



CONNEXIONS





CONNEXIONS: InterCONnected NEXt-Generation Immersive IoT Platform of Crime and Terrorism DetectiON, PredictiON, InvestigatiON, and PreventiON Services

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CONNEXIONS General Information

Project Coordinator: MOTOROLA SOLUTIONS ISRAEL LTD (MSIL), Israel

Project Website: <https://www.connexions-project.eu/>

Start Date: 01/09/2018

Duration: 36 months

Type of Action: Research & Innovation Action (RIA)

Total Cost: € 4,999,390

Consortium: 17 partners (8 LEAs from seven countries, 5 research/academic, 4 industry)

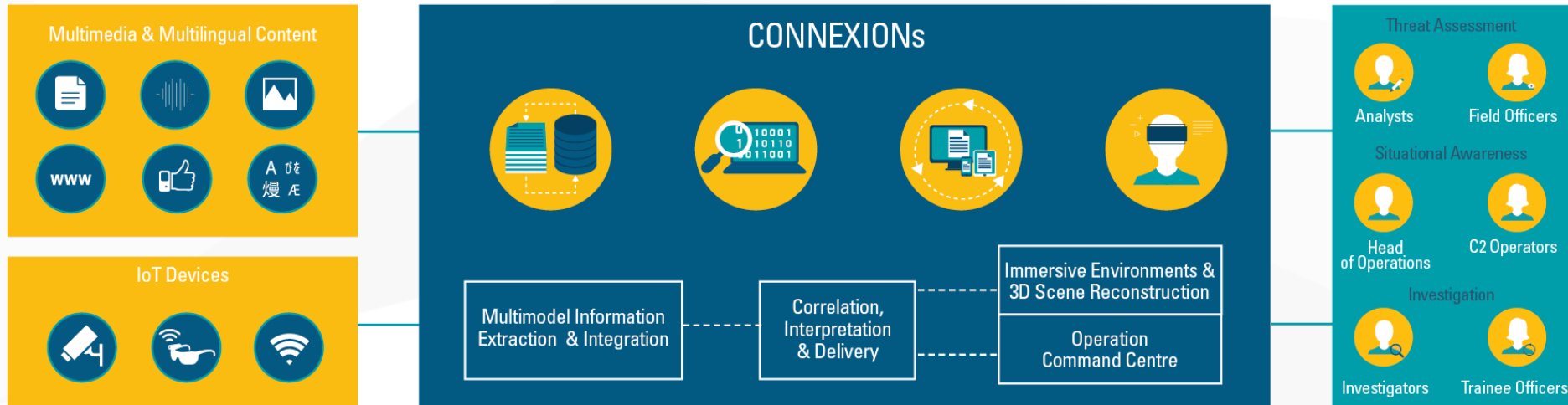
CONNEXIONS for Fighting Crime & Terrorism

CONNEXIONS aims to equip Law Enforcement Agencies (LEAs) with an interconnected suite of advanced next-generation technologies (detection, prediction, prevention, investigation) for significantly improving their capabilities to **gather intelligence**, **analyse evidence**, and **investigate crime and terrorism** effectively and efficiently.

CONNEXIONS main objectives:

- Multimodal information collection, integration, correlation, retrieval, and delivery
- Immersive environments for improving situational awareness, investigation and training capabilities
- Operation command centre for real-time management of LEAs operations
- CONNEXIONS integrated platform based on ethics and privacy by-design principles, implementing EU legal requirements, whilst being highly customisable to local legislations

CONNEXIONS Objectives & Activities



Encompassing the Lifecycle of LEAs' Operations

Pre-occurrence prediction and prevention

- Heterogeneous multimodal content collection, analysis, and understanding
- Information and data correlation
- Threat assessment and early warnings provision
- 3D site reconstruction for unit deployment planning

During-occurrence LEAs operations

- Continuous Web and social media monitoring
- Video footage processing for object detection, face identification, and abnormal activity detection
- AR-based (near) real-time alerts to field officers
- Enhanced situational awareness and unit management (organisation & communication) in the Operation Command centre

Post-occurrence investigation

- Effective data analysis
- 3D crime scene reconstruction
- VR-based scene exploration & investigative hypotheses simulation
- Summarisation (e.g., crime timelines, chain-of-custody) and reporting services

CONNEXIONS Pilot Use Cases (PUCs)

PUC 1. Terrorist Threat in a Public Event



PUC 2. Human Trafficking

PUC 3. Improved Investigation and Training through 3D Crime Scene Reconstruction



- ✓ Online and IoT data
- ✓ Financial & Phone data
- ✓ 3D reconstructions of places (efficient placement of agencies)
- ✓ Unit management capabilities (position and status)
- ✓ VR technology
- ✓ AR applications
- ✓ Hypotheses testing and evaluation

CONNEXIONS Work Packages

No	Title	Lead	Start month	End month
1	Ethics requirements	MSIL	1	36
2	Use Cases, Requirements, and Legal Framework	SPP	1	35
3	Content Understanding & Information Extraction	UPF	1	33
4	IoT Data Propagation & Intelligence	END	3	36
5	Multimodal Information Integration & Correlation	CERTH	1	34
6	Immersive Environments	NURO	1	34
7	Operation Command Center for Real-Time Management	MSIL	1	33
8	Development & Integration of the Platform	SIVECO	1	36
9	Field Demonstrations, Evaluation & Training	BHP	3	36
10	Impact Creation Activities	PSNI	1	36
11	Project Management & Coordination	MSIL	1	36

CONNEXIONS Research & Innovation - I

WP3. Content Understanding & Information Extraction

- Web (Surface/Deep/Dark Web) and social media crawling
- Automatic speech recognition from multiple languages
- Machine translation
- Multilingual content analysis of textual material

WP4. IoT Data Propagation & Intelligence

- IoT data normalisation and propagation
- Visual understanding of multimedia data: objects recognition, abnormal activity detection, face identification
- IoT data fusion at different abstraction levels
- Intelligent IoT data analytics

CONNEXIONS Research & Innovation - II

WP5. **Multimodal Information Integration & Correlation**

- Multimodal data indexing and retrieval
- Semantic content representation, enrichment, and reasoning
- Classification, clustering, and social network analytics
- Misinformation/Disinformation detection
- Profiling and identification of actors (user accounts) in social media, forums, and the Web
- Multilingual summarisation and report generation
- Threat assessment and early warnings

CONNEXIONS Research & Innovation - III

WP6. Immersive Environments

- User interfaces for VR and AR devices
- Visual assets for CONNEXIONS platform
- 3D scene reconstruction using multiple input sources
- Creation and reasoning on investigative hypotheses

WP7. Operation Command Center for Real-Time Management

- Role-based unit management and visualisation functionality
- Enhanced situational awareness
- Multi-agent engagement (real-time parallel engagement of agents)

CONNEXIONS Exploitation & Dissemination

Exploitation

- Creation of open-source, limited open-source, and full commercial modules/services
- Modules to be exploited by LEAs, Security agencies, ICT companies, etc.
- Marketing plan to exploit the final modules/services

Dissemination

- CONNEXIONS website and social media accounts
- Three workshops to demonstrate results to local authorities, public administration, and policy-makers
- Information and demonstration activities to showcase CONNEXIONS solutions to industry and user community
- Presentations at academic and industrial venues
- Final Stakeholder Forum

CONNEXIONS Impact & Benefits

- Provision of better tools tailored to the needs of LEA officers to support them on their daily work
- Better identification and understanding of criminal and terrorist activities
- Improved investigation and training capabilities
- Prevention of more terrorist endeavours
- Rapid crime solving to reduce: societal distress, investigative costs, impact on victims/ relatives

Thank You!