DIGITAL INNOVATION HUB DEVELOPMENT - ARRSA

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1. Structure of DIH

Digital Innovation Hubs (DIHs) are one-stop-shops that help companies to become more competitive with regard to their business/production processes, products or services using digital technologies. They are based upon technology infrastructure and provide access to the latest knowledge, expertise and technology to support their customers with piloting, testing and experimenting with digital innovations. DIHs also provide business and financing support to implement these innovations, if needed across the value chain.

DIH's, facilitated in framework of 4Steps project are composed of 3 boards with specific tasks: 1) Strategic Board, 2) Scientific Board and 3) Stakeholder's Board.

iLaBB 43300 established within the framework of the 4STEPS project is based on the infrastructure of ARRSA and FabLab Bielsko-Biała. 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

The governance and organizational model as well as main scope of interest and main services are described in the sections below.

1.1. Strategic Board

The Strategic Board is composed of the employees of ARRSA – entity that is the coordinator of iLaBB 43300, personally: Jan Sienkiewicz, Director of the International Project Department of ARRSA with more than 20 years of experience in terms of project management and international cooperation also in terms of Industry 4.0 solutions and digitalization. The second person is Patrycja Węgrzyn, international project specialist in the same department, experienced in applying and managing projects mostly in the field of cutting-edge technologies, Industry 4.0 and innovation. She is also providing workshops introducing children and youth to the world of 3D printing. The President of the Board is Mariusz Kłusak – Vice-president of ARRSA who is responsible for coordination of International Project Department.

The Strategic Board meets once in a quarter on regular basis.
It is possible to organize an ad hoc meetings if members of the Strategic Board, as well as two other iLaBB 43300 Boards, have a specific issue to discuss or problem to solve, for example:
- possible new partner joining the hub or wanting to cooperate with the hub,
- new funding opportunity
- presentation of the opportunity to participate in an event and disseminate information about the hub
- daily basis issues needing immediate action

Once a year a meeting of a bigger format is organized with the members of all boards.

Members of Strategic Board are also communicating on a daily basis via e-mail and personal contacts.

The role of the Strategic Board is:
- to set up a vision of the hub development
- to keep development of the hub in line with local and regional strategic documents as well as to follow the trends
- to set up a calendar of activities
- to prepare communication and dissemination plan
- preparing the detailed project implementation plan and quality/risk assessment plan;
- running a web-based shared information space for effective handling of documents and communication;

1.2. Scientific Board

The main role of the Scientific Board is to support DIHs activities with R&D knowledge and experience. It helps in the DIHs project implementation from the scientific point of view and support DIHs clients in development of prototypes and innovative ideas.

One of the associated partners of iLaBB 43300 is University of Bielsko-Biała. It will act as an advisory body for the operations of our DIH.

The leader of the Scientific Board is Tomasz Gancarczyk, Phd at the University and manager of the technology related students club RESET.

Experts in terms of scientific and research activities of DIH will be nominated according to current needs and topic of the project that is being implemented.

Representatives of Scientific Board participate in the annual Strategic Board meeting.

Daily basis communication with DIH staff is conducted via e-mail and personal contacts.

Special working groups dedicated to certain topics may be created according to current needs. Calendar of the meetings is set up accordingly.

1.3. Stakeholder's Board

Each of the DIH partners can dedicate its representative to a Stakeholders Board. Moreover, every interested entity can become a member of the board and participate in its meeting and share its ideas for DIHs development after acceptation of the Strategic Board.
Main role is to disseminate the information about DIHs operations and promote DIH on regional, national and international market. Stakeholders Board is engaged in the organization of events, trainings and workshops and in conducting promotional campaign of those.

It is managed and directly linked with Strategic Board that is setting up communication & dissemination strategy of DIHs activities.

The leader of the Stakeholders Board is ARRSA, personally Patrycja Węgrzyn, international project specialist.
ARRSA has a relevant network of contacts and participate in many initiatives related the Industry 4.0 technologies – on the regional as well as international level. It actively disseminated information about DIH and participates in almost every relevant event in the scope of innovation where good practises of DIHs operation are shared.

Stakeholders Board, meets regularly twice a year under the leadership of ARRSA, to sum up current activities and share ideas for the future one.
When setting up an event calendar, members of the Stakeholders Board are dedicated to the dissemination and promotion activities of a specific event, that is the most in line with their specialisation.

Currently, following entities are involved in the operations of the Stakeholders Board:
ARRSA
Startup Podbeskidzie Foundation
Regional Chamber of Commerce and Industry
Foundation Centre of Modern Technologies
REKORD SI
DaVinci Studio Software House
4Experience
Evatronix S.A.
InnerWeb
Jwave
Fablab Bielsko-Biała
University of Bielsko-Biała
Marshal Office of Silesia Voivodeship
City Hall of Bielsko-Biała

2. Main services of the DIH

(1) Simulation and testing of manufacturing processes using robotic arms

With a 4STEPS project we wanted to meet the expectations of the market in terms of Industry 4.0 technologies and expand our offer to another pillar of autonomous robots. With the project budget we bought two robotic arms – SCARA and 6 axis which now serve as a demonstrator of possibilities of production automation. The service has a demonstrative character and its aim is to increase the awareness and knowledge of entrepreneurs and future engineers about the technological possibilities, rules of application, needs and benefits offered by the automation of production processes. As part of the service, participants will have an access to a demo station – in a form of open day or tailored training programs with two robotic arms so they can learn about the technology and simulate specific processes according to their company's requirements.

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

The service includes:

Scope 1. audit of competence in the ability to operate and use 3D scanners in the process of designing new products, preparation of prototypes or reconstruction of unavailable on the market spare parts and lost documentation.

Scope 2. engineering support for the technical and visual reconstruction in the form of a 3D model of the element, support in the preparation of the spatial model and preparation of the physical object using equipment such as 3D printers, laser cutter, cutting plotter as well as consulting, advisory and design.

Scope 3. technical support and advice on the types and models of 3D scanners that can be used in the production process and quality control of the enterprise.

(3) 3D scanning workshops – for beginners
Participants learn the principles of operation, maintenance and use of 3D scanning equipment, and have the opportunity to process with digital scans. Each participant will be able to independently perform the scanning process of any object, which will allow them to gain practical knowledge and skills in terms of the scanning process.

(4) Microcontroller programming workshops (Arduino)

Microcontroller programming workshops aim is to provide basic knowledge to everyone interested in electronics and programming. Divided into theoretical and practical part this in an offer of complex course that can be a base for further skills development – both in terms of hobby as well as professionally.

Programming and electronics are inseparable elements of our lives, so knowing and understanding how they work can allow participants to develop and choose their future career direction or interests. Arduino project used for the purpose of the workshop is a combination of boards with microcontrollers and programming environment. They have been maximally adapted for simple and effective learning for people starting their adventure with microcontrollers. Participants will learn Arduino programming language and based on certain case studies they will see the possibilities of the platform and be able to use it in their future projects.

Such skills and equipment can be also a base for Industrial Internet of Things solutions.

(5) FabLab: creative open space for everyone

FabLab Bielsko-Biała is a place where innovative ideas can materialize in real objects. It is a creative open space with a daily basis access for everyone who would like to implement a project related with Industry 4.0 technologies. People can use the equipment under the supervision of the fablab manager or participate in workshops and training programs from our offer. They can improve their digital skills, work on innovative projects or just have fun surrounded by cutting-edge 3D technologies.

(6) 3D printing for schools – beginner level

3D printing for schools is 4 hours long course with a perfect balance of theory and practice. It is designed for beginners – pupils and students, who start their journey with 3D technologies and is aimed to show basic characteristics of 3D printers – how to use them, what can be printed, from what materials and for what purposes this equipment can be used. Each participant can prepare their own models, apply correct settings of the 3D printer and start the printing process on one of the printers available in FabLab Bielsko-Biała. The course will end with cleaning and quality assessment of the print.

(7) Train-the-trainer: 3D printing and rapid prototyping for teachers

Train-the-trainer: 3D printing and rapid prototyping is a 26 hours long course dedicated for teachers and lecturers with technical background. The aim of the course is to transfer skills and training tips so that participants can pass the knowledge on and organize their own 3D printing classes in the future. The didactic aspect of the course is highlighted. The service consists of the audit of training needs, theoretical and practical part, as well as providing recommendations in terms of equipment needed and sharing a handbook that enable providing workshops in the future.
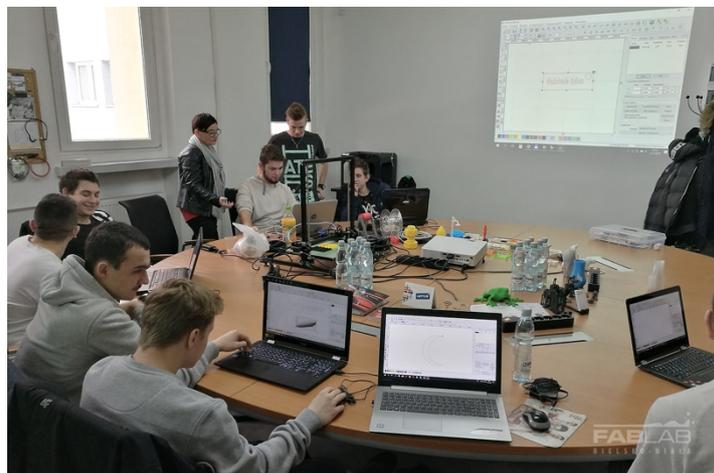
(8) Rapid prototyping: from idea to prototype

Complex service in terms of transforming ideas into prototypes – from auditing, through knowledge sharing, fulfilling competence gap and boosting creativity, to technical aspects of creating spatial model, physical prosperities analysis, making a prototype and testing. Everything finished with a summary report.

The service meets the challenge of the need to implement new products with specific properties and functionalities, which prototyping, testing and implementation, according to traditional methods, would take too long and would not meet the price expectations. Participants become fully involved in the service, which allow them to experience the advantages of both the use of 3D printing techniques and the method of creative product innovation development.