular:

- **manufacturing SMEs**; the concept of manufacturing SME extends beyond the 1st tier level, encompassing 2nd and 3rd tier companies, and must be intended as cross-sectorial
- **smart industries** and **start-ups**

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Finally, the **REVENUES STREAMS** had been seen in the revenue models analysis run before, which revealed that public co-funding and private co-funding are the main source of income for the DIHs, while they are gaining ground subscription/membership fees and commercial income in the form of full or partial cost coverage or commissions/success fees from consulting and technical support services.

4.4   Expression of interest panel's result

The last part of the meeting was devoted to discussing possible variations to the proposed Osterwalder Business Model canvas and its dimensions.

In addition to it, other BMs, already described above, were presented in depth: the Innovation BM, the Lean BM and the Mission BM, with their dimensional differences, as described in Sections 2.2.2, 2.2.3, 2.2.4 respectively.

It was asked to assess whether the dimensions of the other models were relevant to the DIH business, and whether they represented it better than the Osterwalder BM.

As already explained, some of the dimensions of the different models are obviously overlapping, e.g.:

Key partners (Osterwalder) and Stakeholders (Innovation)

Key activities (Osterwalder) and Innovation Activities (Innovation)

Key resources, also present in Innovation and Mission

Cost Structure, also present in Lean and Mission

Value proposition (Osterwalder) and Value Contribution (Innovation)

Customer Relationships (Osterwalder) and Customer Involvement (Innovation)

Customer Segments (Osterwalder) and Target Groups (Innovation)

For this reason, we had already assumed, during the previous sessions, that they were relevant to the BM of DIH, leaving in the compilation of the BM freedom to interpret them both ways.

We then focused our attention on the other dimensions, asking participants to vote on which ones they thought were relevant to the business model of the DIHs. The results are highlighted in Figure 19: to the border of the traditional nine-blocks shape canvas (in grey), additional blocks have been added (in green), deriving from the other canvas explored together with the DIHs. The logic behind the composition of Figure 19 is the following:

- the Osterwalder canvas is entirely reproduced (grey background) and its blocks are identified with red labels;
- the Innovation canvas (which is quite similar to the previous one) has been embedded in it, by highlighting with green labels the most different blocks;
- the Lean canvas presents some blocks in common with the Osterwalder (they were not included to avoid repletion) and some blocks that are completely different (light blue labels): problem, solution, unfair advantages and key metrics can't be combined to any Osterwalder block since they are conceptually very far and so they have been positioned outside (green background)
- same reasoning for the Mission canvas (purple labels): identical blocks were ignored to avoid repetition, similar blocks were embedded in the Osterwalder schema, conceptually different

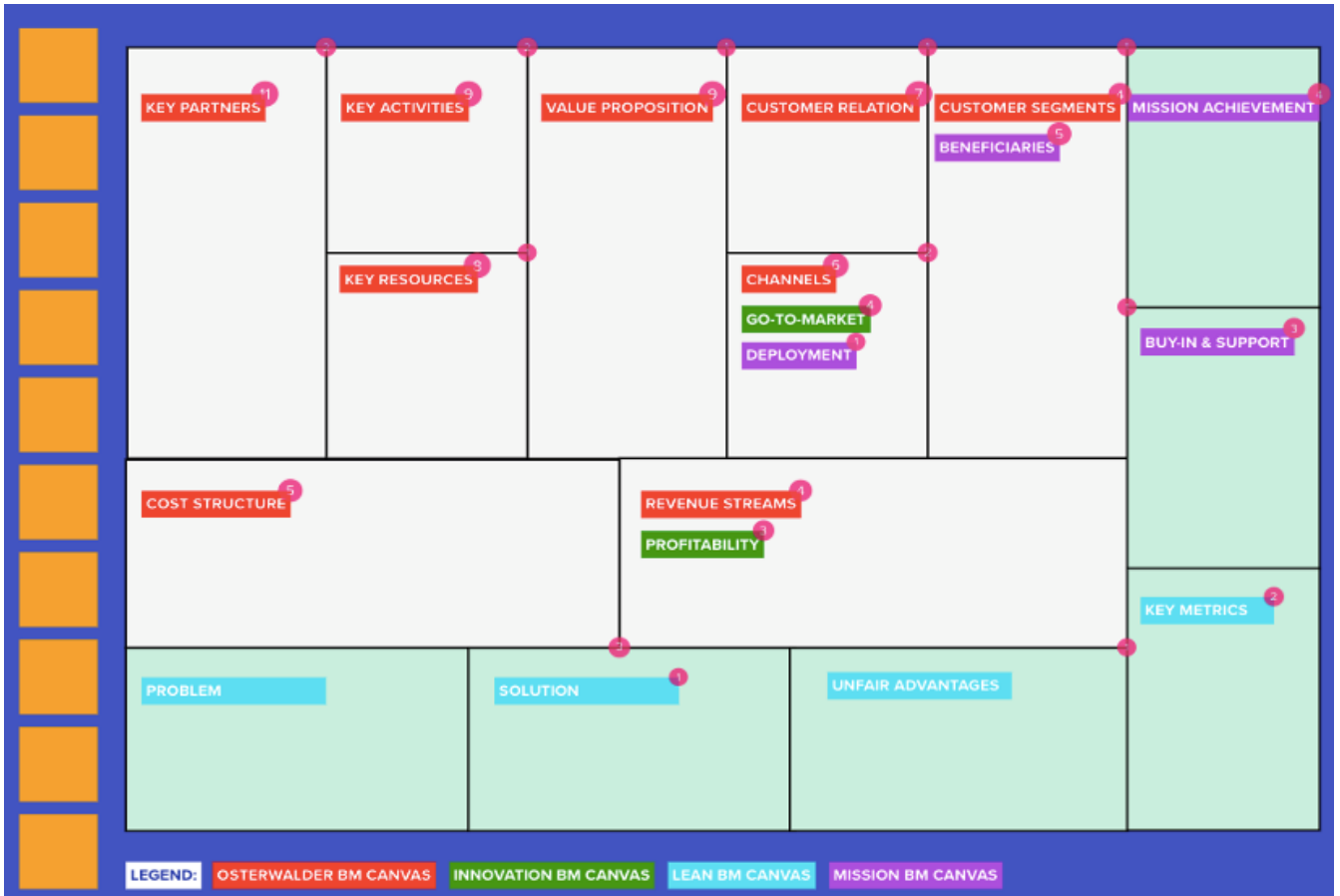ones (as mission achievement) were positioned outside.

Figure 19 The most relevant Business Model Canvas components - interactive session with AI REGIO DIHs

The small red circles with numbers inside represent the number of votes, given by the Digital Innovation Hubs, to identify the most relevant concepts to be included in a DIHs business model canvas.

Customer segments - Beneficiaries

The use of the term Beneficiaries together with Customers was considered equally relevant, consistent with what we have seen in relation to the Revenue Streams, given that the recipients of services provided by DIHs do not always pay or pay in full for the service itself. Both a customer and a beneficiary approach are present in the DIHs BMs.

Channels – Go-to-market

The term Channels represents a commercial approach to customers (awareness creation, service/product proposal, delivery) and was considered correct with respect to the DIH business. However, some attendees also mentioned the definition of Go-to-market, used in the Innovation model, because it concerns the strategy of bringing a new product or service to the market.

Revenues Streams – Profitability - Mission achievement

In this case, the concepts are substantially different.

Revenue streams and profitability refer to for-profit activities, and are therefore relevant when talking about services provided for a fee. This aspect has been considered pre-eminent by DIHs because, although DIHs are non-profit activities, the revenue aspect is still substantial for a correct balance of costs and revenues in their activities.

The Mission Achievement aspect is typical of non-profit organisations, where the success of the company is not represented by economic utility, but by the achievement of social objectives; some DIHs wanted to reward this point of view, citing Mission Achievement among the dimensions worthy of representing the DIH business in a BM canvas.

On the other hand, the dimensions proposed by Lean BM (problems, solutions and key metrics instead of key partners, key activities and key resources) were judged to be generally irrelevant. Lean BM refers to the Lean methodology, mainly aimed at eliminating inefficiencies. At the moment, this is not an issue felt by DIHs, and therefore these items were not considered relevant; problems, solutions, key metrics and unfair advantages received very few or no reports.

4.5 Toward a Value Proposition for the DIHs community

This exercise has been conceived in the **perspective of the creation of a big community of AI REGIO Digital Innovation Hubs**, able to attract other DIHs, according to the joint exploitation plan to be defined in WP7.4 – "Exploitation Vehicle and Business Plan".

In this regard, the community of 13 DIHs has been required to compile the Value Proposition Canvas, considering as customer another Digital Innovation Hub willing to join the AI REGIO network. Hence, the Customer Segment Profile (right circle panel) has been filled from the point of view of an external DIH; the Value Proposition Map (left square panel) from the point of view of the AI REGIO community of DIHs.
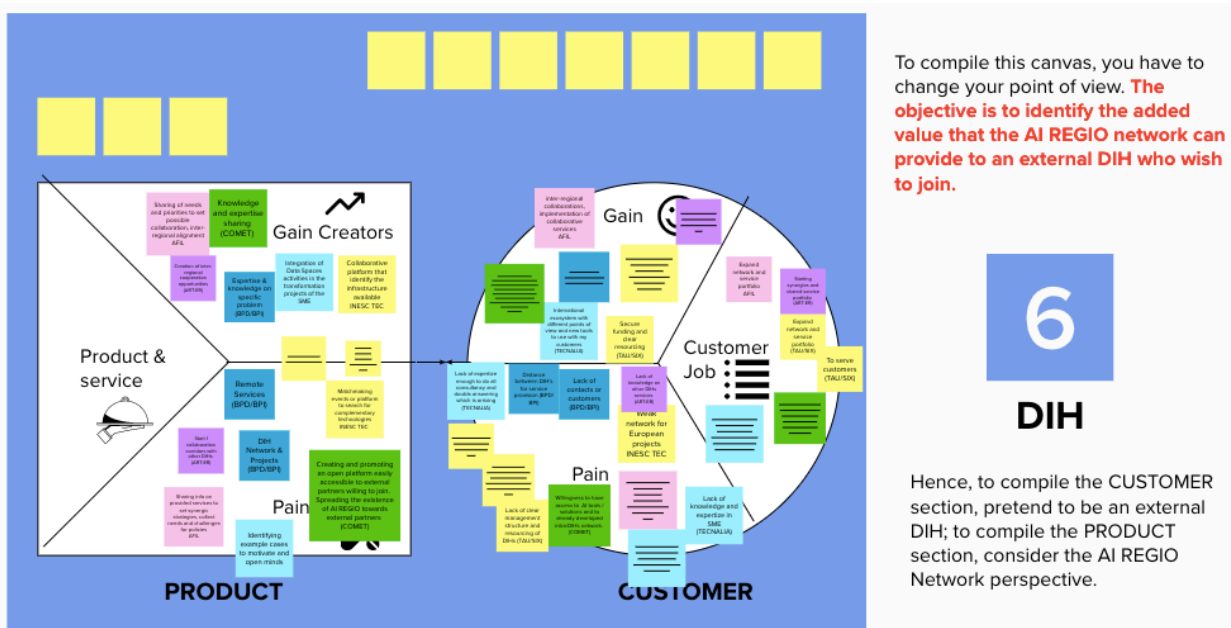

Figure 20 The Value Proposition canvas for DIH's joint exploitation plan

Figure 20 shows the Value Proposition Canvas jointly compiled online by the DIHs.

Starting by analysing the Customer panel, the AI REGIO DIHs describe the possible new customer, that will join the community, as an Hub **looking for new customers** to be included in its constituency, and also willing to have access to a **multi-functional platform** to manage the network of DIHs' stakeholders. Organisations that the AI REGIO community may easily attract are hubs that suffer from **lack of a solid network** (mainly to participate in funded projects), of a clear **management structure** and fear of **competition with other DIHs**. On the other side, their expectations are to become **part of a community**, to develop (new/improved) **collaborative services**, activating inter-regional collaborations and synergies, benefitting of knowledge transfer across the network of DIHs and to be part of a **solid funding system**.

Moving to the left panel, the products/services offered by the AI REGIO community are the outputs of the project itself and hence, not surprisingly, the "Product & Service" section was not filled at all. For instance, a possible product can be easily identified with the **AI REGIO platform** to be developed in WP4 – "Beyond PLATFORMS: AI DIH Open Platforms and DIH platform", that represents the added value that the AI REGIO community will exploit at the end of the project. Additionally, the **AI REGIO network** of DIHs is itself a "service" that perfectly meets the customer requirements. Both the platform and the network will concur to **share knowledge and expertise**, to create **regional, national and international opportunities**, to start **collaborative corridors**, as required by new possible joiners.

5 Conclusion and Future Outlook

D3.5 – "AI REGIO DIHs Business and Governance V1" is a document very rich in content and full of useful information to be exploited in next months and activities.

First of all, it is evident that the DIH Business Model analysis is not finalised yet: in the present deliverable, WP3.4 highlighted the most relevant components to be taken into account for describing a non-profit multi-stakeholder business and identified the main tools to speed up and ease the task (drafting also the guidelines for the compilation of the DIH Business Model Canvas). Hence, the most obvious next step is the compilation of the canvas itself, by each DIH, considering that this activity is also a good exercise to validate the proposed tool. Actually, the analysis run so far involved the Digital Innovation Hubs together, with the objective of collecting and sharing ideas and suggestions among the ecosystem, but without dwelling on the single business.

The description of the 13 businesses (one for each DIH) is a task that will be run in next month within WP3.4 and together with a number of further research activities, with the objective of improving and refining the results got so far.

Actually, as presented in D3.5, the main achievement is the **extension of the METHODIH** methodology, by including also the business model framework. As of now, thanks to the research activities run in WP3.4, it consists on:

- The compilation of the **Value Proposition Canvas**, leveraging on the results obtained applying the previous two steps of the methodology (Service Portfolio and Customer Journey analysis)
- The compilation of the **Business Model canvas tailored for DIHs**' needs and guided with a set of questions defined specifically for Digital Innovation Hubs.

However, the final purpose is to enrich the business analysis outlined so far considering the Governance dimension and the cross-regional sustainability as well, as further topics to be enhanced according to a specific methodology. Both subjects were touched in D3.5 but not analysed in detail:

- The **Governance dimension** is strongly linked to the concept of multi-stakeholder ecosystem, as highlighted while discussing of DIHs' key partners. Starting from the stakeholders analysis presented in D3.5, the final step is the identification of related main components as ownership, liability, responsibility that must be controlled and managed in a multi-stakeholder complex system.
- **Cross-regional sustainability**, that is, the capacity for DIHs of creating a network of Digital Innovation Hubs able to produce and sell business. The compilation of the Value Proposition Canvas considering the AI REGIO ecosystem as the "company" and DIHs as target customer, goes directly into that directions, with the objective of discussing about the key aspects that interact in the process. Next step will be the deep analysis of the network seen as single entity, to determine how guarantee sustainability.