Towards an EU framework for the security of widezones: research project “ZONeSEC”

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Critical Infrastructure and Security Systems

- Critical infrastructure (e.g. highways, energy lines, pipelines) may spread over large areas/large geographic zones.
- Depending on security systems used in critical infrastructure, illicit activities may be undetected, leading to large systemic failures and compromising financial stability, safety and security.

- Shortcomings of security systems:
  - Costs of the systems involved for the surveillance of large areas;
  - Complexity and diversity of the employed systems;
  - Efficiency, robustness and resilience;
  - Accuracy to detect illicit activity patterns;
  - Difficulty to coordinate surveillance and monitoring activities at national and transnational levels;
  - System compliance with EU policies and societal values with respect to privacy protection.
Zone Security - Highways

- Mechanisms already in place to deal with all sorts of events and illicit actions is to provide safe and easy access to the Users of the motorway.

- Threats that may escalate to crises as a result of illegal activities (in the case of a tolled motorway):
  - Demonstration, occupation, uproar
  - Sabotage
  - Vehicle hijacking
  - Terrorist act

- Sources of detection:
  - traffic intervention patrols that circulate constantly on the motorway,
  - network of cameras along the motorway,
  - telephone hotlines,
  - inductive loops under the surface of a motorway and
  - security subcontractors.
Wide Zone Security - Highways

- What about threats from infrastructure adjacent to a Highway?
  - not directly monitored by a motorway,
  - essential to include all systems in a wider, uniform approach.

- Attikes Diadromes, the operation and maintenance company of Attiki Odos, in Athens, Greece, joined the research project ZONeSEC, which is aimed at creating a multilayered digital security and surveillance platform that will operate as a Virtual Perimeter (virtual fence) around any wide-zone facility.
ZONeSEC at a glance

“Towards an EU framework for the security of Wide zones”

The Global Objective of ZONeSEC is to support the security of citizens by providing a total solution for the protection of Wide zone infrastructure.

Grant agreement no: 607292

- Start date: 1 December 2014
- End date: 30 November 2018

- Total budget: 14,163,695 €
- Total funding: 9,262,732 €
ZONeSEC Partners

19 partners
9 countries
4 pilots
48 months
ZONeSEC description

- ZONeSEC aims at integrating affordable ground and airborne sensor observation technologies for the critical surveillance of large spatial areas of high economic value in Europe.
- A resilient and seamless communication platform will integrate all mechanisms that are already in place, to convey illicit events via multiple mechanisms such as audio, video, e-mail and other methods, over a common multilayer interface:
  - Secure and interoperable observation data and information management services using open standards with the aim of cost-effectively reusing them.
  - Knowledge Base (KB), focused on large-scale surveillance with high-performance detection of localized abnormal activities and alerts
  - high-level data fusion and reasoning with reduced uncertainties and false alerts, artificial Intelligence and proprietary algorithms.
**ZONeSEC Alerts**

- Only actual events are processed (with low false alarm rate) into a user-friendly Graphical User Interface (GUI).

- The GUI will also:
  - define and modify zones of interest and sensitivities,
  - manage and review databases,
  - provide multilevel management tools: observing scenes from video cameras in real time, interaction with system security features such as intrusion alarms or real time and archived video and data forensics, complete system administration, etc.

- The platform will be tested in the detection of illegal unauthorized entrances/ trespassing, vandalism or deployment of harmful devices on installations.
ZONeSEC Operations
Four Pilots

Pilot 1. Highway, Railtrack and Oil Pipeline - ATTIKES DIADROMES

Pilot 2. Water pipelines Surveillance - AQUASERV

Pilot 3. Transnational Gas Pipeline Networks - GASUNIE

Pilot 4. Incident on a Highway with implications on neighboring Railtracks and Energy lines - ACCIONA
ZONeSEC Technologies (1/3)

- Software defined MIMO Radar
- Optical Technology for Illicit Activity and Early Threat Detection (iDAS)
ZONeSEC Technologies (2/3)

- Unmanned Aerial Vehicles (Multi-rotor mini-UAV)

- Satellite Imagery & Illicit Activity Pattern Detection and Early Identification of Potential Threats using Imaging (eg. Video-based state detection and monitoring, Hyper-spectral imaging)
ZONeSEC Technologies (3/3)

- Large Scale, Uniform and Secure Communications
  - Wired Sensors
  - Wireless Sensors
  - Cellular and Satellite Interfaced Sensors

- iOC (intelligent Operations Centre)
  - SDAIM - Surveillance, Detection and Alerts Information Management, ZONeSEC Knowledge Base
  - Common Operational Picture and Adaptive User Interfaces
For more information about the project and the participants, please visit:


http://www.zonesec.eu

Thank you!