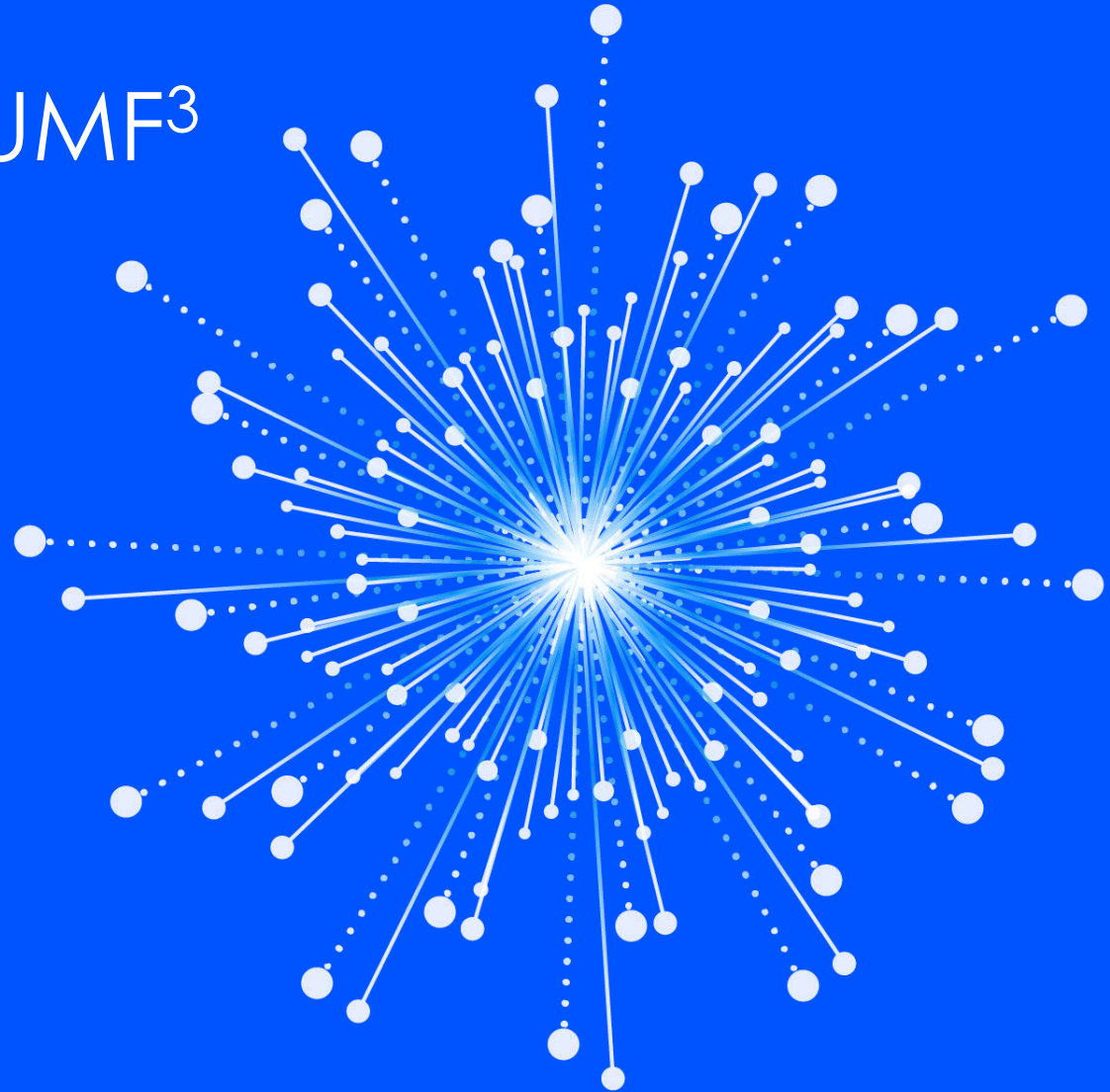


Hexagonal Architecture & UMF³ For Interoperability

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



EUROPEAN SYSTEMS

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

TCNs
(RESIDENTS)



BANK PRIVATE

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



ASYLUM SEEKERS



STADIUM SEMI-PUBLIC

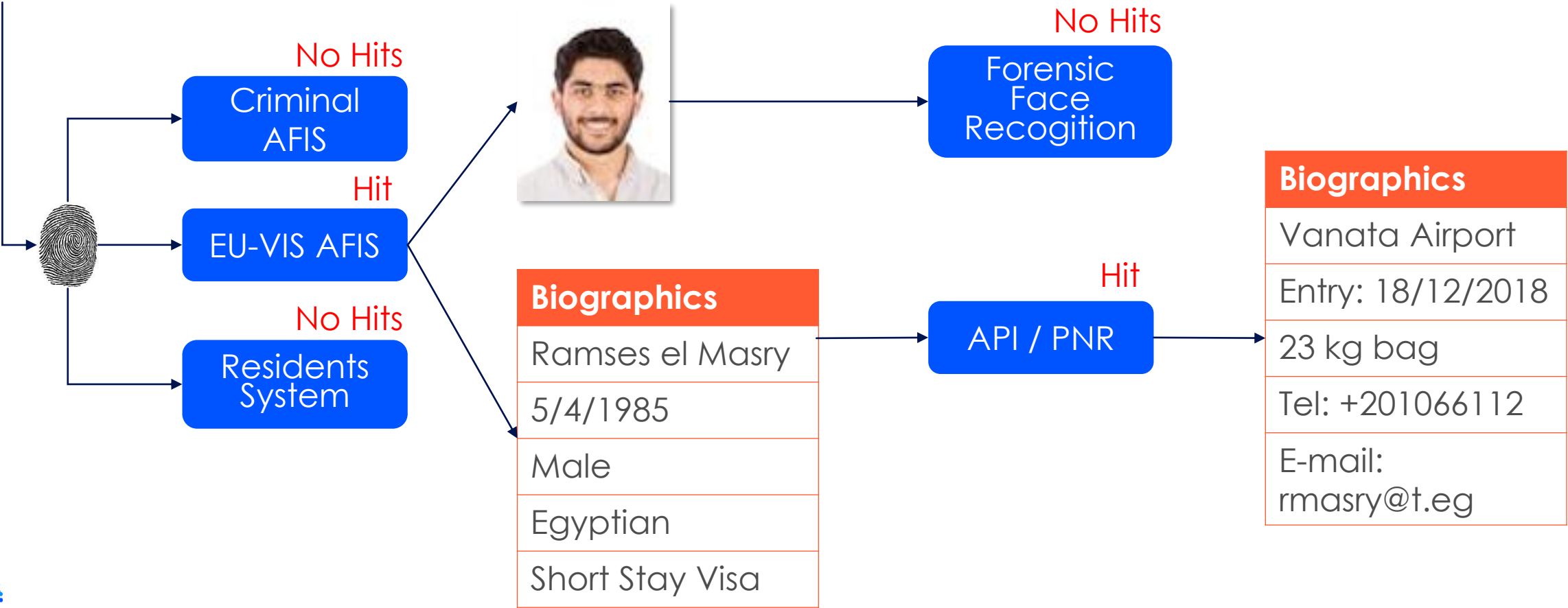


- Video analytics
- Surveillance face recognition

STADIUM INCIDENT VICTIM (CURRENT SITUATION)

Reported homicide during football match in Helsinki

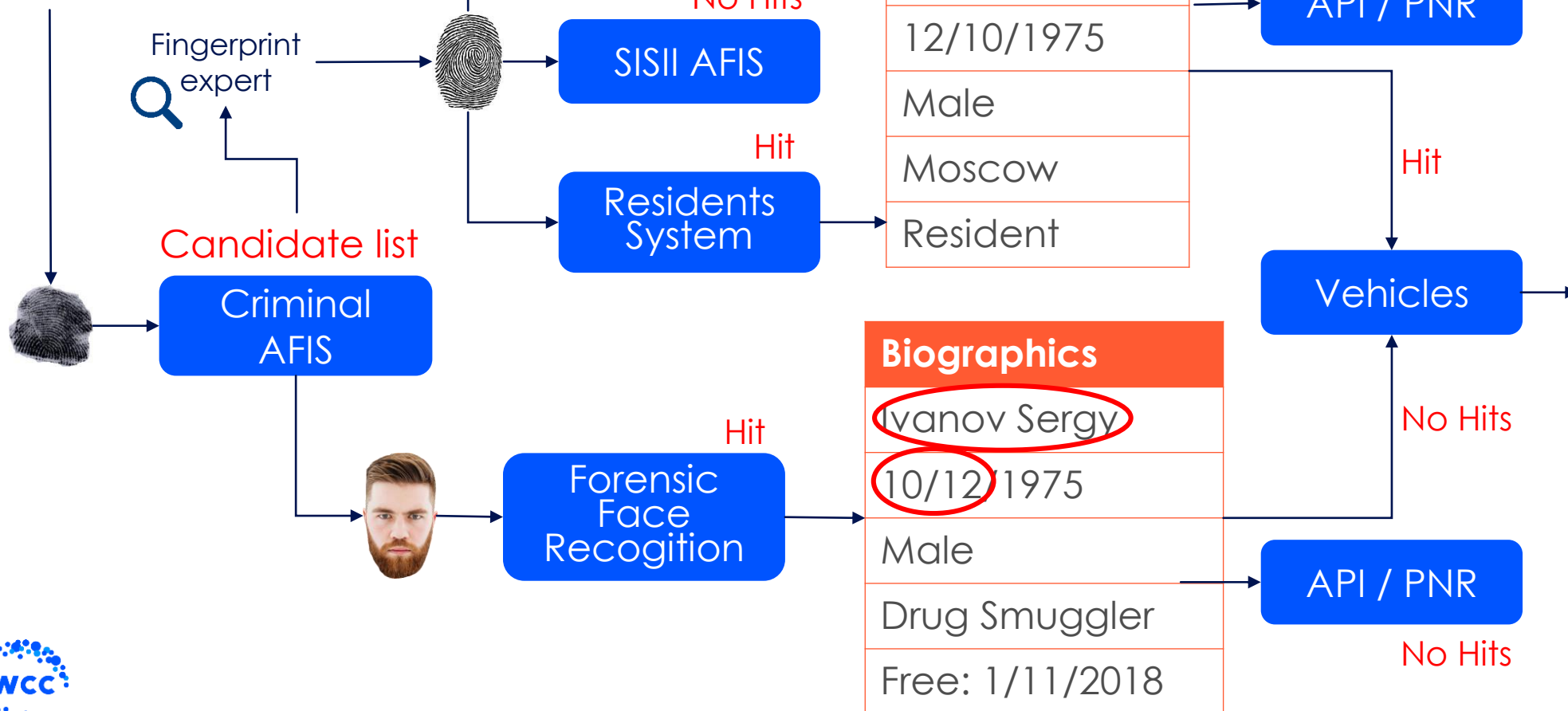
Victim: non-live fingerprint



STADIUM INCIDENT SUSPECT (CURRENT SITUATION)

Suspect fled, knife found

Latent fingerprint extraction
& enhancement



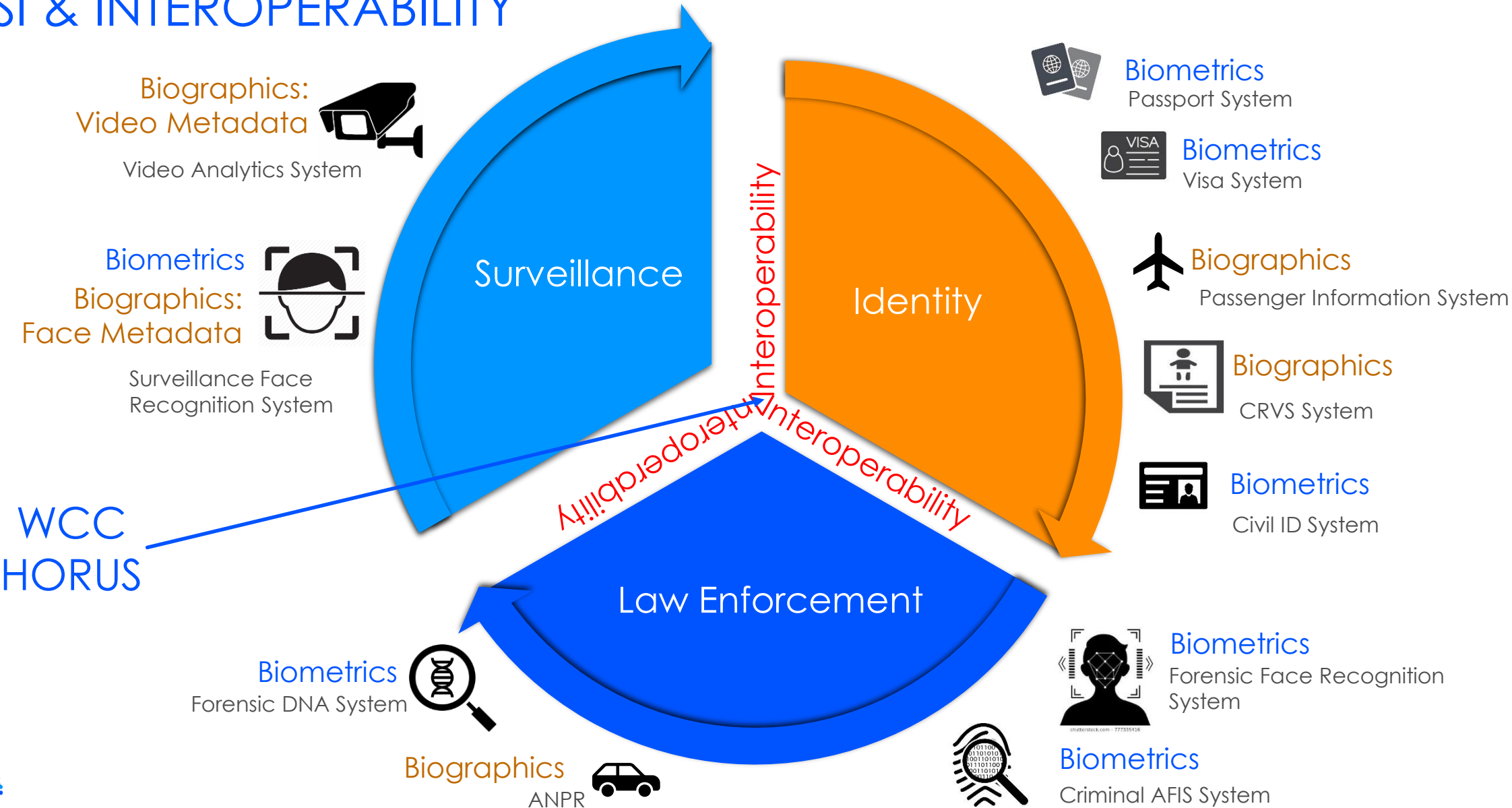
STADIUM INCIDENT CHALLENGES

- 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

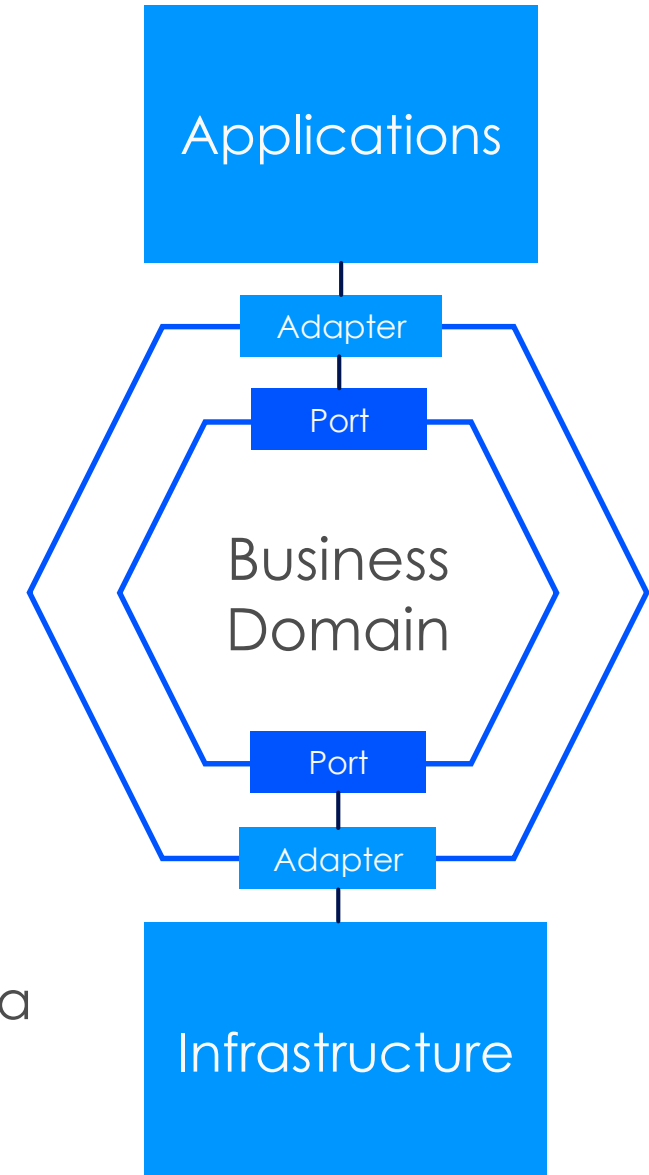
SSI & INTEROPERABILITY



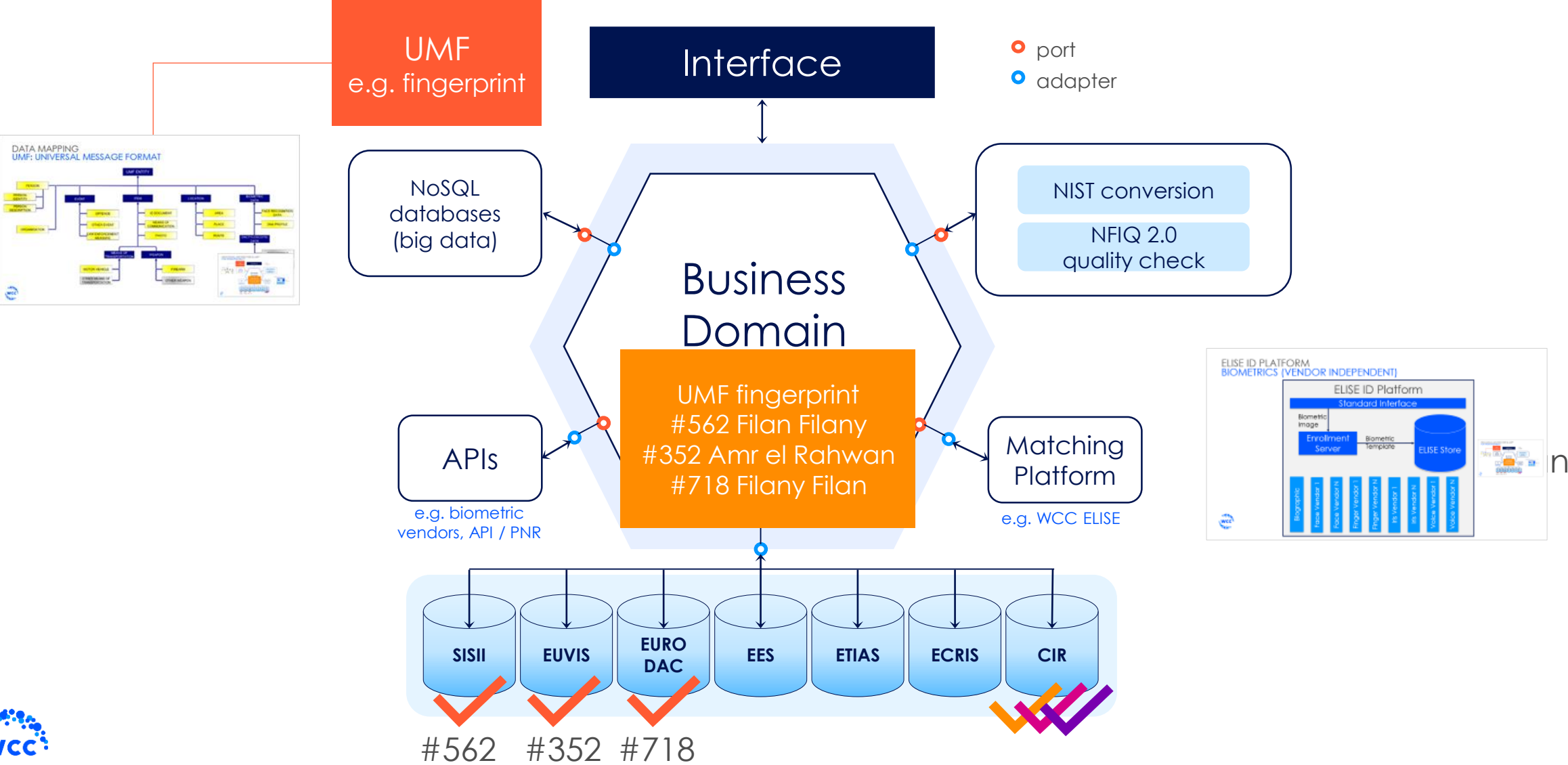
ACHIEVING INTEROPERABILITY

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

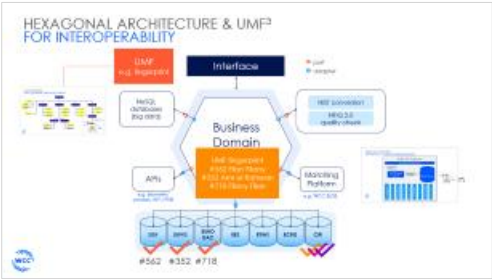
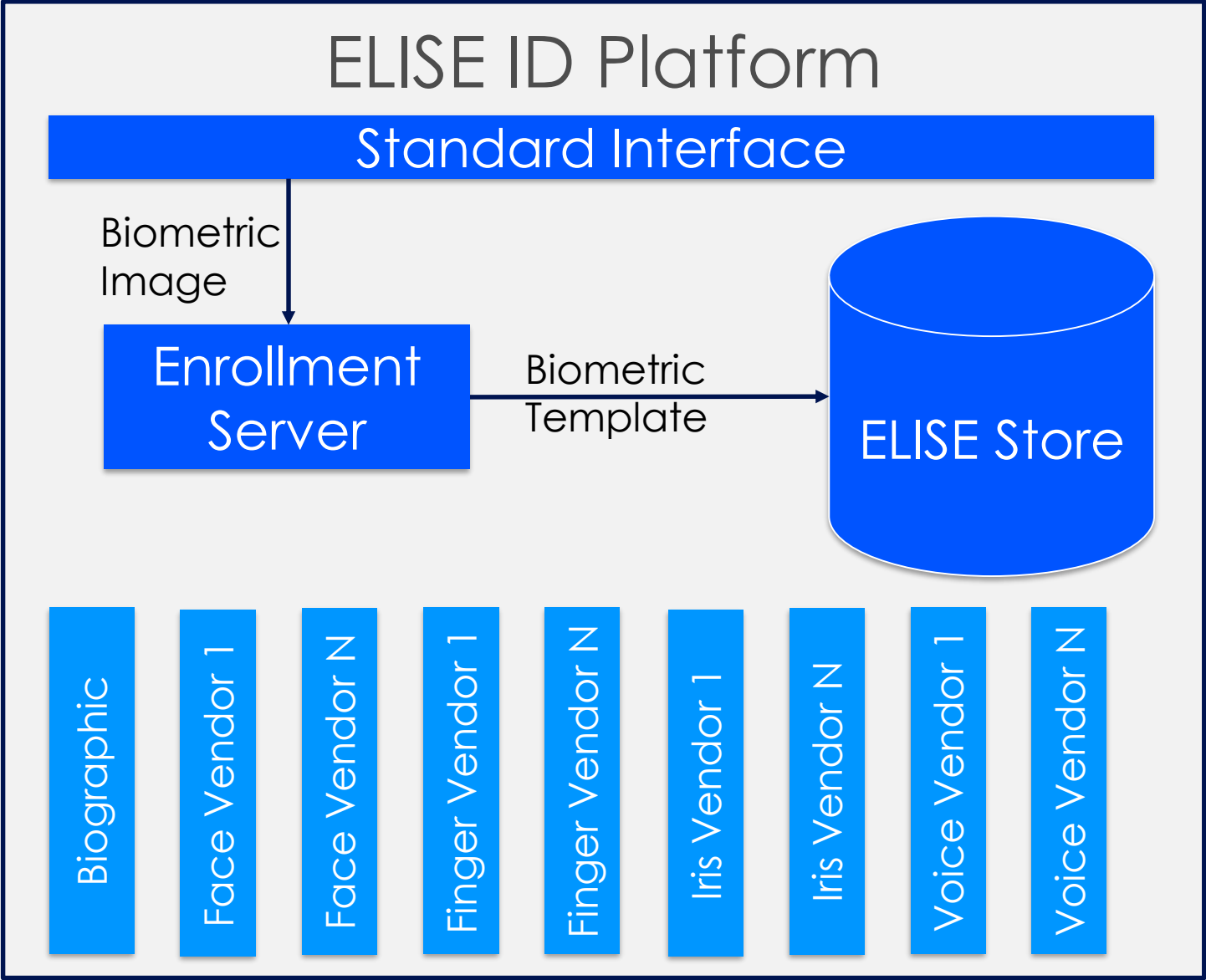


HEXAGONAL ARCHITECTURE & UMF³ FOR INTEROPERABILITY



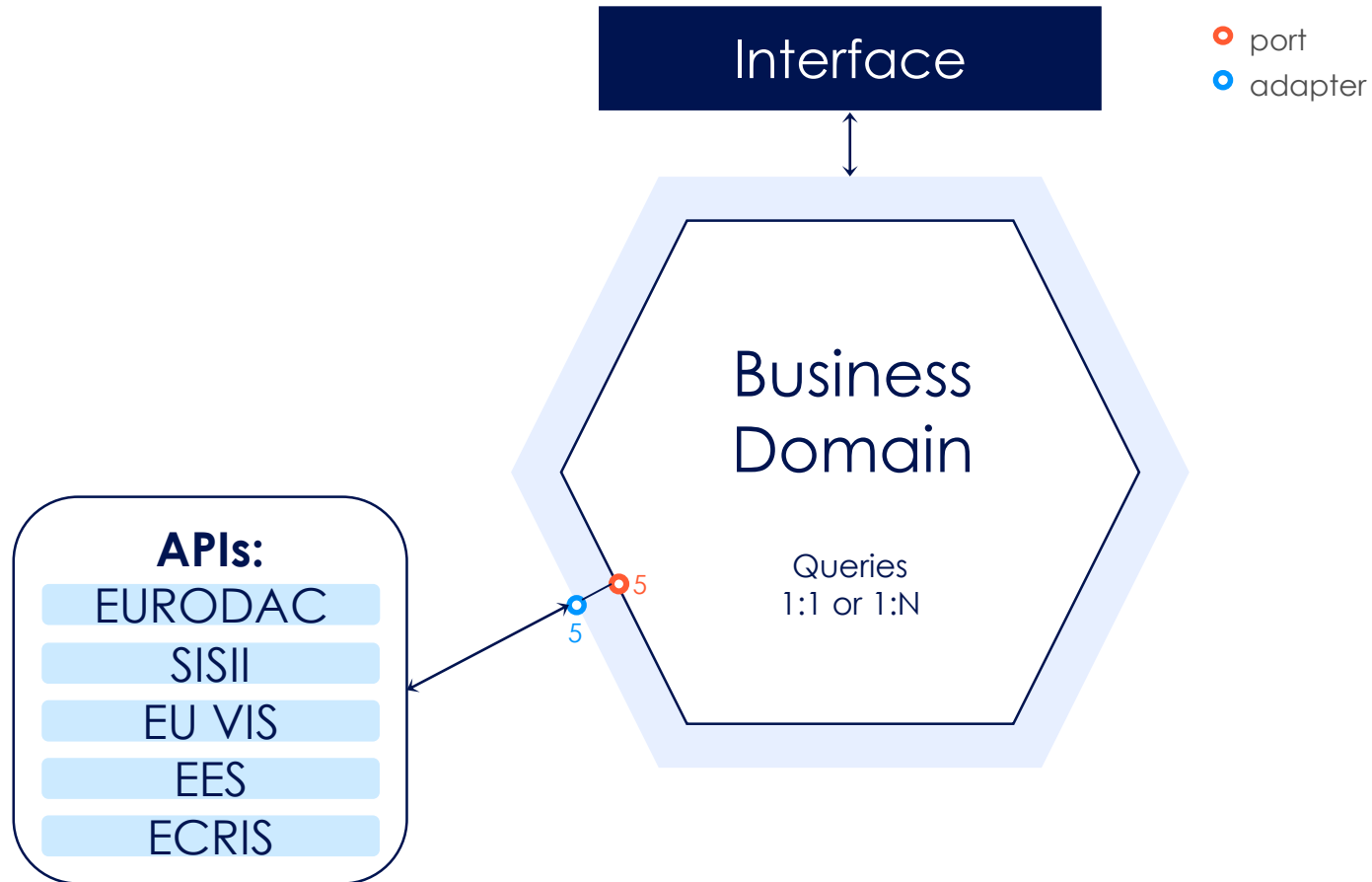
ELISE ID PLATFORM

BIOMETRICS (VENDOR INDEPENDENT)



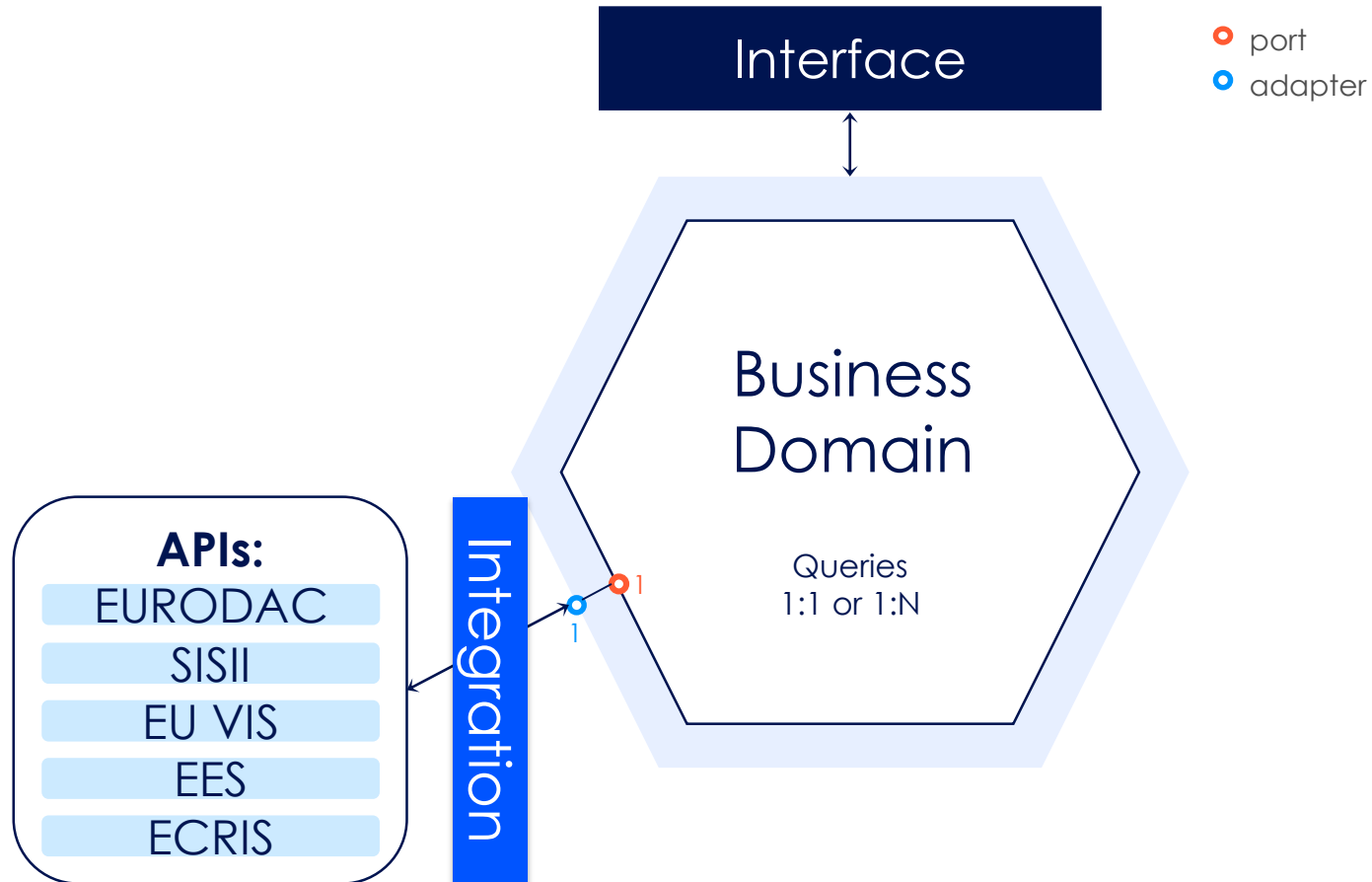
HEXAGONAL ARCHITECTURE IMPLEMENTATION

AS-IS ARCHITECTURE



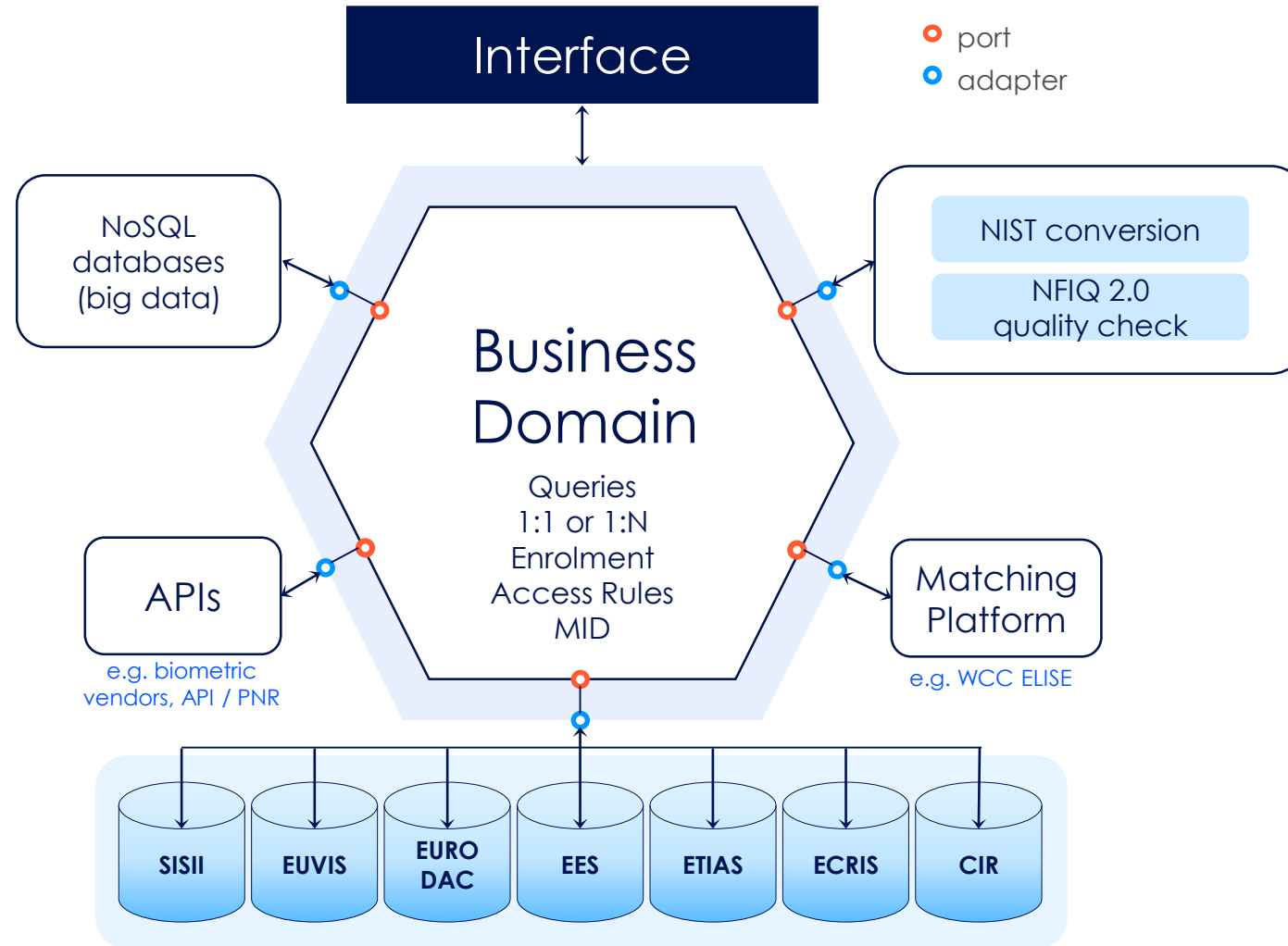
HEXAGONAL ARCHITECTURE IMPLEMENTATION

INTEGRATION ARCHITECTURE



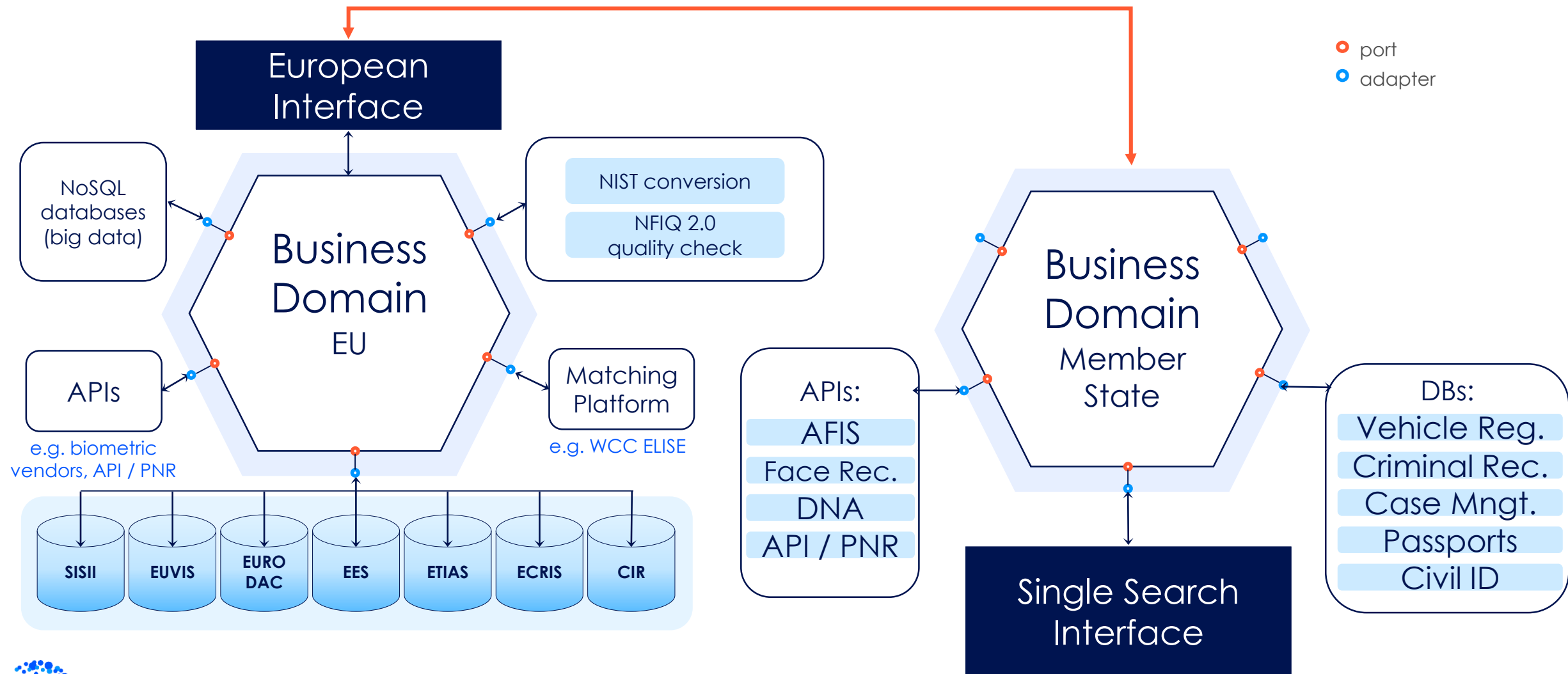
HEXAGONAL ARCHITECTURE IMPLEMENTATION

UNIFICATION ARCHITECTURE



HEXAGONAL ARCHITECTURE – MEMBER STATES

SSI & INTEROPERABILITY





Thank you for your time.
Any questions?



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