

# Unit 1: Introduction to Smart City 3.0

## 1.1. Smart area concepts (general smart city knowledge) - The concept, development and history of smart cities

### Duration:

### Teaching topic:

- Short history of smart cities
- Definition of smart cities
- Smart city features
- Dimension of smart cities

### Learning Aims:

- To understand the smart cities' history
- To understand the aspects of smart cities
- To understand the importance of smart cities

Duration: 45 minutes

### 1. **Smart area concepts (general smart city knowledge) – The concept, development and history of smart cities**

Today's urban development is increasingly driven by technology and its development. For example, there is a focus on more efficient operation, more economical management and improved quality of life. However, new technological tools and the increasing data availability do not provide solutions to urban development and maintenance issues on their own. To understand the smart city as an important new operating model, it is important to start from the basics.

At the beginning of the 21st century, the number of people living in cities was more than 50% of the total human population. This number is expected to increase to 70–75% by the end of the century. More and more people are living in cities in the developed world, especially in Europe. For example, 73% of people in the European Union live in cities. And this trend shows the importance of cities and the responsibility that goes with them. The attraction of accelerating urbanisation also has significant ecological impacts.

### **The burden of the environment of large cities:**

- air-, noise and light pollution,
- solid waste and waste water,
- dry and hot local climatic effects in the built environment

Often, the ecological footprint and resource requirements of large cities are even greater than their countries'.

**It is essential to be able to measure and optimise the functioning of cities and the built environment, since cities are key actors in economic globalisation. Globalisation can also have a strong positive impact on the**

**strengthening of local resources, and alongside the knowledge economy and services, innovation is the basis for global competitiveness.**

One of the main instruments of globalisation has been the explosive development of internet and mobile data technologies since the 1990s. This technological revolution is increasingly reshaping our everyday environment.

The concept of the smart city was first announced in the mid-1990s, when creative city strategies and new, more sustainable solutions were playing an increasingly important role. ***The aim of the smart city were sustainable growth, better governance and communication.***

***In other words, the goal is a logical city.*** An environment where commerce, transport and urban governance are in harmony and form a system.

There is no universally accepted definition of a smart city. The three most common are digital city, intelligent city and smart city. All three terms are related to sustainable urban development and ICT industries.

### **Smart city features:**

1. Use of technology is a daily process.
2. The services provided by the city are interconnected.
3. Efficient use of resources and energy efficiency is in focus.
4. Data is collected and processed continuously, so it can solve problems in real time.
5. Smart city management builds on residents' comments and involves them.
6. Thanks to the flow of data and information, financial resources can be managed more efficiently, allowing cities to save more money.

### **So, in short, what are the main aspects of a "Smart City"?**

- Sustainable development of the natural and built environment
- Developing digital infrastructure
- Improving the quality of municipal services
- Involving citizens
- Economic efficiency

### **The smart city concept has six main dimensions:**

- **smart economy:** energy efficiency; innovation, economic impact and return on investment; circular economy
- **smart transport/mobility:** intelligent traffic and transport systems, intelligent parking solutions, traffic management, mobility as a service
- **smart environment:** water and waste management, monitoring of environmental indicators, sustainable processes and urbanisation, hybrid approaches to manufacturing
- **smart people (uman resources):** citizens, workers and visitors working together; e-health; e-learning.
- **smart living conditions:** smart spaces, advanced materials, public safety and urban resilience
- **smart governance:** digital automation of processes, public data, citizen participation

The smart grid includes energy generation, distribution and ICT devices. The Internet of Things, another critical element of the smart city, is a set of electronic and photonic devices that can communicate with each other without human intervention.

## References:

- <http://okosvaros.lechnerkozpont.hu/hu>
- <https://www.mdpi.com/1424-8220/21/10/3349>
- [https://www.eca.europa.eu/ECAPublications/SR-2023-24/SR-2023-24\\_HU.pdf](https://www.eca.europa.eu/ECAPublications/SR-2023-24/SR-2023-24_HU.pdf)
- [https://www.researchgate.net/publication/335239465\\_Smart\\_Cities\\_Definitions\\_Evolution\\_of\\_the\\_Concept\\_and\\_Examples\\_of\\_Initiatives?enrichId=rgreq-2e042cbc2cd5f5c20b24c57a97b7ca48-XXX&enrichSource=Y292ZXJQYWdIOzMzNTIzOTQ2NTtBUzo4NTMzOTg0NDIyMjU2NjRAMTU4MDQ3NzQ1MjkzNg%3D%3D&el=1\\_x\\_3&esc=publicationCoverPdf](https://www.researchgate.net/publication/335239465_Smart_Cities_Definitions_Evolution_of_the_Concept_and_Examples_of_Initiatives?enrichId=rgreq-2e042cbc2cd5f5c20b24c57a97b7ca48-XXX&enrichSource=Y292ZXJQYWdIOzMzNTIzOTQ2NTtBUzo4NTMzOTg0NDIyMjU2NjRAMTU4MDQ3NzQ1MjkzNg%3D%3D&el=1_x_3&esc=publicationCoverPdf)
- [https://gll.urk.edu.pl/zasoby/74/GLL-4-5\\_2022.pdf](https://gll.urk.edu.pl/zasoby/74/GLL-4-5_2022.pdf)

Smart life Smart energetics Smart urban environment Smart info commun. Smart urban management Smart transport Smart Cities