

INDUSTRIAL HACKATHON

Regional Test Case Documentation

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Patrycja Węgrzyn, Wioletta Łopatka, Szymon Pryszcz, Jan Sienkiewicz, Marzena Kropacz

pwegrzyn@arrsa.pl; wlopotka@arrsa.pl; spryszcz@arrsa.pl; jsienkiewicz@arrsa.pl;
mkropacz@arrsa.pl

TABLE OF CONTENTS

0. Abstract	3
1. Introduction	3
2. Objective	3
3. Applied approach	4
4. Results	5
5. Goal Achievement and Lessons Learned	6
6. Outlook, Sustainability and Transferability	7
7. Annexes	7

0. Abstract

Two editions of Industrial Hackathon consisted of 44 participants, combined in 14 teams that were working on 5 challenges indicated by industrial sector and 2021 edition also by the President of the city of Bielsko-Biała. The total duration of both events is 102 hours of coding, within which 78 hours on-line and 24 hours on-spot. We came up with 14 excellent solutions ready to test in the market. We cooperated with entities from private sector, such as industrial and ICT companies, with public administration and NGOs, as well as other business support organizations and clusters. We have created a fertile ground for further cooperation, boosting creativity and unlocking the innovative potential of the city in the future.

1. Introduction

On the base of our experience, we know that local creative and entrepreneurial scene needs a facilitator of the cooperation and an institution that will matchmake different actors and bring added value to the regional ecosystem. With the Industrial Hackathon we wanted to make a bridge between traditional industry and CCI, who are often distanced on a market, and show them how to use the potential of cooperation to boost the development of both sides.

In the preparation phase of the test case the most important feature for us was to connect local companies. Industry is often looking for the products, services and solutions on the global market, while it can be reachable locally, with face-to-face contact, saving of time and other mutual benefits for both providers and suppliers of certain solution. Industrial Hackathon was the answer to this challenge. We decided to involve two most developed sectors in the city - ICT (specifically software programming) on the side of CCI and automotive on the side of traditional industry.

We also saw the need of bringing new, innovative formats to the city. With the Industrial Hackathon we wanted to show the new approach of providing solutions to the challenges in a short time and boost the creativity by creating a specific environment for developing innovation.

2. Objective

The aim of the Industrial Hackathon was to connect traditional industry with CCI to build the capacity for further cooperation and to showcase possible directions, methods and potentials of similar relations in the future. We also wanted to introduce frame of the hackathon as a new way of both linking creativity with industry as well as providing solutions to real life challenges in a short time and specific environment.

Hackathons are events that are gaining in popularity in Poland, but still are considered as new and innovative. In our region, hackathons organized in the frame of BBDays4.IT were one of the first and the biggest. Also, there are not many industrial hackathons that are open to public and that relates to the specific challenges of certain companies. We wanted to bring this format to Bielsko-Biała to show its creative potential and place it as an innovative and modern city, especially among those middle-sized.

Our aim was also to connect the relevant stakeholders in the city who will bring the added value to our test case. The cooperation also should give us a wider perspective on

industrial sector challenges, as well as an overall regional ecosystem of innovation development. We also wanted to build linkages between local companies from different sectors to boost the strength and bring the added value to the region.

3. Applied approach

Within the InduCCI project we were able to evaluate our Industrial Hackathon test case on each stage of development - from idea, through concept, to implementation. With the support of the whole partnership and with the access to their knowledge and experience, we came out to the event that on the one hand meets the international standards and on the other - is tailored to local needs.

At the beginning, we wanted to use our FabLab (fabrication laboratory) with cutting edge technologies like 3D printing, laser cutting, Arduino programming etc. as a main infrastructure to be used during the hackathon. It was the natural choice for us, because FabLab is a space created for unleashing innovative potential. We have organized many workshops, trainings and events (like European School of Makers when pupils from schools were able to participate in innovative 3D printing training program, 'How to make your own drone?' workshops when participants had a chance to build their own drones from a scratch to fully operational machine) that showed us it is perfect for it. On the conceptualization phase, the opportunity of combining our action with the biggest ICT festival in the region - BBDays4.IT - occurred. The benefits in terms of dissemination of InduCCI project and having an access to knowledge and expertise of CCI related to software programming brought us to the decision to revise our concept. Also, the COVID-19 pandemic that started early spring last year made us think of an alternative to hands on, physical events.

4. Results

In summer 2020 we started the preparation to Industrial Hackathon vol. 1. We signed a Cooperation Agreement with the local Foundation who was the organizer of the BBDays4.IT festival and started to work on the implementation. We have chosen the industrial company to cooperate with, set the challenges, create all necessary formal documents and regulations and a communication and promotion plan for the event. As it was first such big event fully on-line organized by us, and a first hackathon, we asked the InduCCI partnership to help. Italian partner had organized similar event, so we were able to exchange with them, especially about formal aspects, which was very useful and improved our implementation of the test case. The concept of the event itself was to make it fully on-line; teams worked remotely on their projects for 78 hours. Each day of the festival from 7 to 11 September 2020, BBDaysTV studio was broadcasted live on a YouTube channel and each day we connected with different teams to discuss about their progress on working on the challenges. On the last day of the festival teams were pitching their ideas in front of the jury and winners were announced in the TV studio. With such approach, we were trying not to completely lose contact and to ensure interaction between teams, jury, industrial company and audience that was watching BBDaysTV.

In October 2020, after the evaluation of the test case, having positive feedback from the participants, we decided to sign a Letter of Intent with the Foundation Centre of New Technologies, organizer of BBDays4.IT, about the future cooperation in terms of

organization of the second edition of the Industrial Hackathon in 2021, possibly in a form of physical event.

Fortunately, COVID-19 measures were on low level and we were able to fulfill the assumptions of the Letter of Intent and organize an Industrial Hackaton vol. 2 11-12 September 2021, also in the frame of BBDays4.IT. This edition was a traditional 24 hour coding marathon, when participants grouped in teams were placed in a one room and working on challenges. This year, challenges were announced at the beginning of the hackathon, so each team has exactly the same time to work. At the end, also the history of the concept came full circle, and in the second edition of the hackathon we used FabLab equipment that was available to use by the participants.

BBDays4.IT festival is organized in close cooperation with the administration of the city of Bielsko-Biała. The President of the city gives honorary patronage on the festival and provides an open speech on the official opening of the festival in the city hall. In this year's edition he indicated very interesting issue, that we decided to put as a challenge for the hackathon. We discussed, that creativity and innovation imply adjustment to quick changes and our test case should also answer the real needs.

During two editions of Industrial Hackathon, we have 44 participants, combined in 14 teams that were working on 5 challenges indicated by industrial sector and in 2021 edition also by the President of the city of Bielsko-Biała. The total duration of both events is 102 hours of coding, within which 78 hours on-line and 24 hours on-spot. We came up with 14 excellent solutions ready to test in the market. We cooperated with entities form private sector such as industrial and ICT companies, with public administration and NGOs, as well as other business support organizations and clusters. We have created a fertile ground for further cooperation, boosting creativity and unlocking the innovative potential of the city in the future.

In 2020 edition, as a result of our consultation with the automotive sector 3 challenges were indicated:

1. Application for counting people after fire evacuation
2. Application for gathering data about car parts
3. Application to supervise and remove health and safety non-compliance at the plant

Most of the participants have chosen the third topic, related to the health and safety procedures, which was quite surprising, even for the representatives of the company that has provided this challenge, as usual health and safety procedures aren't the most interesting issues. Even if there were less than 80 hours to prepare the application, the projects were very mature and complex. Most of them were ready to be implemented in a real life. The complexity, usage of a whole variety of technologies outside the typical software programming - like IoT and other Industry 4.0 related were also very surprising and showed the level of creativity of participants. Moreover, most of the teams have chosen the technologies and software environment that they don't work with on a daily basis - they wanted to improve their skills and learn new things.

In 2021 edition, in terms of indication of the challenges we went a bit wider. We have consulted it not only directly with the companies, but also through Regional Chamber of

Commerce and Industry and regional automotive cluster. As a result, we've got one common challenge:

1. A system for automatically supervising, booking and billing the use of shared facilities

We have prepared a case study that was shared with the teams at the opening of the hackathon. We also related it to our FabLab, as not only in industrial sector, there are such facilities that are shared by many workers (like CNC, milling machines, welding machines and others in big plants). In our FabLab we have 3D printers, that are open to use on a daily basis by many users, so we decided to bring them on the hackathon as a sort of inspiration and source of knowledge (for example, what data can be taken from the equipment, how does it work, what device can be connected to it) for the teams that would like to work on this challenge.

The second challenge, as already mentioned above, was a result of the inspiring speech of the President of Bielsko-Biała. He indicated, that ICT sector was very important during a COVID-19 pandemic and many processes were digitalized or put on-line. But in the post-pandemic times, the creativity of the ICT sector should be used to bring people back together. It's a bit of a paradox, but we decided that it could be a great issue for the hackathon. So, the second challenge was:

2. An application that will bring people together in a non-virtual reality

Four teams chose the second topic, and two the first one. As in the 2020 edition, created projects were far beyond what we had expected.

In terms of the industrial challenge, each team that were working on it, created complex applications, going even further than what was indicated in the case study. They not only create the coding solution, but also designed devices that can be used in such projects, using Internet of Things. One of the teams located on the third place of the overall classification, was invited to our FabLab to test their ideas.

In terms of the second topic, applications were very creative, both in terms of the concept as well as chosen technologies. Projects tackled the issue from different perspectives -users of the applications as well as local restaurant and tourism sector or public administration. Created applications used gamification and rewarding to encourage people to meet. For example, there was a reward foreseen for a time without the smartphone when you are on the real meeting.

5. Goal Achievement and Lessons Learned

The direct achievements of the Hackathon were solutions provided for the indicated challenges. In both editions, teams have prepared advanced, fully operational applications and concepts that can be implemented in the market. Also, the relations made between teams of CCI, industrial companies, ICT experts and we as a project team and representatives of business support organization were a great achievement and were followed by other mutual initiatives and cooperation.

CCI had a chance to work on a challenge that came directly from the local market and was tangible for them. Moreover, they often emphasized that with the hackathon they were able to boost their own skills, work in different environment and challenge their own creativity by using technologies that they are not working on the daily basis. The benefit

for the CCI, especially in the second edition of the test case, was also to create relations and boost coding community building the region. Additionally, participation in events like hackathons is considered as important and innovative way of gaining new skills in the ICT sector.

From the industrial perspective, hackathon was the chance to participate in an innovative project, that opened their minds on the new approach of providing solutions of their challenges in a very short time. In the first edition, 78 hours of on-line coding in the second - only 24 hours of on-spot event - brought answers to the needs they indicated. The creativity and complexity of developed applications were astonishing. The different view from the CCI perspective was also very appreciated, and technical advancement in terms of architecture of applications and code itself was also important. Additionally, industry gained a knowledge about the local market, services that were already there, what creates a backbone of future possible cooperation.

With our test case we also promote the city of Bielsko-Biala. BBDays4.IT - the festival that we combined our test case implementation with, already showed the capacity of the ICT sector in the city, promote the city as a place to live and work with the perfect work-life balance possibilities. With the hackathon, we brought innovation and creativity to this perspective and moreover, show the cooperation potential between a variety of institutions from different sectors.

6. Outlook, Sustainability and Transferability

As a result of the success of the first edition, already in October 2020 we made a decision to sign a Letter of Intent on organizing the second edition. Whereas, for the next year, we are already discussing the possibilities of cooperation and looking for funding opportunities to be able to organize the Industrial Hackathon vol. 3, after the InduCCI project lifetime.

Having such fertile ground for initiatives related to coding, thanks to the development of the ICT sector in the city, gives as a variety of possibilities for further actions. The success of the Industrial Hackathons and the positive feedback that we gained, allow us to already think about the next edition.

Moreover, the establishment of strong cooperation between all the relevant stakeholders in the city, from the whole quadruple helix, gives the opportunity to implement other projects related to boosting creativity in relation with innovative technologies, in line with the industrial revolution and digital transformation that is currently going on. We are already working on creation of the Digital Innovation Hub in the city, which will be not only one-stop-shop for entrepreneurs and industrial sector, but also a creative place with educational offer for pupils and students, as well as an incubator for startups and creative idea development.

Our scheme of the test case implementation can be used by business support organizations in other regions. Institutions like ours Regional Development Agency often would like to take a role of facilitator and moderator of quadruple helix cooperation. The innovative concept of hackathon can be interesting for many relevant actors in other regions and can improve such networking schemes. As shown by our example, it can also be a way to promote the city and to boost creativity and innovation.

7. Annexes

Annex 1 – Attendance list 2020

Annex 2 – Attendance list 2021

Annex 3 – HackBB article 1 (PL)

Annex 4 – Industrial Hackathon media release (PL)

Annex 5 – links to video materials related to the both editions of test case

Annex 6 & 6a – certificate templates – edition 2020 and 2021

Annex 7 – pictures 2020 edition

Annex 8 – pictures 2021 edition