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Regional Collaborative Innovation Ecosystem STPs as Enablers in Globally OrientedRegional Areas of Collaborative Innovation

Parallel Session 1
"Future-proofing our space"

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Introduction

This paper describes how science and technology parks and other innovation supporting subjects like accelerators, incubators… (STPs) located in a small countries or in a less developed region are tackling challenges of customizing services to the real needs of innovation ecosystem stakeholders; how they face problems of growth when possibilities for organic growth with infrastructure development are insufficient; how they attract technology and talent (TxT) from the wider region and foster its monetization; and how several pilot projects were implemented resulting in the final proven methodology for STPs development that together form a globally oriented regional area of collaborative innovation.

Abstract

STPs around the world choose various paths in their own development, service development as well as in shaping their own activities towards market needs. After the 3rd generation, the development paths of STP are forming in various directions: higher rate of specialization, urbanization of city areas, setting up of areas of innovation or combination of various forms. These directions are above all, defined by the development strategies of stakeholders, available financial resources, focus of regional and or or/and national policies, as well as priorities of the management team and owners of STPs. The development paths relate to development of solutions for capitalization of local entrepreneurial potential and development of the relevant geographical area: from initial activities around universities to the development of specific urban areas.

Due to smallness of our country and consequentially the size of available resources, the development of the Technology Park Ljubljana (TPLJ) is necessarily directed towards development of individual regionally distributed areas not only within Slovenia, but throughout the whole CEE region. Only by using this approach we can reach an equilibrium between invested funds, accumulated knowledge and critical mass of talents; providing for credibility and competitiveness of the system in a broader area. In the case of TPLJ development, the focus is on development of services and presence of parks' activities at the national and CEE level in the form of a network, where the local ecosystem acts as hub or area of collaborative innovation, developed jointly based on our own, in practice verified lean methodologies approach. This development has gone through several phases, where we first developed and tested the methodology within several pilot projects on the local level and then we spread it in the region in an optimum manner.

We understand that every environment is unique and therefore we started developing and testing an adjusted lean methodologies approach, based on identification of the actual needs of motivated stakeholders of each innovation system (educational, industrial and political environment), root causes and key systemic deficiencies. Based on the identified needs and our 20+ years of experience, our next step was the development of a set of creative support services and ecosystem development projects, delivering high added value for stakeholders as well as a long-term impact for the environment. In co-creation (not as consultants) with the local staff, we managed to integrate both the appropriate content (programs, activities, relations) and form (network of organizations and institutions) of the ecosystem in the local environment based on collaborative innovation principles. The developed hub was then

integrated into our broader global network, thus providing high operational standards, self-sustainability and continuous development of all partners involved.

1. Innovation challenges driving new STP's service concepts

1.1 Innovation as driver of a knowledge-based society

Across Europe, the importance of innovation as a driver of growth and competitiveness has and will continue to increase. Europe as a continent opted to become a knowledge-based society, the type of society that is needed to compete and succeed in the changing economic and political dynamics of the modern world: the society that is well educated, that relies on the knowledge of its citizens to drive the innovation, entrepreneurship and dynamism of its economy.

Innovation defined as the successful commercialization of novel ideas, including products, services, processes and business models – is a critical component of the economic growth. Innovation drives growth in two connected and complementary ways:

- by introducing new or improved products or services that tap into existing or latent demand in the market, thereby creating additional value for firms and consumers;
- and by increasing the productivity of firms employing such innovations.

1.2 Innovation capability in Western Balkans

Europe includes six of the 10 most innovative economies in the world, but also many countries that urgently and significantly need to improve their innovation capability. Europe as a region varies greatly in terms of both competitiveness and innovation.

Global innovation index (GII) is the globally recognized standard for analysis of national Innovation capability. This study shows that Western Balkans is a region with serious innovation issues. Table 1 contains findings of this global research for 2016 which indicates that in general innovation capability in the region is declining compared to the rest of the world. This is very concerning considering that this region as a part of Europe opted to become knowledge-based society – result which can only be realized through better innovation capability.

Country	GII 2016	GII 2015	Trend	Positive indicators	Negative indicators
Slovenia	32	28	-4	Scientific and technical articles, knowledge-based work, educational system	Innovation linkages, knowledge diffusion, sophistication and small size of the domestic market
Croatia	47	40	-7	Education, pupil-teacher ratio, ISO 9001 standards ecological sustainability, scientific excellence	Knowledge diffusion, innovation linkages, venture capital deals, financing
Montenegro	51	41	-10	FDI, knowledge absorption, businesses creation, no. of	Local market & competition, development of clusters, IPR

				articles	revenues, formal company trainings, innovation linkages, R&D investments
Macedonia	58	56	-2	Business environment, pupil-teacher ratio, ISO 14001 and 9001, intensity of local competition, ICT services imports	General infrastructure, ICT use & e-Government, ICT net inflows, knowledge creation, knowledge absorption, knowledge diffusion, domestic market scale
Serbia	65	63	-2	Cost of redundancy dismissal, pupil-teacher ratio, graduates in science & engineering, ISO 14001 and 9001, ITC exports & imports, IPR payments	Crediting & investments, intensity of local competition, innovation linkages, ICTs influence on business model or organizational model creation
Bosnia and Herzegovina	87	79	-8	Human capital & research, cost of redundancy dismissal, pupil-teacher ratio, ISO 14001 and 9001	Intensity of local competition, innovation linkages, knowledge absorption, intangible assets, ICTs influence on business model or organizational model creation
Albania	92	87	-5	Tertiary enrollment, school life expectancy, FDI, ITC exports & imports	Innovation linkages, intensity of local competition, knowledge impact & knowledge creation, intangible assets, ICTs influence on business model or organizational model creation, knowledge workers

Table 1: Global innovation index (GII) in Western Balkans countries in 2015 and 2016 (1)

Detailed overview of indicators reveals that countries in the region perform relatively well in production of knowledge, scientific and technology publications, educational system, high environmental and production standards, but are ineffective in monetizing all this knowledge.The GII common indicator where region is underperforming comparing to other more successful countries is the small size of domestic market and its ability to generate competition and absorb and diffuse all this knowledge.The significant differences between European countries are driven also by factors such as the number and quality of linkages between firms and entrepreneurial ventures, and between the private and public sectors. This fragmentation impacts the ability of firms to turn R&D investments into intellectual property (IP) and commercialized products and it hampers European competitiveness in comparison with other regions. Next to these main downsides there are additional indicators decreasing innovation performance of the region such as

Poor ICTs influence on business model or organizational model creation, lack of creativity based intangible assets and even great difficulty of starting a business.

1.3 The STP role in innovation ecosystem networking

When innovation, its evaluation and disapproving is involved, science and technology parks from incubators to accelerators as well as areas of innovation have always proven to be the most effective tool for engaging stakeholders in the commercialization process. Establishing links and flow management between stakeholders of the innovation ecosystem is of paramount importance. Innovative STPs promote innovation activities, technology transfer, incubation and development of start-ups, investments and other activities to support businesses throughout their various stages of development as well as activities of internalization and industrialization.

Obviously, these forms of promotion of innovation activities and their institutionalization are subject to restrictions. Firstly, there are spheres of influence consisting of stakeholders – owners of the STP (university, city, region), as well as competences, ambitions and size of the team responsible for the promotion. Secondly, the restrictions are represented by the availability and range of financial support for these forms of promotion, particularly in the segment aimed at creating new services, adapting to market requirements, modernization of ecosystem and above all in the segment aimed at growth. Often, stakeholders-owners of the STP classify strategic plans and programs based on political priorities that fail to consider the continuous development of the supportive environment.

The STPs adapt their ambitions to the size of the team, competences and available financial resources at the expense of the potential of the environment, which often results in divergences as to what subjects of innovation environment are capable of and what is the potential of the region. The development of science and technology parks depends on the availability of financial resources, rather than the real need, i. e. they do not grow in accordance with the potential and needs of the region.

Instead, STPs with their competent and numerous staff fail to perform their tasks (management of the flow among stakeholders and innovation potential carriers in the region), committing themselves in their struggle for survival, to any project, thus significantly reducing their influence on success and/or development of the innovation ecosystem.

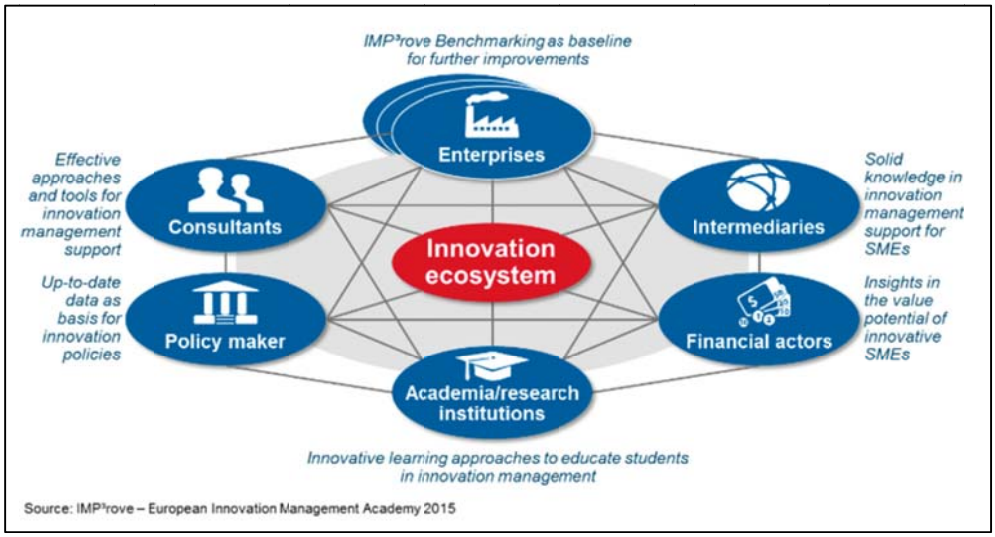


Figure 1: Stakeholders in the innovation ecosystem and their specific needs (2)

To raise awareness of the situation, and alleviate the consequences of wrong priorities, maintain growth and monitor the innovation potential and continuous modernization of the ecosystem, we need experience and sensitivity to detect trends in the political, academic and economic part of the ecosystem. Knowledge of tools and methodologies is crucial to address these issues thoroughly and responding to them in an optimal manner. In the Technology Park Ljubljana, we have addressed this issue by introducing new pilot projects linked to the development of innovation ecosystems at the local and national level and by developing a modern model of innovation ecosystem. The tools and methodologies applied have supported the development of the model of nonorganic growth of the technology park and enabled Technology Park Ljubljana to position itself both regionally and globally.

2. Evolving Solution: A Regional collaborative innovation ecosystem

Tackling root causes for poor innovation performance is a task for STP, as an innovation support ecosystem enabler. As a leading entity of innovation ecosystem in the region, Technology park Ljubljana has been very active in searching for solutions that would successfully address the issues of small size domestic market and poor innovation linkages.

2.1 Evolution of the Technology Park Ljubljana

We have been aware for more than a decade that a successful commercialization of knowledge and technologies require physical and intellectual infrastructure and an excellent network of partners.
Initially, after Technology Park Ljubljana completed our infrastructure, we established an Association of all technology parks and business incubators of Slovenia to encompass business and technology

potential at the national level. Based on this experience we realized that linkages not based on a common vision, strategy and performance standards, as well as not on proactive management and stimulation of the flow of technologies and talents (TxT) cannot result in breakthrough results.

As an improvement, we conceived the Initiative Start-up Slovenia consisting of motivated and proactive representatives of innovation support ecosystem with a common vison to establish a globally competitive startup hub. For the first time, we used the "bottom-up" approach and in a few years, we managed to establish a start-up ecosystem that has become the most recognized in the CEE region. To provide support to the most successful start-ups, we upgraded the ecosystem with services for growth and collaboration among start-ups and larger national corporations, based on the Open innovation principle. However, we found that only closer links between start-ups and larger businesses doesn't bring the desired results in terms of increased TxT commercialization. The most important reason for this is the relatively small number of adequate technologies, as the major part of technological innovations outside multinational corporations is still developing away from the potential buyers. The second reason for poor realization of the technology transfer, rests in the mutual misunderstanding between start-ups and large businesses. Different velocities in decision-making, development vs. implementation of a business model, organizational and statutory differences, etc. were reasons preventing them to reach agreements.

In the second phase, we extended our knowledge and technology offer with achievements and experts from public research organizations (PRO) and Hi-tech small and medium enterprises (SME). Besides we turned mere networking into individual matching and mediation service between chosen large national corporation as technology buyer and national of start-ups, PROs and SMEs as technology providers. Considering the needs of large businesses, we attempted to offer the most suitable technologies. We found out that suitable ideas are plentiful, however not to the extent that would convince a large business that the offered technologies are global state-of-the-art. Another reason for the lack of a substantial shift in the realization, lays in the huge differences between the mindset, motivation levers, nature of operation and expectations in terms of risk taking and investments that exist among start-ups, PROs and SMEs on one side and large businesses on the other side.

Based on the pilot findings, we aim to modernize Technology Park Ljubljana ecosystem as follows:

1. It is necessary to develop a national innovation ecosystem able to successfully support TxT transfer between start-ups, PROs, SMEs and large businesses.
2. Technology Park Ljubljana is moving towards a non-organic growth by being active, launching services and carrying out activities at the national and CEE level in the form of a network where local hubs represent local ecosystems:
    - Partner hubs share with us a common vision, performance standards and have a proactive management.
    - Strategy, programs and projects are developed according to a reliable lean methodology, thus guaranteeing quality services and programs that in fact support TxT transfer, as well as address root causes.

3. Developing global connections with technology buyers and sharing these connections with other partners in the network, we will guarantee the promotion of technology and talent transfer (TxT) throughout the entire network.

2.2 National collaborative innovation ecosystem

In recent years, the development of Technology Park Ljubljana, has been based on the Open Innovation paradigm which failed in practice. In searching for solutions, collaborative innovation method proved to produce the best results.

The mission of the collaborative innovation ecosystem, is to support competitiveness by addressing challenges that all innovation ecosystem levels (knowledge & research organizations, start-ups, SMEs and corporations) face, when they innovate and seek to collaborate with each other to commercialize innovative products, services and business models.

Collaboration between such different innovation ecosystem levels has historically been difficult. To significantly increase the chance of success, the following 3 steps of execution must be followed:

1. Prepare: accelerate innovation ability on all innovation ecosystem levels (knowledge & research organizations, startups, SMEs and corporations)
2. Partner: stimulate global competitiveness of national economy through collaboration among all levels with national ecosystem
3. Pioneer: execute commercialization through global partnerships

As proven many times in the past, the process of collaboration is seldom successful without support. The 3 support roles are:

1. Enable: National smart specialization strategies are based on real needs, fulfilling national vision and supported by national legal, institutional and financial framework.
2. Educate: General awareness building, mindset changing and toolset providing among all innovation ecosystem levels.
3. Empower: Top support programs and incentives for best representatives of all innovation ecosystem levels.

Technology park Ljubljana, is the main driver of the Slovene ecosystem with its key role as a visionary, mediator and coordinator of support programs. Other very important stakeholders are the Government, Intermediary agencies, Technology parks, Incubators, TTOs, Chambers and Clusters.

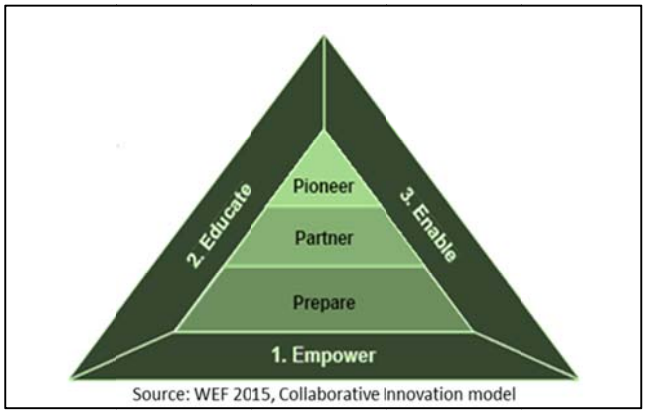


Figure 2: Collaborative innovation Support Ecosystem Policy Model (3)

2.3 Development of a network of hubs in the CEE region

We started several pilot projects for national ecosystem development to perfect the methodology and then deployed the solution within the Alps-Adriatic and Western Balkans regions.

2.3.1 Development and deployment in the national ecosystem

In the development of the national ecosystem, we used the "bottom-up" approach and in a few years managed to develop an innovation support ecosystem in the start-up segment that has become the most distinctive in the CEE region. However, despite the remarkable success, national expansion by merely copying the measures and programs to local hubs has proven to be inefficient.

Each environment is unique. Therefore, we started to develop and test an adapted lean methodology based on identifying the actual needs of motivated innovation ecosystem stakeholders (educational, industrial and political environment) and root causes. Based on the identified needs and our more than 20-years of experience, we have developed tailored support services and ecosystem development projects with a great added value for stakeholders and a long-lasting impact for the region. As co-creators (and not only consultants) and in collaboration with the local staff, we managed to integrate the adequate ecosystem form and content based on the principles of collaborative innovation.

We then integrated the newly created hubs into our national network, ensuring high performance standards, self-sustainability and a continuous development of partnership ecosystems.

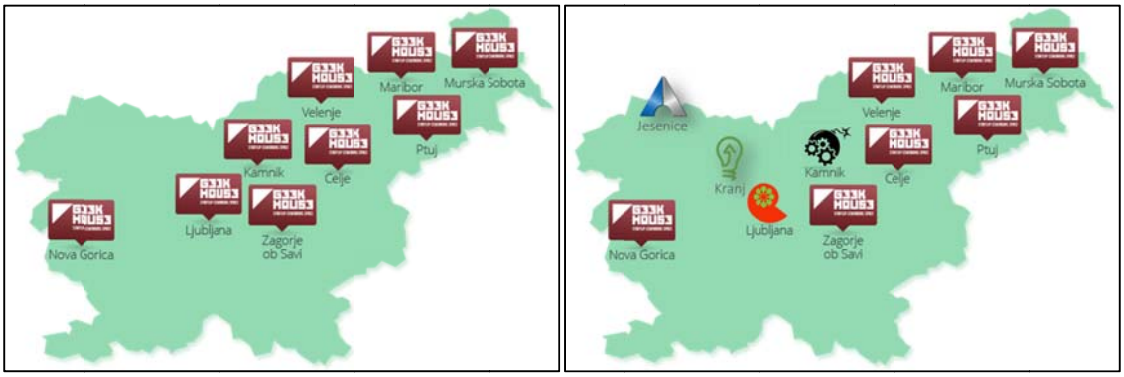
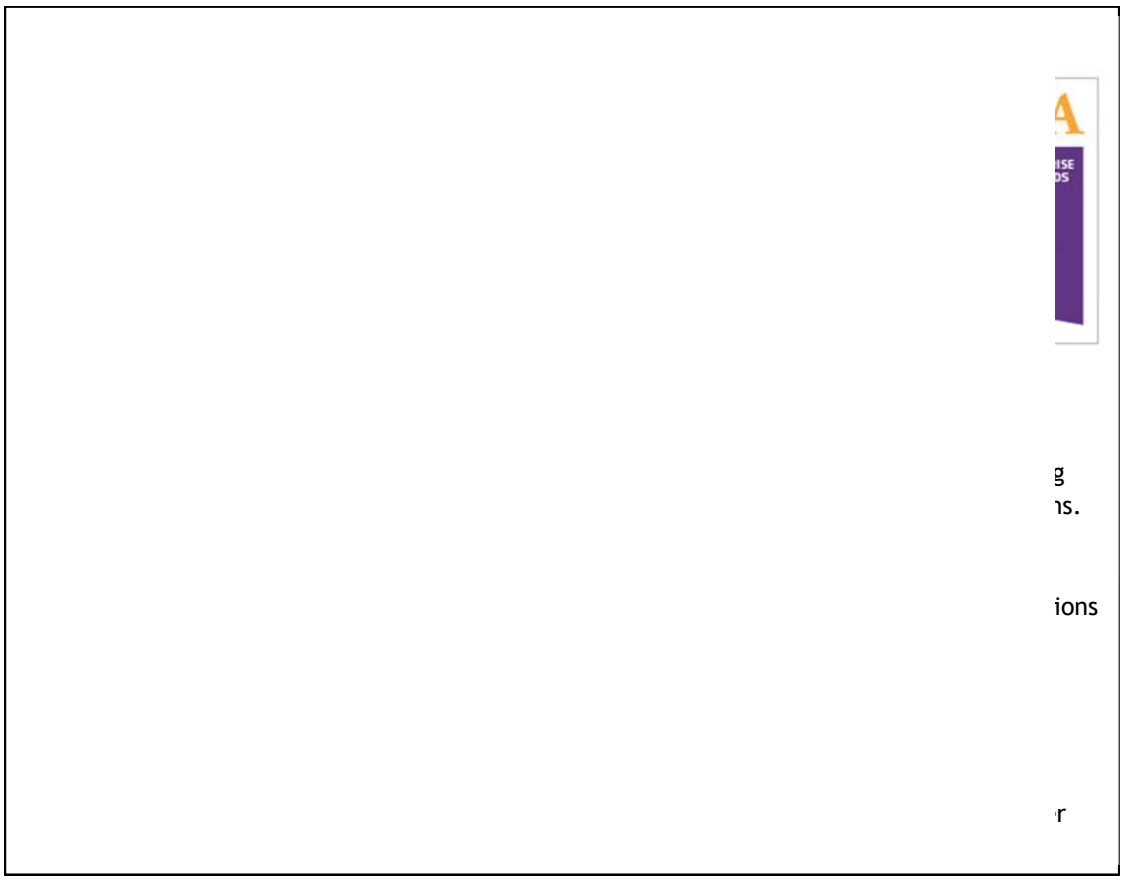


Figure 3: National network of hubs (generalized and tailored)

The methodology has been tested and optimized in local business environments, and now is successfully deployed at various locations in the CEE region. In addition, we have established the Alps-Adriatic Initiative within CEE and play a significant role in the (trans)formation and management of ecosystems in Austria, Serbia, Montenegro, Italy, Croatia and Bosnia and Hercegovina.



2.3.2 Hub Deployment in the region of Western Balkans

Deployment of generalized or tailored national hubs in the region of Western Balkans is challenging. Typically, the introduction of changes in the ecosystem improvement fails or is seriously delayed due to distrust and lack of stakeholders understanding and support. To minimize the distrust of local stakeholders, tend to copy innovation frameworks and measures that brought success in other regions. This is always ineffective as they are not addressing ecosystem specifics. Consequently, the execution of such unadjusted support measures and programs within inappropriate ecosystem frameworks causes disappointment of target groups as long awaited support services and programs are irrelevant.

Finally, the newly established innovation ecosystem institutions, usually STPs, executing ineffective business support services and programs, become yet another symbol of alienation between end users and government. Instead of being the carriers of modern regional development and enablers of a knowledge based society.

To face these challenges, we have developed 3 stages of innovation ecosystem implementation in the region. In each stage, we use lean methodology customized to the specifics of innovation ecosystem industry.

Stage 1: Co-development of strategies and frameworks

The goal is to develop a contemporary smart specialization strategy, empowered by the environment to effectively pursue ecosystem vision. This development is executed in 4 steps:

1. Innovation-related core challenges, end-user needs and potentials
2. Widely supported vision of an innovation ecosystem
3. Vision-driven innovation ecosystem development strategy based on the priorities of smart specialization
4. Legal, institutional and financial framework that support execution of the strategy (instead of limiting it)

Stage 2: Empowering institutions, national HUBs with high-impact services & projects

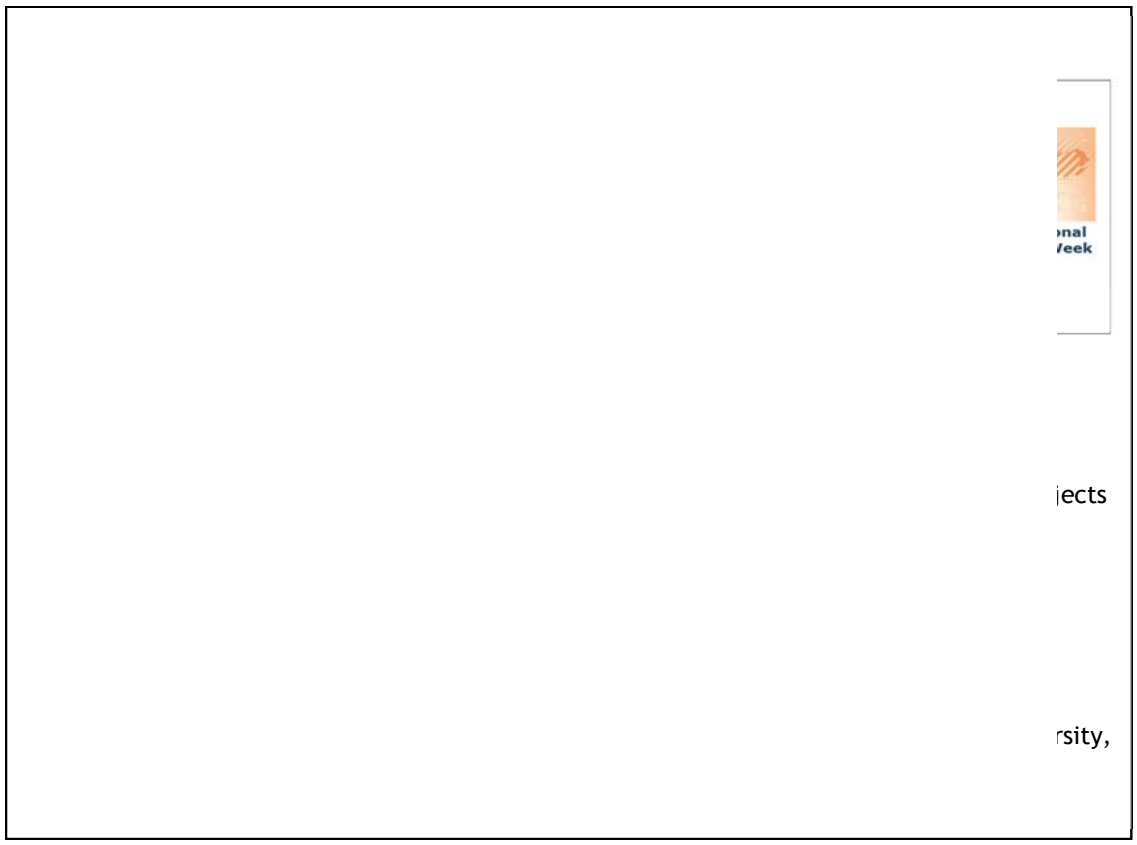
The goal is to implement the collaboration with established institutions able to implement strategies with efficient activities to reduce brain drain, lack of skilled HR and poor knowledge monetization. The development uses adapted lean methodology and is executed in 3 steps:

1. Defining management, target groups and business environment needs and challenges.
2. Implementation of a unique method to develop governance, support services and collaboration projects.
3. Implementation with local staff applying a „learning by doing” approach to transfer the world class know-how.

Stage 3: Co-creation of high-impact national innovation programs

The Goal is to Implement effective and highly quality national programs, tailored to the needs of end-users and in-line with national strategies and vision. The development uses an adapted lean methodology and is executed in 3 steps:

1. Platform for consensus on challenges, end-users needs, vision and strategy.
2. Programs, incentives and financial framework, co-created with the government.
3. Execution of pilot programs: Management & administration, PR, sourcing and selection of TOP



end-users, supervision, quality assurance and development.

2.3 Global connectivity to increase regional networks' performance

To increase the actual commercialization, besides strengthening linkages at the national and regional level through the introduction of a collaborative innovation ecosystem, it is necessary to establish a connection between the whole regional system where national programs and institutions are co-developed and selected global markets. Of outmost importance are strategic connections with the key technology buyers that, currently, come mainly from the East.

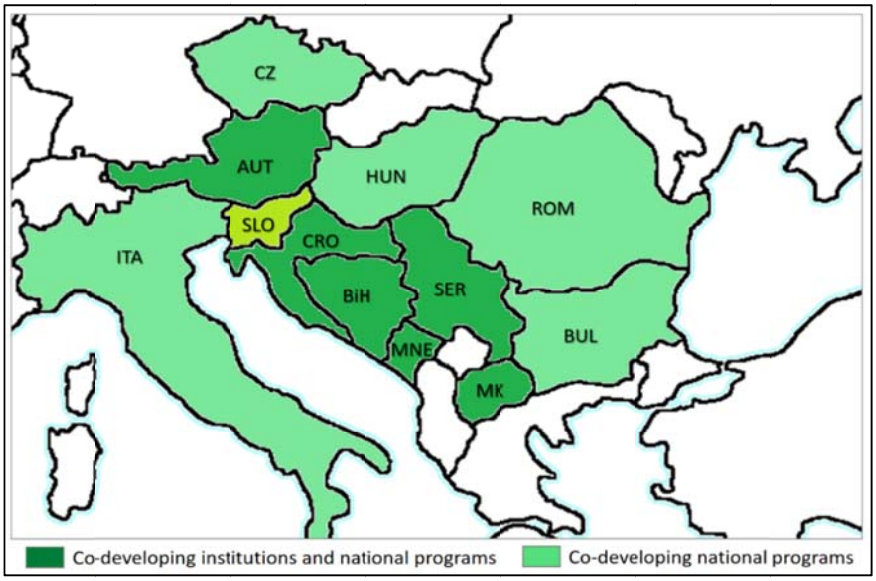


Figure 4: International connectivity of Regional Collaborative Innovation Ecosystem

The CEE region is strengthening connections for technology transfer, especially with China, Iran, India and Russia. These connections are implemented through TWIN offices-bilateral offices, that are proactive and target-oriented in looking for a correlation between demand for technologies in selected markets and offer of technologies in the region. In addition, these offices are responsible for providing full support in the carrying out of the transfer. Partnership hubs in the region share access to target buyers and their participation is motivated by a joint commission.

3. Traction

The proof of the methodology effectiveness, are international recognitions and awards that our projects have received over the last 6 months:

1. Best practice of regional cooperation presented within the EU week of regions & cities for program development of Technology Park Belgrade, Serbia.
2. Shortlisted among 343 projects within European Enterprise Promotion Award 2016 for development of incubator KIKštarter Kamnik, Slovenia.
3. The Initiative Startup Slovenia became the founding member of European Startup Network, that will steer the development of the European start-up ecosystem.

Beside these awards, Technology Park Ljubljana holds several project contracts being implemented:

1. ACCELERATOR – Developing accelerators to provide better access to innovation finance for SMEs (Danube Transnational Program)
2. NTpark Belgrade, SER – Co-Development of a complete ecosystem of the Serbian national technology park.
3. Lake Side park Klagenfurt, AUT – Co-Development of support services and collaboration programs for startups in a regional technology park.
4. Technopolis regional Technology park, MNE – Co-Development of support programs of a regional technology park.
5. Technology Park Podgorica, MNE – Co-development of a feasibility study
6. Technology Park Sarajevo, BiH – Co-development of a feasibility study
7. Regional Start:up initiative Alps-Adriatic, ITA & AUT: Carrier for disseminating good practices of startup ecosystem.
8. National Initiative Start:up Slovenia, SLO: Development of a referential national system for startup support.
9. Regional incubator Tobogan Ljubljana, SLO: Development of complete local entrepreneurial ecosystem
10. OIS-AIR – Support the development of a regional innovation system for the Adriatic-Ionian area (Adriatic-Ionian program Interreg V-B Transnational; pending)

In the past, Technology Park Ljubljana successfully completed the following innovation ecosystem projects:

1. KIKštarter Kamnik, SLO – Co-Development of a complete regional entrepreneurial ecosystem.
2. ICT Technology park Kranj, SLO – Co-Development of the complete ecosystem and national ICT technology park.
3. Plavž Jesenice, SLO – Co-Development of a complete regional innovation ecosystem.
4. Smartup incubator Kranj, SLO – Development of a regional business incubator.
5. Business incubator Zadar, CRO – Development of a feasibility study.
6. Startup Geek house, SLO – Development, Set-up and coordination of network of 7 regional STPs in Slovenia.

4. Literature

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