



# OUTCOME REPORT

## **2021 ITU Regional Innovation Forum for Europe**

**Scaling up innovative digital ecosystems that accelerate digital transformation of key sectors**

**22–23 September 2021**

Organized within the framework of the  
ITU Regional Initiative for Europe on ICT-Centric Innovation Ecosystems

Supported by the Ministry of Information Society and Administration, Republic of North Macedonia



Republic of North Macedonia

Ministry of Information Society  
and Administration

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## ACKNOWLEDGEMENTS

This report has been produced by the International Telecommunication Union (ITU). ITU would like to express their appreciation to the following speakers for their high-level interventions:

H.E. Mr. Iurie Turcanu, Deputy Prime Minister for Digitalization of the Republic of Moldova, and H.E. Ms. Milena Lipovina-Bozovic, State Secretary of the Ministry of Economic Development of Montenegro, as well as opening address of H.E. Mr. Jeton Shaqiri, Minister of Information Society and Administration of North Macedonia.

ITU would also like to thank for the interventions during the high-level panel discussions of: Ms. Florensa Haxhi, Director General of the Development Programs and Cooperation Unit, at the Prime Minister's Office, Albania; Mr. Kosta Petrov, Director, Fund for Innovation and Technology Development, North Macedonia; Ms. Annie Vashakmadze, Head of Department for International Relations and Relations with Donors, Georgia's Innovation and Technology Agency (GITA). ITU also express its thanks to Mr. Vladimir Olegovich Rakhmanin, Assistant Director-General and Regional Representative for Europe and Central Asia, FAO, for his participation in Session 4.

Special thanks must go to the panel moderators: Mr. Jaroslaw Ponder, Head of the ITU Office for Europe; Ms. Agi Veres, Director, UNDP Representation Office, Geneva; Ms. Valentina Stadnic, Digital Ecosystem Expert, ITU Office for Europe; Mr. Valentin Nagy, Junior Technical Officer on Digitalization in Agriculture, FAO Regional Office for Europe and Central Asia; Mr. Them bani Malapela, Knowledge and Information Management Officer, FAO; Mr. Farid Nakhli, Programme Coordinator, ITU Regional Office for CIS Ms. Sarah Delporte, Project Officer, ITU Office for Europe; Mr. Luke Cavanaugh, Editor-in-Chief at European Student Thinktank and Co-Founder at STEAR - Student Think Tank for Europe-Asia Relations; Mr. Ron Kremer, Chief Communications Officer, Messee; Mr. Wilfried Kainz, Head of Research, Zero Project; and Ms. Ana Maria Meshkurti, Programme Coordinator, ITU Office for Europe.

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## 1. INTRODUCTION

The [2021 ITU Regional Innovation Forum for Europe](#) was organized on September 22 - 23, 2021, within the framework of the ITU regional initiative for Europe on ICT-centric innovation ecosystem, and it constitutes an integral part of the ITU Global Innovation Forum. The event was supported by the Ministry of Information Society and Administration of North Macedonia.

This edition of the Forum brought together regional stakeholders to share insights and offer much-needed opportunities for leaders and innovators across sectors to pioneer new approaches, share best practices and adopt new solutions across industries and markets. It fostered inclusive, constructive, and practical dialogue between key stakeholders of the regional ecosystems and provided a platform allowing to connect communities across the region to take bold action and create a resilient and innovative ICT-centric ecosystem. The forum covered three main areas: the general digital innovation ecosystem, agricultural digital ecosystem, and the ICT accessibility ecosystem.

Furthermore, this forum offered the opportunity to promote the one United Nations collaboration at the regional level, and to reinforce the long-standing partnerships with FAO and UNDP, as well as other stakeholders like Zero Projects.

The event followed the following structure:

- Session 1:** Achieving the regional development priorities through digital transformation
- Session 2:** Building partnerships for a sustainable ecosystem development
- Session 3:** Innovation journey – stories from the frontlines – COVID-19
- Session 4:** In focus: Achieving a sustainable future for agriculture  
*Awards Ceremony of the “Digital Excellence in Agriculture: ITU-FAO Regional Contest in Europe and Central Asia”*
- Session 5:** In focus: Generation Connect Session on Youth and Innovation
- Side event:** Accelerating Digital Inclusion in the New Normal

The Regional Innovation Forum’s main outcomes are outlined in this report, which structures the key points that emerged during each session.

## 2. PARTICIPATION

The Forum had almost 70 speakers, who shared good practices and insights.

The Forum addressed multiple stakeholders, including ICT policymakers, regulators, tech incubators, national innovation agencies, development agencies, entrepreneurs, entrepreneurial support organizations, academia as well as institutions willing to undertake actions to streamline the development of the ICT-centric innovation ecosystems. Details about the [agenda](#) and [speakers](#) can be found on the event’s [website](#).

The event was attended by almost 100 participants on the zoom platform, and daily by around 460 participants via YouTube and Twitter channels.



The reach of the Forum sessions is expected to be amplified by ensuring that the content is made available to the audience of the 2021 ITU Global Innovation Forum.

### 3. DOCUMENTATION

The Regional Forum was held virtually. Relevant documentation was made available in electronic form on the event [webpage](#).

The event was supported with **English captioning**, and the edited caption text is made available on the event page. **Video recordings** of the Forum, as well as this outcome report, are also made available on the website.

### 4. OPENING SEGMENT

#### Opening ceremony and special addresses

In his opening speech, **Mr. Jaroslaw Ponder**, Head of the ITU Office for Europe, welcomed all the participants and pointed out the central role of Europe in innovative economies, and digital transformation, with 7 out of 10 most innovative economies coming from Europe. Nonetheless, he argued that there is still work to be carried out to close the innovation divide and enhance socio-economic growth. He also stated that this work is in the common interest of all stakeholders, as it would ensure sustainable development globally and regionally. Acknowledging the role of the pandemic in the growing need for digital transformation, and the efforts of several European countries focused on digital innovation and building digital capabilities, he highlighted that the digital innovation divide must be tackled, for everyone to participate in the digital future. In this context, the attention was drawn to the fact that the ITU work, both at the regional and member states level was fundamental, as it provided platforms, products, and services to strengthen ICT-centric innovation ecosystems. Finally, member states were encouraged to participate in the activities leading to the

upcoming WTDC, in order to set the agenda on digital transformation and innovation. In particular, it was highlighted the centrality of this event for the participating stakeholders, as it would have enabled them to reflect on how to accelerate digital transformation and build an ICT-centric innovation ecosystem in each state and the European region as a whole.

**H.E Mr. Jeton Shaqiri**, Minister of Information Society and Administration of North Macedonia, started his opening speech by expressing his gratitude for the participants and addressed the importance of implementing and building digital technologies for the benefit of the whole society; as ICTs are core to policies and measures that address climate change, inclusivity, accessibility and transparency of digital services. In this light, he shared the experience of the Ministry of Information Society and Information of North Macedonia in fostering the IT sector development. He thereby proceeded to highlight the importance of enforcing policies that promote innovation in different areas, to support small and medium entrepreneurs, build innovation capabilities of existing companies and creating new business opportunities. He underlined how these policies are fundamental to create jobs and enhance economic development in the country. Ultimately, it was stated that the goal of the government is to offer qualitative public services to citizens and businesses, by improving efficiency, transparency and access to information and digital services.

In his special address, **H.E. Mr. Iurie Turcanu**, Deputy Prime Minister for Digitalization of the Republic of Moldova, addressed the importance of governments reinventing themselves through the use of digital technologies. He highlighted the changes in the Moldovan government brought by the introduction of the new position he holds and shared the efforts in implementing social change prompted by digital innovation. Several priority dimensions meant to promote the development of the country's digital ecosystem were mentioned. These cover the process of reinventing the public sector using data-driven decision-making and evaluation, developing citizens-needs-based services, diversifying delivery channels, and increasing citizens' participation through the creation of digital tools, which also target public administration transparency. Moreover, the importance of multistakeholder engagement at the country and Europe region level was underlined.

## 5. CONFERENCE SESSIONS

### SESSION 1: ACHIEVING THE REGIONAL DEVELOPMENT PRIORITIES THROUGH DIGITAL TRANSFORMATION

**Focus:** high-level officials' vision on ensuring digital transformation through various initiatives that amplify the work of change-makers.

**Moderator:** Mr. Jaroslaw Ponder, Head of ITU Office for Europe, ITU

**Speakers:** Milena Lipovina Bozovic, State Secretary, Ministry of Economic Development, Montenegro; Florensa Haxhi, Director General of the Development Programs and Cooperation Unit, at the Prime Minister's Office, Albania; Kosta Petrov, Director, Fund for Innovation and Technology Development, North Macedonia; Annie Vashakmadze, Head of Department for International Relations and Relations with Donors, Georgia's Innovation and Technology Agency (GITA)

**Key points:**

- Through the [Regional Good Practices Report: Accelerating innovation, entrepreneurship and digital transformation – Europe](#), the **ITU Office for Europe** has carried out a comparative analysis of European ICT-centric innovation ecosystems, highlighting good practices and policies in the European region that can inform decisive actions in nurturing entrepreneurship-driven innovation.
- To support the countries in their endeavors and equip national decision-makers and international stakeholders with an overview of the key components of digital development, the ITU office for Europe is currently working on a series of Digital Country Profiles for 9 countries. The Profiles will serve as a guide for future dialogue with national stakeholders and pave the way for fit-for-purpose engagements of the UN system in the country.
- Acknowledging the importance of stimulating innovation at all levels including legal, strategic, and institutional ones, **Montenegro** presented the country's Smart Specialization Strategy and informed about the Digital Transformation Strategy that is currently under development and which is aimed to transform the whole society through digital initiatives.
- Boosting technological capacities development and innovative entrepreneurship requires an effective framework that will enable good governance and articulate the needs of all relevant stakeholders. Moreover, the strong collaboration between academia, the private sector, and governments should be fostered to enable synergies which are a precondition for consistent and effective implementation of innovation policy.
- Despite the pandemic's impact, **Albania** has fostered innovation and entrepreneurship in the country, also thanks to the development of partnerships with academia and the public sector. Their future national projects are devoted to further transform the economy, through the development of infrastructure for advanced technologies (such as AI, data economy, 5G, IoT), increasing skills capabilities, smart specialization strategy, further strengthening the collaboration with the private sector, and clustering development.
- Besides working on the national innovation ecosystem, Albania has been dedicated to the development of the regional innovation ecosystem, in tandem with other Balkan region countries that shared their goals and vision. The objective of this fruitful cooperation is to allow them to function as one integrated digital market and to reach collaboration between the national digital hubs.
- The Fund for Innovation of **North Macedonia** has invested over 85 million euros in 600 companies during six years. Now, the Fund set up a National Start-up Council that has to communicate with start-ups stakeholders and devise meaningful regulations for innovation, with the objective of making North Macedonia the regional start-up hub – both for national and international start-ups. Aiming to invest in start-ups, the Fund is also seeking meaningful collaboration with the private sector.
- Moreover, the Fund is focusing on digitalization strategies, in particular, with regard to AI. In fact, one of the Fund's most prominent digitalization projects is to devise a digital AI assistant for the government programs. Furthermore, the Fund aims to revolutionize the procurement system and the investment mechanisms that fund startups, digitize archives, and set up marketing mentoring programmes. Finally, the fundamental role of regional collaboration in the Balkans was highlighted.
- The Innovation and Technology Agency is the main body that coordinates the development of the innovation ecosystem in **Georgia**, where initiatives for co-investment were developed at

regional and national levels. Their efforts are concentrated on four interweaving areas: supporting the creation of start-ups, developing human capital and providing entrepreneurial training programmes, seeking collaboration both with international stakeholders and the private sector. Georgia is now therefore seeking to further strengthen the already-developed AI sector.

- As far as collaboration is concerned, the importance of exchanging good practices and developing partnerships within the Balkan region and more widely with the EU, as well as with international donors, funds, and institutions were recognized.
- As for the role of academia, all the speakers highlighted its core function when it comes to developing new business models and R&D, as well as stressed the importance of involving universities in government projects and strengthening cooperation between academia and the private sector to foster innovation.

## SESSION 2: BUILDING PARTNERSHIPS FOR A SUSTAINABLE ECOSYSTEM DEVELOPMENT

**Focus:** hindsight on some of the good practices and initiatives that are currently fueling innovation, entrepreneurship, and digital transformation in the countries, as well as a perspective on how different types of partnerships can help stakeholders contribute to this process.

**Moderator:** Agi Veres, Director, UNDP Representation Office, Geneva

**Speakers:** Anthony Giannoumis, Associate Professor, Oslo Metropolitan University; Beatrice Scarioni, Head of Tech4Dec, EPFL; Christopher Baker-Brian, Co-Founder, Bboxx; David Maasz, Member of the Supervisory Board, INPUT Program; Manuel Costa Cabral, Senior Consultant, ANACOM, Portugal

### Key points

- Partnerships are the cornerstone at all levels for creating ICT-centric innovation ecosystems.
- **Portugal's** Secretary of State has devised a Working Group, presided by ANACOM, that developed a **smart submarine cable system** that functions both as a communication infrastructure and an earth observing system that allows monitoring climate change, sea temperature and level, and for early earthquake and tsunami warnings.
- For the cable to be laid down, **ANACOM** individuated national partners, which included academia and parties, and set up a national consortium. Also, international stakeholders were involved, such as the ITU, the World Meteorological Organization, and the UNESCO Oceanic Organization. In this context, the importance of dialogue between ocean observing communities, industries, and regulators was highlighted. An opinion that not partnering is not an option for an initiative involving climate change and disaster risk reduction was stated.
- The **INPUT Programme** started as a partnership of the government of **Hungary** with the private sector, therefore establishing an innovation ecosystem centered around entrepreneurship and innovation. The programme has a bottom-up approach and focuses on involving even the smallest elements of a nationwide ecosystem. It focuses not only on collaboration within the country but also with external partners, by introducing another angle to fostering entrepreneurship and innovation that is competition versus collaboration. In such



a way, stakeholders from different countries are very selfishly motivated to collaborate and develop long-term initiatives and ties, which will outlive the programme.

- The **EPFL** is a Polytechnic University based in Geneva, Switzerland, which has a vibrant ecosystem where collaboration is a key element. They partner with NGOs and other organizations to carry out a two-year program called **Tech4Dev**. Throughout this program, workshops are arranged in which organizations state the needs they have, and engineers and researchers devise technologies that address those needs. Yet, the issue of matchmaking between NGOs and engineers remains.
- Lack of funding and resources can also be overcome by setting a diverse network of partnerships that are the fuel for innovation. **Anthony Giannoumis**, a junior researcher from Oslo University who got involved in the Equals initiative, has proven it. Recently, together with a network of 19 institutes around the world, he applied for the Horizon 2020 EU Framework Program and won 1.6 million Euros from the EU thanks to the diversity of their network partners that were willing to put their time and energy into this project.
- The importance of cooperation with Governments, UN agencies, and commercial partners in achieving the UN Sustainable Development Goals was stressed out by **BBOXX**, a provider of access to energy and other utility services across the African continent with two million beneficiaries over the last decade. In this context, were also highlighted fundamental elements for accelerating the pace of development like the consistency of policy frameworks, empowering the bottom-up innovation and building capacity in local markets.
- As for the sustainability of the partnership, is fundamental to understand the differences in the values that drive someone's participation, and how they contribute to strengthening the connections between people and as a consequence between institutions. Objectives and interests change very quickly in this fast-paced world, thus an open dialogue on the topic of interest is particularly important.

## SESSION 3: INNOVATION JOURNEY – STORIES FROM THE FRONTLINES – COVID-19

**Focus:** innovation journey stories of entrepreneurs on different stages of the entrepreneurial lifecycle that are embracing and navigating through the new normal in some fields and industries particularly affected by the crisis caused by COVID-19 and their advice on best ways to navigate this disruption.

**Moderator:** Valentina Stadnic, Digital Ecosystem Expert, ITU Office for Europe

**Speakers:** Gerassimos Spyridakis, Managing director, Bank Julius Baer; Michel Arditti, CEO, SCSWORLD; Sarah Schwab, Founder & CEO, The Experience Accelerator; Siew-Veena Sahi, CEO & Co-Founder, Testmate Health; Radu Tintescu, Creative Entrepreneur, Co-Founder of [Flow] OS

### Key points

- Perception shift in the health sector towards consumer/patient-centred healthcare approach was highlighted by Testmate Health. During the pandemic, they faced challenges like remote working, developing partnerships and getting the funding they needed. Yet, the Government

support through grant funding was mentioned as an important element in overcoming the valley of death.

- Covid-19 has impacted not only the working but also the learning environments, so that leaders and professionals have to shift to using blended learning approaches. Due to this evolution, there is a low chance that companies will return to the previous way of learning, as we see the acceleration of blend approaches with online and in-person collaborative activities. This takes everyone using this approach a step forward in terms of learning impact and accessibility.
- Universities and educational institutions that were the most flexible to adapt to the new normal were the ones having the student experience in mind and already had several attributes like collaborative learning platforms (like Moodle, blackboard etc.) and recognized that learning experience needs to be re-engineered.
- From the perspective of the banking sector, the pandemic has further highlighted the already-grasped necessity for systemic and structural changes. People are asking for services to be more efficient and also sustainable. Moreover, due to the disruptive nature of innovations, banks had to cut costs and scales to survive these challenges, in addition to needing to build digital capabilities in order to stay agile.

From the point of view of cybercrime, the pandemic has been a fertile occasion for it to spur. 97% of the industry has been a target of data leaks, which is particularly problematic as sensitive data has been released. The hacking industry has been greatly profiting, also given the amount of data that is in the cloud. Everyone is a target of cybercriminals, regardless of the size of the business. Moreover, the model of outsourcing the security aspect is clearly not sustainable anymore. Thus, to counteract rampant cyber threats, it is fundamental that stronger encryption is developed.

- The pandemic has also made more evident how our society is based on information, and how consequently there is a need for the users to select information and sources. Indeed, information overload is a huge issue in online communication. Moreover, it is important for entrepreneurs to build digital communication and use conference tools that structure information in a way that is intuitive and user-friendly.
- Access to cash, maintaining a strong company culture while moving towards a more remote working setting, as well as building partnerships virtually were identified among some of the challenges that entrepreneurs have to address during pandemics. As the solution in this sense were mentioned diversifying the partnerships, going international for identifying investors and pushing yourself out of the comfort zone.
- For Greece, the pandemic posed challenges that were countered with further accelerated digital transformation and start-up innovation. In this context, Greece is becoming a digital hub of global importance, and it's now trying to gather key stakeholders, and talent to develop the ecosystem. Diaspora is very important as it brings not only the capital but the expertise which is transformative. Moreover, digital nomads were identified as a great source of potential revenue for the country that can surpass the one generated by tourists.

## SESSION 4: IN FOCUS: ACHIEVING A SUSTAINABLE FUTURE FOR AGRICULTURE

**Focus:** The session focused on achieving a sustainable future for agriculture. Its core element, Award Ceremony of the “Digital Excellence in Agriculture: ITU-FAO Regional Contest in Europe and Central Asia”, brought together 28 finalists for pitching their solutions aimed at enhancing market access, developing the capacity, promoting sustainability of the food supply chains, overcoming climate changes and managing the disaster risks.

**Moderator:** Valentin Nagy, Junior Technical Officer on Digitalization in Agriculture, FAO Regional Office for Europe and Central Asia; Sarah Delporte, Project Officer, ITU Office for Europe; Themban Malapela, Knowledge and Information Management Officer, FAO; Farid Nakhli, Programme Coordinator, ITU Regional Office for CIS

**Speakers:** Sophie Treinen, Information and Knowledge Management Officer and Digital Agriculture Team Leader, FAO Regional Office for Europe and Central Asia; Mihaly Csoto, Digital Agriculture Expert

### Setting the context: Digital Excellence Awards Ceremony

During the second day, the opening ceremony was led by **Mr. Vladimir Olegovich Rakhmanin**, who explained the context in which the contest for Digital Excellence in Agriculture took place. The pandemic highlighted the chances and the challenges for digitalization in agriculture, especially regarding the gender and digital divides, as well as the lack of opportunities in rural areas. It was argued that to tackle these issues, through tools such as building capacities and devise, policies, financial investments; a dialogue is necessary between all the stakeholders. In this context, it was highlighted that the ITU and the FAO initiatives in the regions of Europe and central Asia are complementary. Indeed, while the ITU Office for Europe focuses on building capacities and infrastructures, strengthening digitalization and enhancing accessibility and inclusivity; FAO’s mandate in Europe and Central Asia is centered around the sustainability of food systems. Three of the FAO’s initiatives are particularly focused on digitalization. The first one tackles poverty and is dedicated to supporting family farms, smallholders and the youth. The second one focuses on transforming food systems and changing marks. The third one is dedicated to preserving biodiversity and is about the sustainable use of materials. The projects that were awarded are related to these three strategies. It was also highlighted that on the same day, the UN Food System Summit would have started. The summit was called in the context of the Sustainable Development Goals (SDGs), to be reached by 2030, especially the second one “Zero Hunger”, given the impact of issues such as climate variability, civil insecurity, poverty and inequality, unaffordability of a healthy diet, impact of the pandemic, downturns; whereby science and technology can help enforce a sustainable food system. Indeed, the Digital Excellence in Agriculture Contest helped identify the good practices and strategies to move in this direction, while also highlighting the necessity of the partnership between ITU and FAO.

In his speech, **Mr. Jaroslav Ponder** underlined the importance of investing and transforming the development sector, which we all depend on. With the fast pace of digitalization of all sectors, digital technologies are becoming important for countries to enhance their capabilities to achieve the 17 UN SDGs. While the Europe and Central Asia regions have made great progress in incorporating digital technologies, different stakeholders have to come together to ensure a safe, equitable and open

digital future for all. With the rate of Internet access being far lower than that of urban areas, where millions reside, it was argued that much must be done to close the digital rural divide, including strengthening digital skills, and increasing affordability and availability of digital technologies across the regions. Digital agriculture is one of the priorities when tackling the issue of the digital divide, and systemic change is needed to implement meaningful connectivity and digital transformation, especially in agricultural services. Indeed, infrastructure is necessary for small farmers and holders, as well as other stakeholders in the agriculture sector, to thrive, reach new markets and bring digital solutions. In this context, the Partner to Connect Digital Coalition was created to attract partners, engage them in initiatives, and provide opportunities for them to implement and ensure impacts could be made in the front lines. ITU and FAO called for good practices in the agricultural sector to be shared in November 2020, and sharing these practices plays a key role when it comes to discovering new strategies and novel innovations for the digital transformation of agriculture. The twenty-eight finalists of the contest will showcase some of these good practices and innovations, as well as present opportunities and challenges with respect to rural areas, which will motivate more individuals and organizations to apply innovations and practices to contribute to the creation of a digital agricultural ecosystem.

### **Status of Digital Agriculture in Europe and Central Asia: Current innovation trends, opportunities and challenges**

**Ms. Sophie Treinen** shared that despite the different areas of work of ITU and FAO, the two organizations harmonized their objectives and collaborated on policies and national frameworks; also by partnering with heterogeneous stakeholders and different sectors. This partnership produced the E-agriculture Strategy Guide, which has been implemented in several European countries. Last year, a report on the Status of Digital Agriculture in 18 countries of Europe and Central Asia was published, and explore the state of technology application, challenges to tackle and the opportunities disclosed. Through this contest, which emerged from this fruitful collaboration, 192 applications were received, of which 171 constituted eligible practices. These addressed 57 countries of application. In total, there were 28 finalists, including 7 winners of the “Digital Excellence in Agriculture” special recognition (one per category), 14 honorable mentions (position 2<sup>nd</sup> and 3<sup>rd</sup> of the Digital Excellence in Agriculture” special recognition) and 7 champions (one per category). The title of “Champion” practice is given solely to practices originating from the 18 countries of Europe and Central Asia which are outside of the scope of the EU, with this selection being decided in the follow up to the “ITU-FAO Study on the Status of Digital Agriculture in 18 Countries of Europe and Central Asia”. The categories of the contest were as follow: 1) Regulatory frameworks, enhanced market access, financial services and insurance; 2) Capacity development and empowerment; 3) Agriculture innovations systems and sustainable farming, which was divided into 4) Specific solutions and 5) Connected farm management systems; 6) Disaster risk management and early warning systems; 7) Food loss and waste, Food safety and traceability. A fifth of the eligible practices was for category 4, with the other eligible practices spreading more or less evenly amongst the remaining categories, after category 3 was split into two. The practices were assessed across five criteria: 1) Impact/Results; 2) Sustainability; 3) Replicability and upscaling; 4) Novelty; 5) Technology. Moreover, attention was paid to whether the project was dedicated to smallholders, and whether partnerships were suggested. Finally, Ms. Treinen shared that a joint “Digital Excellence in Agriculture” report is soon to be published, and will summarize and present the state of technology use in agriculture, as well as good practices, challenges, recommendations, and ICT trends for each of the categories.

**Mr. Mihaly Csoto** shared further information on the “Digital Excellence in Agriculture” Report, the sections of the such report and the contest. The first thing to be noticed is that many of the applications addressed organic farming. Furthermore, it was argued that

- The first category focus on frameworks, market access and financial services; and is dedicated to connecting farmers with stakeholders such as the government, customers, and financial services; thereby making services more accessible, harmonizing the supply and demand, providing marketing and sales opportunities. Many applications for this category came from Ukraine and were relating to FinTech, with an increased interest in agriculture. Another noticed feature was the interest in mobile devices.
- The second category involved capacity development and empowerment, and its scope was to make knowledge management more efficient, by facilitating knowledge transfer and building digital knowledge databases.
- For the third category, characterized by automation, robots, and drones; it was noticed that robots are now commercially available, and that these are being built for many heterogeneous purposes. Automation is used especially in irrigation and full automation of greenhouse systems. Drones are concretely used on the field, for reasons such as crop production.
- In the fourth category, focusing on innovation systems and sustainable farming, it was highlighted that innovations cover monitoring systems that make use of sensors, and thereby make these innovations centered around data. This category shows the issue of how digital solutions are employed.
- The fifth category is on innovation systems and sustainable farming, as well as on connected farm management systems. Many startups are born in this field, taking advantage of remote sensing and geospatial data.
- The sixth category, that of Disaster Risk Management and Early warning systems, connects data from different data sources to advise in real-time.
- Food loss and waste-related applications highlighted the role of transparency and the organization of the food chain and logistics. AI, digital platforms, sensors, and mobile devices were used.

The challenges that constitute a common impediment to foster the digital agriculture sector and use of technologies depicted above lie in technological difficulties, policy issues, commercialization, and human aspects:

- The first one concerns connectivity, energy-related issues, user-friendly interfaces, data that are in different formats.
- Many applications lamented the lack of targeted funding, as well as the lack of intersectoral communication, data interoperability, public data sources and legislation.
- Commercialization issues refer to the difficulties in reaching the right business model, as well as obtaining funding opportunities. Moreover, it was highlighted that data ownership and monetization is a challenge.
- Applications underlined how farmers lack skills, training and awareness surrounding technologies. Many had to launch educational activities, in which language barriers were experienced.

Regarding the applications, it was highlighted that the recommendations include data issues, such as knowledge transfer and cooperation. There is a need to implement regulations and standards around data ownership. Other recommendations will include issues such as regulatory framework; accessibility, affordability and equality of connectivity; investing in equipment for agriculture; advisory service providers, that would help farmers associate and cooperate; digital skills.

### **Pitching of the outstanding practices in digital transformation of the agricultural sector and Awards Ceremony**

The pitching involved four speakers for each of the seven categories, for a total of 28 pitches.

#### Category 1 - Regulatory frameworks / Enhanced market access / Financial services and insurance

- **Local Food Nodes** is on an open-source digital platform to connect food producers and end consumers. It is a website where farmers can make their food available for pre-order and drop it at physical local food nodes. These practices result in the creation of local community food hubs in different countries. The project maintains its economic sustainability by having local food producers gain all the revenues from the selling process, while the project is financed through donations.
- **NMA agro** was born as a mobile application, acting as a tool for farmers and the government to communicate, and it allowed farmers to share geotagged photos in order to report on the state of crops. Later, a data hub was developed, as well as news on support and calendar which is used to set commitments and make decisions. The application currently has 20 thousand users.
- **Fresh.Land** aims to shorten the food supply chain, by cutting out the middlemen that manage the selling of products. The platform they developed connects farmers and end-users, for users to get the freshest products and farmers to make more revenue. By delivering the products directly from the farm and avoiding the usage of preservatives on fruits and vegetables, the project also has a positive impact on the environment with less CO<sub>2</sub> production and less food waste.
- **Agrianalytica** Agri-Financial Ecosystem is a platform for farmers to access finance, markets, knowledge. Indeed, the platform connects farmers with all the stakeholders that surround them. To grant farmers and stakeholders that access, the platform comprehends SAAS and PAAS, where farmers can access relevant data, such as that for risk management. The ecosystem has now a global reach.
- Results of the Awards Ceremony:
  - **Winner of the “Digital Excellence in Agriculture” Special Recognition:**
    - Fresh.Land - Straight from the Farm - Fresh.Land
  - **Honorable Mention of the “Digital Excellence in Agriculture” Special Recognition:**
    - Local Food Nodes - Local Food Nodes Röstånga ek Förening (2<sup>nd</sup> position)
    - Mobile application “NMA agro” - National Paying Agency under the Ministry of Agriculture of the Republic of Lithuania (3<sup>rd</sup> position)
  - **Champion Practice:**
    - Integrated One Stop Shop for farmers to access finance, markets, inputs, and knowledge - Agrianalytica LLC.

### Category 2 – Capacity development and empowerment

- **Organic Farm Knowledge** is created based on how organic farming innovation is knowledge-intensive, therefore it offers farmers and stakeholders free access to tools, such as videos and calculation tools, that enhance sustainability, productivity and quality of organic products. It also allows user connection between stakeholders in different countries, as the platform is translated into multiple languages, and it hosts a discussion app and links for social media.
- **Electronic agricultural maps** is dedicated to capacities development and empowerment. It was developed by three companies, and it hosts information in each of the country's languages for three different countries: Tajikistan, Kyrgyzstan and Russia. The target users are mainly farmers, companies, consultants and managers, who are offered videos, resources, and data. This information helps with enhancing business capabilities and reducing risk. Their aim is to further expand to other countries, such as Moldova.
- **FarmForesight** is a gamified simulation platform that emulates the processes of decision-making and allows analysis of the results of certain actions and decisions. The platform is based on an algorithm that is informed by data on markets and businesses. It allows farmers to build business experience through an engaging tool, and it also constitutes a team-building tool. Being flexible, it has the potential to be further implemented in other geographies and industries.
- **GENPRO** is an online platform, based on a central herdbook database for breeders and breeders' associations, as well as the scientific communities and consumers, to access data on indigenous breeds' health and population. Indeed, indigenous breeds are fundamental for sustainable food production, as it is less impactful on the environment. It is a flexible platform, that can be used by different countries, to monitor the state of different species and different breeds.
- Results of the Awards Ceremony:
  - **Winner of the “Digital Excellence in Agriculture” Special Recognition:**
    - Organic Farm Knowledge - Online platform to promote knowledge exchange among organic farmers and advisors – IFOAM Organics Europe
  - **Honorable Mentions of the “Digital Excellence in Agriculture” Special Recognition:**
    - Genpro - Ruralbit Lda (2<sup>nd</sup> position)
    - Electronic agricultural maps - Agro InformAsia (3<sup>rd</sup> position)
  - **Champion Practice:**
    - FarmForesight agribusiness simulator - FarmForesight

### Category 3 – Agriculture innovations systems and sustainable farming - Farm automation, robots, drones

- Viticulture is facing many challenges, from societal challenges to security, from accidents to toxicity, as well as economic ones. **Vitibot** has created Bakus, which is a full electric and autonomous vineyards robot. Vitibot also focuses on artificial intelligence, mechatronics and

robots that are completely electric and autonomous. It improves carbon footprint and reduces safety risks. It is active in Italy and France but will soon be active worldwide.

- **High-Precision Weed Control in Organic Farming** is a research that addresses the use of herbicides, which have a high environmental impact and causes physical stress. The solution suggests the use of intelligent robotic systems for weed control, based on AI, robotics and Big Data. The project is still in the prototype phase, but will have a market worth 7 billion dollars worldwide, of which 1 will be in Europe. The market is predicted to increase fivefold by 2025.
- **Fly and See Agro LLC** contributes to the reduction of the use of synthetic pesticides in agricultural technologies, and expands the use of beneficial insects in agriculture and forestry worldwide, by initiating projects including the biological protection of plants by entomophages using unmanned aerial vehicles
- **BrioAgro** is dedicated to addressing the issue of water usage in farming. 80% of the world's freshwater is used in agriculture, but with water restrictions caused by climate change, and other issues, farmers are now facing challenges with water usage. BrioAgro is based on IoT and sensors-obtained information, and thus offers a soil moisture calibration algorithm that irrigates the plant when needed. It can be connected to any irrigation system. This way, the cost is reduced and the flavor is increased. It detects fires, pipe breaks, pests, etc., and it is connected to the farmer's phone. All the information is connected to one point.
- Results of the Awards Ceremony:
  - **Winner of the "Digital Excellence in Agriculture" Special Recognition:**
    - High-Precision Weed Control in Organic Farming - West Coast University of Applied Sciences
  - **Honorable Mention of the "Digital Excellence in Agriculture" Special Recognition:**
    - Intelligent watering taking advantage of the existing irrigation installation - BRIOAGRO TECH (2<sup>nd</sup> position)
    - Bakus, full electric and autonomous vineyards robot – VitiBot (3<sup>rd</sup> position)
  - **Champion Practice:**
    - Biological protection of plants by entomophages using unmanned aerial vehicles - LLC "Fly and See Agro"

#### Category 4 - Agriculture innovations systems and sustainable farming - Specific solutions

- **I-bee** is an IoT solution for beekeeping. Indeed, I-bee bees contribute to remotely monitor the hive, by for example measuring its temperature, humidity, weight, number of bees and pollination. The I-bee business has grown worldwide.
- **Apiary Book** helps beekeepers making better-informed decisions to minimize bee colonies losses and increase productivity, as beekeepers are fundamental in the protection of bees. The solutions offered are platforms that help with apiary management, collaboration, reporting and information; as well as knowledge platforms for eLearning, weather data and bee counting. The data are region-based.
- Technology for life helps people to become more successful and sustainable in their professional lives. In particular, **Nedap CowControl** is a tool to apply on cows to monitor their health, reproduction and movement, also thanks to augmented reality.



- **3Bee Hive-Tech** develops customized IoT monitoring systems powered by A.I. algorithms, which would contribute towards the shift from a chemical-driven approach in farming to a more data-driven one.
- Results of the Awards Ceremony:
  - **Winner of the “Digital Excellence in Agriculture” Special Recognition:**
    - Nedap CowControl - Nedap Livestock Management
  - **Honorable Mention of the “Digital Excellence in Agriculture” Special Recognition:**
    - Apiary Book Restored application - Apiary Book Ltd.
    - Hive-Tech - 3Bee Srl.
  - **Champion Practice:**
    - i-bee - IT Innovations

Category 5 – Agriculture innovations systems and sustainable farming - Connected farm management systems

- **Agricolus** is a platform that helps farmers and holders by providing them with innovative technologies for agriculture, such as field mapping and satellite imagery, and also educational platforms for training courses. It therefore aims to digitalize the agriculture sector, and through digitalization to reduce costs and environmental impacts and enhance food quality.
- **XFarm** helps farmers facing the current challenges, from climate change to sustainability. XFarm is a digital ecosystem built on 1) the platform, farm management innovation system which combines data for decision making; 2) sensors, that allows monitoring of the weather; 3) services for supply chain projects to enhance sustainability and traceability. It combines and connects different stakeholders in South Europe and South America.
- **Agrivi** has the mission to empower farmers to increase sustainability. Agrivi provides a centralized platform that connects all the farming data that different products provide. Agrivi works with more than 100 countries worldwide, and brings together with other partners and stakeholders in the ecosystem. It targets 12 sustainable development goals.
- **OneSoil** is a team of 58 people that develops free mobile and apps to precisely monitor the weather and fertilize use. It engages with the farmers through communication tools and social media. The Variable Rate Application technology and productivity zones help farmers implement sustainable practices by identifying the areas where fertilizers are necessary, therefore cutting cost and impact. With weather data and charts, data is provided on the crops. It is used within 180 countries.
- Results of the Awards Ceremony:
  - **Winner of the “Digital Excellence in Agriculture” Special Recognition:**
    - AGRIVI Farm Management Software - AGRIVI d.o.o.
  - **Honorable Mention of the “Digital Excellence in Agriculture” Special Recognition:**
    - Agricolus platform - Agricolus s.r.l. (2<sup>nd</sup> position)
    - xFarm platform – xFarm (3<sup>rd</sup> position)
  - **Champion Practice:**
    - OneSoil - app for precision farming - OneSoil.

### Category 6 – Disaster risk management and early warning systems

- **AgroNET** is a digital platform for sustainable farming. Its target users are small farmers and producers, by helping reducing water use, degradation of the soil. By reducing these factors, it enhances crop and livestock quality.
- **VIPS** is an open-source early warning platform for pests and diseases in agriculture. It automatically calculates the infection risk and keeps working every single day, also taking care of the project maintenance. Field pests and disease risk are displayed on maps and charts. VIPS is used in several Nordic countries, and is also at the project phase in India and some areas in Africa which are very hit by climate change
- **Sencrop**'s objective is to enhance better decision making, in issues such as pests, diseases, climate events; as it is a risk management platform for farmers and their partners. It works within 25 countries, with more than 20 thousand farmers working with it. All kinds of farms can adopt it.
- Pessl is an Austrian multinational that works with countries worldwide. It manufactures IoT. Its project **Disease and Pest Forecast with Artificial Intelligence** develops IoT sensors to monitor insects, weather. It helps to reduce risks by focusing the pest and machine usage.
- Results of the Awards Ceremony:
  - **Winner of the “Digital Excellence in Agriculture” Special Recognition:**
    - Disease and Pest Forecast with Artificial Intelligence - Pessl Instruments GmbH
  - **Honorable Mention of the “Digital Excellence in Agriculture” Special Recognition:**
    - VIPS – NIBIO (2<sup>nd</sup> position)
    - Sencrop: Precision ag-weather solutions – Sencrop (3<sup>rd</sup> position)
  - **Champion Practice:**
    - agroNET – digital platform for sustainable farming - DunavNET

### Category 7 – Food loss and waste / Food safety and traceability

- **Farmer expert** is a blockchain-based system to enhance the transparency of the supply chain. All processes are based on RFID systems, which enables to monitor the food chain system through QR code scanning. The benefits of the system are the improvement of transparency and traceability, as well as of farmers' livelihoods and consumer communication. It improves the negative impact of food systems on the environment. Indeed, farmers can obtain support with their activities, such as logistics and banking. The data gathered through the platform can also help tackle food waste.
- **Olio** is a platform that tackles food waste. It recruits volunteers. Volunteers are matched to a store, where they pick up the food to be distributed. Being a mobile app, it is highly scalable. It works with supermarkets, cafes and restaurants to eliminate any food waste.
- **BIOsens** is in the food testing business to allow stakeholders to know test results in real-time. The tests are on pesticides, antibiotics, and mycotoxins. These tests regard one billion tons of food produced every year are cancer-inducing. The lab testing is however expensive. BIOsens provides real-time results in the field and data for the farmers. It is easy to use and does not require extensive training. The target customers are traders, farmers, food producers. They are now fundraising and need half a million euros.

- **ConnectingFood** uses blockchain and smart models to grant transparency, as most customers trust farmers more than anyone in the food chain. ConnectInFood provides real-time technology and connection, by recording data in a standardized way in a blockchain. This is used to record all the data and actions relating to the food chain, to ensure transparency for the customers.
- Results of the Awards Ceremony:
  - **Winner of the “Digital Excellence in Agriculture” Special Recognition:**
    - OLIO - OLIO Exchange Limited
  - **Honorable Mention of the “Digital Excellence in Agriculture” Special Recognition:**
    - Real-time digital food supply chain auditing, powered by blockchain - Connecting Food (2<sup>nd</sup> position)
    - Farmer Expert platform - Farmer Expert (3<sup>rd</sup> position)
  - **Champion Practice:**
    - BIoSens Myco - BIoSens
- Infrastructure, innovative technologies, policies, investment, capacities and collaboration are all needed for the digital transformation of agriculture in the regions of Europe and Central Asia. The report is being finalized, with today’s contributions included. Once this is finished, the implementation phase will start. In this light, cooperation with innovators, including the finalists, will be fundamental.
- This contest has proven to be an important milestone towards building sustainable food systems across the regions, especially with the identification of nearly 200 agro-technologies as well as opportunities and challenges to implement such practices.
- Digital transformation requires a holistic approach, which also includes addressing the digital, rural and gender divides, to include all stakeholders. This contest was a fundamental milestone in working towards the sustainability of food systems in the regions.
- ITU and FAO will keep working in tandem to create a digital innovation ecosystem for agriculture, with the next milestone of this long-standing cooperation being the joint report on Digital Excellence of Agriculture.
- ITU and FAO stands ready to continue working alongside all fellow practitioners towards impactful, sustainable and innovative solutions which would prove to bring many advancements in fostering a sustainable economy, agriculture, and societal development with the use of digital technologies.
- The ITU Office for Europe and ITU Office for CIS are committed to working on the challenges of digital agriculture, through improving connectivity, promoting citizen-centric digital services, bridging the digital divide and fostering innovation. Moreover, other initiatives on the aforementioned areas and beyond are being launched at the country level in Europe which support the digital transformation at the national and European levels, with the hope that these initiatives and innovations will help to build a more sustainable future.

## SESSION 5: IN FOCUS: GENERATION CONNECT SESSION ON YOUTH AND INNOVATION

**Focus:** opportunities and challenges faced by young entrepreneurs, as well as possible means of tackling these challenges and ways to foster the entrepreneurial ecosystem designed to generate and support the development of innovative ideas and businesses.

**Moderator:** Luke Cavanaugh, Editor-in-Chief at European Student Thinktank and Co-Founder at STEAR - Student Think Tank for Europe-Asia Relations; Ron Kremer, Chief Communications Officer, Messee

**Speakers:** Ana Maria Meshkurti, Programme Coordinator, ITU Office for Europe; Priya Burci, CEO, Powercoders; Sheraz Ahmed, Managing Partner, STORM Partners; Yusuf Kerem Çalıkoğlu, Co-Founder, Pixelized; Zubair Junjuna, Founder of ZNotes, Diana Award Recipient, Entrepreneur-in-Residence at Bedford School.

### Key points

Generation Connect aims to engage global youth and encourage their participation as equal partners alongside the leaders of today's digital change, empowering young people with the skills and opportunities to advance their vision of a connected future.

- From the point of view of challenges that youths face, access to capital and funding was mentioned as one of the main issues, as well as the difficulty of having networking opportunities, professional experiences, and experience a lack of information. These challenges are particularly pressing in developing countries, where issues like lack of infrastructure and role models are also experienced.
- Starting an entrepreneurial activity at a young age also offers many opportunities, such as having more time to experiment while building the start-up, taking advantage of digital tools and other opportunities offered by incubators and accelerator programmes. However, it was also contended that sometimes it is hard to focus on the right opportunities, as there are too many.
- In this context, the core role of being mentored by more experienced peers and entrepreneurs, and of networking with like-minded communities, emerged. It is fundamental for young entrepreneurs to see fellows who are able to implement good social changes, rather than entrepreneurs who are economically successful.
- Young entrepreneurs feel an urge to come together and collaborate on social and environmental issues, and to think about systemic and transformational changes. This cooperation is facilitated by digital communication tools, interconnectedness and globalization; which must be taken advantage of.
- Moreover, the importance of founding structured learning programmes, led by international organizations and institutions such as the ITU and governments, was brought up. It was also mentioned that it would be important to see how entrepreneurs can generate social impact at different stages of the product rollout.
- As for how international organizations can support young innovators, it was mentioned that organizations need to let the youth develop their own visions, and afterwards, as the idea matures, to set standards. Also, there is the need to redefine youth entrepreneurship and to relate it also to local and grassroots initiatives.

- Furthermore, the need to offer support structures and raise awareness on available opportunities were mentioned as ways to build and maintain a milieu where young entrepreneurs can thrive. Also, it is fundamental that frameworks are built where young entrepreneurs can get their first funding.
- In this context, the crucial role of social capital, education and income emerged, as well as the need to further democratize access to opportunities.
- As for fields that experience a shortage of young talents, social entrepreneurship was mentioned as a field that needs to grow.
- Finally, it was said that despite one's nature being more driven to entrepreneurship, it is still fundamental to learn skills and to network for projects to be successful.

## CLOSING REMARKS

The closing speech was given by **Jaroslav Ponder**. He started by expressing his gratitude to the excellent speakers that joined the event, as well as thanking the audience for following the Forum sessions during both days. It was highlighted that the event represented a fundamental milestone, as speakers were able to share good practices, activities, and ideas for the innovation ecosystem across Europe. Moreover, speakers were also enabled to share insights on building partnerships for sustainable ecosystem development, and on overcoming the challenges brought by the Covid-19 pandemic. Therefore, the event provided a platform to accelerate digital transformation and foster entrepreneurship, as well as to further connect stakeholders in the region. It was highlighted that during the event, a significant number of research materials were shared, which he invited everyone to explore. Despite the achievements reached, it was also argued that it is important to continue working together. In this light, it was underlined that collaboration and participation are fundamental as the World Telecommunication Development Conference is planned for next year, and new strategies will be devised to further build the digital ecosystem and close the digital innovation divide at the global, regional, and national levels. Moreover, the invitation was extended to all the participants to join the 2021 Global Innovation Forum, which will take place on October, 25-29, and to connect to the side event dedicated to accelerating digital inclusion in the new normal, organized together with ZeroProject.

## SIDE EVENT: ACCELERATING DIGITAL INCLUSION IN THE NEW NORMAL

**Focus:** ways to empower innovators in providing digital solutions and services designed for persons with disabilities and on the importance of making solutions and products accessible for all. The highlight of this session will be three interventions that will make the case for: Navigation for all, Business for all, and Communication for all.

**Moderator:** AnaMaria Meshkurti, Programme Coordinator, ITU Office for Europe; Wilfried Kainz, Head of Research, Zero Project

**Speakers:** Jaroslav Ponder, Head of the ITU Office for Europe, International Telecommunication Union; Michael Fembek, Director, Zero Project; Debra Ruh, CEO and Founder, Ruh Global IMPACT; Eduardo Jauregui, CEO & Co-Founder, Irisbond; Klaus Candussi, Co-founder, Atempo.

## Key points

- It is always important to make innovative solutions for all, instead of special solutions for target groups.
- Challenging technology like the eye-tracking one, developed by Irisbond, enable people to navigate the digital space using their eyes. This proves that ICTs can improve the lives of people suffering from different disabilities. Yet, the high dependence on the hardware of such solutions makes them difficult to scale. Luckily, the new AI-based technologies have come to alleviate this issue. This makes it possible to improve usability and ensure their integration into the social lives, which is particularly important in the pandemic time.
- Cooperation with various partners can help make the change possible at the government level, and in such a way make the technology accessible for more people. That was the case for Irisbond and its approval as a part of the social care system.
- A product developed for people with learning difficulties meant to help them analyze comprehensive information can become widely used and highly demanded by a larger profile of the population. Capito, a high-quality service for easy-to-understand information, is a great example of it. After 20 years, it is not only a market leader and a technology driver in the disability field, but it also left this niche and became a mainstream service.
- For social cohesion, people need to be aware of the daily news from quality media. That's why Atempo joined efforts with the Austrian press agency and this brought Capito to the National broadcasting organization's main webpage, the next step is repeating this success in Germany for multiplication of societal impact.
- The Covid-19 pandemic sharpened the Capito message: Whatever the problem to solve might be, comprehensible information comes first.
- When you build products for people with disabilities, you open up the world to them and allow them to show their talents. Eventually, this benefits all the society.
- Recently was founded Billion Strong, which is an identity and empowerment community organization designed to bring the billions of voices of persons with disabilities together. It's all about making sure that other people's stories are being told and efforts such as the ones directed towards diminishing the digital divide are being praised.