TESTUDO

AUTONOMOUS SWARM OF HETEROGENEOUS RESOURCES IN INFRASTRUCTURE PROTECTION VIA THREAT PREDICTION AND PREVENTION

NOVEL DATA-DRIVEN AND PROCESS-ORIENTED SURVEILLANCE AND INTELLIGENCE PLATFORM FOR INCREASED AUTONOMY AND IMPROVED SITUATION AWARENESS IN CRITICAL INFRASTRUCTURES

Innovative Autonomous Platforms
- Unmanned ground and aerial vehicles
- Individual fixed sensors
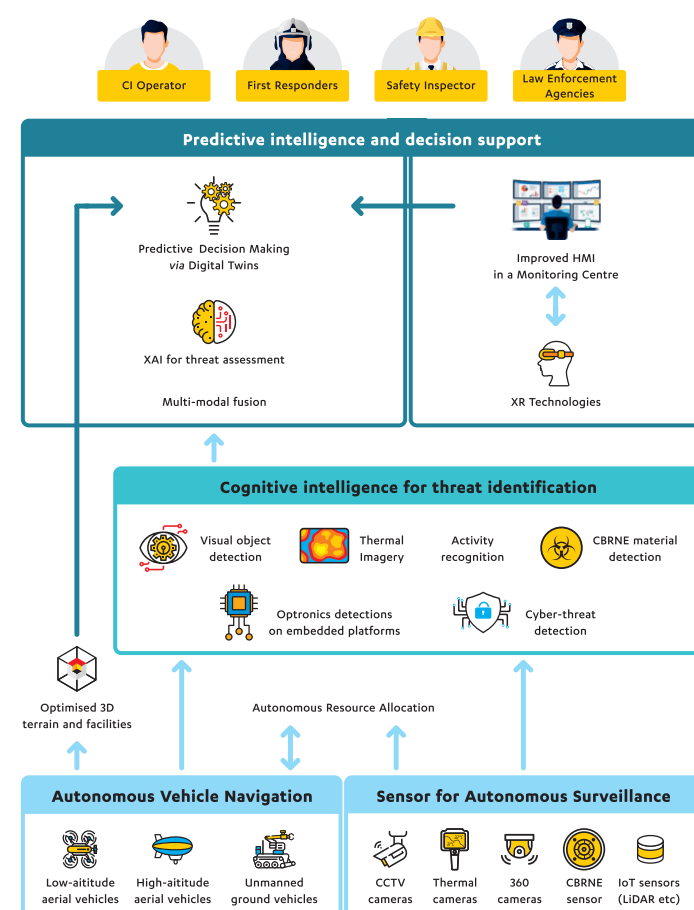
Autonomous Response and Cognitive Intelligence
- Optimal resource allocation
- Threat identification by processing optronics data
- Edge computing for limited connected unmanned vehicles
- CBRN materials identification
- Autonomous response on cyber-attack identifications

Improved HMI for critical infrastructure surveillance
- Optimized 3D terrain and infrastructure mapping
- Fusion schemes of numerous modalities
- Threat assessment *via* XAI technologies
- Predictive intelligence and improved HMI *via* Digital Twins
- Virtual decision-making tool

Short and long-term deployment for large-scale and cross-sectorial trials

TESTUDO ARCHITECTURE

CI Operator — First Responders — Safety Inspector — Law Enforcement Agencies

Predictive intelligence and decision support
- Predictive Decision Making *via* Digital Twins
- Improved HMI in a Monitoring Centre
- XAI for threat assessment
- Multi-modal fusion
- XR Technologies

Cognitive intelligence for threat identification
- Visual object detection
- Thermal Imagery
- Activity recognition
- CBRNE material detection
- Optronics detections on embedded platforms
- Cyber-threat detection

Optimised 3D terrain and facilities — Autonomous Resource Allocation

Autonomous Vehicle Navigation
- Low-altitude aerial vehicles
- High-altitude aerial vehicles
- Unmanned ground vehicles

Sensor for Autonomous Surveillance
- CCTV cameras
- Thermal cameras
- 360 cameras
- CBRNE sensor
- IoT sensors (LiDAR etc)

Use Case #1: Disruptive online events in water reservoirs

Cyber-threat detection – incident evolution visualisation based on the operator's decisions

Use Case #2: Chemical fire in tunnel provoked by an electric vehicle

Mobile sensors for threat detection - situation awareness supported by Digital Twins, XR and HMI technologies

Use Case #3: Synchronized attack on water treatment facilities

UAVs and UGVs for area patrolling - threat detection, assessment and visualisation

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TESTUDO PARTNERS