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SEARCH

SPORT EDUCATION FOR ACTIVE AND RESPONSIBLE CITIZENSHIP THROUGH HEALTH CARING

ECO-FRIENDLY TRANSPORT
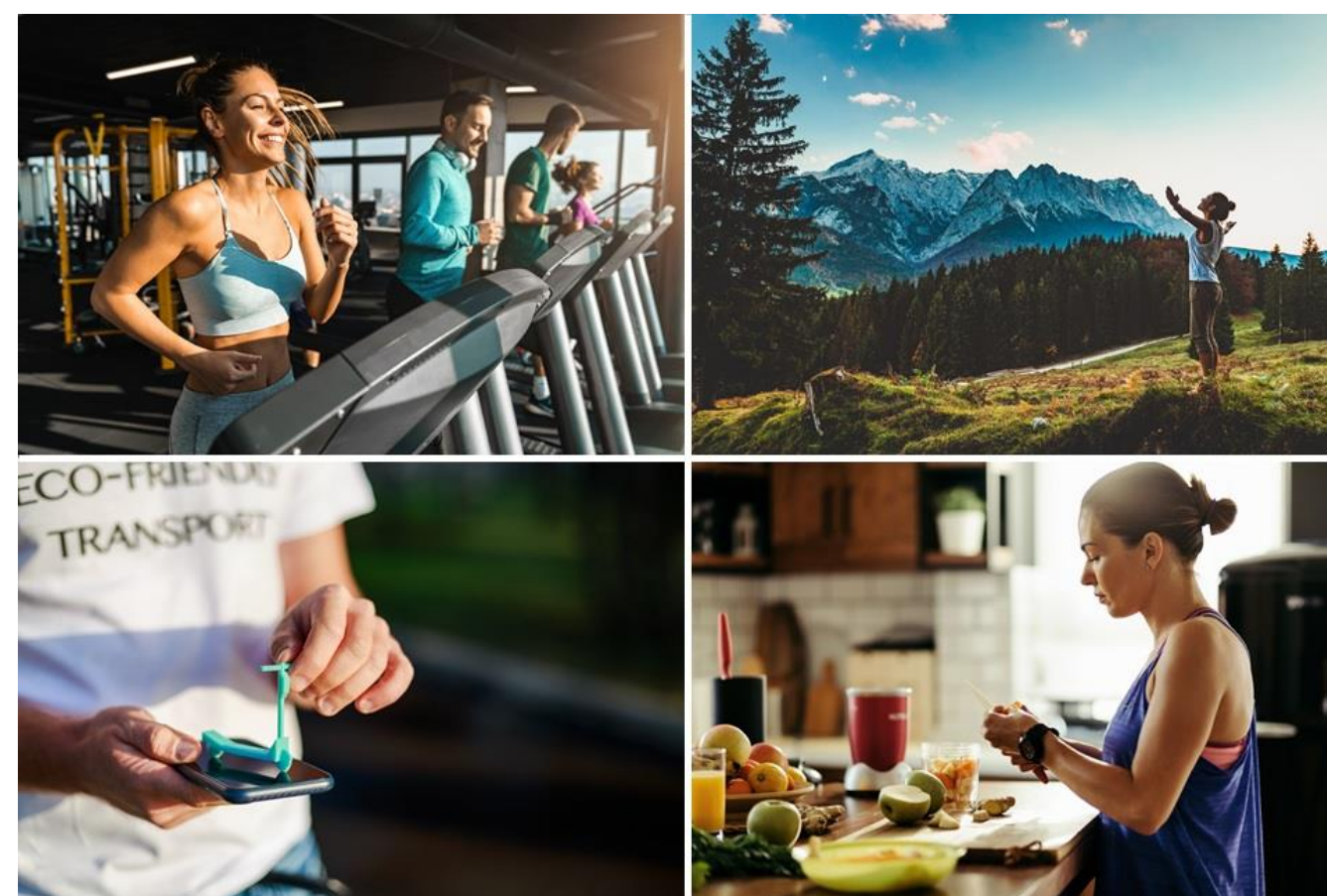
MODULE 5

SMART SPORT CITIES

SEGMENT 2

Smart Cities

The Cities of the future

Cities play a key role in this process.
Organization at administrative, urban planning, environmental and service levels will play a key role in moving towards sustainability.

The urban environment, supported by new technologies, can help solve many problems related to citizens' health and improve their quality of life.

Clean air, sustainable mobility, neighborhood services, exercise and health education, low-impact means of transport, pedestrian paths, green areas and sports infrastructures encourage citizens to engage in a healthy physical activity.

Smart cities are moving in this direction.

Definitions

«A smart city is defined as a city interfacing physical foundations, ICT framework, social and
Business frameworks to use the aggregate knowledge of the city» Harrison. C et al. 2010

«A city which strives to become smarter as to making itself more sustainable, equitable, efficient, and livable»
Natural Resources Defense Council 2012

«A community that has made a conscious effort to make an innovative use of information and communication
technology (ITC) to promote a more inclusive, diversified and sustainable urban environment»
EU Strategy Energy Technology Plan 2009

«Smart City is a city seeking to address public issues via ICT-based multi-stakeholders
partnership» ITRE Committee on Industry, Research and Energy of the European Parliament 2014

Definition of a Smart City

Smart city is indeed a sustainable, efficient and innovative city, a city which can guarantee its citizens a high quality of life through the use of interconnected and integrated technological solutions and systems.
www.lumi4innovation.it

The dimension of Smart Cities

According to the European Union, Smart Cities can be identified along with six main dimension:

1.**Smart People** - Citizens must be involved in activities and choices through participatory and decision-making processes.
2.**Smart Governance** - Human capital, environmental resources, relationships and community assets must be the core of the administration's activities.
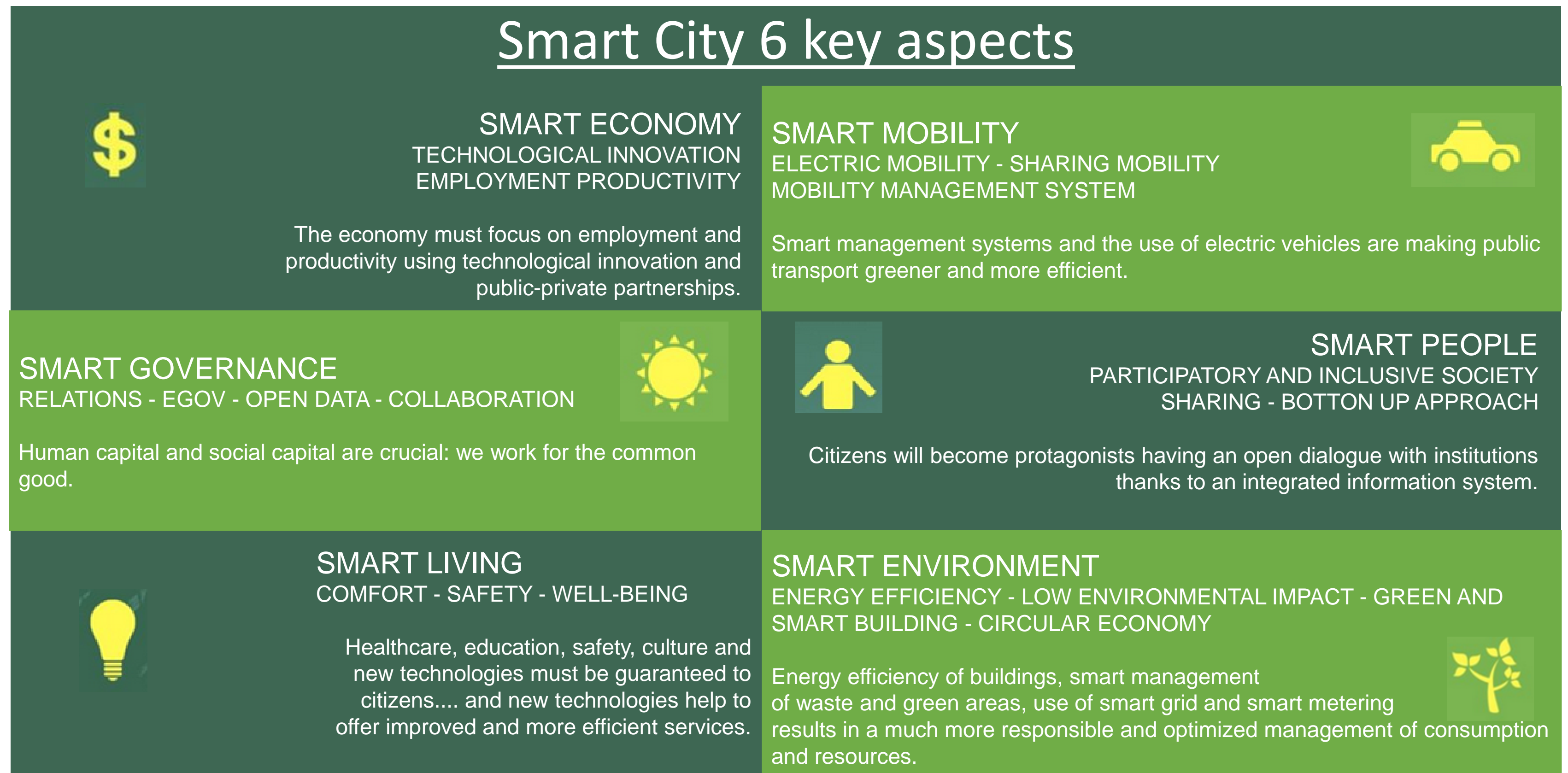3.**Smart Economy** - innovation, research and technology have to make the economy and trade increase productivity and employment within the city
4.**Smart Living** - health, education, safety, culture etc. have to provide well-being and a high standard of living to citizens.
5.**Smart Mobility** - smart mobility solutions (e-mobility, sharing mobility, mobility management) have to decrease costs, environmental impact and energy consumption.
6.**Smart Environment** - low environmental impact and energy efficiency are essential to ensure a sustainable development of the cities of the future.

The dimensions of smart cities (diagram)

Smart City 6 key aspects

SMART ECONOMY
TECHNOLOGICAL INNOVATION
EMPLOYMENT PRODUCTIVITY

The economy must focus on employment and productivity using technological innovation and public-private partnerships.

SMART MOBILITY
ELECTRIC MOBILITY - SHARING MOBILITY
MOBILITY MANAGEMENT SYSTEM

Smart management systems and the use of electric vehicles are making public transport greener and more efficient.

SMART GOVERNANCE
RELATIONS - EGOV - OPEN DATA - COLLABORATION

Human capital and social capital are crucial: we work for the common good.

SMART PEOPLE
PARTICIPATORY AND INCLUSIVE SOCIETY
SHARING - BOTTON UP APPROACH

Citizens will become protagonists having an open dialogue with institutions thanks to an integrated information system.

SMART LIVING
COMFORT - SAFETY - WELL-BEING

Healthcare, education, safety, culture and new technologies must be guaranteed to citizens.... and new technologies help to offer improved and more efficient services.

SMART ENVIRONMENT
ENERGY EFFICIENCY - LOW ENVIRONMENTAL IMPACT - GREEN AND SMART BUILDING - CIRCULAR ECONOMY

Energy efficiency of buildings, smart management of waste and green areas, use of smart grid and smart metering results in a much more responsible and optimized management of consumption and resources.

Why smart cities

Today, cities represent 2% of the earth's crust, hosting 75% of Europe's population and 50% of the world's population.

According to United Nations reports, by 2050 70% of the global population will live in cities.

Despite occupying a very limited amount of space, this concentration of people and activities means that cities produce 75% of energy consumption and 80% of carbon dioxide and pollutant emissions. They therefore have a strong impact on climate change.

The smart city model of modern society must be consistent with energy efficiency and environmental sustainability goals (Agenda 2030 objectives)

Main features

Citizen participation and accountability - thanks to an efficient **information system, citizens can dialogue with the public administration and take part in the decision-making process.**

Smart buildings and energy efficiency - both in the case of new construction and **renovation, buildings must meet pre-established energy standards.**

Environmental sustainability - renewable energies, smart waste management systems **in a perspective of circular economy, valorization of green areas and parks to protect environmental capital.**

Integrated security - using innovative technologies and integrated control systems **can help ensure a reduction in crime and greater attention to critical areas such as the suburbs.**

Transport and mobility - in smart cities it is necessary to reduce the environmental impact caused by **traffic and means of transport, by optimizing mobility thanks to technology**

Enabling technologies:

According to the Politecnico di Milano, the main technologies necessary for the development
of smart cities are:

- Information and communication technologies and infrastructures (such as 5G)
- Artificial Intelligence (AI)
- Big Data analytics
- INTERNET OF THINGS (IoT)
- Urban planning models, administrative decision support and
- management.
- Sensors and actuators
- Reducing and managing energy consumption and energy monitoring systems
- Energy production and distribution systems
- New materials and solutions for sustainable building
- New hybrid and electric vehicles
- Waste cycle management: collection, treatment and recovery models

The layers of a smart city

Ernst & Young proposed a layered analysis of smart cities.
More specifically, this approach is based on four layers:

The first layer is represented by networks, infrastructures and enabling technological equipment
for creating transport, telecommunications, energy

This area includes:

- 5G experimental projects
- Wi-Fi and Li-Fi connections
- Internet access, Broadband access
- sharing mobility and public transport optimization
- Energy distribution
- Optimizing waste management and green areas.
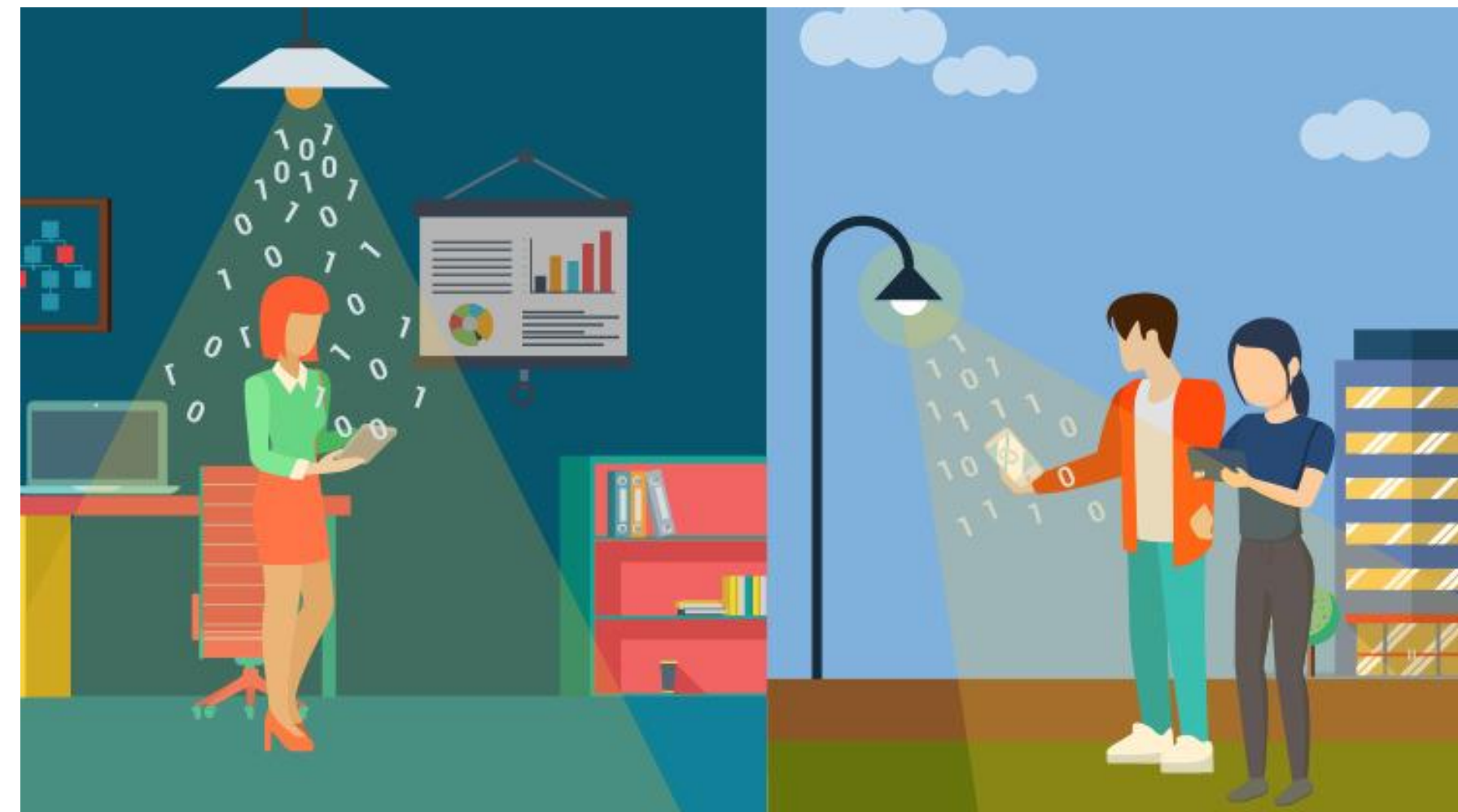
The layers of a smart city

The second layer is composed of sensors and IoT and includes sensor networks and IoT devices required to collect and analyze the big data of the city related to:

- the environment (air, water...),
- user behavior
- the state of the infrastructures in order to engage remote management and maintenance

This area includes:

- sensors to detect building security and smart metering
- sensors integrated in LED street lighting that can operate:

- for environmental control
- For road Networking
- for traffic or mobility monitoring

The layers of a smart city

The third layer is represented by the Service Delivery Platform.

The *delivery* platform is an operational hub capable to process and enhance the territory's big data produced by the other layers with the aim of improving existing services and creating new ones.

The fourth layer concerns the creation of mobile and web applications allowing to reach end users and provide value-added services for citizens.
Even this layer must be integrated with the other three:

This area includes all aspects related to:
- healthcare
- tourism
- mobility
- government (e.g. identification systems)

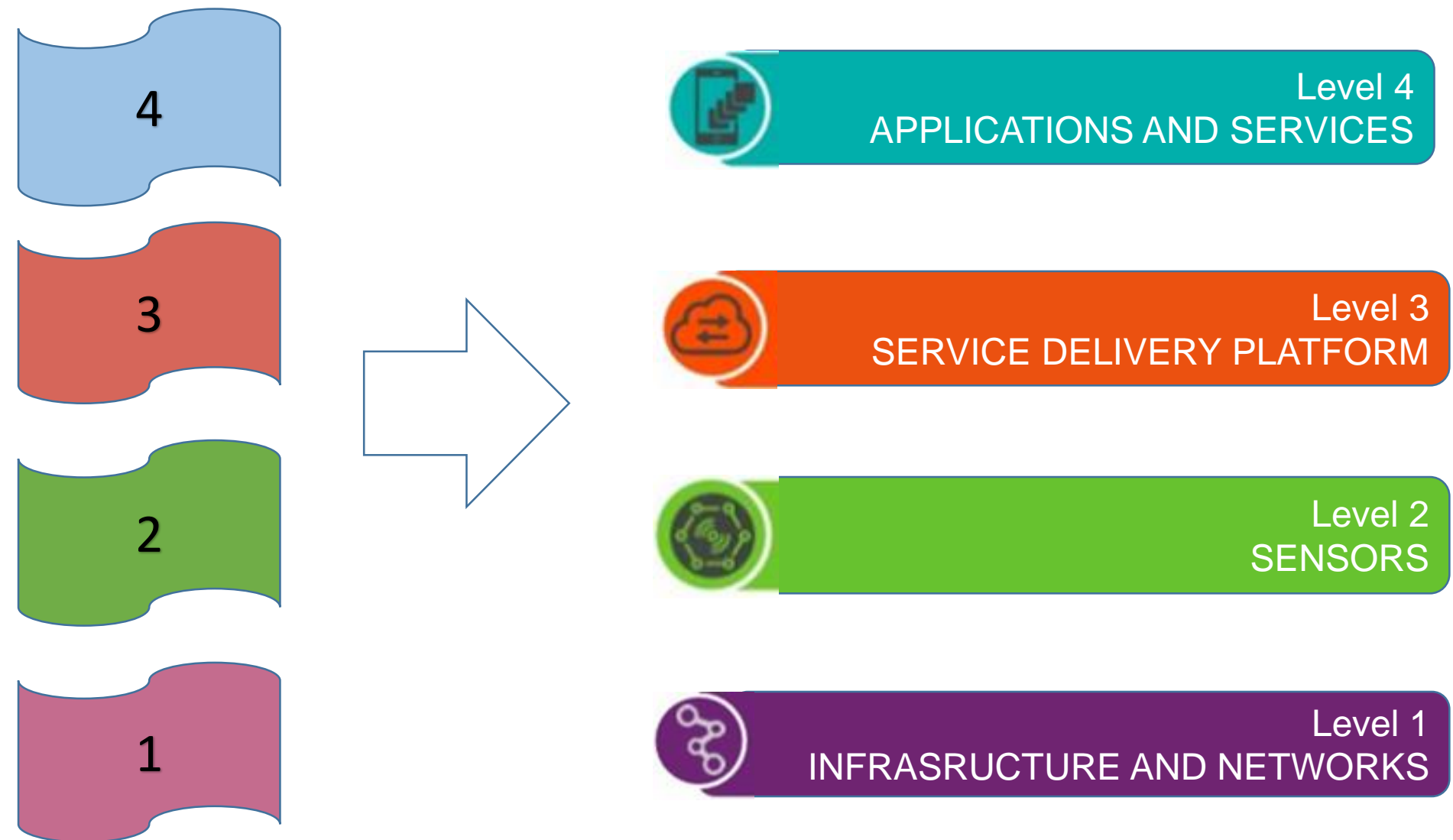# The layers of a smart city (diagram)

The 4 layers (layers) of a smart city

Application and Services

Service delivery Platform

Sensors

Infrastructure and networks

The advantages of the smart city

What are the real benefits of a smart city?

A smart city is a highly efficient city

Implementing data analysis and collecting and processing *"big data"* at an urban level provides cities with access to information previously unavailable.

Monitoring the desired metrics in real time and anticipating any uncomfortable or problematic situations also allows to

- improve service levels and at the same time
 - enable a faster and more effective decision-making process

The advantages of smart cities

A smart city is safer

The use of video surveillance and other innovative technologies allows a greater control of the different urban areas and a crime reduction.

A smart city is a highly participatory and inclusive city

The ability to engage a dialogue with its citizens is fundamental for reducing the distance between public administration and citizens and increasing the level of trust and involvement. Furthermore, there is the possibility of using interactive maps, dashboards on urban mobility or energy efficiency.

A smart city is a more sustainable city

New technologies can become a precious tool to reduce pollution and CO_2 emissions and to increase energy efficiency results by using renewable sources in an integrated way.

The advantages of the smart city

The smart city can offer value-added services, such as better public transport services, a more efficient infrastructure, such as adaptive street lighting. It can also improve monitoring of difficult situations, buildings with structural problems or bridges and roads requiring maintenance, by controlling in real time water and gas consumption.

A smart city is much more connected and digitalized
The information and telecommunications network is the basis for developing a smart city. A smart city is therefore definitely a more connected city, able to create a digital environment for its citizens, as well Wi-Fi connection available around the city.

The advantages of the smart city

A smart city offers enhanced economic and job opportunities
Investing in smart city technologies can have a multiplier effect on businesses and workers. Such actions can play an important role in increasing the level of competitiveness.
A city with lower costs and more time
A smart city reduces costs and has a significant return on investment, which is calculated over a few years.

There is a further precious but hidden benefit: time savings. A smart city offers the possibility of reducing time:

- in interacting with the public administration and the health system (e-Gov)

- in moving around the city or searching a parking space.

From Smart city to safe city

From Smart City to Safe City

An effective Safe City model must be based on the integration of several resources and technologies. The city must react quickly to emergency situations. The goal of public authorities should be to improve both quality and efficiency of emergency management, avoiding dispersion of efforts and increasing coordination between public safety forces and governance.
The Safe City is therefore a new model for ensuring public safety, based on complex technological systems capable of cross-referencing and processing data in order to make immediate decisions in an emergency situation.

Highlights

Smart cities are cities using technology to improve the quality of life of their citizens.

The use of technology allows reducing environmental impact by using soft mobility solutions and low energy buildings, encourages participation and communication with citizens, and increases safety.

There are different types of technological support, ranging from big data analysis to artificial intelligence, 5G and sensors. The use of these technologies allows citizens to save time and improve the quality of services.

On the other hand, smart cities will require responsible, active citizens with good digital skills.

Exercise 2

What is the definition of smart city?

Which are the six dimensions of a smart city?

Can you mention some of the technologies used in smart cities?

What are the benefits of a smart city?

If you were to turn your city into a smart city, what would be
Your first intervention?

Keywords

City of the future

Technologies

Sustainable

Energy standards

Time-saving

Safe city