



S4ALLCITIES

Smart Spaces Safety and Security for All Cities

CERIS Event

“Innovating Urban Resilience through Research and Practice in Smart Cities”

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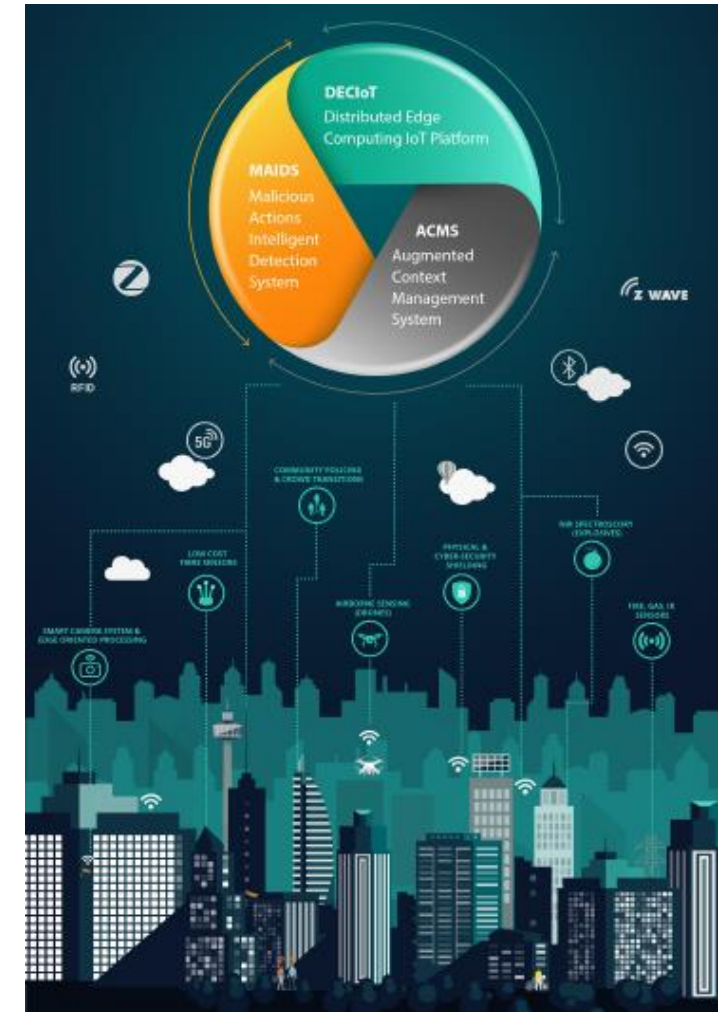
EXUS AI Labs



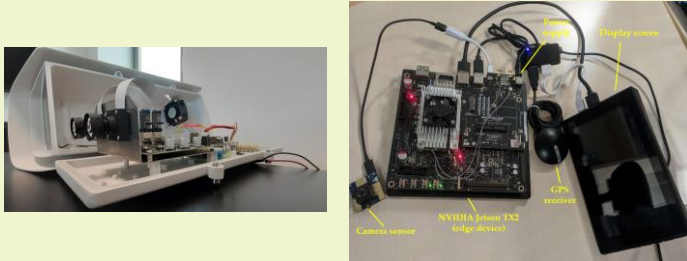
S4AllCities – Our objective



- Smart Spaces Safety & Security for All Cities
 - Increase resilience of city infrastructure
 - Provide technological solutions for the management of safety and security of public spaces
- Demonstrate solutions in 3 pilot cities
 - Trikala
 - Pilsen
 - Bilbao



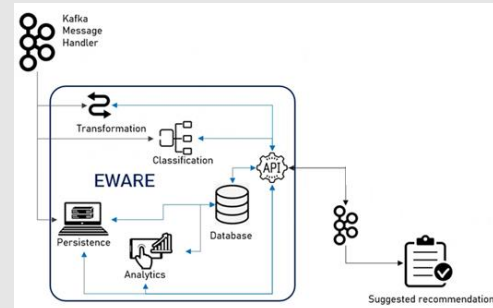
Solutions: Hardware, Modeling & Situational Awareness



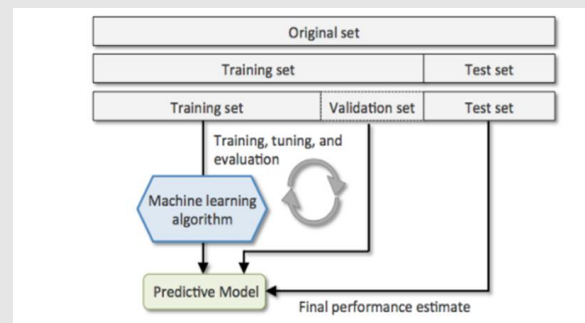
(2) Custom edge hardware for AI enabled video processing



Portable spectrometer for detecting chemical precursors to explosives. ML for spectral analysis



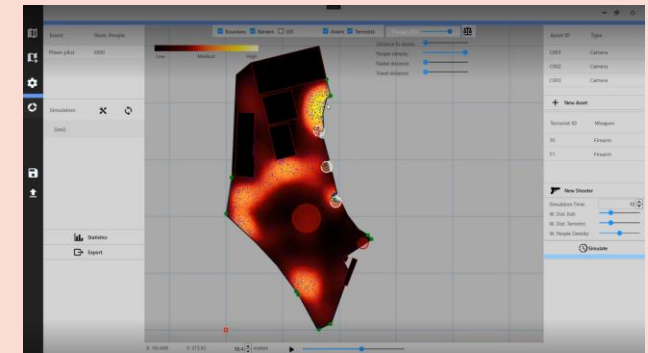
Data fusion, combination and classification for multi-criteria decision analysis



Anomaly detection applied to meteorological parameters



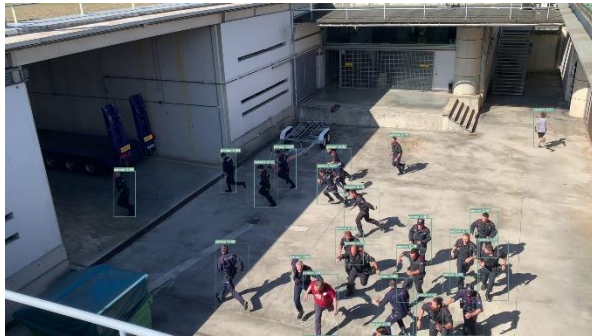
Crowd Simulation Toolkit (Intervention and Evacuation)



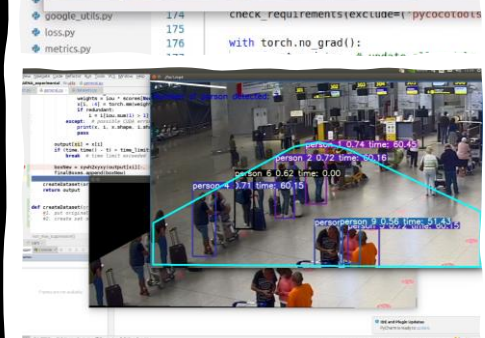
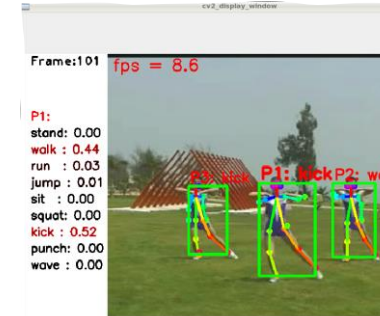
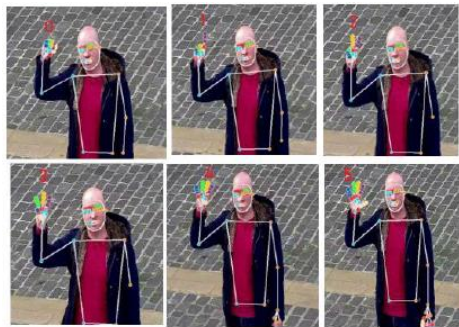
Terrorist Attack Hazard Analysis Toolkit (Mass Shooting impact and IED threat)



Solutions: Video analytics



- Detection of abandoned Luggage & cars
- Re-identification of people using multiples cameras
- Detection of guns & knives
- Gesture recognition
- Unusual crowd behaviour
- Sentiment analysis



Enhanced Situational Awareness

- ❑ Comprehensive view of related events in a Common Operational Picture (COP)
- ❑ Scalable solution for city public space security
- ❑ Use of AI for threat detection and response



Scenario: Attack on Stadium & evacuation



- Pilsen Pilot Scenario
 - Scene: a crowded stadium (Doosan Arena, Pilsen – 600 volunteers)
 - Scenario:
 - An individual draws a weapon (gun/knife) and attacks crowd
 - Several fans are injured & chaos ensues in stands
 - Stadium is evacuated
 - S4AllCities objectives:
 - Detect attack via video analytics
 - Give comprehensive view of situation to security operators
 - Provide optimal evacuation routes
 - Provide optimal routes for first responders



Scenario: Attack on Stadium & evacuation



<https://www.youtube.com/watch?v=cPV643Cn764&t=16s>



S4AllCities – advantages



- ❑ Solution for the whole city
 - Not limited to a specific location/venue
 - Scalable architecture
- ❑ Provide insight to Command Center on how situation will evolve
 - Simulation tools for fire & smoke, traffic, crowd movement/evacuation, mass shooting/IED attack
 - Preparedness & response to crisis situations
- ❑ Enhance situational awareness
 - Real time risk assessment
- ❑ Citizen reporting
- ❑ Coordination response
 - Recommendations appear in COP, easy to assign teams to handle each event
 - Operator gets full picture of response options – remains ultimate decision maker





S4ALLCITIES



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THANK YOU FOR YOUR ATTENTION

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