AIOTI
Alliance for Internet of Things Innovation

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Business models for Digital Innovation Hubs in the agriculture and food domain

Survey results

AIOTI WG06 – Smart Farming and Food Security

4 October 2018

Introduction

The Working Group of AIOTI (https://aioti.eu/) in smart farming and food security has conducted a survey to get insights about the funding aspects of the activities developed by Digital Innovation Hubs in the agriculture and food domain.

AIOTI WG06 published a white paper[1] on Digital Digital Innovation Hubs (DIH) for agriculture. Agriculture DIHs[2] are instruments conceived to support businesses, notably SMEs, farmers, agri-cooperatives and non-tech industries, in their digital transformation. Indeed, DIHs have the potential to play an important role in the democratisation of IoT and digital technologies in the European agri-food domain, but they will require significant investments from the regions and Member States, and strong coordination efforts to maximise their positive impact.

One of the points which is essential to the rollout and long-term success of agriculture DIHs is the definition of a proper business model (combining both public and private funding) which is both convenient to the DIH beneficiaries and well suited to the catalog of services offered by the DIH.

The purpose of the conducted survey is to get more insight on this topic directly from the (potential) beneficiaries and promoters of agri-DIH initiatives in Europe.

[1] https://aioti.eu/wp-content/uploads/2017/11/AIOTI_WG06_ADIHS_final.pdf
[2] https://ec.europa.eu/eip/agriculture/en/event/eip-agri-seminar-digital-innovation-hubs

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1. Responders of this survey

53 answers were received, comprising two types of responders, as illustrated in Figure 1:

> **Type 1**: entities who are either participating already in an agri-food DIH initiative or are potential participants.
>
> **Type 2**: promoters or managers of Digital Innovation Hubs in the field of smart farming and/or food technologies, for which the use of digital technologies is a core component.

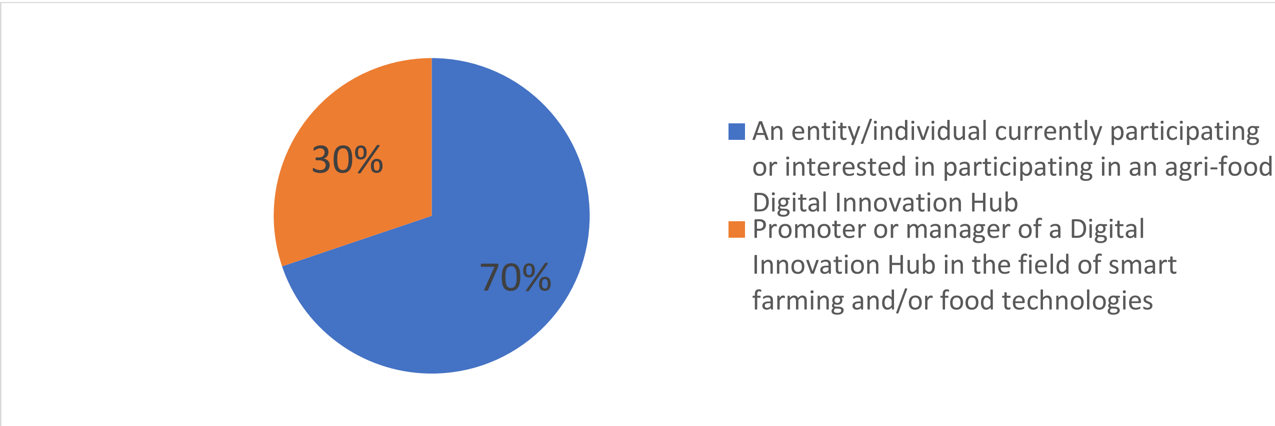

Figure 1: type of responders

Among Type 2, we distinguish those which are already providing services from those yet in a preparatory phase. Most of them declare to be fully operational at the time of providing the answers.

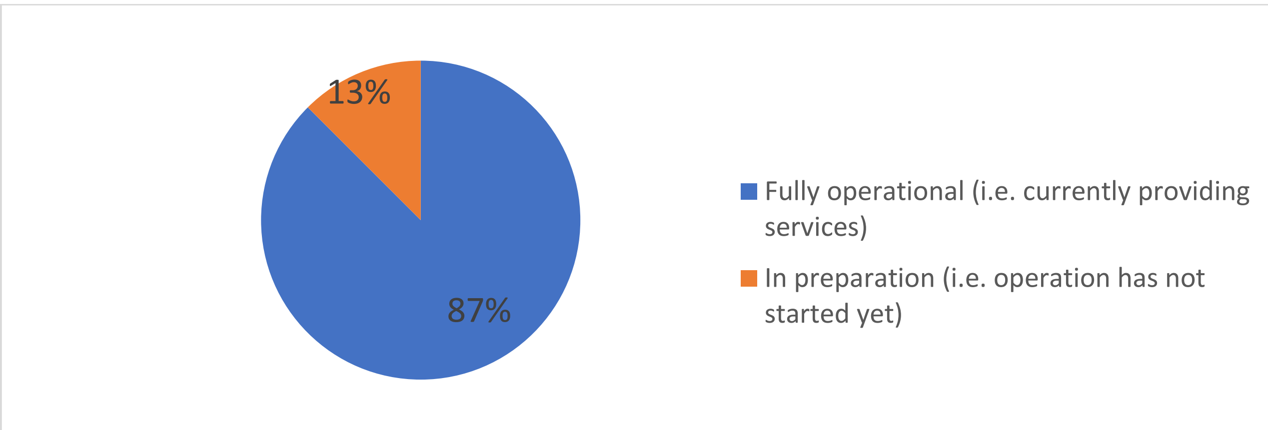

Figure 2: current operational status of the DIHs participating in the survey

The role of Type 1 entities comprises both consumers and providers of services. As can be seen in Figure 3, the majority of Type 1 responders are service providers.

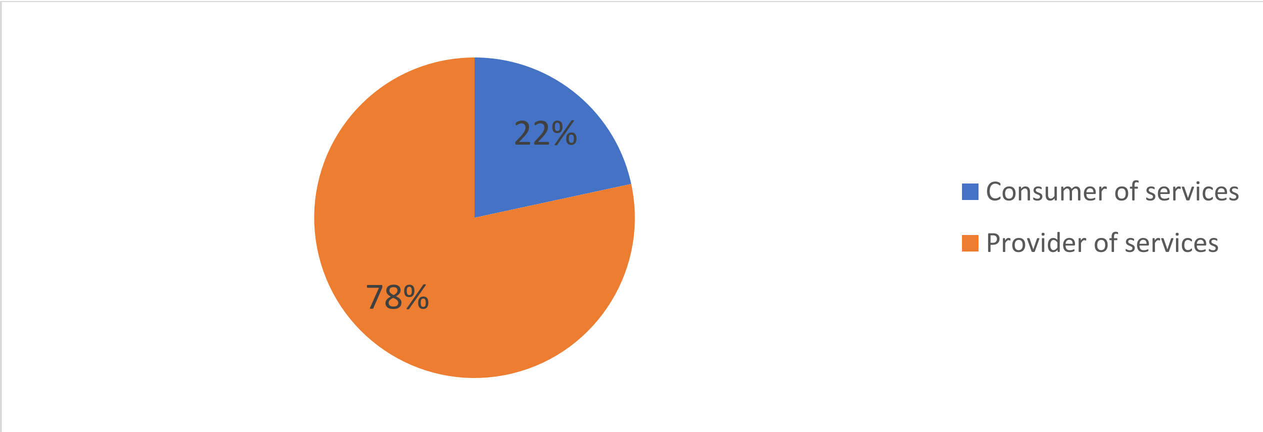

Figure 3: role of the entities participating in the DIH

Figure 4 illustrates the diversity of Type 1 responders, with a clear majority of competence centers, i.e. universities and RTOs.

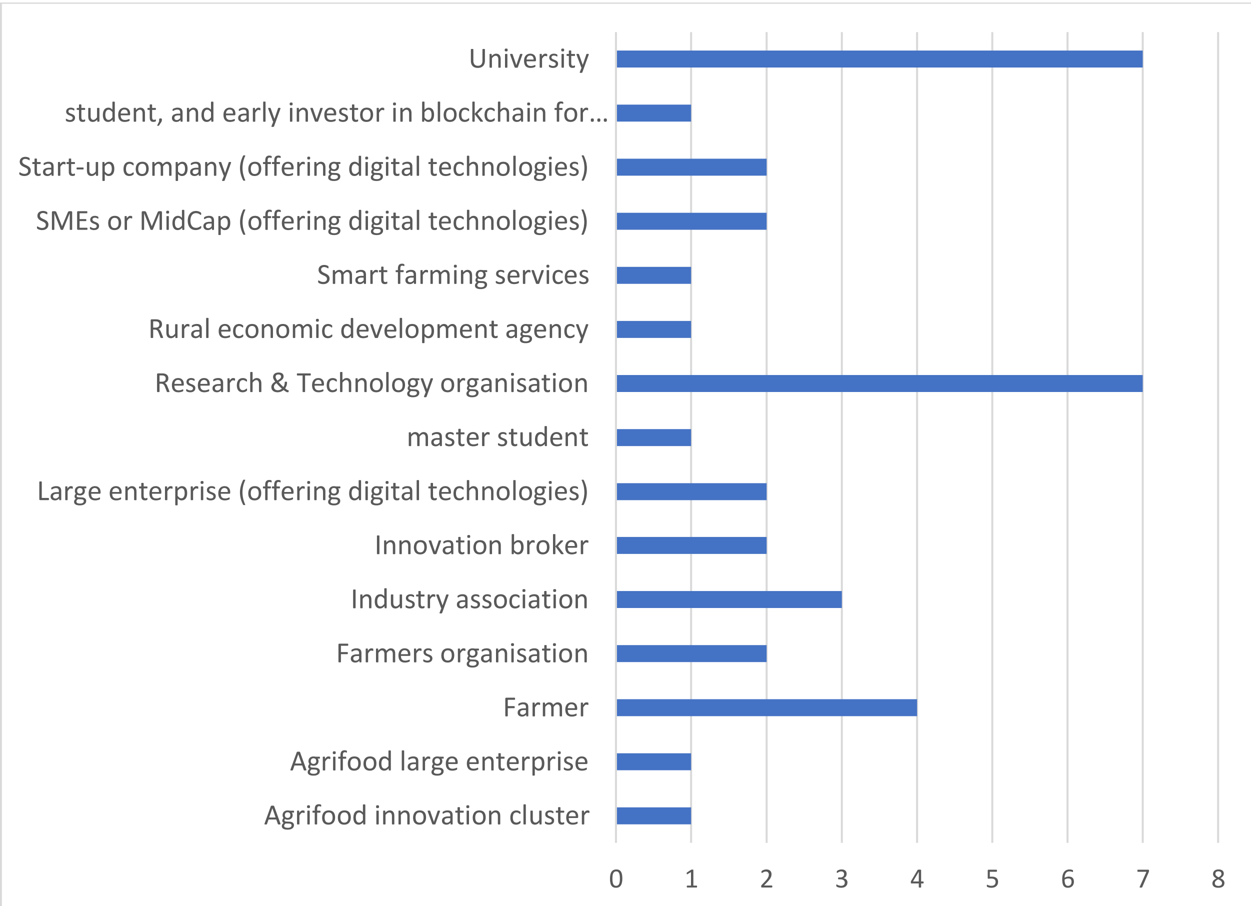

Figure 4: type of entity/individual participating (or interested in participating) in agrifood DIHs

Finally, Figure 5 shows the distribution of answers received by Member State.

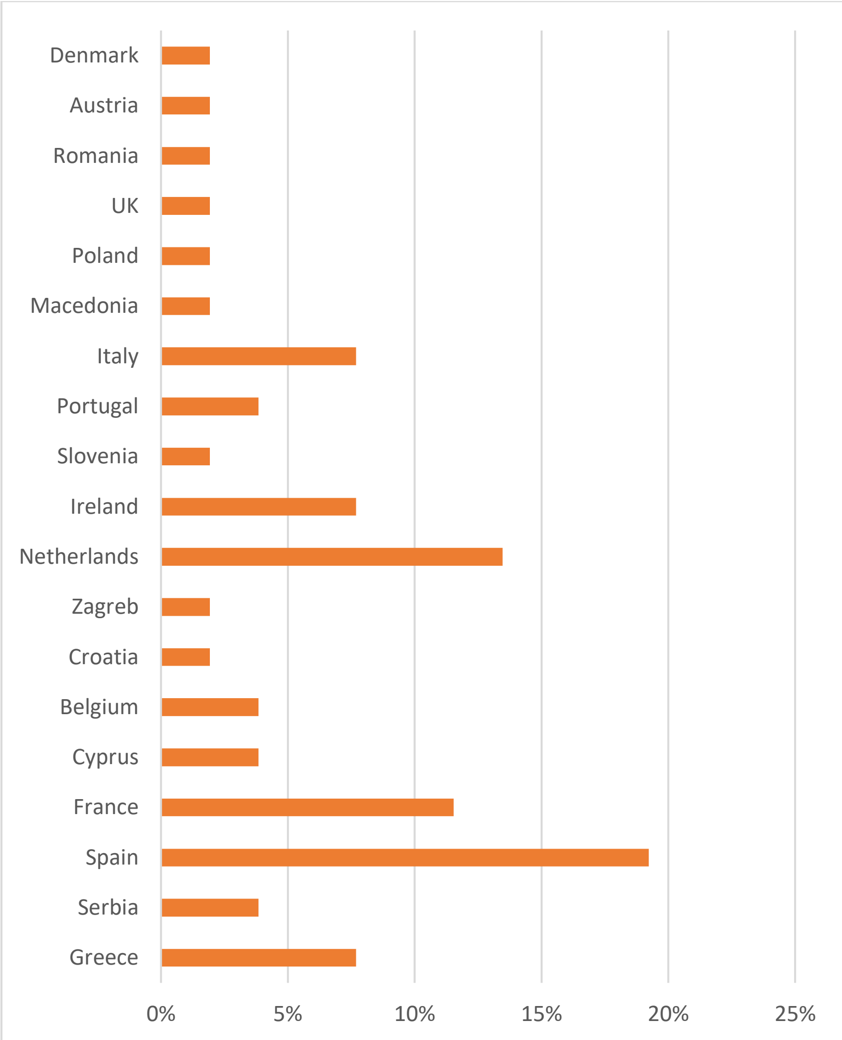

Figure 5: distribution of answers by Member States

2. Perspective from the DIHs

Figure 6 illustrates the answers provided regarding the funding sources identified by the respondent DIHs. Some observations are in order.

- It is interesting to note that all operational DIHs, except in the case of two responders, resort (or expect to) to multiple funding sources. One of these two exceptions is funded by a telco operator, and in the other case it is fully funded via payment per service.
- The majority of responders declare a combination of public and private funding sources.
- There is a strong dependence of H2020 funding, and in general from public funding. Only a small portion of the respondents identify ERDF or EAFDR (the latter, specific to agrifood and rural development) as suitable funding sources.
- Regular payment of fees by the DIH members is seen as an option in very few cases.

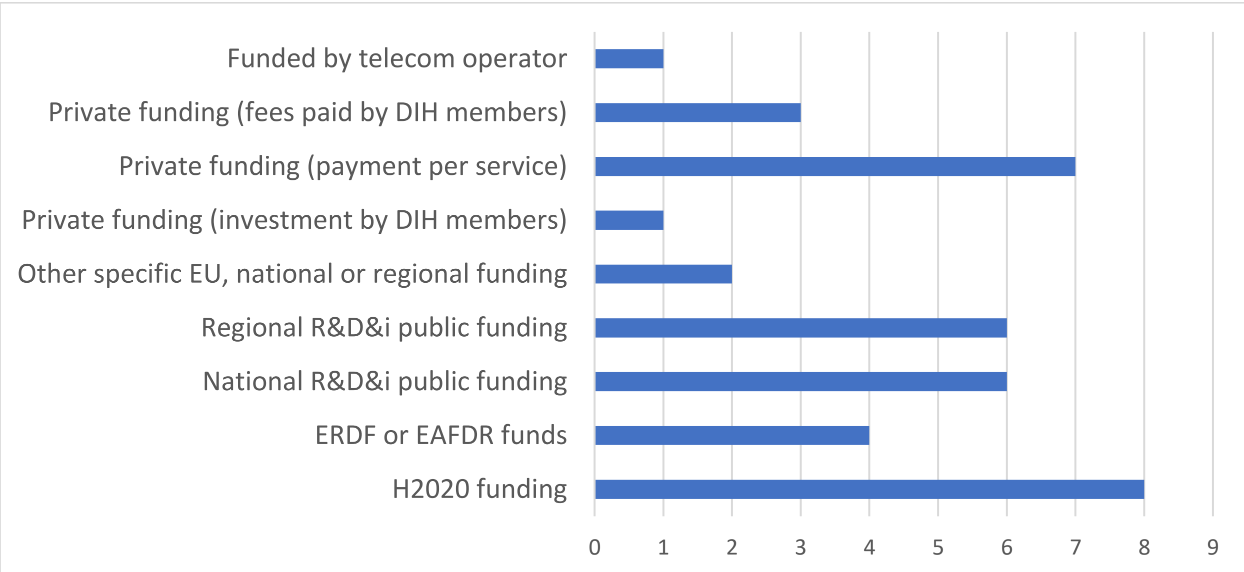

Figure 6: funding sources of the DIHs

Figure 7 shows the results regarding the services offered by the respondent DIHs, along with the actual or envisaged (depending on the operational status of the DIH) funding mechanism(s). Some evident observations:

- The vast majority of answers show that the preferred funding scheme is a combination of public and private funding.
- Interestingly, there is a common understanding that certain services (skills/education, community building) should not be subject to the availability of private funding. None of the respondents identified in this case private funding (solely) as an option.
- On the other hand, the services more susceptible of being privately funded are contract research and testing/validation.

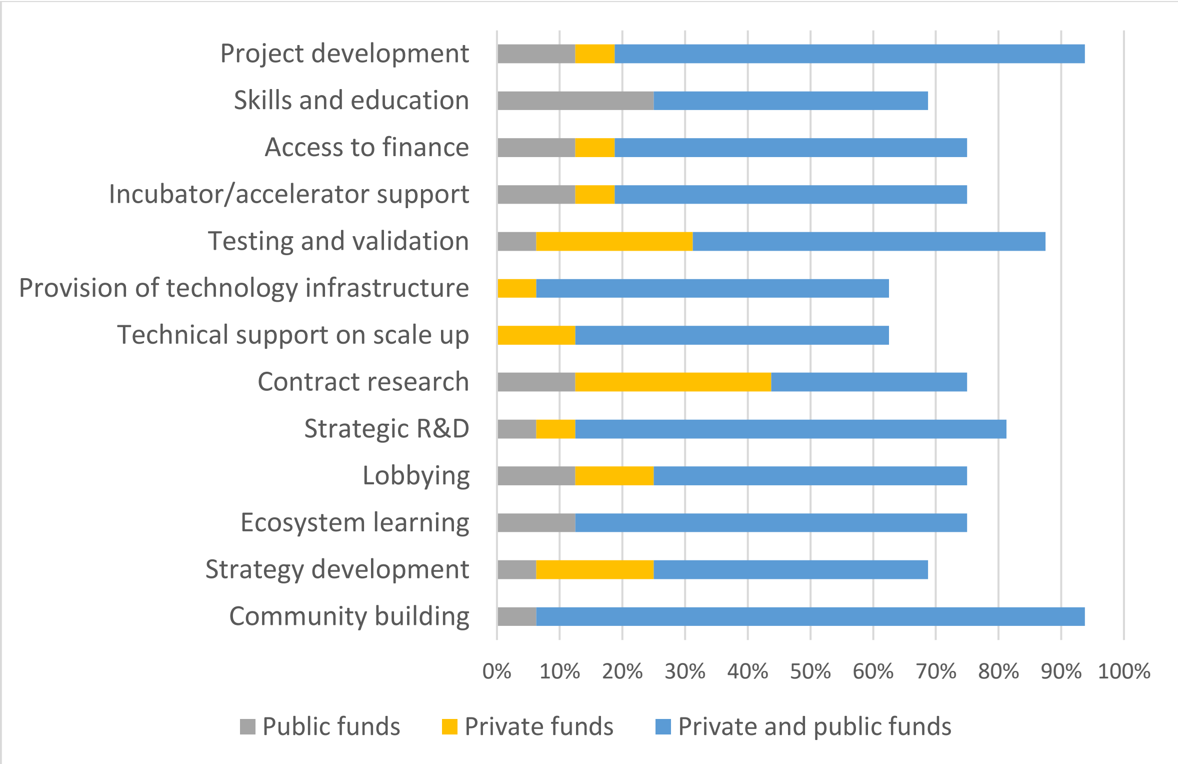

Figure 7: offer of services and envisaged (or actual) funding mechanisms, from the perspective of DIHs

3. Perspective from the participants in the DIHs

This section contains the replies provided by the entities/individuals participating (or interested in participating) in and agrifood DIH. It should be noted that even if an entity is not currently part of a DIH, it can be nonetheless be already acting as a service provider.

Figure 8 shows the amount of entities offering a given service (i.e. service providers) vs. the entities demanding such a service (i.e. service consumers). Some quick observations:

- All the envisaged services in the general context of a DIH are seen as relevant, from the perspective of service consumers.
- Technology services are in general well covered by the offering side, but for certain business services (access to finance, and incubator/accelerator support), the offer (in terms of number of service providers) seems to be too low to meet the high demand.

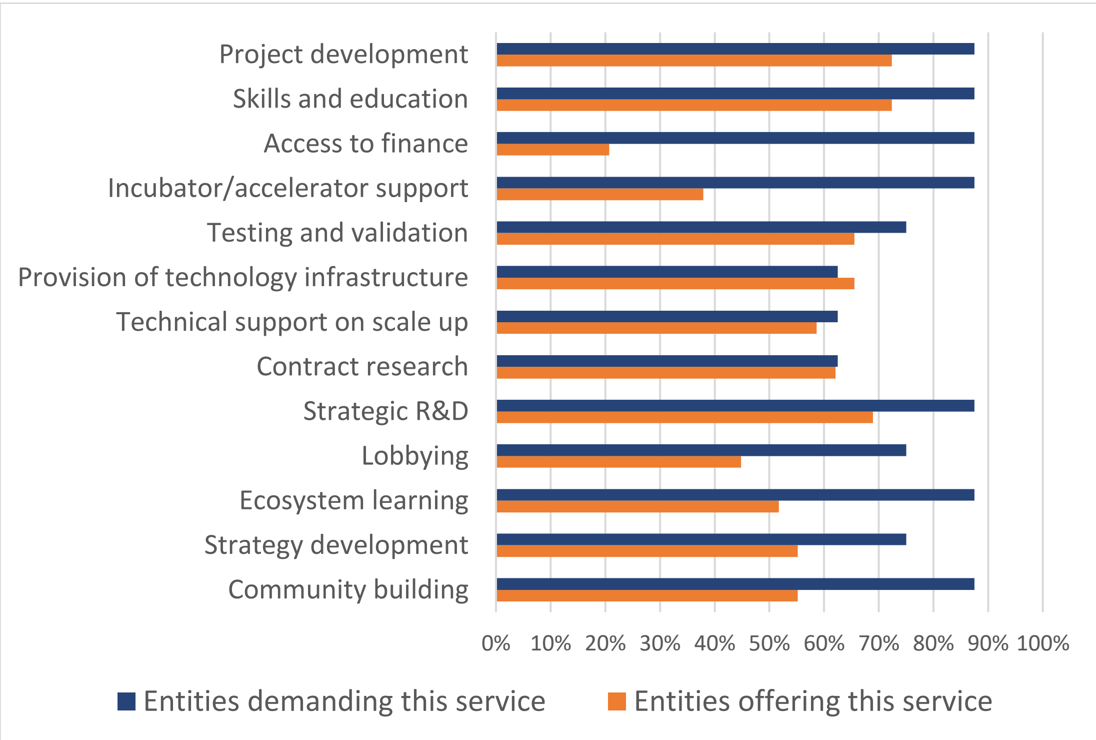

Figure 8: offer vs. demand of services

Figure 9 shows the results of the answers provided by entities providing services within the DIH, regarding the services offered and the envisaged funding mechanism.

- As in the previous section, the preferred mechanism envisages a combination of public and private funding for all services.
- Opposed to the previous section, it is understood by a small portion of responders that certain service consumers could be willing to pay for skills and education even without any public support.

- It is commonly understood that incubator/accelerator support should not be provided without public funding support.

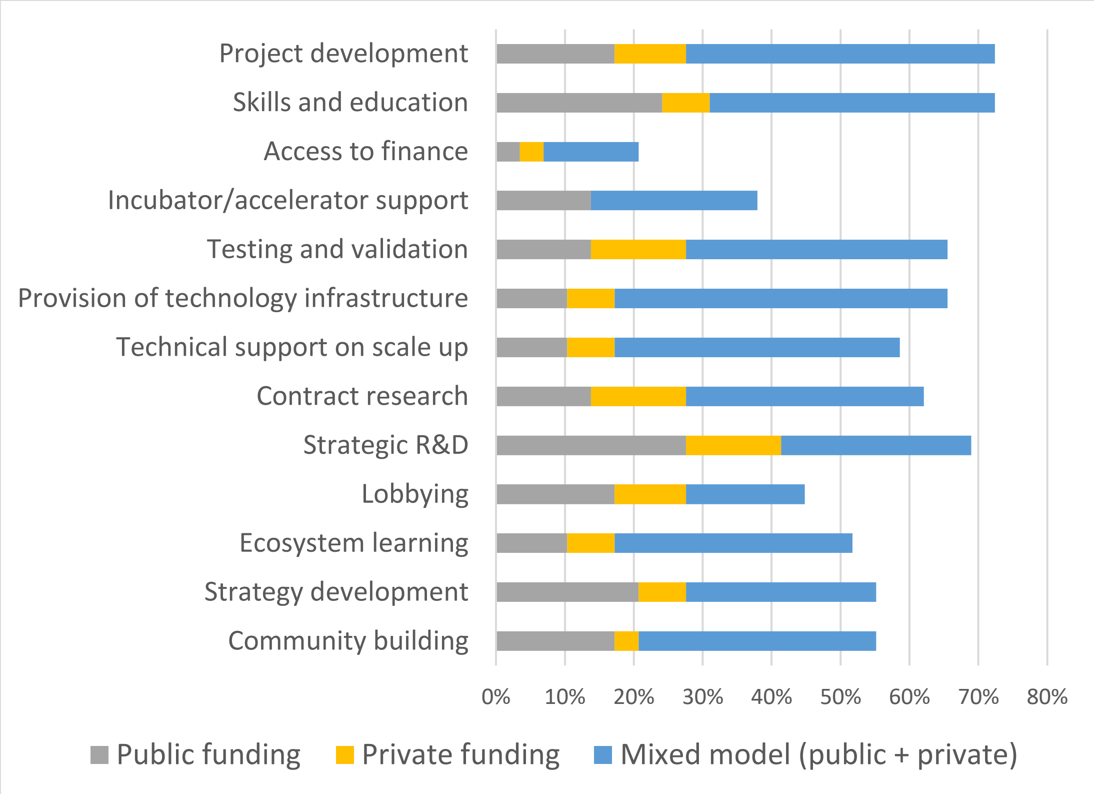

Figure 9: offer of services and envisaged funding mechanisms, from the perspective of service providers participating in the DIHs

Figure 10 shows the demand of each service according to the service consumers participating in the survey.

- All services are seen as highly relevant, specially those dealing with business and ecosystem building.
- In line with the results of Section 2, skills and education are seen as services which should not be subject to the availability of private funding. The same is observed for incubator/accelerator support, and provision of technology infrastructure.
- Interestingly, opposed to the results shown in Figure 7 and Figure 9, the service consumers understand that the access to finance should be covered primarily with their own private funds, or at least via a mixed model (supported by public funding, but not relying solely on it).

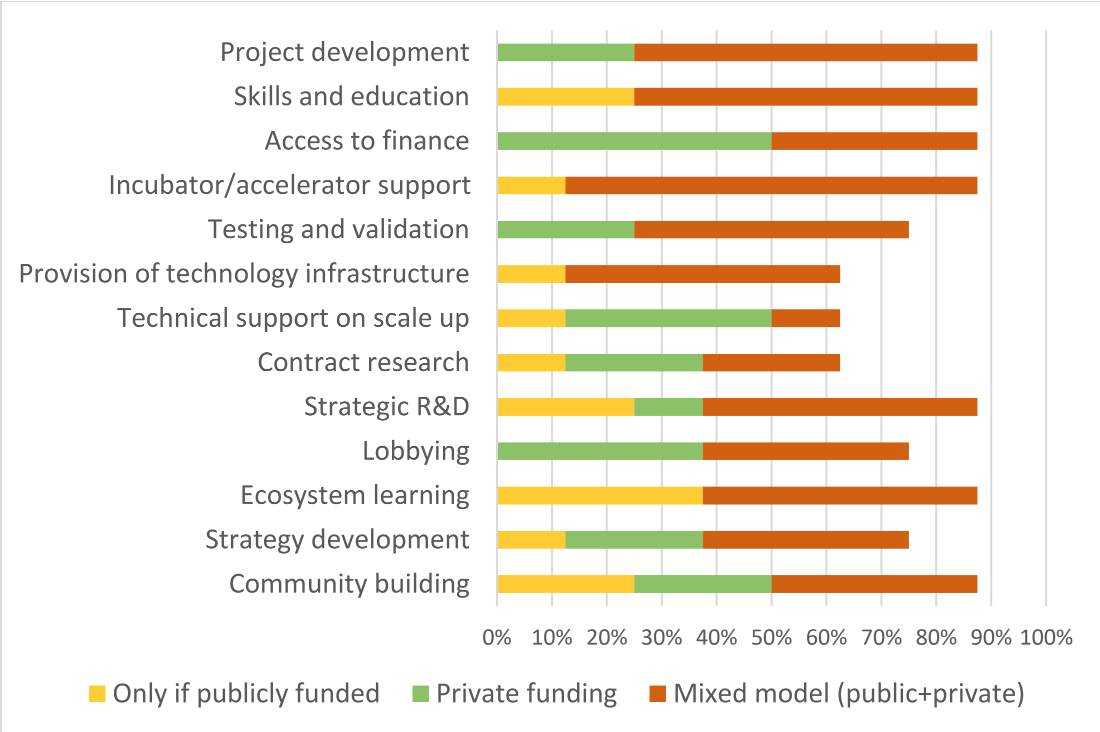

Figure 10: demand of services and funding mechanisms, from the perspective of service consumers

3.1 Further comments received

Some of the comments received stressed the importance of providing services beyond technology, indicating explicitly that DIH's offer should involve more than just technology providers. Farmers need independent advisors to address their digitisation opportunities. Indeed, there are entities already playing this kind of service to their regional/national farming ecosystem, and also structures which have been acting as "de facto" hubs for years, which can provide valuable hands-on feedback on the successful implementation of DIHs for the agrifood sector.

Other comments stressed the importance of public spending in flagship innovation trials in representative areas (e.g. dairy, fruit, meat) to show the benefits of digitisation to the whole, achieving quick engagement with the stakeholders.

4. Conclusions and recommendations

Even if the picture provided by this survey is quite preliminary, there are some interesting conclusions that can be extracted.

It is quite obvious that mixed funding models (combining private and public funding) are being primarily considered as the main mechanism for offering services within the DIHs. In any case, there are clear differences depending on the kind of service. For instance, there is a common understanding that skills and education services should be mainly covered by public funding. Instead, other more technical, close-to-market services (e.g. scale-up, testing and validation) should rely more on private funds.

Interestingly, entities providing services in the business area (access to finance, incubator/accelerator support), could be underrepresented in the offering, in view of the results. Since this is a key area for the success of DIHs, it is worth considering if this could be actually an issue. In any case, the demand for non-technological services is very high, even more than that of purely technical servicez, highlighting the fact that digital innovation (and DIHs) are much more than just technology.

Annex I - Survey for managers or promoters of existing agrifood Digital Innovation Hubs (DIHs)

1. Identification of the Digital Innovation Hub: name, location, main contact, etc.

2. Current operational status of the Digital Innovation Hub
   a. In preparation
   b. Fully operational (i.e. currently providing services)

3. What are the funding sources of your DIH? (multiple choices possible)
   a. H2020 funding
   b. ERDF or EAFDR funds
   c. National R&D&i public funding
   d. Regional R&D&i public funding
   e. Other specific EU, national or regional funding (please specify)
   f. Private funding (please specify: e.g. payment per service)
   g. Fees paid by DIH members
   h. Other (please specify)

4. What are the services provided by your agrifood DIH and actual/intended beneficiaries/users of each service?

   (see Annex III below for catalog of services)
   (see Annex IV below for list of beneficiaries/users)

5. Who covers the cost of each of the services provided?

   (for each provided service, indicate how the cost is covered: by the beneficiary, by some external funding source, by a mix of both, other…)

Annex II - Survey for entities belonging to an existing agrifood Digital Innovation Hub (DIH) or potential members of an agrifood DIH

1. Which type of entity/individual are you?
   (see Annex IV below)
   (contact details)

2. Are you a member of any (operational or under preparation) agrifood DIH?

3. What is the current or envisaged role of you/your entity in an agrifood DIH?
   a. Provider of services
   b. Consumer of services
   c. Both

4. In case you have a role of service provider, which services are you actually offering or interested in offering?
   (see Annex III below)

5. In case you have a role of service consumer, which services do you use or would demand from an agrifood DIH?
   (see Annex III below)

6. Have you already provided or consumed any of those services?

7. In case you are **offering** services or planning to do so, what are the current or envisaged mechanisms for covering the costs?
   a. Public funds
   b. Own private funds of the beneficiary/consumer
   c. A mix of both
   d. Other (please specify)

8. In case you are **consuming** services or planning to do so, what is the current or envisaged mechanism for covering the cost?
   a. Public funds
   b. With your own private funds
   c. A mix of both
   d. Other (please specify)

9. Any other comments (free text)

Annex III - Services provided by Digital Innovation Hubs[3]

TNO innovation for life

WHAT DO DIGITAL INNOVATION HUBS DO?

	Service	Activities
Ecosystem	Community building	Scouting, brokerage, awareness creation, dissemination, ecosystem building
	Strategy development	Market intelligence, market assessments, roadmapping
	Ecosystem learning	Workshops, seminars to share knowledge and experience
	Lobbying	Representing interests during meetings & conferences, organizing (country) visits
Technology	Strategic RDI	Joint, pre-competitive R&D, co-funded research (programmatic)
	Contract research	Specific R&D, technology concept development, proof of concept, public procurement RDI
	Technical support on scale-up	Concept validation, prototyping, small series production
	Provision of technology infrastructure	Renting equipment, low rate commercial production, offering platform technology infrastructure
	Testing and validation	Certification, product demonstration, product qualification
Business	Incubator/accelerator support	Voice of customer, market assessment, business development, consortia building, offering location
	Access to finance	Financial engineering, connection to funding sources, investment plans
	Skills and education	Courses, workshops, offering technological infrastructure for educational purposes
	Project development	Identification of opportunities, creating consortia, development of proposals

1. Community building
2. Strategy development
3. Ecosystem learning
4. Lobbying
5. Strategic R&D&I
6. Contract research
7. Technical support on scale-up
8. Provision of technology infrastructure
9. Testing and validation
10. Incubator/accelerator support
11. Access to finance
12. Skills and education
13. Project development
14. Other (please specify)

Annex IV – List of agrifood DIH beneficiaries

1. Universities
2. Research & Technology organisations
3. Start-up companies (offering digital technologies)
4. SMEs and MidCap (offering digital technologies)
5. Large enterprises (offering digital technologies)
6. Start-up agrifood companies

[3] https://ec.europa.eu/futurium/en/system/files/ged/2018_0221_presentation_on_business_models.pdf

7. Agrifood SMEs and MidCap
8. Agrifood large enterprises
9. Agrifood cooperatives
10. Farmers
11. Industry associations
12. Innovation brokers
13. Rural economic development agencies
14. Business incubators and accelerators
15. Private investors
16. Vendors
17. User communities or associations (please specify)
18. Others (please specify)

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About AIOTI WG06

AIOTI is the Alliance for Internet of Things Innovation (https://aioti.eu/).
AIOTI WG06 is the key meeting point of EU- based stakeholders interested in developing and exploiting the benefits of IoT (technologies, ecosystem and infrastructure) in the domains of farming for food production and food safety, from farm to fork. The scope of the working group encompasses precision farming (IoT devices, data management tools and issues) applied to multiple farming modalities, food traceability and safety, considering the business, policy and societal dimensions.