

# Green Paper: Post-project sustainability of European DIH networks

## *Preliminary views on elements of sustainability* RODIN/DIHNET Green Paper

This paper is a **RODIN/DIHNET working green paper**, developed by a collaborative action of RODIN and DIHNET. Ideas expressed in the paper have benefitted from discussions in the RODIN-DIHNET WG on post-project sustainability. However, the paper does not necessarily reflect the views of the participants.

Other papers resulting from the discussions in **RODIN papers** can be found on the RODIN website and relate to topics such as the future of FSTP and consequences of Brexit for Innovation Actions.

The opinions expressed in this study are those of the authors and do not necessarily reflect the views of the European Commission

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# 1 Introduction to the paper and its approach

## 1.1 Introduction to the Working Group

During the Horizon 2020 programme, the **post-project sustainability** of Innovation Actions (IAs) and other network-focused European projects have become increasingly important. In many cases, EC-funded project are discontinued after the project, or sometimes found sustainability through an additional EC-funding with a follow up project. However, the Commission now looks at their funding as a starting point to initiate momentum that will lead to a sustained network with reduced needs for EC co-funding. This “post-project sustainability thinking” is still challenging and there are **just a few** successful examples (e.g., Bluemorpho, CloudSME) of the continuation of projects after EC-funding. Although many Innovation Actions (IAs) and Coordination & Support Actions (CSA) nowadays address continuation of their results and networks (even from the beginning of the project), there is a need to **share knowledge and experience** regarding this topic in order to gather a comprehensive view.

To address this challenge and exchange ideas, a **working group** was set up in RODIN, connected to the DIHNET project. The RODIN-DIHNET working group aimed to **exchange lessons learned and experiences**, as well as support the development of a common practical vision for post-project sustainability of EU-networks based on DIHs. The Rodin Working Group (WG) was setup with **representatives** from the 5 robotics-related IAs, which are currently in operation and are exploring their post-project sustainability. These representatives bring a **practical approach** from these IAs to the WG discussions. This group will remain in operation as the IAs develop their sustainability plans in the future. The connection with DIHNET was set up in order to provide an overview of the post-project sustainability subject from a broader network perspective and to support cross-learning between different networks. In addition to some joint meetings, e.g. in the RODIN summer camp, the collaboration of the two projects on the topic is also visible through the joint webinar on the topics of PPSEU (post-project sustainability of EU initiatives) on 2 July 2020.

**RODIN** aims to bring together five Digital Innovation Hubs (DIHs) networks in robotic and support them in enhancing their cooperation and effectiveness. As part of the RODIN activities, a working group with the 5 Innovation Actions on robotics – Trinity, agROBOfood, DIH-HERO, DIH<sup>2</sup>, RIMA - has been set to discuss post-project sustainability of EU networks (PPSEU) to support cooperation and peer exchange. The first meeting of the PPSEU took place on 27 May 2020. The RODIN PPSEU WG cooperated with the **DIHNET** project. DIHNET aims at enhancing the EU DIH network by inspiring its stakeholders, and DIHs in particular, to improve their operation and connection them to the network..

This **green paper** was drafted as a result of the discussions and background information in the **RODIN WG** on sustainability in **cooperation with the DIHNET** project. The paper outlines the main elements of a post-project sustainability as presented and discussed in the RODIN-DIHNET WG. It aims to provide the community, including the participants in the WG, with a **comprehensive framework** of regarding the post-project sustainability of their initiatives. We expect that this framework will lead to a shared mindset in order to enhance the quality of the discussions, which in turn will inspire the community to advance on this important aspect and to make it operational in practice. The hope is that this will result in **more successful sustainability outcomes**.

The paper is **not** aiming to outline the approach or plans of the RODIN IAs as the projects are still developing their sustainability plans and the topic is evolving. A short update of the current approach taken by the IAs is provided in the restricted Annex. A second phase with lessons learned from the IAs

on sustainability will be discussed, and if appropriate, further lessons gathered towards the end of their activities.

## 1.2 An introduction to the proposed post-project sustainability framework

Post-project sustainability of EU-project is about – among others - creating viable business models for the operation of European networks, as well as issues of governance, positioning and organization. Often, such networks are based on an initial funding from the Commission under a EC Framework Programme (FP7, H2020, or HEU). Many of the Innovation Actions and Coordination Support Actions that are co-funded by the

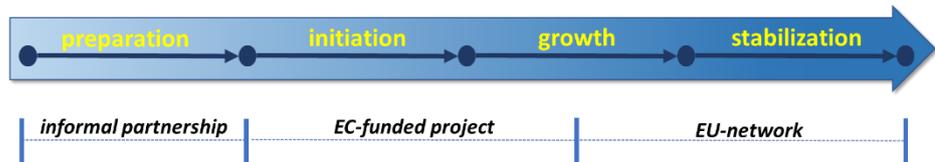


Figure 1: Four different stages in the life of EU-networks.

Commission can be seen as **precursor** to create a **network** of DIHs that **boosts European collaboration** on a specific innovation topic.

However, it is **unlikely** that the Commission can provide additional **long-term funding** for the many IAs and CSAs. This would strain the EC budget to support all projects eligible and would limit new innovation strategies. It is also a challenge to evaluate whether so many networks could continue to operate effectively individually or in collaboration. On the other hand, for the ones that are prepared for sustainable operation, just stopping the activities and networks created would lead to a unwanted early depreciation of investments and stop the added-value activities of these networks.

To evolve from a EC-funded project to an EU-network evolves around **the business model** that is in place to ensure the **balance** between the services offered and the capitalisation of these services. In EU-projects, this balance is created by the EC-funding and some in-kind contributions from the partners. Limiting (or eliminating) the EC-funding could have an impact on the range and type of services provided, as well as the organisation of the work to cohere the network. In order to maintain the network, a **shift** must be made towards other revenue streams to cover the costs of these activities and the service delivery. The different elements of a business model for EU-networks are:

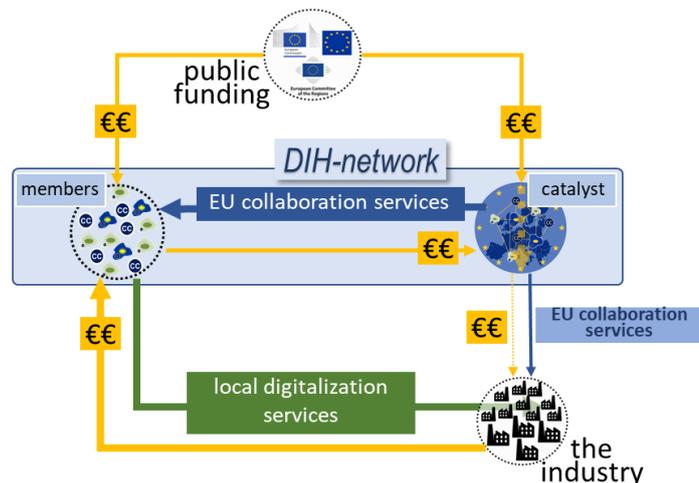


Figure 2: Visualisation of a conceptual business model for EU-network that balances the value delivered and its capitalization.

1. **Services:** The value created by the network; the services form part of the value the network is creating and sets out how they are provided (see chapter 4 DIH networks creating value).<sup>1</sup>

<sup>1</sup> Gassmann, O., Frankenberger, K., & Csik, M. (2014). *The business model navigator: 55 models that will revolutionise your business (1st ed.)*. Upper Saddle River, NJ: FT Press. [About | Business Model Navigator](#)

2. **EU-network organization (catalyst + members):** The organisation of the EU-network activities (see chapter 6 Organisation of the EU-networks);
3. **Revenues (€€):** The way the network is being financed (see chapter Why: Revenue models to capitalize value);
4. **Industry:** The final customers and their pain points – often addressed by the services provided by the network members (see chapter Customers of the individual Members ).

Core to this sustainable business model is the **balance** between providing **value** to the customers/users of the network and the **capitalisation** of this value in order to create income to the network and cover its costs. At the heart of the EU-network, there is a small team (**network catalyst**) whose mission is to forge EU-collaborations. In the (funded) project phase, these smaller teams usually constitute (core partners in) the consortium. They provide mainly services to the EU-network **member service providers** (e.g. DIHs), which in turn are providing direct local digitalization services to the end-customer/users (the industry, and especially SMEs). European, national and regional governments provide co-funding for both 1) the **members** (to deliver their local digitization services to industry) and 2) the **catalyst** (to deliver EU collaboration services to the members). In this overarching model, the **members** could (should) pay a small fee to the **catalyst** to ensure its viability and are, in turn, paid by their customers. In the overarching model, the network is further initiated and boosted by limited co-funding by the **catalyst** to the industry (provided by the governments e.g. via FSTP).

The green-paper will provide more backgrounds and details on this concept, as well as approaches to develop and enhance these business models.

### 1.3 The Business Model approach as guiding principle for the document

Thinking of post-project sustainability in business terms can help the initiative to clarify its strategy, mission and plans in a clear and concise manner even if the initiative is publicly funded. The **two main pillars** of a sound/viable business model are:

- 1) The **creation of added value** towards the customer (value proposition) and
- 2) **Capturing** the value and creating financial and operational stability from it and addressing the costs of the network.

The business model outlines the way the initiative will generate and capture value, as such it outlines the core business logic of the initiative.<sup>2</sup> The business model approach has a few main functions:

- To spell out the business/sustainability plans of the initiative;
- To provoke discussion and alignment of objectives, activities and priorities among the partners;
- To initiate discussions on funding and the development of financing plan/revenue model mix.<sup>3</sup>

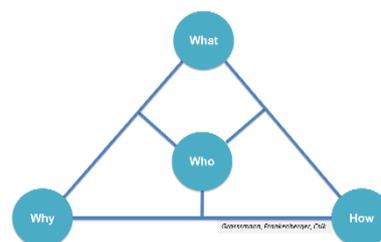


Figure 3: Business Model Navigator (source: The St. Gallen Business Model Navigator)

<sup>2</sup> Maurits Butter & Govert Gijsbers (February 21st, 2018), “Business Models For Digital Innovation Hubs”, DEI Working group 2, available [here](#).

<sup>3</sup> This element is often overlooked, especially when it comes to initiatives addressing a market failure or societal challenge. Yet, an evaluation of possible revenue models is needed, even if there is reliance on public (co)-funding.

There are many methods and tools that can support the development of a business model – the Business Model Canvass, the Mission Canvass, Value proposition canvas,<sup>4</sup> Gassmann magic triangle,<sup>5</sup> and others. While all are useful and could be helpful in the discussions, for the sake of simplicity we will follow the Gassmann model (focusing on who, what, why, & how).

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<sup>4</sup> <https://www.strategyzer.com/blog/posts/2016/2/24/the-mission-model-canvas-an-adapted-business-model-canvas-for-mission-driven-organizations>

<sup>5</sup> <https://www.thegeniusworks.com/wp-content/uploads/2017/06/St-Gallen-Business-Model-Innovation-Paper.pdf>

## 2 Introduction to sustainability of European DIH networks

### 2.1 European DIH networks: what they are and their core objectives<sup>6</sup>

DIH networks aim to **support collaboration across Europe** (e.g. on adoption of innovative technologies). They boost EU competitiveness by connecting the actors like DIHs and CCs across regions and countries in order to provide access to expertise on pan- EU level and support the uptake of key (enabling) technologies such as robotics.

To establish and sustain a leading position of EU industry and support the adoption of advanced technologies and innovations, connection and collaboration need to be established among research, industry and policy. This effort is currently supported by EC funded Innovation Actions (IAs) and respective CSAs, mainly under the Horizon 2020 programme. Innovation actions usually focus on a particular technology or industry and aim to support excellence and the further development of innovations. Such development is also carried out in cooperation with industrial players (especially SMEs), who also conduct experiments for the uptake of the technology supported by the IAs.

Many IAs are also establishing networks with relevant DIHs and CCs and encouraging the cross-border cooperation in Europe. Looking at the 5 IAs that are connected to the RODIN CSA, their aim is to innovate robotics to the next level in a **collaborative** way and create a European **network** of DIHs which can then connect European capacities and capabilities to their local ecosystem. In the end, it is expected that such networks stimulate and support European industry, especially SMEs.

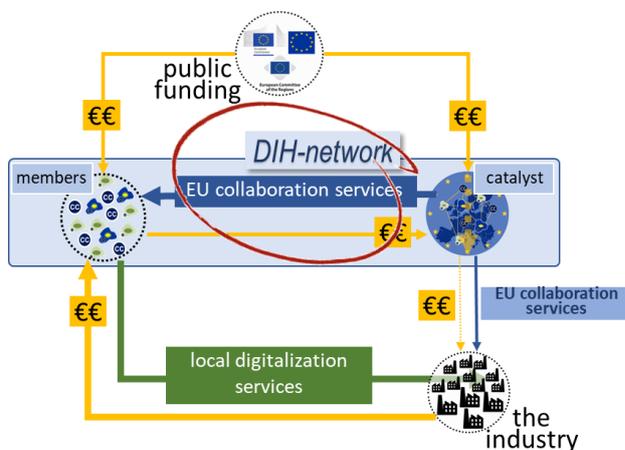


Figure 4: Visualisation of a conceptual business model for EU-networks in which the value delivered and its capitalization is balanced.

But the **core mission of the DIH networks is to strengthen interregional collaboration** and to create a community among local support organizations (like DIHs) across Europe. This differs from the overall objective of DIHs, which aim to support the individual companies and their local ecosystem. DIHs can therefore be seen as offering services to companies and other local stakeholders (incl. the public sector), while DIH networks offer EU collaboration services to support organizations like DIHs and CCs. This difference in the function among the network of DIHs and the DIHs themselves also implies a fundamentally different business model.

In the new Digital Europe Programme, a new network of European Digital Innovation Hubs (EDIHs) is also expected to contribute to interregional collaboration. It should however be noted that there is difference between the upcoming EDIHs and the existing DIHs and the respective networks. One of the key differences is in the branding of “European” hubs which need to be designated by their country

<sup>6</sup>See also Butter, M, et al (2020), “Defining Digital Innovation Hubs as part of the European DIH network; Draft working paper: summary”, DIHNET working paper; Butter M., Gijsbers G., Goetheer A., Karanikolova K. (2020) Digital Innovation Hubs and Their Position in the European, National and Regional Innovation Ecosystems. In: Feldner D. (eds) Redesigning Organizations. Springer, Cham. [https://doi.org/10.1007/978-3-030-27957-8\\_3](https://doi.org/10.1007/978-3-030-27957-8_3)

and need to pass a threshold in the determined in DEP evaluation process.<sup>7</sup> The EDIHs will fulfil a “**local**” (regional) and “**EU**” function and will be funded by the EU and national (or regional) sources. But other differences also exist. Where the main focus of DIHs is on R&D&I, the EDIHs for instance “will act as a multiplier and **widely diffuse** the use of all the digital capacities built up under the different specific objectives of the Digital Europe Programme”<sup>8</sup>. These differences with the DIHs and respective DIH networks should also be explored in the future on the effects of sustainability of these networks and their core objectives.

## 2.2 Why sustainability of EU DIH networks

Sustainability of results/outcomes/impacts has increasingly been put as a priority for European projects in recent years. Post-project sustainability refers to an exploitation strategy and potential continuation of activities after the end of the project. This is an especially critical topic for (DIH) networks. While not all initiatives will manage to continue their operations after the project, projects should explore the sustainability topic as it provides **continuity in the ecosystem**, helping the stakeholders to recognize and stay connected with already developed activities. But also it leads to higher **impact of public funding** due to the exploitation of results and continuous support of the network. A last point is that it increases **efficiency of the activities**, which can continuously develop, leveraging on already established experience in the network and lessons learned from the previous phases of the network development.

Post-project sustainability has been acknowledged as an important topic in (EU) projects and initiatives. Nevertheless, it is a relatively new topic and several challenges to achieve such sustainability can be identified:

- Sustainability can still be seen as an emerging priority, meaning that there are a **limited number of examples** of sustainable networks and expertise on the matter within the community, particularly in regard to workable business models.
- **Sub-optimal alignment** among different networks, initiatives and projects, leading to segmentation and individually developed tools and mechanisms with similar aim (e.g. networking, information repositories, matchmaking tools, etc).
- **Dependence on funding:** many of the activities and services within Innovation Actions (and other publicly funded projects) are dependent on the current funding. An example is the support of the consortium to offer services but also financial incentives to grow the network via third-party funding (e.g. FSTP). After the end of the project, these activities are likely to stop due to limited access to additional funding.
- A revenue model based on memberships is getting more difficult as potential (paying) members are confronted with an **increasing large number of potential networks** they could sign up to.
- IA projects and other networks “under construction” are looking at **sustainability as an ‘after-thought’ rather than a ‘driver’**. Limited attention for post-project sustainability in many of the projects leaves them unprepared for future continuation.

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<sup>7</sup> See European Commission (2021), “Frequently Asked Questions: European Digital Innovation Hubs -Version 4.4 – 20 December 2021”, available [here](#)

<sup>8</sup> Text taken from the EU call for proposals published on 17 November 2021 under call text “Initial Network of European Digital Innovation Hubs; TOPIC ID: DIGITAL-2021-EDIH-INITIAL-01”

- **Transitioning to a new organizational form** is also a challenge for many networks. Not only is it difficult to find an appropriate legal form, but the network consortia may need to change fundamentally to make the future operation sustainable.

To address these challenges, post-project sustainability has been established as an important topic to explore in RODIN and the current robotics IAs, in cooperation with DIHNET. Different aspects are usually considered, including funding but also finding a suitable organizational and governance models, etc

### 2.3 Post-project sustainability in the overall development of the EU DIH network

Sustainability is however not easy and usually requires exploration of suitable services, organization, funding, etc. In that sense, the project phase of Innovation Action can be seen as initiation of the networks and the topic of sustainability refers to the growth and stabilisation (see **Error! Reference source not found.**). The initiation phase is very important as it allows the network to explore different activities/services and establish its added value within the ecosystem. This phase is very much focused on the **exploration** and setting up the services, the foundations of the network **as well as creating a critical mass** of members, services, and use/good cases that can support the further development and establishment of the brand identity of the

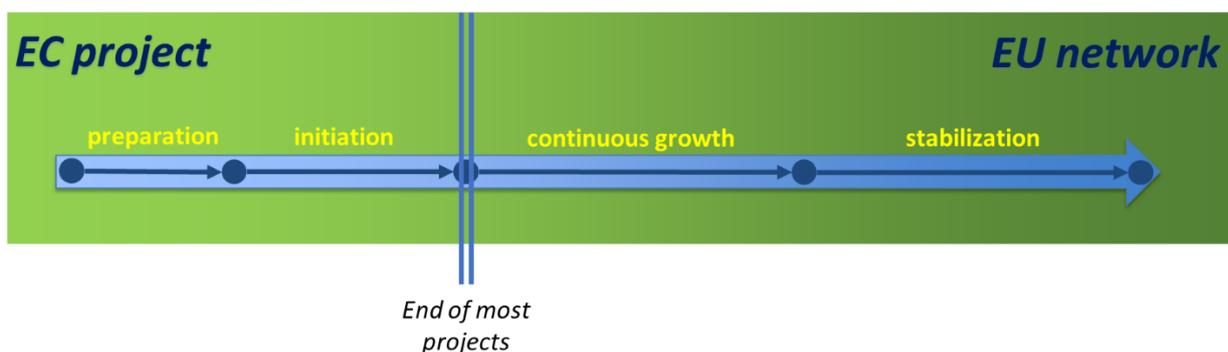


Figure 5: Phases in network development (© 2021 TNO, as part of the work in EU-GREAT!, DIHNET, RODIN projects).

network.

For the continuous growth and continuation of the project to a sustainable EU (DIH) network, it is important that by the end of the project a business plan(s) is developed to outline the strategy and plans on how value is generated and captured as well as the initial governance model and structure of the network. Several elements should be closely considered and will vary among networks:

- **Mission** of the initiative and whether this will be tweaked with the transition from a fully publicly funded program and semi-closed network.
- The **customers (who)** and main target groups, taking into account the services offered by the members of the network themselves (to avoid internal competition)
- The **services (what)** offered, based on the mission and the needs of the target audience. We can expect that a mix of business, skills, technology and ecosystem services will likely be needed to address the customer needs. But the prioritisation of activities and focus of the network can also be expected to influence the choice of the network.

- The **organization/governance** of the initiative is likely to also change. The network may change from a (semi) closed to a more open network, new partners might get engaged while others decide to stop their contribution, the governance and decision making might alter, etc.
- **Funding/revenue** model and how this will be affected by the end of the project to cover the costs of the initiative. The financing of the network needs to balance the costs incurred in managing the network, developing and maintaining the assets and services with the appropriate revenue streams (possibly incl. public co-funding). Looking at collaborative networks, the discussions in the RODIN and DIHNET projects has resulted in the identification of 14 possible revenue models, based on the Gassmann 55 Business Model Patterns.<sup>9</sup> So far, it has been observed that some revenue models relate to cost saving strategies while others support income generation.

## 2.4 Five types of networks

All these elements are essential parts of the sustainability business model of the networks and options for each as well as steps to reach the objective should be explored. Generally speaking, if we cluster the different business and revenue models across 2 axes – public/private funding and open/closed networks – **we can identify 5 typologies of networks** (see Figure 5). For each of these typologies, the elements above will differ.

For example, strategic public networks might aim to address societal challenges by creating a critical mass of activities and a community, with awareness raising activities at its core. Private network associations are likely to support the activities of their members to increase their collaboration

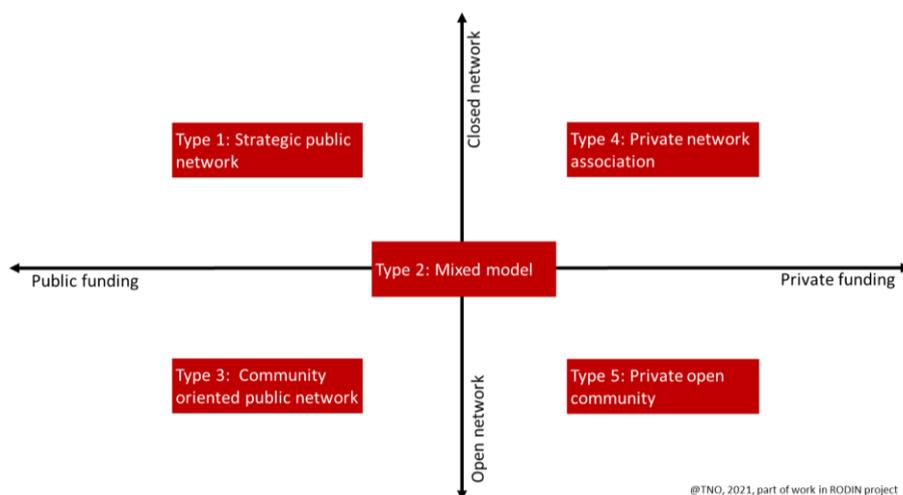


Figure 6: Typologies of networks based on funding and organization, TNO 2021, RODIN Summer Camp 2021

and individual participation and looking at challenges faced by individual members that need to be addressed on by the community as a whole (interdependencies). The 5 types are very general and many networks would continuously renew, creating pathways to reach a new desired state. In that sense, these typologies should be seen only as inspiration to start the discussions.

## 2.5 Capitalizing on the efforts and developed network within the project

Naturally, the suitability of the initiatives should be a continuation of the exploration and activities developed within the timeline of the project. The projects usually offer the opportunity for the

<sup>9</sup> Gassmann, O., Frankenberger, K., & Csik, M. (2014). *The business model navigator: 55 models that will revolutionise your business (1st ed.)*. Upper Saddle River, NJ: FT Press. [About | Business Model Navigator](#)

networks to develop a critical mass of members, activities, success stories and use case, which they can later on leverage to attract new members and continue their operations. For that purpose, it is crucial that the network, within the funded project timeline, already identify the following:

- The (transferable and key) **assets** of the network as developed within the project;
- The **brand** identity established by the network and its overall objectives and added value;
- The **established network** and critical mass of results;
- The (**offered**) **services**, if needed tweaked to reflect the updated ambitions of the network.

These pieces can then be used and leveraged to further develop the network separately or to identify exploitation strategy for each of these elements.

## 2.6 Building on existing networks and leveraging on existing structures

Sustainability refers to the continuation and further exploitation of the results and activities of the network. This, however, does not mean that the network should necessarily continue their independent life. It is possible also to connect the activities to already existing initiatives/networks or align post-project plans with other similar projects. Various options exist, including, but not limited to:

- Setting-up/continuing as an independent network;
- Merging with or joining an already running network;
- Handing over results and assets of the project to other initiatives to be further developed;
- Continuing the initiation/development of the initiative with a follow-up publicly-funded project.

Key in the success of these options is the role/responsibilities the networks have. A strategy is to be used where there is limited overlap between the new and existing networks. As EU-networks have a are founded on “market failures” and initiated with public funding, a competitive strategy should be avoided as this will lead to early depreciation and reduced impact of public investments.

## 2.7 The brand: a key asset of the networks

One of the key assets of an DIH network is a **trusted brand**. It can attract ‘customers’ by convincing them of the added value they will receive from the EU collaboration services by the DIH network. This brand should be recognizable and reliable and able to communicate the identity and goals of the Network to a wider audience. The development of the brand therefore is also connected to the sustainability discussions and requires the establishment of a clear purpose and vision for the

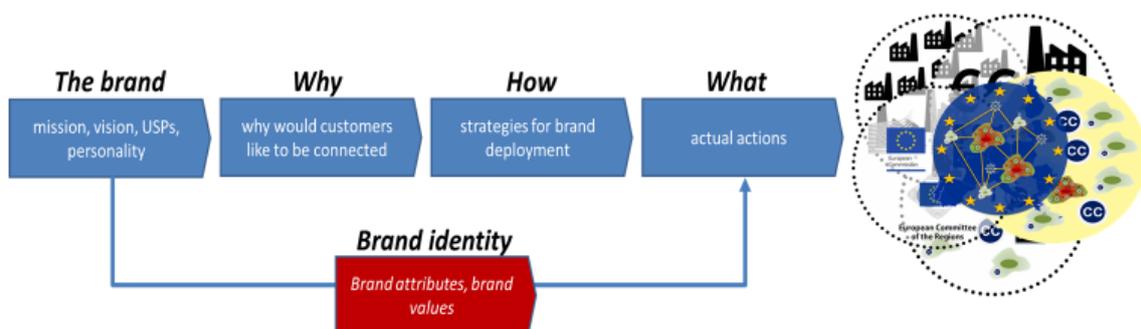


Figure 7: Branding and growing active participation (source TNO 2020, based on analysis in different projects like RODIN, DIHNET, SMARTEES).

Network. Branding is essential for any initiative as in its core the brand is “actually the entire identity of your business”.<sup>10</sup> The brand not only showcases what the initiative has to offer but also how it is perceived.

However, the **brand identity** is often seen as the **visual brand identity** and limited attention is given to develop the brand in an asset for sustainability. Branding is more than a visual tool, or visual identity (e.g. logo, website templates). Network activities (services, deliverables) are key to create the brand and should be perceived and recognized by the majority of the stakeholders in the network's ecosystem, attracting them to the DIH Network. These activities (continuously) reinforce the brand of the network. An example is that if an element of the brand identity is that the network is highly connected to the ecosystem, there should be high quality, explicit activities organised on a continuous basis to showcase this. So, the initiating EU DIH project (IA) should give high attention to creating a well-known brand and the post-project EU DIH networks should embrace that and continue its development in a second phase (e.g. via a follow-up projects).

The term **Brand Identity** should not only be seen as visual elements like logo, fonts and colour schemes. “The deeper meaning, the core values, character, or essence of a brand, is what Upshaw (1995) refers to when they use the term brand identity. However, that expansion of the meaning of brand identity causes some confusion because it overlaps with other common branding terms, such as brand image, brand personality, and brand meaning”. (source The Science and Art of Branding. London: Routledge (published 2015). p. 19. ISBN 9781317454670. and [Wikipedia](#))

The **first step** to build the brand is to identify how the DIH network can be distinguished among the rest, connected to its overall **mission**. Clear and to the point messages, supported with evidence to create trust in their activities are crucial. Naturally, attracting key stakeholders who can vouch for the trustworthiness and expressed value of the network (e.g. expertise, connectivity, etc) can only strengthen the brand. Yet, the main element remains the organisation of

successful activities within the network. These lead to the **brand identity**, like e.g., trustworthy, connected to the ecosystem, active partner, understanding practical issues, quick response, access to finance, access to expertise. Also a slogan needs to be developed, like: “connecting European research and industry”, or “Gateway to European robotics expertise”. These outcomes are to be used by all the consortium partners to convey what the network is.

The **second step** is to understand why customers would look for the network. What pains are addressed and why customers would put in efforts to search for the network? Examples for EU-networks are: “finding the relevant partner takes too much time”, or “We do not know how to create an interregional collaboration”. This step is about the impact the network has on the customers, connected to the main assets. It is about understanding why partners in the ecosystem would help the network more visible in the ecosystem. But it is also about ensuring that irrelevant organisations will not contact the network. Better understanding why customers and partners will contact the (EU DIH) network will ensure that a synchronized marketing of the offerings and increasing the stakeholder base at large. The outcomes of this discussion will create feedback on the first step and adjust the mission and brand identity.

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<sup>10</sup> <https://www.forbes.com/sites/forbesagencycouncil/2021/03/24/the-importance-of-branding-in-business/?sh=4f2bddb667f7>

The **third step** is about translating the outcomes of the first two steps in to strategies: How does the network makes the branding operational? The visual identity is important, but so is the way the activities in the network are tweaked to represent the core brand identities. The brand identities need to be translated to the activities, e.g. “connected to the ecosystem” could imply collecting and providing access to information about the ecosystem stakeholders. This can be also connected to the relevant communication mechanisms: e.g. social media presence, ecosystem partner channels, telemarketing.

The **last step** is about making operational the “how”. These are the products and deliverables connected to the branding activities. The visual identity is translated into a logo and reporting template, to be used in all communication. An example is that “collecting of information” is made operational by a database and access of this information through the website. Another example is social media presence that is translated into “tweets”, LinkedIn forum groups that discuss specific issues, or operational media packages to be used by partner networks and presentations during external events.

Many of the robotics DIHs networks led by the connected IAs are actively developing their brand and outlining their differentiation. What can be seen is that often the cross-connection between the technology domain and the application domain offers a distinguishing characteristic of the network. This is of course supported by activities but also active awareness creation to establish a position in the ecosystem.

### 3 Customers/stakeholders of the DIH networks

#### 3.1 Two distinctive types of customers

The overall aim of the DIH Networks is to support the interregional collaboration and enable service providers to deliver their services to the organisations that are engaged in the actual development and uptake of digital transformation technologies. But a DIH network includes two separate entities: 1) the DIH network catalyst (offering EU collaboration services) and 2) the service providing members such as DIHs and CC (offering local innovation/digitization services). Therefore a distinction must be made.

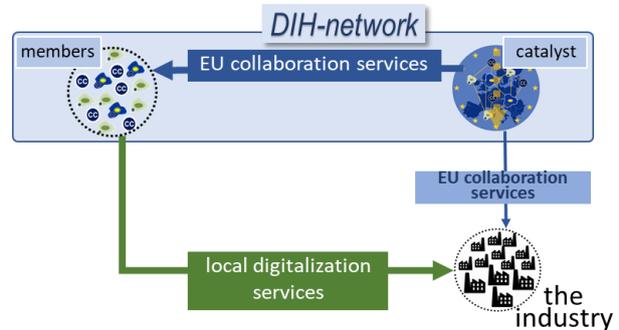


Figure 8: Two target audiences for DIH networks: The members and the industry.

#### 3.2 Customers of the Catalyst

The main aim of the DIH network Catalyst is to support the member DIHs and CCs in organizing interregional collaboration and thereby strengthen the EU ecosystem.<sup>11</sup> Therefore these members can be seen as the **direct target audience** of the DIH network. However, the Catalyst can also provide some EU collaboration services for industrial customers that need to be organised at European level (e.g., standardization, EU brokering events between SMEs, support of individual interregional collaborations).

With the upcoming Digital Europe Programme approximately 200 **European Digital Innovation Hubs (EDIHs)** will be selected following a competitive process. They will receive a special brand and funding for 3 years from the Member States and EU with a possibility to reapply and extend the support with additional 4 years (to 7 years in total). The EDIHs will support the local ecosystem (companies and public administration) in their digital and green transition. Additionally, the EDIHs will fulfil an EU function, including engaging in interregional cooperation and acting as a gateway for their region towards/from other regions. The EDIHs in the EU network will be supported by the Digital Technology Accelerator (DTA) which will support networking and cooperation among the 200 EDIHs.

The upcoming EDIHs and the DTA will also interact with the DIH networks and supported by the Catalyst. As the EDIHs are not yet selected, the role of existing DIH networks with regard to the EDIH network is not yet clear. Currently, the IAs (and DIH networks) are supporting the development of connections among DIHs in Europe. Possible future roles

include DIH networks providing (access to) expertise and know-how on the technology/sectors as well as ready to use tools. Further, existing networks could be seen as a future coordination mechanisms to continue thematic discussions with DIHs and EDIHs. Alternatively, the EDIH network and DIH networks might exist independently from one another. To avoid duplication of effort on EU level, coordination and alignment among the networks will be needed – both currently existing and future

<sup>11</sup> See also Butter, M, et al (2020), “Defining Digital Innovation Hubs as part of the European DIH network; Draft working paper: summary”, DIHNET working paper, 17 March 2020

set networks like the EDIH network need to carefully consider and delineate their services in order to distinguish themselves and align with other (publicly supported) actors.<sup>12</sup>

The Catalyst may also provide service to other stakeholders. For instance, other support organizations such as clusters and RTOs which, similar to DIHs, could have a local/national focus on supporting industry while also being interested in EU collaboration. The Catalyst can therefore add value by supporting cross-border collaboration and even peer learning.



The Catalyst can also act as a bridge with other DIH networks in order to provide cross-reference to services and related information, if relevant. Other networks can therefore be seen as an indirect customer. Communication among the networks can also provide opportunities for alignment and closer cooperation among networks, providing better services to members (DIHs/CCs and even corporates) and where relevant, developing activities together to ensure efficiency of resources (e.g. joined conferences, news sharing, etc).



Policy makers on EU and national/regional level might also be considered a customer of the network Catalyst, particularly if the network aims to create a channel between service providers and policy makers. Yet, as DIH networks are mostly focused on collaboration, often in a particular technology/sector area, the policy makers are an indirect customer of the network.

### 3.3 Customers of the individual Members

The DIH network members provide **local (digitization) services** to the industry to strengthen their competitiveness. Therefore, the industry<sup>13</sup> can be seen as **indirect target audience** of the DIH. This is about supporting SMEs in their (digital) innovation and transformation, by facilitating European collaboration. As DIHs and CCs are usually regionally/locally focused and already in place, the activities of the DIH network should not duplicate these activities.



The services provided by DIH network members (DIHs and CC themselves) could, next to the local function, focus on the providing expertise or markets that requires cross-border collaborations. The DIH network enables the members (DIHs and CCs) to efficiently **support their local ecosystem partners** to engage in interregional collaborations. This includes looking for / access to capacities and capabilities on a particular topic (with limited admin burden) and funding possibilities that might not be available on a regional level.

### 3.4 Concluding: need to identify and prioritise your direct customer (DIHs/CCs)

While collaboration could involve a variety of stakeholders, it is important that networks clearly delineate between the customers of the Catalyst and the customers of the Members. It should be noted that the EU collaboration services might change/evolve after the end of the project (e.g. due to stopping FSTP), making it even more relevant to (re)evaluate the target audience in the sustainability plans for the DIH network. This also impacts the local innovation and digital service provision of the Members to the industry (i.e. DIHs services to industry), as the actual interregional digital

<sup>12</sup> A deeper discussion is needed after the EDIHs and EDIH network is established. At the moment of the writing of this paper, the actual interaction is not clear.

<sup>13</sup> Within the present digital transformation strategies from the European Commission, the target audiences have been expanded to the public sector. This is not addressed in this green paper.

transformation projects are not funded by the Commission anymore and will have a different character (e.g., more focused on deployment due to the needed private funding).

Making a distinction between Catalyst customers and the Member customers also is key in developing the value added of the network. In very general terms, the DIH networks will focus on the Members, often via the services offered, facilities (tangible or intangible) and assets. They also provide direct value to indirect customers. Eg. Knowledge bases, platforms, newsletters etc provide direct benefits to all customers. The aggregated benefits of the network – such as connection and optimised efficiency in the ecosystem – can be seen as providing (indirect) value to the indirect customers and potentially addressing market failures in the ecosystem..

The authors' view is that in general the main 'customer' of DIH networks are the Member DIHs/CC and similar supporting service organizations. As the primary mission of a DIH network is to boost EU collaboration (local digitalization services will also be provided without the networks), the focus of the DIH network is on supporting the Members to engage in European activities. The Member DIHs/CCs can however act as a gateway between the stakeholders in the regional ecosystem which want to engage in EU collaboration; the DIH networks then help to establish the contact with another Member, or another DIH network. In this way, the cooperation among the DIH networks and the DIHs themselves is ensured while companies are supported without creating competition conflicts.

Nevertheless, it should be acknowledged that based on the experience of the 5 robotics Innovation actions, the scope of the customer base will vary depending on the ecosystem they are addressing. To point to some examples:

- DIH-HERO has an expanded view on their customer segment, also including the public side of the value chain - healthcare professionals and institutions like hospitals - in order to address a need for connection in the ecosystem;
- RIMA is addressing a broad customer segment too in order to be able to deliver their key aim to connect the right links in the value chain;
- agROBOfood -next to supporting DIHs in the network and the experiments- is currently exploring which segment is most prudent to focus on depending on their sustainability strategy.

## 4 DIH networks creating value

### 4.1 Overall added value of European DIH networks

Within the EU landscape of DIHs, the pan-EU DIH networks have a distinctive position and mission. As described before, their core mission is to establish interregional, European collaborations to stimulate (digital) innovation in their respective fields. Yet, a distinction needs to be made as the network can facilitate collaborations but the actual local digitization services are provided by their members – the individual DIHs. Hence, the question is: What is the added value of such networks?

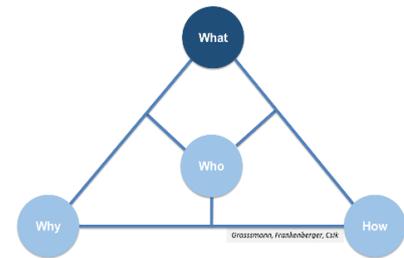


Figure 9: Focus on WHAT is about focus on services that create value.

The added value of DIH networks could be different depending on the network. For instance, one possible added value of the networks is their ability and **expertise to set up collaboration** and connect the relevant **stakeholders and infrastructures across borders**. Networks also can support (less developed/less digitized) regions to **develop their capacities** and are usually in some way involved in **alignment and organization of joined RDI, industrial uptake or citizen awareness** to name a few values as examples.

This is leveraged on the assets of the network, which form the basis of these networks. While the concrete assets will vary among different initiatives, several available assets can be noted:<sup>14</sup>

- Access to **expertise** on supporting collaboration as well as access to (more scarce) knowledge and expertise on the particular technology, sector or topic. This expertise can be offered by the core team but can also be found among the stakeholders of the network;
- **Contacts and a community** with trusted service providers active in the similar value chain. DIH networks build on the breadth and strength of their network to connect peer organizations, experts in the field or related stakeholders. The network can initiate and if needed support such contact;
- **Recognizable and trusted brand** on the particular niche of the network that attracts service providers, end-users, and relevant stakeholders to the network and connects with the network activities;
- Overview of **relevant information** on infrastructures, expertise, news and policy updates provided in one place to tackle information overload and save time for the members (DIHs and CCs in particular);

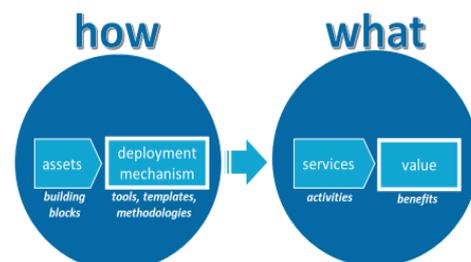


Figure 10: Connecting assets and added value (source: TNO 2020, presented at RODIN WG on sustainability December 2020)

<sup>14</sup> See also sustainability plans of other networks such as Maurits Butter (9 December 2020), “Smartees: presentation Amires”, presentation based on Smartees D6.6 Continuity Plan; Kristina Karanikolova, Maurits Butter, “D6.2 Change2Twin Initial Business Model (confidential)”, Deliverable for Change2Twin Project

- Experience and expertise of the network (core) team in pan-EU **collaboration and brokerage**, which can guide the stakeholders in these activities (e.g. brokerage/matchmaking and services of the particular field).

To illustrate the point, all the robotics DIH networks led by the 5 robotics IAs have identified the expertise and the access to relevant information and the overall community as an asset. In addition to this each network has highlighted a specific asset that distinguishes them. RIMA has pointed to the strong background and expertise of the network and its members enabling the dialogue and sharing a common language in the ecosystem, where DIH-HERO has highlighted the quick response time of the network and its innovative scope to cover the whole healthcare chain. agROBOfood has noted the visibility and information provision as well as role in setting up a strategic vision as key USP of the network and Trinity has mentioned the easy matchmaking between deep expertise and needs as a highlight as well as the training support and in-house demos available. And DIH<sup>2</sup> has highlighted the central role the network plays as a one-stop-shop for its members and the supporting market place

Looking at these assets, it can be seen that there are similarities and some differences in the EU DIH networks.

As part of the projects, many of the Innovation Actions also offer funding through the third-party financing schemes by the EC. Naturally this is an attractive asset that helps the network to create interest and engage members during the initial phase. After the end of the

projects however, offering such support might be more challenging (if at all available).

#### 4.2 EU collaboration services vs local digitalization services<sup>15</sup>

The services offered by the networks outline what the network is doing and delivering to its 'customers', it specifies how the initiative is generating value.

As already made clear, the services provided by DIH networks differ fundamentally from the services provided by the DIHs. Where the DIH network aims at initiating collaboration, the actual (local) digital transformation projects are carried out by DIHs/CCs. This is a crucial take away and has implications for overall business model and strategy of the networks. The services provided by DIH networks- the EU collaboration services - can be divided into four main categories<sup>16</sup>:

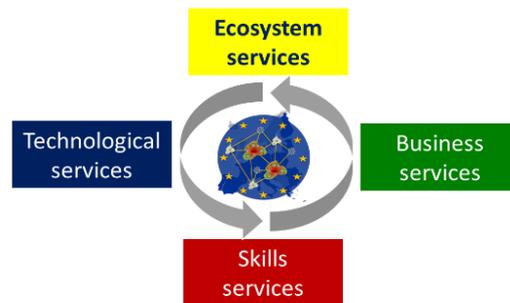


Figure 11: Four different categories for the DIH network to boost EU collaboration.

- 1) **Ecosystem building**: Improving the European community at large;
- 2) **Technology support**: Enhancing European collaboration on research and technology deployment;

<sup>15</sup> This section builds upon previous work and presentations in the PPSEU WG and the RODIN Summer Camp discussions. For reference, see for example Maurits Butter (12 June 2020), "From DIH to EDIH: Summer Camp 2020", RODIN project Summer Camp 2020 and TNO (2020), "Background RODIN summer camp 2020 (draft 08/06/2020)" (shared with participants only), RODIN project

<sup>16</sup> This typology can and are also used by DIHs and CCs themselves, but the underlying services and activities differ between the network and DIH-services level.

- 3) **Business support:** Enhancing the interregional collaboration on creating business with digital technologies;
- 4) **Skills and training:** Enhancing European capacities and capabilities via collaboration, knowledge exchange and alignment on EU skills and training programmes

Where the networks in general are supporting the service providers, DIHs usually focus on providing services for industry, especially SMEs, typically within their regional or national scope. So, the **networks** (with the Catalyst in the driver seat) support interregional and EU-wide collaboration, thereby enhancing access to and use of expertise and infrastructures available across Europe. EU services are focused on alignment, strategy development, common visions, sharing expertise, etc. These are services that support the individual DIHs and the European network as a whole. In essence, DIH networks aim to make the collaboration among local DIHs easier and more efficient.

To ensure sustainability and avoid competition with their own members, it is crucial that DIH network catalyst adds value to its members' existing DIH services (local digitization services) and avoid duplicating the their services. Some of the services, however, might be elevated to the European level – e.g. awareness campaigns of EU policies, running open calls, can be streamlined and (partially) elevated to a network level.

Taking stock of the practical experience of the 5 robotics Innovation Actions– RIMA, TRINITY, DIH2, agROBOfood, DIH-HERO, so far we can conclude that they are offering a mix of EU collaboration services (ecosystem, busines, technology, skills support) in their particular ecosystem. Yet, there is no one-size-fits-all model and the concrete portfolio of service differs depending on the network assets and need in their ecosystem.

### 4.3 Ecosystem services

In general, the focus of DIH networks on ecosystem is to connect the regional stakeholders across Europe to foster collaboration as well as to connect these regional DIHs/CCs to the overall EU discussions. One of the possible activities of DIH networks is to offer a representation and connection to the EU policy level – the network, through its members, can provide insights into expected future developments and practical needs and at the same time could offer explanation/practical translation of EU policies. Examples of possible services are shown in Table 1.

Table 1: Ecosystem services of DIH networks (TNO, 2021, RODIN Summer Camp 3)

	Service	Description
<b>Ecosystem</b>	EU-community building	The initiation, development, facilitation and maintenance of a European community in which stakeholders are networking. This is about creating events, facilitating the networking through a platform and presenting the network during events
	EU-strategy development	Getting key stakeholders in the community to develop community strategies that can drive the European community further. This includes bilateral engagements with stakeholders and webinars.
	Strategic EC advice	The mobilization of the community to address strategic issues and inform the Commission on further policy development/strategies. This includes bilateral engagements with stakeholders and webinars, resulting in policy papers
	Collaborative EU awareness creation	Development of general awareness creation information sources that can be used by the broader community. This can be presentations, showcase descriptions and background information documents.
	EU-wide promotion/representation	Representing the members of the community in events and other settings, both promoting these members and the community at large. This can be done using community materials and also by active representation in key strategic discussions.

Mapping the ecosystem	Getting a clear overview of the European community, including organisations their strengths, needs and capacities/capabilities. This can be done by a catalogue approach, but also through a community platform (distributed approach).
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#### 4.4 Technology services

IAs at large are often focused on particular technology/industry area. This focus is often transferred to the DIH networks, which connect stakeholders and experts on the particular topic. DIH networks usually do not focus on delivering industrial services; these are usually provided on a regional level by DIHs/CCs. Rather, their role often resides in aligning research and innovation efforts (incl. via investment discussions) and identifying strategic direction for technology development among support organizations, such as DIHs/CCs. Examples of such services come for instance from strategic research agendas, trend watching. A non-exhaustive list of examples is provided in Table 2.

Table 2: Technology services of DIH networks (TNO, 2021, RODIN Summer Camp 3)

Technology	Align/synchronize technologies	Identify and clarify technology connections and facilitate discussion to align activities and future development between two or more partners and their region
	Organisation pan-EU research	Initiating and aligning RDI activities EU-wide to optimize efforts, facilitating the identification of partners
	Aligning regional RDI investments	Aligning regional investments in RDI activities to optimize impact on EU level (facilitating meetings with regional stakeholders, facilitating the analysis of complementarities)
	Pan-EU scouting RDI collaborations	Identification of overlapping and complementary RDI capacities/capabilities on specific technologies to support collaborative R&D. This includes searching for interregional research partners, as well as initiation of their collaborations
	Technology trendwatching	Developing easily understandable materials on upcoming technology trends, their potential, policy implications and market potential
	Technology assessment	General assessment of new emerging digital technologies and its positioning in the European landscape. Benchmarking, societal impact assessments and impact of these new technologies for organisation can be included.

#### 4.5 Business services

The aim of the business services of DIH networks is to support DIHs/CCs, research and innovation actions, and if needed industry, in engaging in interregional collaboration and participation in EU/cross-border initiatives. Particularly, support to establish more structural and sustainable cooperation is often seen as a need in the ecosystem. Possible services for DIH networks can be seen in the table below.

Table 3: Business services of DIH networks (TNO, 2021, RODIN Summer Camp 3)

Business	Initiating European collaborations	Active support of the members to initiate EU-collaborative projects. This is about providing a platform of supply and demand brokerage, as well as helping with the first initiation of interregional projects (e.g. by contract templates).
	Development of EU-proposals	Identify interesting European project between network members, responding to EU-calls and MS-opportunities. The support is to provide an overview of opportunities and initiate the collaboration.
	Individual business support	Supporting the members/partners of the network with EU-related information about the network core topic, that is relevant for business development. This can include market intelligence reports and identification/assessment of possible RDI partners.
	Initiate interregional corridors	The identification, initiation of possible partnerships for interregional collaborations
	Access to finance EU-collaborations	Provide and search for funding interregional, cross-country RDI projects. This includes operating a network funding programme, offering a "channel" to other existing funding programmes and support to find and give access to available public/private sources (e.g. EU pitching to investors events).

Centralised maturity assessments	Provide assessment tools (and possibly benchmarking) as an intake tool to support identification of needs and support to be provided. This can be a European tool, as well as support to develop regional tools.
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#### 4.6 Skills and training services

Networks also aim to enhance the capabilities and capacities across Europe to adopt (digital) innovations and engage in the digital transformation. To do that, exchange of expertise and experience (peer learning) are recognized as increasingly important and could be provided by networks. Industry trainings on state-of-the-art technology developments, specific research or upcoming topics could also be scaled on an DIH network level to support the DIHs/CCs and industry but also to achieve economies of scale for more specialized trainings. Further, based on an analysis of needs, specific trainings to support the DIHs/CCs in building their own capacity are possible. Possible types of services for networks are shown in the following table.

Table 4: Skills services of DIH networks (TNO, 2021, RODIN Summer Camp 3)

<b>Skills</b>	Organisation EU expert exchange	Active support to find and organize the exchange of experts across the network (per project/visits/exchange of expertise in work sessions)
	EU training industry/research/policy	Training of stakeholders on innovative specific digital technologies, DIH related topics, specific research topics, etc
	Organisation pan-EU peer learning	Network learning between the members of the EU DIH network, peer exchange and even feedback
	Train the trainers, training design	Support the organization of train-the-trainer methodology and process through which the network can get involved and learn on a specific topic but also gain experience with new training methods (participation platforms, MOOCs, etc)
	Skills information repository	Developing a searchable and user-friendly overview/database/catalogue with available trainings and skills development materials.
	Pan-EU skills certification	In order to allow educational institutes to provide trainings that are accepted in other regions, the network discusses and develops certificates that facilitates interregional acceptance of trainings/education.

#### 4.7 How is the value created

An important element of the business model is not only what the added value is and through which services it is created but also **how** that value can be delivered throughout the network and interested stakeholders. The DIH networks use various deployment mechanisms to offer their assets and services to the network members. Some of the observed mechanisms include (but are not limited to):

- Market places/brokerage platforms which provide the infrastructure facilitating the connection and finding the right expertise/partner in the network;
- Community platforms facilitating the overall communication and exchange of ideas, news, etc in the community;
- Repositories/catalogue with information, contacts, and knowledge to offer access to the collected reports, use cases, good practices, etc;
- Expert pools that are made available to the network members and the European community;
- Events and workshops with members to establish connections and share information;

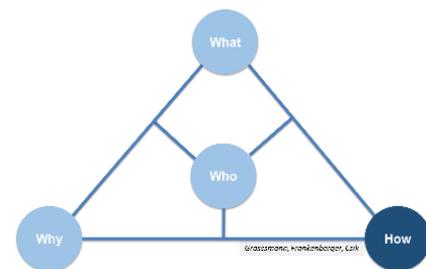


Figure 12: The HOW focuses on the way the delivery of the services is organised.

- Peer learning communities, in which experts can exchange their experiences.

One of the challenges that are witnessed in the EU community is that there are quite a few platforms developed by various projects which remain underutilized after the end of the project due to their limited scale and the fragmentation of market places. In addition, it is not always clear who the main user of such platforms is. In some cases, the platforms envision companies as 'business users', but SMEs often use regional channels for regional partners and support. Next to their lack of interest, a European channel might be in competition with the DIH value chain and ecosystem management services.

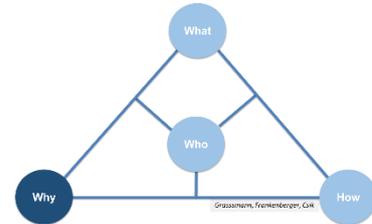
RAMP for instance, developed in the Better Factory project and also used in DIH<sup>2</sup>, has been addressing this challenge by developing and connecting the marketplace to different EU-funded projects, allowing the development of a critical mass. The lessons learned from each project where the platform is applied are then used for further development even though the development may happen in a different project.

It can be concluded, therefore, that further efforts are needed to connect different deployment mechanisms and especially market places with each other. This can contribute to the scale, and hence, the efficiency and effectiveness, of the tools. To cater to the regional focus of the DIHs, platforms and repositories could connect the DIH infrastructure with the DIH network. Finally, yet importantly, the deployment mechanisms should be seen as supporting to the members and closely connected to the service and activities of the network rather than separate assets. This can provide an integrated journey for the 'customers' of the networks.

## 5 Why: Revenue models to capitalize value

### 5.1 Fourteen revenue models (so far)

An important element of the sustainability of any initiative is to identify ways in which the initiative can get financed for the services that it offers. As part of the RODIN/DIHNET work on sustainability, about 14 revenue models – based on the Business Model Navigator<sup>17</sup> have been identified as potentially interesting for DIH Networks (see Figure 13).



- |   |  |
|---|--|
|  <b>Public co-funding (income)</b><br><i>Getting funded for reducing market failures</i>         |  <b>Commission fees (income)</b><br><i>Sales office for the community, on commission</i>  |
|  <b>Partner co-funding (income)</b><br><i>In-kind contributions from core partners</i>           |  <b>Indirect branding (income)</b><br><i>Using the network brand as an income</i>         |
|  <b>Subscription/membership (income)</b><br><i>A periodic fee to access standard services</i>    |  <b>Digitalization (saving)</b><br><i>Virtualize products, reducing costs of delivery</i> |
|  <b>Add-on, razor and blade (income)</b><br><i>Additional services connected to membership</i>   |  <b>Crowdsourcing (saving)</b><br><i>Using the community expertise for free</i>           |
|  <b>Performance based (income)</b><br><i>Individual services, paid based on rate of success</i> |  <b>Integrator (expense saving)</b><br><i>Using economies of scale as business model</i> |
|  <b>Full payment (income)</b><br><i>Individual services paid in full (+ profit)</i>            |  <b>Tit for tat (saving)</b><br><i>Non-monetary exchange of services</i>                |
|  <b>White label (income)</b><br><i>Selling a tool, branded as customer owned</i>               |  <b>Prosumers (saving)</b><br><i>Getting the customers involved in the service</i>      |

Figure 13: 14 possible revenue models (interpretation and selection of the authors based on the Business Model Navigator Patterns, BMI lab)

Naturally, these are only the possibilities identified by the authors and as part of the discussions. However other options are also possible, especially on exchange of services and tit-for-tat options. Some of the revenue models such as public-co-funding and membership/subscriptions can generate income/revenue for the networks. Others, act as a cost saver, thereby contributing to the overall sustainability of the initiative.

DIH networks tend to require a multi-revenue model (based on the services they offer) in order to generate income. For many networks, public funding is also likely to remain an important source of financing as they perform a coordination, community oriented role. Yet, securing (regional or national) public funding is not easy and might not be possible.

Looking at the robotics IAs connected to RODIN, most of them are still exploring their alternatives for potential revenue models. It is however acknowledged that shifting from completely publicly funded action to another model could be challenging and requires evaluation of different options, especially ones that enable success in the transition phase.

<sup>17</sup> The Business Model Navigator provided by BMI Lab based on research at Institute of Technology Management at the University of St. Gallen and the work by Gassmann, et al (2013), available [here](#), last visited 19.08.2021

Looking at the other models, we can make the following observations:

- some (in-kind) contribution from interested partners could be provided, especially by entities which have it as their objective to support collaboration and ecosystem development on national and EU level. Examples are (some) RTOs and DIHs, which can contribute with (limited) time and effort to support some of the services.
- Memberships and subscriptions are one of the more obvious revenue and business models for networks, offering flexibility and stable income for the networks. Yet, it should be noted that quite a few networks with a membership model exist, making it more difficult for new networks to introduce the model if the members have limited resources and are already part of connected networks. Therefore, a thorough market analysis is needed to evaluate the viability of the membership/subscription model.
- Alternatively networks may negotiate to work within an existing network or association where they can maintain their services and connectivity but under the umbrella of an existing, broader organisation

One of the revenue/financing questions is how networks which support collaboration and exchange of services among network members can organize this exchange of support in a structured and fair manner. There are different options on how this could be organised and various networks and IAs explore different business models. One of the options suggested and explored by the DIH-HERO project is to explore a hybrid system. The researchers explored exchanging a token/virtual currency for provided support/service by another hub. The model is still in the process of development, consultation and discussion. It should also be pointed out that this option is explored in addition to other more traditional models for exchange of services.

Next to the exchange of services among members though, it can be expected that the network could incur expenses (e.g. for staff, operations, networking, etc.). Therefore, additional revenue models should also be considered.

## 5.2 Connecting the revenue model to the services

DIH networks are likely to employ a mixed revenue model in order to remain sustainable. The challenge in this is that the mix would vary not only based on the type (open/closed/profit/non-for-profit/publicly or privately supported) of the network but also on the services that the network offers.

It is suggested that networks map the planned services with potential revenue streams in order to also evaluate which revenue models are most relevant for the services their community needs to flourish and ones that could be developed in the future.

Public co-funding is usually only available provided that there is a market failure which the network addresses. Some services such as setting up collaboration corridors and matching experts & infrastructure with those searching for information and collaboration could be seen as addressing a market failure, especially if these are outside of the “desirable<sup>18</sup>” remit of the existing organisations. Yet, public authorities will not be interested or willing to support other services such as technology assessments or proposal writing support. It should also be noted that public co-funding objectives may

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<sup>18</sup> The term “desirable” here refers to, for example, the fact that a company will typically not help its competitors and therefore is unlikely to engage in technology brokerage other than to address its own specific issues. Similarly RTOs may have no remit to operate across national borders.

have a different focus (e.g. regional economic development or. EU wide competitiveness and collaboration). Therefore, networks need to assess: 1) What revenue model is appropriate for what services and 2) How, and whether it is possible, to cluster (and further develop) services under specific revenue models and 3) what financing instruments might be appropriate.

### 5.3 Matching the revenues with expected costs

Last but not least, the financing question should also take into account the costs incurred by the network and how these are matched with the revenues and if a potential gap occurs.<sup>19</sup> The costs of the network would very much depend on the particular services and organization of the network. Yet, one can expect that operational costs to run, manage and grow the network and its assets as well as service and activity costs will be incurred. In terms of sustainability, an evaluation of the costs is needed in the financial plan of the initiative (short-to-mid-term perspective). This topic still warrants empirical exploration to find out the scale and types of costs incurred.

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<sup>19</sup> Marcel de Heide, and Maurits Butter (TNO), TECNALIA, VTT, INESC PORTO (2016), "Deliverable 5.3 Report assessment match/mismatch and issues with combined funding", deliverable within the EU-GREAT! project

## 6 Organisation of the EU-networks

### 6.1 Catalyst: the core network team

As mentioned in the introduction, one of the main elements of post-project sustainability is to consider the DIH network Catalyst. This **Catalyst** team is usually representing the project consortium as part of the project. However, the organization of the DIH networks after the project may also be expected to undergo quite significant changes. One consideration is how the partners will continue to collaborate and how to identify a (small) core team of dedicated people who can manage and sustain the network. This implies considerations on the services, the preservation of assets, continuance of the brand, IPR, use of tools developed during the project lifetime, agreements with existing partners on responsibility to provide services as well as the potential to include new partners or address partners leaving the network.

As the network requires activation, provision of support and continuous updates, a small secretariat team needs to be set up. The aim of this team is to deal with execution, provision of continuous services and contact with the other partners for particular activity/service. They can be seen also as **providing continuation of the activities**, leveraging on gained experience. The costs and efficiency of such a team should be well considered.

Further, the **governance of the DIH network**, and strategic direction of the network needs to be arranged. This usually involves all partners with appropriate procedures to ensure both leadership, accountability and continuity of the activities and policies. Various arrangements are possible – from the members of the network voting for a board and secretariat (e.g. the governance structure of networks such as euRobotics), to a rotation of the leadership and support of the network among the partners (e.g. the AI DIH Network).

### 6.2 Members of the network

Next to the network Catalyst, an important element of the post-project sustainability is to consider the EU-network *service providers*, which usually offer digitalization services to industry and form the Members of the network. The members of the network and their relationship to the organization of the networks also relates to the 'customers' of the networks (see section ##). The member service providers can receive various support (e.g. in forming collaborations, finding information, matchmaking) from the network Catalyst and in this way, they can improve (as the second pillar of the DIH network) their own digitalisation service provision to the end users (industry).

In the organization of the network, it is important to consider how the Members will be selected and what their role in influencing the network will be. This naturally includes governance mechanisms but also can be connected to service and membership models.

With regard to the evolution from an precursor IA to a DIH network, the partners in an IA will become Members of the network. The **role** in the network is fundamentally different than their role in the precursor IA. Where in the precursor phase they are instrumental to the exploration and building up of the DIH network (brand, community, showcases, etc.), in the DIH network phase the business model and critical mass of the network is established and they will receive mature services from the Catalyst. Also the **governance** is different, as in the precursor phase they will be partner, explicitly responsible for the operation of the IA, where in the network phase they will become a customer. But perhaps the

most important change is the **financing**. In the precursor phase they will be co-funded by the Commission for their activities; as a Member, they will be paying a Membership fee. Also, the activities they conduct will change.

### 6.3 Open vs closed network

Many of the networks start as a (semi) closed project of consortium partners, gradually extended with other beneficiaries and members through the life-time of the project. Depending on the objectives and overall aim of the network, after the end of the project, the network could choose a more closed membership model, where members receive particular services or show commitment, or a more open network approach, where various parties are welcome, possibly with varying levels of commitment or involvement. Naturally, in real life, the decision might not be completely clear cut and some form of a mixed model can also be explored. But at the preparation stage (as part of the project duration), it is worth exploring the impact of this decision: what does this mean for a potential membership/subscription model, what are the implication of scaling up the activities, how to develop a brand to support either choice, and how the governance can be organized (what are the rights and obligations of those joining the network).

### 6.4 External actors

The organization of the Network should also take into account external (to the network) actors with similar a mission such as other networks, similar EU or national initiatives or other corporate organisations which might offer similar tools such as collaboration platforms, databases, etc. but with a different scope. Such external actors could either be 1) aligned with the DIH network objectives, in which case they would become a relevant stakeholder or even indirect customer or an ad-hoc partner, or 2) they can pose competition/complementarity to the tools and services of the Network.

The assessment of the external actors and their impact on the network can be a part of the ecosystem and market analysis prepared as part of the project/initiation phase of the Network. Operating within the project, the consortium can also test the demand and get a better understanding of the main actors. This knowledge can then be used to develop a business model and (light) business plan for the network.

## 7 Business models for pan-EU collaboration

### 7.1 Introduction

There are many business models that DIH networks can adopt. It is likely that a multi-business model approach needs to be followed in order to reflect the different services, revenue models and cost elements of the networks. However, looking at collaboration as the main objective, it is also important to identify the potential business models for collaboration and the role of the network in supporting interregional collaboration. In the next sections, we describe 3 possibilities for business models that could be applied (note that the models do not specifically address the different cost elements). It should be stressed that these are **only some of the possibilities**, developed based on experience from different projects and discussion with stakeholders and should just be considered as discussion starters. The outlined models should therefore be further developed. The outlined models **do not represent plans of the robotics Innovation Action**.

### 7.2 Supporting interregional experiments

This is the business model often used in the Innovation Actions. The objective is to support SMEs in their technology/innovation efforts and support cross-border collaboration. The support is based on a project-based fund for the experiments (mostly supported by public, EU funding). The model serves DIHs looking for expertise, infrastructures for its SME customer (not available locally). The role of the network in such a scenario is to connect the relevant DIHs from the regions and to manage the fund. The fund itself and the experience gained in efficiently establishing the right trusted connection and the administrative burden reduction are some of the USP.

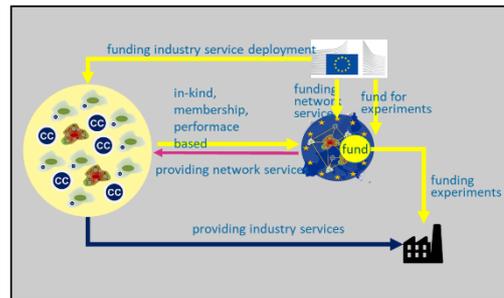


Figure 14: Supporting Interregional experiments business model (TNO 2020, developed within the RODIN and Smartees projects)

The challenge with sustainability of this model is to find continuous availability of funds for the experiments (either via new EU project or supported by alternative funding agencies). Costs related to the fund management should also be taken into account for this model (in addition to operational and service costs).

### 7.3 Interregional SME brokerage facilitated by DIH

In this scenario the objective is to connect SMEs from different regions looking for a partner or a service. The role of the DIHs is to help them find an appropriate partner in the other region and establish the contact. The 2 DIHs therefore provide the access to each-others ecosystem and establish the connection in a very effort-efficient manner. After the first connection among the SMEs is provided, and if there is a need, the respective DIHs might provide additional support. The role of the network itself is to support the connecting DIHs and provide the infrastructure to support finding contacts.

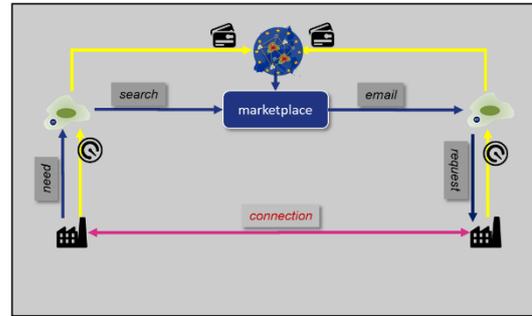


Figure 15: Supporting Interregional experiments Interregional SME business model (TNO 2020, developed within the RODIN projects)

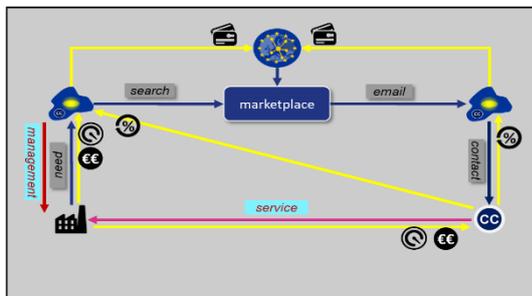


Figure 16: DIH-facilitated connection between competence centres or experts (TNO 2020, developed within the RODIN projects)

A similar model could be used to provide DIH-facilitated connection between a competence centre or expert from one region and an SME from another region, using the DIHs as a facilitator of the connection and managing the overall project.

While the revenues can be connected to a performance-based or membership fee, the role of the network is more limited and therefore either the contributions can be limited or additional services to add further value is needed.

### 7.4 (Satellite based) joint innovation development

Another possibility for the network is to coordinate and facilitate joint innovation and research initiatives. This could be organized on a project-base as well as in establishing structural collaborations and alignment of activities in order to jointly develop new technology or innovations. The role of the networks is in forging and establishing the collaborations. Similarly, the model can be used to establish training and peer learning schemes in the community. The challenge with this model is to find entities with complimentary expertise and to identify (mostly) public funding opportunities that support the collaboration in addition to the individual initiatives in-kind contributions.

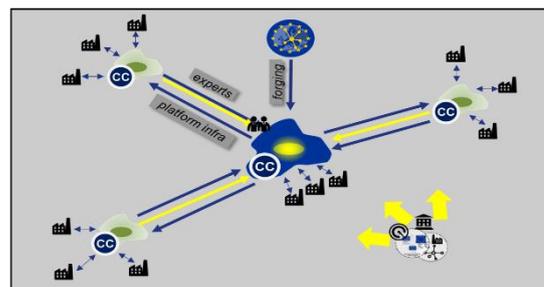


Figure 17: Joined innovation development business model (TNO 2020, developed within the RODIN projects)

## 8 Conclusions and policy recommendations

### 8.1 DIH network projects should be seen as a starting point for a sustainable network

A **sustainable DIH network** requires the development of a **concept, value proposition and the creation of a critical mass of members and activities**. The networks initiated by many Innovation Actions have the potential to organize and stimulate collaboration and innovation in Europe. These projects can/should be seen as a precursor starting point; initiation of the networks where they can serve to test the services and demand, to develop use cases and to establish a trustworthy track record.

It is likely that continuous public funding might be needed for many networks to strengthen the long-term position of the network (either through participation in projects or co-funding). As the activities of a DIH network address “market failures”, it is to be expected that public funding will be needed<sup>20</sup>. The transition from a fully public funded to sustainable network with balanced public/private funding could be challenging. Key is establishing a wide network, prepared to contribute (e.g. via memberships). However, the authors believe that establishing a sound business model for the DIH network is complex and not intrinsically incorporated in the aim of the IA-approach. But without serious attention and an efficient and effective approach, it might lead to suboptimal use of public resources.

A key point is for the **DIH networks** to try and **evaluate the potential revenue and financing models** they envision with **the selected services** they would (continue to) offer. To achieve a greater impact, it is crucial that the post-project sustainability plans also provide a holistic picture of how separate assets and services will be deployed and connected to revenue models. For this, a business model approach (combined with different scenarios) could be useful in approaching the topic .

### 8.2 Differentiate between the Network Catalyst and Members and their services

The mission of a DIH network is to support European collaboration and in this way innovation development and adoption across Europe. With that in mind, they **usually target support service organizations – like DIHs and CCs** – as their main customer. It is however tempting to expand a EU collaboration services and target group also to the wider industry and public sector. It should, nevertheless, be cautioned that this might lead to competition with the EU DIH network members. Instead, it is suggested that a **two-layered approach** can be used where **the local DIHs are seen as a gateway, a partner**, through which some of the services of the EU DIH networks could be made available to interested industry players. By keeping the DIHs as the main contact point in the local ecosystem, the networks are able to reach the local ecosystem, keep their relevance to the DIHs (also by adding to/supporting their services), as well as preserving the local connection and trust in the local DIH services for the industry. This implies that the services and primary customer group of the Networks is fundamentally different from those of the DIHs.

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<sup>20</sup> The mission of DIH networks (European collaboration) experiences issues like network externalities, public good, initial costs and other “market failures”. See [https://en.wikipedia.org/wiki/Market\\_failure](https://en.wikipedia.org/wiki/Market_failure)

### 8.3 Financing should be connected to the services, related costs and organization

Next to creating added value via the EU DIH Network collaboration services, an important element that DIH networks need to address are their **plans regarding the revenue and financing plans** of the network. It is suggested that different financing models are considered (next to public co-funding) and that these plans are connected to the coordination services offered by the network. Naturally, an estimation of the costs, including of running the network and its team, developing and maintaining the assets are important elements of the evaluation of the networks. A variety of revenue models might offer agility of the networks to capture the different value they deliver to the different direct and indirect customers.

### 8.4 Take a systemic view towards the DIH network and its sustainability

As it becomes apparent from the above conclusions and chapters, a DIH network and its sustainability should be explored from a systemic view. **Many of the elements** of post-project sustainability **are interconnected**: different target audiences and (direct and indirect) customers are addressed via a combination of partners, assets, services. This may result in a combination of financial, revenue and business models. It is therefore suggested that all elements are explored and a wholistic ambition and plan are explored for the PPSEU.

### 8.5 A need to discuss the responsibilities of EDIH network and existing DIH networks

With the introduction of the new EDIHs and their coordination network, there is **a need to examine the roles and responsibilities of different actors in the EU DIH ecosystem**. The (specialized) networks developed by many Innovation Actions and CSA undoubtedly have a role in organizing the ecosystem in their technology/industry focus. To avoid duplication of efforts and fragmentation in the ecosystem among different service providers though, it will be essential for the existing DIH networks to align and discuss future developments with the new EDIH network (supported for the next 3 to 7 years by EU and national funding for EDIHs).

## 9 Annex 1: (Restricted access) summary of the Innovation Actions updates on sustainability plans

*\*This Annex will only be included for the restricted view of the RODIN consortium, EC and the project reviewers and will be removed from the public green paper published.\**

## 10 Annex 2: Background slides from RODIN Sustainability WG meeting #2

On 16 December 2020, the second meeting of the sustainability WG took place. As part of the meeting, several topics were discussed with the IAs. In addition, a slide deck with background information was also provided on the following topics:

- A strategic view on EU-networks
- Customers for EU-networks and their needs
- Activities for EU-networks
- Deployment mechanisms
- Revenue models for EU collaboration
- The business model for the network organisation
- Business models for (E)DIH-(E)DIH interregional collaboration
- Branding

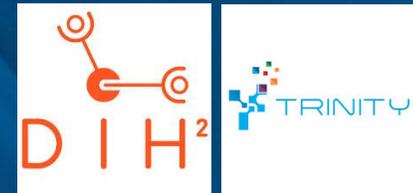
This deliverable builds on the knowledge shared in the slide-deck but with further elaboration. The Annex provides the slides of shared in the second meeting in December 2020. Slides 17-77 offer the background information. Slides 1-17 offer an overview of the discussion on the day.

# WORKING GROUP SUSTAINABILITY

## *BUILDING A VISION AND STRATEGY FOR POST-PROJECT SUSTAINABILITY OF EU-NETWORKS*

- Working group meeting number 2

- 16<sup>th</sup> of December 2020



# AGENDA

- Short introduction
- What are you doing
  - RIMA, Trinity, Agrobofood, DIH2, HERO,
- Discussion on following topics
  1. How do you see the connection to the future EDIH network?
  2. How do you see your plans to continue your community/marketplace platforms?
- Planning: Further activities of the sustainability WG
  - What are the topics that you are faced with?

# SHORT RECAP

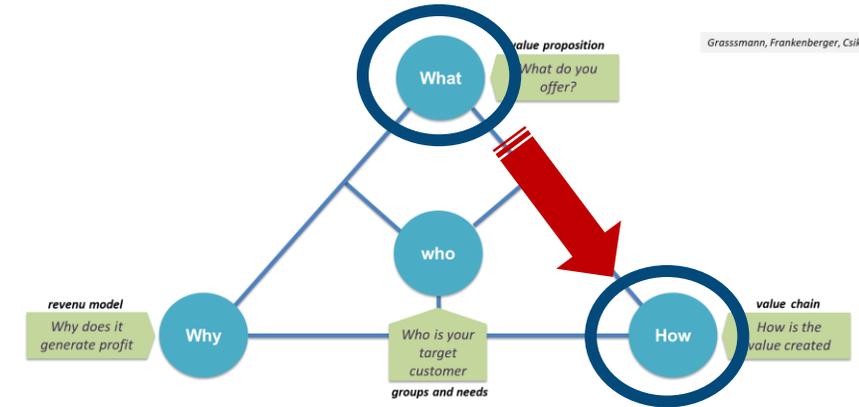
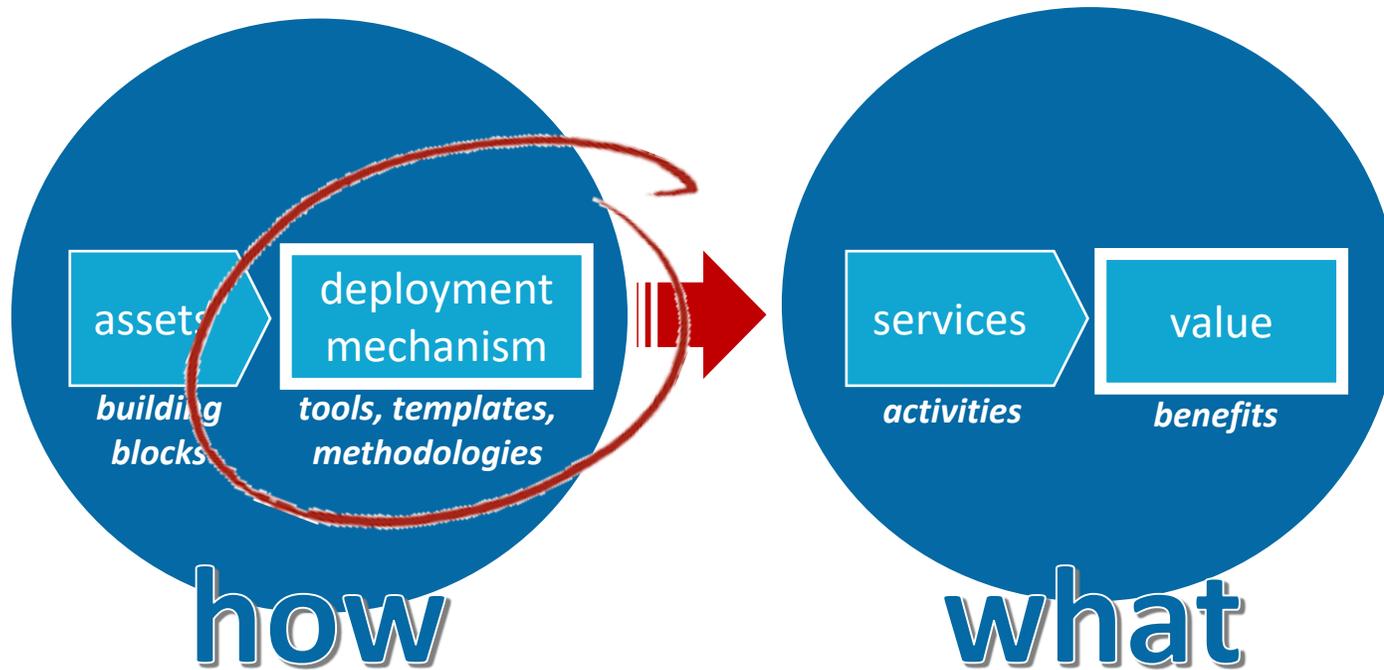
- Working group meetings
  - RODIN Kick-off 27th of May
  - Further discussion during the Summercamp
  - DIHNET/RODIN meeting on the 2nd of July 2020
- Previous views
  - The Grassman Business model navigator approach
  - Distinction between the network and service providers
  - Activities of the network
  - Introduction to revenue models
  - Branding
- Next evolutions based on
  - The EDIH strategy
  - SmartEEs business model
  - Discussion on marketplaces
- New elements
  - Detailed revenue models
  - Deployment mechanisms
  - Assets
  - Membership model
  - Overall business model

# WHAT IS GOING ON WITH REGARD TO POST-PROJECT SUSTAINABILITY

- The RODIN/DIHNET thought leadership discussions
- Post-project sustainability in various projects:
  - All robotics related projects
  - SmartEEs, C2T, DIHNET, BOWI, Tetramax, etc.
  - Smart4Europe initiative
- Topics that are “hot”
  - Marketplaces, marketplaces. No: A brokerage platform
  - Revenue models, including the HERO “tit-for-tat” approach
  - The EDIHs, corridor creation, EU-networks inclusion
  - Getting post-project funding from the Commission...
  - Membership models
  - New initiatives for post-project sustainability

# DISCUSSION TOPIC 1: MARKET PLACES

# DEPLOYMENT MECHANISMS ORGANIZING HOW TO DELIVER VALUE



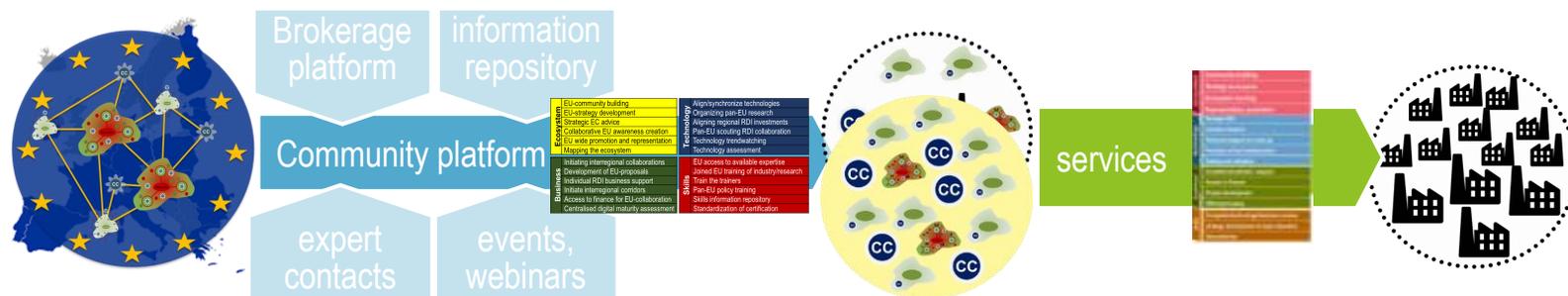
*The assets are made available by deployment mechanism and delivered by services in order to create value*

# DEPLOYMENT MECHANISMS

- **Market place/Brokerage mechanism**
  - An infrastructure to allow brokerage among demand and supply in industry
  - An infrastructure for the members to also share their offering
- **Events/Webinars**
  - Dedicated cross-border matchmaking events between companies and end users
  - Brokerage events dedicated to DIHs?
- **Information/knowledge repository**
  - Collection of reports, analysis, toolboxes, good practices, use cases, etc
- **Expert contacts**
  - Involved experts part of the network management who can answer or connect to other experts regarding technology questions
- **Community platform**
  - Place facilitating all communication in the community

# DEPLOYMENT TOOLS ARE NOT ENOUGH

- A deployment mechanism is a tool, supporting services
- So services need to be connected to the deployment mechanisms to create value!
- This is the case with the “marketplace”



## DISCUSSION TOPIC 1: MARKET PLACES

- ***So, market places /brokerage platforms are key mechanisms to make your assets and services available in order to create value***
- Key question: How to make the marketplaces impactful and sustainable?
  - Is your market place connected to other marketplaces? How? Should it be?
  - Do you want a market place that is accessible for the SMEs or for the DIHs alone? Both?
  - Do you plan to continue with community/market places after the IAs?
  - What are the needed corresponding services to make it successful and add value?

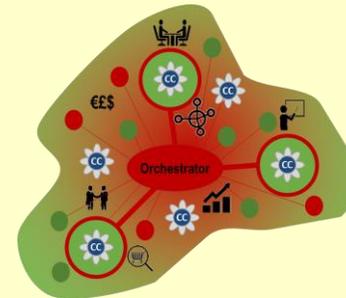
## DISCUSSION TOPIC 2: CONNECTION TO THE FUTURE EDIH NETWORK

# 4+1=5 POSSIBLE BUILDING BLOCKS IN THE EU DIH NETWORK

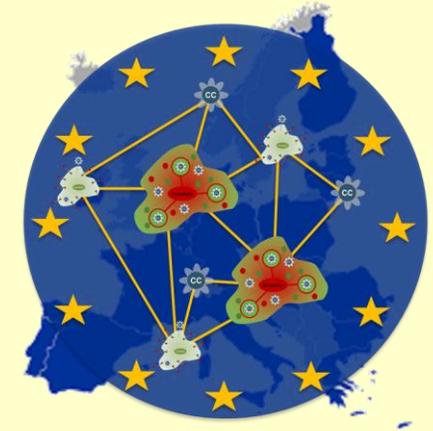
*Competence centre*



*Regional DIH network*



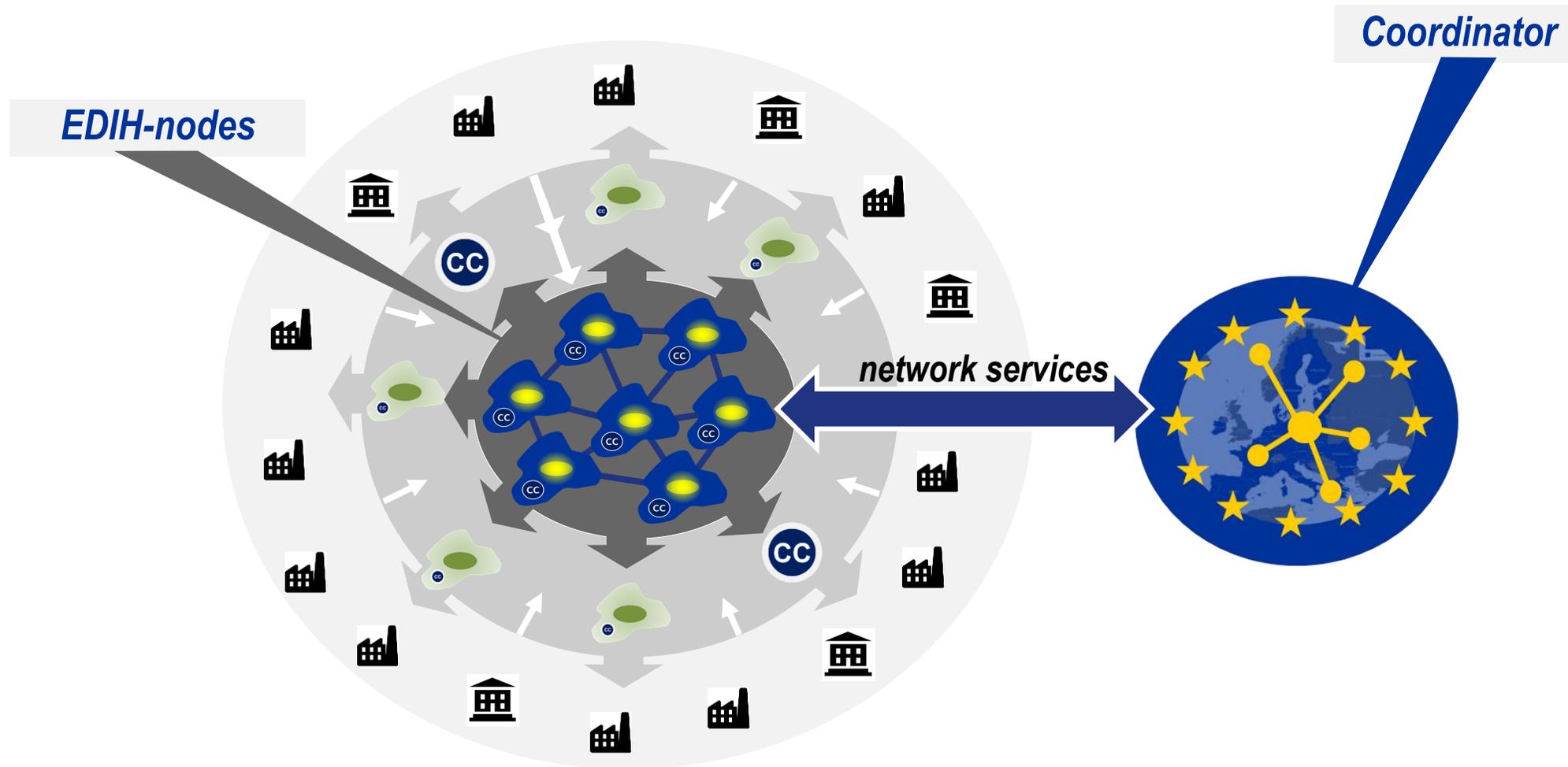
*Pan-EU DIH network*



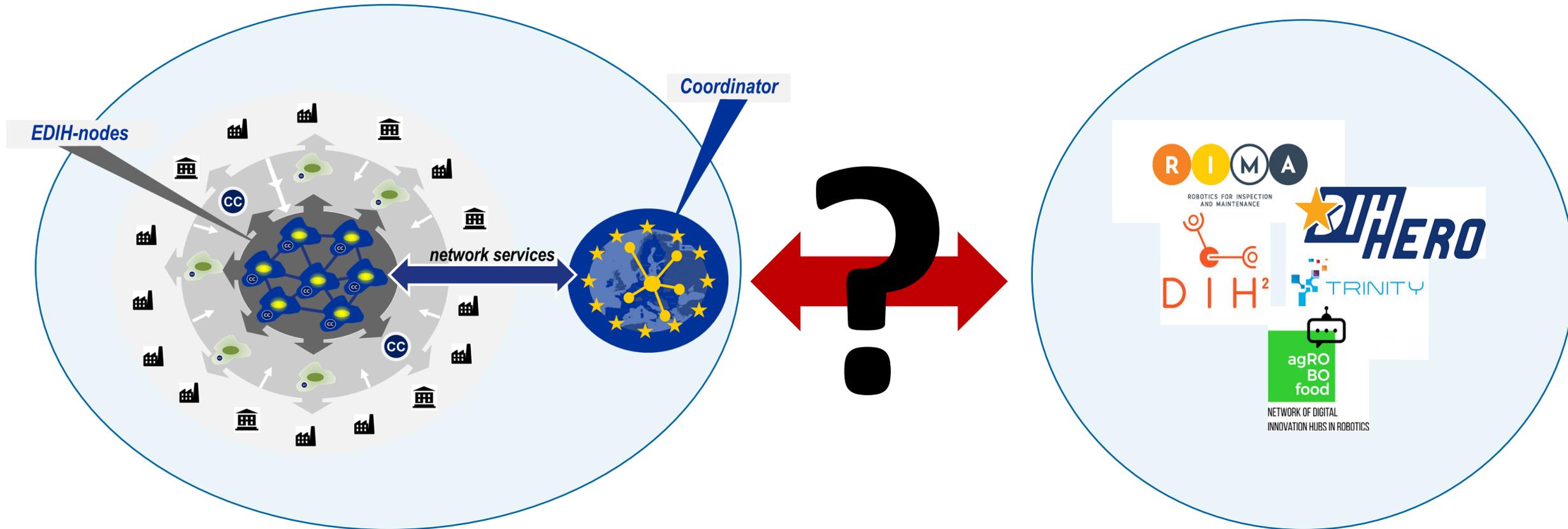
# THE EDIHS AND DTA

- The EDIH network:
  - Upto 200 EDIHs selected in 2022 to:
    - Enhance regional capacities/capabilities for ADT with regard to deployment
    - Improve EU-collaboration
    - Focus on support deployment
- The coordinator: the Digital Transformation Accelerator
  - Coordinating the EDIH network
  - Initiating interregional collaborations
  - Making the connection to other DEP activities
  - Supporting the connection with other programmes

# THE EDIH NETWORK, INCLUDING TWO LAYERS



# DISCUSSION TOPIC 2: CONNECTION TO THE FUTURE EDIH NETWORK



## DISCUSSION TOPIC 2: CONNECTION TO THE FUTURE EDIH NETWORK

- ***We need to establish an effective connection among the networks and the EDIH network in order to offer complementary support, limiting overlaps***
- Key questions: how to establish collaboration between (Robotics) EU-networks and the EDIH network?
  - What connection do you see with the EDIHs, EDIH-network
  - Do you see the robotics networks as also organizing inside the EDIH network?
  - What activities can be combined with the EDIH network?
  - What activities are unique for your current IAs?
  - What are different responsibilities for both networks
  - How can we organize the collaboration?

## NEXT STEPS

- Integration with other initiatives in the coming year?
- What topics to address?
- Building up towards the next Summercamp
  - Address it again?

# SLIDE DECK WITH COLLECTED INFORMATION

- A strategic view on EU-networks
- Customers for EU-networks and their needs
- Activities for EU-networks
- Deployment mechanisms
- Revenue models for EU collaboration
- The business model for the network organisation
- Business models for (E)DIH-(E)DIH interregional collaboration
- Branding

# A STRATEGIC VIEW ON EU-NETWORKS



The RODIN project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 825263.

# WHY EU COLLABORATION

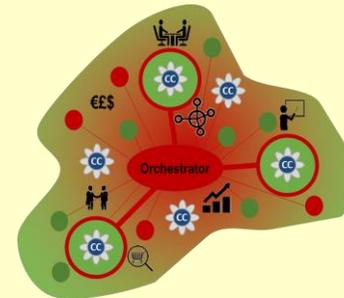
- **Import/export: Use of regional competences/infrastructures at EU level**
  - *Making available infrastructures and competences from one region to another and opening up markets*
- **Pan-EU EDIH capability building**
  - *Using best practices and other capacities one region to increase the capacities in other regions*
- **Increasing the global excellence of European specialisms**
  - *Joining and aligning activities in RD&I on an interregional level to improve excellence*
- **Increase the impact of public and private capital investments**
  - *Collaboration and alignment of public and private investments to reduce duplication*

# 4+1=5 POSSIBLE BUILDING BLOCKS IN THE EU DIH NETWORK

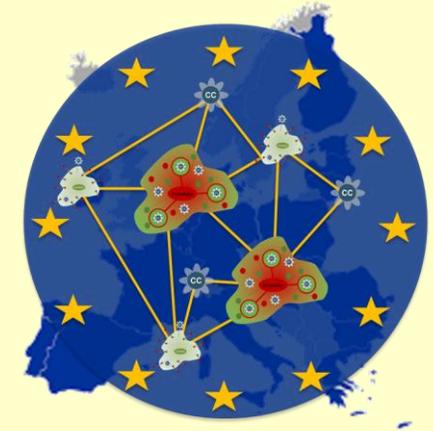
*Competence centre*



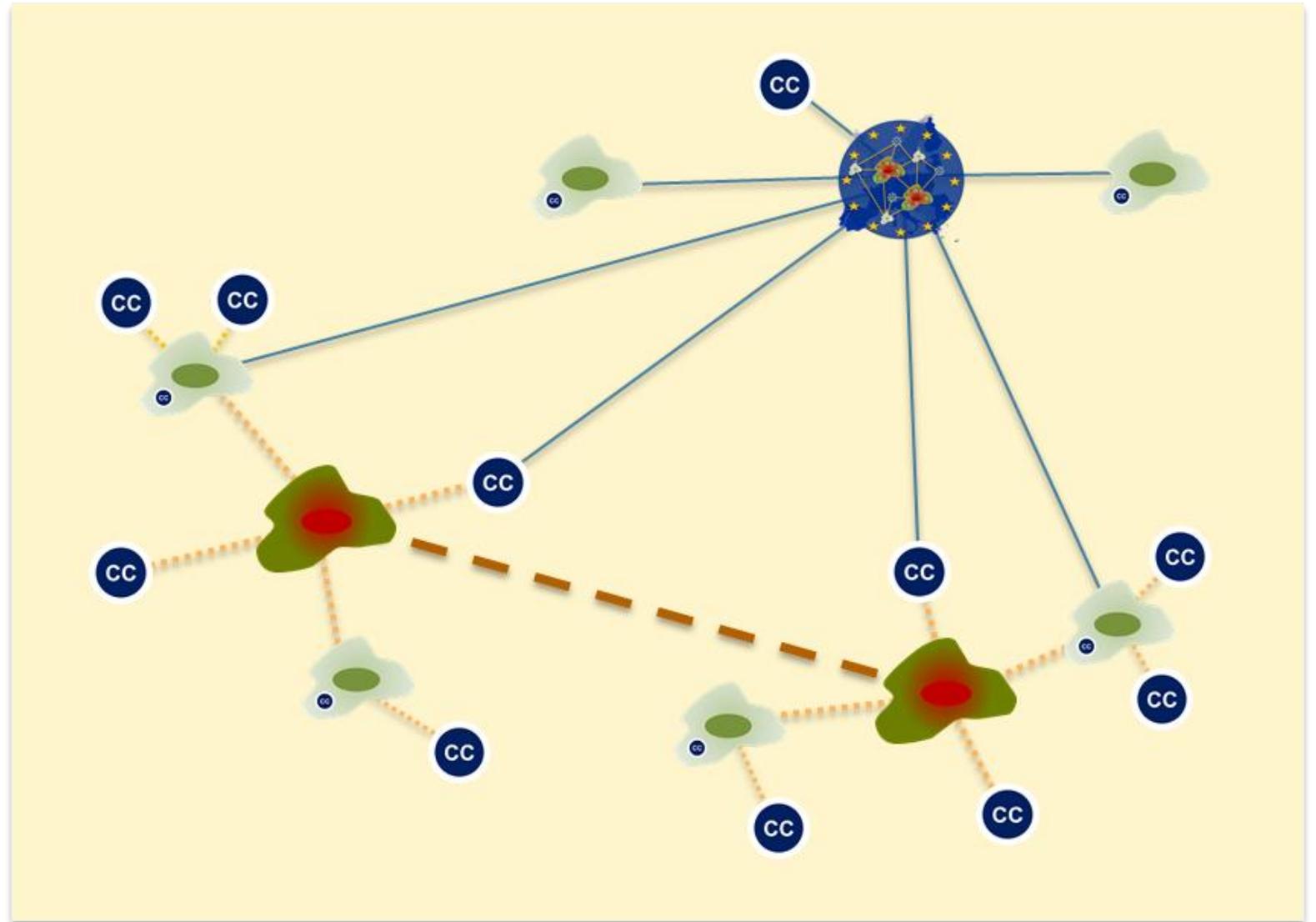
*Regional DIH network*



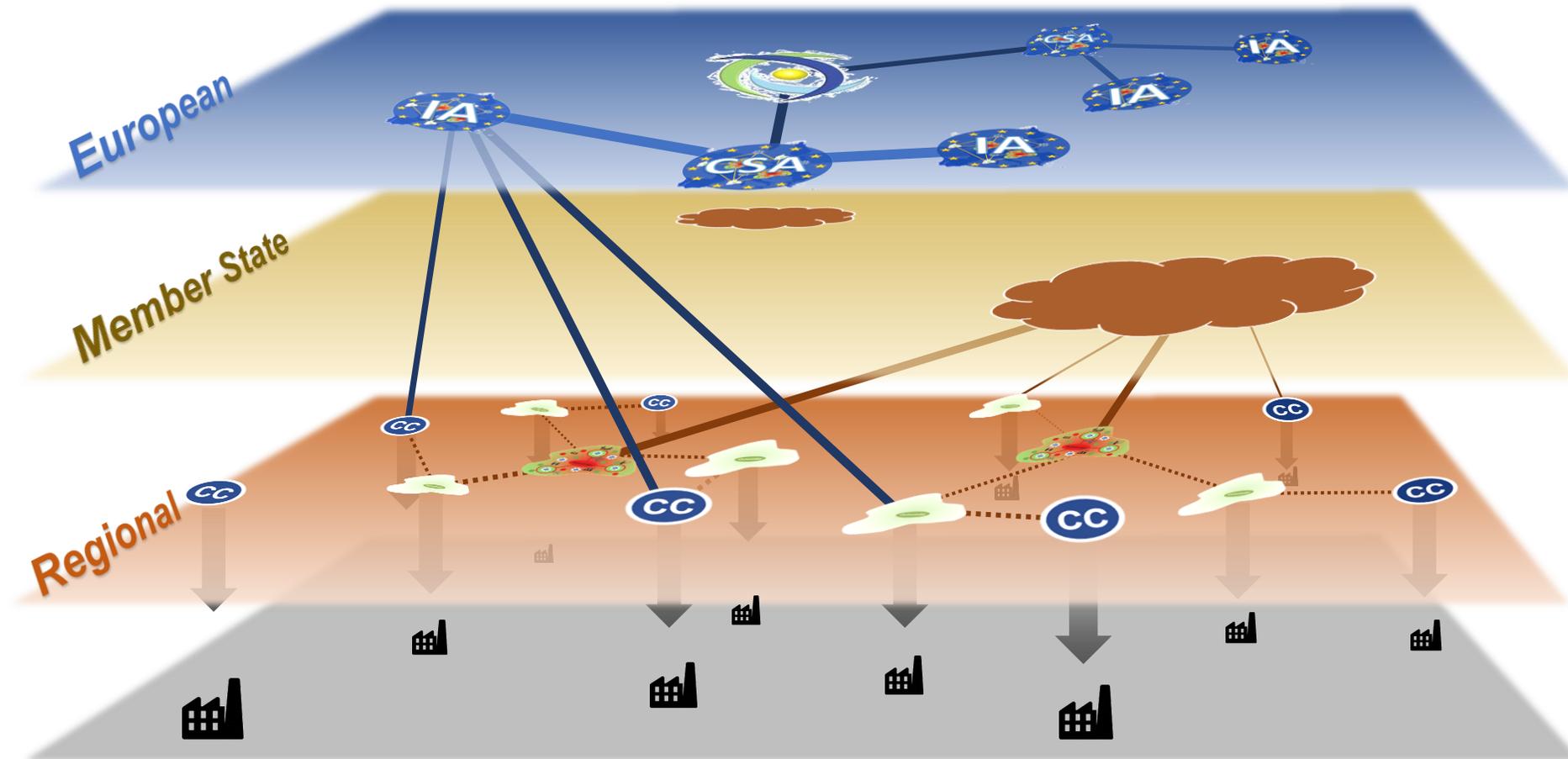
*Pan-EU DIH network*



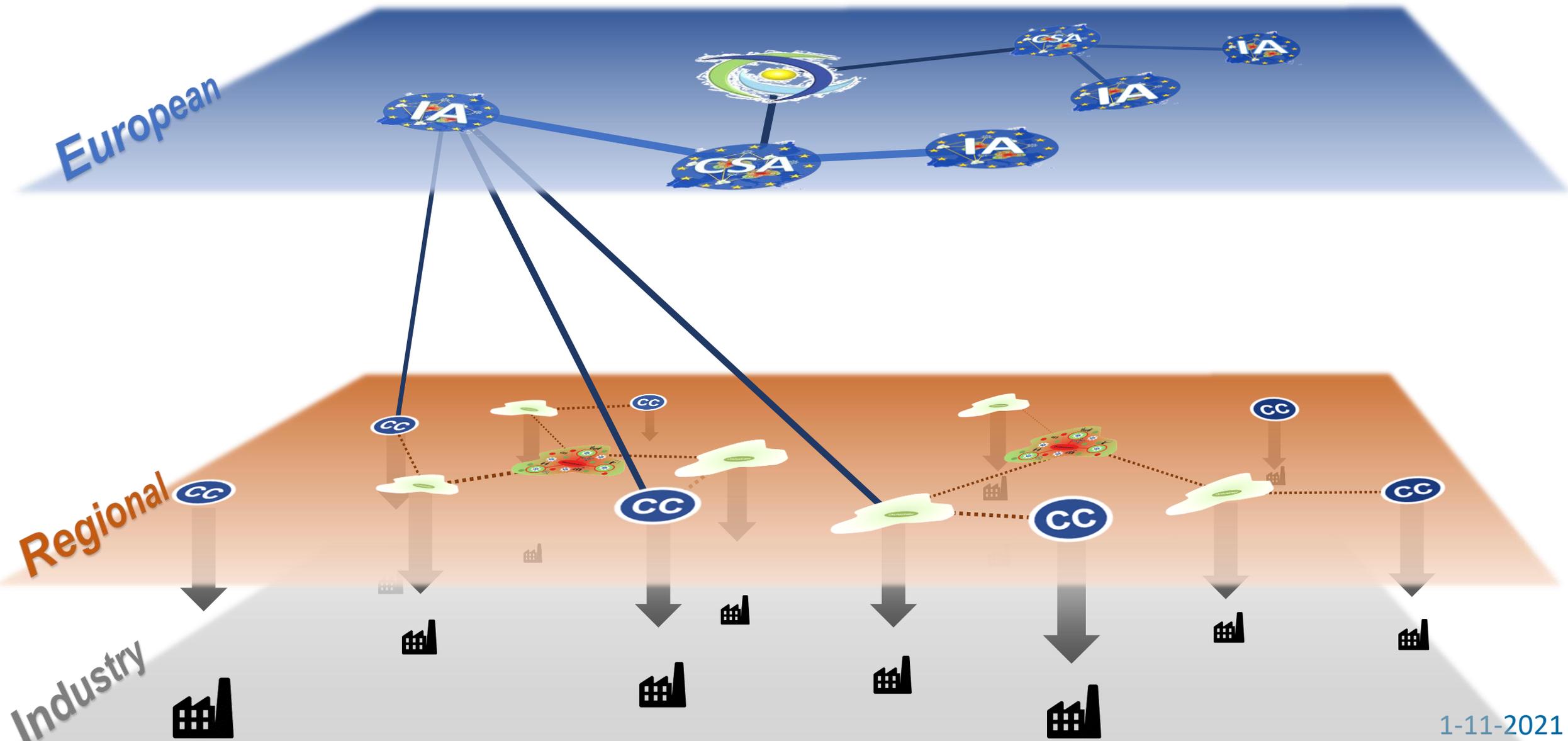
# A NETWORK OF ANIMALS IN THE ZOO



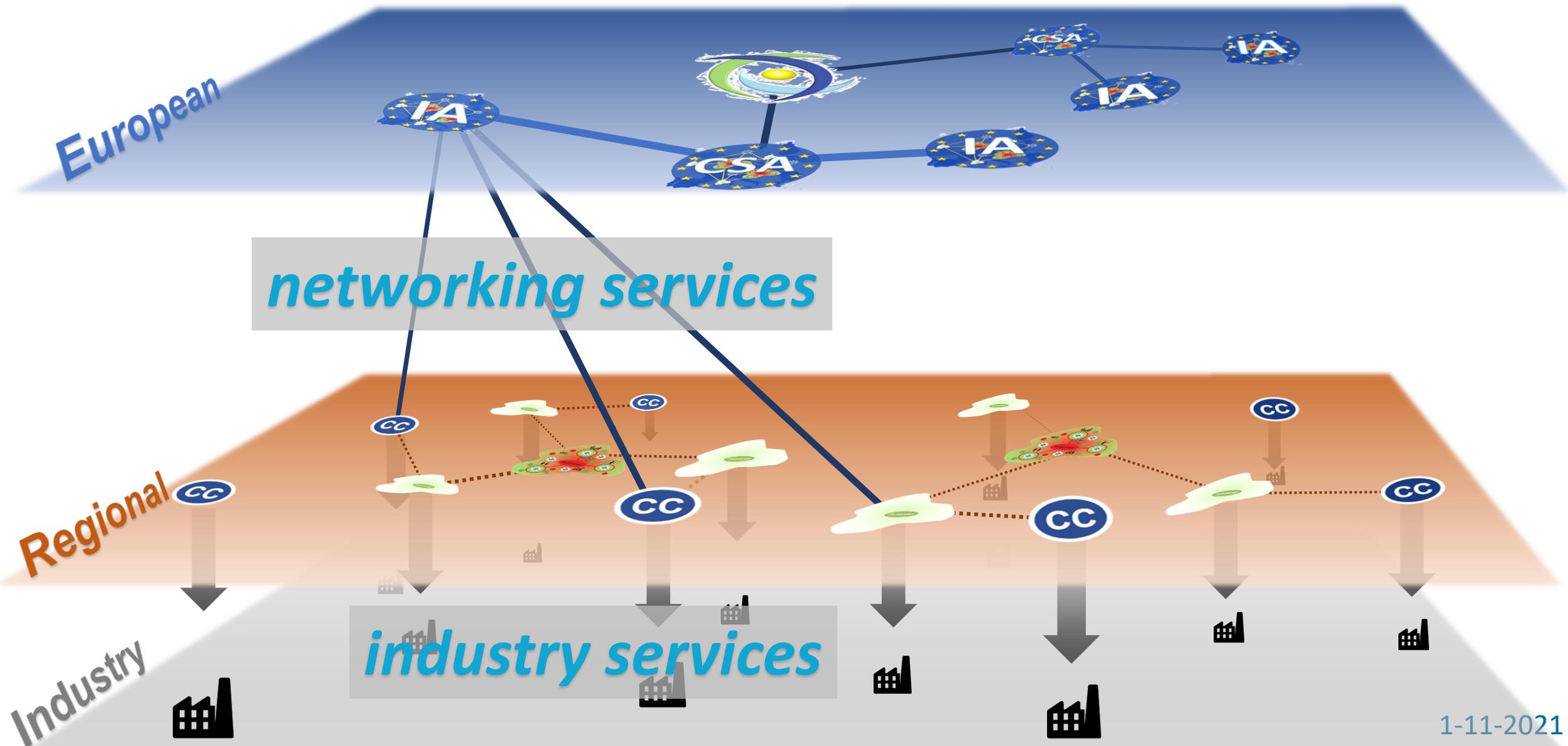
# POSSIBLE CONFIGURATION OF DIHS AND NETWORKS



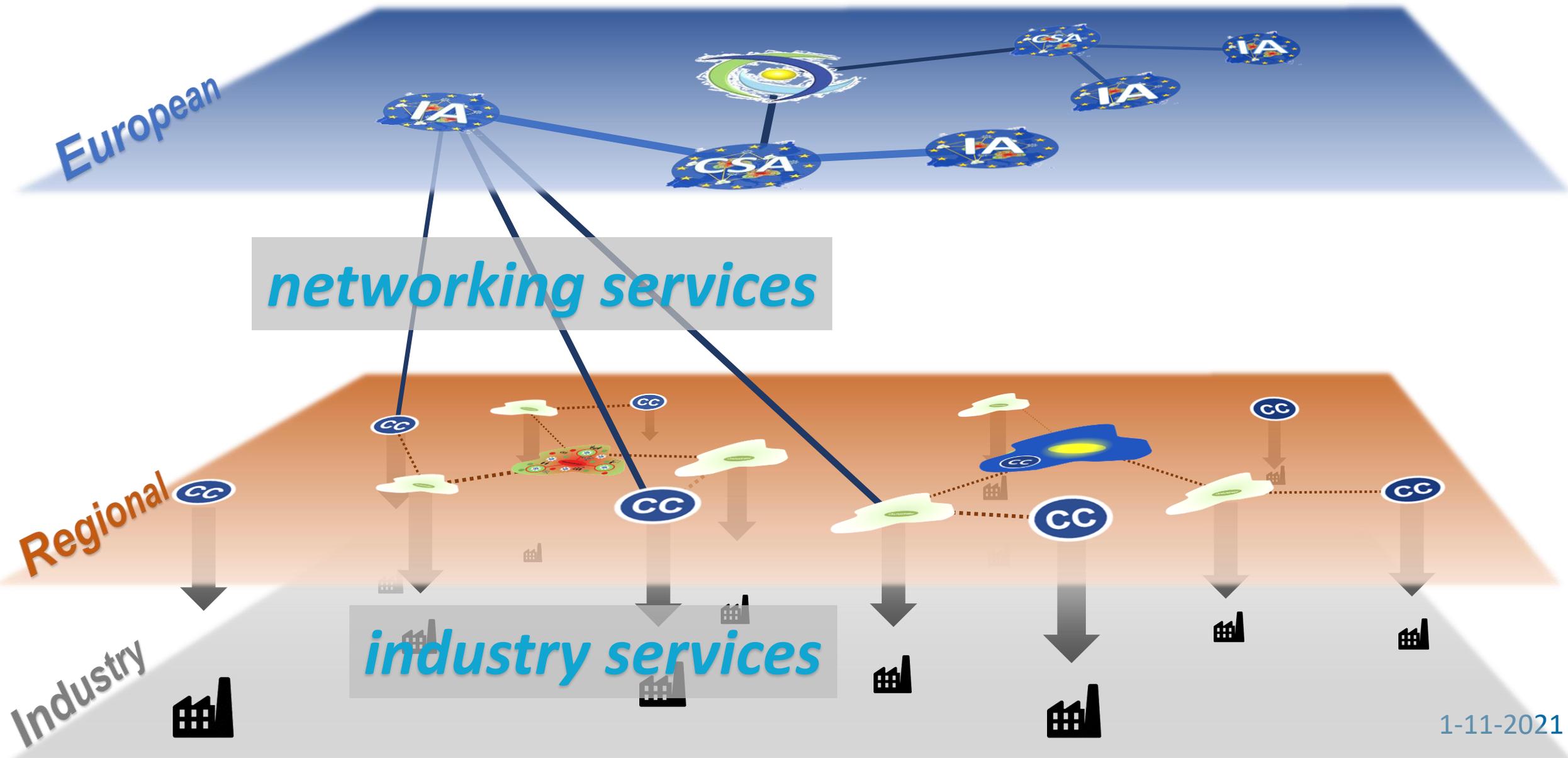
# SETTING THE SCENE



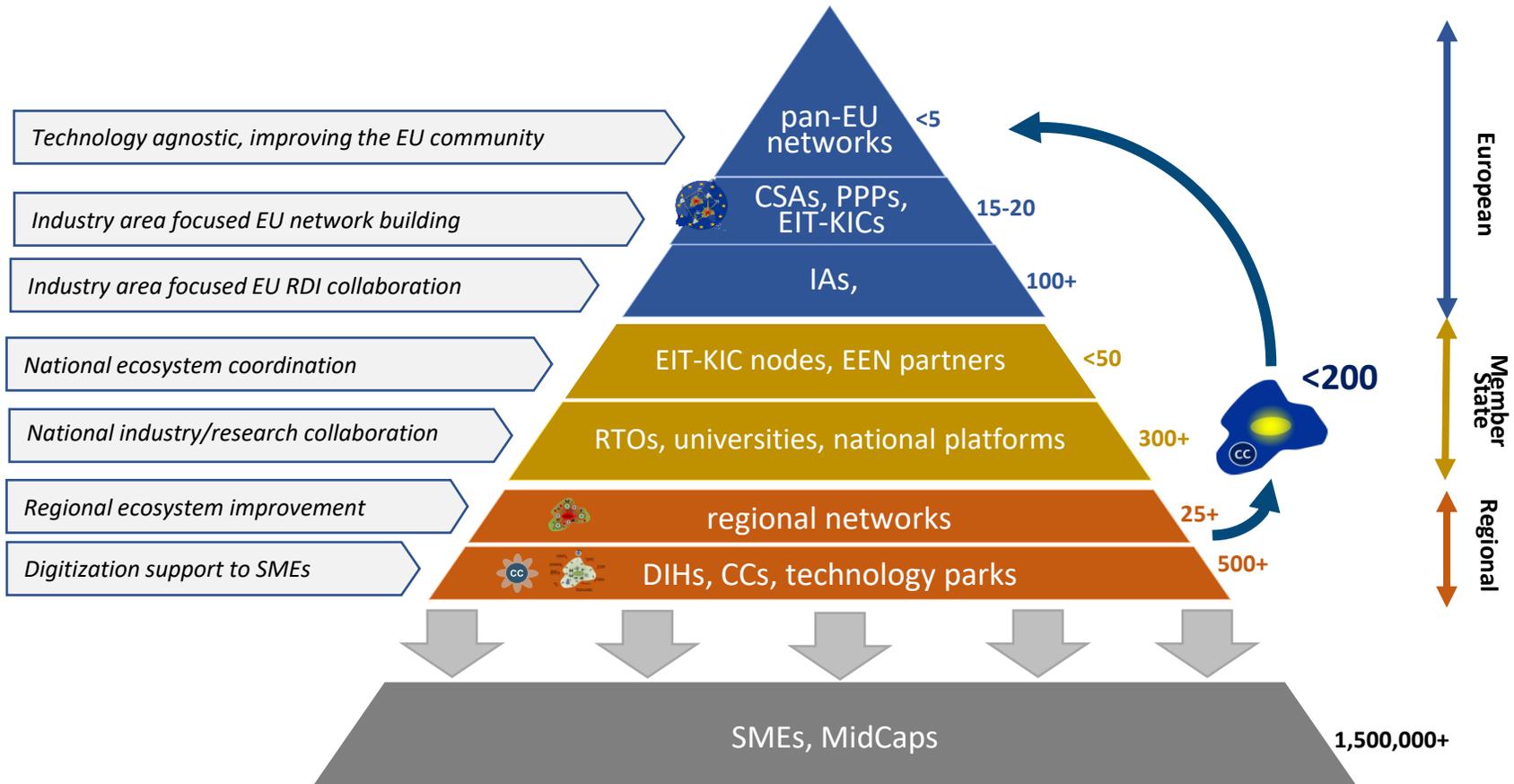
# SETTING THE SCENE FOR THE EDIH NETWORK



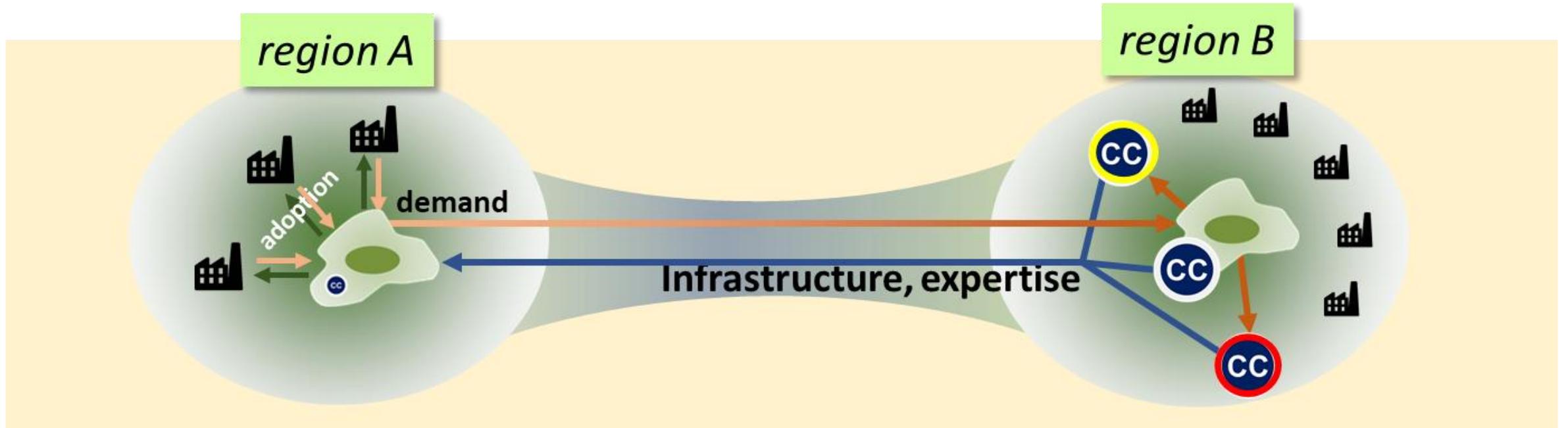
# SETTING THE SCENE FOR THE EDIH NETWORK



# SOME NUMBERS OF THE EU DIH COMMUNITY



# MAIN OBJECTIVE OF NETWORKS: CREATING GATEWAY CORRIDORS

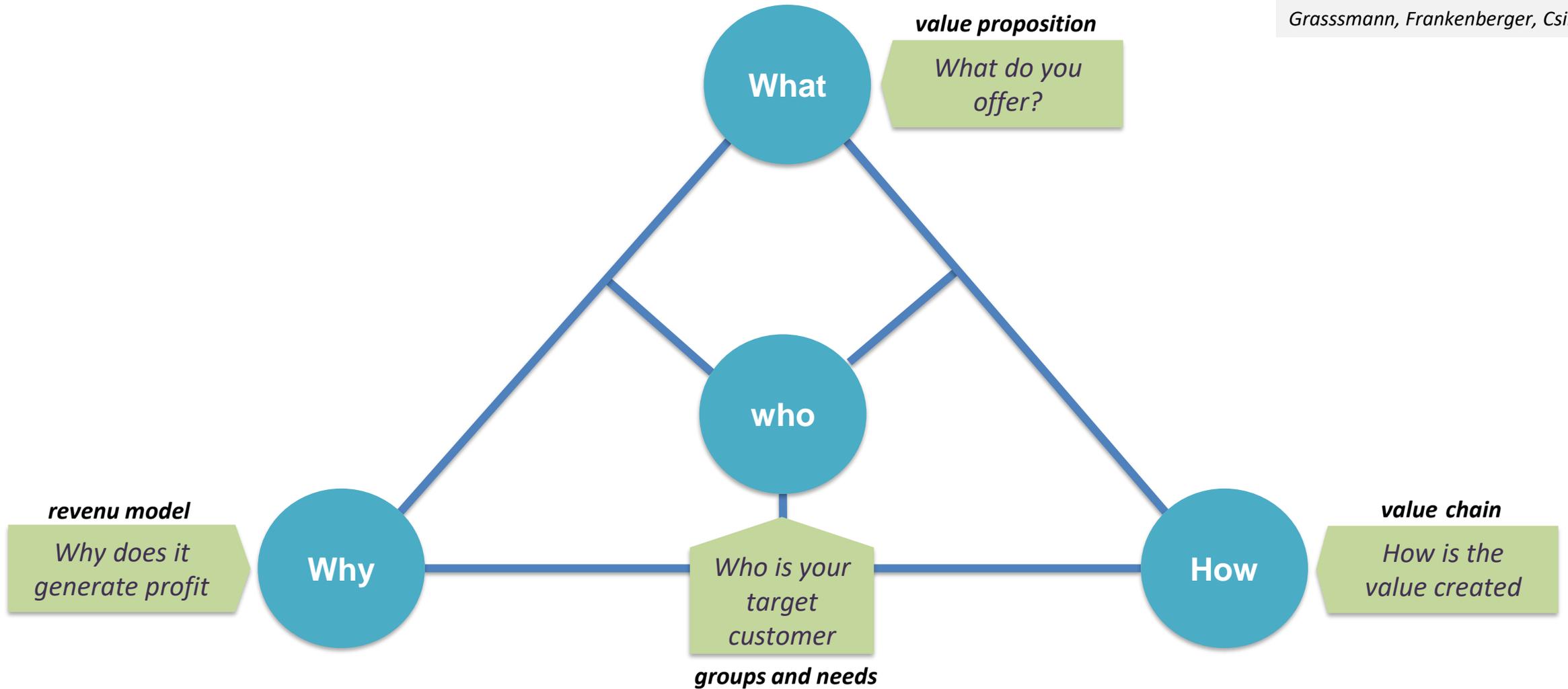


# THE BUSINESS MODEL APPROACH

- Not the Business Model Canvas
  - Too complex
  - Not dealing with the issues of an ecosystem
- Using the business model navigator approach
  - Less complex
  - Using the 55 suggested business models as inspiration
  - <https://www.thegeniusworks.com/wp-content/uploads/2017/06/St-Gallen-Business-Model-Innovation-Paper.pdf>

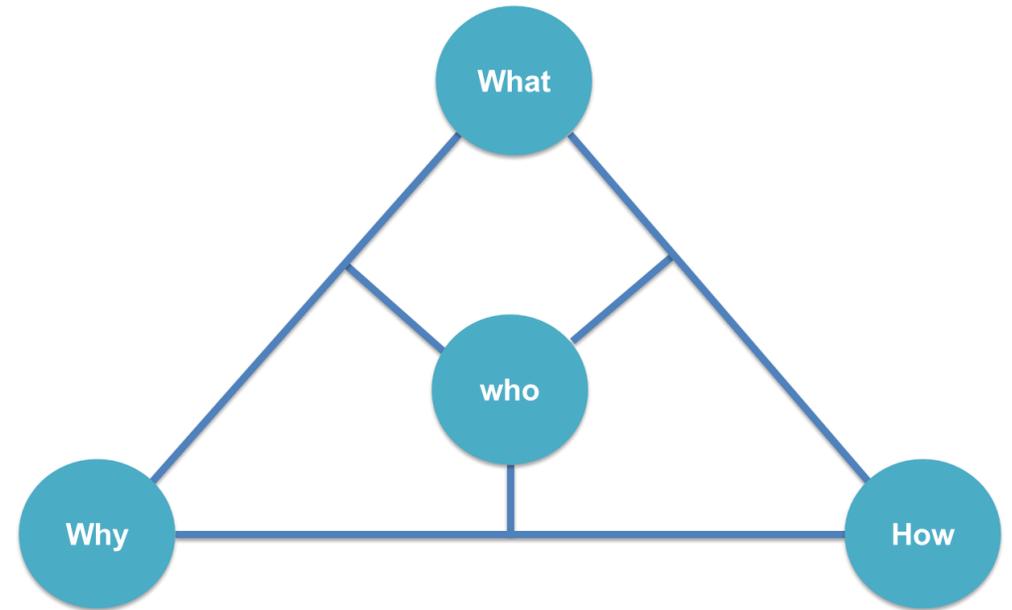
# BUSINESS MODEL ELEMENTS

Grassmann, Frankenberger, Csik



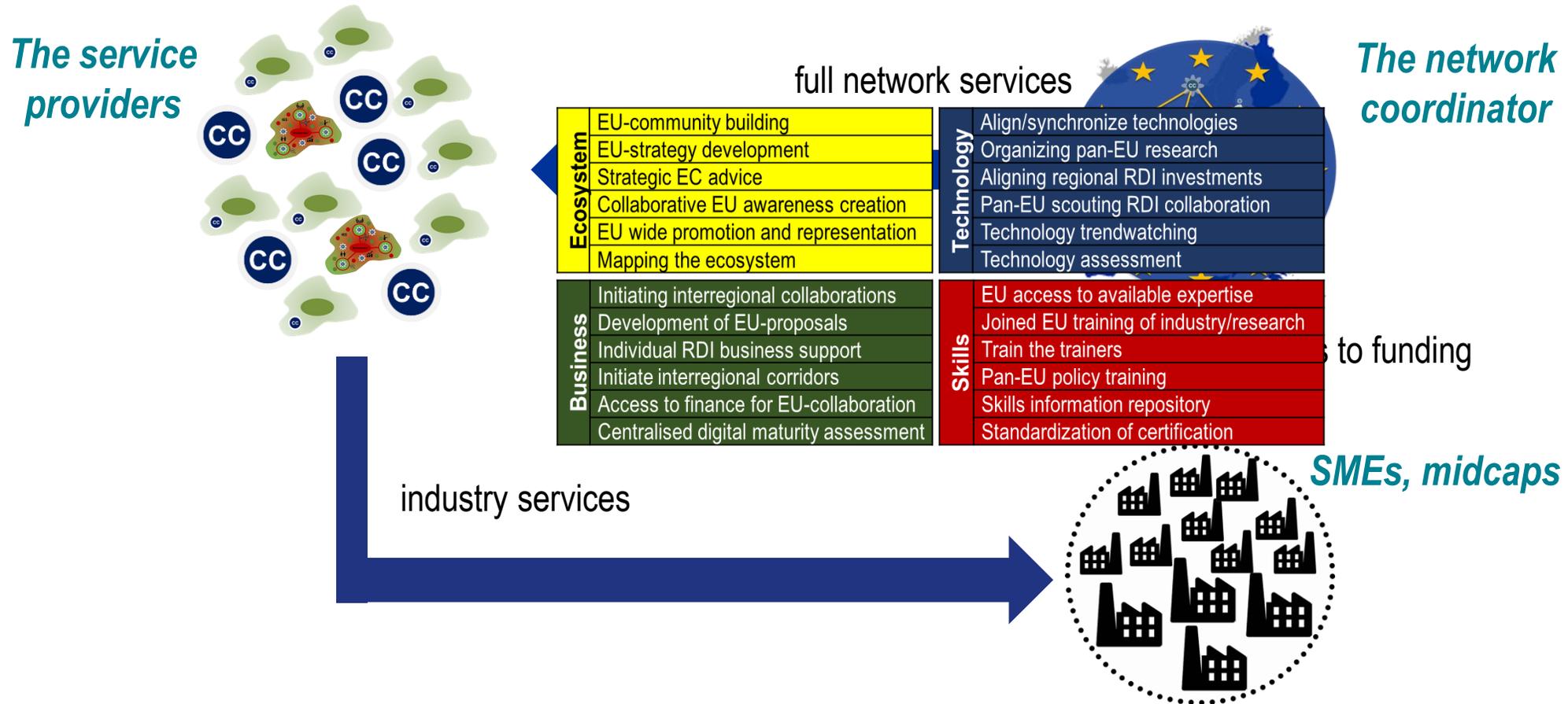
# BUSINESS MODEL ELEMENTS

- Who: The customer:
  - *What are the needs and pains of the customer that are addressed*
- What: The value created to address needs
  - *The actual added value*
  - *The services by which it is created*
- How is the value delivered:
  - *Who is providing the service*
  - *Based on which assets*
  - *Through which deployment mechanisms*
- Why: The revenue models, capitalizing value
  - *What is paid (money, in-kind, etc)*
  - *For what is paid (product, result, use)*
  - *How (subscription, credit, lease)*
  - *How much is paid (full, co-funded, performance)*
  - *Who is paying the services (customer, government, sponsor)*



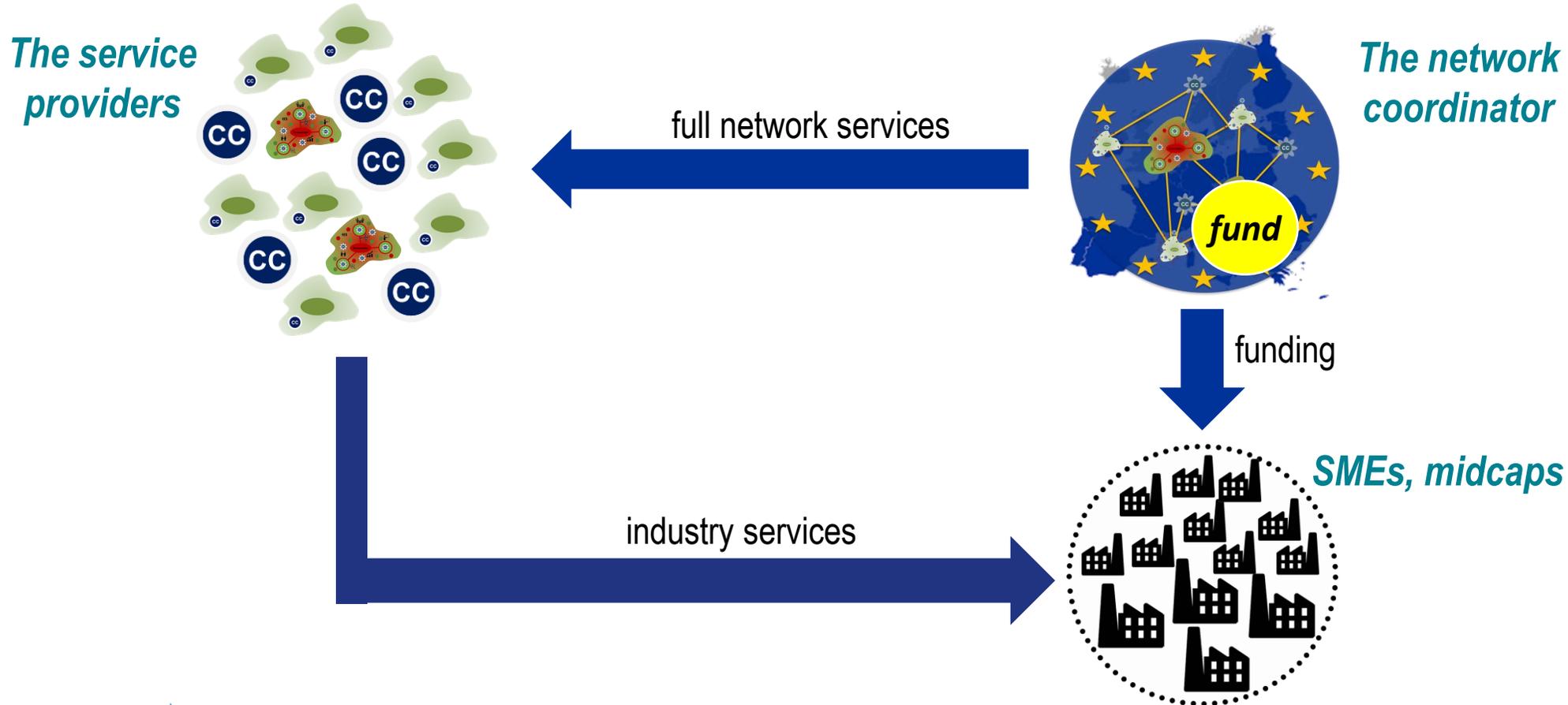
who

# EU-NETWORKS: TWO LAYERED APPROACH



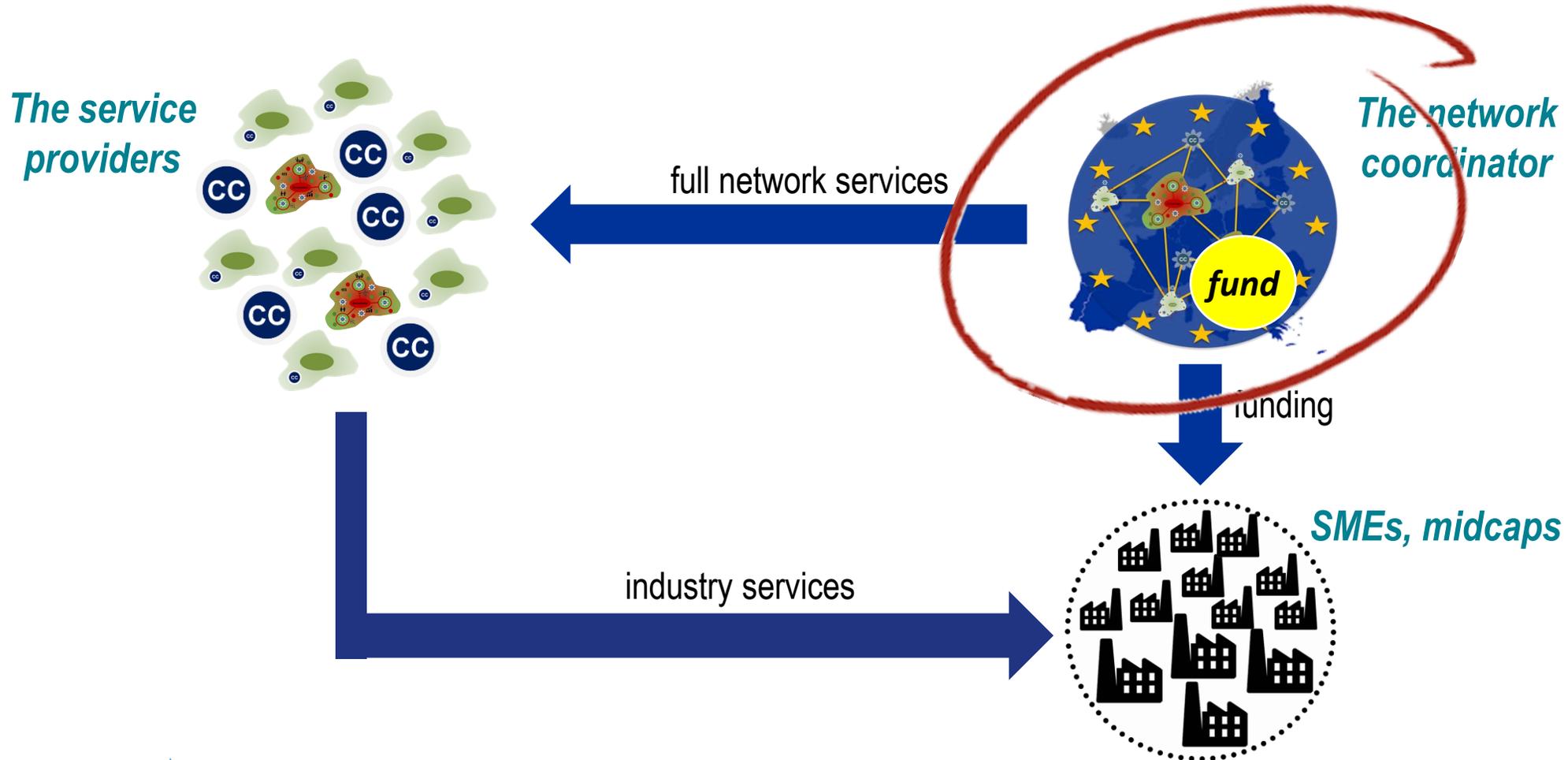
# SO, THE FIRST QUESTION: WHO ARE THE CUSTOMERS?

who



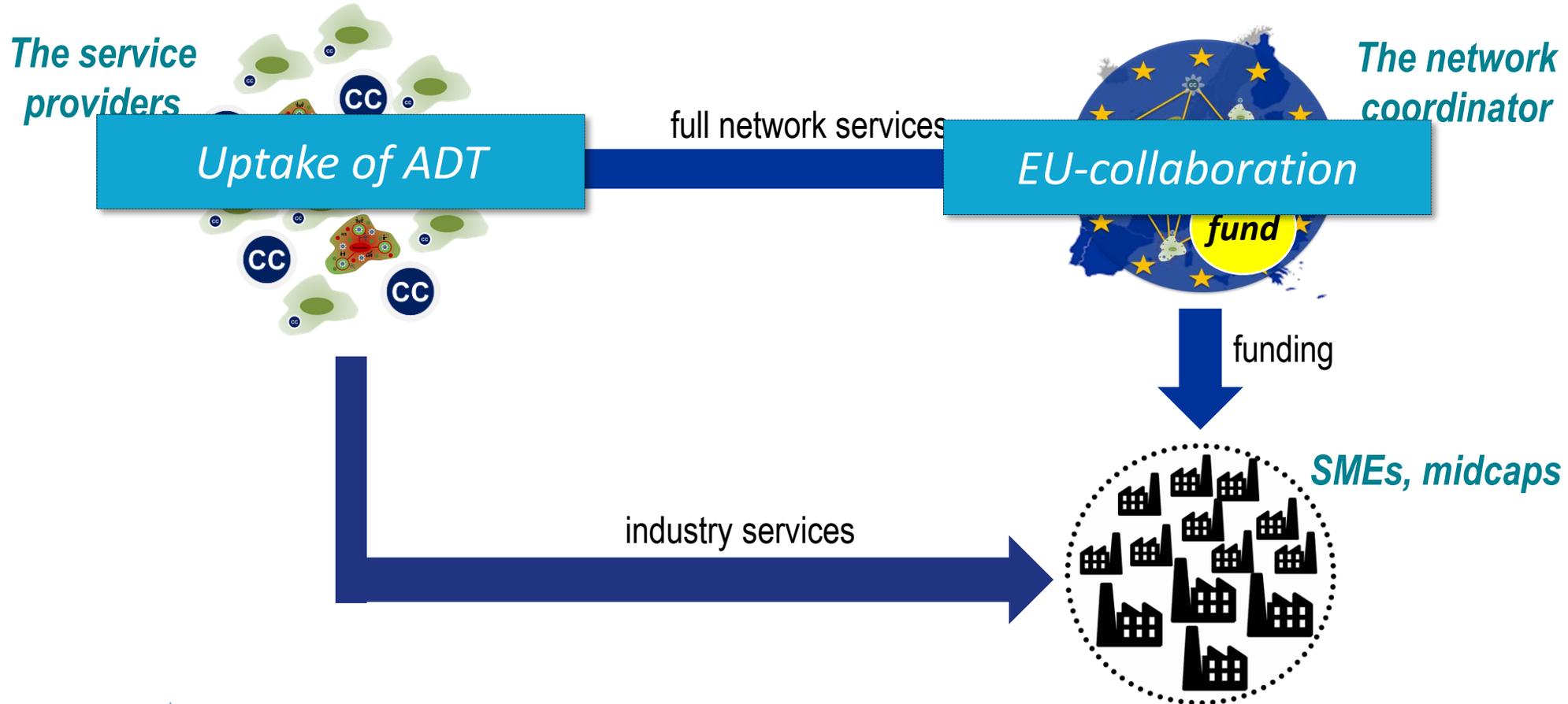
# SO, THE FIRST QUESTION: WHO ARE THE CUSTOMERS?

who



# DIFFERENT MISSIONS

who





The RODIN project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 825263.

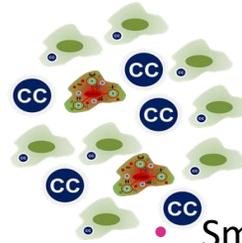
# THE DIRECT AND INDIRECT CUSTOMERS FOR EU-NETWORKS

who



## *Coordinator*

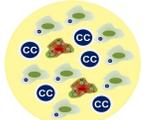
- Direct service providers that are structural involved in the network
- Ad-hoc (semi) public service providers
- Private industrial service providers
- Vendors, manufacturers of infrastructures
- Clusters and other intermediary organisations
- Venture capitalists and other private investors
- Regional development agencies
- The European Commission



## *Customers of the customers*

- Small and medium enterprises
- Midcaps
- Regional vendors, manufacturers of infrastructures

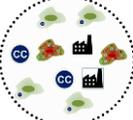
# WHO ARE THE CUSTOMERS OF THE NETWORKS:



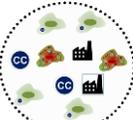
## **Direct customers**



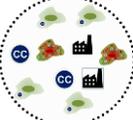
- Public and private service providers



- Public and private investors



- Vendors and manufacturers

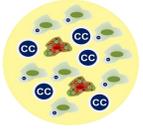


- Intermediary organisations



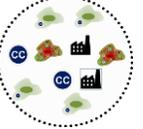
*Access to ...*

# WHO ARE THE CUSTOMERS OF THE NETWORKS:



## Direct customers

- Public and private service providers
- Public and private investors
- Vendors and manufacturers
- Intermediary organisations



## Indirect customers

- The European Commission
- National public administrations
- Regional public administrations

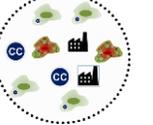
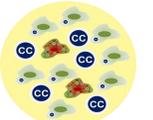


Access to ...



Market failures

# WHAT ARE THE PAINS/NEEDS OF OUR DIRECT CUSTOMERS



## What do they want

- To efficiently and effectively help their customers to engage in EU-collaborations
- Joining initiatives in RDI
- Expand their markets: export
- Access to EU-funding for their RDI

## What are their pains

- Information about activities and capacities/capabilities
- Access to funding for EU-collaborations
- Efficient initiation of EU-collaborations
- Technological information
- Economy of scale with regard to EU-collaborations
- The administrative burden
- Access to human resources

# MARKET FAILURES (SORRY POLICY JARGON)

## *BTW, THIS IS WTO LAW!!!*

*Reasons why governments are allowed to co-fund*

### ▶ “Information asymmetry”

- ▶ This is about one company not having the same access to information as another, disrupting the level playing field

### ▶ “Externalities”

- ▶ When an organisation invests, but another organisation also gets the benefits for free

### ▶ “Public goods”

- ▶ Developing capacities/capabilities that are for the good of the economy/society at large (e.g. education, infrastructures)

### ▶ “Time-inconsistent preferences”

- ▶ If an investment only pays off in the long run, when society needs it now

who



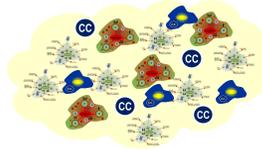
# CUSTOMERS AND THEIR NEEDS, PAINS

who



## *Coordinator: the DIHs*

- Information about available experts, infrastructures, activities in other regions
- Support to increase efficiency and effectiveness to forge collaborations
- Access to European infrastructures and expertise
- Available information about advanced digital technologies (brochures, templates)
- Experiences in take-up activities, as well as boosting the regional ecosystem



## *DIHs: Regional ecosystem*

- Access to expertise/infrastructures in other regions
- Access to market in other regions
- Access to funding for EU-collaborations
- Good/best practices of advanced digital technology deployment
- Creation of pan-EU value chains
- Available personnel/experts in other regions (workforce)

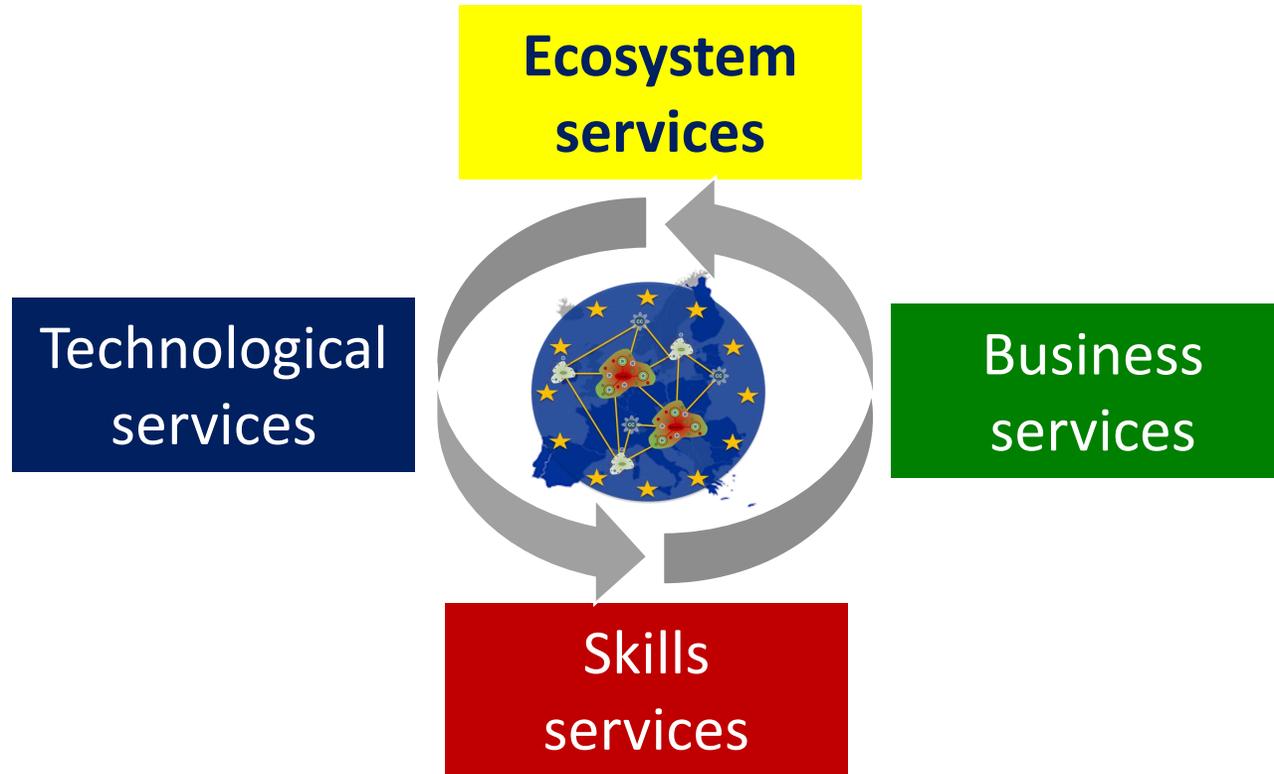
what

## THE VALUE CREATED BY A NETWORK

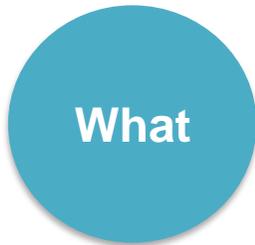
- **Showcasing** best practices and mirroring them at pan-EU level
- Supporting **less developed regions** to enhance their capabilities for uptake
- **Joined development** of state-of-the-art FWE innovations
- **Combine** interregional markets to increase economy of scale
- Alignment/synchronization of regional investments, **avoiding duplication**
- **Optimally benefit** from EU available expertise and infrastructures
- Creating **new markets** for service providers
- Supporting **pan-EU value chain** creation
- Increasing **impact** of public investments
- **Learning** from experiences in regions on European level

# FOUR TYPES OF ACTIVITIES FOR EU-NETWORKS

What



# SO, WHAT VALUE TO DELIVER: SERVICES!



<b>Ecosystem</b>	EU-community building
	EU-strategy development
	Strategic EC advice
	Collaborative EU awareness creation
	EU wide promotion and representation
	Mapping the ecosystem

<b>Technology</b>	Align/synchronize technologies
	Organizing pan-EU research
	Aligning regional RDI investments
	Pan-EU scouting RDI collaboration
	Technology trendwatching
	Technology assessment

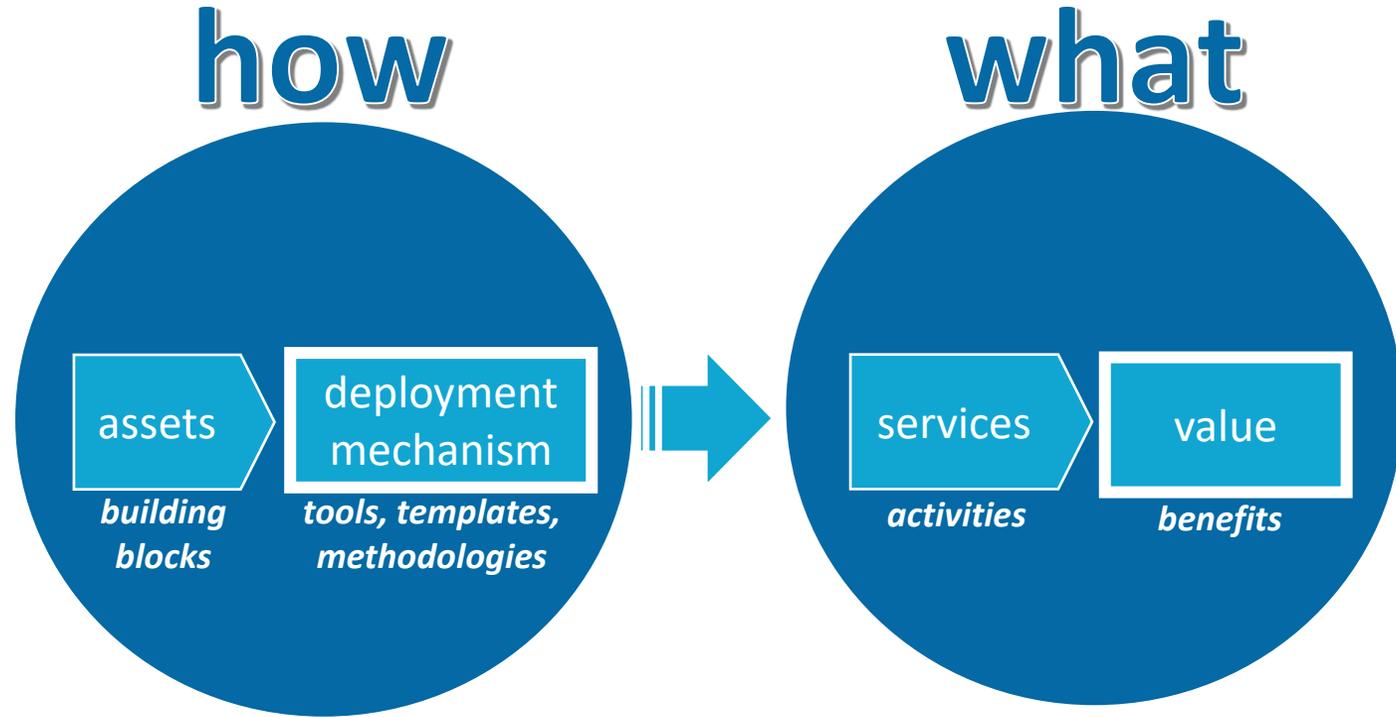
<b>Business</b>	Initiating interregional collaborations
	Development of EU-proposals
	Individual RDI business support
	Initiate interregional corridors
	Access to finance for EU-collaboration
	Centralised digital maturity assessment

<b>Skills</b>	EU access to available expertise
	Joined EU training of industry/research
	Train the trainers
	Pan-EU policy training
	Skills information repository
	Standardization of certification

how

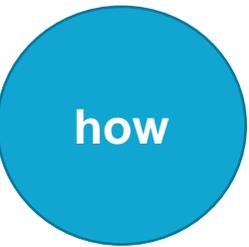
# FROM ASSETS TO CREATING VALUE, THROUGH DEPLOYMENT

how



*The assets are made available by deployment mechanism and delivered by services in order to create value*

# KEY ASSETS



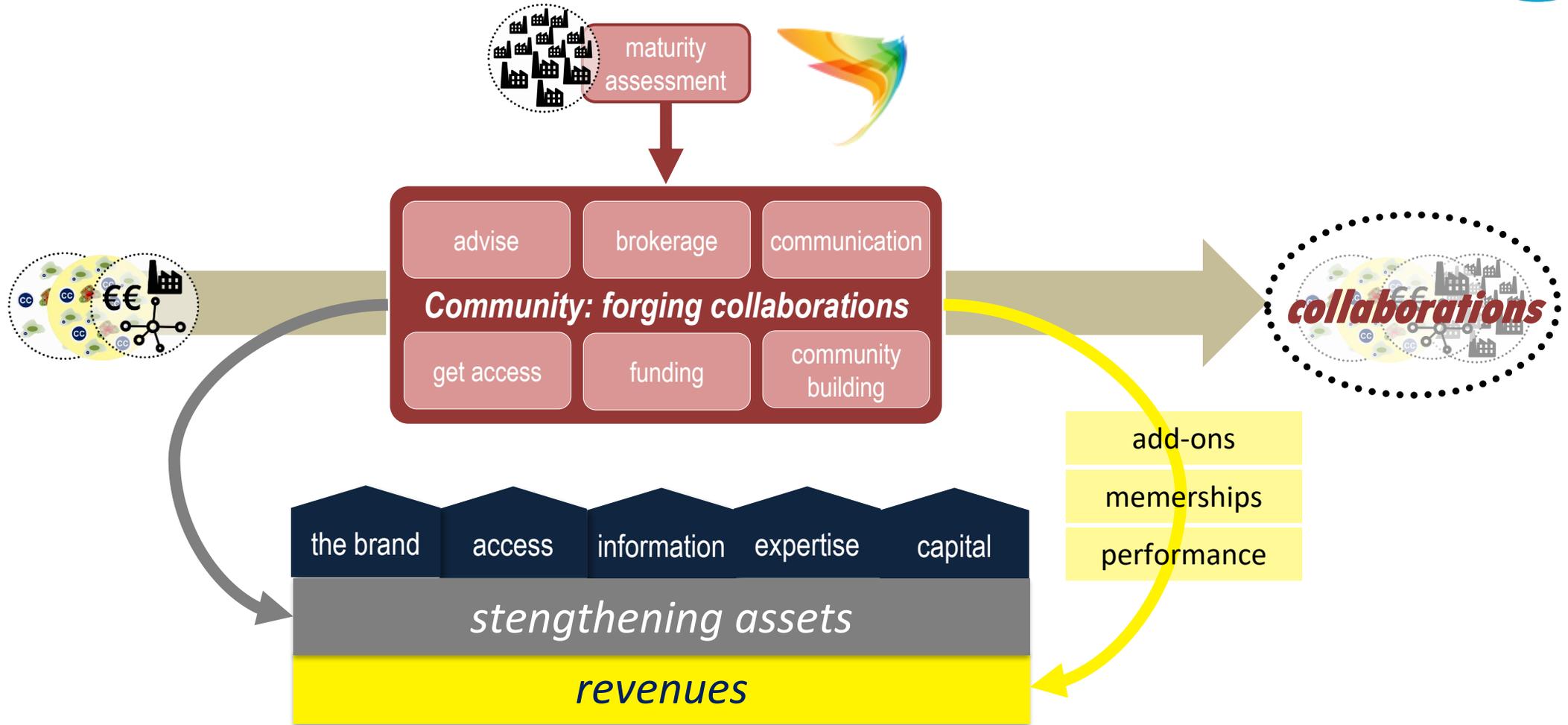
access to funding	<i>having direct access to funding and/or to external investments (indirect)</i>
network contacts	<i>trustworthy contacts to the key players in of the EU EDIH network at large</i>
information	<i>information where to find infrastructures, expertise, funding, skills</i>
expertise	<i>expertise in initiating EU-collaborations, advanced digital technology</i>
tools and templates	<i>tools, common templates &amp; step-wise approaches, good practices, etc.</i>
the brand	<i>trustworthy, objective brand that attracts community actors</i>

## DEPLOYMENT MECHANISMS

- **Market place/Brokerage platforms**
  - An infrastructure to allow brokerage among demand and supply in industry
  - An infrastructure for the members to also share their offering
- **Events/Webinars**
  - Dedicated cross-border matchmaking events between companies and end users
  - Brokerage events dedicated to DIHs?
- **Information/knowledge repository**
  - Collection of reports, analysis, toolboxes, good practices, use cases, etc
- **Expert contacts**
  - Involved experts part of the network management who can answer or connect to other experts regarding technology questions
- **Community platform**
  - Place facilitating all communication in the community

# AN INSPIRATION FROM THE SMARTEES MARKET PLACE

how



# REVENUE MODELS FOR EU NETWORKS



## The Summer Camp 2020 as a starting point

Contributions from Partners

Subscription Based Memberships

Partner Brokerage

- Network acts as an intermediary to ease the communication and transaction between two or more parties
- Also for funding opportunities
- Brokerage fee for successful connections
  
- Pros: The network strengthens the cross-border collaboration
- Cons: payment after work, only for successful connections

Fee for Offered Services

Fee for Content/Products

Pan-European Revolving Fund

- A fund to finance IA networks operations

Slides from Maarit Sandelin  
Rodin Summer Camp June 2020

**What are users likely to pay for?**

**The Recap from previous RODIN/DIHNET workshop in July**

SMEs and Mid-caps	Service providers	Regional/National	European Commission	Why
EU- community building	EU- community building €	EU- community building	EU- community building €€€	
EU strategy development	EU strategy development €	EU strategy development €	EU strategy development €€	
Strategic advice to the EC	Strategic advice to the EC €	Strategic advice to the EC	Strategic advice to the EC €€	
Collaborative pan-EU awareness creation	Collaborative pan-EU awareness creation	Collaborative pan-EU awareness creation	Collaborative pan-EU awareness creation €€	
Alignment EU proposals €	Alignment EU proposals €€	Alignment EU proposals	Alignment EU proposals	
EU wide representation	EU wide representation	EU wide representation	EU wide representation	
<b>Standardization</b>	<b>Standardization</b>	<b>Standardization</b>	<b>Standardization</b>	
Mapping capacities/capabilities	Mapping capacities/capabilities €	Mapping capacities/capabilities €€	Mapping capacities/capabilities €€€	
Organizing pan-EU collaborative research	Organizing pan-EU collaborative research €€	Organizing pan-EU collaborative research	Organizing pan-EU collaborative research €€€	
Smarter specialisation	Smarter specialisation	Smarter specialisation €€€	Smarter specialisation €€	
Pan-EU scouting for collaboration €€€	Pan-EU scouting for collaboration €	Pan-EU scouting for collaboration €	Pan-EU scouting for collaboration €	
EU-market place	EU-market place €	EU-market place €	EU-market place €€	
Initiating interregional collaboration	Initiating interregional collaboration	Initiating interregional collaboration €€	Initiating interregional collaboration €€€	
EU-market assessment	EU-market assessment	EU-market assessment €	EU-market assessment €€	
Individual RDI business support €€€	Individual RDI business support	Individual RDI business support	Individual RDI business support	
EU-widening corridors	EU-widening corridors	EU-widening corridors €€	EU-widening corridors €€€	
Access to finance for EU collaborations €€€	Access to finance for EU collaborations €€	Access to finance for EU collaborations €	Access to finance for EU collaborations €€€	
Pan-EU start-up facility €	Pan-EU start-up facility	Pan-EU start-up facility	Pan-EU start-up facility €€€	
EU market place on HR €€	EU market place on HR €	EU market place on HR	EU market place on HR €€	
Industry training €€€	Industry training	Industry training	Industry training	
Pan-EU network learning	Pan-EU network learning €	Pan-EU network learning €	Pan-EU network learning €€	
EU skills strategy development	EU skills strategy development	EU skills strategy development €	EU skills strategy development €€	
Pan-EU policy training	Pan-EU policy training	Pan-EU policy training €	Pan-EU policy training €	
Training for EU-proposal development €€€	Training for EU-proposal development €	Training for EU-proposal development	Training for EU-proposal development	

N p and in 2

### Updated overview with discussions in Smartees, DIHNET pNetwork

-  **Public co-funding**  
*Getting funded for reducing market failures*
-  **Partner co-funding**  
*In-kind contributions from core partners*
-  **Subscription/membership**  
*A periodic fee to access standard services*
-  **Integrator/orchestrator**  
*Being payed to put things together*
-  **Add-on, razor and blade**  
*Additional services connected to membership*
-  **Tit for tat**  
*No money is changing hands*
-  **Commission fees**  
*Act as a sales office for the community*
-  **(Indirect) Branding**  
*Using the network brand as an income*
-  **Digitalization and mass customization**  
*Virtualize products, reducing costs of delivery*
-  **Crowdsourcing**  
*Using the community expertise for free*
-  **Performance based**  
*Individual services, paid based on rate of success*
-  **Full cost service provision**  
*Individual services paid in full (+ profit)*

# WHY: TWELVE POSSIBLE REVENUE MODELS – FURTHER ELABORATION

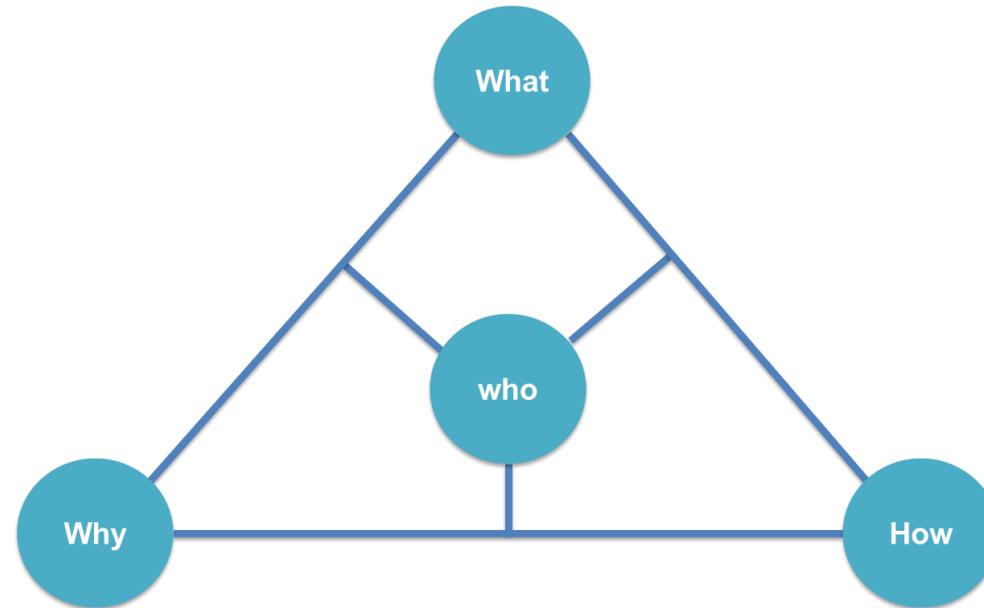


## Updated overview with discussions in Smartees, DIHNET pNetwork

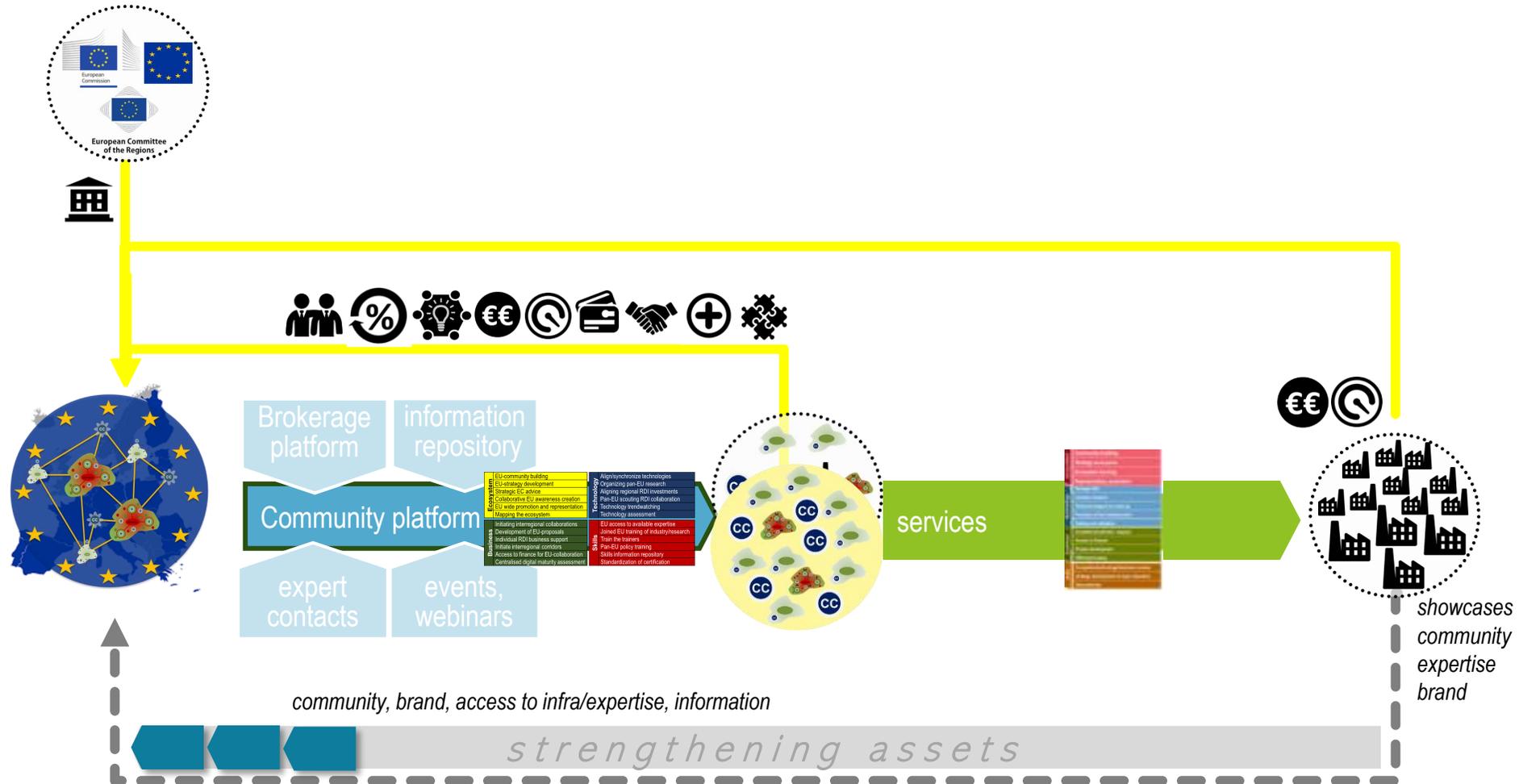
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*Individual services paid in full (+ profit)*

For more details see the Annex

# CONVERGING AND ALIGNING THE ELEMENTS INTO BUSINESS MODELS

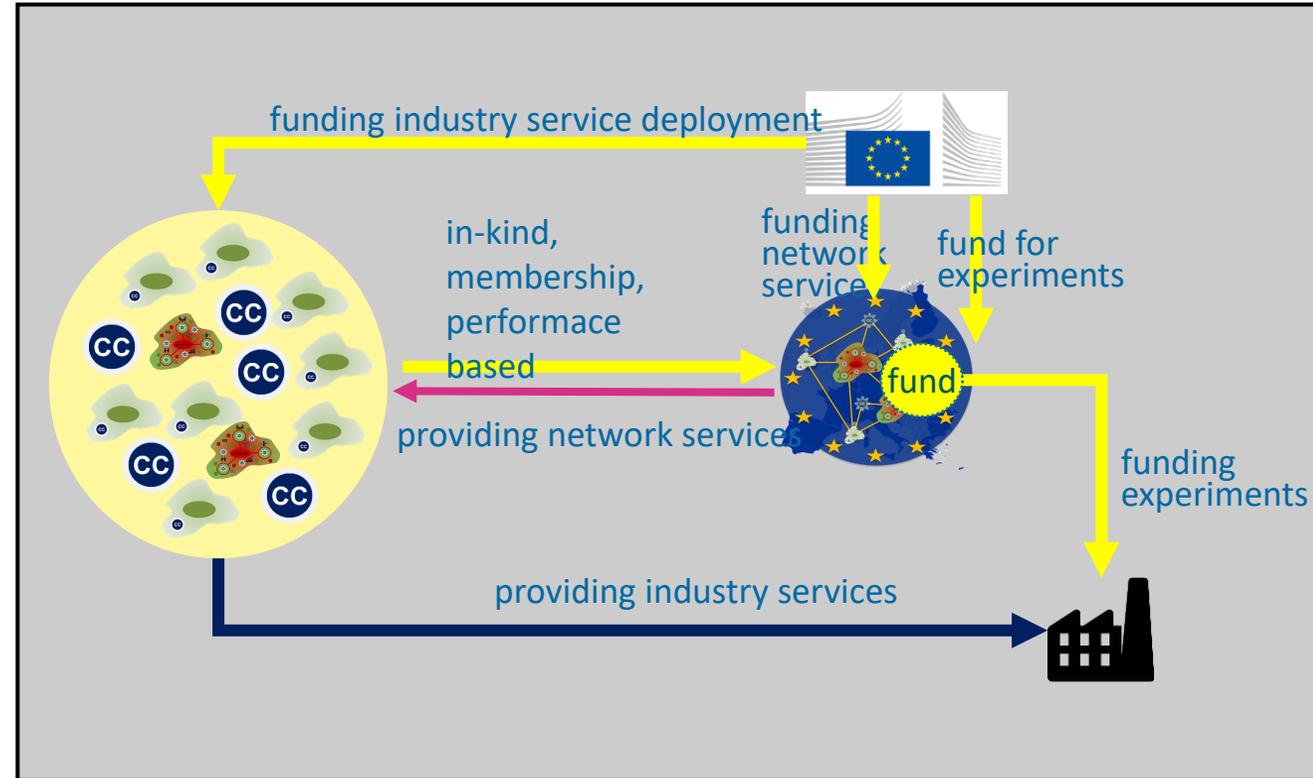


# BUSINESS MODELS FOR FOR THE NETWORK – FIRST IDEAS



# SUPPORTING CROSS-BORDER EXPERIMENTS

<b>What</b>	<ul style="list-style-type: none"> <li>• Addressing market failure for EU use of available industrial capacities</li> <li>• Network services to establish a stable network</li> </ul>
<b>Who</b>	<p>Network providing services and connecting:</p> <ul style="list-style-type: none"> <li>• DIHs looking for EU or market/technology specific information</li> <li>• DIHs looking for expertise, facility training for its client (not available locally)</li> <li>• Partners looking for inspiration</li> </ul>
<b>How</b>	<ul style="list-style-type: none"> <li>• Regional profile included in the marketplace by the DIHs</li> <li>• Brokering initiated/supported by coordinator</li> <li>• SMEs looking for funding via the open calls, joint VC, etc</li> </ul>
<b>why</b>	<ul style="list-style-type: none"> <li>• Public funding funding for market failures;</li> <li>• Economy of scale of information usage;</li> <li>• In-kind and Membership based model</li> <li>• Performance fee based on successful brokerage.</li> </ul>



## conditions

- European Commission is main funding agency
- In-kind contributions from partners
- Centred around a project-fund for experiments
- Focus on research/innovation and cross-border collaborations
- Supporting SME experiments by funding and expertise

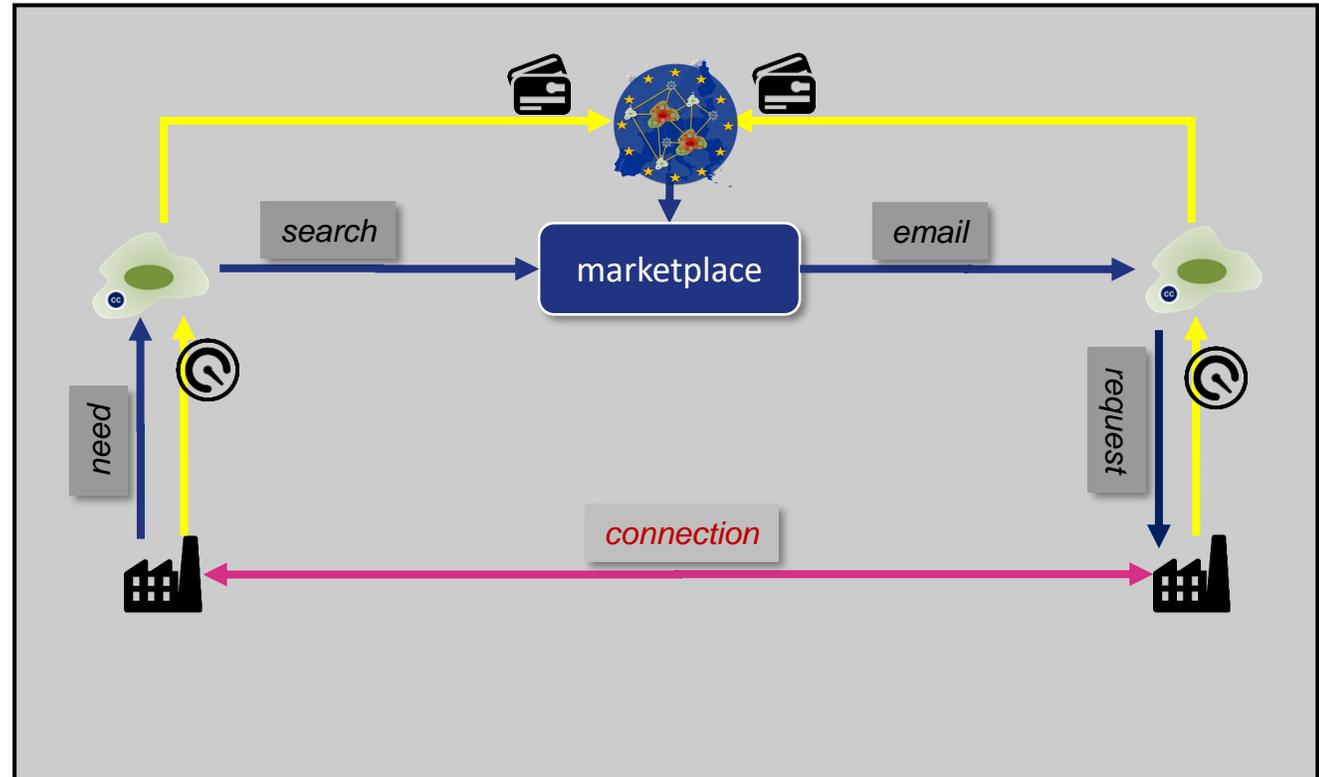
# BUSINESS MODELS FOR DIH-DIH COLLABORATIONS (WITH HELP OF THE NETWORKS)



The RODIN project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 825263.

# EDIH FACILITATED, INTERREGIONAL SME BROKERAGE

<b>What</b>	<ul style="list-style-type: none"> <li>• Interregional use of industrial USPs to enhance quality, reduce costs, or increase markets.</li> <li>• Addressing market failure for EU use of available industrial capacities</li> </ul>
<b>Who</b>	<p>SMEs in two or more regions, either being:</p> <ul style="list-style-type: none"> <li>• Industrial services providers (expertise/ infrastructure), or</li> <li>• Potential partners in a supply chain, or</li> <li>• SME in demand for advanced digital solution</li> </ul>
<b>How</b>	<ul style="list-style-type: none"> <li>• Regional profile included in the marketplace by the EDIHs</li> <li>• Brokering initiated/supported by EDIHs, using the DTA marketplace</li> <li>• After initial link, individual EDIH support.</li> </ul>
<b>why</b>	<ul style="list-style-type: none"> <li>• Public funding funding for market failures;</li> <li>• Economy of scale of information usage;</li> <li>• Membership based model to access the market place;</li> <li>• Performance fee based on successful brokerage.</li> </ul>

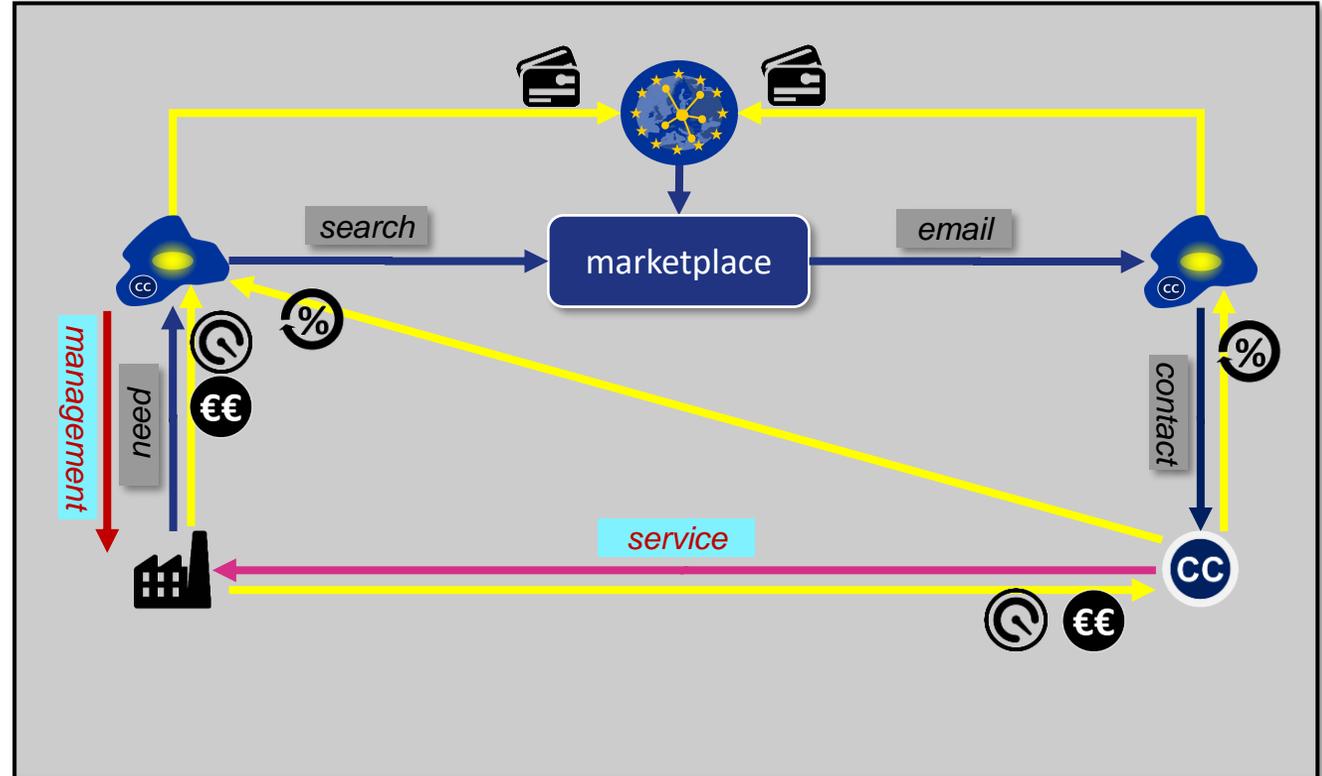


## conditions

- The marketplace must be in place, with connected services
- EDIHs must have a trustworthy (updated) profile of the region created;
- Strong brand of the EDIHs to be pivotal in brokering international industry needs
- Efficient and effective brokerage results

# PERFORMANCE BASED INTERREGIONAL PARTNERSHIPS

<b>What</b>	<ul style="list-style-type: none"> <li>• Interregional use of research infrastructures/ expertise to enhance quality and reduce costs.</li> <li>• Addressing market failure for EU use of available research capacities</li> </ul>
<b>Who</b>	<ul style="list-style-type: none"> <li>• Competence centres with specific expertise and infrastructures;</li> <li>• SMEs looking for state of the art technologies</li> </ul>
<b>How</b>	<ul style="list-style-type: none"> <li>• SMEs contact their primary EDIH for solution;</li> <li>• EDIH uses the marketplace to search for solution in other regions;</li> <li>• EDIH in other region connects to primary EDIH</li> <li>• CC offers services with support of primary EDIH</li> </ul>
<b>why</b>	<ul style="list-style-type: none"> <li>• Better services from other region at lower costs</li> <li>• Extended markets innovation capacities at low costs</li> <li>• Small fee for the brokerage (EDIH);</li> <li>• Improving value for customers of EDIHs</li> </ul>

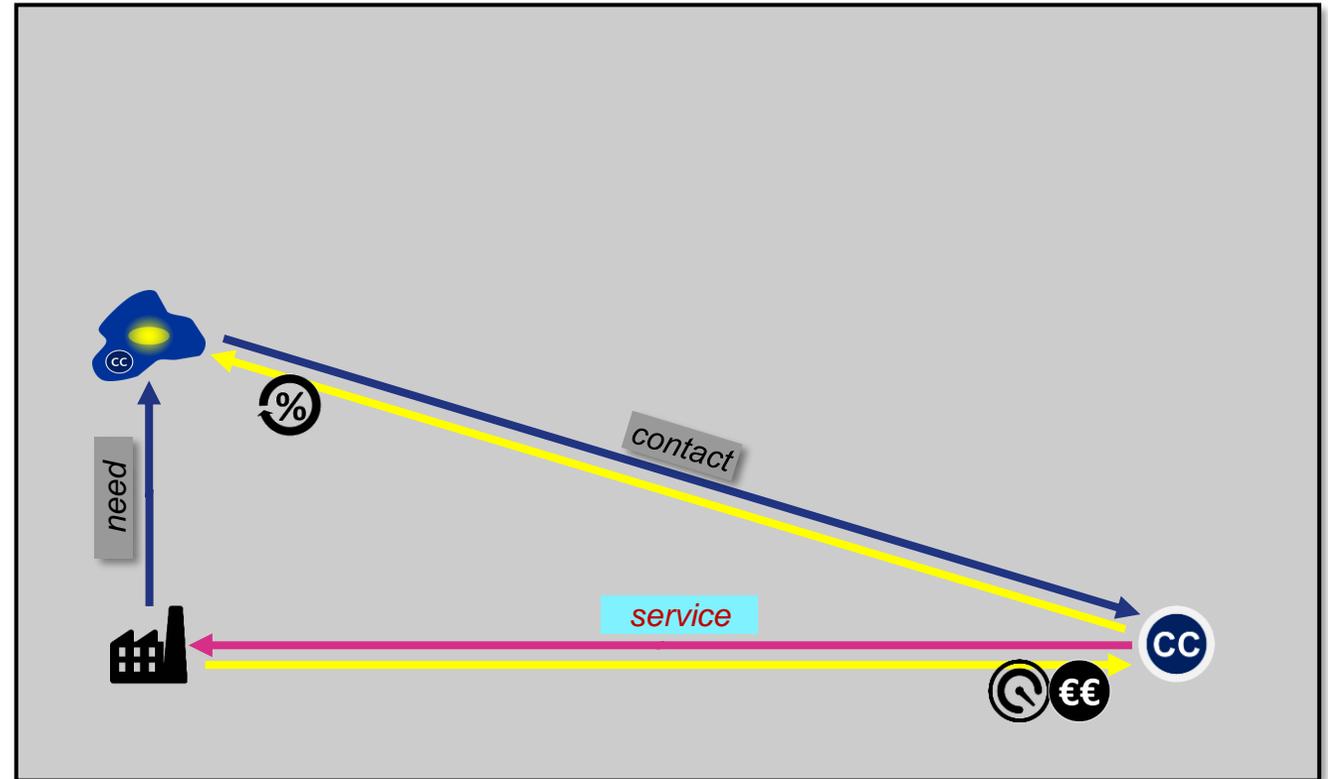


## conditions

- The marketplace must be in place, with connected services
- Services to be offered by competence centres are standardized
- Pre-arranged agreements on commission fees;
- Trust is already established in the services of the competence centre and primary EDIH.

# COMMISSION BASED SALES OFFICES

<i>What</i>	<ul style="list-style-type: none"> <li>• Standardized state-of-the-art services from service providers in other regions;</li> <li>• High quality at low costs</li> <li>• Unique services</li> </ul>
<i>Who</i>	<ul style="list-style-type: none"> <li>• Competence centres with specific expertise and infrastructures;</li> <li>• SMEs looking for state of the art technologies</li> </ul>
<i>How</i>	<p>Primary EDIHs are selling services from providers in other regions using a catalogue</p>
<i>why</i>	<ul style="list-style-type: none"> <li>• Extending the market for service providers with low costs and only if successful</li> <li>• Access to low costs and unique services from other regions</li> <li>• Quick sell, with profits based on low costs</li> <li>• Expert fee for state-of-the art information</li> </ul>

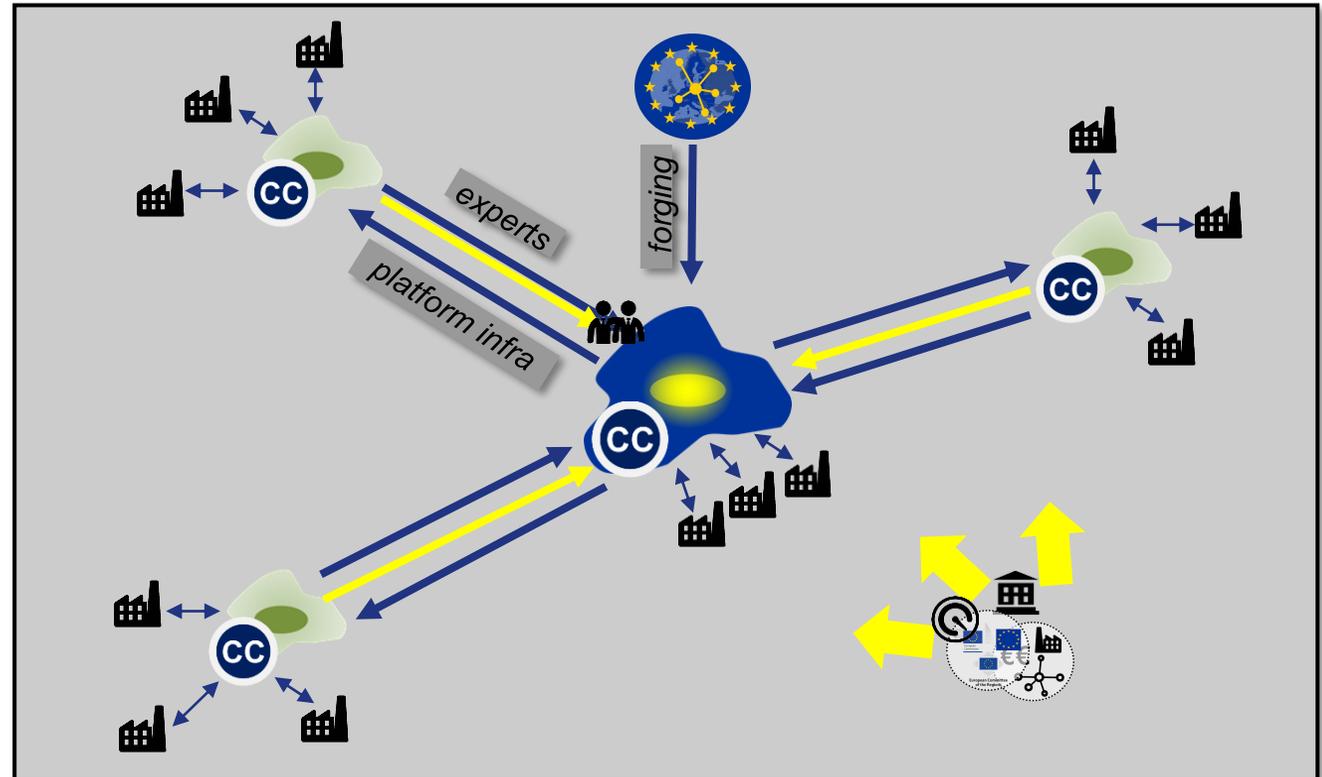


**conditions**

- It is only based on services that are standardized and costs clear
- Agreements to sell and the commissions need to be pre-arranged.
- The services need to be trustworthy, as well as the service provider

# SATELLITE BASED JOINED INNOVATION DEVELOPMENT

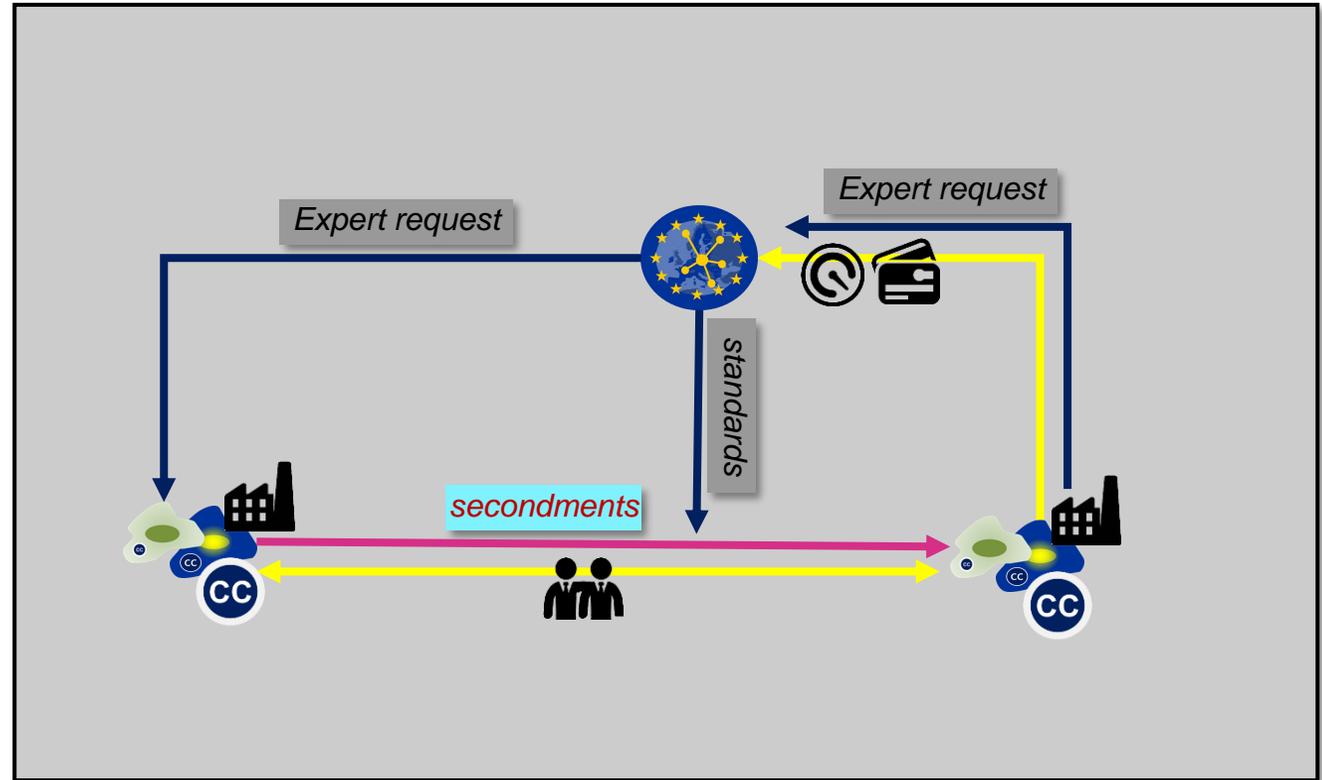
<b>What</b>	<ul style="list-style-type: none"> <li>• Efficiency in development of new platform technologies</li> </ul>
<b>Who</b>	<ul style="list-style-type: none"> <li>• Core EDIH with key infrastructures (specialism)</li> <li>• Satellite CCs with complementary expertise and infrastructures;</li> <li>• DIHs with connected markets to ensure take-up</li> </ul>
<b>How</b>	<ul style="list-style-type: none"> <li>• Secondments of experts to a central competence centre</li> <li>• Centralized platform technology development</li> <li>• Facilitating satellite deployment through training and returning experts</li> </ul>
<b>why</b>	<ul style="list-style-type: none"> <li>• Reducing transition costs of multi-location RDI</li> <li>• Activation of experts that can make the platform technologies operational</li> <li>• Enhancing the market use of developed technologies</li> </ul>



<b>conditions</b>	<ul style="list-style-type: none"> <li>• Housing for secondments is provided by the core EDIH</li> <li>• Training schemes are crucial to take-up platform technologies to the satellite regions</li> <li>• Complementary technologies in satellite CCs are key to ensure transfer of the platform technologies</li> <li>• Satellite (E)DIHs involvement needed for market uptake</li> <li>• Public and private funding needed to support RDI</li> </ul>
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# SECONDMENTS

<b>What</b>	<ul style="list-style-type: none"> <li>Increasing the capacities (fresh views) and EU market opportunities of the primary organisation</li> <li>Increasing the capacities and capabilities of the secondary organization and EU connections</li> </ul>
<b>Who</b>	<ul style="list-style-type: none"> <li>Focus on the primary and secondary EDIH</li> <li>In principle all stakeholders in both the primary and secondary region</li> </ul>
<b>How</b>	<ul style="list-style-type: none"> <li>The DTA facilitates connecting supply and demand of experts (based on expert profiles)</li> <li>After connection, experts are seconded for a limited amount of time</li> </ul>
<b>why</b>	<ul style="list-style-type: none"> <li>Further expansion of the knowledge, expertise and network of the seconded expert</li> <li>Addressing specific gaps in knowledge and expertise</li> <li>Connecting to other markets in Europe</li> </ul>

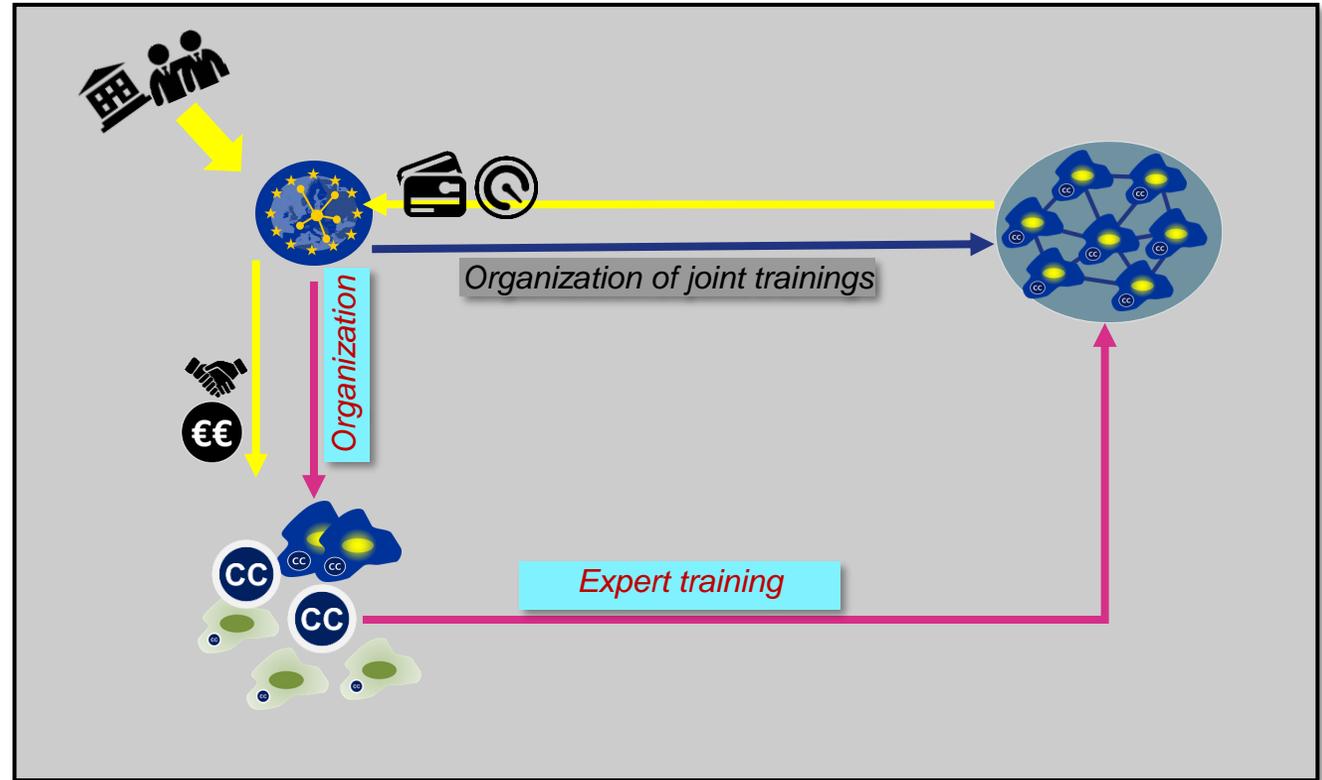


## conditions

- Up to date overview of available experts that are willing to be seconded
- Standardized contracts for secondments
- Housing and salaries paid by the secondary organisation

# JOINED INTERNAL TRAINING

<b>What</b>	<ul style="list-style-type: none"> <li>• Spreading the expertise knowledge within the network</li> <li>• Addressing market failure for EU use of available research capacities and state-of-the-art knowledge</li> </ul>
<b>Who</b>	<ul style="list-style-type: none"> <li>• EDIH network organizes the trainings: identifies topics of interest, and experts who can provide training for the EDIH nodes</li> <li>• Individual EDIHs, CCs, or external expert provide the training based on their expertise</li> </ul>
<b>How</b>	<ul style="list-style-type: none"> <li>• DTA collects needs from the members</li> <li>• Based on profiles in the market place DTA identifies potential trainers/experts</li> <li>• DTA coordinates the training.</li> </ul>
<b>why</b>	<ul style="list-style-type: none"> <li>• Economy of scale of information usage;</li> <li>• Public funding to address information asymmetry</li> <li>• Members offering to provide expertise and build an EU profile on the subject and possibly get some (in-kind) funding</li> </ul>



## conditions

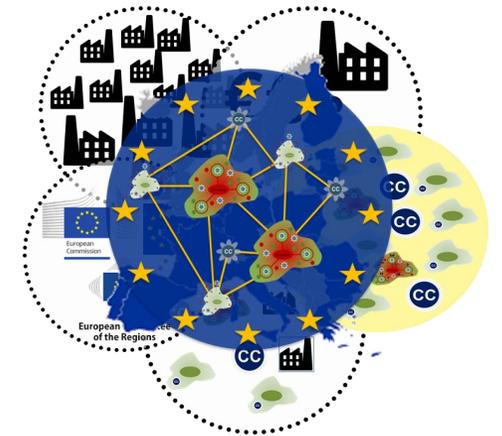
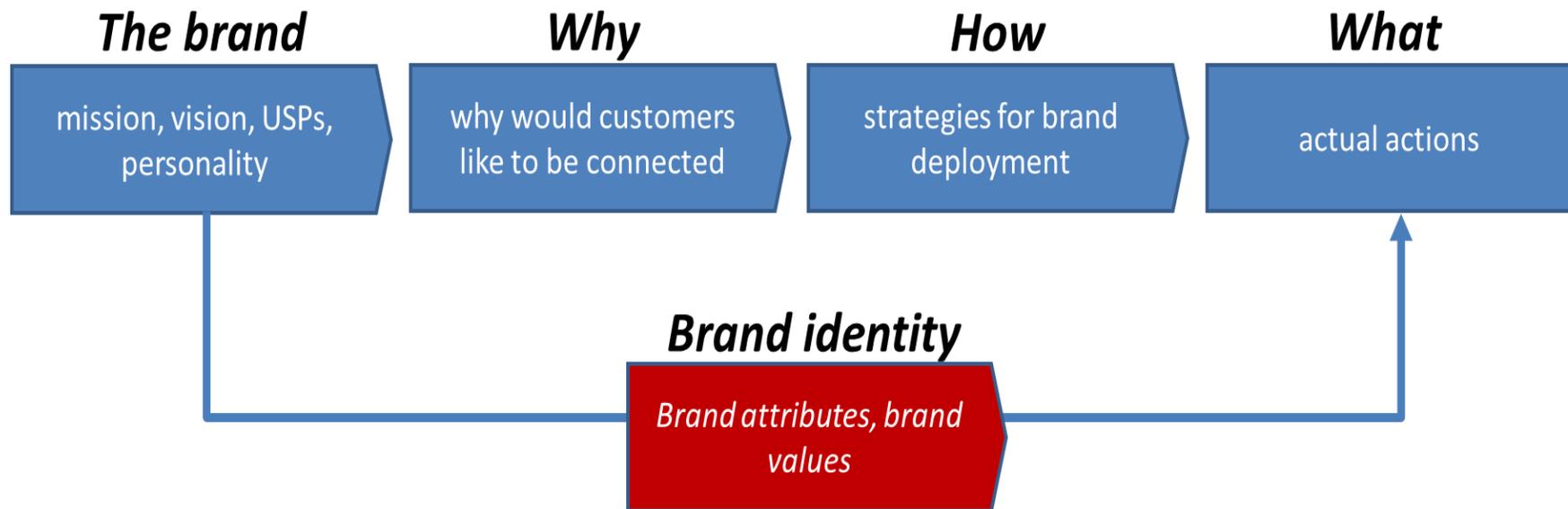
- Needs of the EDIH nodes need to be well explored
- Sufficient knowledge/info of the existing members is needed to identify the expert members
- Members need to trust each others expertise and are willing to contribute

# THE BRAND AS A KEY ASSET

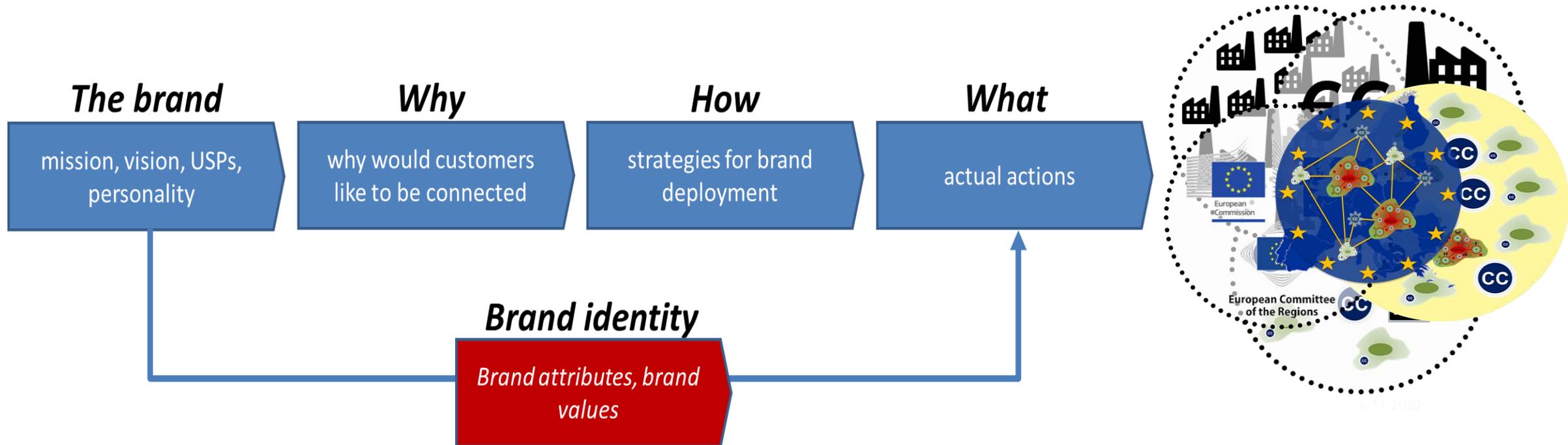


The RODIN project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 825263.

# BRANDING: GROWING THE ACTIVE PARTICIPATION OF YOUR NETWORK



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# A BRAND: CONSISTENT CONNECTION BETWEEN YOUR IDENTITY AND YOUR ACTIONS



# ANNEX 1: REVENUE MODELS ELABORATED IN DIHNET WGS



# Public co-funding



## Getting funded for reducing market failures

Public co-funding is provided for some of the services in order to tackle market failures. Especially issues like information asymmetry, externalities, public goods and time-inconsistent preferences

### Making it operational:

National/regional basic co-funding for the EDIHs and other local partners

-ERDF element 5 to support cross-border collaboration

-Basic co-funding for the network activities at large, enabling the overhead costs to be covered (H2020 and HEU, DEP).

-Support for individual SME-projects (H2020 and HEU FSTP mechanisms).

### Pro

- Provides a med-term certainty
- Often covers services related to establishing collaborations, awareness and first contact with companies (to address market failures), thus lowering the barrier for SMEs to engage (also with foreign EDIHs or experts)
- Can be used for open access to (publicly funded) state-of-art infrastructure

### Contra

- Coordination of various public funds (projects, basic funding, EU/nat/regional)
- Should decrease over time

<b>Value</b>	<ul style="list-style-type: none"> <li>• Access to unique information that is important to create EU-collaborations;</li> <li>• Economy of scale for the generation of information;</li> <li>• Access to state-of-the-art infrastructures</li> <li>• Access to finance for EU-collaborations;</li> </ul>
<b>What</b>	<ul style="list-style-type: none"> <li>• Personnel, housing and infrastructures;</li> <li>• Information and data;</li> <li>• Monetary contributions</li> </ul>
<b>How much</b>	<ul style="list-style-type: none"> <li>• Full cost, without additional profit margin;</li> <li>• Co-funding for service provision;</li> </ul>
<b>How</b>	<ul style="list-style-type: none"> <li>• Grants</li> <li>• Vouchers</li> <li>• In-kind</li> <li>• Projects</li> </ul>
<b>Source</b>	<ul style="list-style-type: none"> <li>• Public authorities (regions, national governments and the European Commission);</li> </ul>



# Partner co-funding



## *In-kind contributions from core partners*

In-kind contributions from EDIHs (and their members) in the activities of the network (time, effort, access to local capacities and infrastructures). In exchange, they influence the network strategy and establish links with others. This is also part of their mission.

### Making it operational:

- Dedicated resources (effort and time) from the EDIHs for networking, collaboration in the network, co-development of joint tools, updates of information, providing expert
- Make available the use of local infrastructures if requested by others
- Secondments?

### *Pro*

- Participation and contribution are part of the mission of the partners (EDIHs)
- Part of partner funding should be dedicated to such activities
- Access to expertise from others at comparatively low cost
- Possibility to align strategies

### *Contra*

- Insufficient resources planned/dedicated by partners
- Some partners more willing to participate than others

<b>Value</b>	<ul style="list-style-type: none"> <li>• Access to unique information that is important to create EU-collaborations;</li> <li>• Access to a broad field of experts;</li> <li>• Access to finance for EU-collaborations;</li> <li>• A strong European brand on FWE;</li> </ul>
<b>What</b>	<ul style="list-style-type: none"> <li>• In-kind contributions, like personnel, housing and infrastructures;</li> <li>• Access to the network</li> </ul>
<b>How much</b>	<ul style="list-style-type: none"> <li>• Partial costs, co-funding based;</li> </ul>
<b>How</b>	<ul style="list-style-type: none"> <li>• In-kind contributions, like personnel, housing and infrastructures;</li> <li>• Tit for tat</li> </ul>
<b>Source</b>	<ul style="list-style-type: none"> <li>• The network members;</li> </ul>



# Subscription/membership



*A periodic fee to access standard services*

The members pay a periodic standard fee to have access to specific services, the network assets and the resources of the network. The memberships/subscription provide (partial) funding for the operation of the network after the initial years of public funding and allow for continuation of activities, update of information, etc.

Making it operational:

-Membership fee for EDIHs, on an yearly basis

-Add ons as an addition

-Membership fee for external (non-EDIHs) interested partner during the first 3 years of operation, and higher membership fee after the first 3 years of operation

## *Pro*

- Provides revenues for the services generated by the network (after the first 3 years) but also covers overhead
- Provides a standardized, clear and transparent expectation with members
- Provides a way to involve also external networks

## *Contra*

- Covers only part of the services
- Layer subscription model might be needed but it also implies that some members will be less involved
- Membership fee might be too high for some members (if they are already struggling) while the added value of the network is in its critical mass

<b>Value</b>	<ul style="list-style-type: none"> <li>• Access to unique information that is important to create EU-collaborations;</li> <li>• Economy of scale for the generation of information;</li> <li>• Access to a broad field of experts;</li> <li>• Access to state-of-the-art infrastructures</li> <li>• Access to finance for EU-collaborations;</li> <li>• Experience and expertise on forging EU-collaborations;</li> <li>• A strong European brand on FWE;</li> <li>• A dynamic community service providers.</li> </ul>
<b>What</b>	<ul style="list-style-type: none"> <li>• Monetary contributions (membership fee)</li> </ul>
<b>How much</b>	<ul style="list-style-type: none"> <li>• Membership contributions/subscription fee;</li> </ul>
<b>How</b>	<ul style="list-style-type: none"> <li>• Subscription based</li> </ul>
<b>Source</b>	<ul style="list-style-type: none"> <li>• Members of the network</li> <li>• Non-member initiatives</li> </ul>



# Digitalization & mass customization



## *Virtualize products, reducing costs of delivery*

Some services and products can be digitized to make the provision of the services cheaper, more accessible and reduce costs. For instance, the market place, common tools and templates can all be made available, and even some meetings can nowadays be virtualized (with less costs for attendance). This can also be integrated in the orchestrator model.

Making it operational:

- In-kind contributions to populate and develop the digital services/products
- Initially public funding to set them up and later on small part of membership fees can be used
- Non-EDIH members can be allowed to access to services/tools but based on a small (membership-like) fee.

### *Pro*

- Easy access and deployment

### *Contra*

- Requires dedication of members to also keep updating data
- Needs to be matched with another RM

### *Value*

- Economy of scale for generating information;
- Access to a broad field of experts;
- Access to state-of-the-art infrastructures
- A dynamic community service providers

### *What*

- In-kind contributions (time, data);
- Information and data;
- Monetary contributions

### *How much*

- Public co-funding
- No payment
- Membership contributions and subscription fee (after first years or for non EDIHs);

### *How*

### *Source*

- Public authorities (regions, national governments and the European Commission);
- Members of the network (after first yers)
- External members (non-EDIHs)



# Performance based



*Individual services, paid based on rate of success*

Revenue based on performed service - e.g. established connection, expert found, peer-review performed, service provided to SME, submitted proposal, event organized, etc.

Making it operational:

- For unique services - overview of hourly rates
- For standardized services (such as established connection), a price-list

## *Pro*

- Provides revenue based on actual value (possibly + profit)
- Incentive for members to use it as there is not commitment in advance is needed

## *Contra*

- Needs to be coordinated with other revenue models and a service portfolio

**Value**

- Access to unique information that is important to create EU-collaborations;
- Access to a broad field of experts;
- Access to finance for EU-collaborations;
- Experience and expertise on forging EU-collaborations;

**What**

- Monetary contributions

**How much**

- Full cost, without additional profit margin;
- Full cost, with additional profit margin;

**How**

- Project/service based

**Source**

- The network members;
- Non-member service providers
- The customers of the network members (SMEs and midcaps);



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