Deliverable 3.1
A scientific report on cross compared research insights on Innovation Support Practices

May 2017

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This document should be quoted as follows: Ndah, T.H., Knierim, A., Faure, G., Zarokosta, E., Audouin, S., Wielinga, E., Koutsouris, A., Heanue, K., Temple, L., Triomphe, B., Kelly, T. (2017): A scientific report on cross compared research insights on Innovation Support Practices, AgriSpin Deliverable 3.1, Uni-Hohenheim, Stuttgart, Germany.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 652642

Content

1 Introduction

1.1 Problem background

Recently it is acknowledged that innovations in rural areas may be triggered not only by researchers but by a variety of other actors including farmers, advisors and staff of public, private, profit, non-profit or third sector organisations (EU-SCAR 2012). Nevertheless, such innovations are only successful when they reach a broader application and acceptance. They are then further co-designed, disseminated and adopted within a social system such as rural communities, peer groups or regional networks (Mc Intyre et al. 2009, Rogers 2003).

The linear innovation - generation - dissemination paradigm (World-Bank 2006) characterised this field of study for many years. In that paradigm, the focus of generating and supporting innovations was limited to well defined and often familiar groups of researchers, farmers or practitioners. This focus is gradually fading away giving room to an emphasis on joint learning in the context of open networks. Networks are spaces where social learning takes place through the links and interactions between actors "creating a purposefully designed 'space' or 'platform' which brings together the experiences of those involved in purpose-driven learning and knowing processes, which allows for the creation of synergies and meaningful working linkages" (Hubert et al., 2012, p. 180). The innovation process is a succession of events and unpredictable transformations in which many actors create linkages in addition to forming networks. The innovation process can also be described with different phases that interact (Callon, 1997) according to different innovation models (Temple 2017). These phases show that innovation is the result of different technological, organizational and institutional arrangements. Joint learning networks and settings, therefore, are fertile breeding grounds for the generation of innovations.

In such learning networks, specifically acknowledging multi-actor and Agricultural Knowledge and Innovation System (AKIS) settings, the role of agricultural advisory services has changed. Previously, they were viewed as the main way to support innovation processes with technology and information, but this view is no longer as pervasive. Other new roles and support service possibilities have emerged, promoting and enhancing innovation processes by carrying out intermediary functions and offering innovation supporting activities. Such support providers and intermediaries are perceived as linking actors within the AKIS through knowledge brokerage especially, fostering a science - practice interaction within an innovation process while at the same time, positively influencing the outcome of the innovation processes.

In spite of the significant role played by such diverse innovation support services in the stimulation and enhancement of innovation processes, little is documented with regards to: whether and to what degree the involved support service processes can be systematised?; what are the emerging patterns or cross cutting linkages and which features can be used to explain the diversity of such support service functions? This is with specific reference to the linkages within and between support service activities and phases of innovations, types of innovations, innovators and support actors as well as service provision institutions. There is also a need to understand how widely such support service provision is embedded within existing AKIS structures and how wider environmental conditions shape the direction and type of support provided for innovation processes.

1.2 Objectives

Given the above mentioned knowledge gaps, in this report we examine the role of innovation support services on innovation processes by specifically:

1. Examining the similarities and differences between visited and studied innovation cases within the AgriSpin project.
2. Identifying and examining the relationship between innovation support services and a) phases of innovation, b) types of innovation and, c) service providers.
3. Examining the role of exceptional personality traits of innovators and support actors on the outcome of innovation processes.
4. Exploring how support services are shaped by the enabling environment/landscape and funding mechanisms including regional AKIS of specific regions in which they are offered.

2 Conceptual framework

2.1 Systems of innovation approach and phases of an innovation process

The AgriSpin project adopted a systems of innovations approach which conceives innovation in a systemic and interactive way, i.e. that innovation emerges from networks of actors as a nonlinear social (and institutional) as well as a technical process, where interactive learning takes place around a common concern or impulse of change (Knierim et al. 2015, Touzard et al. 2015). We adopt a systems approach towards innovations, without completely neglecting classical features of innovations (Rogers 2003). However, our main emphasis is on processes around innovations in which knowledge is constructed through social interaction (Knierim et al. 2015). Thus particular attention is given to (social) exchange, co-ordinated action and networking. Moreover, in order to avoid or overcome gaps resulting from network and institutional failures (Klerkx and Leeuwis, 2009) growing attention is given to various types of (process) 'intermediaries or facilitators' and we follow that emphasis also.

In the literature, there are many ways to characterise and differentiate innovations. In AgriSpin, innovations are defined as everything 'that is in some case new, or a change for an individual or a community that may help in doing things better, making things easier or solving problems'(Rogers, 2003). The OECD (1997) and Eurostat (2009) specify innovation as the implementation of a new or significantly improved product (good, service or practice), a new marketing method or a new organisational or institutional (rule, norm, standard) method in business practices, workplace organisation or external relations. This rather economy-related understanding of an innovation can be complemented by the rural sociology view where innovation is a cause for any social change and can be new ideas, products, technologies or ways of behaviour (Rogers 2003, Planck and Ziche 1979:342).

In the context of this report and related to the current orientation of rural policies, we conceive innovations as emerging from AKIS which comprise multiple actor groups interactively engaged in the phases of innovation process (Hruschka 1994, Wielinga 2016) along value chains, related to specific products or regions or jointly addressing a cross-cutting challenge or problem (EU-SCAR 2013; World-Bank 2006).

Different typologies of innovations are commonly used based on various indicators or dimensions. For instance:

- Inventta (2015) classifies innovation from a business related dimension into: a) those related to the introduction of a good or service that is new (product innovations), those related to the implementation of a new production method or process (process innovation), and those related to the implementation of new marketing and organisational methods (marketing and organisational innovations respectively).
- Leeuwis and Arts (2011) state that every innovation consist of three dimensions such as that which highlights the technologies and practice (hardware component), that resulting in new knowledge and ways of thinking (software-related innovations), and that resulting in new institutional or organizational forms (orgware related innovations). Although we find these dimensions usually as a combination in practice, at any particular point in time, one of the above dimensions can be dominant for a particular innovation.
- According to the Henderson-Clarke Model (WordPress 2015), innovations are classified according to the degree of novelty such as those implementing a single change (radical innovations), or a series of changes which lead to a main change (incremental innovations). Furthermore, innovation can affect a single component of an object, a production process or an organisation (be modular), or it can transform it thoroughly and structurally (be architectural).

In addition to the above standard classifications, the learning experience in the AgriSpin project has led to the suggestion of other classification possibilities especially for agricultural innovations. These include classification according to a) the type of agricultural practice (organic, conventional livestock, conventional crops etc.), b) the main focus and scale of the innovation (farming system, value chain,

territorial development, social collective action), c) main drivers of the innovations (farmers, firms, public, private sector, non-government organisations (NGOs,) farmer-based organisations (FBOs), etc.), or d) main triggers of the innovations (response to crisis, new opportunities, pioneer behaviour from innovators, collective action). Different perspectives can be mobilised for analysing the innovation process as mentioned below.

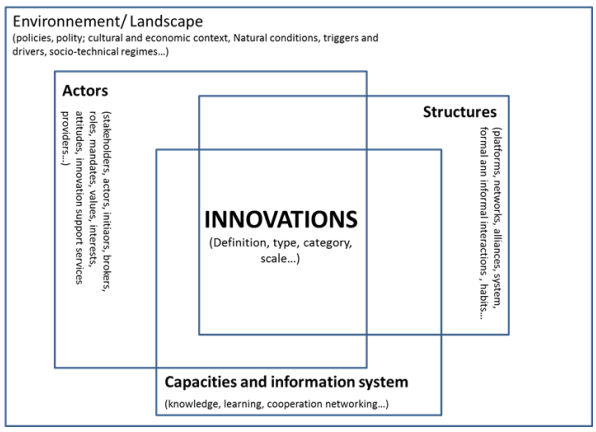

Figure 1: Structural perspective to an innovation process (Knierim et al. 2015a)

Under a structural perspective of the innovation process, major influencing factors to an innovation situation are viewed from a structural or static perspective. The size of each component (boxes) could be increased or decreased depending on the particular innovation in question. The main emphasis here is on the static nature of the components captured at a given point in time as they are embedded or have been shaped by the context (environmental/landscape) in which they are found.

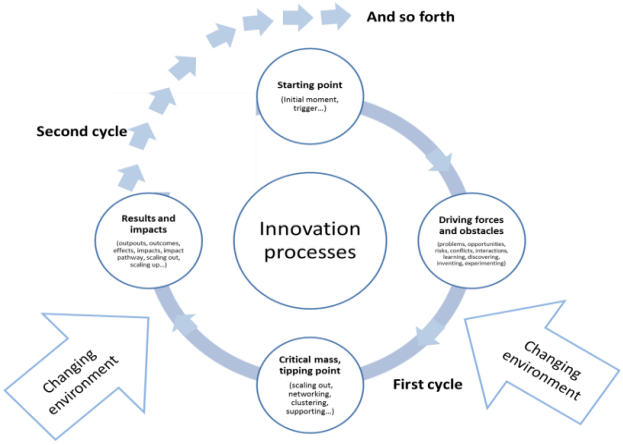

Figure 2: Dynamic perspective to an innovation process (Knierim et al. 2015a)

A dynamic perspective links an innovation process to an iterative cycle or to a sequence of loops that repeat and adjust or improve over time and is constantly influenced by a changing environment. Emphasis here is on the non-linear nature of the innovation process.

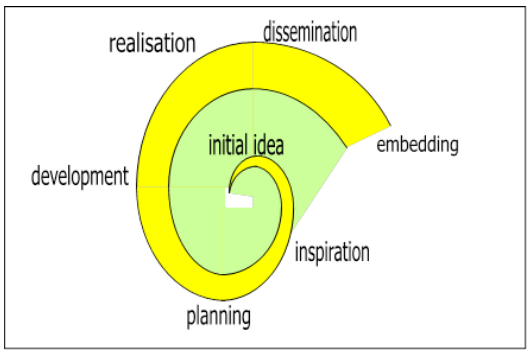

Figure 3: Innovation process as a sequence of different activity phases (Wielinga et al. 2016)

The spiral of innovation process, also called the spiral of initiatives highlights possible phases of a change process - in this case, an innovation process. According to Wielinga (2016), each stage of the process has specific actors to connect with, pitfalls to avoid, barriers to overcome and needs for support. Similar to the dynamic perspective, resulting feedback loops may lead to the actors restarting the spiral at any stage, especially between the inspiration, planning and development phases.

Based on system thinking, in the AgriSpin project we analyse innovation processes from two dimensions starting from the understanding that at any point in time, the process can be viewed from a structural, static perspective (Figure 1) or from a dynamic perspective (Figure 2, Figure 3) following the various phases of an innovation process or as a combination of both perspectives. Our assumption is that it is necessary to differentiate between the analysis of the elements that underlie the structures of the system from the analysis of the elements which create interactions that govern the innovation process (Laperche et al. 2013) across possible phases. The importance of phases and the strategic interaction between the phases for the process is different in each innovation in relation to the institutional context and the nature of innovation.
In our analysis of innovation cases, we have carefully considered the innovation process features highlighted in the three figures above and specifically make use of the spiral of innovation (Figure 3) to identify the various support interventions across phases of an innovation.

2.2 Innovation Support Services (ISS)

As outlined above, the empirical work in the AgriSpin project focused on the study of innovation support services (ISS). At first sight, the term 'innovation support service' may be understood either as an organisational body or actor (named service provider) or as an activity. In the AgriSpin context, we adopt the definition of ISS related to service as an activity. Based on the state of 'service' discussion in economic and agricultural extension literature (Faure et al. 2012; Labarthe et al. 2013) we postulated that *"……by its nature, an ISS is immaterial and intangible and involves one or several providers and one or several beneficiaries in activities in which they interact to address a more or less explicit demand emerging from a problematic situation and formulated by the beneficiaries and to co-produce the services aimed at solving the problem. The interactions aim at achieving one or several beneficiaries' objectives based on the willingness to enhance an innovation process, i.e. fostering technical and social design, enabling the appropriation and use of innovations, facilitating access to resources, helping transform the environment and strengthening the capacities to innovate"* (Mathe et al. 2016: p 6).
Starting from this definition, a comprehensive literature review on support services in agricultural innovation was conducted which led to the development of an initial generic classification of ISS identifying seven classes of support activities (Mathe et al. 2016:p10). In the course of the stepwise case study analysis, this preliminary classification was differentiated to an improved typology resulting in eight generic categories of innovation support activities (Table 1).

Looking closer at the actors providing ISS, we may differentiate between a) their degree of formality or the respective organisational level (i.e. whether we address an individual or a corporate actor) and b) among the various organisational forms corporate actors may take (ranging from public to private to civil society organisations). Following seminal contributions to agricultural extension literature (e.g. Birner et al. 2009, Anderson and Feder 2004: pp. 44) we concentrate our exploration on ISS stemming from corporate actors, and differentiate among public and private sector bodies, FBOs, and other third sector organisations.

Based on the conceptual background for innovation processes and ISS outlined above, a number of specific research questions were formulated in order to address the identified knowledge gaps and to meet the stated objectives of this report. These questions serve as a guide for the following subsections of this report within which findings on the role of ISS on innovation process across the focus case study regions in Europe are presented.

1. What similarities and differences exist between AgriSpin Cross Visit innovation cases and host organisations?
2. Do ISS vary according to the distinctive phases of an innovation process?
3. To what extent are ISS dependant on the personality traits of the innovators?
4. Do ISS vary according to the types of innovation being supported?
5. Is there a relationship between ISS and types of service providers?

6 To what extent are the innovation support services (ISS) determined by the funding mechanisms, enabling environment and wider AKIS in which they operate?

Table 1: Definitions of the generic innovation support services

ISS types	Definition
1. Knowledge and technology transfer	Provision of knowledge and technologies for innovation. For example, dissemination of scientific knowledge or technical information for farmers or groups of farmers. The method for providing knowledge is based on information dissemination (website, leaflets), training or demonstration.
2. Advisory, consultancy and backstopping at farm level	Backstopping can be used for solving complex problems regarding a new farming system (for example, the shift from conventional agriculture to conservation agriculture or organic agriculture) or new value chain design.
3. Advisory, consultancy and backstopping at organization level	Provision of advice (technical, legal, economic, environmental, social etc.) during the innovation process based on demands of actors interacting with farmers and the co-construction of solutions. These services are aimed at strengthening organizations to better support farmers, target markets, negotiate with policy makers, etc. The service provider may help stakeholders to understand their environment, including market demands, and to adapt to this environment.
4. Capacity building and documenting learning	Provision of services aimed at increasing innovation actors' capacities in order to be fully equipped to play their roles in the innovation process. It includes capacity building at the individual level (for example, leadership strengthening) and at the organizational level. The services are based on the provision of classical training and also experiential learning processes. Trainers/advisors/facilitators use several methods that can help them define their problematic situations, choose between alternative solutions and articulate their demand for the provision of more specific services.
5 Demand articulation	Provision of services to help actors to have access to new ideas, identify their needs, define their objectives and express clear demands to other actors (research, service providers, etc.).
6. Networking facilitation and brokerage	Provision of services to help organize or strengthen networks; improve the relationships between key actors (for example, conflict management) and to align services in order to be able to complement each other (the right service at the right time and place). It also includes all activities aimed at strengthening collaborative and collective action.
7. Access to resources	Provision of tangible services to support the process. This could be inputs (seeds, fertilizers etc.), facilities and equipment (technological platforms, labs etc.) and funding (credit, subsidies etc.).
8. Institutional support for niche innovation and scaling mechanisms stimulation	Provision of institutional support for niche innovation (incubators, experimental infrastructures, etc.) and for out scaling and up scaling of the innovation process. This refers to support for the design and enforcement of norms, rules, funding mechanisms, taxes, and subsidies etc. that facilitate the innovation process or the diffusion of innovation.

Source: adapted from Mathe et al. 2016

3 Research design, methods and material

In the AgriSpin project we make use of an action research approach (Checkland and Holwell 1998, Faure et al. 2014) which corresponds to the facts that (i) the project has the format of a 'coordination and support action' (CSA), i.e. a project with a relatively high share of action-oriented knowledge exchange, learning and coordinating activities, and (ii) among the project partners there are a large number of non-academic AKIS stakeholders with a focus on concrete, practice-related outcomes. Furthermore, it was stated initially, that "dialogue and learning among all project partners are at the heart of what we want to pursue in AgriSpin"(Deliverable 1.1) and that the role of the scientists was not to guide but to participate in the same way as other partners in the empirical field. Hence, the design of the research part of AgriSpin reflected the project's overall approach, which was centred on the Cross Visits. In order to make this research design transparent, we briefly describe the Cross Visits in terms of structure, content and procedure in the next section (3.1) and then present the methodological steps and resulting data sets that are used for this scientific report in section 3.2.

3.1 Structures and procedures related to the Cross Visits

In the course of the project, 13 Cross Visits to 12 European countries were realised, each of which lasted 3 – 4 days and involved a mixed team of between 7 and 10 project partner members. The aim of each Cross Visit was to study ISS in concrete innovation cases in agriculture and rural areas. In every region, a host organisation using predefined criteria, identified and proposed a set of possible innovation cases from which the Steering Committee selected the actual cases to be included in each Cross Visit (for further details refer to deliverable 1.2, Ndah et al. 2016a).

In order to reveal the diversity of the host organisations, an overview was created differentiating their organisational features (public, private, FBO, NGO) their time horizon which reflects financial conditions and the assumed organisational goals and orientations (Table 2). Related to this differentiation is the assumption that organisational features (e.g. public, private, FBO, NGO) reflect an organisation's dominating interests and goals. So, we can assume that public organisations not only seek to optimise farmers' results but also take societal interests into account. Farmer-based organisations imply a direct participation and/or representation of their clients and owners, and are thus, near to farmers' interests. Organisational features are also strongly shaped by the financial conditions. While permanent public organisations have a long-term perspective in planning and implementation, this continuity is less secure for project-based organisations and those who have to mobilise private or third-party funding.

Table 2, provides an overview of the organisational diversity of the host organisations responsible for the Cross Visits. Most of them were members of the project consortium while in the case of France (F), Campania in Italy (I) and Greece (GR) the host organisations were not a direct partner in AgriSpin. From the systematisation, we note that there are two larger groups of host organisations i.e. farmer-based and the permanent public organisations, which were each identified in four countries. We assume that these organisations have good institutional bases to accumulate knowledge and expertise because of their permanent character and likely long-term financial security. Such a long-term perspective might be less obvious for project-based organisations or NGO's so that their potential to create a knowledge reservoir or stock of experience might be reduced comparatively. Finally, there are organisations that do not fit into the scheme such as the German bundle of mixed and non-governmental organisations that functioned together as host for AgriSpin. Thus we note that the host organisations in AgriSpin constitute a broad organisational mixture with a certain prevalence of classical sector bodies. Overall, we consider the sample as relevant because of its diversity and geographical spread, but we also have to state that as a whole, it is small (13 organisations) and very heterogeneous in various regards, for example, in terms of the scope of intervention which ranges from the national level (e.g. in Ireland or Denmark) to the district or department level (e.g. in France or Italy). Mediated through the diversity of the host organisations we aimed to cover a broad diversity of innovation cases simultaneously, so that the findings from AgriSpin may provide evidence about the many innovation experiences of the sector.

Furthermore, we consider the appraisal of the host organisations as relevant (Table 2), because the identification of innovation cases to be visited was done by them. As it turned out, in most of the cases, the hosts also had responsibility as an ISS provider, so that in the specific Cross Visit situation, hosts frequently had several roles as (i) presenting and explaining innovation cases to the AgriSpin partners, (ii) participating in the analysis of innovation processes and (iii) explaining and reflecting upon their own activities as a service provider. When exploring ISS examples with relation to the service providers we will rely on these insights where appropriate.

Table 2: The host organisations of the Cross Visits

Type	Countries	Organisational goal and orientation
Farmer based org (FBO)	NL, BE, DK, FI	• Near to farmers' interests • Use experience of most advanced to serve mainstream colleagues
Public org, permanent	SP, IT-T, LT, IE	• Near to political and/or societal goals • Strength through institutional continuity
Public org, project-based	F, IT-C	• Near to political and/or societal goals • Weakness because of institutional uncertainty
NGO	RO	• Near to clients / user groups • Flexibility and high degree of autonomy • Economic stability continuous concern
Mixed (public/private)	GR, DE	• Public and farmers' interests integrated • Challenge to integrate goals • Project of permanent character

Source: own compilation

Integrating the Cross Visits' procedure with the research agenda proved to be a real challenge. The AgriSpin Cross Visits methods as outlined in Deliverable 2.1 (Wielinga et al. 2016) guided the visiting teams in their study of the selected cases. Usually, all team members were busy understanding and explaining the actual situation and its influencing factors so that the time for systematic data collection, documentation and joint data assessment and reflection was frequently reduced. Secondly, the method's development followed an iterative approach characterised by continuous improvement based on received feedbacks after every cross visit (Wielinga et al. 2016) so that some collective data assessment tools weren't applied throughout all cases (see section 3.2). Thus, this document reports specifically on the parts of the methodology focused on data generation and collection for use by the research institutions, and the steps applied for analysing the collected data after the cross visits.

3.2 Data sources and gathering procedure

We followed an exploratory case study approach in the data generation and collection process rather than a standard survey approach. Data sources (Table 3) are (i) innovation case descriptions, (ii) cross visit reports, (iii) innovation case narratives and, (iv) miscellaneous documents from the host team members. In the following, a brief description of every data source type is provided.

i. **Innovation case descriptions** were provided in a more or less harmonised manner prior to any Cross Visit in order to support participants' preparations. The descriptions served as background information during the visits. All innovation case descriptions have been compiled in the Deliverable 1.3 which is publicly available (Ndah et al. 2016b).
ii. In the course of the 13 cross visits, several tools were tested to collect:
    a. The observations of the individual participants, especially **a reflection guided by 'cross-cutting questions'** (applied in the cross visits for NL, BE, SP, DK, FR, IT-T, GR)

and **qualitative non-standardised reflections** (applied in cross visits for DE, FL, IT-C, RO, LT, IE).

b. G**roup observations**, especially **using the timeline** (applied in cross visits for NL, BE, SP, DK, FR, IT-T, GR) **and the innovation spiral** (applied in cross visits for DE, FL, IT-C, RO, LT, IE)

Table 3: Data sources from AgriSpin case studies and satisfactory level

Case study region , Country, and Partner Organisations	Data sources	Satisfactory level of data sources Y = Satisfactory N= Not satisfactory
Brabant, The Netherlands (ZLTO); Flanders, Belgium (ISP); Basque, Spain (HAZI); Aarhus, Denmark (SEGES); Guadaloup, France (ACTA); Tuscany, Italy (RT); Thessalia, Greece (AUA)	• Innovation case narratives • Cross visit report • Some answers for CCQ's • Case descriptions for innovation cases prepared before cross visits	**Y**
Höchst/Odenwald, Germany (VLK)	• Innovation case narratives • Cross visit report • Case descriptions for innovation cases prepared before cross visits	**Y**
Seinäjoki, Finland (ProAgriA); Campania, Italy (IFOAM); Oak Park, Ireland (Teagasc)	• Innovation case narratives • Cross visit report • some cross visit reflections • Case descriptions for innovation cases prepared before cross visit	**Y**
Transylvania, Romania (ADEAPT); Riga, Latvia (LLKC)	• Innovation case narratives • Cross visit report • some cross visit reflections • Case descriptions for innovation cases prepared before cross visit	**N**

iii. After each cross visit, the host organisation prepared a **visit report** which summarised the findings and included graphs and visualised results from the cross visit such as the jointly prepared timeline, the innovation spiral, pearls, puzzling's and key recommendation messages for the host and about further improving the cross visit method.

iv. In addition to the visit report, the host organisation prepared **single case narratives**, which are improved versions of the single case descriptions (provided prior to the visits). These narratives summarise in a complete manner, the case by case outcomes from the cross visits combining the host perspective with that of the visiting team. A complete narrative is expected to include a detailed visualised outcome of the spiral showing the captured support activities, environmental influences and actors involved in the particular innovation in question across the respective phases of the process (Figure 3 involved and example inFigure 4).

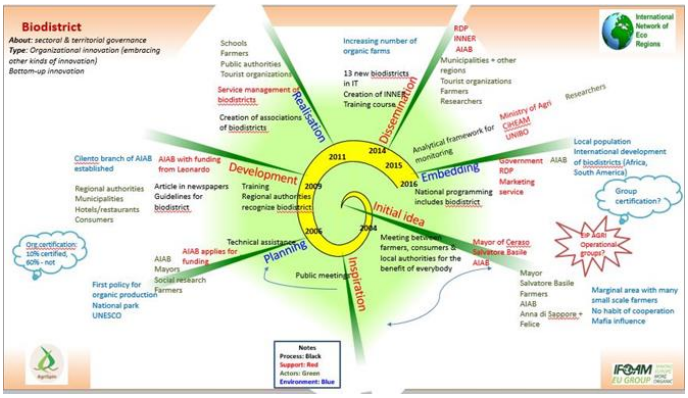

Figure 4: example of detail spiral within a narrative - case of Bio-District, Campania

As these data sources vary in quantity and quality (Table 3) for this report we relied particularly on the content of data coming from the **innovation case narratives**, including **content of the spiral**, and the **cross visit reports**. Nevertheless, in cases of insufficient content the analyst had to explore the content of the other miscellaneous sources in order to at least answer the query of the analysis (see section 3.3).
Summarily, an exploratory process was applied in generating and collecting data for this report. A classical data collection process was not possible within the context of this study given the design and multi-actor nature of the project with 12 practice partner institutions working together with 3 research institutions, all with a common goal of arriving at consensual agreements on best suited operational methods applicable in such a setting as described above (Section 3.1)

3.3 Data analysis: analytical frame and procedure

Data analysis was done in a formalised way. As analytical frames we used (i) the innovation support service matrix and (ii) the innovation characterisation matrix.
The **innovation support service matrix** contains the types of support service functions, the content of the support functions, the support providers involved, and the phases of the innovation process (Table 5). To analyse service provision, we needed to integrate the phase of innovation and the relevant support situations observed including how the services was provided. A situation regarding service provision could be understood as "a moment identified in the spiral or in the narrative where one actor (or a group of actors) is providing a service to other actors which is consider key to stimulating/supporting the innovation process. The matrix is used to identify key services per situations. It is not necessary to complete all boxes. The procedure followed was:

- rapidly identify all the service situations/activities mentioned by the participants across different stages for the cases (Matrix),
- provide more details for 5 to 10 service situations/activities per partner cases (a few lines by service/approach) and
- give more details for one or two considered best services/approaches per case (a quarter of page by service/approach) (see proposed steps in Figure 5)

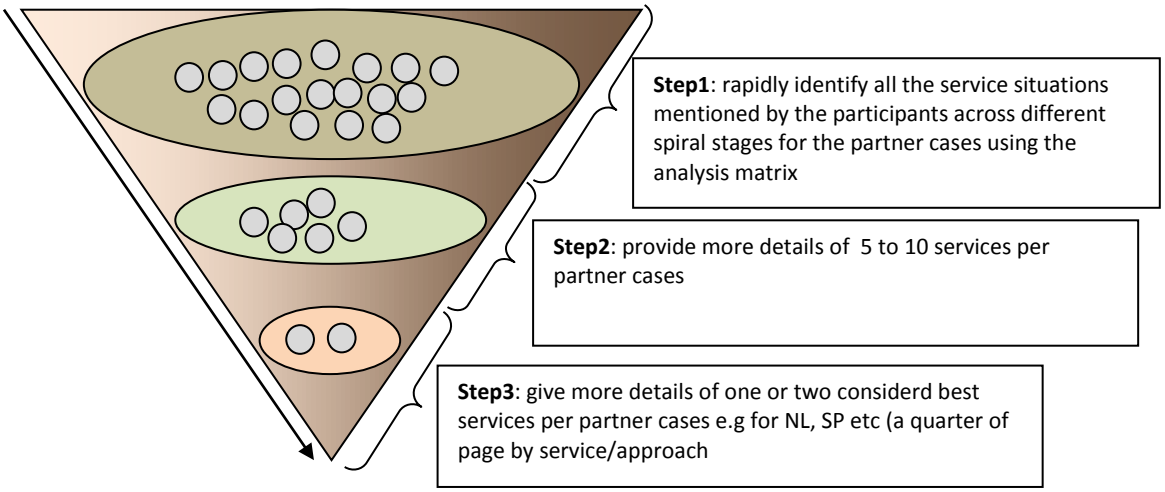

Figure 5: Proposed steps for analysing ISS

The **innovation characterisation matrix** contains information about the geographical scale of the innovation, main actors driving the innovation, extension strategy, main issue driving the innovation and the main support service functions (see example Table 4). The matrix is filled out by integrating the innovation case (top row) with the listed criteria's (left column) and selecting from each specific criteria list (1-7), whatever applies for the innovation case under the specific column (i.e inno. 1 –to N : top row).

Table 4: How to apply an innovation characterisation matrix – example for the Netherlands cases

	Characterisation criteria	Innovation cases NL			
		case 1: Quinoa	**case 2: Supply chain**	**case 3: Vair Varkensuis'**	**case 4: Precision Agriculture**
1	Geographical scale of innovation: 1. local, 2. regional, 3. national, 4. international	international	national	Regional l	International
2	Main actors (funding sector) driving the innovation I : a. public, b. private, c. farmer-based organisation, d. third sector organisation	FBOs, Public	Private	Private	FBOs, Public
3	Main actors driving the innovation II: a. advisory body, b. research body, c. other (Specify)	Other (farmers)	Other (farmer)	(other (farmer)	Other (farmer)
4	Extension strategy: a. Provider driven, b. Farmer driven, c. Interactive facilitation	Provider driven	Provider driven	Provider driven	Provider driven
5	Main issue driving the innovation: a. technological, b. political or c. social change	Technological	Technological change	Social change	Technological
6	Typology of support services activities by content : a. Technical, b. Legal, c. Financial, d. Marketing, e. Environment, f. Organisational, or g. Social	- Financial , - Social , - Technical.	- Organisational, - Marketing, - Technical, - Financial.	- Social, - Technical , - Legal, - Marketing.	- Social , - Financial, - Organisational, - Legal, - marketing ,
7	Typology of support services activities by functions : a. Knowledge and technology transfer, b. Advisory, consultancy and backstopping, c. Marketing and demand articulation, d. Networking facilitation and brokerage, e. Capacity building, Access to resources, f. Institutional support for niche innovation and scaling mechanisms stimulation	- Advisory & consultancy, - access to resources, - Institutional support for niche innovation, - Capacity building.	- Advisory & consultancy, - Institutional support, - Networking facilitation.	- Advisory & consultancy, - Institutional support , - Networking & facilitation.	- Advisory & consultancy, - Networking & facilitation, - Access to resources, - Institutional support.

Table 5: How to apply an innovation support analysis matrix – example for The Netherlands cases

Innovation case	Situation	**Stage in the innovation process***	**Support service type by content****	**Providers*****	**Support service type by function******	Innovation support situation/activity (including actors, approach, funding) e.g. of support activities from visited cases in the NL
Case 1: Quinoa NL	1	Inspiration	Financial ,	Public sector+ farmers org private sector,	Advisory, consultancy and backstopping (2) access to resources; (6) knowledge and technology (1)	The initiator wanted to explore use of Quinoa for feed. He thought of a feasibility study, including visit of Canada and South America. He covered a year without income, Nuffield provided scholarship/subsidy of €7500 and €2500 was covered by LIB, a joint initiative of ZLTO and , the government authority of Northern Brabant . This together made up the financial support activity that paved the way to learn and familiarise with the Quinoa crop: how it grows, different varieties, under which conditions etc. Plus he discovered food use was more interesting than feed.
Case 1: Quinoa NL	2	Planning	Social support	Private sector Public sector+ farmers org	Advisory, consultancy and backstopping ((2)	After the study, he received social and moral support from his family especially his wife who was very understanding and kept him motivated in the process. With agreement of his wife, he resigned from his job to focus on Quinoa promotion. LIB provided an impulse with 15000, covering various costs. In the year after his decision, ZLTO helped him to find 40 farmers taking the risk to grow the crop
Case 1: Quinoa NL	3	Development	Technical support	Public sector+ farmers org Private sector	Institutional support for niche innovation and scaling (7) capacity building (5) Advise and consultancy (2)	A third need was to have knowledge of different Quinoa varieties, and which ones could strive under which soil types in Holland. With this need, he reached out to Wagenningen University (WU) where he found an ongoing Quinoa research project. In collaboration with the university, different crop varieties could be tested within the ongoing project on Quinoa. Part of this studies and other costs had ot be covered. LIB provided 60.000 in 3 years.
Case 1: Quinoa NL	4	Realisation	Entrepreneur-ship and technical	Private sector, public sector+ farmers org	Investment in risk of growing and in processing (drying) plant (6)	Apart from the further investment of Dutch Quinoa, farmers invested €500/ha on new techniques * 250ha = €125.000. A processor invested 2.000.000 in a gluten free drying location. ZLTO invested for €20.000 in providing different entrepreneurship support schemes for the initiator

Notes

* Initial idea, Inspiration, Planning, Development, Realisation, Dissemination, and Embedding (Figure 4)

** Technical, Legal, Financial, Marketing, Environment, Organisational, or Social (Mathe et al. 2016: pp.7)

*** Public, private, farmer-based organisation, NGOS or other third sector organisation 1 (Birner et al. 2009, Anderson and Feder 2004: pp. 44)

****Knowledge and technology transfer; Advisory, consultancy and backstopping; Marketing and demand articulation; Networking facilitation and brokerage; Capacity building; Access to resources; Institutional support for niche innovation (Mathe et al. 2016: pp.10, further specified in Table 1)

For more detail, overview results following the innovation analysis matrix and innovation characterisation matrixes for the 13 AgriSpin partners' innovation cases are available and can be obtained on request from the authors of this report.

For each of the 57 innovation cases, a parallel analysis was carried out by two members of the research institutions who participated in the respective Cross Visit and who were not part of the organising team. This was done as a content analysis of the innovation case narratives, the Cross Visit reports and other data sources (Table 3). Analyses following the above matrixes served to gain insights about the generic support services to innovation processes (
Table **1**, Table 5) as well as characteristics of the innovation itself (Table 4). Taking this overview knowledge on innovation support services, we agreed to further illustrate our findings with examples drawn from the different AgriSpin cases (see step 3: Figure 5) in the subsections 4.1 - 4.7 of this report. In each illustrated example, the circumstances leading to the intervention (the need), what kind of intervention (service function) and who was involved (providers) are highlighted where possible. The methodology and the analytical procedure described above generated the results presented and discussed in the following part of this report.

4 Findings

4.1 Introduction

We present our findings in 7 subsections (i.e. 4.1- 4.7). For clarity, we first describe how the content of each subsection is logically linked with other subsections.
Sub section 4.2 presents findings on the relationship between ISS and the phases of an innovation process. As one of the findings from this sub section, personality traits of innovators are seen to play an important role for the success of the innovation process especially at the early phases. It is for this reason that we extended our analysis to examine the influence of personality traits of innovators on the innovation process: these findings are presented in 4.3. While subsection 4.4 presents findings on the relationship between the ISS and types of innovation, sub section 4.5 highlight findings on the relation between ISS and the providers of these services. Again like with 4.2, in examining the relationship between ISS and providers, the personality trait of support actors on the process was revealed as having an important role to play. It is in this regard that we further extended our analysis to examine the role of personality traits of support actors on the success of the interaction between ISS and innovation processes: findings are presented in 4.6. Lastly, subsection 4.7 highlights findings on the integration of ISS within the enabling environment and the wider AKIS.

4.2 Innovation support service and phases of the innovation process

We first carried out a quantitative analysis, crossing the innovation support functions and the innovation phases (Table 6). Based on this overview, we observed a very broad presentation of all services across (almost) all phases. Frequently mentioned service functions are 'knowledge and technology transfer' (72) and 'networking, facilitation and brokerage' (90). While the dominance of the 'networking' services is not unexpected because innovations were chosen that implied a 'multi-actor approach' (see Ndah et al. 2016a), the frequency of 'knowledge and technology transfer' services is more surprising. It may be an indicator of the cross-cutting need for information and technology access that reigns in all phases of an innovation process. Another plausible explanation is that despite the widely promoted multi-actor and interactive discourse, in real life most innovation cases (and services on a worldwide scale) work on a top-down basis. However, "knowledge and technology transfer" can also be based on participatory approaches, especially with the inclusion of learning activities, suggesting a more bottom-up approach.

Looking comparatively at how services are distributed across the phases, we note a one-peak accumulation in the development phase (88 mentions). Obviously, this phase is one of intensive activitity and thus, the reason for more support services is plausible. However, it is striking that all kinds of services have a relatively high mention here albeit with a dorminance of Knowledge and technlogy transfer, and access to resources functions. A second, intuitively plausible result is that in

the planning phase, the importance of 'advisory services' and supported 'access to resources' are of considerable importance.

Table 6: Number of ISS observations per phase of innovation cases from 10 Cross Visits

Innovation Support Service functions (interventions)	Initial idea phase	Inspiration phase	Planning phase	Development phase	Realisation phase	Dissemination phase	Embedding phase	
Knowledge and technology transfer	12	9	4	19	10	15	3	**72**
Advisory, consultancy and backstopping at farm level	4	7	14	17	7	1	1	**51**
Marketing and demand articulation	3	6	4	5	7	5	1	**31**
Networking facilitation and brokerage	12	17	14	12	14	15	6	**90**
Capacity building	2	3	2	7	10	8	1	**33**
Access to resources	2	3	15	16	6	8	1	**51**
Institutional support for niche innovation and scaling mechanisms stimulation	3	2	5	12	2	2	3	**29**
Total	**38**	**47**	**58**	**88**	**56**	**54**	**16**	357
Data from 43 innovation cases in 10 countries: Netherland (NL), Belgium (BE), Denmark (DK), Spain (SP), Finland (FL), Greece (GR), Germany (DE), Italy-Campania (IT-C), Italy-Tuscany (IT-T), Guadeloupe (FR), Ireland (IE).								

However, there were several challenges related to the analysis of these data due to lack of or insufficient information in some cases (Table 3). Moreover, despite considerable efforts vested into generating common understandings, nevertheless, we realised after completion of this initial analysis that different data interpretations had occurred in some cases as it was not so easy to classify each ISS within our generic classes (Table 1).

As a response to practice partners' request for 'best practice examples', we carried out a second analysis with a refined typology of ISS (cf. column 1, table 7) and identified concrete ISS as described in the reports. We selected some examples to illustrate ISS according to the phases as follows:

Initial idea phase:

Example 1 : **Case of Teagasc (IE), Pg. 59-64, AgriSpin book 1**:
Staff innovation awards and the open call for KT Walsh Fellowship. 'Demand articulation' comes from these and the programme stakeholder consultative groups (see Agrispin stories book 1 page 59-64). In addition, each year Teagasc designs and implements a selection and prioritisation of its activities based on staff and stakeholder input and its capacity to integrate research, training and advisory support into improved programmes

- Example 2: **Case of Organic farm Felice Maio (IT-C): Pg 15, D1.3**
  In Anna dei Sapori's case the involvement of the mayor of Cilento and the support of the whole municipality facilitated by AIAB was crucial for expanding the customers' network. The official endorsement of the authorities raised the profile of the farm and allowed them to market their products to the school canteens. This example corresponds with the ISS function: institutional support for niche innovation and scaling.
- Example 3: **Case of International stdy Centre (IT-C), Pg, 30, D1.3**
  The influence of Ancel Keys studies, as a stimulant to the decision to create the International Centre for Meditarenean Diet (IT-C). This is an example where a new idea emerges based on

research findings from studies or projects. The correspoding ISS function for this case is Knowledge and technology transfer.

Inspiration phase:

- Example 4 : **Quinoa case (NL), pg. 5, D1.3**: Seed capital for start up of new ideas : both LIB and ZLTO offering seed money for starting up new ideas (projects) e.g. case ofQuinoa where with LIB offering €6000, this facilitated the innovators training trip visit to S. America; this example reflects the 'access to resources' service.
- Example 5 : **Mini Wetland (DK), Pg. 15, D1.3:** A farmer gets the idea of mini wetlands at a strategy meeting, called SEGES and suggested that it should be put to the test. A network of researchers and agricultural advisors become inspired and go on a research trip to Sweden to gain more knowledge on how this is implemented in practice.

Planning phase:

- Example 6 : **Orti Etic innovation (IT-T), pg. 18, D1.3:** As part of planning, actors decided to set up a Temporary Association of Enterprises (ATI) an agreement among different organizations oriented towards a specific objective. ATI enables partners to pursue the project objectives enhancing and complementing the specific skills of each partner. An example of the enhancement of an informal and temporary network
- Example 7 : **Keisala Farm and investment support team (FI), Pg. 28, D1.3:** Support from ProAgria, via an advisory team (mixed team of experts from various fields) involved in providing suggestions with regard to production, economics, animal husbandry and plant protection (Barn construction in this case). This example represents advisory and consultancy services that continued through the sequence of the three phases 'inspiration, planning and development'

Development phase:

- Example8 : **SOP and LEARN (DK), Pg. 14, D1.3:** SEGES and their advisors showed the farmers how to use the Week-Planner and followed up on their successes and challenges with the new tool. Continuous feedback was then collected by advisors and SEGES from farmers for improvement.
- Example 9: **Bio district and role of AIAB (IT-C), Pg.27, D1.3:** With overall coordination over the years from AIAB, the "Bio-district Cilento" was established involving associations, public authorities, farmers and tourist operators,
- Example 10: **Bio district and role of AIAB[1] (IT-C), Pg.27, D1.3:** Creating a permanent workshop of culturally significant ideas and initiatives for territorial development based on fair trade and the organic model. All three examples illustrate networking and facilitation support services that were provided in order to enhance the innovation's development

Realisation phase:

- Example 11: **Case of Yam platform (F), Pg. 16, D1.3:** Support of RITA in the establishment of a platform where several Guadeloupian Yams actors regularly meet and exchange knowledge. Knowledge exchange with Cuban researchers and practitioners highlights how networking supports the innovation's realisation.
- Example 12 : **Andreas Hermes Academy (DE), Pg. 23, D1.3:** Internal support to the AHA training programme, which offers adult education in agriculture, opens mind, and supports farmers/ people in their trainings, workshops or coaching. They are well connected in Germany and abroad, reaching the target groups on the one hand and getting the information on their needs on the other hand. This is an example of providing ISS in the realisation phase through capacity building.

[1] Associazione Italiana Per L'agricoltura Biologica

Table 7: Examples to illustrate ISS across phases on innovation

	initial ideas	**Inspiration**	**planning**	**development**	**realization**	**Dissemination**	**Embedding**
Knowledge and technology transfer	Emergence of new ideas based on research findings from studies or projects which eventually become innovations. (Example 3)	External visits to centres where inovative ideas are being practiced for learning and acquisition of knowledge (example 2)	Searching relevant information from outside		Knowledge transfer based on experiences from the development phase,	Information dissemination regarding farming practices or market opportunities	
Advisory, consultancy and backstopping at farm level	Key consultancies to generate new ideas at farm level (e.g Diskrikempen logistok case (BE)				Advisory services for new agricultural practices and new management practices, consultancy based on stabilized knowledge		
Advisory, consultancy and backstopping at organization level	Key consultancy to generate inovations for organisations (e.g Vair Akensus case (NL) Key consultancy to fine tune ideas (example7) Key technical or financial consultancy from outside the network (including research, consultants) to fine tune ideas				Consultancy based on stabilized knowledge		
Capacity building	Boosting individual competencies, to think outside the box, generate new ideas (e.g Food Akademie case (BE)	Support to key individuals (pioneer, entrepreneur, change agent)			Training programme based on learning from the development phase (example 12)	Capacity building at larger scale through regular training based on more or less participatory method to new comers.	
Demand articulation	Award to identify and valorize innovators. Call for innovative	Workshop to share experiences. Trips and cross-visits (example 5)	Workshops for diagnosis and organizing ideas. Worshop for articulating the access to market	Creation of firms	New formal organizations (cooperatives, association, etc.)		Key consultation to further strenghthen and improve demand. e.g acquisition of a certification scheme to further improve demand by an organic farmer

	proposal in the organization (example 1)					
Networking facilitation and brokerage	Facilitation for emergent informal networks, for generating new ideas as well as inspiration for the growth of existing ideas (e.g. role of AIAB in the initiation and start off of Bio District case (IT-C),	Facilitation of informal network connecting people who matter (pioneer, entrepreneur, and others) or influential people able to move the idea forward. Temporary association of actors (example 6)	Strengthening informal networks Building innovation platforms (example 9) Organizing permanent workshops (example 10) Designing participatory monitoring and evaluation (example 8)	Strengthening networks to become more formalized (example 11). Steering committee to monitor and evaluate. Negotiation with actors who are affected by the change.	Faciltation for documenting and collecitve learning based on past experiences. Improving the multilevel governance at territorial or value chain level (example 14)	Connecting actors with outside to share their experiences and get new ideas (keep being innovative) (example 16)
Access to resources	Seed money (example 4). Competitive grants, equally for generting new ideas (e.g role of research funding for the stevia case (GE)	Incubator Access to financial resources for experimenting.		Acces to credit subsidies to invest (example 13)		
Institutional support for niche innovation and scaling mechanisms stimulation	Endorsement of an initial idea from the start by established institutions, or public actors gives it the institutional suport and empetus needed needed at the begininbg (example 4).	Space to innovate within the organization or with other organizations. Legal authorization to experiment			Design of new certifications (for products, process or advisors). Identification of certification bodies (example 15)	Taxes and subsidies for orienting individual and collective actions. New norms for production and processing New indicators for monitoring and assessing advisory services (example 17).

Dissemination phase:

- Example 13 : **Precision Agriculture and role of ZLTO (NL), Pg.07, D1.3:** Main role of ZLTO in actively supporting the farmer in building an alliance and network to be eligible for subsidy and collaboration with national and international projects. This has led to the acquisition of financial support which paved the way for investment in machinery for the innovation process. The ISS 'access to resources' is provided throughout the realisation, dissemination and embedding phases.
- Example 14 : **Bio District and role of AIAB (IT-C), Pg. 27, D1.3:** AIAB's instrumental role in the creation of INNER network (International Network of Eco-regions), coordination strategies of development and continuous innovation of the Cilento bio-district, creating international linkages/cooperation to spread the Bio-district model. Clearly, AIAB's networking activities strenghten the dissemination of the innovation.
- Example 15 : **The CECRA[2] Certificate and role of EURFAS[3] (DE), Pg. 23, D1.3:** EUFRAS (RAS network) enacts a strong influence on the dissemination of CECRA. Several rural advisory services and universities have become accredited CECRA partners thanks to the supportive role of EUFRAS and IALB. They now implement CECRA within their organization and provide CECRA modules, most of them for the first time, with a strong impact and further dissemination.

Embedding phase

- Example 16 : **Hofgut Oberfeld (DE), Pg. 23, D1.3:** The transfer of responsibility from farming family to foundation, a network of crowd funding and young volunteers from around the world and Darmstadt citizens in favour of bio-dynamic farming, micro-enterprises, NGOs for short food-supply chain and slow-food activists. All these actors together form a functional emedding environment.
- Example 17 : **Economic breeding Index (IR), Pg.30, D1.3:** In order to embed the EBI, Teagasc's advisory service has incorporated EBI targets into its advisory programme as key performance indicators and employed a wide variety of extension methodologies to promote EBI.

Based on this analysis we identify the following roles of actors towards stimulating and enhancing innovation processes guided by the respective phases of the Spiral of initiative (Figure 3):

a. **Initial idea phase:** At this phase, actors get a new idea because of a problem or an opportunity. The ISS identify the actors (pioneers and others) and new ideas (to think outside the box) and to provide support to articulate ideas and actors (demand articulation). Such an issue can be addressed within a large organization or with several organizations.
b. **Inspiration phase:** At this phase, others become inspired and form a network around the initiative. The ISS support key actors and strengthen emergent networks.
c. **Planning phase:** At this phase, initiators formulate plans for action, and they negotiate space for experiments: The ISS connect people who need to work together and access key resources and fine-tune advisory services.
d. **Development phase:** This is the phase of experimentation to develop new practices and to collect evidence. The ISS provide knowledge and Technology transfer, Advice and back stopping and then networking and access to resources.
e. **Realization phase**: The innovation here goes into implementation at full scale. The ISS formalize networks, document learning from the previous phases and increase support intensity towards connecting with new networks and better dissemination strategies in order to start scaling the innovation.
f. **Dissemination phase.** This is the phase where effective new practices are being picked up by others. During this phase more "standardised" (transfer) services are needed mainly directed to farmers. Documenting and learning is key as well.

[2] Certificate for European Consultants in Rural Areas
[3] European Forum For Agricultural and Rural Advisory Services

g. **Embedding phase.** As the last phase in the process, the new practice becomes widely accepted. What matters is new rules, laws, subsidies, taxes, etc. to mainstream the innovation.

4.2.1 Summary conclusion on role of support services and phases of innovation process

Our analysis confirms that ISS vary depending on the innovation phases. The above findings confirm that during the first phases, the actors' willing to support innovation needs to provide space and resources for key actors to innovate. During these phases it is difficult to use the classical definition of services such as the one defined by Labarthe et al. (2013) who emphasize two key characteristics of service provision: (1) the joint involvement of the providers and the beneficiaries of the service in the production through "interactions" or "coproduction processes"; (2) the fact that the service is targeted at an entity transformed by the interaction and belonging to the beneficiaries of the service. We realised that instead, it would be more appropriate to use the term "support activities to innovation".

During the final phases of the innovation process, the service provision is more standardized and many services are oriented to farmers. During these phases the classical definition of services (
Table **1**) is more appropriate.

The "Networking, facilitation and brokerage' function is identified as crucial across all phases of the innovation process. However, different forms of networking are required at different phases involving different actors and for different purposes. For instance:

- During the first phases, there is a need to support informal and flexible networks to support a warm process.
- During the last phases there is a need to support more formalized networks to design and enforce new arrangements, to monitor and assess the innovation process towards wider dissemination channels and embedding.

However, our analysis of the case studies shows that the ISS remain case specific and no 'silver bullet' can be provided to support innovation in agriculture. Birner et al. (2009) describe such a situation with the expression "from best practice to best-fit" when analysing extension and advisory services to provide recommendations to improve them.

It was noted that while the listed standard providers (public, private, FBOS, NGOs, and other third sector organisations) do formally support innovation processes and are well recognised as service institutions, there are some individual actors who do not feature in the above list of providers captured in the generic support activities (Table 1). Such actors although often invisible, and less recognised (in most cases) play important roles in the support for innovation processes (e.g. informal support from family members, friends, allies etc), especially at the early stages.

4.3 Tracing role of personality traits for innovators at forefront of innovation process

According to Patterson et al. (2009) personality factor plays an important role in understanding and explaining innovator's behaviour. Magnavita (2002) defines personality as "an individual's habitual way of thinking, feeling, perceiving and reacting to the world". In the framework of the AgriSpin project the habitual ways of innovators are explored through post-innovation reports with a focus on identifying what need, desire or other kind of impulses mobilized the innovators and their actions at various situations during the innovation processes.

Certain personality characteristics can be highlighted in this category: curiosity, the propensity for exploration and openness, the ability of setting clear targets, planning, taking initiatives (leadership) and proceeding step-by-step, the ability to take risks and above all a passionate willingness to defend and implement the innovative idea, are present in almost all innovations initiated by individuals. Gregariousness, assertiveness, trust, cooperativeness, alertness for digging out solutions, feeling responsible for community, including sociocultural, economic and environmental aspects and emotional stability were also identified. Some of these innovations had a random start and emerged though discussions among friends.

In the case of ASYST (Greece), for example, the question “What kind of plant is stevia?” that George Koulossoussas, a crop farmer in Karditsa, who had recently heard about stevia, addressed to his friend - a pensioner and former director in a tobacco company, triggered the innovation process. His curiosity turned into a clear interest and, after the creation of a warm network of stakeholders, the decision to explore the opportunity of replacing traditional but no longer profitable plantations with stevia was put into practice.

Rens Kuijten, a feed advisor in the Netherlands, on the other hand, had already done a lot of research at professional level, presenting the same exploratory attitude, before traveling in Peru to expand his knowledge on quinoa. He was convinced that this plant could make a difference in the dairy sector by replacing corn and soy as animal fodder. However, in Peru he explored quinoa’s role in the local communities’ diet and decided to introduce it in the Netherlands as an alternative to animal protein in the human diet. His openness to new experiences allowed him to reorient himself and change his initial idea, exhibiting simultaneously alertness to new opportunities and flexibility to adapt his plans according to the latest developments.

Exploration is a skill and an activity but also an intention and a state of mind (De Haan, 2006) and this state of mind is exactly what describes John Galatoulas’s openness to new experiences, which made possible the innovation of the New Generation Cooperative (NGC) Efkarpon (Greece). John, while traveling abroad, tasted superfoods and decided to learn more about their properties. Subsequently, a plan was formulated in his mind to combine two innovations, the cultivation of superfoods with the establishment of NGC in the area. Therefore, a set of personality traits, including openness and the abilities of setting clear targets and taking the initiative, which are fundamental in leadership, brings the case to its initiation. Moreover, John has always strongly believed in NGCs as a tool for rural development in Greece and he has devoted a lot of effort, as an agronomist himself, to encouraging such initiatives. Passionate believers - like John - and passionate innovators who turned their hobbies into innovations – like Jacob van den Borne’s in the case of precision farming (Netherlands)- compose a pattern for innovations. Nevertheless, this is not confirmed in all cases.
Furthermore, John’s strong belief in NGCs is connected with a sense of social responsibility that innovators often present, which emphasizes the social dimension of innovation and its largely accepted impact in the development of societies (Yesil and Sozbilir 2013). Other examples of social responsibility on the part of individual innovators come from the cases of ASYST and the Advisory Board in Greece and Belgium respectively that concerns the refusal by some actors to be paid for their services within the innovation processes. The innovators’ ability to stay connected with the societal needs and their responsiveness to them indicate the way they perceive their role as individuals in the social web and their values, pointing out the moral basis of their initiatives.

The moral dimension of innovators’ personality has been expressed in several ways during innovation processes, concerning innovators acting either individually and /or at the level of support service organizations. Dutifulness and the feeling of being responsible for community wellbeing, social coherence, and the preservation of the natural resources and cultural heritage prevailed in certain innovators. Excellent examples of the ethical dimension of innovators’ personalities emerged in the cases of ORTI Etici, IMvito and Florridia from Tuscany Region but also inGreece (ESEK), in Denmark (mini wetlands) and in Romania (Fruleco).

The pattern of innovators combining social responsibility, clear vision for the future and persistence and stamina in continuing their efforts is present in the Greek innovations, though not only in them. The cooperative character of the efforts undertaken, on one hand, and the tight financial conditions on the other hand, made such initiatives increasingly complex and difficult (given the bad reputation of coops in Greece and the financial crisis). This has been especially true for the case of Psyhanthos, whose members insist on active participation and equal engagement in duties, thus building their cooperation on an ethical basis.

Moreover, a crucial personality trait of innovators is their decisiveness and passion to succeed, which seems to enable them to take risks. There are examples –the Sustainable Supply Chain Pork (KDV; The Netherlands) is one of them, in which innovators do not regret the routes they followed during the innovation process, even though they often had to deal with great disappointments or failures. A comment from Spain (ITERA case) emphasizes "how happy [the innovator] was with the decision despite the ups and downs ... 'best decision I ever made' [he said]". This attitude, however, is not the result of an overwhelming behaviour but rather a tendency to accept difficulties as lessons and assimilate them in a learning process towards success. But what gives individual innovators the strength to deal with failures and uncertainty? For Hans Verhoeven in the above-mentioned example, it was the trust and friendship with his associate in business that made him stand up after bankruptcy. In the case of Dutch Quinoa, Rens Kuijten drew energy from his family to take the decision to abandon his job and chase his dream. The support from family and close friends and associates seems to be a key factor for innovators' emotional stability, which is connected with their ability to build stable relationships.

This ability is of particular significance in innovators' interplay with advisors and support service providers because it enables the development of trust between them and the establishment of open communication channels, which makes need expression possible and discussions for searching for solutions meaningful. Therefore, emotional stability and ability to build relationships of trust are basic personality traits that are preconditions for good cooperation among actors in the course of innovation processes. The cases of ASYST, ITERA and the Sustainable Supply Chain Pork (KDV) present - among others- good examples of such qualities.

4.4 Innovation support service and types of innovations

Our findings reveal that ISS vary according to the types of innovations. This is an addition to the above outcomes which relates ISS and the phases of an innovation. As highlighted in the conceptual background, we started with a first differentiation of innovations according to:

a) the business related dimension (product innovations, process innovation, marketing and organisational innovations) (Inventta, 2015),
b) the institutional dimension (hardware related innovations, software related innovations, orgware related innovations (Leeuwis and Arts, 2011) and
c) the Henderson – Clarke Model (radical innovations, incremental innovations (WordPress 2015).

Using the above differentiation (a-c) for the AgriSpin innovation cases to designate the most dominant of these three dimensions, we see a huge diversity of innovation cases in terms of whether the identification of fundamental or stepwise change (23 to 34 cases), a change in the social system (i.e. orgware, 20), changes of technological character (i.e. hardware, 21 cases) or of learning and applying new knowledge (software, 16 cases) is predominant (Table 8). The third category of innovation type was only roughly explored and couldn't be used for systematisation in the current context for time reasons.

The classification below (Table 8) can be very useful for practitioners in an exploratory approach to the diversity of the cases. For example, radical innovation may require a more diverse range of ISS and especially institutional support while incremental innovation may require more specific or specialized ISS.

The **dominant component** of the innovation process may orientate towards specific ISS (e.g technology transfer for hardware, networking and facilitation ISS for orgware, Institutional support for software). Nevertheless, we acknowledge the position of Leeuwis and Arts (2011) who states that at each point in time, a single innovation process embodies the 3 dimensions listed. We, however, argue that certainly one of the components always exhibits some degree of dominance. This might be at a particular phase of the innovation or for the entire innovation process. A particular form of

ISS at each point will, therefore, align with the need of the set innovation or phase of the innovation following the corresponding dominant dimension. For instance, an innovation may exhibit dominance in the hardware dimension at the implementation phase (hence attracts support with Knowledge and technology transfer), then later at the realisation and dissemination phase, it might exhibit dominance in either the orgware dimension (attracting network facilitation and brokerage support) or the software dimension (attracting institutional support for niche innovation and scaling).

Table 8: Characterisation of explored innovation cases

Degree of novelty	Dominant component*	Dominant results	Innovations	Total
Radical (23)	Orgware	Organisation, process	RITA (F), ASYST, EFKARPON (GR), Oberfeld Farm (DE), Kirkkokallio Farm (FI), Karabeleko (SP), Quinoa (NL), Precis Agric (NL), Fruleco (RO) (9)	9
	Hardware	Product, process	Retro wheat (IT-T), Citr green (F), GEOPOS (SP), ESEK (GR), Vencomatic (NL), Saffraan (BE), Sheepfold (RO)	7
	Software	Process (Training, Social Learning)	ENTRA, CECRA, AHA, Training Young Prof (DE), Bio district (IT-C), ORTI (IT-T), Belgicactus (BE)	7
Incremental (34)	Orgware	Product, process Learning Organis., process	Vair Varkens (NL), ITERA_aa (SP), Teamwork for advisors, Busin inc (LT), Young Busin, Visri (RO), Pig Innovation Centre, sustain. Sup. Chain (NL), De Polle I & II (BE), Keisala Farm (FI)	11
	Hardware	Product, marketing process	Kemi Check, Swap pen, Mini Wetland (DK), Yams, APILOG (F), Physan. (GR), Tenuta Vannulo (IT-C), EBI, Greenacres, RFP (IE), MS Schippers (NL), San Aro (IT-T), Eerola Farm, Tikka Farm (FI)	14
	Software	Product, process	SOP_LEAN (DK), Farm, Youth entrepreneurs (LT), Seedcapital (SP), Felice Maio, Study centre (IT-C), IMViTo, FORMA NOVA, POL-TP (IT-T)	9

* We acknowledge that there is almost always a combination of all three components

The **type of innovation** also may shape the type of ISS intervention. For example, an innovation based on a new product (e.g GEOPOS case (SP)) may require mostly technology, knowledge and marketing support, while an innovation based on a new way to transform and sell a product (e.g The Belgian Saffraan case (BE)) may require strong support on marketing and demand articulation.
Innovations in form of **farming practice** such as organic agriculture innovation (e.g Felice Maio and, Tenuta Vannulo case (IT-C)) will require specific ISS compared to conventional agriculture, since technical changes are important and organic markets are not fully structured and demand articulation is necessary. For such innovations, support in the form of network and facilitation, including market demand and articulation targeting territorial, national and international markets for its products will be important.

The **scale of the innovation** process will involve different kinds of stakeholders and objectives and is then strongly related to the type of ISS required. Farm-scale innovation may require stronger technology support (e.g. Feeding Wall case (FI)) while value-chain and territorial development innovations (e.g. Bio district case, (IT-C), and Kirkkokallio case (FI)) may require more networking and facilitation as well as marketing and demand articulation as both covers a wider territory and or value chain levels with a range of heterogeneous actors involved.

The **main actors** who drive the innovation also influence the type of ISS required according to their objectives, skills, knowledge and area of activities. Farmer-driven innovations (e.g. The Netherlands cases (NL)) may need support in area where such actors have less knowledge or skills like marketing or access to specific resources. Public sector driven innovation (e.g. Case of Tuscany region) may directly drive the institutional and network dimension but requires support on technology and capacity building.

In addition to the above differentiation, following the joint learning experience in AgriSpin, we agreed on a second way to highlight important points regarding the innovation process according to the dominant component and issue driving the innovations e.g. a) technologically orientated innovation, b) value chain and territorial innovations, c) support-oriented innovations, d) local community-driven innovations and, e) crisis-driven innovations (Annex 2). Similar to the first classification (Table 8), boundaries of such a subjective grouping must be seen from a loose perspective as in reality, features of innovations in one group may strongly overlap with those of other groups. In this way, whether or not an innovation features in a specific group is determined mostly by the dominant feature of that innovation. This in no way dismisses the fact that it takes features of all the boxes to form a single innovation. Our understanding is that this simple grouping, though not scientifically grounded conceptually, may be relevant and easily identifiable amongst the practice community, for practical purposes. Following this grouping, we argue that support activities may possibly align with the various groupings of innovations according to their dominant features. For a more detailed explanation, we further highlight the various groupings and complement it with practical examples from the AgriSpin innovation cases and support situations as follows:

Technological oriented innovations

Technology oriented innovations in most cases are seen to be those that require physical space for experimentation. A majority of them are involved in farm-level research and deal with the collaboration between farmers and researchers. For such innovations, support services which help to bridge the gap between research and farmers are very useful. Most frequent support functions for such innovations are in form of knowledge and technology transfer, network building, facilitation and brokerage. Examples in the AgriSpin cases include amongst others, most of the Spanish (SP) cases e.g Geopos, Seedcapital; most of the Danish (DK) cases e.g Mini-Wetlands, SWAP PEN, Chemicheck APP; and most of the Netherland cases e.g The Dutch Quinoa, Precision farming.

Support oriented innovations

These are innovative approaches or methods used in the course of supporting innovation processes. Innovations in this category are mostly provider driven with a strong need for marketing their services. Those involved here are the support providing institutions who design innovative ways to execute their functions. Targets of support in such cases could be towards improving extension systems and better working methods for service providing organisations.

A specific form of support in this case can be seen in the training of trainers targeted mostly towards improving the soft skills of advisers. Highlighted examples of innovations in AgriSpin for this category include: most of the Belgian cases e.g. Agro-coach, Advisory Board, Food Innovation Academy; and some of the cases for Denmark e.g. The SOP and LEAN innovation case. In addition, most of the German cases (e.g. the CECRA Certificate training, The Andreas Hermes Akademie, ENTRA) all involving soft skills training, fall in this category.

Value chain and territorial nature innovations

These covers those innovations which spread along the value chain with a strong need for collaboration amongst the different components or levels. Agricultural innovations addressing issues ranging from farm to fork fall in this category. In such settings, the role of a free actor or broker is seen to be very useful in linking the different levels from production to the market. Those services or those of other service providers involved focus mostly on enhancing collaboration within the value chain or at territorial levels. Networks and facilitation, organisational support on how to best manage the different value chain linkages, especially the marketing component is very important. Examples to cite in the AgriSpin cases include the Diskrikempen case in Belgium (logistic innovation), the Kirkkolkallio case in Finland (Agro-ecological concept), and the Biodistrict case in Campania, to name just a few. In this case the structure of collaboration is not the value chain but the territorial resource with the specificities of local and cultural value

Local/community driven innovations

Innovations in this category are closely linked to the demand of a local community. This is often purposely driven by the need to uphold or protect cultural heritage, or practices within a particular region. Such innovations are often linked with a long term practice which people have internalised and have embedded in their day to day lives e.g. types of agricultural practices such as – organic, conventional or social farming. Such practices are often closely linked to the norms of the people and are jealously protected amongst a particular community. Support services towards such innovations are linked to improving collaboration amongst the stakeholders of the community. Services in the form of networks and facilitation, marketing demand articulation, support for niche innovations and scaling are common for such innovations. Examples to cite in AgriSpin cases include amongst others, the Karabeleco case (SP), The Tenuta Vannulo Organic farm case (NL), the Felice Maio Organic farm case (IT-C).

Crisis driven innovations

Unlike local or community driven innovations, crisis driven innovations are often policy genrated in nature. After political, environmental, or economic crisis, changes and or measures are usually proposed either to mitigate against the crisis or to adapt to the crisis situation. Such measures are either directly passed down by government for people to adopt in the form of innovations, or people by learning to cope with such crisis start to innovate. Support services for such innovations are mostly in the form of creating the enabling environment by e.g. assisting in tax reductions, subsidies or training of innovators (i.e. knowledge and technology transfer) on how to cope with such situations. Fitting examples from AgriSpin with accompanying support measures include amongst others, e.g. The Mini Wetland case (DK) which is driven by environmental legislation on the use of chemicals and where most of the support received is in form of knowledge and technology transfer (from Universities) and in form of network facilitation and brokerage (from SEGES). Still in Denmark, other examples include the SWAP pen case which developed as a result of pressure from animal welfare services.

- *for more practical examples following the classification above drawn from AgriSpin innovation cases - see Annex 2 and,*
- *for brief descriptions of each of the mentioned examples - see a publicly available document D1.3 (Ndah et al. 2016b) and,*
- *for a detail overview of all support activities for all AgriSpin studied innovation cases – see Annex 2 and overview results tables (on request from authors of this report).*

Outlook on support services and types of innovations - proposed typology

While the above classification (Table 8), highlighting important points on innovations (type of innovations) and relating with ISS is especially useful for practical purposes (i.e. for a quick identification of linking ISS with corresponding innovations), from a self-reflection position, we conclude that for scientific purposes, there is a need to go deeper and beyond the above relationships. For future scientific purposes (given improved data and time conditions) and as a scientific recommendation from our work, we suggest a much deeper analysis focusing on a few indicators that better address the complexity and dynamics of innovation. Based first on the assumption that the intensity of the desired or expected change to design and enhance the innovation process is based on the most dominant dimension and second, on the idea that an innovation is “socio-technical”, we propose a future analytical frame based on the identification of two main variables across the cases as follows:

- *the level of technological change required to enhance the innovation process (at farm level, value chain level, territory level).*
- *the level of changes for new collaboration among actors which can be low, medium or high.*

Table 9: Proposed matrix for analysis of relations between ISS and types of innovations.

Level of technological change required and scale / level of change for new collaboration among actors	Low			Medium			High		
	Farm level	Value chain level	Territory level	Farm level	Value chain level	Territory level	Farm level	Value chain level	Territory level
Low									
Medium									
High									

This is required to both create a common vision or common objectives among stakeholders and to generate new arrangements to produce knowledge, mobilise resources and finally achieve the collective objectives. A linking of the innovation cases with these two variables, could lead to four groups of innovations with distinctive characteristics, and which attract corresponding ISS as follows:

Group A: innovations with a high level of technological change and low level of coordination among stakeholders. Here, ISS may be focused on technology transfer, advisory and consultancy. Such innovations are more likely to occur at farm level or among small processors with a secured access to market.

Group B: innovations with a low level of technological change and a high level of coordination among stakeholders. Here, ISS may emphasise demand articulation, networking and learning regarding new marketing practices (new value chain) of existing products.

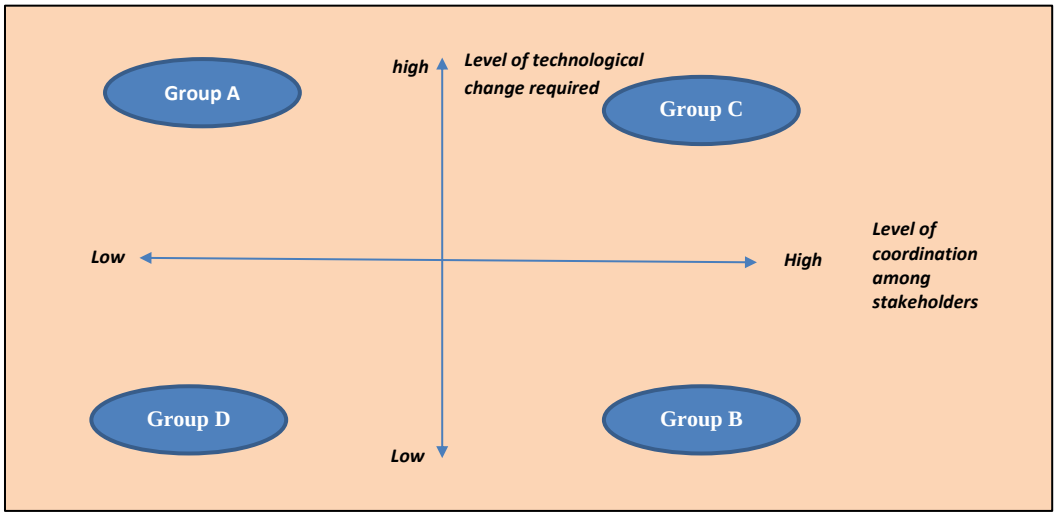

Figure 6: Propose typology of case studies depending on technological change and coordination

Group C: innovations with both high levels of technological change and of coordination among stakeholders. For this group, ISS will be focused on technological transfer, networking and articulating demand. Such innovations are really challenging and are more likely to be radical rather than incremental.

Group D: innovation with both low level of technological change and coordination among stakeholders. For this group, ISS will be focused on access to specific resources, advisory and

consultancy. The ISS here will largely relate to advisory services and consultancy at farm level. There is no need for coordination among farmers..

4.5 Innovation support services and types of providers

The explored range of ISS is very broad as it encompasses the classical advisory services (e.g. knowledge transfer, advisory and consultancy services), the more specific innovation intermediaries' services (e.g. facilitation, networking) and services related to the business sector (e.g. access to resources, institutional support). Thus, we raise the question whether there are specific sets of ISS according to the various service providers or, in other words, whether service providers differ characteristically in their ISS offering? There may be many reasons for such differences. Based on the literature (Birner et al. 2009, Faure et al. 2011, Faure et al. 2012, Faure et al. 2013, Beers and Geerling-Eiff 2014, Kelly 2013) we can characterize the ISS by using a framework putting the emphasis on four components:

- The governance mechanisms which orient the service: This includes their mandates oriented by the public/ private/ hybrid nature of the service provider and their role in the AKIS system.
- The funding mechanisms: This includes the financial resources of the service provider and the mechanisms to fund the service (who pays what? for whom?),
- The capacities of service providers (both extension agents and managers): This includes the skills they are able to mobilize and present in their working routine,
- The methods for providing services: This demonstrates their accumulative knowledge and experiences in dealing with the challenges in the field.

For example:

a. Farmer-based organisations have a specific profile and or patterns of innovation support services due to their 'client-based, client-controlled' organisation (Nagel 1997)
b. Public service providers of a permanent nature have specific goal orientations, target groups and/or service specialisations due to societal influences and long-term continuity.
c. Organisations of mixed, non-governmental and/or project-based character have to cope with specific challenges due to uncertain funding conditions or can especially profit from the flexibility they derive from their less formalised organisational state.

Across the different case studies, we had closer insights into service providers and learned about their more or less specific ISS. From these experiences, we propose to conceive and further explore the following charactistic tpyes:

- **public bodies**, that are explicitly **responsible for all or almost all, ISS** offered to the agricultural sector. One example is Teagasc in Ireland, whose broad mandate includes extension, research, education and public authority tasks. This organisation not only offers many kinds of support to farmers but also enhances the organisation's internal innovation processes (we call it 'internal services') by encouraging the development of innovative ideas and offering capacity development activities to its staff. Such activities are likely to occur when an organization is large and the complexity of different services implies a need to coordinate the actions within the organisation.
- **Public bodies with a restricted responsibility for ISS** and/or limited budget resources such as Tuscany Region (Italy), orthe Basque Region (Spain). These providers according to their mandate focus their activities on a selection of ISS (e.g. advisory or networking activities) rather than offering the complete range. Their 'success' in supporting farmers' innovations strongly depends on whether they manage to connect with other service providers and especially those with other mandates (e.g. from the private sector).
- **Farmer-based organisations** who have to serve the multiple and 'whole-farm' needs of their clients tend to **increase** the range of **ISS through networking with other providers** in the AKIS. The most prominent example in this regard that we visited was the Dutch ZLTO. Their cases

usually implied ISS from public, private and third-sector organisations in various combined forms. The Danish SEGES and related service providers fall in the same category. It provides a broad range of support services, ranging from network fasciliation and brokerage, to capacity building and knowledge transfer all from FBO's, private, public, NGOs and third sector organisations as well. In a slightly different way, the Belgian Innovatiepunt (ISP) introduced 'multi-actor' forms of providing knowledge and advice to farmers into their methodological repertoire. This ranged from facilitating the formation of independent advisory bodies (e.g Advisory board case), to an active involvment in training and couching programmes (Agrocoach) and to facilitated guided tours (e.g food innovation Akademie case).

A second point is that obviously size matters with regard to the providers capacities for services or supports to innovation process:

- We observed ISS within the same organizations, and call them 'internal services'. An example is again derived from evidence from Ireland. Some Teagasc' actors were supporting other Teagasc' actors in terms of capacity building, or the organisation was encouraging innovative attitudes and behaviour through an internal call for innovative projects, for example.
- We observed ISS between organizations/actors that are part of the innovation process. The providers need to establish strong relationships with the beneficiairies of their services to adapt their services to the needs or to co-design the services. We call them, 'co-designed services' . Demand articulation, networking facilitation, capacity building are largely internal services. Advisory services could also be internal services.
- We observed ISS by actors which are not fully part of the innovation process or at least they do not need to establish strong relationships with the beneficiairies of their services. They mainly provide service on a "spot basis". We talk about 'external services'. There are some examples in our case studies (see private consultants in the case of Ireland or in the Flanders cases). Such services are related to consultancy, access to resources and institutional support for niche innovation and scaling mechanisms stimulation.

All support providers act individually or collectively at different stages of the innovation process and thus, they also interact in various ways: cooperation, competition or coopetition. We know that agricultural innovation and problem solving takes place in an increasing pluralistic institutional environment (see next section). Thus, the capacities of the ISS providers to form and maintain networks with practitioners with complementary skills to support innovations at the territorial or value chain scale is critical for successful innovation diffusion and for their long-term survival (See for example, Bio district network – Campania (Italy) and the Katilu network – Basque region (Spain). However, the articulation of services and alignment of ISS with farmers' demands remain a challenge. Based on a case study in Kenya, Kilelu, Klerkx, and Leeuwis (2014) show that because learning in an agricultural innovation process is dynamic, static articulation of demand and supply of ISS is ineffective.

Regarding the articulation of services we came across two situations:

- cases with "fragmented" service provision with a strong need for coordination between service providers and other actors to fully support innovation (case of Tuscany). However, such situations provides space for emerging innovations if there are free actors (Wielinga 2009).
- cases with "concentrated" service provision which facilitates a strong coordination between service providers (e.g Danish cases, Netherlands cases). Many services are internally provided. However, there is a need to have more open space for innovative practices though with the risk of limited orientation towards improved farming practices (use of inputs, for example).

The coordination of the service providers'-network could be regulated by public policy or private initiatives. For example, the brokering function could be fulfilled by a specialized organization

dedicated to providing this type of service, a key organization interested in pushing forward the innovation process, different key organizations sharing this function or acting at different stages of the innovation process or an innovation platform with a dedicated facilitator. Again, the Katilu-network in the Basque region is a good example to cite. It serves as a virtual space where different support service providers converge and direct their focus on service provision according to various competencies and specialisation of the various member organisations.

4.6 Personality of support actors at the forefront of innovation processes

In the cases examined within the AgriSpin project, innovators share more or less a common set of personality qualities with advisors acting in the framework of their employer organizations/support services providers. The differentiation between them derives mainly from the additional personality traits that characterize advisors in the framework of their profession and perhaps the varying intensity of the common traits. Therefore, qualities such as openness to experience, alertness for solutions and risk taking, social responsibility and emotional stability are present in advisors, though apparently, they come to the play with less intensity. Advisors' additional personality traits concern empathy and awareness of the real-life conditions, responsiveness, communication skills and connectedness at all levels.

Empathy, awareness of reality (the state of being conscious) and responsiveness constitute a triptych of qualities that enables advisors' understanding of advisee wishes and feelings and the assessment of real life conditions, while engaging both in an open interplay of exploring opportunities for future change. The case of ITERA (Spain) is such an example of these qualities, as "the advisor was aware of the pressure on the farmer, he was prepared to listen and question without giving a solution, but was supportive of change in the direction of the business" (ITERA, a partner's reflection)". The triptych helps advisors presenting qualities such as responsiveness to farmers' requests, openness to ideas from all over the world, alertness for detecting possible solutions, flexibility and adaptability to real life conditions and farmers' framework.

The above-mentioned elements of the set of personality traits indicate advanced communication skills and connectedness. Good examples of communications at all levels -interpersonal, at organizational level, cross-organizational and cross-industrial - come from Denmark (SEGES) and Ireland (Teagasc) owing to their organizational structure and functions.

Advisors' personality factor cannot be observed independently from the respective organizations' objectives and organizational culture. These constitute fundamental elements that define individual advisors' frameworks and limit or expand opportunities for unfolding personal attitudes, skills and abilities. Seeking consensus among partners (SEGES, Denmark), establishing participatory procedures (ARSIA-Tuscany, ANKA-Greece, LKCE-Latvia) and expanding corporate social responsibility on environmental issues (SEGES- Denmark, Adept-Romania) do not only indicate advisors' orientation (and indirectly advisors' personality traits) but are elements at the core of providers' organizational culture.

In conclusion personality traits detected in the innovation cases examined in the AgriSpin project are connected with the Five Factor Model (Kumar 2010), according to which personality traits can be integrated in five personality dimensions as follows:

1. Openness to experience, which is related to intelligence and curiosity (McCrae, 1987).
2. Neuroticism, which is negatively related to emotional stability.
3. Extraversion, which emphasizes the need to relate and interact with others and the importance of communication and social networking skills.
4. Agreeableness, which involves developing pleasant and satisfying relationships
5. Conscientiousness, which reflects strong sense of purpose, dutifulness, obligation and persistence (Kumar & Bakhshi, 2010), while it is positively related to documentation of knowledge (Matzler et al., 2011; Patterson et al., 2009).

4.7 Innovation support services within enabling environment and wider AKIS

In the cases examined in the project, a distinction can be made between those cases where innovations were started by individuals initiative and cases where innovations were started and developed in the framework of one or more organizations. In all cases, both support service providers (employees or external partners of support organizations) and other actors (farmers, entrepreneurs) exhibited innovative behaviour to various degrees (e.g. the case of mini wetlands - Denmark). The distinction among the cases derives from the differences in the enabling environment and particularly the largely unstructured professional networks within which individual innovators had to function- at least at the initial stages of innovations - as compared with the innovations that started within organizations. Moreover, the interactions and unique relationships often developed between farmers and their advisors and support services providers, acting in the framework of their respective organization, brings to light additional innovative qualities of the actors at the core of the innovation processes.

Geel's (2002) multi-level perspective focuses on niche innovations and the innovation occuring in the main regime. Such a perspective shows that the ISS required are different depending on the environment of the innovation process. At the niche level, actors ask for space to innovate to address more radical innovation, access to knowledge based on networking activities with actors sharing the same vision and values and access to resources to experiment and learn. At the regime level, innovation is more incremental and actors need to identify the relevant service providers to access knowledge and technology within a stable environment. Hence, what the enabling environment is, similarly depends on an innovation's level of expression.

Enhancing **policies** can have a strong impact on the innovation processes but with the need for more open space for innovative practices. For instance, the cases of Denmark - especially the Mini Wetland case (triggered by environmental legislation on the use of agro-chemicals), the SWAP Pen case (triggered by pressure from the animal welfare groups on the need of better housing conditions for pigs) and, the Chemical check APP case (triggered by the EU legislaton on non use of illegal chemicals on farms). Policy changes in Ireland also created the space and possibility for the development of farm partnerships as a response to improving the age profile of the farming population and as young farmers are more innovative, the innovation profile of the sector.
In France, we noted that the **strong political** support to innovation networks given through the national level RITA program resulted from a political crisis and societal mistrust process.
In Spain, we observed how the **cultural and economic context** was conducive to the development and spread of innovations. This is reflected through the activities of the regional government whose main goal is towards enhancing what is called "the Basque identity", via the promotion of innovations for this region. (e.g the Karabeleco case through horticulture and social farming; where local vegetables typical of the Basque region are promoted). Other influences of the **cultural context** on innovation was observed in the cases of Campania (Italy), where the goal of protecting and enhancing the cultural heritage of the region led to a range of innovative practices (e.g the Internatinal Centre for mediterranean Diet, the Bio-District case etc).

A recent trend in the wider AKIS is increasing privatisation of service provision across the European community which results in fragmentation of service providers – especially because private organisations tend to be smaller (Kidd et al. 2000; Knierim et al. 2017). From these developments we assume that there will be rather more than less transparency for farmers where to get what kind of ISS and, 'one-stop-service-provision' will be rare. However, the Irish case provided an interesting example where Teagasc, the publically funded organisation, concentrates many of its support services towards activities with a public good impact while outsourcing other service activities, with more of a private good impact, to private agricultural consultant services. Equally, we noted that funding even from public sources is increasingly spent on projects and thus the long term stability of organisations is challenged. Clearly, communication, negotiation, networking and cooperation skills

of the various actors in the field are and increasingly will be of high importance for successful innovation processes in agriculture and rural areas.

5 Conclusions and key messages

With the main aim of examining the role of innovation support services on innovation processes, the research institutions within the AgriSpin project have adopted an action research approach in its data generation, collection and analysis process towards meeting this objective. This corresponds to the facts that (i) the project has the format of a 'coordination and support action' (CSA), i.e. a project with a relatively high share of action-oriented knowledge exchange, learning and coordinating activities, and (ii) among the project partners, there are a large number of non-academic AKIS stakeholders with a focus on concrete, practice-related outcomes. Based on the findings outlined above, the following key messages on the role of innovation support services on innovation process can be made:

ISS and phases of innovation process

⇒ At the early phases of innovation, it is more appropriate to use the term "support activities" to innovation rather than support services, as standardardised services do not fit well in these phases.

⇒ At the later phases of innovation process, the service provision is more standardised and many services are oriented to farmers. Such phases are more attractive for classical and established support service functions.

⇒ Most offered service functions for innovations are: 'network facilitation and brokerage', 'knowledge and technology transfer', 'advisory, consultancy and backstopping' and, 'access to resources'. Although we observe almost all kind of services across all innovation phases, there is a high concentration of all services in the development phase of innovation processes.

⇒ Though networking, facilitation and brokerage service functions are crucial across all phases of the innovation process, different forms of networking are required at different phases and involving different actors and for different purposes.

ISS and providers of services

⇒ While commonly known support providers (e.g. public, private, FBOS, NGOs, and other third sector organisations) do formally support innovation processes and are well recognised, there are individual actors who are often invisible and less recognised but play important roles in the process (e.g. informal role of family members, friends).

⇒ Support providers act individually or collectively at different stages of the innovation process, and thus, they also interact in various ways e.g. cooperation, competition or coopetition.

⇒ Capacities of the ISS providers to form and maintain networks with practitioners with complementary skills to support innovations at the territorial or value chain scale are decisive for the successful innovation diffusion and for their long-term survival.

ISS and types of innovations

⇒ ISS depend on the type of innovation in terms of the nature of the innovation and scale of the innovation. Additionally, in spite the need for further analysis here, the ISS strongly depends both on (i) the degree of technological changes at farm level, value chain level or territorial level and, (ii) the degree of coordination among actors, all needed to make the innovation happen.

Personality of innovators, support actors and innovation process

⇒ Responsiveness, empathy and awareness are support actors' main personality characteristics that link them with innovators, create conditions of social embeddedness and provide the breeding ground for trust to be developed.

⇒ The role of key innovators personalities throughout the innovation processes and especially at the early phases of the process is judged to be very important. Especially, traits such as the propensity for exploration and openness are preconditions for initiatives to spark and innovators search opportunity to light.

ISS, environment and AKIS setting

⇒ Service provision is dependent on the institutional context and especially on how fragmented or concentrated the AKIS is and such a configuration strongly influences the ISS in each country.

However, despite the above key messages, innovation support services remain a case specific issue and no 'silver bullet' can be provided to support innovation in agriculture. In this light, the articulation of services and alignment of innovation support services with farmers' demands remains a major challenge with need for further investigation. More so, clear communication, negotiation, networking and cooperation skills of the various actors in this field are, and increasingly will be of high importance for successful innovation processes.
Nevertheless, by classifying and highlighting important aspects of innovations, exposing important personality traits of both innovators and support actors, and relating these with ISS and providers of these services, we find this especially useful for practical purposes when it comes to the identification and alignment of services with corresponding innovative practices in agriculture and rural areas.

6 Acknowledgement

This report was elaborated with the funding of the EU horizon 2020 project AgriSpin under the Grant Agreement (GA) No 652642. We wish to acknowledge all AgriSpin partners who actively collaborated and contributed in the joint data generation, and collection process that has form the input for this report.

7 List of tables

8 List of figures

9 References

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10 Annex

10.1 Annex 1: Cross compared innovations support functions across phases of innovation process for AgriSpin cases.

	AgriSPIN innovation cases	Initial idea phase			Inspiration phase			Planning phase							Development phase					Realisation phase				Dissemination phase							Emmbedding phase		
NL	Case 1: Dutch Quinoa Group				2	6	1	2							7	5	3		2	6													
	Case 2: Sustainable supply chain pigs				2	3									6	6	3			2	3		4								2	7	4
	Case 3: Vair Varkenshuis	2			1										2	4	4	2	3	4	3												
	Case 4: Innovation in animal Husbandry																																
Brabant,	Case 5: Precision Agriculture				2	1									6	4	1	4		4	4		6								6	7	
	Case 6: National Innovation Centre for Pig Husbandry																																
	Case 7: Vencomatic – Roundel Egg																																
Flanders, BL	Case 08: Belgicactus – Agrocoach	1			1	5		5	2						6	2				1				6	1								
	Case 09: De Polle - Advisory Board	7			4			4							2					2				4							7		
	Case 10: De Polle – Distrikempen, logistic innovation	2			4			4							2					1				4									
	Case 11: Belgische Saffraan	5			4			4	5						4	5				4	5			4	5								
Basque, SP	Case 12: Seed capital	1			1										4	1	7							4									
	Case 13: Itera_aa				2	4	3	2	6						7	2	7	7		5													
	Case 14: GEOPOS cattle tracking device	1			1										7					4	3												
	Case 15: Karabeleko; Agro-ecological	4			6	7									6	2				2													
Aarhus, DK	Case 16: Chemical control app	1			3			6	3	3	6			6	1	1				4				4	1	3	1		6				
	Case 17: – SOP and LEAN	1						1	1						1					5				1	5	1	1			1	1		
	Case 18 – Mini Wetlands – Reducing the Leaking of Nitrogen	4	1		4										1	2	6			1				6	7								
	Case 19: SWAP Pen - Animal Welfare and Survival of the Piglets	4						4							1	4	1	1	6	4	3			1	4								
Guadelopue, FR	Case 20: Implementation of the RITA scheme				7			7	6						7	6	5			6	5			5									
	Case 21: The "Yam platform"														4	6				6													
	Case 22: The endeavour to fight Citrus greening	4			4			1	6	7					1	6	7																
	Case 23: Apiloc project							7							7	1	7			7	1			1									
IT	Case 24: IMViTo	3			4			6	4						1	1	2	2	6	5	2			1									
	Case25: Orti ETICI				4	6														6	4	5	1	4							4	2	7
	Case 26: Alternative Supply Chain for old wheat varieties																																
Tuscan,	Case 27: FORMA NOVA				4			6							1	2				3				3	1								
	Case 28: POL-TP	4			4			2	6						1					1				3									
	Case 29: SAN-ARO																																
GE	Case 30: Agricultural Stevia Cooperative	1	6		4	1	5	3							2	5	6	1		4													
Karditsa	Case 31: Energy Cooperative of Karditsa (ESEK)	3	6		3	7		2	6															4									
	Case 32: Agricultural Cooperative of Pulses and Food Items				3	2	4	6							5																		
	Case 33: Efkarpon-Hellenic Super foods	3			2	4		2							2	5																	
Höchst, DE	Case 34: "Entra"- Facilitated exchange	4			4			4												4				4	5	6	2	5	4				
	Case 35: CECRA: Certificate for European Consultants	4						4							4					4				4	5						4	5	
	Case 36: FIBL Training: Training young professionals	4	1	5				4	6											3	3												
	Case 37: AHA-Innovation training	4	1																	4	1	5		4	1								
	Case 38: Hofgut Oberfeld							2							4	6	4			6											4	4	1
Riga, Latvia	Case 39: Development of economic activities																																
	Case 40: Team work for farm advice																																
	Case 41: Youth entrepreneurship																																
	Case 42: The herbivorous project																																
Sinäjoki, FL	Case 43: Eerola Farm	1	2					1	6						2	7																	
	Case 44: Feed Wall System - Tikka Farm				1										2									4	1								
	Case 45: Kirkkokallio Agroecological Concept				4			4	2						6																		
	Case 46: Investment Support Team	2	4		2	4		2	4	7					2																		
Campania, IT	Case 47: Bio-districts	4	7	4				6	2											1	4	7		4	1								
	Case 48: Organic Farm	7						6	2						3					4	2												
	Case 49: Tenuta Vannulo														6									4	3	3					3		
	Case 50: The International Study Centre	1													1	4								5	6	6							
Transyl- RO	Case 51: SES Fruleco																																
	Case 52: Private innovative markets																																
	Case 53: Model Sheepfold																																
	Case 54: Milk Collection Points (MCPs)																																
Oak Park, IL	Case 55: Economic Breeding Index (EBI)	1			4			7							7	1				1	1	5		1	5	6	7			7	7	4
	Case 56: Greenacres Joint Programme				3			4							4	1	6	5		1	5	5		1									
	Case 57: Registered Farm Partnership (RFP)				1	5		4	2	4	4	6	3	2	3					2				6									

Key

Knowledge and technology transfer	1
Advisory, consultancy and backstopping	2
Marketing and demand articulation	3
Networking facilitation and brokerage	4
Capacity building	5
Access to resources	6
Institutional support for niche innovation and scaling mechanisms	7
Insuffiecient data on support servics	

10.3 Annex 2: Grouping of AgriSpin innovations according to nature and issue driving the innovations

TECHNOLOGICAL ORIENTED INNOVATIONS

Precision farming Jacob van den Borne (NL)	**Dutch Quinoa** (NL)	**Seedcapital** Use of oil seeds to reduce emissions (SP)
GEOPOS Livestock geo-localisation (SP)	**SWAP PEN** (DK)	**Mini wetlands** Agroecological concept (DK)
Chemical control app (DK)	**Citrus Greening** RITA (F)	**The yam platform** RITA (F)
APILOC Association of beekeepers (F)	**Formanova** Cooperative for cheese production (IT)	**Floriddia** Alternative wheat varieties (IT)
Feeding wall Tikka farm (FIN)	**Biosampo** Eerola farm (FIN)	**Kirkkolkallio** Agroecological concept (FIN)

VAULE CHAIN AND TERRITORIAL INNOVATIONS

Precision farming Jacob van den Borne (NL)	**Sustainable supply chain pigs** Hans Verhoeven (NL	**DistriKempen** Logistic innovation (B)
The yam platform RITA (F)	**APILOC** Association of beekeepers (F)	**Formanova** Cooperative for cheese production (IT)
Floriddia Alternative wheat varieties (IT)	**Psyhanthos** Production and trade network of pulses (GR)	**ASYST** Agricultural Stevia Cooperative (GR)
ESEK Energy cooperation (GR)	**EFKARPON** Hellenic Super Foods ANKA (GR)	**Kirkkolkallio** Agroecological concept (FIN)
Biodistrict Campania (IT)		

SUPPORT ORIENTED INNOVATION

Advisory board Goat farm de Polle (B)	**AgroCoach** Belgicactus (B)	**Food Innovation Academy Tour** Belgium Saffraan (B)
ITERA_AA Advisory and Assessment (SP)	**RITA** Implementation of network program (F)	**Andreas Hermes Akademie** (DE)
SOP and LEAN Labour organisation (DK)	**Orti Etici** Social Farming (IT)	**CECRA** Certification for rural advisors (DE)
ENTRA Network managers of advisory services (DE)	**FiBL** Training for the job in organic sector (DE)	**Investment support team** Keisala farm (FIN)

LOCAL/COMMUNITY DRIVEN FARMING

Karableco Agroecological and psycho-social farming (SP)	**Hofgut Oberfeld** (DE)
Orti Etici Social Farming (IT)	**Tenuta Vannulo** Organic farm and dairy (IT)
Felice Maio Organic farm Anna dei Sapori (IT)	**Ses Fruleco** Community processing and marketing scheme (ROM)
Holistic guesthouse Casa de pe Deal (ROM)	

CRISIS GENERATED INNOVATIONS

Mini wetlands Agroecological concept (DK)	**SWAP pen** (DK)
Citrus Greening RITA (F)	**Teamwork for advice** Financial crisis (LV)
The yam platform RITA (F)	**Biosampo** Eerola farm (FIN)
Farm succession case (IRL)	