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D.T4.1.5 Sustainability strategy

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TABLE OF CONTENTS

Contents

1. Sustainability bases on I-CON project achievements and continuation after completion of the project

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.

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.

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 labelling, 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, labelling).

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.

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 widespreaded further by internationalization activities of I-CON project partners consortium.

2. SMART AGRO-FOOD: Production and processing of food in future

2.1. Introduction

Technological revolution in agrifood is driven nowadays by progress in robotics 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 Agriculture, http://www.nature.com/nature/journal/v544/n7651_supp/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

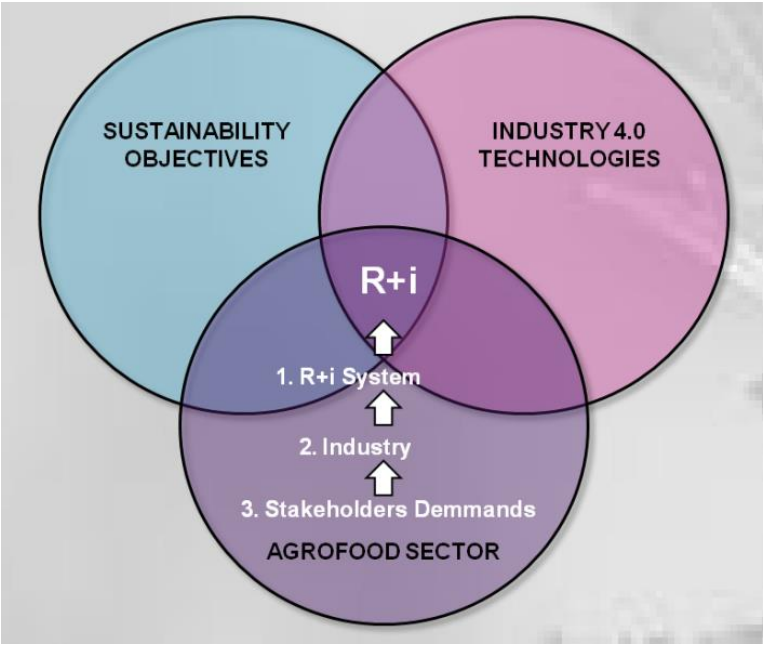
robots are already established in meat processing and automatic quality detection of finished products in bakery. In the beverage industry, robots clean, wash, count, fill and sort bottles on the conveyor belt. Modern visual systems with multiple HD cameras are used to identify faults and inspection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

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.

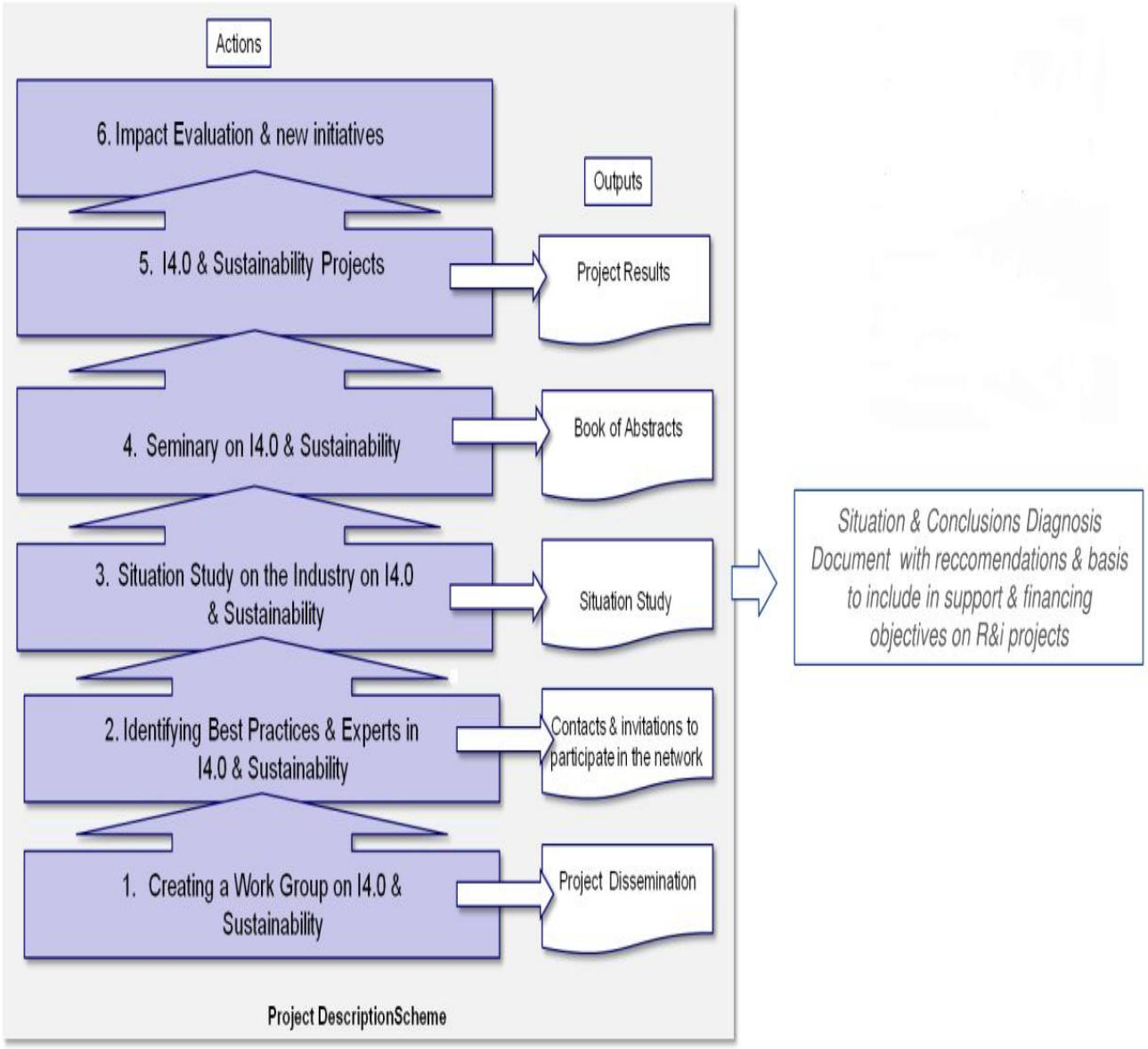
Industry 4.0 is a name given to the current trend of automation and data exchange in manufacturing technologies. It includes cyber-physical systems, the Internet of things, cloud computing and cognitive computing. Industry 4.0 is commonly referred to as the fourth industrial revolution.

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 (Wikipedia).

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



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.

2.2. Moving towards Virtually Connected Innovation Hubs

- **From geography-based to community-driven**
- **From locally processed innovation to open, borderless innovation**
- **From technology-driven to technology-enabled**

2.2.1. From Geography-Based to Community-Driven

Instead of viewing innovation hubs as defined geographies, they should be characterized as digital communities of interest, cohering through close intellectual proximity, and not solely through geographic proximity. It is important to comprehend the growing power of online social networks and collaboration tools in the business sphere. In our global world, collaboration and teamwork cannot be limited to geographies; as the sun sets on one innovation hub, it is rising on another, allowing workers dispersed across different time zones to continue work and optimize productivity every hour of the day.

Attracting New Prospects: First impressions play a vital role in attracting new members to these digital communities. For instance, entrepreneurs considering sites for businesses can compare and contrast a variety of value propositions from the comfort of an armchair. According to Bob Ady, founder of one of the world's leading site-selection firms, the dynamics of site selection have dramatically changed with the emergence of the Internet. Prospective clients use the community's website and other online references as primary sources of information. Before these entrepreneurs engage in formal discussions on moving into the hub, they will have gathered significant amounts of information to fuel their decision-making process. Innovation hubs thus have the

opportunity to differentiate companies from their competitors and attract future participants cost-effectively. The possibilities of today's online experience are such that a large proportion of information that was once delivered by telephone or in physical meetings can be provided by online events, seminars, and even brainstorming sessions.

Private companies need to access this information to make expansion to other countries successful as well. This is a win-win partnership between industry and government. The Soft Landing Zone, an initiative launched by Coventry University Enterprises in partnership with government body UK Trade & Investment, focuses on introducing British companies in other countries. The process set up by this team is an interesting indicator of what works and what could be done better. The Soft Landing Zone program offers a myriad of services to companies that open an office abroad—from IT support to expertise on all legal, financial, cultural, and practical issues involved in doing business in another country. Additionally, the program provides valuable contacts to R&D laboratories, research centres, and academic institutions. Other locales, such as Paris, are developing similar programs. Although the initiative's concept is advanced, its infrastructure is not virtual, and it operates on a basic technological level, preventing candidate companies from obtaining 24/7 service.

Online environments will only become richer; the creation of virtual worlds is rapidly moving into the mainstream. Enterprises such as Cisco, Oracle, and many others have begun to create virtual events and fairs where visitors can explore 3D worlds and create avatars to facilitate business exchanges. Cisco, for example, is increasingly conducting major sales and corporate communications events exclusively online—a move that has not only reduced operating costs, but also increased participant engagement. The potential of these new environments is invaluable for hubs desiring to present themselves in the most attractive way, and for visitors interested in freely exploring their next virtual world.

Using On-Site Communities: The potential for virtual management of existing communities is also promising. By offering hub members an array of highly responsive and personalized online services to address specific questions or needs, loyalty to the hub will be immediately enhanced.

The list of such services is potentially endless, and each innovation hub will have to define its own return on investment and value proposition. Nevertheless, obvious ideas emerge from observing the hub community's primary needs for speed, higher focus, and better networking:

- **Speed:** Basic e-concierge services can be provided online. By posting the right information in the right place and combining this with social networking software, information reaches its appropriate audience faster and smarter. In addition,

click-to-talk capabilities allow residents to access support from anywhere, without having to visit the hub's physical reception desk.

- **Higher Focus:** Imagine a vertically oriented service that pulls together a broad range of potential virtual supporters and providers, covering tasks ranging from marketing and sales to manufacturing. Mashups and online matchmaking could dramatically enhance the process.
- **Better Networking:** Among other ideas, innovation hubs could partner in creating "Virtual Tuesdays," when entrepreneurs make a series of pitches to potential investors around the world. Virtual Tuesdays are modelled after "First Tuesdays," a social movement focusing on technology, the Internet, and future innovation that started in 1999 in London's Soho district, eventually spreading across Europe. Virtual Tuesdays could involve entrepreneurs from more than one hub, at both national and international levels. The concept is a virtual one-on-one or face-to-face meeting, using a mix of sessions and web-based conferences. Any interested entrepreneur can pitch his or her idea and business plan without the exorbitant cost of travel. The virtual meetings could involve 3D experiences as well.
- Another concept could be the **Start-up Stop and Shop**, a web space where video recordings of all entrepreneurs' pitches are made available so that potential investors can search for opportunities at their own leisure. "Virtual Guardian Angels," a mentorship program that connects those seeking and offering best business practices and advice, could provide yet another virtual experience.

The beauty of virtual services is that they are not tied to traditional operating hours—instead, they enable 24-hour global access. While some may be averse to the costs needed to implement these services, two arguments may reverse their objections:

- By empowering the community and authorizing plug-and-play, open-source applications and tools, the innovation hub could find opportunities to minimize usage of public funds while at the same time improving the service experience for key stakeholders. Trusting the community and letting it build its own tools is paramount in a digital culture.
- More important, all of these services could be shared and amortized among several hubs to create a global exchange for growth. Designed to expand relationships to other areas, the global exchange for growth would work as a forum for global collaboration that enables business, government, investors, and educational stakeholders across the world to meet, communicate, and collaborate.

In addition to promoting sharing of costs and eliminating duplication of effort, innovation hubs can increase the reach of all of the above initiatives in several ways:

- The “wisdom of crowds” elevates relevant ideas to relevant audiences. These community interactions would reveal areas of mutual interest that otherwise would not have been identified, resulting in innovative, new partnerships that stimulate and accelerate economic growth and wealth creation across local, regional, and international boundaries.
- Collaboration on a larger scale would expand the number of potential contributors and raise virtual bridges wherever it is relevant to connect partners from different geographies.
- “Coopetition” (defined as cooperation in a context of competition) would deliver its full potential; an alliance of innovation hubs will gain better visibility than any separate initiative.

Whatever the scale of this global exchange for growth, it works for one hub, effectively supports bilateral partnerships, and can be extended to multilateral cooperation with the click of a mouse or an email. This changes the value of implicit exchanges likely to occur on the Internet. Without formal engagement or explicit transactions, people can help and support each other to a significant degree. Individuals derive value from these informal relationships and cultivate them until they translate into tangible deals. This is the ultimate benefit of the virtual network and the reason an increase in these informal exchanges can directly impact business and growth.

2.2.2. From Locally Processed Innovation to Open, Borderless Innovation

In today’s global economy, the innovation chain has become more dispersed and complex, independent of the sophistication of business relationships inside or outside existing hubs. The only way to keep innovating is to connect the dots through new—and sometimes unexpected—paths. Collocating all these participants in a unique physical place is increasingly difficult. As a result, it’s essential for innovation hubs to create **“networks of networks’’**, or concentric innovation circles. Local communities can play the role of catalyst to engender a new, more organically driven model of innovation, based on alliances that focus on specific opportunities.

Involving the Community of Business Partners and Peers: Globally, there are enormous opportunities to enable teams located in different countries to contribute to shared projects. The Global Exchange for Growth will provide opportunities for creating international teams that can contribute on joint efforts. There are already examples of the effectiveness of this approach. For example, Cisco I-Prize is an open, global, innovation competition in which entrepreneurs worldwide can collaborate and submit their proposals for Cisco's next billion-dollar business. Following competition innovative thinkers have access to an expanded portfolio of Cisco collaboration solutions on which

to build as they share their ideas with other participants around the world. The winning team is eligible for $250,000 in prize money.

Contest participants have access to the following Cisco collaboration solutions, which can help break down communication barriers associated with global innovation:

- Cisco Show and Share, a social-video community where contest participants can record, edit, and share videos; comment, rate, and tag interesting content; and use speech-to-text translation for easy video search and viewing
- Cisco Pulse, a search platform that dynamically tags content as it crosses the network, allowing contest participants to accurately locate and rapidly connect with the best experts and information on a particular topic
- Cisco WebEx™, an online meeting platform for audio and web conferencing that enables users to share documents and desktops in real time
- Cisco TelePresence (described earlier)

I-Prize participants also enjoy access to a unique management platform, powered by Spigit, that enables participants to buy and sell ideas on an open market. The idea market lets contest participants establish the value of their ideas through trades. Participants purchase shares of ideas with "virtual currency" awarded to them, based on the value of their contributions to the platform.

The concept of open innovation through global collaboration already has a notable success story in the development of Linux, one of the most famous examples of free and open source software collaboration. Linux followers pioneered this digital collaboration in the 1990s, engendering many new companies and products as a consequence. What has changed is our ability to industrialize this process and replicate it consistently.

Partnering with the Hub Population To Increase Speed and Quality of Innovation: Innovation hubs can also play a critical role in empowering the local community to create new services and products—especially in the area of public services.

The potential for the hub population to co-create products and services with local entrepreneurs cannot be underestimated. Involving the local community in proof-of-concept market tests for products and services developed by hub entrepreneurs not only creates a potential market, but also can shorten product development cycles and provide proof points for attracting new investment.

Government also can be a catalyst by using a similar co-creation and market-test approach to develop and deliver new public services. The procurement function allows

government to play a prominent role in local and national testing of new technologies, and helps smooth the entire innovation chain—from research to go-to-market.

Taken together, this stimulation allows Start-up's to create more sophisticated products based on trial and error at the local level. After these innovative projects have been developed locally, they can expand more rapidly on a global scale than in the old model. As a result, hub communities not only create loyalty to the hub—they change the innovation model, accelerating both pace and impact.

2.2.3. 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

- Idea-generating workshops
- Innovation Cup
- Innovation at a leading event
- Innovation bus
- Innovation competition
- Innovation relay
- Framework workshop
- Matchmaking and ideation for specific funding
- University tour
- Knowledge harvest festival
- Annual summit

SERVICES

- Company get-together
- Hand-in-hand project in preparation for match-making
- Interest groups / sub-networks
- Mapping of positions of strength
- Match service
- Online innovation platform
- Student match
- LinkedIn group

PROJECTS / LONG TERM INITIATIVES

- Innovation at eye level
- Retro concepts
- Matching a target group with large public invest-ments
- Match for breakthrough projects
- Cooperation with innovation agents
- Pit stop
- Inter-disciplinary development processes

INTERNATIONAL

- A week with a top international reseacher
- Satellite office as a gateway to foreign markets
- International conference in collaboration with other networks
- Partnering mission
- International conference with B2B meetings
- International knowledge transformation
- Business delegation to an international trade fair

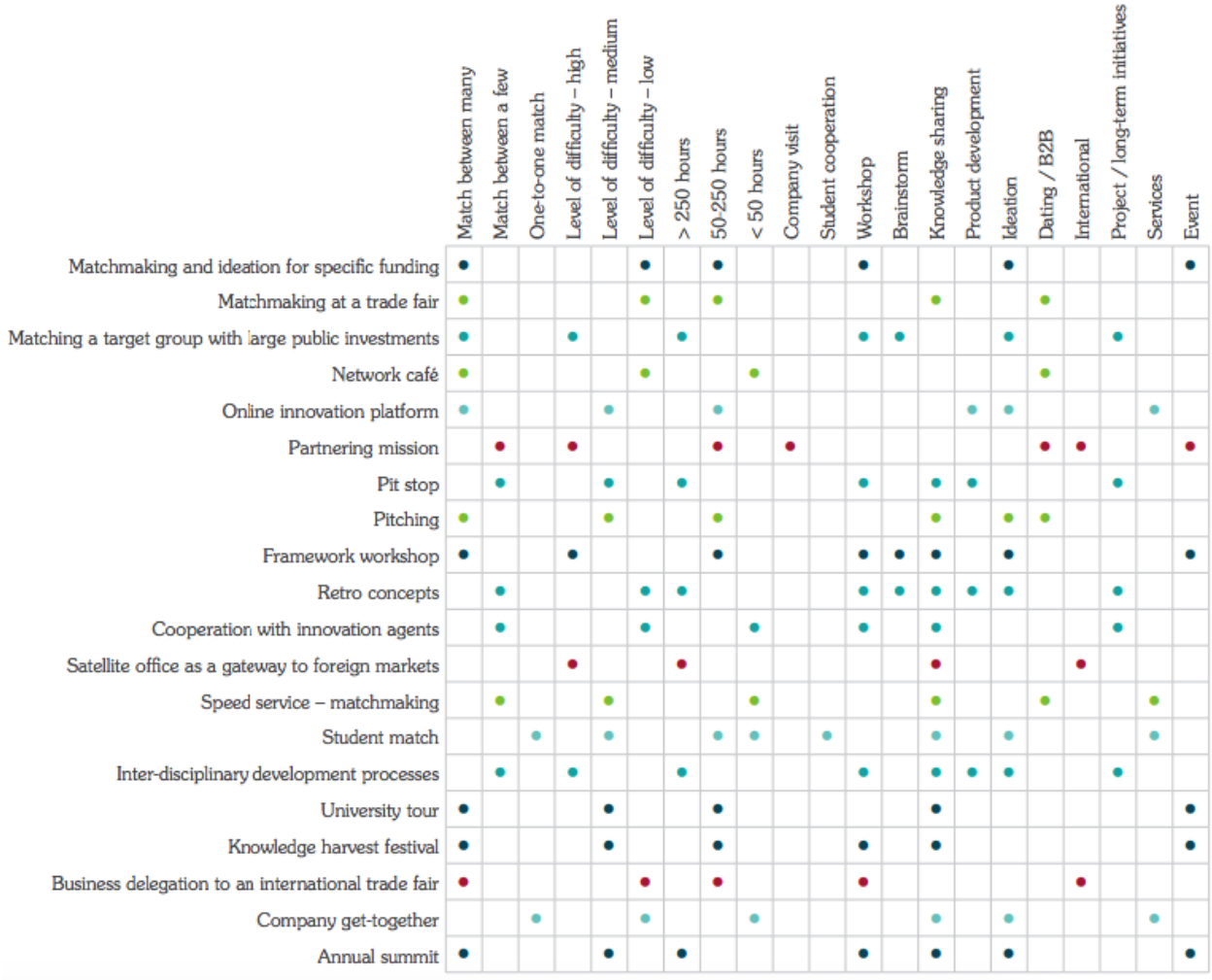
DATING/B2B

- Adventure matchmaking
- Auction
- Icebreakers
- Matchmaking at a trade fair
- Network café
- Pitching
- Speed service – matchmaking

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 matchmaking			●	●					●			●	●		●	●				●	
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



2.3. Why in How to use Mapping tool

2.3.1. 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 organizations, 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 organizations gains a lot of data and knowledge regarding them. It is, undoubtedly,

impossible for a facilitator to memorize 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 organizations. 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 organizations each and every facilitator served so far. Therefore, their consulting to a given firm or organization 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 endeavor 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 centers, etc.) providing organizations 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 organizations, however, only if the utmost carefulness and respect are provided by each and every person inputting the data.

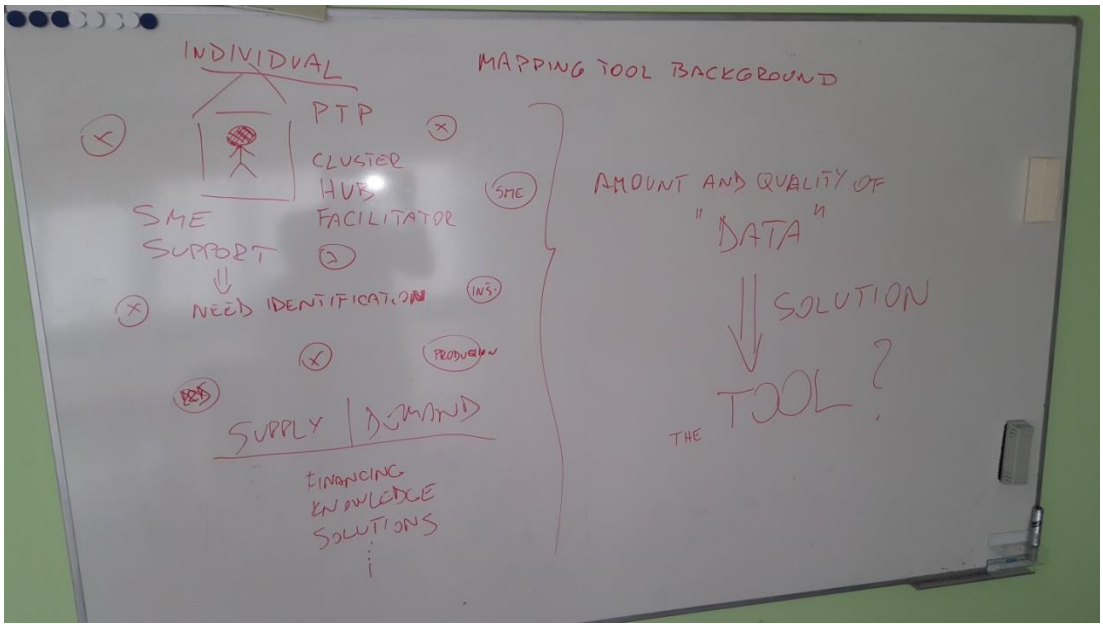


Figure 1: Mapping tool background (individual level) depiction

2.3.2. 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 organization 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 organization which they analyzed 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 organizations which all employ some 15 facilitators. These facilitating firms and organizations, 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 organizations 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.

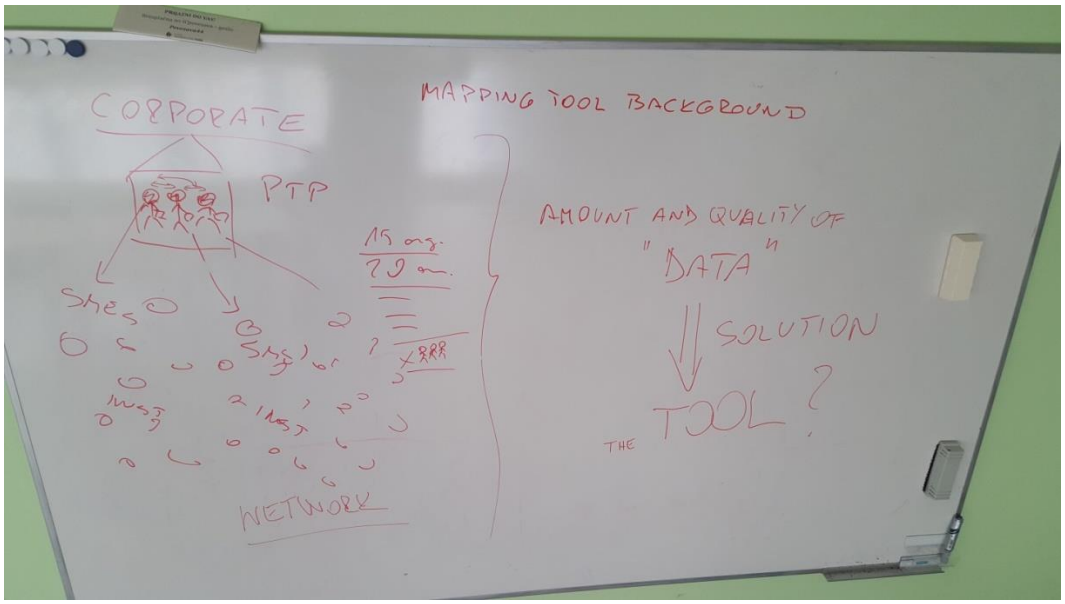


Figure 2: Mapping tool background (corporate level) depiction

2.3.3. Network level

More and more facilitating firms and organizations 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 organizations 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, analyzing, assisting and supporting the interested firms and other organizations, 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.

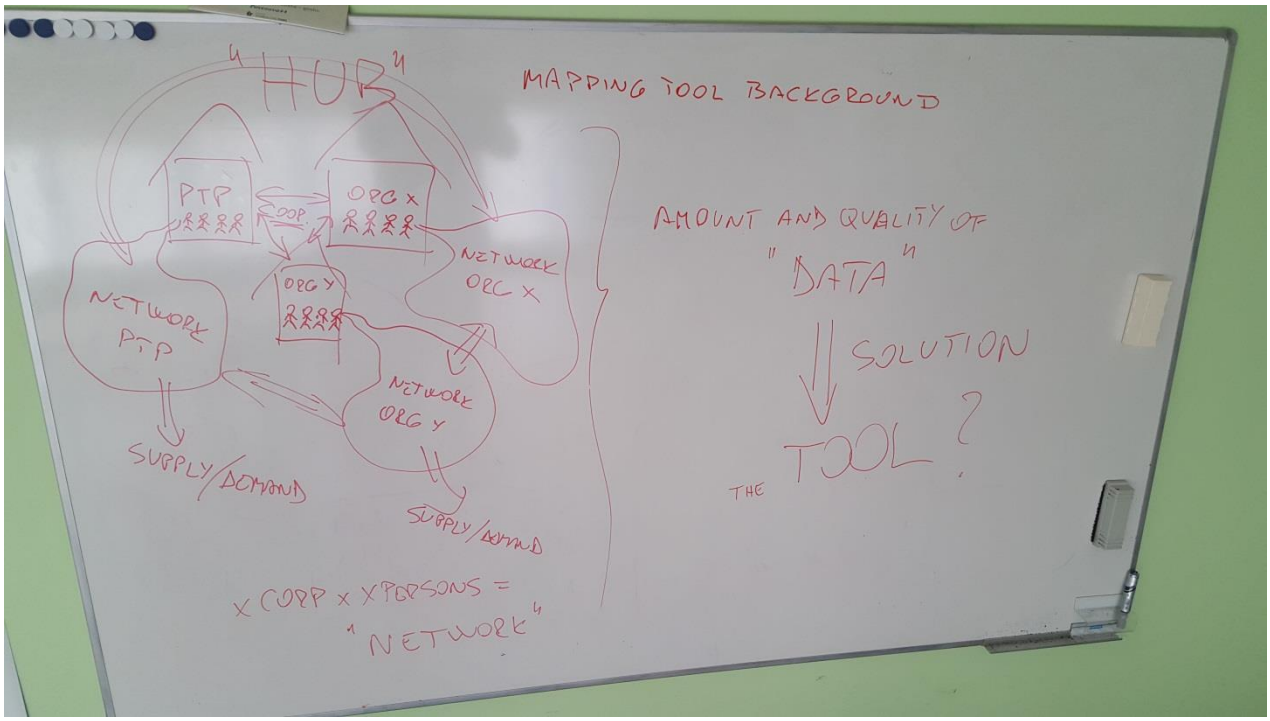


Figure 3: Mapping tool background (network level) depiction

2.3.4. Solutions

In the following subchapters, we present three main solutions which are offered by overviewed mapping tool.

2.3.4.1. Functionality

Usually, the geographically dislocated facilitators gather specific information and knowledge in normal everyday conversations and, concurrently, perceive latent demand and supply tendencies of their clients. Then, numerous soon-to-be-joined-via-the-mapping tool onion-shaped cells each consisting of a satellite (e.g. profit-oriented enterprise or technology park equivalent) of the same firm's or organization's facilitators and the broader network of miscellaneous clients who already have their own connections begin to form. The usage of such a vocabulary is indeed intentional because it meaningfully outlines the subject matter.

The majority of facilitating firms and organizations operate each within a closed inner circle of clients and (other) connections. If we add and consider the significance of their international dispersion and the communication-related limitations we can conclude that:

- the mapping tool the irreplaceable, one-of-a-kind accessory which allows the straightforward and uncomplicated connection between a variety of previously mentioned and described satellites, networks and cells;

- each and every contributor must unconditionally follow the rules that define and state the correct procedure of the mapping tool usage.

We cannot stress enough how important it is to generate proper and unimpaired inputs to ensure as many potential match opportunities as possible. Accordingly, the mapping tool is distinguished by the cautiously thought-out, designed and developed intuitive input fields which allow for an average user to rather effortlessly create an entry.

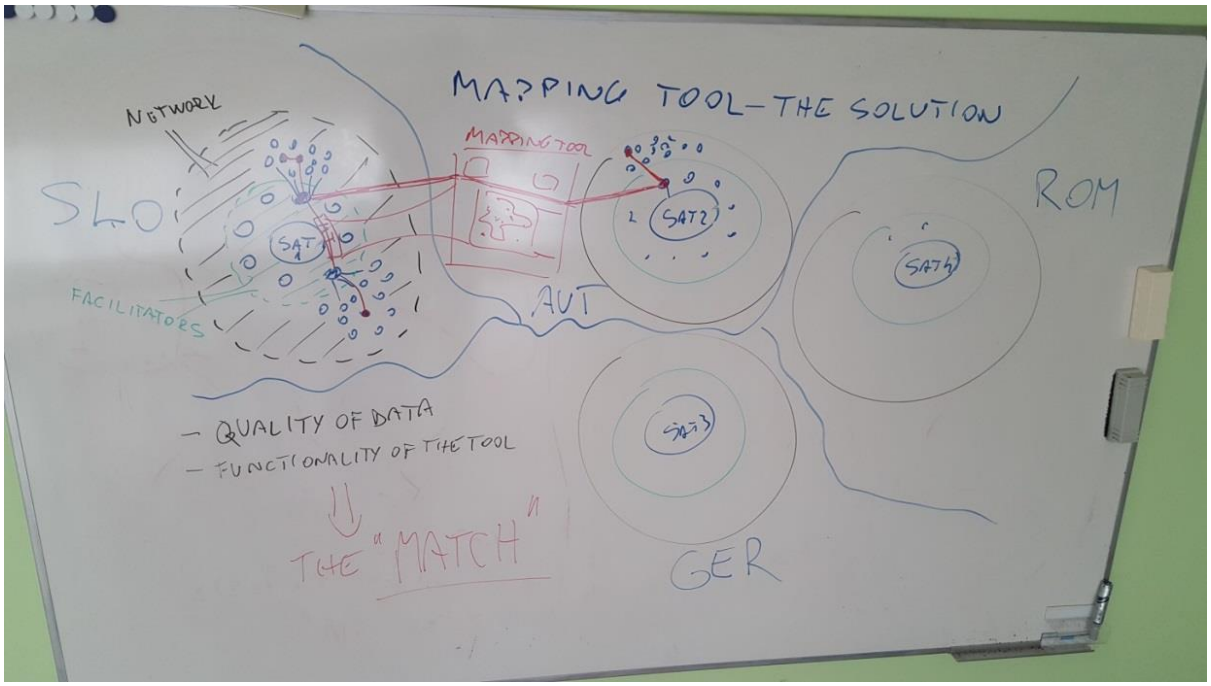


Figure 4: Mapping tool functionality depiction

2.3.4.2. Data quality

Evidently, the data can be captured and entered in to the mapping tool internally or externally, however, each and every contributor ought to consistently follow the predetermined set of critical rules in the mutually beneficial effort to provide analogous and correlative inputs which can later potentially lead to a link between two firms or organizations. Such a match is the intended aim and scope of the whole mapping tool concept.

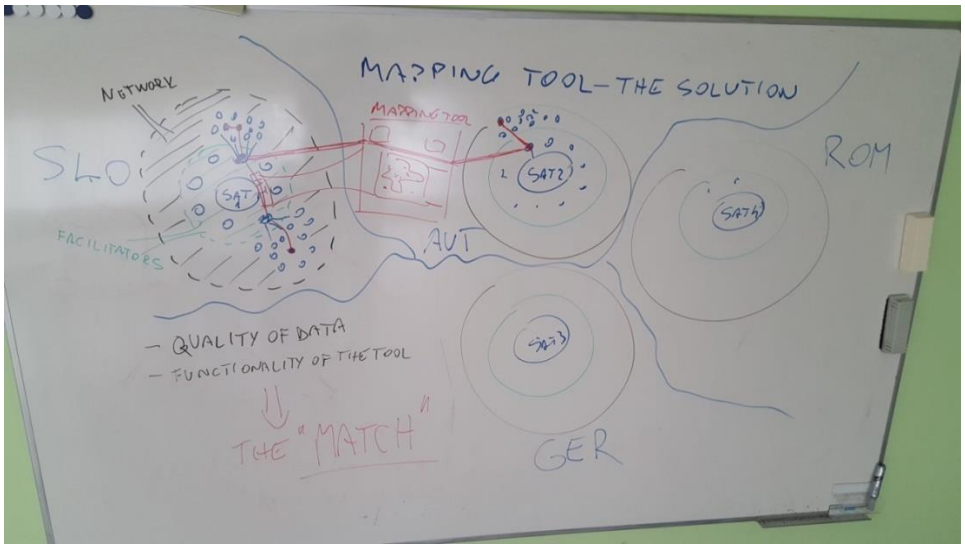


Figure 5: Mapping tool data quality depiction

2.3.4.3. Match

Both, the facilitators as the head pillars in the mapping tool process/system and the mapping tool as the facilitators' accommodating extension, have to be directed to, focused on and targeted to the (potential) stakeholders. All (kinds of) firms and organizations are invited to participate, seek potentially interesting entities, connect and create entries to the mapping tool whether prior and without its help or via fully utilizing it.

To conclude, the sophisticated functionality of the mapping tool and the required quality of the data gathered and entered in to it are two essential and foremost factors which indicate the possibility of the (potential) matches between firms' and organizations' demand and supply tendencies in the future.

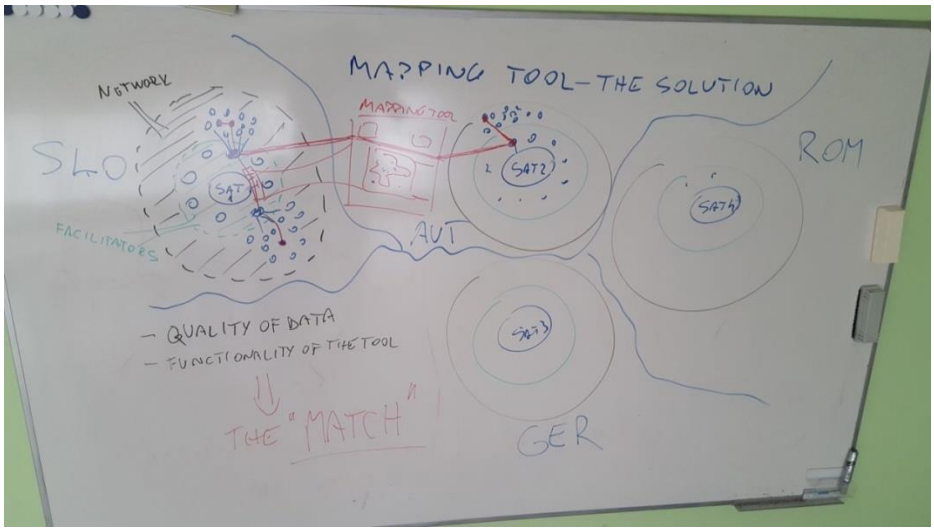


Figure 6: Mapping tool match(making) depiction

2.3.5. Challenges

In the following subchapters, we present the four foreseen critical challenges, of the mapping tool which are to be imperatively considered, taken into account, understood and addressed.

2.3.5.1. Design and development

Every user with the facilitator status assigned to them holds the right to access the advanced search option(s). They – as a lead assisting and supporting subject and a main link between firms and organizations and their demand and supply tendencies – have the permits to see the entire contents of all mapping tool's entries which they can control, edit and monitor. They have the ability to, at any given time, ascertain who has made a given input in to the mapping tool regarding a company profile, funding scheme, partner list, project data, etc. The fact that all of the entries in to the mapping tool are made manually enhances the ability to track who of the facilitators is responsible for a given entry and all of the corresponding changes.

Pomurje Technology Park being the promoter of the mapping tool has the privilege to possess all of the permits to undisturbedly access all of the aspects and parts of the mapping tool at any given time. In addition, a few selected administrators are entrusted with the technical side of the mapping tool and to offer technical assistance and support to the facilitators and other mapping tool users.

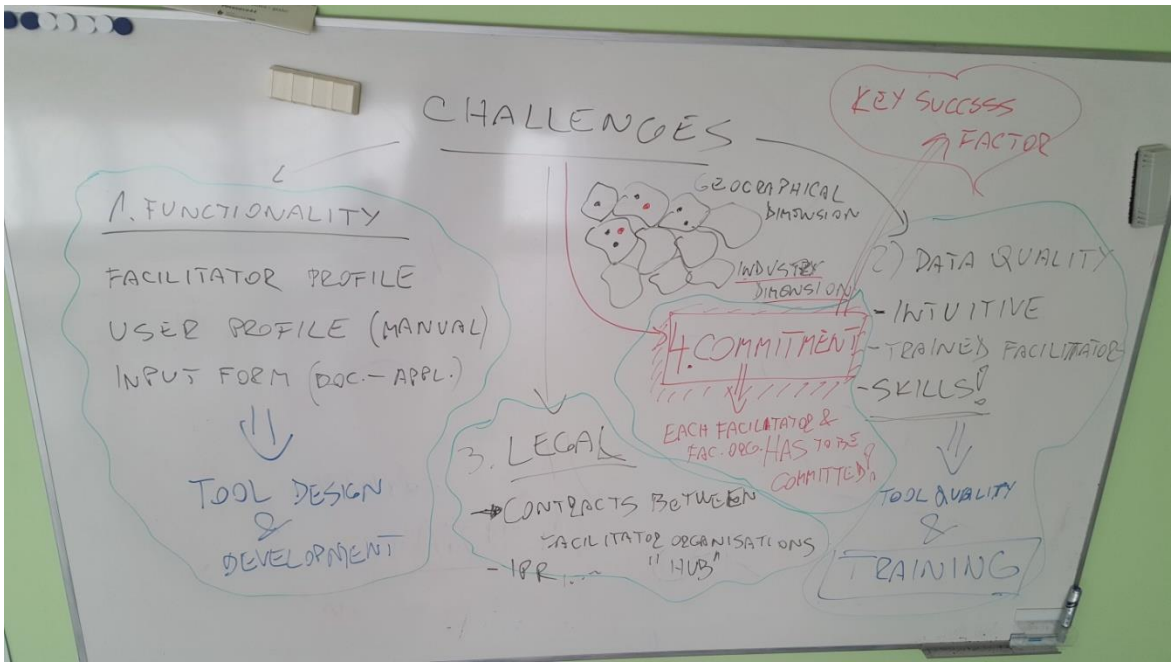


Figure 7: Mapping tool design and development challenge depiction

2.3.5.2. Quality and training

It is clear that various companies and other organizations (note: business-to-business (B2B) and information asymmetry aspects) hardly – or even never – institute a mutual and personal contact. In this regard, the input form ought to be simple, preferably in the Word or PDF file format or accessible, fillable and editable via the computer-based application. It has to be rather intuitive to assure each and every user that the entry will be acceptable and correct if they take into account and follow it precisely and strictly. All of this amounts to the fact that the outputs, i.e. generated results, will be easily searchable, intelligible and understandable by the majority of other mapping tools users.

To manage the demand and supply tendencies of the participating companies and other organizations, the facilitators are the crucial part of the efforts related to the mapping tool. Nevertheless, each and every facilitator must be able to offer unconditional assistance to a given user. Therefore, all facilitators have to become proficient in and excel in networking, arranging relevant meetings, observe, extract and gather data, information and knowledge, create the appropriate mapping tool entries and interpret the generated results after a performed search query. To do and achieve this, they have to possess a vast amount of background and industry-specific knowledge. Additionally, they must be able to sell the mapping tool-based story and be aware that the chaos will arise and the competitive advantages against/relative to other similar platforms, i.e. databases and tools, will be lost if merely one stakeholder does not respect and opposes the preset rules and acts and

works contrary to them. For that reason, the training moment is an immensely significant fragment of the entire mapping tool idea.

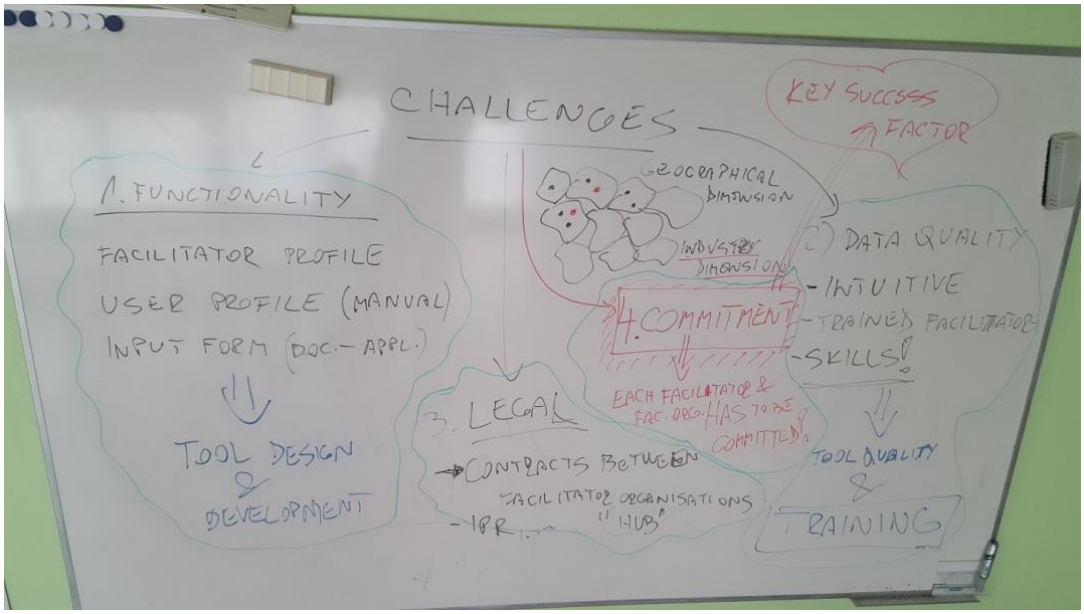


Figure 8: Mapping tool quality and training challenge depiction

2.3.5.3. Legal aspect

All stakeholders participating in the mapping tool system – or, to express ourselves better, hub, ought to consider its legal aspect, namely the importance of the contracts between facilitating firms and organizations, the importance of the intellectual property rights perspective, etc.

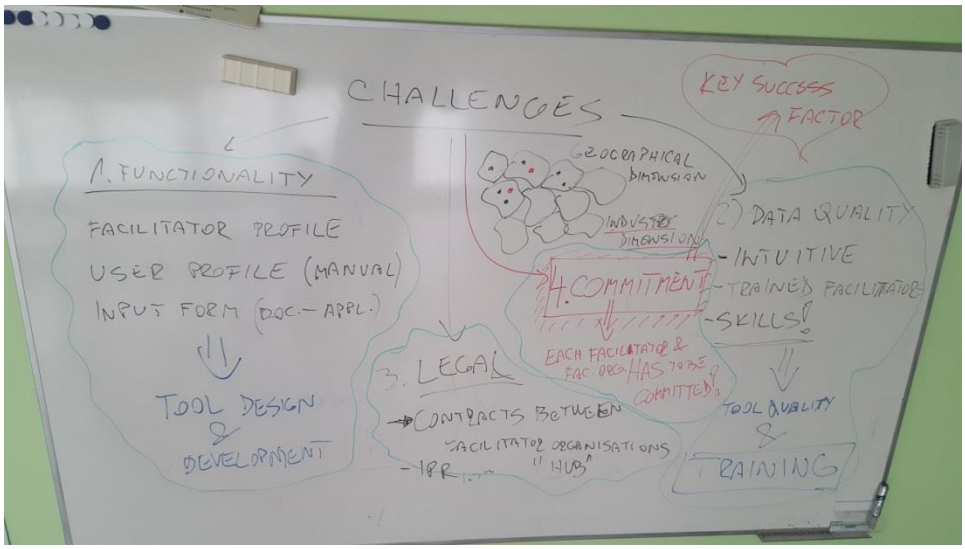


Figure 9: Mapping tool legal aspect challenge depiction

2.3.5.4. Commitment

The mapping tool system allows a given facilitator to forget and/or to lose some of their own data, information and/or knowledge. This is not critical because it is stored in the mapping tool system but, anyway, the forgotten and/or lost data, information and/or knowledge are needlessly wasted.

The paramount question is namely how to encourage, impel, influence, inspire and motivate the overall facilitators' commitment to the cause which is the principal subject of the mapping tool, appears.

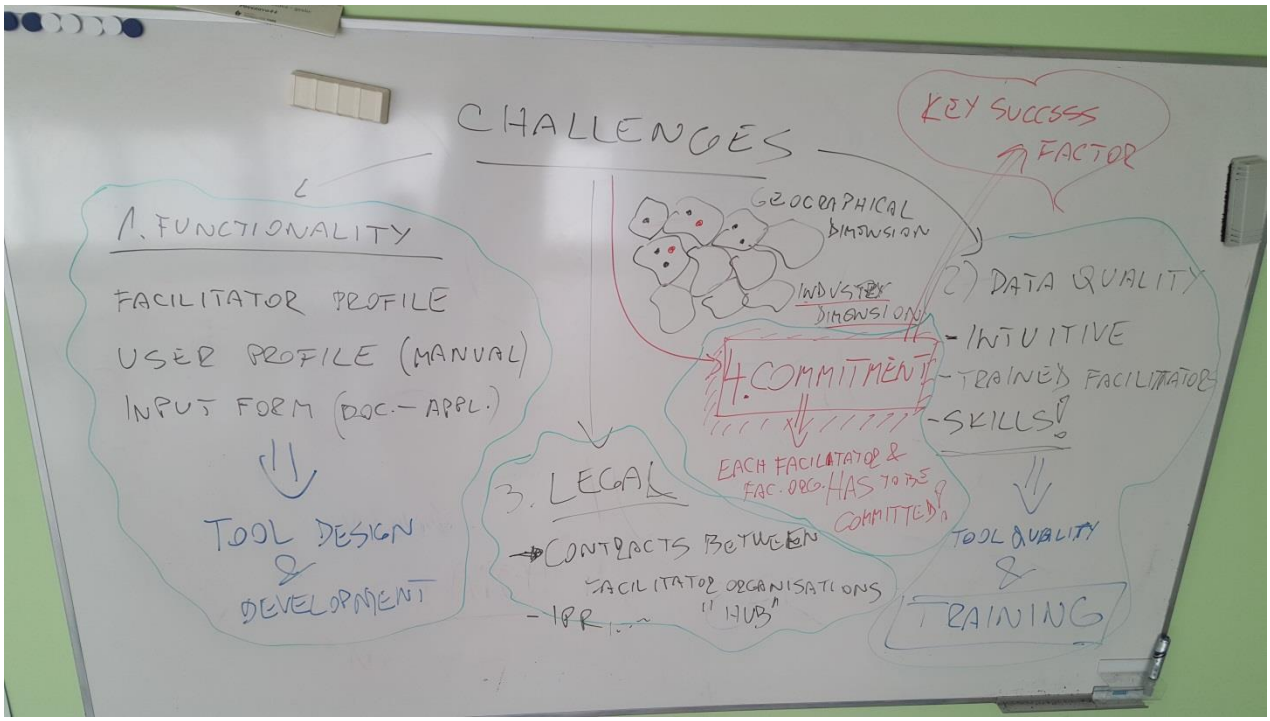


Figure 10: Mapping tool commitment challenge depiction

2.3.6. Key success factor

The users are not augmenting and enriching the mapping tool for no particular reason, rather contrary, there is a lot of hard work and understanding included and present. The mapping tool concept foresees and expects itself to be a long-term process with a lot of gradual and slow trust building and other kinds of struggles.

The capability, competence, potential, power and, most importantly, influence of the mapping tool significantly enlarge and increase after every additional, new (correctly) inputted entry. Each and every participating stakeholder, as well as the entire hub, can immensely benefit by utilizing the mapping tool, however, this is dependent upon and limited by the fact how thoroughly its avail potential has been exploited and how much advantage has been taken of it.

Consequently, the mapping tool's facilitators, their experience and the training(s) they have been subjected to and undergone, are the key success factors in regards to the mapping tool.

2.3.7. Sustainability prospect

In this chapter, we present the sustainability potential of the mapping tool and the so-called modus operandi through which creators and subsequent facilitators, plan to identify, meet and satisfy the perceived users' anticipations, expectations, needs and wishes.

2.3.7.1. Market positioning

The mapping tool has to find its place amongst countless other similar platforms, i.e. databases and tools, and be one of them but, most importantly, better or even the best.

Various data, information and knowledge can be found anywhere and everywhere, however, the mapping tool is one of the rare platforms to present them in the structured and wise way and to give them the meaning and the interpretation capacity so that each and every user can get its point.

Contrary to the other (dying) databases and tools which are stagnating and/or disappearing from the market, the mapping tool is on a path leading to its expansion. To explain this, the current version of the mapping tool is the foundation which can be further developed and improved. Its database has the potential to be enormously and tremendously updated and upgraded, maybe through a relevant national or European call/measurement/project/tender opportunity. However, we have to devise a plan regarding how to eject not-anymore-existing entries from the mapping tool, how to manage the finances, namely the costs, how to optimally gather and upload the datasheets, etc., to avoid and prevent the equal destiny for the mapping tool to happen.

The majority of the mapping tool's potential stakeholders was and/or is a part of one of the similar platforms, i.e. databases and tools, and exhibits no desire and interest to become a part of the another platform. However, this is not an unavoidable problem, especially if/when the mapping tool's references and reputation will grow to a certain degree.

It is of the utmost importance to promote and stimulate the quality of the inputted data and the belonging relationships between all of the participating stakeholders

instead of the data and stakeholders quantity. We have to understand that a (purely statistical) database containing a few thousand firms and other organizations, and even the Google's assets, namely its search engine, are completely and totally useless if they lack the network element/factor/component, i.e. substance consisting of the (inter)connected firms and other companies which are geared up, prepared, ready and set out to fully engage, get involved, play a role, share and take part in the mapping tool's core cause. In short, we have to strive for the right amount of the fantastic and usable data.

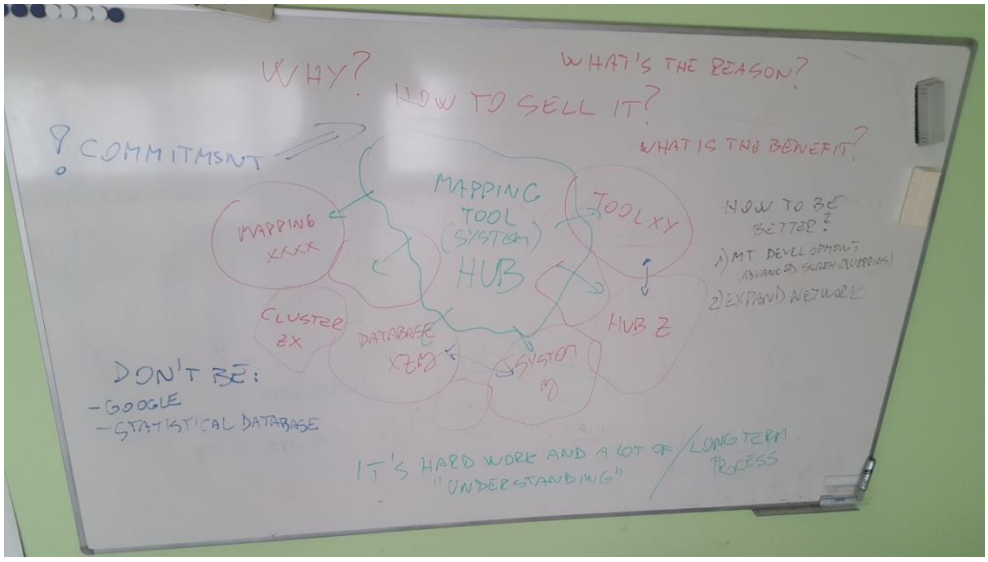


Figure 11: Mapping tool market positioning depiction

2.3.7.2. Added value

The topic of this subchapter is extensively covered in the following chapter 2 and chapter 3.

Notable keywords principally related to the mapping tool's added value are commitment, data quality, facilitator, functionality, network and training.

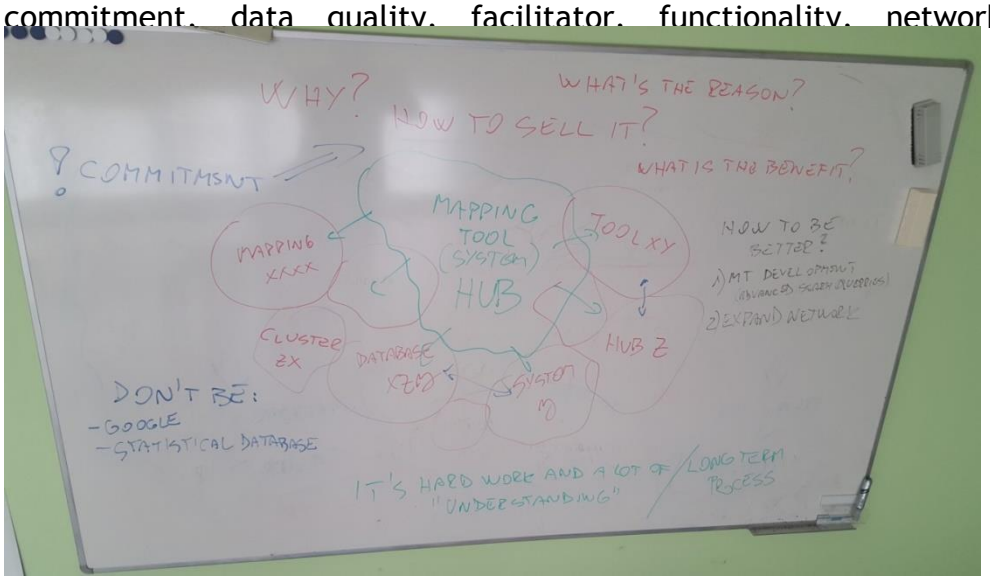


Figure 12: Mapping tool added value depiction

3. DIGITAL INNOVATION VEHICLES FOR AGRICULTURE DIH - Digital Innovation Hubs for Agriculture

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 digitalization 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 agriculture 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 agriculture.

• 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.

4. 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 digitalization 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 play 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**

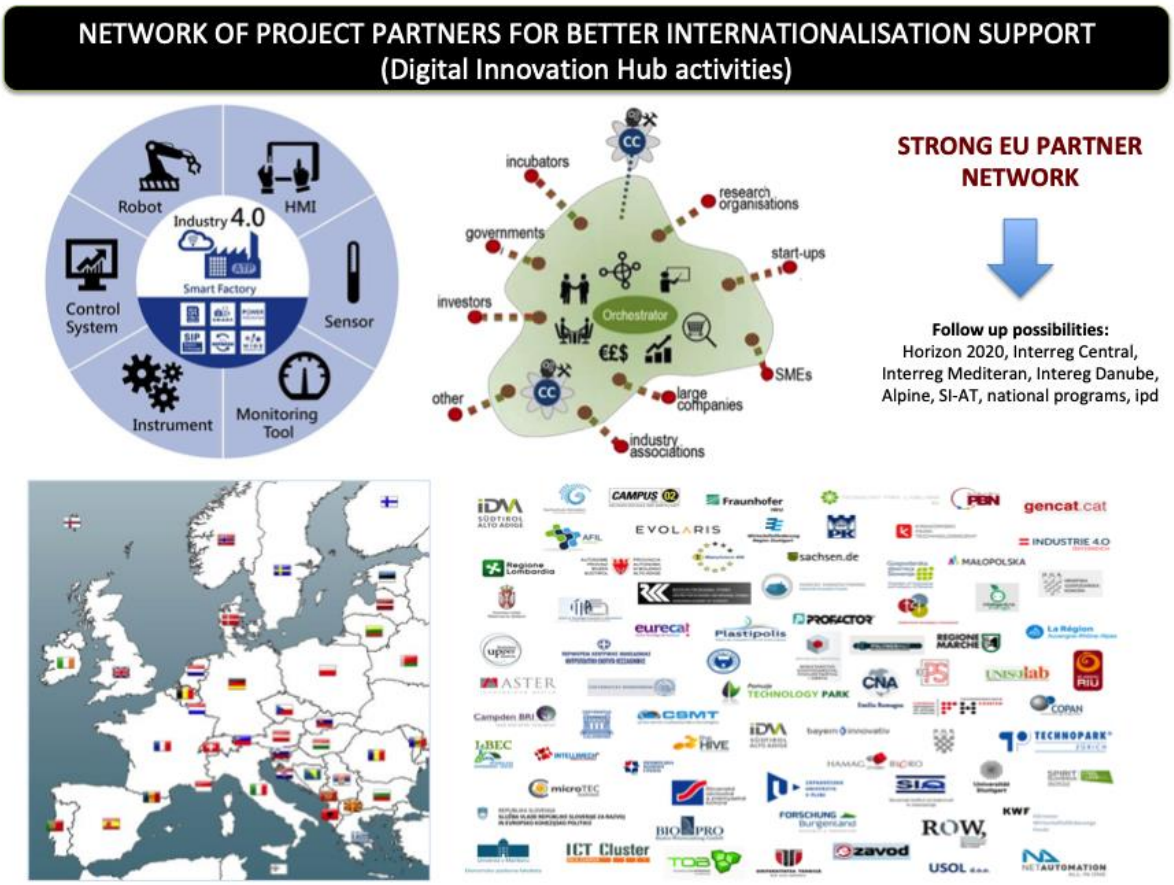
Digital innovation and business models will be a major shift for many companies. They should be encouraged, not only to write a business case, but also to give a deeper consideration to the consequences of digitalization for businesses, in addressing issues such as sustainability and monetarization. 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 (e.g. 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 (e.g. cost reduction at the place of supply, safer products, better quality of life, etc.); and issues related to privacy and security.



4.1.1. 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 (e.g. 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 digitalization services. Social media should also be used as a means of assessing the performance of nodes

4.2. UPGRADING PLATFORM FOR EXCHANGE OF INFORMATION ON TECHNOLOGY

4.2.1. 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.

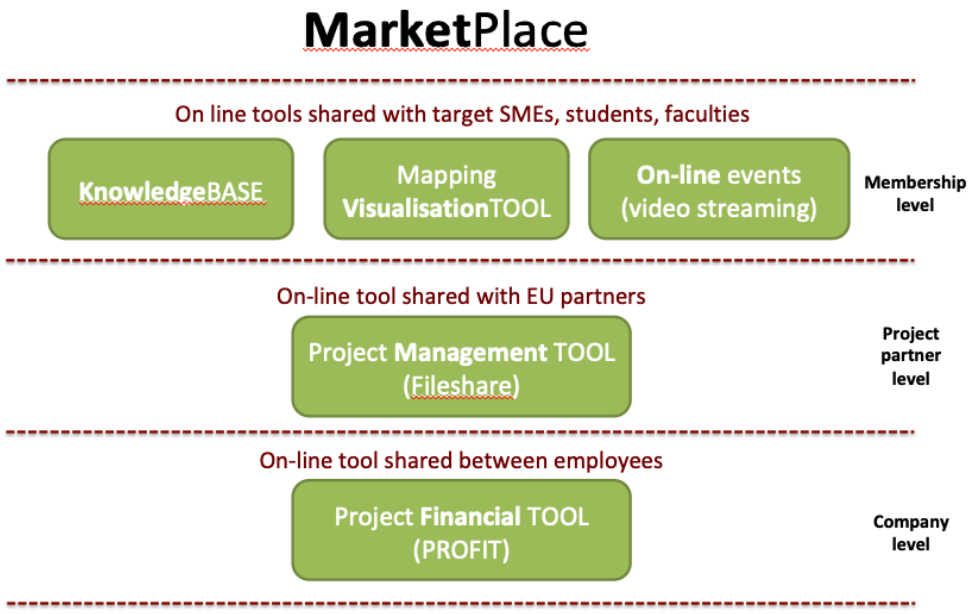
The Web platform can additionally perform the following functions:

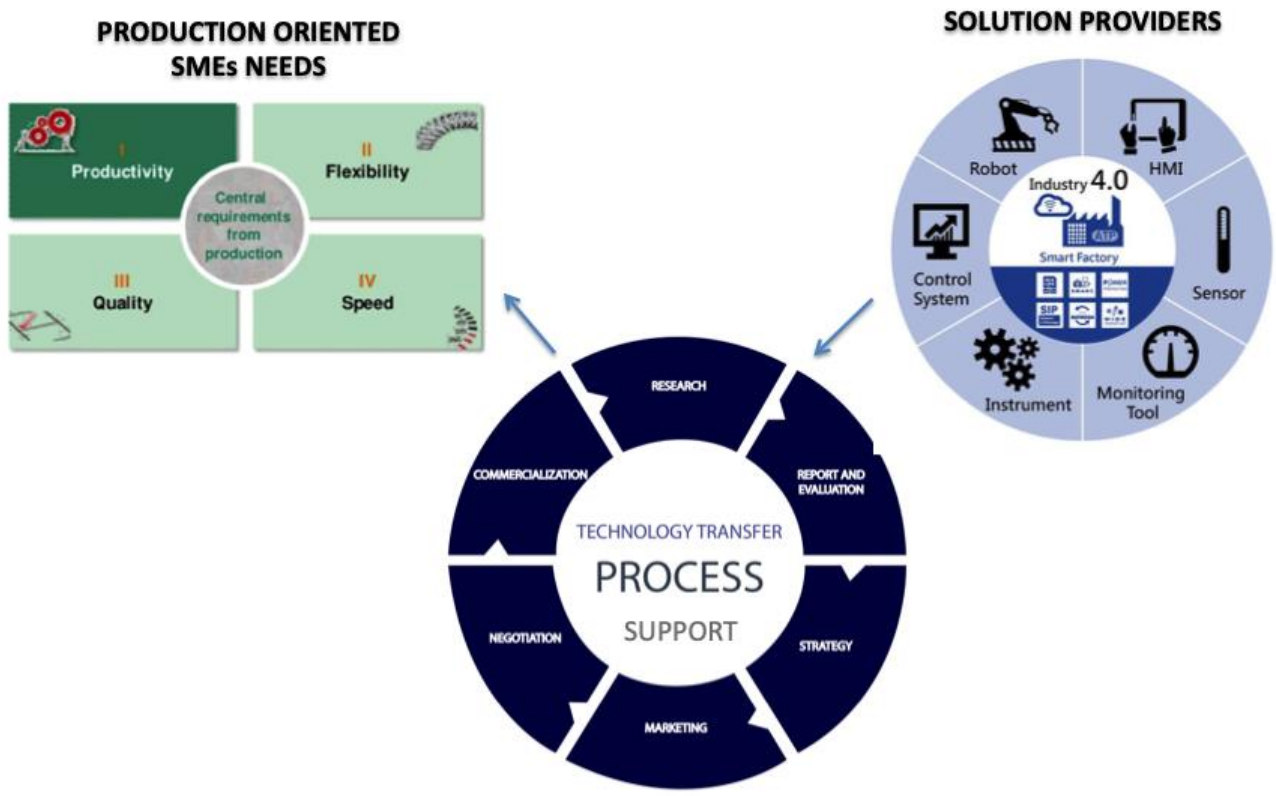
- provide a space for the exchange of knowledge, data, experiences and good practices of different countries and stakeholders in the development of science, technology and innovation, adaptation, dissemination and transfer in a more systematic and structured way;
- Provides technical guidelines and tools 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:





4.2.2. 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.

4.3. 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**

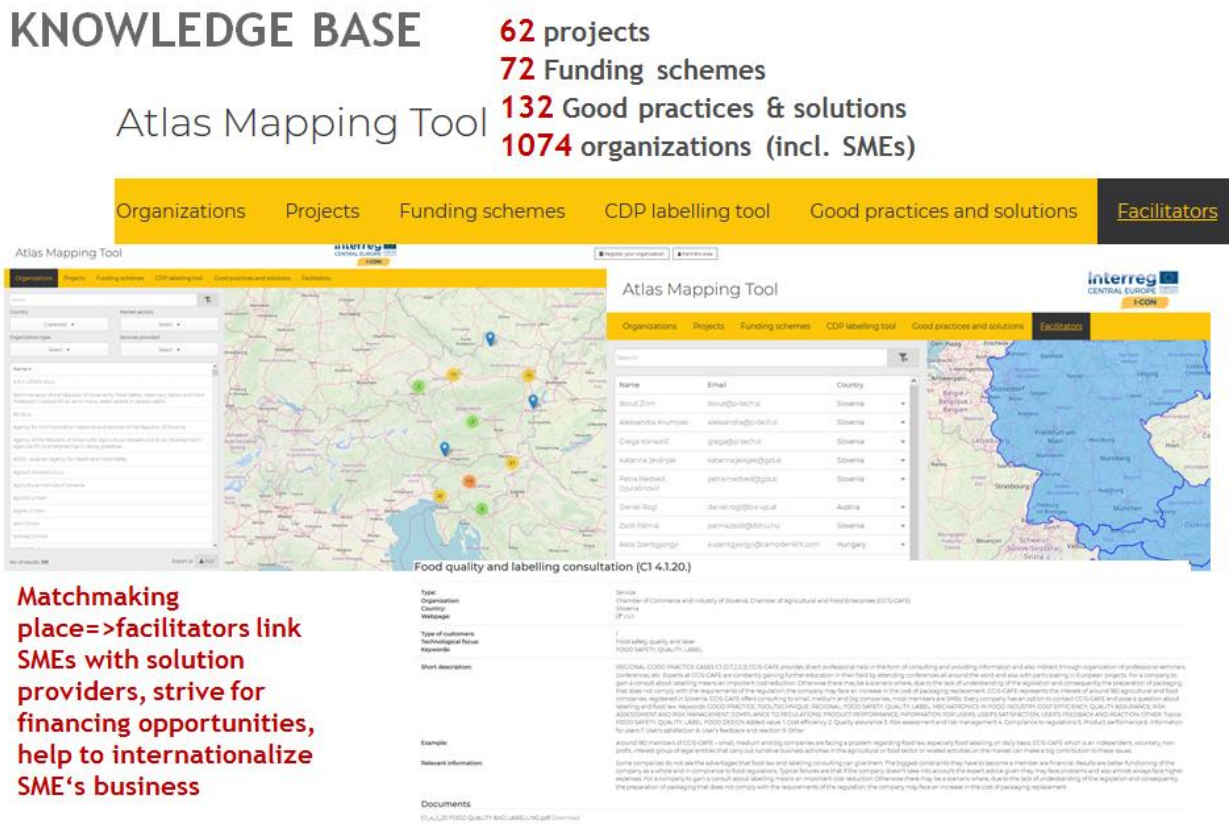
As mentioned earlier, the node could be a common thread or network map that connects existing platforms together and can provide an opportunity to establish a general framework supported by an effective international coordination mechanism.

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.



5. Atlas Mapping Tool – operating guidelines

5.1. 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 regions. The identified solutions and it's providers are presented in detail.

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

5.2. I-CON Atlas Mapping Tool WEB ADDRESS

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

5.3. Specification of I-CON Atlas Mapping Tool modules

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

- Administrator
- In-house access
- Partner access
- Public access

Descriptors in module 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 module Regional actors/Organizations:

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 module Funding Schemes:

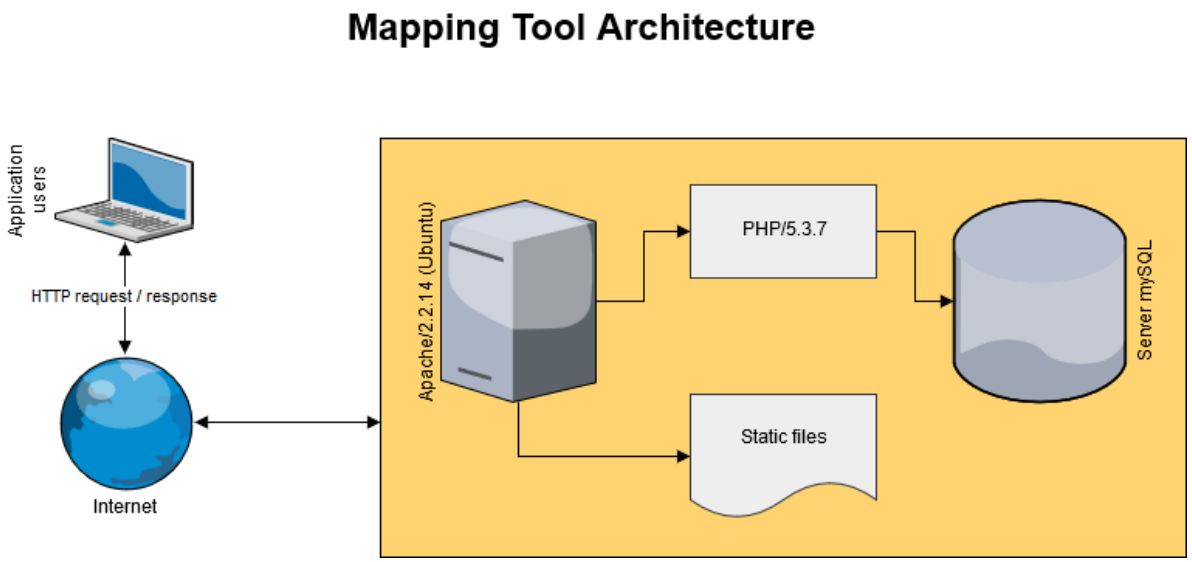
Funding schemes:
COUNTRY
MEASURE(CALL)
OBJECTIVE
IMPLEMENTATION BODY
BUDGET (MIO €)
FINANCING RATE
ELIGIBLE COSTS
MAX.GRANT €
YEAR FROM
YEAR TO

Descriptors in module Projects:

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

5.4. Requirements

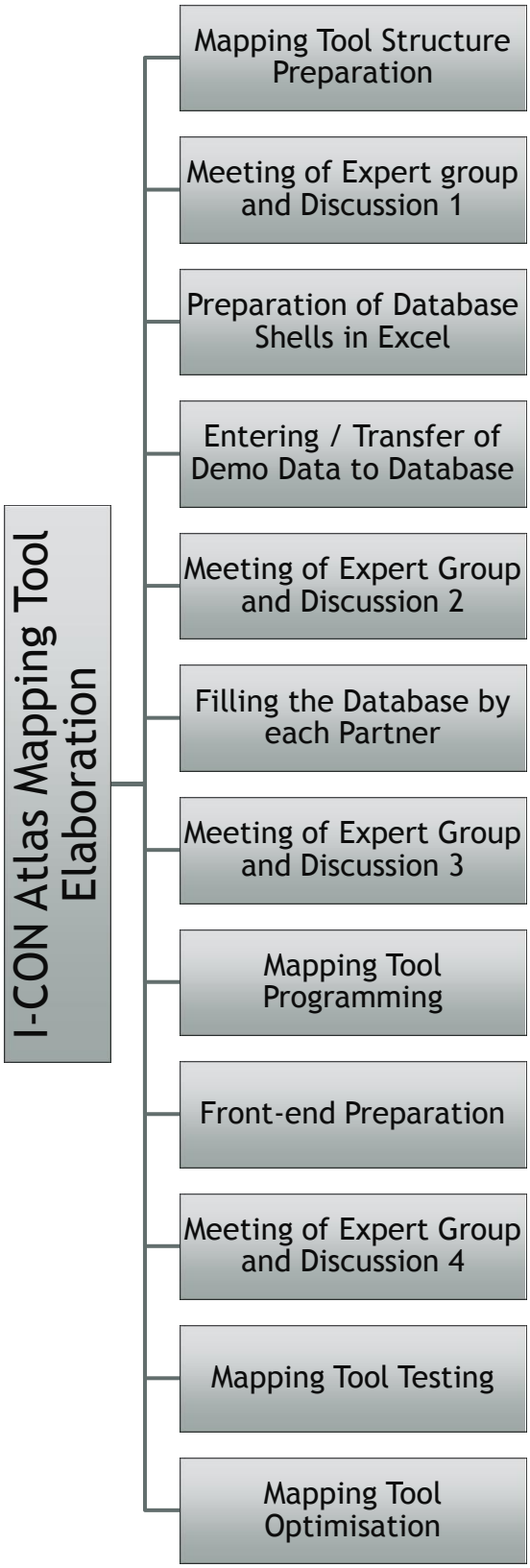
5.4.1. Requirements scheme



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

5.5. Steps in elaboration of I-COM Atlas Mapping Tool

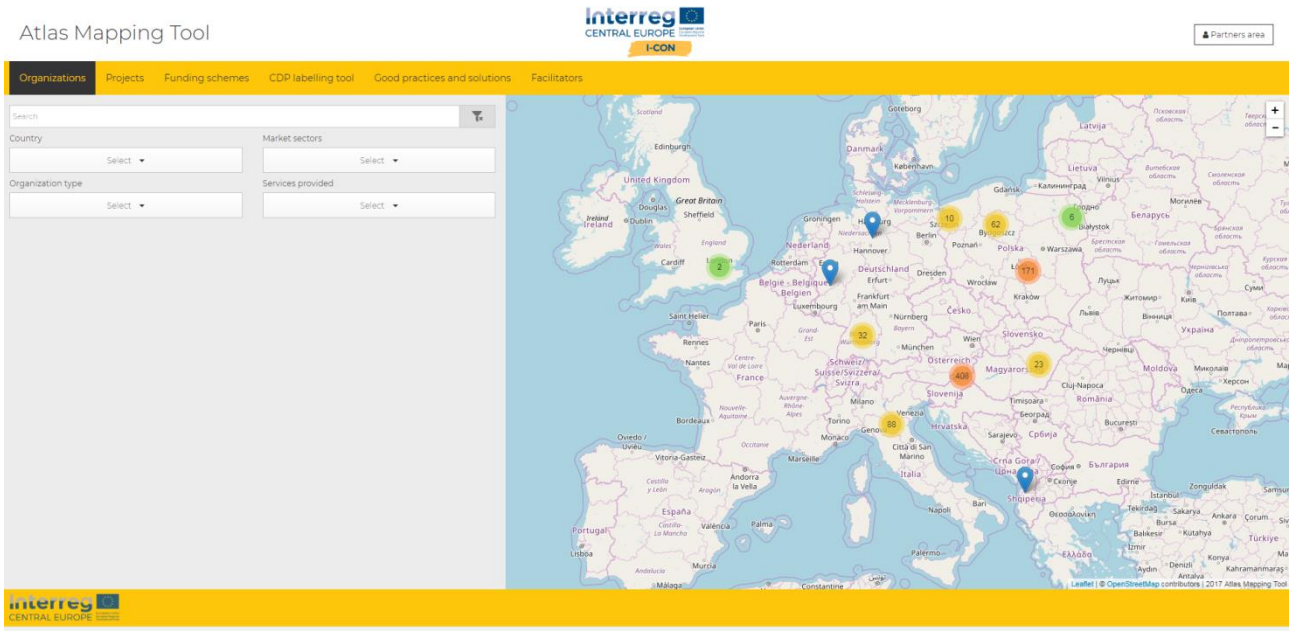


6. Moduls of I-CON Atlas Mapping Tool

6.1. Specification of I-CON Atlas Mapping Tool moduls

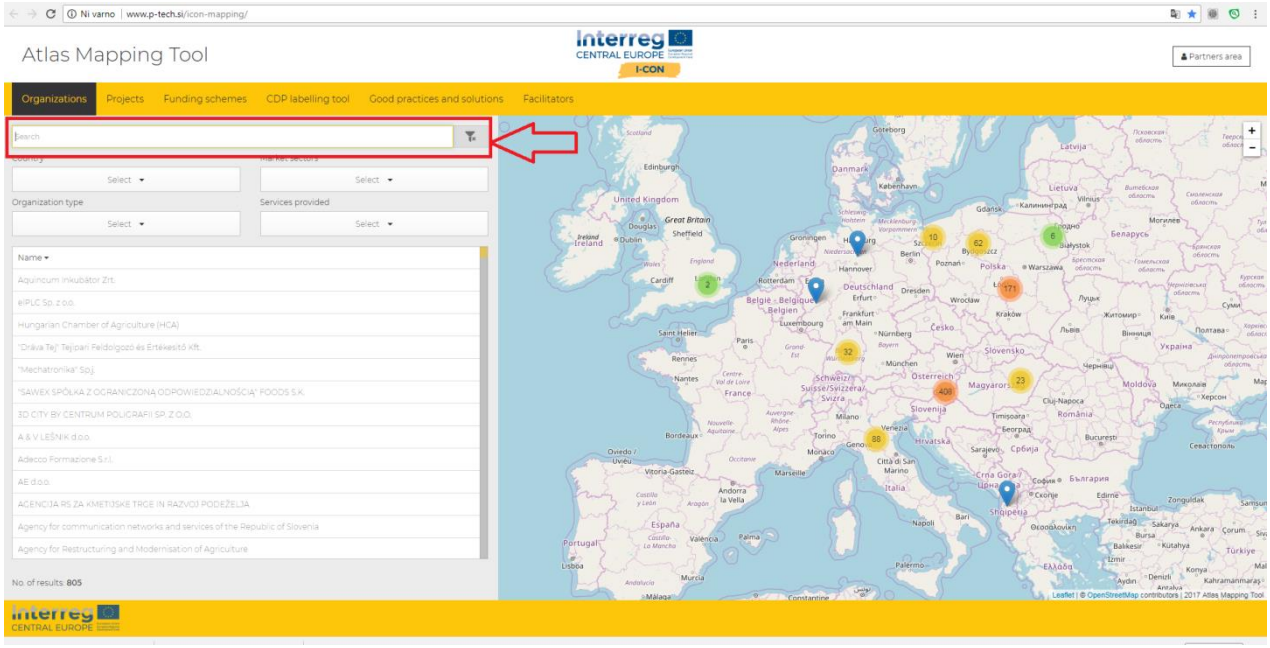
The structure of I-CON Atlas Mapping Tool modules is:

6.2. Front Page Design of I-CON Atlas Mapping Tool

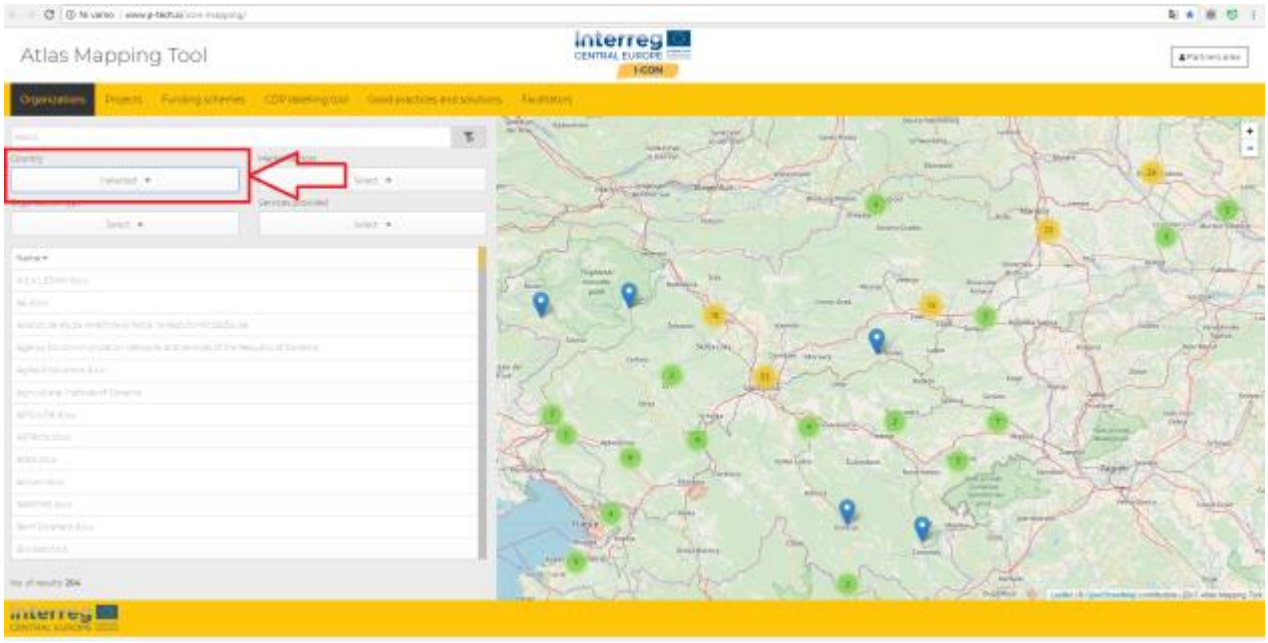


6.3. Search and Filters on Front Page

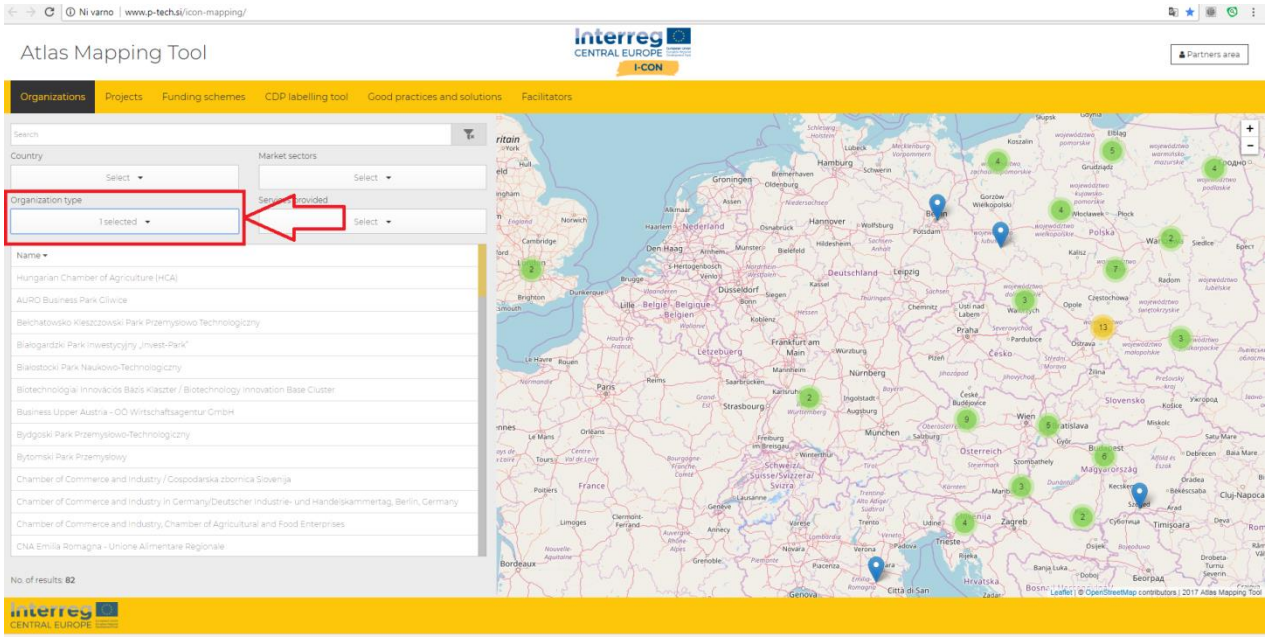
6.3.1. Free text search



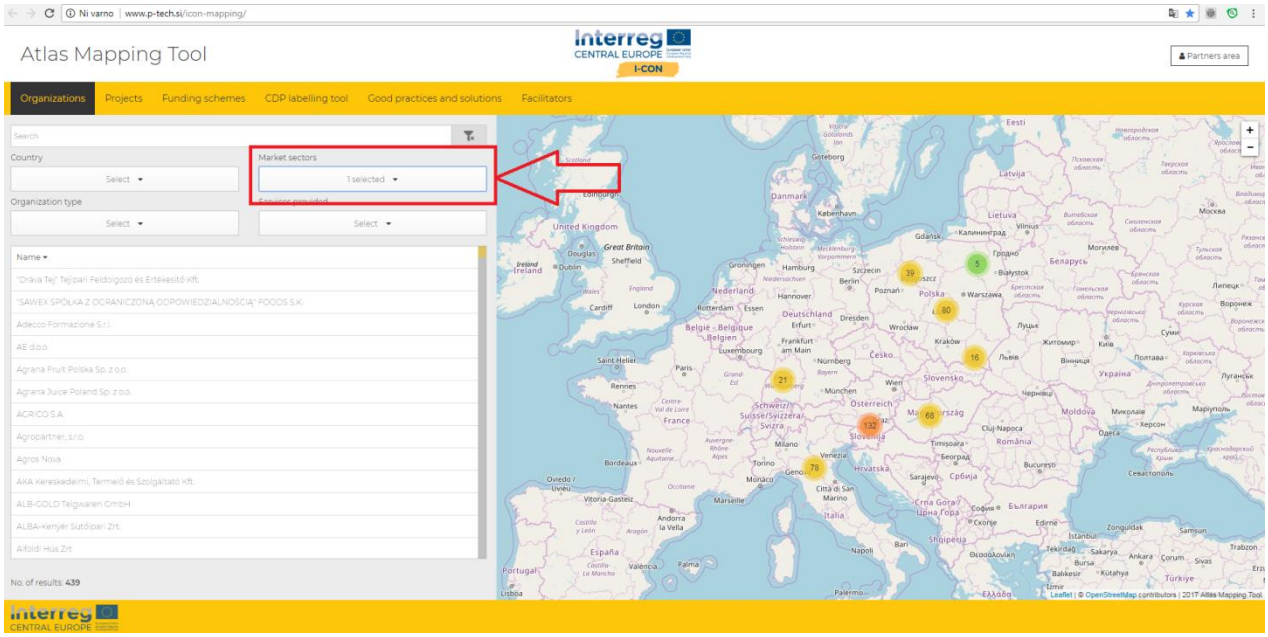
6.3.2. Filter COUNTRY (example SLOVENIA)



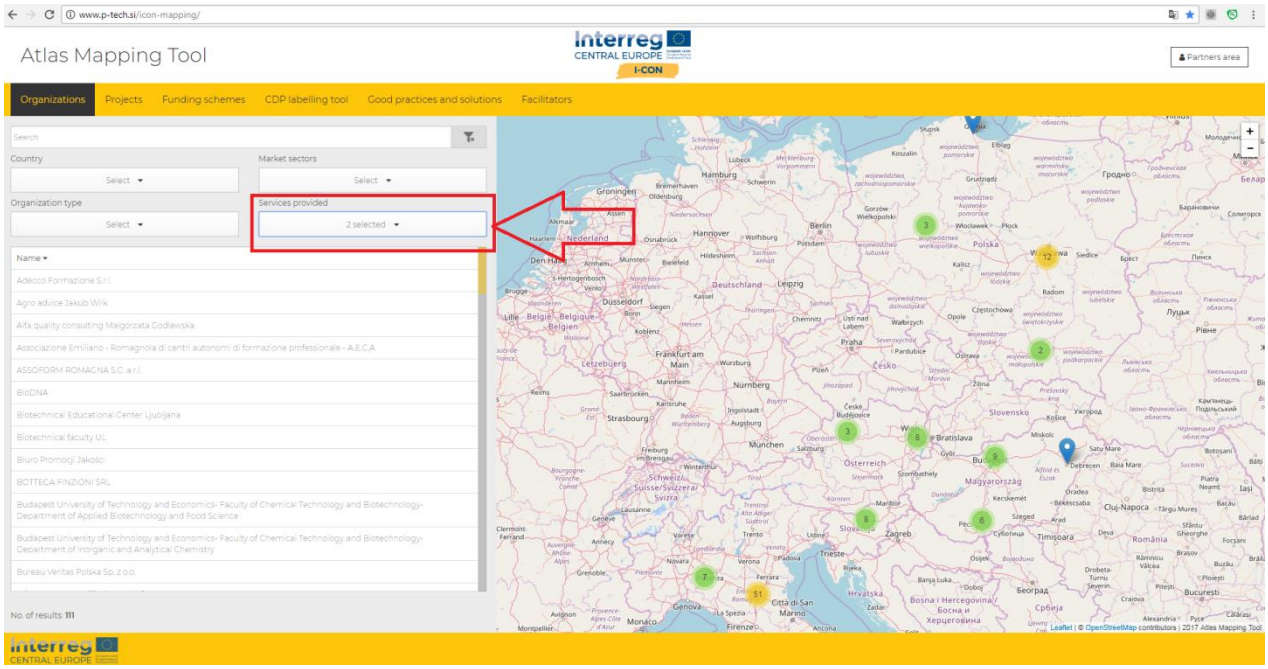
6.3.3. Filter ORGANISATION TYPE (example BUSINESS SUPPORT ORGANIZATIONS)



6.3.4. Filter MARKET SECTORS (example FOOD SECTOR)

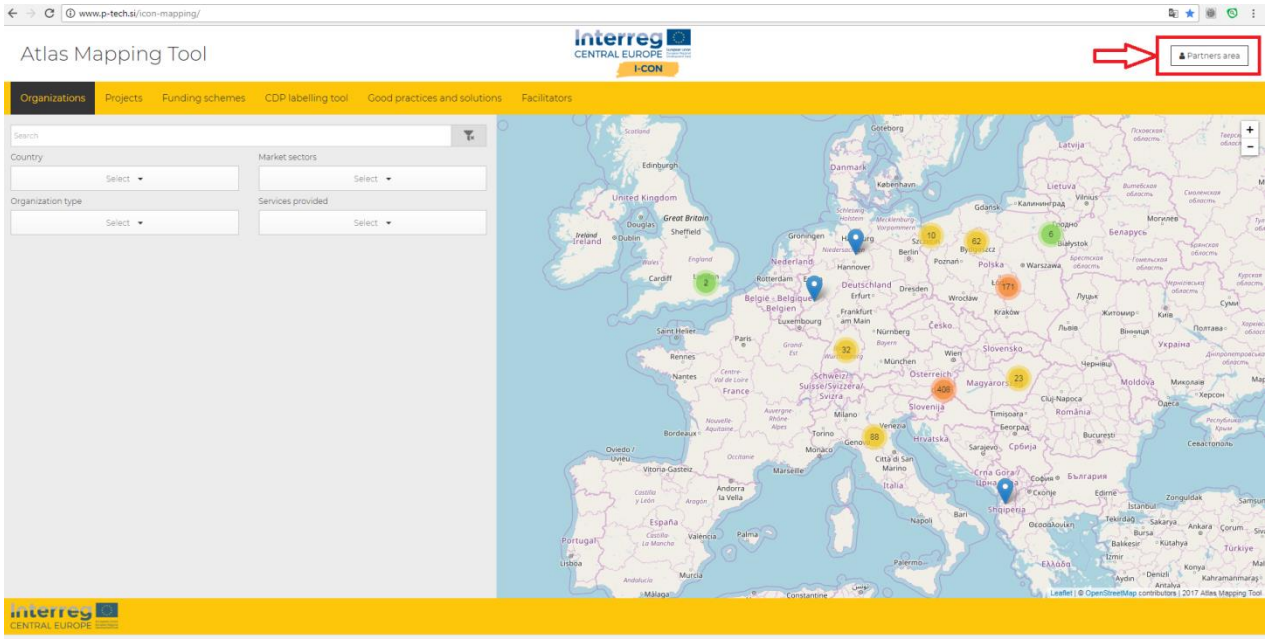


6.3.5. Filter SERVICES PROVIDED (example FOOD SAFETY + EDUCATION, TRAINING)

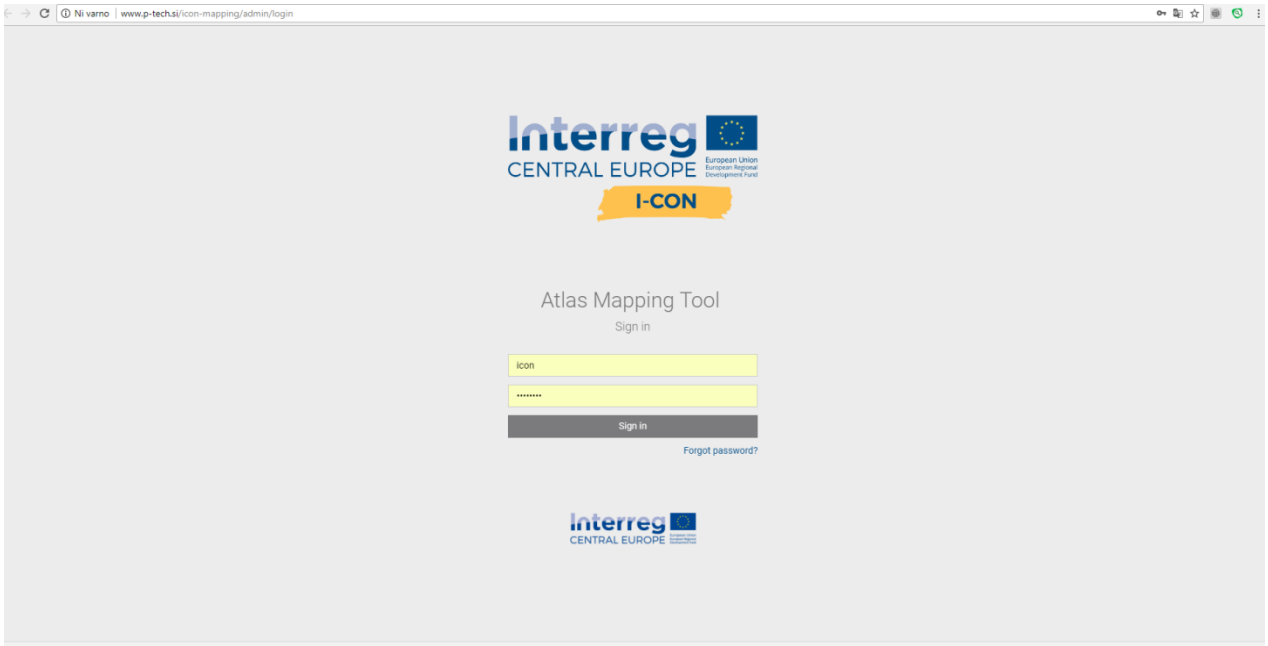


7. Admin page (adding, editing, deleting data ...)

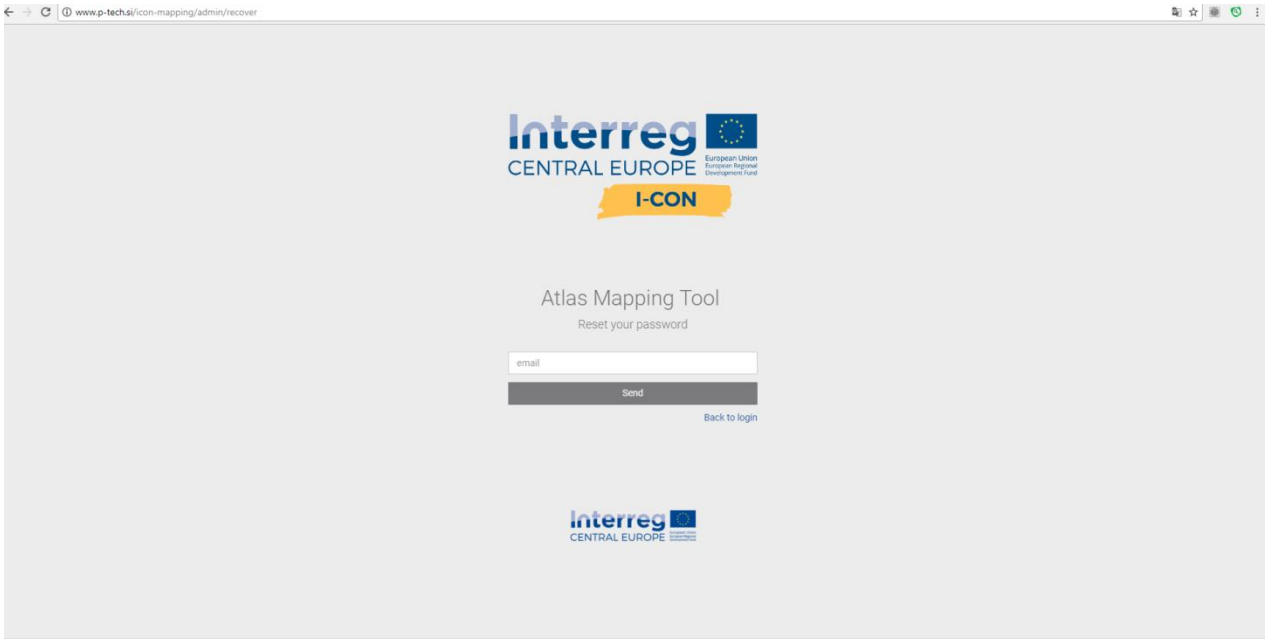
How to enter ADMIN ?



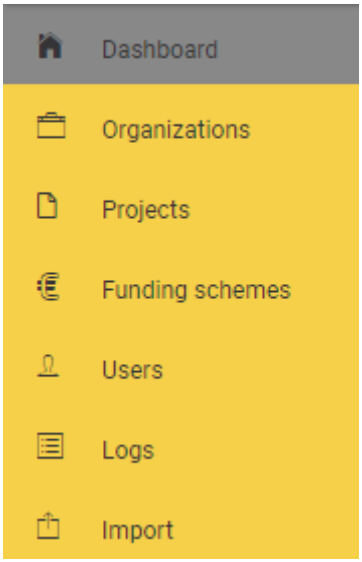
I-CON Atlas Mapping tool Admin – SIGN IN:



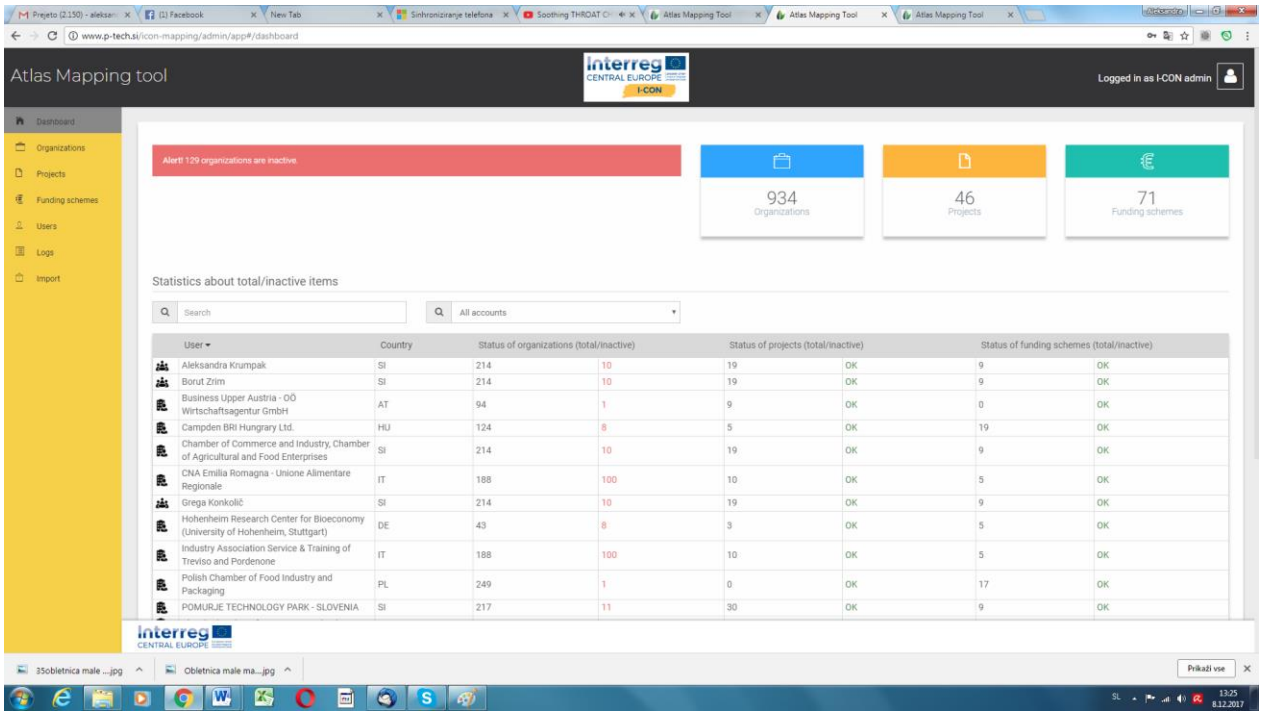
Mapping tool Admin – Password recovery:



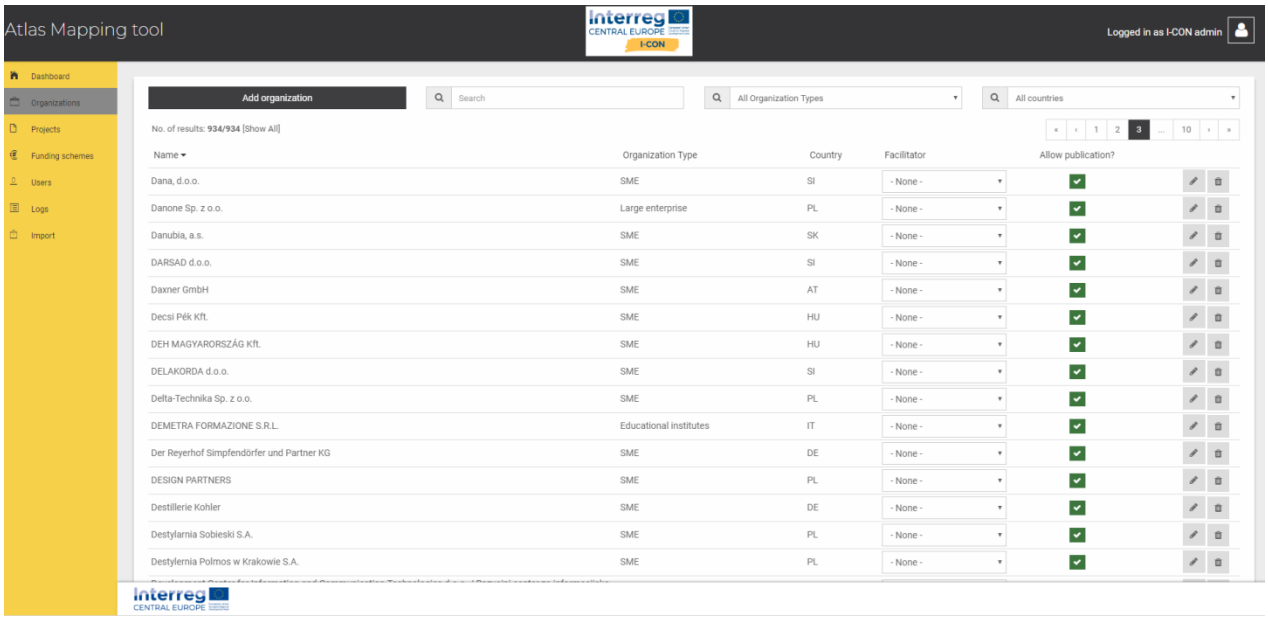
I-CON Atlas Mapping Tool ADMIN – possibilities:



7.1. I-CON Atlas Mapping Tool ADMIN – DASHBOARD

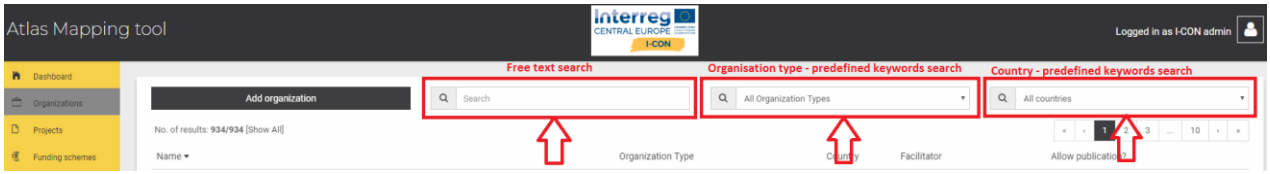


7.2. I-CON Atlas Mapping Tool ADMIN – ORGANIZATIONS

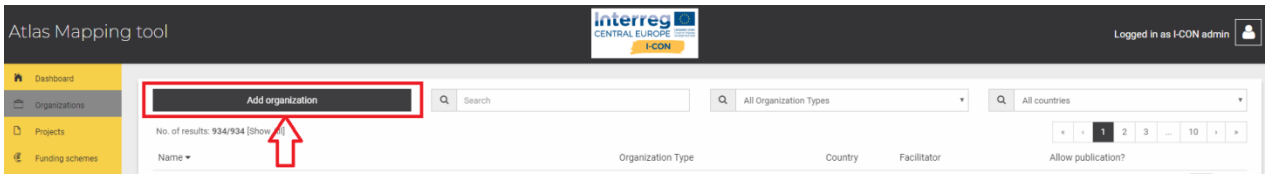


ADMIN – ORGANIZATIONS search possibilities:

- Free text search
- Pre-defined keywords search:
  - Organization type
  - Country
-

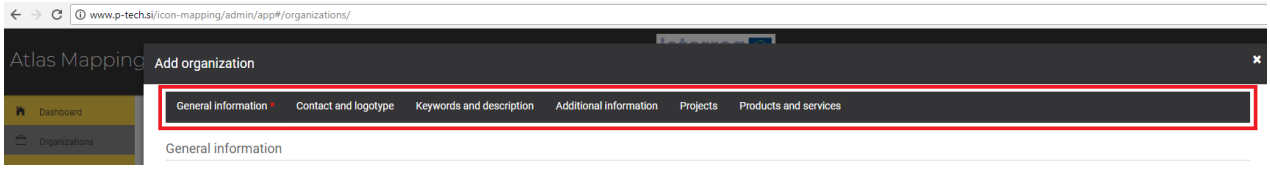


ADMIN – ORGANIZATIONS - **ADD NEW ORGANISATION:**

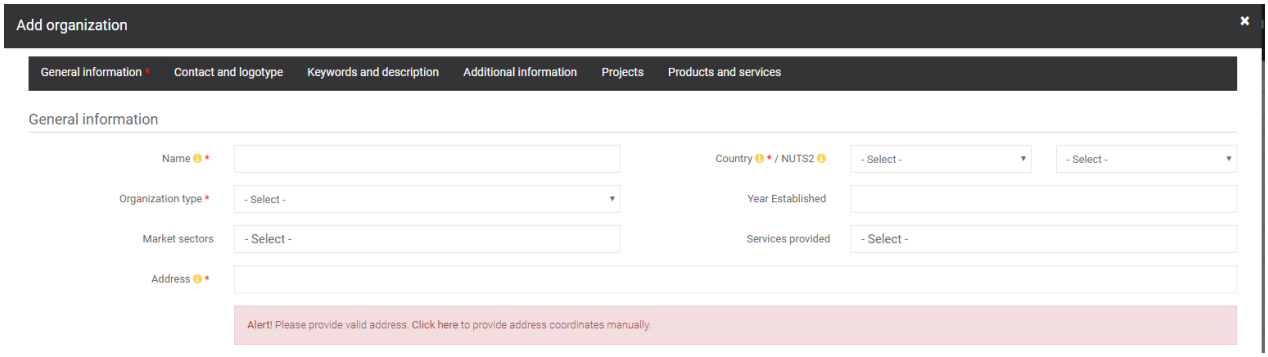


ADMIN – ORGANIZATIONS - **ADD NEW ORGANISATION** (see below):

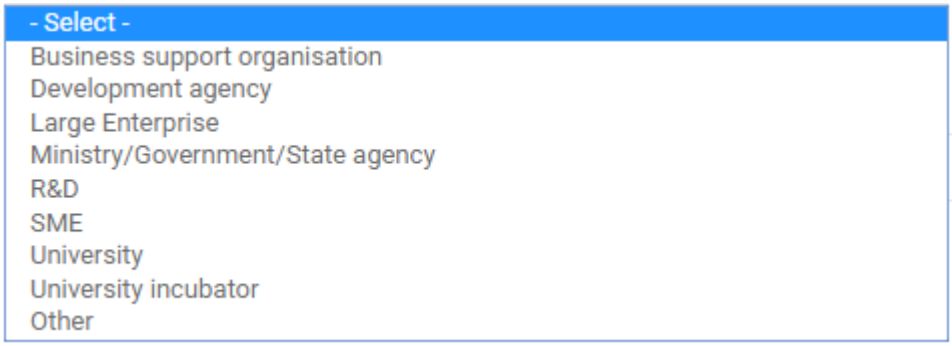
- General information
- Contact and logotype
- Keywords and description
- Additional information
- Projects
- Products and Services



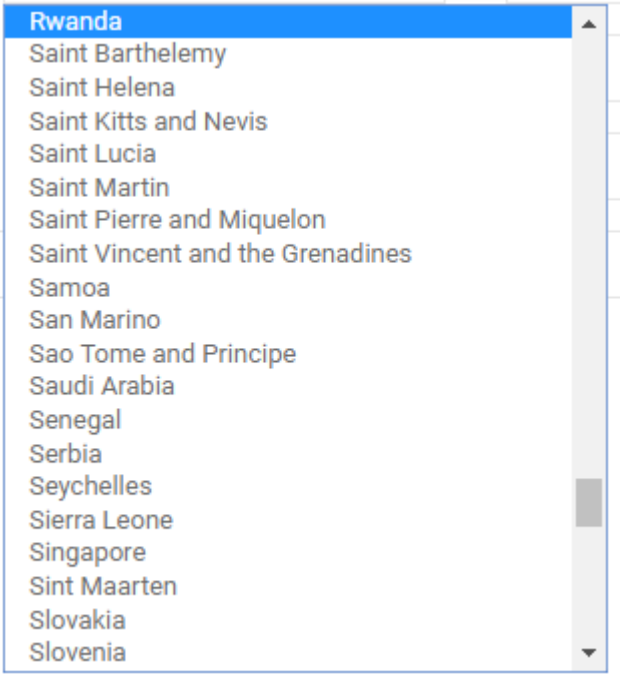
ADMIN – ORGANIZATIONS - ADD NEW ORGANISATION – **GENERAL INFORMATION:**



Organization type – selection possibilites:

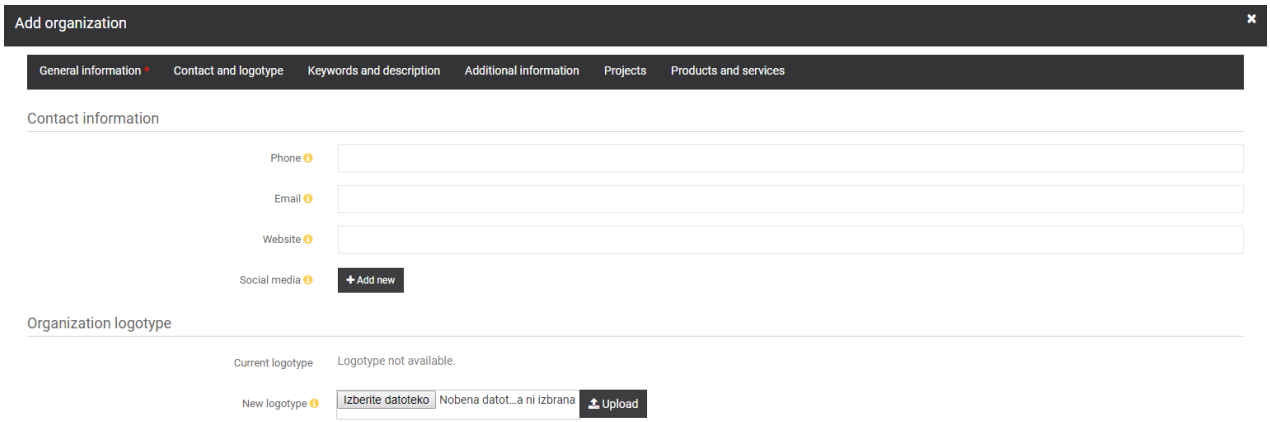


Country – selection possibilites::

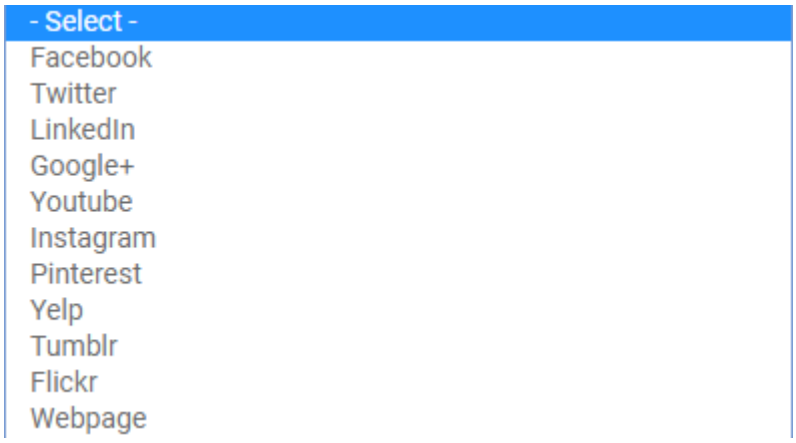


NUTS2 – selection possibilites:

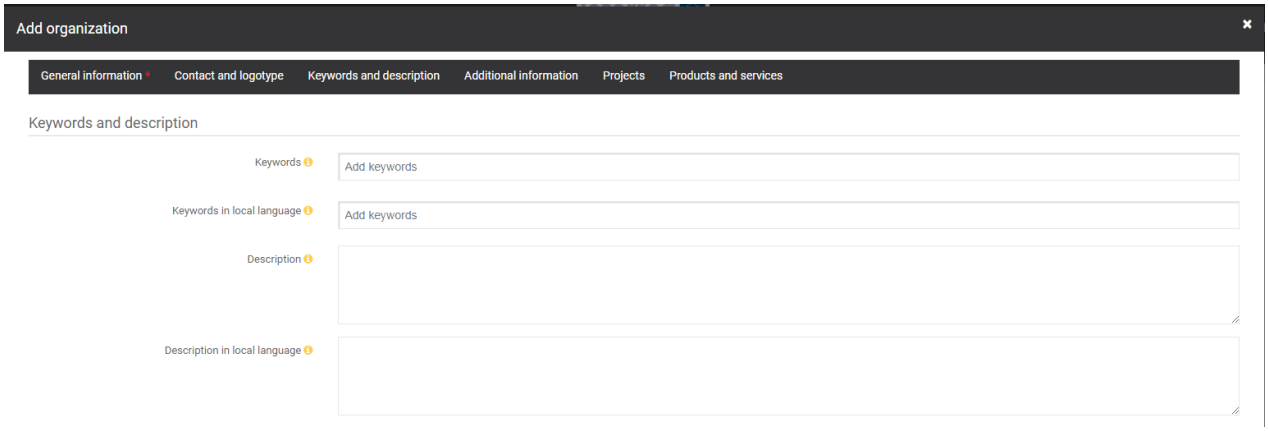
ADMIN – ORGANIZATIONS - ADD NEW ORGANISATION – **CONTACT AND LOGOTYPE:**



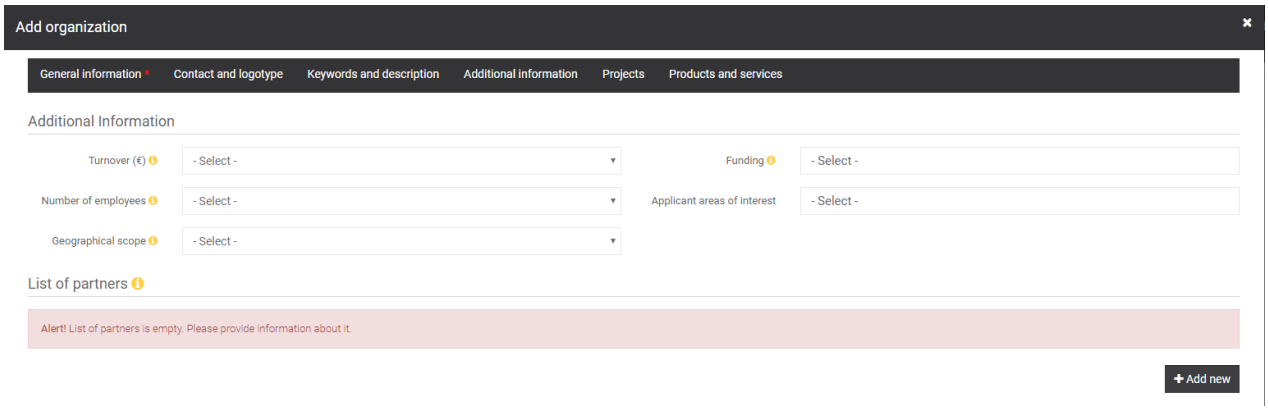
Type of social media – selection possibilites:



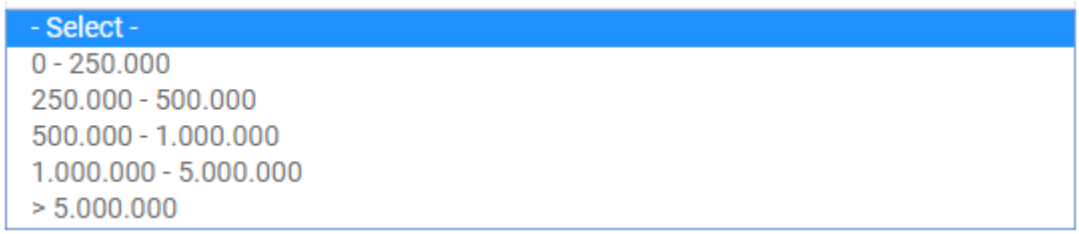
ADMIN – ORGANIZATIONS - ADD NEW ORGANISATION – **KEYWORDS AND DESCRIPTION:**



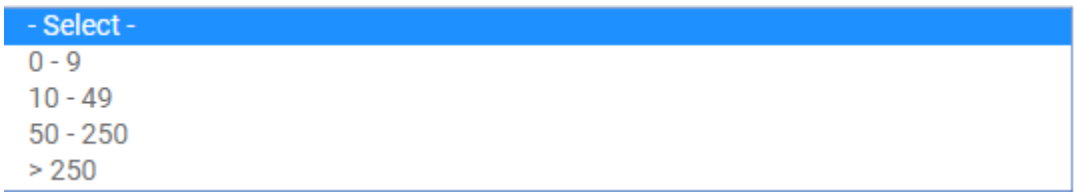
ADMIN – ORGANIZATIONS - ADD NEW ORGANISATION – **ADDITIONAL INFORMATION:**



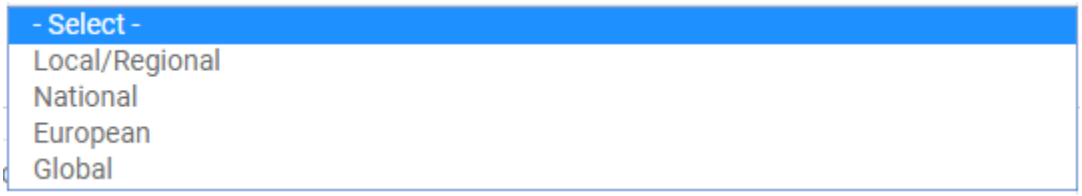
Turnover – selection possibilites:



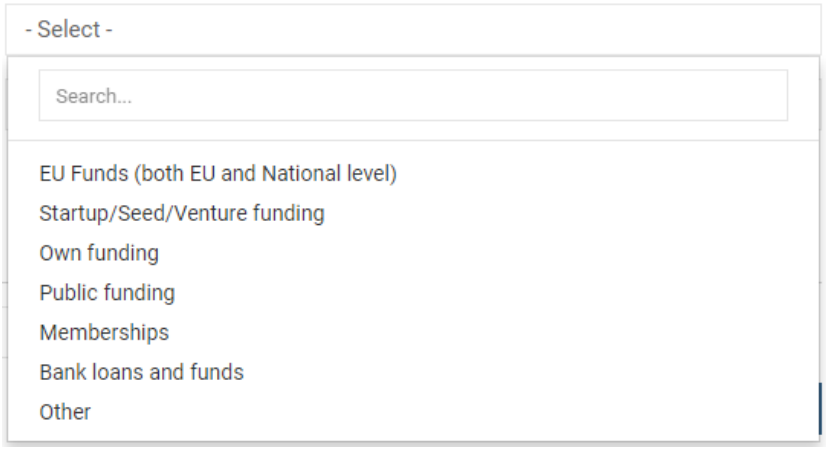
Number of employees – selection possibilities:



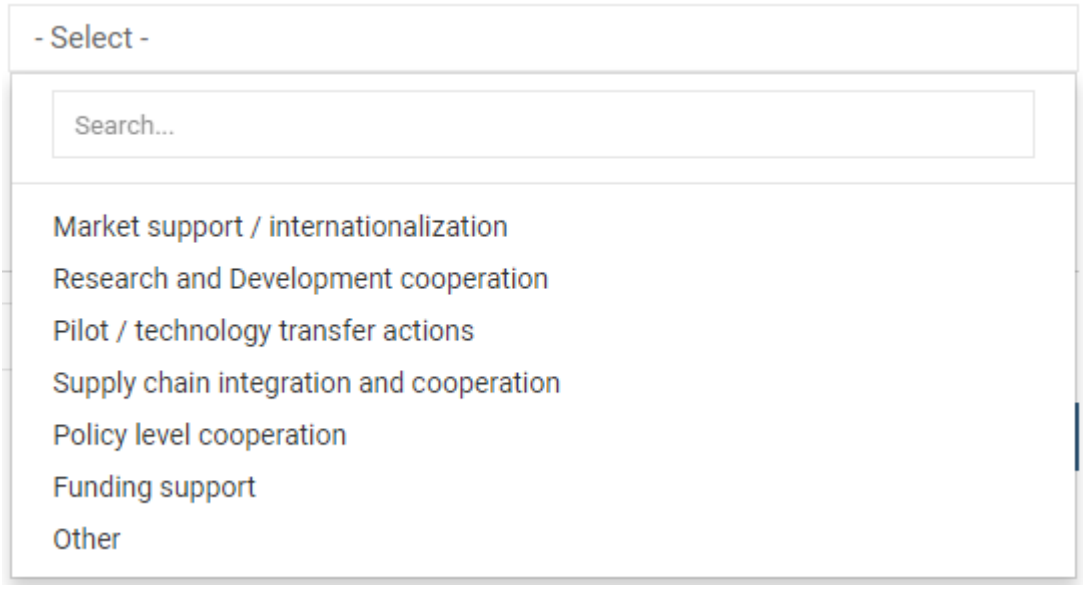
Geographical scope – selection possibilites:



Funding – selection possibilites:

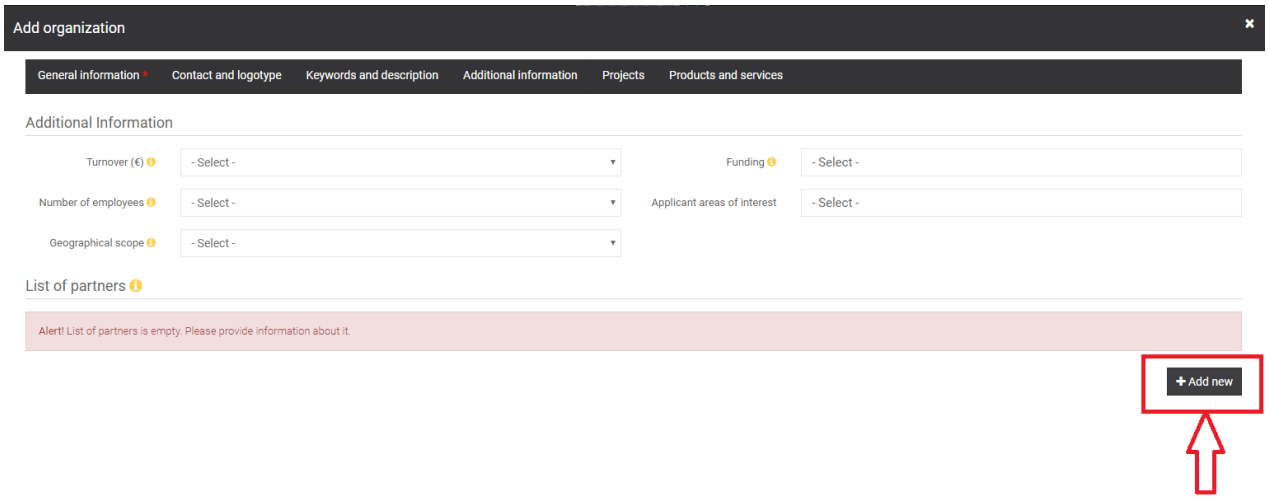


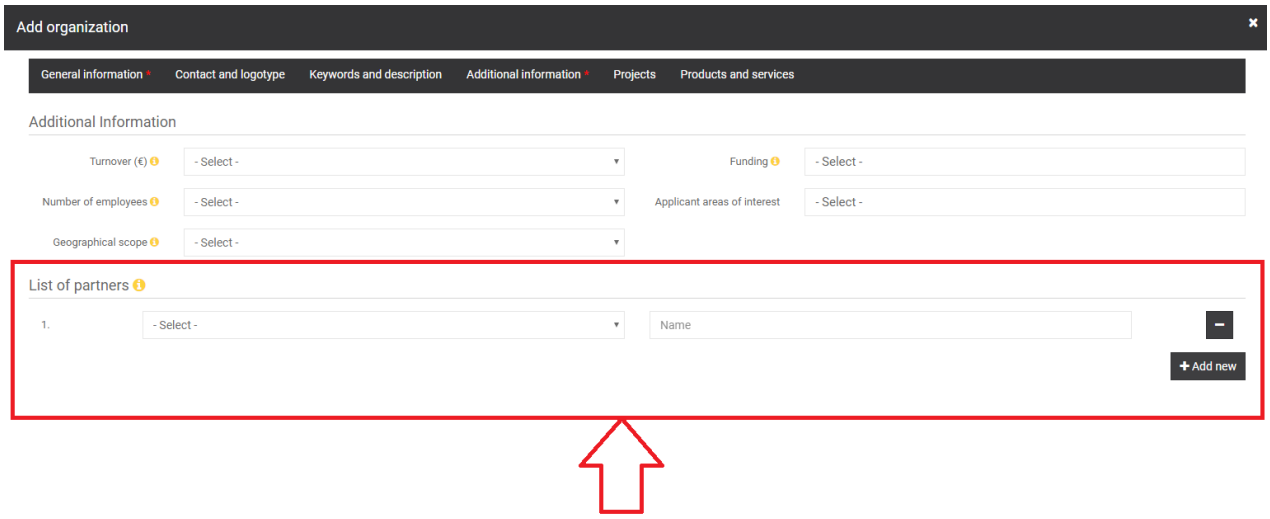
Applicant areas of interest – selection possibilites:



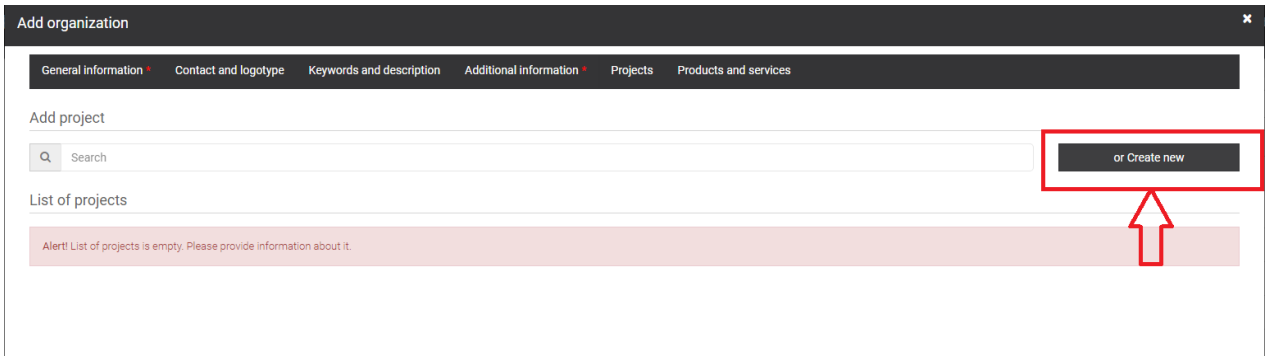
List of partners – selection possibilites:

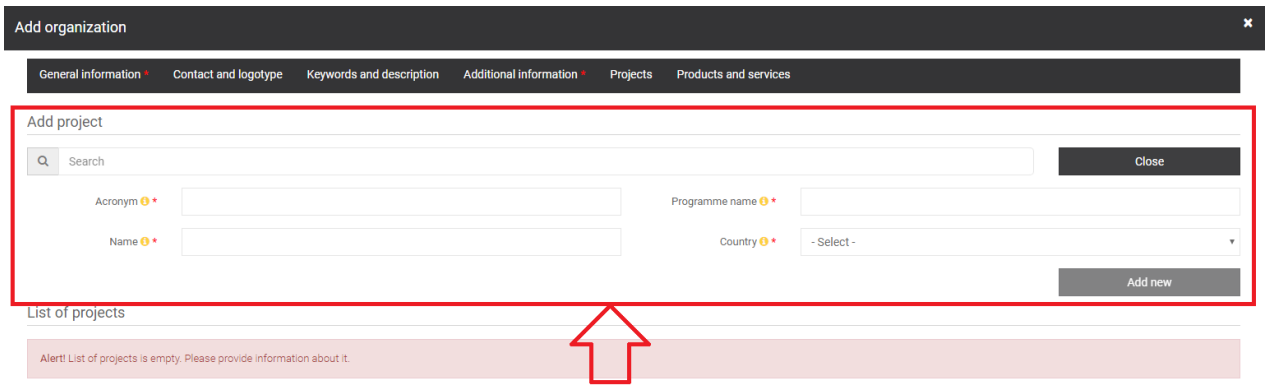
ADMIN – ORGANIZATIONS - ADD NEW ORGANISATION – **ADDITIONAL INFORMATION** – **ADD NEW (PARTNER)**



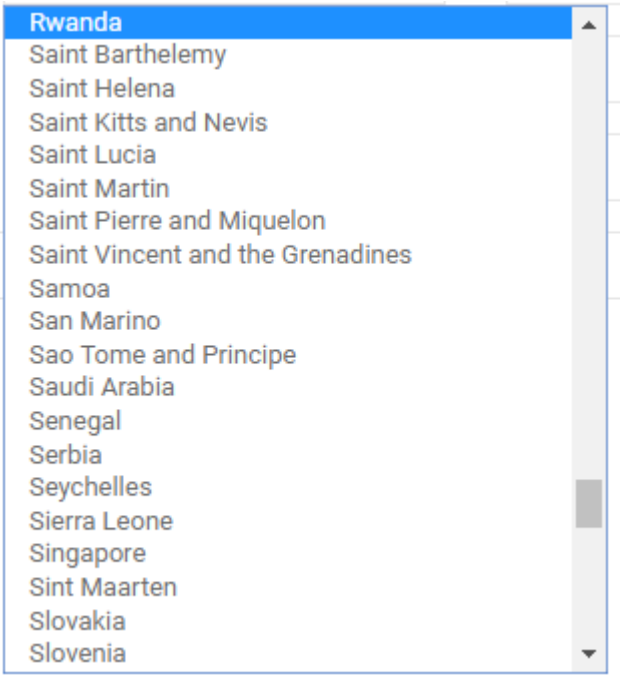


ADMIN – ORGANIZATIONS - ADD NEW ORGANISATION – **PROJECTS:**

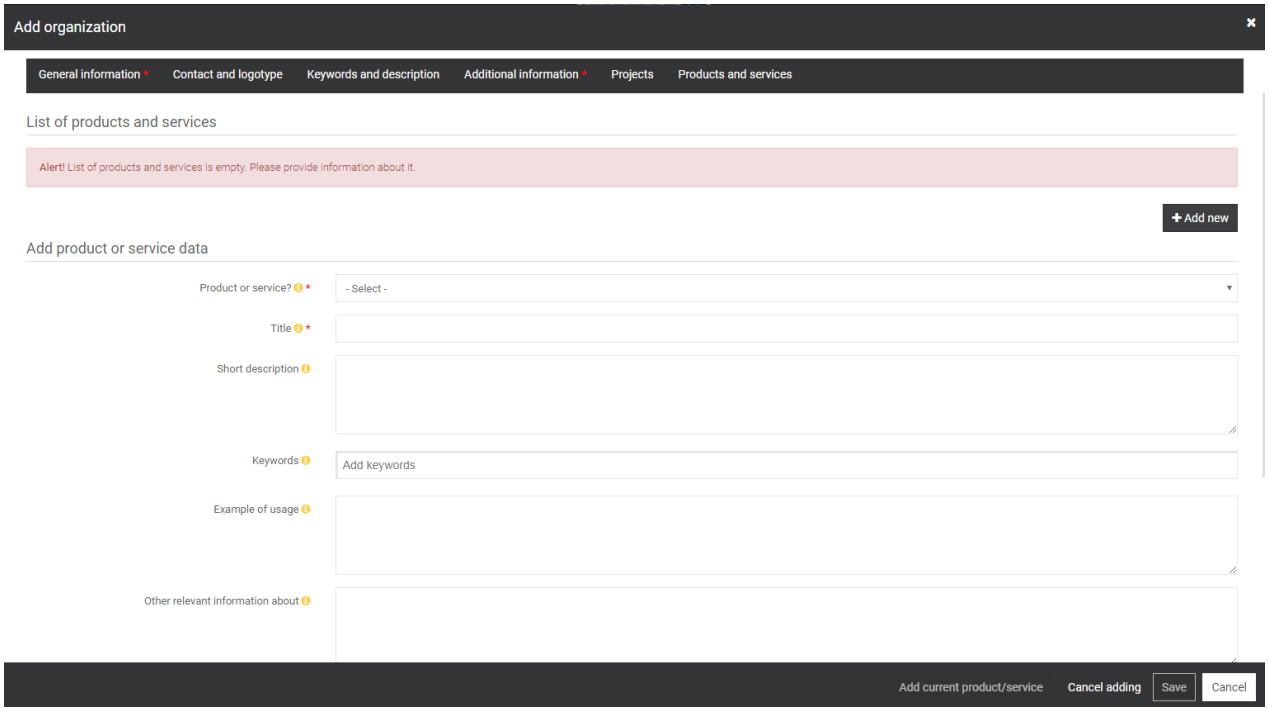




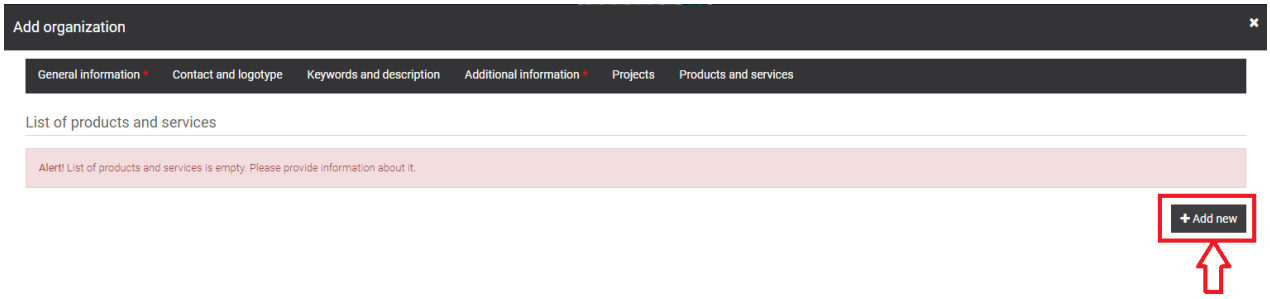
Country – selection possibilites::

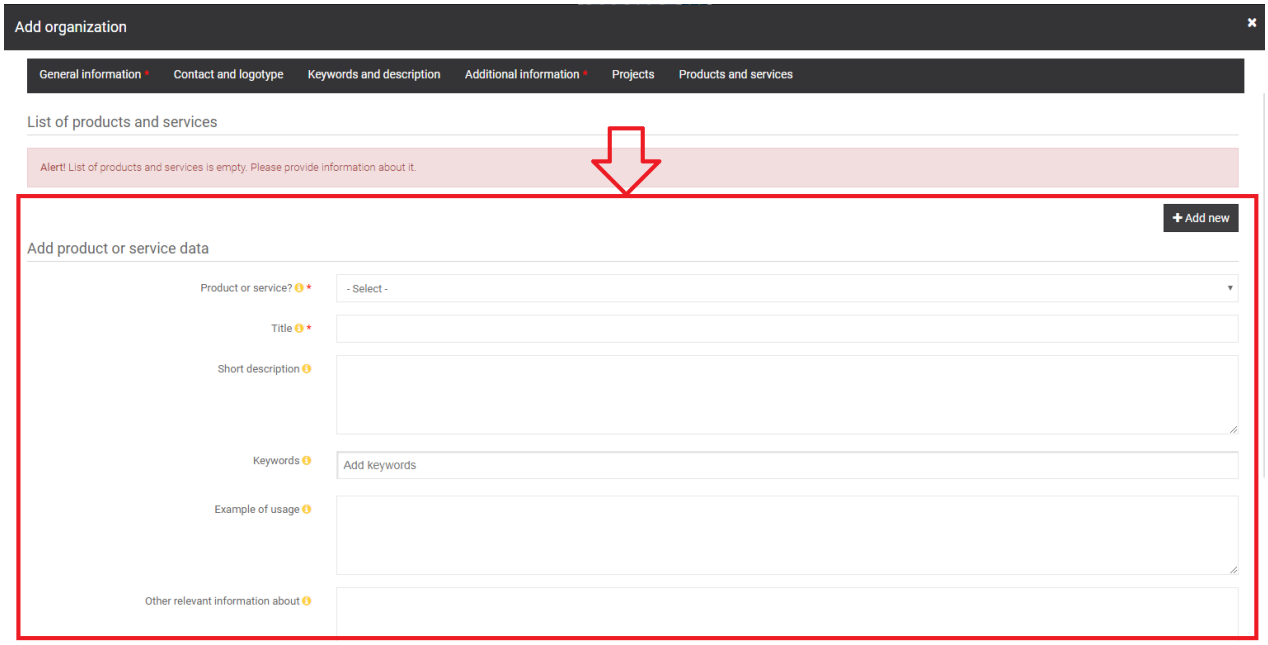


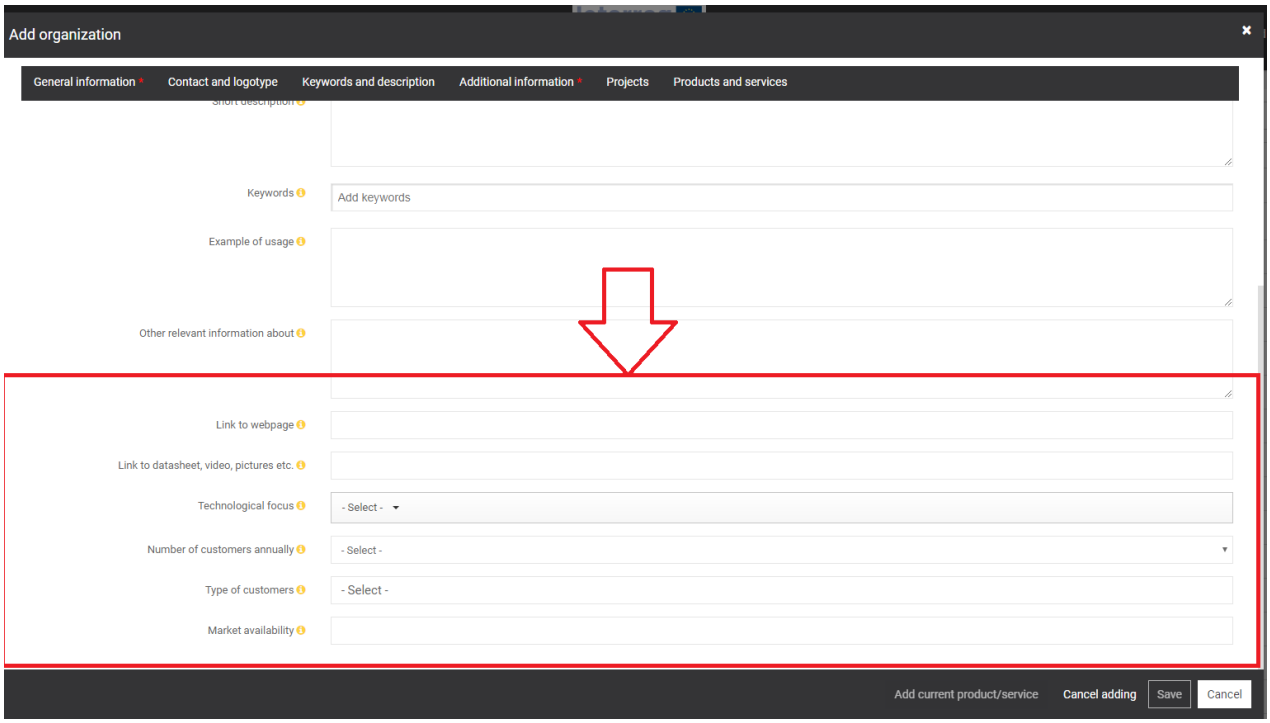
ADMIN – ORGANIZATIONS - ADD NEW ORGANISATION – **PRODUCTS AND SERVICES:**



ADMIN – ORGANIZATIONS - ADD NEW ORGANISATION - **PRODUCTS AND SERVICES - ADD NEW (PRODUCT OR SERVICE):**







Product or service – selection possibilities:

Technological focus – selection possibilities:

AGRICULTURE AND MARINE RESOURCES

- Agriculture
- Resources of the Sea, Fisheries

AGROFOOD INDUSTRY

- Food quality and safety
- Micro- and Nanotechnology related to agrofood
- Technologies for the food industry

BIOLOGICAL SCIENCES

- Biology / Biotechnology
- E-Health
- Genome Research
- Industrial Biotechnology
- Medicine, Human Health
- Micro- and Nanotechnology related to Biological sciences

ELECTRONICS, IT AND TELECOMMS

- Electronic circuits, components and equipment
- Electronics, Microelectronics
- Information Processing & Systems, Workflow
- IT and Telematics Applications

Information Processing & Systems, Workflow

IT and Telematics Applications

Multimedia

Telecommunications, Networking

ENERGY

Biogas and anaerobic digestion (AD)

Carbon capture and energy

Energy efficiency

Energy production, transmission and conversion

Energy storage and transport

Fossil Energy Sources

Nuclear Fission / Nuclear Fusion

Other Energy Topics

Renewable Sources of Energy

INDUSTRIAL MANUFACTURING, MATERIAL AND TRANSPORT

Aerospace Technology

Construction Technology

Design and Modelling / Prototypes

Industrial Manufacture

Materials Technology

Packaging / Handling

- Process control and logistics
- Traffic, mobility
- Transport and Shipping Technologies
- Transport Infrastructure

MEASUREMENTS AND STANDARDS

- Amplifier, A/D Transducer
- Electronic measurement systems
- Measurement Tools
- Recording Devices
- Reference Materials
- Standards

OTHER INDUSTRIAL TECHNOLOGIES

- Other Industrial Technologies

PHYSICAL AND EXACT SCIENCES

- Chemistry
- Meteorology / Climatology
- Micro- and Nanotechnology
- Physics
- Separation Technologies

PROTECTING MAN AND ENVIRONMENT

- Environment

Safety

Waste Management

Water Management

SOCIAL AND ECONOMICS CONCERNS

Citizens participation

Creative products

Creative services

Education and Training

Information and media, society

Infrastructures for social sciences and humanities

Socio-economic models, economic aspects

Sports and Leisure Technology, Society and Employment

Number od customers annually – selection possibilites:

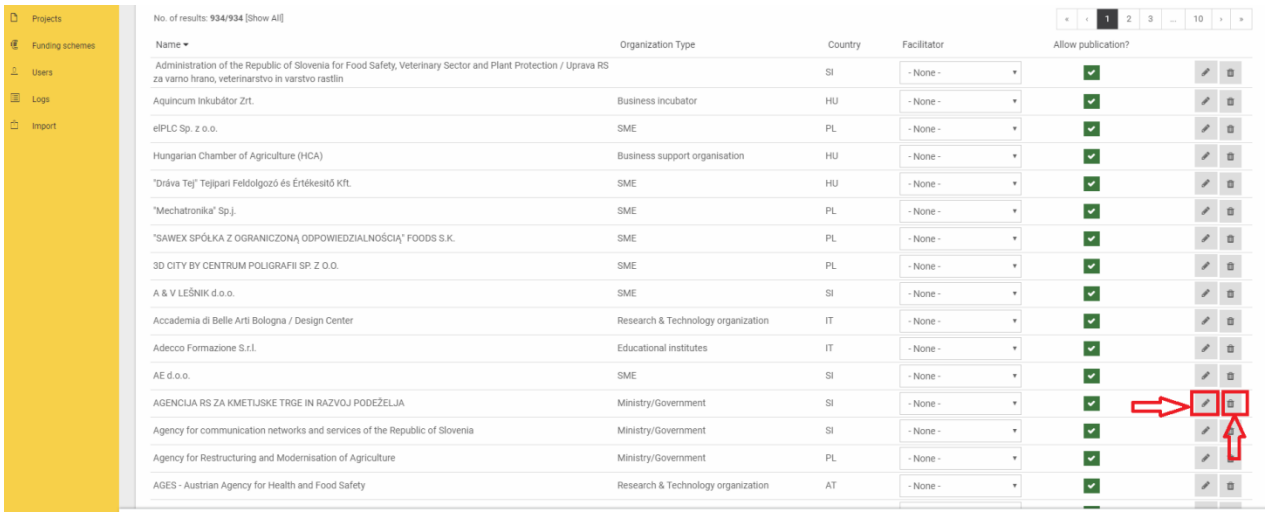
- Select -
0 - 5
6 - 10
11 - 25
26 - 50
> 50

Type of customer – selection possibilites:

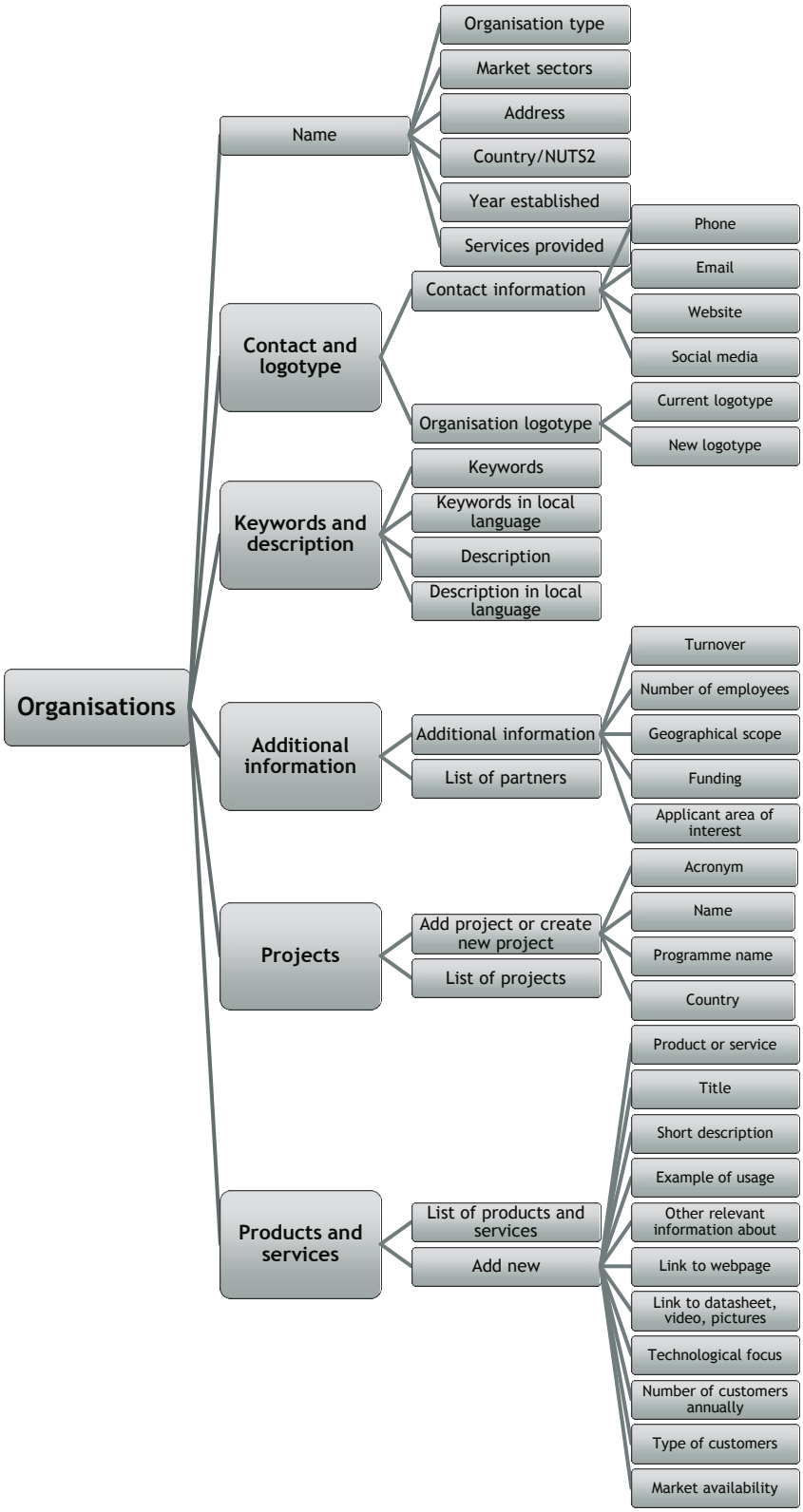
Search...

SMEs (<250 employees)
Large companies
Public institutions
End customer (Business to Customer)
Other

ADMIN – ORGANIZATIONS – **EDITING, DELETING**

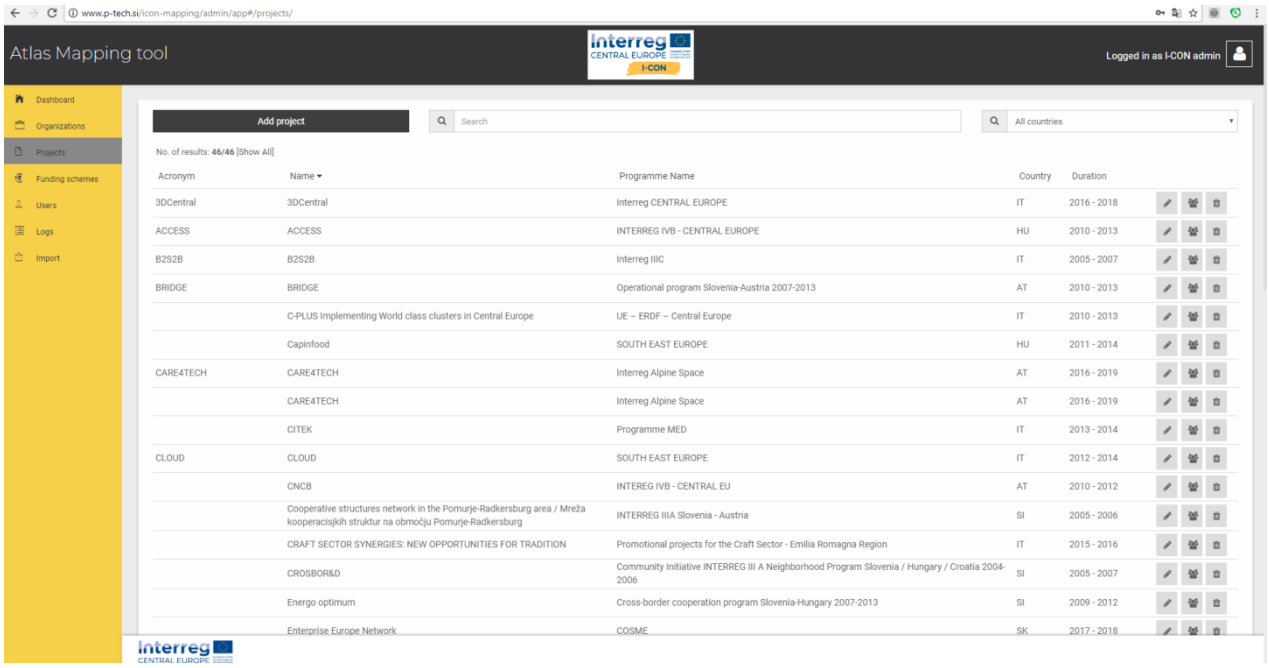


Structure of module ORGANIZATIONS:



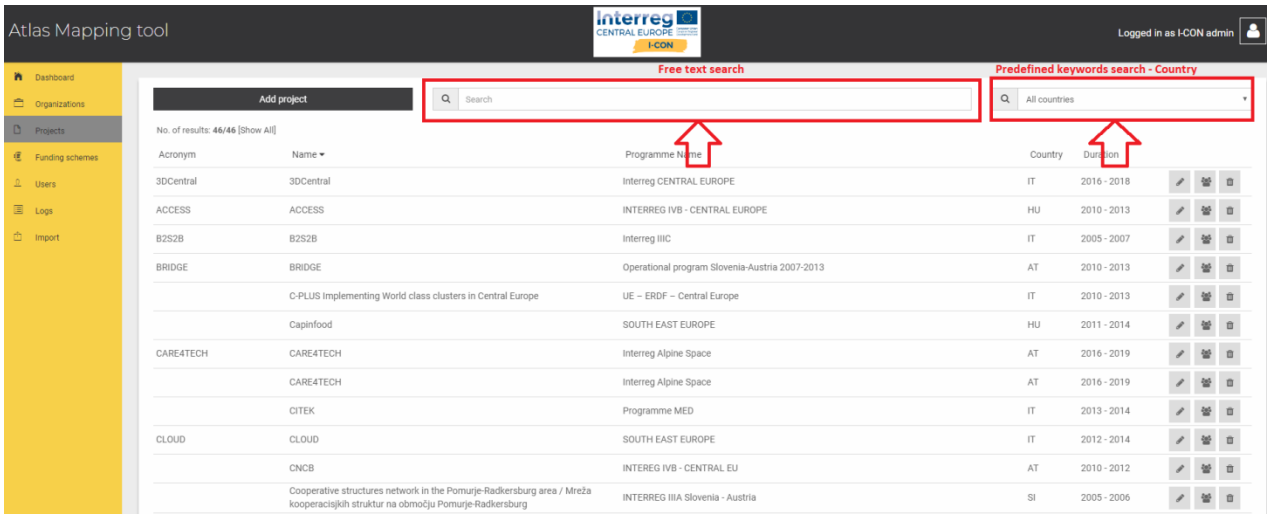
7.3. I-CON Atlas Mapping Tool ADMIN – PROJECTS

ADMIN - **PROJECTS**

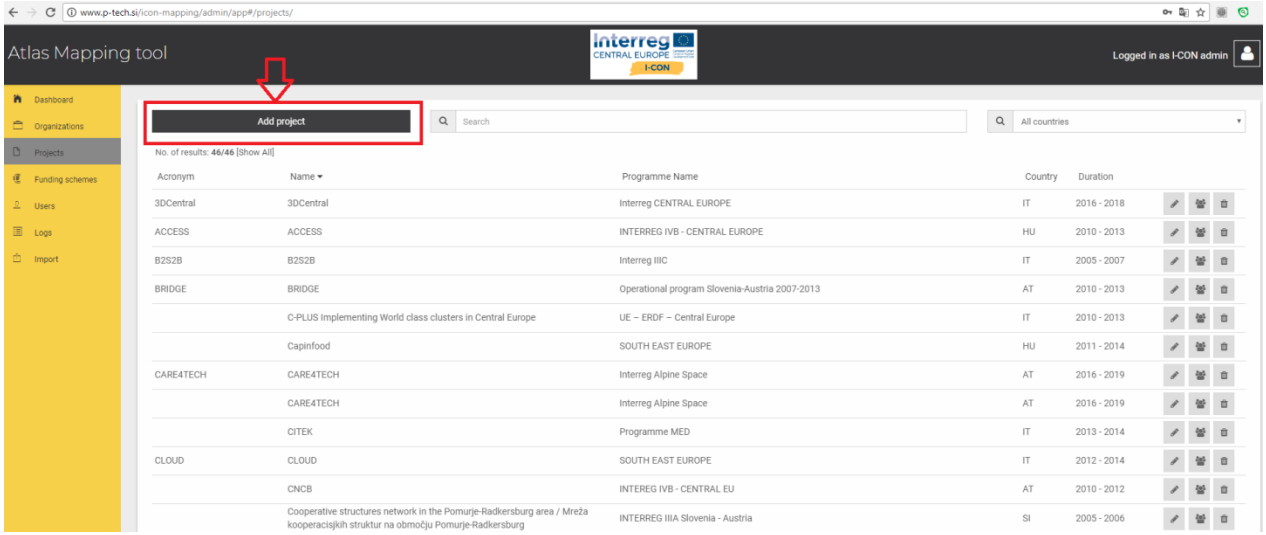


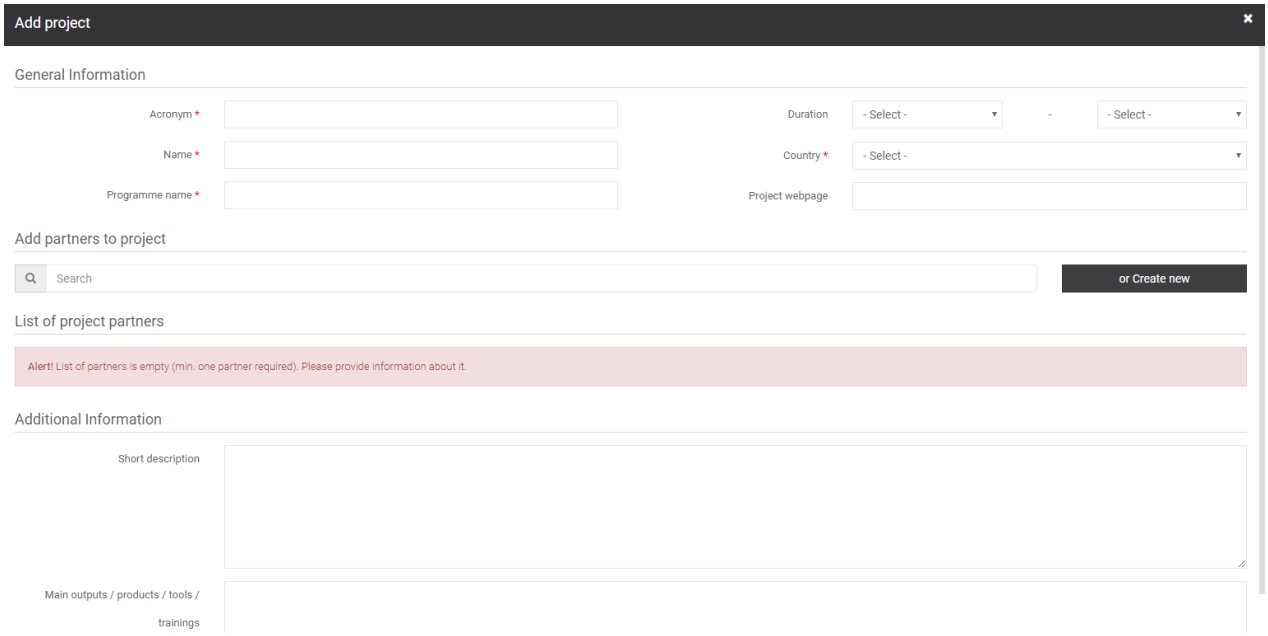
ADMIN – PROJECTS search possibilities:

- Free text search
- Pre-defined keywords search:
  - Country

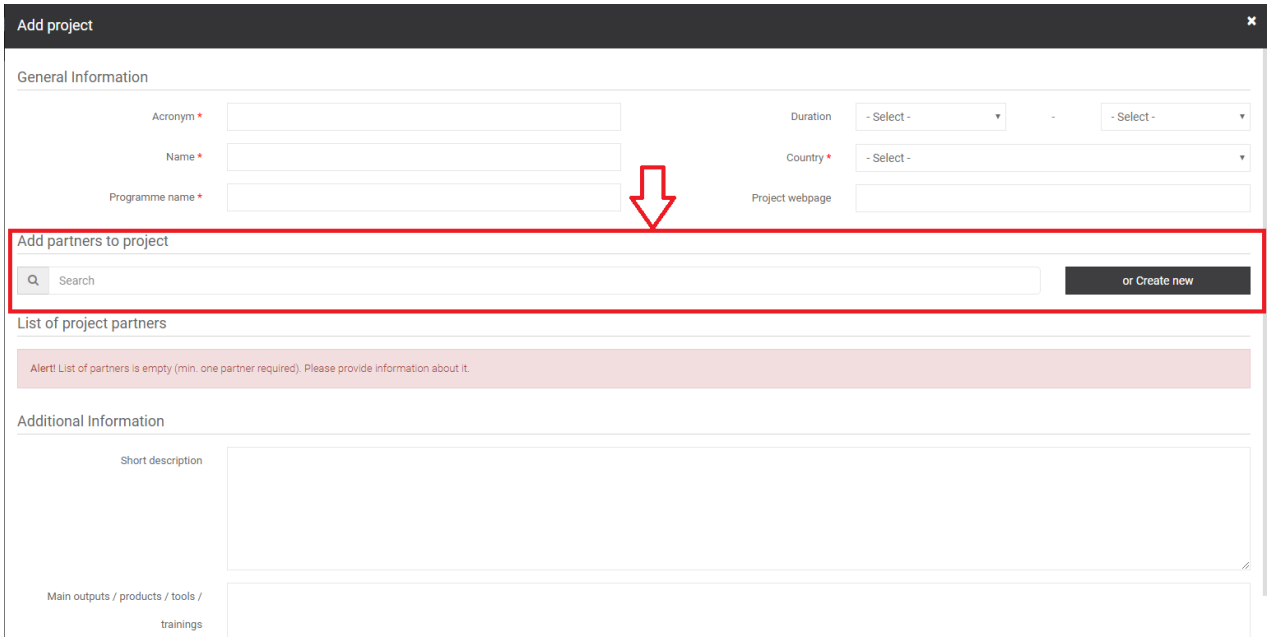


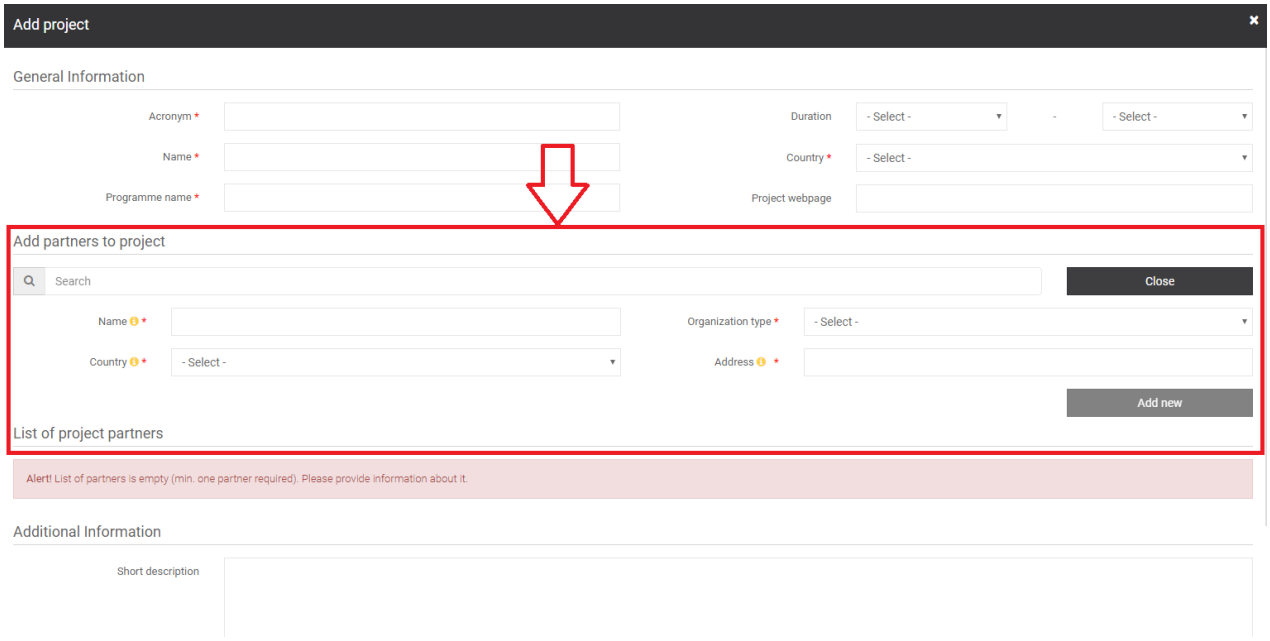
ADMIN – PROJECTS - **ADD PROJECT:**



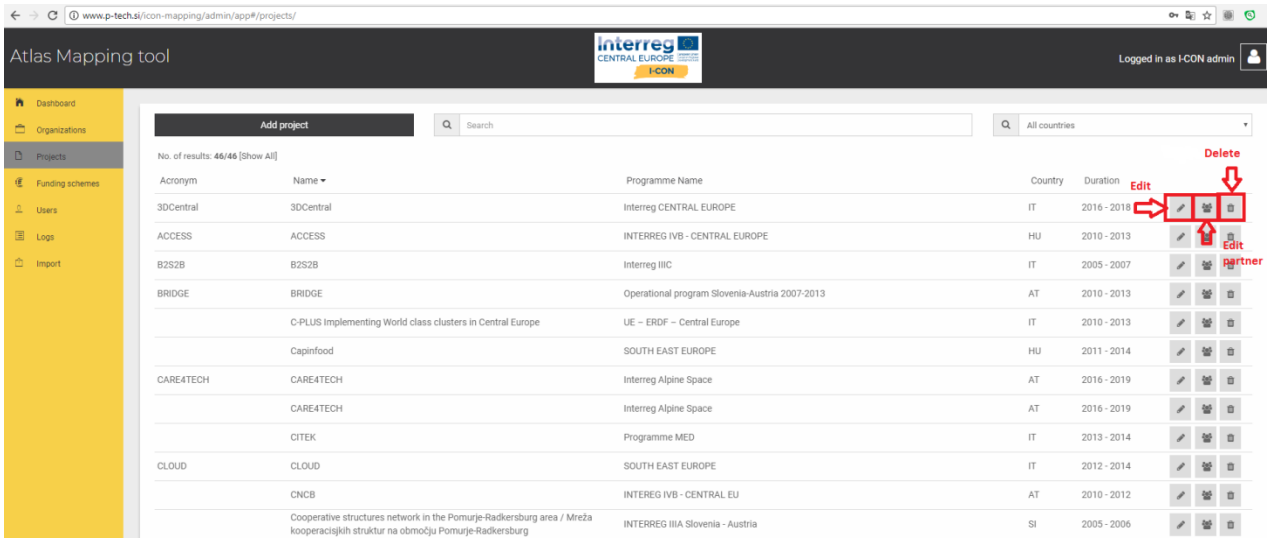


ADMIN – PROJECTS - **ADD PROJECT - ADD PARTNER:**



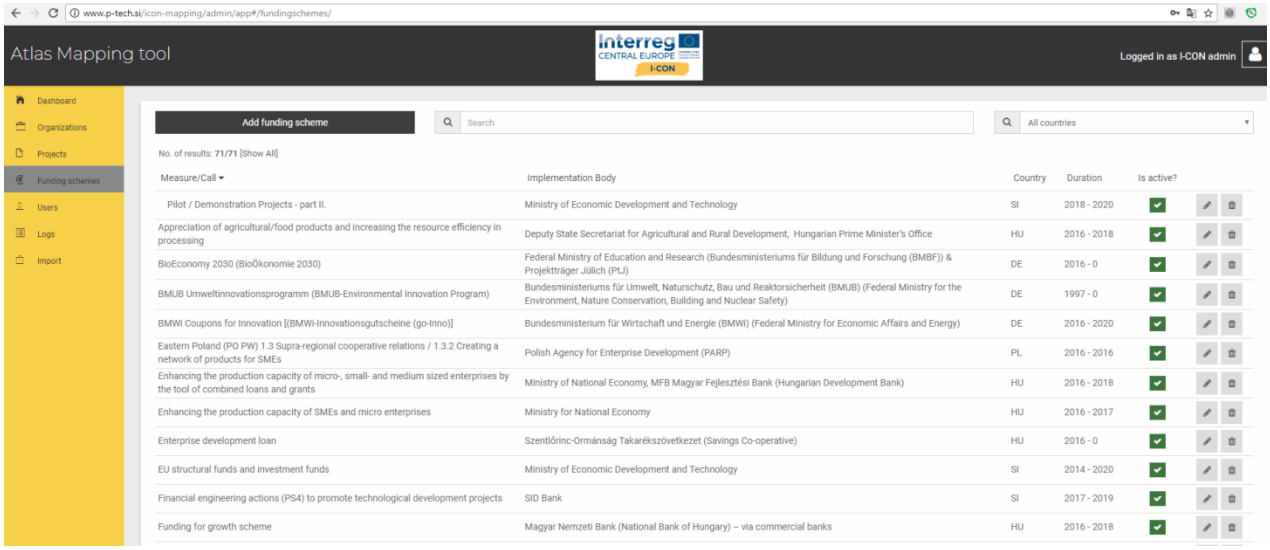


ADMIN – PROJECTS – **EDITING, DELETING**



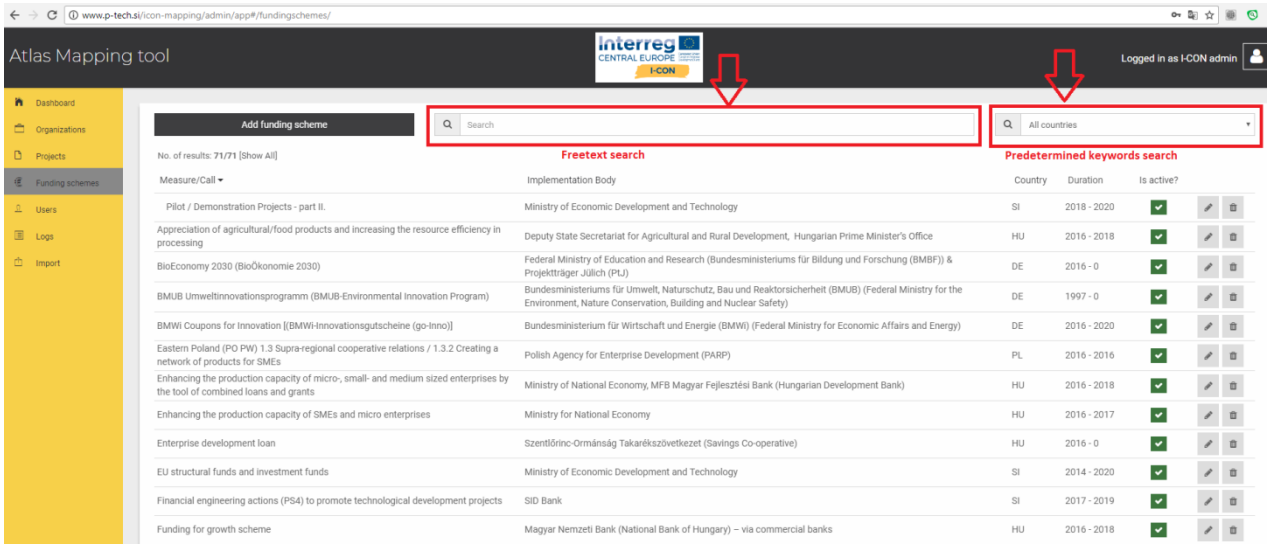
7.4. I-CON Atlas Mapping Tool ADMIN – FUNDING SCHEMES

ADMIN – **FUNDING SCHEMES**



ADMIN – FUNDING SCHEMES search possibilities:

- Free text search
- Pre-defined keywords search:
    - Country



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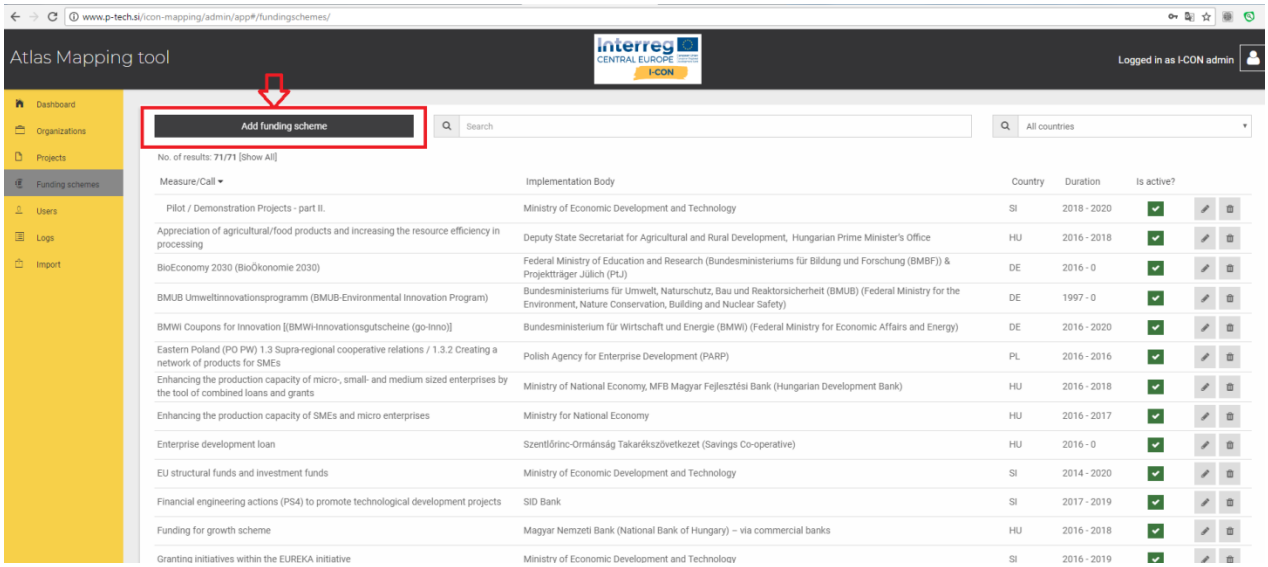

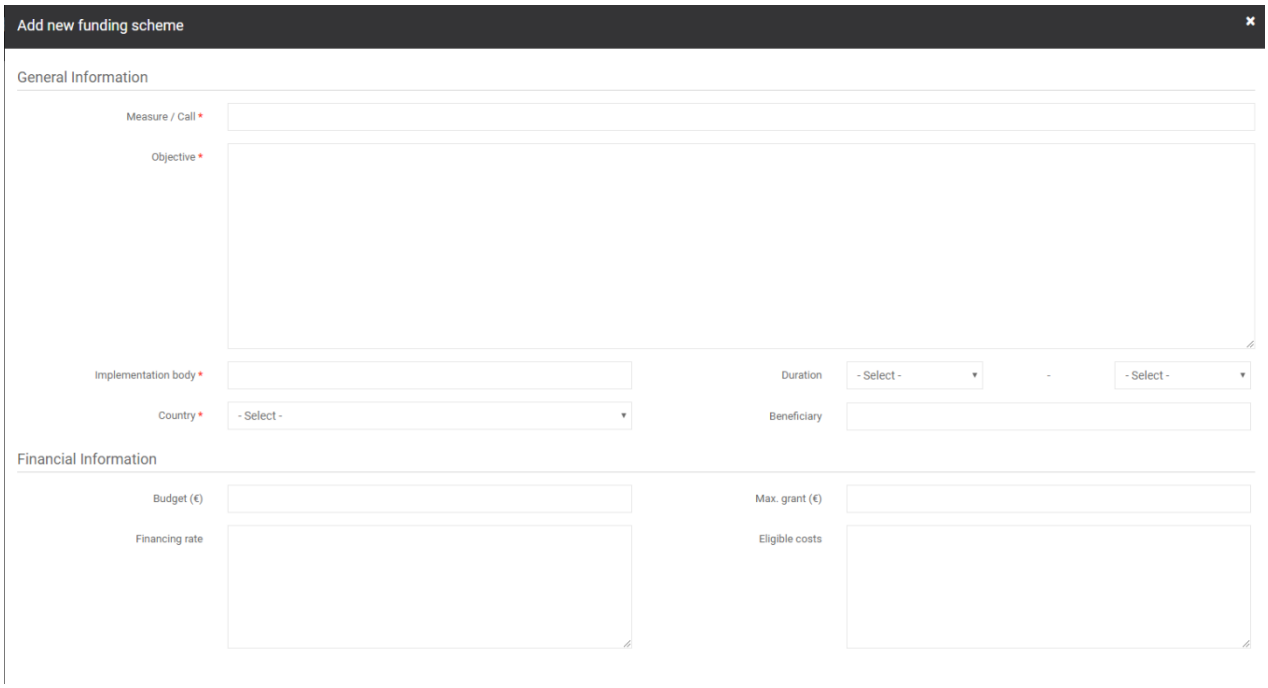

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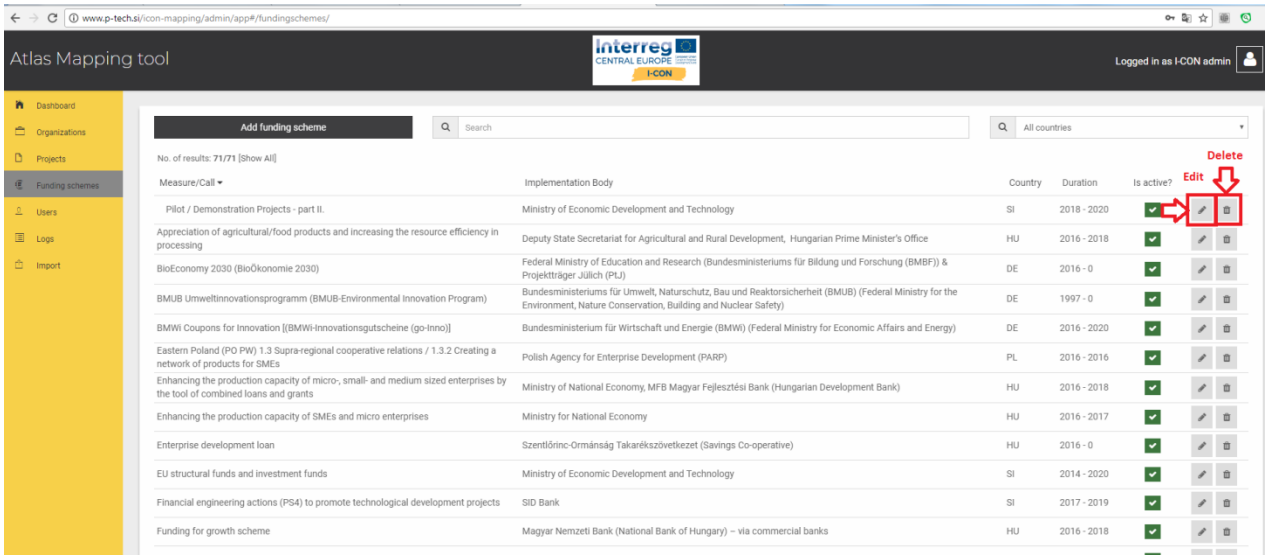
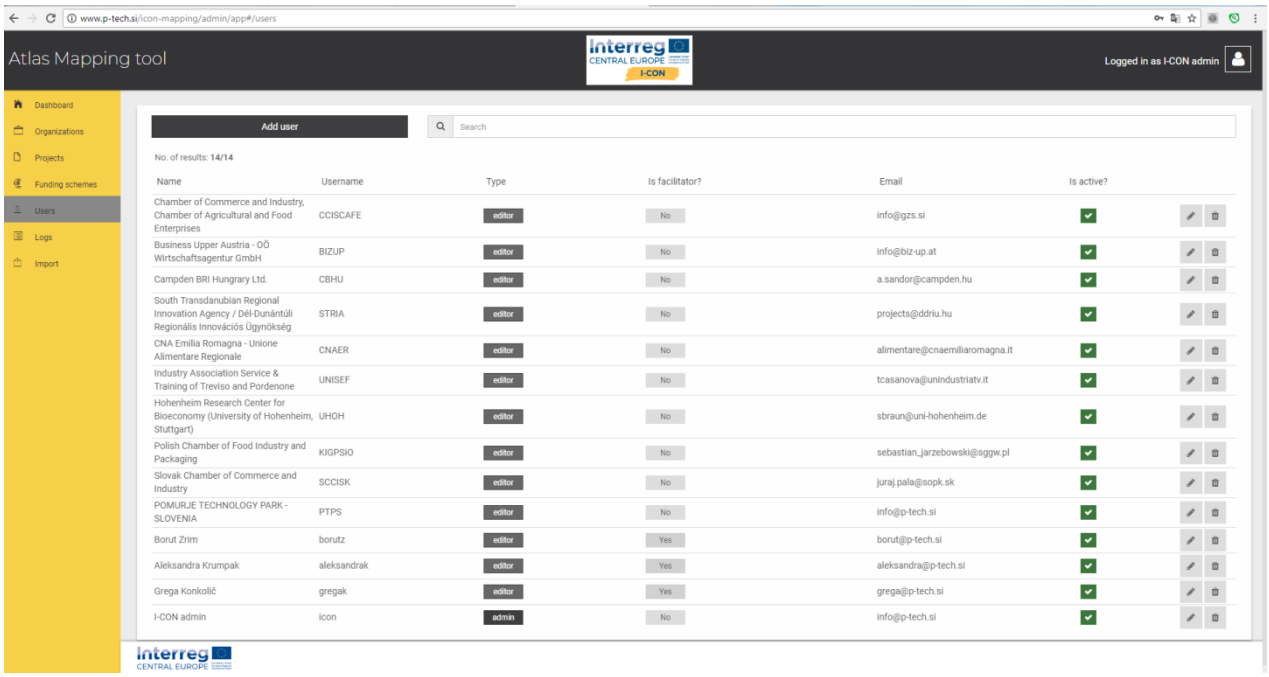


7.5. I-CON Atlas Mapping Tool ADMIN – USERS

ADMIN – **USERS**



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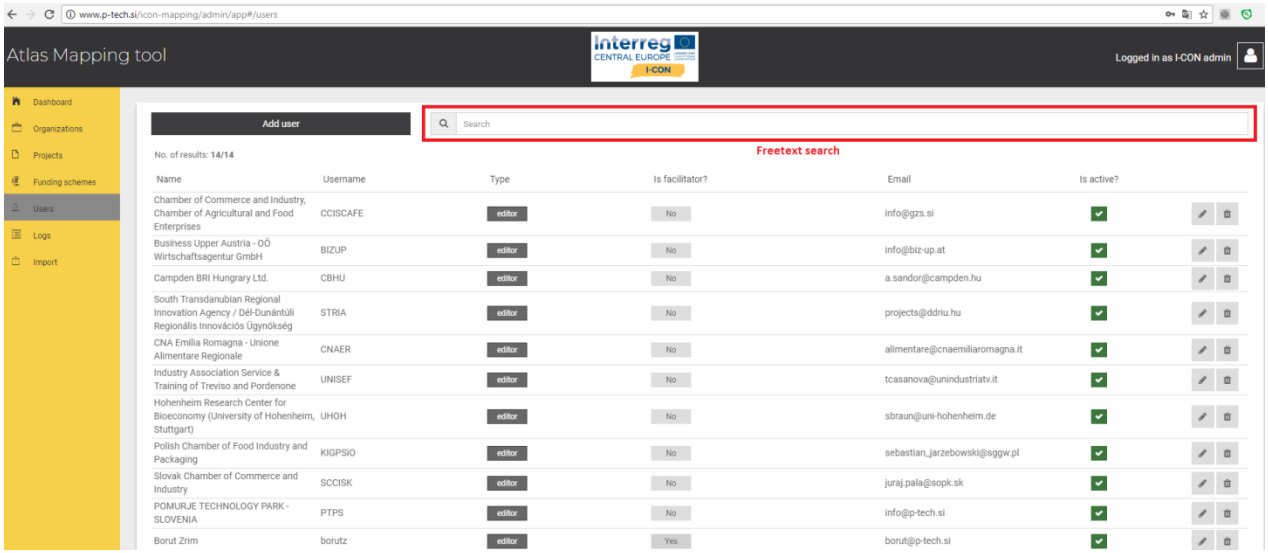

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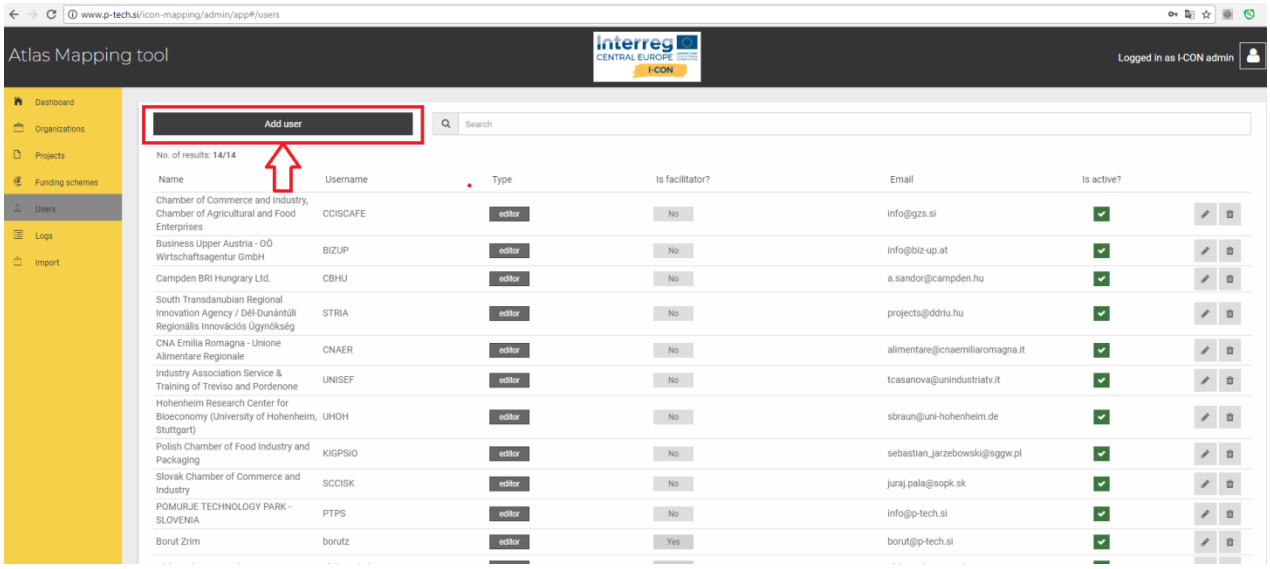
www.p-tech.si/icon-mapping/admin/app#/users
Atlas Mapping tool
Logged in as I-CON admin
Dashboard
Organizations
Projects
Funding schemes
Users
Logs
Import
Add user
Search
No. of results: 14/14
Name
Username
Type
Is facilitator?
Email
Is active?
Chamber of Commerce and Industry, Chamber of Agricultural and Food Enterprises
CCISCAFE
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BIZUP
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CBHU
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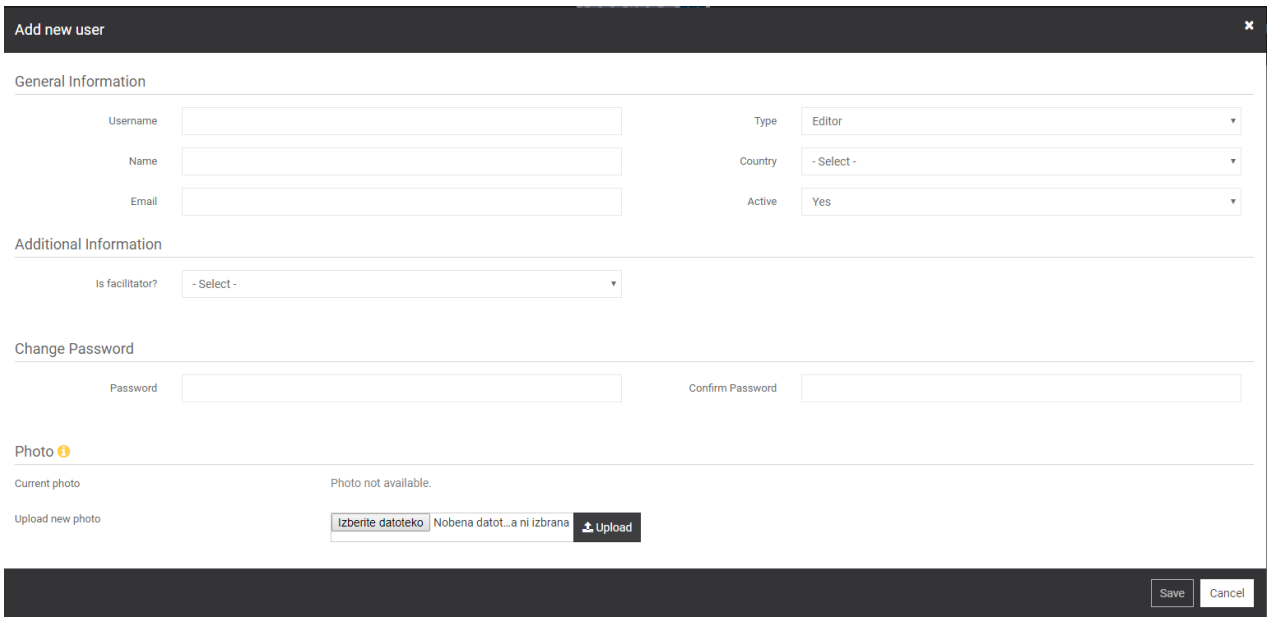
Add new user
General Information
Username
Name
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Type
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Country
- Select -
Active
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Additional Information
Is facilitator?
- Select -
Change Password
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Confirm Password
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Upload new photo
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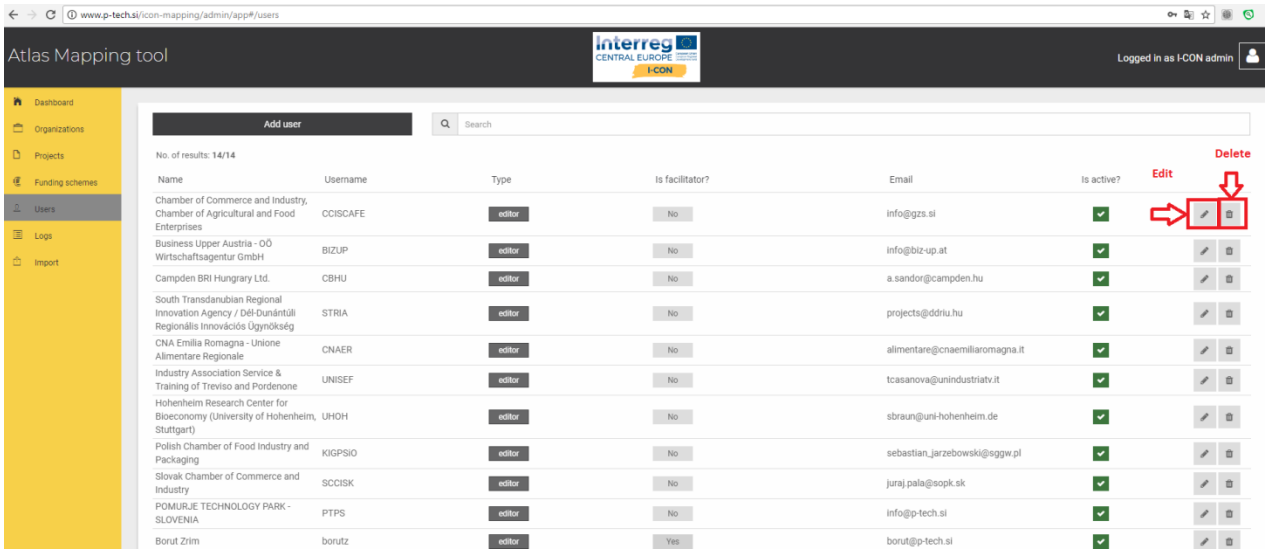
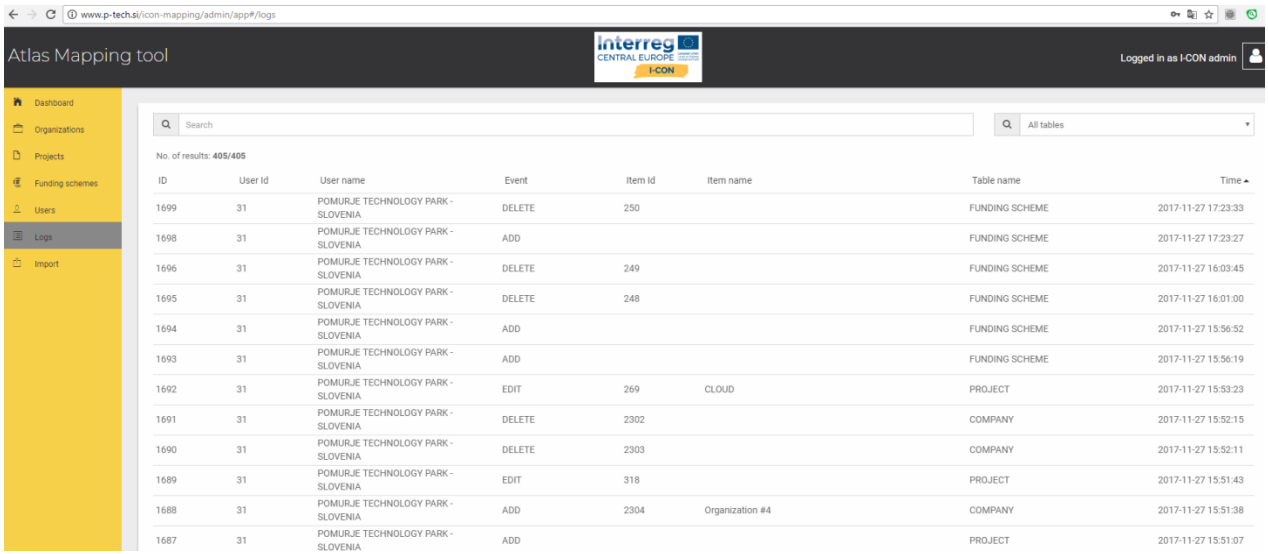
ADMIN – FUNDING SCHEMES – **EDITING, DELETING**

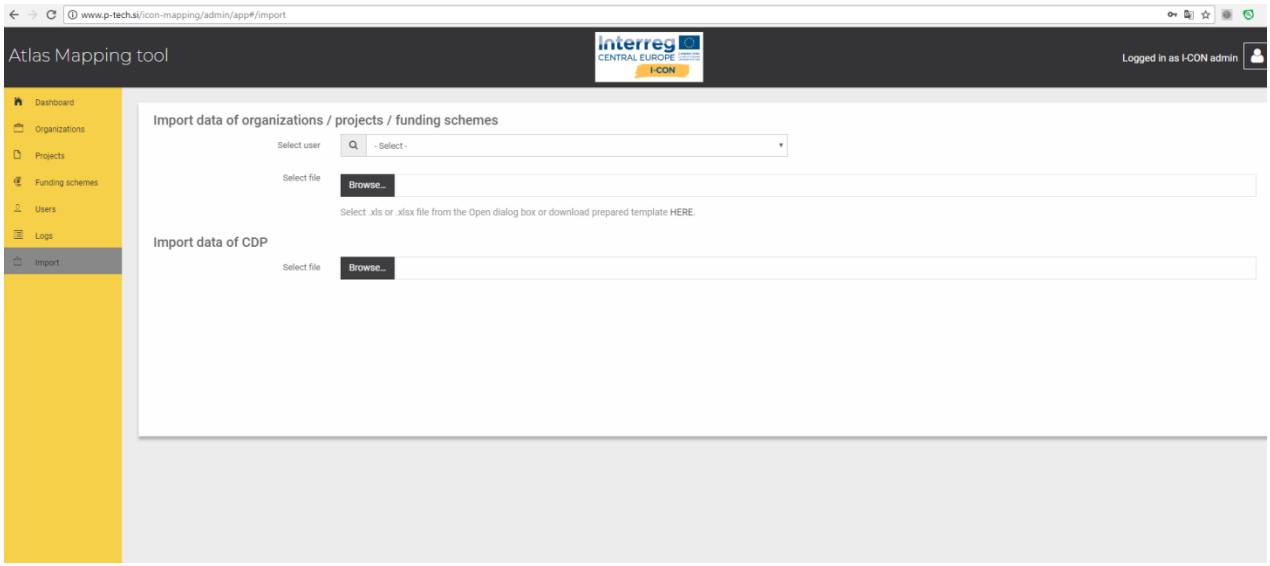


ADMIN – **USERS**

7.6. I-CON Atlas Mapping Tool ADMIN – LOGS

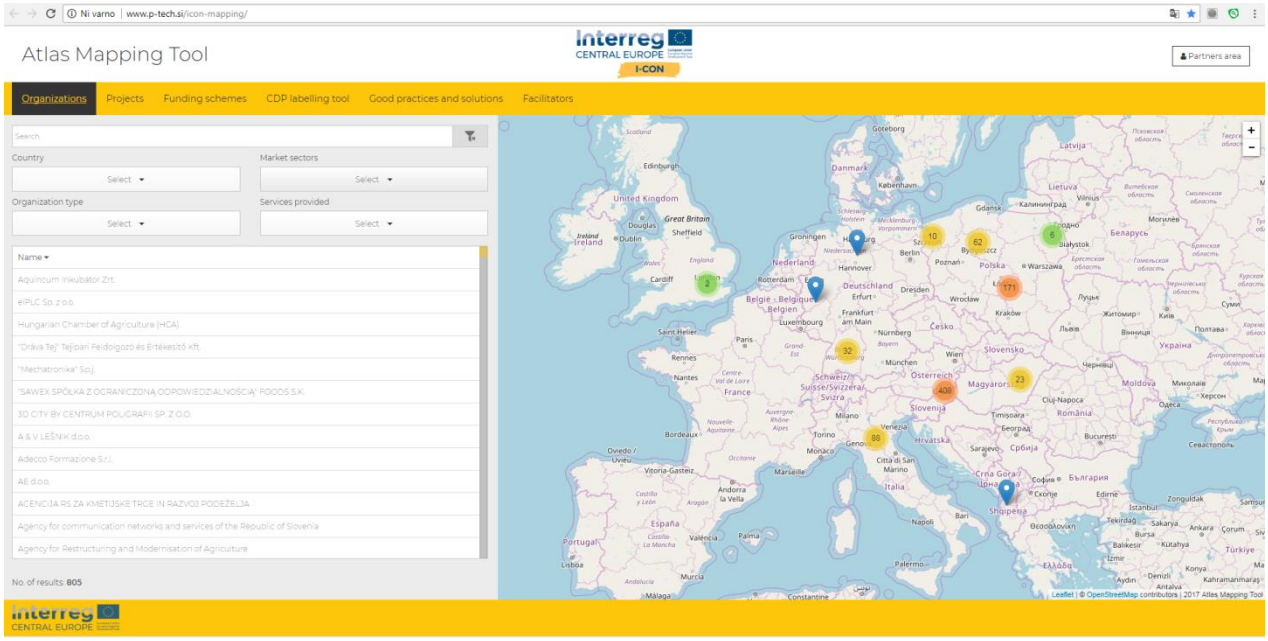


7.7. I-CON Atlas Mapping Tool ADMIN – IMPORT EXCEL FILE TO DATABASE



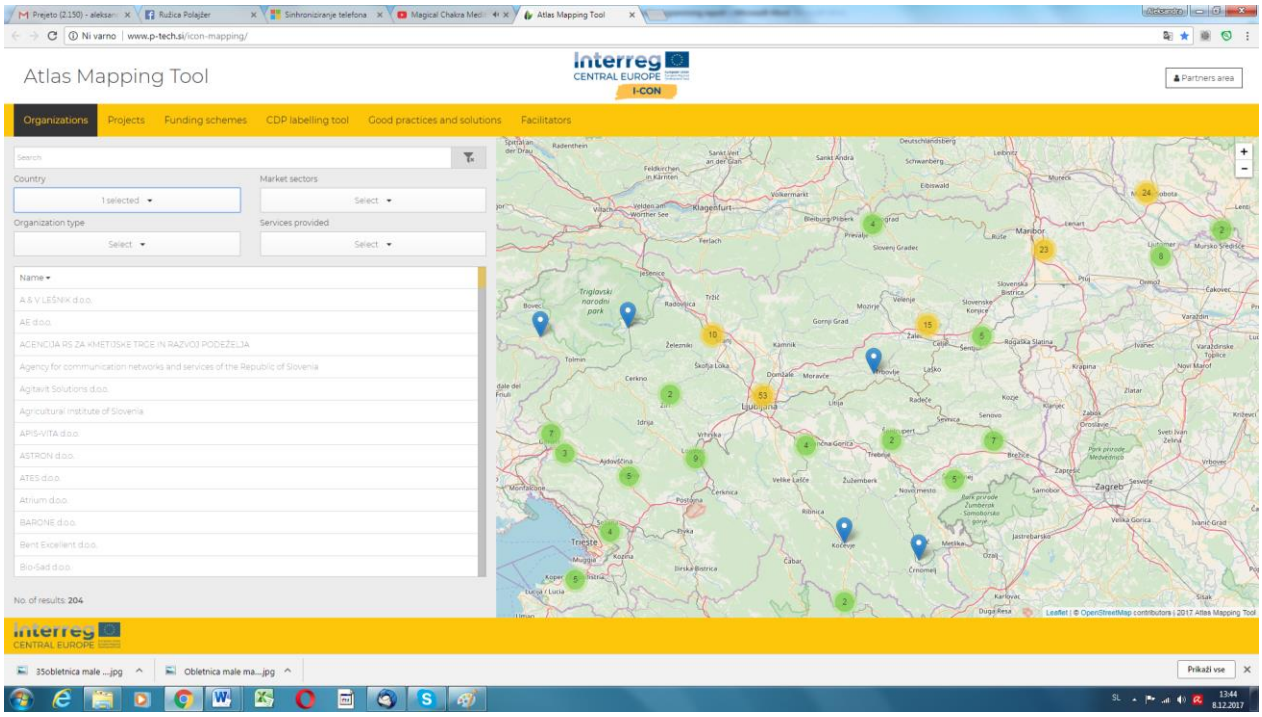
8. Wireframes

8.1. Modul: Organizations

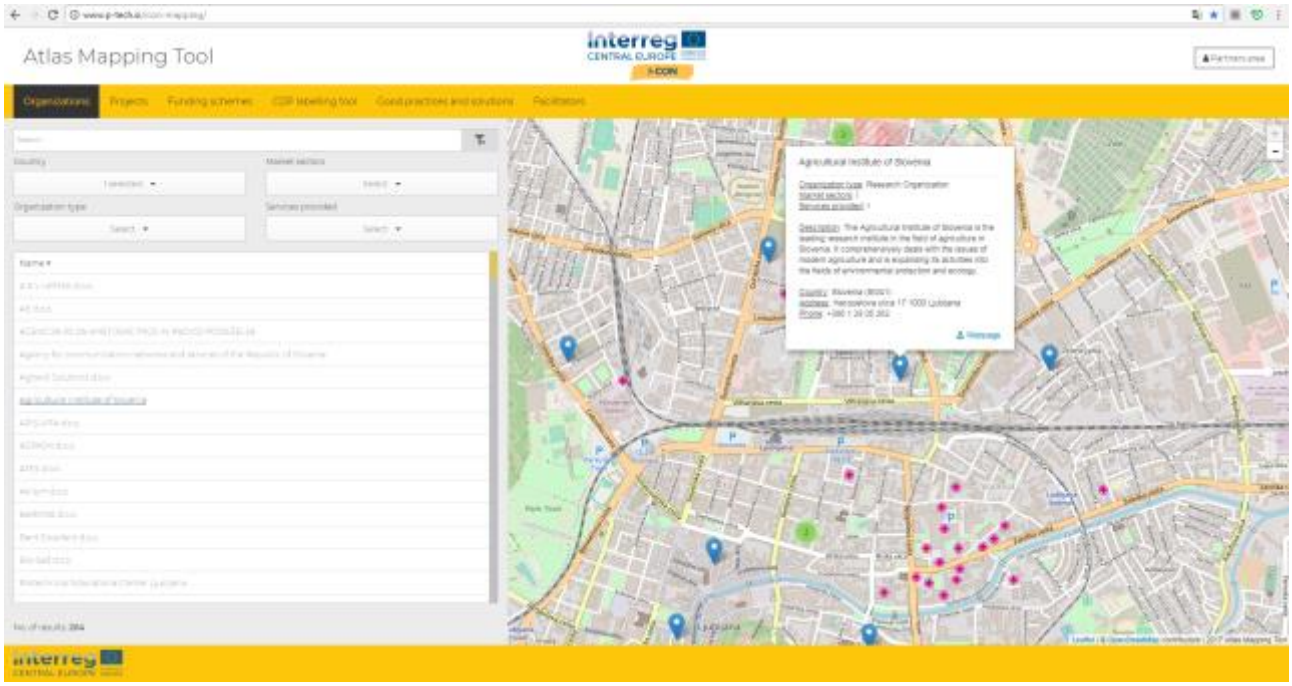


SEARCH:

ORGANIZATIONS * Filter Country: SLOVENIA

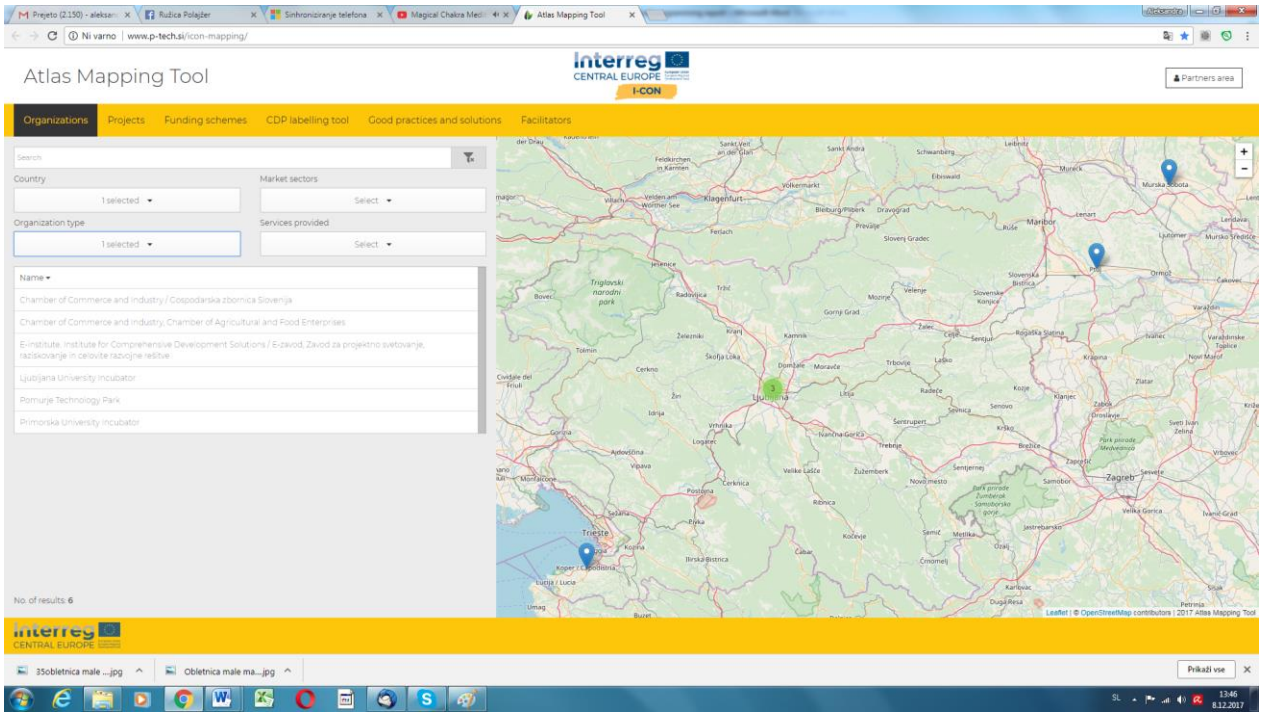


Example of organisation description – Agricultural Institute of Slovenia:

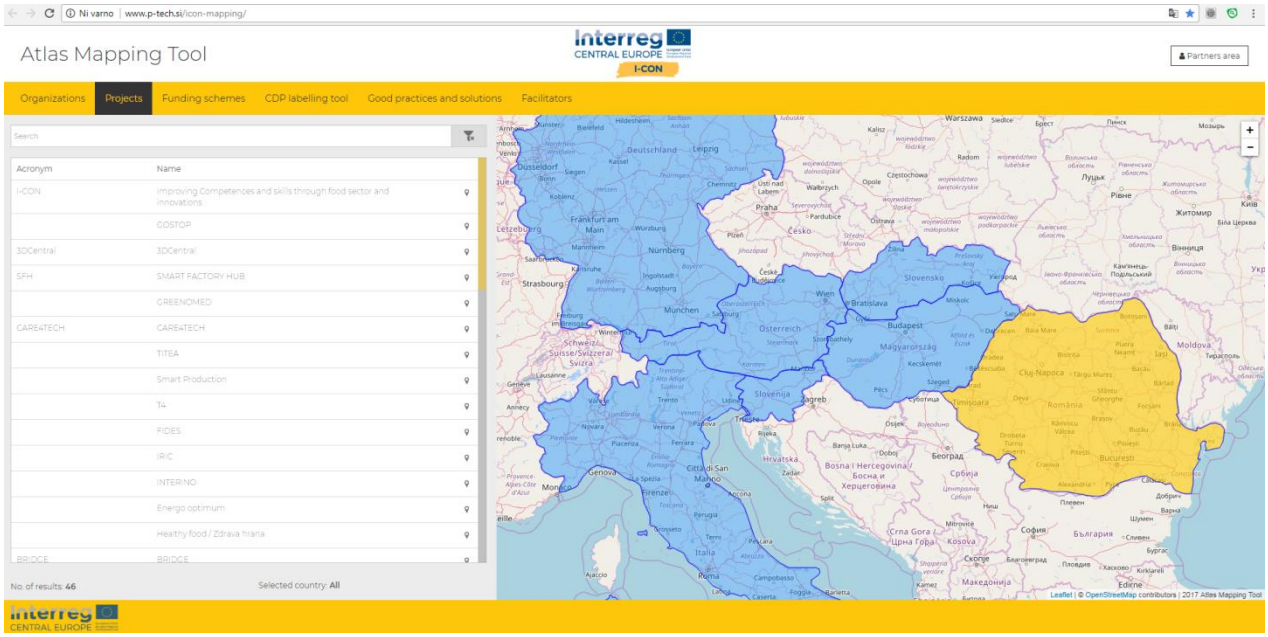


SEARCH:

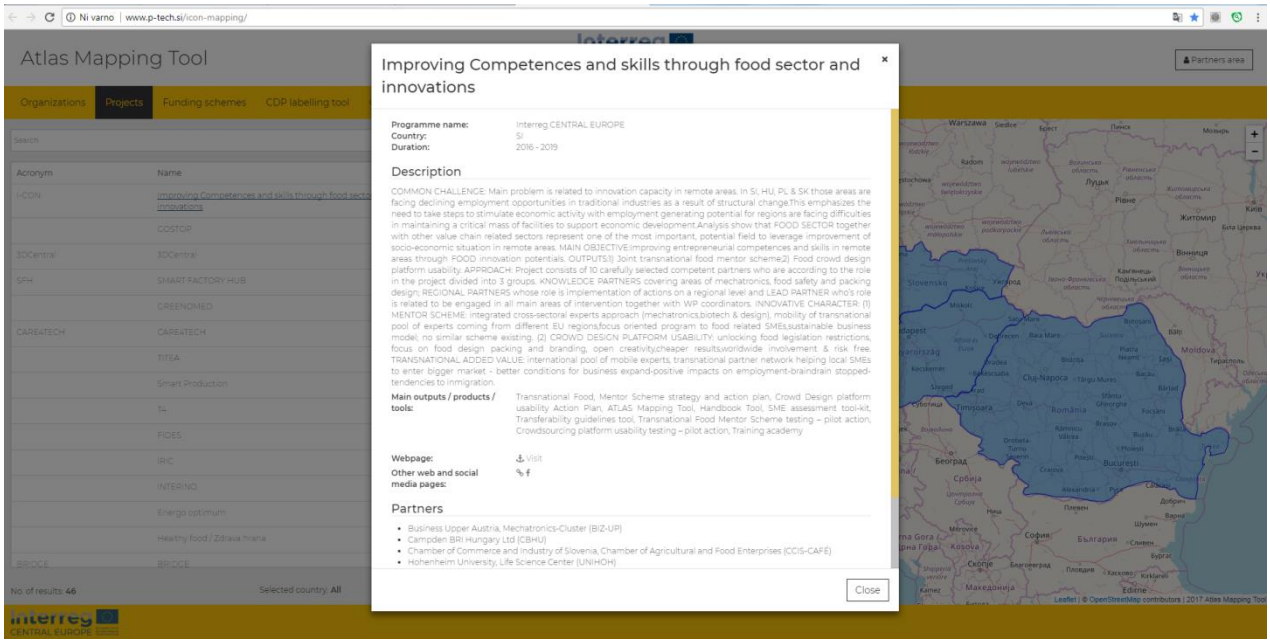
ORGANIZATIONS * Filter Country: SLOVENIA * Filter Organisation Type: BUSINESS SUPPORT ORGANIZATIONS



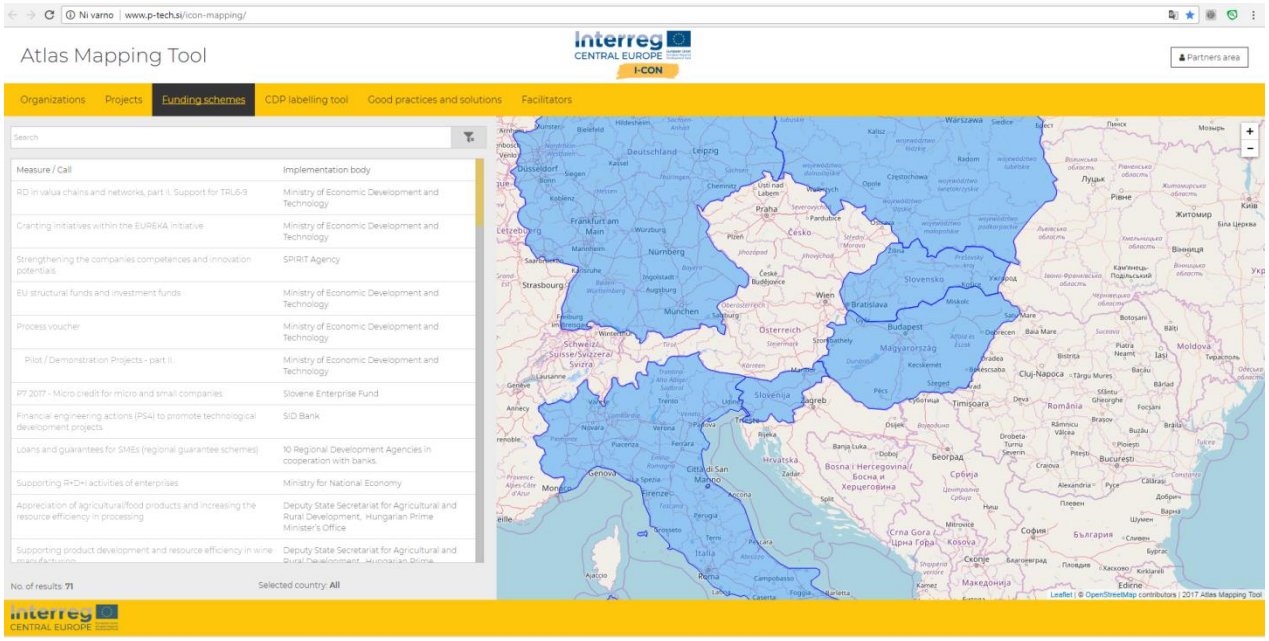
8.2. Modul: Projects



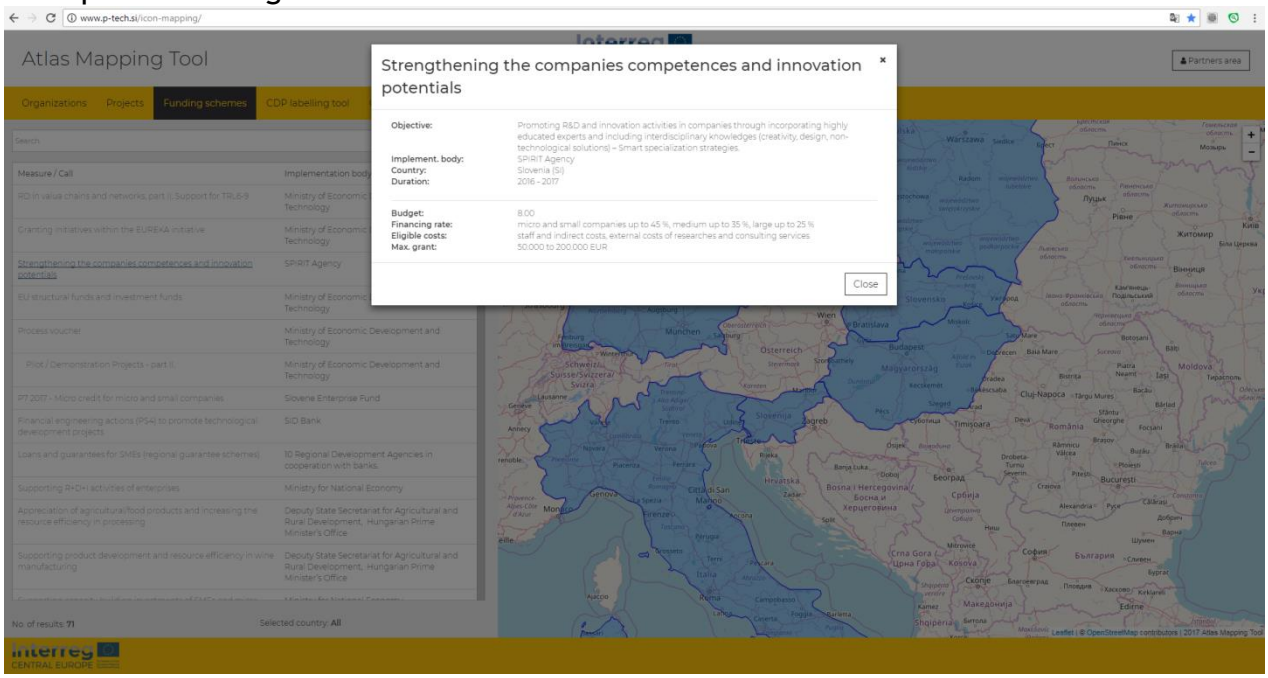
Example of project description - I-CON project:



8.3. Modul: Funding Schemes



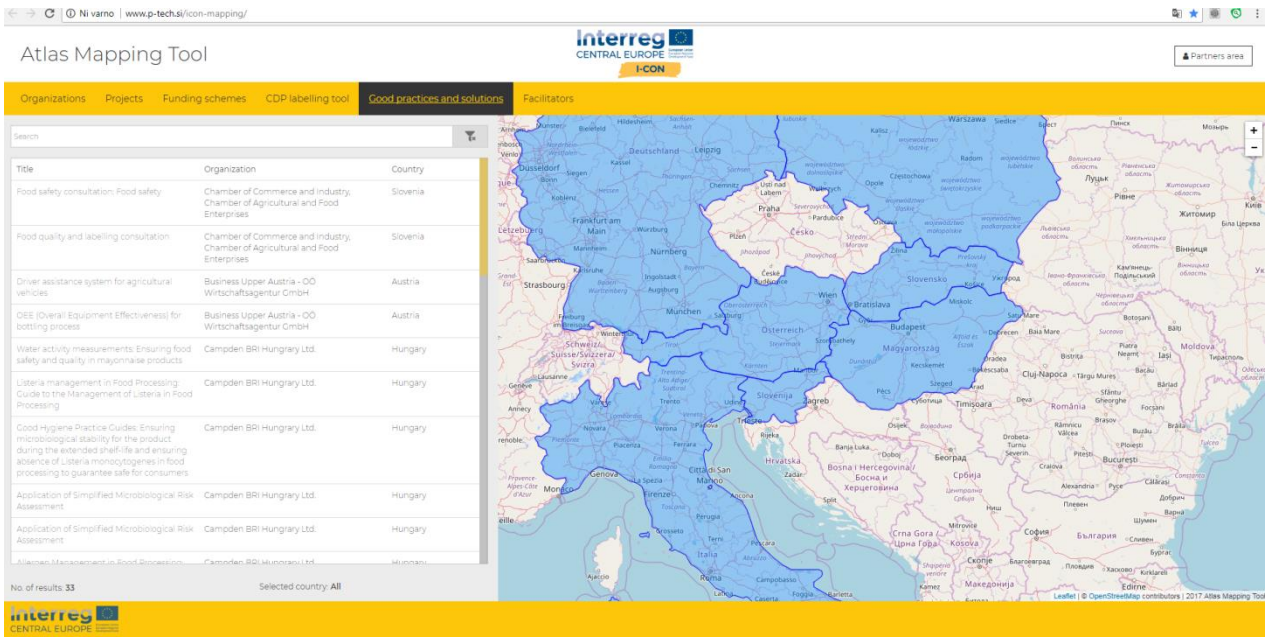
Example of funding scheme:



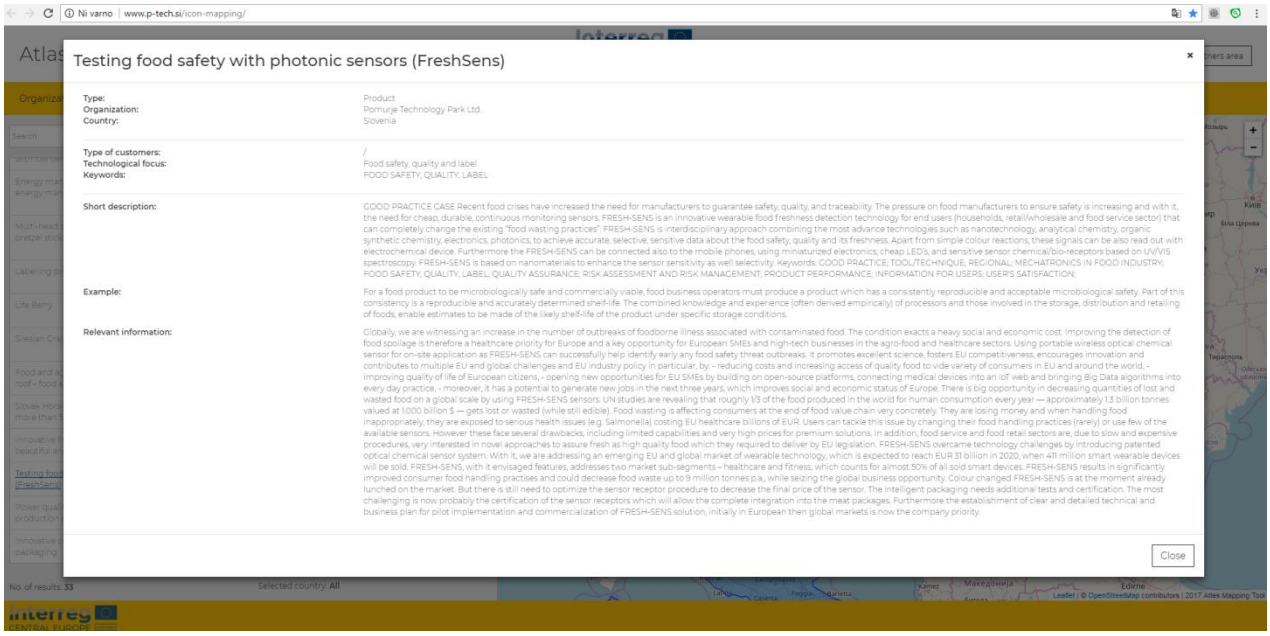
8.4. Modul: CDP labelling tool

…is described in separate document D.T.2.3.3. Design assessment tool-kit.

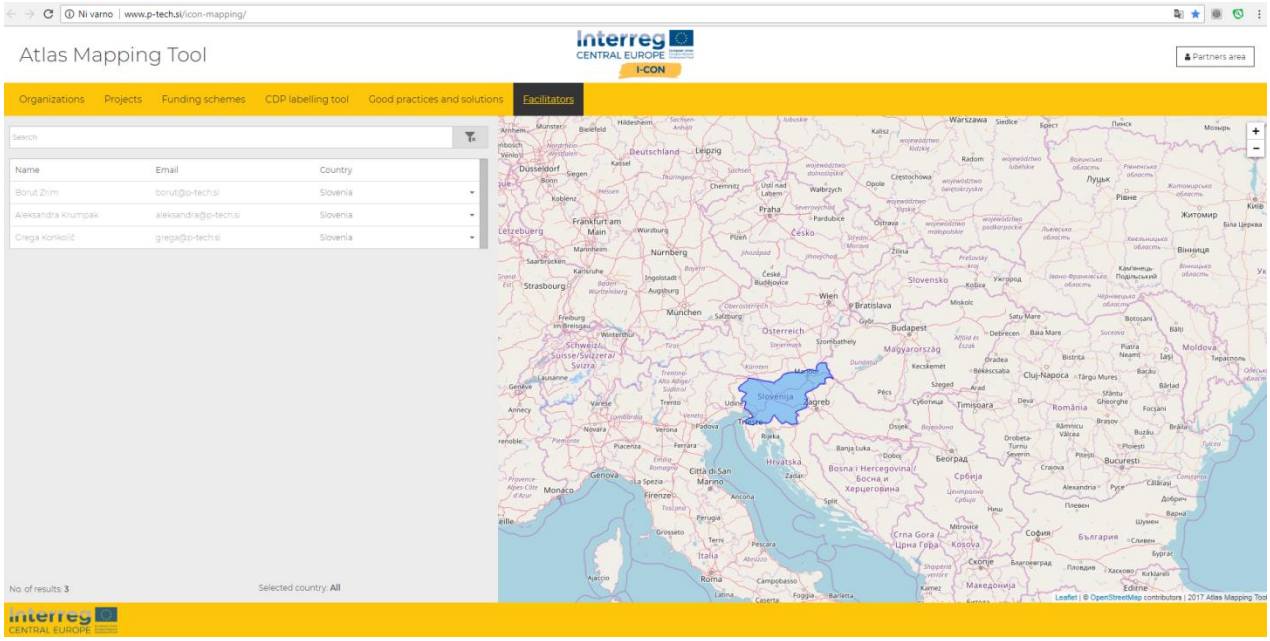
8.5. Modul: I-CON - Good practices and solutions



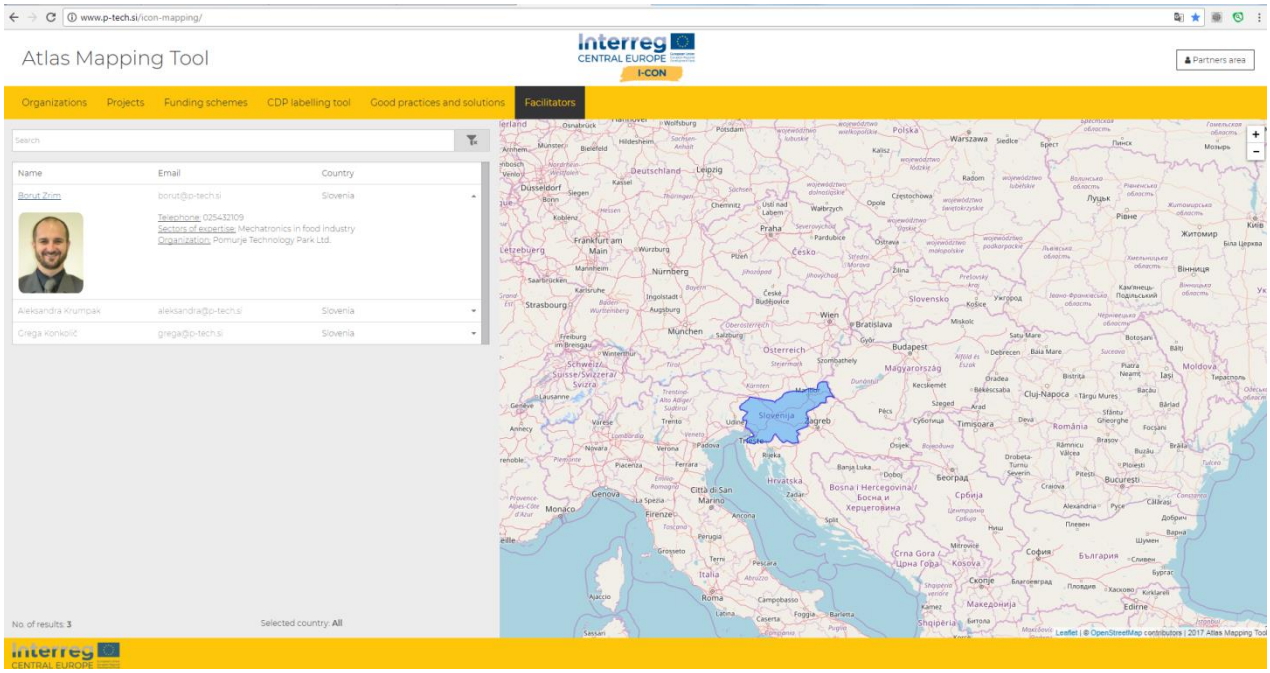
Example of Good practice/Solution description – Testing food safety with photonic sensors (FreshSens):



8.6. Modul: Facilitators



Example of facilitator description – Borut Zrim:



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

9.1. 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

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.

9.2. 1. DIGITAL INNOVATION VEHICLES

The Digital Innovation Hub (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, agriculture, 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.

9.3. 2. DETERMINATION OF THE VALUE PROPOSAL

9.3.1. 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.

9.3.2. 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 DIH 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.

9.4. OFFER

9.4.1. 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.