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Big Data, Artificial Intelligence, and the sustainable development of cities... in the (post) COVID-19 era

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Smart cities for ageing societies

– multidisciplinary seminar

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The concept of smart city:

- Today most people live in urban areas
- Main challenge: sustainable development of cities
- Urban governance and policy decisions are influenced by technological revolution and emergence of Big Data, Internet of Things (IoT), machine learning (ML) and Artificial Intelligence (AI)
- Collection and processing of massive amounts of data collected in real-time, applications of predictive models
- Smart city concept – incorporating ICT and AI (“new electricity”) into day-to-day activities of people living in cities to to create **better living and working conditions**

Modern cities

| Problems | Solutions | Problems of technology |
|------------------------------------|--------------------------|-------------------------------|
| urban sprawl | smart traffic management | technology as a goal itself |
| environmental pollution | smart parking | focus on huge, new projects |
| urban logistics | smart lighting | uneven application of ICT |
| technical infrastructure | smart policing | lack of technical literacy |
| waste management | smart waste management | costs of tools |
| ageing population | smart health care | privacy concerns |
| stratification of wealth levels | smart governance | algorithmic bias |
| areas of poverty | smart... | machine ethics |
| low level of citizen participation | ... | “bad” artificial intelligence |
| ... | | ... |

Most cities have only begun striving towards “being smart”, although this process has sped up because of COVID-19 pandemics.

Smart city and the elderly:

- **Digital divide** - inequalities in the access to, and usage of, digital technologies, in benefits from digital technologies, in knowledge and in power
- Problems with low-skilled, the elderly and poor regions
- Danger of exclusion, discrimination and stigmatization
- Smart cities can solve many problems of the ageing world but the elderly must be able to understand it and obtain assistance when necessary
- Solution:
 - Education, institutions, regulations,
 - No revolutions, gradual development, fitted to local problems and possibilities -> does it mean that they will be left behind?

The impact of COVID-19 outbreak on smart city solutions:

- Acceleration of the digital transformation strategies (Industry 4.0)
- Acceleration of the development of remote city services and medical consultations during the lockdown
- Greater automation of human labor – e.g. automatic cash registers in stores, autonomous delivery
- Innovative AI-based solutions:
 - remote temperature sensing with thermal cameras
 - automated recognition of wearing face masks
 - disease tracking using data on geolocation
 - using drones for spraying disinfectants
 - using drones/robots for enforcement of social distancing rules
 - real-time heatmaps of crowding in public spaces
 - smart audio screening system to strengthen epidemic control and prevention

Most important challenges:

- **Massive amounts of sensitive data** – maintaining **privacy** and protecting the system against **cyber risk**
- **Algorithmic bias** - quality and security of collecting and processing large amounts of data, understanding how algorithms work
- **Reliability** and **scalability** of **IT infrastructure** – e.g. massive remote education (and remote work) increases web traffic
- Internet **connectivity** to keep citizens informed in real time
- **Inclusiveness** – to be successful, the smart city system must include all inhabitants – digital divide, social equity problems for lower income families or families with more children
- **Ethical problems** – need to know, access to data, digital divide, blurring of boundaries
- **Costs** – development of common standards, compatibility between different technologies and systems might help to solve this issue

Conclusions:

- smart city solutions must **meet real needs** of residents
- should adequately care for the **public health dimension**
- need to be **safe, reliable, scalable, inclusive** and **transparent**
- **trust** of the users is the **crucial element of success** of smart city solutions
- need for **active collaboration** between city planners, tech firms and citizens
- need for **collaboration** between cities, regional and national governments, and international organizations