

# PREVISION Architecture

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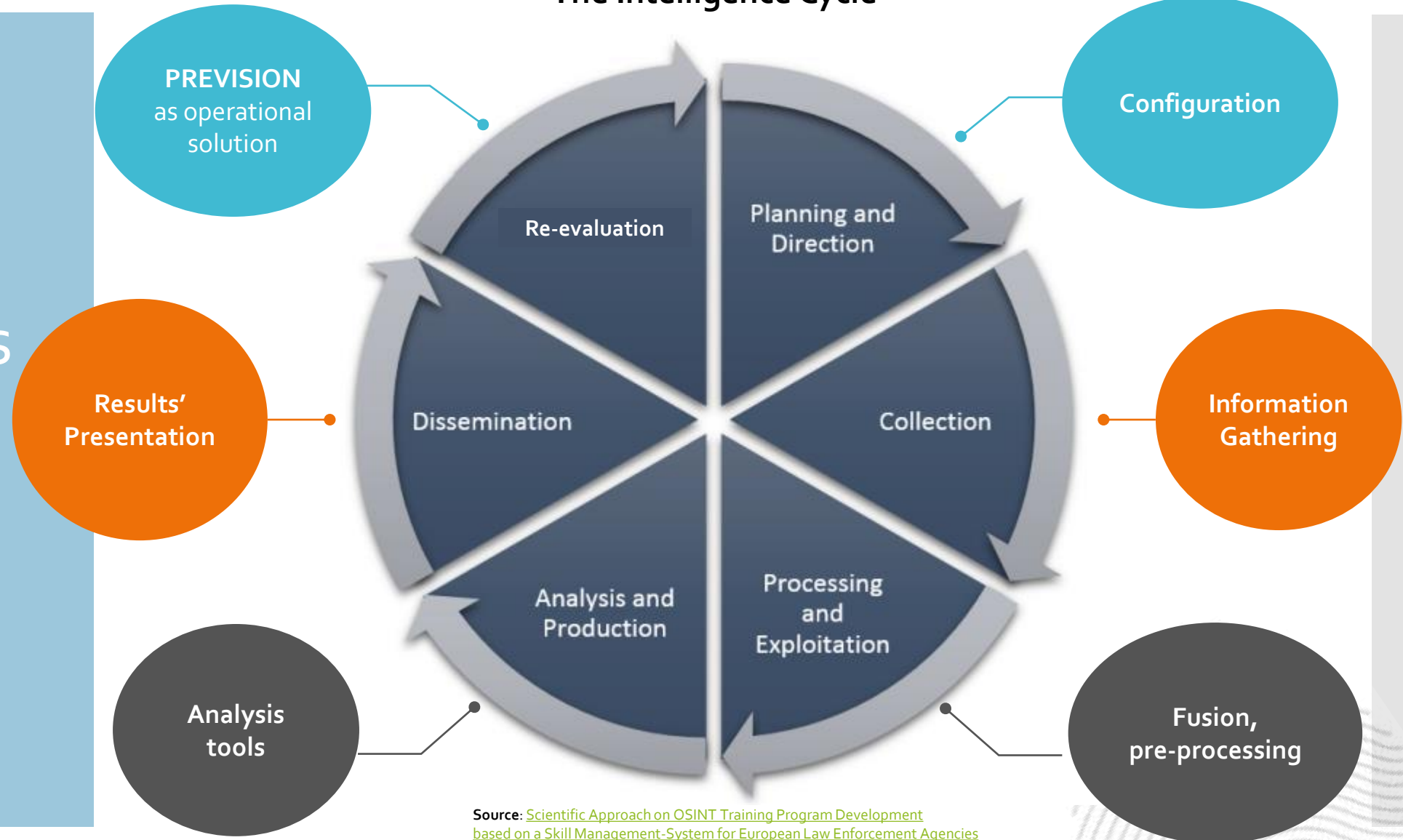


# Outline of the Presentation

- PREVISION as Intelligence Solution
- Conceptual Architecture
- PREVISION Service Bundles

## The Intelligence Cycle

# PREVISION as Intelligence Solution




Source: [Scientific Approach on OSINT Training Program Development based on a Skill Management-System for European Law Enforcement Agencies](#)

**Information Sources**

**PREVISION Services**

**Use Cases**

 **Geospatial data**

 **Web (Darknet, Clearnet, Social)**

 **Visual content**

 **Road/traffic data**

 **Financial data**

 **Telecom**

**Information Gathering**

- Web Crawling
- Text Mining
- Fusion

**Analysis Tools**

- Predictive analytics
- Machine Learning, AI
- Semantic Reasoning

**Results Presentation**

- Operational & Situational awareness

**Soft Targets Protection**

**Anti-Radicalisation**

**Illicit markets investigation**

**Cyber-crime trends**

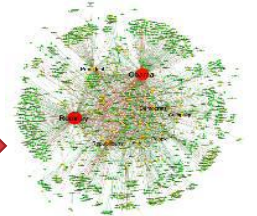
**Financial Crime Investigation**

# Conceptual Architecture

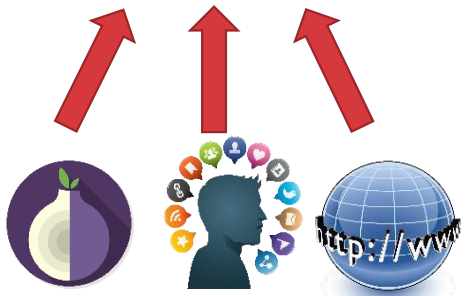
# PREVISION Service Bundles



## Crawling Tools



Analytics

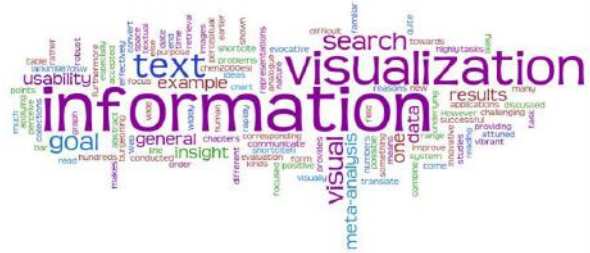


Social media    Dark Web    Clear Web

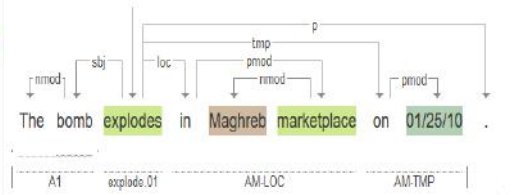
## Deep Linguistic Analysis



Text Mining



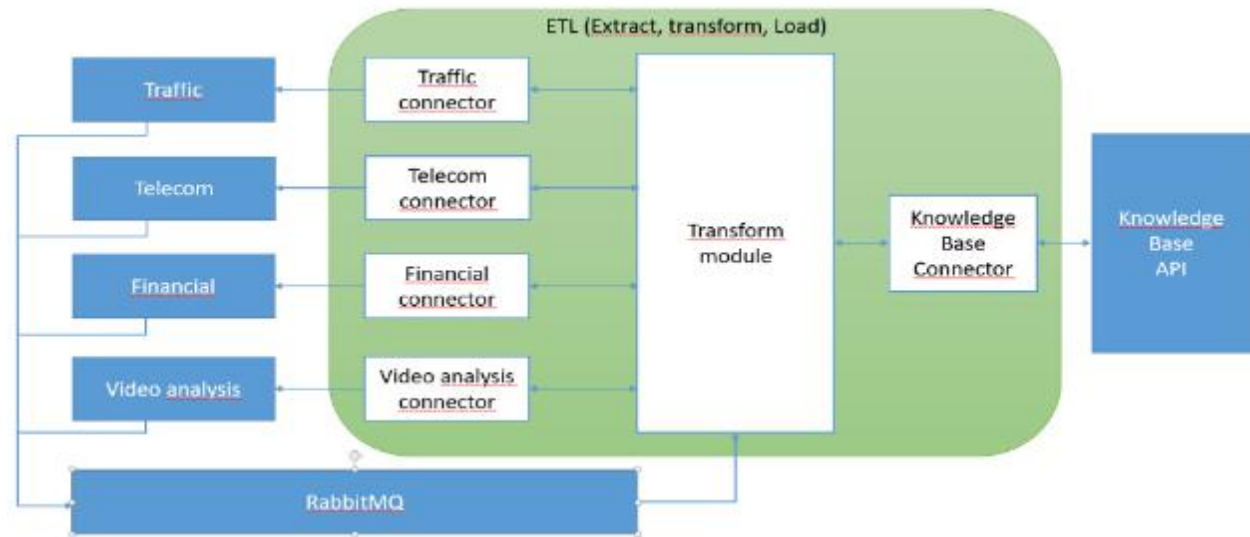
Text Modelling & Visualisation



# PREVISION Service Bundles

Information  
Gathering

## Fusion & pre-processing





# PREVISION Service Bundles

## Analysis Tools



### Visual Analytics



PREVISION 

Face Detection

Activity Recognition

Crisis Event Detection

Localization -> frames 25 to 55  
Classification -> Person walks



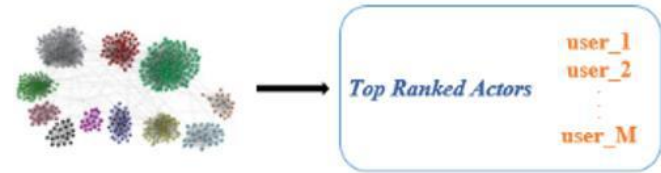
```
{ "merged activity face crisis-fixed.mp4":  
  { "0": [{"label": "fire", "score": 89.00834918022156}],  
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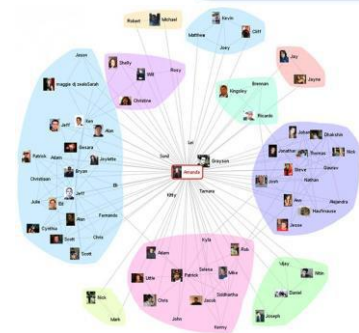
# PREVISION Service Bundles

Analysis Tools

## AI/ML-enabled Cognition



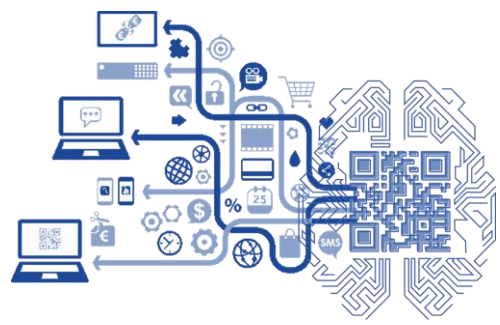
Community Detection,  
Actor Identity Resolution



People Interaction



Semantic Reasoning



Predictive Analytics  
(info check worthiness,  
prediction of aggressive  
content, behaviour analysis)



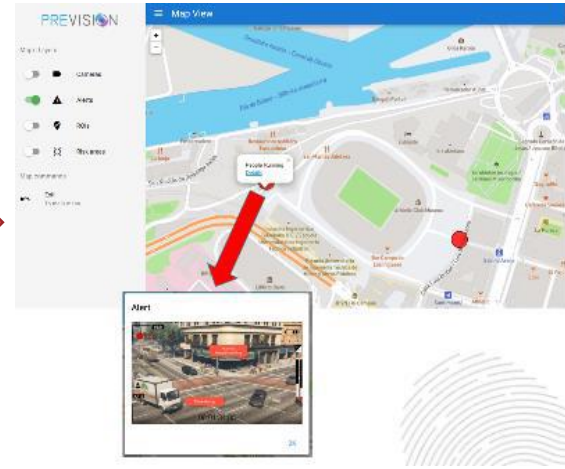
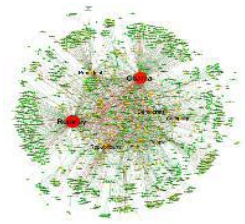
Operational & Situational Awareness

PREVISION  
Service  
Bundles

Results  
Presentation



HMI (operations center)



HMI (field alerting system)



GIS Info Visualisation

# PREVISION Service Bundles

## Applications for Enhanced Operational and Situational Awareness

### PREVISION HMI

Web-GIS & Haptic Device

VR-Visualization

Machine learning model for risk of radicalisation prediction

Soft Target Protection - alerting system

Cybercrime Trends Characterization

Fight against illicit trafficking of cultural goods

## Extreme-scale Heterogeneous Data Streams Processing modules

### Crawling tools

Extraction, Transformation and Loading (ETL)

### Batch and Near-real-time Video and Image Analysis

Activity Recognition (AR)

Face Detection and Recognition (FDR)

Person and Vehicle Re-Identification (PVI)

Crisis Event Detection (CED)

### Social Networks Data Analysis

Community detection and key actor identification

Actor identity resolution

### Deep Linguistic Analysis

Text Mining

Linguistic Feature Extractor (LiFE)

Text visualization tool (TVT)

## Machine Learning and Automated Cognitive Capabilities modules

### Semantic Information Processing

Knowledge Base

Probabilistic Reasoning

Jargon detection

### Smart Fusion and Incomplete Data Handling

Fill in the Gap People Interaction

### AI-based Evidence Discovery

Geospatial Analysis

Classification based on Decision Tree

### Predictive Analytics and Trend Analysis

Predictive Information Diffusion

### Multivariate Behavioural Analysis and Anomaly Detection Tool

### Estimation of Information Check-Worthiness

### Prediction of aggressive content

Thank you for your  
attention!

Partner	Tool	Offering under License Type	Comments
CNRS	Jargon Detection	Open/cost-free	
SPH	Crawling tools (CT)	Closed/proprietary solution	CT cannot be provided at its current state, as it is built on a SPH commercial solution. SPH investigates the modification of the tool so that it can be partially provided in the form of a demo version
CTL	Crisis event Detection (CED)	Closed/proprietary solution	All rights of CED solution are currently reserved. The module is based on a commercial solution that is currently developed within CTL premises and may not be modified or redistributed.
CERTH	Face Detection and Recognition (FDR)	Partially open	A perpetual with no code provision, royalty-free license to use, which is non-exclusive, non-transferable, non-commercial, non-competitive and requires an attribution obligation for the licensee
CERTH	Activity Recognition (AR)	Partially open	
CERTH	Actor Identity Resolution (AIR)	Partially open	
CERTH	Community Detection and key actor identification (CD)	Partially open	
ICCS	Outlier Detection Toolset	Open/cost-free	
ICCS	Call Detail Records (CDR) Toolset	Open/cost-free	
ICCS	Complex Event Processing (CEP) Toolset	Open/cost-free	
ICCS	(Prevision) Semantic Reasoner	Open/cost-free	
ETRA	Extraction Transformation Loading (ETL)	Open/cost-free	
ETRA	Post Event Processor (PEP)	Open/cost-free	
IOSB	Decision Tree	Partially open	A perpetual with no code provision, royalty-free license to use, which is non-exclusive, non-transferable, non-commercial, non-competitive and requires an attribution obligation for the licensee
IOSB	Knowledge Base Manager	Partially open	
IOSB	Geospatial Service - Heatmaps	Partially open	
IOSB	Person Re-Identification (based on full body, not face)	Partially open	
IOSB	Person Re-Identification (based on semantic attributes)	Partially open	
IOSB	Vehicle Re-Identification	Partially open	
PARCS	Identification of stolen cultural goods	Partially open	This license would be a right of use specifically for European LEAs, of perpetual use, without provision of code (except failure of the company PARCS or of a failure after a takeover), without exclusivity, non-transferable, non-commercial, non-competitive and as part of a contract agreement.
PARCS	Identification of looted cultural goods (selected typologies)	Partially open	
PARCS	Surveillance of searched objects (selected crawled sites)	Partially open	
BPTI	Linguistic Feature analysis (LiFE) tool	Partially open	A perpetual with no code provision, royalty-free license to use, which is non-exclusive, non-transferable, non-commercial, non-competitive and requires an attribution obligation for the licensee
BPTI	Text visualization tool (TVT)	Partially open	

# Tools' Licensing Prospects