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FoodSafety4EU

MULTI-STAKEHOLDER PLATFORM
FOR FOOD SAFETY IN EUROPE

Portrait of the FSS-actors roles

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1 EXECUTIVE SUMMARY

This deliverable aims at presenting the portrait of the Food Safety System actors, who play an active role in thes system. These actors are referred in the text as “stakeholders”, that is a more common term for the public and it includes also those categories of actors indirectly involved in the FSS. This broader focus is needed for the further design and development of the FS4EU platform.

The Portrait is intended as a comprehensive picture of the system that allows to identifying per each group of stakeholders the needs and desired kind of gains, in relation to the context, the vision about objectives to achieve and desired connections. The portrait is useful for the FS4EU platform design and shaping, as well as a sort of guidance to know the target groups of the FS4EU project and the actors of the Science-Policy-Society interface, expected to support the Food Safety System.

This deliverable includes also a short overview of the Food Safety System in Europe as a framework that needs and favour better connections inside and outside the system, with its strengthens and weaknesses, and the most influencing factors on its dynamics and transformation.

The report then presents the approach and the tools applied to “scan” the Food Safety System and identify its actors, in line with the platform design methodology and tools.

Finally, per each FSS actors/stakeholders’ categories, it shows a comprehensive portrait, formed by the canvas and tables which explains the identified assets and capabilities, goals and performance pressures as well as different kinds of gains expected to be received as platform users.

Finally, by considering the portraits results, the report describes the motivation matrix, as a detailed analysis on the rationale at the basis of the stakeholders’ choices and behavior in the Food Safety System. This matrix supports the process of shaping the FS4EU platform and the services configuration, by matching the needs/motivations of the profiled users (FSS actors).

2 The Food Safety System and its evolution

Food environments are defined by as the collective physical, economic, policy and socio-cultural surroundings, opportunities and conditions that influence people's food and beverage choices and nutritional status. These include aspects such as food composition, food labelling, food promotion, food prices, food provision in schools and other settings, food availability and trade policies affecting food availability, price and quality.[1] Food safety is contributing to food environment being an essential part of food security and its system, considering the stakeholders involved, is the same: from e.g. seed producers, farmers, food industry to retailers, restaurants and consumers, including policy makers and academia and research, who all have a role to play in the production and consumption of healthy and safe foods.

The Food Safety System (FSS) is a complex and demanding system, as it consists of many interacting stakeholders with different roles, activities and responsibilities in ensuring safe food. Any system can be described as an organized whole of related elements (i.e., the stakeholders in the system), which creates emergent properties and has a specific purpose (i.e., ensuring safe food); all systems have a structure of subsystems and their elements, and form part of other systems in a hierarchy (i.e., multiple levels)[2].

FSS governance for safe, healthy and sustainable foods still remains a challenge[3] and requires a holistic approach through a systemic perspective. New approaches are needed for a better connection between the Food Safety System Stakeholders (FSS stakeholders). Thus, different stakeholders who act at multiple levels need to be more engaged to better align their actions along the food chain according to this comprehensive approach, so, the food safety system governance requires coordination of these stakeholders and decision-making processes, all of these packed by an integrated perspective.

The need for food system transformation is widely recognized among the scientific community. Starting with 2015, a series of concerted actions, including EU initiatives Food 2030, argue the new perspective that is needed to be approached within a systemic framework. To shift towards to a more holistic food system approach it is needed to know that food systems are responsible for numerous interconnected societal challenges (i.e., GHG emissions, water consumption, land degradation, etc.) that must be met with proactive policy. The systemic change of the transformation (i.e., including the sustainable transition) is related not so much to the technological innovations, that would be necessary to support the changes, but more about the governance and politic framework[4]. The Global Panel on Agriculture and Food Systems for Nutrition explicitly links food system transformation to the Sustainable Development Goals.

The European Commission established a **High-Level Expert Group** (HLEG) to assess the needs and options for strengthening science–policy interfaces for improved food systems governance[5]. One of the recommendation of the HLEG is that multilateral governance organizations (i.e., European Commission and the UN), to adopt a food system lens in all their investments and activities for better linking food producers to processors and consumers by empowering all relevant stakeholders, diverse voices and geographical regions[6].

HLEG has defined 6 principles of **Science-Policy-Society Interface** (SPSI) for food system transformation: political legitimacy, participation of traditionally excluded and equity-seeking group, transparency and democracy, work across scales and sectors, autonomy and rigor and clearly defined and measured impacts.

[1] Influencing food environments for healthy diets, FAO, Rome, 2016
[2] Skyttner, L. (2006). General systems theory: problems, perspectives and practice. World Scientific Publishing Co, Singapore, pp. 536.
[3] Marion C. Herens, Katherine H. Pittore, Peter J.M. Oosterveer, (2022), Transforming food systems: Multi-stakeholder platforms driven by consumer concerns and public demands, Global Food Security 32 (2022) 100592, https://doi.org/10.1016/j.gfs.2021.100592
[4] Christophe Béné, Why the Great Food Transformation may not happen – A deep-dive into our food systems' political economy, controversies and politics of evidence, World Development 154 (2022) 105881
[5] https://ec.europa.eu/transparency/expert-groups-register/screen/expert-groups/consult?do=groupDetail.groupDetail&groupID=3739
[6] Everyone at the Table Transforming Food Systems by Connecting Science, Policy and Society, European Commission, DG for Research and Innovation

The 6 key functions should be fulfilled that multiple perspectives and types
of input and knowledge are gathered transparently and equitably: engage stakeholders through dialogue, build capacity, ensure access to data, use forecasting, modelling and scenarios, deliver independent assessment reports, create a forum for co-creation.

Marion C. Herens, et al, 2022, consider that multistakeholder platforms may be one such governance arrangement to facilitate food system governance.

In line with this transformation and addresses, the FoodSafety4EU project is dedicating an entire Work Package: *Co-design of the platform strategy and business model for long-term cooperation* (WP6) to shape a multi-stakeholder platform as framework in which the FSS stakeholders will co-design solutions, strategies, and models to reach the project's objectives. This multi-stakeholder platform FS4EU will be implemented with the definitive goal to make effective and really fruitful the linkages between the FSS stakeholders and scales, thus generating social and public value for the stakeholders, having the potential to contribute to food safety systems governance.

The FS4EU multi-stakeholders' platform is inspired by the system thinking approach; for its structure the design thinking is being used for the actor model analysis to describe and analyze the FSS[7], and define the FSS stakeholders as future potential users of the platform. Because of its complexity, the FSS could be described as a multi-levelled ecosystem with its stakeholders mainly distributed at 3 levels: macro (i.e., policy makers and official control bodies), meso- (i.e., research and academia) and micro-level (i.e., food business operators, consumers and media).

In this way, the FS4EU platform can contribute to the food safety system transformation and contribute to feed a specific SPS interface for the food safety.

In fact, by looking at the 6 key functions to be fulfilled in order to apply the multiple perspectives of Science-Policy-Society-Interface defined for the food system transformation, FS4EU platform is coming with the following approaches for the Food Safety System.

Table 1. Science-Policy – Society functions and FS4Eu Platform

Key Functions[8] for a Science-Policy–Society interface (SPSI)	**How FS4EU Platform responds to these functions**
Engage stakeholders from across food systems through dialogue and co-create evidence agendas that identify needs, priorities, responsibilities and use.	The FS4EU multi-stakeholder platform (as designed for three wide categories of stakeholders: macro-, meso-, micro levels), is a channel for better communication, looking to engage stakeholders in the co-creation process, to enhance cooperation and collaboration and build-up multidisciplinary teams when is needed.
B**uild capacity** to ensure that knowledge generation supports policy decisions, equitable practices and progress tracking.	One of the findings of the analysis of FSS Stakeholders roles and relationships is capacity building, devoted at developing new research capabilities and reaching critical mass of researchers to enhance knowledge creation.
Ensure access to data. No existing system gather a process data in systematic way, analyse the trends and pattern, and engage macro-level stakeholders in this process in order to improve policy, to confirm existing priorities and setting	Having useful and on time data, coherent and meaningful modelling, scenario building and foresight work could be done at regional, EU and, even at global

[7] Dopfer, K., Foster, J. & Potts, J. (2004). Micro-meso-macro. *Journal of Evolutionary Economics*, 14, 263–279; Arnold, R.D. & Wade, J.P. (2015). A Definition of Systems Thinking: A Systems Approach. *Procedia Computer Science*, 44, 669-678; Walker, W. E., Marchau, V. A. W. J., & Kwakkel, J. H. (2013). Uncertainty in the framework of policy analysis. In *Public Policy Analysis* (pp. 215–261). Springer.

[8] Everyone at the Table Transforming Food Systems by Connecting Science, Policy and Society, European Commission, DG for Research and Innovation

Key Functions[8] for a Science-Policy–Society interface (SPSI)	How FS4EU Platform responds to these functions
up new priorities for data collection. More, data on EU middle-income countries are often not available, and activities to improve data Effective Science-Policy-Society Interfaces must support and stimulate the forward-looking efforts in foresight, in modelling or in scenario building needed to acchieve and maintain the multistakeholder dialogues for: - using the potential co-benefits, - identifying the trade-offs and risks - and taking advantages from the opportunities but, taking into account the associated costs and benefits following the specific strategies.	levels in the favor of enhancing food system resilience. FS4EU Platform will ensure an easy access to reliable data, information and knowledge: real ongoing food safety system status and relevant food safety data, provided by the FSS actors who produce and are interested in using the data.
Use forecasting, modelling and scenarios.	Data availability and upfront knowledge enables FSS stakeholders' ability to foresee new challenges and adapted changes - being anticipatory. Also, the structured participatory process activated in the project and the continuous multi-actor confrontation as a robust methodology facilitates the sharing and adoption of new input for the scenario building, according to a multi-disciplinary and collaborative approach.
Deliver independent assessment reports	The platform will provide knowledge and high-level experts who could be involved and/or engaged for independent assessment exercises and reports. It can act as a booster for the experts, who play a precise role in the different Food Safety System areas, and can better exploit their competence.
Create a forum for diplomacy. SPSI is needed to establish mechanisms where food policy makers can engage in food diplomacy discussions, set policy goals and strategies. Based on the aspirational goals, set on scientific views the political or policy targets should take into account the complexity of social and economic systems, trade-offs among different stakeholder targets and views potentially.	FS4EU Forum can be the candidate format connecting different levels of the FSS stakeholders, by providing structured mechanisms facilitating dialogue and sharing policy goals, as a pattern for further food diplomacy actions involving governments and policy makers.

3 Methodology

3.1 Portrait Objectives and link to the platform co-design process

The portrait of the Food Safety System stakeholders (actors) aims to be the basis for theFS4EU platform design and strategy, as well as a reference chart for the exploitation of the project's results (see DELIVERABLE 7.6- EXPLOITATION STRATEGY AND PLAN) according to the needs and expected gains. The final goal is to comply with the four interlinked objectives of WP6, aiming to define the FS4EU platform strategy and share it within the community of internal and external stakeholders. This strategy includes also the dimension of sustainability: it will be based on a business model with selected measures, expected to generate interactions, amplify the network, improve trust and attraction of the platform within the FSS. Based on all of these a long-term Science-Policy-Society interaction strategy will be established at the end.

Finally, knowing the nature of different stakeholders' categories and clustering helps to their positioning in the FSS framework, according to their level of influence/interest[9].

Why to have a portrait?

For defining the FS4EU platform strategy, the Food Safety System mobilization strategy should be designed for setting the point of view and delimiting the opportunity we're addressing with a platform.

A system is a set of entities playing in a context (e.g., a sector, an industry, a market, an organization) interacting and exchanging value, leveraging resources, generating outcomes, in our case, Food Safety System is consisting in all stakeholders' participation along the food chain: food business operators, policy makers, research and academia, NGOs, media. All of these could have needs regarding approach and comply related to food safety but also could contribute at improving the Food Safety System. The platform will engage FSS actors who will benefit from project's results and trigger them to populate and use the platform itself, in order to create and stimulate an autonomous interaction.

In fact, the platform is being set up to offer services to the FSS and to explore its cooperation and aggregation opportunities.

How it can help to the platform co-design?

The platform utility depends on the targeted services that it could offer to its users. By identifying the users and portraying their roles in relation to the platform, the structure of platform will be better designed and structured for facilitating the creation a favorable environment for the establishment of the long-term Science-Policy-Society interface, actively involving various audiences. Clustering stakeholders into roles supports the platform design thinking application.

FSS stakeholders and links to the exploitation strategy objectives

To better understand the needs of the platform users is crucial for the exploitation of the FS4EU results, making the project's outputs self-sustainable after the end of the project but offer to other selected projects a channel for dissemination and ways for exploitation of their results.

[9] Mainardes, Emerson & Alves, Helena & Raposo, Mario. (2012). A model for stakeholder classification and stakeholder relationships. Management Decision. 50. 10.1108/00251741211279648.

3.2 FS4EU approach

The FS4EU approach consists of two phases:

1. *Methodology development – approach, templates, learning process:*
   - Understanding and adapting CANVAS platform design toolkit to be used for FS4EU purpose;
   - Organizing Platform Canvas Design Webinar;
   - Templates designing (tailored Canvas);
2. *Map and details the stakeholder's role:*
   - Mapping FSS stakeholders;
   - Defining FS4EU Stakeholder List;
   - Clustering FSS stakeholders into categories: Macro (2 categories), Meso (2 categories) and Micro levels (3 categories).

FSS stakeholders' role-portrait is detailed taking into consideration what are their goals, what is their context, what they are trying to achieve, with whom and how they are trying to connect, what potential they can express, what are their needs.

Looking at the role is a way to cluster several kinds of entities into the same category of players, primarily according to how much they share motivations to join, assets and capabilities (resources that they can leverage) and type of value exchanges they're looking for[10].

The portrait is linked to the systemic approach applied in the FS4EU project to define and describe the multi-levelled FSS stakeholders' structure (macro-, meso-, micro-level), as reported in the Technical Annex and in Deliverable D7.1.

Fig. 1. FS4EU Food Safety System structure and actors-stakeholders

These targets and their potential involvement in the exploitation are also described in the FS4EU Exploitation plan (D7.6).

[10] Platform Design Toolkit, the uUser Guide 2.2, 2019. Boundaryless - CC BY-SA 4.0.

3.3 Tools

The methodology foresees 2 steps: identifying and clustering stakeholders and portraying of their role. It is supported by working tools (Canvas model, Excel sheets, MIRO boards), that have been used to share the approach and align all the WP leaders in applying it.

The portrait design process was organized and deployed through the following steps:

1. Mapping the potential platform users;
2. Clustering the stakeholders into categories;
3. Setting the roles of FSS stakeholders;
4. Listing the motivation to joins and resources that they can leverage (assets, capabilities);
5. List the value exchanges;
6. Preparation of the MOTIVATION MATRIX;
7. Portrait of the FSS actors (stakeholders) roles: per each group of stakeholder's definition of the needs and desired kind of gains;
8. Preparation of the portrait;
9. Sharing the portrait with WP leaders for validation;
10. Choosing the relationships to be included in the platform.

Since the beginning, Platform Design Webinar and a WP6 pre-meeting were organized to present the process of the platform designing and to establish the Food Safety System which is consisting by entities playing in a Food Safety context, interacting and exchanging value, leveraging resources and generating outcomes.

Later, 6 dedicated workshops coordinated by IBA and CNR were organized to follow the Canvas updated methodology for defining the Platform Strategy both for the Platform designing and Business Plan, also in view of its sustainability.

Table 2. Workshops dedicated to Portraying of actors/stakeholders roles

No.	Workshop	Date	Participants
1	WP6 Platform Design (coordination meeting)	21.04.21	5
	https://fs4eu.humhub.com/s/wp6-platform-co-design/meeting/index/view?id=34		
2	Task 6.1. Portraying of Stakeholder's roles (preliminary restricted meeting)	13.07.21	7
	https://fs4eu.humhub.com/s/wp6-platform-co-design/meeting/index/view?id=56		
3	WP6 Workshop Portraying FSS stakeholders role	22.10.21	14
	https://fs4eu.humhub.com/s/wp6-platform-co-design/meeting/index/view?id=65		
4	WP6 update	19.01.22	6
	https://fs4eu.humhub.com/s/wp6-platform-co-design/meeting/index/view?id=76		
5	WP6 meeting - update for GA	23.03.22	6
	https://fs4eu.humhub.com/s/wp6-platform-co-design/meeting/index/view?id=87		
6	WP6 meeting – update	31.03.22	5
	https://fs4eu.humhub.com/s/wp6-platform-co-design/meeting/index/view?id=89		
7	WP6 meeting_motivation matrix and FS4EU Forum concept	20.04.22	6
	https://fs4eu.humhub.com/s/wp6-platform-co-design/meeting/index/view?id=90		

The adapted Canvas Model

The first template used was for mapping the ecosystem. In our case, the ecosystem is: Food Safety System actors (FSS stakeholders). It was started by enumerating food chain stakeholders (organizations) along the food chain and to cluster them into the 3 groups: macro-, meso- and micro- levels.

They also have been organized by the 4 Hubs: West, North, East and South. The following templates were used, first an Excel file and the second one an adapted Canvas Platform design template.

Organisation	Country	Region	Type of stakeholder	Site	Contact	Email

Fig. 2. The template used for FS4EU stakeholders list details

Fig. 3. The adapted CANVAS ecosystem used for mapping FSS stakeholders (actors)

The FSS actors role-portrait is foreseen by analyzing the following items related to FSS stakeholders:

1. Assets and Capabilities;
2. Current goals;
3. Performance pressure;
4. Gains sought: convenience gains, access reach gains and value gains.

The classification of all these items is the result of the discussions and exercises held by the working groups, and it should be intended as a proposal for the identification of the key drivers of the FSS stakeholders' role portrait, not being exhaustive neither strict. It is also related to the Food Safety System framework/state of the art of the 2021-2022 years, being affected by a dynamic process and challenges. So, the results can be considered as a reference schemes, to be updated according to further transformations, or adapted for other use.

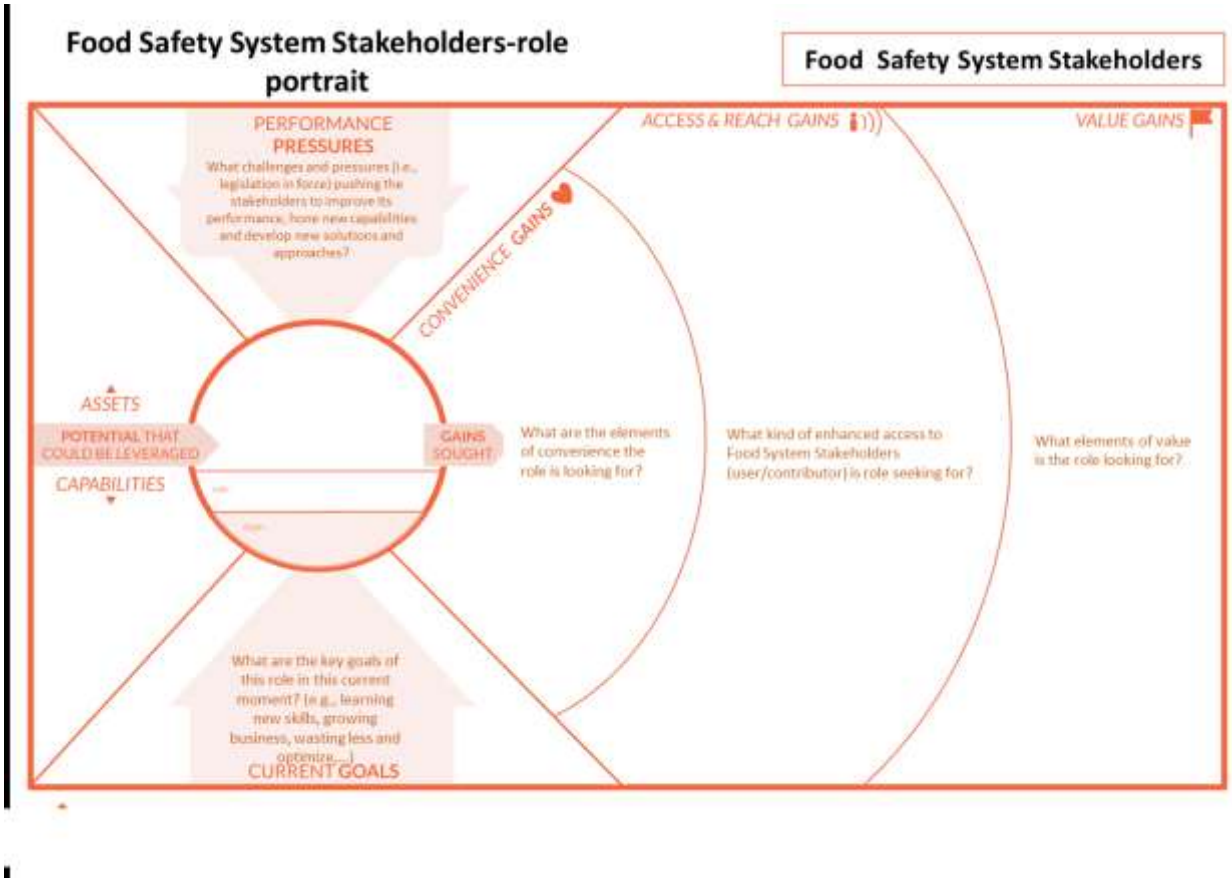

Fig. 4. The adapted Canvas template used for FSS stakeholders' role-portrait

The most important analysis for which the platform will be shaped is the *Gains* sought that are those FSS stakeholders looking for in their current experience.

This analysis is done taking also into account the other three aspects influencing the FSS stakeholders' behavior in the system: their assets and capabilities, current goals and performance pressure.

3 types of gains are addressed to be analysed and detailed for the FSS stakeholders in using the FS4EU platform:

1. The *Convenience Gains* - they are about any "easier, faster, cheaper" way to do things as compared to the current situation of the FSS-role. This is going to be the part of a platform strategy for defining its services and, that makes possible to identify any solution to a problem or opportunities for collaboration and cooperation among FSS stakeholders through the platform.
2. The *Access and Reach Gains* - they are related to other gains different than conventional ones the FSS stakeholders are looking for. These types of Gains help to explore what dimensions are important, for FSS stakeholders to get in touch with the niche they're looking for.
3. The *Value Gains - they* are more related with the impact on medium and long-term that the platform could have among FSS stakeholders.

The Motivations matrix analysis is the next analysis done to better understand and then to characterize the role of FSS stakeholders in relation with FS4EU Platform.

The analysis is consisting in setting the roles that each FSS Stakeholder is playing and influencing the other ones, as it can be seen from the template below (fig. 5).

The ecosystems' motivation matrix						Food Safety System Stakeholders	
Roles	Ministries & Food Safety Authorities	Public EU and international organizations	Academia & Research	R&I Umbrella Networks	Food associations/ federations/ Food processors	Innovative companies, laboratory and other supporting services	Consumers organisations, media
Ministries & Food Safety Authorities							
Public EU and international organizations							
Academia & Research							
R&I Umbrella Networks							
Food associations/ federations/ Food processors							
Innovative companies, laboratory and other supporting services							
Consumers organisations, media							

Fig. 5. FS4EU Motivation matrix scheme based on the adapted Canvas template

Thanks to Motivation matrix, the potential of exchange flows of value is analyzed, mapping the value exchanges that Food Safety System Stakeholders are performing already (or trying to) and what additional type of value they might exchange if properly enabled by the FS4EU Platform. In this view, one by one type of stakeholder is analyzed in relation with each stakeholder, according to the scheme presented in the figure 5.

4 The FSS actors portrait

4.1 The FSS actors roles and contributions

For designing the platform strategy, it is needed to involve/engage a wider spectrum of participants (users or contributors) in the Food Safety context. For each FSS-actors and stakeholders role, the platform should identify a value proposition that can capture different adoption contexts.

FSS actors-Role Portraits are a keystone exercise to craft the narrative and value propositions for FSS users.

The value proposition for a FSS-actor (stakeholder) role can be described as follows: "I'll be able to leverage my potential, to reach my goals and cope with performance pressures, while the platform will give me the convenience, reach and value gains I'm looking for to fully express myself"[11].

It is also important to map what the FSS stakeholders are looking to mobilize right now, not in the future when the platform will be ready.

The platform strategy should be able to sustain FSS stakeholders' participants while letting them express their potential, for generating the attraction to the platform, engagement and their active involvement.

[11] Platform Design toolkit 2.2, 2019. Boundaryless - CC BY-SA 4.0.

4.2 Mapping the potential platform users and clustering the stakeholders into categories

By using the Canvas adapted model the Food Safety System stakeholders was analyzed and organized for further designing the platform strategy. The organizations, the existing food safety stakeholders were mapped and we tried to understand what roles they might play, clustering them into categories.

Taking into account the FoodSafety4EU Supporting Partners list but also FS4EU website registered organizations and experts, the FSS was defined. FS system, bringing 118 FSS stakeholders, was posted in HumHub working space using Excel template.

The stakeholders were organized in 4 categories: Macro-level, Meso-level, Micro-level, and Platform Shapers, in the first Canvas template entitled "Mapping FSS stakeholders". A preliminary meeting organized for clustering FS stakeholders and portraying of Stakeholder's roles, the 4 stakeholders' categories were organized by the 4 Hubs for preparing the second Canvas Template "Portraying FSS stakeholder's role".

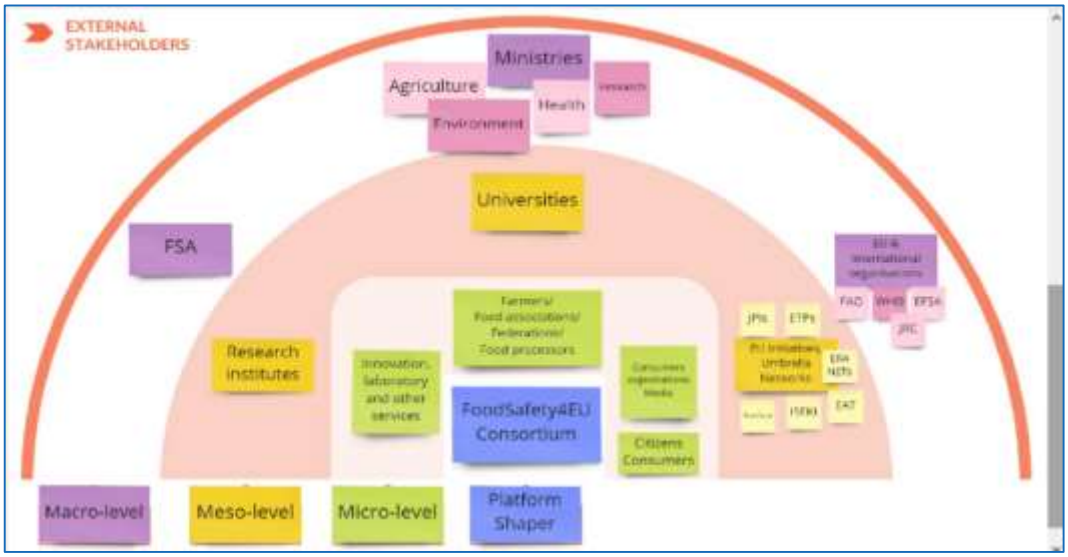

Fig. 6. FSS actors (stakeholders) map

7 groups of actors (stakeholders) were established after clustering them according with their role along the food chain and society (see fig. 7):

1. Ministries, Food Safety Authorities Governmental agencies (national and regional);
2. European and international organizations;
3. Education, Academia and Research;
4. R&D Umbrella Networks;
5. Food associations / federations / Food business operators;
6. Laboratories (and networks) other supporting services (consultancy, advisory, advocacy etc.);
7. Consumer and citizen organizations, media.

Stakeholders by Hubs					
	South	West	**North**	**East**	**Total**
Macro level	**14**	**2**	**2**	**4**	**22**
Ministries	1	0	1	0	2
FSA	10	2	1	4	17
Other	3	0	0	0	3
Meso level	**10**	**7**	**1**	**11**	**29**
Universities	5	1	0	2	8
Research institutes	1	2	0	4	7
Umbrella networks	4	4	1	5	14
Micro level	**24**	**12**	**2**	**6**	**44**
Food companies/associations	6	5	2	1	14
Farmer associations	0	1	0	0	1
Innovation, laboratory and other services	5	1	0	3	9
Consumer organisations and media	2	3	0	2	7
Citizens	11	2	0	0	13
Platform Shaper	**6**	**11**	**2**	**4**	**23**
Total	**54**	**32**	**7**	**25**	**118**

Fig. 7. FS4EU Stakeholders at Macro-, meso-, and micro- levels by Hubs

Finally, 7 Miro boards related to Stakeholders groups, had defined the stakeholders' roles for clustering them into the same category of players, primarily according to how much they share motivations to join, assets and capabilities (resources that they can leverage) and secondarily to assess their needs and desired kind of gains:

- Macro level, 2 categories: Ministries, Food Safety Authorities Governmental agencies (national and regional) and European and international organizations;
- Meso level, 2 categories: Education, Academia and Research and R&D Umbrella Networks;
- Micro level, 3 categories: Food associations / federations / Food Business Operators; Laboratories (and networks) other supporting services (consultancy, advisory, advocacy etc.); Consumer and citizen organizations, media.

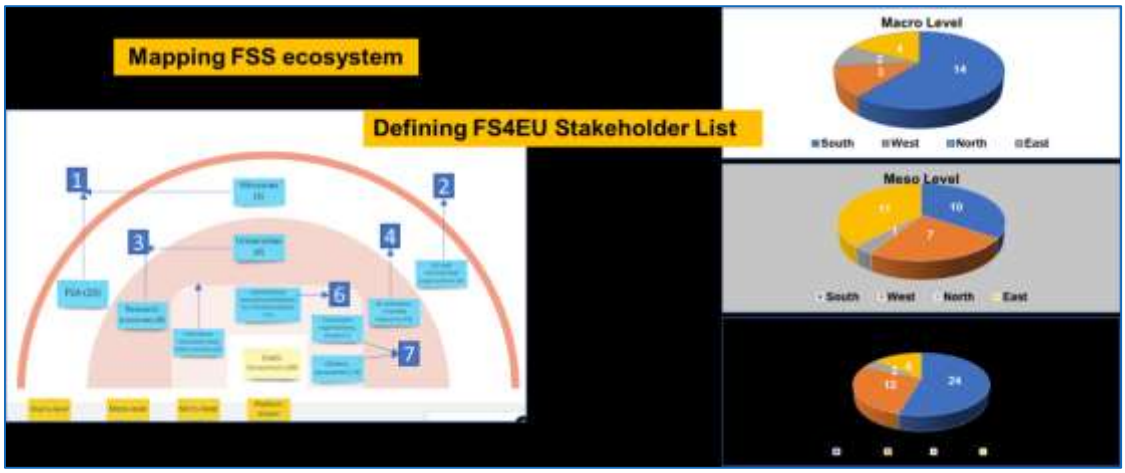

Fig. 8. Designing Food Safety System

4.2.1 The FSS actors (stakeholders) portrait for Macro-level

Per each FOODSAFETY4EU group, according to the multi-level system approach, a portrait has been realized.

For the Macro-level group (governmental organizations): 2 FSS stakeholders' portraits were realized for Macro-level: Ministries and National Food Safety Authorities (FSAs) and EU and international public organizations, as shown below:

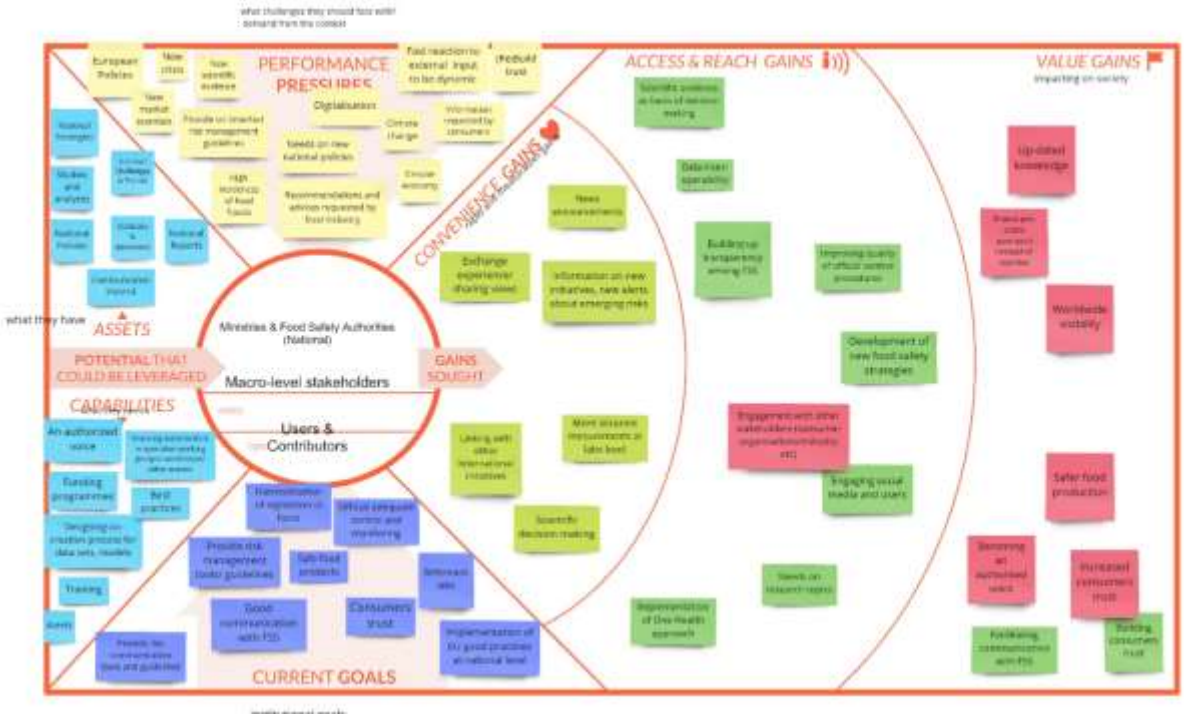

Fig. 9. FSS Macro - level portrait Canvas – Ministries and FSAs

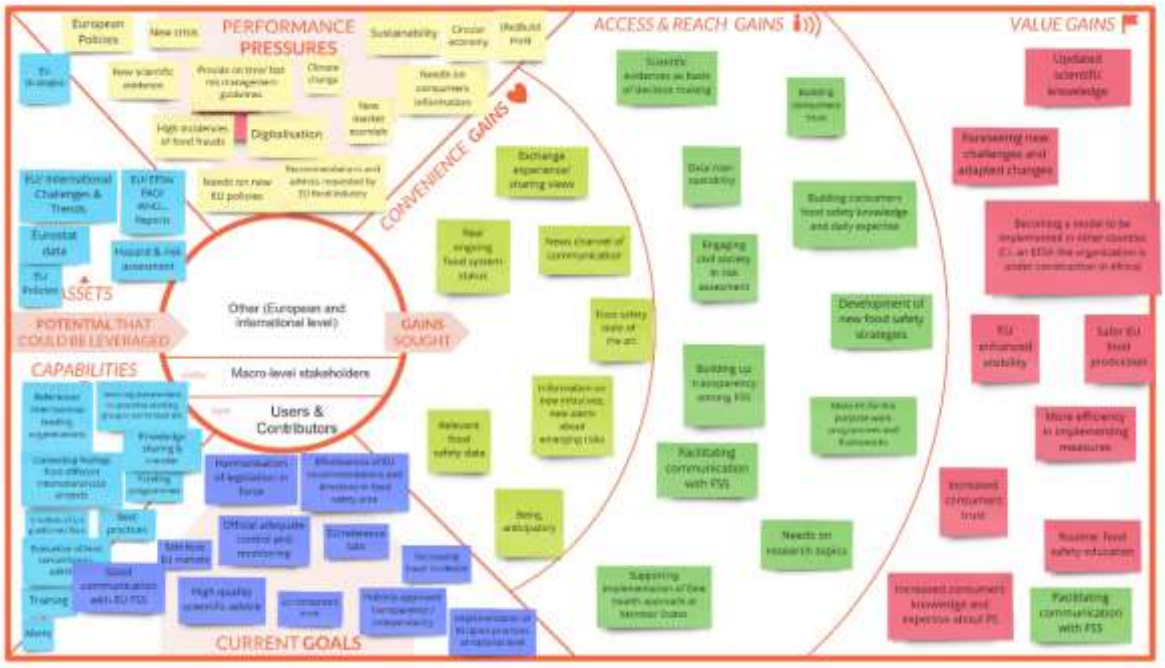

Fig. 10. FSS Macro - level portrait Canvas – EU and international public organizations

In the following tables assets and capabilities, goals, performance pressures and gains as identified in the portrait canvas are presented.

Table 3. Assets and Capabilities of Macro-level stakeholders

Macro-level FSS stakeholder's portrait: assets and capabilities	
Ministries and Food Safety Authorities	**EU and International public organizations**
Assets	
National Strategies	EU Strategies
National Challenge and Trends	EU/International Challenge and Trends
Studies and Analysis	Hazard and risk assessment
National Policies	EU policies
Statistics and databases	EUROSTAT data
National Reports	EU/International Body reports
Communication materials	
Capabilities	
An authorized voice	Reference/leading international organizations
Funding programmes	Funding programmes
Best practices	Best practices
Involving FSS stakeholders in operative working groups, workshops, events	Involving FSS stakeholders in operative working groups, workshops, events
Designing co-creation process for data sets, models	Creation of EU platforms/for a
Trainings	Trainings
Alerts	Alerts
	Evaluation of food contaminants, additives
	Knowledge sharing and transfer
	Connecting finding from different EU/international projects

The national, EU and international public organizations/authorities have similar assets and capabilities with few differences related to the mission that they have. Ministries and Food Safety Authorities are usually policy makers, shaping the food policy at level of EU Member States, including food safety policy. EU and International public organizations through *Involving FSS stakeholders in operative working groups, workshops, events and EU platforms/fora, as well as by connecting/finding from different EU/international projects*, have the mission to evaluate, update and improve the legislative framework at EU/international level in the field of food safety, on the basis of scientific evidences.

Both types of organizations are building up their strategies for the short, medium and long terms taking into account the existing societal challenges that have major social, economic and environmental impacts. On the basis on their strategies, both type of organizations could set up funding programmes and organize competitive calls for R&D projects, for further developments in food safety knowledge and better understand of the needs of the actual context.

Both types of organizations are authorized voices in the field, and their publicly messages drive stakeholders in food safety sector functionality.

Their assets and capabilities should be promoted among FSS stakeholders and collaboration between these national, EU and international public organizations/authorities and the rest Of Food Safety System stakeholders is very important in the creation of an appropriate Food Safety working environment to have a fast reaction and solutions to the unforeseen challenges that could affect the human health.

Table 4. Goals and Performance Pressure of Macro-level stakeholders

Macro-level FSS stakeholder's portrait: goals and performance pressure	
Ministries and Food Safety Authorities	**EU and International public organizations**
Goals	
Harmonization of legislation in force	Harmonization of legislation in force
Official adequate control and monitoring	Official adequate control and monitoring
Safe food products	Safe food EU markets
EU Consumers trust	Consumers trust
Reference labs	EU Reference labs
Provide risk management tools/guidelines	Effectiveness of EU recommendations and directives in food safety area
Implementation of EU good practices at national level	Implementation of EU good practices at national level
Good communication with FSS stakeholders	Good communication with FSS stakeholders
	Decreasing fraud incidence
	Publicly approved transparency/ independency
	High quality scientific advice
Performance Pressure	
EU policies	EU policies
New crises	New crises
New scientific evidences	New scientific evidences
New market scandals	New market scandals
Provide on time/fast risk management guidelines	Provide on time/fast risk management guidelines
High incidences on food frauds	High incidences on food frauds
Needs on new national policies	Needs on new EU policies
Digitalization	Digitalization
Climate change	Climate change
Circular economy	Circular economy
(Re)built trust	(Re)built trust
Fast reaction to external input	Sustainability
Information requested by the consumers	Needs on consumers information
Recommendations and advices requested by the food industry	Recommendations and advices requested by the food industry

The national, EU and international public organizations/authorities have also the similar goals related to the updating and harmonization of legislation in force, but also for having an official adequate and efficient control and monitoring for assuring a food safety national/EU market.

For an appropriate official control, reference labs are needed and also risk management tools and guidelines, including identified good practices that could be shared among FSS stakeholders through an efficient communication on the basis of high-quality scientific advice. All of these actors have the main target of increasing transparency along the food chain, decreasing fraud incidence and building up the consumer trust in food chain.

Considering the Performance Pressure, different stakeholders of the food environment make the food sector, including food safety field, to be one of the most dynamic sectors among other agro-industrial ones. The stakeholders that we refer to are the following: high incidences on food frauds and new market scandals, climate change and green deal policies with increasing sustainability and developing circular economy concept.

In this context, the needs on solving the societal challenges that affect food security, including food safety, are related with the needs on new EU/national policies, with the needs on new scientific evidences for solving the emergent problems and with the needs on better consumers information.

For re-building trust of consumers on the food chain, its transparency should be assured. Digitalization could be the most appropriate tool for food chain transparency in order to have a fast reaction to external input but also to provide on time risk management guidelines, which are requested also by food industry.

Table 5. Macro-level stakeholders expected gains

Macro-level FSS actors (stakeholders) portrait: conventional, access and value gains	
Ministries and Food Safety Authorities	**EU and International public organizations**
Conventional gains	
New announcements	Real ongoing food safety system status
Exchange experience/Sharing views	Exchange experience/Sharing views
Information about new initiatives, new alerts about emerging risks	Information about new initiatives, new alerts about emerging risks
Linking with other international initiatives	New channel of communication
More accurate measurements at labs level	Relevant food safety data
Scientific decision making	Being anticipatory
	Food safety state-of-the art
Access and reach gains	
Implementation of One Health approach	Supporting implementation of One Health approach at Member States level
Needs on research topics	Needs on research topics
Engaging social media and users	Engaging civil society in risk assessment
Scientific evidence as basis of decision making	Scientific evidence as basis of decision making
Data interoperability	Data interoperability
Building transparency among FSS stakeholders	Building transparency among FSS stakeholders
Development of food safety strategies	Development of food safety strategies
Facilitation communication with FSS stakeholders	Facilitation communication with FSS stakeholders
Building consumers trust	Building consumers trust
Improving quality of official control procedures	Building consumers food safety knowledge and daily expertise
	More fit-for the purpose work programmes and framework
Value gains	
Updated scientific knowledge	Updated scientific knowledge
Engagement with other stakeholders (consumer organizations, industry, etc.)	Increased consumer knowledge and expertise about Food Safety
Enable proactive approach instead of reactive	Becoming a model to be implemented in other countries (i.e., an EFSA like organization is under construction in Africa)
Worldwide visibility	EU enhanced visibility
Safer production	Safer EU food production
Becoming an authorized voice	Routine food safety education
Increased consumer trust	Increased consumer trust
	Foreseeing new challenges and adapted changes
	More efficiency in implementing measures

The most rapid gains obtained by FS4EU Platform (through the participatory process) are to have real ongoing information about Food Safety System status and, about new initiatives and new alerts on emerging risks. Exchange experience and sharing views between the national, EU and international public organizations/authorities is very important in having a scientific decision making for an anticipatory approach.

The other gains are coming from the opportunities that FS4EU Platform will offer through better communication, engagement and cooperation between FSS stakeholders, including civil society and media which:

- will create a transparency among FSS stakeholders;
- will give possibility, through participatory process, to develop the future food safety strategies and to identify the needs and priorities on research topics and, additional to set up more fit-for the purpose work programmes and framework;
- will give better access to data for their interoperability and for taking scientific based decision making;
- will build consumers food safety knowledge and daily expertise and consumers' trust;
- will support step by step to implement the One Health concept at Member States level.

The value gains are related to the impact that FS4EU platform will have on the long-term in relation with Macro-level FSS stakeholders' collaboration.

Besides of an enhanced visibility, and supporting them in becoming a trustful authorized voice in food safety field, the national EU and international public organizations/authorities will have the opportunity to update its scientific knowledge and to better engage FAA in their activities. Food safety education and even increasing consumer knowledge and expertise about Food Safety is another value that will be gained by using FS4EU Platform.

During the time, new challenges and adapted changes will be Foreseen which should could be solved by requesting more efficiency in implementing measures in order to have a proactive approach instead of reactive one. The main value gain is to increase and maintain a safety EU food production and to re-built and increase the consumer trust in it.

4.2.2 The FSS actors (stakeholders) portrait for Meso - level

For the Meso-level group: 2 FSS stakeholders' portraits were realized for Meso-level: Universities & Research Institutes, Umbrella R&D Networks, as shown below:

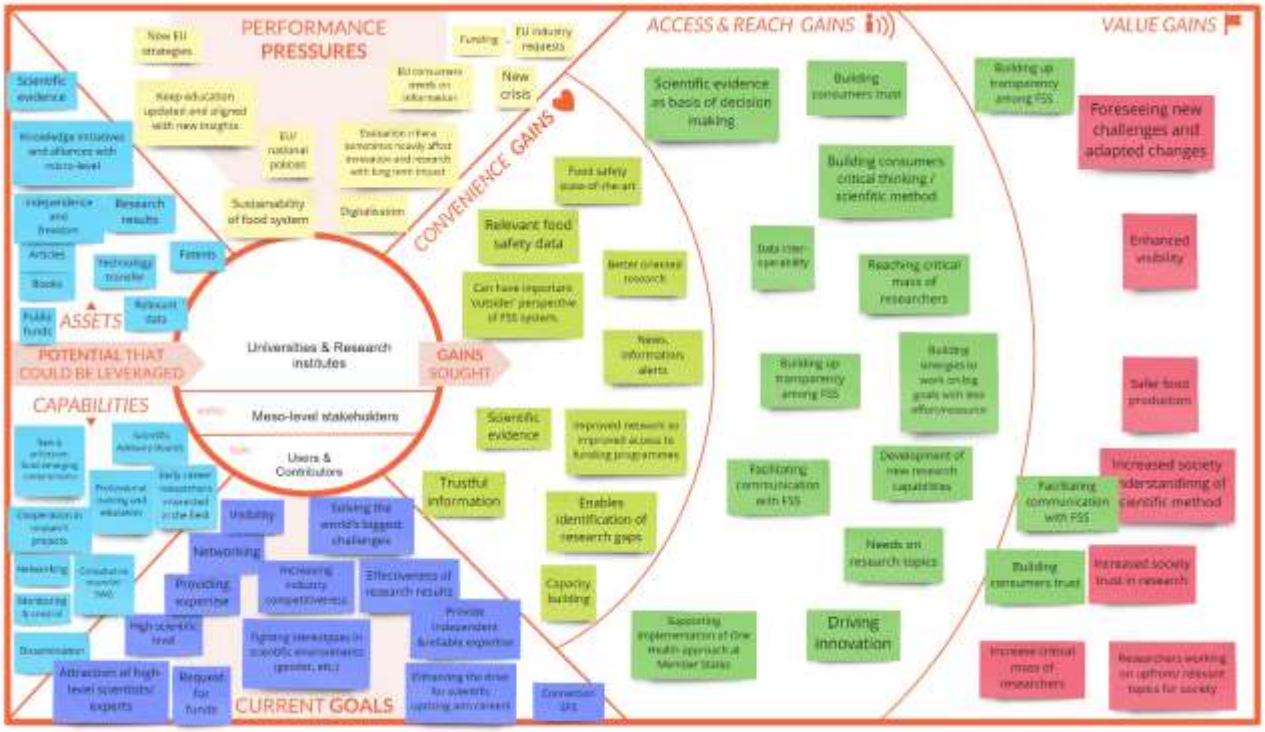

Fig. 11 - FSS Meso- level portrait Canvas – Universities &Research institutes

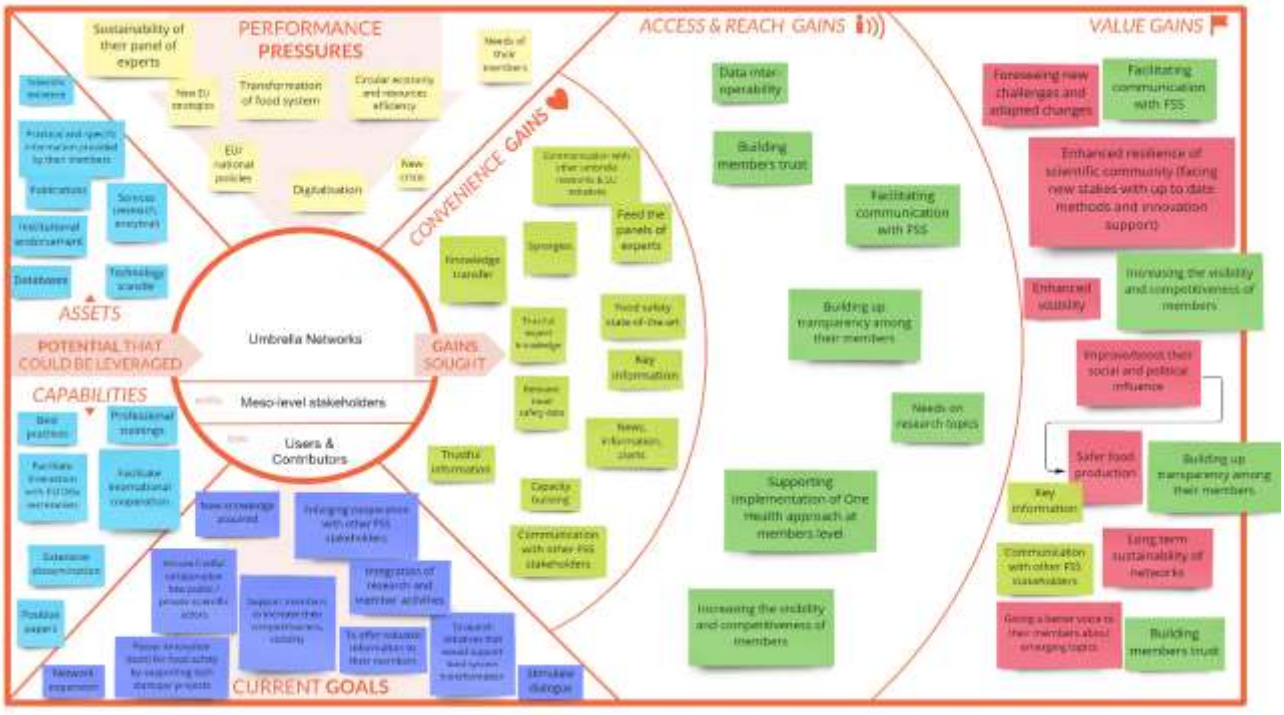

Fig. 12. FSS Meso- level portrait Canvas – R&D Networks

In the following tables assets and capabilities, goals, performance pressures and gains as identified in the portrait canvas are presented.

Table 4. Assets and capabilities of Meso-level stakeholders

Meso-level FSS actors (stakeholders) portrait-role	
Universities & Research Institutes	**R&D Networks**
Assets	
Scientific evidences	Scientific evidences
Knowledge initiatives and alliances with micro-level	Institutional endorsement
Independence and freedom	Services (analytic, research)
Publications: articles, books	Publications: articles, books
Research results	Databases
Relevant data	Practical and specific information provided by their members
Patents	Technology transfer offers
Technology transfer offers	
Public funds	
Capabilities	
New and unforeseen food emerging contaminants	Best practices
Scientific Advisory Boards	Professional trainings
Cooperation in research projects	Facilitate interaction with EU DG secretariats
Professional training and education	Facilitate international cooperation
Early career researchers interested in the field	Extensive dissemination
Networking	Position papers
Consultative council/SWG	
Monitoring and control	
Dissemination	

The assets of Universities&Research institutes and R&D Networks are very similar, taking into account that R&D Networks usually are associations of research organizations/teams. Both type of organizations has research results to be exploited, publications, patent and technology and knowledge transfer to offer. Concerning capabilities, both type of organizations could organize trainings and could be involved in education activities as well as in dissemination of research results to the all FSS stakeholders.

Experts from Universities&Research institutes could be involved in Scientific Advisory Boards and Consultative councils and Working Groups. Could be also involved in Monitoring and control activities by Official control organizations and could identify New and unforeseen food emerging contaminants through targeted researches.

The R&D Umbrella networks could facilitate international cooperation but also communication with EU DG offices, and could elaborate position papers in order to propose the new needed R&D topics or to contribute to different EU R&D Strategies.

Table 5. Goals and Performance Pressure of Meso-level stakeholders

Meso-level FSS actors (stakeholders) portrait-role	
Universities & Research Institutes	**R&D Networks**
Goals	
Harmonization of legislation in force	Stimulate dialogue
Official adequate control and monitoring	To launch initiatives that would support food system transformation
Safe food products	To offer valuable information to their members
EU Consumers trust	Integration of research and members activities
Reference labs	Enlarging cooperation with FSS stakeholders
Provide risk management tools/guidelines	Support members to increase their competitiveness, visibility
Implementation of EU good practices at national level	New knowledge acquired
Good communication with FSS stakeholders	Ensure fruitful collaboration both public/private scientific stakeholders
	Foster innovation for food safety by supporting tech start-up/projects
	Network expansion
Performance Pressure	
New EU strategies	New EU strategies
EU/National policies	EU/National policies
Sustainability of food system	Sustainability of their panel experts
Evaluation criteria sometimes heavily affect and research with long-term impact	Transformation of food system
New crises	New crises
Funding	Circular economy and resource efficiency
Digitalization	Digitalization
EU consumers needs on information	Needs of their members
Recommendations and advices requested by the food industry	

The goals of Universities&Research institutes are to find solutions for the problems that food chain should overcome in order to have safe food products and to re-gain the EU Consumers trust in the food chain. For all of these, they could be involved in providing risk management tools/guidelines as well as to implement EU good practices at national level. Setting up reference labs R&D organizations could offer supporting for an official adequate control and monitoring. With a good communication with FSS stakeholders and on the basis of their expertise, R&D organizations could also support the harmonization and improvement of the legislative framework.

R&D Networks desire to offer real time valuable information to their members contributing to increase their competitiveness, as well as their visibility. The R&D Networks, being more powerful than a single organization, could easier facilitate and stimulate dialogue between their members and with other FSS stakeholders, enlarging in this way the cooperation with them, ensuring a fruitful collaboration both public/private scientific stakeholders. The networks are supporting integration of research and members activities, fostering innovation for food safety and they could launch initiatives that would support food system transformation.

Both type of organizations relates Performance Pressure with existing strategies and EU/national legislative framework but also related to the new crises or pressure of needs on digitalization of the system. The need of transformation of food system in one more sustainable, responsible, competitive, resistant and inclusive developing the circular economy and using resources in a more efficient way is the main Performance Pressure that both type of organizations is taking into account.

Another Performance Pressures are the requests from industry and consumers to be regularly fed with updated food safety new information but also to maintain sustainability of their panel experts in case of R&D Networks.

Funding is a huge pressure for R&D activities, especially during period of crises (e.g., pandemic, the war) and evaluation criteria sometimes heavily affect and research with long-term impact.

Table 6. Gains that Meso-level stakeholders will have been FS4EU Platform user

Meso-level FSS actors (stakeholders) portrait-role	
Universities & Research Institutes	**R&D Networks**
Conventional gains	
Food safety state-of-the art	Food safety state-of-the art
Relevant food safety data	Relevant food safety data
Can have an outsider perspective on food safety	Communication with other umbrella networks&EU initiatives
Better oriented research	News, information, alerts
News, information, alerts	Synergies
Scientific evidence	Trustful information
Trustful information	Feed the panel of experts
Improved network, improved access to funding programmes	Trustful expert knowledge
Enable identifying the research gaps	Capacity building
Capacity building	Knowledge transfer
	Communication with other FSS stakeholders
	Key information
Access and reach gains	
Building consumers critical thinking, scientific methods	Increase visibility and competitiveness of their members
Reaching critical mass of researchers	Needs on research topics
Building synergies to work on big goals with less resources/effort	Supporting implementation of One Health approach
Needs on research topics	Data interoperability
Supporting implementation of One Health approach	Building transparency among their members
Driving innovation	Facilitation communication with FSS stakeholders
Developing new research capabilities	Building members trust
Scientific evidence as basis of decision making	
Data interoperability	
Building transparency among FSS stakeholders	
Facilitation communication with FSS stakeholders	
Building consumers trust	

Meso-level FSS actors (stakeholders) portrait-role	
Universities & Research Institutes	**R&D Networks**
Value gains	
Foreseeing new challenges and adapted changes	Foreseeing new challenges and adapted changes
Enhanced EU visibility	Enhanced EU visibility
Safer EU food production	Enhance resilience of scientific community (facing new stakes with up-to-date methods and innovation support)
Increase society trust in research	Giving a better voice to their members about emerging topics
Increasing society understanding on scientific methods	Long term sustainability of network
Increase critical mass of researchers	Safer EU food production
Researchers working on upfront/topics for society	Improve/boost their social and political influence

The gains that both organizations could have been FS4EU Platform user are firstly to have access to relevant food safety data, including news, key and trustful information and alerts, and to have a real picture of Food safety state-of-the art. In this way, they should have better oriented research in order to build up synergies, to create new knowledge and to obtain scientific evidence for a specific problem. Capacity building is another gain that both type of organization could foresee.

Another gain is the opportunity that platform will offer in building up consortia and to improve, in this way, the access to funding programmes.

The platform will offer also the opportunity to better communicate with other umbrella networks&EU initiatives and with other FSS stakeholders. This will in the Knowledge transfer activities but also in feeding the panel of experts, finding the appropriate expertise for a specific debate/working group.

The common access and reach gains that both organizations will obtain are related to:

- facilitation communication with FSS stakeholders,
- and, having access to more data, data interoperability is another gain that this meso-level stakeholders want to have,
- identifying priorities and needs on research,
- and, very important, supporting implementation of One Health approach.

Another access and reach gains are related to improving R&D working environment by reaching critical mass of researchers, developing new research capabilities, building synergies to work on big goals with less resources/effort and driving innovation.

The cooperation with other FSS stakeholders is important by opportunity that Platform will give to build transparency among all FSS stakeholders, but, very important is to build consumers critical thinking through scientific methods and, in this way, to build consumers trust.

On the other side, specifically for R&D Networks they are interested to build transparency and trust among their members and to increase visibility and competitiveness of their members.

The value gains that Platform will offer to both type of R&D organizations is enhancing their visibility at EU level, foreseeing new challenges and adapted changes and reaching a safer EU food production.

For Universities&Research institutes it is very important to increase society understanding on scientific methods and, in this way, to increase society trust in research. This, further, will lead to increase critical mass of researchers and researchers to work on upfront/topics for society.

For the R&D Networks the specific value gains are related with enhancing resilience of scientific community, facing new stakes with up-to-date methods and innovation support and boosting their social and political influence. This will lead to have a better voice to their members (i.e., about emerging topics) but also to maintain a long-term sustainability of the network.

4.2.3 The FSS actors (stakeholders) portrait for Micro-level

For the Micro-level group (governmental organizations): 3 FSS stakeholders' portraits were realized for Micro-level: Food associations/ federations/ food companies/ farmers/ farmers associations; Innovative companies, laboratories and other supporting services; Consumer organizations, media as shown below:

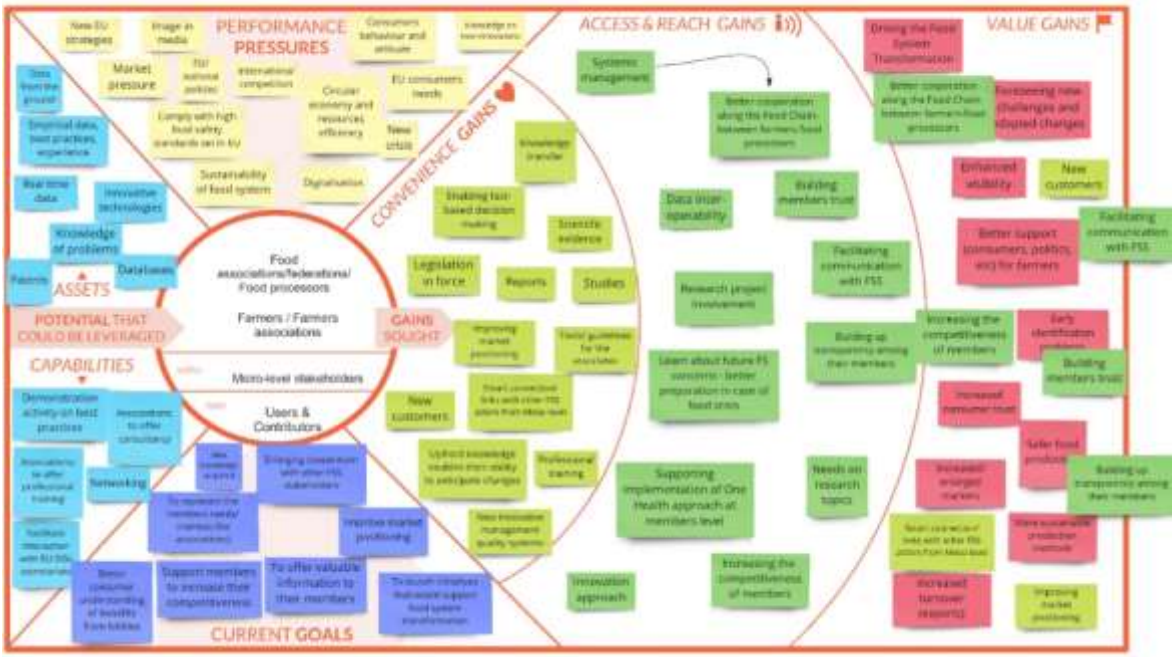

Fig. 13. FSS Micro- level portrait Canvas – Food associations/ federations/ food companies/ farmers/ farmers associations

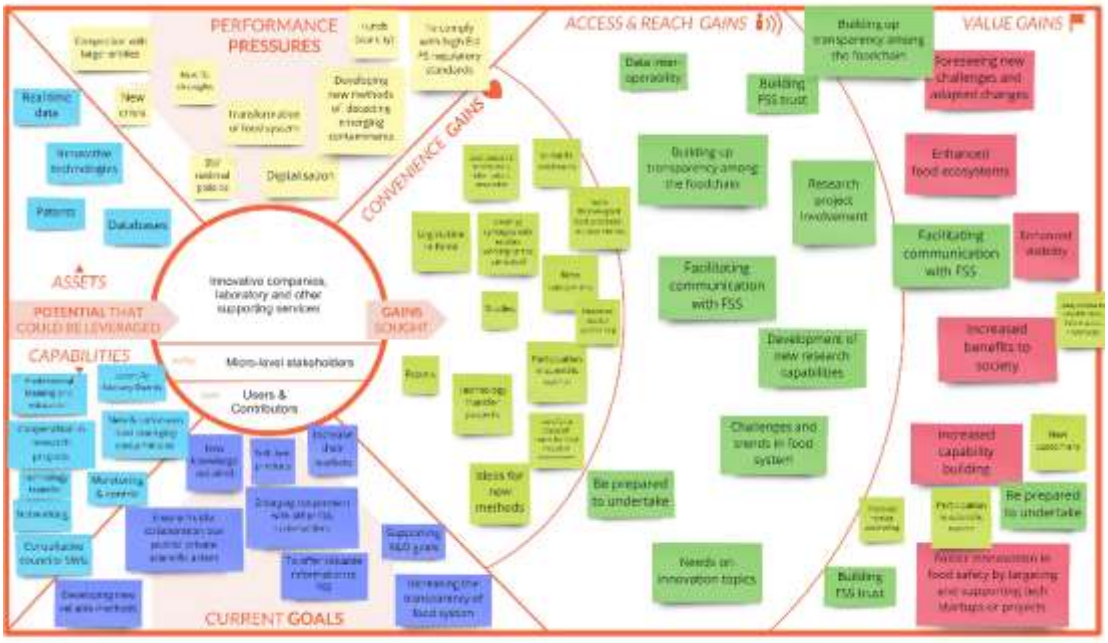

Fig. 14 - FSS Micro- level portrait Canvas - Innovative companies, laboratories and other supporting services

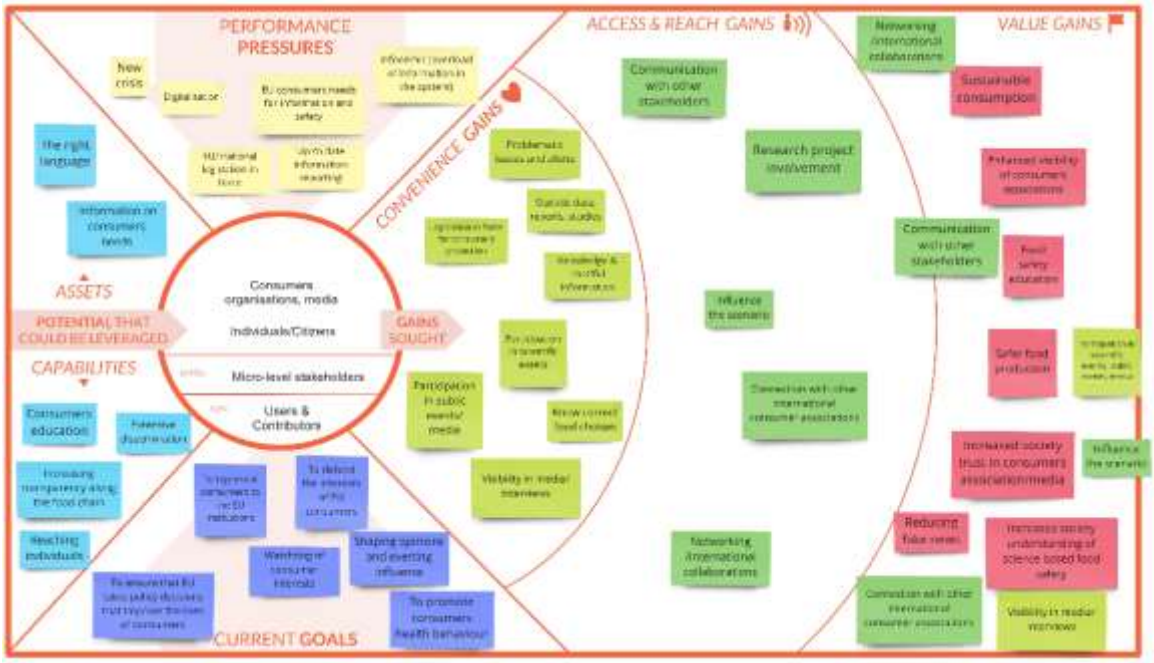

Fig. 15. FSS Micro- level portrait Canvas – Consumer organizations, media

In the following tables assets and capabilities, goals, performance pressures and gains as identified in the portrait canvas are presented.

Table 7. Assets and Capabilities of Micro-level stakeholders

Micro-level FSS actors (stakeholders) portrait		
Food associations/ federations/ food companies/ farmers/ farmers associations	**Innovative companies, laboratories and other supporting services**	**Consumer organizations, media**
Assets		
Data from the ground	Scientific evidences	The right language
Real time data	Real time data	Information on consumers' needs
Empirical data, best practices, experience	Innovative technologies	
Innovative technologies	Databases	
Knowledge of problems	Patents	
Databases		
Patents		
Capabilities		
Demonstration activities on best practices	Professional training and education	Consumer education
Consultancy activities (associations)	Scientific Advisory Boards	Extensive dissemination
Networking	Facilitate cooperation in research projects	Increasing transparency along the food chain
Professional training	New and unforeseen food emerging contaminants	Reaching individuals

Micro-level FSS actors (stakeholders) portrait		
Food associations/ federations/ food companies/ farmers/ farmers associations	**Innovative companies, laboratories and other supporting services**	**Consumer organizations, media**
Facilitate interactions with DG secretariats	Technology transfer	
	Monitoring and control	
	Networking	
	Consultative councils/SWG	

Micro-level stakeholders are consisting in 3 types of stakeholders: Food associations/ federations/ food companies/ farmers/ farmers associations (**FBO**), Innovative companies, laboratories and other supporting services (**I&SS**) and Consumer Organizations and media (**C&M**).

The first two type of stakeholders (FBO and I&SS) have similar needs and different than the third one (C&M).

The Assets of the three types of stakeholders are related to data and databases they have from their experience and practice (real time, empirical), patents and their innovative technologies. Additionally, they have knowledge about expected and unexpected problems and challenges that occur at the level of food production and consumption.

Professional trainings and networking are the ones of the common capabilities that FBO and I&SS have. They have also the capability to participate as expert or consultant in different Advisory Boards and Scientific Working Groups.

I&SS has the capabilities to support official control organizations in monitoring and control activities and could come with information about new and unforeseen food emerging contaminants.

C&M has the capability to reach individuals and to engage them in a participatory process within different projects contributing to increase the transparency along the food chain but also to assure an extensive dissemination among the EU citizen.

Table 8. Goals and Performance Pressure of Micro-level stakeholders

Micro-level FSS actors (stakeholders) portrait-role		
Food associations/ federations/ food companies/ farmers/ farmers associations	**Innovative companies, laboratories and other supporting services**	**Consumer organizations, media**
Goals		
New knowledge acquired	New knowledge acquired	To represent consumers to the EU institutions
Enlarging cooperation with other FSS stakeholders	Enlarging cooperation with other FSS stakeholders	To defend the interest of EU consumers
To represent members needs interests	Developing new reliable methods	Shaping opinions and exerting influence
Support members to increase their competitiveness	Ensuring fruitful cooperation between public/private scientific actors	Watchdog of consumer interests
To offer valuable information to members	Sell their products	To ensure that EU take policy decisions that improve the lives of consumers
To launch initiative for supporting food system transformation	Increase their market	To promote consumers health behaviours

Micro-level FSS actors (stakeholders) portrait-role		
Food associations/ federations/ food companies/ farmers/ farmers associations	**Innovative companies, laboratories and other supporting services**	**Consumer organizations, media**
Improve market positioning	Supporting R&D goals	
Better consumer understanding of benefits from lobbies	Increasing the transparency of food system	
	To offer valuable information to FSS stakeholders	
Performance Pressure		
New EU strategies	New EU strategies	EU consumers needs on information and safety
EU/National policies	EU/National policies	EU/National policies
Sustainability of food system	Competition with larger entities	Infodemic overload of information on the system
International competition	Transformation of food system	Update information reporting
New crises	New crises	New crises
Digitalization	Digitalization	Digitalization
Circular economy and resources efficiency	Funds (scarcity)	
EU consumers needs	Developing new methods on detecting emerging contaminants	
To comply with high EU FS regulatory standards	To comply with high EU FS regulatory standards	
Market pressure		
Image in media		
Consumer behaviour and attitude		
Knowledge on new Innovation		

The three types of micro-level stakeholders - FBO, I&SS and C&M – has the goals according with their mission, but the first two have similar goals such as: to acquire new knowledge, associations to offer valuable information to members and companies to become more competitive. Another common goal is to enlarge cooperation with other FSS stakeholders and to improve food market positioning for better selling of their products and to support food system transformation and, as one of the consequences, to increase the transparency of the food system.

The third type micro-level stakeholder, C&M, have the main goal to promote consumers health behaviours and to represent consumers to the EU institutions in order to defend the interest of consumers by promoting EU policy decisions that will improve the lives of EU consumers.

The Performance pressures of the micro-level stakeholders are related to EU/National policies, new EU strategies (e.g., transformation of food system - sustainability and circular economy), new crises and digitalization.

The first 2 categories of stakeholders are facing to a huge competition at the level of their market and they should comply with high EU FS regulatory standards and with new food safety challenges such as, new emerging contaminants. FBO are connected to the C&M, the 3rd category of micro stakeholders by Performance pressure to have a good image in media and to be informed about consumers needs and their food behaviour and attitude.

The 3rd category, is sometimes overloaded with confusing messages about food safety and they should collaborate with stakeholders at the level of entire food safety system in order to have access at trustful and valuable updated information that could be shared among the consumers/citizens.

Table 9. Expected Gains for Micro-level stakeholders as FS4EU Platform users

Micro-level FSS actors (stakeholders) portrait-role		
Food associations/ federations/ food companies/ farmers/ farmers associations	**Innovative companies, laboratories and other supporting services**	**Consumer organizations, media**
Conventional gains		
Enabling fact-based decision making	Easy access to reliable data, information and knowledge	Participation in public events/media
Knowledge transfer	Identifying research needs for food industry and laboratories	Visibility in media/interviews
Scientific evidence	Scientific evidence	Problematic issues and alerts
Legislation in force	Legislation in force	Legislation in force for consumer protection
Reports, studies	Reports, studies	Statistic data, reports, studies
Tools, guidelines for the associates	Creating synergies with entities working in the same goals	Knowledge and trustful information
Improving market position	Improving market position	Participation in scientific events
Smart connection, links with other FSS stakeholders from micro-level	Learn from/exploit best practices - success stories	Know correct food choices
New customers	New customers	
Professional trainings	Participation in scientific events	
New innovative management quality systems	Technology transfer projects	
Upfront knowledge enables their ability to anticipate changes	Ideas for new methods	
Access and reach gains		
Increase visibility and competitiveness of their members	Research project involvement	Research project involvement
Learning about future FS concerns - better preparation in case of food crisis	Needs on innovation topics	Networking/international collaboration
Needs on research topics	Supporting implementation of One Health approach	Facilitation communication with other FSS stakeholders
Supporting implementation of One Health approach	Data interoperability	Influence the scenario
Innovation approach	Building transparency among FSS stakeholders	Cooperation with other international consumer associations
Better cooperation along the food chain between farmers and food processors	Challenges and trends in food system	
Data interoperability	Building FSS stakeholders trust	

Micro-level FSS actors (stakeholders) portrait-role		
Food associations/ federations/ food companies/ farmers/ farmers associations	**Innovative companies, laboratories and other supporting services**	**Consumer organizations, media**
Research projects involvement	Be prepared to undertake	
Building transparency among their members	Development of new research capabilities	
Facilitation communication with other FSS stakeholders	Facilitation communication with other FSS stakeholders	
Building members trust		
Value gains		
Foreseeing new challenges and adapted changes	Foreseeing new challenges and adapted changes	Sustainable consumption
Enhanced EU visibility	Enhanced Food ecosystem	Enhanced visibility of consumer associations
Better support (consumers, politics, etc.) for farmers	Increased benefits to society	Food safety education
Early identification problems	Increased capacity building	Safer food production
Safer food production	Foster innovation in food safety by targeting and supporting tech startups and projects	Increased society trust in consumer associations/media
More sustainable production methods	Be prepared to undertake	Reducing fake news
Increased, enlarged market	Enhanced visibility	Increased society understanding of science-based food safety
Driving the food system transformation		
Increased consumers trust		
Increased turnover (exports)		

The conventional gain that micro-level stakeholders could obtain being users of FS4EU Platform is firstly having an easier access to reliable data and knowledge, updating their information from different publications: reports, studies, statistic data and legislative framework. Upfront knowledge enables their ability to anticipate changes, to develop new innovative management quality systems or ideas for new methods. Other gains are related to opportunities to knowledge and technology transfer, professional trainings and access to tools and guidelines which will lead to increase FBO and I&SS competitiveness and, as a consequence, improving their market position.

Building up smart connection and links with other FSS stakeholders for exploiting and learning from the best practices - success stories - and creating synergies with entities working in the same goals, is an important gain that micro-level stakeholders could obtain.

The Platform gives opportunities to C&M to participate to the scientific events, to have access to knowledge and trustful information and to have knowledge about correct food choices.

The common access and reach gains for the micro-level stakeholders are: facilitation communication with other FSS stakeholders and involvement in research projects.

For FBO and I&SS, the following are important to be gained:

- data interoperability;
- building transparency and trust among the members of associations/federations but also among FSS stakeholders;

- learning about future FS concerns to be better prepared in case of food crisis (be prepared to undertakes);
- supporting implementation of One Health approach;
- information about the needs on research topics.

Cooperation is also very important and this is a gain that could be obtained through enhancing networking/international collaboration, but also cooperation along the food chain between farmers and food processors as well as cooperation, in the case of C&M stakeholders, with other international consumer associations.

The value gains that could be foreseen are firstly enhanced their visibility, and enlarged their market. Foreseeing new challenges and adapted changes and early identification of problems are also very important to be gained.

Receiving support for improving safety and sustainability of food production and consumption, driving in this way the food system transformation is a value gain with further impact in enhancing food ecosystem and increasing benefits to society.

Fostering innovation in food safety by targeting and supporting tech startups and projects is identified as a value gain that could be obtained that could be bases on an increased capacity building and a continuous food safety education.

Another value gains that micro-level stakeholders could have, are:

- increasing society understanding of science-based food safety;
- reducing fake news;
- increasing consumers trust in food chain;
- increasing society trust in consumer associations/media.

4.3 The motivation matrix

For analyzing the Motivations to exchange value between all 7 categories of stakeholders included in the three levels macro-, meso- and micro defined, the current and potential flows of values that it can be seen to happen (or potential happening) between the FSS stakeholders-roles, was mapped. Finally, the established 7 categories of stakeholders were analyzed in terms of contributions to the FS4EU platform but also as users of it, and defining in this way the potential services that FS4EU platform could offer. The relationship and cooperation interests between stakeholders were identified.

Taking into account the Stakeholders assets and capabilities, each of them could contribute to the platform development and participatory process to fulfill the 6 key functions under the 6 principles of Science-Policy-Society-Interface defined for food system transformation (see chapter 2).

For Motivation matrix designing, firstly the Food Safety assets and capabilities of each type of stakeholders were analyzed related to interests that the other FSS stakeholders could have in its. Additionally, the gains of the three groups of stakeholders (macro-, meso- and micro-) were also taken into consideration in order to identify the Platform value propositions.

The analysis of assets and capabilities that FSS stakeholders could offer to the Platform

Table 10. The assets and capabilities of Ministries & Food Safety Authorities (National) that could be used by other stakeholders

		Ministries & Food Safety Authorities (National)	EU and international public organizations	Universities & Research institutes	R&D Umbrella Networks	Food associations/ federations/ Food processors	Innovative companies, laboratory and other supporting services	Consumers organizations, media
Ministries & FSA	National Policies and Strategies	x	X	x	x	x	x	x
	National Challenges & Trends	x	X	x	x	x	x	x
	Studies, reports and analyses	x	X	x	x	x	x	x
	Statistics & Databases	x	X	x	x	x	x	x
	Announcements, Communication, Alerts	x	X	x	x	x	x	x
	Funding programmes	no	No	x	x	x	x	x
	Involving stakeholders in operative working groups/ workshops/ other events	no	No	x	x	x	x	x
	Best practices	x	X	x	x	x	x	x
	Designing co-creation process for data sets, models	no	No	x	x	x	x	x
	Trainings	no	No	x	x	x	x	x

Ministries & Food Safety Authorities are playing, at the national level, one of the most important roles in driving transformation of Food Safety System by supporting all FSS stakeholders' engagement into a participatory process, by involving them in operative working groups and trainings but also, by organizing R&I funding programmes for new knowledge and products/technologies creation.

Table 11. The assets and capabilities of EU and international public organizations that could be used by other stakeholders

		Ministries & Food Safety Authorities (National)	EU and international public organizations	Universities & Research institutes	R&D Umbrella Networks	Food associations/ federations/ Food processors	Innovative companies, laboratory and other supporting services	Consumers organizations, media
Public European and international level organizations	EU Policies and Strategies	x	x	x	x	x	x	x
	Studies, analyses, assessment and reports by international organizations	x	x	x	x	x	x	x
	EU/ International Challenges & Trends/One Health and SDGs	x	x	x	x	x	x	x
	Trainings	no	no	x	x	x	x	x
	Funding programmes	no	no	x	x	x	x	x
	Creation of EU platforms/ fora	x	no	x	x	x	x	x
	Evaluation of food contaminants, additives	no	no	x	x	x	x	No
	Sharing knowledge & Best practices	x	x	x	x	x	x	x
	Connecting findings from different international (EU) projects	x	no	x	x	x	x	x
	Involving stakeholders in operative working groups/ workshops etc.	x	no	x	x	x	x	x

Some of the assets and capabilities of EU and international public organizations are similar with those identified for the Ministries & Food Safety Authorities, but at EU/international level. These organization could involve EU/international stakeholders and could better integrate the FSS information needed to find solutions for regional/global challenges.

Table 12 The assets and capabilities of Universities & Research institutes that could be used by other stakeholders

		Ministries & Food Safety Authorities (National)	EU and international public organizations	Universities & Research institutes	Umbrella Networks	Food associations/ federations/ Food processors	Innovative companies, laboratory and other supporting services	Consumers organizations, media
Academia & Research	Scientific evidence (research results and relevant data)	x	x	x	x	x	x	x
	Publications	x	x	x	x	x	x	x
	Knowledge initiatives and alliances with micro-level	no	no	no	no	x	x	x
	New & unforeseen food emerging contaminants	x	x	x	x	x	x	x
	Patents	no	no	x	x	x	x	x
	Experts for Scientific Advisory Boards/ Consultative Councils/ SWG	x	x	x	x	x	x	x
	Networking and Dissemination	x	x	x	x	x	x	x
	Monitoring & control	x	x	no	x	no	no	no
	Cooperation in research projects	no	no	x	x	x	x	x
	Early career researchers interested in the field	no	no	x	no	no	no	no
	Professional training and education	no	no	x	x	x	x	x

Academia and Research are main driver forces for creating new knowledge and to find solutions for the FSS challenges, for training and educating FSS stakeholders, including consumers/citizens and for participating in improving food policies in order to further improve and maintain food safety.

Table 13. The assets and capabilities of R&D Umbrella Networks institutes that could be used by other stakeholders

		Ministries & Food Safety Authorities (National)	EU and international public organizations	Universities & Research institutes	R&D Umbrella Networks	Food associations/ federations/ Food processors	Innovative companies, laboratory and other supporting services	Consumers organizations, media
R&D Umbrella Networks	Best practices	x	x	x	x	x	x	x
	Scientific evidence	x	x	x	x	x	x	x
	Professional trainings	no	no	x	x	x	x	x
	Position papers	x	x	no	no	no	no	no
	Technology transfer	no	no	no	x	x	x	no
	Databases	x	x	x	x	no	no	no
	Facilitate interaction with EU DGs secretariats	no	no	x	x	x	x	x
	Facilitate international cooperation	x	x	x	x	x	x	x
	Practical and specific information provided by their members	no	no	x	x	x	x	x
	Networking and Dissemination	x	x	x	x	x	x	x
	Publications	no	no	no	x	x	x	x
	Services (research, analytical)	x	x	no		x	x	x

R&D Umbrella Networks are coming to make more efficient R&I activities, putting together research results and facilitate cooperation between research teams, research and food business operators but also research and EU/National authorities and policy makers. They can exploit the research results by facilitating the

connection with the macro and micro level, by using FS4EU science-based results to provide: the macro level with practical knowledge for transforming the existing FSS; the micro-level with the new communication schemes proposed by FS4EU, thus contributing to transform the way to communicate and engage consumers. In this way, they can play an important role of integration the new knowledge into society (Science-Policy-Society interface) but also for identifying gaps and needs for future research.

Table 14. The assets and capabilities of Food associations/ federations/ Food processors that could be used by other stakeholders

		Ministries & Food Safety Authorities (National)	EU and international public organizations	Universities & Research institutes	R&D Umbrella Networks	Food associations/ federations/ Food processors	Innovative companies, laboratory and other supporting services	Consumers organizations, media
Food associations/ federations/ Food processors	Data from the ground / Empirical data / Real time data / Best practices	x	x	x	x	x	x	x
	Databases	x	x	x	x	x	x	x
	Sharing knowledge of problems	x	x	x	x	x	x	x
	Associations: to offer consultancy	no	no	no	no	x	no	no
	Networking and Dissemination	x	x	x	x	x	x	x
	Patents and innovative technologies	no	no	x	x	x	x	x
	Professional training	no	no	x	x	x	x	x
	Facilitate interaction with EU DGs secretariats	no	no	no	x	x	no	x

Food associations/ federations/ Food processors are the FSS stakeholders that have an effective and the most important role in assuring food to be safe. Having real time Data from the ground they have knowledge of problems that could be shared among the other FSS stakeholders in order to be solved. More, when represented in farmers/producers' associations, they could use/refer to FSOLabs' output in their information to consumers, and feed opinion papers/policy briefs asking for any policy changes those influencing the macro-level. They need new knowledge and best practices to keep their production safe and their market position. They could apply general insights and input for practical recommendations, including best practices, to improve food safety assurance all along the value chain.

Table 15 The assets and capabilities of Innovative companies, laboratory and other supporting services that could be used by other stakeholders

		Ministries & Food Safety Authorities (National)	EU and international public organizations	Universities & Research institutes	Umbrella Networks	Food associations/ federations/ Food processors	Innovative companies, laboratory and other supporting services	Consumers organizations, media
Innovative companies, laboratory and other supporting services	Experts for Stakeholders Advisory Boards, Consultative councils/ SWG	x	x	x	X	x	x	x
	Cooperation in research projects	no	no	x	X	x	x	x
	Patents and innovative technologies	no	no	x	X	.x	x	x
	Real time data	x	no	x	X	x	x	x
	Monitoring & control	x	no	x	X	x		
	Networking	x	x	x	X	x	x	x
	New & unforeseen food emerging contaminants	x	no	x	No	x	no	no
	Professional training for students	no	no	x	No	no	x	no
	Technology transfer	no	no	no	No	x	no	x

Other supporting service are also contributing with information and real time data from the ground and they are interested in collaboration, in data interoperability as well as trainings and technology transfer.

Table 16. The assets and capabilities of Consumers organizations and media that could be used by other stakeholders

		Ministries & Food Safety Authorities (National)	EU and international public organizations	Universities & Research institutes	R&D Umbrella Networks	Food associations/ federations/ Food processors	Innovative companies, laboratory and other supporting services	Consumers organizations, media
Consumers organizations, media	Extensive dissemination	x	x	x	x	x	x	x
	The right/ appropriate language (media)	no	no	no	no	x	x	x
	Information on consumers' needs / Consumers education	no	no	no	no	no	no	x

Consumers and the civil society (considered as individual, as well as represented in associations and organized groups) can use some exploitable research results (i.e., knowledge and communication materials, such as information sheets, glossary, videos) to be informed about FSS and apply some recommendations. They could also spread information among society, while adopting safer food behaviors in their daily routine; finally, being more aware about food safety, they could also contribute to the shaping the FSS of the future by participating in large public consultations, or providing input during FS4EU events.

The motivation matrix (below) represents the basis for building and define the business model, thus including the free and payment services that can contribute to the financial sustainability of the platform in the long run. The motivation matrix is comprising the assets and capabilities that FSS stakeholders could offer (from the tables 10-16.) but also the gains that FSS stakeholders expect to have as the platform users (from the tables 4 ,5, 8).

The gains resulted from the tables 3 ,6, 9, clustered into a first approach of categories:

Policy and strategic documents

1. Legislative framework;
2. Development of food safety strategies identifying the gaps and needs on research topics; challenges and trends in food system;
3. Building synergies to work on big goals with less resources/effort;
4. Driving the food system transformation: sustainable production and consumption;
5. Scientific and enabling fact-based decision-making decision making;
6. Implementation of One Health approach;
7. Improving quality of official control procedures and more accurate measurements at labs level;
8. Reducing fake news and safer food production.

Research and innovation

9. Research - better oriented -researchers working on upfront/topics for society; research projects involvement;
10. Driving innovation: knowledge transfer; supporting tech startups and projects;

11. Scientific evidences;
12. Enhance resilience of scientific community (facing new stakes with up-to-date methods and innovation support) - increasing society understanding on scientific methods;
13. Feed the panel of experts - trustful expert knowledge.

Knowledge Hub

14. Easy access to reliable data, information and knowledge: real ongoing food safety system status and relevant food safety data;
15. Publications: reports, studies, tools, guidelines, articles, etc.;
16. Knowledge and trustful information about new initiatives, new alerts about emerging risks, updating scientific knowledge, new innovative management quality systems, new methods, etc.
17. Data interoperability and upfront knowledge enables their ability to foresee new challenges and adapted changes - being anticipatory;

Professional training and education

18. Professional training and food education – improving the food choices;
19. Exchange experience/Sharing views;
20. Learning about future FS concerns - better preparation in case of food crisis (prepared to undertake); learn from/exploit best practices - success stories; early identification problems;
21. Building consumers food safety knowledge, critical thinking and trust in scientific methods and daily expertise;

Capacity building

22. Capacity building: developing new research capabilities and reaching critical mass of researchers;
23. Opportunities to participate in scientific events, public events/media; enhance EU and worldwide visibility and becoming an authorized voice; increased visibility in media/interviews

Cooperation

24. Linking with other international initiatives;
25. Building transparency and facilitation communication among FSS stakeholders and engagement with other stakeholders (consumer organizations, industry, civil society, social media etc.);
26. Better cooperation along the food chain between FSS stakeholder at EU/international level;
27. Better support (consumers, politics, etc.) for farmers; Influence the scenario;
28. Improving market position: new customers and increased turnover (exports).

These categories together with the FSS stakeholders' assets and capabilities were discussed within the working group and have led to the following Motivation Matrix.

The motivation matrix (below) represents the basis for building and define the business model, that will include also services for the long- term sustainability of the platform.

	Platform structure				Interactions													
	motivations/needs -> services	Levels			Ministries & Food Safety Authorities		European and international organization		Universities & Research institutes		R&I Umbrella Networks		Agri-Food associations/ federations/ Agri-Food processors		Innovative companies, laboratory and other supporting services		Consumers organisations, media	
		A	B	Obs.	Contributor	User	Contributor	User	Contributor	User	Contributor	User	Contributor	User	Contributor	User	Contributor	User
1	Policies	a. National policy	a. Policy for agrofood industry		x	x	x	x		x		x		x		x		x
		b. European policy	b. Consumer protection policy		x		x	x		x		x		x		x		x
		c. Strategic documents	c. National Challenges&Trends		x	x		x		x		x		x		x		x
			d. Food Safety Strategies (including initiating, development and supporting)		x	x	x	x	x	x	x	x	x	x		x		
			e. Enabling fact-based decision making/Scientific evidence as basis of decision making		x		x	x		x		x		x		x		
		b. One Health	a. Systemic management		x	x	x	x	x	x	x	x	x	x		x		
			b. New innovative management quality systems		x	x	x	x	x	x	x	x	x	x		x		
2	Food Safety Information and Knowledge	a. Studies			x	x	x	x	x	x	x	x		x		x		x
		b. Reports and analysis (including evaluations about food contaminants and additives)			x	x	x	x	x	x	x	x		x		x		x
		c. Reseach results				x		x	x	x	x	x		x		x		x
		d. Position papers			x	x	x	x	x	x	x	x	x	x		x		x
		e. Global/EU/National management and technological FS practices				x		x		x		x	x	x	x	x		x
		f. Food Safety state-of-the art			x		x	x	x	x	x	x	x	x	x	x		x
3	Food Safety Data	a. Real time data and data from the ground				x		x	x	x	x	x	x	x	x	x	x	x
		b. Databases			x	x	x	x	x	x	x	x	x	x	x	x	x	x
		c. Statistics and interoperability			x	x	x	x	x	x	x	x	x	x		x		x
4	Announcements/ Communication	a. New initiatives at EU/Regional/National/Local levels			x	x	x	x	x	x	x	x	x	x	x	x	x	x
		b. Alerts (i.e emerging risks)			x	x	x	x	x	x	x	x	x	x	x	x	x	x
		c. New & unforseen food emerging contamintans			x	x	x	x	x	x	x	x	x	x	x	x	x	x
5	Research	a. Funding programmes			x	x	x	x		x	x	x	x	x		x		x
		b. Relevant Research projects	a. Cooperations in research projects		x		x		x	x	x	x	x	x	x	x	x	x
		c. New research topics	a. Research needs for research by food chain stakeholders (industry, laboratories, research)		x	x	x	x	x	x	x	x	x	x	x	x	x	x
		d.Research gaps identified			x	x	x	x	x	x	x	x	x	x	x	x	x	x
6	Co-creation	Involving stakeholders	a. operative working groups/ workshops/ other events/ data sets, models		x	x	x	x	x	x		x		x		x		x
			b. data sets, models		x	x	x	x	x	x		x		x		x		x
			c. Engaging social media and users		x	x	x	x	x	x		x		x		x	x	x
			d. Engaging civil society in risk assesment		x	x	x	x	x	x		x		x		x	x	x
			e. Building consumers critical thinking / scientific method		x	x	x	x	x	x		x		x		x	x	x
		Networking and dissemination from stakeholders	f. Practical and specific information		x	x	x	x	x	x		x		x		x		x
7	Scientific experts database	Experts for Scientific Advisory Boards		Intranet/humhub spaces		x		x	x	x	x	x	x	x	x	x		x
		Experts for Consultative Councils				x		x	x	x	x	x	x	x	x	x		x
		Experts for Scientific Working Groups				x		x	x	x	x	x	x	x	x	x		x
8	Updates on FS management systems	a.Quality of official control procedures				x		x	x	x	x	x		x	x	x		x
		b. More accurate mesurements at labs level				x		x	x	x	x	x		x	x	x		x
		c. New methods and management systems				x		x	x	x	x	x		x	x	x		x
9	Services promotion and offer	a. Research services offer				x		x	x	x	x	x		x		x		x
		b. Laboratory/pilot/industrial scale xperimental tests				x		x	x	x	x	x	x	x	x	x		x
		c. Analytical measurements services offer				x		x	x	x	x	x		x	x	x		x
		d. Training/kanowledge transfer	a.Blending learning methods about FS concerns		x	x	x	x	x		x		x	x	x	x		x
			b.On-line courses/webinars		x	x	x	x	x		x		x	x	x	x		x
		e. Tools and guidelines			x	x	x	x	x		x		x	x		x		x
		f. Consultancy				x		x	x		x		x	x		x		x
10	Innovation - information and services	a.Technology transfer projects							x	x	x	x	x	x	x	x		x
		b. Patents							x	x	x	x	x	x	x	x		x
		c. Innovation projects							x	x	x	x	x	x	x	x		x
		d. Innovation funding programmes			x		x			x		x		x		x		x
11	Capacity Building	a. Infrastructure					x		x	x	x	x	x		x	x		
		b Research capabilities					x		x	x	x	x	x		x	x		
12	Forum				x	x	x	x	x	x	x	x	x	x	x	x	x	x

Fig. 16. FS4EU platform motivation matrix

The Motivation matrix is giving us a perspective about the functionality of the FS4EU Platform in order FSS stakeholders having access to knowledge, tools, instruments and cooperation for supporting transformation of Food System in a more sustainable, competitive, responsible, resistant and inclusive one.

Compiling the results obtained from tables over presented such as: 3,6 and 9 as well as those from 10 to 16, showed several categories of information and services that FSS stakeholders need. They are grouped in 12 categories as it can be seen in Fig. 16: Policies (1), Food Safety Information and knowledge (2), Food Safety Data (3), Announcement/Communication (4), Research (5), Co-creation (6), Scientific experts database (7), Updates on FS management systems (8), Services promotion and offer (9), Innovation – information and services (10), Capacity building (11) and Forum (12). Each category comprises several details about what this category should contain.

After consulting achievements and Key Exploitable Results which are obtained or are going to be obtained by other Work Packages and, starting from Fig. 16 (the FS4EU platform motivation matrix) a draft of FS4EU motivation matrix as a basis for the platform services design has been elaborated, as it can be seen in Fig. 17. In this matrix a further clustering of the 12 value propositions has been made to better structure the areas of expected services of the platform, that have been reduced to 10. A further matching exercise with FSS stakeholders role (as user or contributor) has been conducted, to better define the main areas of services to be designed and defined.

Stakeholders			1. Ministries & Food Safety Authorities (National							2. EU and international public organizations							3. Academia & Research							4. R&D Umbrella Networks							5. Food associations/ federations/ Food processors							6. Innovative companies, laboratory and other supporting services							7. Consumers organisations, media						
			1	2	3	4	5	6	7	2	1	3	4	5	6	7	3	1	2	4	5	6	7	4	1	2	3	5	6	7	5	1	2	3	4	6	7	6	1	2	3	4	5	7	7	1	2	3	4	5	6
No	Platform offer	Description	Contributor	User of information given by the other Stakeholders							Contributor	User of information given by the other							Contributor	User of information given by the other							Contributor	User of information given by the other							Contributor	User of information given by the other							Contributor	User of information given by the other							Contributor	User of information given by the other					
1	Infopack policy	EU and National Policies	x	no	no	no	no	no	no	x	x	no	no	no	no	no	no	x	x	no	no	no	no	no	x	x	no	no	no	no	no	x	x	no	no	no	no	no	x	x	no	no	no	no	no	x	x	no	no	no	no
		EU/National studies, reports and analysis	x	no	no	no	no	no	no	x	x	no	no	no	no	no	no	x	x	no	no	no	no	no	x	x	no	no	no	no	no	x	x	no	no	no	no	no	x	x	no	no	no	no	no	x	x	no	no	no	no
2	Science-policy scenarios and strategies	EU and National Strategies	x	no	no	no	no	no	no	x	x	no	no	no	no	no	x	x	no	no	no	no	no	x	x	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no
		EU/National Challenges & Trends; Science-Policy-Society interface	x	no	no	no	no	no	no	x	x	no	no	no	no	no	x	x	no	no	no	no	no	x	x	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no
3	Envisioning of the food system	One Health approach; SDGs	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		Position papers	no	no	no	x	no	no	no	x	no	x	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
		Studies and analyses and reports by EU and international organisations and other publications related to the contribution to transformation of food system	no	x	x	x	no	no	no	x	no	x	no	no	no	no	x	no	x	x	no	no	no	x	no	no	x	x	no	no	no	no	no	x	x	x	no	no	no	no	x	x	x	no	no	no	x	x	x	no	no
4	Research; research app	Scientific evidence (research results and relevant data) as basis of decision making	no	no	x	x	no	no	no	no	no	x	x	x	no	no	x	no	no	no	no	no	no	x	no	no	x	no	no	no	no	no	no	x	x	no	no	no	no	x	x	no	no	no	no	no	x	x	no	no	no
		Statistics & Databases	x	no	no	x	x	no	no	no	x	x	x	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no
		Connecting findings from different international (EU) projects: relevant research projects	no	x	no	no	no	no	no	x	no	no	no	no	no	no	no	no	x	no	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no
		Cooperation in research projects	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	x	no	no	no	no	no	no	no	no	no	no
		Early career researchers interested in the field	no	no	no	no	no	no	no	no	no	x	no	no	no	no	x	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
		Cooperation in research projects	no	no	no	no	no	no	no	no	no	no	no	x	no	no	x	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	x
		Funding programmes	x	no	no	no	no	no	no	x	no	no	no	no	no	no	x	x	no	no	no	no	no	no	no	no	x	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no
		New and emergent research topics; research gaps	x	x	x	x	no	no	no	x	x	x	x	no	no	no	x	x	x	x	no	no	no	x	x	x	x	no	no	no	no	x	x	x	x	no	no	no	x	x	x	x	no	no	no	x	x	x	x	no	no
		Training and Consultancy on Designing and Implementing support action projects, Infrastructures projects (assests), business models	no	no	no	no	no	no	no	no	no	no	no	no	no	no	x	no	no	x	no	no	no	x	no	no	x	no	no	no	no	no	no	x	x	no	no	no	no	x	x	no	no	no	no	no	x	x	no	no
		Facilitate international cooperation	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	no	no	no	no	no	x	no	no	no	no	no	no	no	no	no	no	x	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no
5	News	Announcements, Communication, Alerts	x	no	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no
		Professional trainings and education (videos; webinars; courses)	no	x	no	no	no	no	no	x	no	no	no	no	no	no	x	x	x	x	x	no	no	x	x	x	x	x	no	no	no	no	x	x	x	x	x	no	x	x	x	x	x	x	no	no	x	x	x	x	no
		Forum	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
6	Stakeholders' Engagement	Involving stakeholders in operative working groups/ workshops/ other events	x	no	no	no	no	no	no	x	no	no	no	no	no	no	no	x	x	no	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	x	no	no	no	no	no	x	no	no	no	no
		Designing co-creation process for data sets, models: Methodology, organizing a participatory process, toolkit co-creation, engagement strategy	x	x	x	x	no	no	no	x	no	x	x	no	no	no	x	x	x	x	no	no	no	x	x	x	x	no	no	no	no	x	x	x	x	no	no	no	x	x	x	x	no	no	no	x	x	x	x	no	no
		Creation of EU platforms/ fora	no	x	no	no	no	no	no	x	no	no	no	no	no	no	no	no	x	no	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no
		The right/ appropriate language (media)	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	x	no	no	no	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	no	no
		Information on consumers needs / Consumers education	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	x	no	no	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	no	no
		Facilitate interaction with EU DGs secretariats	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	x	no	no	no	no	no	no	no	no	x	no	no	no	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no
		Networking and Dissemination	no	no	x	x	x	x	x	no	no	x	x	x	x	x	x	no	no	no	no	x	x	x	no	no	x	x	x	no	x	no	no	x	x	x	x	no	x	no	no	x	x	x	x	no	no	x	x	x	x
		Knowledge initiatives and alliances with micro-level stakeholders	no	no	no	no	no	no	no	no	no	no	no	no	no	no	x	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	x	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no
7	Food safety knowledge	Evaluation of food contaminants, additives	no	x	no	no	no	no	no	x	no	no	no	no	no	no	no	no	x	no	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no
		Sharing knowledge & best practices: articles, reports and analysis, brochures, studies, standards; databases; knowledge on food safety novelties (e.g., new methods for detecting emerging contaminants)	no	x	no	x	no	no	no	x	x	no	x	no	no	no	x	x	x	no	no	no	no	x	x	x	no	no	no	no	no	x	x	no	x	no	no	no	x	x	no	x	no	no	no	x	x	no	x	no	no
		New & unforseen food emerging contaminants	no	no	x	no	no	x	no	no	no	x	no	no	no	x	no	x	no	no	no	no	x	no	no	no	no	x	no	x	no	no	no	x	no	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no
		Monitoring & control	no	no	x	no	no	x	no	no	no	x	no	no	no	no	x	no	no	no	no	x	no	no	no	no	no	x	no	x	no	no	no	no	x	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
		Data from the ground / Empirical data / Real time data / Best practices	no	no	no	no	x	x	no	no	no	no	no	x	no	no	no	no	no	x	x	no	no	no	no	no	no	x	x	no	x	no	no	no	no	x	no	x	no	no	no	no	no	no	no	no	no	no	no	no	x
		Practical and specific information provided by networks/associations members	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	x	no	no	no	x	no	no	no	no	x	no	no	no	no	no	x	no	no	no	no	no	no	no	no	no	no	no	no	no	x	no	no
		Sharing knowledge of problems	no	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	x	no	x	no	no	no	no	x	no	x	no	no	no	x	no	no	no	no	no	no	no	x	no	no	no	no	no	no	x	no	x	no
8	Innovation/ Knowledge and technology transfer	Patents and innovative technologies; Selected information on digital tools promoting traceability and transparency of the food chain system	no	no	no	no	no	no	no	no	no	no	no	no	no	no	x	no	no	no	x	x	no	no	no	no	no	no	no	x	x	no	no	no	no	x	no	x	no	no	no	x	x	no	no	no	no	x	x
		Consultancy and advisory about exploiting of the R&D project results (technology and knowledge transfer), innovation projects – Eureka, Eurostars, BBI, EIT etc.).	no	no	no	no	no	no	no	no	no	no	no	no	no	no	x	no	no	x	no	no	no	x	no	no	x	x	no	no	no	no	no	x	x	no	no	no	no	x	x	no	no	no	no	x	x	no	no
		Technology transfer	no	no	no	no	no	no	no	no	no	no	no	no	no	no	x	no	no	x	no	no	no	x	no	no	no	no	x	x	no	no	no	no	x	no	no	no	no	x	x	no	no	no	no	no	x	no	no	no	x
9	Experts' finder app	Experts' data base: xperts for Scientific Advisory Boards/ Consultative Councils/ SWG	no	no	x	no	no	x	no	no	no	x	no	no	x	no	x	no	no	no	no	x	no	x	no	no	no	x	no	x	no	no	no	x	no	x	no	x	no	no	x	no	no	no	no	x	no	x	no	no	x
10	Other Services	Services (research, analytical)	no	no	no	x	no	no	no	no	no	no	x	no	no	no	no	no	no	no	no	no	no	x	no	no	no	no	x	no	no	no	no	no	x	no	no	no	no	x	no	no	no	no	no	no	no	x	no	no	no
		Hosting services for private companies, NGOs: Stakeholders' services promotion, new initiatives, new tools and guidelines for detecting emerging contaminants, etc.	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	x	x	x	no	no	no	no	no	x	x	x	no	no	no	no	x	x	x	no	no	no	no	x	x	x	no	no	no	no	x	x
		Hosting services for public messages: Multiply the policy makers mission (including alerts and crises mesasges, official control procedures, etc)	x	x	x	no	no	no	no	x	x	x	no	no	no	no	x	x	x	no	no	no	no	no	x	x	x	no	no	no	no	x	x	x	no	no	no	x	x	x	no	no	no	no	x	x	x	no	no	no
		Associations: to offer consultancy	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	x	no	no	no	no	no	no	no	no	no	x	no	no	no	no	x	no	no	no	no	no	x	no	no	no	no	no	x	no	no	no

Fig. 17. FS4EU motivation matrix as a basis for drafting the platform services design

What was the rationale for elaborating the draft of FS4EU motivation matrix as a basis for the platform services design?

The explanation can be shown in the table below (Table 18), where the list of the value propositions is being aligned and matched with the expected areas of services (10) that the platform could offer. This list includes also several additional needs (in black) as identified in Fig. 17.

Table 18. The FS4EU motivation matrix as a basis for drafting the platform services design and align the users needs and requirements

	Value propositions from the FS4EU platform motivation matrix (Fig. 16)			**Preliminary list of areas for services to be defined and developed referring to the FS4EU motivation matrix (Fig. 17) as a basis for the platform services design (draft)**	
1	Policies	**1.** National policy: Policy for agrifood industry, Consumer protection policy; **2.** European policy: Policy for agrifood industry, Consumer protection policy; **3.** Strategic documents: National Challenges&Trends, Food Safety Strategies (including initiating, development and supporting); Enabling fact-based decision making/Scientific evidence as basis of decision making; **4.** One Health; Systemic management; New innovative management quality systems	1	Policy Infopack	National policy: Policy for agrifood industry, Consumer protection policy **(1);** European policy: Policy for agrifood industry, Consumer protection policy **(2).**
2	Food Safety Information and knowledge	**5.** Position papers; **6.** Studies, Reports and analysis (including evaluations about food contaminants and additives); **7.** Research results; **8.** Global/EU/National management and technological FS practices **9.** Food Safety state-of-the art	2	Science-policy scenarios and strategy	Strategic documents: National Challenges&Trends, Food Safety Strategies (including initiating, development and supporting); Enabling fact-based decision making/ Scientific evidence as basis of decision making **(3)**

	Value propositions from the FS4EU platform motivation matrix (Fig. 16)			Preliminary list of areas for services to be defined and developed referring to the FS4EU motivation matrix (Fig. 17) as a basis for the platform services design (draft)	
3	Food Safety Data	**10.** Databases; **11.** Statistics and interoperability; **12.** Real time data and data from the ground	3	Envisioning of the food system	One Health approach **(4);** SDGs Position paper **(5)** Studies, analyses and reports by EU and international organizations and other publications related to the contribution to transformation of food system **(6, 4 and 34).**
4	Research	**13.** Funding programmes **14.** Relevant Research projects **15.** New research topics; **16.** Research gaps identified; **17.** Cooperations in research projects; **18.** Research needs of the food chain stakeholders (industry, laboratories, research).	4	Research; research app	Scientific evidence (research results and relevant data) as basis of decision making **(7);** Statistics & Databases **(10 and 11**); Connecting findings from different international (EU) projects; Funding programmes **(13);** Relevant research projects **(14)** New and emergent research topics **(15 and 18);** Research gaps **(16);** Cooperation in research projects and facilitate international cooperation **(17)** Training and Consultancy on Designing and Implementing support action projects, infrastructures projects (assets), business models **(46)**; Early career researchers interested in the field **(45).**
5	Announcements Communication	**19.** New initiatives at EU/Regional/National/Local levels **20.** Alerts (i.e., emerging risks) **21.** New & unforeseen food emerging contaminants	5	News	Announcements and Communication **(19)**, Alerts **(20);** Professional trainings and education – videos; webinars; courses, **(38);** Forum **(47).**

	Value propositions from the FS4EU platform motivation matrix (Fig. 16)			Preliminary list of areas for services to be defined and developed referring to the FS4EU motivation matrix (Fig. 17) as a basis for the platform services design (draft)	
6	Co-creation	**22.** Involving stakeholders in operative working groups/ workshops/ other events/ data sets, models; **23.** Networking and dissemination from stakeholders; **24.** Data sets, models; **25.** Engaging social media and users; **26.** Engaging civil society in risk assessment; **27.** Building consumers critical thinking / scientific method; **28.** Practical and specific information	6	Stakeholders' Engagement	Involving stakeholders in operative working groups/ workshops/ other events **(22)** Designing co-creation process for data sets, models: Methodology, organizing a participatory process, toolkit co-creation, engagement strategy (**26);** Creation of EU platforms/ Fora The right/ appropriate language (media) **(26)** Information on consumers' needs/Consumers education **(28)** Networking and Dissemination **(23)** Facilitate interaction with EU DGs secretariats Knowledge initiatives and alliances with micro-level stakeholders
7	Scientific expert's database	**29.** Experts for Scientific Advisory Boards; **30.** Experts for Consultative Councils; **31.** Experts for Scientific Working Groups.	7	Experts' finder app	Experts' data base: experts for Scientific Advisory Boards/ Consultative Councils/ SWG (**29, 30 and 31**).
8	Updates on FS management systems	**32.** Quality of official control procedures; **33.** More accurate measurements at labs level; **34.** New methods and management systems.	8	Food safety knowledge	Evaluation of food contaminants, additives Sharing knowledge & Best practices: articles, reports and analysis, brochures, studies, standards; databases; knowledge on food safety novelties (e.g., new methods for detecting emerging contaminants) **(8 and 9);** New & unforeseen food emerging contaminants **(21)**; Monitoring & control **(32)**; Data from the ground / Empirical data / Real time data / Best practices **(12)**; Practical and specific information provided by networks/associations members **(28);** Sharing knowledge of problems
9	Services promotion and offer	**35.** Research services offer; **36.** Laboratory/pilot/industrial scale experimental tests; **37.** Analytical measurements services offer; **38.** Training/knowledge transfer;	9	Other Services	Research Services, analytical and pilot/industrial experiments **(33, 35 and 36);** Hosting services for private companies, NGOs: Stakeholders' services promotion, new initiatives, new

	Value propositions from the FS4EU platform motivation matrix (Fig. 16)			Preliminary list of areas for services to be defined and developed referring to the FS4EU motivation matrix (Fig. 17) as a basis for the platform services design (draft)	
		39. Tools and guidelines; **40.**Consultancy.			tools and guidelines for detecting emerging contaminants, etc. **(37, 38 and 39)**; Hosting services for public messages: Multiply the policy makers mission (including alerts and crises messages, official control procedures **(32),** etc.); Associations: to offer consultancy **(40)**
10	Innovation – information and services	**41.**Technology transfer projects; **42.**Patents; **43.**Innovation projects; **44.**Innovation funding programmes.	10	Innovation/ Knowledge and technology transfer	Technology transfer **(41)**; Patents and innovative technologies; Selected information on digital tools promoting traceability and transparency of the food chain system **(42)**; Consultancy and advisory about exploiting of the R&D project results (technology and knowledge transfer), innovation projects – Eureka, Eurostars, BBI, EIT etc.). **(43 and 44)**.
11	Capacity building	**45.**Research capabilities; **46.**Infrastructure			
12	Forum	**47.**Forum			

According to these motivation matrix evidences, FSS stakeholders from the different levels have been identified as potential contributors as well as potential users of the services that will be offered by the platform. The scheme below is a preliminary scheme that combines the FSS stakeholders with the services, further clustered in three main big needs/areas of interest: knowledge – networking – as opportunity to grow in the system – and access to resources and data.

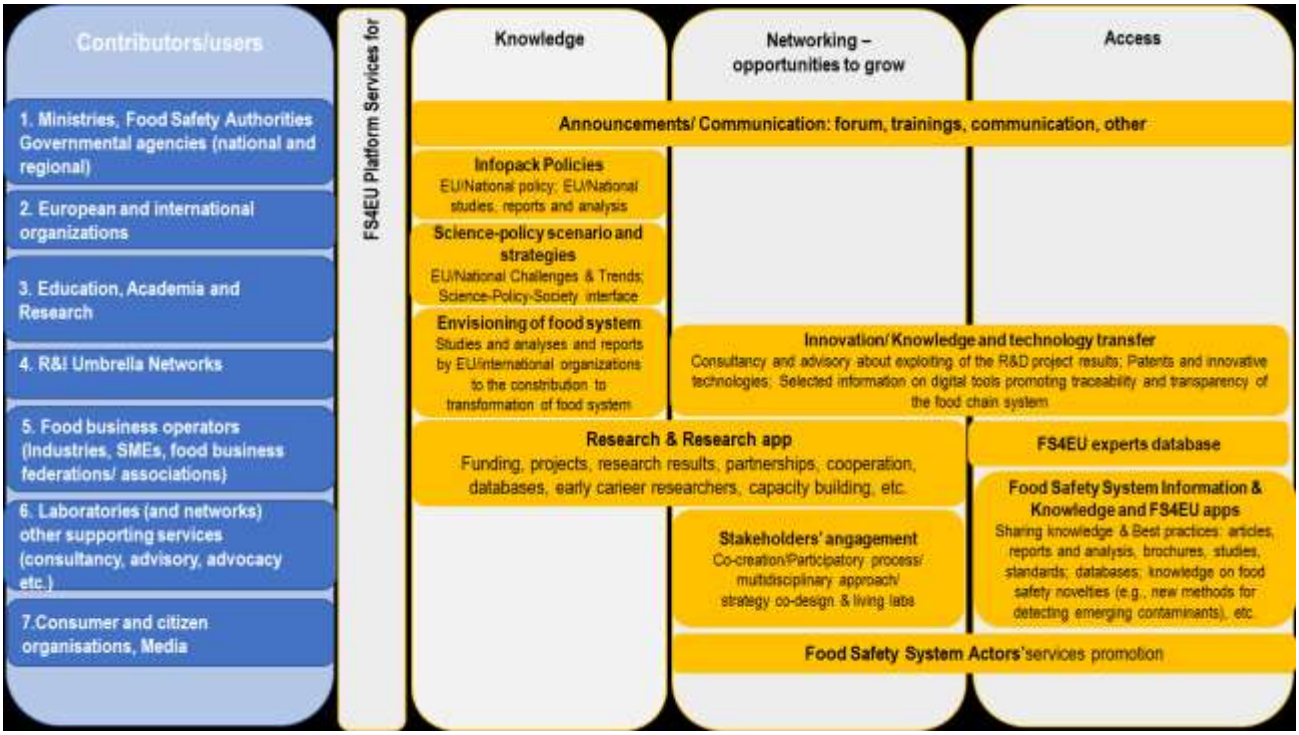

Fig. 18. FS4EU platform concept

5 Conclusions

The work conducted in this Deliverable was done in 2 steps using different tools: Canvas Platform design toolkit 2.2, Excel sheets, Miro Boards through brain stormings and workshops:

1. Methodology development – approach, templates and learning process - for understand and adapt Canvas platform design toolkit to be used for FS4EU purpose and,
2. Map and details the stakeholders' role.

The Food Safety System Stakeholders were organized, by the 4 Hubs (South, West, North and East), in 4 categories: Macro-level, Meso-level, Micro-level, and Platform Shapers, identifying 7 groups according with their role along the food chain and society:

1. Ministries, Food Safety Authorities Governmental agencies (national and regional);
2. European and international organizations;
3. Education, Academia and Research;
4. R&D Umbrella Networks;
5. Food associations / federations / Food business operators;
6. Laboratories (and networks) other supporting services (consultancy, advisory, advocacy etc.);
7. Consumer and citizen organizations, media.

For each FSS stakeholders' category a portrait has been realized, taking into consideration their assets, capabilities, their goals and performance pressure and, the gains that they foresee to have using the platform: conventional, access and reach and value gains.

All of these are influencing the Platform structure and the Motivation matrix could be setting up using the following information:

- the Assets and Capabilities could be shared through the platform with other stakeholders;
- the Goals and Performance pressure give the needs on using different services;
- the Gains that the FSS stakeholders foresee to have by using the Platform could be included in the services that Platform could offer.

The first defined Motivation matrix (fig. 16) identified 12 Value propositions that the Platform could offer. After a series of brainstorming exercises, the FS4EU motivation matrix as a basis for the platform services design has been drafted with 10 Value Propositions, including entire information from the previous one. These 10 Value Propositions have drawn the Platform concept and are being used for the Minimum Viable Platform that will be structured on the basis of the "cooperation-transaction boards". They will be also considered for the Platform Business Model.

FoodSafety4EU

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FOR FOOD SAFETY IN EUROPE

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