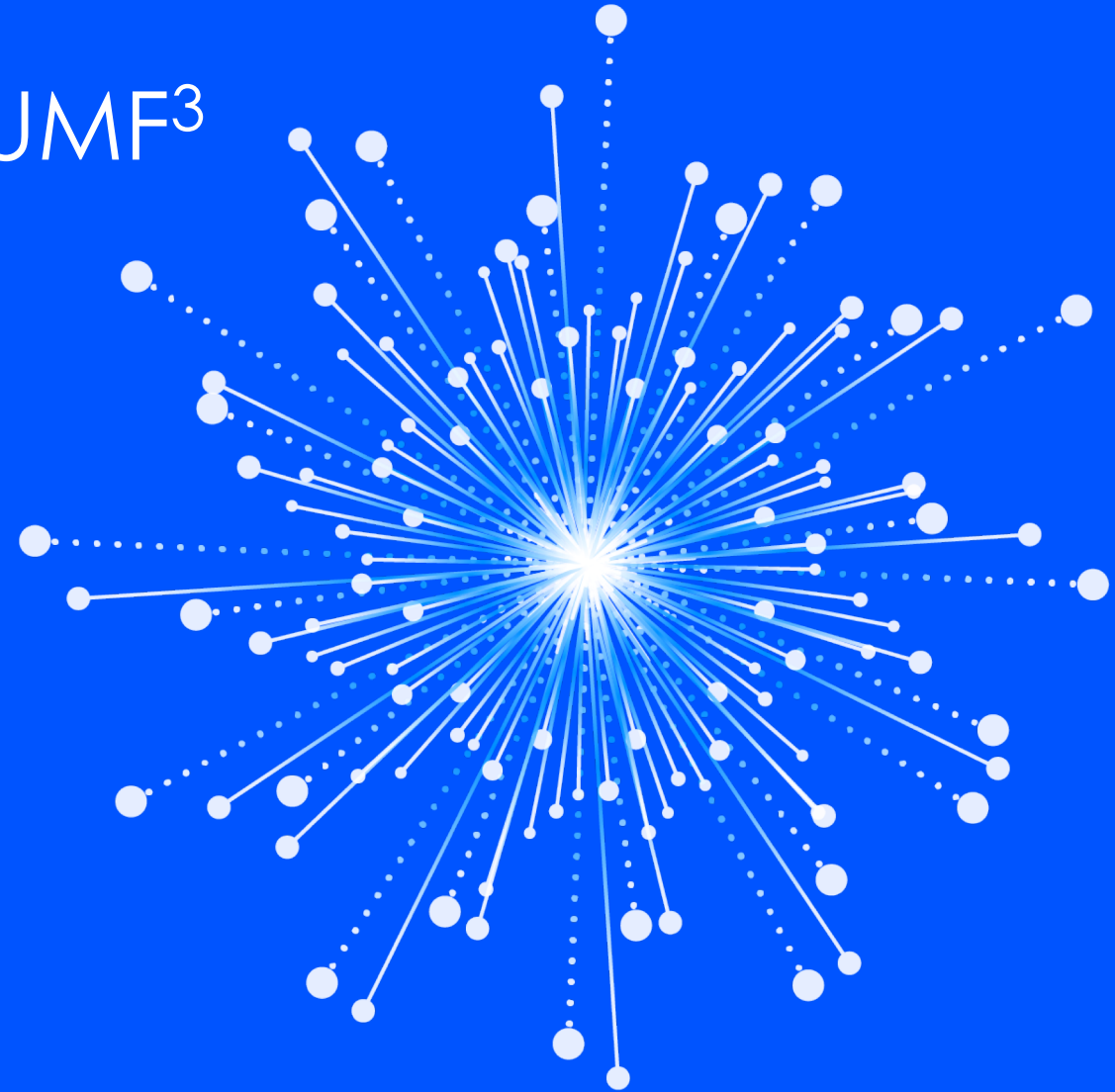


Hexagonal Architecture & UMF³ For Interoperability

WCC presentation
9 October 2019



HEXAGONAL ARCHITECTURE & UMF³ FOR INTEROPERABILITY

Agenda

1. POLE: Landscape, Example, Challenges
2. POLE and UMF³
3. Hexagonal Architecture for Interoperability
4. Implementation & Transition
5. Single Search Interface for Member States



THE POLE LANDSCAPE

PERSONS, OBJECTS, LOCATIONS, EVENTS



AIRPORT
SEMI-PUBLIC

- Passport system
- API/PNR system
- Visa system
- Residency system
- Video analytics
- Surveillance face recognition



TCNs
(VISITORS)



LAW ENFORCEMENT

- Criminal AFIS
- Forensic face recognition
- License plate recognition
- DNA



STATION
PUBLIC

- Video analytics
- Surveillance face recognition



CITIZENS



TCNs
(RESIDENTS)

EUROPEAN SYSTEMS

- EU-VIS
- SISII
- EURODAC
- EES
- ECRIS-TCN
- ETIAS



STADIUM
SEMI-PUBLIC



- Video analytics
- Surveillance face recognition



BANK
PRIVATE

- Civil ID system
- Driver's license system
- Video analytics
- Surveillance face recognition



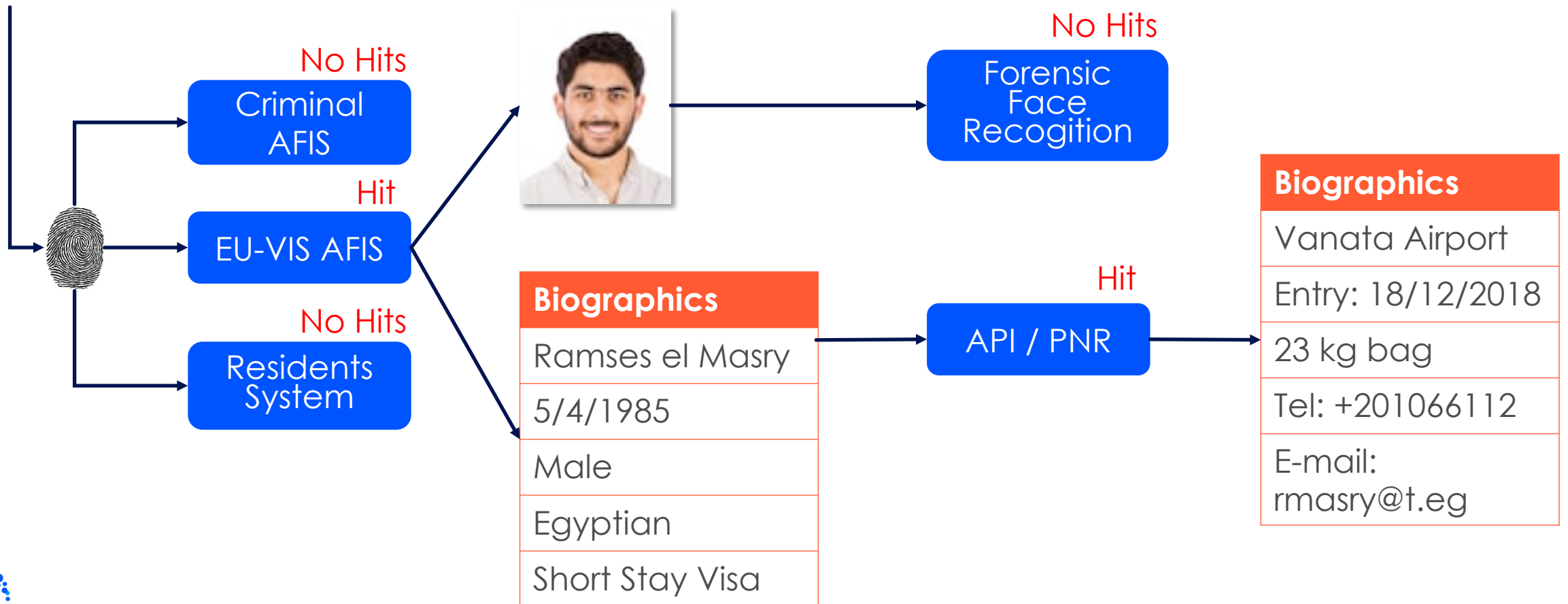
ASYLUM SEEKERS



STADIUM INCIDENT VICTIM (CURRENT SITUATION)

Reported homicide during football match in Helsinki

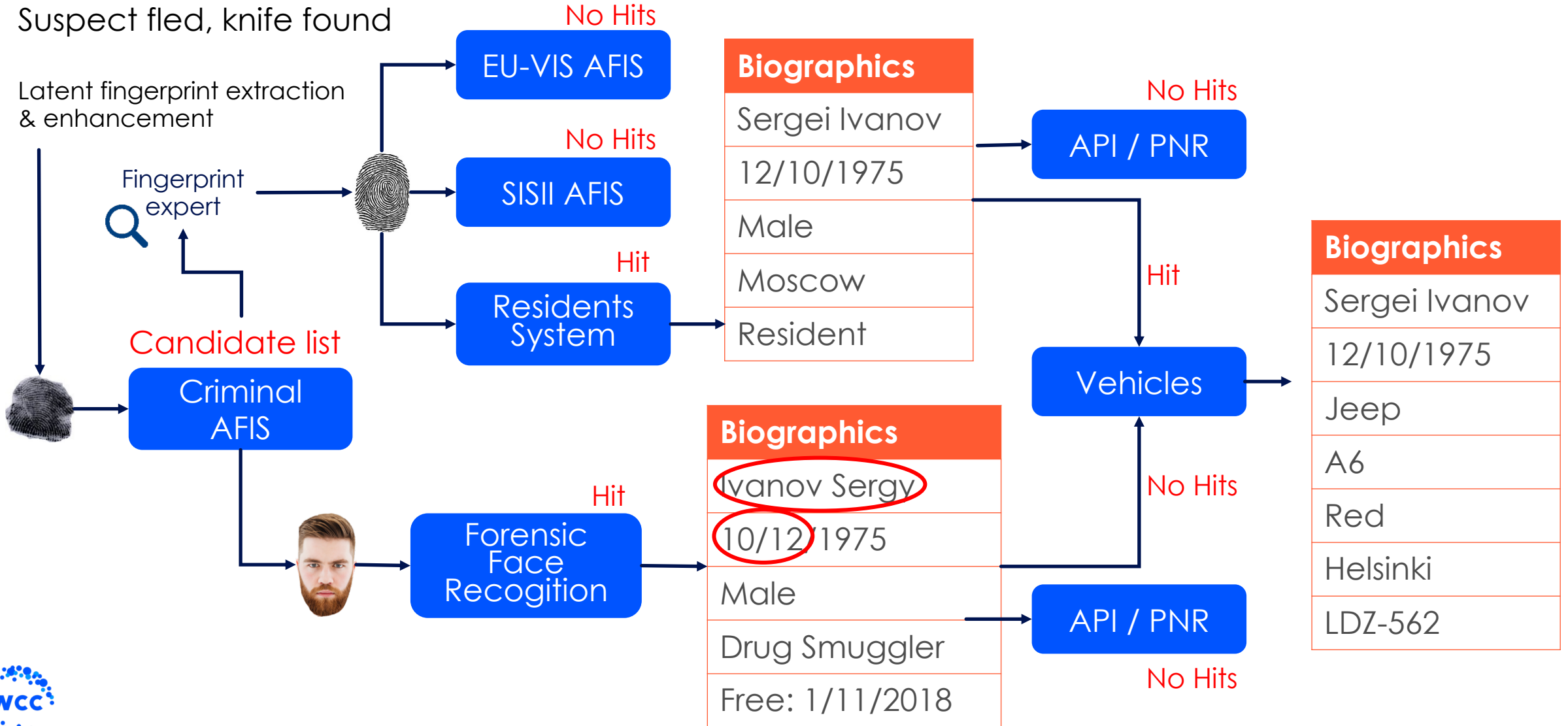
Victim: non-live fingerprint



STADIUM INCIDENT SUSPECT (CURRENT SITUATION)

Suspect fled, knife found

Latent fingerprint extraction & enhancement

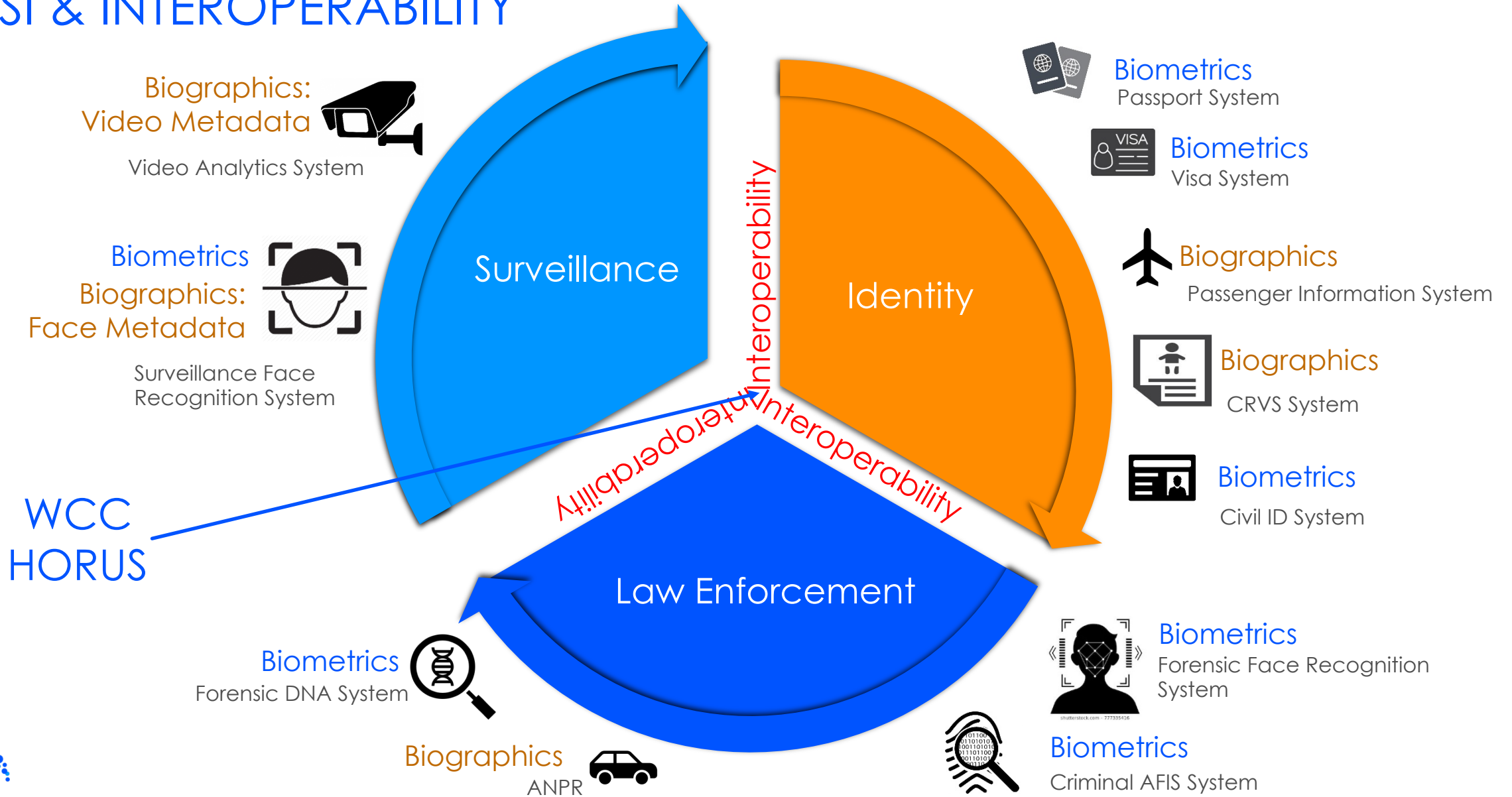


STADIUM INCIDENT CHALLENGES

- Many systems to be queried separately, consuming time
- Databases process personal & sensitive data, restricting access
- Databases and interfaces were developed by different vendors, creating compatibility issues
- Different types of data: biometric, biographic, and metadata, cannot be covered in a single query
- Different encounters of the same person are not linked, causing officers to miss connections
- Surveillance cameras create huge amounts of metadata, making searching difficult



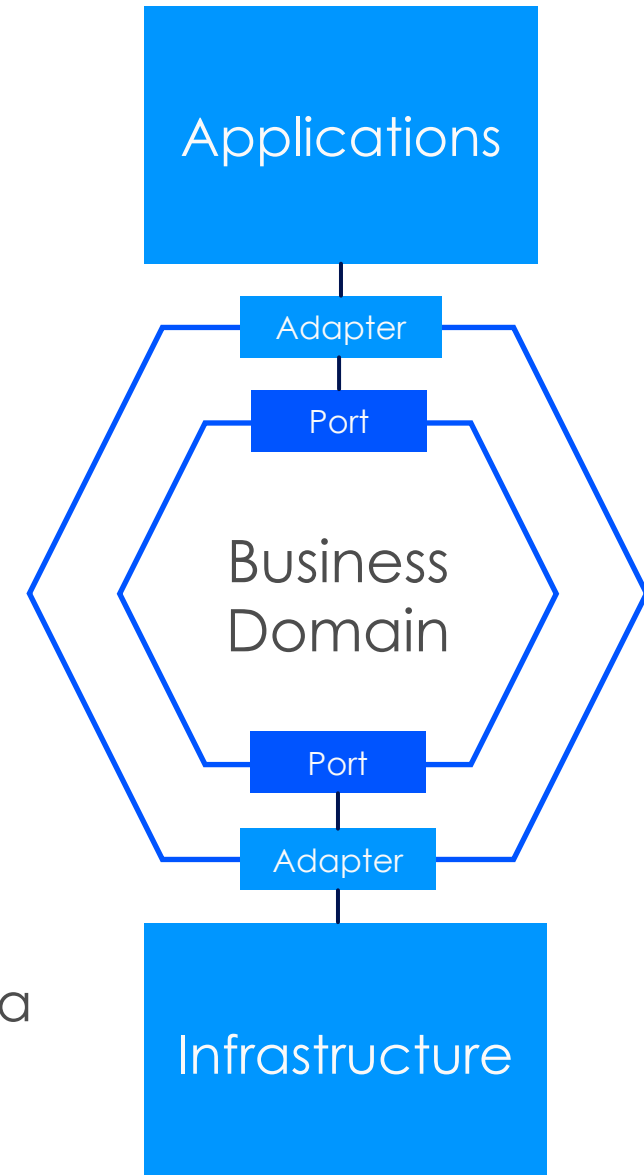
WCC HORUS SSI & INTEROPERABILITY



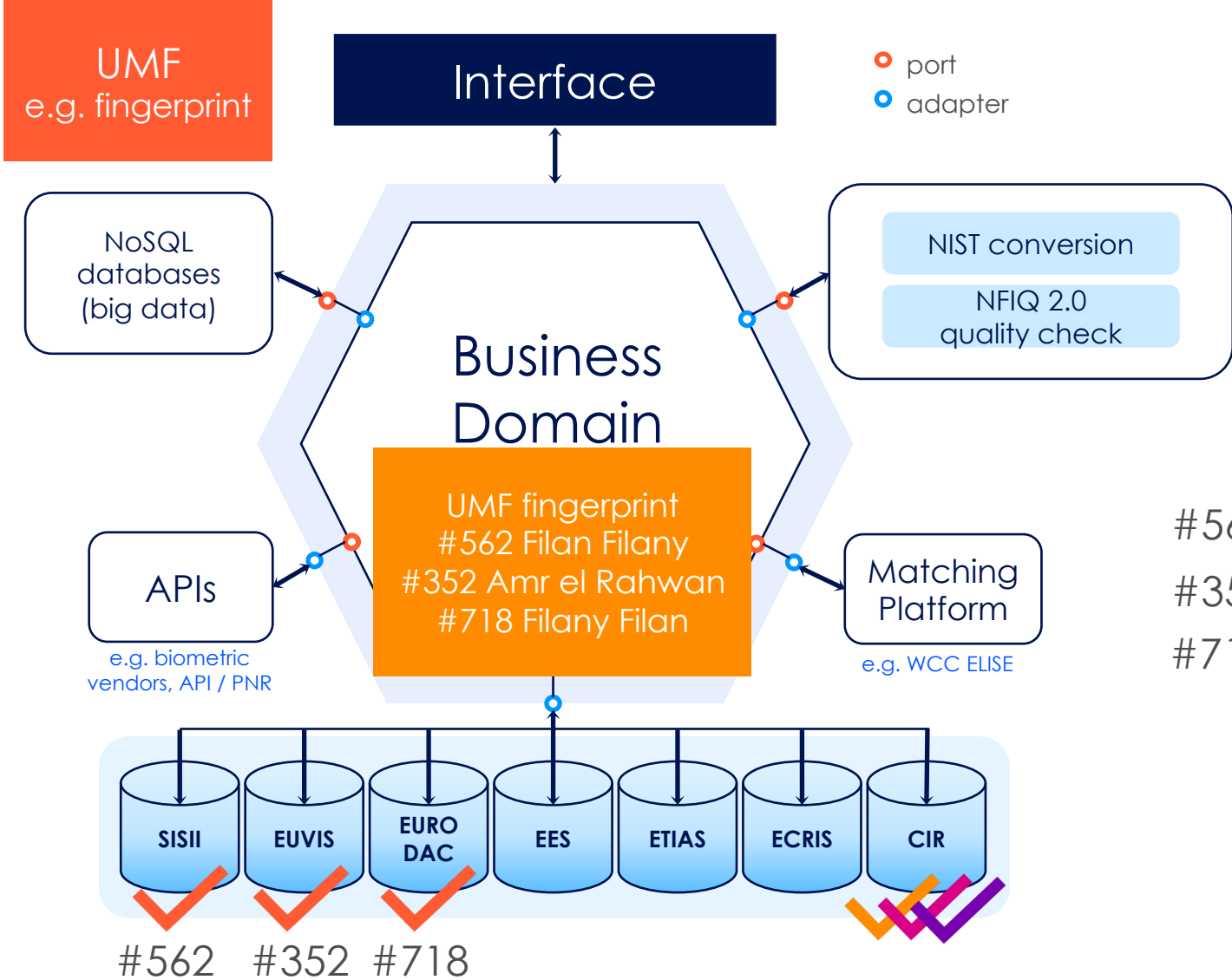
ACHIEVING INTEROPERABILITY

WHY HEXAGONAL ARCHITECTURE?

- Separating applications, business domain, and infrastructure (e.g. databases)
- Dependencies move from applications and infrastructure to the business domain
- Each of the applications, infrastructure, and the business domain can be independently modified
- The architecture is data-agnostic
- The architecture is vendor-agnostic
- Hexagonal architecture can achieve interoperability and a Single Search Interface



HEXAGONAL ARCHITECTURE & UMF³ FOR INTEROPERABILITY

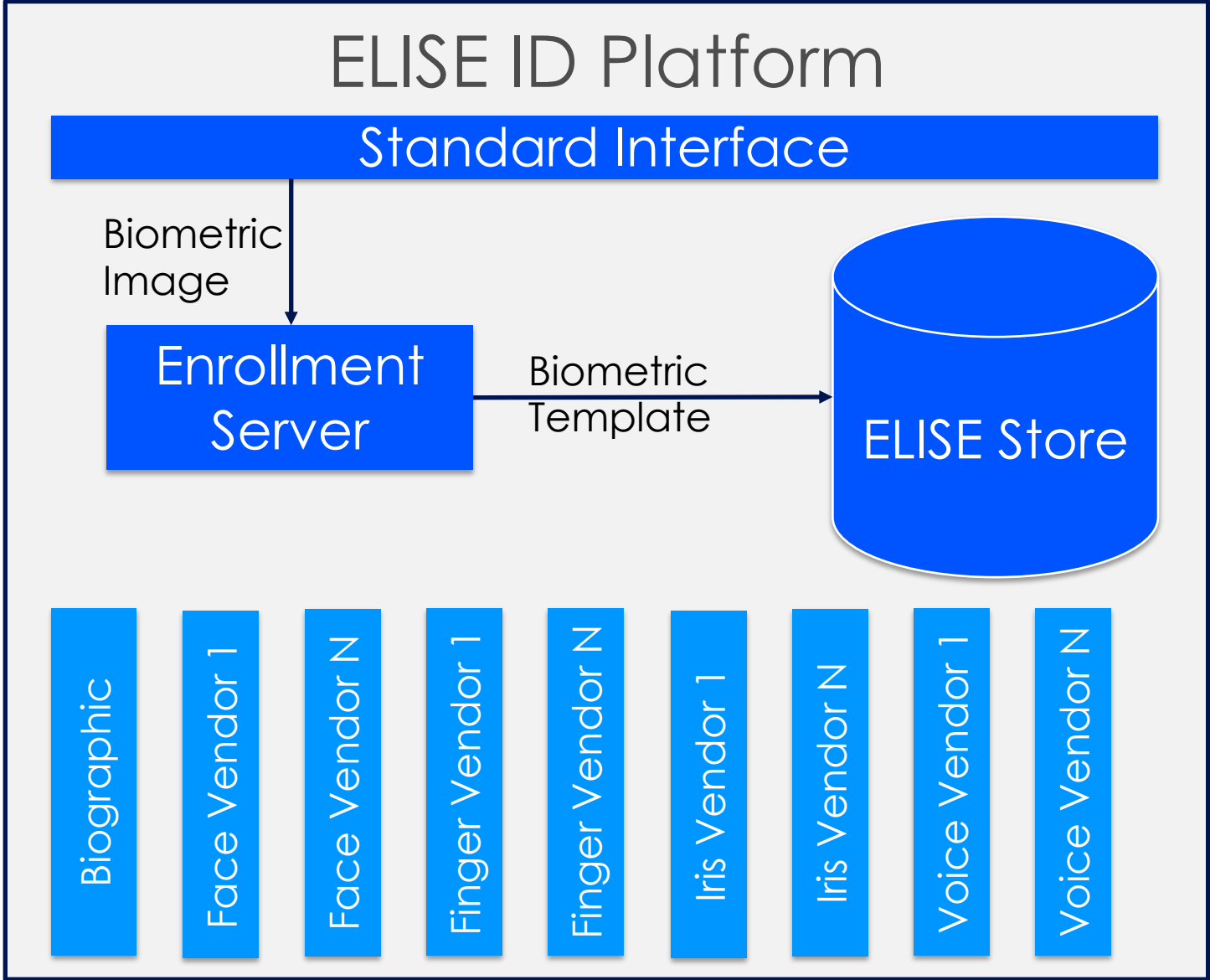


#562 Filan Filany
 #352 Amr el Rahwan
 #718 Filany Filan



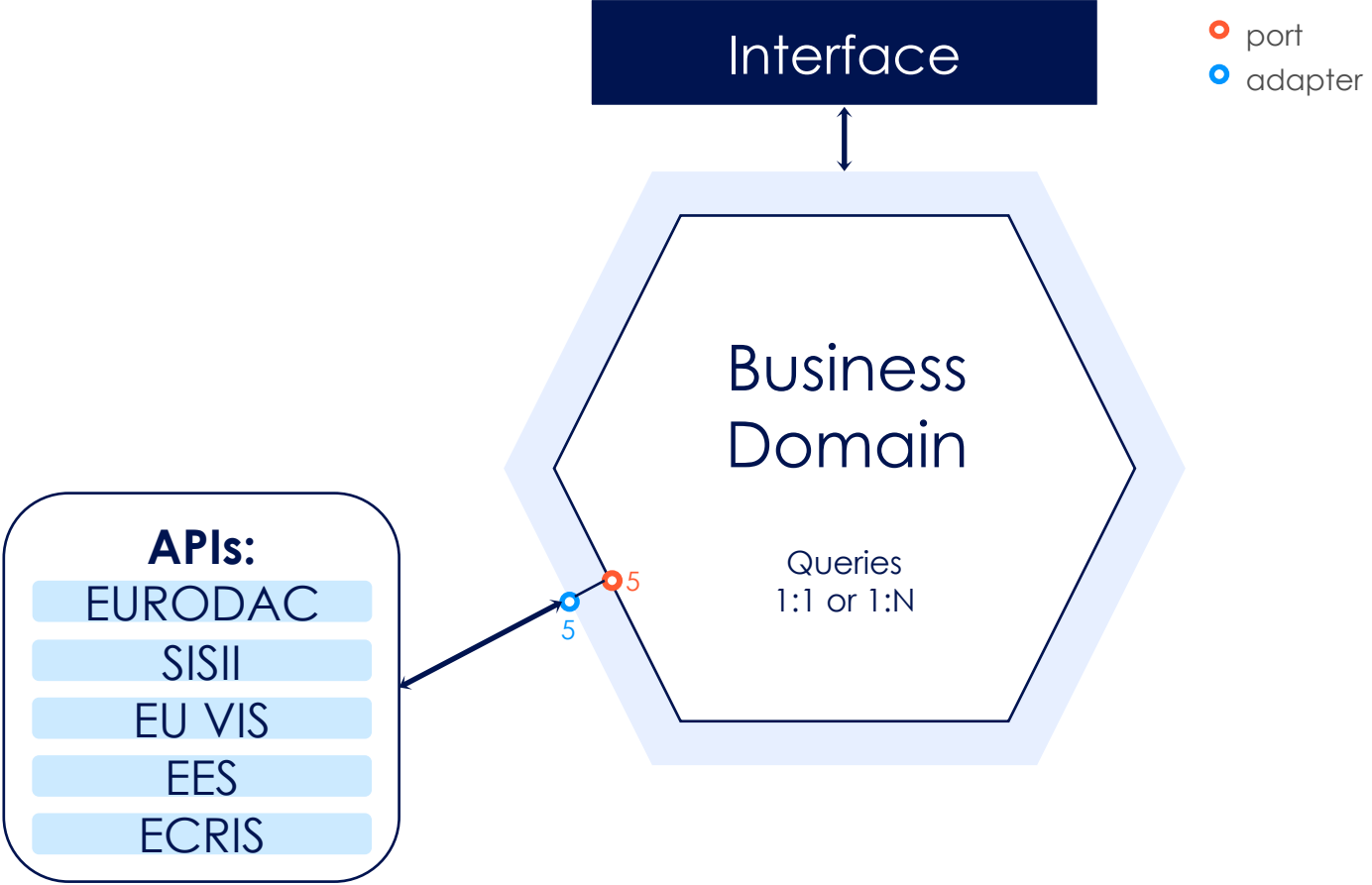
ELISE ID PLATFORM

BIOMETRICS (VENDOR INDEPENDENT)

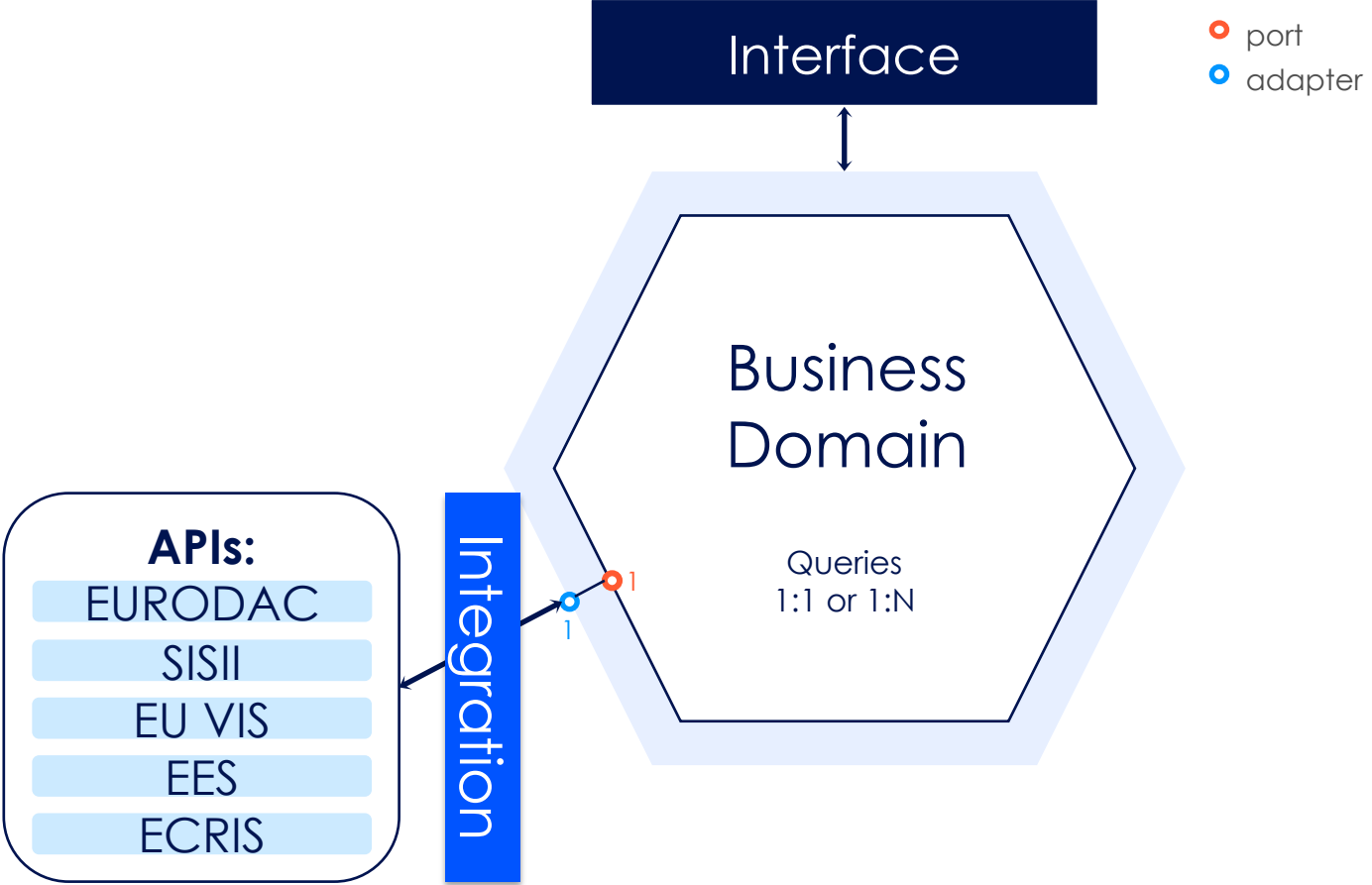


HEXAGONAL ARCHITECTURE IMPLEMENTATION

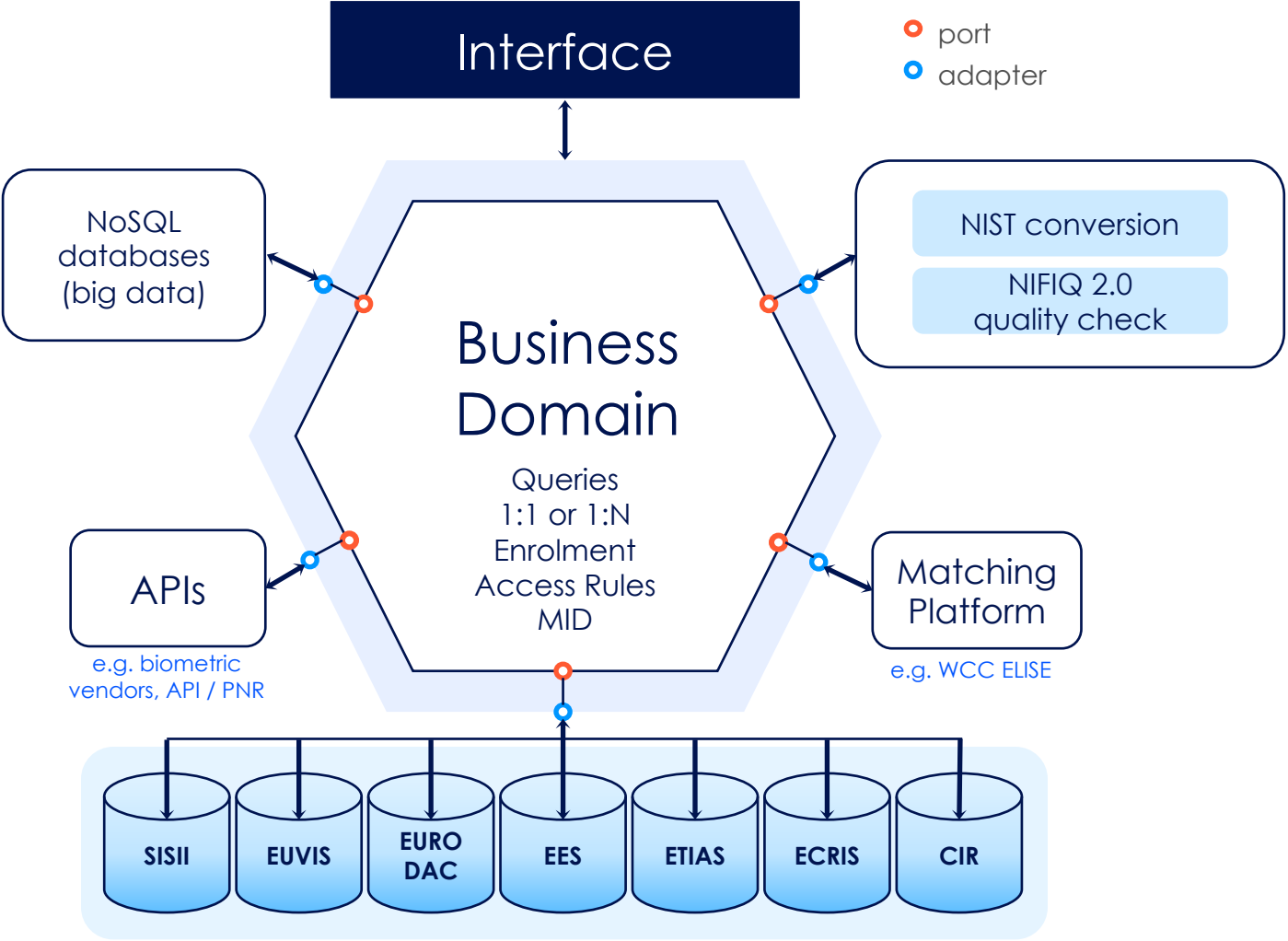
AS-IS ARCHITECTURE



HEXAGONAL ARCHITECTURE IMPLEMENTATION INTEGRATION ARCHITECTURE



HEXAGONAL ARCHITECTURE IMPLEMENTATION UNIFICATION ARCHITECTURE



HEXAGONAL ARCHITECTURE – MEMBER STATES

SSI & INTEROPERABILITY

