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Joint implementation report for the pilot in the ICT and electronics sector

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1 EXECUTIVE SUMMARY

Croatian Chamber of Economy (CCE-ZCC) and Košice IT Valley (KEITVA) saw the opportunity to support innovation and knowledge transfer in local SMEs through the CHAIN REACTIONS project with defined and structured innovation strategies. The need for innovative ideas must not be seen as an isolated problem. That is why CCE-ZCC and KEITVA are thrilled to participate in this project.

KEITVA's pilot activities should answer questions such as How to bring new innovative perspectives at IT sectors to our region? How to change the current crisis into new possibilities for our area? The aim was to establish a platform for innovative business models and activities. Digital autumn is a platform created, so the SMEs and municipality educational institutions can showcase their innovative activities. KEITVA can support them in their out-of-the-box ideas that help to develop this eco-system further. The goal of the pilot activity is to deepen the dialogue between academia, business and public sectors, as well as to boost the delivery of new business ideas.

Due to the pandemic lasting in the past two years and due to the problematic time management of the original pilot idea, KEITVA had to change the pilot action from building the test room for the local hospital to creating the concept of IT segment development in Košice, which in the long term could be more beneficial for the further development of the sector and Kosice region. The IT segment development document was created to perform a comprehensive analysis and subsequent design of the concept of development of Košice through the IT sector using the tax policy of the Slovak Republic. All the pilot activities and outcomes were carefully conducted during the period of the project and under the project brand. KEITVA had multiple meetings with stakeholders, SMEs, IGA members, and project partners, which created a positive environment for the value chain innovation activities. The duo partners of this pilot have already identified some activities that could be conducted in Slovakia and Croatia.

KEITVA is already measuring the success of the project and the pilot action. However, from the long-term perspective, it will also be interesting to see the new connections generated by the project, which will also impact the sustainability of the created platform.

Croatian Chamber of Economy - Zadar County Chamber (CCE-ZCC) is primarily focused on the needs of its members, who are mostly SMEs. The Chamber is a link between the private sector, i.e. its members and other stakeholders that directly or indirectly affect the economy (national, regional and local authorities, public sector, scientific community, educational institutions, etc.). Therefore, in pilot activities CCE-ZCC focused on SMEs, and through cooperation with other stakeholders, they sought to encourage transnational and cross-sectoral cooperation. Encouraging of innovation was seen as a challenge, and finding software solutions and achieving transnational and cross-sectoral cooperation as an opportunity. There are two steps to achieve this, and that is the organization of the *Hackathon* and *Matchmaking event*. However, before holding those two events, meetings and workshops with various stakeholders were organized to discuss about innovations in the ICT sector and to prepare for the two main activities.

One of the goals of this pilot is sustainability. Related to this it is expected that pilot activities will yield business cooperation between the participants. In the future, CCE-ZCC will certainly strive to maintain contact and conduct joint activities with its duo partner Košice IT Valley and other project partners involved in pilot activities, namely RDA from Pilsen and STP from Maribor.

Hackathon was organized to motivate ICT sector actors to propose the best solutions for problems that companies from the project partner regions are facing. The key question was *"What are the issues*

of advanced manufacturing and energy & environment sector that our ICT sector can positively influence?" For this purpose, questionnaires in Word and in Google forms were made and sent to the project partners in order to obtain proper inputs.

As for the *Matchmaking event*, it was organized to achieve business cooperation between the Croatian ICT sector and the companies of project partners operating in the field of advanced manufacturing and energy and environment, as well as Croatian companies from those sectors. By participating in *Matchmaking*, the authors of innovative solutions from the *Hackathon* and all others who wanted to commercialize their projects were able to find potential business partners. It was held online via the b2match platform.

Due to the COVID-19 pandemic, the time frame of the pilot activities has been changed and previously scheduled events were postponed on several occasions. Also, *Hackathon* had to be organized slightly different from the usual. The original idea was to organize it as a physical event in the premises of the Chamber that would last 1-2 days. However, due to the pandemic, this was not possible, so an online version was organized in five days, and the presentation of the solutions served as the final event. One of the *Hackathon's* outputs is a brochure, which lists all the teams and their software solutions.

Prior to the *Matchmaking event*, a workshop was organized that served to establish transnational and cross-sectoral cooperation, transfer of knowledge and presenting examples of good practice. In communication with partners from Pilsen and Košice regarding the *Matchmaking event*, it was concluded that we could organize an additional meeting or workshop to connect ICT stakeholders from Croatia and Košice Region, and stakeholders operating in advanced manufacturing from the Pilsen Region. IGA members and other participants in the pilot activities were invited, such as participants from the *Hackathon*.

CCE-ZCC believes that its pilot provided the participants with new valuable experience, knowledge transfer opportunities, encouraged innovative thinking, and as the ultimate goal contributed to the development of new products/services and future business cooperation. CCE-ZCC was extremely pleased to work with project partners of CHAIN REACTIONS and other stakeholders involved, and they look forward to future cooperation after the end of the project.

2 REPORT ON ACTIVITIES IMPLEMENTED

Provide a complete list of activities performed within the pilot.

Table 1.1: Activities performed – PP8 KEITVA

Nr	Date	Location[1]	Type of activity[2]	Target group involvement*						
				LRPA	SA	HE&R	SME	BSO	IGA	Other PP
1	20.08.2020.	Online	Multilateral meeting with IGA	1		2	3			3
2	10.9.2020	Košice	Webinar	5		5	10	5	15	
3	16.12.2020	Košice	Webinar	10		8	10	20	10	
4	20.5.2021	Online	Discussion/Webinar	3			10		4	
5	17.6.2021	Online	Workshop							1
6	1.7.2021	Hotel Dália	Workshop	16	4	12	39	11	20	
7	17.8.2021	Online	Workshop							1
8	24.9.2021	Online	Bilateral meeting							1
9	14.10.2021	Bistro Bakos	Meeting	4			3		3	
10	16.11.2021	Online	Meeting	4			4		9	
11	10.2.2022	Košice	Meeting				4		2	
12	25.2.2022	Online	Workshop				10		3	3
13	25.2.2022	Online	Transnational Work-shop				9	1	3	2

Table 1.2: Activities performed – PP4 CCE-ZCC

Nr	Date	Location	Type of activity	Target group involvement*						
				LRPA	SA	HE&R	SME	BSO	IGA	Other PP
1	25.6.2020.	Zadar, Croatia / Online	Value chain analysis workshop and IGA meeting	1			3	1	(5)	
2	14.09.2020	Zadar, Croatia	Bilateral meeting with AB OVO (IGA member)				1		(1)	
3	23.09.2020	Zadar, Croatia	Bilateral meeting with Zadar County – Depart-ment for Economy, tourism, infrastructure and EU funds (IGA member)	1					(1)	

[1] City, country / online
[2] Type of activity: workshop, conference, training, bilateral meeting, other (please, name the activity)

4	29.10.2020	Zadar, Croatia	Bilateral meeting with AB OVO (IGA member)				1		(1)	
5	25.11.2020	Online	Bilateral meeting with IT Cluster Croatia (IGA member)					1	(1)	
6	18.2.2021	Online	Meeting with CCEs Headquarters - Department of Industry							
7	22.2.2021	Zadar, Croatia	Discussion/Trilateral meeting with AB OVO (IGA member) and a team of IT experts from Zadar County				2		(1)	
8	24.02.2021	Online	Mentoring process meeting (Alexandra Rudl from Bwcon)							1
9	10.3.2021	Zadar, Croatia	Bilateral meeting with Inovativni Zadar (IGA member) - Incubator					1	(1)	
10	24.3.2021	Zadar, Croatia	Bilateral meeting with Ivan Tokić (IT expert from Zadar)				1			
11	22.4.2021	Zadar, Croatia	Bilateral meeting with Inovativni Zadar (IGA member) - Incubator					1	(1)	
13	3.5.2021	Zadar, Croatia	Bilateral meeting with AB OVO (IGA member)				1		(1)	
14	3.9.2021	Online	Industrial Innovation Workshop	1		2	10	3		
15	9.09.2021	Online	Bilateral meeting with Mr Ivan Lupić regarding participation in the hackathon as a member of the jury					1	(1)	
16	24.9.2021	Online	Bilateral meeting with KEITVA regarding transnational industrial innovation roadmap and hackathon organization							1
17	30.9.2021	Zadar, Croatia	Bilateral meeting with prof. Nedeljko Štefanić regarding participation in the hackathon as a member of the jury			1				
18	12-17.11. 2021	Online	Hackathon				21			

19	24.11.2021	Zadar / online	Hackathon - Final Event			1	12	1		
20	24.11.2021	Zadar, Croatia	Bilateral meeting with Mr Ivan Matić from the IT company INCUBIS d.o.o. regarding potential collaboration with Hackathon participants and participation in a Matchmaking event				1			
21	25.2.2022	Online	Transnational Workshop				9	1	3	2
22	28.2.2022.	Online	Matchmaking event		1		40	2		

*** Target group involvement – number of involved:**

LRPA – Local / regional public authority

SA – Sectoral agency

HE&R – Higher education and research

SME – Small and medium sized enterprises

BSO – Business support organisation

IGA – Innovation and Growth Alliance

Other PP – other project partners

In the next part, describe the process of implementation in the following structure:

Project partner implementing the pilot	PP8- Kosice IT Valley
CHAIN REACTIONS' sector	ICT and Electronics
Sub-sector	
Description of pilot work plan	The KEITVA saw the opportunity to support innovation and knowledge transfer in local SMEs through this project with defined and structured innovation strategies. However, the need for innovative ideas must not be seen as an isolated problem. KEITVA is very vigilant that all the activities stay active throughout the activities after the project is finalized. The sustainability of the activities is crucial in chain value projects. <u>The main objectives of the pilot activity of KEITVA are:</u> • To map the Košice region's ecosystem and create a roadmap that will help to understand different sectors.

	• To extend the trialogue between the scholarly community, business, and public areas. • To educate stakeholders from various sectors of the needs of innovation and ICT across the public (academia, health sector) and private sphere. • To identify and involve regional stakeholders (SMEs, universities, hospitals, Kosice region). To create a platform for the innovative activities
Detailed description of activities performed	Košice IT Valley, as a well-known cluster with more than 60 members from the different target groups (SMEs, large companies, Higher education institutions, and regional authority) and IT background, has a broader impact on implementing required instruments. Cluster actively participate in the development of regional entrepreneurship and SME competitiveness. Our members are also regional organizations. For those organizations, we are, amongst many other fields, also an apparatus for innovation knowledge sharing. Companies can share their experience with innovation and possible enhancements throughout the pilot implementations. KEITVA is increasing citizens' knowledge to recognize the innovation potential connected to using IKT and learn methods of creating innovative ideas to bring business and success to the region. Also, KEITVA supports competitive innovation-oriented SMEs and achieves their growth and engagement on a national scale. KEITVA has created a platform for innovative business models and activities called **Digital Autumn** as a pilot activity. It is a platform for SMEs, municipalities, educational institutions, Startups to use and promote their innovative ideas and actions. The other pilot activity is ICT segment development in Košice. The document was created to perform a comprehensive analysis and subsequent design of the concept of development of Košice through the IT sector using the tax policy of the Slovak Republic. The analytical part of the document is expressed by a summary of the basic assumptions that apply to the IT industry. The design part is represented by the concept of the tax system or tax measures that appreciate this knowledge. The document forms the first part of three units, including the IGAs concept of Košice development as a tool for reducing regional disparities through the IT sector. The remaining two parts are then devoted to workforce care and the long-term formation of a quality educational structure of the population in eastern Slovakia, suitable for the support of the IT sector. **August – September 2020** Košice IT Valley managed to get in touch with potential partners that could be involved in the pilot activity. Mapping and involving SMEs, large companies, startups, business support organizations, and healthcare providers in the pilot's events were organized to

	discuss innovation needs in ICT and the possibility of future focus of the region in e-health. The self-government region was identified as a key partner for further developing the ICT Industry in the events. It enables the creation of the pilot's synergies and future regional specialization. In the Košice region, the ICT sector is quite developed (with hospitals and with the Faculty of Medicine), representing the region's future. **May 2021** It was a webinar on "How to implement innovative solutions across the sectors." 17 participants were discussing the topic. The feedback on the webinar was positive. The idea of the meeting was to make the first step to communicate innovative solutions across the sectors and interconnect different sectors. We have defined how ICT impact Healthcare. <u>ICT impact in Health sectors</u> • Management systems • Communication systems • Computerized decision support systems • Information systems **June 2021** Topic: – Train the trainer Kosice IT Valley Part 1 Effectuation The workshop was for the Kosice IT Valley employees so they could share the knowledge with their network. This first workshop focuses on effectuation. The workshop introduced the partner to a new decision making action that could bring new things into the world. This workshop and exercise can positively influence independent logic and innovation thinking. Alexandra Rudl moderated the workshop. **July 2021** This was the most prominent physical event that KEITVA organised. We presented the Chain reactions project and had interesting presentations and discussions on various ICT-related topics. We acknowledge that the ICT sector is a significant economic driver of the 21st century. It is one of the fastest-growing industries in the world. Slovakia is no exception, where the ICT sector brings job opportunities of a new quality, diversifies the national economic structure, supports export performance, and helps the country build a knowledge-based economy. The questions of the events were: How to bring new innovative perspectives to the IT sector to Košice region and how to change the current crisis into new possibilities for this region. It is essential to realise the significant involvement of ICT across all sectors. It is important to educate youth for the future. Nowadays, we are experiencing a significant change in every sector. We experience massive digitisation, automatisation, cybersecurity risks. Tools of the future include Intelligent Business, Artificial Intelligence, Machine Learning, Industry 4.0, etc.

	Due to the boom in Industry 4.0 and digitalisation, we can discuss the benefits of reducing emissions in the automotive industry and using less harmful techniques. ICT plays a vital role in reducing energy intensity and increasing energy efficiency. • The development of cloud computing is beneficial for energy sectors by sharing processers and hardware Because of the long-lasting epidemiologic circumstance, the Slovak Health area discovers many spots where digitisation can improve. During the workshops, the delegates of all areas communicated their perspective on how the health sector could be mechanised more effectively. Košice IT Valley was one of the accomplices who took part in making a call center for clinics and the health sector for individuals with inquiries concerning the current circumstance. Furthermore, one of KEITVAs partners is responsible for an application GreenPass for Slovakia that is utilised for a vaccination certificate. Although the conversation was zeroing in chiefly on the current circumstance, there were numerous assessments that, due to ICT contribution in the health sector, are more dependable and proficient. What part of the health sector was improved by ICT before COVID-19: • Data storages • Communication • Remote consultation • Diagnosis and treatment • Cooperation amongst health workers ICT impact in health sectors: • Management systems • Communication systems • Computerised decision support systems The workshop provided data that is beneficial in further activities in creating transnational industrial innovation roadmap. The workshop was a great way to show the need for ICT across the sectors. **August 2021** This was the second workshop from Alexandra Rudl focusing on very popular Design Thinking. This workshop was held for the KEITVA employees. KEITVA can share the information within their network. The partner decided to have the workshop in a smaller group because the English level in the eastern part of Slovakia is not as advanced. The design thinking technique is trendy, especially in startups. As participants were informed, 68% of innovation processes are more efficient. Our main challenge was to improve internal communication. One of the activities KEITVA employees did was an Interview. The activity helped participants to find important information, and they

	stayed open-minded. All these aspects are vital for further business development for creating an innovative action. September 2021 The workshop's goal is to share the outcome of the workshop held on 1.7.2021, so the partners can create the most relevant roadmap of the ICT sector. Both partners shared their agendas of the workshop and the primary outcome from the Industrial Innovation workshop held in partners' countries in their language. The main point that was discussed focused on ICT and healthcare and ICT and energy. The duo partners exchanged the findings and were able to do the next step. **October 2021** The goal of this workshop was to create a SWOT analysis and come up with the activities for the industrial innovation roadmap and agenda so we can share the outcomes of the agenda with the project partner. We created a proposal of joint activities and defined potential partners that will be actively participating in the defined activities. <u>Four activities were divided into three categories</u> • Campaign / Transfer of knowledge • Creating a concept based on data • Educate <u>Activities:</u> • The concept of IT segment development • IT needs you • Step by Step • LAB IT Creativity **November 2021** On this workshop project, partners shared their defined main goals and issues of the ICT ecosystem in their region. Then, with an understanding of each ecosystem, they could clarify actions that could be implemented within the five years. <u>We define five goals</u> • Strengthen the innovation potential of the region by building a qualified workforce and prevent from brain drain • Transfer of knowledge from abroad when compiling a regional development strategy • Building an Innovation Ecosystem • Support of home growth companies • Technology development and technology transfer, especially in the field of R&D <u>The action that was defined as innovation actions</u> • IT segment development • Slovakia needs you

	• Kosice 2025 • Digitalna Komora • Say yes to Innovation! • Education on financing possibilities **February 2022** Throughout the chain Value, we see massive potential in supporting all sorts of communities. For example, we kept the UX/UI community and supported women in IT. Our international workshop shows that supporting women in the ICT sector is also a massive topic in different countries. For example, our Transnational workshop with Croatia and Czech Republic partners opened doors for many cooperation activities. Furthermore, the exchange of knowledge from SMEs and IGAs members help us to finalize our pilot activities. At the first half of the workshop partners (KEITVA, CCE-ZCC and RDA) focused on presenting the Chain Reactions project to the stakeholders present in the workshop. Each partner presented their pilot activities. The significant part of the workshop was the presentation of the transnational industrial innovation roadmap for the ICT and electronics sector, which was developed by ICT partners (KEITVA and CCE-ZCC). The main part of the workshop was the presentation of each partner's opportunities for international cooperation. We defined a few activities such as • Training and seminars to encourage women in ICT at the transnational level in Croatia and Slovakia • Series of networking events to help developed the transnational and cross-sectoral relationships between Slovakia, Croatia and the Czech Republic.
Use of value chain innovation models and instruments	To ensure the functionality of the pilot action, KEITVA used value chain innovation models and instruments that helped fulfil the potential of all aspects of the pilot and ensure the sustainability of the activities beyond the project period. In the ICT sector, we always work with data. So detailed analysis was crucial. In addition, we were creating alliances within the region and partnerships on a transnational level help develop innovative ideas that support the overall goal. The value chain innovation toolbox from WPT1 was very helpful for the KEITVA team for managing activities and educating regional IGA members, SMEs, stakeholders, medical institutions, and start-ups. In addition, the project allowed us to share analysis knowledge such as SWOT analysis that we frequently used on multiple presentations and workshops. Bilateral meetings with IGA members discussed the possibilities of using these models through pilot activities. The project allowed us to create smoother and more effective cooperations that will last longer than the project itself, one of the most significant benefits of the Chain Reactions project.
Involved actors	It was crucial to involve as many of the targeted actors (Local public authority, Regional public authority, Sectoral agency, Higher education

	and research, SME, Business support organisation) in all our activities. Therefore, there were multiple representatives of each target group in every workshop, webinar or meeting. In addition, the transnational workshops also helped to develop a deeper collaboration with our partner's actors.
Monitoring of performance indicators	KEITVA achieved the set goals from the pilot. However, the turbulent period made all organizations very flexible. KEITVA had to change their pilot, but it has the same value. In the long term, it could be more beneficial for all sectors. The **"Concept of IT segment development in Kosice"** could not be done without the project and participation of IGA members who were meeting regularly. There is a considerable number of involved actors, which manifest in a great and strong pilot. The wide range of KEITVAs stakeholders, IGA members, and involved actors in the pilot activities helped all the workshops, seminars, and meetings to have cross-sectoral and transnational contexts.
Key results	The impact of the pilot activities on KEITVA is that many of the member SMEs are involved in the activities and are actively searching for them. We found out that the development of the IT segment gives us many answers and possibilities to create innovation activities to help develop the intersectoral, cross-sectoral and transnational value chains. The digital autumn is a platform that puts all the innovation activities in one place. The ICT expert and the broad public can get the information.
Follow-up	Along with our venture accomplices, KEITVA and RDA Pilsen, it was consented to execute innovative activities after the end of the project. There are few of these exercises that KEITVA is expecting to do together with some of the project partners in the following years: • Training and seminars to encourage women in IT at the transnational level in Croatia, Slovakia and the Czech Republic. • Series of networking events to help develop the transnational and cross-sectoral relationships between Slovakia, Croatia and the Czech Republic. Extension of virtual democentre to enrich the content of it. It is a web-based platform for sharing good practice examples of solutions for advanced manufacturing.
Delays, problems	As in every project, there is a need to be flexible. That is why KEITVA had to change the pilot activities from building the test room for local hospitals step by step to creating a concept of IT segment development in Košice. It could make a huge help in developing new strategies in the long term. But unfortunately, the pilot activities have changed due to the pandemic and the time management that could not be reached due to the lack of medical staff in Slovakia. Due to the constant change of regulations during this project, KEITVA could not hold as many meetings and personal workshops as planned.

	All the activities had to be moved into the online world. Due to regulations, some activities had to be postponed at the last minute, which caused delays.

Project partner implementing the pilot	PP4 – Croatian Chamber of Economy – Zadar County Chamber
CHAIN REACTIONS' sector	ICT and Electronics
Sub-sector	Computer programming
Description of pilot work plan	The scope of pilot activities is set to improve innovations in the value chain in ICT, i.e. the sub-sector of computer programming. The aim of the pilot activity is to determine how to efficiently use the in favour aspects described in the analysis to mitigate the deficiencies of the national surroundings. In other words, the pilot project aims to define how to efficiently transform challenges to opportunities. Pilot project will aim to influence the value chain innovation in a few steps. First, meetings and workshops were organized to familiarize IGA members and other stakeholders with the pilot activities. These events focused on fostering innovation and opportunities for transnational and cross-sectoral cooperation. After that, the organization of *Hackathon* was launched with the aim of finding software solutions in the field of advanced manufacturing and energy and environment sector. The pilot project involved collaboration with partners to determine the scope of ideas for our ICT sector to contribute. The *Hackathon* involved relevant sector actors wanting to improve their value chain by diversifying their products and services. This solution will be beneficial in a twofold way, as it will diversify the ICT sector products on one hand, and improve the value chain of project partners 'related sectors through innovation. After the *Hackathon*, two events were organized for networking of different stakeholders - *Matchmaking event* and *Transnational Workshop*. In addition to finding software solutions, the purpose of CCE-ZCC's pilot activities is to achieve transnational and cross-sectoral cooperation of companies from the regions involved in the pilot, and other interested stakeholders. That was the goal of the *Matchmaking Event*. It was intended for the ICT, advanced manufacturing and energy and environment sector. *Transnational Workshop* was organized together with project partners involved in pilot activities, and it served to establish transnational and cross-sectoral cooperation, transfer of knowledge and presenting examples of good practice. IGA members and other interested stakeholders were invited to it. It is expected that the pilot activities will result in future business cooperation, and we will strive to collaborate with project partners after the end of the project.

Detailed description of activities performed	CCE-ZCC intended to involve SMEs and other relevant stakeholders in its pilot activities in the best possible way, in order to encourage an innovative process that would lead to the development of new IT products / services on the one hand and transnational cooperation on the other. For this reason, at the beginning of the pilot development, meetings were held with various actors (companies operating in IT or related to this sector, policy makers, business support organizations, etc.), and the workshops focused on encouraging innovation and transnational cooperation. The highlight of the pilot activities were *Hackathon* and *Matchmaking event*, and we managed to organize an additional event in the form of a *Transnational Workshop* that served to network stakeholders from Croatia, Slovakia and the Czech Republic. **ACTIVITIES DURING THE PERIOD FROM MARCH TO NOVEMBER 2020** From the beginning of the work on the transnational pilot, CCE-ZCC first contacted the IGA members and presented to them how it intended to carry out this activity. At the ***Value chain analysis workshop*** held on **June 25, 2020**, IGA members were presented with the scope and objectives of the pilot, together with a time frame for implementation. Bilateral meetings with several IGA members to elaborate on the activities followed this. The company AB OVO, as well as Zadar County - Department of Economy, Tourism, Infrastructure and EU Funds and ICT Cluster Croatia, made a contribution in above. With its influence and contacts, ICT Cluster Croatia provided access to IT companies with the aim of informing about the activities and the possibility of participating in the pilot. The meetings agreed that the *Hackathon* will be organized in April, and *Matchmaking event* in September or November 2021. Subsequently this had to be postponed due to the situation with COVID-19. During this period, several IGA members participated in the trainings organized within the project in order to, among other, get familiar with the tools that potentially can be used within the pilot activities. CCE-ZCC also studied materials related to models and instruments for value chain innovations defined in WPT1 and present them to IGA members. Further communication was agreed with regional stakeholders and IGA members about the new steps. One of the main goals in the future period was to determine the common interests of our IT companies and sectors in which our pilot project partners operate - advanced manufacturing and energy and the environment sector. Advanced manufacturing is the focus of the Regional Development Agency of the Pilsen Region (RDA Pilsen) from the Czech Republic, and energy and environment sector is of the Styrian Technology Park (STP) from Slovenia.

	ACTIVITIES DURING THE PERIOD FROM DECEMBER 2020 TO JUNE 2021 During this period, CCE-ZCC organized several meetings with IGA members and was in communication with IT companies that could potentially participate in the hackathon. Two meetings were organized with AB OVO, a member of IGA, to work out further steps in organizing the hackathon. Team of IT experts from Zadar County also attended one of the meetings. Their domain of work is application development (e.g. employment application software) and the meeting served to assess the possibility of their participation in the hackathon. Meetings were also held with the company Innovative Zadar, also one of the IGA members. It is a company whose primary goal is to encourage the development of small and medium enterprises at the local level and it has experience in carrying out such activities. Their domain of work are mainly related to ICT technologies, coordination, and integration of development of ICT services and infrastructure for local government needs. Meetings were organized with the hope that cooperation with Innovative Zadar will result in the best possible organization and implementation of our pilot activities through their experiences and contacts. Communication and meetings were also made and organized with the CCEs Headquarters - Department of Industry, to involve key members, and to examine interest in participating in the *Hackathon*. A call for proposals for cooperation with IT companies at the national level was made. The Department conducted a survey and communicated with members, but they did not express interest in participating at that time. The first online meeting related to the mentoring process was held. Alexandra Rudl from BWCON led it and a mentoring roadmap was defined on it. Through meetings and communication with IT companies it was noticed they are now overwhelmed with work, they have plenty of new projects to develop, and for this reason, many of them had to cancel their interest in participating in the *Hackathon*. They also pointed out that they had to turn down some jobs, some projects that in the previous year would definitely accept. Through conversations with IGA members and IT companies, it was agreed that it is complicated to organize a hackathon at a previously scheduled time (April 2021), for the reasons already mentioned. Due to that, the organization of the *Hackathon* was postponed and budget modification was requested from the Lead Partner in order to provide funds for the winners of the *Hackathon*. LP approved a modification and transfer of a little less than 4,000 EUR for reimbursement for the hackathon winners. These funds encouraged a better response to participate in the *Hackathon*. **ACTIVITIES DURING THE PERIOD FROM JULY 2021 TO FEBRUARY 2022** During the observed period, the CCE-ZCC conducted preparatory actions, meetings and communication related to the organization of the *Industrial Innovation Workshop*, *Hackathon*, *Matchmaking event* and *Transnational Workshop*.

	Industrial Innovation Workshop was held online on **September 3, 2021** and served to present the CHAIN REACTIONS project, the partnership network, trends and directions of sector development, connecting ICT with other industries and to give examples of good practice. All this was done with the aim of encouraging innovative thinking among participants and their further involvement in our project activities. This primarily refers to the *Hackathon* that is the backbone of our pilot. The workshop also provided us with data that are beneficial in further activities in creating transnational industrial innovation roadmap. Over 20 participants participated in the workshop. Lecturers at the workshop were professors and assistants from the Faculty of Electrical Engineering and Computing of the University of Zagreb and Faculty of Mechanical Engineering and Naval Architecture of the University of Zagreb, the president of the Croatian Competitiveness Cluster of the ICT Industry, as well as representatives of companies operating in the field of IT and advanced manufacturing. Topics discussed at the workshop: - the direction in which the ICT sector is developing and how to link it with other sectors; - building a startUp ecosystem in the era of Industry 4.0 and Croatia's readiness for industrial change, mostly in terms of the development of smart factories; - connecting computing and neuroscience and cooperation between the private sector (ICT) and the scientific community; - innovative solutions in industrial automation. Finally, a discussion followed with the aim of involving the present stakeholders in the pilot activities. ***Hackathon*** was organized with the aim of finding software solutions in the field of advanced manufacturing and environmental protection. The event was intended for the IT sector (micro, small and medium enterprises, crafts, start-ups, freelancers and students). *Hackathon* was organized differently than usual, i.e. the participants had five days, from **November 12 to 17, 2021** to develop solutions that were presented to the jury at the final event. The final event took place on **November 24, 2021** in a *hybrid form* (on spot - in the premises of the Zadar County Chamber and online). One of the goals of the *Hackathon* was also to find potential business partners from Croatia, Slovenia, Slovakia or the Czech Republic through the developed solutions. *Hackathon* was in open type format, the condition was that the solution should be created for the sectors of advanced manufacturing and energy and environment. Participants were offered several examples within they could develop a solution: such as smart cities, smart factories, software solutions for climate change mitigation, supply chain integration, advanced planning, monitoring energy consumption and savings, renewable energy sources, quality control and similar ideas.

	The solution as a result of the hackathon did not have to be in the final form, but could be: - only an elaborated project without a final solution, - elaborated project with a proposal of a specific technological solution, - partially elaborated and developed technical solution with a proposal for the final solution. A total of 21 teams applied (over 50 participants in total), of which 12 submitted the decision. Some of the participants had to withdraw from the competition for private, business or health reasons. At the final event, all the solutions developed during the *Hackathon* were presented and the winner was announced. In the jury were: - *Ivan Lupić*, President of the Croatian Competitiveness Cluster of the ICT Industry - *Nedeljko Štefanić*, professor at the Faculty of Mechanical Engineering and Naval Architecture of the University of Zagreb and director of Culmena Ltd. which developed the project "100 smart factors" - *Marko Jović*, local coordinator of the CHAIN REACTIONS project The winner of the *Hackathon* is the Kodium Pro team, which developed the KIES platform *(Kodium Intelligent Energy Saver)* and won a prize of HRK 25,000.00 in gross amount. Team members Davor Novokmet, Ivan Radak and Jurica Fabijanić come from small IT firm Kodium Pro d.o.o. from Zagreb. *Kodium Intelligent Energy Saver (KIES platform)* is a solution which: receives any type of sensor data, processes it and gives valuable insight into business; uses an AI module to automatically find anomalies, detect correlated sensors and „learns as it goes", provides regression analysis for production to predict future needs and provide indicators for business decisions. Key benefits: - automatic AI insights through automatic anomaly detection and correlation analysis; - ISO 50001 certification made easy – easily track energy use, create and track targets; - available on all devices – including mobile phones; - user can receive notifications of anomalies instantly on his device; - user can receive and act on data in real time; - it allows receiving various kinds of data, regardless of vendor – system provides easy to use adapters for various data sources. Some of the available protocols: MODBUS, BACNET, OPC-UA, REST, ZIGBEE, MQTT, LORAWAN, SIGFOX.

	It can work in a hybrid mode – parts of the data can be collected manually using provided mobile application. KIES provides a powerful reporting engine that allows user to analyse data at the precision level he requires. Regression analysis offers a measurable method to track production efficiency of various machines, production lines or companies. The system allows immediate notifications for critical indicators – for example critical temperature or detection of a burst pipe. It is intended for companies that want to control costs and improve efficiency and any company looking to improve insight into their production process. Companies implementing ISO 50001 with the need for a robust and capable reporting engine, municipal companies looking for remote metering solution and ecologically friendly companies wanting to reduce their energy and CO2 footprint can use KIES platform. The participants were satisfied with the organization of the *Hackathon* and we had positive feedback. We have also invited Slovak IT companies to participate in the event through our duo partner Košice IT Valley. They invited their IT companies and put the invitation on the official website and Facebook. In addition to finding software solutions, the purpose of our pilot activities is to achieve transnational and cross-sectoral cooperation of companies from the regions involved in our pilot, but also other interested stakeholders. That was the goal of the ***Matchmaking event***. It was intended for the ICT, advanced manufacturing and energy and environment sector. It was held *online* via the *b2match* platform on **February 28**, **2022** and gathered 44 participants. In addition, at the *Matchmaking event,* we had a special speaker, Mr. Peter Sczigel. He is Project Manager of the Due Diligence Helpdesk on EU Sanctions for EU SMEs dealing with Iran, an initiative funded by the European Union. The overall objective of the Helpdesk is to support EU businesses, SMEs that are willing to engage in business transactions with Iran. They saw our event, contacted us and suggested cooperation. We also asked LP for their opinion on their participation and received positive feedback. In this way, we got an additional promotion of the project and gain visibility. Prior to the *Matchmaking event*, we organized an *online* ***Transnational workshop*** on **February 25, 2022** that served to establish transnational and cross-sectoral cooperation, transfer of knowledge and presenting examples of good practice. In communication with partners from RDA and KEITVA regarding the *Matchmaking event*, it was concluded that we could organize an additional meeting or workshop to connect IT stakeholders from Croatia and Košice Region, and stakeholders operating in advanced manufacturing from the Pilsen Region. IGA members and other participants in the pilot activities were invited, such as participants from the *Hackathon*. In total, 16 people attended the event, including the representatives of CCE-ZCC, KEITVA and RDA. At the first half of the *Transnational workshop* partners (KEITVA, CCE-ZCC and RDA) focused on presenting the CHAIN REACTIONS project to the present stakeholders. Each partner presented their pilot activities.

	The significant part of the workshop was the presentation of the transnational industrial innovation roadmap for the ICT and electronics sector, which was developed by duo partners, i.e. KEITVA and CCE-ZCC. The main part of the workshop was the presentation of each partner's opportunities for international cooperation. Few potential activities have been defined: - Training and seminars to encourage women in ICT at the transnational level in Croatia and Slovakia; - Series of networking events to help developed the transnational and cross-sectoral relationships between Slovakia, Croatia and the Czech Republic; - Extension of the virtual democentre, developed by the RDA
Use of value chain innovation models and instruments	CCE-ZCC studied materials related to models and instruments for value chain innovations defined in WPT1, firstly introduced those models to IGA members, and presented the potentials and possibilities of their use. Through the contacts that IGA members have, CCE-ZCC wanted to bring closer to IT companies the benefits of participating in the pilot activities. First, it is access to new markets, especially in the context of supporting SMEs coming from advanced manufacturing and energy & environment sector. SMEs can more easily access international trade and global value chains precisely through the influence of IT technology. Bilateral meetings with our IGA members discussed the possibilities of using these models through pilot activities. The conclusion was that there is great potential, in terms of developing service innovations, smart connected products, applications in manufacturing, big data analytics, etc. Through the mentoring process, which was carried out in collaboration with BWCON, this topic was also mentioned. Through the *Industrial Innovation Workshop* and preparatory activities for the *Hackathon*, the participants were also introduced to the value chain innovation models and instruments. It was noted that in the development of software solutions on *Hackathon* participants could use some of the listed value chain innovation models and instruments.
Involved actors	CCE-ZCC sought to involve as many relevant stakeholders as possible in its pilot activities, but with special emphasis on SMEs. This was achieved through communication, bilateral meetings, workshops, *Hackathon* and *Matchmaking event*. This pilot was attended by representatives of regional authorities, the scientific and research community, business support organizations, clusters, international initiatives, public companies and the private sector. It is especially important to us that through quality cooperation with project partners, KEITVA, RDA and STP, we involved their stakeholders and achieved transnational and sectoral cooperation.
Monitoring of performance indicators	The CCE-ZCC achieved the goals it set in its pilot, although there were delays in implementing certain activities. Some goals, such as a budget modification for reimbursement for the *Hackathon* winners, were not initially set but were also implemented during the pilot. Communication and meetings with IGA members and other relevant stakeholders, introduction to models and instruments for value chain innovations, defining the scope of involvement of project partners and development

	of questionnaires for their stakeholders, holding workshops, hackathons and matchmaking events were achieved. Various stakeholders of the project partners regions were involved in the pilot activities, thus achieving transnational and cross-sectoral cooperation.
Key results	The impact of the pilot activities is reflected in the fact that we have managed to connect various stakeholders, encourage innovation, promote the development of new software products and services, transfer of knowledge and share examples of good practice. From the perspective of CCE-ZCC in the implementation of pilot activities, concrete cooperation has been established with representatives of regional policy makers, the scientific community, public and private companies, business support organizations and clusters. We have placed the importance of fostering innovation at the top of the list of priorities, along with transnational networking. Through cooperation with our project partners and their stakeholders, we gained valuable experience and contacts that will remain after the completion of the project. A brochure with all hackathon participants and their solutions is being prepared, and will represent one of the pilot's outputs.
Follow-up	Together with our project partners, KEITVA and RDA Pilsen, it was agreed to implement innovative activities after the project was completed. There are several of these activities that we intend to carry out together in the next few years: 1) Trainings and seminars to encourage women in IT at the transnational level in Croatia, Slovakia and the Czech Republic 2) Series of networking events to help developed the transnational and cross-sectoral relationships between Slovakia, Croatia and the Czech Republic 3) Extension of virtual democentre, with the aim to enrich the content of it. It is a web based platform for sharing the good practice examples of solutions for advanced manufacturing.
Delays, problems	We had problems attracting participants in pilot activities, so we had to postpone the announced *Hackathon* several times. Due to the large volume of work, IT companies were not able to participate in the previously scheduled dates. For this reason, a *Matchmaking event* also had to be postponed. The cause of these delays is related to the situation with the COVID-19 pandemic and the circumstances that IT companies performed extremely well during that period, and were not so interested in participating in the *Hackathon*. For this reason, we held several meetings with various stakeholders to turn this to our favour, and one of the actions we took was budget modifications. Namely, transferring the funds intended for the staff to the reimbursement for the hackathon winners proved to be a good decision. Lead Partner approved a modification and transfer of a little less than 4,000 EUR. These funds

	encouraged a better response to participate in the *Hackathon*. It turned out that we need to be flexible and adapt to the situation.

3 CONCLUSIONS AND LESSONS LEARNED

Through pilot activities, and in general through the CHAIN REACTIONS project, CCE-ZCC and KEITVA have benefited a lot. It has enabled IT members, who are mostly SMEs, to focus on the research and innovation process that has led to the development of 12 valuable software solutions. These solutions, as a pilot output, remain for the future. It was realized that the process of fostering innovation is complex and time-consuming, and needs to be worked on constantly.

In addition, through workshops and a *Matchmaking event*, contacts were made, which hopefully will result in future business cooperation.

It is very important to have reliable and professional partners in such projects, which is the case of CHAIN REACTIONS. The cooperation of duo partners in the ICT sector, i.e. CCE-ZCC and KEITVA, was nice example of this. The communication has always been prompt and goal-oriented, all for the purpose of the best possible implementation of the assigned activities. The other partners in pilot activities, who are operating in advanced manufacturing and energy and environment, RDA Pilsen and STP have always been ready for transnational and cross-sectoral cooperation.

Based on unforeseen situations and the associated several delays in pilot activities, it has been realized that it was important to be flexible and to adapt to the new conditions.

Few CHAIN REACTIONS impacts are listed below:

- Project dissemination and its activities;
- Cooperation with stakeholders operating in ICT on national and international level
- Involvement of regional authorities in project activities - especially through IGA
- Networking of different stakeholders (workshops, hackathon, matchmaking event)
- Stronger connection with the scientific community through cooperation on project activities
- Informing companies and other stakeholders regarding the funding opportunities for innovation in Croatia and Slovakia
- Raising awareness - the importance of the ICT sector and further digitization of members and other stakeholders, encouraging the women in the ITC sector, and similar activities.

ANNEXES

IT VALLEY KOŠICE

Concept of IT segment development in Košice summary document

A. The concept of adjustments to the tax policy of the Slovak Republic for the purpose of long-term and sustainable development of the IT sector in Košice v1

B. The concept of proposed changes to improve the conditions of care for employees v2

C. The concept of education for the field of IT v2

LYNX

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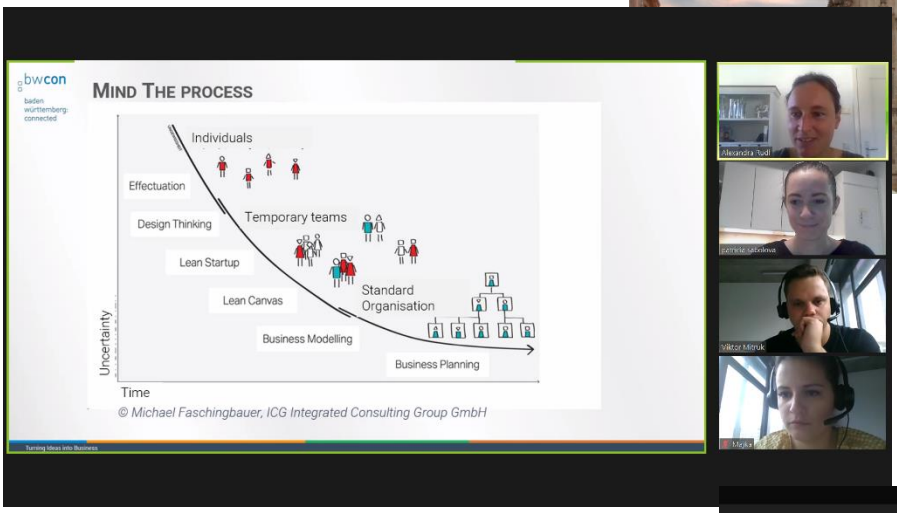
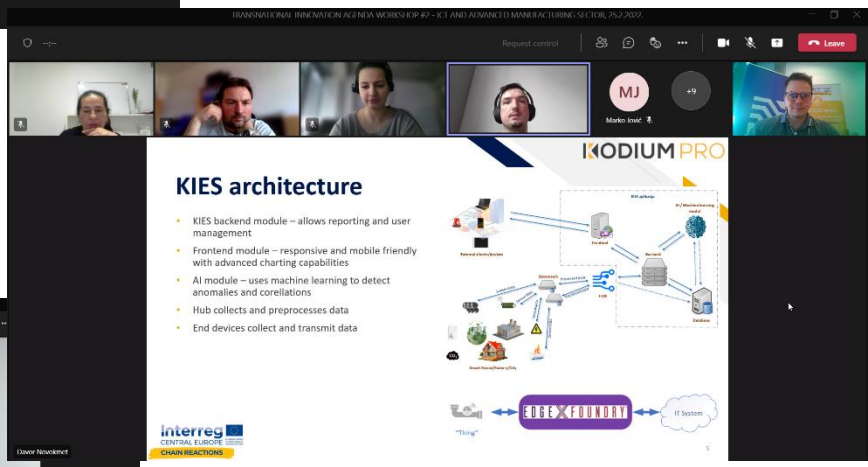
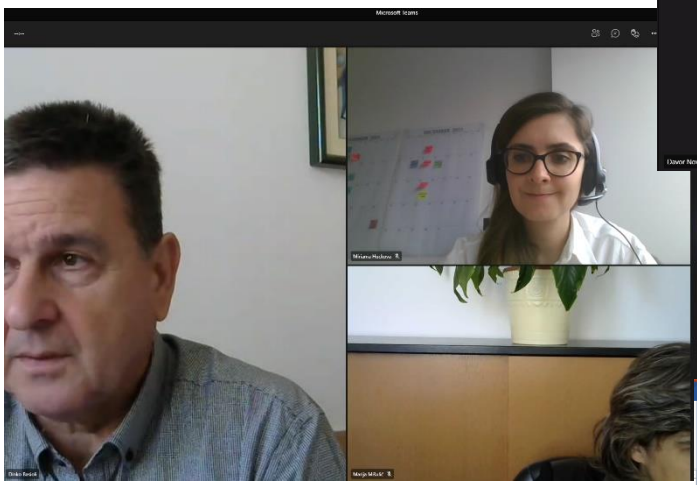
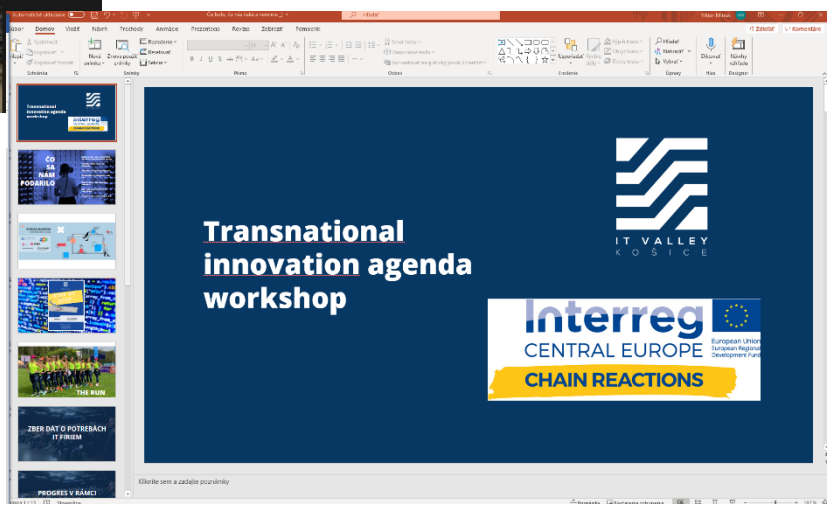
DIGITÁLNA JESEŇ
Zaži dnešný svet
technológií
s Digitálnou jeseňou
v Košiciach


bwcon
baden württemberg: connected
MIND THE PROCESS
Individuals
Effectuation
Design Thinking
Temporary teams
Lean Startup
Lean Canvas
Standard Organisation
Business Modelling
Business Planning
Uncertainty
Time
© Michael Faschingbauer, ICG Integrated Consulting Group GmbH


KODIUM PRO
KIES architecture
KIES backend module – allows reporting and user management
Frontend module – responsive and mobile friendly with advanced charting capabilities
AI module – uses machine learning to detect anomalies and corellations
Hub collects and preprocesses data
End devices collect and transmit data
EDGEXFOUNDRY
IT System
interreg CENTRAL EUROPE
CHAIN REACTIONS




Transnational innovation agenda workshop
IT VALLEY KOŠICE
Interreg CENTRAL EUROPE
CHAIN REACTIONS

Interreg CENTRAL EUROPE
CHAIN REACTIONS

CHAIN REACTIONS
Driving smart industrial growth through value chain innovation

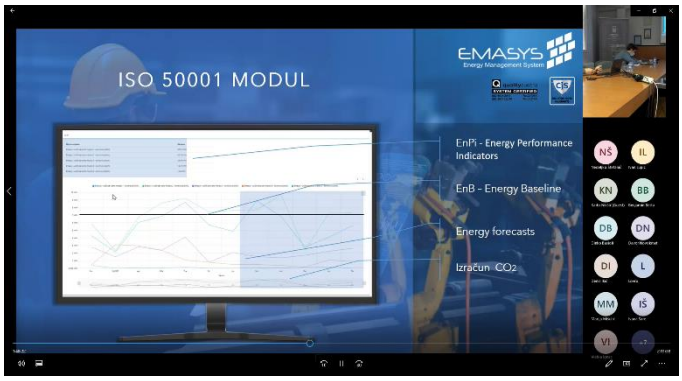
CHAIN REACTIONS HACKATHON
FINAL EVENT
24/11/2021

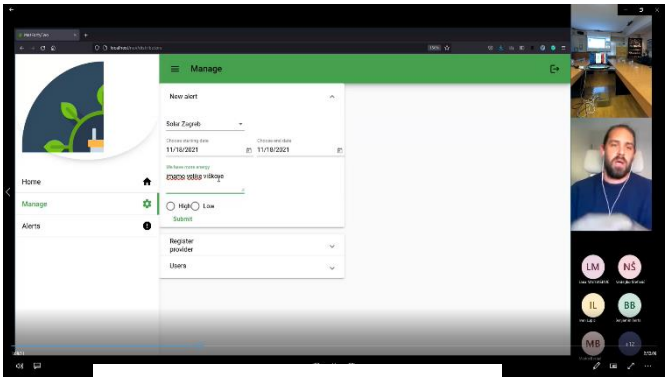
PROGRAM	
10:45 – 11:00	*Registracija i kava dobrodošlice*
11:00 – 11:15	*Uvodni govor* *Marko Jović, lokalni koordinator projekta CHAIN REACTIONS, HGK – Županijska komora Zadar*
11:15 – 13:30	*Prezentacije rješenja sudionika hackathona*
13:30 – 15:00	*Pauza za ručak*
15:00	*Proglašenje pobjednika hackathona*

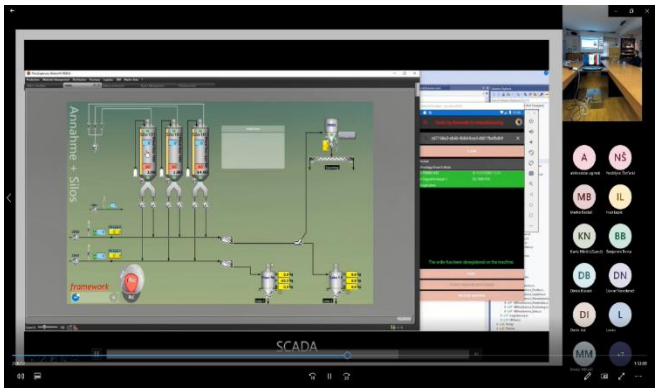
*Organizator zadržava prava izmjene programa.

HGK CROATIAN CHAMBER OF ECONOMY

Zadar County Chamber
Špire Brusine 16
23000 Zadar
+385 23 211 747
hgkzd@hgk.hr







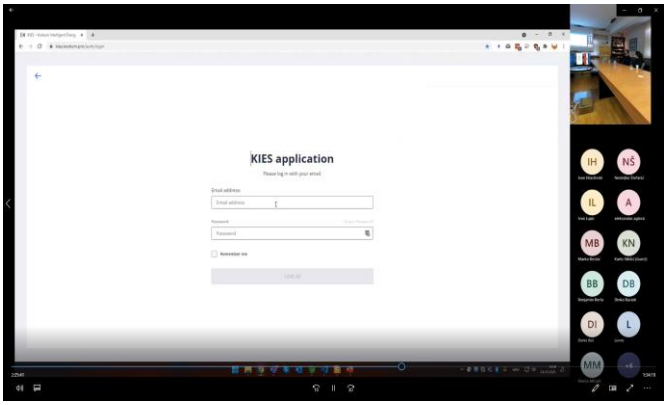
Interreg CENTRAL EUROPE
CHAIN REACTIONS

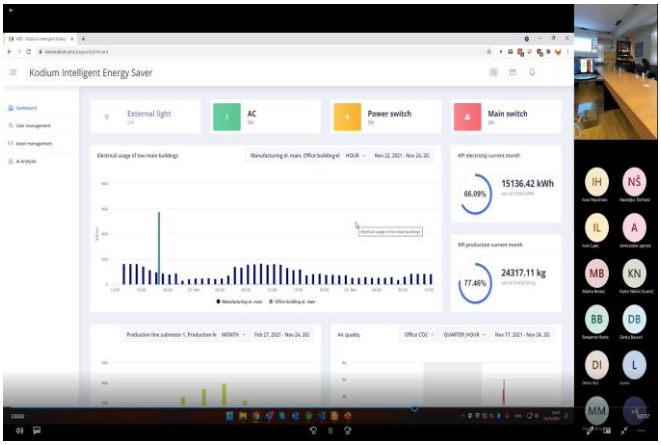
CHAIN REACTIONS HACKATHON
Croatian Chamber of Economy - Zadar County Chamber
Solutions 11 2021

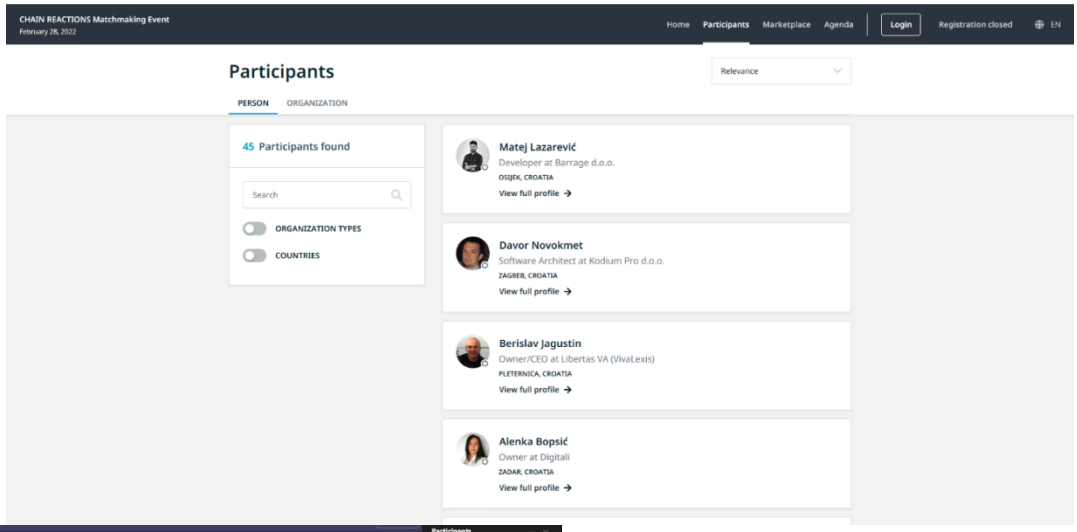
CROATIAN CHAMBER OF ECONOMY - ZADAR COUNTY CHAMBER

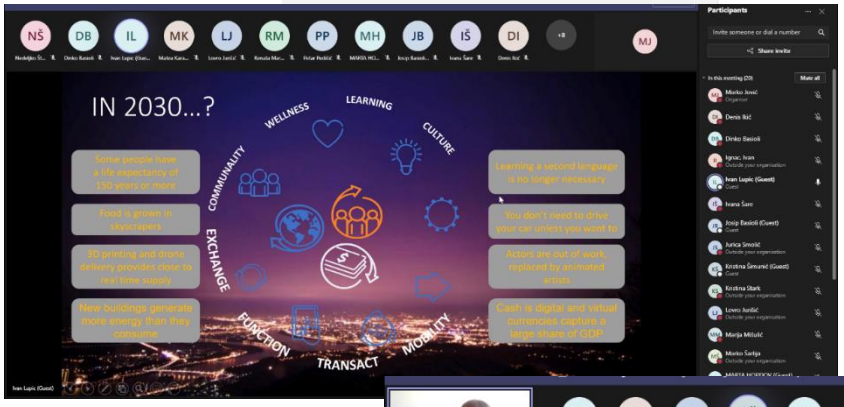
CHAIN REACTIONS HACKATHON

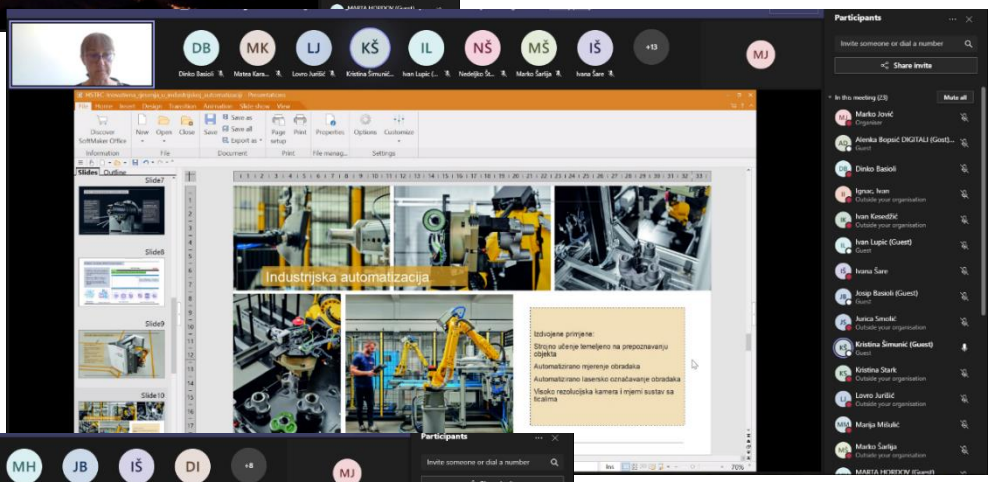
Team/individual	Solution
Barrage	Application of software solutions to electric vehicle charging stations in the immediate vicinity of local shared storage
BARREK	Smart waste disposal system
Careesma X Galo Industries	Europeans will beat climate change by walking with virtual assistant
David Burcar	Smart factories - product monitoring and management software - SPUP
Davor Predavec	Flood monitoring - Why we need Early Warning System?
DDK	"Sustainability as an energy problem"
DIGITALI	Računko
Emasys Team	Remote reading of energy and water consumption in the manufacturing industry
gipSoft	Advanced production of bakery products
Kodium Pro	Kodium Intelligent Energy Saver (KIES platform)
TOUCH4SMART	CLOUDORDER - cloud software solution for supply chain integration and climate change mitigation
VoodooTrex	Surface pollution detection of water using satellite image and autonomous Bucket fleet

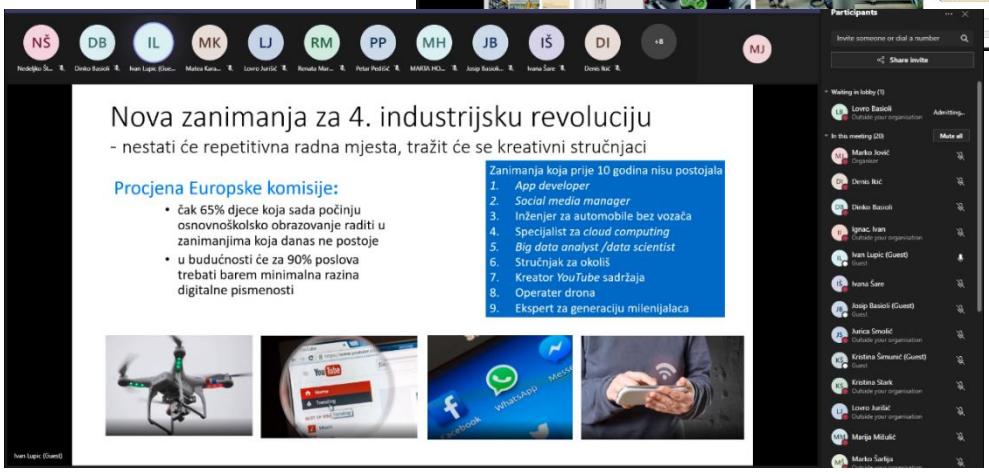





CHAIN REACTIONS Matchmaking Event
February 28, 2022
Home
Participants
Marketplace
Agenda
Login
Registration closed
EN
Participants
Relevance
PERSON
ORGANIZATION
45 Participants found
Search
ORGANIZATION TYPES
COUNTRIES
Matej Lazarević
Developer at Barrage d.o.o.
OSIJEK, CROATIA
View full profile
Davor Novokmet
Software Architect at Kodium Pro d.o.o.
ZAGREB, CROATIA
View full profile
Berislav Jagustin
Owner/CEO at Libertas VA (VivaLexis)
PLETERNICA, CROATIA
View full profile
Alenka Bopsić
Owner at Digitali
ZADAR, CROATIA
View full profile


IN 2030...?
WELLNESS
LEARNING
CULTURE
COMMUNALITY
EXCHANGE
FUNCTION
TRANSACT
MOBILITY
Some people have a life expectancy of 150 years or more
Food is grown in skyscrapers
3D printing and drone delivery provides close to real time supply
New buildings generate more energy then they consume
Learning a second language is no longer necessary
You don't need to drive your car unless you want to
Actors are out of work, replaced by animated artists
Cash is digital and virtual currencies capture a large share of GDP
Participants


Industrijska automatizacija
Participants

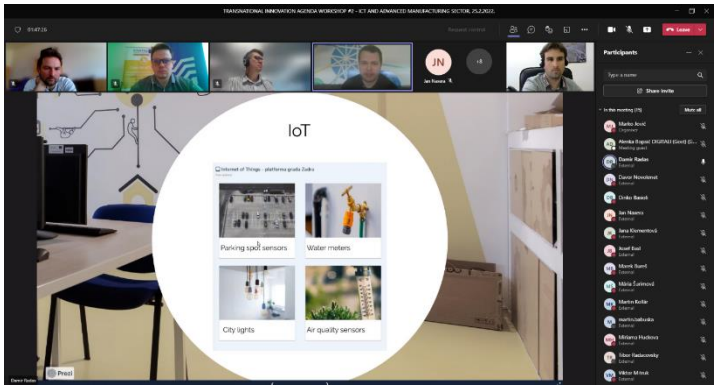
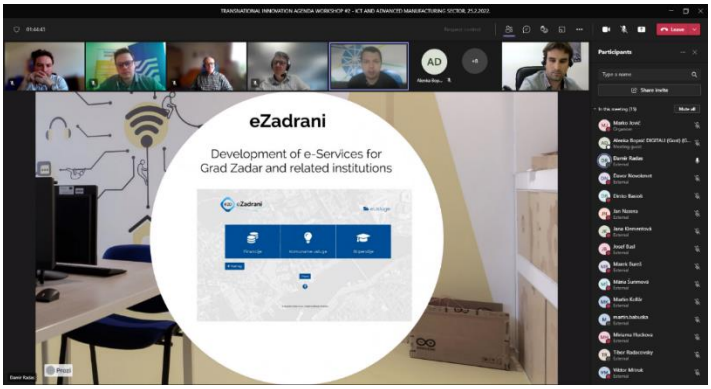
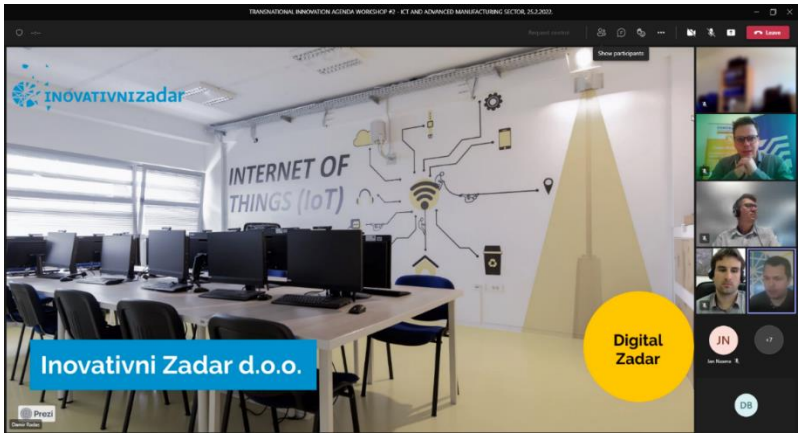
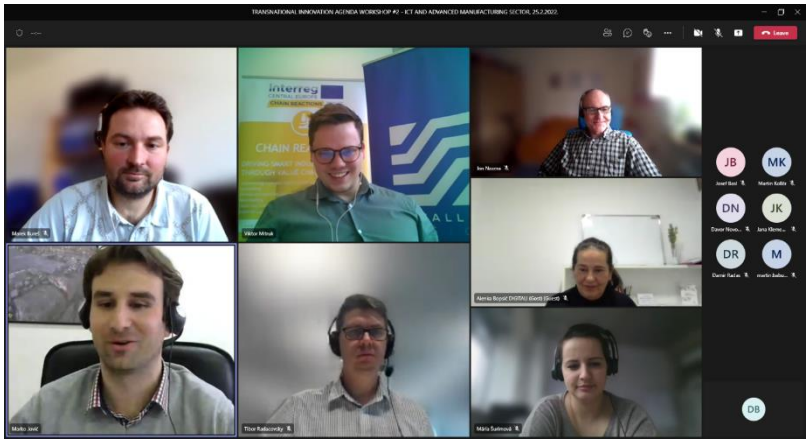

Nova zanimanja za 4. industrijsku revoluciju
- nestati će repetitivna radna mjesta, tražit će se kreativni stručnjaci
Procjena Europske komisije:
• čak 65% djece koja sada počinju osnovnoškolsko obrazovanje raditi u zanimanjima koja danas ne postoje
• u budućnosti će za 90% poslova trebati barem minimalna razina digitalne pismenosti
Zanimanja koja prije 10 godina nisu postojala
1. App developer
2. Social media manager
3. Inženjer za automobile bez vozača
4. Specijalist za cloud computing
5. Big data analyst /data scientist
6. Stručnjak za okoliš
7. Kreator YouTube sadržaja
8. Operater drona
9. Ekspert za generaciju milenijalaca
Participants

Interreg CENTRAL EUROPE
CHAIN REACTIONS

CHAIN REACTIONS
Driving smart industrial growth through value chain innovation
TRANSNATIONAL INNOVATION AGENDA WORKSHOP # 2 On-line, 25/02/2022

AGENDA

- *Workshop opening and brief introduction of the participants*
- *Short overview of the CHAIN REACTIONS project (Košice IT Valley and CCE-ZCC)*
- *Presentation of the activities proposed so far that will be implemented in the future with the aim of strengthening the ICT sector (previously developed roadmap for ICT sector)*
- ***ICT sector***
  - *opportunities for international cooperation – Košice IT Valley / TNIS members*
  - *hackathon experiences, presented solutions (CCE-ZCC / hackathon participants)*
- ***Advanced manufacturing sector***
  - *opportunities for international cooperation - RDA /TNIS members)*
- *New proposed joint activities (transnational cooperation between TNIS members) - possible partners*
- ***PAUSE***
- *Discussion: How do the members of the TNIS plan to implement the activities?*
- *Validation of activities: The participants assess how feasible are the proposed plans for implementation of innovation activities*

***NOTE: The workshop starts at 11 a.m.**

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