Technologies for United and Resilient Critical
and Vital Services in Pandemic-Stricken Europe

PRECINCT

ainst large

Preparedness and Resilience Enforcement for Critical Infrastructure Cascading Cyber-Physical Threats

RAISE

e security operators to mitigate
soft targets

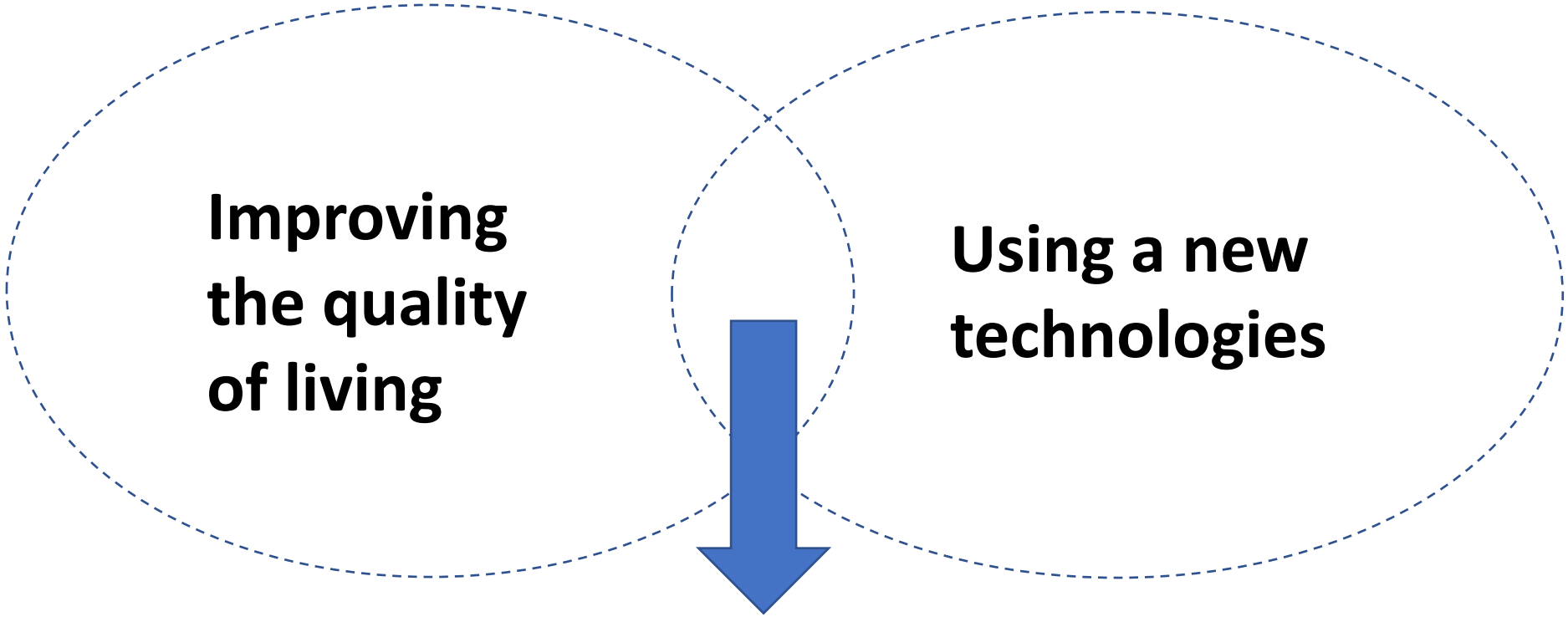
CERIS
Panel 2: Advanced Security Measures for Urban Areas

Presenter: Dr. Denis Caleta

Company: Institute for Corporative Security Studies (ICS)

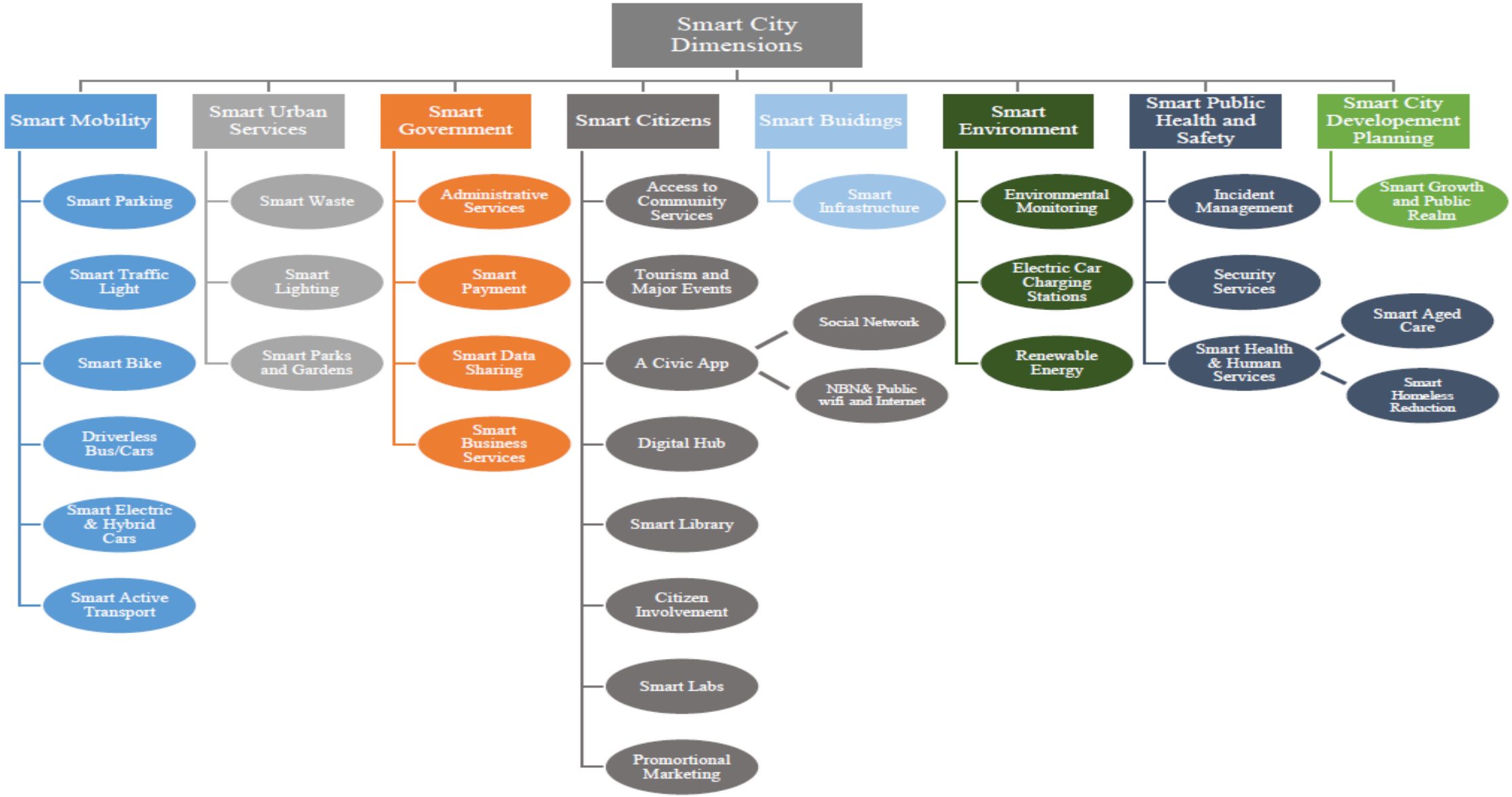
Date: 11th April 2024

Definition of Smart city solutions

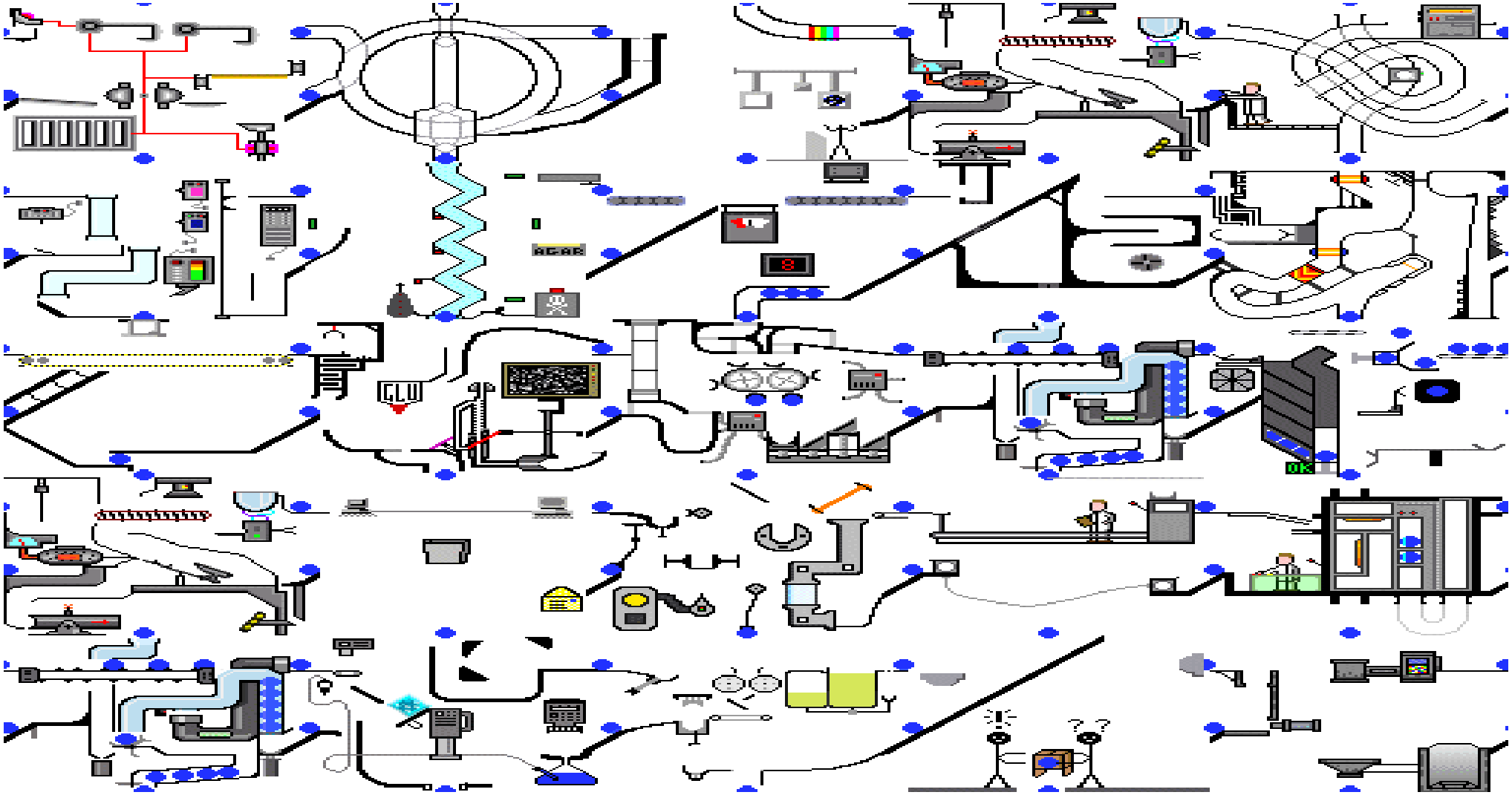


A city that secure use a technology to make life easier and better for its residents.

SMART CITY VERTICALS



Why is security understanding of this complexity so important?

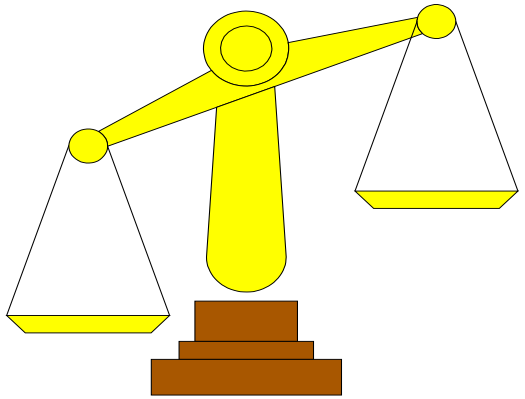


SMART CITIES AND SMART SOLUTIONS

THE MORE COMPLEX THE SYSTEM ARE THE MORE DEPENDENT THEY ARE ON THE WORKING OF ICT

Technological Advancements

- Industry 4.0
- Digitalisation
- “Smartification”
- 24/7 Connectivity
- Internet of Things
- Big Data, Smart Analytics
- Process & Computing Power
- Automation, Machine 2 Machine
- **Blockchain**
- **Artificial Intelligence**



Increased System Complexity

- Demand Response
- Competitive Pressure
- Multiple Market Actors
- Real-Time Operations
- Multi-Directional System
- System Balancing / Volatility
- Decentralization / Renewables
- Multiple Standards / Regulations
- **More regulations covering the same market in a sub-optimal way**
- **No coordination with the interdependent markets**

New interdependencies and opportunities, but vulnerabilities as IT (Information Technology) and OT (Operational Technology) continue to converge and interoperate

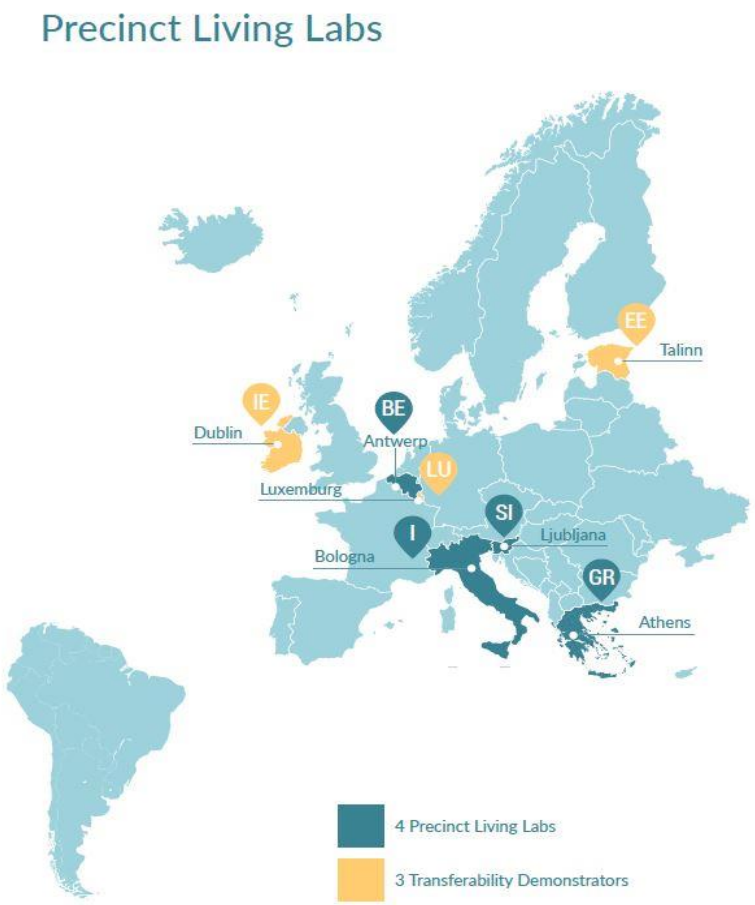
APPROPRIATE LEVEL OF SECUITY AND PROVIDING BUSINESS CONTINUITY

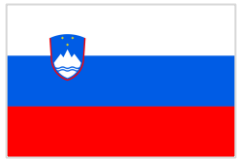
Identification of different levels of interdependencies and cascading effects in Smart City eco-system

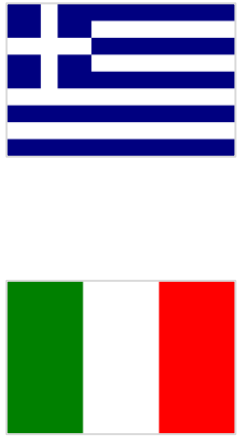
- Identifying and analyse multiple levels of interdependencies and cascading effects as:
  - Combination of cyber and physical threats/hazards between the CI included in Smart City;
  - Analysis potential cascading effects (disaster escalation points);
  - Analysis element of risk (assets, installations, plants, employees, neighbouring populations, infrastructure, environmental qualities,….);
  - Analysis Disaster damage magnitude scale;
  - Analysis Scales for spatial and social effects from disaster scenarios under consideration.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 101021668.

Four Living Labs - Focus







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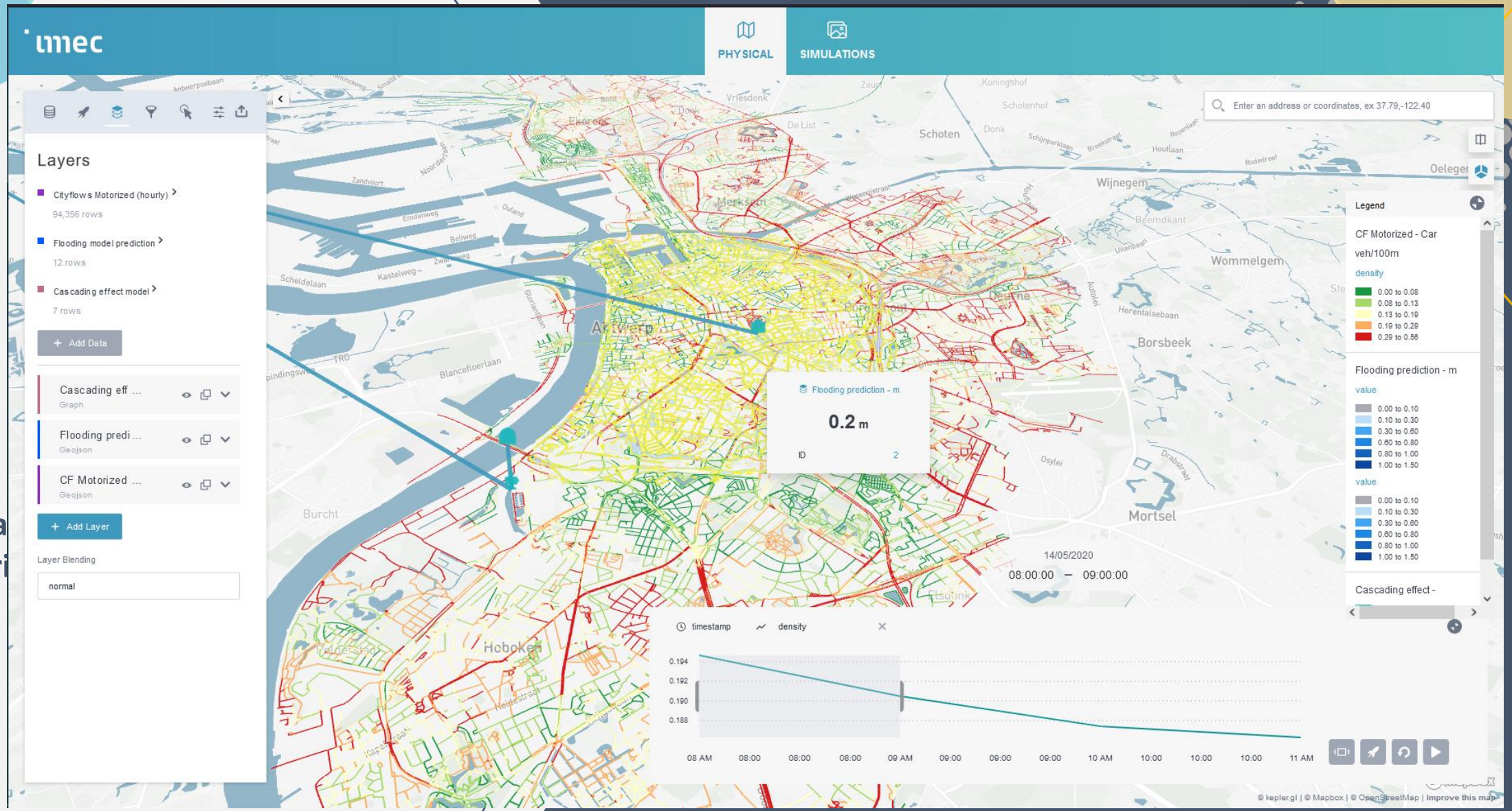
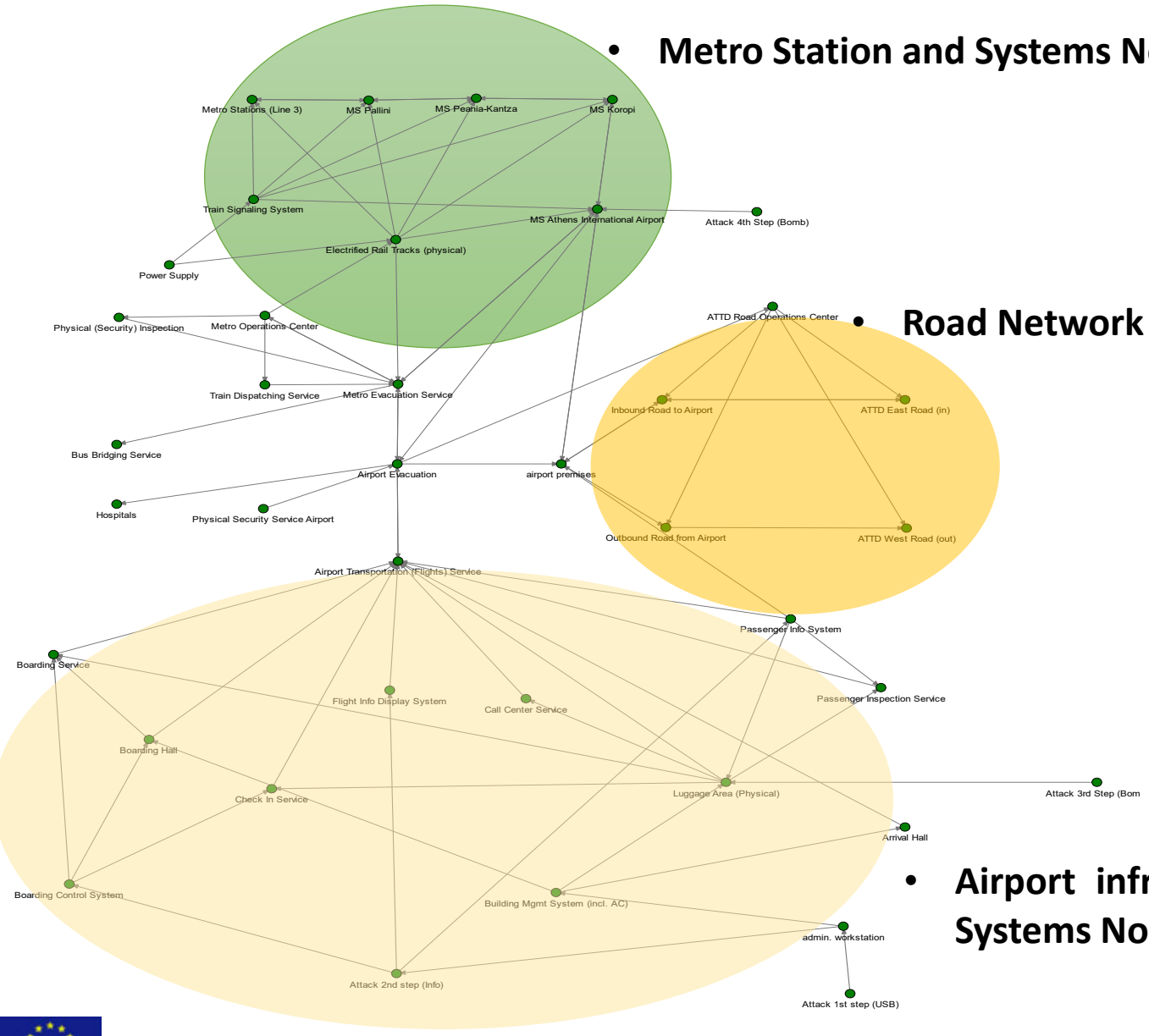
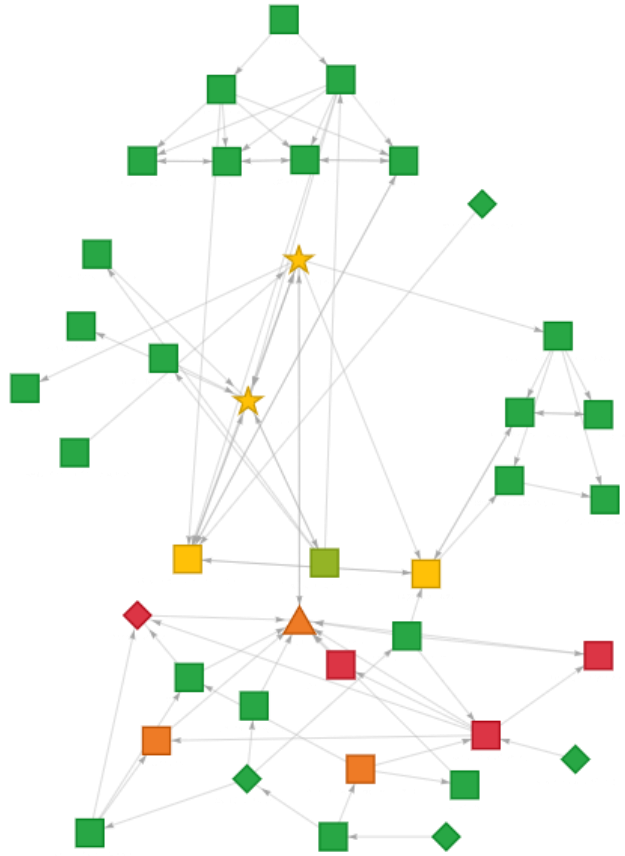


Example LL3 Interdependency Graph and Threats Simulations



- **Metro Station and Systems Nodes**
- **Road Network Nodes**
- **Airport infrastructure and Systems Nodes**

LL3 Network Nodes Status after a simulated attack



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Challenges with important influence on better resilience of operating smart cities

- Different level of integration and understanding jurisdiction (vertical, horizontal, processes);
- Lack of resources (personal, financial,.....;
- Vulnerability of ICT technologies which become a baseline for operating Smart City
  - Improved Cyber-Resilience of Industrial Networks and Cloud Data;
  - Enhanced Cybersecurity Measures for Smart City Technologies.
- Building security eco-system partnership (business continuity of CI operation = business continuity of operating Smart Cities)
- Important steps:
  - Raise strategic security awareness and level of expertise's for understanding complexity of system integration and improve of advance security measures;
  - Define clear powers and responsibilities for developing smart cities concept and systems;
  - Standardization security technologies and processes;
  - Proper managing with resources (avoiding siloes approaches);
  - Constant investing in research and development of technologies, methodologies and processes.

Discussion

Thank you for attention!