D5.4 PROCEDURES FOR GOVERNANCE AND MANAGEMENT OF CC NETWORK AND CRITERIA FOR NEW CCS

WP 5

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LIST OF ABBREVIATIONS

Abbreviation	Explanation
WP	Work package
RC	Regional Cluster
CC	Competence centre
DIH	Digital Innovation Hub
IE	Innovation Experiment
FIE	Flagship Innovation Experiment
ICT	Information and communication technology
SAH	SmartAgriHubs
SME	Small and medium-sized enterprise

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PROJECT SUMMARY

Digital technologies enable a transformation into data-driven, intelligent, agile and autonomous farm operations, and are generally considered as a key to address the grand challenges for agriculture. Recent initiatives showed the eagerness of the sector to seize the opportunities offered by ICT and in particular data-oriented technologies. However, current available applications are still fragmented and mainly used by a small group of early adopters. Against this background, SmartAgriHubs (SAH) has the potential to be a real game changer in the adoption of digital solutions by the farming sector.

SAH will leverage, strengthen and connect local DIHs and numerous Competence Centres (CCs) throughout Europe. The project already put together a large initial network of 140 DIHs by building on its existing projects and ecosystems such as Internet of Food and Farm (IoF2020). All DIHs are aligned with 9 regional clusters, which are led by organizations that are closely related to national or regional digitization initiatives and funds. DIHs will be empowered and supported in their development, to be able to carry out high-performance Innovation Experiments (IEs). SAH already identified 28 Flagship Innovation Experiments (FIEs), which are examples of outstanding, innovative and successful IEs, where ideas, concepts and prototypes are further developed and introduced into the market.

SAH uses a multi-actor approach based on a vast network of start-ups, SMEs, business and service providers, technology experts and end-users. End-users from the agri-food sector are at the heart of the project and the driving force of the digital transformation.

Led by the Wageningen University and Research (WUR), SAH consists of a pan-European consortium of over 160 Partners representing all EU Member States. SAH is part of Horizon2020 and is supported by the European Commission with a budget of €20 million.

EXECUTIVE SUMMARY

The overall aim of this deliverable is to establish procedures that serve to contribute to the good governance and management of the network of Competence Centres in SmartAgriHubs. The procedure enables CCs and CC candidates to join SmartAgriHubs, manage themselves as network partners, and cooperate permanently or ad-hoc with SAH stakeholders in developing digital innovations. The procedure is composed of three major elements: definition of CCs, governance of CCs' network and management of CCs' network. Additional components will include the development of quality service and cooperation agreement, a systematic approach for measurement of CC quality performance and compliance, and procedures for dissemination and reporting on new technologies and innovations.

This deliverable is considered as a *"living document"*, since it will be updated and expanded throughout the life of the project. However, this version already provides valuable insights into the concepts and methodology, includes reviews of relevant literature and former EU projects, as well as the main components of the suggested procedures.

1. INTRODUCTION

SmartAgriHubs is dedicated to accelerating the digital transformation of the European agrifood sector, building a strong, multi-layered network of agricultural Digital Innovation Hubs (DIHs) and Competence Centres (CCs). DIHs and CCs have different roles, although the CCs often form part of DIHs. The CCs provide R&D, technical expertise, laboratory and demonstration facilities, testing and validation, and ICT skills to users. No single competence centre can be excellent in all fields; therefore, it is necessary to build strong linkage between CCs. SmartAgriHubs aims at expanding the network of CCs within and outside the agricultural sector, in order to promote cross-fertilisation and to stimulate even more knowledge exchange.

The aim of WP5 is to help the establishment of the network of digital Competence Centres (CCs). This Deliverable 5.4 is targeted to procedures that help to create and maintain the network of Competence Centres in SmartAgriHubs. It has a strong synergy with Deliverable 5.5 focusing on the capacity building of CCs, developing training and demonstration materials in order to help CCs to become an active, visible and receptive part of a digital ecosystem.

There is a strong synergy also with WP1, responsible for developing the web-based interactive Innovation Portal. The portal will manage the whole SmartAgriHubs ecosystem and will offer several services also for the day-to-day operation of CCs.

2. APPROACH & METHODOLOGY

2.1. APPROACH

This deliverable is considered as a "living document", since it will be updated and expanded throughout the lifespan of the project. The following mind map (Fig. 1.) presents the visual organisation of the elements of Deliverable 5.4.

Figure 1 Concept chart of the structure of the deliverable 5.4
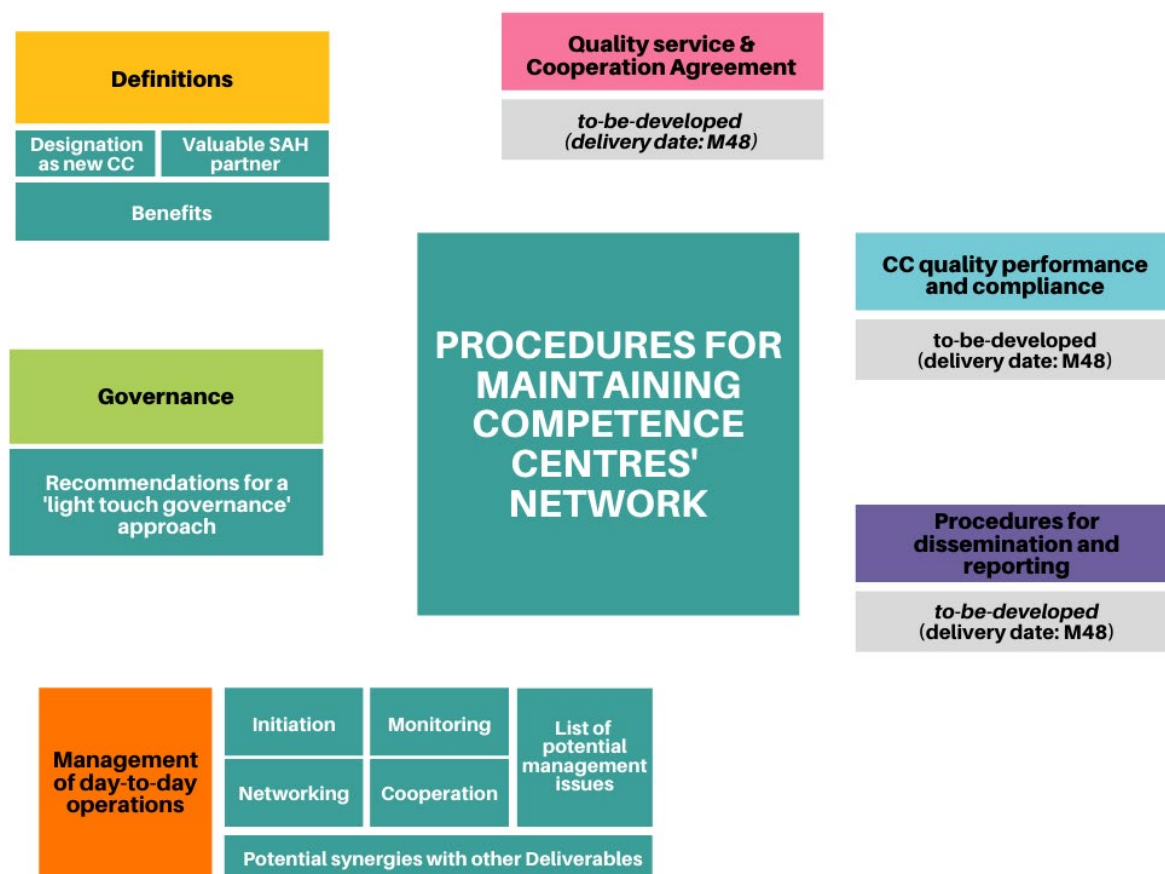
2.2 METHODOLOGY

This section serves two purposes. Firstly, it presents the SmartAgriHubs definition of Competence Centres. (Definitions and good practices from previous successfully implemented projects are set out to provide background for the SAH definition.) Secondly, it aims to establish a common understanding of concepts, definitions and terms related to governance and management of networks by reviewing academic and grey literature.

Review of CC definitions in other projects and industries

The development of CC definition has been largely drawn from the experience of initiatives with similar objectives to SmartAgriHubs, although examples from other industries have been reviewed as well. A short summary of the relevant projects demonstrates that there is no one standard definition for competence centres. Even the names can be slightly different, as 'centre of competence' and 'technology centre' are also used as synonyms. However, the common characteristics in the definitions are the specific digital technological knowledge, the research and transfer activities, demonstration, and collaboration.

Based on the paper of the AIOTI (Alliance for Internet of Things Innovation) CCs may be considered as the forefathers of DIHs, as they existed before the concept of DIHs was defined by the Digitising European Industry (DEI) initiative, and they partially served the same role. They consider CCs as collaborative entities, which aim to **help companies towards their digital transformation**, by improving their digital competences and facilitate technology transfer towards them. This is achieved by e.g. providing access to infrastructure, digital tools and services, guidance on the adoption of digital tools (and the digitisation of the companies in general), demonstrate new digital technologies highlighting their potential benefits, provide support for the development of new products etc. (Protonotarios et al., 2017).

The DIATOMIC project (Quintas, 2017) emphasises that CCs are **R&D entities** that operate in some particular area of focus such as a technology, skill or discipline. Competence centres connect partners from the industry and research sector in order to strengthen the capacity to advance and exploit new technologies in new products, processes, and services. They have an important role in **helping SMEs** address the challenges that digitisation poses. The service that CCs offer can range from providing access to technology infrastructure and expertise, to supporting the creation of new product prototypes.

ICT Innovation for Manufacturing SMEs[1] supports SMEs active in the manufacturing sector. According to their definition, a Competence Centre can be **any organization** (university institute, technology and research organization) **offering technological infrastructure and accompanying skills and competencies** that support the scale-up and valorisation of a technology. They are usually at the core of Digital Innovation Hubs and have an (semi) open approach and provide high end technological solutions or infrastructure to SMEs in order to translate the I4MS research/technologies into opportunities for business.

HORSE – Smart integrated Robotics system for SMEs[2] is an implementation of the second phase of I4MS, focusing on advanced robotics for manufacturing. Competence Centres in the HORSE are **physical locations and act as a one-stop shops providing information, expertise, equipment, advice, and support services**. CCs offer expert advising assistance on deployment and quick assessment of robotics solutions in manufacturing especially for first-time users from SMEs.

Enterprise Ireland is the government organisation responsible for the development and growth of Irish enterprises in world markets. According to their definition Competence Centres (or Technology Centres) are **collaborative entities established and led by industry** and resourced by highly qualified researchers associated with research institutions who are empowered to undertake market focussed strategic research for the benefit of industry. Any group of companies with common research interests that are active R&D performers or that have committed to increase their performance in R&D or that has a clear strategic plan to engage in R&D should consider becoming part of a Competence Centre[3].

In the CREST (Comité de la recherche scientifique et technique) Report on "Industry-led Competence Centres" (EC, 2009) the **following definition was agreed** by the working group:

- They are engaged in collaborative research, typically focused on medium/long term issues.
- The research is conducted on areas of direct industrial relevance.
- The areas of research are focused on gaining competence in areas of technology or innovation which are relevant to the industry stakeholders.
- They are formal organizations, which have a long term but typically finite duration.

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[1] *https://i4ms.eu*
[2] *http://horse-project.eu*
[3] *https://www.enterprise-ireland.com/en/research-innovation/companies/r-d-funding/competence-center-faqs*

They also stated that **there is no ideal type of Competence Centre**, and the organisational set up, mandate, size and resources of Competence Centres vary considerably and therefore there is no one single blueprint that can be designed to assess their impact or define their effective operation. The flexibility of the Competence Centre model allows for adaptability to suit the needs of the industrial and academic partners.

TAFTIE is the European Association of leading national innovation agencies. Based on their report (TAFTIE, 2016) Competence Centres (CC) can be defined as structured, long-term research and innovation (R&I) collaborations in strategically important areas between academia and industry/public sector. They focus on strategic research agendas, support strong interactions between science and industry and provide truly collaborative research with a medium to long-term perspective. Competence Centres **may also play an active role in developing international standards**. In many industries, standards need to be widely adopted for the research to become industry relevant and therefore internationalisation is a key pre-requisite. They found that the average size of CCs is significantly different amongst the Competence Centre Programmes observed. It seems that larger CCs are typically organized as independent entities. Competence Centres can also be differentiated by their intended duration and continuity.

According to TAFTIE competence centres perform **several activities** separate from the operation of the R&D programme and focus to varying extent on:

- Exploitation of research results by means of IPR and Spin-Offs
- Training of PhDs and master students
- Dissemination of research results via publications, conferences etc.
- Stimulation of networking and knowledge transfer
- Acquisition of third-party funding (incl. EU sources)
- Provision of research infrastructures
- Provision of market intelligence.

In accordance to the different definitions, a study prepared for the Digitising European Industry round table (EC, 2016) found that **several types of competence centres** exist in Europe, e.g.:

- High tech organisations / research institutes (universities, RTOs – research technology organisations, private consultants, design houses, private research organisations) that are specialised in applying certain innovative technologies to solve challenging problems of enterprises.
- Demonstration factories/show cases that show advanced technologies integrated in manufacturing processes.
- Testbed facilities (e.g. a factory, hospital, farm, urban area, test-house, power plant), opening its facility to the technologists for solving their problems and accompanying them during the whole process, from requirement to testing phases.
- Pilot lines, offering production facilities for companies that have developed new products based on e.g. based on nano-electronics, photonics, new materials.
- Maker labs or fab labs which offer introductory courses to understand new technology and offer services for using specialised equipment.

Some centres may have expertise in a very narrow domain, while others may have competences across a broad range of domains. When certain expertise is necessary which is not available in the centre, it should be possible to find it in another centre. Networking among CCs will ensure excellence and specialisation since not all competence centres need to cover all competences. Networking CCs with Digital Innovation Hubs will ensure that a DIH can become a one-stop-shop and can offer all necessary support for companies for their digital transformation (EC, 2016). Figure 2. shows how competence centres can collaborate with other innovation actors in a digital innovation hub to provide a holistic set of digital transformation services to the industry (DEI, 2017).

Network governance

This section will review the literature on network governance to present the terminology having been used in this deliverable. Autonomous firms often work together with other stakeholders in networks for the realization of beneficial knowledge or resource exchange. Network partners benefit from these partnerships by becoming jointly able to adapt, coordinate and safeguard these exchanges (Jones et al. 1997).

According to Provan and Kenis (2008), one of the most important advantages of networks over hierarchies is their flexibility. It allows their members to respond quickly to competition, other challenges or opportunities. At the same time, however, some level of stability is also required in order to maintain legitimacy (for which the most obvious mechanism is a kind of formal hierarchy). The goal is to find the balance and develop a governance structure that is flexible and stable at the same time.

Network governance can be categorized along two different dimensions: first, the level of brokerage: a network can be governed by the organizations that comprise the network, in a decentralized form (shared governance) or a network can be highly brokered in a centralized way. The second dimension is the source of governance (external / internal). Along these dimensions, Provan and Kenis (2008) differentiate three forms of network governance:

- ❖ Participant-governed networks: the network is governed by the network members themselves with no separate governance entity.
- ❖ Lead organisation-governed networks: there is one (usually large/powerful/resourceful/legitimate) participant within the network who takes the lead.
- ❖ Network administrative organisations: although the network members interact with one another, a separate (external) administrative entity is set up to govern the network and its activities.

Provan and Kennis (2008) claim that the effectiveness of network governance depends upon some key features of networks. They studied four features such as trust, number of participants, goal consensus and the need for network level competencies. Table 1 presents the relationships between these four features and the governance forms.

1. Table Key Predictors of Effectiveness of Network Governance forms (Provan and Kenis, 2008)

Governance forms	Trust	Number of participants	Goal consensus	Need for network level competencies
Shared governance	High density	Few	High	Low
Lead organisation	Low density, highly centralised	Moderate number	Moderately low	Moderate
Network administrative organisation	Moderate density, NAO monitored by members	Moderate to many	Moderately high	High

According to Provan and Kenis (2008), one of the most important advantages of networks over hierarchies is their flexibility. It allows their members to respond quickly to competition, other challenges, or opportunities. At the same time, however, some level of stability is also required in order to maintain legitimacy (for which the most obvious mechanism is a kind of formal hierarchy). The goal is to **find the balance and develop a governance structure that is flexible and stable at the same time.**

SmartAgriHubs, in its future final design, will be operating on the basis of the paradigm of open innovation network. Open innovation networks have been conceptualized more specifically comparing to traditional networks. According to Chesbrough, open innovation is "*the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively*" (Chesbrough, 2006, 1).

From the perspective of SmartAgriHubs, Competence Centres create and maintain partnerships, then contribute to joint innovation activities and Innovation Experiments using multi-layered networks of stakeholders (RCs, DIHs, other CCs). These activities are only able to produce the desired outputs if these networks are governed and managed in a deliberate and adequate way.

Although, cooperation with a diverse group of partners (such as customers, end-users, suppliers, competitors, universities, government bodies, etc.) offers great opportunity, additional challenges may arise and cross the road to the desired success. In the paper of Tepic et al (2010), these challenges are split into two groups: challenges in relation to uncertainty and heterogeneity.

Innovation uncertainty "*is determined by the extent of (in)ability to determine what to pursue, how to pursue and whether the pursuit is likely to be profitable" (Tepic, 2010. 4.).* Uncertainty arise from the difference between what information we already have and the information we may further need to solve a task. Innovation heterogeneity comes from the special nature of open innovation networks in which network partners may represent a great diversity that often increase the coordination cost of maintaining a network. Partners can be heterogeneous in several comparison such as in their knowledge, capabilities, expectations, interests, views and commitment.

Since such challenges may arise in SmartAgriHubs, therefore, it is worth considering what Tepic et al. (2010) offers with regards to governance mechanism. What they claim is that there are two kinds of governance mechanism. The core element in structural perspective is the self-interested and opportunistic behaviour of human beings which is explained by transaction cost and contact theory. On the contrary to that, relational perspective sees the social context in which human beings are embedded and emphasize their ability to trust and be trusted. Regarding governance strategies, opportunistic behaviour can be managed through specified task and resource allocation in the form of contracts, agreements and decision-making hierarchy. This might be an effective strategy if the number of network partners is high. Relational perspective highlights the importance of trust that develops if the level of shared information about reliability and competencies among partners is high. In other words, if the innovation uncertainty is low. Such condition usually results in a decentralized type of governance with informal group coordination. In case of high network heterogeneity, this type of governance can be constraining. However, under real life circumstances, conditions regarding uncertainty and heterogeneity can be combined which means that structural and relational governance mechanisms are better used in combination too (Tepic et al. 2010).

Claus and Spieth's (2017) study has further examined the impacts of governance mechanisms on innovation networks. They claim that the role of governance is twofold: *control* of partners aims to keep risks of opportunism low, while coordination of partners contributes to "*orchestrated activities*". They identify three different governance mechanisms: transactional governance, relational governance and institutionalized governance. Transactional governance "*significantly enhances joint innovation generation and therefore emphasizes the requirement for formalized processes, activities and roles, defined responsibilities and justified consequences in case of disputes*". Relational governance has impacts on "*joint innovation generation which stresses the need for inherent and moral control, governing exchanges through consistent goals and cooperative atmospheres*". Institutionalized governance relies "*on an active network management dealing with orchestrating of network relationships*" (Claus and Spieth 2017, 80.).

One can easily admit that there is a significant relationship between network governance mechanism and the effectiveness of a network. Moreover, the characterization of a network largely determines what type of governance mechanisms can be applied in a network setup. SmartAgriHubs aims to build the network of networks for the digital transition of European

Agriculture. Therefore, careful consideration of the potential uncertainty and heterogeneity is crucial before placing the network of Competence Centres on the continuum of different types of governance mechanisms to realize the ambition of the project.

Network management

In SmartAgriHubs, network management is the operational guidelines of those day-to-day tasks that Competence Centres may need to complete in their "network life". According to Wielinga (2018), three main streams of thought can be identified in the process of constructing networks. These basically imply three different modes of collaboration.

- Transfer:" I know what is good for you"

Transfers of technology, extension, diffusion of innovations, multiplier effects are typical to this mode. When the message is really good, transfer mode can be effective. The challenge is to convince the partners that the outcome is their interest.

- Exchange: "Can we make a deal?"

In exchange mode, the initiator has a desired outcome in mind, for which other actors are needed to collaborate. However, the collaborators need something in return, there should be mutual gain in this mode.

- Co-creation: "What can we create by pooling resources?"

In co-creation mode, actors pool their resources to achieve some common goal. Shared ambition is the driving force here.

Identifying the right partners with complementary competencies can be difficult, as these partners might speak another 'language' due to their very different technical background. The following three steps are essential for a CC to **identify and interact with prospective partners** in setting up (research) collaboration (Abuja et al., 2019):

1. Determine the right partner profile.
2. Create a proposition that fits your target audience or potential partners
3. Reach out to prospective partners.

3. RESULTS

In this section, the definition of Competence Centres will be presented as a core element of SmartAgriHubs. This definition supports the creation of clear criteria for new CCs' designation that will play a key role in future operations of SmartAgriHubs. This section will also provide suggestions for an effective and easy-to-operate composition of governance and management elements to adopt in the network of Competence Centres.

3.1. DEFINITION OF COMPETENCE CENTRES

Definition of Competence Centres in SmartAgriHubs

A carefully developed definition is required for the coherence of, as well as for the daily operation of the project. **Defining characteristics of a CC are that they are engaged in both research and transfer of research**. CCs provide cutting edge knowledge and technologies, which may differ from entities that are technology providers, or provide testing facilities. The definition of Competence Centres as it is on the Portal[4]: *"Competence Centres (CC) form the cornerstone of the Digital Innovation Hubs in the SmartAgriHubs network. They provide the digital technological infrastructure of the DIH by offering advanced technical expertise, access to the latest knowledge and information on digital technologies, as well as test facilities such as labs, pilot and experimental facilities, and other technological and scientific infrastructure.*

Within their respective Digital Innovation Hubs, Competence Centres cooperate with all relevant partners in the agri-food innovation value chain to support farmers, businesses and other agri-food entities in their digital transformation. This entails establishing connections with a wide range of technology companies, research institutions, and digital solutions providers as well as potential users and customers.

By providing the test infrastructure and know-how for digital innovation, as well as closely cooperating with Digital Innovation Hubs and Flagship Innovation Experiments, Competence Centres help facilitate the realisation of digital solutions for the agri-food sector and form an integral part of the greater SmartAgriHubs innovation ecosystem."

Criterion for new CCs designation

In that sense, the criterion for new CCs designation is broad, inclusive and general, whilst having at is core the dual requirement of research and transfer of research. This criterion is meant to attract and encourage candidates to join SmartAgriHubs. From the perspective of network development, the central aim is to maximize the number of Competence Centres because this is how a rich and diverse pool of competences can support the creation of digital ecosystem in SmartAgriHubs. When they start their registration, Competence Centres must clearly demonstrate what digital competences they can offer for the agricultural sector. They will do that by going through a categorisation process (Deliverable 5.1: Technology Navigation Wheel). Candidates are responsible for the correctness and accuracy of the information provided.

Suggestion how to become a valuable part of SmartAgriHubs

In accordance to the DigitalPreservationEurope (DPE) project, CCs must listen and respond to the changing needs of their user communities and reflect the ongoing achievements of international research and development efforts. They must also be able to demonstrate

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[4] *https://smartagrihubs.eu/competence-centers*

community building capabilities and effective communication strategies to disseminate guidance, support and resources. CCs must also begin to work more effectively with other competence centres to help overcome fragmentation and duplication of effort (Lunghi et al., 2007). Referring to Deliverable 5.5, this deliverable highlights the importance of competence demonstration which makes a CC a valuable part of SmartAgriHubs.

CCs' advantage for joining SmartAgriHubs

The current fragmentation of knowledge and technology expertise in the proximity of farms and the lack of promising business cases for farmers and business models for the technology providers are among the main barriers hindering the spread of digitalisation in agriculture. To overcome these challenges SmartAgriHubs aims to build a digital ecosystem. CCs joining this community can benefit from:

- Showcasing their competences and systems supported by technologies through the Agricultural Technology Navigator on the Innovation Portal.
- Involvement in the development of Innovation Experiments (IEs) in which ideas, concepts and expertise are combined and further developed
- Improving the research portfolio by addressing research questions generated by IEs
- Interconnectivity among different actors in the digital ecosystem and increased opportunities for transfer of research and knowledge
- Increased contact with companies and end users who may be interested in the evolution, application and/or commercialisation of products and services related to competences and systems showcased on the Innovation Portal.
- Knowledge sharing with multiple partners and increased possibilities for user feedback, co-creation of solutions, and ability to understand emerging needs of farmers and their businesses.
- Networking possibility that could lead to involvement in EU, state and other R&D initiatives.

3.2. GOVERNANCE OF COMPETENCE CENTRES NETWORK

Suggestion for governance structure of CC network – Light touch approach

The overall aim of SmartAgriHubs is to build a healthy innovation ecosystem that bridges the gaps between needs, interests and expectations of the research and the farming communities and enables stakeholders to freely establish ad-hoc or permanent partnerships, collaboration and networks for adoption and development of new technologies, services and products. SmartAgriHubs follows the paradigm of open innovation network.

Considering overall aim of SmartAgriHubs and what has been learnt from the literature review, this deliverable suggests adopting a so-called "light touch approach" as a governance and management mechanism. The phrase "light touch approach" has been borrowed from a study made by DEI Working Group 1 on Digital Innovation Hubs (DEI, 2017); however, it has been also widely used in research on subjects of regulation. A previous version of the mentioned study (DEI, 2016) raises the question of what form of coordination and governance a European network' of digital innovation hubs would require and seeks answers for the following questions:

- ❖ What would be the criteria for admission/recognition? (E.g. Provision of specific services, meeting specific conditions)
- ❖ Would any certification mechanism be necessary (if so by whom)?
- ❖ What profile should it have within the marketplace (a brand in its own right or remain in the background)?
- ❖ How would issues of competition between members be addressed?
- ❖ What governance structures, if any, would the network require?

Another European example for light touch governance is the EIT (European Institute of Innovation & Technology). Within the EIT framework, the individual KICs (Knowledge and Innovation Communities) were given a large degree of autonomy (e.g. agenda and working methods), allowing them to choose the best suited approach to meet their objectives. While the EIT coordinates them with a flexible framework, supports and advises them in administrative matters, and disseminates their best governance and funding models. According to an EU Decision "The EIT should act as a role model across Europe by showing effective and light touch governance" (EP 2013).

In the following year (June 2017) an updated final version emphasises **flexibility** as the touchstone of the network structure and governance. The services offered for example should be relevant to the clients. When talking about the required organizational forms of the members, the network would be guided by practicality and not rules and regulations that may restrict the scope to act. A formal certification process (with an accreditation structure, and an awarding body) would be too rigid for a network which aims at being responsive to research needs, knowledge and transfer demands, and market requirements. In order to create a dynamic network, the barriers to entry must be kept low while maintaining service and the quality of the network members. **The development of governance structures, in line with the 'light touch' approach would include a useful guidance discussing a list of potential issues that CCs might need to address.**

Based upon these, the features of light touch approach have been defined:

- **Minimal central (top-down) coordination**: instead of a hierarchical, centralised coordination, a bottom-up way is encouraged where communication, joint decision-making, negotiation and adaptation among CCs are in place – facilitated through the SAH Portal and DIHs. The DIHs are expected to play an important role in the communication between CCs within the DIHs.
- **Minimal formalization:** instead of focusing on positions, and regulations and explicitly prescribed governance processes, the light-touch approach allows the members to adapt to the quickly changing, diverse environment by providing them non-compulsory guidelines and supporting materials through the Portal (and the DIHs)
- **Decentralization**: decisions regarding the way of operation are made "locally" by the CCs and their partners, supported by non-compulsory guidelines and materials through the Portal (and the DIHs).
- **Horizontal connectedness:** members of the CC network are encouraged to connect one another based on their interests and informed decisions both locally and outside the locality.
- **Self-supporting (self-governance):** within the network, CCs can exercise their power to achieve their goals without an unwanted intervention from a central network body. The SAH community will serve to empower CCs with opportunities and tools to increase their presence, activity and impact.

The idea of light touch approach fits well in with the general mechanism that SmartAgriHubs is built around. Stakeholders of the digital ecosystem, such as individual farmers, small technology providers and even large technology companies tend to achieve only a limited influence on the digital ecosystem, SmartAgriHubs will strengthen and connect them with DIHs and embed them within the network of CCs.

DIHs will be in the frontline in searching for challenges and funding to generate, advance and combine new or already existing innovations in the agricultural domain. When DIHs have a match, they join these forces, initiate an Innovation Experiment (IE) with the involvement of best qualified CCs.

Therefore, it is crucial to let CCs freely operate, as much as possible, within the network as their involvement in the development of an IE might require quick reactions crossing borders of sectors, regions or even countries.

3.3. MANAGEMENT OF COMPETENCE CENTRES NETWORK

Management of day-to-day operations

Day-to-day operation is broken down into interactions that CCs may be engaged in while using the network (e.g. entering the SAH community, networking, collaboration, monitoring / evaluating). These actions might either generate or might be impacted by issues that need to be addressed, although CCs are not necessarily able to handle them. Therefore, this deliverable is planned to provide a non-binding guidance for CCs to help them through these issues. **The guidance is planned to be a collection of recommendations in the form of a checklist**. Certain key actions have already been identified with potential links to activities of other WPs or Deliverables.

❖ **Initiation / entry:** Synergies with WP1 and Deliverable 5.1.

When a newcomer CC wants to register in the Portal (WP1), they will be asked to create a profile. Upon registering the CCs' profile through the **CC categorisation tool** (Agricultural Technology Navigator) it is required to enter information on their services, competences, systems and technologies in a multi-layered input system.

❖ **Networking:** Synergies with Deliverable 5.5

Based on the details provided throughout registration, the Innovation Portal is planned to help users in networking by the '**Matchmaking**' function. Users will be able to look for other users by using a search engine and/or applying filters such as competences, region, country, sector or organisation type. In the future, the classification of systems and competences technologies through the Agricultural Technology Navigator will allow a more sophisticated search function by CCs and also by the whole of the SAH community. The Portal's **discussion forum** will be available on the matchmaking page for users to access and engage in discussion threads dedicated to topics relevant to the SmartAgriHubs community. Deliverable 5.5 will provide guidelines for face-to-face and online demonstrations that help create local networks.

❖ **Cooperation:** Synergies with WP2 and WP6

Among the several kinds of cooperation that SAH will generate, cooperation through lean multi-actor method will likely be the most noticeable. Lean multi-actor approach for Innovation Experiments will play a crucial role in expanding and developing the SAH ecosystem including the network of CCs. This deliverable is planning to provide recommendations for CCs how they can gain the most from their participation in these processes.

❖ **Monitoring:** Synergies with Deliverable 5.5

The self-evaluation tool (Deliverable 5.5) is provided to support CCs in self-evaluation concerning demonstration and networking skills. Further evaluation tools assessing performance (evaluation sheets) will be delivered in later phases of the project.

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