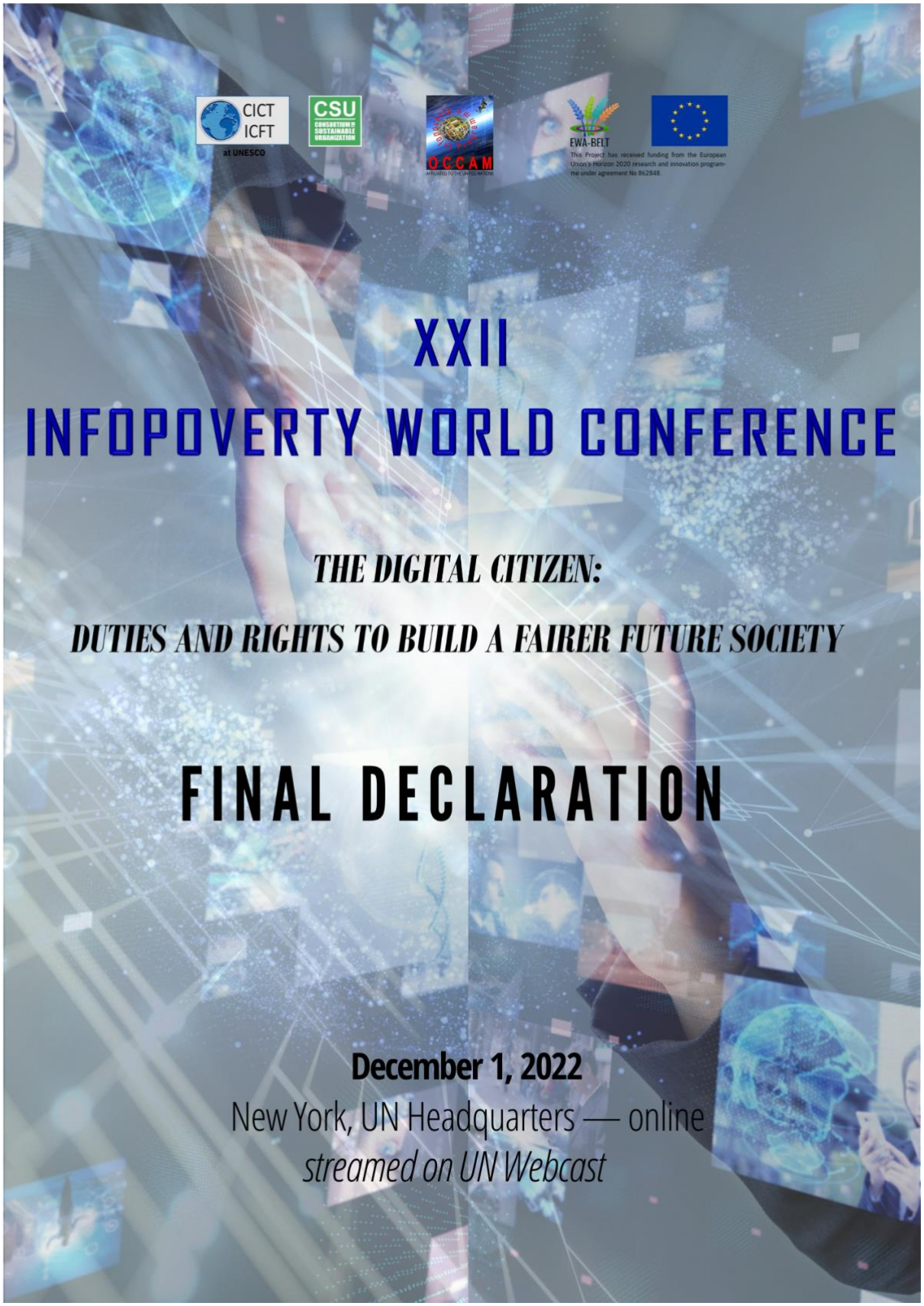

XXII
INFOPOVERTY WORLD CONFERENCE

THE DIGITAL CITIZEN:

DUTIES AND RIGHTS TO BUILD A FAIRER FUTURE SOCIETY

FINAL DECLARATION

December 1, 2022

New York, UN Headquarters — online

streamed on UN Webcast

PRESENTATION
XXII Infopoverty World Conference

How could the Digital Citizen, with her rights and duties, build a fairer digital society? This is the focus of the **22nd Infopoverty World Conference** launched in this moment of great fragility due to pandemics, wars and climate crises that must be necessarily faced with the awareness of great risks for our civilization. Scheduled to take place on **December 1, 2022** at the **United Nations Headquarters** in **New York** and online, live-streamed on **UN Webcast,** this year edition intends to investigate the unit of the Digital Society, namely the Digital Citizen.

This Edition draws on the paths traced by the **20th Infopoverty World Conference** "*Towards the Digital Society inspired by SDGs*". The **21st Infopoverty World Conference** "*How to build a fairer and more inclusive Digital Society?*" further deepened the main challenges and constraints of the Digital Society by stressing how the post-industrial structures based on repetitive work, financial assets and representative democracy have inevitably shifted online. In such scenarios, new paradigms have overcome the space-time dimensions resulting in more and more complex digital mechanisms, as expressed during **several preparatory meetings**. Throughout the years, the Conference has continuously dealt with the advancements brought about by the Digital Revolution and has progressively discovered and launched "*best-practices models*" in the fields of telemedicine, e-learning, e-agriculture, and e-money. Established by OCCAM – Observatory on Digital Communication with the participation of many African and Latin American governments, many remote villages and disadvantaged communities have successfully applied the most ground-breaking E-services for Development, previously presented, and validated during the different editions of the Infopoverty World Conference. Stemming from the results achieved throughout the past 21 years of activities outlining who are the drivers of the Digital Revolution and how they operate in terms of e-services4Dev, the **22nd Infopoverty World Conference** will draw a **Plan of Action** encompassing all **possible options** to empower the **protagonist** of the change in progress in all her **associative dynamics** and without whom the State as we know it would end up being an empty container of things thus preventing it from becoming a far-west lookalike or a pariah of spaces. The parameters of a new-born civilization must be recognized, collected, and directed towards a vision that enhances human rights and finds its inspiration in the SDGs proclaimed by the United Nations as the operational compass for orientation.

WE THANK

M. Bachelet, *President of Chile and United Nations High Commissioner for Human Rights.* **L. Fernàndez**, *President of the Dominican Republic*, **M. Ravalomanana**, *President of the Republic, Madagascar*, **A. d. L. Contreras**, *Vice President, Honduras*, **J. Shirley Jr**., *President of the Navajo Nation*, **J. Kerry**, *Secretary of State, US*, **T.R. Kennedy**, *New York State Supreme Court, US*, **A. M. E. Ibrahim**, *Minister, Niger*, **B.S. Burian**, *Minister, Tanzania*, **C. Nelson**, *Minister, Zimbabwe*, **F. Norkeh**, *Minister, Liberia*, **G. Fini**, *President of the Chamber of Deputies, Italy*, **G. Terzi di Sant'Agata**, *Minister, Italy*, **G.B. Zepeda**, *Minister, Honduras*, **H. Mongi**, *Minister, Tunisia*, **I. A. Ibrahim**, *Minister, Nigeria*, **J.G. Ruiz**, *Minister, Ecuador*, **J.P. Nsengimana**, *Minister, Ruanda*, **L. Boldrini**, *President of the Chamber of Deputies, Italy*, **L. Moratti**, *Minister, Italy*, **L. C. Sgaier**, *Secretary of State IT, Tanzania*, **M. Ayaipoma**, *Congress President, Peru*, **M. Baccini**, *Minister, Italy*, **M. I. Touré**, *Minister, Mali*, **M. Ibrahim**, *Minister, Somalia*, **M. Ramatlapeng**, *Minister, Lesotho*, **N. Sekiguel**, *Minister, Japan*, **R. Schifani**, *President of the Senate, Italy*, **R. Espinel**, *Minister, Equador*, **R. Lutchmana Padaya**, *Minister, South Africa*, **S. Craxi**, *Undersecretary of Foreign Affairs, Italy*, **V. Borra**, *Minister, Peru*, **S. De Mistura**, *UN Secretary General Assistant and Deputy Minister of Foreign Affairs and International Cooperation of Italy*, **A. J. Mohammed**, *Deputy Secretary-General of the United Nations*, **S. M. De Badaroux**, *Executive Board Unesco, President*, **K. Matsuura**, *Director-General of UNESCO*, **H. Touré**, *ITU Secretary-General* , **S. Al Basheer Al Morshid**, *Director ITU*, **C. Williams**, *Director UNHabitat*, **P. Civili**, *Special Advisor to the Director General of IDLO*, **N. Kroes**, *Vice-President of the European Commission*, **A. Mangati**, *Director of the Knowledge Exchange and Capacity Building Division for the FAO*, **J.A. Ocampo**, *Under-Secretary-General, UNDESA*, **S. Khan**, *Executive Coordinator, UNGAID*, **D. Bas**, *Director of Division for Inclusive Social Development UNDESA*, **V. Reding**, *European Commissioner for Information Society and Media*, **N. Rochdi**, *UN Deputy Special Envoy for Syria*, **M. Bukuru**, *Director UNCCD Liaison Office in New York*, **A. P. Celik**, *Chair of the Board Consortium for Sustainable Urbanization, US*, **G. S. Kins**, *Editor In Chief, Society & Diplomatic Review*, **M. G. Cavenaghi**, *Director EU Parliament Office in Milan*, **M. Di Stefano**, *Vice Minister for Foreign Affairs, Italy*, **A. Mantica**, *Undersecretary of Foreign Affairs, Italy*, **B. Benifei**, *European Parliamentary*, **G. Gargani**, *European Parliamentary*, **Amb. Abdul A. K. Momen**, *Bangladesh*, **Amb. Ahmed Sareer**, *Maldives*, **Amb. Ali Hachani**, *Tunisia*, **Amb. Allan Wagner**, *Andean Community*, **Amb. Angela Zappia**, *Italy*, **Amb. Antonio Bernardini**, *Italy*, **Amb. Antònio Gumende**, *Mozambique*, **Amb. C. M. G. Hernandez**, *El Salvador*, **Amb. Carlos Garcia**, *El Salvador*, **Amb. Crispin Gregoire**, *Dominica*, **Amb. David B. Dunn**, *US*, **Amb. Dawit Yohannes**, *Ethiopia*, **Amb. Denis Antoine**, *Grenada*, **Amb. Emilia Gatto**, *Italy*, **Amb. F. Lobasso**, *Italy*, **Amb. Ferit Hoxa**, *Albania*, **Amb. Garcia Gonzalez**, *El Salvador*, **Amb. Genc Pollo**, *Albania*, **Amb. Ghazi Jomaa**, *Tunisia*, **Amb. Giorgio Bosco**, *Italy*, **Amb. Henry Macdonald**, *Surriname*, **Amb. Hesham El Nakib**, *Egypt*, **Amb. Hiroshi Ishkawa**, *Japan*, **Amb. Hoxha Ferit**, *Albania*, **Amb. I.A. Gaspar Martins**, *Angola*, **Amb. Ibrahim O. Dabbashi**, *Lybia*, **Amb. Inoussa Ousseini**, *Niger*, **Amb. Jackline Yonga**, *Kenya*, **Amb. Jean-Francis Zinsou**, *Benin*, **Amb. Karen Tan**, *Singapore*, **Amb. Klausw Grewlich**, *Germany*, **Amb. Lot Dzonzi**, *Malawi*, **Amb. Marcello Spatafora**, *Italy*, **Amb. Mario Panara**, *Italy*, **Amb. Mohammed K. Khiari**, *Tunisia*, **Amb. Nicolette Williams**, *Jamaica*, **Amb. Palitha T.B. Kohona**, *Sri Lanka*, **Amb. Robert Van Lierop**, *Vanuatu*, **Amb. Ryadh B. Sliman**, *Tunisia*, **Amb. Sebastiano Cardi**, *Italy*, **Amb. Serge Telle**, *France*, **Amb. Somduth Soborun**, *Mauritius*, **Amb. Stefano Cacciaguerra**, *Italy*, **Amb. Sven Jurgenson**, *Estonia*, **Amb. Sylvie Lucas**, *Luxembourg*, **Amb. T.B. Palitha**, *Sri Lanka*, **Amb. Tiina Intelmann**, *Estonia*, **Amb. Toshiya Hoshino**, *Japan*, **Amb. Z.R. Zainuddin**, *Malaysia*, **Amb. Zina Andrianarivelo**, *Madagascar*, **Cons. Gen. F. Augustin**, *Haiti*, **Cons. Gen. N. Nomvuyo**, *South Africa*, **S. S. P. Hinduja**, *Chairperson, the Hinduja Foundation*, **Schwab Klaus**, *Founder And President, World Economic Forum*, **P. Pistorio**, *President of ST-Microelectronics*, **P. Ferrari**, *CEO Fiera Milano*, **G. Viriglio**, *General Director, ESA*, **Adele, Christopher** and **Nikki Smithers**, *Presidents of Smithers Foundation*, **C. Ravizza,** *President of International Rotary Club*,

AND OTHERS FOR PARTICIPATING TO THE PREVIOUS CONFERENCES (2001-2021)

Left: Plate received from the President of the Italian Republic Sergio Mattarella celebrating the XVIII Infopoverty

Right: Medal received from the President of the Italian Republic Giorgio Napolitano celebrating the Infopoverty Programme

INVITATION

1 December 2022
New York, UN Headquarters - Conference Room 12
And online on Webex
Streamed on UNWebcast

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PROGRAM
New York, United Nations Headquarters,
Conference Room 12
10:00-10:30 am (NYT) - Opening Session

Marco Romiti, *First Councillor for Economic Affairs, Permanent Mission of Italy to the United Nations*
Daniela Bas, *Director of the Division for Inclusive Social Development at the UNDESA, US*
Tawfik Jelassi, *Assistant Director-General for Communication and Information, UNESCO, France*

General Introduction

Pierpaolo Saporito, *President of OCCAM and Infopoverty , Italy*

10:30 - 11:30 am (NYT) - First Session

The Digital Citizen: From digital communities to real society, how the process could be implemented on terms of participation and global wellness and freedom.

***Moderator*: Aliye P. Celik**, *Chair of the Board Consortium for Sustainable Urbanization, US*

Lance Jay Brown, *President, Consortium for Sustainable Urbanization, US*
Francesca De Ferrari, *Programme Management Officer, UN-HABITAT, US*
Gernot Riether, *Coordinator, M.Arch and MS. Arch Programs, US*
Syed Munir Khasru, *Chairman, IPAG, Institute for Policy, Advocacy, & Governance, Bangladesh*
Gerardo Zepeda Bermudez, *Advisor to Broad Comm Inc. (US), Former Minister of Science & Technology, Honduras*
Ben Horton, *Strategic Planning Officer, Chatham House, UK*
Robert Seatter, *Director BBC History, UK*
Patrizio Civili, *Special Advisor to the Director General of IDLO, Former United Nations Assistant Secretary-General, US*
Vicky Charisi, *Senior Research Scientist, JRC, Centre for Advanced Studies, European Commission, Netherlands*
Fabrizio Lobasso, *Sub-Saharan Africa Deputy Director, Ministry of Foreign Affairs, Italy*

PROGRAM
New York, United Nations Headquarters,
Conference Room 12
11:30-13:30 pm (NYT) - Second Session

How the new technologies can achieve SDGs and develop rural communities, saving planet and assuring safe lives, assisting new digital best practices and services

***Moderator:* Melchiade Bukuru**, *Director UNCCD Liaison Office in New York, US*

First part: How to reach Zero Hunger.
The EWA-BELT solutions on e-agriculture
Giovanna Seddaiu, *Professor in Agronomics and EWA-BELT Project Coordinator, University of Sassari, NRD Centre, Italy*
Amare Ayalew, *Manager of Partnership for Aflatoxin Control in Africa, African Union Commission*
Margaret Jesang Hutchinson, *Professor and Associate Vice Chancellor Research and Enterprise, University of Nairobi, Kenya*
Sheila Okoth, *Professor of Botany, University of Nairobi, Kenya*
Marco Cereda, *Advanced Researcher- System Research and Applications, ST-Microelectronics, Italy*
Naresh Magan, *Professor of Applied Mycology, Agrifood and Biosciences, Cranfield University, UK*
Giuseppe Enne, *Head of Scientific Advisory Board, EWA-BELT*
Zinsou Kpavode, *M&E Specialist, CORAF, Senegal*

Second part: Smart villages and e-services.
The example of the ICT UN Millennium Village, a model for rural communities' development into the digital era
Riana Rasamimanantsoa, *Director General, Minister of Digital Development, Posts and Telecommunications, Madagascar (tbc)*
Remy Sietchiping, *Chief, Policy, Legislation and Governance Section, UN-Habitat, Kenya*
Gitanjali Sah, *Strategy and Policy Coordinator, International Telecommunication Union (ITU), Switzerland*
Toky Ravoavy, *Expert consultant in Social Safeguards of poverty reduction projects, Madagascar*
Ranja Bakoly, *Directrice CEG Sambaina, Madagascar*

Third part: Health for all. The role of telemedicine
Claudio Azzolini, *Professor of Ophthalmology, Insubria University & Founder of Eumeda® Telemedicine Platform, Italy*
Simone Donati, *Department of medicine and surgery, Professor of Ophthalmology, Insubria University, Italy*
Alessandro Orro, *Institute of Biomedical Technologies - CNR, Italy*
Hassan Ghazal, *President, Moroccan Association for Telemedicine and eHealth, Morocco*
Francesco Sicurello, *President, International Institute of Telemedicine (IITM), Italy*
Ibrahima Gueye, *Professor & Director of the Polylab, Ecole Polytechnique de Thiès, Senegal*

PROGRAM
New York, United Nations Headquarters,
Conference Room 12
14:30-16:30 pm (NYT) - Third Session

SDGs achievement and e-welfare for all:
The pillars for a fairer Digital Society

***Moderator:* Maria Grazia Cavenaghi,** *Former Director EU Parliament Office in Milan and OCCAM Liaison Officer at the UN, US*

Collette V. Smith, *Founder & President of Believe N You Inc., US*
Nourredine Ben Ticha, *President of Al-Jareeda Newspaper, Senior Political Advisor to the Former President of Tunisia*
Hassanatou Camara, *Founder of DIMEDI FOUNDATION, Singer, songwriter and musician, US*
Todd Courtney, *CEO and Founder Picticular, US*
Bill Thompson, *Head of Future Value Research, Advisory Team, BBC Research & Development, UK*
Giacomo Mazzone, *Secretary-General, Eurovisioni, Switzerland*
Emmanuel Amos, *Chief Software Architect, Programos, Nigeria*
Imtiaz Dharker, *Winner of Queen's Gold Medal for poetry, Chancellor of New Castle University, UK*
Rehan Chaudhri, *CEO Peak XV Advisors, US*
Makoto Okubo, *General Manager International Affairs, Nippon Life Insurance Company, Japan*

Interventions by
Andrea Falco, *Founder of Alfadesignstudio, Italy*
Rita Pizzi, *Quantum Blockchain Technologies PLC, UK*
Jack Gallastegui, *Network Analysis Manager, European Climate Foundation, Netherlands*
Melita Zajc, *Associate Professor Institutum Studiorum Humanitatis (AMEU-ISH) Ljubljana, Slovenia*
Jasmina Bojic, *Founder and President, UNAFF Travelling Film Festival, Stanford University, US*
Rizwan Ahamd, *Director, Media Centre, MANUU, India*

General Discussion for a Plan of Action

FINAL DECLARATION

ACKNOWLEDGING

the successful path of the Infopoverty World Conference – organized since 2001 by OCCAM at the UNHQ in New York – whose Final Declarations constitute a thread to recognize and comprehend the occurrences of the Digital Revolution towards the achievement of the SDGs – former MDGs – implementing solutions to fight poverty through e-services4dev in the ICT Villages and disadvantaged communities in the fields of education, telemedicine and food-security within the Infopoverty Programme and its projects annually drafted by the Conference in view of the UN 2030 Agenda;

RECALLING

the important contributions exposed during the five previous steps of the conference:

1. *76th Session of Third Committee on Social, Humanitarian & Cultural Issues – Civil Society Consultation,* February 16, 2022, online;
2. 25th Commission on Science and Technology for Development promoted by UNCTAD, March 28 – April 1, 2022, Geneva;
3. UN Habitat 76 Dialogue to Impact Change *Reflections from the UN General Assembly High Level Meeting on the Implementation of the New Urban Agenda,* April 28, 2022, online;
4. World Summit on the Information Society Forum 2022, May 30 – June 3, International Telecommunications Union, ITU – Geneva;
5. XXIV Euromediterranean Conference on Cinema *"Cinema Evolution in The Digital Era - The Mediterranean as paraphrase of the world",* 9 September 2022, Venice International Film Festival, Lido di Venezia;

CONVENE ON THE FOLLOWING STATEMENT

DECLARATION

In the undergoing palingenesis of codes and paradigms, the individual – no longer considered just mass or a simple economic data – ought to become a Global Citizen using the available digital tools in an adequate manner in order to obtain those rights to education, equality, food-security, health and social justice and breaking down existing barriers to exclusion. In this context, governments have the duty to establish and guarantee the conditions and services for this to happen, adjusting innovations and private investments, facilitating technological and ecological transformation in open and shared terms so to favor active participation of all in the building of a fairer and more inclusive society for everyone.

In view of the great and definitive leap towards the Digital, this process entails the algorithms of the powerful platforms to be globally oriented towards the guarantee of human rights and the achievement of SDGs, supported by legitimate keys and regulations rather than left to private interests, avoiding abuses, data manipulations and privacy violations.

The advent of AI is a game changer. As such, building it requires high level ethical skills and capabilities for it not to become a marketing product but rather a globally applied digital process optimization tool in that, if not properly implemented, AI risks bringing world transformation into unimaginable scenarios. Rather, it must be pointed so that it can act as a Regulator to ensure the protection of human rights, as expressed in the United Nations Charter.

On these premises, the conference explored some already operational aspects formulating specific recommendations:

1. Assure global connectivity and open internet to all as prerequisite to create a fairer Society, leaving no one behind, achieving on the SDGs, *promoting an operative alliance with the SAT communication companies for the coverage of remote areas in order to ensure a meaningful access for all*.
2. Transfer technologies and competence to the farmers as they restore their degraded lands and build drought resilience, implementing knowledge and tools, empowering them with distant assistance network of centers of excellence, to eliminate hunger, lifting millions of people from extreme poverty and endorse *Green Taxes* on re-forestation,

efficiently yielding crops and fruit trees in remote areas to empower *Infopoverty platform for e-services* and counteract climate change, promoting Disaster Risk Reduction measures based on Sendai plan.

3. Ensure the right to education to all, providing digital supports, especially for young people to shape their future in their own language and within their own culture, *working for the reinforcement of UNESCO Convention 2005.*
4. Guarantee health assistance to all, overcoming pandemic risks, implementing telemedicine infrastructures associated with the most advanced internationally recognized platforms in order to ensure medical consult and training at distance in communities and countries in need, *creating a Global Telemedicine e-Centre.*
5. Smart cities and Smart/ICT Villages are two faces of the same coin: the acceleration in urbanization must be accompanied by a symmetric development on the rural front, empowering communities' capacity to fight poverty while also eliminating slums and sharing the accumulation of wealth to assure real sustainability in such transformation process, for a better environment in a fairer digital society. To do so, *establish a dashboard to promote best practices (i.e. UN Millennium Village of Sambaina, Madagascar) referring to ITU's Broadband Commission recommendations and to the MoU on Indigenous people development signed at the 2005 WSIS in Tunis by ITU, OCCAM and Navajo Nation.*
6. The potentials of digital technology and ICT should be maximized in the design and planning of our physical environment ranging from objects to buildings and communities, including infrastructure, housing, mobility, and the public realm,
7. Promote cultures and skills, stimulate creativity and enrich young people. New e-platforms are to be envisaged, actively entrenched in the dynamism of the emerging society, guiding the transition to digital away from the old paradigm and towards a collective elaboration of ideas and trends, seeds of an incumbent future where inequalities, injustices, hunger and conflicts are not encouraged nor tolerated. *Invite to support the activities promoted by the International Council of Cinema and Television at UNESCO.*
8. Artificial Intelligence will be the matrix of change. As such, this progressive elaboration cannot constitute a private enterprise, but

rather, it must serve the common good for its global implications to impact the human destiny good. Governance could be more linked to the people's way of life, shaping the new Society models from pyramidal asset to interactive decision system led by A.I., based on Algorithms able to guarantee the respect of human rights. One practical turn could be the *launch of a prestigious Award, the Golden Algorithm Prize, assigned to the best A.I. solution by a jury composed of participants to the conference.*

9. Address communication systems and innovation flows so that they could stress opportunities for all people to become digital citizens (through Media and Information literacy, fight to Digital Divide and so on) in and with all their rights, equipped from now on with the adequate ICT infrastructure, available ICT skills and capacities, solid and safe regulatory frameworks, integrated and interoperable information system and active engagement for them to access, exploit and benefit from digital innovation services, guaranteeing inclusion and participation of all, thus responding to the call of the UN Secretary-General for a GDC – Global Digital Compact – to build back better and accompany the "paradigm shift" we are experiencing.

The Participants thrust that this Declaration will be supported and endorsed by all public and private stakeholders interested to contribute to build a fairer and inclusive digital society, inspired by the UN Agenda 2030.

To this end, they assume the aforementioned operative suggestions as an **Action Plan** to be presented in the various international related fora (such as WSIS, IGF, Climate Change's COPs and DRR Global platforms), exploited during the next Infopoverty follow up meetings, giving mandate to OCCAM to continue as Permanent Secretariat of the Infopoverty Conference and Programme, and organize the next 23rd Infopoverty World Conference on the theme of **asynchronism in the development processes** in the perspective of the 2024 UN Summit of the Future.

UNHQ, New York, 1 December 2022

REPORT

22nd INFOPOVERTY WORLD CONFERENCE
"The Digital Citizen: duties and rights to build a fairer future Society"

December 1, 2022

UNHQ in New York • Webex • UN Webcast

10.00 am - OPENING SESSION

Institutional Greetings

MARCO ROMITI, First Councillor for Economic Affairs, Permanent Mission of Italy to the United Nations

Excellencies, colleagues and dear friends, good morning to you all also on behalf of Italy's Permanent Representative Ambassador Massari.

I wish to thank the President of the Observatory for cultural, audio-visual communication in the Mediterranean and Infopoverty, Mr Pierpaolo Saporito, for the kind invitation to open the session of the XXII edition of Infopoverty World Conference on the topic more relevant than ever of the digital citizen's duties and rights for a fairer future society. Built in his 21 years activities, this interesting edition of the Infopoverty Conference aims at exploring how digital citizen in a level framework of right s and duties can build a fairer society, now that the paradigms have overcome the space-time dimension creating increasingly complex digital mechanisms.

The digital transformation is moving at an unprecedented speed worldwide and added the COVID-19 pandemic, and worsen climate change emergency, have accessor baited existing inequality so resulting in a wider digital divide within our society in among countries. The growth of the geographical distribution of the digital transformation have been uneven; it is of course important to revert this trend which has an impact also on the achievement of the 2030 Agenda.

Thanks to the Observatory with the participation of many African and Latin American governments, many remote villages and disadvantaged communities have successfully benefited from the application of advanced digital services for their development needs. By promoting the application of information and communication technologies that stools of development in vulnerable areas it is carrying out poverty reduction initiatives on the ground in developing countries which can contribute to reduce inequalities and to the achievement of SDGs and in particular Goal 1 and poverty in all its forms everywhere in order to leave no one behind.

Today's conference is not doubt timely and important opportunity to explore what are the essential values to be promoted within the digital transformation putting people at the centre, with digital technology benefiting all individuals, businesses and society as a whole.

Our societies are now faced with the challenge of shaping fair rules providing for duties and rights for the digital citizens: the Internet can be a powerful tool but it needs to be ruled, connectivity on its own is not sufficient anymore. Governments, individual users and private sectors are to maintain the integrity of the Internet community locally and internationally. Devising just and fair participation mechanism and appropriate rights and duties will be the main challenge for this future.

The United Nations is providing an incredible platform to strengthen a multilateral response to increasing inequalities also in the field of new technologies and innovation. The Secretary General's road map on digital corporation brought a vision for a digitally interdependent world that connects, respects and protects all people, the content of the road map therefore help to define and implement common actions so for a world's fair society and a more sustainable world in line with the 2030 Agenda, the recovery process must be connected to the goals of the 2030 Agenda which should remain compass in this challenging times, and digital technologies are key enablers for achieving the UN sustainable development goals, which required more than ever our concerted efforts.

In this context we must also underline the importance of implementing a human centred and inclusive application of digital technologies, increasing the digital access and removing barriers in a context of respect for human rights an individual freedom.

Multilateralism is key in this connection, besides the pioneering role played by European Union in this field following the Secretary General's report on our common agenda: the pros and sliding to the drafting of the global digital compact at the UN level was starting and will prove of paramount importance. Building on technology tracked involving all stakeholders and outlining short principal for an open free and secure digital future for all, while the application of human rights online will be part and parcel of the processor.

The document will be announced on also contributed to the declaration for future generations and in preparation of the summit of the future. Needless to say that the involvement of the private sector and all relevant stakeholders is instrumental in finding sustainable solutions. Since the beginning of this year Italy has been a member of the economic and social council of the United Nations and will continue to promote this vision for a fairer more inclusive and equal digital society.

I'm sure that thanks to all the distinguished panellists and speakers that are joining us, a starting from Daniela Bas, director of UNDESA, who will enjoy a fruitful discussion of the interesting subjects of today, with a view to finding new solutions to very sensitive issues. Thank you very much for your attention.

DANIELA BAS, Director of the Division for Inclusive Social Development at the UNDESA

Excellences, ladies and gentlemen, colleagues and friends, I'm honoured to be present at this important annual appointment and I wish to commend the President of OCCAM, Pier Paolo Saporito, for his commitment to improving the well-being of communities and people, and the choice of 4 theme this year that really looks at the future, because the COVID 19 crisis risks reversing decade of progress in the field of social development.

Although COVID is not defeated yet, the world is moving steps forward for a fair and inclusive recovery. The benefits everyone, women and girls, older persons, people with disabilities have been particularly hard hit by the social and economic consequences of the pandemic. As countries emerge from the COVID 19 crisis, the promotion of human rights and gender equality and social justice should be central to recovery efforts, and similarly, transition toward sustainable development should not increase social inequality, and benefits and transition costs should be equally distributed, and the roadmap agreed by members of the United Nations in 2015, the 2030 Agenda and the SDGs, and his motto, as we know, "leaving no country and no one behind".

Leaving no one behind means leaving no one offline, and despite the number of online persons has increased rapidly in recent years, half of the world population that an estimated 3.7 billion people does not use the internet. 4/5 of the offline population are located in Africa and Asia Pacific, according to data collected by ITU in 2017. However, 2019, the 80% of individuals in developed countries were online, compared to 47% people in developing countries and 19% people in least developed countries, according to data collected by ITU. You can find much more information in our policy briefs n. 92 produced by DESA entitled "Leveraging digital technology for social inclusion".

So indeed, digital technologies play a critical role in the recovery of Covid-19 response by enabling remote work, remote learning and delivery of essential goods and services. We have seen how it worked., well.

And digital technologies can reactivate the economy and drive also social economic transformation, increase productivity, enhance connectivity between nations and international economies, that we have seen as well.

And digital technologies have also a critical role to play in implementing the 2030 agenda because digitalization is the tool for the achievement of the SDG's.

There is the need to connect the unconnected, to keep in mind affordability and skilling while reaffirming the UN values and human rights, in particular in the digital environment to more controversial one such as artificial intelligence, the big e-tech companies business model and cyber security.

Countries should ensure that everyone, especially the poorest can benefit from the ingenuity f science and technology. Yet, digital technologies alone, cannot solve complex issues such as hunger, poverty, inequality or environmental challenges. However, there one of the tools to address the root causes of these challenges.

So, while digital technologies can accelerate progress towards achieving the SDGs, connect people and build capacity and drive accountability, unconscious bias and social cultural norms can cause them to reinforce exclusion and biases.

Society needs to guard against such risks and engage in a public debate about the risks and ethics surrounding the use of digital technologies.

Let me also make a quick reference to human resources that are the cornerstone of digital transformation.

Economies and labour markets are being transformed by digitalization. New jobs and new sectors which require a new and dynamic set of digital and cognitive skills are rapidly emerging and thus investing in digital skills can improve the resilience of economies and the individuals.

And this is particularly true of a vulnerable population who often lack the necessary digital skills for digital society and economy.

And allow me to conclude by making reference to what discuss during the Commission for social development in 2020 and they really encouraged this forum as well, to one, contribute in implementing strategies that promote decent work in particular in the digital economy.

TAWFIK JELASSI, Assistant Director-General for Communication and Information, UNESCO, France

Excellency Maurizio Massari, Miss Daniela Bas, director of UN department of economic and social affairs, Mr Pierpaolo Saporito, president of the Odessa competence center for artificial intelligence and machine learning and of the Infopoverty Programme, distinguished participants. I'm very pleased to deliver this video message for the 22nd Infopoverty World Conference.

The topic of the conference, the duties and rights of digital citizens in 2022 and beyond is both relevant and timely. We are witnessing a massive acceleration of digital transformation at an unprecedented scale. Today 4.9 billion people use the Internet. By 2025 we'll have globally 1 data interaction every 18 seconds, and 163 zettabytes of data. This huge data volume is actually expected to double every two years. However, with a rapid rise in digital connectivity, came an increased digital divide.

Although data is present everywhere, it is not representing everyone. For example, women living in less connected rural areas are especially vulnerable to being underrepresented in digital spaces, as many don't have access to mobile phones nor to internet devices. Much more can be done to ensure that data is used to provide useful insights to all whether in the public sector, in business or to consumers. As such, UNESCO is committed to supporting digital transformation and AI adoption in human rights based open accessible and multi-state holder driven manner. This is done through our awareness raising standard setting, policy advice and capacity building efforts. One of the important stakeholders for UNESCO is young people, who are the digital natives. Youth make up a large portion of our global population. Today there are 1.2 billion young people aged 15 to 24 years. In Africa, more than 60% of the population is under the age of 25. UNESCO recognizes young people as essential partners in shaping the future. Around the globe, young people are rightly demanding more just, equitable, and progressive societies. However, they can only be a positive force for change if they are given the proper means to improve their knowledge and skills. This is why UNESCO is working on media and information literacy for youth. We are informing them about the new technologies such as artificial intelligence through engaging comic strips and offering them micro-learning courses on topics such as defending human rights in the age of artificial intelligence. Through our work, we are igniting debates about digital divides, algorithmic biases, social media echo-chambers and the daily generated e-waste.

Let me now address today's leaders, policy makers, regulators, and civil servants. They are not necessarily young, nor necessarily digitally literate. We must remember that many of them face challenges as non-digital natives. For example, 51% of governments' chief information officers say that silo strategies and decision making processes prevent them from inspiring digital transformation. We sought to offer assistance to innovation, experimentation, coming from governments, organizational culture. More specifically, what is lacking is a mature data collection, management and government processes, as well as sufficient investment in digital equipment, data analysis, IT and ICT skills. As a result of these barriers, almost half of 198 countries don't have programs to improve digital skills in the public sector. These are difficult but not insurmountable challenges. We need to create a government's culture that is suited for the digital age, a culture that fosters innovation, experimentation, and agile execution. UNESCO is working to strengthen policy makers and civil servants capacities through its AI and digital transformation competency framework.

As part of our whole of government and whole of society approach, we are also collaborating with judicial actors to protect the human rights, promote the rule of law, and defend democracy. Digital transformation can have judicial systems improve access to justice. For example, the digitalization of administrative results can result in significant time savings as it happened in Panama, where 96% time saving was achieved in the end-to-end judicial service. As the use of Artificial Intelligence grows, judges and prosecutors will play a critical role in protecting human rights and the rule of law while addressing the challenges of implementing transparent and trustworthy AI systems. UNESCO has trained so far over 4000 judicial offices from over 138 countries on the benefits and challenges of Artificial Intelligence. Finally, in addressing emerging challenges, it is critical to be inclusive, since no individual nor a single state, chordal group has all the answers. In order to ensure the participation of all voices in the policy making process, we'll need to follow an inclusive multi-stakeholder approach. Youth, AI development communities, enterprises and activists are some of the frequently overlooked groups. Involving advocates for gender equality and environmental protection enriches discussions and accelerates progress towards a more inclusive, sustainable and equitable public policy. Being ready for the digital age requires everyone's participation. We should leave no one behind, as the UNESCO mantra says.

I wish you a successful conference and a future in which everyone is empowered to become a digital citizen, capable of freeping the full benefits of the ongoing digital transformation. Thank you for your attention.

PIERPAOLO SAPORITO, President, OCCAM and Infopoverty Programme

Excellencies, Ladies and Gentlemen,

Welcome to the 22nd Infopoverty World Conference.

The Conference has recorded important results since its establishment in 2001. Among others, worthy of attention is the development of the **ICT Village models** and the related **UN millennium Village of Sambaina** (Madagascar), where best practices of telemedicine, e-learning and e- agriculture have been applied in the most disadvantaged communities, permitting an e-welfare for all to emerge. The eminent speakers and different institutions that have participated in the Conference through the years have underlined the great social, economic, financial and cultural changes brought about by an increasingly impetuous digital revolution that has now penetrated all areas of human activities to the point of prevailing (in the form of virtual mainstream).

Now more than ever, we are in a **human-digital dimension**, indispensable prostheses for our activities, relationships and feelings. This has been made possible due to the accelerate flow of inventions of increasingly performing devices with generalized connectivity, achieving impressive dimensions with an exponential growth of **data** which, in turn, is able to constantly mutate and influence relationships by reaching a wider population.

The whole process appears based on a system born from the entrepreneurship of a few who invested in scientific innovations, resulting in the current communication tools and infrastructures. What is crucial now is being able to look for the keys to development, with all its constraints and possibilities, while maintaining the original purposes and utilities that gave life to this **virtual universe** in which we are immersed today.

The user-consumer was the first target attracted by free-for-all policies, the motor of global expansion that influenced social and economic behaviours, and only later did institutions become interested in such topics, first as users themselves, and then, worried about the urgency of order in the far-west they had let emerge, attempting with obsolete legislations a failed standardization of the protection of privacy and its correct use. The result is a weakening of the established authorities based on national laws and the current global phenomenon of growing uncertainty. This is the moment that we are all experiencing, still open to all options, where private, public, economic, scientific and social players are wondering **where we are going**, what is being built in virtuality, how it affects our reality, and what underlying structural mechanisms are developing.

This is the field of action - or battle - between the various hegemonies that will be increasingly ignited by the advent of new technologies such as digital quantum, robotic, smart cities, blockchains, clean energy and e-services for development. It is therefore necessary to ask ourselves seriously how exactly society is developing in a continuous **hybridization** process operated by automatisms now hidden in **precluded algorithms**, and which modeling platforms are functional to the missions of the major stakeholders. A reflection therefore is essential, and is the reason for this forum, aimed at making a contribution of knowledge and conscious practicality to identify the most effective solutions with which to accelerate the achievement of the SDGs, a UN priority to which all players should adhere with conviction.

This is the **litmus test** to verify players' objectives at various levels, starting with the commitment to fight poverty, whose expansion beyond the limits of sustainability can cause the collapse of society. Elaborating a **road map** leading to an optimization of the constructive lexicons of algorithms and platforms towards common wellness and inclusion, would mean opening up to digital citizens and their active participation in the social choices that form institutions and governance.

In this context, overcoming the **deterministic vision** typical of the industrial revolution and entering into a **holistic logic** where forces can identify and merge in the common purpose for a better society is of the utmost importance. Here, then, the problem of climate, energy, health, hunger, etc can be measured by their components and reoriented in terms of **whole sustainability** where innovation can focus on accelerating solutions.

This could be possible by introducing the concept of the **Golden Algorithm**, which the ancients conceptually attributed to the golden number, the pi, the founding determinant of still vital civilizations. What is needed is a **universal codex** that imposes human rights in the virtual world, that makes their applications and violations visible, that guides a truly sustainable development, bringing together the entrepreneurial and financial forces to common objectives, moderating waste and wrongs done to the planet and to people: a **codex that recognizes digital citizenship** for everyone and allows everyone ipsofacto to actively participate in public life in the most appropriate form, rather than being relegated to mere consumers or subjects; a codex that can eliminate, by resolving them at the root, irrational drifts such as war, the absolute evil that should be considered the supreme taboo of our human assembly.

This does not necessarily translate into utopia because **artificial intelligence** is upon us, and this could be the last chance to build a more just society or fall into irreversible automatisms. A.I. is a fundamental topic that should not be left to entrepreneurial technicalities, but addressed at the highest levels with great, competent, and encompassing participation, overcoming determinism with the tools provided by quantum science, and a strongly epistemological approach and heuristic planning capable of accelerating appropriate solutions.

Who can lead this process that involves all of humanity with its varied institutions, needs, cultures and powers? This will be the great challenge that the UN will have to face, accelerating the achievement of the **SDGs** with digital tools enhanced by a common effort, laying the foundations for new alliances not only between nations, but also with digital superpowers that in fact are changing our manner of living.

This is a complex but necessary challenge that this conference intends to begin to outline, shedding light on the players and their respective trajectories in the various fields, merging the **needs of civil society** with the potential of A.I. in order to achieve a sustainable feasibility of converging actions to consciously start the new Digital Era which is fairer, more inclusive and sustainable.

Our commitment with this 22nd edition will be to make treasure of all the results that will emerge in order to empower the UN system, and to strengthen its necessary leadership to ensure peace and prosperity in our daily life. On these premises, this year's discussion will be articulated in three main sessions. The first session is a theoretical general conceptualization of the topic. The second session will focus on solutions that are already operative in the digital services sector intended to accelerate the achievement of the SDGs and the advent of the new Digital Society. The third session is constructed to be a synthesis of the projects and ideas collected during the discussion, elaborating the **final declaration and action plan.**

Thank you.

10.30 am - FIRST SESSION

The Digital Citizen: from digital communities to real society, how the process could be implemented on terms of participation and global wellness and freedom.

The current moment of transition between old technological, health, climatic and political structures requires us to start a reflection on the condition of people who, on the one hand, can access unprecedented communication systems and services thus overcoming linguistic and territorial barriers and on the other hand, see the social dynamics changing towards horizons not yet definable. In this context, the individual, empowered as a "digital citizen", acquires new opportunities for development and participation, while the current system must adapt its structures to this transformative process both to cater assistance to real needs and to find new innovative solutions. A new social pact is thus on its way and, if this emerging citizenship proves to be more active and participatory, a better society could take shape.

Moderator: ALIYE P. CELIK, Chair of the Board Consortium for Sustainable Urbanization, USA

Excellencies, Distinguished speakers and guests,

I am Aliye Celik, Founder and Chair of the Board of the Consortium for Sustainable Urbanization

It is a great pleasure and honor for me to moderate the info poverty World Conference which I attended and spoke in for over 20 years while I was working at the UN and afterwards when I was the President of CSU. , President Saporito is delivering a very impressive conference again. Bravo.It is very important that the UN SDGs are known and achieved all over the world and this Conference is an important step for that purpose. Let me tell you why I am here. And why we are very proud to partner with you at this meeting

The CSU is a New York-based, not-for-profit organization formed to promote a better understanding of the role of sustainable urbanization and resilient design in the planning of our cities. We connect global thought leaders concerned with urbanization to exchange ideas. CSU focus is on replicable ideas and concepts, best practices, and speculative proposals. CSU has consultative status with ECOSOC and work closely with UN-Habitat to advance the Sustainable Development Goals and advocate for responsible design and planning, increasing awareness about emerging issues and facilitating knowledge transfer between policymakers, delegations, urbanists, architects, academics, and activists by catalyzing cooperation and collaboration to promote the United Nations Sustainable Development Goals, with particular emphasis on SDG 11, CSU helps promulgate the New Urban Agenda, adopted at the UN Habitat III Conference in Quito, with its commitment to improve connectivity and support innovative and green initiatives.

Apart from Green Cities monthly lectures and annual gala , CSU has organized numerous flagship events, that bring together

Design professionals and public officials to address best practices and lessons learned. Our goal in so doing is to influence the crafting of public policy and the reshaping of our built environment. (See https://consortiumforsustainableurbanization.org

The population of cities will increase by 2.5 billion people in the next 30 years therefore we have to transform existing cities to sustainable cities all over the world if we want to avoid food shortages, mobility problems, increased CO2 levels, liveable housing shortages etc. Sustainability needs to be achieved, because there are huge inequalities, injustices, natural and manmade disasters, hunger, anger, conflicts and suffering. With a global pandemic, the necessity of sustainable cities has become more imminent, for saving lives as well as the planet. The best tool we have in achieving this is technology, and a digital world where

the local and national governments and all the players and stakeholders use the digital tools to spread knowledge and implement it correctly and transparently.

Organizations such as OCCAM have to spread the word and try to disseminate workable solutions, innovative thinking related to the Sustainable Development Goals. We think that everyone should try to avert the existentialist threat of climate change which already started to impact our daily lives and our planet. We should convince, the national and local governments to fight with climate change, urge citizens to apply unrelenting and pressure on their politicians, with the use of digital tools.

If corporations can show a genuine commitment to find solutions and allow dramatic improvements, if conflicts can be solved by peaceful negotiations instead of war and if human beings and the institutions they establish can reduce the level of their greed for money and power, we can achieve a digital society that leads to sustainable development goals. This can be achieved with the advancement of technology and use of social media that will be beneficial for everyone

PATRIZIO CIVILI, Special Advisor to the Director General of IDLO, former UN ASG, USA

Caro Pierpaolo, Consigliere Romiti, Dear Aliye, Excellencies and Friends

I am very sorry that an engagement in Rome connected with the annual Assembly of Parties of my organization, the International Development Law Organization will not make it possible for me to be with you in New York this year as I have had the pleasure to do for the past many years, almost too many to count.

A warning for those of you who are attending this Conference for the first time. These conferences tend to be addictive. They leave you enriched, challenged, and wanting more. Much of this is due to the leadership of Pierpaolo Saporito who is tireless in his drive to gain and share knowledge on different but, in his fertile mind, all interconnected dimensions of the digital revolution and its impact on the human condition. And, as a longtime UN Official before joining IDLO, I have always appreciated how Pierpaolo has approached the UN venue of these conference, not simply as a convenient, and of course prestigious location, but as an intellectual and policy challenge: that of seeking angles from which these conferences could make a distinct contribution to advance the larger UN mission of peace and development.

Since I could not be with you today, Pierpaolo was kind enough to share with me an advance version of his opening statement. And it seems to me that in that statement, he has gone further and deeper in this direction than ever before: by approaching the "digital citizen" theme of this conference in a way that fully captures the people-centered approach that characterizes Agenda 2030 and its Sustainable Development Goals; and by tackling at the core the overall relationship between the digital revolution and the fundamental transformation called for by Agenda 2030, pointing to the commitment to the eradication of poverty as the basic nexus that should guide that relationship.

This Conference is, of course, not the only forum in which this relationship is being addressed. But it strikes me that also the UN itself finds it difficult to carry out a comprehensive debate on the digitalization processes underway—a debate that encompasses in an integrated way their technological dimensions, their human rights implications and their contribution as a "means of implementation" of the SDGs. Also, to the extent that broader governance dimensions are discussed in ECOSOC and the General Assembly, the institutional angles tend to be the focus rather than the more fundamental policy and existential dimensions.

This Conference, given the intellectual orientation that has been imparted to its agenda, has a chance to make a contribution that is both technical and ethical—a contribution that is able to foresee the further directions that digital innovations will take, define the governance challenges that they pose and address principles that should guide the governance effort.

And at the risk of showing another professional bias shaped by my current service with IDLO, it seems to me that the rule of law in both its national and its international dimensions offers the basic orientation that we need to manage as a Global Public Good the knowledge and tools being produced by the digital revolution.

I agree with Pierpaolo that given the pace and direction that artificial intelligence and other digital innovations are taking, their governance has become truly urgent. It would however be a mistake—to me, a disservice to humankind—to approach this governance process in terms of harnessing, constraining, the digital transformation that the world is undergoing. In the same vein, I don't think we necessarily need to conceive of rules to be applied to each of the different manifestations of the digitalization process. What we need is to be clear and purposeful about the principles that should underlie the laws, policies, and practices to be put in place to guide the overall governance effort. And we must ensure that the private sector and indeed all relevant stakeholders in society are fully engaged with the public sector in this process.

The principles underlying the rule of law focus on equality, on fighting discrimination and inequalities, on creating more level playing fields, on social inclusion, and on international cooperation and solidarity. They look at the law as an instrument to make human rights operational. And above all they seek to gear the law to serve as a people-centered force for justice nationally and internationally. The great economist Amartya Sen reminds us that justice does not need to be defined: You know it when

you see it. And the quest for justice extends to all aspects of human endeavor, certainly including the digitalization process now underway.

Digitalization is undoubtedly a powerful force for progress and we are far from having seen the realization of its full potential in this respect. At the same time, misuses are there for us to face every day. The challenge now is to make it into a force that is at the very center of the drive for justice and inclusiveness and is bent on leaving no one behind—a central force in creating, in the words of SDG16, the peaceful, inclusive, and just societies that are the ultimate aim of Agenda 2030.

Thank you Aliye. Buon lavoro to all.

LANCE JAY BROWN, President, Consortium for Sustainable Urbanization, USA

Dear Aliye, thank you for your kind introduction and Distinguished Colleagues thank you for inviting me to participate in this important and ongoing discussion taking place at this 22nd Infopoverty world conference.

In 2008 Sarbuland Khan, the Executive Coordinator of the Global Alliance for ICT and Development, an arm of ECOSOC, opened, in cooperation with UN Habitat, the American Institute of Architects New York Chapter, and the NY Regional Plan Association, a conference titled "The Forum on Sustainable Urbanization in the information age". 35 representatives from around the world, including a dozen mayors, urban planners, ambassadors, high level officials, academics, architects, and other experts spoke to the over 500 attendees who gathered to learn about emerging actions and phenomena resulting from the digital revolution. As stated on the back cover of the proceedings, "The Forum addressed the global challenges posed by rapid urbanization and its impact on global warming and the natural environment, from poverty and inequality to public health showing the role of information, communication technology in providing solutions." This event, organized by Sarbuland Khan, and including Aliye Celik, our panel moderator, myself, and other colleagues, also became the founding event of the CSU over which I humbly preside today.

I was born in 1943. For the younger members of the audience this was before a host of technologies and devices that have totally altered the landscape I was born into. I have lived to see television developed, computers, cell phones, GPS devices, and AI invented, people walking on the moon, undergarments become outergarments, people talking on sci-fi wristwatches, interracial marriage become common practice, and cryptocurrency hit the market. If this is what happened in just the second half of the 20th century, what can we imagine will happen in the next 50 years??? It is not possible now to imagine such growth and change happening without advances in ICT.

I have also seen the population of the world grow from 2.5 to 8 billion and counting and the world become primarily urbanized. We reached 8 billion in advance of projections. Whole Earth Catalogue author Stewart Brand said we would totally peak at 8 9.2 billion in 2050 but the UN now sees it at almost 11 billion by 2100 with most growth, 3 million, happening in Africa. These numbers are, even if controversial, essential to knowing the way forward.

My interest in this meeting is to see in what ways our ever-emerging environment can employ, take advantage of, and evolve new ICT applications to help improve our lives and the lives of the world's disadvantaged especially in the area of the man-made, physical environment. Our 2008 Forum touched up many ways this might happen however, ongoing creative and innovative ways and means roll out every day and must be applied judiciously and equitably. I am always thinking about how things interconnect and manifest physically and how today most everything from telemedicine, instruction at home or in school, learning to repair a machine, convert a material, fell a tree, all is aided by ICT. The big question is, today, how to share this more universally and to provide these benefits far afield.

This November the CSU partnered with others to present a full day conference on Affordable Housing and Innovative Technologies. The first half of the day focused primarily on housing policy, programs, finance, and labor. The second half focuses mostly on emerging technologies including passive house design (IE low energy highly insulated housing, mass timber construction, using wood instead of concrete and steel, modular housing, using the benefits of factory built articulated units, and 3D printed housing, a method very directly related to community building as defined by SDG 11 and one very much supported by OCCAM itself. As discussed, the issue with 3D printing in Africa was a concern over the loss of work. for laborers. However, the actual heavy construction being replaced by 3D Printing is the most dangerous phase of the work for the workers, so the advantages of 3D printing were economy, efficiency, and health and safety. The adaptation of the new technology would therefor require re-training, or just training, and create a gap in job opportunities for the heavy construction laborers. While the increase in the production of housing units would require increased production in interiors, appliances, and furnishings, provoking and providing new jobs, it would take time. This dynamic reality needs to be built into all such plans.

3D-printed buildings have significant benefits: It ensures construction materials are used exactly; there is no waste; as there is so little material waste and because fewer human workers are needed 3D-printed buildings can be highly cost-effective hence offering options for low-cost housing; and less material waste and shorter construction times mean 3D-printed buildings have a smaller environmental impact than more traditionally constructed buildings.

Materials being used for 3D printing vary the most common involving a mix of concrete (hopefully crushed and recycled), fiber, sand, and geopolymers. which are then layered in an extrusion apparatus. Some homes have been 3D printed from fully biodegradable materials, including mud, soil, straw, and rice husks.

As an indication of the availability of the technology one speaker said that her public library in Sacramento California has 3D printers on weekly loan and her 3-year-old had one at home printing things!

So, I look forward to the discussions about how the evolving world of ever-emerging ICT can address all attendant circumstances, be of equitable benefit, be inclusive, serve to educate diverse populations, and all while respecting the values of our globally diverse cultures.

FRANCESCA DE FERRARI Programme Management Officer, UN-HABITAT New York, USA

Distinguished delegates colleagues and friends, good morning.

I would like for before all to spend my appreciation to the Infopoverty Conference for organising this interactive discussion on how to encourage the creation of a healthy and free digital society for all.

As we have seen in recent years especially during the COVID-19 Pandemic, Internet connectivity has become a requisite for full participation in society, which includes having assessed education, affordable housing and critical government activities. Nonetheless, in 2019 3.7 billion people in the world still did not have access to the Internet, with Africans population being disproportionately impacted. Technologies innovation are essential tools in tackling climate change and in moving towards sustainable organisation. Because that digital transformation is critical to meet the demand of sustainable development, we must find a way to encourage a healthy and safe digital citizenship that can facilitate this innovation.

In 2020 UN Habitat launched the flagship programme called “People centre smart cities” the core programme based on multi-level governance strategy provides strategic and Technical Support to develop tools for an ethical use of technology and innovation in urban sustainable development project.

With the aim of improving citizen quality of life and ensuring the respect of inclusivity prosperity and human rights in cities, UN habitat recognises that technology cannot replace citizen engagement community an city affairs as well as within learning community. For this reason we develop a global public space programme focused on providing a safe digital space, in which public engagement is used to deliver accessible and inclusive green spaces. A part of the programme uses encourage and empower in participated in city planning processes through the use of popular virtual building game called Minecraft, an outstanding example of this programme result is the regeneration project developed by the district.

Furthermore gender plays an important role in the technological divide: women often benefit less from innovation and technology than men. In order to empower women and girls and enable them to freely express their voices opinion and powerful contribution, UN Habitat created her city's tool kids toolbox initiative which support urban development. From a girls perspective it provides an open and digitally accessible platform for all facilitating an ongoing dialogue between professional and citizen. So that they have the ability to participate in the city planning process, it is essential to recognise that even though new technologies and innovation are incredible tools for enabling the full potential of sustainable development, they might be they must be dealt with cautiously add responsibly.

The element of Artificial Intelligence, technologies provide opportunities to equipment and improve city management; however, AI technologies is manifesting at an unprecedented rate in urban centres often with significant risk and little oversight. Un Habitat on AI and cities report discusses the risk of AI technologies including data misalignment, historical biases privacy, and data protection outcome, misinterpretation and concept drift using AI technology.

Without appropriate governance mechanism and without adequate consideration of the fact on human rights can potentially create the catastrophic consequences, AI used must be considered a priority going forward authorities at both the national regional and local level, needed to be supported with new technologies capacity building strategies, due to the lack of support on this local government, especially in low income countries which are often forced to depend on the private sector expertise, which is some cases relies on unfavourable terms and condition especially in regard to data collection ownership.

In conclusion, going forward, it is essential that interconnectivity is improved especially for low income country, and at the same time government should be supported in implementing digital management regulation and legislative frameworks, both at local and national level in order to avoid extensive collection and recording of individuals private data.

Technologies and innovation are a crucial factor in the successful treatment of sustainable development, therefore it is fundamental to help governments building skills and grow their technological expertise to develop an effectively use of digital technologies in an ethical inclusive way that leaves no one behind.

Thank you.

GERNOT RIETHER, Coordinator, M.Arch and MS. Arch Programs, USA

Today I will talk about a book review. We are currently working on the second edition of an urban machine. Every year, for the next thirty years, eighty million people will move into cities, and that requires efficiency to public space. To develop efficient tools, you need to have the definition; it is not about just the skyline or the physical form, but if we understand the city as the social form, the creation would be how do we measure the creation of social form?

Aristotele once said that a sophisticated society is a social form in which the richest member can lift the quality life. Public space is a critical part of that. But the public space created is often not of high quality. New urban developments are reduced allocations of land for public, and we see that the failure of market development to create and protect the public spaces. At the same time, we see Information and Technology (IT) developing at a rapid scale and changing the way we are using the physical public space in the cities.

Before IT, for example in the medieval cities, you would have to cross a public space in order to go to the fountain to get water, or to go the market to get food, or if you wanted any kind of information. IT have provided an alternative to that: we can communicate online, gain goods online and receive information online while sitting at home in our pyjamas.

The question therefore is: how do we design a public space now differently for a digital culture? Especially because IT, social media and etcetera already dramatically changed the way we are using public space. In 2008, for example, Starbucks introduced free Wi-fi in its stores, and working inside coffee shops became normal. Smartphones changed the way we are using public space in 2013, when the number of people accessing on internet thorough a mobile device changed to 10% to 70% just in one year, and there are studies showing that people using mobile devices use public space differently.

In 2008 Facebook introduced a feature that allows YouTube posts videos, in 2009 Flash mobs became a global phenomenon, in 2010 Facebook introduced community pages, a feature that was used three months later to organize the protests in Tahrir square (Arab Springs, nda). In 2011 Facebook introduced the feature that allows you to tag photos with location, a few months later that was used to occupy Wall Street. In 2017, face recognition was introduced by Facebook to detect friends in pictures, in the same year, Chicago and Detroit purchased the same software for monitoring the public spaces in selective neighbourhoods. In 2019 Facebook face recognition technology was banned in public space in San Francisco, but in the same year, Chinese government made a State priority to become world leader in the development of Artificial Intelligence (AI), which speed it up the development of face recognition software and its implementation in public space.

So we are creating here a timeline of digital application. How are these application changing the use of public space? We need to be aware of this relationship between IT and public space, and really think about what will public space turn into if we further expand ourselves and if we expand the physical public space within IT.

In this book we introduced different strategies that also address the creation of who is changing that public space: municipalities, cooperations or citizens. For example, I can introduce these strategies when open spaces will emerge bottom-up design processes from millions of people being hacked or being hackers.

Our book is also full of cases studies with hybrid cases between physical public space and IT, such as a Pavillion, where projectors and screens are used to connect citizens to a wide range of inaccessible layers of the city of London, Vicky Plaza, that is an open space laboratory where programmers teach citizens how to build their own apps to intervene with the city, or an eco-boulevard, that uses interactive greenhouse technology to cool the public space in south of Madrid .

The book is also filled with conversations with architects and planners on how IT can inform public space. We talked to Calorati about his trash track project and how you use the Internet of Things to improve trash removal in cities, we talked to Claudia Pasquero about new urban agriculture and gathering a prototype that use alchie which requires CO2 to grow, we talked about his cinematic structure that unfold when CO2 raises critical levels, and François Roche who developed a robot which transform the wastes of cities into new building materials to build unpredictable new public spaces.

Whenever there are new technologies, technologies have always enabled to earn new forms of urban life, from the aqueduct in Rome, to the car at the beginning of last century. Once a new technology is introduced, cities are actually changing very quickly and with IT, it is not just about efficiency, but it is really about quality of space that is critical to determine the health of its citizens. The problem is that most of the resources to develop IT tools are in the hands of a very few in the private sector: we need to regulate them and work with them to ensure that citizens can decide what issues address and how. We are too happy about apps such as Snapchat, but we don't realize how these same technologies are used by private entities to dictate the characteristics of future public space.

This is important, because if we don't do anything, large corporations will define the character of public space for us, and the new quality of public space will emerge from consumerism. We count on politicians, on architects, on urban planners and on all citizens to think about efficient for public space and for digital culture.

Thank you

GERARDO ZEPEDA BERMUDEZ, Member of OCCAM Board, Advisor to Broad Comm Inc, (USA), Former Minister of Science & Technology, Honduras

My name is Gerardo Zepeda-Bermudez. I'm Member of the OCCAM Board, also advisor to Broad Comm Inc., in New York, USA. And I'm the former Minister of Science and Technology in Honduras. I'm very glad to speak to you this morning, in this very important forum regarding the digital citizen. This is a very relevant topic.

What we are doing with Broad Comm Inc., internationally, is actually to introduce comprehensive technologies experiences, with strong innovation, also trying to utilize the broadcast infrastructure and use the media relations, in a very innovative way.

So, I would express that a global citizen needs to be identified as part of an emerging world community. From a digital government, that we were used to speaking many years ago, we are moving into a digital nation; and I would also say, into a digital world.

There are some rapid changes in the digital and global landscape, and that is what I'm going to emphasize more, about the new technologies and what changes have been occurring in the past few years.

The pandemic actually accelerated a dramatic transition. We are really going into a digital world, and there is going to be more data and video demanded, for many applications.

I will focus on a new technology that is called the Advanced Television System Committee (ATSC 3.0). It consists, basically, of a maximization of TV broadcast solutions. This technology has been visualized and utilized to close the digital divide and to set up many innovative business opportunities.

The ATSC 3.0 is the latest broadcast standard, approved by the US Federal Communications Commission (FCC), but it is also being introduced worldwide. It uses the native TV one-to-many distribution single signal system, where a single transmitter can broadcast to infinite users. It is efficient in reaching thousands or millions of people within one transmitter.

One transmitter typically reaches forty miles, so in both east/west and north/south, it has an eighty miles distance, that can actually be covered by one transmitter. Can you imagine in rural communities, if we put one transmitter? It could broadcast forty miles all the way around! It is actually going to be a very good solution for rural communities.

I remember many years ago, between 1999 and 2001, when I was Minister of Science and Technology in Honduras. With the support of UNESCO, the OAS and OCCAM, we introduced what was called the first "Solar.net Village in Latin America (San Ramon, Choluteca, Southern Honduras)". Right after Hurricane Mitch battered Honduras badly, there was no hope, but we introduced a little technology at the time. We had a big parabolic antenna, and we were still talking about last-mile wireless solutions. But now, with one single tower, we can broadcast forty miles to eighty miles, in all directions.

So the rural coverage is something that we actually are going to implement. And one good thing is that we can upgrade existing infrastructure, wherever we have a TV broadcast tower. So we can upgrade it to make it ATSC 3.0. Where we don't have existing infrastructure, we can install a tower. And we don't need to worry too much, as in the past, to lay much more fiber optic or physical lines. It is easier to install and speeds up a lot the introduction of digital technologies in rural communities.

There are many public sector initiatives that are already visualizing using ATSC 3.0. For example, you can now know the educational contents and students, who are destined to specific communities. And even if you have a community with no Internet, with ATSC 3.0 you can now better implement lectures and educational programs.

Emergency alerts in times of crisis: imagine, after all the hurricanes or all the floods, and the disasters that we are having worldwide, if we could send alerts to people, wherever they are, not only for people on land, but also to people in vehicles. Because ATSC 3.0 has the advantage that it can have the chips in mobile phones, tablets and connected cars. Therefore, you can have your devices all connected.

Historically, TV broadcast has been a one-way service, where the broadcasters send the information. But now, integration of ATSC 3.0 with broadband services, can broadcast TV as an interactive digital solution to help a lot of services applications, such as remote learning. Schools that don't have access to the Internet right now, will be able to have remote learning and being more interactive than it was before.

The same thing applies to telemedicine: we can have a discussion with the medical unit and the patient unit, to have an interaction.

Regarding smart agriculture, we can have agriculture on our mobile phones and receive instructions on how to plant and how to improve their fertilization. This reminds me of San Ramon's Don Daniel, an 88 years old man many years ago, who learned how to use Excel and Word to plan agriculture. Can you imagine now somebody like him, if he can receive instructions directly from every agricultural extension unit on how to plant better?

We finally have enhanced TV, not just a normal one. It can be on bigger screens, also having the Internet available on screen, to simultaneously look up for information. It's more than just a TV. It is actually a way to provide the internet to areas with no access to traditional broadband, and much more.

We are also working with businesses. That's something very important because it will be informed to the next generation on how to better improve their actions.

I just want to finish up by saying a fact:

"*Global wellness and freedom necessarily go through fair employment. This implies targeting the achievements of sustainable and inclusive employment. That is technological transformation should be centered on the people".*

Thank you very much.

ROBERT SEATTER, Director BBC History, United Kingdom and

BILL THOMPSON, Head of Future Value Research, Advisory Team, BBC Research & Development, United Kingdom [PRESENT TOGETHER]

The Public Service Internet

Vision: We believe that it is possible to make the internet a better place for our audiences, and that in collaboration with other organisations the BBC can shape the future of the internet in ways that deliver public value.

Through partnerships, applied research, and technical innovation we wish to address fundamental issues with the underlying infrastructure of the internet, the design of online services, and network governance, in order to provide better support for public service activities and the BBC's mission, and create a Public Service Internet

Fit for future purpose

As a public service broadcaster based in the UK but with global reach, the BBC is aware of the need to engage with the online environment just as we have helped to shape broadcasting over the last one hundred years.

The rapid shift from existing broadcasting infrastructure to more and more internet-based mechanisms means that public organisations of every kind have a responsibility to ensure that the online environment is fit for purpose.

One aspect of that is ensuring that everyone has the access they need to the network, but the nature of that network is also important. There are many aspects of today's internet that create a very negative experience, from online abuse, to spam email, to unwanted and intrusive surveillance of people's lives.

We are one of a large number of organisations that believe a better internet is possible, and are working to deliver a public service internet that that can serve our audiences, using our engineering, research and storytelling skills.

Universal and safe access

This work must be grounded in efforts to ensure that access to the network is universal, and that the network supports applications and services that meet people's access, accessibility and language needs. We need an online environment that protects and promotes credible, reliable and trustworthy information, while minimising the amount of misleading and false content, and we need to design the network and its associated infrastructure in ways that are sustainable and support net zero carbon goals.

The result will be a safer, more inclusive and diverse online space that offers increased privacy and control over personal data, and reduces the incidence of spam, phishing, fraud and online harm, especially to children, and can underpin a digital public sphere that sustains society and is able to sustain healthy civic discourse and diverse participation

This is not an impossible task. Today's internet was created as a result of engineering, design and regulatory choices made over the past fifty years - we can and should be able to rebuild it to serve people's deeper needs, more able to deliver the sustainable development goals. At the BBC, we are working towards this goal.

A fairer and more inclusive Digital Society can only be built on the firm foundations of a network that has been designed to deliver public service outcomes, and one that is regulated to achieve that goal.

Three key areas

Our work has identified three areas where intervention could be effective: the standards and protocols that define the network; the design of applications and services; and the regulation and governance of the network. These three areas consitute a 'public service stack'.

This work is already underway, with BBC Research & Development working with a wide range of partners across industry, government and civil society to achieve these goals, and work around personal data stewardship, online privacy, and countering misinformation is well advanced.

Together, we can create an environment within which creative organisations can make stronger, more trusted, connections to their audiences, and encourage the growth of a safe, responsible, online public sphere within which the BBC and other public service organisations can thrive.

You can find out more on the BBC R&D website https://www.bbc.co.uk/rd

Seatter:

Thank you very much, I am delighted to be here and to join you. As you may know BBC is a broadcast service, celebrating 100 years continuous broadcasting. In recent years we are not focused on the past but focused on the future.

We want to share with you one of our key futures all around a new vision for BBC public service Internet, and this is our contribution to this key dialogue around Infopoverty.

So, I'm going to head over to Bill who looks after future value research now BBC's current division, and he's going to take you through some of these ideas in detail.

Thompson:

Hello it's a great honour to join you.

I find myself sitting outside King's College Chapel in the centre of Cambridge, due to a scheduling mix up on my part, so apologies for the poor light quality where I am but I hope you can hear me adequately.

As Roberts says the BBC is looking to the past and to the future on its centenary as a public service broadcaster based in the UK, but with global significance we're aware of the need to engage with the online environment just as we've helped to shape broadcasting during the last 100 years. And as we move from existing broadcasting infrastructure to more and more Internet based mechanisms, public organisations of every kind like us, we have more responsibility to ensure the online environment is fit for purpose.

One aspect of that he's obviously ensuring as we are today that everyone has the access they need to the network, but the nature of that network is also important.

There are many aspects of today's Internet that create a very negative experience for people: from online abuse, to spam e-mail, to unwanted and intrusive surveillance of people's lives.

Aware of a large number of organisations that believe a better Internet is possible, we are working to deliver what we call a "public service Internet", using our engineering research and storytelling skills.

We're looking at it from 3 levels: first, the underlying protocols that sustain the network that make it possible; secondly, the applications and services that live on that network and how they can be designed, how your browser works, how apps work on your mobile phone. And thirdly, and crucially, the legal and regulatory frameworks and the terms of service that are crucial to defining how a public service Internet might operates.

And we've identified a number of underlying principles that we believe are central to building human Internet: the first is that we have digital public spaces that are safe open and inclusive, able to sustain healthy civic discourse and very diverse participation; then we have applications and services that meet people's access ability and language needs, that are genuinely international. But the online environment protects and promotes credible reliable and trustworthy information, and minimises the amount of misleading and false content; but we have responsibilities in data stewardship and respect for people's data rights that we support universal digital skills literacy and creativity.

These technologies are sustainable boats for people as individuals and for the whole planet, and for that we designed the network with that in mind, because we believe in a fairer and more inclusive digital word can only be built on the firm foundations of a network that has been designed to deliver public service.

Today's Internet was created as a result of engineering design and regulatory choices, made over the past 50 years.

We can, and we should be able to, rebuild it to deliver to serve people's deeper needs, so that it is more able to deliver the sustainable development goals and at the BBC we are working with many others towards this goal. Thank you

VICKI CHARISI, Senior Research Scientist, JRC, Centre for Advanced Studies, European Commission, The Netherlands

I would like to introduce our work at the Joint Research Center (JRC) at the European Commission on Artificial Intelligence (AI) and children rights. At the JRC we are the science knowledge service of the European Commission, which means that we conduct primary and secondary research in order to support policy making at the European level.

So, today I would like to introduce you our latest work on AI and child rights with which we tried to work towards an integrated agenda for research and policy. This is a public document, so you can download it if you are interested in it.

I would talk a little bit about the structure of the report; first we did an overview of the current policy initiatives, it is a fact that this is a topic that many International Organizations, like your organization within this Conference at the United Nations, UNESCO, OECD and others have started to work systematically, so we made reviews of these initiatives and policy recommendations.

Then, as researchers, we are very much interested in scientific evidence in order to support policies: so we did a literature review on three AI based systems, and the impact that they have on children cognitive and socio-motional development, and we focused on recommended systems, social robots and conversational agents, and we found indeed, although we don't have long terms studies yet, most of the current studies are short term studies, but still we can see that the recent impact on children development.

Then we ran workshops first with children, and this is what the main tool focus in this ….. , because we wanted to see their own views about AI and their own rights, but also we ran some workshops where we put together researchers and experts on the field and policy makers, and we try to understand their perspective. At the end we put together all the findings of these activities and we proposed some requirements for trans-bord AI, we highlighted some methods on how to deliver these requirements and some knowledge gaps where we need to focus for our future research.

In principle, I will focus on this workshop we ran with these young people and children from the European countries: we saw that children are positive on the use of AI at based application, most of them are aware of some AI systems behind the applications they use. Through these activities we saw that they were concerned about safety and risks and they wanted to see some activities on AI literacy to be more aware about how systems work. They had concerns about employment trust, future prospects and the impact that they had on their privacy.

Then we conducted content analysis on their narratives and we saw that in different sectors they highlighted specific items and for many cases we saw that they pursue at the same time opportunity and risks. This is a think we want to develop to work more, because AI can be a great tool to advance our society, but at the same time we need to be aware about the risks while using AI technologies.

Then what we did was also to triangulate perspectives of these three different stakeholders involved in our activities: children, policy makers and researchers, and what we saw that most of them they talk about the same topics, they have the same concerns, they see the same opportunities, but they prioritize them in different ways. While for children and policy makers the emphasis is on education, researchers are more interested about the impact of children cognition and their development.

And now I'm going to conclude with the main findings and our proposal thorough those activities. The requirements highlighted by the participants for trans-bord AI are: AI minimalization and valuable purposes especially in the area of education; transparency, communication and accountability; inclusion and non-discrimination; special attention to privacy, data protection and safety and integration and respect of children agency.

Regarding the methods they proposed, especially researchers and policy makers focus on: anticipation, evaluation and monitoring of these systems over time, because as we know novel techniques and machines learning may develop in unexpected ways; multi stakeholders collaboration; children participation and valency conflicting rights.

Lastly, about the knowledge gaps that our participants identified, were mainly; AI impact on children cognition developing the way they play different activities that is now transformed; empowerment through education and developmentally appropriate systems.

With this I would like to thank you for this opportunity to be today with you

Thank you very much.

FABRIZIO LOBASSO, Sub-Saharan Africa Deputy Director, Ministry of Foreign Affairs, Italy

Excellencies, colleagues and dear friends, I couldn't attend in person today, but I wanted nonetheless to deliver a brief message to contribute to a fruitful debate on the future of digital evolution and its impacts on prosperity and sustainable development for all of us. Especially now, in the light of the most recent and tragical geopolitical development

tin the post pandemic world. For this reason, I want to thank Occam and in particular its president Pierpaolo Saporito and all the organizers for making this moment possible and this precious opportunity.

As Occam has been advocating for a long time, there is an immediate need for new solutions in terms of creating technologies to merge specifical operating unruled realities in the so called “Global South”, where fundamental freedoms and human rights for youth, women and people with disabilities, children and elders are still undermined.

The very object of today’s debate “The digital citizen” is pivotal to understand how important the empowerment of individuals, is, in order to regain dignity, identity and the full right to feel a unique been into the human chain of the globe.

In the becoming more and more a digital citizen, everybody should acquire new tools for a genuine and concrete participation into the future of society: through the help of a system and training every single person who can make the difference and consequently been a fundamental part for the improvement of its own community.

Look at the important examples we are experimenting throughout the planet, on the field of telemedicine in rural villages or 3D technologies on social housing to reduce pressure and improve livelihoods in peripheries, in this context it is imperative that we focus on fostering digitalization in the field of food supplies and aggrotech sector to do benefits of local communities.

The Ewa-Belt Project aims developing sustainable intensification of agricultural production in organic agroforestry and mix-crops farming systems in important African countries, and this is an outstanding example of this mission.

Finally, yet importantly, for the experience of the Ewa-Belt project I really stands we have to strengthen in parallel our agricultural approach to digitalization to combine new technologies, digital expertise and digital knowledge. In order words it is true digitalization will help countries and people in need on the way of full citizenship dignity as human beings.

It is also true that we have to do all we can to preserve their identities without losing their culture values and traditions. Therefore I believe that the contribution of ICTs in relation with the new idea of digital citizen can create a fascinating new concepts for individual, a new position in the societies and new challenges for future generations through direct participation in community life and the improvement of disadvantaged realities; yet for every augmented reality in the digital world, stimulating an augmented consciousness on what we are, our needs, our visions, our deep essence cooperating human beings for the common objective of a better planet, likewise cannot be postponed.

Thank you

11.30 am - SECOND SESSION

How the new technologies can achieve SDGs and develop rural communities, saving planet and assuring safe lives, assisting new digital best practices and services

The web is not only a powerful engine for communication, but it could also be an essential mean for enhancing development to promote all people and communities. The most disadvantaged communities, historically left out from the industrial revolution’s economic benefits, need to have the access to all the digital services developed so far. In this way, more than 689 million people, who now live in extreme poverty, could participate in the social life. New forms of Digital Urban Development should be envisaged as well as new solutions in the field of e-agriculture so to create a link between smart cities and new digital rural communities to outline a fairer and more sustainable Digital Society.

Moderator: MELCHIADE BUKURU, Director UNCCD Liaison Office in New York, USA

Thank you, Dr. Celik, for handing over the moderation to me. I would like to express my appreciation to you for facilitating a great session we just had. Let me also thank President Saporito for his long and outstanding leadership of OCCAM and Infopoverty. He has been a man of great endurance and dedication. Mr. Saporito, you must have been a good marathon runner over past years and perhaps now.

I am happy to moderate the next conversation on “How the new technologies can help achieving SDGs and develop rural communities, saving planet and assuring safe lives, assisting new digital best practices and services”. This theme is composed of three sub-items. First part: how to reach Zero Hunger – the EWA-BELT solutions on e-agriculture. The second part is Smart villages and e-services, the example of the ICT UN millennium Village – a model for rural communities’ development into the digital era. The last part is “health for all, the role of telemedicine”.

The theme and its three items share the same premises. They all evolve around the Digital Citizen to harness new technologies for sustainable development. For the People. For the Planet. For the Prosperity.

As introduced by Dr. Celik, my name is Melchiade Bukuru, Director of UNCCD office in New York. My daily job is to ensure that desertification, land degradation and drought are high on the global agenda.

I agreed to moderate this discussion since the geography of poverty and hunger, themes that we will discuss today, tends to coincide with that of drought and land degradation. Also, restoring degraded lands brings them back to full productivity thus ensuring food security, income generation through green jobs creation. Land restoration is also an empowerment tool for women, especially in rural areas in developing countries, where women are the stewardesses of land. It is a labour-intensive economic activity. Of course, today, we cannot continue to turn a blind eye to drought. With climate change, droughts, along with other extreme weather events, have become more frequent and broader in terms of scope and intensity and severity. Recently, the world leaders attending COP.27 in Sharm El Sheikh have launched the International Drought Resilience Alliance (IDRA) to put the world on a drought resilience trajectory and forge an ambitious political agenda to address those droughts in a pro-active way, thus departing from the traditional reactive path. All these policy developments must have strong enablers. Chiefly, new technologies, among them, digital. How to transform the rural farmer, the pastoralist, into a digital entrepreneur, a digital citizen? We will hear from the Academia and the practitioners their reflections on how e-agriculture can help in this endeavour. How e-services have been delivering sustainable development to rural communities, not only in food production, but also in access to health services through telemedicine.

I am happy to introduce my panel now.

First part: how to reach Zero Hunger – the EWA-BELT solutions on e-agriculture

Bottom-up experiences, shared in the virtual world, entail a strong effect able to influence the behavior of communities. A series of best practices in action will be presented in the fields of food security, and e-agriculture. and new way of conceiving rural space in a Digital era.

GIOVANNA SEDDAIU, Professor in Agronomy and Crop Science and EWA-BELT Project Coordinator, Università di Sassari, Desertification Research Centre, Italy

Thank you, Doctor, for introducing me, good morning, good evening, good afternoon depending on the part of the world where you are now.

So, I am Giovanna Seddaiu, associate professor at the University of Sassari in Italy, and I'm coordinating the EWA-Belt project, that was also mentioned during the speech of Doctor Lobasso.
The EWA-Belt project has started in October 2020, so we are on the second year now, and I'm very grateful to OCCAM for organizing this important event Infopoverty World Conference, and for giving the opportunity to the project EWA-Belt to contribute also this year.

In fact, this is the third year we, as EWA-Belt project, are participating in this event; in the first year the project had just started two months before so we could only present our objectives and the foreseen research activities. Last year in December 2021, we highlighted the most promising strategies that the project was undertaken within the domain of digitalization of agricultural system, with a focus in Sub-Saharan Africa countries.

So today I'm delighted to present the important progress we have achieved so far, in particular we will present three strategies that could promote the digitalization of agriculture at a small holder scale in Sub-Saharan Africa.

Why e-agriculture in sub-Saharan Africa is so promising? Tele-density in this region is rapidly increasing, with about 50% of population involved nowadays, with a total number of SIM connections raised to over 1 billion corresponding to 90% of population. Under these circumstances the implementation of e-agricultural strategies in sub-Saharan Africa appears feasible and extremely promising; in order to increase the agricultural productivity, that, in turn, would help lift more than 400 million people who live in conditions of extreme poverty and hunger and would improve the livelihood of approximately 250 million small holder farmers and pastoralists in the region.
So, what we meant for digital agriculture or e-agriculture? It is using ICT tools and digital platforms as decision support systems and for learning and knowledge exchange; it is using sensory and proximity devices for early warning monitoring, for instance, for past and diseases, and it is digital profiling of value chain actors, it is using e-commerce. So, the overall aim of the digital agriculture is to improve sustainability, efficiency and profitability of small-scale farming systems.

In Sub-Saharan Africa digital agriculture transformation is already underway at varying stages in several countries, but it is very far from desirable levels of development, for many reasons.

Our goal as EWA-Belt Project today is to contribute to the international debate on the agricultural digitalization, the so called e-agriculture, providing examples of application in six sub-Saharan African countries: three in the Eastern region that are Ethiopia, Kenya and Tanzania, and three in the Western region that are Ghana, Burkina Faso and Sierra Leone.

We would like to present some of the strategies we are developing and testing, that have great potential for improving food security by reducing the crop yield gap. What is the “crop yield gap”? it is the difference between the actual yield and the potential yield, that in some cases, such for example in the corn, could correspond to up to 10/12 tons per hectare.
These innovations have also the potential for reducing the post-harvest losses associated to pests and diseases, and therefore increasing the food safety by a significant decline or even absence of mycotoxins in the agricultural products.

Overall, today the ambition of the EWA-Belt project is to contribute to the discussions and reflection for the achievements of the sustainable development goal number 2: zero hunger, that is one of the inspiring concepts of this Infopoverty World Conference. The three EWA-Belt speakers who will give a talk later, will highlight the achievements so far obtained in developing and testing 3 strategists of digital agriculture, on their strengths, but also on the possible constraints for their adoption at smallholder scale, hoping that the conference participants may appreciate our results and would like to encourage and support our efforts in further expanding, replicating and scaling out the impact of these strategies across a virtual belt embracing the Sub-Saharan African countries.

AMARE AYALEW, Manager of Partnership for Aflatoxin Control in Africa (PACA) African Union Commission, Ethiopia

Thank you very much Mr moderator, it is really a great honor to be part of this important Conference and distinguished panel.

First of all, I would like to commend the Conference organizers, for including this discussion.

First and foremost, we are moving in the wrong direction from ending hunger, the number of hungry people is at a record high, and it has actually kept increasing since 2014.

In Africa alone over 280 million people, which is around one in five people, are going hungry. In Asia and Latin America also, we are witnessing tragic increases in prevalence of undernourishment. Most of the burden is on the African continent.

So, if we leave things as usual we would actually continue to be on this wrong trajectory and cannot deliver on our commitment to achieve zero hunger globally.

Secondly, there is increasing recognition that the problem of global hunger is very complex, far more complex than piecemeal increases in production and productivity using conventional methods.

We actually need to find the right tools to systemically fix inefficiencies in the entire food systems, so we need innovative, game changing and durable solutions; so, in this regard e-agriculture which builds on sustainable solutions offers huge opportunities especially in the context of low and mid low- and middle-income countries to provide safe and nutritious foods for everyone actually, while at the same time addressing environmental and climate related challenges.

In Africa where most of the changes in reversing this hunger trained should take place, some major efforts are actually ongoing, they’re underway. food security and nutrition are very high on the agenda of the African Union and African governments.

For example, African Union's Malabo Declaration for Agricultural Transformation, the framework of the Comprehensive Africa Agriculture development Program (CAADP), the Africa Continental Free Trade Area some of African Union flagships that could contribute to ending hunger, poverty and other long-term development challenges, which of course should be fast tracked. Also, on the short term there is recognition of the need to address the various shocks which are affecting Africa’s agriculture and food systems.

I also wish to mention that the African Union Theme for 2022 is “strengthening resilience in nutrition and food security on the African continent”, so we can actually use the rest of this year to highlight what is going on and what can be done to avert the food insecurity crisis.

As I come closer to my conclusion, I would like to applaud the EWA-Belt Project because of the importance of the work that they are doing in a number of ways.

1. First of all, as we support experience sharing and information exchange, we promote collaboration among different countries and different players, which is very important because actually no single entity has the solution to global hunger,
2. They are harnessing technology solutions to address key challenges in entire systems,
3. also what EWA-Belt calls, the belt of interchange on sustainable intensification solutions between different farming systems in Africa, will really promote ready access to improved knowledge across the entire region.

And finally, e- agriculture needs to be mainstreamed and it requires enabling environment which is supported by appropriate policies.

So, EWA-Belt can actually contribute to making evidence on the value of data and technologies available to convince our policy and decision makers.

I hope EWA-Belt will get all rounded support and I congratulate the Consortium for the success of this innovative approach so far which we want to see expanded and scaled, for the for the good of the continent and the world.

Thank you for your kind attention

MARGARET JESANG HUTCHINSON, Professor and Associate Vice Chancellor Research and Enterprise, University of Nairobi, Kenya

Thank you so much moderator.

Allow me, to sincerely thank the EWA BELT team, professor Enne, Giovanna, professor Sheila Okoth and the entire and the entire team and also Occam for allowing me to make this presentation.
The previous speaker has already spoken about the stubborn nature of food security and its definition.
Hunger statistics are showing that 828 million in the world are having serious hunger issues.
And the issue of the stability, cause if you look at the three pillars (food availability, access and utilization) there is the issue of actually stability that continues to be very critical because food security is relied basically on a very small bands of foods that is maize, wheat and rice, and so 60% of our calories and proteins come from those three only and when these are lacking then the global community is in trouble.

I will use the metaphor of the broken African pot to say that in general Africa continues to have a lot of challenges and when somebody reads about the trends as Ayalew mentioned, we seem to be going on the wrong direction as a continent in terms of dealing with food insecurity.
So, we are talking about the paradox where as a community, as universities, as practitioners and also those who trains, there is this paradox where we invested quite a bit in terms of commitment and political goodwill at national, continental and also international level.
We have talked about politics and programs right now in place, financing has never been better, we have a huge portfolio of research and innovations within the space of food and nutrition insecurity; learning and capacity development, as a university we are happy to be one of those who are actually contributing to building the capacity of the practitioners and also of the researchers. And then the participation of older stakeholders within the civil society, communities and yet food security continues to be a challenge.

So we mentioned how as a university, as a country – Kenya, as a continent in Africa and also as global community, we have very ambitious programmes and also a policy framework that supports nutrition security, food security in the continent and so whether you are looking at sustainable development goals or at a local level the Vision 2030 and the Constitution (of Kenya) who gives rights to every citizen, that continues to be a challenge.
So, I will not go through that cause I think that we are all familiar with the challenges that have been faced by the farmers , especially in sub-sarian Africa but we have to say that the indicators show that we have not achieved the level of productivity required of us.

And therefore, in conclusion, in terms of the paradox that we have met before, Africa s one of the fastest growing region s in the world in terms of agriculture but it is also the most food insecure and ¼ of the population is categorized as undernourished.
So those statistics you are already aware; but one of the opportunities to take advantage of concerns e-commerce. Next slide please. So, in terms of the African urban food market, this is set to increase four times, to exceed over 400 billion dollars by the year 2030.

This is an opportunity we can take advantage as practitioners, as researchers and those who care about the food security issue in Africa. And also, there is another opportunity in terms of supply prospects where Africa has the potential to increase the value of its annual output by 3 times.
So, we have talked about moving from about 280$ billion in 2020/21/22 to about 800 billion dollars by the year 2030.

This is an opportunity for us in terms of the supply prospects.
In terms of the business the Agribusiness projected to become a multi-trillion-dollar business in Africa: some estimates 1 trillion other 3 trillion depending on the source, but the bottom line is that there is an opportunity for Agribusiness and I would try to link that with the youth. Next slide please.
And so, the elephant in the room is can ICT or e-agriculture give us a solution to reversing those trends and changing the paradox?

So basically, what I am suggesting from where I sit as the person who is charged to coordinating the research functions at the university and also supporting the EWA BELT is that as a country and also as a university, we are looking at holistics value-chains approaches to dealing with the strengths and the weaknesses along the entire value-chain on the different nodes.

So, we are thinking that one of the questions we are asking to ourselves is that after covid-19 struck we cannot reverse the trend of learning and of research, so we are thinking that mainstreams ICT in the agricultural value chains can actually assist us in being relevant to the 25 century, more so because the younger population now so the youth, sometimes called the digital natives in terms of them ensuring that the ICT mainstreams in agriculture is the only way forward we can reverse that.
Therefore we need to build capacities for the women and the youth in the innovations and also in the entrenepreunship initiatives within the sector so that as we talked about the youth and the women that they are not just using the mobiles to transferred

money to but they are actually participating in identifying opportunities along the entire value-chain where ICTs can be applied and so they can actually find that agriculture is not just a ruin but actually can be very exciting and it can be a guideline to how will raise the new ICTs spaces.

The other aspect is that ICT cannot be just a silver bullet, because there are other pressing issues such as climate change and the patriarchal society we live in, where gender becomes a very serious issue, and also young people and the issue of land ownership, because old people don't want young people to have access to or own land, since they are still alive so the cultural aspects and climate change that is global is putting pressure.

And so, while we are dealing with ICT, we are still innovating around climate change and making sure that any technology will develop a response to the agenda and also attracts young people.
Second last is that ultimately governments must put the statement of intent that is in the policy prouncements that can actually support ICTs, support agriculture, support the youth and also support the women who are the media-players in the agriculture, not to say that the men should be putted a side, but we are saying look at those themes, at marginalization, so that together are both gender participating in equitable manner to drive the full value chain to its conclusion.

And then of course ensure that whatever will do we continuously reduce the factors that contribute to the paradox so that we do not have a situation where we are putting so much efforts in having less but adopt the 2018 rules that you put in 20 to get 80% out of it, so all the stakeholders need to put their best food forward and ensure that Africa is moving to Zero hunger and leaving no-one behind because governments, civil society, academia, farmers, the youth, the women, the man are all actively putting their best foot forward as far as the ICTs and the agricultural on agriculture because that is the way forward because doing business as usual will give us the same solutions. But we want to do business unusual for great gains in the food and ICT security sector.

I want to thank you very much for your kind attention.

SHEILA OKOTH, Professor of Botany, University of Nairobi, Kenya

My name is Sheila Okoth, I'm the leader of the Kenyan team at the University of Nairobi in the EWA-BELT project. I'm here to introduce to you a remote tool being developed within the EWA-BELT project. this is meant to support plant health disease diagnosis and management. EWABELT / OCCAM is establishing a remote PLANT Health Diagnostic (PLANTHEAD) network in Eastern and Western Africa. From my slide, you can see the nodes we are using to establish this network.

Why do we need this remote tool? Why is OCCAM within the project developing this remote tool or technology for farmers in Eastern and Western Africa?

African farmers are still faced with a myriad of crop diseases which affect production, especially in the face of climate cha nge: We are observing many other new diseases that are coming up, and this reality keeps changing with climate change.

Farmers also have a problem accessing agricultural information, and the poor infrastructure that we find in Africa affects the farmers' capability to access information that they require to control diseases. And because of expenses and costs of paying extension workers, the number of extension workers in the countries has reduced.

And further, due to the absence of necessary agricultural related information, farmers have to access the extension workers through physical visits, and this is difficult because of the poor infrastructure and the number of farmers we have per extension worker is large making it difficult for the latter to provide prompts actions.

Because of these problems, there's need for remote tool that can provide immediate support to the farmers. This is the help that OCCAM provided to us.

From my slide, you can see some of the diseases we have already experienced in the project. These photos have been taken in the farmers fields, and as we know these diseases spread very quickly when the weather changes and it becomes wet abruptly, and because of this, a farmer would require urgent help to stop the spread of such diseases.

This next slide also shows definitely that the harvest is reduced from this peanut farm, and furthermore, aflatoxin contamination of groundnuts is a problem in groundnut production. Aflatoxins are known to be Class 1 carcinogen.

The disease is not only a problem but also exposure to toxins when a farmer eats products that have been infected.

The farmers can be exposed to the toxins directly by eating the peanut, or also the farmer can also be exposed by drinking milk from cows that have eaten contaminated products.

The problem here is multiple, not only reduced harvest but also exposure to cancerogenic toxins.

Because of this, the EWA-BELT project realized that farmers needed help, and OCCAM is thus developing a remote tool that can help farmers to access prompt information on crop diseases from their farms and how to manage them. This tool improves communication between farmers and the extension workers that are unable to visit farmers as often as possible. And finally, these tools will also enhance communication between farmers, extension workers, researchers and policymakers as this is essential in the improvement of agricultural efficiency.

So we have a tool that communicates to different stakeholders and all these together can be held in developing policies that can help the farmers. Now, just to give you a background on mobile economy in sub-Saharan Africa, because our tool depends on the use of the telephone. This slide from GSM report of 2022 shows how many mobile subscribers are there. Already in 2021 we had 550 million subscribers, smartphone users 49% and it's thought that by 2022 we will have 61%. The mobile industry contribution to GDP will also increase. By 2022 the increase is shot from 40% to 60% and, in some cases, to 70% as shown in this slide. That means that the mobile subscription is already widespread but it is on the rise. That means the cost of the phones are also going to be lower by the day, and it also means that the coverage is also going to increase. Most farmers will be able to benefit from this, as the costs are also going to go down, as the coverage increases. This is the time to take up a technology that is based on telephony. This is a slide to just show you how the platforms will look like. On the top left is the farmer, visiting the farm and noticing a disease, so the farmer photographs the disease and, with that photo he submits to the platform of the plant head. This platform has already been fed by photographs, and it's ready for artificial intelligence information. The database of diseases has also been geo-referenced so the location will also appear, because some diseases are I n some locations and not others. This platform is going to have a database of photographs of the diseases piled up, forming the basis of the artificial intelligence. The database form the hub, from which the farmer will receive the information back on which disease it is on his farm, and how to solve it. But if the hub cannot solve it, the message will automatically be sent to node 1, which is field research unit, or a university that is specialized in farming within the region. So this will depend on which part of the country within the project. For some countries it might be research units, while others it will be research centers, or university, since we are several universities within the EWA-BELT project. If the node 1 cannot solve the problem, the message automatically goes to node 2, which is research center or the universities within the country, several of them are already involved in the project, and if also node 2 cannot solve, it goes to node 3 where it will find international partners in the consortium who have expertise in identifying diseased crops and proposing management practices. Since this is on e-platform, the feedback is very fast and can happen within a day from node 1 to node 3. Now, if from the hub the farmer gets his feedback straight, then he can use the information. After all this has been sorted, the information is retained within the database and builds up the information that will be used for the next events. So, the information builds up, and the building up feeds the artificial intelligence even quicker and more accurate in identification of the disease.

So here we have a farmer with his smartphone: he sends an alert - and he can send an alert as a message or as a photograph, as shown here. And the photograph can also be accompanied by descriptions if he is able to type one (if he is not then even just a photograph is good enough) and that's is sent to the research center and then the feedback goes back.

So, he gets some message back commenting to him what is supposed to do. And the photograph that he has taken accumulates in the platform and allows artificial intelligence to be even smarter.

So, on that platform -the remote platform - this is a slide to show you how the information is kept in folders.

The blue is the repository where the partners of the project may create folders, they add files with more information, to make the platform smarter.

And, in the red one, there is an automatic repository containing the files that are sent by the farmers. No knowledge is lost, all is accumulated and this can be used to review information by researchers so that in case of a new disease, a follow up can be made.

This slide again shows a platform, a page on the platform that helps also to know if a situation has been resolved. For example, if we follow code 0036, which has been given an Occam001 code, it is shown that the event happened in Italy and the status section shows whether this event has been resolved. If it is not resolved, however, the message 'in progress' is shown and anybody, or the manager of the platform can check why it is still in progress, if there is any delay or not and whatever delay can be resolved.

So, the platform is live and at each point a farmer can get feedback and can be helped.

This slide shows a repository of the images that are going to be kept and are going to be used to update the artificial intelligence and it show a sum of the photographs that we have already taken and insert in the platform.

These images will feed the artificial intelligence and will increase its accuracy in identifying diseases.

Now, this slide (slide 13) again shows you for example four different plants: it shows that the first one is 90% healthy, then the next one shows 90% healthy, the third one 98% healthy; so, the farmer will know if there is a damage and at what extent he has the damage. And these percentages become sharper as the information bank for the artificial intelligence increases.

So, that is what Occam is developing with the help of the other participating countries. Right now we are collecting images to build the AI.

My slides here show you that there is also a format of how to take the images: an image of the plant (or an image of the plant leaf) has to be full, so that there is no noise for the artificial intelligence to capture the information.

We take photographs that are full like this (she is showing the photo of a leaf) and farmers are also informed to do that when they are taking their photographs.

Photos of both healthy and diseased plants are recorded in the platform, so that the AI is able to identify them.

Thank you very much and we hope that the success of this platform will make an improvement to farmer disease management and thus increase production. Thank you.

MARCO CEREDA, Advanced research team leader- System Research and Applications Division, ST Microelectronics, Italy

Thank you very much Mr. Bukuru for the great introduction.

Good morning and good evening everybody, it is an honor to be here.

I am Marco Cereda from STMicroelectronics. Today I will talk to you about a molecular analysis device and whole workflow that we have been developing during EWA-BELT to analyze crops of interest for the involved African countries. The aim here is to look for mycotoxin-producing fungi.

Molecular tests are analyses where the targets are nucleic acids, so DNA or RNA. You know that any life form has specific DNA and RNA, so these techniques have a wide range of applications. They have some pros, like the best possible sensitivity and specificity, but they also have some cons, which are limiting their diffusion nowadays: they are quite complex, and require expensive and bulky instruments. We are trying to tackle all these limitations in the EWA-BELT project.

The whole workflow requires the collection of the sample, then a phase where DNA or RNA is purified from all the other components, and then the actual molecular analysis, typically with a technique called qPCR.

qPCR is a molecular technique which allows to look for specific DNA sequences in a sample, and if the sequences are present, they will be exponentially replicated to billions of copies so that they can be easily detected or further studied. You can see in this scheme the exponential amplification carried out during qPCR, which occurs thanks to specific reagents and a repeated heating and cooling of the reaction, the so-called thermal cycling. During this process there is also a fluorescence measurement, so we can get not only a yes-or-no answer, but also a quantitative answer. If a sample is positive, at a certain point there will be an exponential rise of the fluorescence signal.

We have developed this portable platform for qPCR, called Q3. It is much more compact than traditional qPCR equipment and is composed of three main elements: a single-use cartridge, a compact instrument to run it, and a piece of software. Of course, we also need specific reagents for each application.

The cartridge is the core of the system and is composed of six reaction wells, where the reactions occur; the key element is a silicon chip that allows a very precise thermal control, which is of paramount importance for running qPCR. The chip is assembled with other components to obtain the final cartridge.

The instrument has three main functions: the thermal driving of the cartridge; the acquisition of the fluorescence signals – in the lid of the instrument there is a compact fluorescence microscope to do that; and the communication with the host, which can be either a computer or a smartphone through USB or Bluetooth connection. The dimensions and weight are very low. The instrument also has some other interesting functions, to enable simpler use and automation.

Regarding the software, we have two kinds. We had already developed a general-purpose software, which enables to run any kind of molecular analysis. While during the EWA-BELT project, we have developed a dedicated software which goes to the opposite direction, to have the best possible ease of use.

We have two phases of execution in the EWA-BELT project, regarding this objective. Phase one is about development and optimization; more in detail, we have these three objectives we are working on: an easy DNA extraction procedure from plants, the development of the EWA-BELT software, and then the development of the qPCR reaction to work onto our Q3 compact device. The DNA sequences we are looking for are fungal genes, which are involved in the synthesis of these five families of mycotoxins. If the sequences are present in a sample, it means that there is contamination by one or more fungi which are genetically able to produce the corresponding toxin. The matter is tricky, because sometimes these fungi give clearly visible symptoms, while in other cases the contamination is not so visible, or it can happen post-harvest, or anyway the food and feed

can end up in informal markets. And that is a big problem because, as Prof. Okoth just mentioned, these are very toxic substances; for example, aflatoxins have been directly linked with liver cancer in humans.

Here we have some preliminary results: we have developed a simple DNA extraction procedure, to extract from maize and peanut samples so far, which requires very little equipment. Then we are detecting by qPCR the genes for eight mycotoxins. And here I am showing some qPCR results, obtained first on a standard qPCR equipment. For example, here you can see a peanut sample which was contaminated by Aspergillus flavus, a fungus that can produce aflatoxins; and in fact, we got a positive signal for aflatoxins. Here a maize sample contaminated by Fusarium proliferatum, a fungus that can produce fumonisins, another kind of mycotoxin; and in fact, we got a positive signal for fumonisins.

Then we ported the reactions to our portable Q3 device, and we have developed a dedicated software to run the tests on the Q3 device. Here I am showing some screenshots of the software to give you an idea of the ease of use of the workflow: there are step-by-step instructions on screen, and all the parameters are preset. The raw data, those curves that can be tricky to understand, are interpreted in a very easy way. The generated output files can be uploaded to a specific repository in the PLANTHEAD portal that Prof. Okoth just described, and developed by OCCAM; so that all the data we generate in the project can be gathered there.

In the end, this is the final screen with a typical result, the raw results are interpreted by an embedded algorithm, and shown in a very easy-to-understand way: positive or negative for each targeted mycotoxin. These are results very easy to understand, also for people who are not experts in molecular biology.

Phase two is about a training to end users, so potential users in Africa. In the last week of October 2022, we were at the University of Nairobi (UoN) in Kenya, with all the Consortium. We had first a capacity-building workshop with external stakeholders, and then STMicroelectronics gave a training to some staff and students of UoN, from Prof. Okoth's team. Here I am showing some of the pictures I personally took in the laboratories: some bags of peanut samples, the peanuts were then pestled to extract DNA from them, then DNA extraction, the loading of purified DNA into a Q3 cartridge to run qPCR, and the final results on the PC screen.

Here I am listing some of the pros that Q3 has over traditional qPCR equipment: portability; here you can see the dimensions of Q3 compared to one of the most used traditional qPCR equipment, so we can go out of the big, traditional laboratories, also thanks to the lower cost of the platform, especially on the instrument and reagents side. This allows to decrease the barrier to access to the qPCR technology. Also, we have an ease of use thanks to the software and other technologies we integrated. So even people with no expertise in molecular biology can use it, with only minimal training. Then some more technical advantages on the thermal performance, and faster time-to-answer thanks to the specific design of the system.

To conclude, what we see as the overall advantage in adopting this technology is making molecular analyses accessible also in low- and lower middle-income regions. A positive result means that there is a contamination by a fungus that can produce the toxin, but not necessarily the toxin has been produced yet. This means that thanks to an early detection that we can do, due to the top sensitivity of this technique, we can very promptly raise a yellow flag that can allow to take early precautions, and maybe save the harvest. So, in the end this can allow to have an increased food and feed safety.

Here I am listing some other possible applications of the Q3; wherever there is DNA/RNA, we can apply it, changing the reagents and protocol. For example, besides agro-food, it can also be used for infectious diseases. We have a collaboration ongoing on malaria in South America with a partner. We also did a trial on Ebola with some partners in Sierra Leone. Then human genetics and so on.

To conclude, these are some of the next steps we want to take in the EWA-BELT project but also in general, to make the platform even more portable and easy to use. Regarding EWA-BELT, we want to get as much information as possible from a single test, detecting also some other emerging mycotoxins.

Thank you very much.

NARESH MAGAN, Professor of Applied Mycology, Agrifood and Biosciences, Cranfield University, United Kingdom

Good morning, I am going to talk about real time decision support systems for asylum management in installed commodities, you've heard early about pre harvest already.

So, the first thing I just wanted to mention we know that because of drying especially in developing countries we are losing about 25% or more of our commodities especially (*not audible*).

Centre key I've explained, there are the losses.

I'm going to move to the next slide, I wanted to show a couple of slides about the moisture content relationship for different commodities, in this case maize, and you see immediately that if your dry maize properly, you can keep it safe at about 15%

moisture, but if it's slightly higher you enter this zone of uncertainty, and anything higher results in it being unsafe, you may have aflatoxin contamination or if it's wetter, alternative mycotoxins

This is for maize, and we have a similar situation for peanuts, which are very important in both West and East Africa, and again you can see that at 67 and a half percent it's safer storage because no moles can grow, but if you have slightly higher moisture content, and peanuts hygroscopic they absorb moisture you enter the thermals certainty anything wetter is unsafe or and you can have high levels of aflatoxins sometimes ochratoxins or you can have deoxynivalenol

Now, most of the commodities, which are staple foods, when they are harvested and dry, they're all alive and respiring; so, when they are dry at about 0.7 water activity the moisture content I mentioned earlier (you can see this dark line represents the slow respiration rate); however, when it's slightly wetter you can see the change in the respiration rate, which occurs for different types of commodities

So, we want to use this CO2 monitoring, as an early indicator of changes in your storage system.

It started out by using mini silos, where we used safe conditions and slightly unsafe conditions, in this case for maize grain, and you can see immediately the CO2 in the dry grain is very low, it's very high in the slightly moisture maize, it could be a very good indicator.

And we tested this again with brown basmati rice for example, where we looked at the control which is safe conditions, and we added a bit of water after day three, and immediately the CEO to rose significantly; and this is in many silos using 3.5 kg.

So, we knew that CO2 could be a very early indicator and sensitive indicator of changes, due to either past activity, mode activity, and mycotoxin contamination.

We then move to slightly bigger scale where we look at pilot scale silos, so you can see we've added for on each of these steel cables, and we monitored the C02 levels over time, over actually nine months, but at one particular time we added some water to simulate an ingress of water, whereas some damage, and immediately you can see that the CO2 levels have increased significantly in this particular area here where the water was added from the side.

In addition, we after nine months, we took down these the silo and we took the different samples, and you can see that in this area where it was slightly wetter there was a range of mycotoxins, whereas in all the other areas we had no mycotoxins; so again, this year could be a good indicator.

In addition to this with public quite a lot of work already, in relation to the models for the moles with producer different mycotoxins and the conditions under which they produce toxins and won't produce mycotoxins, so the idea is to link the CO2 production to these models so we can have a no risk, a 50% probability, or more than 90% probability of bold initiation or growth and mycotoxin contamination.

So, our final idea here is really to have these sensors, wisely linked to these models, enter the CO2 to production, so we can have a relative risk of spoiling mycotoxins and you can then think about mitigation strategies.

What about the cost benefit analysis of this type of DSS or decision support system? If you're using 12 sensors, in this particular case you can see that the total cost would be about 20.5 thousand euros, although this is more for centrally operated silence where, or maybe a cooperative has a silo.

I could also foresee using one or two or three sensors in a rural environment, with farmers could get together where they storing their bags of staple grains, where they could measure the CO2 to either in the bags, or around the bags, to make sure that they can store it for as long a time as possible.

My final site is really well organized for comparative silo storage system: it is possible to develop such decision support approaches.

In developing countries may not be applicable to rural farmers, but it can be very positive for most centrally organized cooperatives storage systems: this could reduce the risk of mycotoxin contamination, and especially as we had earlier exposure of sensitive subpopulations of people, especially infants and older people to such natural toxins such as aflatoxins.

This approach would also bear benefits in reducing waste streams, and have significant impacts on food security.

So I'm happy to end my talk there. Thank you very much for your attention.

GIUSEPPE ENNE, Head of Scientific Board EWA-BELT Project and NRD Centre, Italy

First of all, I would like to thank the organizers of this Conference, but above all the speakers and all the participants for their presence and for their contribution to the debate.
The Infopoverty World Conference has reached its 22nd edition. An extraordinary achievement!

Looking at the recordings (on the UNWEBCAST) of the various editions made over time, over two decades, one can appreciate the impressive amount of information, updates, suggestions that experts from all over the world and Policy Makers have been able to produce to contrast and put limitations on world hunger.
Telemedicine, economic and social context and constraints, food security have been analyzed and explored over the years.
I only recall the role played by Infopoverty on the occasion of EXPO 2015 with the great intuition of the "Food Security e-Center" which anticipated the topics being discussed today.
A first effort with the aim of modernizing and evolving towards a Citizen Digitalized vision was first made by OCCAM in 1999 in Honduras; subsequently, along the lines of this experience, the Infopoverty Programme creates the prototype of the ICT Villages on the field, in Sambaina in Madagascar, which represents a synthesis of all the work carried out by IWC in all the years that have preceded this milestone.

Digitization is a powerful tool to support that "Sustainable Intensification" of agricultural production that the international community is looking for.
In this context, the EWA-BELT Project, funded by the European Union and operating in six African countries, is an example of what scientific research is doing in the specific Horizon framework of the Citizen Digitalization.

Today, some very significant results based on digital technologies/innovations applied in the rural environment are presented here; the EWA-BELT research is taking charge of monitoring and validating actions within the target area of the (selected) six countries in which the experimentation is being carried out. The positive feedback already obtained and being validated must however make us reflect on the opportunity to identify intervention strategies also in all the other countries which should also benefit from the new technologies that the scientific research offers us; it is necessary to generalize the benefits of research through their widespread dissemination and application throughout the African continent.
I think Infopoverty can't just be a showcase of good practices and success stories; I believe instead that the Infopoverty program must become a *dashboard* where the acquisitions, and the knowledge gained so far, the experiences matured, the innovations developed, must find a synthesis for their real transfer on a large scale to the most fragile areas from the point of view of food and health care of the different continents.
The establishment of a working group under the aegis of the U.N. and with the help of its Food Security Agencies, it could and should work to give substance to a project for the better distribution of knowledge in all those countries that still have a strong need for it.
This is my wish for the 22nd edition of the Infopoverty World Conference.

ZINSOU KPAVODE, M&E Specialist, CORAF, Dakar, Senegal

Good afternoon, everyone, I am pleased to take the floor during this 22nd Infopoverty World Conference on behalf of the executive director of CORAF who is unfortunately unable to attend because of agenda conflict and he had to share CORAF experience in the use of digital solutions. The West and Central African Council for Agricultural Research and Development (CORAF) and is a non-profit organization composed of 23 national agricultural research systems in West and Central Africa. CORAF sees a future where people and communities in West and Central Africa achieve food and nutrition security and are prosperous. Its primary objective is to improve livelihood in these given areas, to sustainably increase agricultural production and productivity as well as promoting competitiveness and markets.

To achieve this objective, it is necessary to address critical issues such as food and nutrition insecurity, chronic poverty, and youth unemployment. To achieve this mission, CORAF has developed a strategic plan covering the period from 2018-2027, which was developed to strengthen agricultural research and to establish and coordinate community of practise in agricultural research in the region. The ten-year plan promotes successful pathway for scaling up and scaling out agricultural technologies and innovations to achieve widespread impact. The strategic plan will enable farmers to become market oriented and competitive while ensuring food and nutritional security for the population in West and Central Africa.

To deliver on the expected results, the strategic plan addresses emerging challenges in agricultural developments in the region, including the use of modern approaches and information communication technologies to achieve impact. Indeed, CORAF in the long-term run is targeting to foster adoption of technologies and achieving this ambitious result will require to improve farmer access to quality agricultural input and services. Therefore, closing the productivity gap is not possible without new ways of making actors along the value chain to have access to information and support services and make mindful and timely agricultural investments.

CORAF has promoted the use of digital tools to facilitate the upscaling of agricultural technologies and innovations. The focus is going to be on three tools that CORAF is currently using to scale technologies and innovations.

The first one is called MITA. The Markets of Innovations and Agricultural Technologies is a web mobile application for information on improved agricultural innovation and technologies and their transaction. MITA serves as a direct interaction between research users and promoters to stimulate demand for improved technologies. The platform ensures the dissemination of proven agricultural innovations and technologies from the sub-regions with the aim of improving agricultural production and productivity through an increased use and adoption of the best technologies and innovations that help transform agriculture in the region. As a discovery platform for technologies and innovations, MITA aims to attract key stakeholders who are involved in the supply, transfer, and adoption of improved technologies.

MITA was established by CORAF as part of the implementation of the WAAPP (West Africa Agricultural Productivity Programme) program with the support of the World Bank and has been continuously updated since 2020 thanks the support of USAID through a programme called PAIRED. MITA is an access free platform which operates as a repository for more than 200 technologies and innovations from 23 research centres in the sub region. The target groups of the platform include researchers, farmers, and other actors involved in agricultural value chains in the region. Overall, the benefits of the platform include increased visibility of technologies and innovation developed and easier linkage between researchers and end-users of technology and innovation.

The second tool developed by CORAF is "The Fertilizer and Seed Recommendations Map for West Africa". It was developed to respond to the inadequate and inappropriate use of agricultural input, particularly seeds and fertilizer in the region. The platform has been developed thanks to the collaboration between the International Fertilizer Development Centre (IFDC) and CORAF. This platform offers a key technical, operational, and site-specific agricultural inputs recommendation targeted at various potential users, particularly smallholder farmers in west Africa. The digital solution aims to accelerate yield increases and agricultural productivity across west Africa. It is a decision-making tool developed to facilitate access to the right information for agricultural stakeholders in terms of the best improved seed varieties, the optimal fertilizer recommendations and associated good agriculture practices by agro-ecological zones.

The platform was launched in 2020 and upgraded in 2022 and is the product of over two-year extensive consultation of more than 350 agri-input actors across west Africa. The platform contains recommendations on agri-inputs, fertilizer, seeds, and good agricultural practices, for different crops in specific agro-ecological zones. Roughly 1,034 agricultural input packages can be generated from the database of 806 varieties for about 27 crops and over 64 fertilizer recommendations across West Africa.

Lastly, the other tool is the "Digital Agricultural Innovation Platform Portal" that is being developed right now. Innovation Platforms is the Integrated Agricultural Research for Development (IAR4D) scaling approach adopted by CORAF. An Innovation Platform is a tool to help identify value chain actors, examine bottlenecks and weak links in the value chain, build and strengthen partnerships and collaborative learning among actors (both public and private), and address business opportunities and new products for improving market outcomes, food security and natural resource management. It helps to achieve greater impact than each actor can achieve alone. The use of Innovation Platforms aims to bring together a network of agriculture stakeholders along specific value chain who depend on each other in realizing their ambitions for agriculture and economic transformation and can therefore foster multiple and simultaneous social and technical changes among themselves and in their environment leading to large-scale technology adoption.

CORAF is aiming to foster the adoption of cutting-edge technologies, and this can only be achieved if we adopt new ways of making information about agricultural inputs available to the main users. CORAF has initiated the process of developing and establishing the digital agricultural innovation platform which is expected to serve as a web information repository. The main objective of the platform is to facilitate and enhance access to agricultural input and services that will improve productivity and welfare of small holder farmers. In addition, the portal will facilitate access to information and solutions through sharing of knowledge and group practises. The development of this platform is still ongoing, but the solution will be available at the end of the year.

Besides these three solutions, CORAF is also working with partners in the region to put in place other digital solutions.

Thank you.

Second part: Smart villages and e-services, the example of the ICT UN millennium Village – a model for rural communities' development into the digital era

The acceleration of the innovation process imposes a strong integration among rural and Urban environment. This is even more urgent in Africa, where statistics show how rural abandonment constitutes a major issue with great social, economic and developmental repercussions. Smart villages and the ICT Millennium Village model are great examples of encompassing efforts to contrast such emergencies reinforcing rural communities with technologies adapting to local and communal needs and capable of providing solutions to food-security issues and to boost education and health services.

TOKY RAVOAVY, Expert consultant in Social Safeguards of poverty reduction projects, OCCAM Representative in Madagascar, Madagascar

Bonjour à vous tous, chers citoyens du monde unis avec le numérique

Hello to all of you, dear citizens of the Digital world

La Pandémie du coronavirus nous a fait comprendre que grâce au numérique, on peut réduire les déplacements tout en apprenant, en échangeant des informations ou encore en faisant des affaires. La révolution numérique est partout dans le monde, mais on ne sait pas encore bien l'exploiter pour lutter contre la pauvreté surtout dans les pays pauvres comme Madagascar. Cette 22 ème conférence mondiale est un rappel de cette opportunité unique qu'offre le numérique. Malgré nos

différences, l'internet a aboli les frontières, les déplacements et les pertes de temps. Il nous reste donc à lever les autres contraintes pour construire une société mondiale juste. Il faudrait encore convaincre les hommes de pouvoir sur les priorités pour répondre aux défis des Objectifs de Développement Durable.

The coronavirus pandemic has made us understand that thanks to digital technology, we can reduce travel while learning, exchanging information or doing business. The digital revolution is everywhere in the world, but we do not yet know how to exploit it well to fight poverty, especially in poor countries like Madagascar. This 22nd World Conference is a reminder of this unique opportunity offered by digital technology. Despite our differences, internet has abolished borders, travel and wasted time. It therefore remains for us to remove the other constraints in order to build a fairer global society. It would still be necessary to convince policymakers on the priorities to focus on to meet the challenges of the Sustainable Development Goals.

Madagascar est parmi les pays les plus pauvres dans le monde pour multiples raisons dont le manque de bonnes pratiques et d'appuis internationaux. Avec la mise en concurrence de trois fournisseurs d'intenet à Madagascar, l'internet couvre presque l'ensemble du territoire en quelques années, plus que les routes d'accès réalisées pendant des siècles. Même dans les zones reculées, l'emploi de téléphones portables est devenu banal. Le smartphone se vulgarise. Le facebook est devenu tellement populaire avec un prix concurrentiel. Mais le facebook est devenu une nouvelle drogue pour les jeunes en raison de la mauvaise utilisation.

Madagascar is among the poorest countries in the world for many reasons including the lack of good practices and international support. With the competition between three internet providers in Madagascar, the internet has covered almost the entire territory in a few years, more than what road made in centuries. Even in remote areas, the use of mobile phones has become commonplace. The smartphone is becoming popular. Facebook has become so popular with competitive price while also bacoming a new drug for young people due to misuse.

Le retour d'expérience de Sambaina a ressorti que les enfants de parents pauvres peuvent améliorer leur niveau scolaire grâce à l'internet sans avoir besoin à acheter des livres ou à se déplacer dans les grandes villes. Avec le manque de moyen de l'Etat, les parents peuvent sacrifier pour cotiser à la charge de fonctionnement d'une salle informatique. Mais il y a des limites comme les frais élevés de connexion par mois ou encore la création d'outils pédagogiques qui sont inaccessibles. Les résultats scolaires des enfants de Sambaina se sont fortement améliorer depuis l'existence de salle informatique connectée gratuitement avant. Cette expérience risque de prendre fin si on ne trouve pas ensemble des solutions sur la connexion devenue payante. Pourtant Sambaina projette d'inviter les autres enfants des écoles voisines et d'améliorer la pédagogie.

Our experience from Sambaina has shown that children of poor parents can improve their academic level through the Internet without having to buy books or travel to large cities. Considering the lack of national resources, parents can sacrifice to contribute to the operating costs of a computer room. But there are limits such as the high connection costs per month or the creation of educational tools that are inaccessible. Notwithstanding, the school results of the children of Sambaina have greatly improved since the existence of a computer room connected to internet free of charge. This experience may come to an end if we do not find solutions together on the connection that has become chargeable. Even so, Sambaina plans to invite other students from neighboring schools and improve pedagogy.

Sambaina est un cas d'école ou une vitrine de la dure réalité d'un pays pauvre. La lutte contre la pauvreté est possible grâce à une solidarité mondiale en commençant par l'e-learnig par des échanges de leçons classiques et des leçons techniques répondant aux besoins de chaque localité. Ce n'est pas les expériences dans le monde qui manque, mais la volonté est nécessaire. Si une réussite locale se perpétue, on peut être TOUS fiers de vivre chez soi tout en étant ouvert au monde. La petite expérience de Sambaina dans un petit village de Madagascar peut prendre fin. Mais peut aussi devenir un exemple planétaire avec votre aide. Vive la solidarité mondiale avec la révolution numérique. Restons en contact chers amis, citoyens du monde. Votre soutien est la bienvenue. Merci de m'avoir écouté.

Sambaina is a textbook case or a showcase of the harsh reality of a poor country. The fight against poverty is possible thanks to global solidarity, starting with e-learning through the exchange of classic lessons and technical lessons that meet the needs of each local communities. It is not the experiences in the world that are lacking, but willingness to help is still necessary. If a local success endavours, we can ALL be proud to live in one place while being open to the world. Sambaina's little experience in a small village in Madagascar can come to an end. But it can, and should, also become a global example with your help. Long live global solidarity with the digital revolution ! Let's keep in touch dear friends, citizens of the world. Your support is welcome. Thank you for listening to me.

RANJA BAKOLI, Directrice CEG Sambaina, Madagascar

Son excellence Mesdames et Messieurs qui assistent à cette conférence, permettez-moi de dire bonjour spécialement à Monsieur Pierre Paolo Saporito, président de l'OCCAM.

Depuis l'installation de TIC au centre Sambaina, les élèves, les parents d'élèves, les corps enseignants et toutes les communautés sont tous très heureux.

Since the installation of ICT tools at the Sambaina center, the students, the parents of students, the teaching staff and all the communities are all very happy.

C'est une forte raison pour les élèves d'aller à l'école que beaucoup d'entre eux ne touche pas encore l'ordinateur que c'est la primière fois au centre. C'est le moment précieux pour les élèves de manipuler l'ordinateur, d'apprendre le word et l'excel, de faire des recherches fertil sur l'internet et même de se divertir avec des jeux éducatifs sur l'ordinateur.

These digital innovations represent one strong reason for students to go to school, especially because many of them have never used the computer. School time is a precious time for students to start learning how computers work, to learn how to use word and excel, to do fruitful research on the internet and even to have fun with educational games on the computer.

Pendant la période de confinement repété en plusieurs fois à Madagascar causé par le passage de l'épidémie COVID 19 qui dure trois mois en 2019, deux mois en 2020 et un mois en 2021, les élèves ont été privé de cours en salle mais grace à l'utilisation de la TIC au centre et avec le guide de moniteur et des enseignants ; ils rattrapent rapidement les lacunes des leçons

During the Covid-19 lockdowns in Madagascar which lasted three months in 2019, two months in 2020 and one month in 2021, students were deprived of indoor lessons. However, thanks to the use of ICTs at the center and through the guidelines by the teachers and trainers, they quickly make up for the shortcomings of physical lessons.

En effet, nous avons eu des résultats d'examen encourageant. Et même, surprit car mon élève était le lauréat du BEPC ; c'est l'examen officiel du second cycle à Madagascar au niveau de la circonscription scolaire l'année dernière. C'est un grand succès pour nous !

And indeed, we had encouraging examination results. Also surprising ones as one of the students became the « *laureate of the BEPC* », that is the official second cycle exam in Madagascar at the school district level. It was such a big success for us!

Les parents d'élèves sont convaincus que la TIC est essentiel pour l'éducation. C'est pourquoi, ils ont fait de cotisation annuelle dans l'association des parents d'élèves sous le nom FEFFI pour payer les dépenses minimales incontournable, telles que le frais de charge d'électricité, le gardiennage et la maintenance des matériels informatiques et l'indemnité d'un moniteur de TIC pour les élèves.

Parents of students are convinced that ICTs are essential for education. This is why they have made an annual contribution to the parents' association under the name FEFFI to pay the essential minimum expenses, such as the cost of charging electricity, guarding and maintenance of computer equipment and the allowance of an ICT monitor for pupils.

Nous savons que le passage de COVID a été suivi de conséquences sociales et économiques grave, cela entraine d'une forte augmentation du chômage et de la pauvreté à Madagascar. Cela passera également des défis important à la finance de chaque foyer.

We know that the passage of COVID has been followed by serious social and economic consequences, leading to a sharp increase in unemployment and poverty in Madagascar. This will also constitutes significant challenges to the finances of each household.

En effet, j'ai rencontré beaucoup de difficulté car la cotisation des parents est très limitée. Nous n'avons qu'un seul moniteur pour 230 élèves et un ordinateur pour 3 à 4 élèves selon la répartition du groupe. Le volume horaire du cours TIC est très insuffisant aussi :une heure par semaine à chaque groupe au lieu de 2h par semaine à cause de l'insuffisance de moniteur.

As a result, we did encountered a lot of difficulty because nowadays parents' contributions are very limited. We have only one monitor for 230 students and a computer for 3 to 4 students depending on the distribution of the group. The hourly volume of the ICT course is also very insufficient: one hour per week for each group instead of 2 hours per week because of the lack of a monitor.

Ici, il n'y a pas de salle spéciale pour la TIC et nous transforme la salle de bibliothèque en salle provisoire pour la TIC, mais cette salle est très restreinte et mal aérée.

On top of it, there is no special room dedicated to ICT tools. We transformed the library room into a temporary room for ICT, but this room is very small and poorly ventilated.

Les mobiliers utilisés aussi comme les tables, les chaises et le tableau sont tous très usés et inadéquats aux élèves.

The furniture also, such as tables, chairs and the blackboard are all very used and unsuitable for the students.

De plus, la participation à la connexion internet proposé par l'opérateur est impossible à notre budget.

In addition, an internet subscription offered by the operator is not feasible for our budget.

Cependant, CEG Sambaina est un Modèle pour le développement des communautés rurales à l'ère numérique.

Notwithstanding all these constraints, CEG Sambaina is a Model for the development of rural communities in the digital era.

Notre ambition, c'est de former des citoyennes bien instruis et vivre aisément avec la découverte incessante de la technologie et plus précisément à l'accès au monde numériques.

Our ambition is to train well-educated citizens who can live well keeping up with the constant discoveries of technology and access to the digital world.

Pour que nos efforts soient reconnus et notre projet continue et s'étend encore à plus grande échelle, nous lançons un appel à tous les collaborateurs afin de développer les autres communautés rurales de bénéficier ce projet TIC à Sambaina Madagascar.

For our efforts to be recognized and our project to continue and expand further on a larger scale, we are appealing to all collaborators to develop other rural communities to benefit from this ICT project in Sambaina Madagascar.

Nous espérons qu'après cette conférence nous serons concrétisés par un appui financier et aurons répondu aux critères de sélection d'un projet fiable de l'appel à proposition lancé aujourd'hui.

We hope that, after this conference, we will have some materialized financial contributions. We also hope to meet the criteria to be selected as a a reliable project in the call for proposals launched today.

Car malgré tous les problèmes, nous avons toujours l'initiative d'organiser et de mettre en place une nouvelle stratégie. Selon notre thème :<< pour nous la justesse de la société est un potentiel objectif de ce projet, nous voulons aller au-delà des résultats actuels, la capitalisation maximise d'impact des résultats de projet prévu ou imprévu en le soutenant>>

Because, despite all the problems, we always have the possibility to organize and implement a new strategy according to our mantra: << *pour nous, la justesse de la société est un potentiel objectif de ce projet* >>. We want to go beyond the current results by maximizing the impacts of the planned or unplanned project activities through pragmatic support.

La coopération et partenariat avec OCCAM , STM fondation représenté par Mauro Decca et TELMA Madagascar nous donne déjà une partie de cette opportunité même s'il n'y a pas encore du financement disponible jusqu'à ce jours.

The cooperation and partnership with OCCAM, STM foundation represented by Mauro Decca and TELMA Madagascar already gives us part of this opportunity even if there is no funding available yet.

Afin de mieux atteindre les résultats et les impacts attendus, notre projet a besoin plus de partenaires et afin de toucher le public à Sambaina.

In order to better achieve the expected results and impacts, our project needs more partners to expand to to others in Sambaina.

Mesdames et Messieurs participantes et participant ensemble, nous vainquions la pauvreté, j'espère que vous seriez appeler à examiner le niveau de vulnérabilité des élèves et apprécier notre effort.

Ladies and gentlemen, we must overcome poverty. I hope you will be called upon to examine the level of vulnerability of the students and appreciate our effort.

Pour se faire, je voudrais savoir, compter sur vous tous, cher participants le réalisme de notre projet pour que nous arriverons enfin à installer un projet pérenne.

To do this, I would like to count on all of you, dear participants, so that we will finally be able to set up a sustainable project.

J'ai rendu compte à son excellence, Président Pierre Paolo Saporito qui nous félicite pour la démarche ; il est très attentif à ce projet.

I reported this to President Saporito who congratulated us on the approach; he is very attentive to this project.

Je vous remercie par avance, pour votre contribution et suggestion.

Thank you in advance for your contribution and suggestion.

Honorable participants, Medames et Messieurs, avant de clore mon discours, Je voudrais saluer l'effort que chacun de nous déployer pour le développement de la TIC à Sambaina.

Honorable participants, ladies and gentlemen, before closing my speech, I would like to appreciate the efforts that each of us is making for the development of ICTs in Sambaina.

Mes remerciements renouvelés vont aux partenaires et nouvelle partenaire. Je vous remercie.

My renewed thanks go to the partners and new partner. Thank you

VLADIMIR STANKOVIC, Programme officer, International Telecommunication Union (ITU), Switzerland

I would like to thank the organizators and the permanent mission of italy to the UN, of course. I'm really pleased to be here and to present at this important event. I will start from where we just ended: The ict village of Sambaina is a gem that survided more than 20 years and I woud like to share my apprecciation to OCCAM and to president saporito for this good example of sustainble development and ICT application in rural vilalges. Of course this is just an example but we have many more. For example, in the WSIS Process. The WSIS Process started in 1998 under the proposal of TUNISIA. And then the first forum on information society was organized and many proposals were collected thanks to the participation of many member states. Among the different proposal, the WSIS "Stocking" (?) was born in 2004. This allow us to track all the ICT innovations that were developed around the world and to collect them in one place so to be accessible to all those in need. See Social, economic, environment impact of technologies in the society was the purpose of this WSIS Stocking. Another example of the importance to collect best practices and technologies innovation was the creation of WSIS Prize in (2010?) so to award the best innovation for improving social impact in modern societies. Of course, technologies and ICTs are fundamental in our society, we have well experienced it in the last two years of pandemic where we were our technology extension. There are so many things where technologies could help us in, but the key words should be inclusion. Inclusion means that we have to take care of our communities apart from gender, age, nationality. In this process all kind of stakeholders should be included. The wsis process follow this path with many "consultation process" that are organized along side with the Forum. And I invite you all to take part in this and share your stories, to continue discussing and engaging in a countinous dialogue among the different stakeholders. A follow up of this conference could be also organized in Geneva in march (also in hybrid). The use of ICT For development is fundamental and need to be shared as much as possible. Thank you. I prepared a full presentation of the WSIS process but I would rather preferred to share my thoughts with you.

The unprecedented global pandemic has underscored the vital importance of digital networks and services to economic resilience and the continuity of essential public services like education and healthcare. Embracing technology and digital transformation is key towards creating information and knowledge societies, including villages and those in rural areas, which is also the objective and mission of World Summit on the Information Society process since 2005. Besides information and communication technology, it is important to highlight the aspects of inclusion, partnership and collaboration. The smart way to build our world is to ensure "Smart for all". This means being digitally inclusive and accessible for all people and empowering everyone through ICTs regardless of their gender, age, ability, or context of use. Accelerating the real impact of the ongoing Sustainable Development agenda for people in rural areas, we must understand how important ICTs are and how they can help us advance. We have many opportunities to do so by continuously sharing best practices, experiences, policies...similarly to what we have been hearing in this conference.

In this context, we would like to invite you all to consider participating and continue discussions from this conference at the upcoming WSIS Forum as an example of successful multistakeholder collaboration and UN partnership.

We invite you to hold sessions and showcase your smart village work, consider participating at WSIS Forum www.wsis.org/forum physically or virtually – help shape our program by submitting through OCP, and ultimately contribute to the creation of information and knowledge societies. We also invite you to promote your smart villages projects through the WSIS Prizes www.wsis.org/prizes

REMY SIETCHIPING, Chief, Policy, Legislation and Governance Section, UN-Habitat

Thank you for inviting me to this important session, my name is Remy Sietchiping, and I am the chief of policy, legislation and governance at UN Habitat. Our contribution today will focus on how smart villages could contribute to enhancing integrated urban and territorial development.

As some of you are aware, urban-rural linkages are defined as the inter-dependencies, complementarities, synergies of functions, across the territory that are made of flow of people, resources, capital goods, employment, information, ecosystem, services and so on within the continuum of urban, rural, and peri-urban areas.

So, at UN-Habitat we consider linkages from the urbanization processes and how they have to benefit other territories and contribute to the positive transformation of people living in those territories.

We also understand that the traditional approach of urban-rural dichotomy is entrenched through policies, governance and investment regulations. This has not been very effective; hence the need to have a more coherent policy across the territory to make sure that all of us who live, work, and have multiple functions across the territory can be more efficient.

So, we know that the idea of the boundary between urban and rural is sometimes artificial because the reality is often more diffuse and fluid. Connections exist in many forms and shapes. It is so important to point out that when you look at Sustainable Development Goals numbers 2, 9, 11, 12, and 16 among others, all refer to the territory and what ought to be done across the territory to improve the quality of life so that we leave no one and no place behind.

We have a similar approach when you look at the New Urban Agenda, many references are pointing toward enhancing territorial coherence; therefore, we do support the idea of territorial inclusion and justice.

UN-Habitat's role is to ensure that we develop and implement instruments to provide investment opportunities that are equitable for everybody who lives across and along the territory.

UN-Habitat together with over 130 partners prepared the guiding principles and framework for action on urban-rural linkages, that foster all entry points of interaction in the urban-rural continuum. In its first assembly in 2019, UN-Habitat went a step further by securing a member states' resolution on urban rural linkages.

We are preparing a global report to showcase what was done from 2019 to 2023, which will be presented at the second UN Habitat assembly in June 2023. In order to achieve what is required in the resolution, UN-Habitat has undertaken many interventions to transform the ways in which policies and strategies are made across the territory. UN-Habitat's Strategic Plan 2020-2025 further fosters the importance of urban-rural linkages.

Let me turn to the smart villages approach at UN Habitat and explain why it is so important in this discussion.

UN-Habitat sees digital transformation as an instrument to leverage development in the urban-rural continuum, and this is done mainly through knowledge to provide a solid ground to advise how digital transformation in rural areas can benefit from the forces of urbanization.

So, the idea of engaging and promoting smart villages contributes to creating more synergy between urban and rural areas to reduce gaps and disparities. If you look at the New Urban Agenda, various paragraphs talk about harnessing the power of digital transformation, to work across the territory, and to create more resilient systems. For example, here is a direct quote from the New Urban Agenda paragraph 156: "*We will promote the development of national information and communications technology policies and e-government strategies, as well as citizen-centric digital governance tools, tapping into technological innovations, including capacity-development programmes, in order to make information and communications technologies accessible to the public… The use of digital platforms and tools, including geospatial information systems, will be encouraged to improve long-term integrated urban and territorial planning and design, land administration and management, and access to urban and metropolitan services*." This means working across urban and rural settlements.

In actual implementation of a strategy of digital transformation, innovation is critical to improving the lives of people living across the urban-rural continuum.

This publication titled ''From smart cities to smart villages,'' has a collection of practices and approaches that you can find on our website.

In summary, the publication brings together a collection of global experiences and examples of smart villages and offers some valuable policy recommendations on the implementation of smart villages strategies in different contexts and for different stakeholders. So, a must read for anyone interested in "smart villages through the lens of urban transformation"

We have further contributed through the biannual International Forum on Urban-Rural Linkages Partnership where smart villages sessions were organized during the forum. We have further contributed by developing an online course on Urban-Rural Linkages with smart villages as part of the digital component that will be released soon.

To go further, just to give you some other forthcoming activities, UN Habitat is planning to advance its work in linking villages to cities. First, linking various partners and stakeholders who are interested in engaging in funding durable and territorial solutions to reduce the spatial gap through the lens of digital transformation.

The second area of work that we would like to invest in is knowledge development and experience sharing. There is a lot out there, including many good and inspiring examples worth looking at. We will keep documenting, facilitating their uptake, and sharing the knowledge with all the stakeholders and actors interested in improving the lives of people in rural areas through digital transformation and innovation.

The third area is capacity development. As we have developed these experiences and harnessed these approaches to developing smart villages solutions, we would like to start putting them into a package of knowledge sharing through e-capacity building. That work is also forthcoming.

The fourth area is enhancing or embedding smart villages into technical assistance and advisory services so that the country and partners, including the governments at all levels, can consider implementing those strategies while being better equipped or informed by UN Habitat interventions.

The final area where we invest more time and effort is to establish facilitation mechanisms, whereby we will be able to assess the performance of smart villages based on the criteria that would be more people-centered.

So, these are some of the snippets of what we are doing, where we come from and some of the things that we are looking forward to further develop, to advance smart villages in the context of urban-rural linkages, and better territorial coherence.

I thank you very much for this opportunity and I look forward to further engagement on this fascinating topic.

Third part: health for all, the role of telemedicine

The application of AI and IoT systems in the healthcare sector, combined with a growing amount of electronic health data, if adequately, oriented could improve national health care systems and patient health.

CLAUDIO AZZOLINI, MD, Professor at Insubria University, founder of EUMEDA®, Italy

Thank you, thank you Director Mr. Bukuru, thank you for the presentation and me too I don't know exactly what is telemedicine even if I am a doctor and I'll show you why.
First of all, of course I would like to thank a lot Architect Saporito for inviting me here, in this important context. He asked me to make a little presentation of telemedicine before speaking on telemedicine and I'll do briefly because we have a delay of time, as you see.
The world telemedicine was created a little bit more than one hundred years ago and it grew up slowly because we had the problems of costs of telecommunication and also poor reliability on telecommunications. So, telemedicine grew up very slowly. In the last decades, it grew up a little bit more, but no more as we would like to have.
Covid, as you know, gave a great boost to telemedicine projects but it remains still not well operative. Yes, it's true we can see at video of patients, we can change some medical data but no more. If you here that a surgeon from New York is doing an operation to a patient in Rome, it's not true; that's make happy the mass media but we have not this kind of medicine yet in the world.
So, in the next issue, I'll show you some aspects, some practical aspects of telemedicine, step by step to succeed we hope in working a new system of telemedicine in the future.
And so, we start this session with the first speech by me speaking about how a platform on the web may help to build a more inclusive society.
As you can see here, e-health offers many topics: one of these is telemedicine. I would like to show you our background in order to understand why we are here. In 1996 in post war Bosnia, we had the chance to use a satellite from European Space Agency to connect our hospital in San Raffaele in Milan to Sarajevo in Bosnia.
So, we succeeded in helping surgeons in Bosnia to do operations in post-traumatic eyes. It was a great experience and personally I fell in love in telemedicine just in that occasion.
Then, we assisted other surgeons by teleophthalmology in Palestine before the second Intifada and after this we realized that we need a new e-health, a new telemedicine that is a theoretic technology of informatics applied in medicine in highly interdisciplinary way that means that physicians, speaking about cells and engineers, they have to work shoulder to shoulder.
And I have to thank engineer Mr. Andrea Falco here, because he knows how important is to work shoulder to shoulder to have beautiful projects.
We create a meta-platform in 2001 for sharing doctors, at first ophthalmologists and then other doctors.
It is a platform physician to physician oriented to benefit of patients. It is working on the web that means that medical records, images and so on, are visible anywhere and anytime.
From 2021 because of Italian law, it was not possible to proceed with other projects just with a no profit association so we have to become a Ltd.
Se we are now working in all fields of medicine, several people are working in this platform as you can see here: we have engineer programmers, data entries, business consultant and very important a lawyer that assist us on every project.
These are some of our features and one of the most important features is the files that we have for each project: every project has its electronical medical record for that project.
From the legal side, we take particular attention of code of conduct, privacy policy and on security of all our systems.
As much medicine is image oriented, we take particular attention to images, so as you can see here, we have a chance of uploading and downloading images also very heavy. So, with this special software, thanks to engineer Andrea Falco, we may have in different times, we can see the same tissues during therapy, so looking if the therapy is good or not.
And we are performing database for electronic medical records, for medical images and for better follow up of our patients; and groups in which we can have many many patients for many hospitals in Italy. There is for example a big project sponsored by Retina Italia a no-profit association, to have many electronical records for clinical trials and for better therapies of patients.
Second opinion is very important for us because every doctor would like to have a second chance and asking advices to other doctors, so with this system we may ask an advice to others doctors. So, it's a very beautiful system according to us, to work well in many fields of medicine and it's possible to ask an opinion to others doctors in others places; it's also possible to drawing on the image to highlight a specific topic of that disease.
We have many medical relapses according to us: increasing medical knowledge, improving teamwork, locating better treatment options: there are many medical relapses in a system like this.
I have to say that in the last three years we have several projects involving more than 300 hundred physicians and involving thousands of patients.
Of course, we have to monitor all these projects with process of care evaluation like access, acceptability, data quality and medical efficacy.

Last question is why, and I think it's the most important question. Some considerations: Eumeda platform works well on the web, it's like a golden standard for us; we have created useful tools in health system like the images in the electronical medical records and so one; and we have no more problems of technology, reliability and costs (problems that we had once).
So, we think that is very important and according to us it's works well. But if it works so well in Italy, why we don't use the same platform around the world, maybe in developing countries?
We may have a link among little clinics and hospitals. In Italy we try to have a so-called Hospital territory integration, but we may have here a hospital ICT village integration, the ICT villages so dear to Architect Saporito.
We have no need to build hospitals, no need to hire many new doctors, just web or satellite link that is enough easy to have nowadays.
So we have a new kind of entry barriers: the first one is interest or participation of physicians; the other one, the most important is the organization between countries. It's difficult to make an agreement between different countries but we are here, and I think that is the main task of the United Nations and to the Occam to make agreement between countries in this sense.
Resources: we don't need a lot of resources according to me. According to me systems like this do not need exceptional resources and we can find resources for example by governments, oil companies (they have to thanks inhabitants of the countries in which they are extracting oil), pharmaceutical companies and flight companies also just to say that they do this and to have more profits.
And thank you very much for hearing me and now I give the word to Professor Donati, speaking about the wearable sensory devices that combine assistance systems with mobile connectivity.
Professor Donati is an Associate Professor in Ophthalmology in University of Insubria, his research is in medical and surgical retina and pediatric ophthalmology and also in telemedicine. He is involved in many international projects and he is also invited in national and international congresses.

SIMONE DONATI, MD, Associate Professor of Ophthalmology, University of Insubria, Italy

Thank you to dottor Saporito for the invitation to this important conference here in New York and also thank you to the University of Insubria that gave me the possibility to join this international conference.

Dear colleagues, in my presentation I would like to share the recent developments on health monitoring devices. We started in 1962 with the Holter cardiac device for heart rate monitoring to the recent devices composed by nanotechnologies and nanomaterials for biomarkers recognition.

Why monitoring? To reduce distances and to have a remote evaluation of body parameters. Nowadays the increase of chronic diseases needs for a strict follow up of patients and in order to decrease the hospital and medical centres burden we may adopt a distance monitoring. These systems also allow to evaluate health markers in real life conditions to study working activities, sport training and different life condition in healthy subjects.

What to measure? Is it useful? We are able to evaluate not only physical parameters as blood pressure, heart or breath rate but also biochemical markers. This fact will allow to have a complete overview of body systems, by analysing swear, urine, blood, interstitial fluids, saliva. The ability and use of microneedle and chemical reagents are the real step forward. At the same time this device must follow body movement, to evaluate not only in bed patients but also subjects in real life. They must be light and "invisible". Among all their components, the transmitting device and the energy batteries are fundamental. We can have standard batteries or piezoelectric systems. Data elaboration systems, data storage are connected via Bluetooth or wireless to select correct data, to run specific algorithms and to detect errors in data monitoring.

Results of this research are a wide selection of devices. We have wearable device embedded in synthetic and natural tissues and fibres, polymer patches with nanoneedles for biomarkers detection (interstitial fluids), front band to measure concentration of ions and proteins in the sweat during sport activities. Some device are composed by sensing unit with biorecognition elements as well as signal amplification units to detect and recognize specific biomarkers. Each component present different reactive materials to register parameters and biological substances.

The final direction is the connection and monitoring of our body to the environment device, to be monitored in disease condition but also during real life. An important step is the definition of rules for data protection and transfer, for a correct data handling by different subjects. Ethical issues must be discussed by central committees for telemedicine and laws.

The evolution doesn't stop as we are at the third generation of devices, from the first Holter devices (first generation) to the second generation with wearable devices and smart watches. They are called theranostic devices as they are composed by a diagnostic function but also a therapeutical component.

For example, they are studying polymer patches for surgical, or post trauma wound to control the healing process by measuring temperature and inflammatory biomarkers but at the same time able to release drugs. In this way a remote monitoring and a therapeutical approach is possible in different environment conditions, from war to remote village in developing countries.

The presentation of Ing Orro that will follow will show you the application of all these devices in different realities. As I showed in my slides, the creation of these devices by the combination of different components, from energy supply, to nanomaterials,

to biochemical reagents to detect specific biomarkers, will give the possibility to create smart watches, smart front bands, theranostic patches, smart infusion pumps for drugs. Real life condition like sport activities, working environments, disease condition will benefit of a body monitoring and a remote data recording. A database platform like EUMEDA is able to support this process considering also data protection and data handling.

Thank you for the possibility to join this important meeting.

ALESSANDRO ORRO, PhD, Institute of Biomedical Technologies – CNR, Italy

In this presentation I will talk about biomedical devices, in particular about the possibility of remotely using them for biomedical application. I think the biomedical device could be a great asset to improve healthcare and health management, in medicine in general but also in telemedicine.

Unfortunately, in our experience not all health conditions can be easily managed outside hospital settings, or in a remote way. Just some examples are: the anamnesis report that is not appropriate and in some countries, for example in Italy, is not allowed at all. So the first visit should be in person. There are also some type of pathologies that are complex conditions such as physical trauma or also involving severe pain. These are conditions which should be better evaluated in person. Other applications for the management of emergencies or psychiatric crisis for example are other diseased where telemedicine is not so appropriate. Fortunately there are also a lot of other important situations where the healthcare provided in a remote way (often supported by medical devices) is very useful. This is the case of not acute conditions, somewhere related to a constant monitoring or other health parameters. The monitoring is not necessarily automatic but also manual, often with the help of biomedical devices and not necessarily with the constant support of health professionals. In this class falls, condition like heart disease or diabetes, chronically respiratory disease, Covid 19 disease, vision defects or hearing defects. These can all be treated in a telemedicine settings.

In CNR, we are involved in several projects of this kind, in the last years. Very quickly we present some of these applications that are all computational cloud platforms used to provide healthcare with the use of medical devices. The teleMoCo19 it is mainly addressed to people in rural regions. It involves the use of very simple devices such as SpO2 and thermometers, where data are acquired in a very simple way, where no other technologies are present in the territory or where elder people are not able to use this kind of technology (for example simple phone call is useful in this case). Then we have several joint collaborations promoted by the Italian minster of foreign affairs and the Egyptian counterpart. In this case we are starting to develop smart hospital technologies in hospitals that are equipped with smart sensors, where sensors can collect data at a large scale and use this data as a fast diagnosis tool, for example, but also as predictive tools for forecasting disease progression. We have other collaborations in telerehabilitation for movement disorder or cardiovascular disorder with North African countries.

This is a collaboration with some Italian partners - Francesco Sicurello will probably go in more depth in this topic. Telemdicare is a cloud platform we are developing in last months. The goal is to manage all activities related to the rehabilitation of motor disease at home. It is a Cloud Platform that includes several functions listed in this slide. They are: programming of visits with doctors of physiotherapist, the management of therapy sessions, and definition of protocols for the therapists. In this context, protocols are the exact sequence of steps and the exact procedure to be followed by the patient during the exercise. During the procedures, the data acquired by wearable devices that are placed on the body or the cloth on the patients are collected and sent to a cloud room.

What we would like to achieve is the therapy adherence that is trying to have a qualitative and quantitative measure of the degree to which a patient is making some kind of rehabilitation, or following the rehabilitation program, to measure how much the real movements they make during the excise match the correct movements. The main goal is to obtain an index to measure the therapy adherence.

The last project I will present is a collaboration between a company and the Italian Red Cross association. In this project we are developing a large scale monitoring addressing, the health status of workers. In this case workers are first-aid operators of the Italian Red Cross that is a set of volunteer. The tree main components of this platform are a smart t-shirt that is equipped with a set of devices. The devices are printed on the tissue of the t-shirt, and a central unit collecting the data and sending this data to a smartphone, then a cloud-based infrastructure that implements all the machinery to collect the data, integrate them with health status, reporting and management of the alarms that can occur during the working activities.

The last slide shows a dashboard of this application I presented in the previous slide. Listed are the data received by the devices during the working activities. The application continuously acquires data for sensor associated to the operator and sends the to the cloud platform. The diseases are possessed by a cloud platforms and the anomalies are evaluated in real time to visualize the alarm and manage the alarm itself.

Thank you.

HASSAN GHAZAL, President, Moroccan Association for Telemedicine and eHealth, Morocco

Hello everybody, good morning or good afternoon, it depends. Thanks to OCCAM and to Mr. Saporito Pierpaolo for inviting me once again to contribute to the United Nations Infopoverty Conference. This is the 22nd edition and I congratulate you on this great achievement. It's quite sustainable which means that it's something the world needs and that the Infopoverty project still has a lot to achieve in the fight against poverty using ICT.

This year, I chose to talk about an issue that concerns cross-border telehealth from a global perspective. The outline of the presentation will be as follows: after defining what cross-border telemedicine is, I will talk about the challenges in its implementation and then how health data can be used in the frame of cross-border telemedicine practice. I will finish with some recommendations on how OCCAM can act to implement cross-border telemedicine as a global organization.

First, let me remind you that cross-border healthcare is quite an old issue, already in 2002 WHO mentioned the term cross-border healthcare, which is defined as how to allow patients to receive healthcare in a country outside of their own. This provision might include the movement of patients and the movement of healthcare professionals as well as international telehealth services. If telemedicine can refer to health and medical services using ICT, it becomes cross-border if the patient or the healthcare provider using or delivering telemedicine services resides in two different countries. An example of cross-border telemedicine might concern preventing a shortage of qualified staff in some countries, or for international tourism and medical tourism, patients using facilities in border regions, which happens quite often in Europe, and the availability of highly specialized health care in countries other than the country of origin of a patient.

In my opinion, the main driver for the development of cross-border telemedicine is the need to access specialist services in low- and mid-middle-income countries. Just as an example, let us take Morocco, my country, where telemedicine has had its law since 2015. The legislator had the smartness to mention the possibility of using cross-border healthcare in the frame of telemedicine, yet it is just one unique article that is incomplete and seemingly ignores many problems.

This is something that we should improve, I mean the law, in Morocco and other countries. This is the main objective of my talk; how can we improve the legal issues to improve the provision of cross-border telemedicine all over the world? It is big a challenge. What are the challenges in implementing and using cross-border telemedicine worldwide? These challenges can be summarized in five main differences: legislation, implementation, technology, planning, and terminology. As such, experts could define key factors that might affect the implementation of cross-border telemedicine worldwide, and this can be summarized in five key elements: legal factors, sustainability issues, cultural factors, ethics, and finally contextual factors.

For legal factors, for example, data security and liability; sustainability factors, such as financing and integration into the local health system; cultural factors, mainly resistance to change, which we could see all over the world, for both patients and health care professionals; ethical factors, for example, patient rights differ between countries; and contextual factors, which concern resources, including human resources and infrastructures.

The technical challenges can be summarized in three main elements: infrastructures, interoperability, and standards. These three technical challenges can be within countries as well, but in regard to cross-border telemedicine, they become very important, in particular regarding the infrastructure.

By infrastructure, we mean these broadband networks that are not available equally in countries and in particular across territories; security of the networks across borders; reliability and accuracy of telemedicine applications, and finally the authentication of professionals and patients to ensure secure and efficient service provision.

In my opinion, the main challenge remains the legal issues, and they should be addressed at the global level. Five key legal issues could be identified: licensing, data protection, reimbursement, liability, and relevant jurisdiction and applicable law. These concern these five questions: does the telemedicine provider also need to be licensed/registered in the country of the patient? What are the conditions for the legitimate processing of personal data related to health? Will the cross-border telemedicine service be reimbursed? What is the liability regime applicable in case damage arises? Finally, what are the relevant jurisdictions and the main laws applicable in case damage arises?

My last point will concern the transfer of data and, in terms of telemedicine; the sensitivity of these data is very important. when these data are moving in cross-border telemedicine. Then, guarantees should be provided at the international level, given the sensitivity of these personal health data.

GDPR, which is the legal framework within the European Union that has been adopted in many other parts of the world as applicable to health data, includes a process to determine if a third party provides sufficient data protection safeguards to allow data exchange with the EU. This element should be extended to health data and cross-border telemedicine.

There are five rights provided to patients or data subjects by the GDPR, summarized in ownership, portability, transparency, access, and erasure. Then, the main basic challenge regards how we can define health data, and there are as many definitions as experts: this issue should be addressed globally to come up with a consensual definition.

Finally, some recommendations to address the challenges that I have mentioned are as follows: I recommend preparing national laws for cross-border telemedicine and addressing the main issue of interoperability and standardization to allow widespread use of telemedicine technologies within the country and across borders. Cross-border telemedicine services can be envisaged within the frames of the WHO or other regional organizations, such as the EU, the Union of the Mediterranean, and the African Union.

In the context of the EU, Directive 2011/24/EU already mentioned the right of European citizens to cross-border telemedicine. The harmonization of laws in all countries around the world, including all aspects of data protection, should be addressed, and in the meantime, bilateral agreements between individual countries should try to address the issue.

To conclude, cross-border provisions of telemedicine services require legal clarification on an international basis. This means the harmonization of health systems in all countries, regarding, for example, the policy of objectives for the free movement of patients and medical professionals. Thus, there is a need for standardized regulations to address medical liability and the sensitive issue of data protection associated with telemedicine-enabled care. National telemedicine programs may build infrastructures and change mindsets, laying the foundations for successful engagement in cross-border services.

Cross-border telemedicine promises equal access to quality care to all at any time and anywhere and constitutes a good model for the Infopoverty project. Thank you.

IBRAHIMA GUEYE, Professor, Ecole Polytechnique de Thiès (Director of the Polylab), Senegal

Good morning, everyone, I am really happy to join this session in order to discuss with you about “Health for all, the role of telemedicine”. This second session is about “How the new technologies can achieve SDGs and develop rural communities, saving planet and assuring safe lives, assisting new digital best practices and services”.

First of all, I present myself, I am Ibrahima Gueye, I am professor from the Ecole Polytechnique de Thies in Senegal, and my research activities are about Big Data, in parallel of this, I am directing a fabrication laboratory called Polylab, is a Fablab in Senegal.

In this Fablab we have some activities about training people and connect some projects, we are doing 3D printing, 3D designs, electronics, the Internet of Things and rapid prototyping. Before talking about the role of telemedicine, I am going to show you some of our important projects as we have conducted in these areas. First of all, we have conducted projects on the design and printing of leg and hand prostheses, we launched this project few years ago and it is responsible for more than 27 prostheses in Senegal and they have time-problem because they took some two-three-four years in order to train for protheses… *(not comprehensible).*

During the Covid-19 we have also designed and constructed artificial respirators and oxygen concentrators so we have developed our own respirators here in Senegal. We have also designed syringe drivers which devices are used in hospitals; they are very important devices which are not really easy to repair when they present some difficulties in working.

Beside these, we went also on implementing different systems as for the design and implementation of remote monitoring systems. I am showing you this because it is important to be able to analyse the components when designing telemedicine tools. This monitoring systems helps you to connect different devices, identities and log in IDs also in different places in a country, allowing you to communicate and exchange data.

Now I am going to discuss about the telemedicine, which is the principal subject of this meeting. I have taken an example of what people think here in Senegal about telemedicine. It happens very frequently that people with chronic diseases, or elderly people have to travel several hours to reach the hospital structures; those hospitals are seen as mainly located in capitals or in regional capitals, and these are mainly for check-up, sometimes people arrive and the doctor is absent and they have to wait few days after the arrival.

There are many difficulties correlated to these examples. One example is that people in general who are facing difficulties, they are not able to make these visits twice a month, so the mortality for diseases is high.

We are also facing a lack of medical specialists, and there is often a specialist for one entire region. These specialists can be cardiologists, neurologists, virologists and so on. We have also observed that due to this lack of specialists, medical appointments take very long time, sometimes three months or more. And if the disease is very serious, this can be complicated for the patient. And also, at the doctor’s side is very overloaded, because if you have a single person responsible for a whole region, it can be complicated to handle this work.

These are many problems we can face by using telemedicine *(referring to the slides)*: telemedicine is a technology that can help people interact with doctors, and help the doctor to take care of the patient where it is located.

In the beginning of my presentation, I talked about it and I showed some technical solutions we have built, and these kinds of solutions are called “frugal innovation”: frugal because they are cheap and not complicated to build, you don’t need to much

financing and resources to build them. And these frugal innovations are real alternatives to enable better health care delivery with high impact for more people at low costs. Our aim is improving frugal technology and research in order to tackle the telemedicine problematics in order to build telemedicine solutions for the population.

Telemedicine is already used in the world; we have some countries where it is implemented but we can find a way to implement it in our population and country in Africa. Every country can implement it with a low cost.

With telemedicine you have different ways, you can observe it in different angles, by a technical point of view and the functionalities offered. To “features” we see in telemedicine a more: remote consultation, remote assisted examinations, surveillance or remote monitoring. This last point is very complex and problematic and we do not analyze in our research or in our projects because it needs specific and deep collaboration with doctors.

In short to medium term perspective, we are working on solutions for our countries: the more concentration solution, the more assisting examination and the more monitoring for patients. We rely on achievements and research in Artificial Intelligence, automatic language processing, chat-bots, Big Data and the Internet of Things to create connected cabins for the care of remote patients and those who are not, unable to afford certain trips, as we have explained on the previous slide.

This kind of cabin is a place where you can have some monitors from one to two, three, depending on what you are going to do specifically, we use also many sensors to allow the monitor to take specific measure if needed, also you’ll have some kind of camera in order to take pictures or some kind of videos. Now we have many tools that doctors have in order to make some kind of examinations for tumors, for the skin and for many parts of the body, so by using this kind of cabin we can help and talk and observe the situation carefully and do some basic examinations, and this will help the doctor to do his job and this will help the population to handle this kind of difficulties we talked about.

This is a real opportunity for developing countries and we are open for collaboration if there are people interested.

I thank you very much for your attention.

Thank you

2.30 pm - THIRD SESSION

SDGs achievement and e-welfare for all: the pillars for a fairer Digital society

The Digital Citizen must find a pivotal strategic position which favors the harmonious development of generations, direct participation in Community life, gender equality and the opening up of new job opportunities while promoting the improvement of the conditions for the most disadvantaged social partners. In this respect, the United Nations must renew its role in guiding humanity towards an International Digital Alliance.

Moderator: MARIA GRAZIA CAVENAGHI, Former director EU Parliament Office in Milan and OCCAM Liaison Officer at the UNHQ, USA

We're going to start this third session of the 22nd Infopoverty World Conference.

Welcome to the United Nations headquarters in New York to those who have been haven't been here yet, and welcome back to those who were already this morning in the previous session'.

This story of this Conference is a very interesting: Mr Saporito, President in 2000, came to me in Milan, I was the director of European Parliament Office, and introduced me a project that seemed absolutely interesting; it was a different look at new technologies, and the point of which he was analysing them was if new technologies were going to be a progress in a very positive thing for poor countries to fill the gap, or is they were going to be an instrument to widen even more the gap.

I thought this was a very interesting point of view to look at new technologies because it was a new way of looking at it, at least at the time nobody had thought about it.

So, we decided to start this conference and we started with European Parliament office in Milan, the Conference room in the European Parliament office in Milan, and the UN headquarters here in New York.

President Saporito was training here and I was chairing in Milan, and this that was the beginning of everything. 22 years later we're here with all these incredibly important people, and so many countries, and the Polytechnic of Milan came in and so on.

This was the origin, and 22 years later and three years after won not one but the worse pandemic in 100 years, which most scientists seem to agrees it has become endemic now, during which we were home isolated the whole world was on a lockdown.

Factories, offices, stores, everything was closed and cities were deserted; nature was starting to taking over again, and animals were roaming free, waters were becoming clearer, our phones and our games and social media channels became our family, we were home and had time to think. Then on May 25th 2020, a young girl in Minneapolis witness and captured on her phone camera the brutal murder of a black man, George Floyd, by the knee of a white policeman, while three others were doing nothing. The whole world watched it because it went viral, and because the world was at home.

It sparked a series of unprecedented worldwide demonstrations by all kind of people: young, older, all origins and ethnicities and languages, and it did have a very positive conclusion.

And the positive conclusion was accountability: for the first time the people who have committed this murder where finally found guilty. The simple gesture of kneeling brought unprecedented consequences to his career, but put the roller sports on the foreground of social movements.

Natural catastrophes of accrued intensity and frequency have spurred unprecedented climate migration; as if this was not enough, now we have a war at the door of NATO and the word is fighting an unprecedented energy crisis and is red by inflation.

But we are resilient, and we are finally doing what we have been trying to do and what the United Nations has been trying to make us do for years. We have finally realised the green revolution and the green economy and the development of green sources of energy, as one of the most important answers.

It is why is next session I would also call it not only the SDGs achievements, and all the pillars for a fair digital society, but also social network as mean to bring about social and environmental justice through sports, the art, journalists; because each one of a participant in this session has a story of success to tell, their way to give back using their platform, to empower others-

I would like to start with the 1st guest Mrs Colette V. Smith who is the founder and President of “Believe N You” Inc, USA. She gained international notoriety when she became the NFL's first African American female coach and the first female coach in the NY Jets franchise history, making her NFL coaching debut with the NY Jets defensive backs in 2017 during training camp.

Colette Smith, thank you.

COLLETTE V. SMITH, Founder & President of Believe N You Inc., USA

Thank you for having me.

It’s an honor to be here. Many times I get an opportunity to speak about love in the playfields. Let’s level the play fields. I did, at least a little, but at least it was a start. I started playing pro football at the age of 42 because when I was a little girl I was denied access to play on a kid’s football teams because of my gender. But today I’m the first African american woman to have ever coached in the history of the NFL and then first woman to coach in the history of the New York Jets. Today I’m the founder and the president of believe n you INC that seeks to empower the underserved, the marginalized, to know that anything and everything is in fact possible if you believe in yourself.

I achieved these platforms amongst great odds and much resistance, but this was not uncommon for me. Because as a black person, as a woman, I’ve encountered resistance all my life. Give all not some fighting chance to win. Why are the underrepresented and the underserved always given less tha, and then expected to feel appeased? For instance, in disadvantaged communities children schoolbooks are not the best to say the least. In poverage schools are left to work with less than because of limited budgets, given to these overlooked communities.

I’m not here to make anybody uncomfortable or comfortable for thta matter. I’m here to speak up about the truth, so we can find change for the very people that need us the most, that need a true fighting chance. The underserved and marginalized communities, oppressed communities based simply on economic classification. Gender inequity and raised discrimination. Let’s all find change for a fairer, more inclusive and sustainable world for every person. Let’s find change as an individual, as a community, as a state, as a country, as a nation, as a world that claimant to be humane, to empower all persons, no matter their race, gender, age, sexual orientation or religious classification. If i were to speak on one topic, gender inequity. Let’s mobile all society to become activists for prevention of violence against women. To stand in solidarity, to support feminist movements around the world, to resist a roll back of women’s rights. A colorful world, free from violence against women and girls. It’s time to make the adjustments. It’s time for humanity and inclusivity for a harmonious world where every person has a fair chance at winning. It’s over time and long overdue how we treat our girls and women, the underserved population. Why is giving less than to the disadvantage, the girls, the women, the people of color come in? It is a time to make change now. Trust me when i tell you, when you help others to live a fuller, fairer, happier and gratifying life, it feeds your soul as well and makes for our balanced and joyful world.

The great Marianne Attleman said ‘leave no child behind’. Education is for improving the lives of others, and for leaving your community and world better than you found it. Humanity is not a weakness, but the greatest strength a woman , a man, a country, a nation, a world could ever possess. So if you see something, say something. Why are we being selective with

selecting degrees of responsibility? Whose responsibility is it for humanity? Whose? I'll tell you who. I believe all of our responsibility. To be humane, to be fair, to be just, to be ethical, to be empathetic. Once again, if you see something, say something. Let's utilize humanity. Our children of color and our girls are encouraged to leave not to expect better, but to settle for less. That's another form of oppression. That we don't act on until it's too late. So let's speak up. It's the digital age, so let's utilize these platforms to make a change and use the power in our voice for humanity now. In the words of Martin Luther King jr, "the time is always right to do what is right." Life's most persistent and most urgent question is what are you doing for others? I digress, and say simply together we are stronger. If you see something, say something. Let's all make tomorrow better today. Thank you.

NOURREDINE BEN TICHA, Founder of Al-Jareeda Newspaper, Advisor to the Former President of the Republic of Tunisia, Tunisia

Thank you so much for having me today. I am pleased and honoured to be review on behalf of Mr. Nourredine Ben Ticha who is the Senior Political Advisor to the Former President of Tunisia.
Actually Mr. Nourredine Ben Ticha made it all the way for Dubai to New York to attend this big conference but unfortunately, he was not able to do so, due to some health problems so I'm the speaker today to deliver his speech on his behalf.
And thank you so much all for this opportunity, so Mr. Ben Ticha's speech was just like that:
"Excellencies, distinguished participants, dear friends,
I would like to thank Gloria first of all, for this opportunity and for coordinating and putting us all together today at this important conference. And thank you all for inviting me to be at the United Nations headquarter at the XXII Infopoverty World Conference to discuss the sustainable development goals and e-welfare for all.
Thank you Mr. Pierpaolo Saporito, President of Occam and Infopoverty Program for this opportunity.
My deepest thanks and regards to the moderator of this session Miss Maria Grazia Cavenaghi, Former Director of the European Parliament Office in Milan.
I would like to start by pointing out the resolutions adopted by governments here in New York in September 2015 named "Transforming our world agenda 2020 for sustainable development" where among the seventeen sustainable development goals which aim to significantly increase access to ICTs and strive to provide universal and affordable access to the internet in the less developed countries by 2020.
The Internet was also essential for the implementation and monitoring of the sustainable development goals and today in 2022 we are here to see if the goals were achieved in an increasingly digitalized world.
Without a doubt the pandemic showed the significant change to how people use the internet in a global scale: lockdown necessitated that we conducted more of our lives online and a new normal was created as industries adopted and improved digital services offerings.
Globally over 1 billion new internet users have been added over the last five years; the covid-19 pandemic sparked a surge in Internet use and in 2020 an estimated 466 million people began using the Internet for the first time.
By mid-2022, 5.3 billion people were online, over 63% of the world population, yet a third of the world's people 2.7 billion do not use the Internet. Many of them live in the less developed countries, the covid-19 pandemic busted internet access over all by encouraging more people to go online for work. But in some countries, its existing digital divides between and within countries related to age, disabilities, gender, geography and socio-economic status, with many essential services pushed online there is a real danger that those without broadband internet access could be left ever further behind.
For many people in the developing world, especially mobile telephony and internet access remain unaffordable.
The cost of broadband Internet access remain above the affordability target sets by board band commission for sustainable development, namely 2% of monthly gross national income for capital for several LDC's according for each use data.
By adopting the 2030 Agenda for the UN sustainable development member of states committed to achieve sustainable development for all nations and people in all segments of the society. The agenda is based on the ideals of inclusiveness, ensuring prosperity in member states pledging to leave no-one behind and to invite all to reach furthest behind first.
However, millions of people cannot work or go to school remotely or access technology and its benefits. So, despite efforts of the United Nations the digital divide still persists between more and less connected countries, communities and people. Enabling all the world's people to access new digital technologies, including digital devices, remains a challenge that needs to be addressed in the world community to achieve the United Nations sustainable goals by 2030.
Therefore, let us all work together today with the high-level technical experts as well as representatives of governments, civil society, academic institutions and the private sector to discuss the urgency of addressing digital inclusion for all. Thank you.

HASSANATOU CAMARA, Founder of DIMEDI FOUNDATION & singer/songwriter/musician, USA

Hello everyone. I'm Natou Camara, singer, songwriter and musician. Now imagine a Muslim, a girl, African, the nightmare I was to my parents. I was a lot of people's nightmare but that girl became the one I am today thanks to the fears I has and the fearless young girl I was back then. When I was young, I used to fight to not be married at 13. I used to fight to be able to finish school, to be able to travel. Today, I'm in New York City. God brought me here for a reason. That's a

long story to be told another time. In 2017, I've decided to go to Guinee and promote my first solo album. There, I was on every radio, on TV and my fans there welcomed me very much. But I was shocked when the youth reached out to me. Thanks to Facebook, they knew where to get me. They told me how much I was inspired them when I was on TV. One of the young girls I mentored when I was 22 reached out to me asking me to come to her school because she is a teacher and a business owner now to speak up. I told her I didn't want to turn all the girls into rebels and singers. So I figured I needed more people to help me out. So I reached out to my allies in the government, doctors, journalists, writers. I reached out to all the powerful women I know in my country to follow me in this school so the kids had all the references they could be inspired from. From there, people were reaching out to me, showing me places in Guinee which I thought had changed but I completely forgot how there were people there that needed me. How could I help? Since I was 16, I've been fighting this one fight: to have the right to speak up. I have it now. I have the right to become the best version of myself, not only because I am a woman. I decided to found the DIMEDI Foundation, which is also the name of my first album. Child. I named my album child because my childhood meant a lot to me. And I named the Foundation DIMEDI because I believe that if I want to change my country, I have to focus on women who brings children to the world and on the children. As such, I stand for women, children, human rights. I do the best I can do through my music. I am very thankful because God has given a voice and a platform, which is a stage where I can perform, play, sign and express myself and also connect with the world. I am also very thankful to be in the United States, but I'm also very thankful to have the opportunity to have something to bring back to my country. In Guinee, we are 44 girls now. Once one started to reach out, all the others followed suit. I can't afford it now as we don't have many fundings. But there are people who believed in me, and who saw something in me that I probably did not see. When I started doing my mentorship programme with the 44 girls I was in Guinee. When I moved to the States, I still wanted to continue my mentoring. How could I do that? How can I not give up on these girls? How can I use the new era, the new technologies, the tools I have to train these girls? We decided we were going to do it virtually over Zoom. However, as much as technology has grown and the world is advancing, in developing countries challenges persist. Some of the mentored girls didn't have phones, some they had access to Facebook but they could not stay online for two hours as internet connection must be paid and they can't afford it. How do I make this mentoring programme happen without funding? I reach out to the America Embassy, to all the people I knew and said to them: I need a room and chairs for 44 girls and I need a screen and a Zoom and someone to coordinate with me. The American Embassy did give me the space for the activities. We needed to divide the girls into groups for 3h per day, 3 days per week for a month to do the first module of the Mentoring programme, which is composed of 5 other modules. After the pandemic ended, we did not have access to the rooms anymore. Of course, other challenges emerged so we reached out to other embassy in Guinee and international organizations, wherever we could. We collaborated with some people there to continue our activity. We were still working to define our strategy. At this point, I realized and decided to open an office there, get some computers for the girls from them to become the best version of themselves. The goal was always to help them in becoming mentors to others. To do so, we help pay for their schools and make sure they are ready to go in the smallest village in Guinee and give them a screen to do the same thing all over again with other young children. This is the power of technology. The other thing that we were able to do during the pandemic was to create a Facebook safe space page "Le femmes de demain" - the women of tomorrow – where women can speak freely and reach out to us even if not in Guinee. When they reach out, I will call everyone I know to help them. That's how we have been able to work with the foundation so far. Technology has done a lot.

The other thing I do is music: I am an artist, a musician. Even here, technology helped me a lot in developing and promoting my art and my business, a production company.

I do have a question to ask you: how can I as an artist, with everything I believe in, with all the activities I promote, reach out to the whole world through technology without being distracted with the rules and regulations that exist on social media? Is it possible? How do we make it happen? How can we make it easier for the girls in Guinee to be heard in the world? How can we make "Les femmes de demain" known to all? We will do eveything we can to pass the message right, but these girls need to hear it even though a lot don't have access to internet, to electricity. All I need to do is inspire these girls and bring exemplary models they can look up to. But we all need to make an effort to help them and give them a little push.

JASMINA BOJIC, Founder and President, UNAFF Travelling Film Festival, Stanford University, USA

Thank you so much Maria Grazia, and thank you to Pierpaolo and the team of OCCAM for holding this events and our film festival United Nations Association Film Festival (UNAFF) just celebrated the 25th anniversary. We are on the same page of bringing this digital revolution and also presenting a lot of films dealing with UNAFF is created on the basis of the Universal Declaration on human rights, and we are presenting a lot of these films dealing with this most important document in the world, created in 1948 by Franklin Delano Roosevelt AND A LOT of films we presented this year talked about the poverty, talked about education in the film that we wanted to present you today it goes from a short documentary from Bangladesh by filmmaker Novera Hasan Nikkon, who created this beautiful film about the woman who is fighting the rules in Bangladesh.

film projected

This is just one example of one of our documentary screened at the 25th UNAFF. Unfortunately right now is around 3 o clock in the morning in Bangladesh so the director could not enjoy us, but she really wanted to enjoy us. This is one of the ways we are connecting with the film makers since 25 years of the UNAFF and give a space to them to tell their stories. Due to the

pandemic, we have all of our filmmakers online, but the presentation of the films and they use the camera to tell stories connected with the topic we are actually discussing today from the beginning.

Seeing the stories and bringing these visual moments of empathy is very important for all of us, this is my message. Thank you very much

TODD COURTNEY, CEO and Founder Picticular, USA

Thank you very much. My name is Todd Courtney, I'm the co-founder and CEO of *Picticular*. I'm honored to be here speaking amongst you. I'm very grateful to the UN, to UNESCO and to OCCAM for welcoming me here. I started my career in the world of sciences by pharmaceutical and biotechnologies, so research and assessment to improve the life of people is really the fire that drives me.

The name of our company is *Picticular*, where we try to be picky but also be particular about our friends' preferences and about the way we communicate with them. It's completely counter to any of the current platforms, where rather you have been forced to participate in the global community. Our technology is private and cyber-encrypted; rather than contact syncing, you are automatically link up not only with your contacts, but also and eventually with the rest of the world. This is because we think that your relationships should remain private until you opt into sharing with people individually, whether friends, contact or people you connect with via username like you do in every social media platform.

The intersections between technologies and futurism is what is really important to deliver better solutions to society by bringing together first-in-class thinkers, workers developers, human beings in building pillars for a fairer society, particularly in the technological fields. That is the core in Picticular.

I really wanted to explain more about why today's topic is so meaningful to me and why I'm here today. Over the past years, I have partnered with some of the most interesting minds in technology and the entertainment field to create Picticular. Its origins are in alignment with this forum about pillars in view of a fairer digital society. Originally, we started Picticular just a war against time. During the pandemic, we had so much time on our hands. At the same time, we were just frustrated by how some of the most prominent digital platforms created two decades ago worked. It was time for a real innovation that would respect our time and our desire to connect with friends and peers with less complications. It is indeed true that these traditional platforms add complication: more complications mean more steps to be taken, which in turn mean more data gathered.

With Picticular, such frictions are removed. Instead of building a digital community around taste only, we are actually building bridges between individuals of similar and diverse backgrounds.

We don't care what your sex is, we don't care what your age is, we don't care what you look like, you enter a platform, and you just start using it as a tool. We give up all about this information initially, but what we find is that there is a lot of different life connecting on a digital platform in ways you wouldn't never expect. But we also attribute that to the power of speaking and storytelling in cinema, which is what Picticular is about. It is just a correlation between storytelling and us, our taste. As such, nowadays, as content creators – whether of movies or social media materials – there is a great responsibility and ability to or not to exploit data information. In general, data is not that valuable; it is what we do with data that is valuable. The amount of data we have would be meaningless without knowing how to use it. There is thus a responsibility concerning what you do with data. This is why we are here today to contribute to what will and is next. Data sensitivity encompasses the rights and duties that digital citizens have and the responsibility that we, as an enterprise, have to do our best to protect the former, with a particular focus on young people. The future is the youth. As such, the responsibility of what we do with data is of the utmost importance. At the same time, we also need traditional platforms like the United Nations, UNESCO and OCCAM to embrace and address the challenge, to establish cooperation network and share strategies to be adopted for the long-term as architects of digital rights of the digital citizens.

We believe technology as a global solution. However, we must not forget that tech solutions and tech challenges are global issue. As such, they must be addressed at all levels of society. If we truly want a fairer future digital society, we got to lean to that, we got to respect voices of the young digital citizens and we have to listen and adapt to the needs of disadvantaged communities all around the world to embrace their ideation.

That is what we are looking at as a tech company. That is really what we need to be talking about. Thank you

GIACOMO MAZZONE, Secretary-General, Eurovisioni, Member of IGF, Switzerland

Apologies for not being with you today, but unfortunately Infopoverty 2022 dates clashes with those of the IGF – Internet Governance Forum- conveyed by the UN in Addis Ababa, where I am one of the rapporteurs.

In this video contribution I want to mention you the risks that the new digital society risk to be, already is a society less compassionate and where it will be /it is easier to be left behind.

It could become a society of isolation, where individuals come first then family, then community, then state, then nations.

My field of experience are media and entertainment; the way to share information, experiences and emotions.

All of it started from theatre: living together in the same space a common emotion between the stage and the audience. Then we moved to cinema, where at least the same emotion was shared without the presence of the actors, but at least was shared with the audience in the cinema. Then we moved to television where at least the emotion was shared within the same family. Now we moved to the single user living his own emotion alone.

The level of social interaction is reducing more and more and surrogates are provided by digital experiences, where everyone is left alone. Once -watching a movie with friends- you were sharing a collective emotion in the same moment in the same space. Today you share a common consumption, but hardly the attached emotions can pass through.

Luckily it seems that the dystopia of the Metaverso is sinking, despite the huge investments pumped in by the company from the same name. a virtual place where an individual could inform himself, study, work, interact with friends, access to contents, go shopping and entertain himself, all the day long without any interaction with real life and with other humans (except than through the mediation of the machine), it's for me worst than 1984 or Brave new world. Access to internet and to digital world is not anymore enough, even in the rural and most remote areas.

This is why there is an important evolution in the last years that occurred to concept of ACCESS. It's not only anymore to bring access even to the poorer and in the most remote areas, but also more and more it's question to bring the access jointly with services, with contents related to the experience of those that you want to connect.

This new concept is the one resumed in the formula of "meaningful access". That means to bring to citizens not only access to the internet at affordable prices and with decent devices, but also to use this connectivity to let them access to services that they need and cannot be accessed through other tools. Access to contents expressed in their local languages and that respect the diversity of individuals and of their cultures.

Access to services -like the ones that Infopoverty promotes since many years, such as education, e-government, telemedicine and so on.

But also access to markets in areas that are very poor in infrastructures and services, such as financial services, e-commerce and so on. Like the experience of the "tao-bao" consumer-to-consumer platform that in China allow millions of farmers to sell directly their products.

All remains a question of choice about the kind of future we want to have: political and individual choices.

In the digital new world everything could exist in two versions: the good and the bad.

Health data through internet for instance: the big platforms can now access private data of citizens about their health and sell these data to insurance companies, so that certain citizens cannot find or afford anymore health insurance. But transmission of medical data could also save lives and bring assistance in remote places where there are no hospitals.

It's a question of choices , a matter of regulation and of enforcement. Political choice of Governments and Regulators first. If transmission of medical data over the platforms would be secured and privacy strictly protected, then societies could evolve in the right direction, because a trust relation could be established over these data.

The main obstacle is that internet platforms today are bigger and richer than entire countries. Rules to them cannot be imposed by single countries, disrespectful of the size of the country, but need to be adopted , imposed and enforced at least at regional level. This is what EU is trying to do with new common legislation: from a charter of digital rights to regulations of market (DMA – digital markets act) to reinforcement of the privacy in the digital world (GDPR – General data protection regulation).

The same happens in the cultural world. Let's look at the paradox of pop music in west Africa, explored by WIPO in a recent study. In the last twenty years there has been an explosion of new musicians and groups in west Africa. The digitalization of music instruments and of the recording technologies has bring down the prices to produce music, lowering barriers to access. 10 years ago these musicians were able to sell their records in the streets in form of CDs or DVDs. Since then, music has moved on mobile phones and on internet platforms and the distribution of west African musicians multiplied by 10 times going beyond national and regional boundaries. The paradox is that revenues shrunk to 10% of the original ones, because the price asked by the telecom operators or by internet platforms to clients is very low and only 30% of the generated incomes arrive to musicians, while the rest is kept by platforms and telcos.

Again, it's a question of choice. Political choices, where -as the WIPO study recommends- governments would have to intervene and impose minimum tariffs and fix ceiling to the percentage retained by the distributors. Again, it's something that cannot

occur at national level (because these operators are bigger than single countries) but need at least a regional (if not a global) regulation and enforcement.

If nothing will happen, the rise of the music movement in Western Africa will arrive soon to an end because nobody will be anymore able to live of the revenues from this activity and the hopes "to build a fairer future society" -as correctly spells the title of this edition of Infopoverty, will vanish. Only our collective efforts and actions could spin and push the digital change in the right direction.

EMMANUEL AMOS, Chief Software Architect, Programos, Nigeria

It is exactly a decade ago that the world gathered at the UN headquarters to fashion an eNabler initiative known as the ICT4SIDS Computer-Aided Strategic Planning Architectures and Control Education S.P.A.C.E to help particularly least developed nations, small islands and developing countries like Nigeria desiring a Digital Economy, to accelerate their social economic developments by using latest technology tools powered by ICT4SIDS and Harrisburg University of Science and Technology, USA to make their regions more liveable, fairer and sustainable to the citizens.

OCCAM has for long been custodian to the project reporting from many geographies, and aided communications addressing developmental growths in a multi stakeholder multi-disciplinary and integrated community manner.

Today the XXII edition of the Infopoverty World Conference, it is indeed a great honor to report on the factors of governance that SIDS have to surmount to adopt the **'eNabler'** SPACE, SPACE4Nigeria* - for time, I am keeping my view specifically to the maturity of the objectives in Nigeria, West Africa, and a population of more than 200m people. We at Programos know we are in for a long journey into the digital society so we love to party as we go with our interventions: showcasing and celebrating our wins by the people, process and technologies in a R&D fashion, enjoying these small steps and successes we make for humanity and our fatherland, most times without no supports – as we crave viable collaborations to scale efforts!

Leaderships objectives in the new decade for **digitalization** to be successful we assessed **NIGERIA** for the following:

- The will of government in transformation
- ICT infrastructure and Tools availability e.g **SPACE4Nigeria** by UN ICT4SIDS and its adoption
- Thorough Plans and Strategy
- Available local ICT Skills and Capacities – complementary skills programme to ensure citizens are digitally literate and can use digital platforms efficiently to access government services
- Solid regulatory framework to ensure valid electronic processes
- Citizens Awareness and their Engagement
- Considering PPP in critical economic transformation developments
- Budgeting
- Develop an Integrated information System .

Others are:

- Clarity, Focus, Good Knowledge, Integrity, Courage, Firmness, Resilience, Compassion

The Agency, under the supervision of Ministry of Communications and Digital Economy supports initiatives in developing programmes that promotes e-government, cyber-security, digital skills, gender barrier, enhance regulation and market environment to increase access to Information and Communication Technology (ICT), and promote ICT-Centred innovation and entrepreneurship. NITDA has established over 1500 IT Centres across the 36 state of country including the capital territory Abuja where thousands of Nigerians are gaining basic computer skills to setup their own businesses across the country. The Agency has commissioned new Innovation Centers as in out 1st outline of pilot will provide enabling environment for innovators in the state, which in line with Federal Government agenda of economy diversification from oil resources revenue generation to digital revenue generation. This will also boost participation of young people leveraging on these opportunities to compete more effectively in the UN World Summit Awards process for which Africa as a continent still has a lot to do.

In the E-governance registry: population, business, land, …

- identity is a critical infrastructure:
- Natural Citizens ie population registry
- GIS system
- e-Planning
- Ease of interoperability
- Satellites and Optical Fibers
- Safety Concerns

- Tax systems online
- Business online
- And a lot more can then ride on the registry, but security is not always easy
- Citizens data protection
- Launch of 5G promises new #5G4Industry processes to be deliverable by SIDS

5G will make #AI delivers more for Miners who need to operate and deliver safer remote-controlled processes with minimized risk and topmost accuracy using high uplink bandwidth and low latency for remote control signals – making underground works less fashionable with less accidents, greener operation, real-time inspections, from the comfort of their homes or offices.

Innovators will have enough opportunities emerge to create more jobs in these areas – growing scientific research will make young people to modernize a lot more process for both government and private enterprises achieve more.

Broadband Penetration in Nigeria Hits 44.5% says NCC Nigeria's political reality showed that broadband usage moved from 40.9% in February 2022 to 44.5% in July 2022. Executive Vice Chairman of the Commission, Prof. Umar Danbatta disclosed. The other anticipated deployments include the Fifth Generation (5G) technology, and management of short codes in Nigeria, including the Toll-Free Emergency Code 112. Boosting the whole economy by health developments, green energy, policy making implementation and transparency.

The great news of The Nigeria Startup Bill which was signed into law by Mr President, President Mohammandu Buhari GCFR on the 19th October, 2022 validated the relevance and importance of the tech ecosystem in the new development agenda to sustain a fairer innovation development in Nigeria.

More Project Intervention Background:

Innovationbed is an economic development cradle powered by the UN ICT4SIDS' Digital Transformation Initiative called **SPACE4ICT** designed for small islands and developing countries.

At the XXII edition of Infopoverty World Conference Innovationbed has been documented courtesy of OCCAM's invitation, in a country-level Capability Assessment Report that recommended Nigeria along other developing countries and small islands to adopt the SPACE4ICT as a national strategy to aid rapid transform in their digital economy journeys.

The key pillars of Innovationbed Process for Nigeria aka **SPACE4Nigeria** are:

1. Innovation Capacity Development Incubation, Tech-scouting, Standardization for Global Rating Programme - in collaboration with the UN World Summit Awards.
2. Fix-A-Gap Research - in Collaboration with Tertiary Institutions, ICT Agencies in Nigeria
3. Workforce Agility and Future Readiness Programme - in collaboration with ICT4SIDS
4. Digital Policy and Advocacy Programme
5. Employment Creation Programme: Skills/Talent Export Gateway in Partnership with TalentNations (Middle East) and ODO Global (Singapore).

The Innovationbed **SPACE4ICT** project pilot whose model, Mr Amos Emmanuel the Architect and Country Coordinator for Nigeria, founder of Programos Foundation (a recognised Not-for-Profit organization in the OCCAM Integrated Stakeholder Community Report of the 14th edition of the IWC), has been ran for 12 years in selfless volunteerism in Nigeria in partnership with **Prof Amjad Umar, Lead Architect for UN ICT4SIDS SPACE4ICT from Harrisburg University of Science and Technology,** and this has earned us as a country a maturity level for scaling fast into the economic development fabrics of leadership in Nigeria and other developing countries.

Important background for the declaration on why we have made it a point of duty to salvage our societal development wrongs in a rather scientific method than traditional is as follows: Nigeria like many developing countries is termed a democracy because it practices government of the people by the people and for the people. Traditionally governments of different political classes and parties do come and go after 4 to 8 years with little or no handovers of strategic frameworks or sustainable development agenda and sometimes characterized by misappropriation in treasury etc. In the course of these pilots for 12 years in Nigeria we have witnessed 3 major government change overs and in another 2 months' time we will be experiencing another cycle change as the election holds in February 2023.

The Innovationbed research outcomes are in line with UN **ICT4SIDS' SPACE4ICT** as it identifies the concerns that trail leadership fashion on developing countries which include but not limited to:

⇒**Re-inventing the will of development lifecycle in every new government with unnecessary 'trial and error'**

Innovationbed **SPACE4ICT** will offer an innovation-based template of the basic developmental knowledge base of bureaucracies that serves as a well-informed guide to incoming executives and leaders of state and federal portfolios to learn and institute the UN templates for growth without re-inventing the will.

Innovationbed Leadership Research Survey 2023-2025:

Are you a government executive,

President, Vice President, Governor, Deputy Governor, House of Representative member, Senator, SSAs to Executive Governors, Director- Generals, Administrator, Director?

Are you faced with the following as soon as you assume office?

AS A NEWLY ELECT,

1. **How do I understand the basic issues, policies, and approaches of the new office?**
2. **How do I develop a customized plan that is specific to my country?**
3. **How do I successfully execute the developed plan?**
4. **How do I monitor and evaluate the progress being made?**
5. **and How do I do everything without reinventing the wheel?**

Constraints:

These (Learn-Plan-Do-Check Capacity Development Programme) activities may require ***some good education which can be pretty expensive or not readily available.***

Provisions requiring stronger support:

We have simplified all this in the Inovationbed leadership programme so the new and in-coming leaders can rapidly, economically, and globally administer more competitively. These UN initiatives have got their back as leaders, so we are advancing this advocacy and awareness for doing and using the right technology tools by UN ICT4SIDS in their daily work dispensation so that the society at large can benefit from the promises of the digital age.

Our Capability Assessment Report therefore shows that **SPACE4ICT** adoption will impact positively the following economic development challenge areas of developing countries:

1. Bridge the Unemployment gap in the economy:
2. Introduce transparency and corruption control in leadership
3. Boost ICT contribution to GDP in real terms
4. Guarantee a fairer, sustainable and inclusive economy that survives in a digital economy.
5. Data-driven governance culture
6. Renewal of Digital Citizenship

The basis of this research proposal is simply to unearth gaps within development data causing fundamental knowledge consequently inhibiting good standards of living, as well as set up digital innovation programmes for the outcomes by employing our local creatives and rated innovators of the ecosystem.

We focused on the test for:

1. Governments' will to do what is right in tech adoption
2. Promoting Local innovation ecosystem in Nigeria - Nigeria is recording even more laurels in 2022 at the UN World Summit Awards making indelible marks on the world innovation map
3. Infrastructural Growth: Broadband and Internet Connectivity
4. Treatment of Data as a National Data as National Asset and its Protection
5. Transparency Spotlight in governance

All the outcomes show positive signs and that Nigeria will be able to sustain adoption of SPACE4ICT initiative for growth.

In Conclusion we appeal the **Innovationbed model** may best be suitable for the EU Horizon pattern collaborations with OCCAM that can fast-track engagement of weaker economies SIDS like we are proposing for accelerated adoption.

Thank you.

Interventions by:

ANDREA FALCO, Founder of Alfadesignstudio, Italy

Just a few words.

In creating our platform, EUMEDA, with Professor Azzolini, our main challenge was to make this platform as accessible as possible for everyone. I just want to point out the fact that you don't need any additional software to access it. All you need is an internet connection and a browser; nothing more.

Every single module, as already brilliantly expressed in his speech by Professor Azzolini, is designed to meet the specific needs of data collection.

This made its realization very complex, without funds, only by working together with Professor Azzolini. I am convinced that this represents a real help for developing countries because it can be accessed from anywhere in the world without the need to install any software and to buy often very expensive and difficult to find machinery. As already mentioned, an internet connection is sufficient, which, as highlighted in various previous interventions, is increasingly spreading in these countries as well.

I think this is a very important goal for us.

Thank you.

RITA PIZZI, Quantum blockchain Technologies PLC, United Kingdom

AI investments and opportunities

We are aware that data and computational tools are crucial factors for the realization of the SDGs. AI already enhances computational capacity. This is already clear to decision makers, in fact investments on AI exceed already 10 billion per year and grow 30% per year.
The prediction is that AI can increase global income, reduce the greenhouse effect, and increase employment.
To see in detail the impact of AI on the SDG goals it is useful to group them into three broad categories:

- Social goals
- economic goals
- environmental goals
- Social Goals

For these goals AI is able to a highlight critical issue and prevent them, optimize resources, and support citizens in daily life.
AI support to Health
In particular AI is able to improve public health through monitoring with both satellite data and local data also by means of wearable devices. It makes possible the processing of such data for diagnostic and therapeutic purposes. It also dramatically shortens the time to develop new drugs.
In synergy with telemedicine it enables remote diagnosis by assessing the priority of interventions and emergencies. Through mobile applications, the patient can interact with virtual assistants who direct them to the correct care. Physicians are supported in interpreting the patient's data and also his facial expression and verbal responses.
AI support to Education and Inclusion
AI is an aid to education and inclusion collecting data from satellite or from heterogeneous sources to detect and prevent social distress and support inclusion, using also emotion analysis.
AI offers support systems for elderly, disabled and frail people. Computer vision and speech synthesis systems are known are already effective tools for disabilities.
Online assistants help citizens in accessing public services and work
As for education, there are very effective online platforms for the training of students in remote areas
With personalized assistance even in homework using natural language processing.
Bias detection algorithms enable monitoring and prevention of bullying and barriers to study and inclusion

Economic Goals
AI support to Agricolture
Most important is the AI support to agriculture to optimize resource, avoid overproduction through decision support methods that process big data and historical data.
AI is useful in maintaining soil quality by analyzing data from satellite and from local sensors by integrating many variables simultaneously
It also integrates weather data by assessing risks in time and optimizing planting and harvest times
It predicts and prevents diseases, controls and optimizes Irrigation also through robotic systems.
AI for Industry
AI optimizes the use of materials and human resources, minimizing waste, making agricultural and industrial processes more efficient, reducing working time, and eliminating heavy and dangerous activities.

Environmental Goals

AI Support to the Earth's Ecosystem

AI makes it possible to analyze big data to quantify resources and pollution, predicting local climate situations, and monitoring deforestation, maps biodiversity through satellite data, discovers new sustainable materials, improves the efficiency of renewable energy production.

Important is AI's contribution to the implementation of smart cities, particularly from the energy perspective: reducing energy costs for the end user with the so-called smart grid, that creates an integrated energy balance system that allows optimization of consumption with benefit for the final user costs.

AI also makes it possible to integrate energy consumption data with weather data so as to optimize consumption.

Negative Implications and Risks

But what are the negative implications and risks of AI ?

First of all the energy consumption of machine learning systems in the training phase. Then the risk of the digital divide becoming greater in areas where AI tools are not available.

Then there is the risk of unemployment where automation increases. It is possible around 50 percent reduction in employment by 2030.

However, there is also a positive outlook on this issue at least in the medium term provided a quick and intensive reskilling.

The security problems that AI can create are well known, although there are ways to limit or eliminate them.

Finally, the data must be based on fair models, otherwise there is a risk of biased results that can worsen social imbalances.

Conclusions: Artificial Intelligence, Ethics and Sustainability

AI can optimize processes in agriculture and industry and improve health, education, inclusion, supporting daily life and sustainability.

But since there is a lack of a regulatory framework that defines the principles and limits on which AI should move it is necessary to pay close attention to its social and cultural effects.

there is also a need for an integrated approach that captures the relationships among the various objectives because, for example, increasing production can worsen the environmental situation.

Ultimately there is a need to establish a community of purpose between countries, governments, the private sector, academia and civil society.

IMTIAZ DHARKER, Winner of Queen's Gold Medal for poetry, Chancellor of New Castle University, United Kingdom

Reconfigure

Look at this. The system has hung again.

The connection is lost

and the world is hanging in the balance,

civilisation dangling by a thread.

The only advice coming down the line is

Switch off. Switch off and restart,

but this won't correct the deep

disconnect and the glitch that refuses

to respond to the easy fix

or incantation or circle of chalk,

tail of newt or tongue of snake.

There is too much at stake

and the stakeholder is you. Blue

light reflects in you*r* eyes

as you try to connect, reconnect

the tech to the human,

the want to the need,

the respect.

Your search is for knowledge

where you open a portal

and the universe answers.

It encompasses the farthest star

and follows the lowliest snail

drawing its journey in silver.

It travels a coastline that turns

and overlaps but is not random,

faithful to the truth it maps.

Even when words falter and data slips
from one route to another, it finds
a point where neurons meet and spark.

It summons just one drop of water,
one clean drop that falls to the earth
and splashes into soil, to moisten a seed

that sprouts and bursts out of the mud.
One green shoot breaks into air,
wind and rain, and grows to be a blade

of grass. One cluster of green
becomes a wide meadow
where cattle graze.

One mouthful of milk feeds
the woman, one woman holds
the child inside the womb,

one child opens her eyes
and sees the web of stars
and puts up her hand to touch it.

You are trying to write a code
that connects art with artifice,
intelligence to the heart.

Make a mark, pixels that meet a need,
symbols that feed a village. Take
the human voice and the sound of birds,

overlay the singing of the spheres,
paint a way of life with a brush of light,
a flash of hope, the span and scope

of atom, plant and beast, fish,
dragonfly, the light in your eye,
all from the one source.

Scan it like something precious,
a single cell dividing,
deciding what it will become.

Listen for the heartbeat
the living creature in the womb,
the perfect programme.

You are reaching out of the dark,
measuring every virtual success
by living need and human right

and global cost. A worm turns the soil,
an eagle hangs in air, the rhythms
of their movement cross

and animate the universe.
Download one dot of light
and a story drops out of the dark.

The musical notation on a page
is the morse of being here,
in the web of the world, alive,

and here is help for the sick,
the sick at heart,
a balm for the hurt,

a salve for what we have done
to the earth, a berth for the sleepless,
a home for the homeless, a rebirth

for the hollow soul, a filled bowl
for the hungry, a promise of water
in a bottomless well,

a ritual of kindness. It will be spelt
on stone and written out
in new scripts, digital hieroglyphs,

the alphabet of who we are.
We may be dots in time, separate
as stars, but there is a spell that binds us.

You and I are holding out our hands
and the child takes them.
She puts her trust in us.

We swing her up into the sky
as far as she can fly
into dizzy blue. The world restarts.

She opens her eyes
and knows
she has come from the dust of stars.