CEPOL
EUROPEAN UNION AGENCY FOR LAW ENFORCEMENT TRAINING

ARTIFICIAL INTELLIGENCE AND INTEROPERABILITY FOR SOLVING CHALLENGES OF OSINT AND CROSS-BORDER INVESTIGATIONS

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Agenda
Topics

Challenges

- Multiple-Identity, Fraud, Cross-Border Investigation, OSINT Complexity

Artificial Intelligence, Training Essentials, & Person-Centric OSINT

- AI for Fuzzy Name Matching
- AI for Image Recognition vs Facial Recognition
- European UMF Person-Centric Standard (P-O-L-I-C-E)

Cases, Cross-Border Interoperability, & Automated Search

- 3 Cases: Multiple-Identity, Fraud, Cross-Border Spy
- HORUS System for SSI & Cross-Border Interoperability
- Automated Search Scenario: Identifying Unknown Terrorist

Conclusion & Recommendations

- Compliance, Purchasing & Implementing, Capacity Building, Training

Challenges
Multiple-Identity, Fraud, Cross-Border Investigation, OSINT Complexity

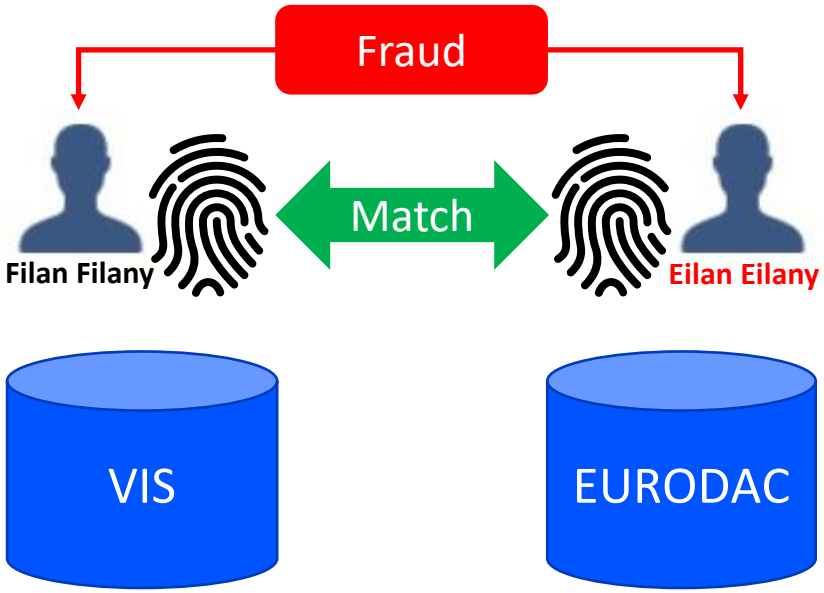
EU Central Systems:
Multiple-Identity Detection for new enrollment & ETIAS

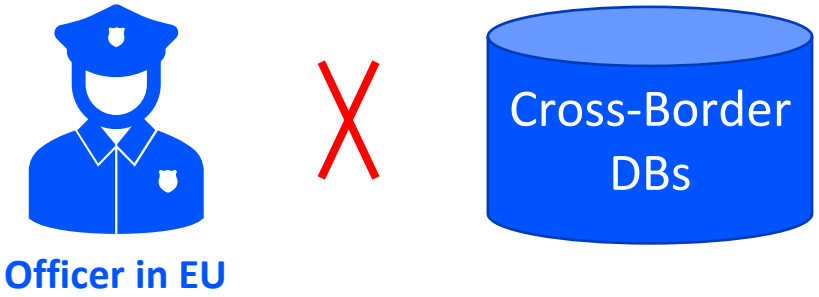
Member State:
Multiple-Identity Detection for national ETIAS & National DBs

Persons of Interest:
Visitor TCNs & few EU Citizens in SIS

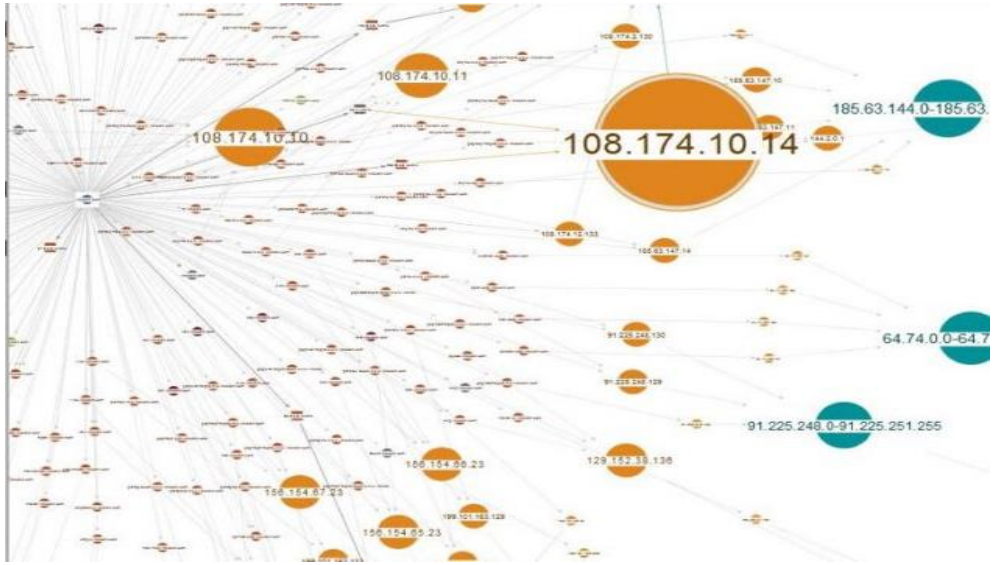
Persons of Interest:
EU Citizens & Resident TCNs

Clause 22 of Interoperability Regulations 2019/817 & 818: Member State Responsibility





Officer in EU



OSINT Complexity:
Time-Consuming, and requires officers with high IT skills

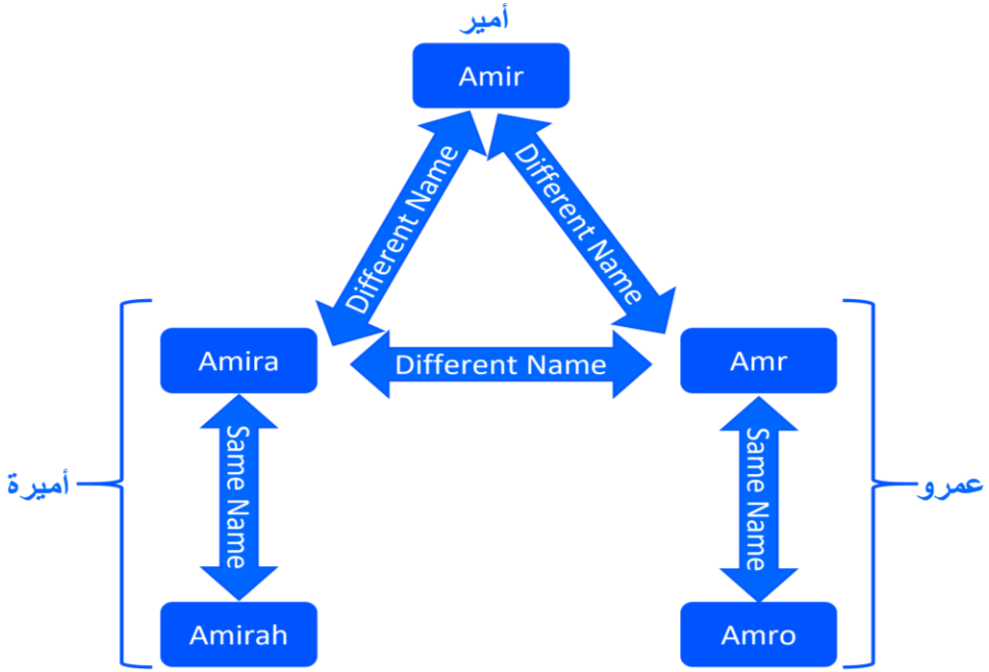
Artificial Intelligence, Training Essentials, & Person-Centric OSINT

AI for Fuzzy Name Matching

Name 1	Name2	Same Name	Gender	AI Score
Amr	عمرو	Yes	Same	99.0%
Amr	أمير	No	Same	72.7%
Amr	أميرة	No	Different	28.4%
Amr	Amira	No	Different	37.4%
Amr	Amir	No	Same	85.5%
Amir	عمرو	No	Same	72.7%
Amir	أمير	Yes	Same	99.0%
Amir	أميرة	No	Different	80.9%
Amir	Amira	No	Different	51.2%
Amira	عمرو	No	Different	60.9%
Amira	أمير	No	Different	80.3%
Amira	أميرة	Yes	Same	98.2%

Wrong Match

Wrong Match



Training Essentials & Best Practice
AI is not an absolute source of truth
AI is not 100% Matured & not Well-Trained
USE: AI for Detecting Multiple-Identity & Fraud
Learn: AI Mechanisms, Limitations, & Evaluation

Artificial Intelligence, Training Essentials, & Person-Centric OSINT

AI for Image Recognition vs Facial Recognition

Comparison	Image Recognition	Facial Recognition
Mechanism	Analyze full image	Analyze Faces
Limitations	Image-Related	Facial-Related
Accuracy	Low	High
Image Popularity	Important	Not Important
Background & Colors	Important	Not Important
Ethnicity Bias	No	Yes

Facial OSINT	American	Chinese	Polish	Eastern Country
Geographic Area	Americas	China	Europe	Eastern Europe
Identify Sunglasses	Yes	No	No	No
Identify Children	Yes	No	No	No
Ethnicity Bias	White, African, Hispanic	Asian	European	European
Websites Coverage	Criminal Records	Asia	Wide	No
Social Media	Facebook, Instagram, YouTube	No	No	VK, Tik Tok, Clubhouse

Google

Microsoft Bing

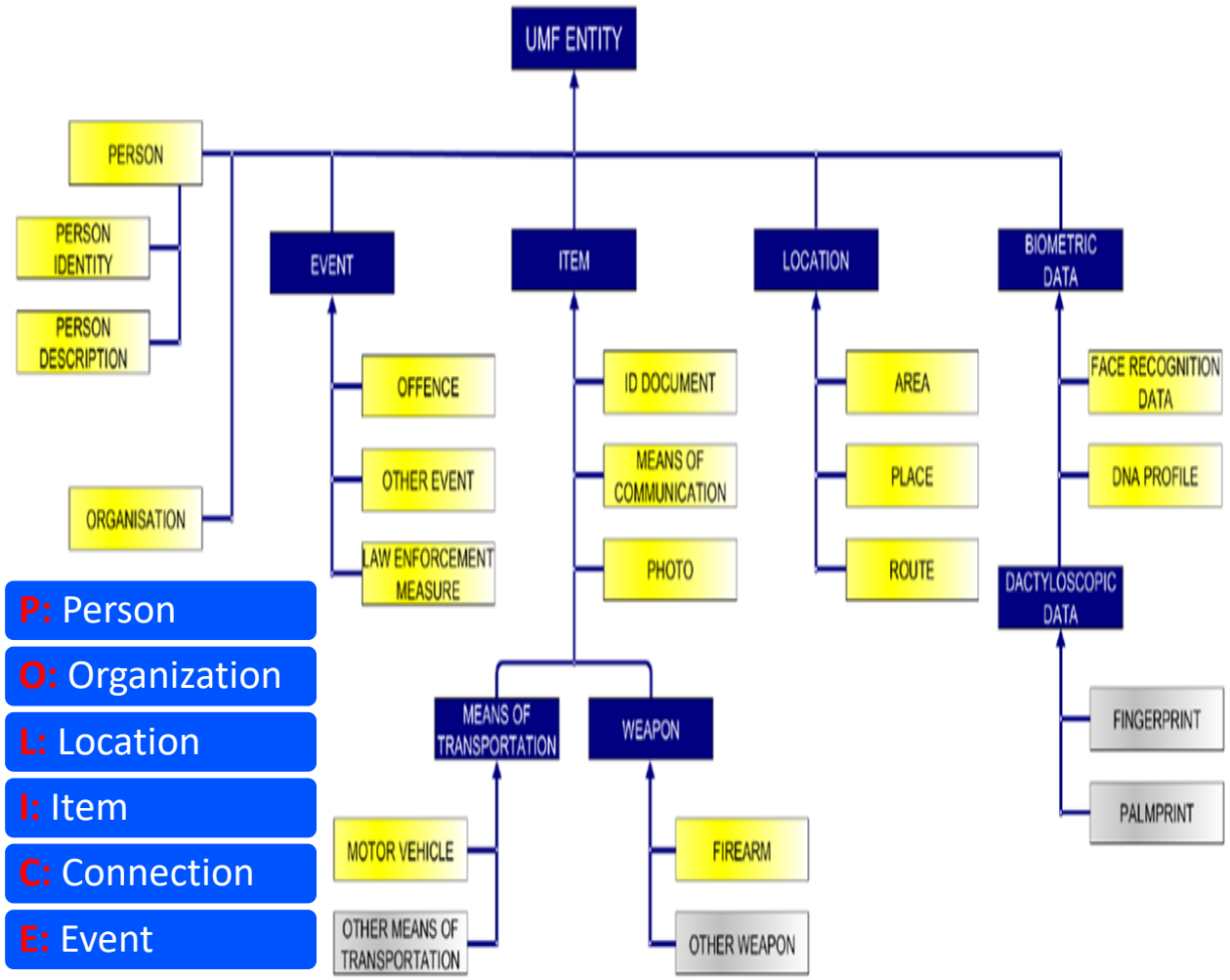
Yandex

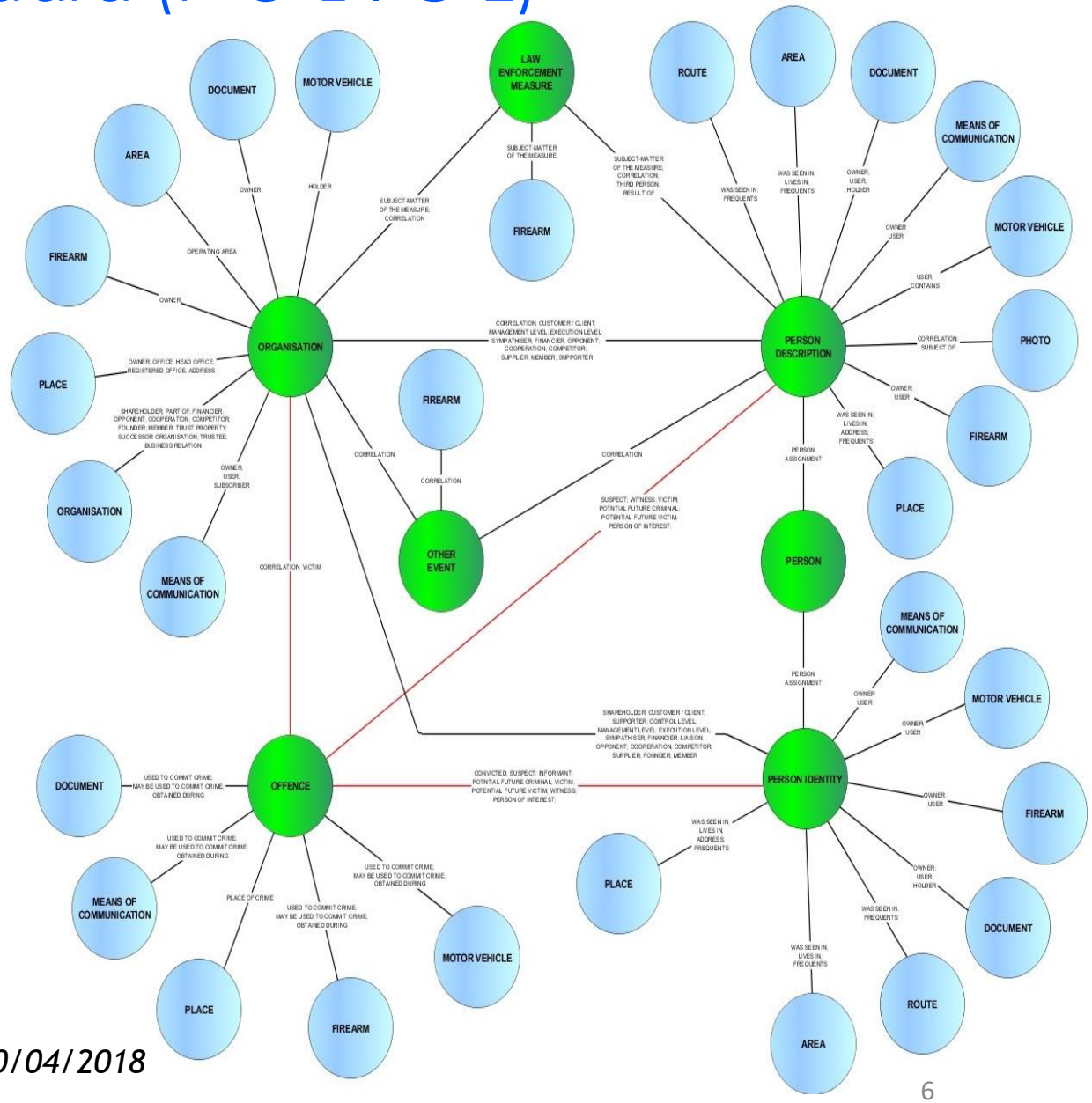
Image Recognition Tools

Training Essentials & Best Practice
Differentiate between AI for Image Recognition & Facial Recognition
AI is not Accurate, not Well-Trained, Training Data is Biased
Understand: Person-Centric OSINT Approach & AI Demographics
Learn: AI Mechanisms, Facial Recognition, & Decide on Images & AI Tools

Artificial Intelligence, Training Essentials, & Person-Centric OSINT

European UMF Person-Centric Standard (P-O-L-I-C-E)

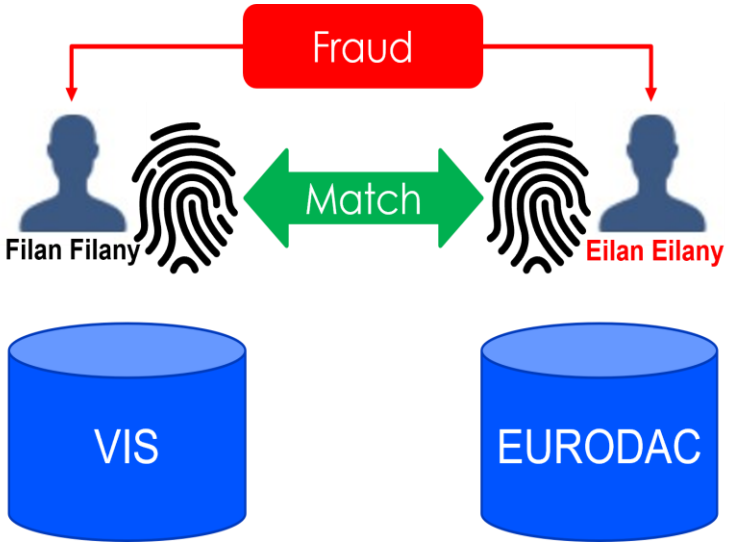


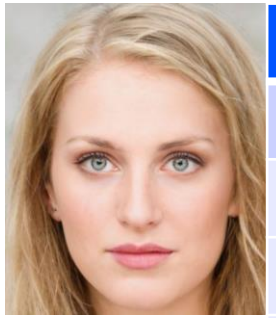


Reference: ISF Universal Message Format (UMF) Information Model v2.0 30/04/2018

Cases, Cross-Border Interoperability, & Automated Search

3 Cases: Multiple-Identity, Fraud, Cross-Border Spy





Imposter Spy
Name: Ivanna Antonova
Gender: Female
Age: 29
Place of Birth: Donetsk
Nationality: Ukrainian
Job: Security Expert

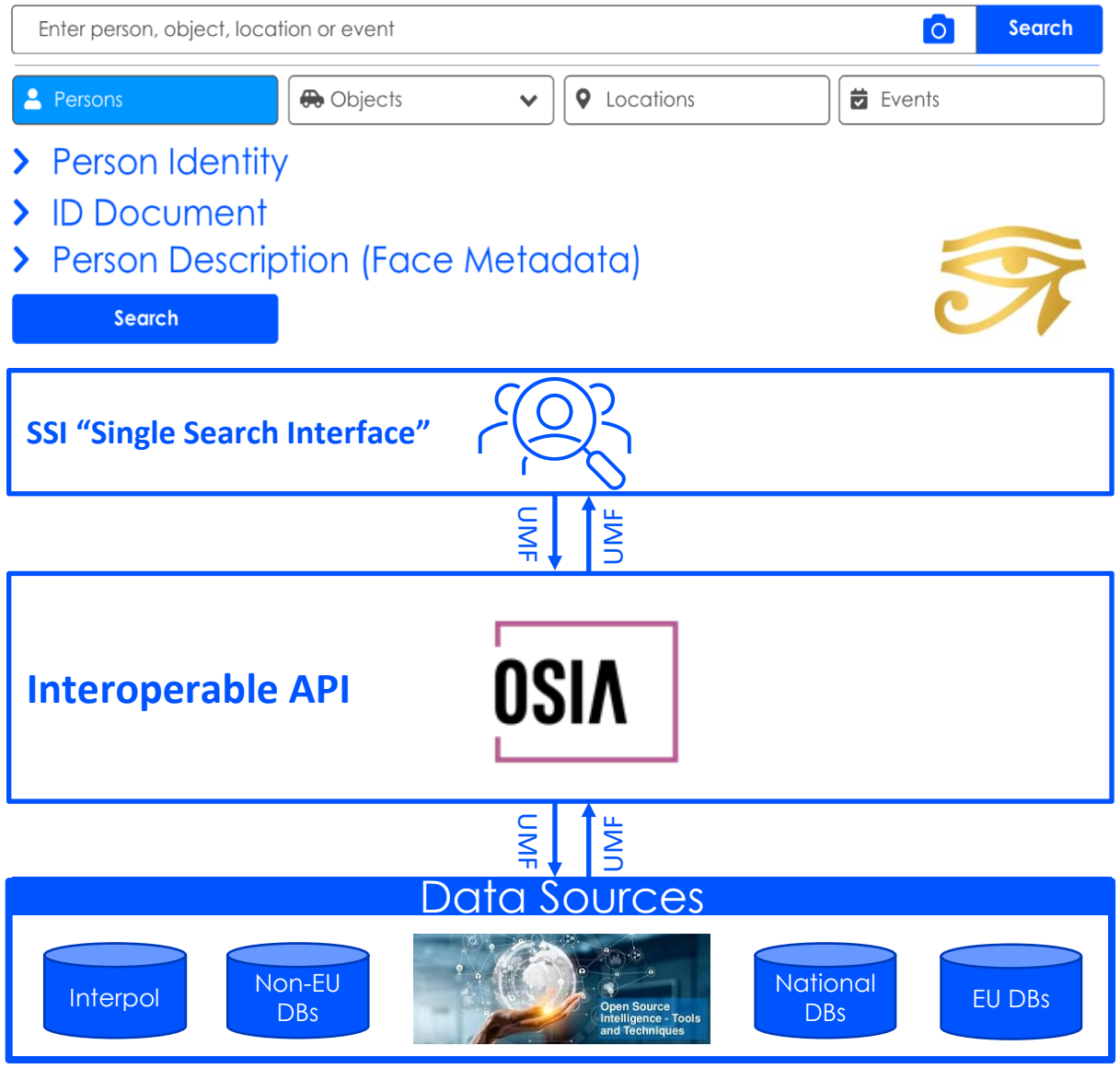
AI Algorithms for Solving Case 1
NER “Named Entity Recognition”
NLP “Natural Language Processing”
Facial Recognition

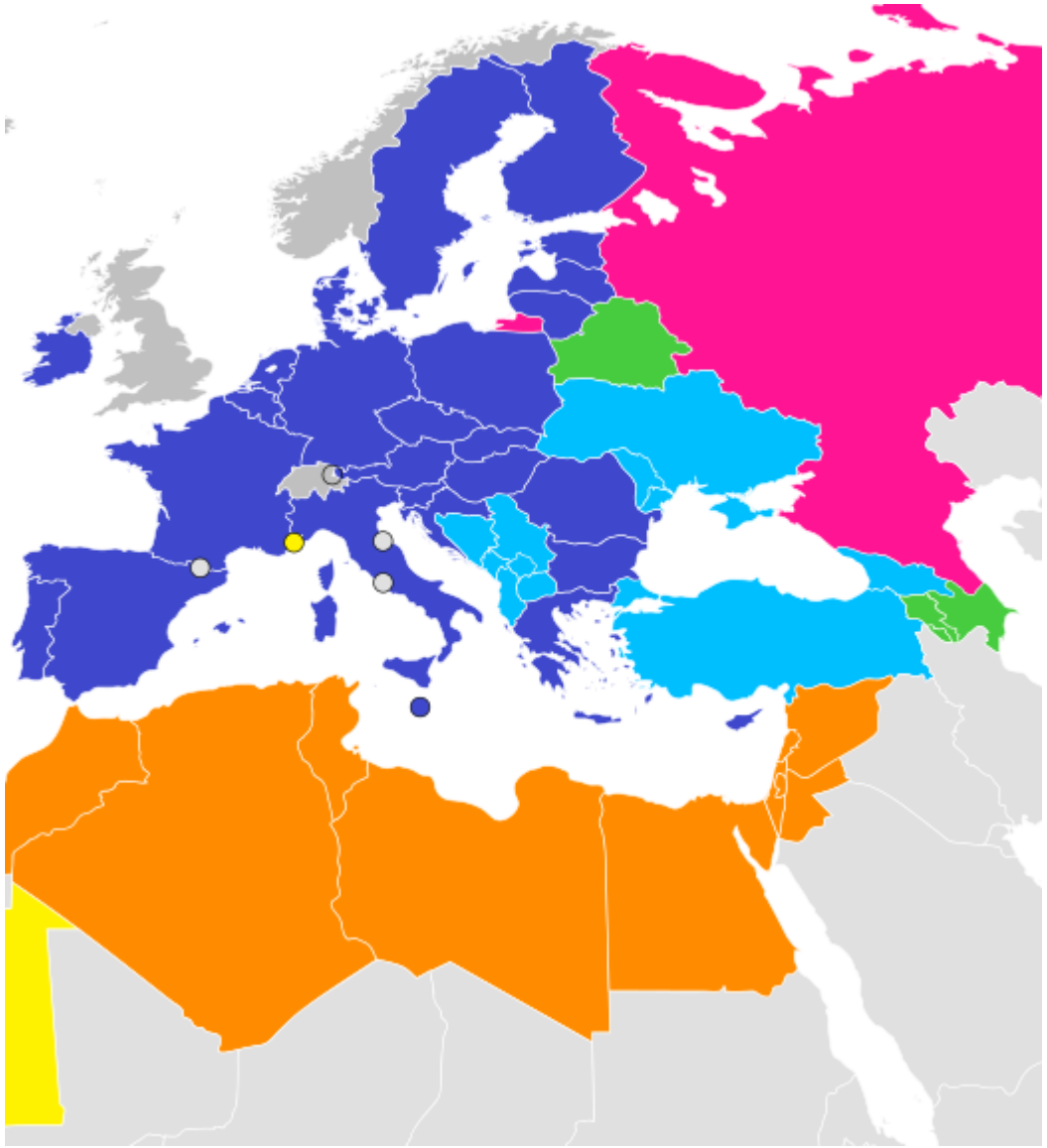
AI Algorithms for Solving Case 2
NLP “Natural Language Processing”
Facial Recognition
Facial Recognition OSINT

AI Algorithms for Solving Case 3
NER “Named Entity Recognition”
NLP “Natural Language Processing”
Facial Recognition OSINT

Cases, Cross-Border Interoperability, & Automated Search

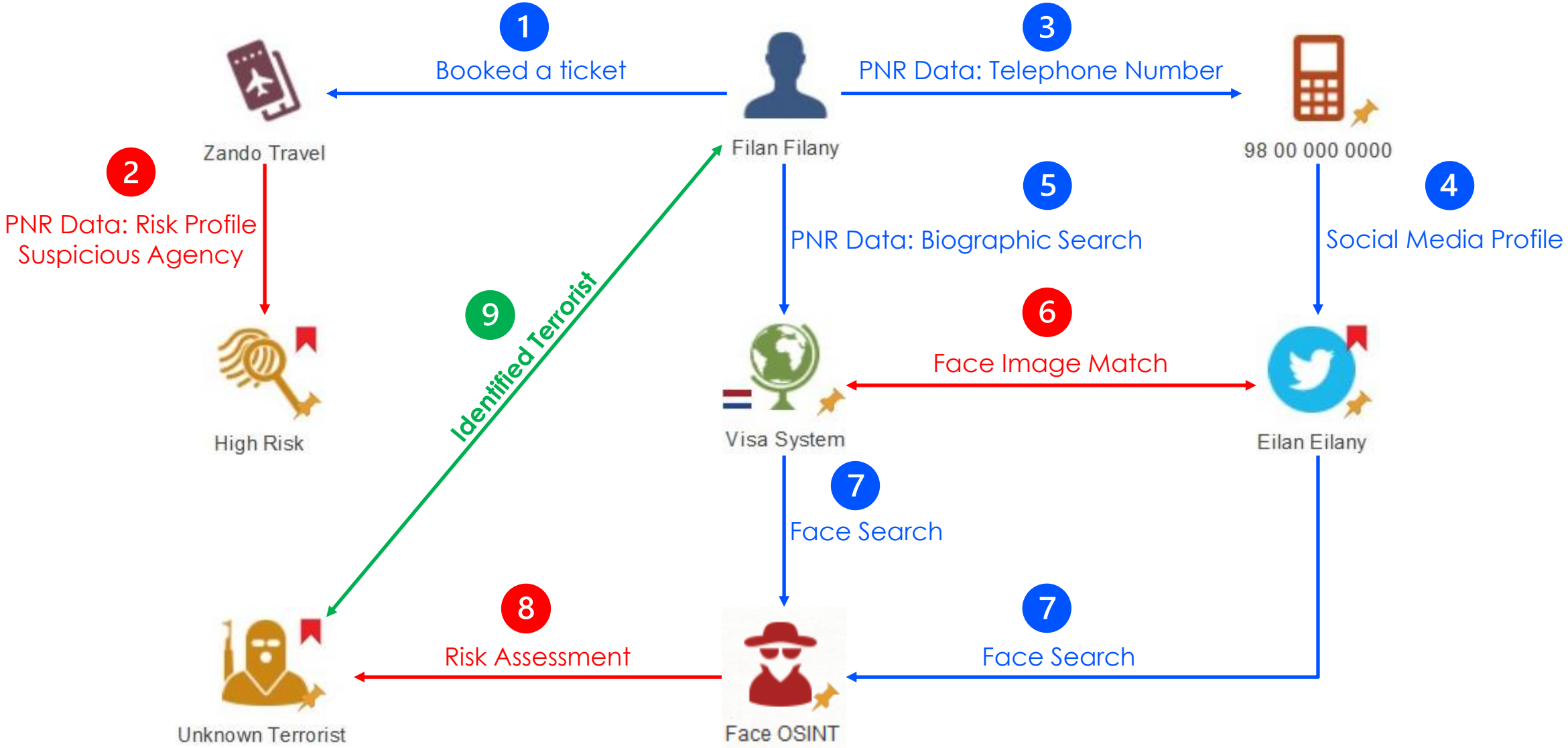
HORUS System for SSI & Cross-Border Interoperability





Cases, Cross-Border Interoperability, & Automated Search

Automated Search Scenario: Identifying Unknown Terrorist



Conclusion & Recommendations

Compliance, Purchasing & Implementing, Capacity Building, Training