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Empowering Oman's smart economy through GeoSpatial Technologies

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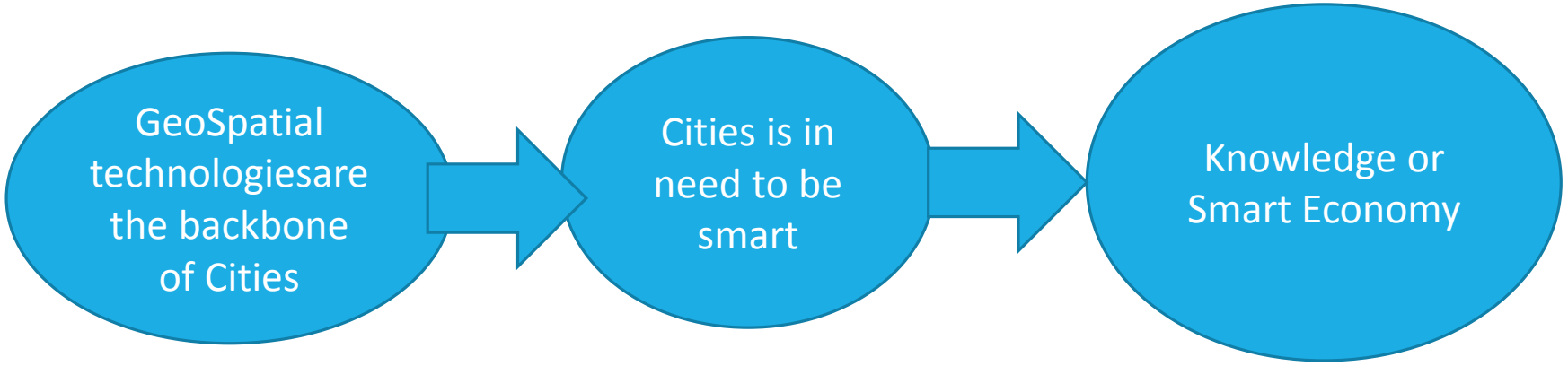
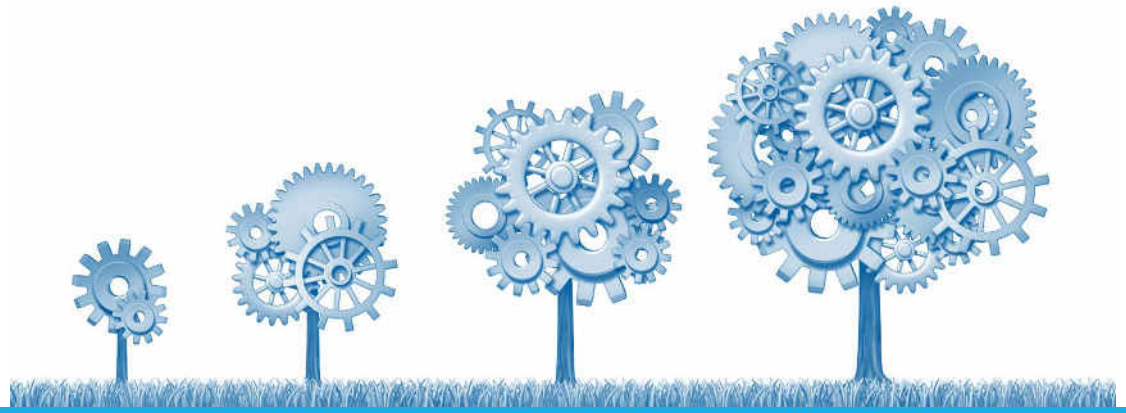
Outline



Introduction: Cities and economies

- There is always a positive correlation between urbanization (cities) and economic growth within national economics.
- **70%** of the global GDP is generated by cities
- Everything is happening in Cities(more than 50% of the global population is living in cities, will be more than 75% in 2050)

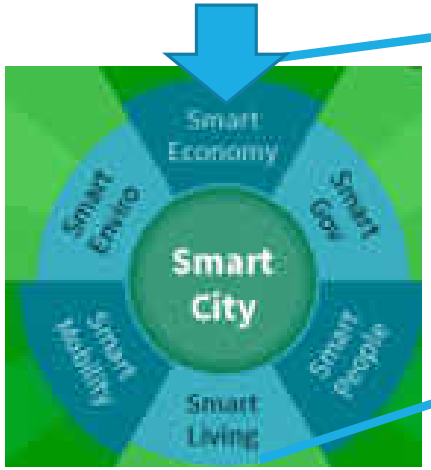


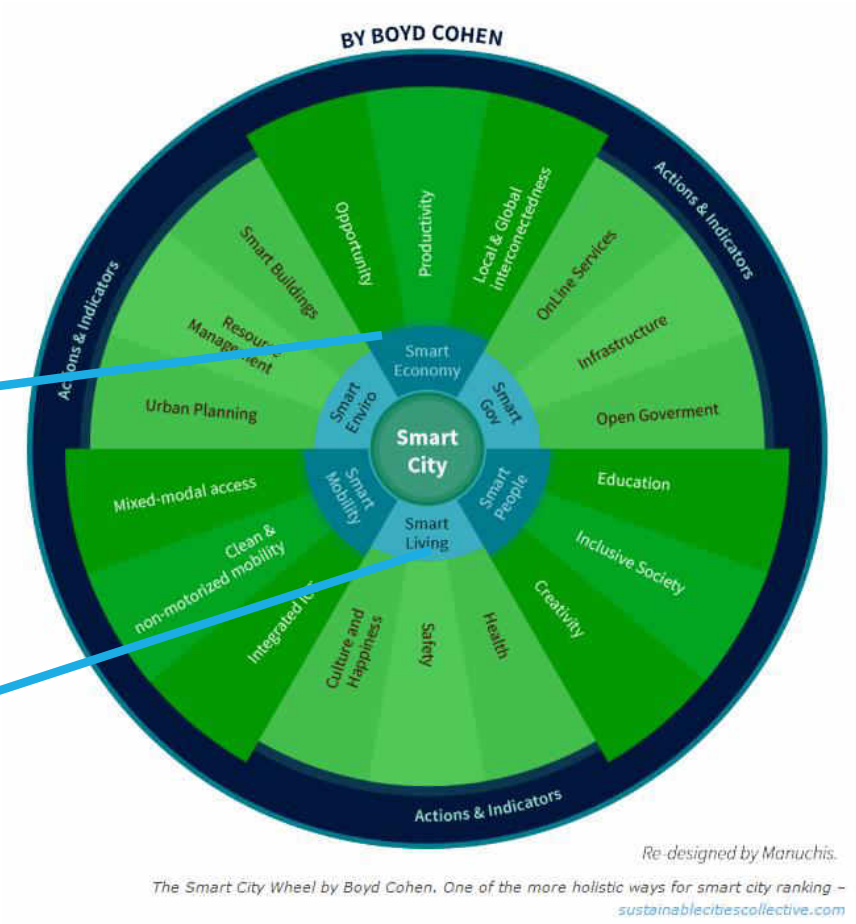
Smart cities definition

- "Smart City is an innovative city hat use 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 and environmental aspects (ITU, 2014)

Smart city subsystems or dimensions

- There is not straight forward and standard definition of what consists of smart cities, a widely accepted connotation for smart cities is given In this picture.





Smart (knowledge-based) economy

- Smart economy is an essential building block of smart city. Smart economy has been defined in many ways, here are few:
  - Smart economy involves the knowledge economy, where innovation and technologies are considered as the most important driving force
  - Smart economy involves the establishment of innovation clusters and mutual cooperation between enterprises, research institutions, and the citizens in order to develop, implement and promote innovation through these networks
  - Smart economy combines the enterprise economy and innovation or the "idea economy". It is characterized through the use of human capital-knowledge, skills and creativity, transforming ideas into valuable processes, products and services.

Smart economy (Cont.)

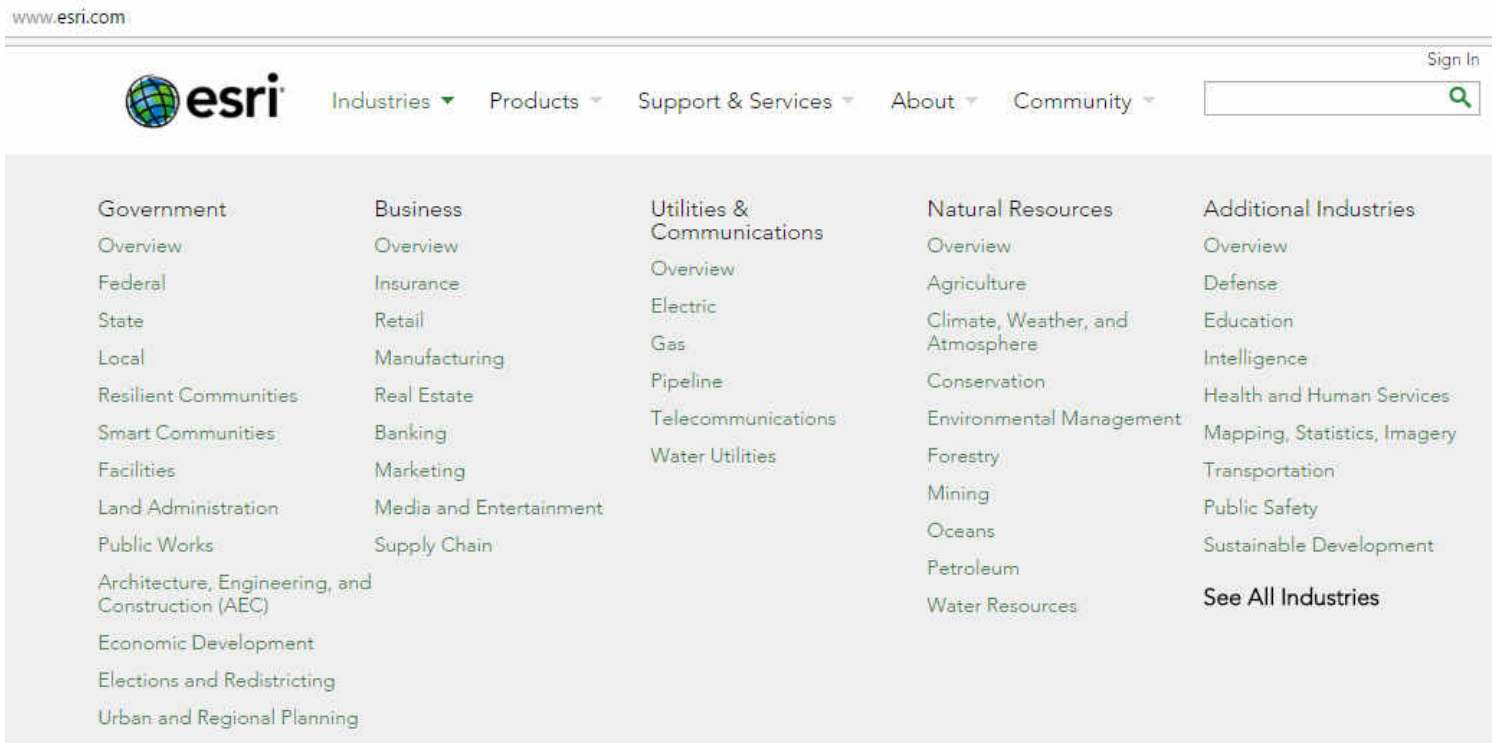
- Other definitions:
  - Smart economy is an ability to employ the existing resources for the development and implementation of innovative solutions
  - Smart economy is competitive in the spheres of innovation, entrepreneurship, intellectual property, efficiency, and the labor market flexibility and integrates in global markets.
  - Many others

Smart cities boost the smart economy

- "Smart Cities are those that are able to attract investments and experts and professionals. Good quality infrastructure, simple and transparent online business and public services processes that make it easy to practice one's profession or to establish an enterprise and run it efficiently without any bureaucratic hassles are essential features of a citizen centric and investor-friendly smart city", Source: Ministry of Urban Development, India

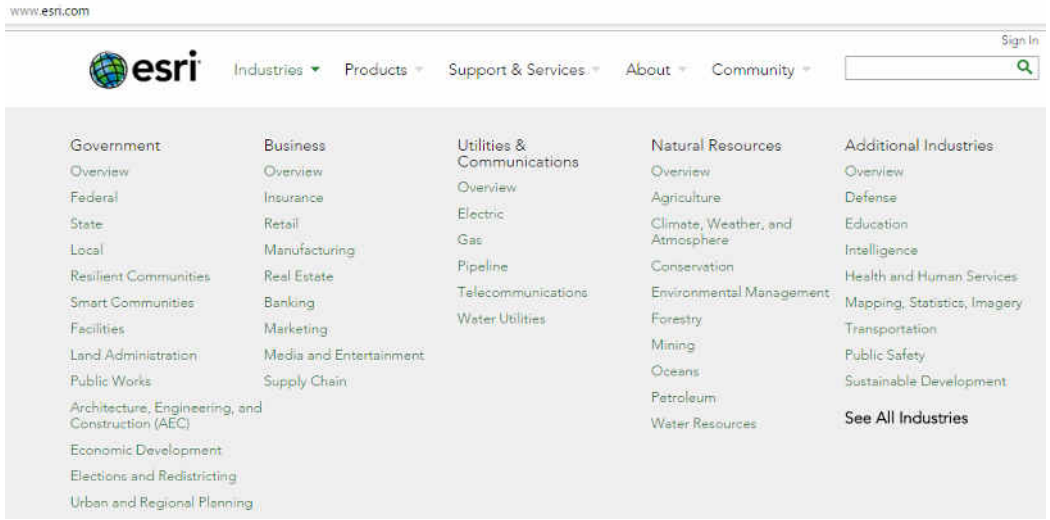
Role of GeoSpatial Technologies in Smart Cities

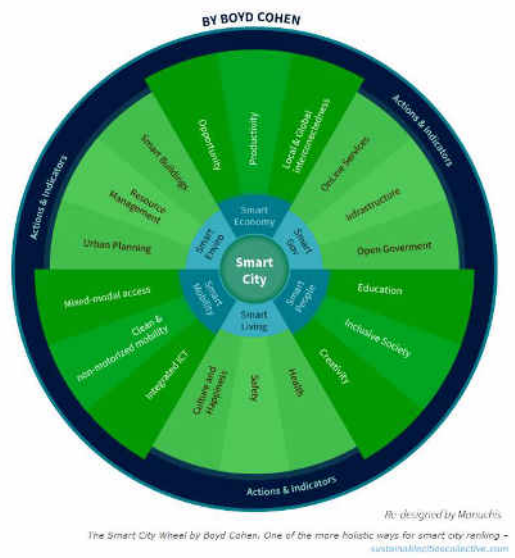
- Geospatial technologies have a key role to play when it comes to enabling smart cities (Reference)



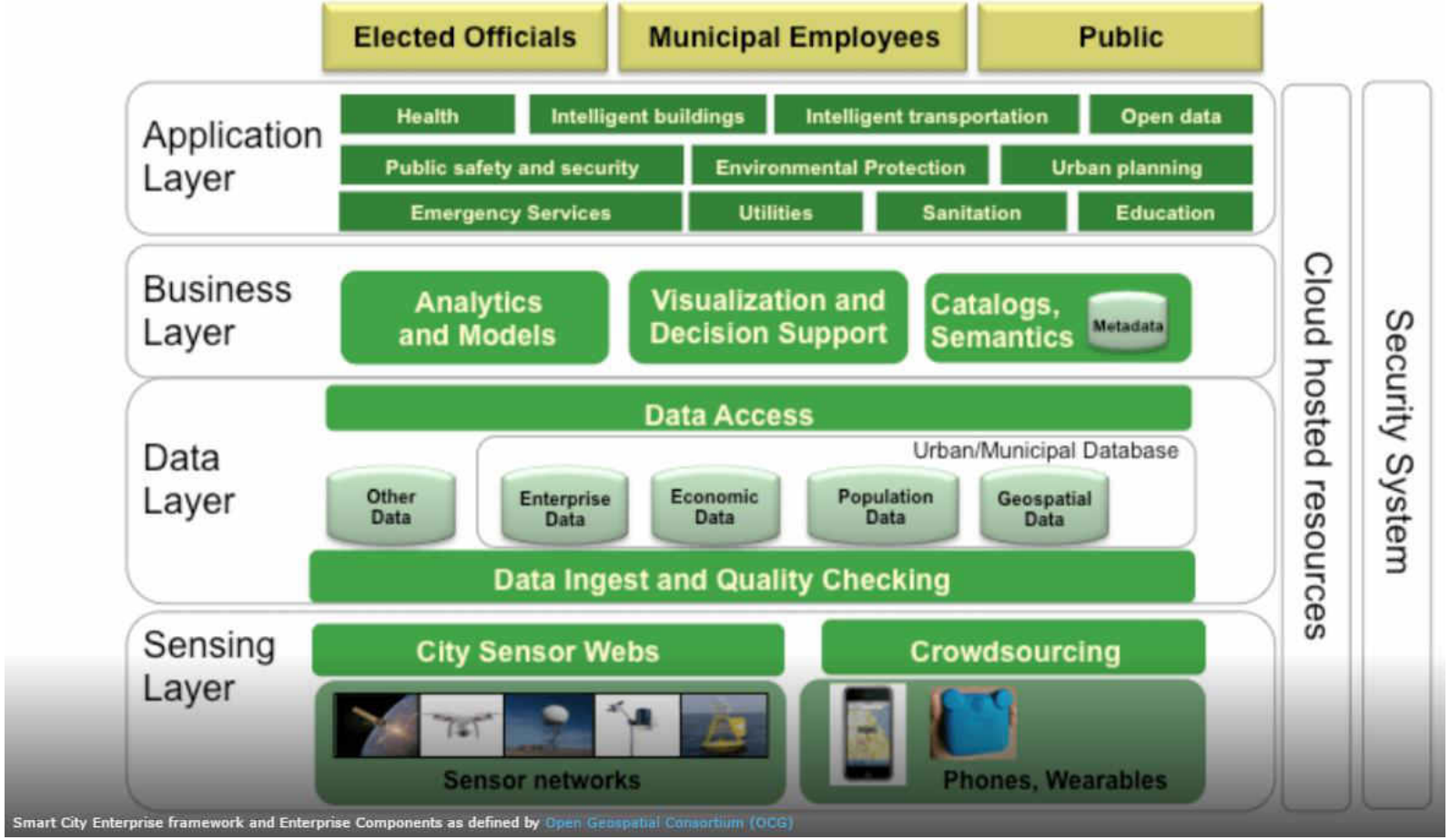
Geospatial technologies application in smart cities

- Looking at the current scope of applications of geospatial technologies, one could easily say that geospatial technologies are important and can be applied across all components and stages of smart city subsystems.





GeoSpatial technologies for smart city: The framework

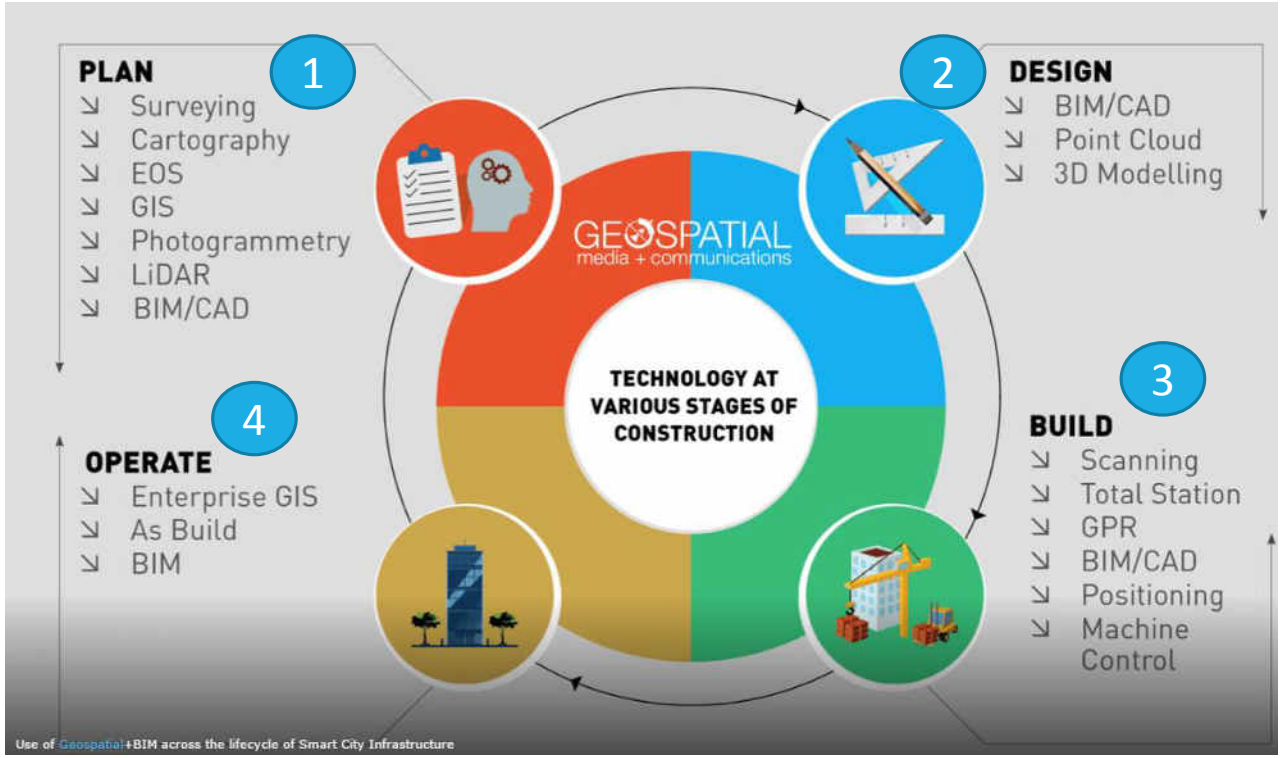


GeoSpatial technologies for smart city: The framework

- When we look from an ICT and geospatial perspective, the framework for smart cities would consist of 4 main components
  - Sensing Layer – to continuously monitor the parameters of city subsystems, that consists of a network of machines, sensors, IoT devices and human sensors
  - Data Layer – Consisting of federated or desperate databases related to the functioning of urban bodies and municipalities along with the departments supporting the city infrastructure like transportation, utilities etc.
  - Business Layer – Consisting of models related to analytics, visualization, business logic, semantics; data catalogs, metadata etc.
  - Application Layer – Consisting of various applications used by citizens, municipal staff and administrators related to various departments of the smart city

How to use Geospatial technologies in smart city infrastructure lifecycle

- Geospatial technologies are useful during various stages of the smart city infrastructure such as Plan > Design > Build > Operate

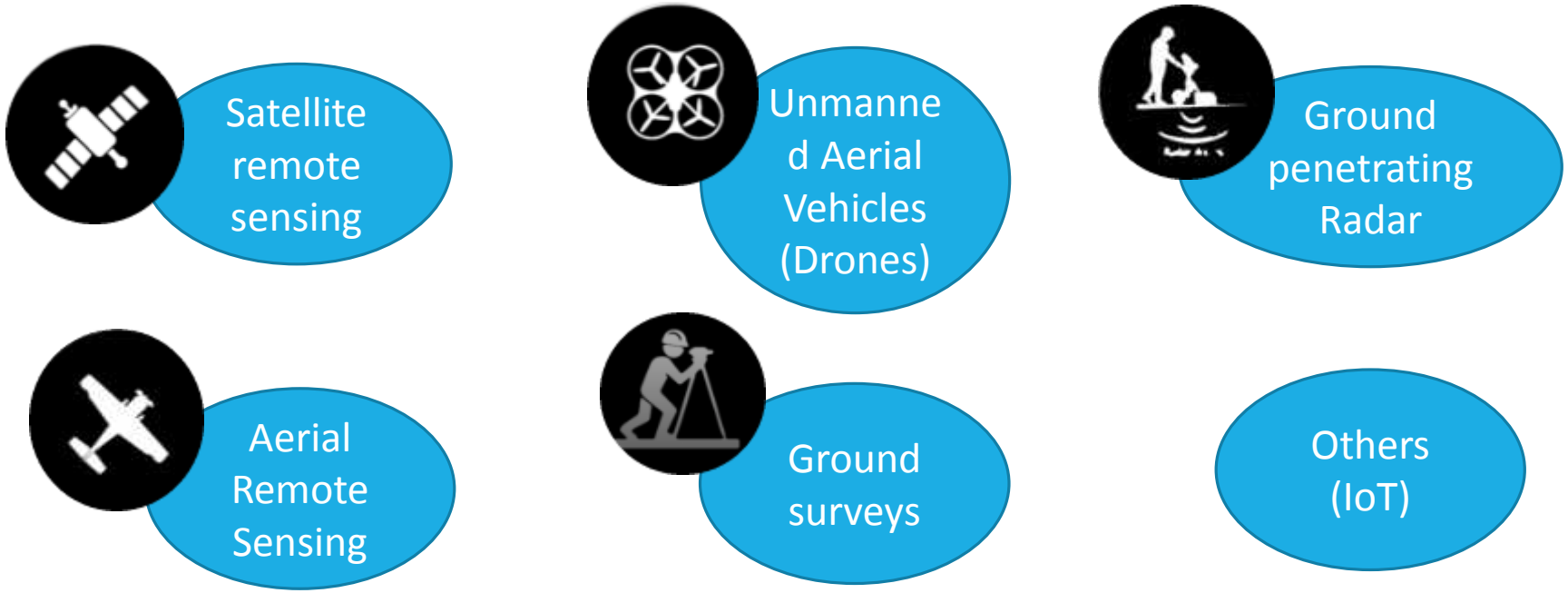


What kind of geospatial data is needed for smart cities

- Geospatial data at various scales and accuracies will be needed for the management and maintenance of smart cities. And it can be seen in three tires
- Data needed for city planning (macro-level) – creation of smart city master plans, etc.
- Data needed for physical infrastructure (macro-level) – roads and bridges, city furniture, public spaces, etc.
- Data needed for individual buildings (micro-level) – Energy efficient and green building design

Type of sensors

- Type of sensors that can be deployed to collect geospatial data for smart cities:



Conclusion

- The Geospatial technologies can be applied across the smart city subsystems or dimensions such as Energy, Water, Transportation, Public safety, Citizen services, city governance, healthcare, education, etc.
- Geospatial technologies aim is not only to improve the efficiency in managing the city infrastructure, but also enable collaboration during the planning, construction, monitoring and management of the city infrastructure.
- Smart cities are the backbone of the future economy: Smart economy or Knowledge economy

Thank you

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