AI for Good Global Summit REPORT

Track 1: AI & Smart Cities and Smart Communities
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The Smart Cities and Smart Communities track presented the opportunities and challenges brought to light by the rise of smarter, if not smart, cities. After framing the state of play, as well as examples of state-of-art, panelists discussed AI applications for urban areas, AI solutions for fostering (smart) governments and how AI can help to empower smart citizens.
Today, half the world’s population lives in urban areas. Projections show that this proportion is expected to reach more than two-thirds in 2050. In total, the shift from rural to urban areas combined with the world’s population growth represents no less than 2.5 billion additional people to live in cities by 2050. In view of this, it is crucial to understand the trends of these demographic changes in order to implement the United Nations’ 2030 Agenda for Sustainable Development. Indeed, as the world continues to get more urbanized, managing the growth of cities fairly and successfully will be essential for fulfilling United Nations’ SDGs. Classical encountered areas of concern include housing, transportation, energy systems or even education and healthcare. Smart cities can offer an incredible amount of efficient and fair solutions to these problems that both public and private sectors must address together, while taking into account cities’ individual identities.
What is a Smart City?
Does such a thing really exist?

Smart Cities are urban areas in which information and communication technologies, taking advantage of the potential offered by massive amount of data, enhance cities’ global infrastructure and existing services for citizens’ welfare and government action efficiency. ITU and UNECE have developed a definition for ‘smart’ sustainable cities:

A smart sustainable city is an innovative city that uses information and communication technologies (ICTs) and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social, environmental as well as cultural aspects” [the ITU/UNECE United 4 Smart Sustainable Cities initiative].
As such, a Smart City where everything would be connected and interacting does not exist, at least not yet. The main interest of such a term lies in the fact that it expresses well the enhancement dynamic taking place in cities thanks to the rise of ICTs. As cities’ infrastructure and services are improving and getting more efficient, they benefit from science development, they get ‘smarter’, so does the city in its entirety. The Smart City revolution is paired with the Internet of Things phenomenon, since every city component can potentially become connected and smarter. From traffic congestion systems to (sustainable) energy supply, broadband network, safety devices, automatic translation apps or even environment friendliness, each and every area of daily life is concerned. The potential of all these areas can be maximized by AI which is a key enabler of Smart Cities’ solutions.
Framing the State of Art in Smart Cities & Communities
In his introductory remarks, he talked about of AI/Machine learning for strengthening communication for future smart cities, and described the work of Tokyo University. One of its initiatives aims at working closely with the industry partners on the SDGs (170 SDGs projects). Prof. Nakao emphasized that phone infrastructure is crucial, as we all need phones. 5G can provide 10 Gb/sec, while enhanced broadband networks can even allow 4k/8K real-time surveillance video using 5G cellular. In smart cities, video surveillance is very important and can even be achieved via drones (he showed recorded high-resolution video showing Tokyo University, but not in real-time).
Another aspect concerns the key performance indicators (KPI) of 5G mobile (see graphic). In one millisecond, data can be transferred to video (rs: don’t understand what that means). Object and people recognition can be implemented using deep neural networks (e.g. a video with coloured squares surrounding people and objects and moving with them). 5G technology could be very useful for security purposes and vocal recognition, or application-based Internet traffic classifications.

Prof. Nakao also showed a statistic which says that 50% of citizens in 2019 could benefit from smart city programs by voluntarily sharing their data. Of course, different challenges persist (such as for instance the need of a flexible communication infrastructure, of in-network machine learning, of edge computing for data analytics, of sensing/inference without privacy violation and of viable use cases for smart(er) cities). Tokyo University has started a group to see how best to use AI and ML in telecommunication infrastructure.

Brian Markwalter, Senior VP, Consumer Trade Association (CTA), presented his “Thoughts on AI and smart cities”. He described the CTA and how IoT is related to AI and smart cities. IoT will be a key...
part of making cities smart. There are various challenges and opportunities, including the growing number of IoT devices worldwide (e.g. HIS Markit study: 75.4 billion in 2025), as well a growing global urban population (66% of population in urban areas in 2050). Digital assistants, voice interfaces, and smart speakers are becoming very popular, especially in the US. People are experiencing technology making their life better, and he thinks people should expect the same from their city. He cited a McKinsey study suggesting 26 billion USD will be spent by tech giants on AI shortly. He emphasized barriers to smart cities growth about people (privacy and cost) and business/governments (ROI and jurisdiction). Barriers to AI growth may include trust, regulations and technological limitations.

Chaesub Lee, Director of ITU-T, described how ITU started to study distributed & tailored AI/ML for smart cities in 2008. A specific Study Group was created on IoT and smart cities & communities (ITU-T SG20). As a sign of ITU’s growing expertise in the area of Smart Cities, ITU is promoting the implementation of Key Performance Indicators (KPIs) to reach the SDGs (e.g. the case of Singapore where 87% of the KPIs were verified). Over 50 cities worldwide are already implementing these KPIs. We can make cities smarter by various means: collaborative knowledge (operations); compatibility (service/app); integrity (platforms); interoperability (data); and interconnected infrastructure.
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These last three factors ("in-") are about quality of convenience while the first four are about quality of smartness, and all five are about being smart.

Today, we tend to approach ICTs vertically, and a more concentrated perspective (per domain) could be more efficient. Cities are constructed entities, they are not created equal, cities change and are all different. It is important to take account of city priorities first when talking about smart cities and AI. There is a difference between centralized AI vs. distributed AI as well as between generalized AI vs. tailored AI. Dr Lee also invited participants to join the current work that ITU-T SG20 is carrying out on Artificial Intelligence in cities and the work of the United for Smart Sustainable Cities (U4SSC) initiative on “City science application framework”, “Guiding principles for artificial intelligence in cities”, and “The impact of Sensing technologies and IoT in cities”, among others. He mentioned that the U4SSC is a UN initiative coordinated by ITU and UNECE and supported by 14 other UN agencies and programmes. Andrejs Vasiļjevs, Co-Founder and Chairman at Tilde, described the language challenges of multilingual cities. Every city is different, there is huge language diversity nowadays, and cities are increasingly multilingual. Some cities are historically multilingual, while others aren’t. In the world, the 15 largest languages cover 50% of the planet – but what about the rest? We have to embrace multilingualism, to be inclusive with these languages, to enable them, which is precisely the mission of company Tilde. Neural Machine Translation (MT) systems have a big potential. AI can be a tool for these translation systems to the benefit of governments. One example of that is HUGO, an MT service for the Latvian public sector. Another example of translation necessity is in the EU (“EU presidency translator” – for website, documents, and other automatic kind of translations). Government AI applications have great potential, e.g. virtual assistant (UNA in Latvia – to help business to register and for other different kind of administrative acts). He advocated for multilingually inclusive AI.
Why are Key Performance Indicators (KPIs) so important for Smart (Sustainable) Cities?

Since Smart Cities are all about cities’ (sustainable) development thanks to innovation and information and communication technologies, it has become clear very soon that a reference system was necessary to assess cities performance and progress in becoming “smarter”. Better management comes together with better measurement. For that reason, the United for Smart Sustainable Cities (U4SSC) initiative has developed a “set of international key performance indicators (KPIs) for Smart Sustainable Cities (SSC), which are based on an international standard - Recommendation ITU-T Y.4903/L.1603 on “Key performance indicators for smart sustainable cities to assess the achievement of sustainable development goals”, to establish the criteria to evaluate ICT’s contributions in making cities smarter and more sustainable, and to provide cities with the means for self-assessments to achieve the sustainable development goals (SDGs).” This KPI set accompanies ITU's standards on the same subject (notably, ITU-T L.1600/Y.4900, L.1601/Y4901 and L.1602/Y.4902.
On day 3 of the Summit, H.E. Dr. Ahmed Al Theneyan, Deputy Minister for Technology Industry and Digital Capacities, MCIT of Saudi Arabia, described Saudi Arabia’s work to facilitate AI and the future smart city NEOM on the Red Sea. The government is playing an active role – ways for AI to adapt well, and to have the best use of AI. The government provide the funds (not specified) - it is providing 3 billion USD to build smart infrastructure, to be pioneering and leading in AI. Saudi Arabia is investing heavily in building innovation centers to explore development solutions to improve the health of its citizens. It has committed to train 20,000 young people, and has already trained 7,000 to prepare our young generations for future market needs, including women, and is aiming to double the participation of women in its ICT sector. The government would like to make Saudi Arabia more attractive to start-ups and develop programmes for entrepreneurship.
Discussions focused on the need for collaboration and reliable international standards, as well as interoperability and compatibility. Of course ITU is open to creating an interoperable space. Without sharing data, many applications become impossible. So we need to be aware of the quantities of data being shared, which we may not know, as the technical specifications of products are difficult to understand. At the same time, users should have more choice/information on to whom data go to and what they are used for. Privacy and consumer protection are crucial, it is vital that people understand what is being done with their data - consumers may have problems when data are used for other purposes or for purposes they didn’t understand originally.
AI for Urban Solutions

Boyd Cohen, Deputy Director of Research at EADA Business School, moderated this Session.
She presented two cases studies on human intelligence along with AI. How can people seeing issues in a city sit together to do something in real-time? There are three entities that can do something - the population, the cities and the service providers. Changify is a tailor-made fast easy citizen engagement. She described two case studies - the first is about smarter streets to make streets safer. Changify created an interface/app allowing people to take pictures of issues on the street that needed to be addressed, the app also detected some other factors by itself. The second study was smart security, following the same process as the first, but for reporting accidents.
Eyal Santo, CEO of Urban Mobility, described “AI for urban sustainability”. Companies can pay to use bike or cities paying to use vehicles more sustainably. UMO’s AI app enables cities to have better regulation/rules for car mobility. They map urban city strategy mismatches and use AI to gain insights and generate recommendations to optimize and resolve mismatches.

UMO can collect a lot of data, measure and analyze it to create an AI-based solution dashboard where different solutions are presented. They can also analyze the damage created by car (pollution, social inclusiveness, road, etc.), per day or year and calculate how much a city can gain per car removed (helping achieve the SDGs).
Boyd Cohen, Deputy Director of Research at EADA Business School, presented “IoMob: the Blockchain-powered Internet of Mobility”.

There are persistent problems in the sector: extractive VC-backed mobility monopolies, a lot of start-ups struggling for market share, and smart cities striving to increase efficiency of mobility services. Solutions could include open protocols & tech, strong business development and crypto-economic design. Their project IoMob could help here. Convergence is happening between blockchain and AI. Blockchain is an interesting tool for AI. Interesting examples of AI & ML with IoMob include: routing, resilience; demand prediction, fleet management; cryptoeconomic incentives; and autonomous vehicles. He proposed a blockchain cities alliance.
Kriti Sharma, VP of AI at Sage, shared two stories. In India, as a child, she was not allowed to walk alone in the street which was disturbing for a child.

Later, interested by computers, she bought a robot, a machine with the power to make autonomous decisions, which was very inspiring for her. Then, she figured out safety was a problem for every woman in the world. She has a positive vision of AI/technology, which could help solving some problems of the world. However, she figured out that in the tech field there was a lack of emotional ethical leadership, it all comes down to ethics. We need to build AI and machine ethically, which is the mission of the Sage Foundation.
Stephen Kelly, CEO of Sage, described Sage’s work. Ethics is crucial - we have to tackle AI correctly, without creating injustice to achieve the SDGs. For instance, in South Africa, domestic violence is unfortunately part of the culture (with one of the highest rates in the world). Meanwhile, many rapes are not reported and women who have been sexually aggressed don’t dare report it because they may feel ashamed or don’t want to be exposed. Could there be a solution here, such as a platform to support these women? The Rainbow AI companion was cited as a voice/AI to whom women could talk, for instance about abuse in relationships. Women might maybe feel more comfortable to speak with AI, which may judge them less. Potential apps for woman abuse must record some data - for example, for evidence gathering, but otherwise it does not record data. What can be done about big companies such as Uber killing the economy? And how can youth best be involved to enable them to play their part in building part cities?
H.E Mr Omar Bin Sultan Al Olama, Minister of State for AI of the United Arab Emirates (UAE) opened the Panel, “Projects in Action: Towards an AI and Data Commons” on day 3. In his view, the Industrial Revolution was not a race between countries, but a race against time, given climate change - economic development was achieved, but at a cost to the environment. Today, some countries are trying to take steps on their own with projects, but the real race is on to create more sustainable projects. H.E. Al Olama believes AI has a lot of potential to combat climate change and global inequality. UAE is hosting the Global AI Governance Forum to help move AI forward positively. Governments have to ensure technology progresses, without affecting people negatively. UAE expressed its support for projects leveraging AI technologies. When it comes to examples of leading smart cities, there is no doubt that Dubai can be considered as one of the more advanced smart cities. With many projects for “Smart Economy, Smart Living, Smart Governance, Smart Environment, Smart People and Smart Mobility”, Dubai has won numerous awards in the course over recent years.
Carla Dualib, Secretary of Communication and Press, Diademe City Hall, Brazil, noted that Diademe is very densely populated – Brazil’s second-most densely populated city – and small: 31km². They want to take full advantage of AI for people, and not only via smart cities but also for smart citizens. Efficiency and good policies are important here. City authorities are worried about their citizens’ quality of life. She described the “DOE Diademe Open Evolution” programme, which is an online lab for “sharing and performing”, as well as the project “Casa Beth Lobo”, a house offering protections for women suffering from violence. This project has generated very informative data and information: the project formulators know who did what, when and where. They would like to use these data to predict potential violence before it happens. AI could be very useful in this, especially working in partnership.
Smart City: Amsterdam (Netherlands)

Frans-Anton Vermast, Amsterdam Smart City Ambassador, moderated this Session. He described his association, Amsterdam Smart City, which involves the private sector. We need to go further than Public Private Partnerships and enhance the trust of users. Social inclusion is crucial. Tailored data is fundamental. People should have more rights over their data, the city doesn’t own their data, citizens should own it. Amsterdam has created a data lab and competition for app developers and is opening up algorithms in order to improve the city, including to youth. As a city, they can decide which algorithm they want to use, but sometimes algorithms are unfair, so one has to pay attention to fairness. Amsterdam’s Smart City Festival will run on 20-24 June 2018.
Buying new technologies is not always the first priority in small/poor cities. Even with technologies, it is difficult to get politicians to vote for long-term projects. Sometimes there is a lack of financing (e.g. in one city, there are nine cameras for 4,000 inhabitants). But with financing and good Public Private Partnership (PPP), we can improve the situation provided we tackle the issue correctly, using AI (example using AI for catching potential fight in prisons).

The discussions that followed focused on recommendations for the UN in terms of smart cities initiatives, and best practices for data management and data ownership. There is a project in New York where people can share data for renovation works. How can we regulate new technologies, without blocking innovation? We have to “differentiate data” to let companies know the identity/details of the shared data. It is important to make algorithms
open so everyone can see how decisions are made (as they try to do in Amsterdam). With regard to the security of codes and apps, we must have security first and foremost (especially for public apps), and not try to bolt security on as an add-on afterwards. We have to adapt regulations/PPP to the context – e.g. it may be difficult to apply the lessons and PPPs of New York everywhere. It is important to have inclusive regulatory processes in order to learn from each other and from others’ experiences. Discussions also addressed the role of governments in the digital age – will Governments be reduced to a facilitator’s role? The role of government should be bringing people together as they are representatives of the people - Governments must listen, yet take leadership to facilitate. It is necessary to have open platforms and open innovations.
AI Empowering Smart Citizens
Professor Joaquin Rodriguez Alvarez of EPSI-UAB presented «Towards an ethical understanding of data management and meaningful human control».

One has to be cautious as some AI has great potential, but this potential has to be managed well (to avoid fear of misuse, constant watching, etc.). Data management is another real problem. If we look at history, data has sometimes been used for very bad purposes (e.g. information from registries during the holocaust or in Rwanda during the genocide). We have to be very careful and set good legal frameworks. We cannot always trust the private sector nor public administration because information misuse is very dangerous. We need to do in relation to break the “filter bubble”, which is a big responsibility. Empowering communities can give access to information, to critical thinking tools, to creativity. It is important to retain meaningful human control over what is happening. We have to understand technology within its context, technology is not neutral. Do we really want AI to reproduce our own behaviour, which is hardly always the best behaviour? Also, for questions of human dignity, one cannot let a machine decide/take certain decisions (e.g. about grant allowances). For instance, Facebook has implemented human reviews of some ad-targeting options after first computer decisions.
Jacques Ludik, Founder & CEO, Cortex Logic; Founder & President, Machine Intelligence Institute of Africa, presented “Health, Water, Smart Education & Smart Technology Services for African Smart Cities”. For him, promoting technology innovations is crucial for shaping a better future, focusing on Africa. He called for the international community to come together in order to do better. He described the work of the Machine Intelligence Institute of Africa (MIIA) as a community accelerator for machine intelligence & data science & research and applications to help transform Africa. He described the Zindi value proposition and Zindi ecosystems, healthcare data & analytics ecosystem for Africa. Water data and water analytics are becoming crucial issues. He showed a complex map with a generic water control area. Smart technology is empowering an education-entrepreneurship ecosystem. We need tailored public services to increase resource efficiency. Amsterdam Smart Citizens Lab’s manifesto on smart citizens defines what a smart citizen should be. He described urban feeds dataflow and smart citizen considerations. He distinguished between the old way of seeing cities (top-down decision-making with a linear approach, reducing complexity, minimizing uncertainty and stifling innovation) and the new way (bottom-up decision-making with a non-linear approach, encouraging complexity, embracing uncertainty and enabling creativity).
Alexandre Cadain, Co-Founder & CEO at ANIMA and XPRIZE Ambassador, summarized the Session.

Smart city applications have been used to make car rentals more efficient, calculate fuel consumption and raise awareness. Pittsburgh created a roadmap for innovation/smart city, including privacy considerations and open data. Empowering homeless people so they can become active citizens will help make smart cities even smarter. Data collection and AI can be very useful for connecting unemployed people with companies proposing jobs. The most sensitive data are often personal data (relating to religion, ideology, etc.), but they must be protected.
Mayor Bill Peduto intervened on Day 3 of the Summit, on the theme “Opening the Beneficial AI Era (AI in every city)”. Having led the global steel industry for many years, as of 1979 the city of Pittsburgh suffered a significant economic crisis. However, over time, Pittsburgh was reborn, notably thanks to the diversification of its economy to become a leading smart city in science and technology. Pillars of this renaissance consisted simply in learning from mistakes, attracting talent, forging partnerships and protecting workers. Now, Pittsburgh is at the forefront in terms of innovation in predictive analysis, medicine, AI, robotics, autonomy of everything. Smart PGH is the city’s innovation center with a number of future smart programs.