

# PILOT REPORT

Deliverable D.T3.2.3

Regional Development Agency (ARRSA) - PP3

03/2022



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# **Executive Summary/Management Summary**

The purpose of this document is to sum up the activities undertaken within the 4STEPS project to implement pilot action under Work Package T3 Digital Innovation Hub in Action.

Pilot Action implemented by ARRSA was related to the development of Digital Innovation Hub structure, based on the FabLab creative space and conclusions for the meetings with our network of relevant industry 4.0 related stakeholders.

The documents describes the concept of DIH that we considered the most relevant for our local ecosystem, strategic embedment of the idea, implementation scheme of the pilot action followed with conclusions, next steps to be taken and the impact that we would like to have in the future.

# 1. Introduction (incl. business needs and requirements)

The aim of the project is to extend the functionality of FabLab in Bielsko-Biała - creative space conducted by ARRSA since 2014 - by creating a one-stop-shop digital services center for Industry 4.0 in the scope of complementary and comprehensive offer related to the implementation of digital technologies in companies. The actions taken so far and the qualification of Regional Development Agency (ARRSA) to the European Commission's Digital Innovation Hub Enhance Learning Programme (2019) and now - being a member of the European Digital Innovation Hub pre-selected on the national level - confirm the validity of this assumption and allow to determine the required range of companies in the region.

In its portfolio, ARRSA offers comprehensive assistance for entrepreneurs, including proinnovative consulting, technology transfer, consultations and training, as well as cooperation in international projects, exchange of experience, creation of consortia and promotion of the region and its economic potential.

FabLab in Bielsko-Biała, operating within ARRSA, is the first in southern Poland laboratory of 3D printing technology, reverse engineering, rapid prototyping and 3D competence, a place where innovative ideas are created, possessing modern technologies and above all open to everyone - both local community and entrepreneurs (Living Lab).

Using the FabLab infrastructure and ARRSA organizational resources and potential, it was agreed to create iLaBB 43300 - Digital Innovation Hub in Bielsko-Biała, offering comprehensive support for companies and local community in the process of digital transformation, especially in the field of Industry 4.0 technology.

ARRSA has competences that allow it to create a hub and its comprehensive management. Thanks to the network of contacts - both local and international - the creation of the DIH in Bielsko-Biała will additionally strengthen access to the latest technologies and the significance of the cities in the region and increase the competitiveness of the local economy. In the rankings, Bielsko-Biała is presented as a city friendly to entrepreneurs, with a high quality of life and innovative, mainly thanks to a widely developed ICT market and a developed startup scene.

The basic activities of iLaBB 43300 DIH can be divided into the following specialisations:

1. additive manufacturing and 3D modelling (including rapid prototyping - with 3D printing, prototype processing, small series production, as well as 3D scanning, reverse and replacement engineering). This is the main competence of FabLab Bielsko-Biała - in previous years we conducted numerous consultations, services and trainings. BB-LAB DIH Bielsko-Biała will become a research and development base for local companies and will provide them with access to the most modern technologies and laboratory testing of prototypes.

2. competence building in the field of digital technologies, in particular in the field of Industry 4.0 - training programs, R&D cooperation with the academic environment. Access to robotics technologies (programming of autonomous robots) will ensure employee competence in the implementation and programming of automated production lines and human-robot cooperation.

3. promotional and informational activity about the potential of digital transformation and its effects on business models, in particular - awareness raising activities

4. technological maturity audits - a programme for assessing the current level of digitalization of companies, development of trainers' capabilities, promotion, implementation of the level of digitalization improvement.

5. Implementation and testing of Industry 4.0 technology including: process automation, robotics, machine learning, research on the level of technological maturity of enterprises and services related to the digitalization of enterprises - indication of directions of transformation and creation of individual action plans for companies.

6. Financing services through the Beskid Technology Accelerator Capital Fund and Loan and Guarantee Fund operating by ARRSA.

The topic of digitalization and innovation capacity building is strongly embedded in the strategic documents on the different territorial levels, as shortly described below:

# European & national level:

(1) **Digital Europe Programme,** that aims to reinforce the EU's core digital capacities as a crucial driver for the l transformation of the public and private sectors by way of delivering testing and experimentation facilities with a focus on the manufacturing sector and the medical (health) sector. Foreseen, action in relation to the Industry 4.0 manufacturing systems (automation and robotics) the project will support digital transformation in the field of trusted, interoperable and sustainable cloud-to-edge capabilities and service deployment. ARRSA is a partner in the EDIH-Silesia consortium, which brings an added value for the Investment Plan objectives, and will ensure the impact on the regional scale as well as will enable international cooperation with other EDIHs and alike entites in Europe.

(2) New Industrial Strategy for Europe and the 2030 Digital Compass: the European way for the Digital Decade - created DIH will fulfil strategic objectives of these documents in supporting digital skills development and enabling digital transformation of the public and private entities

(3) National Strategy of Regional Development 2030 and the Productivity Strategy 2030, in which digital skill development and the uptake of digital technologies are acknowledged as a means to strengthen competitiveness of Polish SMEs towards a low-carbon, circular and data-driven economy.

Regional level:

(1) Bielsko-Biała Investment Plan focus areas and activities are in line with the **Regional Innovation Strategy of the Silesia Voivodship** (regional smart specializations covered: energy, medicine, information and communication technologies, green economy, emerging industries). With its activities, it will become a regional facilitator for implementing the strategic objectives that indicates following priority axes emphasizing the importance of innovation capacity building:

- **Priority 1 Increase and internal integration of the region's innovative potential** with strategic objectives: Supporting change in innovative communities strongly cooperating with knowledge and information production centres on a global scale; Network coo-creation and co-usage of research infrastructure; Internationalization of SME sector via specialization of innovativeness support institutions' services by academic entities, universities, businesses and public utility institutions; Multiplication of knowledge, skills and competence of entities creating the innovation ecosystem
- **Priority 2 Creating smart markets for future technologies** with strategic objectives: Co-creation of competence centre network for the development of smart markets; Raising the quality of public service network, using digitalization, especially in the medical public administration and education sector; Construction of a new infrastructure of smart growth, based of low-emission technologies and energy efficiency; High level of participation of SME sector businesses in regional and meta-regional cooperation networks, increasing its participation in smart markets.

# (2) Program for Silesia:

**Objective 1: Innovative industry and investments**, Increase industry innovation and development investment in the region. The objective concerns the implementation of activities that will strengthen and introduce new forms of highly productive economic activity in Silesia, using the region's industrial potential, which is the largest in the country:

- improvement of the level of innovation in the regional economy, including economic activation and increased use of available instruments to stimulate the economy, investment in modern industry and the development and promotion of cooperation between business and science
- greater focus on the technological and creative sectors as two pillars of the emerging new economy, the so-called Economy 4.0,
- strengthening regional smart specializations consistent with the national smart specializations, i.e: In the region, it is necessary to strengthen regional smart specialisation consistent with national smart specialisation, i.e.: energy sector, which is an important economic sector of the region, medicine, which is one of the

distinctive features of the Silesia Voivodeship in the country, and information and communication technologies, which are of horizontal importance for the technological, economic and social development of the region,

- support for highly productive sectors which diversify the economic structure of the voivodship so that they become factors which will shape the competitiveness of Silesia and allow to make the development of the region independent from the mining sector, such as: automotive or metallurgical sector,
- testing and full-scale implementation of innovative solutions from the energy sector, which is not only the key economic sector in the region but also in the national economy, using for this purpose the existing infrastructure in Silesia (production, transmission and consumption of energy), as well as the historical location of the industry.

**Objective 2: Work and education**, Increasing professional activity and improving qualifications of the region's inhabitants. potentials, modern economy based on knowledge, creating its own and absorbing innovations (including technological ones) that appear in the environment:

- stimulating the development of areas of economic activity, which can be an alternative for the employees leaving the industry, which requires the creation of effective solutions for retraining and preparation for work in occupations, which are expected to increase the demand for employees in the future
- efforts to ensure that changes in the structure of employment and professional activity, which are the result of the development of modern economy, do not cause permanent loss of employment,
- adjustment of the vocational education offer to the needs of the local labour market and modernization of realization of the vocational education process in schools,
- better adjustment of the educational systems to the needs of the labour market, facilitation of transition from education to employment and strengthening of the quality of educational systems, including vocational training, e.g. learning through practical vocational training carried out in close cooperation with employers,
- social innovation.

# (3) Technology Development Program of the Silesian Voivodeship

The Technology Development Program of the Silesian Voivodeship for 2010-2020 is a strategic plan for the technological development of the region, the hitherto general objective of which is to identify the potential of the region, taking into account the future programming period.55 Thus, TDP is part of a wide range of activities implemented under the Regional Innovation Strategy.

There are three main values were identified as pillars of the Technology Development Program:

- 1.
- 2. Cooperation
- 3. Innovation

The Investment Plan assumptions are in line with the operational obejctives of TDP, which are:

# Operational objective 1 A unique resource of knowledge and skills

1.1. The development of a unique research infrastructure for the development of knowledge economy

1.2. Intensification of participation in the global R&D network 1.3. Diffusion of knowledge and technology in industry and services

# Operational objective 2 Open cooperation

2.1. The development of specialized cooperation and knowledge exchange networks

2.2. Professionalization of BSI services

# Operational objective 3 Flexible strategic orientation

3.1. Identification of challenges, needs and areas of technology application

- 3.2. Feedback and interaction with the business sector
- 3.3.Public mechanisms support

3.4 Actions for the internationalization and promotion of technologies

City level: Development Strategy of the city of Bielsko-Biała till 2030 (working docuemtn)

The city of Bielsko-Biała is currently in the middle of the process of creating new development strategy covering the period till 2030. The most relevant for the scope of Investment Plan is a part indicate as 'Area: Economy' with strategic objective: Bielsko-Biała as a leading economic center of the Silesian Voivodeship, developing on the basis of local resources

Public intervention described in the Strategy, aimed at creating favorable conditions for the development of the local economy, draw on the tradition of Bielsko-Biała as "the city" of a hundred industries. Therefore, the activities promoting the development of automotive, IT and 'free time' industries are planned. The answer to the demographic challenges of the city, especially related to its aging population, will be the support for the development of the so-called silver economy, understood as a system of services and production of goods aimed at taking advantage of the purchasing potential of seniors and satisfying their consumption, living and health needs. Initiatives will be undertaken to diversify the local economy by, among others, supporting the development of small and medium enterprises and startups. An important role in the process of supporting the local

Integrity

economy development will be played by Bielsko-Biala universities. In particular, activities aimed at strengthening their function as a personnel forge for the needs of the labour market will be supported. The priority will be both adjusting curricula to the needs and requirements of employers and increasing their attractiveness for students, including foreign ones. Moreover, the city will support the universities in their efforts to establish partnerships with scientific and research centers from Central and Eastern Europe.

# 2. Digital Innovation Hub and its services

Could be a literature review, an empirically study (case study, action design research, etc.) or a mix of both; incl. a summary of the experiences you made within the workshops, trainings, events out of WP2 & 3.

# 2.1. the Hub

Digital Innovation Hub in Bielsko-Biała is based on the infrastructure and experience of Regional Development Agency (ARRSA). ARRSA was established in 1992 with the focus on initiating, organizing and supporting the development of the Southern Subregion of Śląskie Voivodeship and its national and foreign promotion. Through its active involvement in regional policy making, business environment creation, business support activities and services, ARRSA gained sufficient experience and has established wide network of cooperation with international, national and regional organizations and authorities, science parks and clusters. From the beginning of its activity, ARRSA has followed global and European trends and news in the scope of innovation, technologies and regional and strategic development. Due to that, in 2014 ARRSA established a FabLab, first fabrication laboratory in the south of Poland with the aim to promote novel, bottom-up approach building on open, technology-driven innovation and acting as an education platform. Throughout the years ARRSA has been developing FabLab with the purchase of new equipment and expanding the range of services offered. FabLab has become a local center of innovation with cutting-edge technologies available for everyone and wide network of contacts and relevant stakeholders concentrated around. On the base of that and following the concept of smart specialization, digitalization trends and Industry 4.0 principles, ARRSA decided to create a digital innovation hub - a one-stop-shop for innovation, operating not only to raise awareness about cutting-edge technologies among the community, but also to help companies to become more competitive with regard to their business/production processes, products or services using digitalization.

iLaBB 43300 ambition is to become an efficient tool for increasing regional competitiveness by:

• being local innovation center that disseminates cutting edge technologies

- raising awareness of digital fabrication, rapid prototyping and innovative technologies through organizing workshops and trainings educational program, talent creation and competence building
- introducing ideas to the market and transferring them into the product
- merging all parts of local innovation ecosystem, involving new actors and increasing existing innovative potential of the region
- stimulating regional labor market as a competence development center
- enabling companies to follow the Industry 4.0 principles and improve efficiency of their services and products

To organize a Digital Innovation Hub ARRSA also invited relevant stakeholders from the local ecosystem of innovation to cooperate. Those are companies and institutions operating in the field of Industry 4.0 technologies, local authorities and business support organizations that provide advisory and consultation in terms of further DIH development, its strategic embedment and accordance to the innovative trends.

# 2.2. products & services

Having relevant knowledge in terms of needs of local companies in the field of digitalisation, also based on the 4STEPS digital maturity assessment survey, gives ARRSA a possibility to tailor its activities. Great experience in the educational and awareness raising services in the field of digitalisation, wide network of relevant contacts on different territorial levels gives ARRSA and our DIH a position of facilitator and relevant partner for Industry 4.0 related initiatives. Presence of well-developed automotive sector is one of the factors that determines development of technological machine park into the direction of automation of production lines, rapid prototyping and simulation.

Main products and services offered by DIH are based on the equipment, knowledge and expertise of FabLab. We have in-house 4 out of 9 technologies indicated as relevant pillars of Industry 4.0 identified within the scope of the 4STEPS project. Those are:

- 1. Autonomous robots
- 2. Simulation
- 3. Industrial Internet of Things
- 4. Additive manufacturing

In our portfolio, we have activities related both to testing the technologies and their usability in accordance to certain case studies presented by the companies, as well as awareness raising and educational services. Products and services offered, derive from both own, former activity of FabLab and scenarios tested within the scope of daily operations or other projects and from the implementation of 4STEPS project. Additionally,

to FabLab in-house offer, we also cooperate with iLaBB 43300 partners, who complement it with other technologies and who help us to leverage the effect of the DIH.

Within the scope of the 4STEPS project implementation we were able to prepare a complex portfolio of services, agreed among the focus group as well as internally discussed within the project team.

For the sake of this report, we will focus on the in-house technology related activities and awareness raising events organized in a collaborative way with our network.

Products and services in the portfolio of iLaBB 43300, can be divided as follows:

1. Simulation and testing of manufacturing processes using robotic arms (originating in 4STEPS Showroom of Robotic Arms pilot action)

2. 3D scanning, reverse engineering and quality control of production processes

- 3. 3D scanning, workshops for beginners
- 4. Microcontroller programming workshops
- 5. FabLab creative space for everyone
- 6. Rapid prototyping from idea to prototype

7. Digital Skills workshops tailored to different target groups - based on the concept created within the 4STEPS project

8. EU Industry Week - Industry 4.0 awareness raising event with brokering and networking parts, in an interactive on-line formula

Services 1, 5, 7 and 8 are directly related to the implementation of the 4STEPS project and tested pilot actions.

**Service 1:** as mentioned above, origins in the Showroom of Robotic Arms (D.T3.2.2) that was implemented as follows:

I on-spot technology event in the formula of Technology Breakfast: Robotics, when we demonstrated the robotic arms with a production line simulation. The total number of 13 participants - representatives of the SMEs - took part in the event. The service had a demonstrative character and its aim was to increase the awareness and knowledge of entrepreneurs and engineers about the technological possibilities, rules of application, needs and benefits offered by the automation of production processes. The access to a demonstrator in the form of two Epson robotic arms - SCARA type and 6-axis was provided, with the possibility of testing solutions in the field of production automation, programming of production lines, showing the possible directions of their programming, the sequence of operations with the use of robots, introducing health and safety procedures when operating robotic lines and identifying potential gains and risks associated with the operation of robots.

- **5 individual consultations** in terms of possible usage of robotic arms 1 for the SME representative and 4 for the representatives of academic sector (students) adjustment made due to COVID-19 restrictions
- **1 open FabLab Showroom of Robotic Arms for schools** pupils were able to get familiar with creative space of FabLab and learn about how robotic arms are working and what skills are needed to operate such equipment
- **1 outside FabLab Showroom of Robotic Arms** participation in the BBDays4.IT festival robotic arms booth at the venue of the event demonstration and simulation of the work of simple robotic line; event dedicated to ICT and technological companies
- **On-line webinar** available on a daily basis on our YouTube channel open for everyone, presenting in accessible way how robotic arms are working, what software is needed etc.

Based on the activities tested in the form of pilot action we have gathered relevant feedback on how showroom should look like in the future, what formula is the most appropriate.

**Service 5 & 8:** originating in the pilot action implemented under D.T3.2.1 development of DIH as described below:

- **1 EU Industry Week** where 5 SMEs from the technology suppliers side took part and agreed to cooperate within the framework of DIH. There is a total number of 538 views of the video on our YouTube channel (counting on the date of providing the report) with 45 same-time unique viewers at the live transmission. The information about the event was disseminated both in the traditional industrial sector as well as among Industry 4.0 related technology companies

The need of awareness raising in terms of digitalisation processes of different sectors and a role of ARRSA as a facilitator of this process was often emphasized. With participation in EU Industry Week format and FabLab as a creative, Industry 4.0 technology related space, open on a daily basis for everyone, ARRSA reinforces its role in the local ecosystem of innovation. Development of DIH was a natural next step and a twist to the entrepreneurial sector.

**Service 7**: Digital Skills Workshops (A.T2.2) was put in the portfolio of DIH services. The approach of targeting different groups is in line with ARRSA strategy of digitalisation awareness raising. With the tested workshop schemes, we have prepared three types of trainings that will be continued in the future. Popularity of the courses confirms our assumptions about the need of boosting digital skills of the community, education sector and entrepreneurs.

# 2.3. networks

ARRSA has a wide network of relevant stakeholders operating in the scope of boosting ecosystem of innovation and building the capacity of technological and digital development.

### 1. European Level:

- 1.1.EURADA European Association of Regional Development Agencies association that facilitates the cooperation among regional development practitioners across Europe. Brokering events, webinars and access to project ideas, information about new calls for proposals etc. make EURADA one of the most important international points of contacts for ARRSA and give the opportunity to present and benchmark your activities
- 1.2. FabLabNet Central European Network of Innovative and Creative Labs the story of the network started back in 2016 from the project FabLabNet, financed by the European program Interreg Central Europe, when nine Fab Labs from nine central European countries met in Vienna to tackle challenges that most labs in the region are facing: how to better engage local communities, how to connect closer to education, how to contribute to the business sector? In one word, how to be integrate into its local innovation ecosystem?
- 1.3. Digitalisation Working Group of EURADA established to facilitate partnerships and mutual learning among regional economic development practitioners. Digital transition and Industry 4.0 is one of the key pillars of the future competitiveness of the European industry as facilitator of economic growth and one of the priorities of the twin transition of the European Union. This initiative is powered by EURADA (European Association of Regional Development Agencies) and FundingBox
- 2. National and interregional level:

ARRSA is also operating on the national and interregional level, promoting and disseminating the knowledge about the 4STEPS project, pilot actions implemented and DIH development. We are cooperating with other DIHs, creative spaces and technology related companies, just to mention:

- 2.1.Cracow Technology Park and hub4industry entities operating in the field of innovation ecosystem boosting by providing incubation services, business & technological mentoring, as well as developing a DIH opportunity of good practice exchange
- 2.2.ASTOR company providing products and services related to Industry 4.0 concept especially automation of production processes, promoting and disseminating knowledge about fourth industrial revolution, organizing awareness raising events exchanging of experience in terms of automation processes, maintenance of robotic arms
- 3. Regional level:

- 3.1.Marshal Office of Silesia Voivodeship Managing Authority of European Funds on the regional level, also responsible for the smart specialisation strategy as well as Technology Development program for Silesia - strategic consultation, exchange of experience, disseminating information about 4STEPS activities (i.e. 4STEPS digital maturity assessment was considered as a good practice in the scope of 40Ready Interreg Europe project implemented by Marshal Office)
- 3.2.Katowicka Special Economic Zone coordinator of the European Digital Innovation Hub consortium,

### 4. Local level:

- 4.1.KIBS companies:
  - 4.1.1. Rekord SI ERP systems
  - 4.1.2. 4Experience virtual and augmented reality
  - 4.1.3. Evatronix 3D scanning and quality control processes
  - 4.1.4. InnerWeb Industrial Internet of Things
  - 4.1.5. DaVinci -software development, machine learning
  - 4.1.6. SoniqSoft software development

All of above mentioned are actively involved in the operations of iLaBB 43300, by organisation of common events and initiatives and dissemination of information about the DIH

- 4.2. Business support organisations:
  - 4.2.1. Beskidzka Chamber of Commerce -access to a wide range of companies, e.g. to test certain solution, benchmark, disseminate information, consultation
- 4.3.NGOs:
  - 4.3.1. Startup Podbeskidzie startup ecosystem, mentoring, events organization
  - 4.3.2. Center of Modern Technologies Foundation support of IT & technology sector, digitalisation of public and industrial services,
- 4.4. Education sector:
  - 4.4.1. University of Bielsko-Biała the most relevant DIH partner from the educational part of the ecosystem
  - 4.4.2. RESET students association actively engaged with DIH initiatives
  - 4.4.3. High schools, especially technical providing competence building programs for pupils, cooperation and consultation in terms of technological education
- 4.5.Local authorities
  - 4.5.1. City of Bielsko-Biała strategic overview and consultation in terms of DIH development
  - 4.5.2. Surrounding municipalities possible expanding of DIH services plan to organize iLaBB 43300 satellite entities in the future



Figure 1: iLaBB 43300 organisation scheme

### 2.4. iLaBB 43300 business model canvas



Figure 2: iLaBB 43300 Business model canvas

# 3. (Expected) Impacts for your tackled business/industry, region, country & Interreg

Expected impact of the **iLaBB 43300 Digital Innovation Hub** is defined in the value proposition prepared by ARRSA and entities engaged in the development of DIH during the lifetime of the 4STEPS project. In general, its role is to unlock the digital potential of the region by facilitating the cooperation of Industry 4.0 related stakeholders, competence building and awareness raising activities, demonstrating cutting edge technologies and enabling test-before-invest services for companies.

Ambition is to become an efficient tool for increasing regional competitiveness by:

- Being local innovation center that disseminates cutting edge technologies raising awareness of digital fabrication, rapid prototyping and innovative technologies through organizing workshops and trainings - educational program, talent creation and competence building
- Introducing ideas to the market and transferring them into the product
- Merging all parts of local innovation ecosystem, involving new actors and increasing existing innovative potential of the region
- Stimulating regional labor market as a competence development center
- Enabling companies to follow the Industry4.0 principles and improve efficiency of their services and products
- Activate local society and inhabitants to be active, innovative and inclusive
- Support and stimulate local education sector to meet the needs and growing interest of employing high qualified and skilled staff
- Building an effective and sustainable cooperation platform for all players of local ecosystem
- Establish one-stop-shop to merge physical facilitates with the innovation potential of the region, digitalization technologies and social needs of the local community
- Creating a platform for cooperation between different stakeholders especially for education and competence gap fulfillment
- Funding for startup companies from the seed capital accelerator and loan and guarantee fund to develop the business and skills
- Brokering and ecosystem building activities