

# FORUM ON ARTIFICIAL INTELLIGENCE IN AFRICA

Mohammed VI Polytechnic University, Benguérir, Morocco  
12<sup>th</sup>-13<sup>th</sup> of December 2018

## PLENARY, ROUND TABLE and PARALLEL SESSIONS

### Plenary Session 1: Artificial intelligence in Africa: issues, challenges and opportunities

This session, dedicated to Artificial Intelligence (AI) as a lever for development, will explore the opportunities, challenges and threats it poses for sustainable and inclusive development in Africa.

#### Moderator:

**Mme Maryline BAUMARD**, Editor-in-chief, Le Monde Afrique

**Mr. Frank ELEANYA**, Journalist, Business Day Nigeria

A technology journalist covering Nigeria and West Africa. He heads the online news desk of BusinessDay Media Limited. As an active enthusiast and expert in new technologies he uses his platform to provide information and intelligence to the public in areas such as artificial intelligence, blockchain, fintech and startups funding. His contributions in highlighting innovations in payment services like cryptocurrencies and mobile money has seen traditional media platforms like BusinessDay embrace technology education as a critical aspect of its reporting. He also covers tech events around the world, most recently the Web Summit, 2018 in Lisbon, Portugal. He has also been invited to share his wealth of knowledge with young entrepreneurs, founders and professionals at Andela, Co-Creation Hub, SeedSpace, Luno Lagos Meetup, to name a few.



#### Panelists:

**Ms. Thérèse AKOUOSSO**, Deputy Minister to the Minister of State, Minister of Communication and Digital Economy of Gabon

**Mr. Gilles BABINET**, Chairman and "Digital Champion" of France at the European Commission

Gilles is a multi-entrepreneur. He has founded nine companies. He is the "digital champion" of France at the European Commission, responsible for digital economy issues and in charge of promoting the benefits of a digital society in France. Gilles Babinet is also a member of the Strategic Advisory Board of EY Consulting, formerly known as Ernst & Young. He wrote "The Digital Age, New Age of Humanity" and "Big Data: an alternative view of mankind". He wrote "The Digital Age, New Age of Humanity" and "Big Data: an alternative view of mankind"



Title of intervention:

Presentation Outline:

**M. Nathnael GOSSAYE**, Co-founder de LangBot (Ethiopia)

Co-founder and CEO of LangBot, a company that makes it easy for schools & teachers to create AI powered educational chatbots. Before founding LangBot Nathnael worked as a lead developer at various tech companies building apps and websites including a gamified learning platform for high school students, 20 apps for the government, enterprise systems and more. He also served as a Google Student Ambassador while studying computer science at Addis Ababa University.



Title of presentation: The Role of AI in Education

**Presentation Outline:** Artificial Intelligence while still far from replacing teachers, can have a huge impact when used in education. Especially, on a continent like Africa where there is a severe lack of access to quality education. There are studies that show that, even after several years in school, many children cannot read, write or do basic math. The fact remains that all students learn in different ways. So instead of employing a one size fits all approach, AI can be used to personalize lessons to each student according to their strengths and weaknesses. As for teachers in addition to helping them with repetitive tasks such as grading, it can also give educators insight about content that their students are struggling with. AI can provide suggestions to both teachers and students, provide personalized education at any time, act as a virtual mentor and more. LangBot focuses on how chatbots can be used as virtual mentors. A chatbot we built to teach French to English speakers has been used by almost a quarter of a million users since launched last December. LangBot is now working on a platform that allows schools and teachers to easily create their own chatbots for popular messaging apps. These chatbots deliver fun lessons and exercises, answer frequently asked questions and provide a way for teachers to track their student's progress.

**Ms. Rimini MAKAMA**, Government Affairs Director, Microsoft Nigeria & Ghana

**M. Hassan RADOINE**, Director, Ecole Nationale d'Architecture, University Mohammed VI Polytechnique (Maroc)

An architecture curator, critic, author and consultant, he is currently the Director of the School of Architecture, Planning and Design at the Mohammed VI Polytechnic. Radoine was previously Director of the Ecole Nationale d'Architecture (ENA) in Morocco, and Head of the Architecture Department at the University of Sharjah (UAE). He has an M.Phil. in Architecture from the Prince of Wales Institute of Architecture in London, and an Architecture degree from the ENA. He has been a consultant for international bodies such as UNESCO, UN-Habitat, ICCROM, MCC, Aga Khan Award of Architecture, and the World Bank. His research and work include Smart and Sustainable Urban Planning, Urban Conservation & Development, Smart and Resilient Human Establishments, Sustainable Contemporary Architecture and Urbanism in the MENA region. In 2017, he was designated President of the international jury for the design of the new building of the International Telecommunication Union (ITU). Among his publications, *Architecture in Context: Designing in the Middle East*.

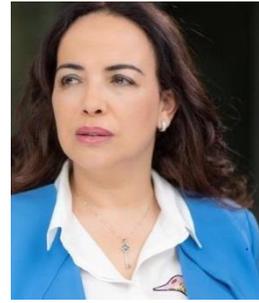


**Title of presentation:** Challenges and opportunities of smart and sustainable urbanization in Africa

**Presentation Outline:** Africa is urbanizing fast. By 2035, more than 50% of Africa's population is expected to live in urban areas, and it is the continent that witnesses the fastest urbanization globally at a rate of 4.5 per cent per year. However, how this urbanization is undertaken remains a great challenge in terms of how to upgrade the current degenerating towns or to project new sustainable and smart ones. Due to the rise of several new complex challenges such as fast immigration, aerosolization, mobility, sprawl, pollution, and high consumption of resources, Africa is in quest for a more sustainable and smart urban and territorial planning to achieve smarter cities. Nevertheless, beyond the sole connotation of smart technology that is, hitherto, achieving fragmented smart cities, it is timely to holistically address the issues of urban and territorial planning in terms of resilience and sustainability based on smartness. Planning mechanisms ought to move, accordingly, to smarter human and environmental systems in different territories in order to improve the sense of belonging and the sense of place of local communities. This paper sheds light on how to reach resilient and sustainable urbanization in Africa through integrated and innovative planning by exploring sustainable human capital, resilient environmental resolutions, and smart urban solutions that cover all urban and territorial scales.

**Dr. Bouchra RAHMOUNI BENHIDA**, Professor, University Hassan 1<sup>st</sup>, Director Executive Education Centre Casablanca & S Senior Research Fellow, OCP Policy Center

University Professor and Senior Researcher (Senior Fellow) at OCP Policy Center. She contributed to several collective works such as "Africa of new lusts", Editions ELLIPSES, (2011) / "Woman and entrepreneur, it is possible", Editions PEARSON, (2012) "Governance, risks and crises", Editions L'HARMATTAN, (2012). She directed the book "Africa: New Frontier of Growth - Understanding, Investing and Entrepreneurship" published by Editions Technip & Orpys (2015). This book earned her an interview in Forbes Africa on the Savannah Valley. She also directed the book "Strategic Morocco: ruptures and permanence of a Kingdom", Editions DESCARTES, (2013). She is the co-author of "Geopolitics of the Mediterranean", Editions PUF (2013) (in Japanese by Hakusui - Sha editions). She contributed to the Atlantic Currents report with a chapter entitled: "Geopolitics of Finance in the South Atlantic: The role of banks and sovereign wealth funds", German Marshall Funds and OCP Policy Center. She led the roadmap: Cap 2022, all united for the promotion of social entrepreneurship in Morocco (2018).



**Title of presentation:** Digital entrepreneurship in Africa: pillar of an inclusive development

**Presentation Outline:** In Africa, there is already talk of connected objects that will change the face of the continent by meeting the specific needs of African populations. It is said that "necessity is the mother of invention". The continent already has significant technological innovations that affect many areas such as renewable energies with M-Kopa Solar (Kenya), waste recovery with Afate 3D Printer and Eco\_Act Tanzania, health with MEDX eHealth Care (Cameroon) or logistics with Bifasor (Burkina Faso).

Local digital entrepreneurship is expected to contribute, to a large extent, to the fight against precariousness and exclusion in Africa. African digital entrepreneurs have become increasingly capable of creating products targeting their local markets, which are both sources of inspiration and benchmarking for scaling up. Indeed, digital entrepreneurship's end goal lies in the creative production of software and applications by qualified individuals and companies focused on opportunities. This new generation of African entrepreneurs is forming communities of digital startups and developing innovative digital products that will enable businesses and consumers on the African continent to take advantage of 21st century technologies.

**Dr. Haruo TAKEDA**, Corporate Chief Engineer, Hitachi, Ltd., Japan

In 1980, he graduated from the University of Tokyo where he majored “machine learning for neural networks” in the department of mathematical engineering. He got his PhD from the University of Tokyo later. His academic publications on AI includes the one with more than 100 citations. From 1990-92 he was a visiting scientist of the AI robotics laboratory of Stanford University in USA. In Hitachi, he was the head of the Advanced Research Center from 2008-11, a corporate officer and the head of the technology strategy center from 2012-14, before being Corporate Chief Engineer. He is currently working also for the Cabinet Office of Japan for AI and SDGs strategy, for a funding agency of Ministry of Economy, Trade and Industry as the chairman of adoption committee of the next generation AI, as the head of a AI program of a funding agency of Ministry of Science and Technology.



**Title of Presentation:** An opportunity for Africa in AI

**Presentation Outline:** In industries, Dr. Takeda is Corporate Chief Engineer of Hitachi, ex-chairman of the strategy board of Japan Electric Manufacturers’ Association, and a board member of an international standardization organization in Geneva where he leads a task force for SDGs strategies. In academia, he wrote a machine learning program of a neural network for the game of go in 1980 when the software was input by punched cards, stayed in AI laboratory of Stanford University later, and published several papers on AI followed by a number of citations. In the Government, he is the chairman of the adoption committee of “next generation AI” in Ministry of Economy, Trade and Industries, the head of “intelligent infrastructure” in a multinational joint research in Ministry of Science and Technology, and a member of an advisory board on AI and SDGs in the Cabinet Office. Combining those experiences, he is currently leading an academia-industry-government collaboration project for SDGs in the Engineering Academy of Japan. His talk in the United Nation in New York last year was reported by a major international media that Japan is a notable exception where corporate leadership from Hitachi is part of the national and trans-national effort in achieving SDGs. Following his message in the first plenary session of the Next Einstein Forum held in Rwanda this year, he will talk on Africa having a substantial opportunity in AI by combining it with SDGs under the concept of “Human-oriented AI Society” and by combining African academia with industries around the world.

## Opening Ceremony

Master of Ceremony:

**Ms. Maryline BAUMARD**, Editor-in-chief, Le Monde Afrique,

**Mr. Frank ELEANYA**, Journalist, Business Day Nigeria

A technology journalist covering Nigeria and West Africa. He heads the online news desk of BusinessDay Media Limited. As an active enthusiast and expert in new technologies he uses his platform to provide information and intelligence to the public in areas such as artificial intelligence, blockchain, fintech and startups funding. His contributions in highlighting innovations in payment services like cryptocurrencies and mobile money has seen traditional media platforms like BusinessDay embrace technology education as a critical aspect of its reporting. He also covers tech events around the world, most recently the Web Summit, 2018 in Lisbon, Portugal. He has also been invited to share his wealth of knowledge with young entrepreneurs, founders and professionals at Andela, Co-Creation Hub, SeedSpace, Luno Lagos Meetup, to name a few.



### Welcoming Address: A high-level representative from UM6P

**M. Hicham EL HABTI**, Secretary General, Mohammed VI Polytechnic University (Morocco)

A graduate from École Polytechnique and Ponts et Chaussées (France), he started his career at Ernst & Young, then joined OCP Group in 2013 after managing different Moroccan SMEs for seven years. He first held the position of Project Leader to the General Manager of OCP. He was later appointed Director of Management Control/Business Steering, before being appointed Deputy Secretary General. Today he is also Secretary General of Mohammed VI Polytechnic University in Benguerir, Morocco.



### Speakers:

**Ms. Audrey AZOULAY**, Director-General of UNESCO

A graduate of France's Ecole Nationale d'Administration and of the Paris Institut d'Etudes Politiques, she holds a diploma in Business Administration from the University of Lancaster (UK). Having worked in the sector of culture since the start of her professional career, Audrey Azoulay has notably focused on the funding of French public broadcasting and on the reform and modernization of France's film support system. She has also served the European Commission providing her expertise on issues concerning culture and communication. In 2014, as an advisor on culture to the President of the French Republic, she notably initiated the development of a protection plan for heritage in danger, which she was able to implement in 2016 as Minister of Culture and Communication. She has also prioritized improving children's access to culture with the launch of artistic and cultural education school programs "Création en cours" and created innovative cultural outreach programs for people in remote and vulnerable areas "Microfolies".



**Mr. Saïd AMZAZI**, Minister of National Education, Vocational Training, Higher Education and Scientific Research of the Kingdom of Morocco

**Mr. Yuxiang LONG**, Executive Chairman of China International Cultural Communication Center, Chairman of China Charity Work Committee

He was a member of the 12th CPPCC National Committee and member of the Foreign Affairs Committee of the CPPCC National Committee. Due to his contribution to world cultural exchange and charity work, he was awarded an Honorary Doctorate from the Sun Moon University; the Five Continents Medal presented by former Director-General of UNESCO Irina Bokova; the Friendship Award conferred by the United Nation; the World Harmony Outstanding Contribution Award conferred by the United Nations Department of Economic and Social Council Affairs; the Outstanding Contribution Award for Sino-US Forum presented by US Present George W. Bush; the Outstanding Contribution Award for Sino-German Cultural, Economic and Trade Exchanges given by German Chancellor Angela Merkel; and the China-Australia Friendship Award presented by Australian Prime Minister Bob Hawke.



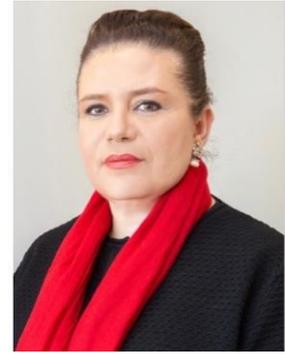
**Mr. Ibrahim YOUSRY**, Regional General Manager of Microsoft MEA Multi Country Cluster

Regional General Manager of Microsoft MEA Multi Country Cluster (MCC). He joined Microsoft in 2007 in the server and tools business, managing this across most of Africa and Levant. During his tenure, Youssry led growth across the region, overseeing every aspect of Microsoft's business, being awarded the Microsoft global "General Manager of the Year" award in 2009. In 2011, he moved to Microsoft France, leading extensive government business covering ministries, social and administrative entities and large public-private accounts. In November 2013, Youssry moved back to the MEA region and joined Microsoft Gulf as the Public-Sector lead. He has made an enormous impact in the market supporting government and education organizations. Prior to joining Microsoft, Youssry spent many years working in multinational organizations across different sectors including Aramco, GUPCO and Schlumberger. He holds a Bachelor of Science-Geophysics degree and a master's in international business management.



**H. E. Ms. Zohour ALAOUI**, President of the General Conference and Ambassador Permanent Delegate of Morocco to UNESCO

H.E. Zohour Alaoui was Ambassador to Sweden and non-resident Ambassador to the Republic of Latvia. From 2003 to 2006, she was the Director of the Division for the UN and International Organizations at the Ministry of Foreign Affairs and Cooperation. She served as Chief of the Division for the UN and International Organizations (1999-2003), then as Chief of the Service for the UN General Assembly and Security Council, (1997-1999), and as Chief of the Service for Governmental Organizations of a Political Nature (1995-1997). Recruited to the Ministry of Foreign Affairs and Cooperation in 1978, she served as Secretary of FA at the Moroccan Embassy in Washington, before being appointed Chief of Staff of the Ministry of Cultural Affairs.



She was member of several committees, commissions and subsidiary bodies of the Executive Board and General Conference of UNESCO, including the Executive Board, of which she was the Vice-Chairperson since 2015.

## Plenary Session 2: What future for Artificial intelligence in Africa?

What is the most conducive environment for the rise of AI in Africa? What are the challenges and opportunities for AI development in Africa, given the African Union 2063 Agenda? High-level reflection will be conducted on the future of AI on the continent, with special guests from the public and private sectors. Special attention will be paid to the "demographic dividend" as well as the issues of education and youth employment, including in the creative industry.

**Moderator:** **M. Serge KOFFI**, Journalist-reporter at AfricaNews (Togo)

Journalist-reporter for nine years, he began his career as a correspondent in several countries (Togo, Benin, Gabon and Equatorial Guinea) for the news channel Africa24. Two years ago, he joined Euronews group and now works for its subsidiary Africanews as a journalist - presenting the weekly column "Sci-tech". The column is dedicated to the technology ecosystem and gives voice to those who make scientific and technological progress on the African continent. Serge Koffi holds a Master II degree in audiovisual journalism and a bachelor's degree in African literature.



**Panelists:**

**M. Nabil Mohamed AHMED**, Minister of Higher Education and Research of Djibouti

**Ms. Bunmi BANJO**, Former Head of Brand & Ecosystem Development, Google Africa, CEO, Kuvora Inc

**Ms. Betelhem DESSIE, Project Manager, iCog - Labs**

**Mme Narjis HILALE**, Writer and Professor at the International University of Geneva, Switzerland

Professor at the International University in Geneva, where she teaches Management and Marketing, a Strategic Consultant and a Female Executive Coach. She has 15 years global expertise in Marketing, Strategy and Insights. She has 15 years global expertise in Strategy and Insights. Daughter of a diplomat, she grew up in Morocco, Switzerland and Indonesia, studied in France and Canada, and worked in Singapore, Morocco, France and Switzerland. She worked for major FMCG multinationals and UN organizations (P&G, Shell, Vivendi, JTI, Firmenich, SingTel, WIPO), in global leadership roles, managing multi-cultural teams. She is the author of the book « Woman's Essentials Box



for the Corporate World », a book that is a compilation of tools and tips for women, on how to better navigate the tough waters of the corporate world, which is still overwhelmingly a man's world. She is passionate about Artificial Intelligence, and its impact on society. She studied Piano and music theory for 12 years and speaks French, English and Arabic.

**Title of presentation:** Africa pioneering a “human” artificial intelligence?

**Presentation Outline:** Since artificial intelligence is at an early stage in Africa, there is an opportunity to build a human-centric approach, where tomorrow's challenges and citizens' aspirations are taken into account. The Western model is currently raising important questions: since the machine is aiming at replacing humans, could artificial intelligence be harmful to humanity? The 4th Industrial Revolution is a major opportunity for the African continent to create an artificial intelligence model where human is put at the center. Therefore, Africa could work on building an approach the focuses on strengthening soft skills, fighting disparities and promoting equality in terms of opportunities and gender. Not only will it be essential to support private investments in Africa, it will also foster civil society initiatives. Will this approach be led by government states, institutions, or citizens? All actors must take ownership of the project and have a role to play in the emergence of a human artificial intelligence in Africa.

**Mr. Gabriel MALKA**, Director of Training and Research in Biotechnology and Biomedical Engineering, Mohammed VI Polytechnic University

**M. Ibrahim YOUSRY**, Regional General Manager of Microsoft MEA Multi Country Cluster

Regional General Manager of Microsoft MEA Multi Country Cluster (MCC). He joined Microsoft in 2007 in the server and tools business, managing this across most of Africa and Levant. During his tenure, Youssry led growth across the region, overseeing every aspect of Microsoft's business, being awarded the Microsoft global "General Manager of the Year" award in 2009. In 2011, he moved to Microsoft France, leading extensive government business covering ministries, social and administrative entities and large public-private accounts. In November 2013, Youssry moved back to the MEA region and joined Microsoft Gulf as the Public-Sector lead. He has made an enormous impact in the market supporting government and education organizations. Prior to joining Microsoft, Youssry spent many years working in multinational organizations across different sectors including Aramco, GUPCO and Schlumberger. He holds a Bachelor of Science-Geophysics degree and a master's in international business management.



**Plenary Session 3: « Universal Access to Information and Knowledge, and Artificial intelligence in Africa »**

This session will focus on the prerequisites for using AI in the African context to ensure universal access to information and knowledge. This session will also explore the potential of AI in promoting scientific cooperation and open access to scientific information.

**Moderator:** **M. Moez CHAKCHOUK**, Assistant Director-General for Communication and Information, UNESCO

**Panelists:** **Mr. Mohammed BEN ABDELKADER**, Minister Delegate to the Head of Government responsible for the reform of the Administration and the Civil Service of Morocco

**Ms. Hawa Ba**, Program Director, OSIWA

Hawa Ba coordinates the media work as well as Senegal programs of the Open Society Initiative for West Africa (OSIWA)'s, part of the Open Society Foundations. Fierce advocate of girls' education and for equal rights for women in political and economic spheres, Hawa works to promote and protect the rights of the most vulnerable segments of society and defends fundamental liberties. She defines herself as feminist and afro-optimist. Hawa holds a Diplome d'Etudes Approfondies (DEA) in Anthropology and a Post-Graduate Degree in Journalism.



**Ms. Bunmi BANJO**, Former Head of Brand & Ecosystem Development, Google Africa, CEO, Kuvora Inc

**Chrystèle DUMONT**, Marketing and Operations Lead Microsoft MEA Multi Country Cluster (MEA MCC)

Marketing and Operations Lead for Microsoft MEA Multi Country Cluster (MCC). MCC spans the full African continent (except for South Africa and Egypt), the Indian Ocean Islands, as well as Levant and Pakistan. She works closely with internal teams and partners to accelerate their digital transformation journey. Since joining Microsoft in 2006, Dumont has held positions including the Regional Central Operations Officer (COO) and Central Marketing Officer (CMO) at North, West, East, Central, Southern Africa, East Mediterranean and Pakistan (NEPA), across 67 countries. Furthermore, she was led the end to end operations, strategy, planning, marketing and communications covering all Microsoft businesses within the Enterprise, Public Sector, Small and Corporate businesses segments as well as Partner organization. Dumont has 19 years' experience in Business Development, Channel, Sales and Marketing, People Management in B2B with international experience and ICT expertise in Middle East, Africa and Europe.



**Pr. Abdelouahid LYHYAOUI**, Full Professor at ENSA of Tangier, Abdelmalek Essaadi University (Maroc)

Abdelouahid Lyhyaoui received an M.S. degree from the Polytechnic University of Madrid, Spain, in 1997 and a Ph.D. from Carlos III University of Madrid in 1999. Currently he is a full professor in the Electrical and Industrial Engineering Department at the National School of Applied Sciences, Abdelmalek Essaadi University. His research interests include intelligent Systems, neural networks, machine learning, Data Mining and Signal Processing for WSN. From 2001 to 2003, he has been a visiting professor at Carlos III University, lecturing at the Signal Theory and Communications Department. Between 2010 and 2018 he was a guest professor at LIPN Laboratory, Paris 13 University. His Specific research interest areas include the participation in the development of Sustainable cities, and the application of Artificial Intelligence in WSN for smart cities.



**Title of presentation:** Upgrading society to better understanding of AI

**Presentation Outline:** Artificial Intelligence (AI) is one of the main actors for the development of a country. The global economic impact of this technological revolution is around 16 trillion dollars, generating employment opportunities of about 2.3 million. These facts reflect the emergency of taking first steps to involve AI in the future. So, it will be necessary to ensure that people are able to design and develop AI systems and applications, also in direct and deep collaboration with research and major technology operators. It will be of fundamental importance to develop the necessary skills for the interaction between human beings and AI. There are several areas to act on in order to enable these skills, more specifically, the training public and private workers, and more generally, the literacy of everyone in order to fully exploit digital services. It is also important to help people understand what AI is, what benefits it can have and what risks it entails to enable them to make the best use of the services offered. Furthermore, it is necessary to “educate” citizens so as to reduce the access gap to such technologies. This involves the school system, which must consider the changes described to make the training of future citizens and workers more effective.

**Mr. Davor ORLIC, Senior Project Manager, Jozef Stefan Institute, Chief Operating Officer, K4ALL foundation**

Davor Orlic is a researcher at the Center for knowledge transfer in information technologies, Jožef Stefan Institute and works as COO of the Knowledge 4 All Foundation Ltd. He also works on multiple initiatives at the intersection of research, technologies, policies and business innovation in Artificial Intelligence. He is currently working on setting up a Network of Excellence in Artificial Intelligence in sub-Saharan Africa and expanding the Global South mapping of hot spots in AI across four global regions.



**Ms. Ruhiya KRISTINE SEWARD, Senior Program Officer, Technology and Innovation, International Development Research Centre**

Ruhiya oversees a portfolio of research on digital governance issues in the global South, from digital rights and cybersecurity, to data analytics and AI. She is experienced with both high level policy and local community development, with a driving concern for facilitating inclusion, participation and gender equality. She has a Ph.D. in politics from the New School for Social Research, and an M.Sc. in International Relations from the LSE.



**M. Jonathan STEVER, Co-founder et Director general, Impact Hub Kigali (Rwanda)**

Jonathan Stever is a macroeconomist, entrepreneur and community builder. He is the founder of Impact Hub Kigali and The Office, and a catalyst of the i4Policy movement. Jon is currently advising several Governments on digital economy policies.



## **Plenary Session 4: Artificial intelligence, a lever for development of youth in Africa**

**Moderator: M. Frank ELEANYA, Journalist, Business Day Nigeria (Nigeria)**

A technology journalist covering Nigeria and West Africa. He heads the online news desk of BusinessDay Media Limited. As an active enthusiast and expert in new technologies he uses his platform to provide information and intelligence to the public in areas such as artificial intelligence, blockchain, fintech and startups funding. His contributions in highlighting innovations in payment services like cryptocurrencies and mobile money has seen traditional media platforms like BusinessDay embrace technology education as a critical aspect of its reporting. He also covers tech events around the world, most recently the Web Summit, 2018 in Lisbon, Portugal. He has also been invited to share his wealth of knowledge with young entrepreneurs, founders and professionals at Andela, Co-Creation Hub, SeedSpace, Luno Lagos Meetup, to name a few.



**Panelists:**

**Ms. Maria DO ROSARIO BRAGANÇA SAMBO, Minister of Higher Education, Science, Technology and Innovation of Angola**

Graduating in Medicine (1983) from the Medical School of the Universidade Agostinho Neto, specializing in Neurology (1997) at the Hospital Egas Moniz (Lisbon - Portugal) and completing a PhD (2010) "Genetic susceptibility to cerebral malaria in Angolan children" at the Instituto Gulbenkian de Ciência (Oeiras, Portugal), Maria do Rosário Teixeira de Alva Sequeira Bragança Sambo, is the honorable Minister of Higher Education, Science, Technology and Innovation of Angola since September 2017. In her educational administrative roles, the honorable Minister functioned as Associate Professor (2012), Rector (2015) at the University Agostinho Neto (Luanda-Angola) and Dean of the Faculty of Medicine, University Katyavala Bwila in Benguela (2011-15).



**Dr. Ikram CHAIRI, Professor and Postdoctoral Researcher, Mohammed VI Polytechnic University (Morocco)**

Ikram Chairi is a teacher and researcher at Mohammed VI Polytechnic University. Her research interests focus around Data Analysis, Machine Learning, and Artificial Intelligence application. She obtained a PhD in machine learning and statistics in 2014 from University Abdelmalek Essaâdi. In 2015, she worked as Postdoctoral Research Fellow at GIAA (Laboratory of applied artificial intelligence) in university Carlos III of Madrid and participated in the construction on an intelligent conversational agent. She also has an engineering degree in Statistics and Data warehousing.

**M. Ekene Johnpaul IKWELLE, Chairperson of the Pan-African Youth Network for a Culture of Peace**

Culture of peace expert, a movement building coach, a youth civic engagement professional and a Fellow of the Friedrich-Ebert-Stifung Open Minds Young Voices program. Chairperson of the Pan-African Youth Network for a Culture of Peace (PAYNCoP), a UNESCO-supported network of youth-led organizations working on the thematic area of peace and for the promotion of the culture of peace and nonviolence in Africa. Co-founder and Executive Director of the Centre for Youth Advocacy and Development (CeYAD), a non-governmental organization focused on peacebuilding through social cohesion initiatives; on preparing young people for smooth transition to adulthood; and on the promotion of strong institutions through grass-root movements. Certified in result-orientation, project coordination and foresight development; experienced in customer and donor relations; and an enthusiast of Artificial Intelligence. Bachelors' Degree in Geological Sciences from Nnamdi Azikiwe Univeristy Awka.



**Title presentation:** Artificial Intelligence in Africa and the fear of Social Exclusion

**Presentation Outline:** Some discussions around AI in Africa have been about what it means for job opportunities since it is expected that traditional jobs will become extinct. However, many are not aware that in the past few years, we have become immersed in several levels of transformative innovations made possible by Artificial Intelligence

(types of AI). Other works have focused on the implications, mostly positive, of Artificial Intelligence (AI) to health, education and security, but not many have considered the impending dangers of social exclusion vis a vis the rapidly disruptive development of AI to a continent that is still battling with the social inclusion of over 77% of its population who are younger than 35. While the potentials of AI and the opportunities for its application across several sectors in Africa are intriguing, its correlation to the present challenges of young people across the continent are still grey areas that require urgent attention. The presentation explores these grey areas, examining the mysteries surrounding AI and youth development, and brings them to the table for a dynamic discussion. It also proposes possible areas for new policy development, providing a general overview of countries who seem to be on the right track, and yet raising concerns around impending dangers for countries who are left behind. Since this Fourth Industrial Revolution is certainly being driven by young people, the only countries that will reap bountiful benefits are those that have invested massively and rightly in its young population, especially in ensuring equal access to training and opportunities, but how many of these countries will be in Africa?

**M. Tomoyuki NAITO**, Senior Advisor for ICT and Development, Japan International Cooperation Agency

Senior Advisor for ICT and Development at Japan International Cooperation Agency (JICA). Prior to the current position, he was Program Manager at the World Bank. Previously, he was the Director of Planning as well as the Director of Transportation and ICT at JICA headquarters. He is a member of Global Steering Committee of “Internet for All” project at the World Economic Forum since 2016.



**Title of presentation:** Artificial Intelligence for Africa’s Development: Education matters.

**Presentation Outline:** The mind-boggling innovations triggered by the Fourth Industrial Revolution are redefining what it means to be human. Technological advances are pushing us to new frontiers of ethics as well. As we all know, Amazon and Netflix already possess algorithms that predict which films and books we may wish to watch and read. Within the context of international cooperation for Africa’s further development, have we always carefully considered these aspects? The Fourth Industrial Revolution including the deployment of A.I. needs to be grounded in a discussion of broader questions about the societies in which we wish to live. Today, the possibilities for human empowerment brought by technology are immense, but we must continue to focus on the impact of technologies on people, their everyday lives and their enjoyment of human rights. No longer is this exclusively the domain of states and international organizations. The private sector must take a leadership role with careful and opened manners, and the states and international organizations should properly support the process as needed. The appropriate ethical education from early student stage (and many teachers) might be one of the areas to focus on, rather than simply provide programming practices or mobile devices.

**M. Noël Magloire NDOBA**, Économiste, Ancien doyen de la Faculté des Sciences économiques de l'université de Brazzaville (Congo)

**Prof. Ebenezer NJOH MOUELLE**, Representative of Cameroon on the Executive Council, Permanent Delegation of Cameroon to UNESCO

President of the Scientific Council of the Center for Research and Doctoral Training for Arts, Languages and Culture, at the University of Yaoundé I. He is also the Representative of Cameroon to the Executive Board of Unesco since 2015. He adds to his experience numerous publications including Globalization, Relationships of forces and illusions of solidarity (2016), Transhumanism, science merchants and future of the man (2018) and What ethics for transhumanism: Increased men and posthumans, tomorrow in Africa? (2018) His 1970 work, Essay on the Human Significance of Development, entitled From Mediocrity to Excellence, is known and studied throughout Africa, particularly in Cameroon, and is included in the program of the General School Secondary School Classes.



**Title of presentation:** Who gets the leading role in the development of AI in Africa? Web giants or state powers?

**Presentation Outline:** The interest in the introducing of AI should no longer surprise, simply because it contributes in a rationalization of behaviors. It facilitates the requirement that productive industrial economies should replace preindustrial economies. AI will have to help develop a better relationship with time, as well as a concern for rigor, precision and quantitative and qualitative performance at all levels. In recent years, many AI start-ups have emerged on the African continent.

There are indeed major platforms formed by web-giants that are making their way into to African continent, creating research centers and training institutes in various countries. It should be possible for Africa, while purposefully entering into the dance of Artificial Intelligence, to set its own ends, defined at the state-power level. Even if there is no unified state power for all of Africa, the 55 African states could retain identifiable skills on their soil and thus encourage and support private sector entrepreneurs through partnerships that foster true African interests.

**M. Zhang BAOJUN**, Vice-President, Beijing Language and Culture University (China)

**Plenary Session 5: “Ethics and Artificial intelligence in Africa: What is at stake?”**

**Moderator:** **Ms. Dorothy GORDON**, Chairperson, UNESCO Information for All Program

**Panelists:**

**Mr. Anantha DURAIAPPAH**, Director, Mahatma Gandhi Institute of Education for Peace and Sustainable Development (India)

Dr. Anantha Duraiappah took the position as inaugural Director of the UNESCO MGIEP in 2014. A science-policy pacesetter, with over 33 years' experience, he now plays a key role in positioning UNESCO MGIEP as a leading research institute on education for peace, sustainable development and global citizenship. Anantha received his Ph.D. in economics specializing in mathematical and computational modeling from the University of Texas in Austin, USA. He has authored numerous peer-reviewed books and journal articles. He is a Fellow of the World Academy of Arts and Sciences (WAAS), a Fellow of The World Academy of Sciences (TWAS) and a visiting Professor at the University of Tokyo, Japan. Dr. Duraiappah is presently focusing on strengthening the science-policy guide in Education by researching and exploring how the neurosciences of learning can contribute to developing emotional & intellectual intelligence through innovative digital pedagogies.



**Title of presentation:** Education: AI & Ethics

**Presentation Outline:** The increasing use of technology in education – from online learning platforms and the digital content that they host, to machine learning and natural language processing (NLP) – has not only proposed scalable solutions to longstanding problems in the classroom but also raised urgent new questions about how to manage the interactions between new technologies and initiatives in education. Artificial intelligence offers the possibility of using data to provide crucial insight to student learning behavior: indeed, AI could analyze a student's learning and offer solutions and interventions to develop an approach that is well suited to the student's strength while also considering their weaknesses without compromising student's privacy. In this way, the elusive dream of personalized learning may finally become a reality. It is important, however, that we acknowledge the critical role data plays in ensuring AI systems work as intended: if the legacy data provided to train an AI system is biased or otherwise morally tainted, the AI will perpetuate the bias. Similarly, as there are many key factors in any educational approach that cannot be represented as data points – the value of another person (be it an educator or peer), of connections, of friendship – the AI or Machine learning (ML) system will necessarily be blind to some of the most meaningful elements of a student's learning experience. In light of these dangers, it is imperative to identify and account for the various ways in which discrimination could be unintentionally perpetuated by AI systems. Dr. Duraiappah believes that UNESCO has a key role to play in this endeavor, including by defining interoperability standards (XML formats, byte patterns) and API frameworks that anyone can build to share insights as well as charting a path forward that accommodates the growing role of technology in our education without compromising the ethical frameworks that we all hold dear.

**Mr. Eugène C. EZIN**, Professor of Computer Science and Artificial Intelligence, University of Abomey-Calavi, Member of the IEEE Computer Science Society (Benin)

Eugene C. Ezin's research work focused on automatic speech processing using hybrid neural network systems and fuzzy logic and led to the PhD thesis in Artificial Intelligence in 2001. Now full Professor in Computer Science and Artificial Intelligence, he is the current Director of the Institute of Training and Research in Computer Science at the University of Abomey-Calavi. He has to his credit more than sixty scientific publications in international journals and in the proceedings of refereed conferences. He is the editor of several newspapers and a member of several scientific committees. Since 2012, he is an active member of IEEE Computer Society. His research interests include cryptography, signal processing, intelligent systems, machine learning.



**Title of presentation:** Human Intelligence vs. Artificial Intelligence: Where Does Human Reason Go?

**Presentation Outline:** Artificial intelligence, "great myth of our time", is often presented as a major opportunity to seize in terms of the knowledge economy. Its contributions in the fields of robotics, medicine, transportation, communications and particularly agriculture already are considerable. And yet, real concerns and risks are observed, including job destruction and replacement with the emergence of robots, loss of a humanity facing the black box. In short, algorithms govern us and decide for us. Where does human reason and ethics point to in Africa especially with the emergence of these technologies?

**Mme Monique MORROW**, President and Co-Founder of Humanized Internet, Associate Researcher, Alexander von Humboldt Institute for Internet and Society (Switzerland)

President and Co-Founder of the Humanized Internet, a non-profit organization focused on addressing the need to control our identities as well as providing digital identity for those individuals most underserved. The belief in the social good of technology with embedded ethics has guided Monique's extensive work on the intersection between blockchain technology, security-privacy issues, questions of legal jurisdiction, and portfolio development. She engaged with and explored these issues in her capacity as a member of the procivis.ch and Vetri Global advisory boards (Switzerland) and is a Senior Advisor to Hycon (South Korea). She is also an active member of the IEEE Ethics in Action Executive Committee and Co-Chair of the IEEE Ethics in Action Extended Reality Committee. Regarded as one of the most influential technology leaders worldwide and having earned numerous honors in recognition of her



efforts, Monique is an advocate for women in technology and engineering, serving on multiple non-profit boards, publishing *Internet of Women, Accelerating Culture Change* in 2016 and facilitating the launch of the Women in Standardization Expert Group for ITU. Monique has won such honors as Top 100 CIOs for 2016 (CIO.com), the Top Women in Cloud Innovations Award 2016 (CloudNow), Social Media Presence of the Year 2016 (AI Magazine), 10 Women in Networking/Communications You Should Know, Top 10 Influential IT Women in Europe (Think Progress), 2015 Women of M2M/IoT (Connected World Magazine), the 2014 GEM-TECH Award (ITU and UN), Top 50 EMEA Influencers in Data Centres and Cloud, and most recently she was recognized as one of Switzerland's Top 100 Digital Shapers for 2018. Monique is in the process of co-writing a book entitled *The Humanized Internet*, to be published in 2019.

**Title of presentation:** Ethics in AI: An Opportunity for Africa

**Presentation Outline:** There is a polarity between the mass empowerment that citizens can benefit from AI to the mass destruction. Technology has no agency and therefore it is incumbent upon its creators to define its intentional use. Africa has an opportunity to set a global agenda on Ethics in AI and avoid results that could negatively impact citizens. The discussion will commence with general observations and potential for abuse and end with AI as a job creator to be launched in Africa. Ethics underpins the core discussion.

**Professor Takashi EGAWA**, Department of Electrical and Mechanical Engineering, Department of Electrical and Mechanical Engineering, Research Center for Nano-Device and next generation material

Takashi Egawa started his business carrier as a research engineer of networking technology (in particular layer 3-4 and around). Then he moved from research to standardization in 2004. In ITU-T, he contributed to the standardization of NGN, Future Networks, SDN and disaster communication as a Rapporteur and the chair of various activities. He then shifted his focus of standardization to AI. He is contributing to various standardization of AI, in particular to IEEE P7001 (transparency of autonomous systems) as the secretary (2017).



**Title of presentation:** Towards ethical AI: dialogue in standardization and its implementation

**Presentation Outline:** AI is emerging as a critical enabler of digital inclusion and innovation and is expected to improve our society and human rights. Since it is a very powerful tool, we also have to be careful that it is used for good. For example, human, not AI, must control the system and be accountable. Having this in mind NEC is participating and contributing the dialogue of AI governance and its realization, e.g., standardization of the AI ethics such as transparency and trustworthiness. With deep understandings of AI from these dialogue, and as a leader of global innovative ICT provider, NEC is committed to continue to solve social issues and contribute to SDGs by making AI ethics fully permeated into product and solution development as well as its corporate activities.

**Mr. Ayman OSMAN**, Corporate, External & Legal Affairs Director for Emerging Markets (Africa, Levant & Pakistan) in Middle East & Africa, Microsoft

**Mr. Abdoulaye SENE**, Professor, Institute of Environmental Sciences, Faculty of Science and Technology, University Cheikh Anta Diop of Dakar, Vice-President, World Commission on Ethics of Scientific Knowledge and Technology (Senegal)

Environmental sociologist, lecturer-researcher and consultant specialized in the domain of assessing corporate social responsibility with respect to environmental questions, Professor Sene holds a doctorate in Political Science and Literature and directs the research unit “Ethics, Governance, and Social and Environmental Responsibility” at the Institute of Environmental Science in the Faculty of Science of the Université Cheikh Anta Diop in Dakar. Professor Sene teaches at numerous universities and provides training in environmental and social assessment and corporate-social responsibility (CSR). Additionally, he is currently the President of the Management Board of the National Authority for Quality Assurance in Higher Education (ANAQ-Sup) and has been since 2012 a member of the World Commission on the Ethics of Scientific Knowledge and Technology, on which he serves as Vice-Chairperson. Professor Sene is the author of more than 20 scientific publications on environmental sociology and development.



**Title of presentation:** Artificial Intelligence and African Futures: For what humanism?

**Presentation Outline:** Professor Sene’s presentation will explore the various paths, risks, and dangers associated with the development of artificial intelligence systems in the African context from a sociological and environmental perspective. In posing questions about the nature of social, cultural, and political changes brought about by AI, Professor Sene will offer insight into such important subjects as transhumanism, global capitalism, historical Progress, and the disruption of ethical and religious value systems by the development of AI.

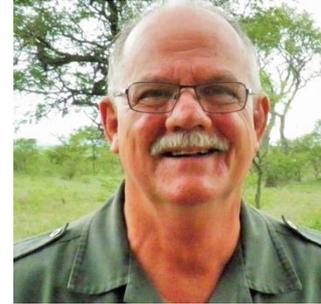
## UNESCO Parallel Thematic Sessions

### 1. “Artificial Intelligence: The Future of Monitoring World Heritage Sites and Biosphere Reserves in Africa?”

#### Panelists:

#### **M. Otch OTTO**, Consultant for the African Parks Sustainable Environmental Asset Protection, Law Enforcement, Safety and Security

Currently consultant for the African Parks Sustainable Environmental Asset Protection, Law Enforcement, Safety and Security (SEAPLESS), providing specialist support to all African Parks across the African continent. From 2013 to 2017, Director of Operations of Greater Kruger National Park (KNP) and Environmental Protection Technologies System Integration Officer for MALA (Movement, Access, Location and Air Space Control). CMORE (A Command, Control, Communication and Reporting Platform for collaboration, predictive analysis, and interdictive patrolling). Graduated in 1972, worked 15 years in the field, mostly as Team Leader, then at sea for 8 years as qualified Skipper, followed with appointment as Chief Ranger Security Services Kruger National Park for 5 years. Master’s Degree in 1996. From 2002 served 10 years as International Project Manager, mostly Africa and Central Asia in various Humanitarian and Security Programs, most of them for the United Nations.



**Title Presentation:** “ Technical Solutions for African SEAPLESS (Sustainable Environmental Asset Protection, Law Enforcement, Safety & Security)

**Presentation Outline:** Environmental Asset Protection in the field to counter poaching, requires accurate just in time information to capacitate mitigation actions and interventions. The presentation is factual and covers the route followed in the past 7 years of carnage in the field utilizing detection technologies (TechInt) to assist in the collection of quality data and information to obtain actionable intelligence to complement the one collected by human observations (HumInt) alone. The presentation will display what is available, deployed and producing results, to assist Rangers to save the Rhino, or the Elephant, to protect sensitive resources and areas from exploitation.

The presentation will focus on:

- What is required to know to take in time preventative action in the field
- Listed technologies that can collect what is required
- Finding the best platform for technologies to perform
- Establishing supporting networks to transmit technology collected data for rapid application
- Options created for information use with the resulting data mass (predictive analysis)

**Naruki MORIMURA, Ph.D.**, Program-Specific Associate Professor at Kyoto University and Vice-Director of the Kumamoto Sanctuary

Program-specific associate professor of Kyoto University, vice-director of the Kumamoto Sanctuary, a first chimpanzee sanctuary for retired laboratory chimpanzees in Japan. Morimura has been studying chimpanzees both in the laboratory and in the wild since 1998 with focusing on a bridging concept between animal welfare in captivity and conservation consideration in the wild. A systematic drone survey in Bossou-Nimba Mountains, Guinea, for chimpanzee conservation and in Misumi-Ariake Sound, Japan, for endangered finless porpoise protection are on-going projects in the field work.



**Title of presentation:** Drone study for chimpanzee conservation in Bossou and Nimba mountains, Guinea

**Presentation Outline:** Located west of the Nimba Mountains, near a village in Guinea, West Africa, the Bossou World Natural Heritage site and Biosphere Reserve (UNESCO/MAB), hosts chimpanzees well known to use a variety of different tools, studied in detail over the past 40 years. The number of chimpanzees in Bossou community was stable, counting 19 individuals on average from 1976 to 2003, but five chimpanzees died due to flu-like epidemic in November 2003 and only 7 individuals remain now. No female chimpanzees immigrated since the beginning of the field study. The Green Corridor Project, a tree plantation effort, started in 1997 as a 4 km long expanse across the savanna area separating Bossou from the Nimba Mountains. The project aims to promote individual interchange between the Bossou and Nimba groups as part of the conservation effort on wild chimpanzees' fragmented habitats. However, forest destruction by illegal cultivation and bush fire constitutes a serious obstacle for those efforts. Innovations in research technology can advance approaches on forest conservation. Unmanned aerial vehicles, or drones, can collect ecological data at unprecedented spatial and temporal scales across various topographic regions. Drone surveys in Bossou and Nimba succeeded to record the huge scale negative impact of bush fire onto Nimba landscape, based on the analysis of hundreds of aerial photos in the Green Corridor, leading to development of a plantation 3D model as an environmental education tool. The new technology provides both an evidence-based approach to monitoring, measuring, and promoting chimpanzee and forest protection in conflict with human living activity, and a new avenue for self-sustaining forest reserve management with educational infrastructure development.

## 2. **“Building capacity in AI in Africa: from fundamental research to application”**

**Mr. Antonello SCARDICCHIO, Ph.D.,**

Physicist working on complex systems and quantum computation. He earned his PhD in physics from the Massachusetts Institute of Technology (Cambridge, MA, USA) in 2006, and then joined the Princeton Center for Theoretical Sciences of Princeton University (Princeton, NJ, USA) as a Junior Fellow. In 2009 he was appointed as a researcher and faculty member at the Abdus Salam International Centre for Theoretical Physics (ICTP, Trieste, Italy), where he teaches and does research in complex systems, foundations of statistical mechanics and quantum technologies. In particular, Prof. Scardicchio's research has concentrated on the comparative performance of classical and quantum algorithms for performing complex tasks, and on the fundamental reasons for which quantum algorithms might succeed or fail to outperform the best classical algorithms.



**Title of presentation:** Artificial Intelligence (AI) Research and Education at the Abdus Salam International Center for Theoretical Physics

**Presentation Outline:** The AI activities that are taking place and that are planned for in the near future at the Abdus Salam International Center for Theoretical Physics (ICTP, Trieste, Italy) will be presented. ICTP is a UNESCO Category 1 institute in which world-class research, teaching and outreach are combined in a unique, international environment. Research, teaching activities, advanced schools and conferences take place both at ICTP and in developing countries, where ICTP works with associated research groups and local universities. In the field of AI, ICTP's research aims to advance and develop new physics-motivated algorithms, to apply AI algorithms to research, and to develop the technology of smart objects (internet of things). In the teaching and outreach categories, ICTP educates new generations of scientists on how AI algorithms work and how to develop, perfect, and apply them to pure and applied research problems.

**Dr. Tapiwa CHIWEWE, Manager at IBM Research**

Africa is a where he leads the advanced and applied artificial intelligence group that uses artificial intelligence to transform industries and tackle grand challenges in Africa by generating scientific output and creating innovative solutions. Dr Chiwewe has a PhD in Computer Engineering from the University of Pretoria and began his career in academia. He spent some time as a software developer at LUUK ICT developing fleet management, voice over IP and geographic information system products. He later worked as a computer engineer at Fifth Dimension Technologies (5DT) specializing in the development of virtual reality training simulators for the construction, mining and military industries. Afterwards he moved on to the Council for Scientific and Industrial Research (CSIR) in South Africa as a senior engineer in the mechatronics and micro manufacturing group and later on joined IBM Research.



**Title of presentation:** Africa Embracing the Age of AI

**Presentation Outline:** Artificial intelligence (AI) and advanced machine learning are rapidly growing fields that are enabling the creation of intelligent physical and software-

based systems that can understand, reason and learn. In the same way that the industrial revolution or the steam engine transformed economies, artificial intelligence is going to transform how we work and live on a historic scale. Africa is already embracing this age of AI and using this revolutionary technology to solve a wide range of practical problems, boost productivity and foster new discoveries across many industries. This talk will give examples of this from work done at IBM Research - Africa.

In the healthcare space, we are developing computational platforms for mining heterogeneous biological and medical data to change the way we prevent, diagnose, treat and manage disease. The research in this area is currently focused on two disease classes, Tuberculosis and cancer, where methods and models from fields such as natural language understanding, image understanding, and bioinformatics are applied. In terms of core AI, we are doing research that spans the areas of computer vision, natural language understanding, sequence modelling, semi-supervised learning, and **explainability**. Techniques such as generative adversarial networks, convolutional neural networks, recurrent neural networks and capsule networks are explored.

### Partners Parallel Thematic Sessions

#### **3. “Smart technology and its applications in cities, agriculture and industry”**

**Session Abstract:** Advances in network connectivity and technology have a great impact on the functions and activities of different sectors such as urbanization, agriculture and industry. Hence, technological smartness is key to turn a city to be more intelligent one; to turn agriculture into a more productive one based on artificial precision; and to turn manufacturing into a sector of application of artificial intelligence technology by the concepts of industry 4.0 in order to be embrace more efficient and qualitative industrial processes. This session aims, therefore, to present different cases of application of smart technologies in different areas, and to discuss how artificial intelligence, machine learning algorithms and data analysis, can contribute in the development of different countries.

**EI Khadir LAMRANI**, Senior data scientist, Mohammed VI Polytechnic University

Senior Data Scientist at Mohammed VI Polytechnic University, he is in charge of managing data science projects in agriculture, predictive maintenance and machine learning automation platform, with more than 6 years of experience behind in the construction and implementation of Artificial Intelligence and data science solutions in various domains and fields of activity. He has recently obtained his PhD in natural language processing, Artificial Intelligence and deep learning. His works involve the construction of automatic question answering systems using deep learning methods.



**Title of presentation:** Artificial intelligence in agriculture: tools to help farmers increase performance and rationalize the consumption of resources

**Presentation Outline:** In a technological context marked by the expansion of data in the world, which affects all areas and sectors: health, banking, finance, e-commerce, agriculture, industry, and many others, the technologies of Artificial Intelligence determine our ability to organize data, to make sense of it, to extract knowledge, to increase our ability to make decisions and control systems, and especially to derive value and meaning from this data. Agriculture as the driving force of the economy in Morocco and Africa is constantly facing great challenges to keep feeding humanity and suffice its increasing needs, while preserving the environment and its natural resources. Artificial Intelligence is a valuable contributor for that matter. At this stage, we are working on ambitious projects to help farmers improve yield, productivity and energy balance while reducing the use of chemical inputs through a better recommendation of crops and fertilizers, a better monitoring of yields, from soil data, plants, agricultural machinery, plots, weather, prices of different agricultural products, satellite images, etc. We present in what follows, how the use of AI technologies helps improve yields and thus the farmers quality of life while reducing pollution.

**Laurent DESHAYES, Fablab Manager, Mohammed VI Polytechnic University**

**Title of presentation:** The Industry of the Future, Industry 4.0, a major challenge for Moroccan economic development and the African continent

**Presentation Outline:** The industry of tomorrow is more and more digital and communicative. What are the technological and managerial challenges that Moroccan manufacturers must face right now to ensure their digital transition? This question is all the more difficult to solve since for each industrialist the connectivity between the components of their production and management system becomes an indispensable support. As a result, there is an exponential increase in the complexity of the systems developed to enter the era of Industry 4.0. This complexity is mainly related to the integration of the following pillars of Industry 4.0: a communicating industry, an agile and flexible industry, intelligent human-centered automation, Robotisation, the use of models, a production system energy efficient and raw materials, an innovative industry in production processes, and an industry where management models evolve. The development of an industry-oriented 4.0 system necessarily involves a complex system design and integration methodology, which, as a result, must become a generalized approach used by any industry 4.0 player. In this presentation a general overview of the industry of the future will be given and focused on the pillars presented above. Then will be presented the methodology used for the decomposition of systems in order to orient them industry 4.0. Finally, a discussion will begin on how to imagine a deployment of industry 4.0 in Morocco.

**Nadia BUFARDI**, Researcher at the Laboratory of Innovative Technologies, Abdelmalek Essaadi University

Ph.D. student at the National School of Applied Sciences of Tangier, her research focuses on the application of Artificial Intelligence in recommender systems. Nadia holds an engineering degree in software and computer systems, with 5 years of experience in computer analysis and development. She works in collaboration with a start-up on innovative Research & Development solutions based mainly on AI.



**Title of presentation:** “Transformation of new technologies into citizen-centric services: SmarTA Project (Smart Tangier Project)”

**Presentation Outline:** Technological innovation for the common good is the philosophy behind the concept of Smart City, which aims to transform cities with the goal of sustainable economic development, a high quality of life and rational management of natural resources. This goal is achieved through the integration of new technologies such AI with an active participation of citizens in the governance of the city. The "smart city" is therefore an asset with "smart citizenship" and its main objective is to make people more socially involved with better access to services. Tangier, as the second largest economic city of the country with a population of 1 million inhabitants in the 2017 census. This concentration of population leads irremediably to preserve and optimize the resources of the city and their organization. In order to support this societal, political and environmental issue, the concept of the smarTA project (Smart Tangier) has become crucial. The #SmarTA project aims to create a distributed infrastructure of sensors, transducers, and smart objects scattered throughout the region and connected to the Internet. This infrastructure will allow objects to interact and communicate with each other by gathering data and information to develop innovative services and make the entire ecosystem intelligent.

#### **4. AI for Good: Transforming Society with Microsoft AI**

**Session Abstract:** At Microsoft, we are optimistic about the opportunities that AI provides to create a better future for all. To ensure that we realize this future, it will be essential for governments, businesses, academics and civil society to work together in creating trustworthy AI systems and prepare people for a world where the skills they need to succeed will be constantly changing. This will require the development of AI in ways that are human-centered and can ensure broad and fair access to its benefits as we move forward together.

**Angela NG'ANG'A**, Corporate Affairs Director, MEA Emerging Markets

Leading the government relations and policy team across 78 countries, Angela Ng'ang'a's role involves being responsible for policy advocacy and driving alignment between government priorities and Microsoft's strategic goals in MEA Emerging Markets. Ng'ang'a's focus areas

concern information security, data protection, privacy and cyber security. She holds immense experience in regulatory and compliance matters across several industry verticals – including government, judiciary, telecoms, and financial services. Ng'ang'a is passionate not only about the wellbeing of the continent, but also of her East African heritage – having served in a number of national and county boards in her native Kenya including Brand Kenya Board, Machawood Board and the Public Relations Society of Kenya. A political science graduate, Ng'ang'a is a member of the Chartered Institute of Public Relations UK, the Public Relations Society of Kenya, the Kenya Private Sector Alliance (ICT) Sectoral Committee and the Northern Corridor Technology Alliance.

## 5. Creating Impact through A.I. Applications

**About R2 Social:** R2 Social Ltd. is a technology start-up incubator with the mission of empowering refugees. It was founded in 2018 by Ben Ng, a Vietnamese-born Chinese and former refugee. Ben left Vietnam as a “boat person” at 18, and subsequently spent months in a refugee camp before he was given refuge in Australia. This personal experience coupled with 18 years of success in the technology venture investment business has led him to form R2 Social. The current dilemma is that there are 68.5 million displaced people worldwide. They cannot use their ideas or talents to become assets to society without proper opportunities. R2 Social exists to ensure that talent should be nurtured, not wasted. Our vision is to see refugee talents recognized, maximized, and transformed into assets to their host countries. Our four main focuses are leading-edge digital technology, refugees, entrepreneurship, and emerging markets. We work with tech startups, whose products and services will create positive impact for the refugee community. We also provide coding and entrepreneurship trainings to empower refugees to contribute productively to the tech industry and society.

**Session Abstract:** AI is one of the leading-edge technologies of the century, at the center of Industry 4.0 (The Fourth Industrial Revolution). It has the potential to create great social and economic impact for the world. AI development in Africa, however, has been uneven. There are hesitations and concerns that AI will lead Africa to ‘premature deindustrialization’ as robots and AI systems replace people in the workforce, causing an increase in an already overwhelming unemployment rate. However, research from PricewaterhouseCoopers estimated that “artificial intelligence technologies could increase global GDP by \$15.7 trillion, a full 14%, by 2030 of which \$1.2 trillion would be added for Africa.”

As a technology-focused social enterprise preparing to launch in Kampala, Uganda, R2 Social believes that AI can create uncapped positive impact for Africa. It can decrease illiteracy rate, improve healthcare, and increase productivity. We have invited speakers to share their innovative AI technology and address how Africa can use it to achieve overall growth in some of the most crucial sectors: humanitarian, education, and healthcare. Joins us in this thematic session as we expand more on our stance in the first roundtable.

**Moderator: Annie Tay**, Managing Director, Cubic Risk Solutions

A collaborator, a world citizen, and a passionate individual in making a difference to people's lives, Annie Tay is committed to facilitating financial independence that changes mindsets and creates new possibilities. As a seasoned investment and insurance professional, she has been playing an active role in the facilitation of financial inclusion to alleviate poverty, protect against financial losses, and concretize innovative solutions to reality. Annie is a Board and Committee Member, C-suite officer and Director with over twenty years of institutional and board level experience in the insurance and start-ups space. She is also a Fellow member of the Institute of Actuaries Australia, and an alumna of the Wharton School of the University of Pennsylvania. Here at the 2018 UNESCO Forum on AI in Africa, she is acting as the consultant and moderator for R2 Social, a technology start-up incubator with the mission of empowering refugees.



**Title of intervention: The Role of AI in Education: Ensuring Education to Employability**

**Presentation Outline:** The technological innovation in the field of Education has ensured the reach of not just general, but quality education to all. The important problem of understanding each individual's needs and contextualizing different learning experiences has been solved by Artificial Intelligence. Its application has personalized the learning experience, and at the same time, solved important problems of handling slow and fast learners in one common classroom. Eckovation has successfully used AI technology to empower the weakest population of developing India, helping them to achieve great results in their learning process—such as an increase in over 30% pass rate. For its incredible impact in the field of education, the organization has received several national and International Innovation Awards. Eckovation's next step is to explore opportunities in the emerging African market, one that has many potentials and similarities to that of India. Its goal is to leverage AI to increase access to quality education everywhere

**Ms. Shirley DO**, Global Operations Director, R2 Social Ltd.

Shirley is deeply passionate about social impact and innovation. As a Bill & Melinda Gates Millennium Scholar and community leader, she strongly believes that each individual has a crucial role and responsibility in shaping society. Born in Vietnam, she immigrated to the U.S. with her family at the age of seven as a refugee due to her father having served in the Vietnam War alongside of American soldiers. Her personal experiences make her greatly compassionate towards the displaced population and encourage her to find solutions for the refugee crisis. Under the leadership of Ben Ng, she helped establish R2 Social Ltd., a tech start-up incubator in Kampala, Uganda with the mission of empowering refugees. She is based in Shanghai and serves as its Global Operations Director. She holds a B.A. from the University of North Carolina at Chapel-Hill with a dual major in International Studies and Asian Studies. She is fluent in English, Vietnamese, and Mandarin.



## Title of intervention: Leveraging AI for Growth

**Presentation Outline:** AI is one of the leading-edge technologies of the century, at the center of Industry 4.0 (The Fourth Industrial Revolution). It has the potential to create great social and economic impact for the world. AI development in Africa, however, has been uneven. There are hesitations and concerns that AI will lead Africa to 'premature deindustrialization' as robots and AI systems replace people in the workforce, causing an increase in an already overwhelming unemployment rate. However, research from PricewaterhouseCoopers estimated that "artificial intelligence technologies could increase global GDP by \$15.7 trillion, a full 14%, by 2030 of which \$1.2 trillion would be added for Africa and Oceania." As a technology-focused social enterprise preparing to launch in Kampala, Uganda, R2 Social believes that Africa can leverage AI for tremendous growth. The question then should not be if AI is beneficial to Africa, but is Africa ready to embrace AI and reap its benefits? If Africa is to be ready, workers need to be trained, and laws and reforms must be made across all sectors. Instead of fearing that AI might replace workers, Africa should embrace and leverage it to decrease illiteracy rate, improve healthcare, and increase productivity. AI can train low-level workers to complete more complex tasks. It can be used in web-based programs to provide wider-reaching education and healthcare to rural areas. As with all innovation and change, proper preparation must be made in order to achieve the right results.

### **Christopher MIKKELSEN, Founder & Co-CEO, REFUNITE**

Christopher is Founder and Co-CEO of REFUNITE, a tech-driven family tracing agency helping refugees reconnect with their missing family. Helping more than 1.1M people with their search, and connecting hundreds of families a month, REFUNITE runs the largest platform of its kind. Working with 20+ mobile operators and tech companies, REFUNITE is operational in 22 countries and functions as a hybrid between the world of technology, business and non-profit. REFUNITE has extended its mobile family tracing platform with a portal that enables refugee women to work with labeling images for AI companies. Working 3-4 hours a day, tagging simple objects in images to optimize algorithmic accuracy, refugee women can earn \$2-\$4, while at the same time learning how to access the 21st century online job market. Addressing a multi-billion-dollar market, REFUNITE's next step is moving from decentralizing family tracing to decentralizing the access to the digital economy and enabling further autonomy.

### **Ritesh SINGH, CEO, Eckovation**

Ritesh hails from a small town in Bihar, India and came to Delhi after getting selected in the IIT-JEE entrance in 2008. After graduating from IIT Delhi, one of the best universities of India, he joined Bosch R&D as a Senior Engineer and earned two patents in the process. He then moved on to join Bosch's business development facility. During college, he also started a non-profit organization, SARAS to help the masses get access to education technology developed by universities in India and abroad. The time spent working with SARAS led him to join Avanti, a non-profit organization that provides low-income high-school students a world-class science and mathematics education. In 2014, together with his classmate and friend from IIT-Delhi, Akshat Goel, Ritesh co-founded Eckovation—an award-winning social learning and online courses platform. He is now CEO of Eckovation and manages its overarching strategy.



**Title of presentation:** Role of AI in Education: Ensuring Education to Employability

**Presentation Outline:** The technological innovation in the field of Education has ensured the reach of not just general, but quality education to all. The important problem of understanding each individual's needs and contextualizing different learning experiences has been solved by Artificial Intelligence. Its application has personalized the learning experience, and at the same time, solved important problems of handling slow and fast learners in one common classroom.

Eckovation has successfully used AI technology to empower the weakest population of developing India, helping them to achieve great results in their learning process—such as an increase in over 30% pass rate. For its incredible impact in the field of education, the organization has received several national and International Innovation Awards. Eckovation's next step is to explore opportunities in the emerging African market, one that has many potentials and similarities to that of India. Its goal is to leverage AI to increase access to quality education everywhere.

## **Plenary session 6 “UNESCO and AI in Africa: what vision, what strategies?”**

**Moderator:**

**Mr. Firmin Edouard MATOKO**, Assistant Director-General for Priority Africa and External Relations, UNESCO

**Panelists:**

**Ms. Golda EL-KHOURY**, Director, Rabat Office, UNESCO

**Mr. Hervé HUOT-MARCHAND**, Head of the Bamako Office, UNESCO

Hervé Huot-Marchand is the current Head of Office and UNESCO Representative in Mali since the end of 2016. He has over 17 years of international experience in the field of education and training, with various positions exercised at many levels of responsibility, mainly in Sub-Saharan Africa for both bilateral and multilateral partners. Mr. Huot-Marchand holds two Masters, one in the field of Engineering Sciences (1994), the other in Education Sciences (1998).



**Ms. Ann Therese NDONG-JATTA**, Director for Multi-Sectoral Office for East Africa (Kenya) and UNESCO Representative to Comoros, Djibouti, Ethiopia, Eritrea, Kenya, Madagascar, Mauritius, Rwanda, Seychelles, Tanzania, Somalia, South Sudan and Uganda

Ms. Ndong-Jatta joined UNESCO in September 2004 as Director of the Division of Basic Education in the Education Sector at Headquarters where she was responsible for policy development, research and convening of experts on basic education related issues, literacy and early childhood development. In July 2008, Ms. Ndong-Jatta was appointed with promotion to the post of Director of the UNESCO Regional Bureau for Education in Africa (BREDA) (Dakar Senegal), which in November 2013 was transformed to the UNESCO Multi-sectoral Regional Office for West Africa (Sahel) within the context of the reform of the field network in Africa, and UNESCO Representative to Senegal, Burkina Faso, Cape Verde, Gambia, Guinea Bissau and Niger.



**Mr. Khaled SALAH**, Director, Multi-sectoral Regional Office for Central Africa, UNESCO

**Ms. Ana Elisa SANTANA AFONSO**, Director, Liaison Office with the African Union and with the United Nations Economic Commission for Africa and National Office for Ethiopia, UNESCO

**Mr. Ydo Yao**, Director, Multi-sectoral Regional Office for West Africa, UNESCO



## Closing Ceremony

Moderator: **Mr. Serge KOFFI**, Journalist, AfricaNews

Presentation of the Forum Report/Proceedings

**Mr. Hicham EL HABTI**, Secretary General, Mohammed VI Polytechnic University

**H. E. Mr. Oumar KEITA**, Chairperson of the African Group, Ambassador, Permanent Delegate of the Republic of Mali to UNESCO

**Mr. Firmin Edouard MATOKO**, Assistant Director-General for Priority Africa and External Relations, UNESCO