



CONNEXIONS





Inter**CON**ected **NEXT**-Generation Immersive IoT Platform
of Crime and Terrorism
Detecti**ON**, Predicti**ON**, Investigati**ON**, and Preventi**ON** services

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Multimodal Data Fusion and Analytics Group*





CONNEXIONS

Project Information

CONNEXIONS

Grant agreement ID: 786731

Project website

Status

Ongoing project

Start date

1 September 2018

End date

28 February 2022

Funded under

H2020-EU.3.7.6.

H2020-EU.3.7.1.

Overall budget

€ 4 999 390

EU contribution

€ 4 999 390



Coordinated by

ETHNIKO KENTRO EREVNAS KAI TECHNOLOGIKIS

ANAPTYXIS

Greece

CONSORTIUM → 17 PARTNERS

RESEARCH/ACADEMIC



INDUSTRY



LEAs



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



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Fighting Crime & Terrorism

CONNEXIONS aims to equip Law Enforcement Agencies (LEAs) with an **interconnected suite** of **advanced next-generation technologies** for significantly improving their capabilities

- to **gather intelligence**,
- to **analyse evidence**,
- and to **investigate crime and terrorism** effectively and efficiently

Concept

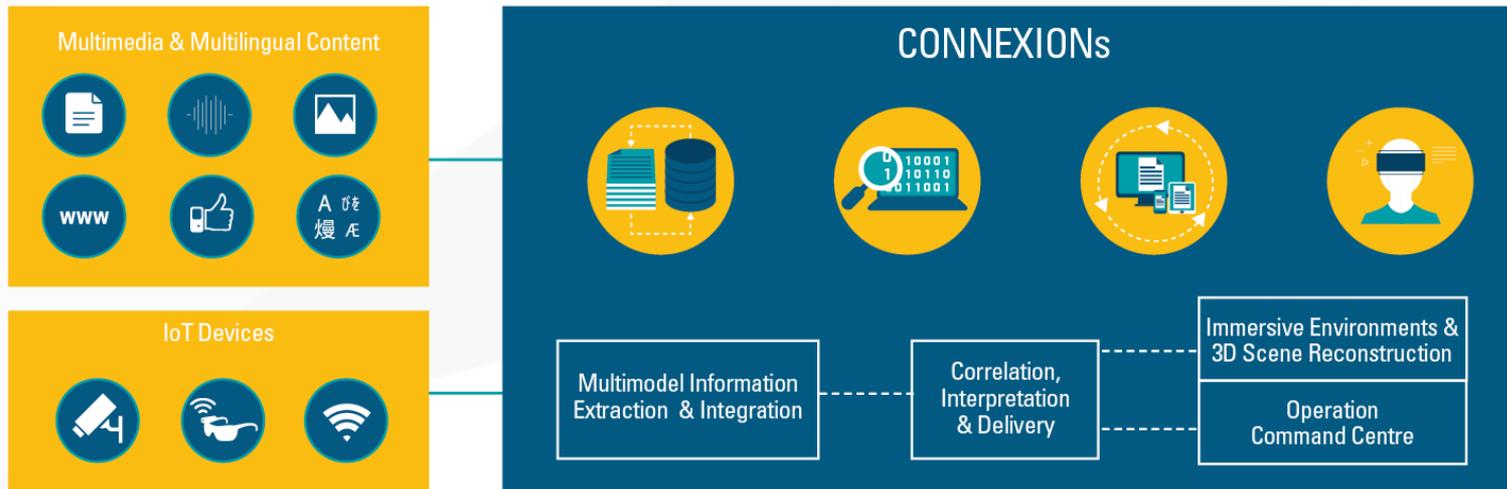
Multimedia & Multilingual Content



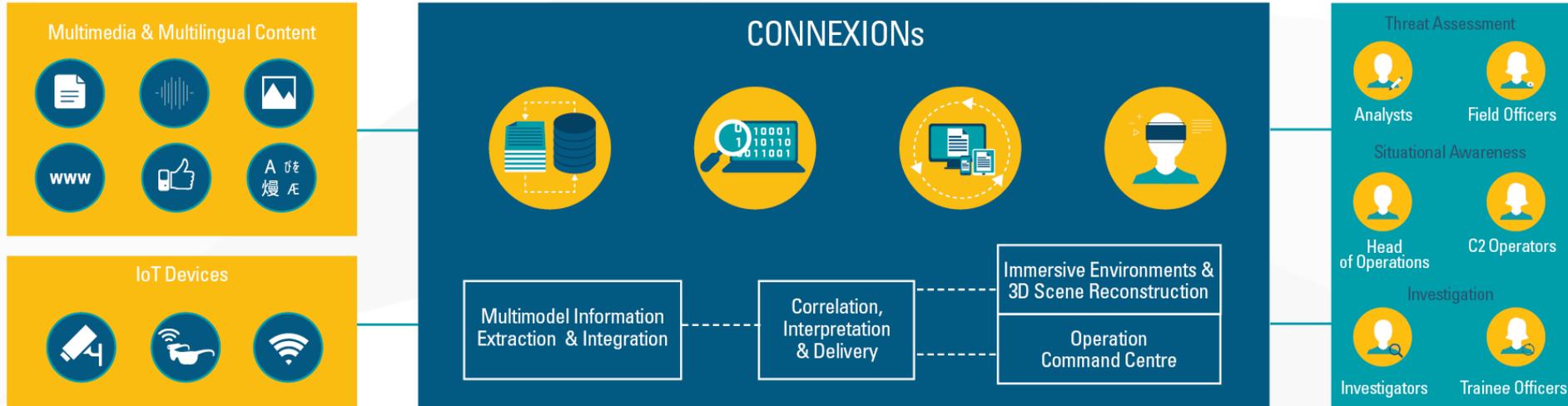
IoT Devices



Concept



Concept



Lifecycle of LEAs' Operations

Pre-occurrence prediction & prevention

- Intelligence gathering based on the discovery, collection, and analysis of online content
- Threat assessment and early warnings provision
- 3D site reconstruction for unit deployment planning

During-occurrence LEA operations

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

Post-occurrence investigation

- 3D crime scene reconstruction
- VR-based scene exploration & investigative hypotheses simulation
- Summarisation and reporting services
- Analytics services to seized evidence and devices

Pilot Use Cases

1. Terrorist Threat to a Public Event



2. Human Trafficking

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



CONNEXIONS Status & Next Steps

<ul style="list-style-type: none"> Feb – Sep 2020: 1st prototype ✓ Oct 2020: PUC2 pilot evaluation (PSNI) ✓ Dec 2020: PUC1 pilot evaluation (SPP) ✓ 	1st iteration
<ul style="list-style-type: none"> April 2021: 2nd prototype ✓ May 2021: PUC3 pilot evaluation (BHP/MPD) ✓ May 2021: PUC1 pilot evaluation (KEMEA) ✓ Jun 2021: PUC2 pilot evaluation (PJ) ✓ 	2nd iteration
<ul style="list-style-type: none"> Dec 2021: Final system Jan 2022 : PUC3 pilot evaluation (BHP/MPD) Jan 2022 : PUC2 pilot evaluation (PSNI) Feb 2022: PUC1 pilot evaluation (SPP) 	3rd iteration

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PUC1 Terrorist Threat to a Public Event

1st iteration – PUC1

SPP @ Bucharest, Romania

December 7, 2020



2nd iteration – PUC1

KEMEA @ Athens, Greece

May 25, 2021



3rd iteration – PUC1

SPP @ Bucharest, Romania

February 2022





PUC2 Human Trafficking

1st iteration – PUC2

PSNI @ Belfast, UK

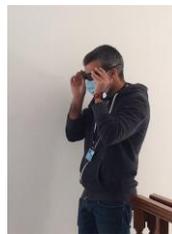
October 22, 2020



2nd iteration – PUC2

PJ @ Lisbon, Portugal

June 23, 2021



3rd iteration – PUC2

PSNI @ Belfast, UK

January 2022





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PUC3 Improved Investigation & Training through 3D Crime Scene Reconstruction

1st iteration – N/A

2nd iteration – PUC3

3rd iteration – PUC3

BHP/MPD @ Munich, Germany

BHP/MPD @ Munich, Germany

May 20, 2021

January 2022







Content Understanding
& Information Extraction

- Web and social media **mining**
- Automatic **speech** recognition
- Machine **translation**
- **Multilingual** content analysis



IoT Data Propagation
& Intelligence

- IoT data **propagation**
- IoT data **fusion** at different abstraction levels
- Intelligent IoT data **analytics**



Multimodal Analytics

- **Semantic** representation and reasoning
- Classification, clustering, and social network **analytics**
- **Mis-/Dis-information** detection
- Actor **identity** profiling and resolution
- Multilingual **summarisation** and report generation
- **Threat assessment** and early warnings



Visual Understanding

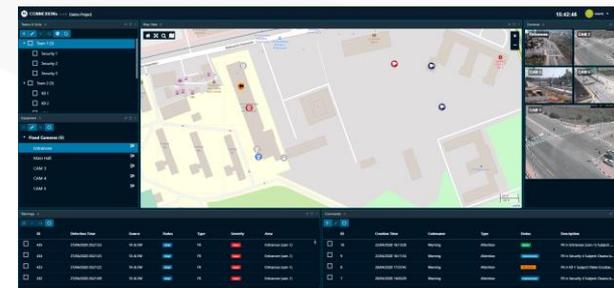
- Object detection and tracking
- Face detection and recognition
- Activity recognition
- Crowd violence detection





Operation Command Centre

- Real-time management of LEAs operations
- Role-based unit management
- Enhanced situational awareness
- Multi-agent engagement





3D Reconstruction





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Immersive Environments

Virtual and Augmented Reality

Investigative Hypothesis Simulation



Impact & Benefits

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

Thank you for your attention

Contact

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Online presence



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



<https://twitter.com/CONNEXIONSsEU>



<https://www.linkedin.com/groups/12170539/>