

T4 IMPROVING COMPETENCE SKILLS & CREATIVITY

Deliverable D.T.4.3.3

**Policy recommendation
report**

Version 1
05 2019





Project code: CE393
Project acronym: I-CON
Title: Improving Competences and skills through Food sector InNovations

Deliverable D.T.4.3.3

Policy recommendation report

Work package T4:
Improving competence skills & creativity

Activity:
A.T4.3 Impact assessment and policy appraisal

Document issued by: **Pomurje Technology Park**

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Delivery month: **05/2019**

Version: **1.0**

Document language: **ENG**

Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants	
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1. BACKGROUND SUMMARY: I-CON PROJECT

From I-CON project Application Form:

Deliverable D.T4.3.3 Policy recommendation report: Recommendations to policy makers at regional level (RIS3) and recommendations at transnational level (Food DrinkEurope)

Project I-CON strives to improve competences and skills of food related SMEs through tools and techniques.

In the framework of the I-CON project, ten competent partners, in collaboration with local and transnational partners and stakeholders, established reliable and strong relationships and improved entrepreneurial competences and skills in their remote local environments through enhancement of food innovation potentials in SMEs:

- PTP-LP, SI011, Pomurska;
- CCIS-CAFE-PP2, SI021, Osrednjeslovenska;
- BIZ-UP-PP3, 3AT312, Linz-Wels;
- CBHU-PP4, HU101, Budapest;
- STRIA-PP5, HU231, Baranya;
- CNA ER-PP6, ITH55, Bologna;
- UNISEF-PP7, ITH34, Treviso;
- UHOH-PP8, DE111 Stuttgart, Stadtkreis;
- KIGPSiO-PP9, PL127, Miasto Warszawa;
- SCCI-PP10, SK010, Bratislavský kraj.

FOOD SECTOR is traditional industry that is through smart specialization identified as the most potential sector to achieve socio-economic multiplier effects. In I-CON project included remote regions in SI, HU, PL, SK are facing declining employment opportunities in traditional industries as a result of structural change. This emphasizes the need to take steps to stimulate economic activity with employment generating potential in maintaining a critical mass of facilities to support economic development.

Within the I-CON task Developing online interactive map, PTP in cooperation with other project partners, elaborated the online Atlas Mapping Tool (AMP).

The main objective of AMP is to provide users all relevant information to leverage joint cooperation possibilities.

AMT is online tool providing a visual depiction (geographic data) of joint possibilities (RIS 3 supporting measures) and solutions providers (technology, design and food safety)



enabling regional SMEs to access the resources and opportunities necessary to meet their needs and reach the advancing knowledge.

I-CON Atlas Mapping Tool is in practice online tool to investigate food sector specific areas of mechatronics, food safety and geographic areas by selecting the data mapped from the menu.

Focus of Atlas Mapping Tool is on good practice cases that enable SMEs to get access to cost efficient solutions, able to assure quality and safety of their products and be better in risk management.

The goal of all partners and their regions, to create and offer the integrated knowledge hub for food processing SMEs by meeting their need for good, practical, real solutions in the domain of three food sector topics, is fully accomplished.

This online tool with geographic data positioning and identified solution providers underpin contacts to specific facilitator (either by competence or country), who will audit the issue of SME and forward “needs” to most competent transnational mentor in pool of experts.

The tool supports SMEs by providing geographic overview of the available services, support schemes and supportive ecosystem across the regions. Sample materials and links to helpful resources are provided where existing. By providing a visual depiction of joint possibilities the tool is supposed to play a powerful role in guiding policy, planning, and strategic actions to joint solutions as well as B2B instrument.

Impact and benefits are in form of concrete support for food related SMEs in need, to reach: the solutions in the field of mechatronics, food safety and quality, food design issues; access to pool of experts/mentors and facilitators to link them with competent resources (either human or financial); skills to use available tools, improving SMEs competitiveness, reducing costs, improving performance, assuring repeatable quality and better handling of risk management.

After launching online Atlas Mapping Tool within the partnership, I-CON partners continue to enter data into the databases and use it on daily bases.

Both, “demand” (SMEs in need) and “supply” (mentors and good practice case solutions’ providers) gain from match-making process, where joint projects are to be reach, especially if both sides find appropriate funding solutions in the same hub, under section of RIS3 support instruments.

Dissemination activities in food related SMEs community are organized in a way that enables SMEs, with or without assistance of facilitators, to use the tool on daily bases and get access to competent skills that enable them quicker introduction of new products on the market, decrease costs and lowers environmental impacts.

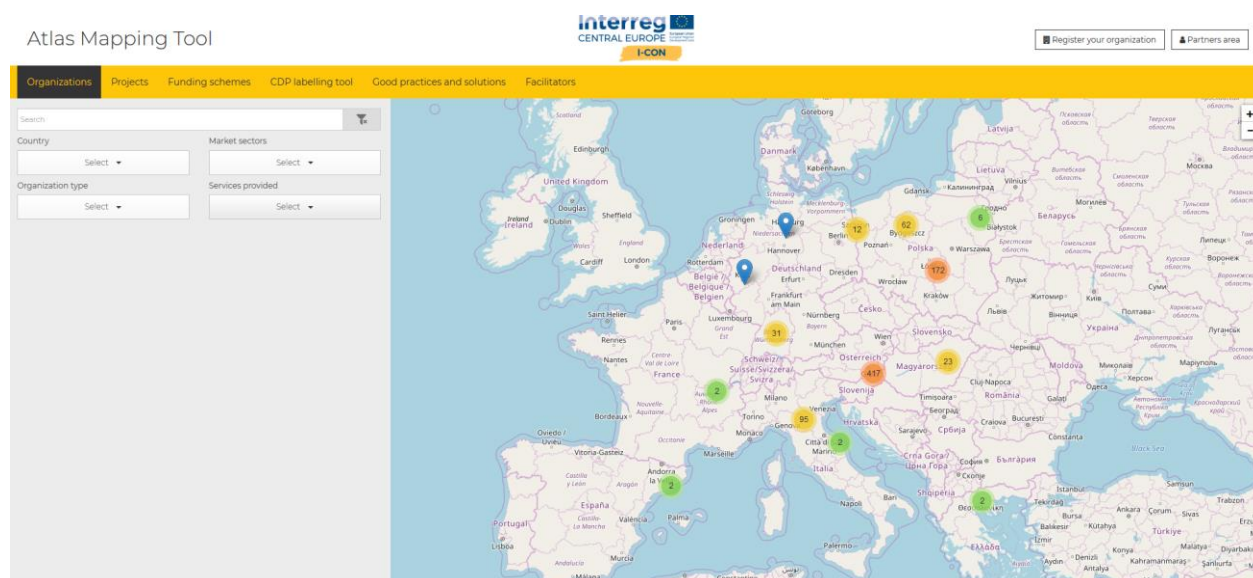


AMT permanently grows in data and attract various players from the sector that multiplies match-making possibilities, filling database with relevant data and assuring long time sustainability.

The focus of the activity itself is online interactive mapping tool that provides a visual depiction of joint possibilities. That enables understanding of how well regions, SMEs, RD Institutions and supportive environment are able to access the I-CON resources and opportunities.

The tool is an open web platform therefore available to SMEs and stakeholders that have interest.

<http://www.p-tech.si/icon-mapping/>

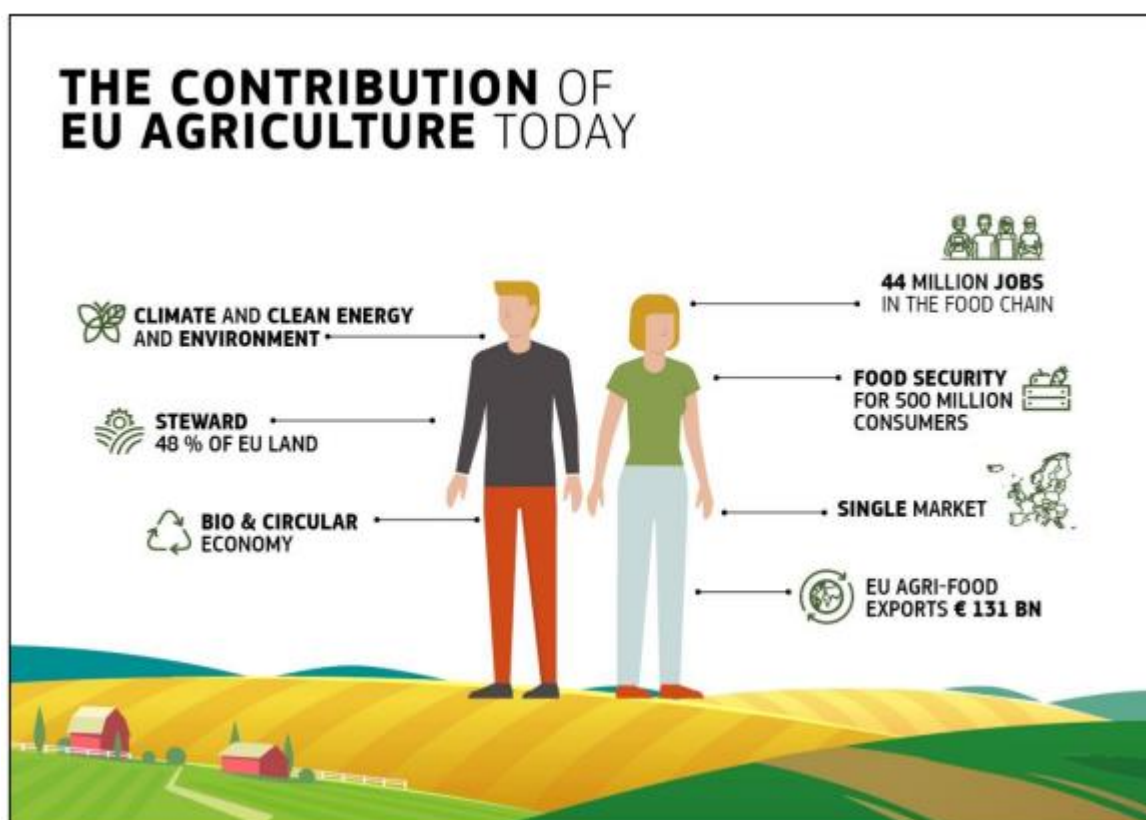


In project I-CON elaborated Transnational Food Mentor Scheme Strategy and Action Plan (TFMS-AP) represents developed joint cooperation strategy to integrate and transfer skills, experiences and knowledge in three important food sector topics: 1) mechatronics, 2) food safety, quality and labeling, 3) food design. TFMS-AP reflects the goal of all partners and their regions to create and offer the integrated knowledge hub for food processing SMEs (ATLAS mapping tool) by meeting their needs for good, practical, real solutions in the domain of three food sector topics (mechatronics, food safety, quality, labeling).

2. ANALYSIS OF THE POLICY ISSUES IN AGROFOOD

New EU Context in AGROFOOD

The EU's farm sector and rural areas are major players in terms of the Union's well-being and its future. EU Agrofood is one of the world's leading producers of food, and guarantees food security for over 500 million European citizens. The EU's farmers are also the first stewards of the natural environment, as they care for the natural resources of soil, water, air and biodiversity on 48% of the EU's land (foresters a further 36%) and provide essential carbon sinks and the supply of renewable resources for industry and energy. They also depend directly on these natural resources. Large numbers of jobs depend on farming, either within the sector itself (which provides regular work for 22 million persons) or within the wider food sector (farming, food processing and related retail and services together provide around 44 million jobs). The EU's rural areas as a whole are home to 55% of its citizens¹ while serving as major bases for employment, recreation and tourism.



None of these benefits can however be taken for granted. Unlike most other economic sectors, farming is strongly affected by the weather; it is also frequently tested by volatile prices, natural disasters, pests and diseases - with the result that, every year, at least 20% of farmers lose more than 30% of their income compared with the average of the last three years. At the same time pressure on natural



resources is still clearly present partly as a result of some farming activities. Climate change threatens to make all of the above-mentioned problems weigh more heavily. The Common Agricultural Policy (CAP) should therefore lead a transition towards a more sustainable Agrofood.

The CAP enabled the development of the most integrated single market. It is thanks to the CAP that the EU farm sector is able to respond to citizens' demands regarding food security, safety, quality and sustainability. However, at the same time the sector faces the challenges of low profitability - due inter alia to the EU's high production standards, the high costs of production factors and the fragmented structure of the primary sector. The sector now competes at world market prices in most sectors, leads the field in terms of food product diversity and quality and achieves the globe's highest agri-food exports (worth EUR 131 billion in 2016).

The creation of the European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI) gave an impetus to knowledge creation and sharing. However, important efforts still need to be done to facilitate the access of farmers to knowledge.

Organic farming expanded significantly, to cover 6% of UAA in 2015 compared to 2% in 2000.

Future-proof CAP

While addressing the CAP Treaty objectives, the CAP has kept evolving, increasing the EU added value. It has also substantially increased its emphasis on the environment, climate and the wider rural context in which farming operates. This enabled the sector to increase its productivity by nearly 9% since 2005 while cutting greenhouse gas (GHG) emissions by 24% since 1990 and reducing fertiliser use with a positive impact on water quality. However, in the absence of stronger and more ambitious policy support it is unlikely that EU agricultural emissions will continue to decrease at the same pace.

The CAP continue stepping up its response to these challenges and it also shall play an essential role in realising the Juncker priorities in full coherence with other policies, especially:

- boosting quality employment, growth and investment;
- harnessing the potential of the Energy Union, the circular economy and the bioeconomy while bolstering environmental care and fighting and adapting to climate change;
- bringing research and innovation out of the labs and onto the fields and markets;
- fully connecting farmers and the countryside to the digital economy; and
- contributing to the European Commission's agenda on migration.



At the same time, the EU is strongly committed to action on the COP21 Paris Agreement and the United Nations Sustainable Development Goals (SDGs). Notably, the CAP underpins the policies spelled out in the 2030 Climate and Energy framework, which calls upon the farming sector to contribute to the economy-wide emission reduction target of -40% by 2030 and EU Adaptation strategy. European farming also needs to step up its contribution towards the EU environmental objectives. These commitments cannot be met without farmers, foresters and other rural actors who manage over half of the EU's land, are key users and custodians of the related natural resources and provide large carbon sinks as well as renewable resources for industry and energy. This is why a modernised CAP should enhance its EU added value by reflecting a higher level of environmental and climate ambition, and address citizens' concerns regarding sustainable agricultural production. The Cork 2.0 Declaration of 2016, A Better Life in Rural Areas, gave voice to ambitious aspirations for the future success of the EU's Agrofood and countryside and the contributions they could make to society as a whole. It presents an agenda for reforming the CAP to improve its delivery and bring it up to date to the current day challenges. In particular there is a need to invest in skills, public services, infrastructure and capacity building in order to generate vibrant rural communities.

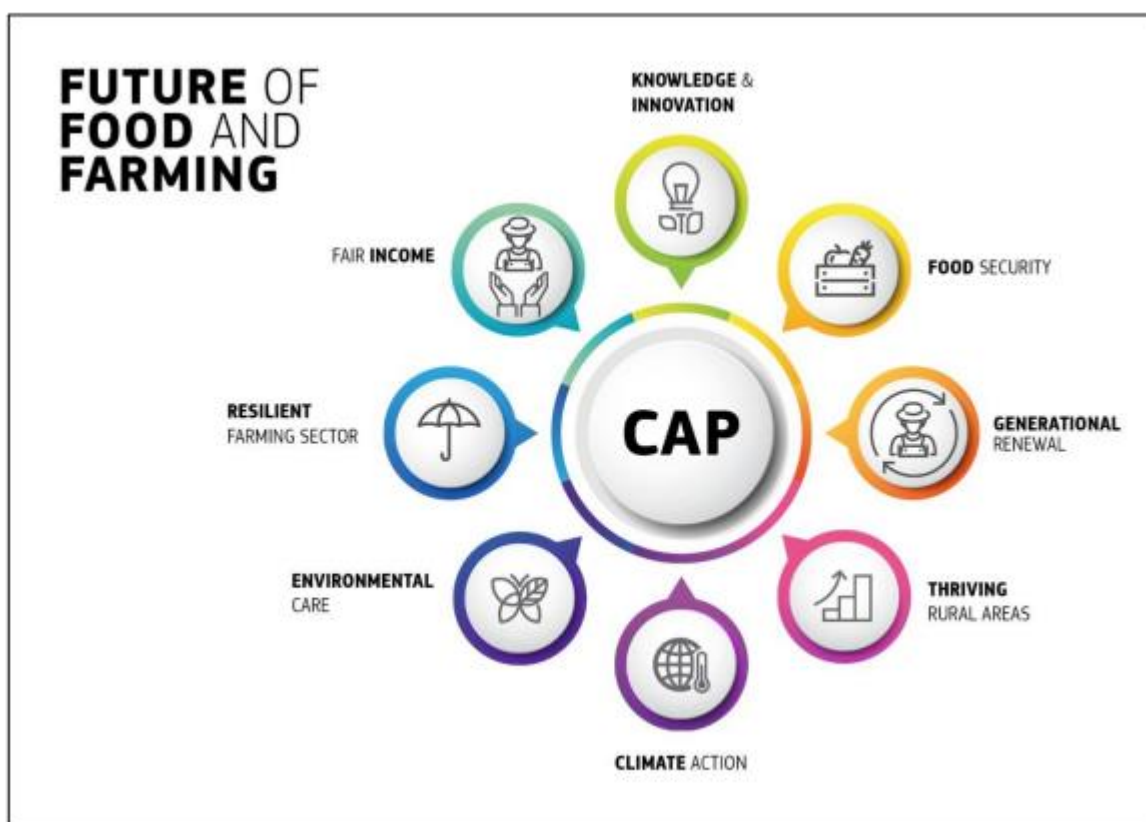
THE CONTRIBUTION OF THE CAP TO THE SDGs



The public consultation underlined the importance of the three dimensions of sustainability (economic, environmental and social) and linked them to a broader need to modernise and simplify the policy. The *Commission's White Paper on the Future of Europe of 1 March 2017* set in motion a wide-ranging debate on tomorrow's EU, calling on the Union and its Member States to interact better with citizens, be more accountable to them and deliver faster and better on what has

been collectively agreed, such as the European Pillar of Social Rights. The Commission's Reflection paper on the Future of EU Finances of 28 June 2017 stimulates further this debate, setting out options and scenarios for the future direction of the EU budget, including among other options a degree of co-financing of the CAP and its implications. As recalled in the Reflection Paper, the EU budget should continue dealing with current trends that will shape the EU in the coming years. There are also a number of new challenges in which the EU budget will need to do more than today. In this context, all existing instruments including the CAP will need to be looked at. Hence, this Communication does neither pre-empt the outcome of this debate nor the proposals for the next multiannual financial framework (MFF). The Reflection Paper on the future of EU finances called for a shift towards new, sustainable growth that combine economic, social and environmental considerations in a holistic and integrated way and stronger focus on the provision of public goods.

European citizens should continue to have access to safe, high quality, affordable, nutritious and diverse food. The way this food is produced and marketed should adapt to citizens' expectation, in particular concerning the impact on their health, the environment and the climate.



The main foreseen objectives of the future CAP:

- to foster a smart and resilient agricultural sector;

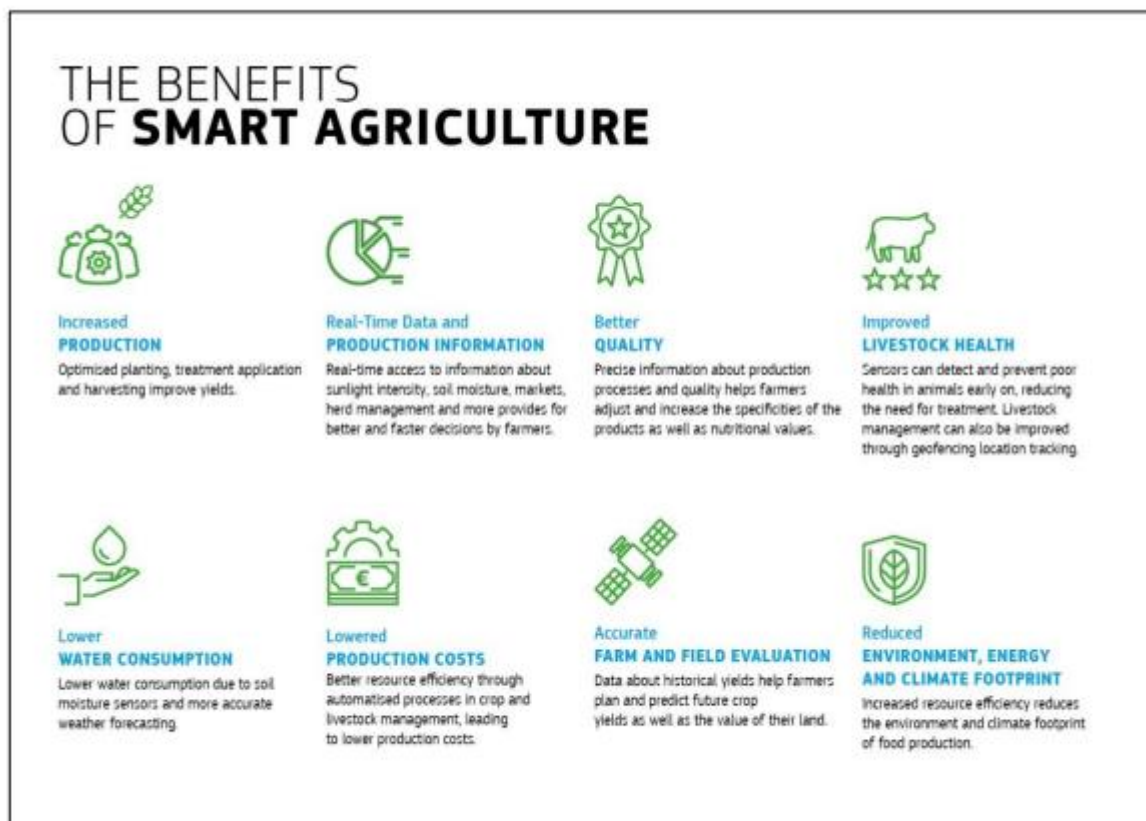


- to bolster environmental care and climate action and to contribute to the environmental and climate objectives of the EU;
- to strengthening the socio-economic fabric of rural areas.

To fulfil these objectives the agricultural sector and the EU rural areas will need to be better linked to human capital development and research and support for innovation will need to be stepped up.

The future CAP will also need to continue to address societal expectations regarding sustainable food production, in particular concerning food safety, food quality, environmental and animal welfare standards.

Using research and innovation to better link what we know to what we grow. Innovations in various fields (agronomy such as nature based solutions, breeding, vertical farming, zootechnics, biological, technological, digital, organisational and product related) are within reach and can serve the multi-functionality of EU agricultural and food systems. Research and innovation are part of the foundation of progress concerning all the challenges which confront the EU's farm sector and rural areas: economic, environmental and social. The needs and contributions of rural areas should be clearly reflected on the research agenda of the European Union and the future CAP will need to enhance even more synergies with the Research and Innovation Policy in fostering innovation. Technological development and digitisation make possible big leaps in resource efficiency enhancing an environment and climate smart Agrofood, which reduces the environment-/climate impact of farming, increase resilience and soil health and decrease costs for farmers. However, the uptake of new technologies in farming remains below expectations and unevenly spread throughout the EU, and there is a particular need to address small and medium-sized farms' access to technology. Not only technology but also access to sound, relevant and new knowledge is very patchy around the Union. This impedes the performance of certain CAP instruments as well as the farm sector's overall competitiveness and development potential. By contrast, the CAP's capacity to increase the flow of knowledge between partners from different parts of the EU offers strong added value as it will save costs, increase the impact of EU funding and speed up innovation in the different parts of the EU.

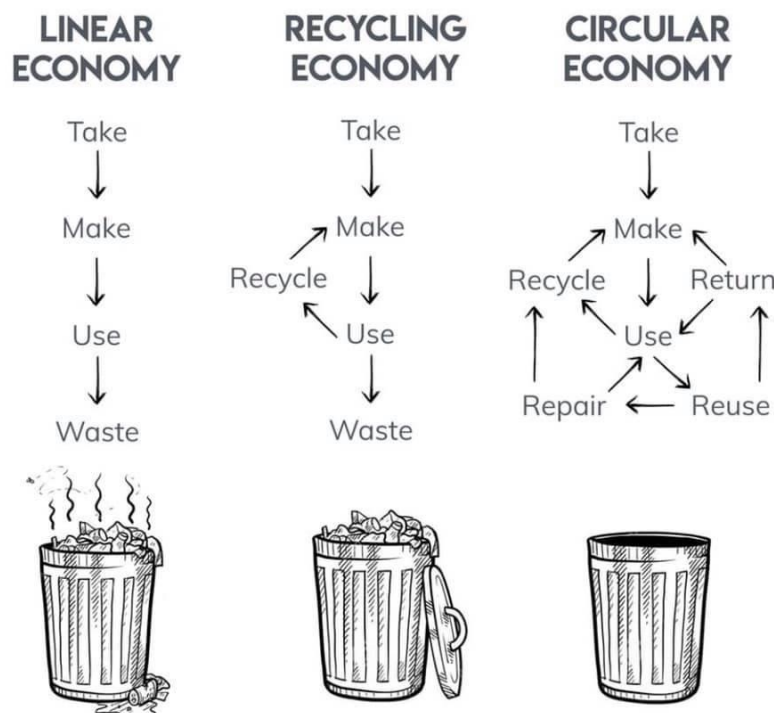


Support for knowledge, innovation and technology will be crucial to future-proofing the CAP. Schemes that aim at enhancing economic, social or environmental performance as well as climate change adaptation and mitigation will be linked to the advisory services providing knowledge, advice, skills and innovation. The European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI) and the European Innovation Partnership on Water have proven their value in mobilising the agricultural sector for innovation. It has funded multi-participant pilot projects and is networking across Europe to make new knowledge generally available. Its success depends on the combined performance of advisors, agricultural training and educational systems, researchers and farmer organisations often referred to as the Agricultural Knowledge and Innovation System (AKIS) - which operates very differently from one Member States to another. The role of the farm advisor stands out as particularly important. A modern CAP should support the strengthening of farm advisory services within the AKIS systems. This should become a condition for the approval of CAP Strategic Plans. This should be facilitated by strengthening the support for peer-to-peer exchange, networking and cooperation amongst farmers including through Producer Organisations ("POs"), as these can be important vehicles of knowledge sharing, innovation as well as cost savings for the farmers on a very regular basis.

New rural value chains such as clean energy, the emerging bio-economy, the circular economy, and ecotourism can offer good growth and job potential for rural areas. By-



products from agri-food and forestry could find new value as inputs for bioenergy and bio-based industries, while manure can turn into biogas and fertiliser thus supporting both the energy transition and the wider nutrient recycling. This also contributes to the substitution of more polluting and non-renewable resources and materials, and to a reduction of food losses and waste. Sustainable Agrofood and forestry are both strategic sectors to develop this potential. Growth of the bio-economy in a sustainable business model should therefore become a priority for the CAP strategic plans, and support the EU circular economy strategy and the development of new business models which will benefit farmers and foresters whilst creating new jobs. This would also boost the CAP's potential to contribute to the Energy Union and the EU Industrial Policy by promoting clean and efficient energy production, including sustainable biomass mobilization in respect of the core principles of the EU circular economy strategy. The EFSI and other financial instruments should leverage additional support from Rural Development programmes in order to provide low cost and longer term loans for entrepreneurs that are willing to invest in rural areas.





One priority for this future joint work across policy areas is development of "Smart Villages" throughout the Union. This emerging concept, currently developing through a number of initiatives and pilots, will help local communities address issues of inadequate broadband connectivity, employment opportunities and service provision in a clear and comprehensive manner. The Commission is committed to reinforcing support for rural communities and local authorities that wish to develop Smart Villages through capacity building, investments, innovation support, networking as well as through the provision of innovative financing tools for improving skills, services and infrastructure.

Citizens are also increasingly valuing access to a wide variety of food that carries broader benefits for society, such as organic produce, products with geographical indications (GIs), local specialities and innovative food.

(The Future of Food and Farming, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions EUROPEAN COMMISSION Brussels, 29.11.2017 COM(2017) 713 final)



The Smart Specialisation Platform for Agri-Food (S3P Agri-Food)

The Smart Specialisation Platform for Agri-Food (S3P Agri-Food) established at EU level aims to accelerate the development of joint investment projects in the EU by encouraging and supporting interregional cooperation in thematic areas based on smart specialisation priorities defined by regional and national government linked to Agrofood and food. Through the S3P Agri-Food, EU regions and member states are able to implement more efficiently their smart specialisation strategies, and regional stakeholders benefit from the new cooperation opportunities with partners from other regions (<https://s3platform.jrc.ec.europa.eu/agri-food>).

The key objective of the S3P Agri-Food is to orchestrate and support the efforts of EU regions committed to work together for developing a pipeline of investment projects connected to specific thematic areas of smart specialisation priorities through interregional cooperation. The S3P Agri-Food will be co-developed and co-led by the regions themselves ensuring an active participation and commitment of industry and related business organisations and clusters as well as research institutions, academia and civil society.

The investment opportunities generated by the S3P Agri-Food will contribute to a more competitive and sustainable EU food supply chain, more resilient food systems, and to a more effective targeting of the EU regional funds on growth and jobs, especially through the numerous SMEs and micro-companies that make up this chain. The Platform will also promote the complementarity of funding instruments in the support of an investment project pipeline. (<https://s3platform.jrc.ec.europa.eu/agri-food>)

Production and Processing of Food in Future - SMART AGROFOOD

Technological revolution in agrifood is driven nowadays by progress in robotics, digitalisation and sensor technologies. These changes lead to a change in the current model of the operation. In the past, farms have introduced a number of technologies to increase yields. Believing "more is better" has become the main mode of farming and consequently small farms have become increasingly less competitive. With the introduction of "smart" technologies, the trend is reversing, it is expected that small manufacturers will become competitive again with the introduction of intelligent robots.

Technological advances in various areas have greatly expanded the use of mechatronics. Mechatronics is an interdisciplinary field where engineers with different specializations,



such as mechanics, electronics and computing, collaborate with researchers from more classical areas.

Experts are convinced that by introducing new technologies and robots, agricultural production and processing will become more efficient and more sustainable.

In greenhouses, engineers are exploring automation as a way to reduce costs and increase quality (for example, identifying the point of technological maturity "Ripe for the picking"). Plant growth monitoring devices as well as robotic devices are being tested. Animal life supporters help maintain the health and well-being of animals (animal followers "Animal trackers"). Underway is also work to monitor and maintain soil quality (Silicon soil saviours) and to eliminate pests and diseases without the use of agrochemicals (Eliminating Pests and Illnesses). (Technology: The Future of Agrofood, http://www.nature.com/nature/journal/v544/n7651_suppl/full/544S21a.html).

In the field of processing, the situation is somewhat different. Most food processing plants now use "fixed" automation technologies. These technologies are designed to carry out one function in order to mass deliver the product and lower costs. Primary defects are their inability to respond to the product's variability or to perform multi-layered or complex manufacturing operations. With growing market pressures to deliver more value-added products, a growing focus on workers' availability, employee safety, and product safety, many food processing companies focus their attention on more "intelligent" automation technologies. These technologies use the growing power and affordability of computer platforms and the development and distribution of electronic sensors and product manipulators (JC Wyvill, Proceedings of the IEEE / ASME International Conference on Advanced Intelligent Mechatronics, Tokyo, Japan, 1997, pp. 8).

Today, robots are regularly used in sowing, watering, harvesting, and processing of agricultural and food products in cutting, processing and packaging processes. Various robots are already established in meat processing and automatic quality detection of finished products in bakery. In the beverage industry, robots clean, wash, count, fill and sort bottles on the conveyor belt. Modern visual systems with multiple HD cameras are used to identify faults and inspection and quality control of vegetables and fruits using robot learning.

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Agrofood Robotics

Research innovation labs nowadays work in robotics: precision Agrofood, machine learning and robotics related technologies for the agro sector, both fundamental research and business orientied.

In the past decades there has been tremendous developments in the area of machine learning and artificial intelligence.



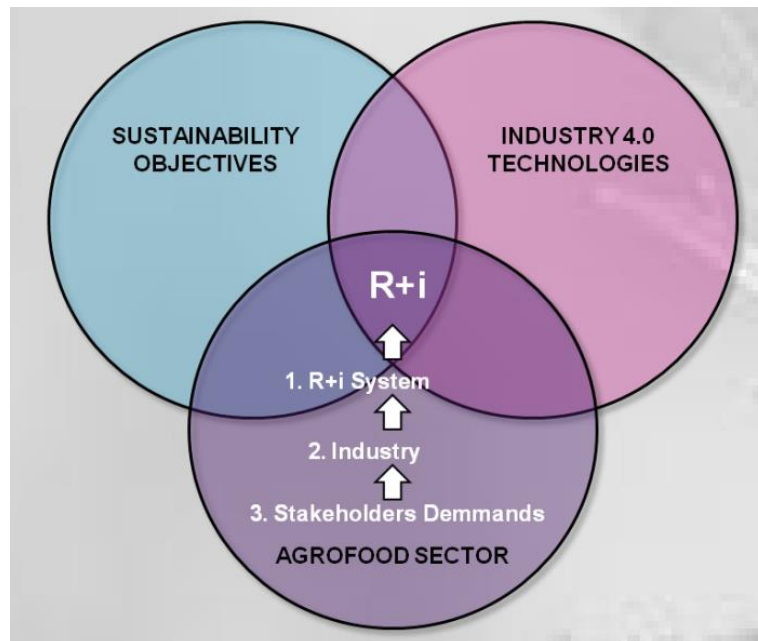
Therefore, in recent years there has been a significant increase in the use of robots in the agro-food sector. Robots have a great potential to transform processes in handling and processing their food, palletizing, packing and feeding. The current critical aspects are related to robotic kinematics, dynamics, hygiene, economy, human-robot interaction, security and protection, and operation and maintenance.

Industry 4.0 is a name given to the current trend of automation and data exchange in manufacturing technologies. It includes cyber-physical systems, the Internet of things, cloud computing and cognitive computing. Industry 4.0 is commonly referred to as the fourth industrial revolution.

Industry 4.0 fosters what has been called a "smart factory". Within modular structured smart factories, cyber-physical systems monitor physical processes, create a virtual copy of the physical world and make decentralized decisions. Over the Internet of Things, cyber-physical systems communicate and cooperate with each

other and with humans in real-time both internally and across organizational services offered and used by participants of the value chain (wikipedija).

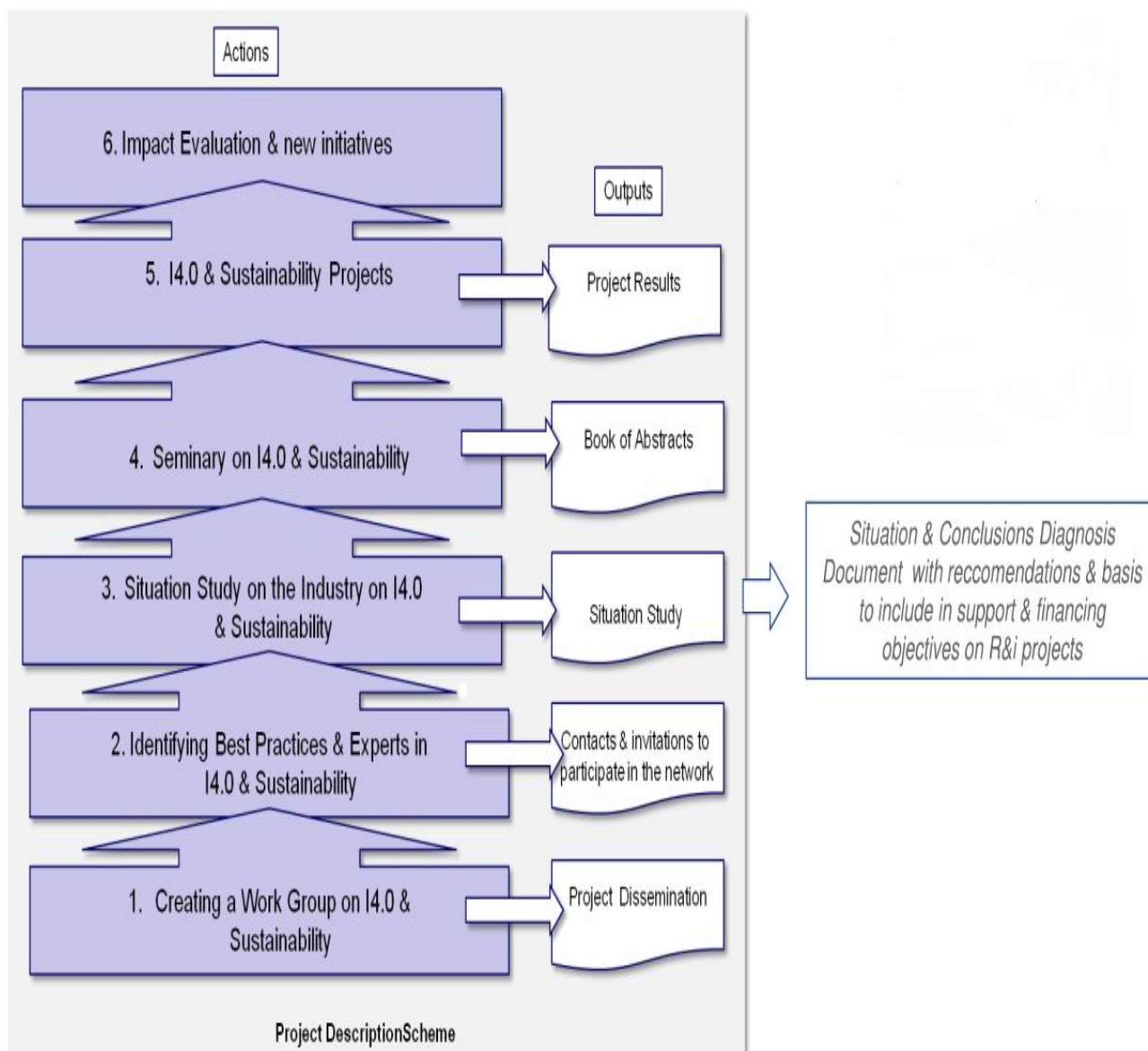
Industry 4.0 technologies can function as a sustainability driver in the development of practices and innovation in agrofood sector, as presented in following scheme:



3. RECOMMENDATIONS

Digital Innovation Vehicles for Agrofood: DIH - Digital Innovation Hubs for Agrofood

AGROFOOD HUB Initiative Action Plan:



DEFINITION OF INDIVIDUAL AREAS BY CANVAS METHOD:



1) Key partners:

- Technology parks
- Clusters
- Business incubators
- Centers of excellence
- Research centers
- Competence centers
- Universities
- Regions
- Ministries

In the framework of the node, these partners were identified in the following countries: Slovenia, Austria, Italy, Hungary, Spain, France, Switzerland, Germany, Czech Republic, Slovakia, Poland, Croatia, Romania, Bulgaria, Serbia and Greece.

From Technology-Driven to Technology-Enabled

Technology should be harnessed to enable growth in all industry sectors (as opposed to focusing solely on hubs that rely on technological innovation). The degree of availability, quality, and efficiency of web infrastructure supporting the hub will determine the strength of these digital communities and the pace of innovation.

An evolved technological infrastructure will tear down the barriers between work and home, and between professional workspace and personal space. On-site innovation centres will be designed to facilitate this bridge between “intelligent offices” and “connected homes” for workers who do not perceive boundaries between their personal and professional environments. These new innovation centres would provide tele-presence, cafeterias, web conferencing, and children’s daycare, delivering a more personal and eco-friendly work environment. Essentially, this will transform the entire experience of doing business.

The crucial factor for future economic growth is sophisticated collaboration. Due to sophisticated shared-ownership agreements, workers’ interests became even more aligned with the success of their employers. The role of “coopetition” is vital, where collaboration even extended to competitors who helped foster critical mass, formal and informal standards, and effective customer solutions. Implementing a new model that fosters co-creation, coproduction, mutual evaluation, and cross-industry investments will require significant cultural changes, greater trust in individuals, and the acceptance of a novel form of collaboration. At different levels and without predefined hierarchy, these community-driven hubs will thrive by involving virtual residents in a global dialogue. They enter a world in which organizations become less important than their



members, in which geography fades into virtual territories, and where economic growth translates into personal wealth for community members across the globe

POSSIBLE TYPE OF INTERNATIONALISATION ACTIONS

MATCHMAKING, KNOWLEDGE SHARING AND IDEA CREATION

EVENTS	SERVICES	PROJECTS / LONG TERM INITIATIVES	INTERNATIONAL	DATING/B2B
Idea-generating workshops	Company get-together	Innovation at eye level	A week with a top international researcher	Adventure matchmaking
Innovation Cup	Hand-in-hand project in preparation for match-making	Retro concepts	Satellite office as a gateway to foreign markets	Auction
Innovation at a leading event	Interest groups / sub-networks	Matching a target group with large public investments	International conference in collaboration with other networks	Icebreakers
Innovation bus	Mapping of positions of strength	Match for breakthrough projects	Partnering mission	Matchmaking at a trade fair
Innovation competition	Match service	Cooperation with innovation agents	International conference with B2B meetings	Network café
Innovation relay	Online innovation platform	Pit stop	International knowledge transformation	Pitching
Framework workshop	Student match	Inter-disciplinary development processes	Business delegation to an international trade fair	Speed service – matchmaking
Matchmaking and ideation for specific funding	LinkedIn group			
University tour				
Knowledge harvest festival				
Annual summit				

SELECTION MATRIX PART ONE

	Match between many	Match between a few	One-to-one match	Level of difficulty - high	Level of difficulty - medium	Level of difficulty - low	> 250 hours	50-250 hours	< 50 hours	Company visit	Student cooperation	Workshop	Brainstorm	Knowledge sharing	Product development	Ideation	Dating / B2B	International	Project / long-term initiatives	Services	Event
Adventure matchmaking	●					●		●						●		●	●				
Auction	●					●		●						●			●				
A week with a top international researcher	●			●				●				●						●			
Hand-in-hand project in preparation for match-making		●	●					●				●	●	●	●	●				●	
Icebreakers	●					●		●									●				
Idea-generating workshop	●			●				●				●	●	●	●	●					●
Innovation Cup		●	●					●			●			●	●	●					●
Innovation at eye level	●			●				●				●	●	●	●	●			●		
Innovation at a leading event	●			●				●				●	●	●	●	●					●
Innovation bus	●					●		●		●				●	●	●					●
Innovation competition		●				●		●				●	●	●	●	●					●
Innovation relay	●					●		●			●	●	●	●	●	●					●
Interest groups / sub-networks		●	●	●	●	●		●					●	●	●	●				●	
International conference in collaboration with other networks	●			●				●				●	●	●	●	●			●		
International conference with B2B meetings	●			●				●			●	●	●	●	●	●			●		
International knowledge transformation	●			●				●					●	●	●	●			●		
Mapping of positions of strength				●				●				●	●	●	●	●					●
LinkedIn group	●					●		●						●	●	●				●	
Match for breakthrough projects	●			●				●				●	●	●	●	●			●		
Match service		●		●				●						●	●	●					●



SELECTION MATRIX PART TWO

	Match between many	Match between a few	One-to-one match	Level of difficulty – high	Level of difficulty – medium	Level of difficulty – low	> 250 hours	50-250 hours	< 50 hours	Company visit	Student cooperation	Workshop	Brainstorm	Knowledge sharing	Product development	Ideation	Dating / B2B	International	Project / long-term initiatives	Services	Event
Matchmaking and ideation for specific funding	●					●		●				●				●					●
Matchmaking at a trade fair	●					●		●						●			●				
Matching a target group with large public investments	●		●				●				●	●				●			●		
Network café	●					●		●									●				
Online innovation platform	●			●				●							●	●					●
Partnering mission		●	●				●			●							●	●			●
Pit stop	●			●			●				●		●	●					●		
Pitching	●			●				●						●	●	●	●				
Framework workshop	●		●					●				●	●	●	●	●					●
Retro concepts	●				●	●					●	●	●	●	●				●		
Cooperation with innovation agents	●				●			●			●		●						●		
Satellite office as a gateway to foreign markets			●				●							●				●			
Speed service – matchmaking	●			●				●						●			●				●
Student match		●		●				●	●		●		●		●						●
Inter-disciplinary development processes	●		●				●				●		●	●	●				●		
University tour	●				●			●						●							●
Knowledge harvest festival	●				●			●			●		●								●
Business delegation to an international trade fair	●				●			●			●							●			
Company get-together		●			●			●					●		●						●
Annual summit	●				●			●				●		●	●						●

Why in How to use Mapping tool

Individual level

One of the main long-term purposes of Pomurje Technology Park and I-CON partners consortium is to fully support business innovations. This is by far the most effectively done by reaching out to the vast amount of firms and other organisations, ranging from local to international and global, and help them identify their interests and assist them in meeting their needs and achieving their goals.

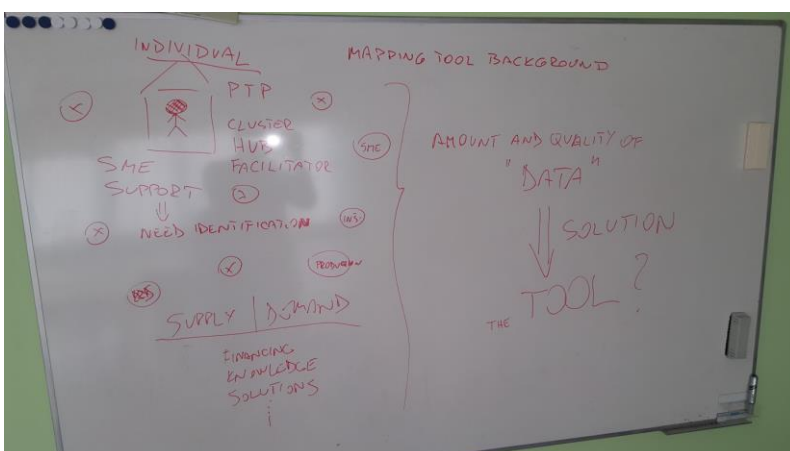
In such a process, every employee, hereinafter referred to as a facilitator, which, on demand, examines and offers various relevant services to a number of firms and organisations gains a lot of data and knowledge regarding them. It is, undoubtedly, impossible for a facilitator to memorise such amount of information and keep it in

their head and, at any given time, recall complete and correct information of more than 10 or 20 firms and organisations. Additionally, facilitators have limited perception, they may forget (some) acquired information, they are prone to making mistakes and other errors and they definitely do not have sufficient time available to mutually discuss their findings, notes and remarks concerning the firms and organisations each and every facilitator served so far. Therefore, their consulting to a given firm or organisation is by default compromised and clearly indicates the need for an accompanying tool which can eliminate most or even all of the previously stated risks.

The main objective of such an endeavour is to link demand and supply tendencies in the field of mostly small and medium-sized enterprises and also other production based (including farms) and solutions (research and development, research centres, etc.) providing organisations which can then easily and quickly identify mutual interests, meet their cooperation, financial and knowledge/technology based needs, find partners and so on. This can also lead to a cluster formation.

At this point we have to emphasize that the mapping tool is cloud, i.e. computer, based service or system and, therefore, is neither in any way geographically limited nor, more importantly, has limited memory capacity and can accumulate and hold a vast amount of data, allowing facilitators and other users to find the right information at the right moment in time, i.e. on the spot when needed.

We can notice that the requirement for flawlessly correct data being entered in to the mapping tool begins to shape. It is absolutely comprehensible that the quality of collected data predominates the quantity of collected data and that such a tool can effectively offer unification of the substantial amount of data and the quality of data required to assist involved firms and organisations, however, only if the utmost carefulness and respect are provided by each and every person inputting the data.



Mapping tool background (individual level) depiction

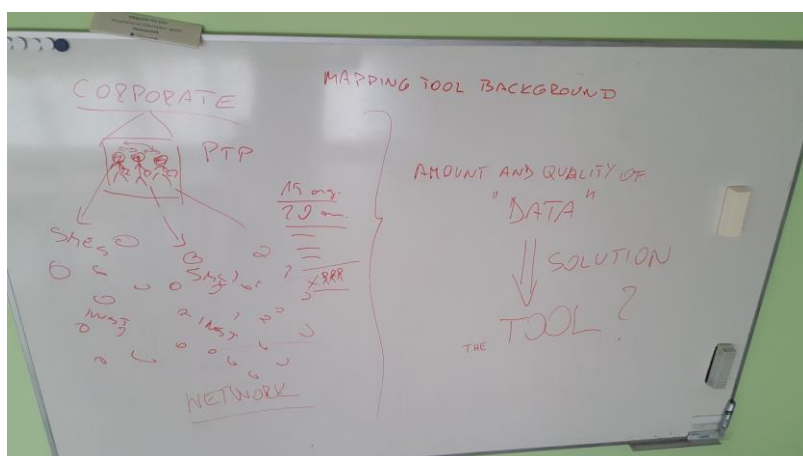
Corporate level

The concern of the limited assistance and support ability of an individual facilitator described in the previous subchapter is merely one small part of the existing issue.

A facilitating firm or organisation usually consists of more than just one facilitator and each and every one of them possesses an irreplaceable and valuable volume of information and knowledge regarding a given amount of firms and organisation which they analysed and studied. However, the other facilitators do not own such knowledge and this is not the sole problem in view of the fact that, as we have already stated, not all facilitators have (enough) time to internally debate the obtained information and knowledge due to enormous work dynamics, however, they all can input the raw data in to the mapping tool for others to access to it at any given time.

As an illustrative example, let us ponder 15 facilitating firms and organisations which all employ some 15 facilitators. These facilitating firms and organisations, along with all 200 or 250 facilitators, form a rather sizeable and wide-reaching network with, and this is of significant importance, shared mission, strategy and vision.

Similarly to the good practice which applies to the individual level, it is crucial that all facilitating firms and organisations and all of their employees, i.e. facilitators, attentively respect the rules which provide the incentive to correctly and uniformly collect and input the data in to the mapping tool.



Mapping tool background (corporate level) depiction

Network level

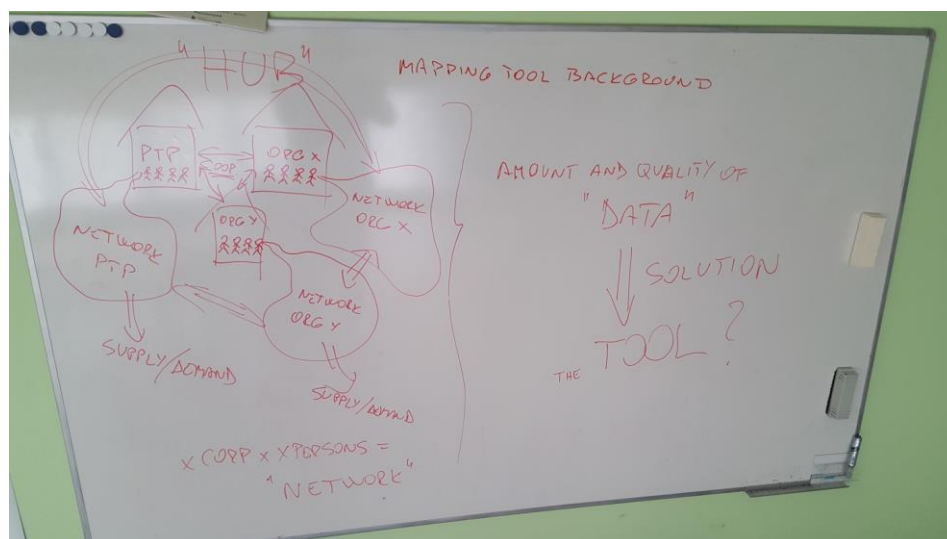
More and more facilitating firms and organisations and, consequently, more and more facilitators means more and more industry-specific and unique networks with more and more potential to address more and more distinctive demand and supply tendencies across many areas.

Although all of the facilitators are independently gathering the relevant information and knowledge and the majority of the engaged facilitators do not even know each

other, the cooperation between the networks in the form of knowledge/technology transfer is not in the least compromised because it is conveniently allowed by the mapping tool.

A given number of facilitating firms and organisations multiplied by a given number of employed facilitators constitutes or composes a network. This simple statement embodies and manifests the hub principle, a special kind of many diverse clusters deliberately establishing, structuring and participating in a homogenous principal cluster.

But still, the work, i.e. the process of identifying, analysing, assisting and supporting the interested firms and other organisations, entirely and utterly depends and hinges on the amount and the correctness of the input data and the general quality of the design, development, implementation, improvements/upgrades and maintenance of the (existing) mapping tool.



Mapping tool background (network level) depiction

STARTING:

The growing digitalization of business processes creates new opportunities for developing and integrating digital agricultural solutions that would keep Slovene producers competitive on the market and, in spite of the negative effects of climate change and the high pressure to lower production costs, will be able to survive. Agricultural holdings do not have enough knowledge and competences to cope with the challenges of digital transformation and the implementation of innovative technological solutions to day-to-day use in the production process. The opportunities offered by the digitalization process to agricultural holdings are reflected in the



reduction of production risks, the development of new digital models for more economical business and the mitigation of the negative effects of climate change.

PURPOSE:

Solving acute problems in individual agricultural sectors through the development and testing of new methods and tools for the implementation of innovative digital technologies in agricultural holdings. The goal of integrating digitalisation into the agricultural sector is to raise productivity and, by transferring knowledge, to increase the capacity of agricultural holdings to be able to compete on the global market.

OBJECTIVE:

Establishment of the pilot project of the digital innovation hub for Agrofood in the form of a "One Stop Shop" service, to be organized within the framework of the consortium cooperation of RR institutions, chambers, farms, innovation technology centers, which would carry out the following tasks for agricultural holdings:

- Information on novelties: disseminating information on the prospects and benefits of new technologies and services related to the digitization of Agrofood.
- Scouting of innovations: A set of technology solutions providers that increase productivity and quality of work on farms.
- Needs assessment / maturity of farms: Diagnosing farm needs and preparedness in connection with the introduction of new technologies, providing feedback on the degree of maturity and defining possible solutions.
- Development of a business model for farms: Assisting in the design of a business model and searching for links in the implementation of activities within a network of partners.
- Access to expertise and infrastructure: Assistance in carrying out experiments and testing solutions to usefulness of use, finding suitable spaces for pilot and experimental implementation, access to live laboratories, and involving stakeholders in the implementation.
- Mentoring: Applied assistance in implementing solutions - project implementation, access to finance, internationalization, analysis, value chain design, etc.
- "Brokering / matchmaking": Helping to establish a direct contact and organization of events, which are brought together by stakeholders (solution providers-solutions seekers); access to information, exchange of experience and good practices.
- Education: Preparation of different types of training:



- o Expert workshops, conferences and visits to good practices
- o On-line knowledge and data base with educational materials and video presentations
- Access to funding: Financing pilot schemes for aggregating agricultural holdings.

METHOD OF CONDUCT: consortium application

PREDICTED RESULTS:

- Reduction of risks
- Greater predictability and predictive capability
- Better use of resources and increase of market potential
- Lower consumption and better cost management
- Higher productivity and higher yield

PERIOD OF MEASURE: 1-2 years

VALUE OF MEASURE: 1-2m EUR

Expected effect: In case of positive results of the pilot project, a support program environment for the next financial perspective will be established.

Characteristics of DIH activities

The main characteristics of the service offer and the way in which digital innovation hubs operate are as follows:

Building the ecosystem, complementing and linking existing services

The hub is based on the existing advantages in the region, that is, cooperation with existing service providers (such as digital SMEs that offer ICT and other services for non-technology SMEs, existing business support centers, RTOs and training centers). The node enforces a new and special approach in order not to repeat the existing forms of support and counseling, but to fill the current gaps. A special role is being sought in achieving businesses that have not yet joined the digital transformation program and are difficult to achieve.

Phased services that offer companies a clear path to digitization



Each node has its own approach and categorization of services. They are labeled in such a way as to offer companies clear progress as their needs change and evolve.

An assessment of digital maturity as a central service

Estimating the level that the company has achieved in the digitalisation pathway is probably one of the most important services offered by digital innovation nodes. Such an assessment helps the company and node understand the current position of the company and identify future opportunities and needs.

A self-help tool was developed that the company can use. The assessment diagnoses the needs and readiness of the company in relation to digital technologies, provides feedback on the degree of maturity, and directs the customer to further tailored help and advice in the ecosystem of the node. This also includes referrals to recognized private sector suppliers (digital IT SMEs, consulting firms, etc.).

Focusing on validation and presentation of technology

As far as the level of innovation is concerned, the focal point for DIH services should be around TRL 4-7, i.e. technology confirmed in the laboratory scenario to demonstrate the prototype of the system in an operational environment. The focus on TRL 8-9 may in some cases be justified. The main nodes generally do not deal with TRL 1-3, basic and applied research - except where there is a clear and unmet need within a customer base.

Simple and cost-effective access to specialized test, pilot and test facilities plays a central role in validating technology. Such objects are often complex and expensive and no nodes can afford to fit with all the relevant test sites. Therefore, it is a key area for cooperation between nodes, where nodes share and open their objects to others in the network of digital and other innovation nodes. It can even be expanded to co-exist between nodes / regions in new objects.

Training and skills will be essential in building capacity in companies

Activities related to training and skills cover the whole spectrum of employment. Students need to be acquainted with the basics of digitization and its potential. The industry must communicate its vision of future needs and requirements to the academic public and participate in the development of curricula such as pan-European master's studies. Youth service employees should have apprenticeship opportunities in digital form, and employees at all levels should have access to courses to upgrade their competences. Leaders will also need to strengthen their knowledge in the field of economics, business models and change management. Funds need to be found to ensure that the industry continues to provide feedback on training and knowledge needs.



A strong physical presence

Although they are engaged in the promotion of digital technologies and services, DIHs should not function only in the web. Many of their target customers are still "analogous" and it will be essential that nodes have a physical presence in communities where these companies are, as well as proactively "scouting" businesses in these places. There should be a designated contact point for businesses. DIHs would definitely have to have a strong online identity, but they should also be recognizable physical entities.

Another reason why the nodes are physical is to provide access to specialized (and expensive) technological means - demonstrators, test scouts, pilot lines, etc. - which must be easily accessible either within a dedicated DIH facility or in a partner organization in the DIH network.

Promote digital culture

Digital innovation and business models will be a major shift for many companies. They should be encouraged, not only to write a business case, but also to give a deeper consideration to the consequences of digitalisation for businesses, in addressing issues such as sustainability and monetarization. Business considerations - such as business models, training and digital culture - will be an important part of the message as well as technology. Entrepreneurial thinking will need to be promoted and trained by employees.

Access to finance as a key service

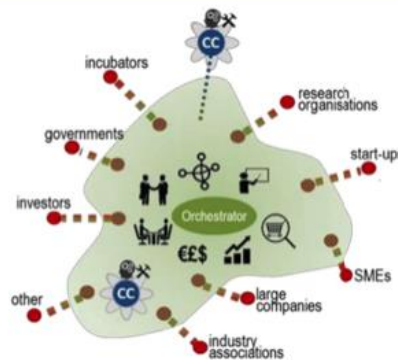
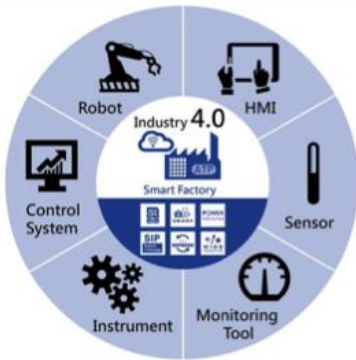
Digital innovation nodes should help small and medium-sized enterprises and start-up businesses to access regional, national and / or European funds for the use of new technologies, preferably in line with regional smart specialization strategies. It could also help and support SMEs to explain to banks and private investors their strategies that often do not understand the need for (seemingly) low-tech companies to "digitize".

Raising awareness of the public and the social dimension

In addition to the direct interests of the target sectors, the nodes in their communication activities also need to address public awareness of digitization, including the social dimension. Consideration should be given to issues related to the impact on employment (eg job losses / migration due to digitization, job creation through increased competitiveness, new markets and business models, benefits and challenges in improving workforce, etc.); impact on services (eg cost reduction at the place of supply, safer products, better quality of life, etc.); and issues related to privacy and security.



**NETWORK OF PROJECT PARTNERS FOR BETTER INTERNATIONALISATION SUPPORT
(Digital Innovation Hub activities)**



STRONG EU PARTNER NETWORK



Follow up possibilities:
Horizon 2020, Interreg Central,
Interreg Mediteran, Intereg Danube,
Alpine, SI-AT, national programs, ipd



Measuring performance and impact

Indicators for measuring the impact of DIHs will be needed. Such measures should extend from the relationships between the individual nodes, the entire operation of the node, and the impact of the DIH ecosystem as a whole. Particular emphasis should be placed on measuring the quality and impact of cooperative links, since (as stated above) the priority will be primarily determined by the strength of these links, and not by unrelated activities. Key performance indicators at node level may include:

- Number of DIH users
- Number of referrals to ICT companies and other service providers
- percentage of users with successful digitization activities
- the percentage of users who are returning and / or referring to other services
- number of events and participation in events
- number of collaborations and transnational links
- the extent of training provided and the increase in digital skills
- the amount of external financing provided to client companies.

Selection metrics could be used to define service standards and standards, and to share best practices.



Further impact could be measured using econometric measures such as increased awareness, greater competitiveness and an assessment of digital maturity. Possible additional indicators are: increasing the market share of the company; creating value through new markets and business models; establishing new value chains; increasing the relationship between services and products; quantifying the reduction of service costs and the optimization of resources due to digitization; number of patents and other IP protection (eg registered models); number of innovation projects (eg "hackathons"); number of people trained in digital knowledge. Systematic monitoring should not be complicated. While certain performance matrices are definitely needed, the approaches that users and social media evaluate should also be used. Users should be able to exchange their experience with node providers using the "TripAdvisor" mechanism to create a user ecosystem for digitalisation services. Social media should also be used as a means of assessing the performance of nodes

Upgrading Platform for Exchange of Information on Technology

Goals

For the needs of the self-sustainability of the online platform, we present a set of parameters and functionalities with which we can further increase the usefulness of the prepared program on the project. The Web platform should provide a full range of activities, services and resources to support SMEs in their industry process 4.0.

The overall long-term effects of such a platform would be:

- promote coordination, synergies and cooperation in providing technical advice related to technology, capacity building and other services, and;
- Increase cooperation and facilitate the assessment of technological needs and identify expertise and appropriate technologies to address these needs.
- become a hub that eventually helps to develop new knowledge and approaches.

The Web platform can additionally perform the following functions:

- provide a space for the exchange of knowledge, data, experiences and good practices of different countries and stakeholders in the development of science, technology and innovation, adaptation, dissemination and transfer in a more systematic and structured way;
- Provides technical guidelines and tools for communicating approaches to promote technologies and innovation in line with national situations in different countries;
- Link SMEs, researchers and policy makers and provide tools / data that allow users to participate;

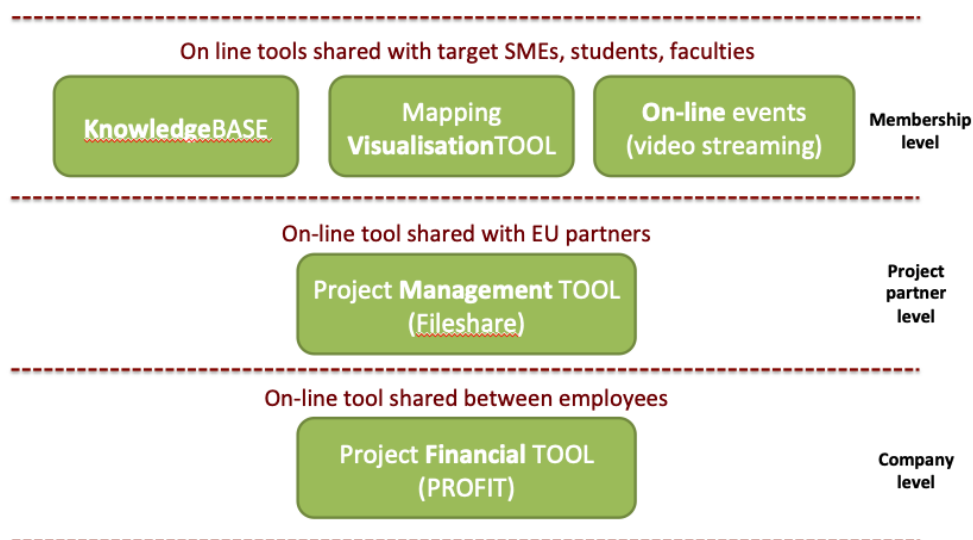


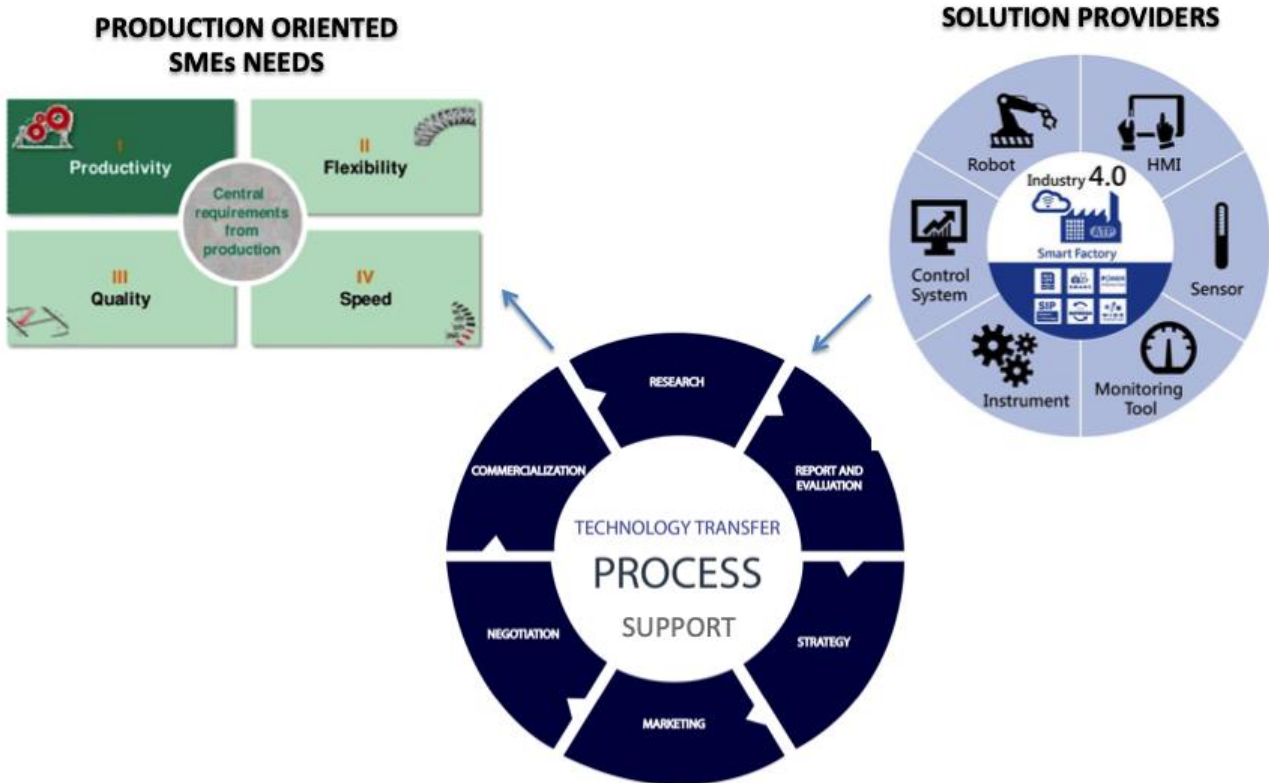
- Facilitate the coordination of technologies and financing needs, including capacity building needs, with relevant knowledge providers, expertise and technology;
- supports the creation and operation of a community of practices, partnerships related to various technologies relevant to the Industry 4.0 theme;
- accelerate international cooperation to accelerate the transfer of technologies;
- not only provides a stand-alone service, but also serves as a key element of a larger digital strategy.

The agreed goals and functions of the platform could lead to the creation of structural components of the platform and management arrangements.

The main process:

MarketPlace





Frame

A steadily growing number of information exchange platforms and initiatives with separate management arrangements, partnerships, agendas, memberships and networks, along with potential duplication areas of responsibility and influence, is not an effective agreement. There is a real danger of the "fatigue of the platform," as platforms are beginning to duplicate services and membership, where members do not have the time and resources to commit to a number of uncoordinated initiatives.

There can be considerable benefits in creating closer links between complementary platforms, consolidating duplicate platforms where possible, and providing a coherent overall international framework for linking these platforms to support a more coordinated capacity-building agenda for industry 4.0 and facilitating global progress in agreed development goals .

Possible Elements in Platform

The design and development of the platform could be carried out in a gradual process to ensure the continued relevance of the online platform for a global technology promotion center. By using a gradual approach, people could begin with small, but flexible and constant repetitions and development of platform content and functionality.



The conceptual core could be organized around the modules on the technological hubs. In technology hubs, the structure of the platform remains relatively stable over time. We would add new and updated materials and new knowledge products, but the overall design of the module would remain the same. In addition, the node could include a "wiki-like" mechanism that takes advantage of the knowledge of a large number of people who are willing to volunteer to give their time and expertise, and community spaces where content-driven content will be constantly evolving. Thus, technology seekers and technology providers will have easier access to information and dissemination of relevant good open access practices.

Finally, the future development of the online platform could include a learning element for capacity building. This could include online training and capacity building, regional workshops and online seminars and demand, such as conversations, video talks, podcasts, guidelines and case studies.

Technological nodes

One possibility could be the establishment of geographically distributed technology hubs for different technologies / clusters, all of which would keep their own technology platforms in their areas and link with a central hub that would probably deal with systemic, global and political issues that reduce costs between technological areas.

Even distributed nodes could serve as regional nodes. Central regional nodes can combine content from existing platforms with modern approaches such as APIs. For example, if a company dealing with energy efficiency technologies could exist in Murska Sobota, it could at the same time be a center for the exchange of technological knowledge in the wider region. This design will allow many different communities to continue working through their well-known colleagues and online communities where content-driven content will be constantly evolving.

In this regard, we want to emphasize the importance of interoperability standards / standards of the semantic web and the construction of ontologies for everyone. For example, "WebPress" was so successful due to the RSS standard for weblogs that enabled automatic sorting of entries from many blogs. Without this, users would have to write individual interfaces for each blog that you would like to link to. Whenever these pages change, the interface needs to be changed - the best solution for maintenance nodes and scalability in the future.

Therefore, it is important to note from a technical point of view that semantic web standards provide a common framework that enables the sharing of data and their re-use within the boundaries of applications, businesses and communities.

Possible structural components

As mentioned earlier, the node could be a common thread or network map that connects existing platforms together and can provide an opportunity to establish a general framework supported by an effective international coordination mechanism.

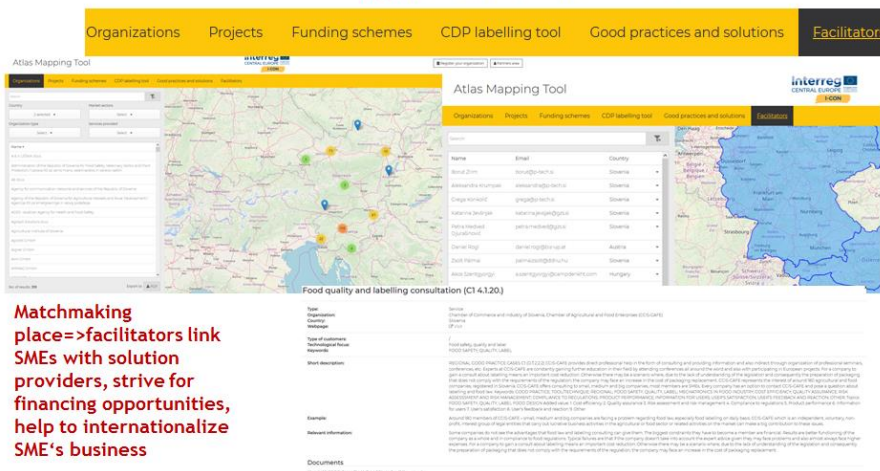
Each web-based technology facilitation platform would eventually include a number of basic structural components needed to achieve its goals. On the basis of information gathered through research, together with an analysis of some existing knowledge platforms and a review of recent literature on this topic, the node architecture could be developed in four levels, comprised of the database of knowledge and functionality of the platform.

Level 1: Interactive interface - allows users to contribute to the node (such as peer learning) and capture "silent" knowledge. It provides interactive tools for promoting dialogue and virtual community of practices (eg competitions, forums, networking tools, ...).

Level 2: Search for navigation - allows structured navigation of web platforms

Atlas mapping tool is Online tool providing a visual depiction (geographic data) of joint possibilities (RIS 3 supporting measures) and solutions providers (technology, design and food safety) enabling regional SMEs to access the resources and opportunities necessary to meet their needs and advancing knowledge.

KNOWLEDGE BASE
62 projects
72 Funding schemes
Atlas Mapping Tool 132 Good practices & solutions
1074 organizations (incl. SMEs)



The screenshot shows the Atlas Mapping Tool interface. At the top, there are navigation tabs: Organizations, Projects, Funding schemes, CDP labelling tool, Good practices and solutions, and Facilitators. Below the tabs, there is a map of Central Europe with several colored markers. To the right of the map is a list of organizations with columns for Name, Email, and Country. Below the list is a detailed view of a project titled "Food quality and labelling consultation (CI 4.1.20)". The project details include the title, organization, description, and documents.

**Matchmaking
place=>facilitators link
SMEs with solution
providers, strive for
financing opportunities,
help to internationalize
SME's business**



Atlas Mapping Tool

Introduction

The main goal of all partners and their regions to create and offer the integrated knowledge hub for food processing SMEs in the form of I-CON Atlas mapping tool by meeting their need for good, practical, real solutions in the domain of three food sector topics (mechatronics, food safety, quality, labeling).

This document presents the relevant information on programming of I-CON Atlas Mapping Tool as online tool to investigate food sector specific areas of mechatronics, food safety and geographic areas by selecting the data to be mapped from the menu.

This online tool with geographic data positioning and identified solution providers) underpins contact to specific (either by competence or country) facilitator, who will audit the issue of SME and forward “needs” to most competent transnational mentor in transnational pool of experts.

Online interactive mapping tool provides a visual depiction of joint possibilities regions, SMEs, RD Institutions and supportive environment are able to access the I-CON resources and opportunities. The tool is an open web platform.

The platform is open-ended and allows data entry of partners and selected facilitators in all region. The identified solutions and it’s providers are presented in detail.

Every partner is responsible for analysing and collecting information and materials in the I-CON areas of mechatronics, food safety, quality, labelling and food design.

The tool supports SMEs by providing geographic overview of the available services, support schemes and supportive ecosystem across the regions. Sample materials and links to helpful resources are provided where existing. By providing a visual depiction of joint possibilities the tool is supposed to play a powerful role in guiding policy, planning, and strategic actions to joint solutions as well as B2B instrument.

I-CON Atlas Mapping Tool WEB ADDRESS

<http://www.p-tech.si/icon-mapping/>

Specification of I-CON Atlas Mapping Tool moduls

I-CON Atlas Mapping Tool have different levels of use:

- Administrator
- In-house access
- Partner access



- Public access

Descriptors in modul Good Practices /Solutions (Regional/European/Worldwide):



- **Title:**
- **Facilitator:**
- **Short description**
 - **Specific need or problem being addressed**
 - **Business that implemented the case**
 - **Method, procedure, solution implemented**
 - **Specific constraints, if any**
 - **Results**
- **Summary**
- **Common descriptors/key words:**
 - 1st level:
 - **I.Mechatronics;**
 - **II. Food safety quality, labelling;**
 - **III. Food design**
 - 2nd level:
 - **Cost efficiency**
 - **Quality assurance**
 - **Risk assessment and risk management**
 - **Compliance to regulators**
 - **Product performance**
 - **Information for users**
 - **User's satisfaction**
 - **User's feedback and reaction**
 - **Others**

Descriptors in modul Regional actors/Organisations:

Regional actors:
COUNTRY
NUTS2
NAME
INSTITUTION TYPE
INDUSTRY SECTOR
SERVICE TYPE
SERVICE FIELD
I-CON RELEVANCE (USER/SOLUTION PROVIDER)
DESCRIPTION OF PRODUCTS AND SERVICES
ADDRESS
PHONE
EMAIL
WEBPAGE

Descriptors in modul Funding Schemes:

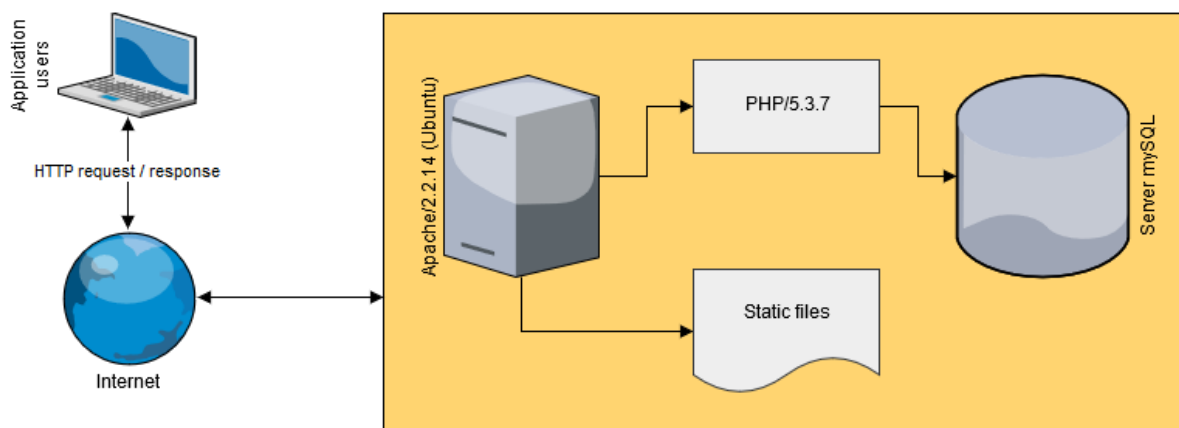


Funding schemes:
COUNTRY
MEASURE(CALL)
OBJECTIVE
IMPLEMENTATION BODY
BUDGET (MIO €)
FINANCING RATE
ELIGIBLE COSTS
MAX.GRANT €
YEAR FROM
YEAR TO

Descriptors in modul Projects:

Projects:
MAIN APPLICANT COUNTRY
PROJECT NAME
PROGRAMME NAME
YEAR FROM
YEAR TO
SHORT DESCRIPTION
MAIN OUTPUTS/PRODUCTS/TOOLS/
TRAININGS
WEBPAGE LINKS
PARTNER 1,.....

Mapping Tool Architecture



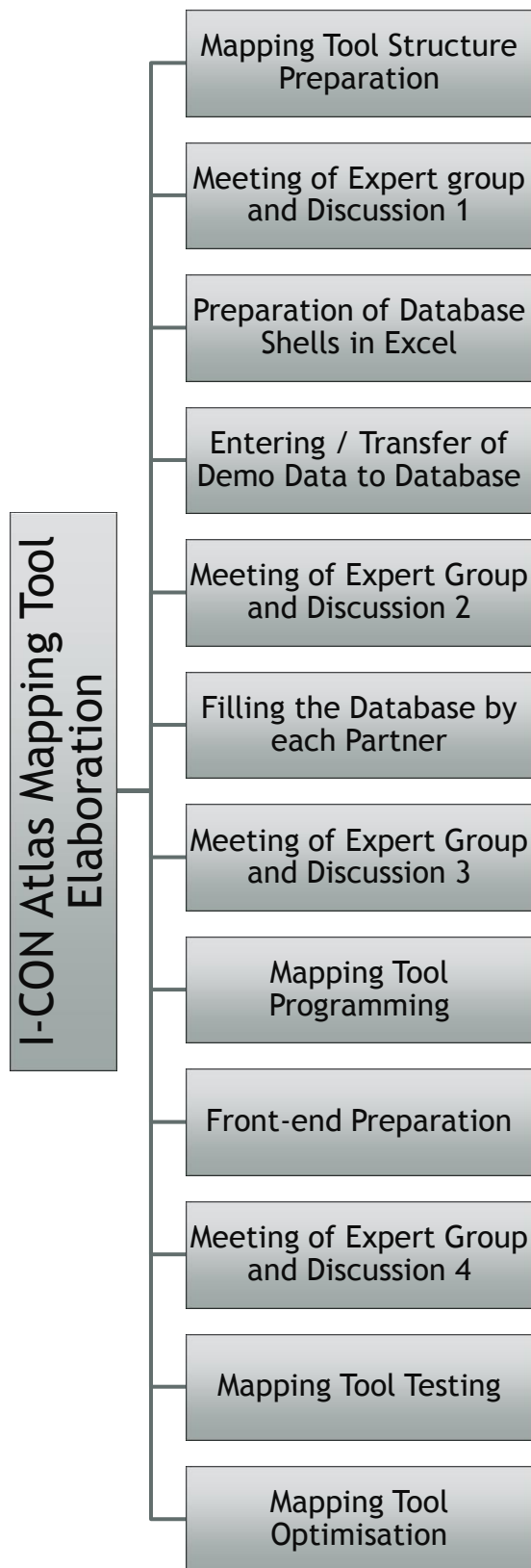
1. Development of "Admin page" (adding, editing, deleting data ...)

2. Mapping Tools Development:

- a. Organizations
- b. Projects
- c. Funding schemes
- d. I-CON - Good practices and solutions



Steps in elaboration of I-COM Atlas Mapping Tool



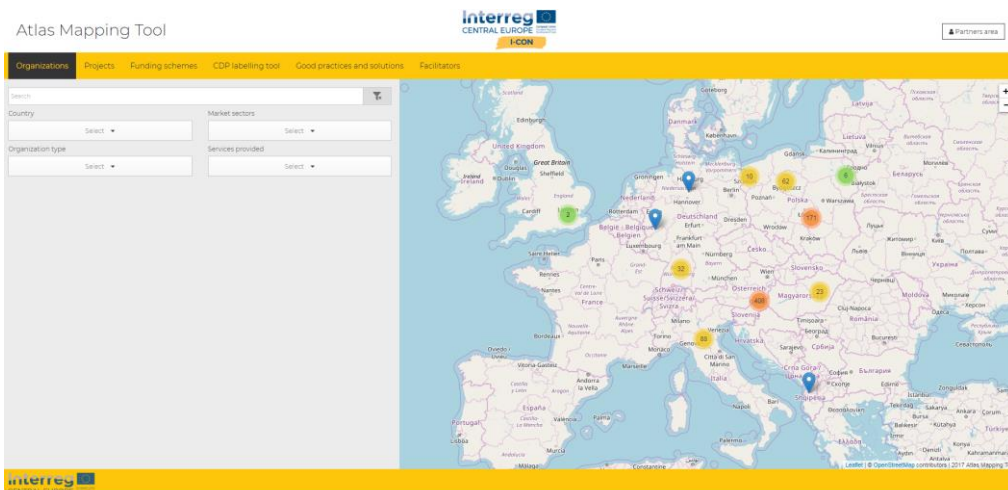
Moduls of I-CON Atlas Mapping Tool

Specification of I-CON Atlas Mapping Tool moduls

The structure of I-CON Atlas Mapping Tool moduls is:

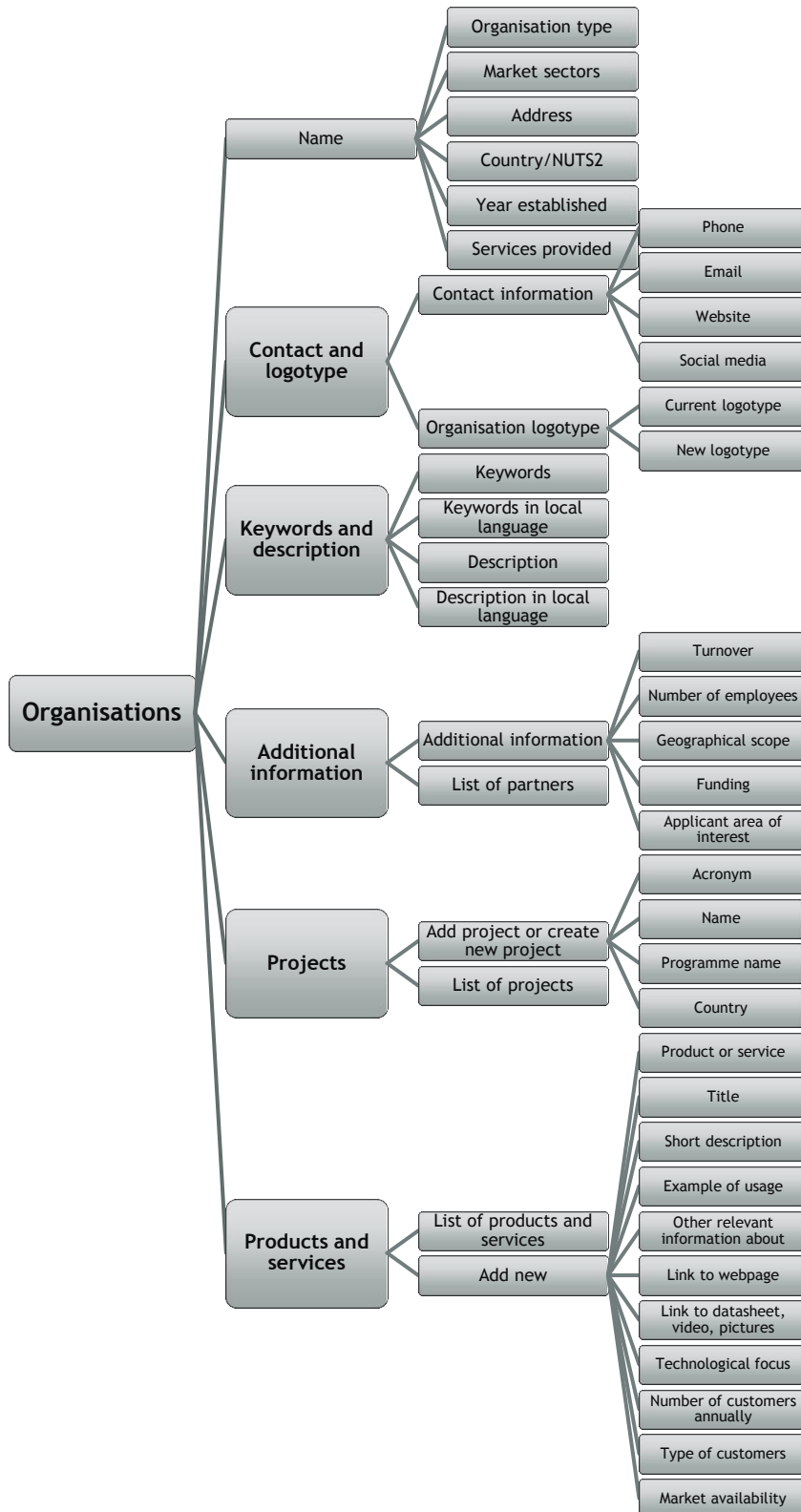


Front Page Design of I-CON Atlas Mapping Tool





Structure of modul ORGANISATIONS:





Plan for the further work of the TRANSNATIONAL SMART AGRO-FOOD HUB

STARTING OUT

The partners thus formed a service program for companies that were tested in the cross-border programmatic framework in the framework of pilot activities.

PROGRAM OF SERVICES



ISO 9001:2015

Through the implementation of new ISO 9001:2015 towards the performance improvement.



Lean manufacturing

Doing more with less by employing 'lean thinking'.



Technology transfer

Transferring skills, knowledge, technologies, and manufacturing to create new products, processes, applications, materials or services.



Product development

New products in form of new innovations, or entirely new goods, are an essential component of business success.



Measuring effectiveness

Attracting and keeping good staff is critical for business success.



Start:up center

From ideas to success stories.

At the time of the implementation of the project, strategic guidelines for regional, national and EU policies for the new financial perspective have been established and, in particular, in line with the strategy of smart specialization and the orientations of Industry 4.0 in the direction of digitization, the partnership sees the sense of continuing the prepared program of services and support to production companies through the instrument of digital innovation nodes, which will be financially supported by the European Commission.

DIGITAL INNOVATION VEHICLES

The Digital Innovation Node (DIH) is a supportive instrument that helps companies to become more competitive by improving their business processes and products and services through digital technology. DIHs operate as "all-in-one" and serve companies in their local region and wider to digitize their business. They help customers solve their challenges in a business manner and with a common model of services that offer services that would not be accessible elsewhere.

The services available through the site enable each company access to the latest knowledge, expertise and technology for testing and experimenting with digital innovations that are relevant to its products, processes or business models. DIHs provide links with investors, facilitate access to funding for digital transformations, and help connect users and suppliers of digital innovation across the value chain.



They also promote synergies between digital and other key incentive technologies (such as biotechnology, nanotechnology and advanced materials). These services are particularly important for companies that currently have a relatively low level of digitization and do not have the resources or staff to address the challenge of digitization.

In line with the DEI initiative, the goal is to ensure that every company in Europe has access to the digital innovation hub at a "working distance" (ie, in a form and location that is appropriate for their day-to-day business). The services provided should be made available to companies in any industrial sector, with a particular focus on SMEs, medium-sized enterprises and low-tech companies.

In addition to focusing on technology, DIH can also focus on specific sectors, for example on the metal industry, polymers, Agrofood, etc. Proximity between DIHs and businesses is an important factor, and the first contact point for companies will often be DIH in the same region.



As an innovative ecosystem providing access to services, facilities and expertise of a wide range of partnerships, digital innovation nodes ensure that individual clients receive the services they need; that target market segments receive innovative, flexible solutions; and that DIHs work together effectively.

DETERMINATION OF THE VALUE PROPOSAL

What's different in relation to DIH?

What is new and different in relation to DIHs is that it brings together all the players in the region and develops a coherent and harmonized set of services needed to help those companies (especially small businesses or companies in the low-technology sectors) that have a problem by digitizing them through a one-stop-shop. A holistic view of digitization as a process of transformation throughout the whole society enables businesses not only to identify technical solutions, but also to finance and innovate at a level that they could actually implement in the company and contribute to greater competitiveness.

In addition, in accordance with the JRC Guideline, each DIH will have its own specialization in line with the priorities of the region's smart specialization, with the



interregional integration of the DIHs, competencies that are not available in the regional DIH can be found. This mechanism will lead to specialization and excellence and prevent each region from investing in all the competencies needed for digital transformation.

Initiatives with some of these characteristics are already visible in many parts of Europe and in different sectors.

- Universities and research and technology centers (RTOs) (generally referred to as "competence centers") or "competence centers" (COCs) already provide their expertise and access to advanced capabilities to the industry.
- Private businesses (large and small) have useful products and services for the digitization of processes, products and services.
- Incubators and accelerators help start-ups in growth and scale.
- Cluster organizations, industry associations representing individual companies play a very important role in innovation in the sector. Investors already provide access to finance.
- Local authorities are aware of the importance of innovation and develop their smart specialization plans.

Added Value of Digital Innovation Hubs

Value proposals for digital innovation nodes should reflect the needs of the industry. This is more than just a list of solutions and services: it's the heart of the node's mission and how it works.

The added value of digital innovation hubs compared to existing initiatives and approaches thus includes one or more of the following options into which the ready-made solutions within the I-CON project will be transformed.

DIH was evaluated by the JRC and was selected and included in the EU DIH-based database with the status "fully operational".

The established DIHa connection will allow:

- One-stop contact point for businesses and provide access to specialized platforms and infrastructures.
- Substantial knowledge and experience covering, for example, technical disciplines and technological as well as technological areas (eg business, finance, law, intellectual property rights).
- Ability to market and proactively identify relevant customers for their services.
- Ability to "speak the language" of SMEs and understand their needs.



- Understanding business models and business transformation and helping companies transform.
- Ability to cooperate with companies at all levels of digital maturity, including offering low technology transfer to companies lower according to the maturity curve.
- Ability to independently and impartially mediate between the needs of industry and relevant technology providers.
- Ability to assess current and future skills needs and provide appropriate support.
- Providing financing or facilitating access to funding from external sources.

OFFER

Portfolio of services

Digital Innovation Nodes have translated the value offer into a unique offer that addresses the specific needs of regional businesses. In a broader sense, these are services that are available and are classified into three pillars:

- Innovation activities to identify the opportunities for digitization and the development and validation of innovative solutions based on state-of-the-art technology;
- Business development, which helps companies to use modern solutions and evaluate economic effects;
- Creating knowledge and skills that are involved in building innovation capabilities through the enrichment of human capital.

More specifically, the main services are:

1) Information on the news: Dissemination of information on the opportunities and benefits of new technologies and services related to "Industry 4.0". A web-based tool is available with available information on providers of technology solutions, good practices, use cases, business models, and catalog of competencies and specialist services. (MAPPING TOOL)

2) Innovation Skills: Small and medium-sized enterprises (SMEs) and other technology solutions that increase productivity and quality of work in companies.

3) Assessment of needs and maturity of SMEs: Diagnosing the needs and preparedness of the company in connection with the introduction of new technologies, providing feedback on the degree of maturity and defining possible solutions.

4) Developing a business model for the company: Assisting in the design of a business model and finding links in the implementation of activities within a network of partners.



- 5) Access to expertise and infrastructure: Assistance in carrying out experiments and testing solutions to the usefulness of use, finding suitable premises for pilot and experimental implementation, access to live laboratories, and involving stakeholders in the implementation.
- 6) Mentoring: Applied assistance in implementing solutions - project implementation, access to finance, internationalization, analysis, value chain design, etc.
- 7) "Brokering / matchmaking": Aid to establish direct contact and organization of events, which are brought together by stakeholders (solution providers-solutions for solutions); access to information, exchange of experience and good practices.
- 8) Education: Preparation of different types of training:
 - Professional workshops, conferences and visits to good practices
 - An online database of knowledge and data with educational materials and video presentations
- 9) Access to funding: Access to regional, national and EU funding sources for the access to new technologies.
- 10) Joint research on issues of common interest. Although DIHs are generally not research organizations, in certain cases the research and development used is justified in areas that are in the common interest of subscriber companies. Depending on the local conditions of the DIH, the survey is carried out directly or acts as a transition to appropriate expertise.

4. CONCLUSIONS

SMART MANUFACTURING IN AGROFOOD: GENERAL RECOMMENDATIONS

- Modernisation of the Food Industry through Industry 4.0 and Digitisation with particular focus on developing transdisciplinary competences, skills and demonstration projects
- Creating a professional forum for regional actors (i.e. enterprises, intermediaries including food industry federations, chambers of industry and Agrofood, research centres, higher education, research and innovation agencies, funding agencies and clusters) being active in food processing, in development of Industry 4.0, ICT and advanced manufacturing solutions for a dialogue on international transdisciplinary RDI cooperation for application of Industry 4.0 and digital solutions in food processing;
- Regional and international presentation and discussion of the common challenges faced and opportunities in ensuring skilled work force and application of transdisciplinary competences through training and education approaches and programmes;



- Transnational and international presenting of approaches to initiate pilot/ demonstration projects which can trigger further applications;
- Building industry based transdisciplinary (food technology+ industry 4.0 + ICT) communities, networks;
- Fostering the involvement of the Central European and other European businesses, business associations, clusters into the European networks, initiatives such as S3 platforms, transdisciplinary, cross-regional and transregional collaborations and providing opportunities for participants to recognise thematic priorities, to present their project ideas in view of collaboration;
- Exchange of experiences on development and implementation of national strategies on application of Industry 4.0 and digitisation of the food industry and other food industry related S3 strategies.
- Elaboration of strategies for flexible, efficient and sustainable food processing to foster the adoption of advances of Industry 4.0 in food factories to improve efficiency and sustainability and to meet the needs of the customers and consumers
- Systematic approach for matching food industry needs and Industry 4.0 and digital solutions
- Elaboration of strategic approach for facilitating adoption of Industry4.0 in food processing
- Training and strategy for digitisation of the food chain (The role of skills and cultural change in the digitalisation of the food chain)
- Key enabling functions of the Industry 4.0 for food processing (tbc), (main enablers and functions of Industry 4.0 for processing applications)
- Food Industry4.0 Strategy of an EU member state (strategy for introduction of I4.0 in the food processing: regional cooperation possibilities, relevant networks, thematic platforms and proposed priority areas for cooperation
- Elaboration of perspective main Skills, Training and Networks: Insight into the approaches to develop skills and to promote involvement into transregional network collaborations
- Presentation of Smart Specialisation Platform for Agri-Food (S3P) to agrofood general public (the Vision and Strategy, Implementation Roadmap, Operational Handbook (of network of living labs), Preliminary results).

SMART MANUFACTURING IN AGROFOOD: SPECIFIC RECOMMENDATIONS

New model for agrofood development for enhancing the prospects of agrofood businesses and assist them in competing in the ever-changing 21st century. This new



model is “Agrofood 4.0” and the key concepts comprises of evolving from the manufacturer of Mass Products to Innovative Products with the help of creativity, technology and new methodologies, and also transforming from a production-based to a service-based economy with the help of digital system as part of this transformation. This model covers 5 key industries, which includes Agrofood, Food and Biotechnology, and purposes to incorporate the related businesses into the food production supply chain, from the upstream agricultural actions, processing, storage, packaging, and marketing, to distribution.

If European Community wishes to build on its markets both globally and domestically, it needs to live up to the highest quality standards. As the lifestyles change quickly towards the requirement for ease and more convenience in the preparation of food, there is specifically growth prospects in the areas of convenience and fast food, canning, snack foods, retail level bakeries and confectionary dairy products.

Due to urbanization over the last few decades, the increase in economic growth has resulted to an increase in demand for higher-value fresh and processed products amongst the highly-educated, middle and upper-income population. Health consideration, rather than price, is becoming a key purchasing factor in the people.

In the delivery model of the future CAP, the Union should set the basic policy parameters (objectives of the CAP, broad types of intervention, basic requirements), while Member States should bear greater responsibility and be more accountable as to how they meet the objectives and achieve agreed targets. The CAP objectives would fulfil the EU Treaty obligations but also the already agreed objectives and targets on for instance the environment, climate change (COP 21), and a number of the SDGs. When preparing CAP strategic plans, the Member States will take into account their planning tools adopted emanating from EU environmental and climate legislation and policies.⁹ At the same time, Member States would be accountable for providing credible performance monitoring and reporting, underpinning the assurance of the budget. Greater subsidiarity would make it possible to better take into account local conditions and needs, against such objectives and targets. Member States would be in charge of tailoring CAP interventions to maximise their contribution to EU objectives. While maintaining current governance structures - that must continue to ensure an effective monitoring and enforcement of the attainment of all policy objectives - the Member States would also have a greater say in designing the compliance and control framework applicable to beneficiaries (including controls and penalties).

Digital Innovation Hub for Agrofood and Food production (DIH AGRIFOOD) brings together research and development expertise in the field of Agrofood and Food production. The network provides with the latest knowledge on digitalization of this industry - so called “Smart manufacturing in AGROFOOD”. The goal of DIH AGRIFOOD is to represent a One-Stop-Shop providing services to organisations in the region



through a multipartner cooperation in order to provide safe, sustainable and quality food.

Based on project achievements, the I-CON partnership consortium sees long-term sustainability of I-CON project in the form of:

1. **SMART AGRO-FOOD DIH platform** and
2. **SMART AGRO-FOOD community**

that is based on Atlas Mapping Tool (AMP) and transnational network of SMEs and solution providers (match-making community) developed within I-CON project and will be widespread further by internationalisation activities of I-CON project partners consortium.

WORKING TOWARDS THE LONG-TERM SUSTAINABILITY

There are pertinent issues related to the long-term sustainability of interregional collaboration in the context of smart specialisation and manufacturing in AGROFOOD:

- management of financial resources and funding,
- political support and
- strategic vision.