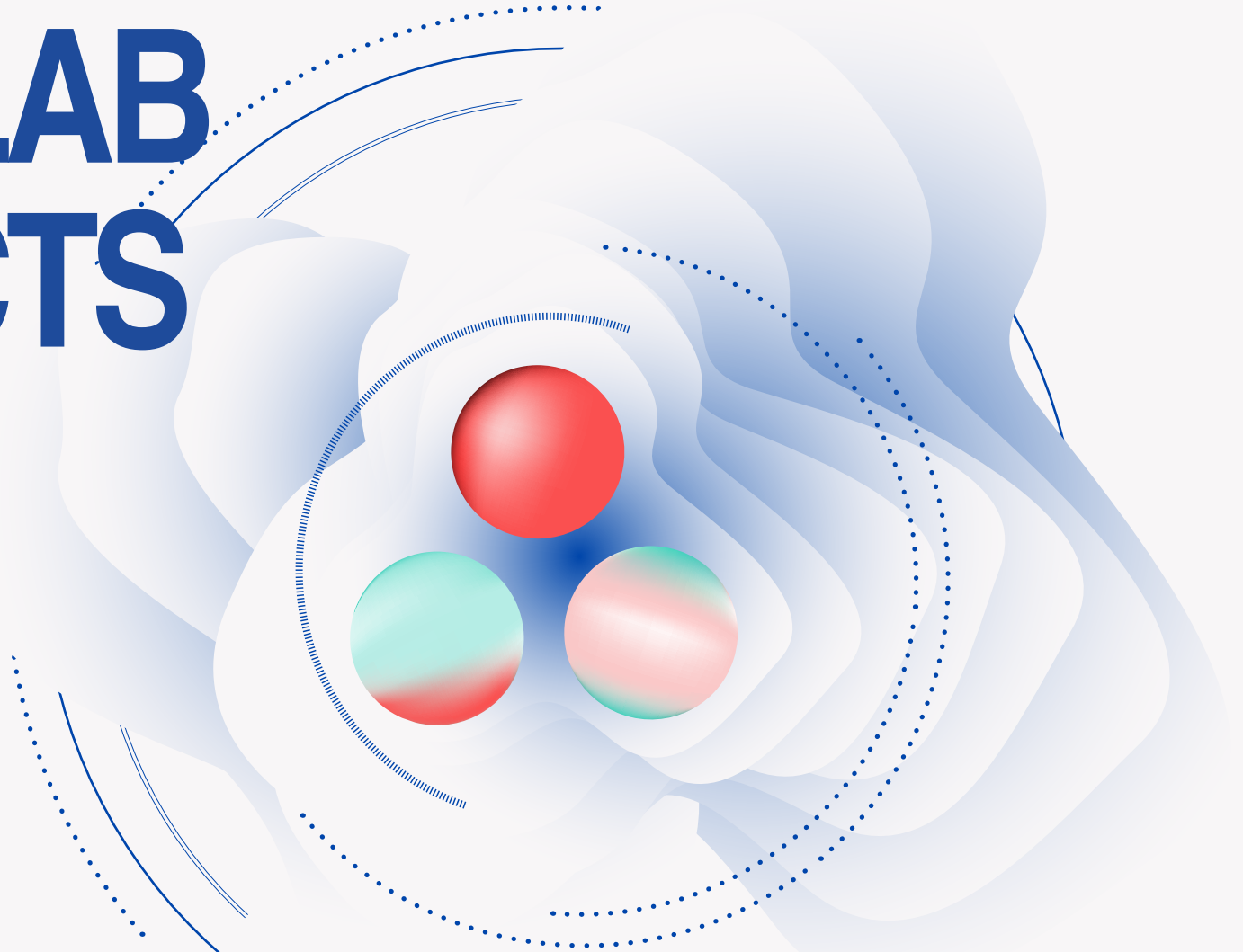


LIVING LAB PROJECTS 2020

Co-creation
& Experimentation
in Real Life
& Digital Environments

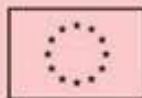


SISCODE

European
Network of
Living Labs

European
Network of
Living Labs

SYSCODE



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European
Network of
Living Labs

BY ENOLL
CHAIRPERSON
Fernando Vilariño

One more year, I have the pleasure to be invited to write a few words for the opening of the report on the Living Lab Projects of 2020. This piece of work is the effort of a Community, the community of people working in citizen-centric and multi-stakeholder innovation around the world. But it is also a reason for celebrating that things go on in a moment of tragic events. Even in this context, the Living Lab perspective is alive and healthy, ready to give hands on responses on actual challenges.

And the challenges that we are facing today cannot be tackled by one institution alone, but by all of us together, without leaving anyone behind. This is something on which we all agree. The tragic SARS-CoV-2 pandemic only showed that this idea has more relevance than it ever had. The key question now is “how” we are going to do it. Living Labs appear as excellent tools to face our global challenges, and this collection of projects can be viewed as the proof that, by doing things in this way, the Living Lab Community is providing answers on the “how” for Europe and the world: Through innovation-led growth and the positive social transformation provided by the Living Lab Community, together we will keep on being stronger, empowering everyone to innovate.

The annual publication of ENoLL on their Living Lab projects illustrates a variety of cases from the domain of Living Labs. A number of these cases have been developed within the H2020 project SISCODE.

Starting from the investigation of the theoretical background and the analysis of existing cases of applied co-creation across Europe, the project conducted ten real-life experimentations as pilots in as many labs from three different networks: The European Network of Living Labs (ENoLL), the Fab Lab network, and the European Network of Science Centers and Museums (Ecsite).

Under an action-research paradigm, all pilots followed an experiential learning framework based on a co-creation approach, which supports the building of new skills and a reflection on multiple levels, ranging from the efficacy of methods and tools, up to the assessment of the developed solutions and their potential impact. Applying this framework in the context of tackling pressing societal challenges resulted in the development of relevant implementable and scalable solutions while experiencing multi-level transformations triggered by inclusive and synergic cooperation among actors that usually work independently.

SISCODE – Co-design for society in innovation and science (siscodoproject.eu) has explored the use of co-design to operationalize Responsible Research and Innovation (RRI) over the past three years. The final goal is the integration of society in science and innovation, and the achievement of a broader impact on the landscape of Science, Technology and Innovation policymaking.

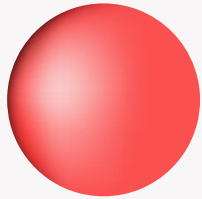
SISCODE's pilots involved a variety of stakeholders and citizens in hands-on activities and workshops. These typically in-presence interactions were strongly affected by the COVID-19 pandemic, requiring a review of established practices, approaches and interaction modes. Physical workshops, tools, and even prototypes were adapted and transformed for digital remote use, with significant implications on stakeholder engagement. Not only new competencies in relation to remote activities have been acquired, but the process has found a means for empowerment, acquisition of new skills, and expanding capabilities to adapt to different situations and contexts.

The identification of these new challenges, opportunities, drivers and barriers is to be reconnected to one of SISCODE's key findings: the fact that operationalizing RRI and embedding co-creation requires cultural and organisation transformations that can be triggered by doing new things and by doing them in a different way. This report presents a series of high-impact cases run by Living Labs, among them the three labs that participated in the SISCODE project: the Cracow Technology Park (KTP) Living Lab in Poland, the Thessaloniki Active and Healthy Ageing (Thess-AHALL) Living Lab in Greece, and the Precision Agriculture Living (PA4ALL) Lab at the Biosense Institute in Serbia.

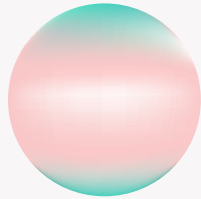


**BY SISCODE
PROJECT
COORDINATOR**
Alessandro Deserti

CATEGORY



SISCODE



CO-CREATION

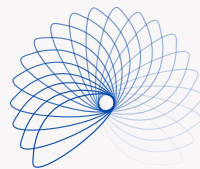


EXPERIMENTATION

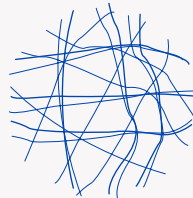
THEMATIC



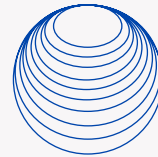
AGRICULTURE



CREATIVITY



CROSS-SECTOR



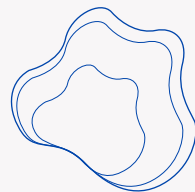
CULTURE



EDUCATION



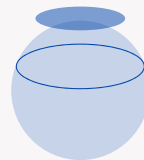
ENERGY



ENVIRONMENT



HEALTH



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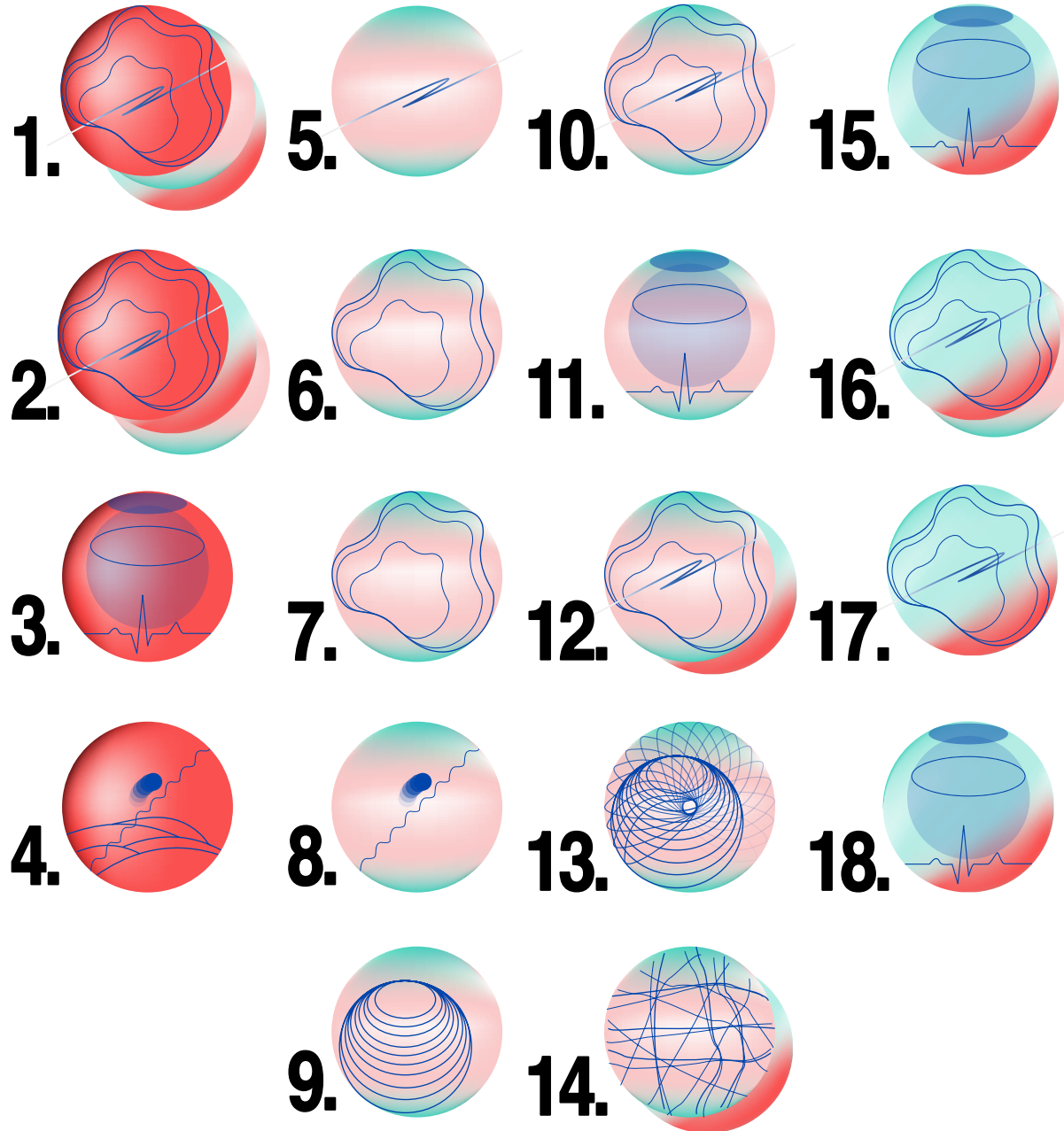
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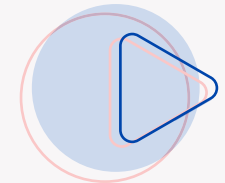
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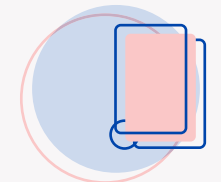
Mission Zero Foodprint



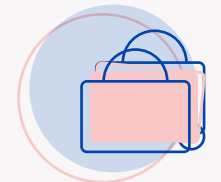
**YOU CAN
CLICK ON THEM
THROUGHOUT THE
PUBLICATION**



Online Video

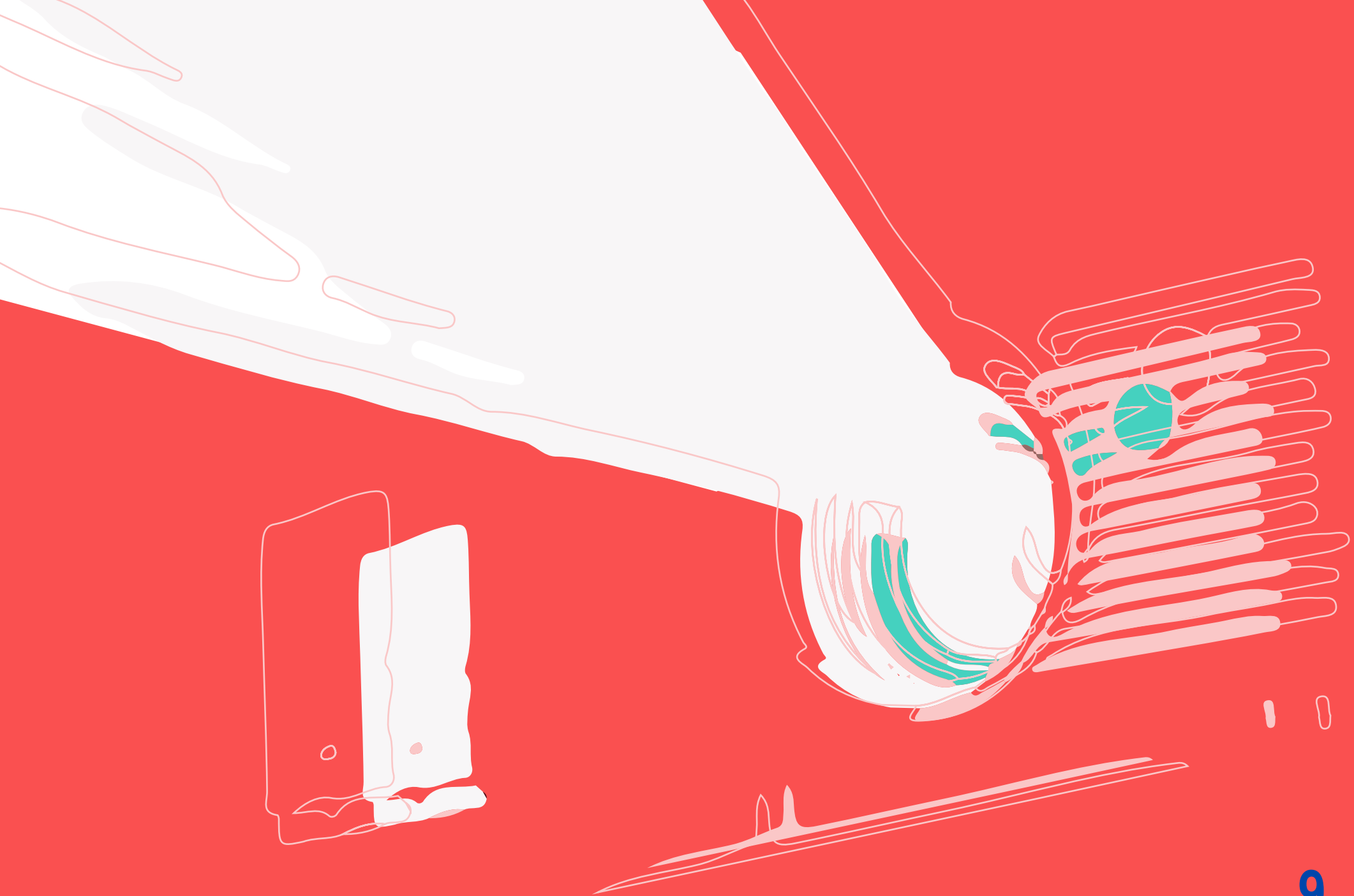


Reading



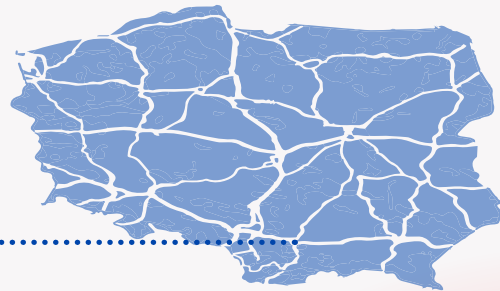
**Tools
and Material**

SISCODE PROJECTS





KRAKOW
TECHNOLOGY
PARK



Poland

**KRAKOW
TECHNOLOGY
PARK**

For citizens and with citizens

– collectively improving air quality in Krakow

Continuing its co-creation journey within the SISCODE project and in strong partnership with the regional authorities, KTP has been actively working on improving the air quality in Krakow and Malopolska region. Various groups of stakeholders were involved in creating the new regional policy (civil society, NGO experts, scientists, civil servants, representatives of businesses). The intensive and long term co-creation work resulted in the development of the Air Quality Plan (AQP), a binding document for the entire Małopolska Region, with key assumptions and tools for significant ecological changes in the whole region. Malopolska is the first region in Poland to have started and finalized their regional Air Quality Plan with strategic long and short term activities to be implemented to achieve reduction of levels of air pollutants, namely PM 10 and PM 2.5, recommended by the World Health Organisation (WHO) by 2030.

CO-CREATION

The co-creation of a new Air Quality Plan started in 2019 and finished in September 2020 when the final version of the document was published and ratified by the Regional Authorities.

The AQP is the result of the process of extensive consultations and co-creation workshops that took place in 2019. The activities undertaken by the KTP in 2019 included a series of workshops with various stakeholders in order to understand their perspectives, expectations and identify a catalogue of initial project proposals aimed at reduction of air pollution. Some of them became also priorities for the hackathon co-organised by KTP in December 2020.

All reflections, insights, recommendations as well as catalogue of project proposals were collected by Marshall Office of Malopolska Region and used in defining the 1st version of the Air Quality Plan. It was published in January 2020 including a set of rules and restrictions but also proposals for activities which should be implemented in the region to improve the quality of air.

In contrast to 2019, when all activities took place in real life, the activities undertaken in 2020 switched to the digital world due to the Covid-19 pandemic.



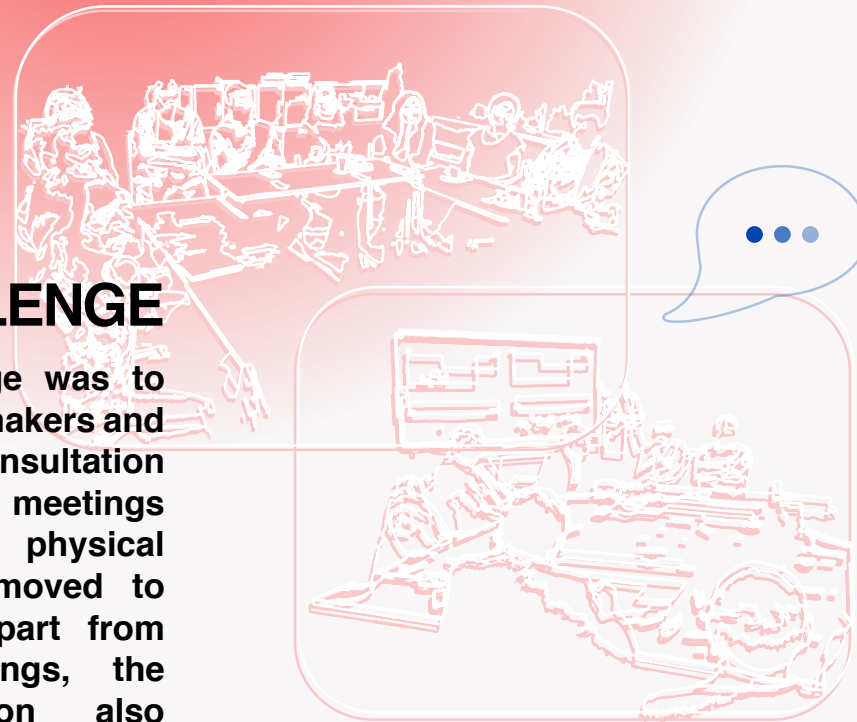
The AQP has been disseminated during 6 meetings in 5 major cities of Malopolska region, to let all interested stakeholders provide their feedback. During these face to face meetings, the AQP draft was presented by the authorities followed by an open discussion. After the first round of consultations in January 2020, the draft of the AQP was revised, the recommendations were analysed and incorporated to the second version of the prototype.

Since April 2020, the consultation phase has been transferred to the digital environment that partially limits the desired depth and scope of discussions.

However, to ensure inhabitants of Malopolska chance to participate in the final debate over the 2nd version of AQP, the consultation meeting was organized both in real-life environment, following the covid-19 restrictions, as well as in digital world with open streaming in real-time, giving all inhabitants a chance to ask questions or express their opinions.

CHALLENGE

The biggest challenge was to bring together policymakers and citizens to digital consultation meetings. A few meetings initially planned as physical events had to be moved to the online world. Apart from the physical meetings, the coronavirus situation also caused severe limitations related to prototyping activities, where the meeting face to face between the KTP team and policy makers was important in order to better understand some details regarding the AQP. Moreover, the process of getting feedback from inhabitants was much more complex and time-consuming. It occurred also that policy makers were less available for activities and consultation meetings in the digital world.



Co-creation Labs' journey



*Let's talk about air.
Sharing ideas.
Looking for solutions.*

OUTCOMES AND LESSONS LEARNT

The open and transparent consultation process proved to be extremely significant for the further development and approval of the legislative act. The involvement of different stakeholders and respect to their needs and threats gave a deep understanding how to effectively co-design new policies that are accepted and approved. The complex and holistic vision of how to approach the creation of any legislative act is the added value to the whole co-creation journey undertaken within the Siscode project.

In a consultation meeting and workshop organized by the KTP in 2019 nearly 330 participants took part. In 2020 in real-life consultation meetings over 350 participants took part, the similar number in online meetings and presented recommendations or comments to AQP.

Lesson#03

ILLUSTRATION:
Prototyping with regional
policy programmes

Agnieszka Włodarczyk
KRAKOWSKI PARK TECHNOLOGICZNY

03

Mooc movie



SISCODE - KTP



A view from KTP



Test before invest – a platform for monitoring industrial pollution

Continuing the intensive and long term co-creation work in Krakow, the Living Lab's work contributed to the development of the Air Quality Plan, a binding document for the entire Małopolska Region, with key assumptions and tools for significant ecological changes in the whole region. One of the main courses of activities furthering air quality improvement listed in the Air Quality Plan is the reduction of industrial emissions to the environment. KTP decided to continue the journey by focusing on this topic and enabling the implementation of one pilot project selected during the Smogathon 2019 (a hackathon focused on the air protection projects). This resulted in an experimental pilot implementation of a platform for monitoring industrial pollution in one of Malopolska's counties. That pilot implementation became a tangible effect of the whole co-creation and experimentation journey.

About the Living Lab

Krakow Technology Park was established in 1997. Its mission is to develop modern economy and innovative academy-based technology enterprises in the region. Krakow Technology Park plays a key role in the development and growth of the local economy in the area of ICT technologies and e-driven solutions, being a hub for innovative SMEs offering them varied infrastructure, state-of-the-art labs, office space and a vast range of training, information and consulting opportunities. As a Business Innovation Center, KTP supports directly over 150 companies (incubators, accelerators, tenants) located in the venue, gathers 100 IT & ICT based companies in clusters and the same number in special economic zones.

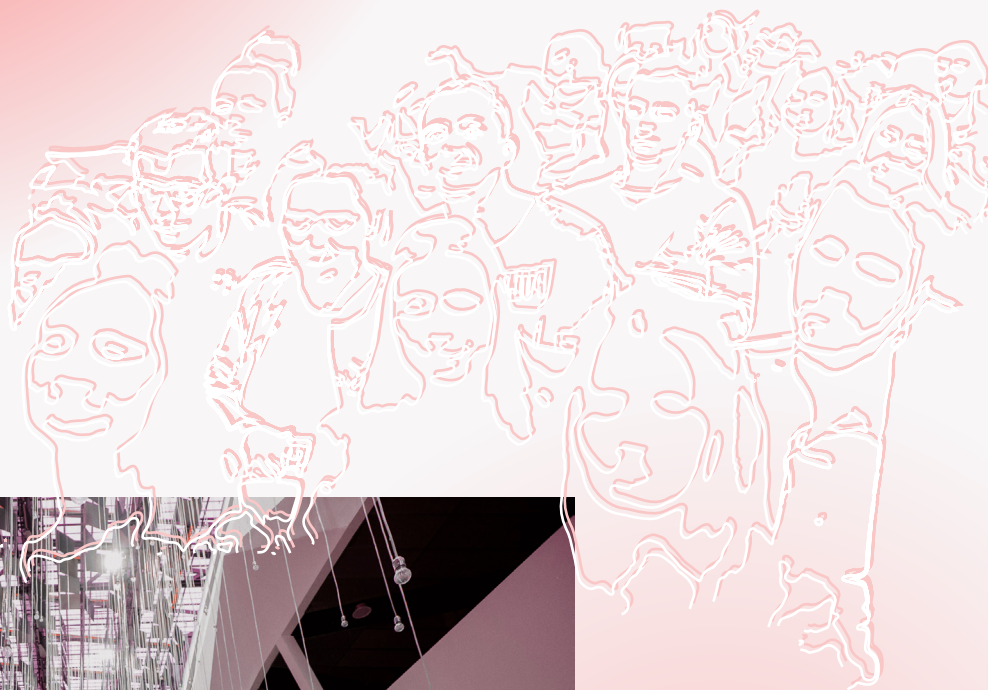
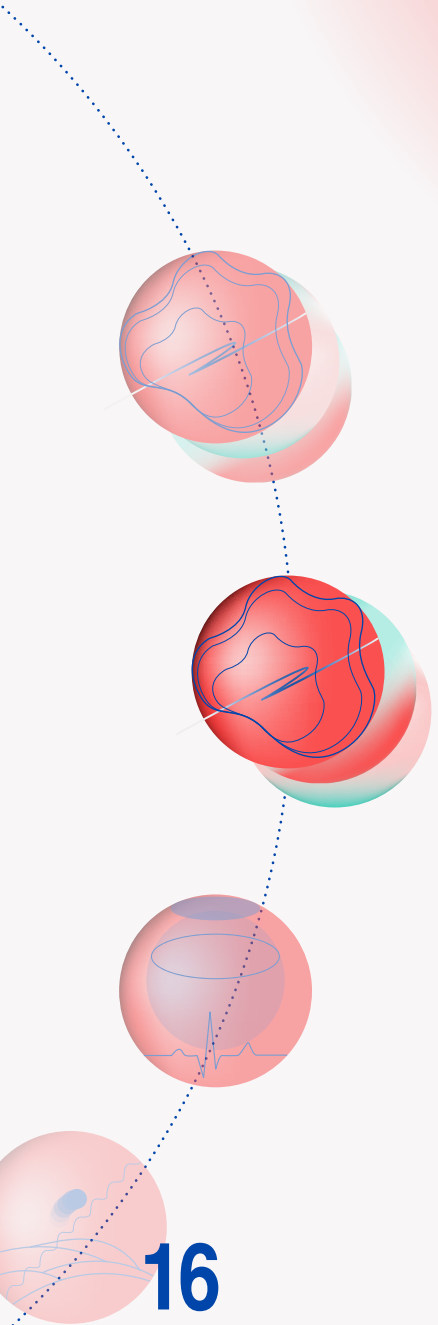
EXPERIMENTATION

When the Smogathon took place in December 2019, within 24 hours, 170 participants presented 30 projects focused on improving the air quality, but nobody expected that the awarded solution would be further prototyped and tested under completely different circumstances.



The experimentation was conducted from December 2019 to December 2020. The project team, which consisted of KTP's representatives and the Smogathon winners, prepared a plan of their work dedicated to designing and testing the platform in one of the counties of the Malopolska region. This required a long preparatory process with the analysis of the competences and responsibilities' allocation among particular administrative units, revision and adaptation of available data, consultations and discussions with various stakeholders in terms of their needs, expectations, and ideas. Multiple bilateral and multilateral meetings have been conducted, and prototyping workshops were organised. Unexpectedly, the process became very complicated, when everyday life has been interrupted by the Covid-19 pandemic and the lockdown. Since then, it became very difficult to engage with the representatives of SMEs, policy makers, and inhabitants.

The project team was forced to adapt quickly to the changing circumstances and transfer the whole process to the digital world. When the first version of the platform was issued, the wide scale tests were organised virtually via emails, phone calls and online collaborative platforms (ZOOM, Miro). Thanks to the use of interactive tools the process ended up being very successful and effective. Testing of the platform included 3 phases: internal review of the project team, external review among representatives of the KTP and regional authorities, and tests with end users. The interviews with end users (inhabitants & SMEs) went smoothly and helped to improve the prototype and present a set of recommendations which will be used by regional authorities in the further phases of the process.



OUTCOMES AND LESSONS LEARNT

Tangible outcomes: one prototype of the platform for monitoring industrial pollution has been designed and tested among 49 inhabitants and 5 enterprises, one recommendation report for the regional authorities has been prepared.

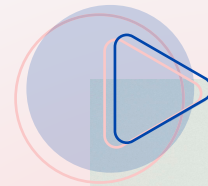
Intangible outcomes: the biggest outcome and lesson learnt from the whole process is that only flexibility and ability to adapt quickly to the unexpected circumstances leads to the success of experimentation.

The prototype presented and awarded during the Smogathon had a lot of potential. Thanks to the close involvement of the crucial stakeholders in the experimentation process, the collaborative work of many stakeholders, and deep analysis of procedures and legislations, it was possible to release the effective and functional monitoring platform.

Moreover, the fast and agile response to the COVID-19 restrictions, and transferring all of the interactions to the digital world, with extensive usage of interactive tools and platforms, provided the success of the testing phase.

The main lesson is that you have to be open to changes during your experimentation journey, as experimentation both in real-life and in the digital world is undoubtedly a dynamic and unpredictable process.

Smogathon movie



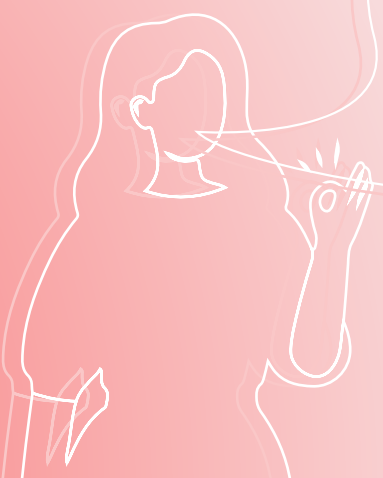
Greece

**THESSALONIKI
ACTIVE & HEALTHY
AGEING
(THESS-AHALL)**


Teaching university students co-creation and living lab methodologies

During the last decade, co-creation concept and living lab methodologies have been considered as valuable resources for future researchers along with the demand of companies and public sectors on investing in person-centred approaches for fostering social innovation and state-of-the-art services. However, teaching university students co-creation and living lab methods has not been conceptualised yet. Thess-AHALL designed a first prototype course on teaching the co-creation and living lab methodologies through experiential learning activities and active experimentation, by bringing students and citizens in the same class and triggering knowledge exchange through the mutual collaboration and support of all the involved parts. Students enter the shoes of citizens, trying to understand society's real needs, while preparing themselves for the challenges of professions' world, and citizens become an active part of the educational process, operating as co-students or "partners of experience".

The activity was designed as a short course for engineering students and was composed of four lectures span over four consecutive days, taking place for approximately two hours each. The course was compulsory, and all students received a final grade. The course output was to design and implement serious games web applications for Parkinson patients that would help the patients improve certain personal capacities (e.g. memory, attention) and assist them in facing the disease's symptoms.



"I enjoyed discussing with [end users] in order to understand what they think, what they like and what they don't. It is my first time meeting and discussing with a patient"



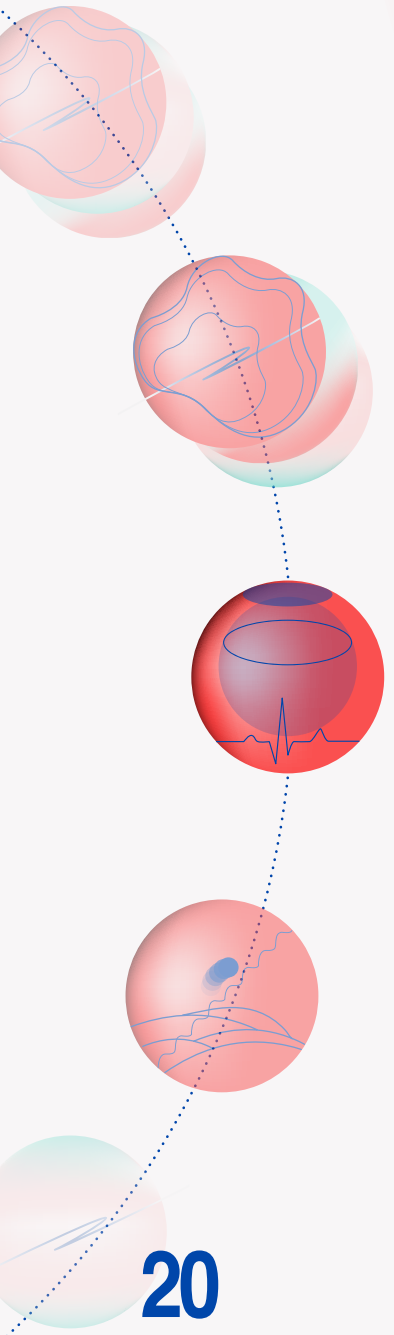
"I would never have thought that simple games, such as the ones we designed, could be of value for Parkinson's patients, if we hadn't discussed with them before designing. Even the feedback we received during the competition could be used to improve more the games."

Student participating in the activity

Student participating in the activity

About the Living Lab

Thessaloniki Active & Healthy aging Living Lab (Thess-AHALL), operational since 2014, is a unique setting in Thessaloniki, Greece. The lab fosters initiatives encouraging development and sustainability of novel technologies in the active and healthy ageing domain. It is actively pursuing co-creation/co-design of technological solutions to improve health & independent living for older adults. It is a hub of interconnected pilot sites, the actual strength of which lies in the created synergies and strong bonds with local and European community. Thess-AHALL has created the "Collaboration & Research Community for independent living", composed of more than 100 older adults, caregivers & healthcare professionals, who participate in participatory research activities of the Living Lab. The community meets regularly, sharing experiences and providing views and doubts on everyday life of older adults & chronic diseases, as well as co-designing & validating assistive solutions for health & well-being.



EXPERIMENTATION

An indicative example has been the joined classes (lectures and hands-on activities) of Aristotle University of Thessaloniki (AUTH) School of Medicine postgraduate students with older adult Parkinson’s patients/ members of Thess-AHALL’s Collaboration & Research community for independent Living. The groups met on a regular basis to perform co-creation activities. In that way the community members and potential end-users become familiar with the educational procedures and start providing their requirements, thoughts and concerns on effective problem-solving as well as solution-design by students. Older adults were not given any guidance so as to perform spontaneous requirements’ elicitation and response on students’ ideas. The students were informed of any symptoms the Parkinson patients might experience during the discussion. They were encouraged to ask any questions they think would be useful for designing their solutions as well as any other question that would help them understand the end-users’ real-life needs.

When the older adults were asked about the “Play for the Parkinson’s Association” campaign they told Thess-AHALL that in the year where the serious games for the citizens were introduced, the pavilion was full of people. The previous years the pavilion was not attractive for people passing by and did not attract many visitors. The Parkinson’s patients were glad that such a campaign was achieved to attract people at the pavilion because they had also the opportunity to be informed about the disease and the association.

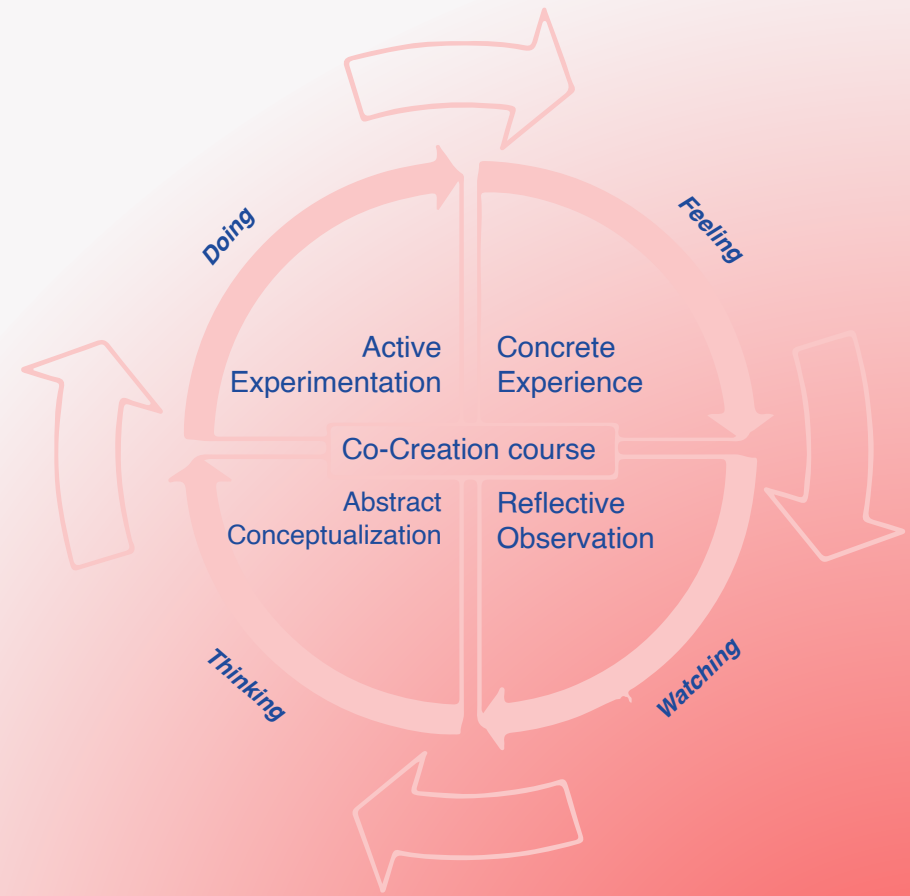
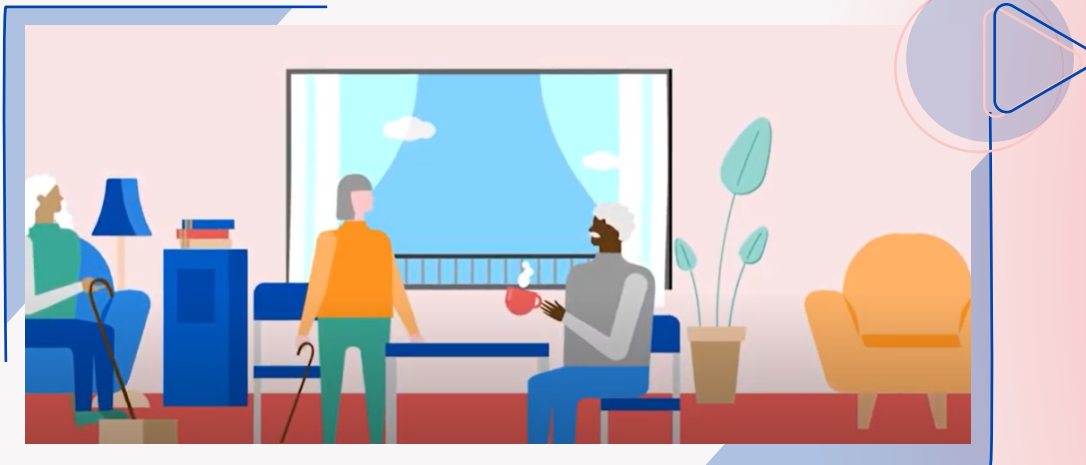
**RAISING AWARENESS
FOR THE CAUSE**

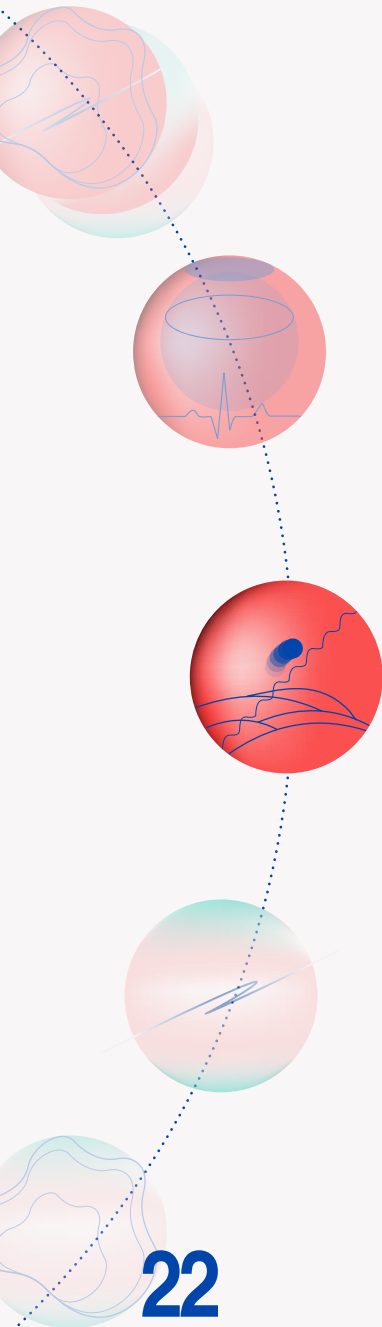
**OUTCOMES
AND LESSONS
LEARNT**

DEVELOPING A PROTOTYPE

This round of joint lectures led students to promote the design of serious games for Parkinson's patients to support their everyday life and contribute to the alleviation of disease's symptoms. Challenge and an asset for students was to design serious games. Students had to respect the feedback of older adults and perform activities, based on end-users' needs, previous experiences and concerns about the disease. Students worked for a couple of weeks in smaller teams to implement their solutions. During the last joint lecture, students presented their serious games to the invited end-users for testing and evaluation. This first prototype course was deployed under the "Course on Technology", powered by the Board of European Students of Technology (BEST), Thess-AHALL & AUTH Medical Physics Lab and it was one of the Parent-Ideas of other successful case-studies, like the Play4/Participate4 gamified public awareness campaigns and the SISCODE H2020 Partners of Experience.

Thess-Ahall Video Scenario





Serbia

**P4ALL
BIOSENSE**

Co-creating an educational module

The Living Lab's main focus in the SISCODE project is set on educating young future professionals in the agrifood sector to uptake precision agriculture tools, and in that way supporting the still traditionally conducted sector of agriculture in Serbia. The prototype developed is an educational model that will be used in high schools around Serbia, and which will widely introduce precision agriculture tools to young farmers and future generations of professionals.

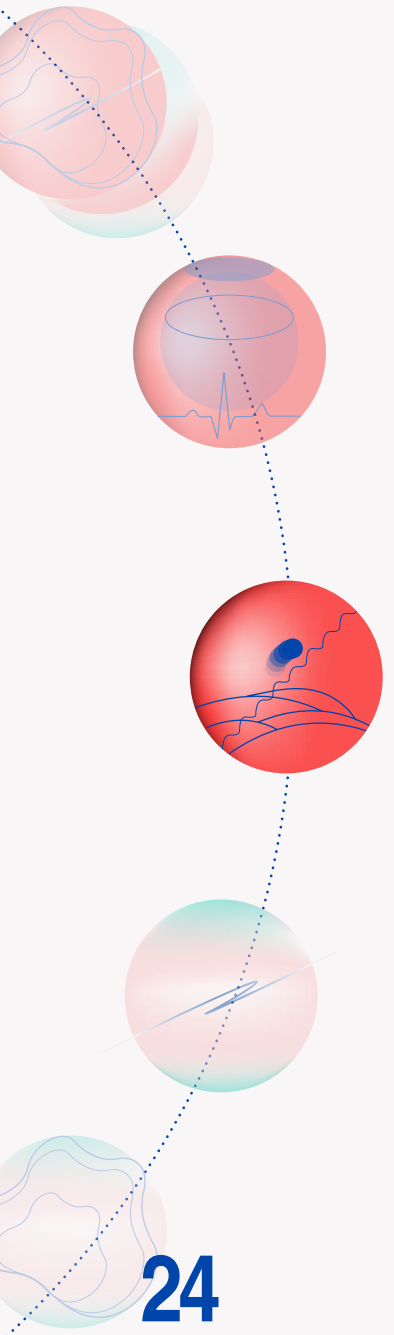
The Living Lab set off with the aim of introducing precision agriculture tools in high schools specialized in agriculture by presenting the benefits of using the ICT in the sector and encouraging high school students to uptake new trends and innovations.

After conducting desk research and interviews during the co-creation process with the stakeholders, PA4ALL concluded that the best solution would be to provide meteo stations to one selected school, which will offer the best innovation idea related to ICT in agriculture. The meteorological stations provide information, such as soil humidity, air temperature, precipitation amounts, air humidity, wind direction, through the BioSense internal platform – AgroSense which provides various data on personalized agriculture production. The final aim was to improve the curriculum in schools with this new module and change the adoption of ICT in schools on a larger scale, considering the notion that the younger agricultural household members are a demographic group that has demonstrated higher adoption rates of technology.

About the Living Lab

PA4ALL is an abbreviation of Precision Agriculture for All, which is also the main scope of the Living Lab: Introducing all the actors along the agriculture production chain to precision agriculture tools. The host organization of PA4ALL is BioSense Institute, an Institute for research and development of information technology in biosystems. Research and innovation at BioSense Institute is developed in a close interaction with farmers and the agrifood sector, government bodies, entrepreneurs and business community, international researchers, and citizens. PA4ALL is working together to create a new generation of open innovation, which will be readily used and lead to benefits along the entire value-chain. As a meeting place for all relevant stakeholders, PA4ALL has been established – the Living lab for precision agriculture. This is the first Living Laboratory in Serbia and the first one in Europe to focus on precision agriculture. PA4ALL takes full advantage of inter-sectoral cross-fertilization of ideas and offers possibilities to test ideas and prototypes in a real-world setting.





CO-CREATION

Steps for co-creating the envisioned solution

1. Analyzing context

Desktop research on educational systems.

Selection of a reference school and interviews with the teachers and students to analyse their needs.

Including the network of innovators (farmers, SMEs, entrepreneurs) for gathering their professional opinions on the current needs of the market and creating better professionals.

Workshops with the farmers community, SMEs and start-ups.

3. Ideate

2. Reframing the problem

Contact with different schools and pupils in Serbia.

Data analysis has helped in determining what are the crucial needs of schools in developing their curricula.

4. Prototyping

Installation of a meteostation and providing support materials (laptops, video projectors or printers) in order to help the school to collect and manipulate meteorological data directly from the meteostations.

Furthermore, PA4ALL provided several training sessions on how to use the meteostations, the AgroSense platform, as well as giving personalized access to AgroSense. The services of AgroSense are promising for schools since students are able to see how such a technology looks and works in real life.

5. The Final solution

Design of a new educational module for high schools.

OUTCOMES AND LESSONS LEARNT

Through the PA4ALL project initiative, the application of co-creation led to both direct and indirect benefits on a policy level. Indirectly, due to the existing governmental strategies, which are addressing the existing policies that incentivize the implementation of ICT in education in Serbia (Digital Agenda) a more innovative mind-set, and starting changes on a societal level were expected. Directly, since the co-creation activities functioned as positive examples to be presented to the policy makers on how the curriculum in schools could be improved and how the society reacts to educational system reforms.

Other key lessons learnt:

- Detection that the level of interest in the field of agriculture among high school children is dropping significantly in Serbia

Co-creation applied in science can lead to long-term positive results
Due to COVID-19 related lockdowns, digitalisation and a use of new tools is key to effectively reach out to the stakeholders

CHALLENGE

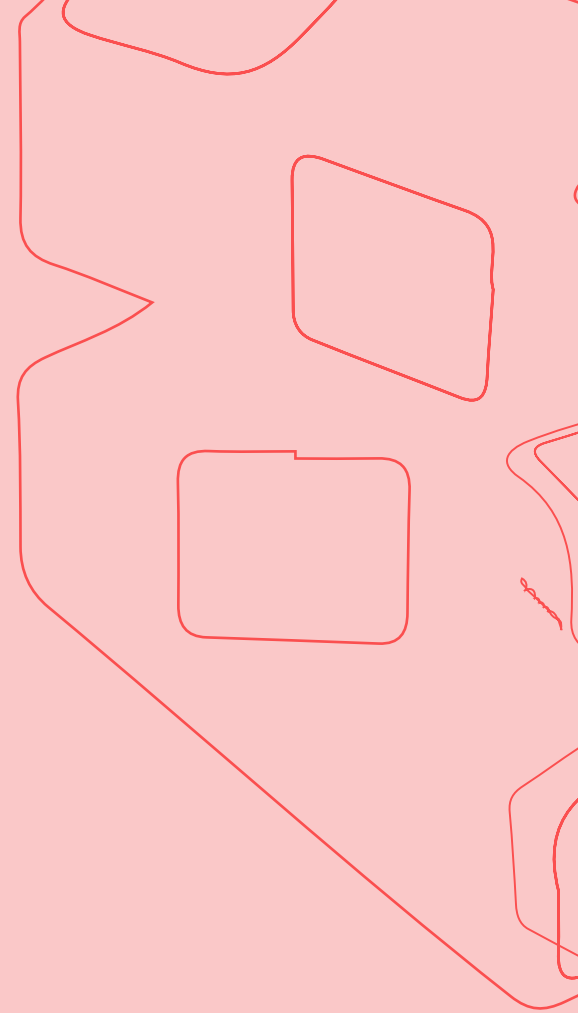
COVID-19 slowed down and generally impacted the progress of the project. Due to the direct involvement of high schools and their closing due to the pandemic, the planned activities and workshops in schools were postponed from Spring to September 2020. The interaction therefore had to be moved to the digital channels, through which the AgroSense platform was presented. Nevertheless this obstacle did not stop the project in its course and interaction continued with the students and teachers.

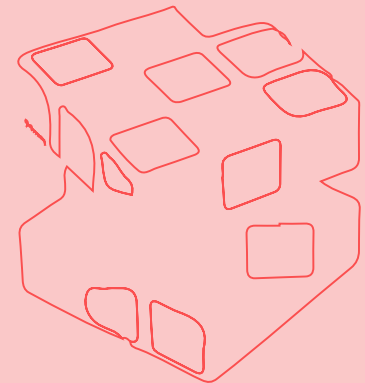
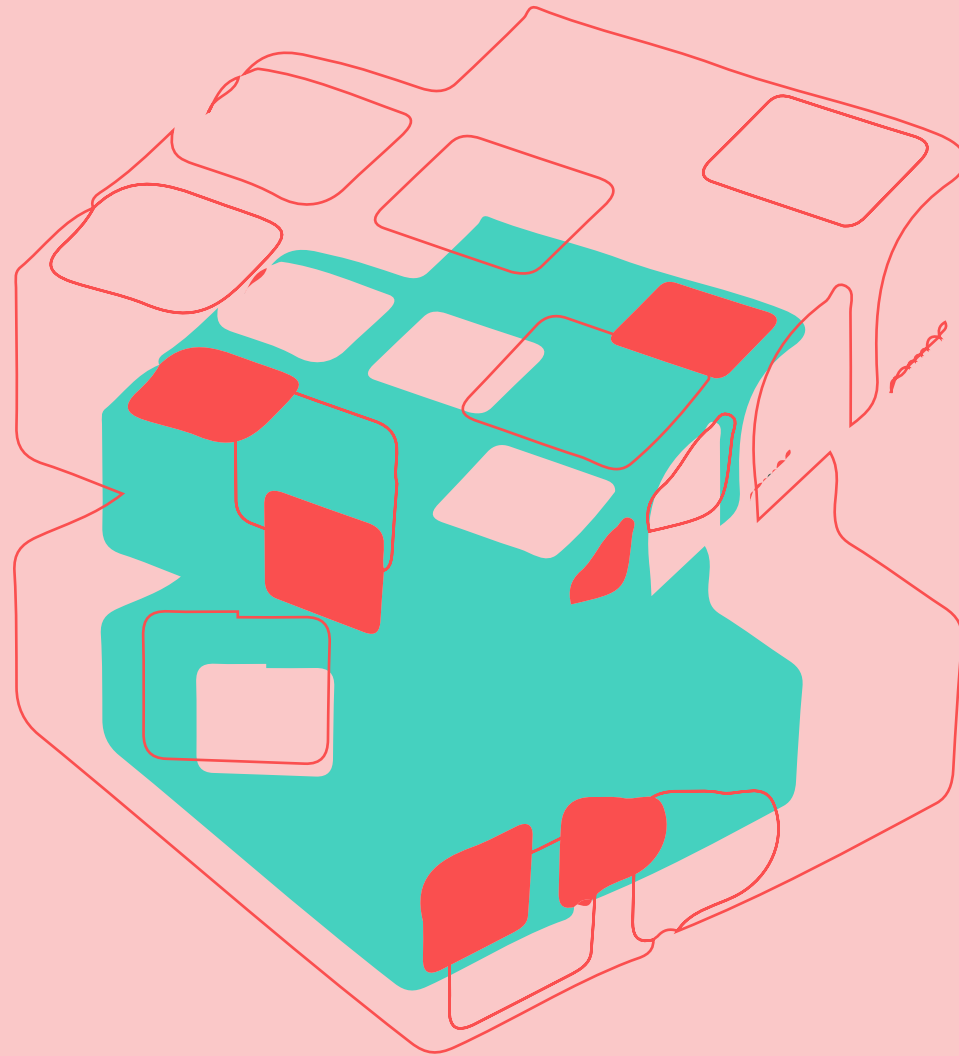
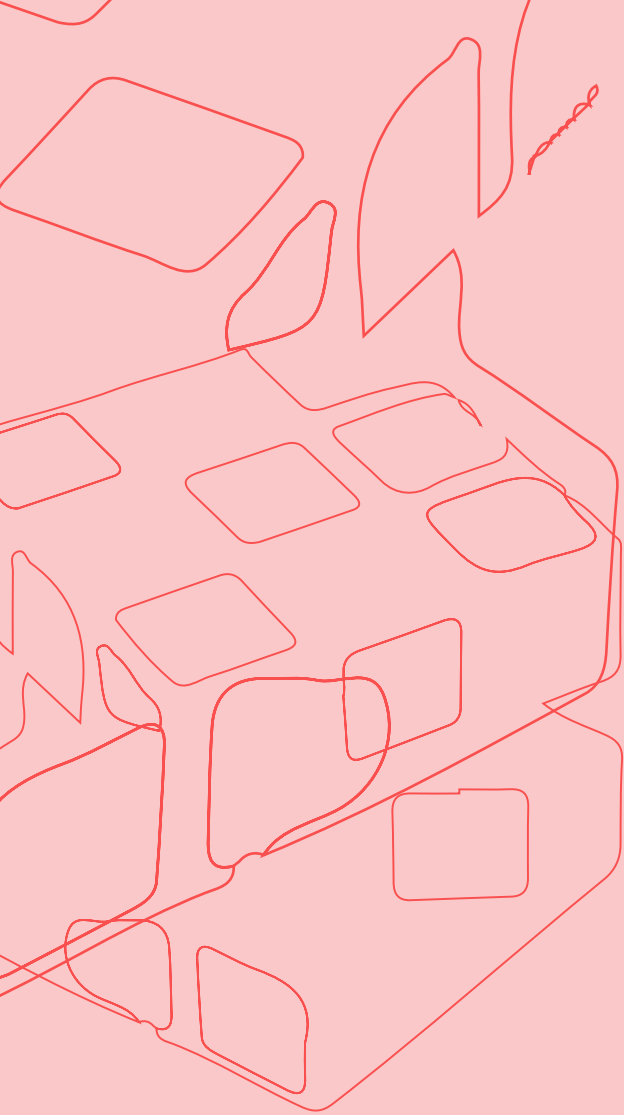
Another challenge that was faced in the project is that there is no ICT education in high schools at the moment which is a considerable problem for the agriculture of the future. When co-creating with the main stakeholders, both teachers and students pointed out that currently there was no syllabus supporting ICT subjects in schools specialized in agriculture. The pupils and the faculty both expressed interest in being more connected to market demands and emphasized that they lacked relevant courses that could support that. Compiled outputs pointed the Living Lab in the direction of finding connections between ICT and agriculture and focusing its efforts on it.



P4ALL Video Scenario

CO - CREATION

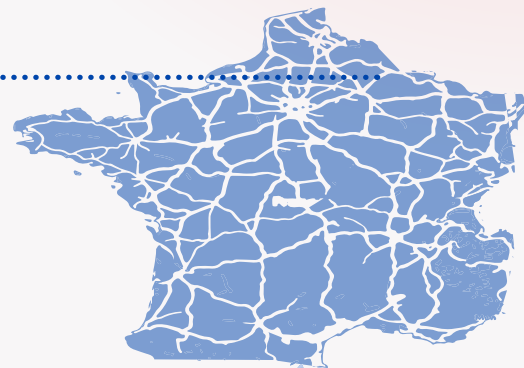




Based on the universality of the Université de Lorraine and its multidisciplinary, the Lorraine Smart Cities Living Lab (LSCLL) experiments in terms of projects, governance and support platform.

The LSCLL is a collaborative resource centre hosted at the Lorraine Fab Living Lab® (LF2L.Fr) Nancy, France, to support and link the various thematic and territorial labs integrating users and implementing collaborative approaches in the service of Research, Development of Innovations, Training and a Citizen Culture. The LSCLL seeks to develop Public Private Population Partnerships (PPPPs) to disseminate innovation and related practices.

The term “Lorraine” refers to the territory of the Université de Lorraine, and works with all continents. The notion of “Smart Cities” is understood in the very broad sense covering all the possible themes of territories, their challenges and the transitions they face involving users.



France

**LORRAINE SMART
CITY LIVING LAB
(UNIVERSITÉ DE
LORRAINE)**



Smagrinet - Empowering Smart Grid Expertise in Europe

SMAGRINET project (EU Grant agreement 837626) is providing services to European universities, municipalities and industries to enhance their capacity in energy research and innovation to tackle the smart grid energy transition. This EU project aims to accelerate the spread of smart grid technologies via the creation of initial education lectures and continuous education programs, both specialized in smart grids.

The continuous education programs target:

- 1) *the electrical engineering workforce*
- 2) *engineering researchers*
- 3) *the broader public, including policymakers and public authorities.*

In order to co-design the continuing educational material with the various stakeholders, an action research method was adopted (i.e the subject was explored interactively and iteratively according to the activities implemented). Workshops applying the Living Lab methodology were organised and supported by the LF2L.fr platform to involve neophyte citizens and local authority professionals on the issue of smart grids.

The Living Lab workshops initially took place in 2019 on the LF2L.fr co-design platform to combine training via MOOC (smagrinet.eu) and active pedagogy on mock-up and immersive devices. The COVID-19 pandemic has required to adapt practices. For the 2020 edition, the Living Lab workshops were transformed into a full week of online user-driven innovative training. Starting from a real use case, this workshop confronted students with the current challenges of the energy transition facing territories and companies (the energy sector). Through a detailed analysis of the ecosystem and the needs of the players in a territory, the project co-designed and evaluated the potential acceptability of different scenarios for the deployment of distributed energy systems involving production and/or storage solutions.

The biggest challenge was to involve and keep 30 new experts and people to the subject motivated in a co-creation process without meeting physically. It was also challenging to make the intangible tangible (innovation in energy).

CO-CREATION



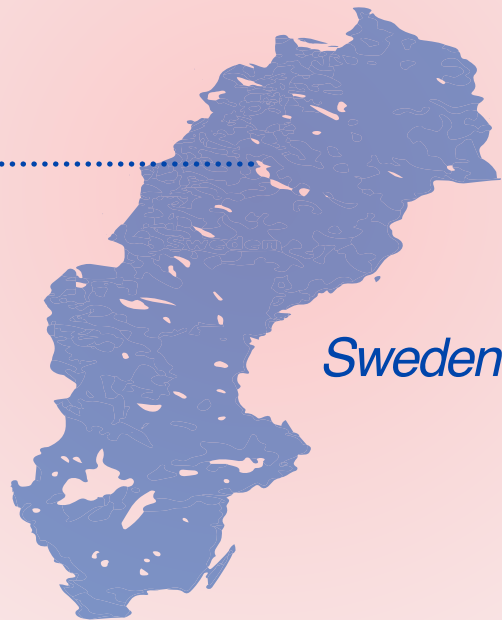
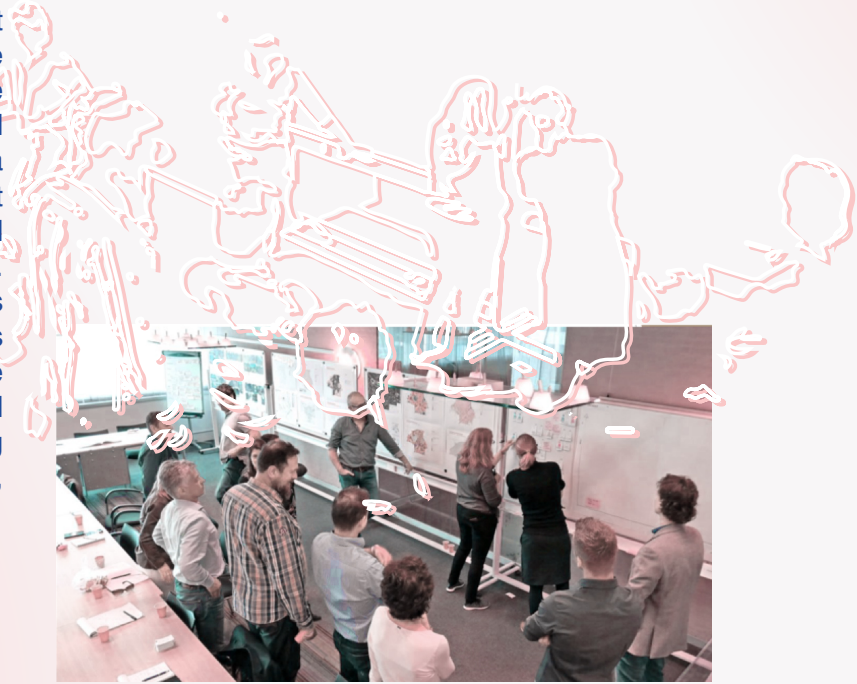
Applying a Living Lab Approach to Smart Grid Training Course Design

The challenge for researchers from complementary disciplines is to combine their knowledge and know-how to innovate together in order to train the specialists and professionals of tomorrow, while integrating the point of view of users/citizens and public decision-makers.

The involvement of researchers in educational workshops enabled the students to benefit from the resources of research laboratories as soon as possible. Conversely, the researchers have feedback on the modalities of leading face-to-face and online a participatory science approach. These meetings also made possible to detect possible scientific controversies on socio-technical systems by listening to the criticisms and remarks of the participants. The next step is to offer these workshops directly to citizens, users, businesses, communities. Organizing workshops with participants with different profiles is useful to identify the relevant way of skills and knowledge about Smart Grids.

OUTCOMES AND LESSONS LEARNT

At Luleå University of Technology (LTU) in Sweden the Department of Computer Science, Electrical and Space Engineering host the research subject Information Systems. From the year 2000 we have been running Botnia Living Lab (hosted by LTU) which has matured from a test-bed to become a real-life Living Laboratory. Botnia is a world-leading environment for user-centric research, development and innovation (RDI), supported by innovative methods, tools and experts and is also a member of the European Network of Living Labs. With its focus on advanced IT services and products, Botnia's strategy is to be independent from (geographically) fixed assets and essentially, service experimentation relying on readily available hardware and communication infrastructure. Botnia's track record includes application areas such as: smart regions and cities (focusing also on Smart villages), energy efficiency, sports and culture, e-democracy as well as security and privacy.



BOTNIA LIVING LAB



Urban Nature Labs

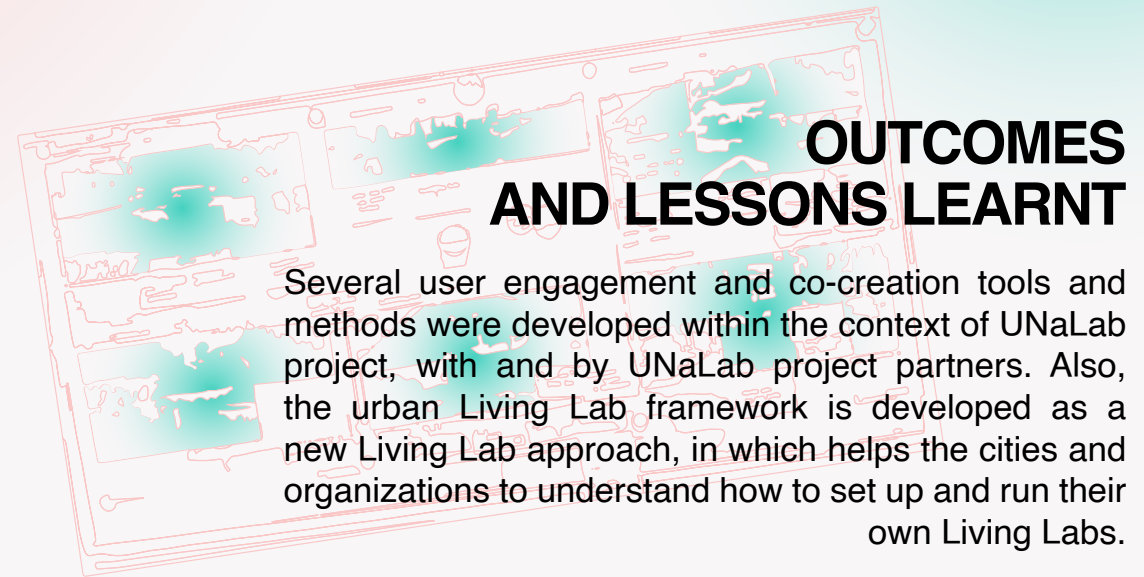
The EU-funded UNaLab project aims to develop smarter, more inclusive, more resilient and increasingly sustainable societies through innovative Nature-Based Solutions (NBS). The UNaLab Consortium is composed of 28 partners including 10 cities across Europe and beyond. The UNaLab partner cities are committed to address climate- and water-related urban challenges with an innovative and citizen-driven approach.

Nature-based solutions (NBS) are inspired by or supported by nature. They represent natural 'green' solutions to societal challenges, such as flooding, environmental pollution, biodiversity decline, and compromised human well-being. In the UNaLab project, NBSs are co-created systems that utilise natural features and ecosystem-based processes. These innovative solutions bring more diverse nature and natural features and processes into cities, landscapes and seascapes, thereby creating more sustainable and resilient societies.

Within the project Nature-Based Solutions were co-created with various stakeholders, including citizens. Three European cities went through the co-creation process: Genova (Italy), Tampere (Finland) and Eindhoven (The Netherlands), the latter also being a member of ENoLL through Brainport Eindhoven.

UNaLab will employ and further develop the Urban Living Lab approach for the co-creation of NBSs, in order to create an EU reference demonstration and go-to-market environment for NBS.

CO-CREATION



Several user engagement and co-creation tools and methods were developed within the context of UNaLab project, with and by UNaLab project partners. Also, the urban Living Lab framework is developed as a new Living Lab approach, in which helps the cities and organizations to understand how to set up and run their own Living Labs.

Each city had several takeaways from the co-creation workshops. Here is an example of one take away from each city:

- Eindhoven: redefine the challenges and collect as many ideas as possible for solutions, make sure that there is no hesitation among the participants to voice an opinion.
- Tampere: prepare high-quality educational material for the workshop. Maps, pictures and plans of the relevant area are useful as a base for discussion.
- Genova: follow up electronic invitations with phone calls to ensure that the stakeholders representing key areas of expertise participate.



*Urban
Living Lab
Handbook*

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LORRAINE SMART CITY LIVING LAB (UNIVERSITÉ DE LORRAINE)



Climate Labs

The Climate Labs project* seeks to strengthen applied research and innovation capacities of 10 partner universities from Mexico, Brazil and Colombia through the design and implementation of Social Innovation Labs for mitigation and adaptation to Climate Change. The project aims to build interdisciplinary and multi-stakeholder labs that will institutionalize the applied research and innovation for climate change in the territories the partners are inserted. Through the LF2L.fr the Université de Lorraine leads the capacity building process in terms of supporting the Latin American universities to assemble the Climate Lab teams and further design and implementation of their social innovation platform. To this end, a series of Living Lab co-design workshops have been designed to ensure that the Climate Lab implementation process is multi-stakeholder and collaborative

**The project is funded by the Erasmus+ programme (610032-EPP-1-2019-1-CO-EPPKA2-CBHE-J/2009 - 2006 / 001-001)*

“How do you spark collaborative sense-making processes among recently assembled teams towards a fuzzy desired future?”

This was one of the main challenges at the start of the project for which a Living Lab workshop was designed, so that project members could begin to envision and reflect on the Climate Lab journey they were embarking on. Building on their main motivations and territorial challenges, members of the University teams were asked to confront their ideas on what each of them thought the Climate Lab should be and aspire to be, then to know each other by identifying their main competencies, their weakest points where more development was needed and finally, to discuss the main obstacles to the successful implementation of their social innovation platform.

The biggest challenge was to ensure smooth and meaningful interaction among all the teams. There were more than 60 participants distributed in 10 teams.

CO-CREATION

OUTCOMES AND LESSONS LEARNT

The Living Lab workshop took place in Manizales, Colombia in March 2020. This was just before lockdowns began to occur due to the COVID-19 pandemic. Probably the most important outcome of this workshop was the bond created between the teams and the sense-making process that began at that time. Since all subsequent project activities were conducted digitally, the results of this co-creation session served as an early strategic blueprint that provided key data from which next phases of the project were adapted.

Four main strengthening points were identified:

1. How to implement a Living Lab process to address social and climate change issues ?
2. How to manage a social innovation platform ?
3. How to build social innovation and climate change culture within universities?

Accordingly, the next steps of the project have focused on assessing the competences and setting up the Climate Lab teams, as well as structuring the incubation program for the ten Climate Lab initiatives in Latin America.



The Well-being Living Lab Nagykovacsi is operated by TREBAG Intellectual Property and Project Manager Ltd., a Hungarian private company, established in 1989. TREBAG has wide experience in European projects and transnational cooperation for over 30 years with special focus on innovation, R&D and training. The company participated in several projects including LLL in KA4, KA3, Leonardo da Vinci and Grundtvig programmes, and is currently engaged in Horizon 2020 projects.

In 2010, TREBAG established an Innovation Lodge in Nagykovácsi, which became a member of the European Network of Living Labs in 2011, under the name Well-being Living Lab Nagykovácsi. The Living Lab is based on the results of numerous projects carried out within the EU Lifelong Learning Programme and on the R&D activities built on the know-how of TREBAG.



Hungary

**WELL-BEING
LIVING LAB
NAGYKOVÁCSI**



Schools Innovation Labs

The School Innovation Labs (SI-Lab) project aims at improving the employability of students developing some of the most valued skills in the labour market, namely innovation, creative thinking and digital skills, through the introduction of the “I-Lab» concept to the school environment. An I-Lab (innovation laboratory) is an inspirational innovative facility designed to transport users from their everyday environments into an extraordinary space, encouraging creative and innovative thinking as well as collaborative work towards problem solving.

Primary work of the Well-being Living Lab Nagykovácsi was the creation of an online brainstorming platform, for i-labs, suitable for school students from 12 years old and above. This online space allows co-creation at an improved level, enabling teachers and students to work together on school assignments, brainstorming sessions and provide them with a unique place to maintain cooperation even during the restrictions of the COVID-19 pandemic.



The creation of a digital tool always harbours challenges and unforeseen events. To some extent, the brainstorming platform was created to enhance cooperation in the digital space, but it had no intention to replace school education. The COVID-19 pandemic however altered the plans of showcasing the brainstorming platform to the target audience in a classroom setting, restricting everyone to the utilisation of solely online tools. The partner schools however, tackled the digital education related issues efficiently, and the platform re-united teachers and students as a community again. One after the other, ideas and concepts regarding the improvement of the platform skyrocketed, despite the fact that Living Lab's capabilities of implementing such modifications were restricted. The biggest challenge was to sustain balance, and preserve the platform as an educational tool rather than a management program.

CO-CREATION

OUTCOMES AND LESSONS LEARNT

Despite being restricted to virtual means, and a ravaging pandemic, strong cooperation between the partnership remained vigilant, and thus, even in the testing phase, the project managed to reach over 400 students and education professionals. The platform not only performed fantastically with school related assignments, but also proved to be an effective management tool for the design and co-creation of innovation labs in each partner school. It served as a bridge between students and teachers to preserve their concepts and ideas, and shape them into actionable plans. Additionally, after a registration process, anyone around the world could invite, or be invited to a virtual classroom brainstorming session, allowing the opportunity of cooperation between schools and teachers far and wide, promising a platform for shared virtues, and a feeling of unity, that perhaps despite locked borders, we may be closer to each other more than we have ever thought.



Platform developed

The Library Living Lab explores how technology transforms the cultural experience of people. It brings together a consortium coordinated by the Computer Vision Centre, the Universitat Autònoma de Barcelona (UAB), and Sant Cugat del Vallès Municipality. It also integrates the Neighbourhood of Volpelleres, the Barcelona Provincial Council and is open to the participation of small and large companies. The members of the consortium benefit from the collaboration in the Library Living Lab.



LIBRARY LIVING LAB

**LIBRARY
LIVING
LAB**



3D Capitals: The cloister of sant cugat del vallès monastery

Citizens Co-Creating the City's Digital Cultural Heritage

The citizens of Sant Cugat del Vallès, a town located in the north of Barcelona in Catalonia, Spain, have co-created the digital 3D versions of the capitals of the Romanesque cloister of Sant Cugat.

By using photogrammetry methods learnt in the Library Living Lab, the citizens use their own mobile phones to capture photos. Then, they join a team for the creation of the new open source models, and finally, they prepare 3D printed versions. Objective of the Library Living Lab is to engage the public in the process of scanning the 145 capitals of the cloister.

This provides a new role for the citizen as generator of the novel (digital) cultural heritage where the citizen becomes the protagonist of the cultural action. In addition, it opens new opportunities for curation, business, but mostly enjoyment of Sant Cugat del Vallès fascinating history.

CO-CREATION

The process for low-cost scanning of digital heritage with mobile phones was co-created. The capital scanning process is based on basic photogrammetry techniques. Anyone with a mobile phone can make several photos around an object, so that it is covered visually. This is one of the strengths of this project, as it allows it to be accessible to everyone.

- The first step is to make this set of photos, at least 20.
- Then, they must be processed by a specific software. There are several options, open and payment options
- Once the 3D model has been generated, a digital model on the web can be created or a 3D impression, which is then displayed in the Library Living Lab at the Biblioteca Miquel Batllori in the neighborhood of Volpelleres, Sant Cugat del Vallès.

PRESENTACIO CAPITELLS



OUTCOMES AND LESSONS LEARNT

Through the project citizens contribute to the creation of digital assets of the city and physical replicas of the cloisters which are 3D printed.

HSB Living Lab is a 10-year collaboration project between industry, city and academia. It is a unique and open arena to create future sustainable living environments. The idea of creating a Living Lab for research on sustainable living environment was born in 2013. At Johanneberg campus in Gothenburg, Sweden students and researchers live, work, and test innovations and technical solutions for the next generation of housing.

In the 29 apartments of the Living Lab, equipped with monitoring stations and 2000 sensors, 33 people live in a building where the walls, facades and interiors develop as the research progresses. Until today, more than 100 projects have taken place in the HSB Living Lab.

Main partners of HSB Living Lab are Chalmers University of Technology, HSB and Johanneberg Science Park. Collaboration partners are Tengbom, Peab, Akademiska Hus, Tieto, Electrolux, Bengt Dahlgren, Göteborg Energi, Elfa, Vedum.



Sweden

HSB LIVING LAB

**HSB
LIVING
LAB**

Design for an energy resilient everyday life

The project «Design for an energy-efficient everyday life» is an effect of collaboration between HSB Living Lab, Chalmers, the Swedish Research Institute - RISE, and partners from the industry.

The project is funded by the Swedish Energy Agency, with the timespan from January 2020 to December 2021. The project aims at increasing knowledge on how people can live a good and comfortable life with reduced dependence on a reliable energy supply and with lower energy usage in general. During the first year of the project, studies have been conducted with the residents of HSB Living Lab. The main idea behind this research was to investigate which everyday activities can be done without electricity and what needs to be done in the future to make it happen.

Future steps within this project include:

1. Co-design workshops with the HSB Living Labs and its partners to develop ideas on how to become more energy-efficient in everyday life.
2. Develop prototypes of the everyday products that will be evaluated together with the residents.



CO-CREATION

Co-designing a digital workshop.

The goal of the workshop was to develop ideas that could help households in becoming more resilient in the future energy system, where an increased share of renewables leads to a higher risk of power shortages and temporary power outages. During the workshop, the project leader presented the results of their study of household conditions for energy resilience - i.e. conditions that determine having a good everyday life despite disruptions in the electricity supply. Workshop participants included: HSB LL residents, HSB LL partners, researchers from the RISE, and experts in the field. The co-design workshop was initially planned to be organized in a real-life setting. However, due to COVID-19 restrictions it became digital. The workshop was conducted via Zoom with supporting physical materials. A small workshop kit has been sent to the participants a few days before the event in order to stimulate their creativity.



The Future Self and Design Living Lab (FSDLL) focuses on designing and exploring innovative socio-technical systems and solutions for improving the wellbeing and quality of life of older adults. The FSD LL has specific expertise in co-designing with adults living with dementia and communities. Co-creating solutions with end-user involvement at every step of the process ensures service solutions are likely to be adopted and can address evolving needs over time. The FSD Lab is skilled in the actual development and implementation of technologies and their dispersal via policies, education and public access. **Led by Professor Sonja Pedell, this project saw the FSDLL partner with ACCESS Health and Community to co-design a social prescribing service for trial within their organisation.**



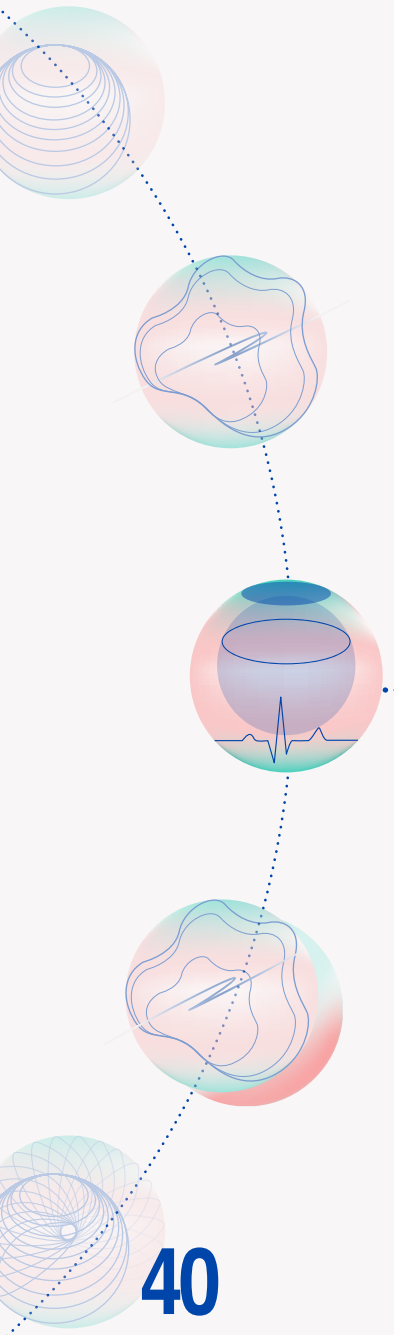
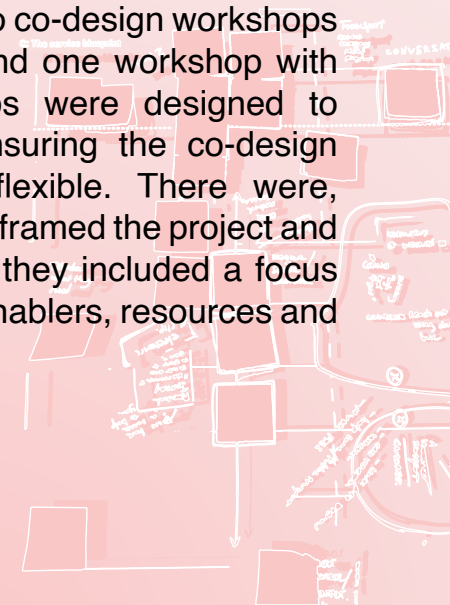
Australia

FUTURE SELF AND DESIGN LIVING LAB



Co-design of a social prescribing service with citizens and Access Health and Community

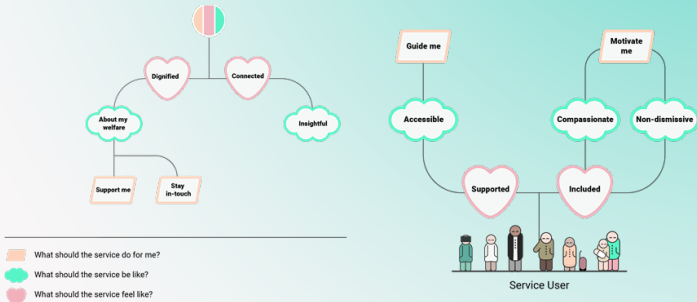
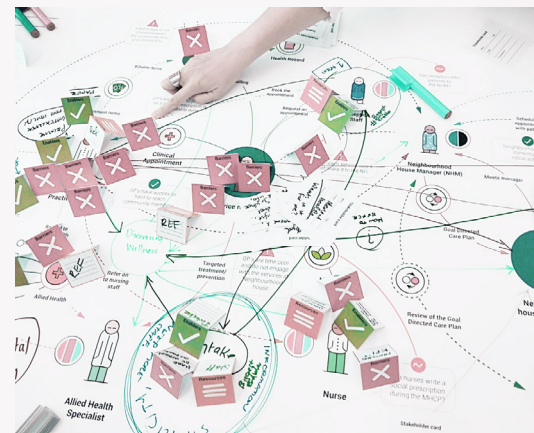
Social prescribing services provide non-medical support to clients to boost their overall wellbeing and alleviate stress or loneliness. Prescriptions may include exercises or hobbies, such as art or even pet adoption. The aim of the research was to communicate the feasibility, current barriers, opportunities and create a blueprint of a social prescription offering ready for trial. Applying co-design methodologies, the FSDLL team held one round of staff interviews, two co-design workshops with health practitioners, and one workshop with the community. Workshops were designed to cascade into the next, ensuring the co-design process was open and flexible. There were, however, key themes which framed the project and its subsequent workshops; they included a focus on stakeholders, barriers, enablers, resources and communication pathways.





OUTCOMES AND LESSONS LEARNT

Four values were deemed necessary if clients were to engage with a social prescription. First, a sense of connection to the greater community was described as integral to the health journey. This might be a simple referral to a wider network of activities outside of ACCESS Health and Community after a period of time. Clients also wanted to feel comfortable with their clinicians and not stigmatised. A sense of knowing that the health provider is aware about mental health illness and how to diagnose and treat such illnesses were important. Finally, clients wanted a real sense of having a tailored approach to their social prescription. Upholding these values were emotions, qualities and functions. Project outcomes showed that through navigating the existing network with merely the support of one new service role named a “Community Connector”, it was feasible to set up such a service.

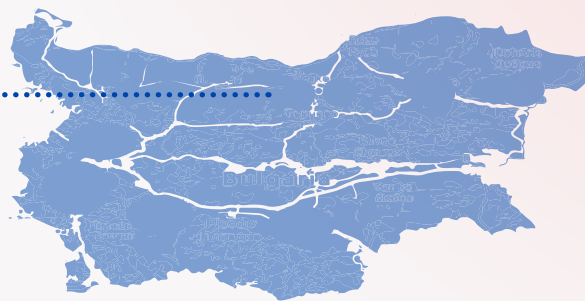


■ What should the service do for me?
■ What should the service be like?
■ What should the service feel like?

The biggest challenge was to identify non-tangible requirements for a social prescribing service. The co-design workshop with potential clients revealed important insights about emotions, goals, and expected values. The workshop with the community members produced four outcomes. The first outcome was a model describing the different values of a social prescription. It showed the different characteristics and values of a social prescription that clients would like to have embedded into their experience. An emotional goal model also accompanies the value model demonstrating the preferred emotions, qualities, and functions that a health client would like to interact with during their social prescription service. The stakeholder workshop also identified people in the community who might benefit from engaging with such a model. The clients then conceptualised different tangible and intangible features which support a client throughout their journey.

CO-CREATION

SofiaLab is a co-working and co-learning space where people from different fields can develop solutions to various challenges (topics vary from urban challenges such as mobility and air-pollution to social innovations and inclusion). SofiaLab is a conducive environment for meaningful ideas and initiatives. SofiaLab's priority events follow and apply the Quadruple Helix philosophy - they result from partnerships between institutions, business, scientific and civic organizations. At SofiaLab people representing various backgrounds can exchange views, experiences, and approaches during activities that excite them.



Bulgaria

SOFIALAB



INNOAIR

INNOAIR is the first Bulgarian project funded by the EU initiative Urban Innovative Actions, which enables large European cities to test innovative, creative, but also risky solutions to urban challenges. INNOAIR started in 2020 and in the next two years will experimentally implement measures in the thematic area of «air quality», in particular «innovative green mobility solutions», such as «on-demand green public transportation», formed by a platform with machine learning and advanced analytic capabilities and mini electric busses; low-emission geospatial urban zones, preventing vehicles from entering the city center and certain areas on polluted days; green corridors for active transport and congestion charge model. The project includes citizens in developing solutions and allows them to co-create with the project' partners during various events such as workshops, focus groups, hackathons and competitions.

The Power of Inclusive Cooperation: INNOAIR Co-Design Workshop.

Sofia Development Association in partnership with Sofia Municipality held a radically different event, putting people at the heart of the design process. The aim of the workshop was to co-design solutions for more environmentally friendly public transportation usage and to transfer these solutions into action. The workshop hosts, located at the SofiaLab, managed to create a cozy digital atmosphere where workshop participants could reimagine how they live and move around the city. The workshop activities consisted of a group discussion, as well as an interactive session. The session has been carried out on an online collaborative whiteboard platform where multiple users could work and communicate in real-time. Ensuring a wide range of perspectives resulted in the development of diverse ideas such as the creation of an application that integrates all types of transport services in one access system or the creation of an information campaign with wide publicity.

CO-CREATION AND EXPERIMENTATION

INNOAIR project video



OUTCOMES AND LESSONS LEARNT

The virtual co-design workshop brought together more than 30 end-users, company representatives, city officials and researchers who collectively explored trends, drivers and challenges that could have an impact on the transportation preferences. Over 500 citizens took part in a survey on the attitudes of the residents of Sofia to switch from cars to public or alternative transport. Forty participants from the business sector, residents in the area where the on-demand transport will be tested, cyclists and car drivers took part in four focus groups. In their opinion what could help to change the way in which city residents move is a good information campaign, better infrastructure, and an application that integrates all types of transport services. The outcome of all those activities was the solid base for further discussions with Sofia Municipality, funders, as well as mobility and technology companies.



Bristol Living Lab is a community of citizens, artists, technologists, researchers, businesses and public sector organisations who come together to create and test new ideas, tools and technologies to address the challenges we face both locally and globally. Bristol Living Lab is not a single building but a series of connected activities dispersed across a range of environments, from innovation hubs and public spaces to homes and gardens – innovation happening everywhere, every day, for everyone. Living Lab activity is supported and coordinated by Knowle West Media Centre, a non-profit organisation with 25 years' experience of working with communities to understand how digital technologies can be utilised to meet local needs and develop creative models for positive social change. Bristol Living Lab not only explores the needs of specific people and places, it involves collaborating with communities and Living Labs across the UK and the world, sharing knowledge and resources for the common good.

*The
United
Kingdom*

BRISTOL LIVING LAB

KWMC ★
KNOWLE WEST MEDIA CENTRE

Forms of Intelligence

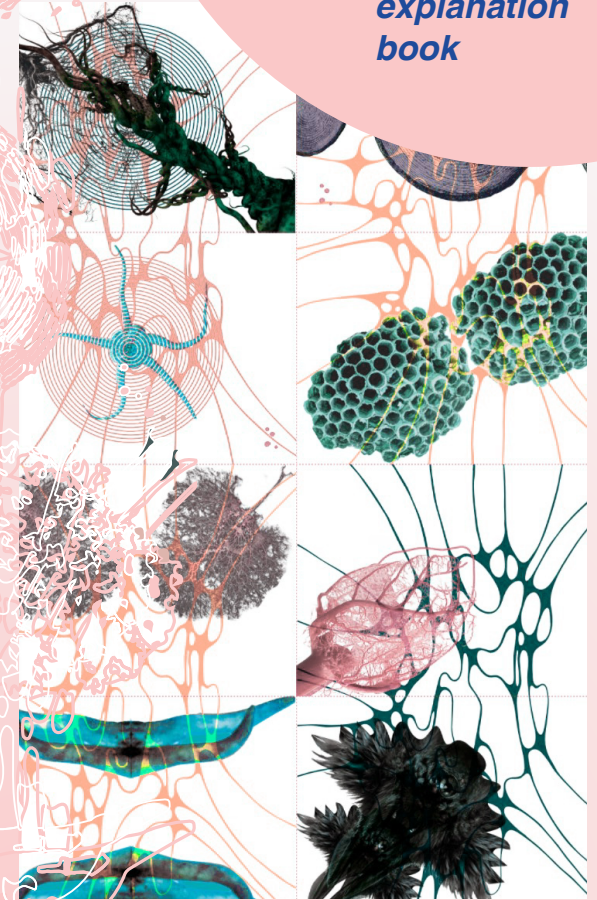
Against the backdrop of a global climate emergency and in the midst of the COVID-19 pandemic, the timely and innovative **Forms of Intelligence** project was launched. It brought together people from across the UK and internationally to ask: what can we learn from animal and plant intelligence? How could nature teach us to look differently at what we value, how we work together, and plan for our future? Community activists, artists and researchers - with specialisms in spiders, ants, trees, fungi, butterflies, local wildlife, soil, coral, gardening, bees, dogs, birds, robotics, performance and visual arts - participated in on- and offline co-creation activities. Their insights were transformed into a set of inspiration cards for co-species care by artist Kaajal Modi, designed to help us see different perspectives and consider who or what is impacted by our decisions. The project was coordinated by Knowle West Media Centre, in collaboration with the Digital Cultures Research Centre.

Participants took part in online workshops and offline activities during the UK COVID lockdown of spring / summer 2020. Having received packages containing magnifying glasses and binoculars, the group set each other creative fieldwork challenges to help everyone explore 'intelligence' from new perspectives: birdwatchers learned about insect intelligence and tree champions about butterflies. Due to COVID restrictions they weren't able to meet in person. Whilst it was challenging for participants to be unable to physically show how they work with different species, online meetings enabled wider participation and for collaborations to happen across time zones and longer periods. Young environmentalist Mya-Rose 'Birdgirl' Craig (based in the UK) and Luisa Ruge, expert in animal centred design and dog training (based in Columbia), were able to birdwatch remotely, spotting differences and similarities in behaviour and raising thought-provoking questions such as: what is 'success' for a bird?

CO-CREATION

OUTCOMES AND LESSONS LEARNT

The project resulted in a set of beautifully illustrated inspiration cards for co-species care, that provoke deep thought about how we live together and the impacts of our choices. The cards and accompanying booklet include the voices of all participants and demonstrate the power of co-creating across disciplines. Cards include: "be like lichen" (referring to the fact that lichen is a combination of algae and fungus, encouraging us to engage in more mutual exchange) and "is it hidden or just not seen?" (inspired by fungi and tree roots). Researchers, artists and local authority professionals are now using the cards for inspiration in projects ranging in focus from health and land justice to Artificial Intelligence. The project also led to new opportunities for participants: one is now working with a community in Bristol to develop a sensor network for local gardeners to help plants, people and pollinators to communicate, while another has engaged school children in tree care.



Forms of intelligence : the cards

Forms of intelligence : explanation book

The i2CAT Foundation is a Internet research and innovation centre that promotes mission-driven projects to empower citizens through open and participative digital social innovation with territorial capillarity. The i2CAT Foundation envisions Catalonia as a digital and social innovation ecosystem open to everyone, it means: universal.

Spain



**i2CAT
FOUNDATION**



Collaboratory CatSud

The Collaboratory CATSUD has been a i2CAT Foundation project, funded by the regional Government of Catalonia, to test and prototype such a vision. CatSud is the Southern part of the region, with approx. 800.000 Hb, formed by the second metropolitan area of the region (Tarragona-Reus) and an extensive rural area (Terres de l'Ebre). Climate change and energy transition are main challenges in this territory. The community has been a pioneer in the history of a civic approach to the Internet and it is a land with several citizen, public, and private innovative labs.

There were three main challenges to be overcome by the project:

1. Building trust between different labs in this territory, exploring how to collaborate between them within the territorial ecosystem to solve urgent societal challenges.
2. Closing the innovation gap between the metropolitan area of Tarragona-Reus and the rest of the region.
3. Decentralizing the regional innovation ecosystem beyond the metropolitan area of Barcelona to the rest of the territory. Until now all Living Labs in the region were established in the Barcelona metropolitan area. However, the new approach is to generate a more decentralized user-centric innovation ecosystem.

CO-CREATION AND EXPERIMENTATION

The biggest challenge was to co-create through a digital social innovative process a new social structure: the collaboratory, a lab of labs. The aim was to co-create a peer to peer governance model of collaboration and setting up different actions and projects for co-experimenting its viability.

The co-creation pilot engaged 7 heterogeneous “labs” and institutions in this southern part of Catalonia:

1. The Univeersitat Rovira i Virgili (URV); the local University.
2. The CRITC, the new research and innovation center on vocational training, including 3 local institutes.
3. The Interiors Living Lab of CENFIM, the furniture industrial cluster.
4. The Social Innovation Lab of Tarragona city.
5. The citizen lab of the city of Reus.
6. The Fablab of the city of Amposta.
7. The CoEbreLab, the digital social innovation lab of Ribera d’Ebre, a rural county of about 20.000 inhabitants.

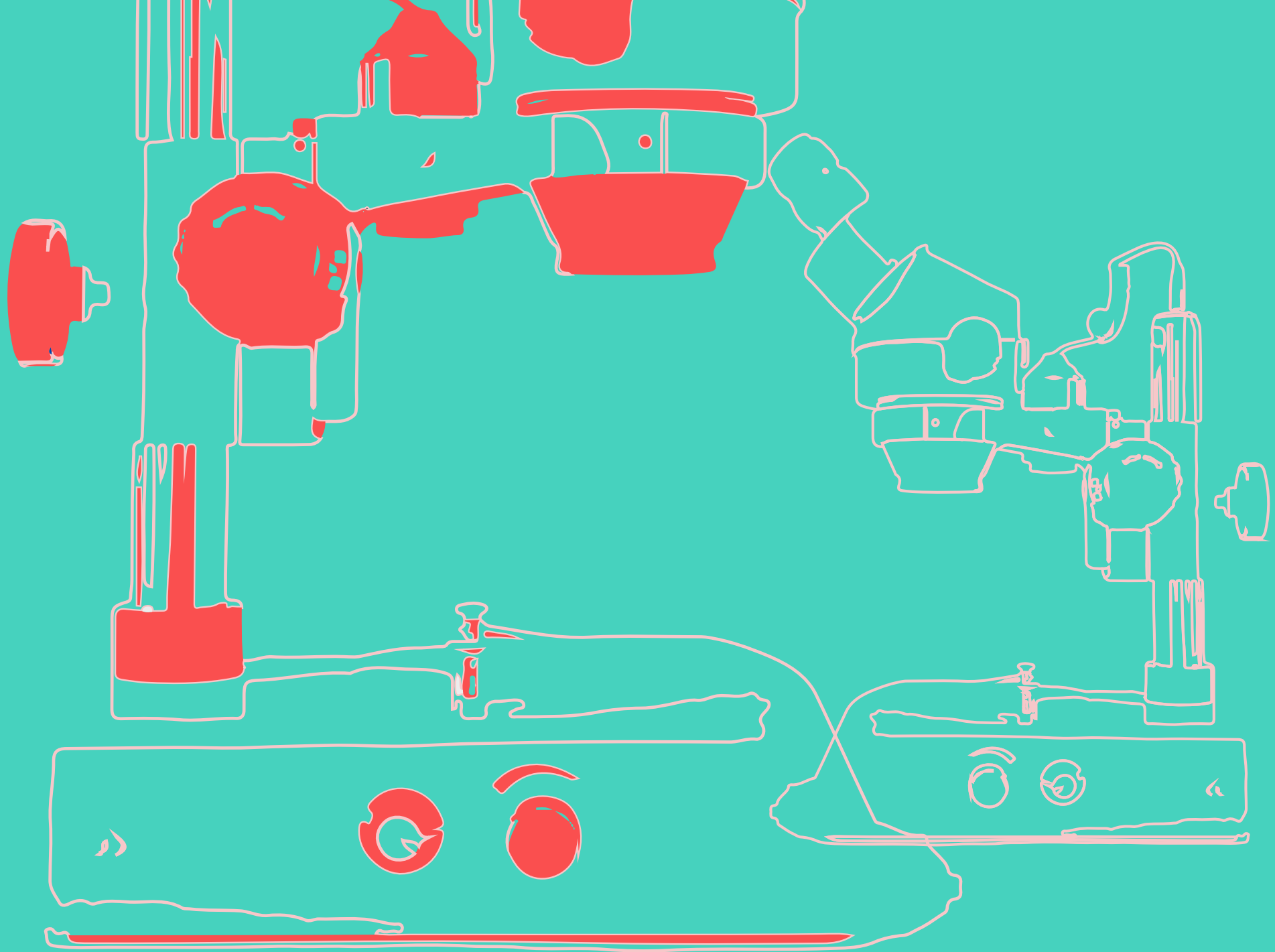
In March 2020, COVID-19 restrictions forced us and our partners to make an even more intensive use of cooperating and co-creation online tools (Zoom, Slack, Mural, Miro, etc.) as well as digital learning environments (Moodle).

OUTCOMES AND LESSONS LEARNT

1. Collaboratory CATSUD was born. On June 11th, 2020 Col.laboratori CatSud was presented during a Demo Day including all the institutions and people engaged in the project. The local press was informed extensively about this deed : <https://www.setmanarilebre.cat/noticia/118542/el-collaboratori-cat-sud-fa-els-primers-passos-com-a-pol-dinnovacio-creativa>
2. In March 2021 the Col.laboratori CatSud is fully operational, ruled mainly by its local labs, through a Secreatiat, a Plenary and different working groups Members of the collab are constantly setting up new projects and actions like
 - a) An advanced course on digital and innovative skills between the URV, i2cat and CRITC : <https://sites.google.com/xtec.cat/5gxfp>
 - b) A “laborlab” for designing new jobs in the city of Amposta between its Employment Agency and the i2cat Foundation.
 - c) A new regional consortium called CatSud Clean Hydrogen Valley, led by the URV
 - d) A pioneer Rural 5G area led by CoEbre Lab and the i2cat.
3. The main lesson learnt: Living Labs can help to advance the vision of “empowering everyone to innovate” through a strategy of universal innovation ecosystems and through social innovation projects targeting collaboratories, new complex innovative structures that facilitate the alliances between the world of labs that is emerging in our communities. The secret is to to learn how to orchestrate and solve the inevitable differences that exist and will arise between its members.



EXPERIMENTATION



LiCalab is a care Living Lab that supports businesses and organisations by including end users (healthy citizens, patients, care professionals...) from the very beginning of the development process until market introduction. LiCalab is a research group of Thomas More University of Applied Sciences. Focus areas of LiCalab are care technology, assisted living, active and healthy aging, integrated care. Human centred design is the key method used by LiCalab in all steps of the innovation chain. LiCalab uses co-creation techniques to explore and validate new products, services, systems and business models. LiCalab relies on a broad network of local, regional and EU partners with expertise in Healthcare and Wellbeing, including (local) governments, care givers, research institutes, companies. LiCalab works closely together with these stakeholders in regional and EU projects and in private assignments. LiCalab coordinates a reference site of EIP-AHA in the name of the Health and Care Network Kempen.

Belgium



LICALAB
(LIVING & CARE LAB)



BIBOPP

Start-up the BIPOPP-tool

BIBOPP stands for 'Citizens in movement with an Online Prevention Platform'. It is a digital tool for citizens based on a validated health guide for population screening. The tool wants to improve lifestyle and reduce the risk of (chronic) diseases by offering a tailor-made prevention plan. The obtained data are managed and controlled by the citizen himself, in line with GDPR. Citizens can give permission to third parties to perform research with their anonymised data to develop new care solutions. The results also allow local authorities to map out their prevention and health services. LiCalab worked closely together with the Flemish Research Institute VITO, who developed the digital tool, and Domus Medica, the largest Flemish association of GP's, that developed the health guide. LiCalab organized 15 co-creation sessions and 3 pilot tests with the participation of +/- 200 care professionals, GP's, patients and citizens (18+) to develop the platform and personalized services applying user centered design.

*Newsarticle
on co-
creation*

EXPERIMENTATION

In the pilot tests, LiCalab also included socially vulnerable people and elderly, which was a real challenge. They often have poor digital skills and Health literacy, as well as a lack of digital tools and financial means to participate in the tests and assess the platform. LiCalab worked closely together with local ambassadors, providing the expertise to engage with these vulnerable citizens, and with local authorities, providing the digital tools for their citizens to participate. LiCalab organized workshops, also in collaboration with local organisations, to enhance digital skills, for instance how to login in a safe manner with the app 'Itsme' or with an e-id. Many vulnerable citizens did not know how or did not even have a card-reader. The LiCalab team supported the vulnerable participants to truly involve them in the process.



*The validated
Health Guide
tool*



*The COVID
risk calculator*



OUTCOMES AND LESSONS LEARNT

End users involvement has led to the outcome that the platform and the prevention action plan meet their personal needs regarding content, usability, accessibility. The overview of local services, local service providers and care providers were greatly expanded to offer a maximum of possibilities to get started with the personal action plan. During the COVID-19 pandemic, the tool has been expanded with a COVID-19 - risk calculator and a motivational chatbot to support anxious citizens to make the right decisions about their health. The city of Turnhout and 4 other local authorities will launch BIBOPP via a large-scale pilot (+ 3000 participants) from June 2021 onwards.

Thessaloniki Smart Mobility Living Lab is one of Europe's largest Living Labs. The entire city of Thessaloniki is a platform for testing technological and innovative solutions for mobility, cooperative and autonomous vehicles and will soon be extended to freight transport. Thessaloniki is now in the list of smart cities in the mobility sector, and this would not have been possible without the involvement of the bodies that make up the ecosystem of the city, which has been created over the last decade and is constantly growing. In this ecosystem, various operators and businesses are involved in providing data or expertise to create the right conditions for the exploitation of this infrastructure for the benefit of citizens. The Thessaloniki Smart Mobility Living Lab includes, among real time traffic data in Thessaloniki (cars and trains), short-term predictions of traffic conditions from multiple sources, exporting and formulating mobility and activity patterns, extended IoT equipment.

Greece



**THESSALONIKI
SMART MOBILITY
LIVING LAB**
- HIT/CERTH



C-MOBILE

C-MOBILE (Accelerating C-ITS Mobility Innovation and depLoyment in Europe)

The C-MOBILE vision is a European road network which is safer, more efficient, more sustainable and economically viable while minimising environmental impacts. C-MOBILE will demonstrate Cooperative Intelligent Transport Systems (C-ITS) solutions in large-scale urban and extra-urban environments by providing C-ITS services and service bundles to several end-users' groups, including Vulnerable Road Users (VRUs), across various transport modes. It will address real-life mobility issues and develop business cases based on sustainability criteria.

*Supporting
large-scale
deployment of
cooperative
intelligent
transport
systems
and services
across Europe*

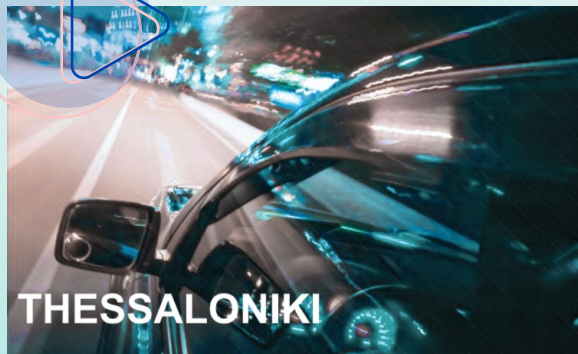
This will be achieved by opening up existing ITS-enabled cities via a hybrid communication architecture and by providing C-ITS services and applications in an uninterrupted cross-modal and cross-border way. In all of the C-Mobile deployment sites (Barcelona, Bilbao, Bordeaux, Copenhagen, Newcastle, North Brabant, Thessaloniki, Vigo) the C-Mobile demonstrations will focus on current urban challenges at specific urban and extra-urban locations.



C-MOBILE
platform



C-Mobile Project



EXPERIMENTATION

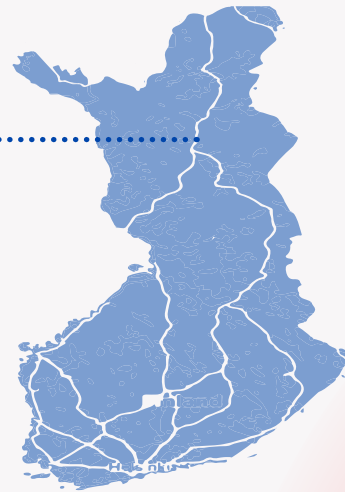
In relation to the C-Mobile project the real-life experimentation which took place in Thessaloniki was the large-scale demonstration of the C-ITS services. For the purposes of the project, C-ITS services providing roads works and hazards, traffic lights, and travel times information were developed and provided via an Application to end-users, i.e., drivers, of the road network of Thessaloniki. The objective was to inform drivers dynamically about the conditions of the road network and subsequently contribute to city goals, such as road safety increase, traffic efficiency improvement, environmental impact decrease, and driving comfort. The biggest challenge was the development of the services. Concerning the development of the services, new back end and front-end systems were developed and tested in the context of the Thessaloniki Smart Living Lab taking into account that all implementations should be interoperable with all the other C-Mobile deployment cities.

OUTCOMES AND LESSONS LEARNT

The most important outcome of the project is the successful development of the 7 C-ITS services and their integration into one Application, which can be downloaded and used for free by drivers in Thessaloniki. Despite the challenges caused by the COVID-19 pandemic, the number of services' users was high enough for the purposes of the project. Around 1000 taxi drivers and 100 drivers from the general population were engaged. Also, the interoperable architecture for C-ITS was implemented. It allowed transferring the Application to other C-Mobile deployment cities. In addition to that, a web-based platform for traffic managers and road operators was implemented. The platform facilitates the use of C-ITS services in dynamic traffic management. Throughout the whole process of developing and testing the above-mentioned systems in the real-life environment of the Thessaloniki Smart Mobility Living Lab, the project team gained significant experience in the domain of C-ITS technologies and established a solid base for their future projects.

Lahti Living Lab brings people into the centre of innovation. The Living Lab believes that the needs of the user and the consumer are paramount in developing products, services and solutions. The purpose is to help companies and organisations develop their products so they are user-centred and to have consumers participate in the innovation process. At the same time, new solutions and business opportunities are sought amongst rising trends and weak signals.

Lahti Living Lab's laboratory is located where the people are; at home, school, the workplace, in town and among hobbyists. Products, services and solutions are developed and tested in real surroundings. End-users actively participate in product development.



Finland

LAHTI LIVING LAB



Assisting care work with an exoskeleton in care homes

Utilization of welfare technology in services.

Digitalization, including increasing utilization of welfare technology, is one of the powerful developments in the provision of social and healthcare services. The related sociotechnical transition needs to be examined at all levels from individuals to the society. We focus on the relationship between human-centred care and technology, at micro-, meso- and macro-levels, in a multi-disciplinary way within LUT, and with national and international external partners. Research environments are mainly in elderly care, for example, care homes and home care. Collaboration partners include public social and healthcare bodies, companies and non-governmental organizations, research and educational organizations, interest organizations, decision-makers, and other stakeholders. The research is supported by the Strategic Research Council (SRC) established within the Academy of Finland (project name: Robots and the Future of Welfare Services, ROSE) as well as JPI MYBL/ national funder: Academy of Finland (ORIENT project) and the European Regional Development Fund and the Regional Council of Päijät-Häme (HyTeLab project).

The study on assisting care work with an exoskeleton in care homes was conducted in collaboration between LUT University and an organization providing care services. A broader research study also included Tampere University; see the link to the journal article below. **Laevo exoskeleton** is a wearable chest and back support that adapts to every posture. It is reported to relieve 40–50 percent of lower back strain. It was tested in three care units with 8 care workers, who had it in their individual use for a week. It was used in tasks such as assisting a patient out and into a wheelchair, eating, and toileting (see the photo below).



Methods: interviews before and after the trial period (personal experiences and care workers' views of the clients', their close ones' and workmates' opinions), user diaries.

EXPERIMENTATION

Biggest challenges:

- The purchasing process.
- “Preparing the ground” in the care field: Laevo was a new product used in care work as it had originally been designed for industry.
- Management of the shift work: the issue of shifts was not properly taken into account.

Main lessons learnt:

Support of the management and participation of the whole organization are crucial.

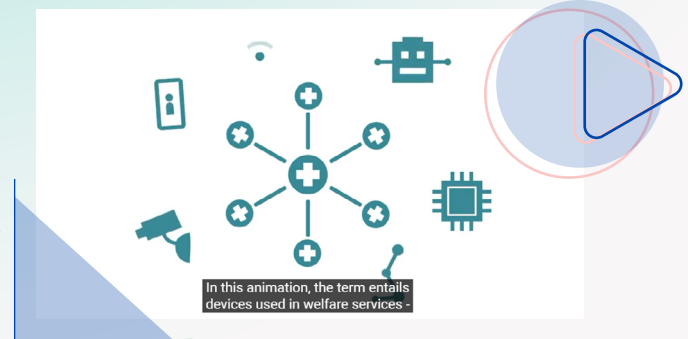
OUTCOMES AND LESSONS LEARNT

The challenges and lessons learned were incorporated into visualized outcomes:



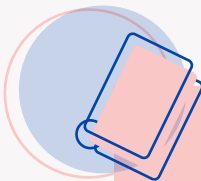
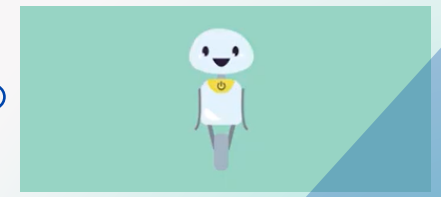
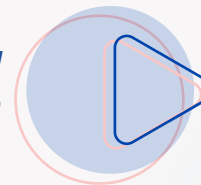
Discussion cards, to support people in pondering the use of welfare technology

*Animation
“Technology for the welfare of workers and clients”*



An orientation guide “Care robotics: orientation pathways for users and the society”

The related animation



Intention to use exoskeletons in geriatric care work: need for ergonomic and social design

Smart Kalasatama (Helsinki Innovation Fund) project umbrella has included several agile pilots run with startups, SMEs and residents related to the thematic of food, carbon footprint, last mile deliveries, and citizens' behavior change towards a sustainable everyday life. Mission Zero Foodprint -project (ERDF), coordinated by FVH, promotes carbon neutrality of small restaurants by developing a model and smart solutions, and by making the change visible for consumers. During the project, co-creation and agile pilots are carried out in collaboration with restaurants and other stakeholders in the Helsinki region. Ten restaurants from the Helsinki-Uusimaa Region act as a Living Lab environment for this project. The project has also opened a dialogue within the Helsinki Smart Region gathering cities, food service and restaurant sector, research and innovation around the topic of carbon footprint and collaboration.



Finland



**Mission
Zero
Foodprint**

**FORUM VIRIUM
HELSINKI
SMART
KALASATAMA
URBAN LAB**

Mission Zero Foodprint

The Mission Zero Foodprint project (2019-2021) promotes carbon neutrality of restaurants by measuring and managing carbon footprint, and by making the change visible for consumers. During the project, co-creation and pilots are carried out in collaboration with restaurants and other stakeholders in the Helsinki region. The aim is to find suitable digital solutions and models especially for small and medium-sized restaurants to support their work becoming more climate friendly. Furthermore, the digital tools and data can also offer competitive advantages and support consumers' informed choices. The project is coordinated by Forum Virium Helsinki, with Laurea University of Applied Sciences serving as project partner. The project is funded by the European Regional Development Fund and the Helsinki-Uusimaa Regional Council.

CO-CREATION AND EXPERIMENTATION

Co-creation solutions for carbon neutrality of restaurants.

The restaurants in the Helsinki region served as Living labs in the Mission Zero Foodprint project. The first step in the whole process was to explore the restaurant field and identify the key actors. To engage the stakeholders, six co-creation workshops gathering more than 120 professionals were organised in 2020 around the challenges and needs concerning food waste, energy efficiency and carbon footprint in different types of restaurants. The insights and ideas from the workshops were translated into challenges to be solved and validated with the key collaboration partners. An essential question for the project was “How to measure and manage carbon footprint in the restaurants?”. At the very initial stage of the process, the project team found out that small and medium-sized restaurants lack digital tools, and that most of the existing tools are too expensive for them, heavy and time consuming. To find and co-create solutions that truly meet the needs of the restaurants, an open call for digital solutions has been launched in the fall 2020. Three solutions were selected to be piloted and co-created within the agile piloting programme with the 10 committed pilot restaurants. The ongoing COVID-19 pandemic has caused various challenges, as the restaurants have been struggling with customer loss, closures and different restrictions.

This process highlighted a strong need for tools to measure and manage food waste and carbon footprint in restaurants. These solutions should be accessible, easy to use and hopefully integrable to other systems already used by the restaurants. Furthermore, accurate data is seen essential to improve the management of carbon footprint in food services. Also an increasing interest within the food and restaurant sector related to sustainability and new models of working has emerged.

A growing demand for sustainable food services from the customers’ side has also encouraged the restaurants to actively seek ways to communicate their sustainability related actions and results. The piloting programme with the 10 restaurants is still in progress, but the process has already provided many valuable learnings. Restaurants were eager to test and co-create new solutions, providing first hand feedback for the companies. In addition, most of the restaurants identified new models that support their daily operations on the way towards carbon neutrality. The project has opened a dialogue between various stakeholders from the food service industry, cities, and R&I sector. It also opened new possibilities to make positive changes together and co-create better and more sustainable solutions for the whole food system.



OUTCOMES AND LESSONS LEARNT

REFERENCES

LIVING LABS

PROJECTS

WEBSITE

KRAKOW TECHNOLOGY PARK -KTP	For citizens and with citizens – collectively improving air quality in Krakow	https://www.youtube.com/watch?v=tSSogToZkyU https://youtu.be/g6RP0EpojS0 https://www.youtube.com/watch?v=LbihNpTgPm8&t=12s https://www.kpt.krakow.pl/en/laboratories/livinglab/ https://siscodeproject.eu/kpt/
	Test before invest – a platform for monitoring industrial pollution	https://www.youtube.com/watch?v=36FhUwwkNXs
Thessaloniki Active & Healthy Ageing (Thess-AHALL)	Teaching university students co-creation and Living Lab methodologies	https://www.youtube.com/watch?v=NkwuzTPHyN4 http://thessahall.com
P4ALL, BioSense	Co-creating an educational module	https://www.youtube.com/watch?v=bllulomaL6s https://biosens.rs/?page_id=12564&lang=en
Lorraine Smart City Living Lab (Université de Lorraine)	Smagrinet - Empowering Smart Grid Expertise in Europe	https://hal.archives-ouvertes.fr/hal-02884574/document https://www.smagrinet.eu/
Botnia Living Lab	Urban Nature Labs	https://issuu.com/home/published/ull_handbook_online_version https://unalab.eu/en
Lorraine Smart City Living Lab (Université de Lorraine)	Climate Labs	http://climate-labs.org/
Well-being Living Lab Nagykovácsi	Schools Innovation Labs	http://trebag.hu/living_lab http://brainstorming.trebag.hu/en/index
Library Living Lab	3D CAPITALS: THE CLOISTER OF SANT CUGAT DEL VALLÈS MONASTERY. Citizens Co-Creating the City's Digital Cultural Heritage	https://www.youtube.com/watch?v=lzakZH1r6c&feature=youtu.be http://librarylivinglab.cvc.uab.cat/home/capitals/?lang=en
HSB Living Lab	Design for an energy resilient everyday life	https://www.hsb.se/hsblivinglab/projekt-i-huset/design-for-en-energiresilient-vardag/

Future Self and Design Living Lab	Co-design of a social prescribing service with citizens and Access Health and Community	https://www.swinburne.edu.au/research/centres-groups-clinics/centre-for-design-innovation/our-research/future-self-living-lab/social-prescribing/ https://researchbank.swinburne.edu.au/items/d7968b66-37bf-4feb-97f4-57e493281e29/1/
SofiaLab	INNOAIR	https://www.youtube.com/watch?v=gztvILYbNDo https://innoair-sofia.eu/en/
Bristol Living Lab	Forms of Intelligence	https://kwmc.org.uk/wp-content/uploads/2020/01/NEW_A4-LAYOUT_forms-of-intelligence-cards_A7.pdf https://kwmc.org.uk/wp-content/uploads/2020/01/forms-of-intelligence-book_5_A5.pdf https://kwmc.org.uk/about/research/livinglab/
i2cat Foundation	Collaboratory CatSud	https://www.slideshare.net/secret/9MdJ4VYSJOA9mG http://www.i2cat.net
LiCalab (Living & Care Lab)	BIBOPP	https://www.licalab.be/nl/nieuws/detail/bibopp-ers-werken-mee-aan-een-gezondheidsapplicatie https://gezondheidsgids.be/ https://bibopp-acc.vito.be/covid19-risicocalculator https://www.licalab.be/nl/projecten/detail/bibopp
Thessaloniki Smart Mobility Living Lab - HIT/CERTH	C-MOBILE (Accelerating C-ITS Mobility Innovation and depLoyment in Europe)	https://c-mobile-project.eu/ https://c-mobile-project.eu/wp-content/uploads/sites/19/2019/03/C-MOBILE_brochure_210x210_web-1.pdf https://cmobile.imet.gr/ https://www.youtube.com/watch?v=_z0FhHYCWQ4&t=18s https://www.smartmlab.imet.gr/
LAHTI Living Lab	Assisting care work with an exoskeleton in care homes	https://enoll.org/network/living-labs/?livinglab=lahti-living-lab#description http://urn.fi/URN:ISBN:978-%C2%AD952%C2%AD-335%C2%AD-55-2%C2%AD https://www.youtube.com/watch?v=A5Ed7Gdn6PE https://www.robotorientation.eu/wp-content/uploads/2020/03/Orient-Care-robotics.pdf https://www.youtube.com/watch?v=fjoZTLusnek https://journals.sagepub.com/doi/pdf/10.1177/1064804620961577
Forum Virium Helsinki, Smart Kalasatama Urban Lab	Mission Zero Foodprint	https://forumvirium.fi/en/mission-zero-foodprint-project/

