PREVISION

PREdiction and Visual Intelligence for Security InformatiON

PREVISION Overview

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PREVISION – General information

Project Coordinator: Institute of Communication and Computer Systems (ICCS), Greece
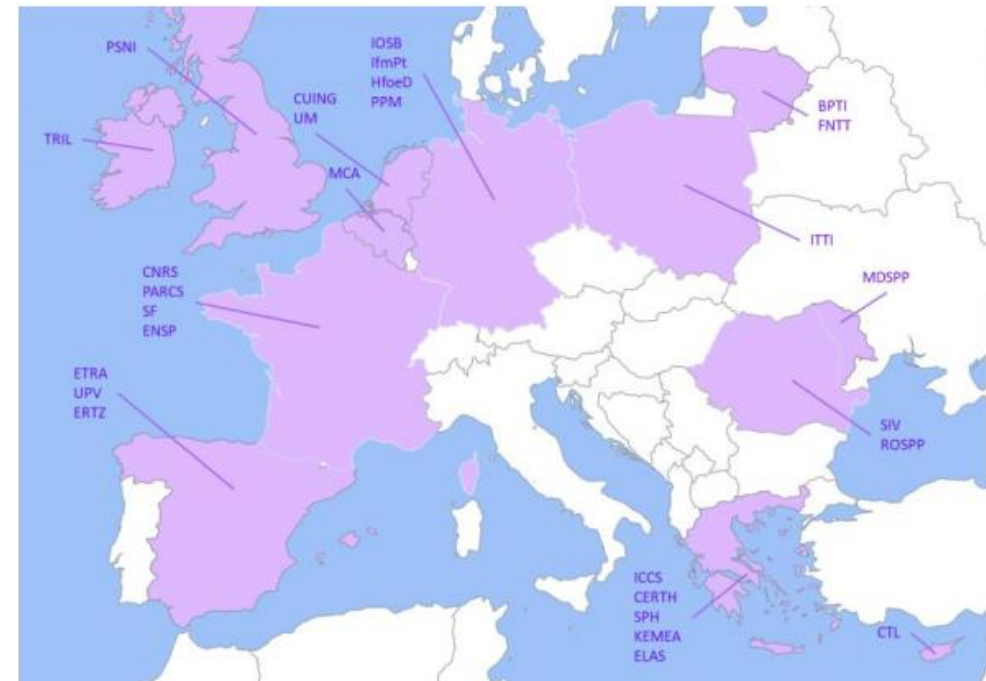
Start Date: 01/09/2019

Duration: 24months

Type of Action: Innovation Action (IA)

Total Cost: € 9,036,105

Consortium: 28 partners

- ◦ **10 LEAs** from eight countries
- ◦ **7 Research and academic partners** from six countries
- ◦ **8 Industrial and commercial partners** from eight countries
- ◦ **3 Non-profit organizations from** three countries
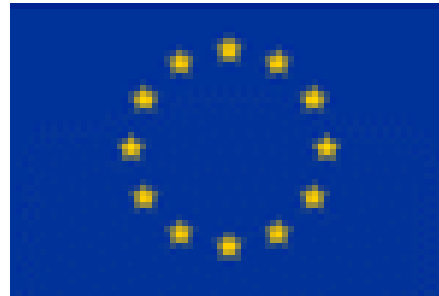
Research Centers | SMEs | Industries | LEAs | Practitioners | NPOs | Universities

PREVISION's Mission 1/2

PREVISION's mission is to **provide LEAs with the capabilities** of:

1. **Analyzing and jointly exploiting** multiple **massive data streams**, coming from:
   - Online social networks
   - Open web/Darknet/DarkWeb
   - CCTV and video surveillance systems
   - Traffic and financial data sources

2. **Semantically integrating them** into **dynamic knowledge graphs**
   - That capture the structure/ interrelations/ trends of:
     - **Terrorist groups** and individuals
     - **Cybercriminal organizations** and OCGs

3. **Predicting abnormal or deviant behavior** and **radicalization risks**
   - based on sound predictive policing methods:
     - Underpinned by valid psychological, sociological and linguistic models
     - In conjunction with **historical data patterns**

PREVISION's Mission 2/2

4. **Performing dependable soft target risk assessment** and **cybercrime trend prediction**
   ◦ At different timescales

5. **Becoming continuously more knowledgeable** of the operations and activities of criminal organizations
   ◦ By coupling the semantic technologies with deep and ensemble learning techniques

6. **Maintaining high situation awareness** at all times
   ◦ By means of user-centered **visual analytics** and
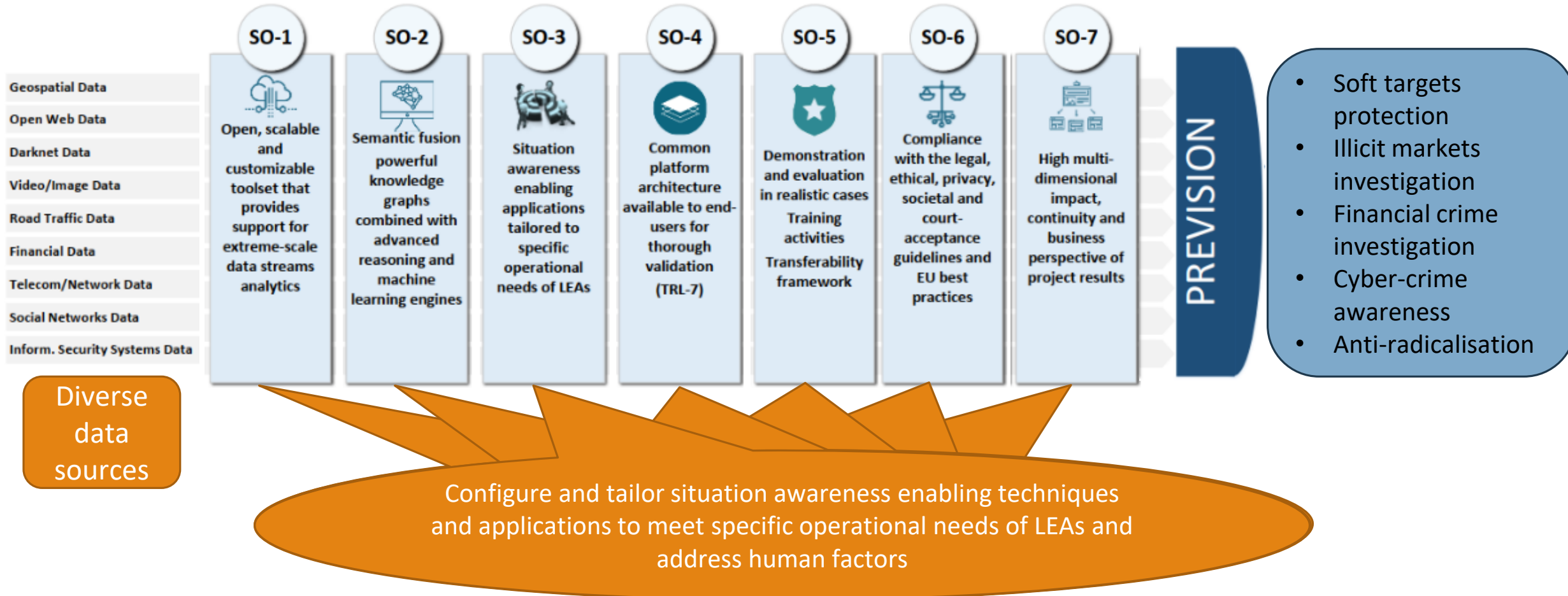   ◦ **Human-machine** interaction techniques
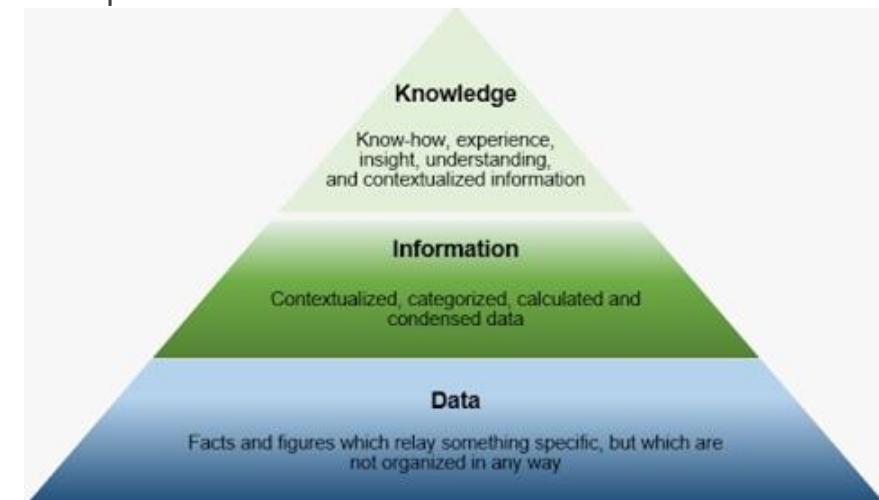
PREVISION's Concept

PREVISION aims to develop and demonstrate a **next-generation detection**, **prediction, prevention, and investigation platform** by building upon the concepts of:

- **Crawling** through and analyzing **massive heterogeneous data streams**

- **Multi-purpose analysis** capabilities that extend from traditional object/person detection **to advanced behavior analytics**

- **Near-real-time** analysis performance together with the ability to automatically and dependably balance accuracy vs. processing speed.

- **Semantic integration** the fragmented and individual information flows into dynamic and continuously **updating knowledge graphs**

- **Trend analysis and multi-variate behaviour anomaly detection** in the semantically fused knowledge

PREVISION Objectives and Activities

Geospatial Data
Open Web Data
Darknet Data
Video/Image Data
Road Traffic Data
Financial Data
Telecom/Network Data
Social Networks Data
Inform. Security Systems Data

Diverse data sources

SO-1 Open, scalable and customizable toolset that provides support for extreme-scale data streams analytics

SO-2 Semantic fusion powerful knowledge graphs combined with advanced reasoning and machine learning engines

SO-3 Situation awareness enabling applications tailored to specific operational needs of LEAs

SO-4 Common platform architecture available to end-users for thorough validation (TRL-7)

SO-5 Demonstration and evaluation in realistic cases Training activities Transferability framework

SO-6 Compliance with the legal, ethical, privacy, societal and court-acceptance guidelines and EU best practices

SO-7 High multi-dimensional impact, continuity and business perspective of project results

PREVISION

- Soft targets protection
- Illicit markets investigation
- Financial crime investigation
- Cyber-crime awareness
- Anti-radicalisation

Configure and tailor situation awareness enabling techniques and applications to meet specific operational needs of LEAs and address human factors

PREVISION's Use Cases

1. Use Case 1: **Terrorist attack at stadium protection**

2. Use Case 2: **Radicalization** & terrorist threat prevention

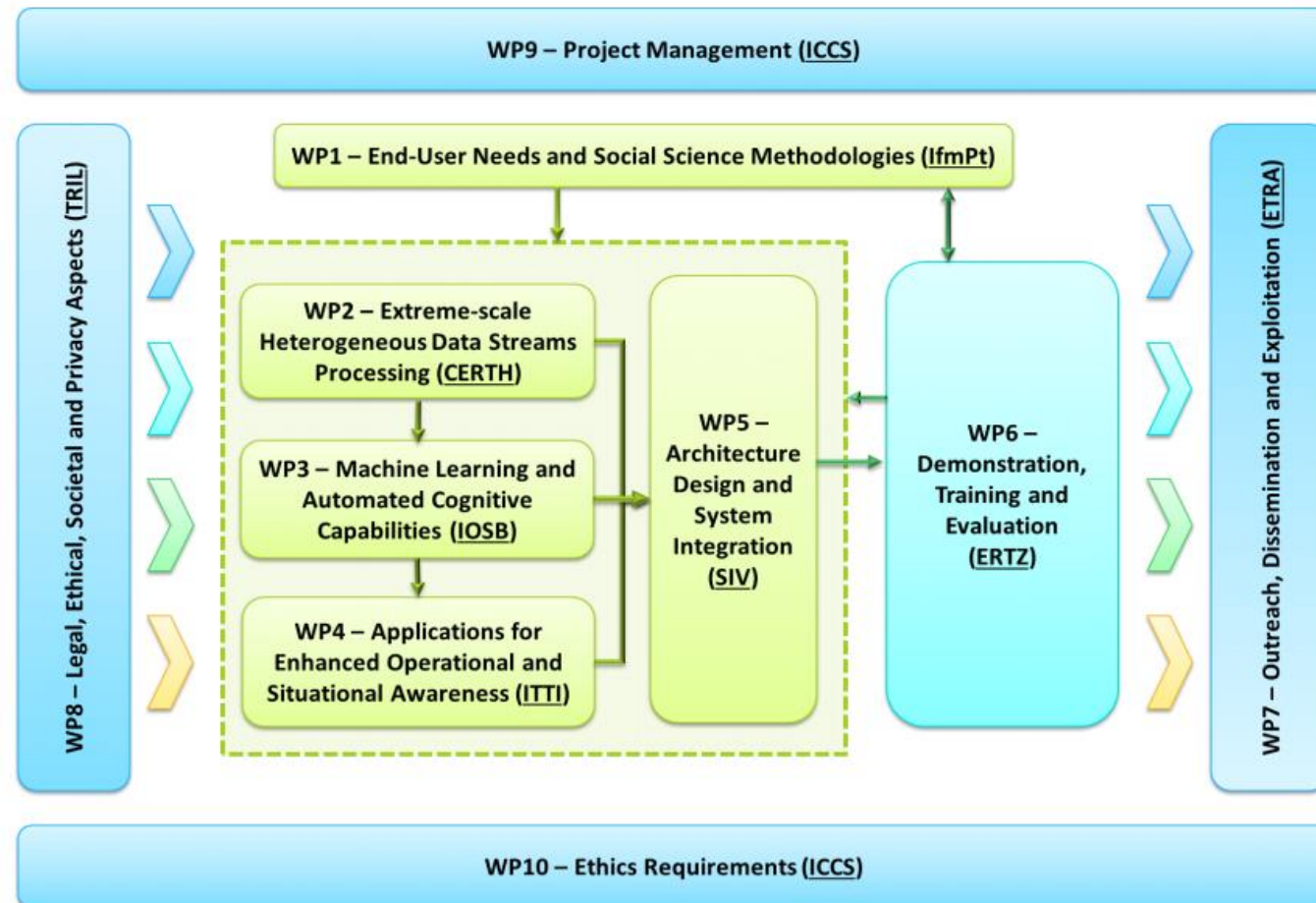3. Use Case 3: Financial Crime Investigation – **Detection of fraudulent companies**

4. Use Case 4: **Cyber-enabled crime detection**

5. Use Case 5: **Illicit markets investigation** – against looting and trafficking of **cultural goods**

PREVISION'S Work Packages

PREVISION'S Work Packages

No	Title	Lead	Start month	End month
WP1	Use Cases and user Requirements	IfmPT	1	11
WP2	Extreme-scale Heterogeneous Data Streams Processing	CERTH	2	16
WP3	Machine Learning and Automated Cognitive Capabilities	IOSB	4	16
WP4	Applications for Enhanced Operational and Situational Awareness	ITTI	6	17
WP5	Architecture Design and System Integration	SIV	2	19
WP6	Demonstration, Training and Evaluation	ERTZ	8	24
WP7	Outreach, Dissemination and Exploitation	ETRA	1	24
WP8	Legal, Ethical, Societal and Privacy Aspects	TRIL	1	24
WP9	Project Management	ICCS	1	24
WP10	Ethics Requirements	ICCS	1	24

PREVISION Innovation Actions

WP2. Extreme-scale Heterogeneous Data Streams Processing

- Web (Surface/Deep/Dark Web) and social media crawling
- Near-real-time Image and Video Analysis
- Deep Linguistic Analysis

WP3. Machine Learning and Automated Cognitive Capabilities

- Semantic information processing
- Advanced evidence discovery
- Trends analysis and anomaly detection
- Working in parallel with multiple information streams

WP4. Applications for Enhanced Operational and Situational Awareness

- Identification of Radicalization and Terrorist Propaganda
- Fight against Illicit Trafficking and Money Laundering
- Trend Characterization in Cybercriminal Activities

PREVISION Platform
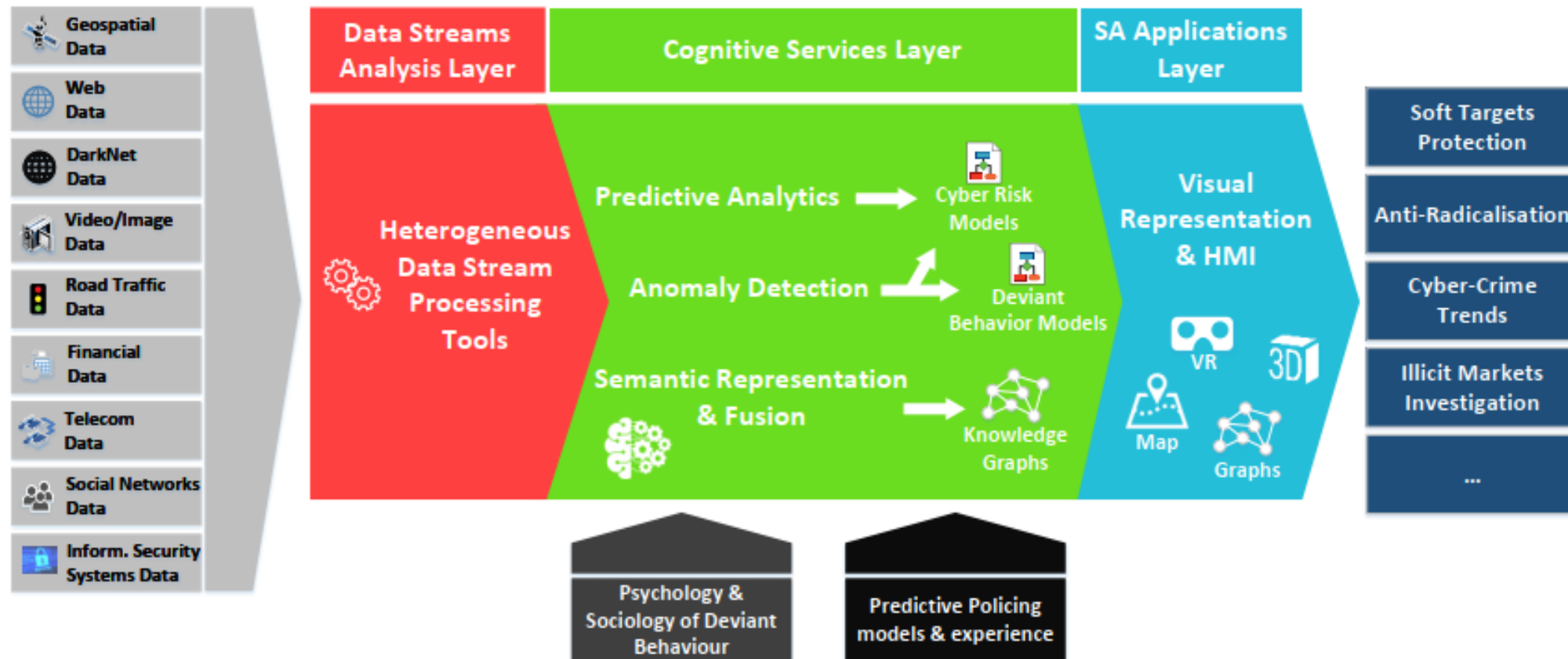
PREVISION Exploitation & Dissemination

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

- PREVISION website and social media accounts
- Workshops to demonstrate results to local authorities, public administration, and policy-makers
- Information and demonstration activities to showcase PREVISION solutions to industry and user community
- Presentations at academic and industrial venues

PREVISION's Impact & Benefits

- **Providing of better tools** tailored to the needs of LEA officers to support them on their daily work

- **Prevention of more terrorist attacks**

- **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/ relatives

Thank You!