Interreg CENTRAL EUROPE
European Union
European Regional Development Fund
ECOS4IN

MAŁOPOLSKA
GAP ANALYSIS

Deliverable D.T2.2.4

1. What components we have in our ecosystem and how we evaluate their performance (good, average, poor)

GOOD: High number of R&D centers (195, 2nd position in the country), of international concerns.

GOOD: A high number of business environment institutions. Most of them are working for the ICT industry.

GOOD: Małopolska is at the forefront of the country in terms of universities located here, research and scientific entities as well as accredited research laboratories.

GOOD/AVERAGE: An important role in the regional system of commercialisation of knowledge from universities to industry is played by entities established for this purpose: technology transfer centres (7 in Małopolska, including 3 not related to universities) and knowledge transfer centres (4 in Małopolska, operating within the three specialisations of the region: life science, sustainable energy and information and communication technologies).

POOR: Very low number of industrial robots per 10,000 employed in industrial plants. In 2018, it was 42 works per 10,000 industrial workers.

VERY GOOD: Krakow Technology Park, supporting innovative small and medium-sized companies (including using a technology incubator and accelerator). The Digital Innovation Hub launched by KPT acts as a comprehensive support point (the so-called one-stop-shop) for companies from all over southern Poland.

POOR: Supporting clusters - The cluster system requires development and systemic support of local governments or central authorities. Cluster activity in Poland faces many barriers, such as mental barriers (socio-cultural, ingrained principles of cooperation, lack of social trust in the public sphere), organisational (the shape of the Polish economy, including in particular the R&D sector and the system of financing cluster initiatives), institutional (e.g. relations between operating and potential members of the cluster initiative and local, government or business environment institutions) and market (trends in the global economy, increased competitiveness, etc.). There are 10 key cluster organizations operating in Krakow, including the Life Science Kraków Cluster and Digital Economy Cluster, which both have important ongoing activities to favor collaboration among enterprises, higher education institutions, regional government and other organizations regionally, national and internationally.

POOR: Very small number of events (e.g. conferences, training sessions, workshops) related to Industry 4.0 in Małopolska. These deficiencies are particularly visible due to the high level of the region in all rankings concerning innovation and modern technologies.

AVERAGE: **R&D grants -** though Małopolska is second region in Poland based on number of participations in Horizon 2020, and third based on funding received from Horizon 2020, the number of participants in European research programmes (Horizon Europe) should increase/be higher.

GOOD: Soft loans - a fairly wide range of repayable instruments, separate loan funds for start ups,

AVERAGE: Digitisation vouchers - Within the framework of the Regional Operational Programme 2014-2020, vouchers for innovations, vouchers for training services, vouchers for consulting services were available in Malopolska.

AVERAGE: **Accelerators and venture capital -**An increasing number of accelerators and venture capital funds in the region, but mainly due to public money

POOR: **Other forms of funding** - some forms of funding are not currently working well enough: business angel finance (unfavourable taxation) and crowdfunding (underdeveloped). Regional debt instruments need to be developed in the coming years (in addition to European funds);

AVERAGE: The process of acquiring the funds - the process of acquiring the funds is not very simple or quick

POOR: Guarantee funds -There is only one active regional guarantee fund in Małopolska

AVERAGE: ICT infrastructure and high-speed data transmission - one of the key elements in social and economic development is access to fast Internet. In Małopolska in 2017, 78.1% of the population (2nd place in Poland) and 93.4% of entrepreneurs (13th place in Poland) had access to the Internet. In terms of broadband Internet access Malopoloska remains in the group of regions with the lowest rate. The problem is not the access to the Internet, but the speed of data transmission.

Good (but market requirements are even greater): The number of IT specialists - growing demand for IT specialists influences the development of national technological start-ups and international centres responsible for IT systems security. In Małopolska there is a shortage of database designers and administrators and programmers. The high demand for IT professions occurs mainly in large urban centers.

AVERAGE: Education system adapted to teaching new digital skills - research indicates that schools need support on improving teaching skills for the development of key competences. Problems occur in the area of shaping digital and pro-innovative competences, including entrepreneurial attitudes and creativity.

AVERAGE: Cooperation between schools and employers - despite positive signals concerning the situation of graduates, insufficient cooperation between schools and employers remains a problem. The barriers range from systemic obstacles, through mental problems to technical and organizational deficiencies. As many as 75% of companies feel a lack of basic knowledge about vocational education. The problem is also the mismatch between the educational structure and the needs of employers. The system of financing awards the most popular faculties, and not those which respond most to the current and projected demand.

GOOD: supporting startups - there is a strong startup environment in Małopolska, in 2018 alone there were over 800 events organized by and for startup communities in Krakow. Małopolska startups specialize mainly in the areas of big data, analysts and Internet Things. Information and communication technologies, which are one of the seven smart specialties of Małopolska, dominate strongly.

AVERAGE: IT solutions for SME like data processing and analysis - Companies that set new standards of efficiency and innovation largely base their business model on data collection, processing and analysis, even if this area is not their main business. One of the important factors in the development of enterprises in this context is conducting a big data analysis. In 2017 in Małopolska, only 8.4% of entrepreneurs conducted big data analyses (0.5% p.p. above the national average). Between 2015 and 2017, the percentage of companies using large data collections in Małopolska increased by 2.4 p.p., and the region moved from 6th to 5th position.

2. What we must developed in our ecosystem

- System of popularization the idea of Industry 4.0 in the region - creating the complexity in services offer for regional companies - building a support network
- Providing ICT infrastructure and high-speed data transmission for social and economic development, including the transition to an industry model 4.0 (The problem is not the Internet access, but the speed of data transfer, broadband internet should be developed) .
- Cooperation between schools and employers
- Cooperation between science and industry
- Establising the significant regional events related to Industry 4.0
- Financial instruments to support technology development: digital vouchers, soft loans

- Financial instruments for the development of new technologies: equity financing, R&D grants
- Improve the ability of the education system to shape universal competences, including digital skills necessary for development of Industry 4.0
- Ensuring an appropriate number of specialists in relation to the growing demand for IT services in the economy.
- Shaping pro-innovative attitudes among entrepreneurs, scientists and public administration
- Implementation of IT solutions, including data processing and analysis, as a necessary condition for ensuring the competitiveness of 4.0 industry enterprises, including SMEs.
- Robotization of industrial enterprises and increasing the index of industrial robots per 10,000 employees in Malopolska.

3. What will be nice to have in ecosystem in our region

- Promotion of I4.0 education programs and skills development
- Tax credit for R&D activities & training activities related to Industry 4.0
- Internet portals/websites about Industry 4.0 offering information about: events, matchmaking, conferences, funds, best practices,
- Digital solutions in public administration
- Increasing efforts to commercialise research results and transfer of new technologies
- Support for start-ups in testing and launching new services or products
- Support for the creation and development of business cooperation initiatives – e.g. cluster support system
- Networking and implementation of trans-regional projects aimed at accelerating knowledge transfer from scientific entities from all over the world
- Vocational training infrastructure, including centres of professional competence in key sectors
- Development of lifelong learning
- Support in implementing IT solutions in SMEs to improve their competitiveness.

4. With whom specific ecosystem components we will share resources with another regions (on national level or on cross board level).

- System of popularization the idea of Industry 4.0 in the region - creating the complexity in services offer for regional companies - building a support network

- The Digital Innovation Hub (DIH) KPT is dedicated to Polish manufacturing companies primarily operating in southern Poland, which will provide a wide range of services necessary in the evolution to the factory of the future - including in the areas of 5G, IIoT, intelligent robotization, AR, VR, BIM and others. DIH works for entities from the whole of southern Poland, i.e. in a wider area than the Lesser Poland region. This component can be shared with another regions at national level.

- Universities operating in Lesser Poland and the technology transfer centers operating in them can operate and act for the benefit of business entities from outside of Lesser Poland. Entities from abroad can also be the final recipient of technologies emerging at these universities.