

# ICT in focus of Smart specialization strategy of Serbia?

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**Abstract**—Serbia is in the process of creating its national smart specialization strategy (S3), whereas the region of Vojvodina has its strategy already defined. Determined smart specialization sectors are core sectors for innovation and research activities in a region. The aim of authors of this paper is to introduce stakeholders with the existing bottom-up process which is in progress and which should identify sectors of smart specialization, to stress its importance to the future of ICT sector, at national and regional level (Vojvodina) and to provoke information-communication technology (ICT) experts to be involved in process of creation of S3.

**Key words:** smart specialization, innovation, research, ICT

## I. INTRODUCTION

Smart specialization is a new general concept developed by European Commission whose aim is to build an innovative approach for the growth of European economy based on model used in United States that enables creation of its unique research and innovation space. S3 should bring new ideas, business models and multiplication of jobs in Europe [1]. It is based on a premise that not all regions in Europe need to do research and create innovative solutions in all sectors. Available resources should be used more efficiently. Each region should be specialized for research and innovation in sectors with the biggest potential which comes out of its resources and specificity. Niches of specialized products and services must be developed out of identified comparative advantages [2].

Smart specialization has made a big change in designing innovation strategies for European regions. It started or reinforced cooperation at all levels based on the analysis of the strengths and opportunities of economies and on an Entrepreneurial Discovery Process (EDP). EDP is a bottom-up process with wide stakeholder involvement. This process brings together local authorities, scientific institutions, companies and civil society to work together with aim to define focus sectors for research and innovation of a given region. Process is supported by EU funding programs [3]. Starting from 2011, the European Commission is providing consultancy to regional and national authorities on how to define and implement their smart specialization strategies. It created S3 Platform which provides advice to EU countries and regions for the design and implementation of their smart specialization strategies S3. Services of S3 platform are to [4]:

- provide guidance material and good practice examples
- Inform strategy formation and policy-making

- Facilitate peer-reviews and mutual learning
- Support access to relevant data
- Train policy-makers

At S3 platform can be found all registered regions that have developed S3 documents with list of their focus sectors for innovation and research.

All these regions went through the creation process defined by EU and many of them organized peer review events to discuss their S3 concussions and compare with other regions.

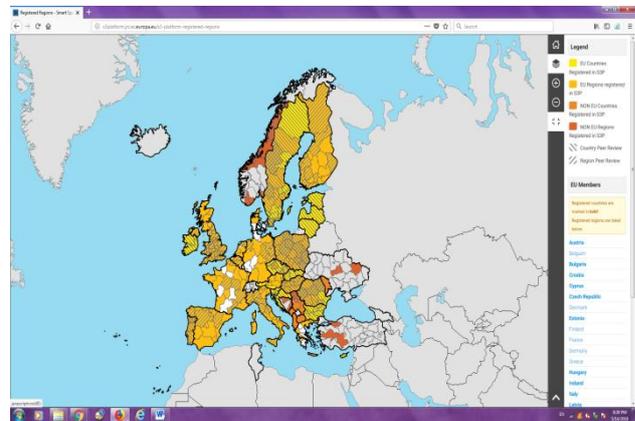


Figure 1. EU and Non EU regions that have S3 strategies (source: S3 platform)

## II. RESEARCH QUESTIONS

Whereas Serbia is in the process of creating its national smart specialization strategy, the region of Vojvodina has its strategy already defined. The methodology was accepted from Hungarian partner through one Instrument for Preaccession Assistant (IPA): cross border cooperation (CBC) project between Hungary and Serbia, financed by EU. Vojvodina went through the whole process of developing S3 which consisted of:

- mapping data of existing situation
- benchmarking of neighboring regions and similar regions
- presenting best practice examples
- collecting and analyzing primary data through survey
- Collecting and analyzing secondary data (tuning primary data)
- defining priorities

-defining action plan

-creating indicators, monitoring system and further activities' owners.

A Peer review workshop was organized in Novi Sad to discuss all results when practically representatives of all stakeholders were invited together with representatives of Germany and Romania who presented their S3 documents and development processes.

Focus sectors defined in regional S3 strategy of Vojvodina are:

At regional level, there have been identified the following sectors with potential for smart specialization:

- ❖ Agricultural production and food industry
- ❖ Information communication technology and professional electronics
- ❖ Renewable energy sources
- ❖ Metal industry
- ❖ Tourism

Detailed smart specialization sectors analysis:

- ❖ Agricultural production and food industry
  - Organic agricultural production:
    - Crop production
    - Viticulture
    - Fruit growing
    - Livestock production: native species (mangulica, oxes, sheep, donkey)
      - Functional Nutrition
      - Healing herbs
      - Phytopharmacology
      - Biotechnology
- ❖ Information communication technology
  - Information system
  - Smart greed
  - Digital agriculture
  - Services (teleworking, E-Medicine, E-Manufacturing;, E-Tourism)
- ❖ Renewable energy sources
  - Geothermal resources
  - Biomass/biogas
  - Biodiesel
  - Mini hydropower
  - Wind turbines
  - Solar energy
- ❖ Professional electronics (medical equipment and instrumentation)
- ❖ Metal industry
  - Equipment for the renewable energy systems
  - The equipment for agriculture (irrigation system, agricultural machinery)

- Process equipment for food industry (mini bakeries and breweries)
- Process equipment for petrochemical industry
- Supply for automotive industry, railway systems, shipbuilding

❖ Tourism

- Spa tourism
- Cycle tourism
- Cultural tourism
- Health tourism
- Hunting tourism
- Ethno tourism
- Agging tourism
- Personalized tourism

Horizontal issues which should be incorporated into all sectors are:

- ✓ Ecology and environment protection
  - Waste water management
  - Recycling
  - Decrease of harmful gas emission

Serbia is in the process of developing its national S 3. Inter-ministerial working group of the Republic of Serbia is established to lead this process, Joint research center (JRC) from EU supports a lot this process through education, trainings, experts missions and workshops. Through all activates Working group tries to include as much as possible stakeholders into this process. Now it is very important to involve wide public into process of creation S3 to get the best document and to reach goal that all involved in its creation would become its owners and actors of implementation its activities, with aim: to reach its goals. The authors intent is to draw public attention to the importance of the smart specialization strategies and their outcomes for the future development of Serbian regions.

Namely, at this stage of development of national level of S3 which will include all regions in Serbia, recently completed document: "Mapping of data about the most potential sectors in Serbia" (published by a foreign organization) has found that leading sectors in Vojvodina are automotive supply industry, petrochemical sector, plastic, and, after, telecommunication and not ICT. ICT is even not among three sectors on top of the list. Only Belgrade region was mapped as software programming/ICT region.

And de facto, in Novi Sad, which is the city of IT entrepreneurship and the center of IT industry in Serbia, some of the largest IT companies in Serbia were created. According to data from the Vojvodina ICT cluster among the top 10 IT companies in Serbia, the first 3-4 places are companies from Novi Sad: Schneider Elektric DMS NS, which was created by combining the expertise of our professors from Faculty of technical sciences in Novi Sad (FTN) and world capital; A51 doo, that, with its project management SW package, from a company with two employees became a company that earned a revenue of 12 million USD and within 2 years increased the number of employees to 15 and whose products are bought by famous world companies, such as Diznija et al. Among the leading IT companies are RT-RK, which deals with the development of software for TV and telecommunications, then

Levi 9 and others.

According to the same source, the export income of cluster members alone is around 200 million euros, which is about a third of Serbia's IT exports. In Novi Sad there are over 250 companies employing 6,000 people, which is almost one third of all employees in IT in Serbia. The number of founding companies from 1993 to 2016 is constantly increasing. Also, the number of employees as well as the income from exports is increasing [5].

Vojvodina that has been for a while recognized in the world of ICT as a fast growing region with possibility to become Silicone valley of Europe, is not recognized in "Mapping of data about the most potential sectors in Serbia" as an IT region. And this mapping could be of crucial importance to define smart specialization focus of Vojvodina. What could consequence of such smart specialization of Vojvodina be as defined in Mapping document? It will disable European funding of ICT projects and minimize Vojvodina's general growth. It will be almost eliminated from the European ICT innovation race.

The problem which authors addressed in this paper is relation between regional and national smart specialization strategies and then, between already created and new ones. The problem is how to organize the process which should lead from the current situation mapped on the existing official statistical data of the Statistical Office of the Republic of Serbia to the results facing the future which should define economic development of Serbia. Focus sectors should encompass the vision of the future EU economy and niches of Serbian regions within it. Statistical data directed the process itself into the wrong direction, into sectors which remained from the past, from socialism time, when Serbia had well developed some industrial branches. Statistical data are not enough reliable and specially because many ICT companies which have activities in Vojvodina have their headquarters in Belgrade or are registered at other codes, not those referring to ICT activity.

The topic is new, and there are no many researches and articles about it. Dr. Henning Kroll said in his Policy Brief on Smart Specialization that it is heartening to see in how many regions there is continuous ownership of the process and political attention for related activities. The analysis shows that the participants of entrepreneurial processes are in fact less entrepreneurial than initially envisaged. With limited exceptions, most discourses are led by universities and research organizations, rather than by local business firms. Furthermore, civil society organizations are underrepresented. Universities and PROs leading role is in part strongly complemented by intermediaries, such as clusters. Contrary to what has been suggested, universities do not, in general, appear capable of substituting for genuine entrepreneurs in the identification of market-oriented domains. Instead, they engage in discussions mostly to promote own interests and to contribute within their mission of research and teaching. Finally, it seems that the political level, at which the process of discussion is anchored, influences the composition and role of the involved actors. The higher their process is anchored in the political hierarchy and the larger the territory it covers, the stronger it leans towards political negotiation rather than towards open ended processes of joint discovery [6]. Such explanation doesn't have a solution for Serbia on how to come from mentioned wrong mapping to the real demanding focus of S3.

Philip McCann and Raquel Ortega-Argilés in their work: "Transforming European regional policy: a results-driven agenda and smart specialization define the smart specialization

concept and its use to facilitate a results-oriented policy agenda". They say that the specific features of the EU context also heavily influence the nature and logic of the changes [7].

In the paper, "Converting smart specialization into a regional strategy", INFYDE Working Paper, Year 1 - Vol. 2 N°1, 2012, Castillo and Paton present that it is also necessary to consider that there are differences between regions, and thus the process of defining and strategic implementation cannot be uniform. Finally, the concept of smart specialization brings as a novelty the fact that governance is no longer part of the regional logic but is inserted in the global context. This makes the process even more complex, because it is no longer enough to identify regional specialization, to structure it in the field of related diversity, and to get innovation system agents involved. Now the fact that there are similar processes in other regions implies a potential competition for us, but also offer opportunities for collaboration. In this sense it seems critical to configure the governance of a specialization considering that the regional system is inserted into the national and international levels, so that at every micro-meso-macro level actors, institutions and their relationships should contribute to specialization conceived in global terms. It should be noted that a region will not be the only one choosing certain areas of expertise. Nevertheless, the appropriate mechanisms should be taken into consideration for any region since, regardless of their stage of development, any region can reach leadership in a domain or specific sector on a medium or a term. As history has shown, competitive leadership is not so much a matter of allocation of resources and exogenous capabilities, but it is a process that is based on the comparative advantage looking for the "construction" of competitive advantage. Hence the importance of governance that will keep that process over time, and adapt to changes in circumstances is significant [8].

### III. DISCUSSION

This paper described a part of the roadmap that was created by Inter-ministerial working group of the Republic of Serbia to define Serbian S3 strategy and present some results of just finished Innovation camp held in Belgrade. It presented dilemmas and problems which should be solved as soon as possible, and, gave also, some suggestions for solving them.

Already this paper makes progress simply with its intent to inform wider audience, the most important stakeholders of smart specialization process in Serbia - experts from the possible focus sectors of S3 in Serbia (and Vojvodina): ICT experts. ICT companies and the ones related to ICT should be involved in Entrepreneurial discovery process in Serbia directing it towards the clear notion that ICT should be in the focus of S3. The process should convince the EU, national and regional authorities about potential of ICT and possibilities of its growth. Scientific conferences should discuss, except scientific topics, also social changes and the role of ICT in new business models of the EU functioning.

The Entrepreneurial discovery process which pursues the integration of entrepreneurial knowledge fragmented over many organizations, companies, universities, clients and users, should build links and partnerships. It is opening up a new pool of opportunities which can potentially result in numerous attractive innovations. But, in case of Serbia, there is a need for a strong push by conscious experts, especially young owners of ICT companies to use their influence on decision makers. Wide experts' action must bring the valuable solution for both Serbia and Vojvodina - ICT in focus of both S3s with, additionally, a

few other sectors with well defined niches at European and world market.

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