PANTHEON Pilots

Pilot 1 – Athens, Greece
Disaster Resilience Testing against Earthquake & Wildfire

The Athens Tabletop Exercise tested disaster risk management operations through simulated large-scale natural disasters using the PANTHEON Smart City Digital Twin Platform.

Pilot 2 – Vienna, Austria
Smart City Digital Twin for Urban Heat and Cyber-Physical Threats

The Vienna pilot implemented planning and training scenarios using precise real-life data to digitally simulate complex urban emergencies.

Use Case 1: Wildfire at the NW of Athens
A rapidly spreading wildfire threatened the Wildland-Urban Interface area of Fyli under strong winds.
Stakeholders' (Hellenic Police, Hellenic Fire Service, Municipalities & Prefectures) activities included:

- Rapid traffic management to support fire service access
- Execution of evacuation orders and public safety measures
- Area security, access control, and prevention of looting
- Coordination with fire and local authorities during recovery

The scenario focused on first responder training and cross-organizational coordination using the Digital Twin platform.

Use Case 2: Western Attica Earthquake
A strong, shallow earthquake caused severe damage and cascading effects across the Attica region, disrupting transport, energy, telecommunications, and emergency services.
Stakeholders' (Hellenic Police, Hellenic Fire ServiceNational Centre of Emergency Assistance (EKAB) & Volunteer Organisations activities included:

- Establishing security perimeters around unsafe structures
- Managing traffic restrictions and emergency corridors
- Supporting organized preventive evacuation
- Using drone-based information for situational awareness
- Protecting evacuated areas and assisting in damage assessment

The Digital Twin supported planning and early warning through simulations, enabling informed decision-making across the response chain.

What was tested accross both pilots:

01 Decision-making under evolving crisis conditions

02 Planning and training using realistic digital simulations

03 Coordination between first responder organizations

04 Integration of multisource data into operational workflows

05 Applicability of Smart City Digital Twins to natural and man-made disasters

Key Outcomes

- Validation of the Smart City Digital Twin as a valuable decision-support tool
- Improved situational awareness and planning efficiency
- Strong engagement from first responders
- Practical feedback incorporated into ongoing development
- Demonstrated adaptability across different disaster types and urban contexts

Use Case 1: Heatwave
A guided tabletop scenario simulated a medical first responder planning task focused on the establishment of temporary cooling spots for the population during an extensive heatwave.
Stakeholders' (Human Resources Managers, Volunteer Coordinators, Command Centre Employees) activities included included:

- Identification of heat-vulnerable hotspot areas
- Consideration of heatwave duration and forecast data
- Assessment of population density and vulnerable groups
- Accessibility and availability of suitable locations
- Exclusion of areas with existing city-initiated cooling spots
- Prediction of deployment duration based on historical data

The platform was evaluated as an additional planning and decision-support tool, receiving highly positive feedback and generating feature requests for further development.

Use Case 2: Cyber-Physical Attack
A high-impact man-made disaster scenario simulated a coordinated cyber-physical attack causing backup power supply systems at communication towers to overheat and explode.
Scenario characteristics:

- Focus on tactical-level (silver command) training
- Simulated drone-based situational awareness
- Dynamic escalation with cascading infrastructure damage
- Trainer-controlled force deployment within the Digital Twin

The exercise tested force management, situational assessment, and coordinated response to novel hybrid threats.

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PANTHEON Project

https://pantheon-project.eu/