COOPP - Cooperation Project for Maritime Surveillance

Towards a common data model for integrated maritime surveillance

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Agenda

- Project's objectives
- Rational for a common solution
- Data model definition
- Services definition
- Participants
- Sectorial expected benefits
- Marine and Maritime Information Exchange
- Way ahead

Project's objectives

(overall)

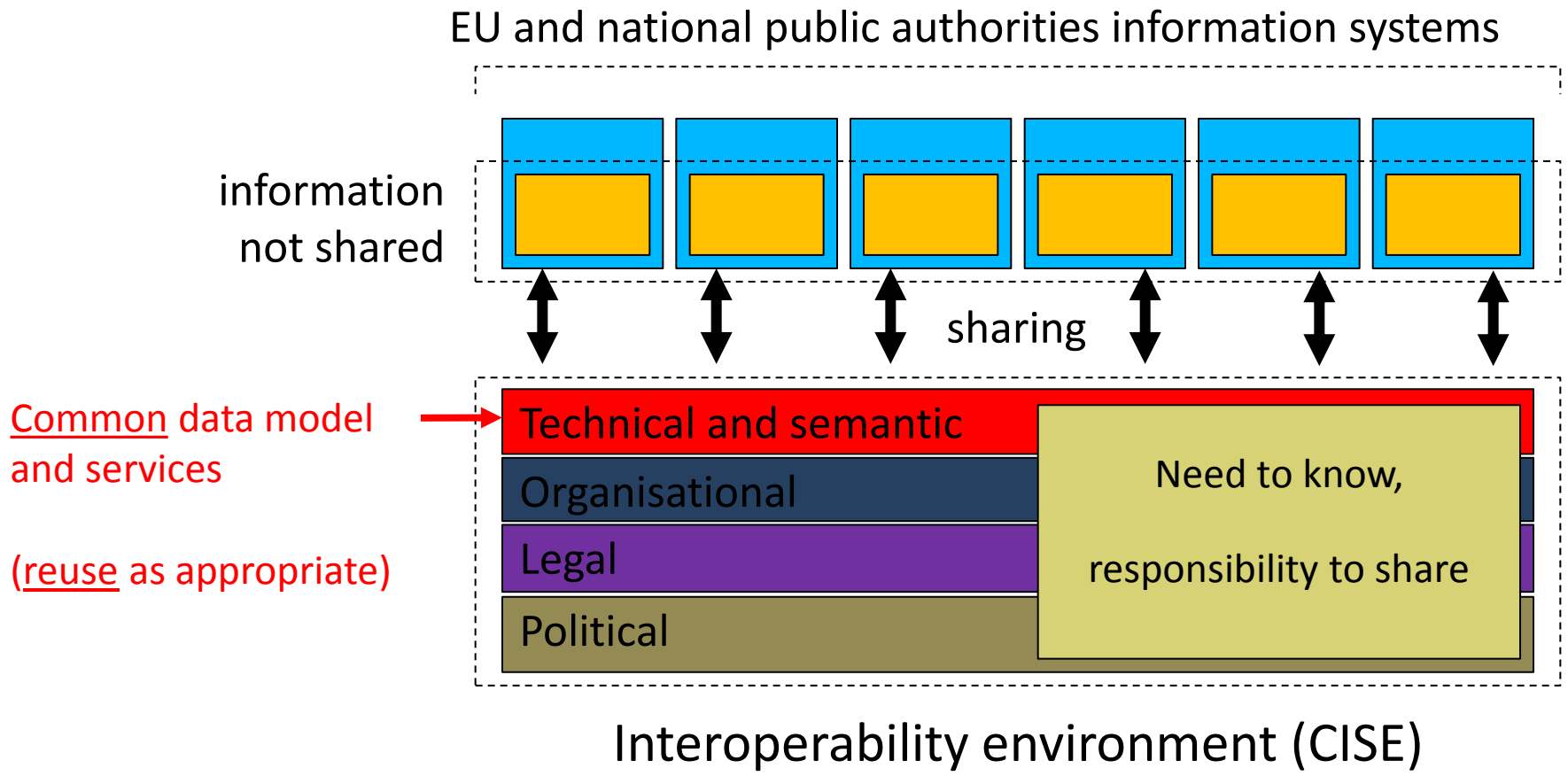
- Objective 1: To define and agree on a selection of use cases with related information services and attached access rights (WP2 and WP4)

- Objective 2: To define common data formats and semantics (**WP5**)

- Objective 3: To contribute to the cost-benefit analysis of Integrated Maritime Surveillance (WP3)

Project's objectives

(WP5)



Rational for a common solution

(why having common data model and services?)

An example from the communities: the tyranny of multiple languages

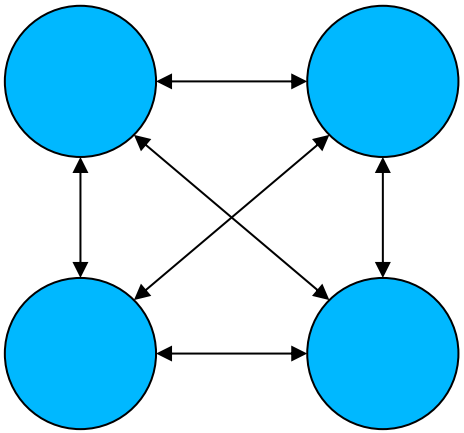
Relay interpreting

- One source language
- Several target languages
- Step 1: Interpretation to a common language
- Step 2: Interpretation to target languages

Rational for a common solution

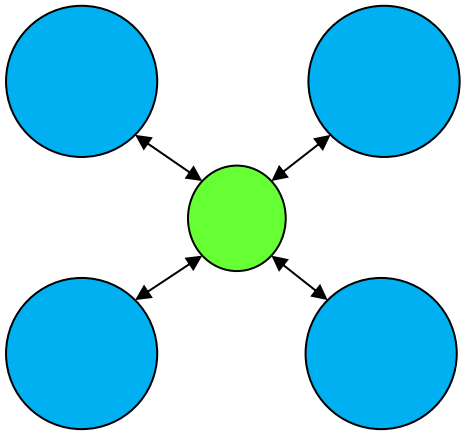
(why having common data model and services?)

Example 1: Implementing interoperability among 4 different systems:



No common data model/services

- Higher cost (6 units of cost)
- Heavier development
- Heavier maintenance
- Higher complexity



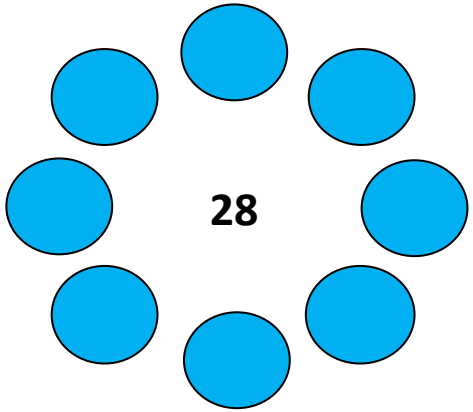
Common data model/services

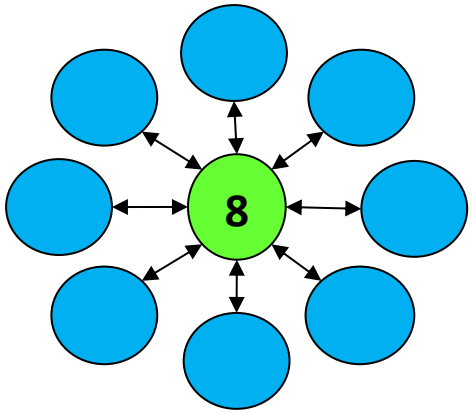
- Lower cost (4 units of cost)
- Easier development
- Easier maintenance
- Lower complexity

Rational for a common solution

(why having common data model and services?)

Example 2: Implementing interoperability among 8 different systems:





No common data model/services

Common data model/services

Presently **360** authorities are performing coast guard functions in the EU (64 620 / 360)
Data models tend to grow with time. CISE is a **long term** endeavour

Common data model: Less complex and expensive solution regarding implementation/maintenance

Rational for a common solution

(why not reusing what exists – model, services, system?)

An example from the transport domain: the personal transport

How we do it

- Highly customized
- Thinking about: Me

How we use it

- Personal activities
- Shared only with close ones

How we feel about it

- Best in the world
- Personal bonding

How others feel about it

- Love
- Hate

Rational for a common solution

(why not reusing what exists – model, services, system?)

An example from the transport domain: the group transport

How we do it

- Fairly customized
- Thinking about: Us

How we use it

- Group activities
- Complimentary to personal

How we feel about it

- Nice to have
- Group bonding

How others feel about it

- Indifference
- Desire

Rational for a common solution

(why not reusing what exists – model, services, system?)

An example from the transport domain: the public transport

How we do it

- Impersonal
- Thinking about: Anybody

How we use it

- Any activities
- Share it with anyone

How we feel about it

- Good to have
- Practical

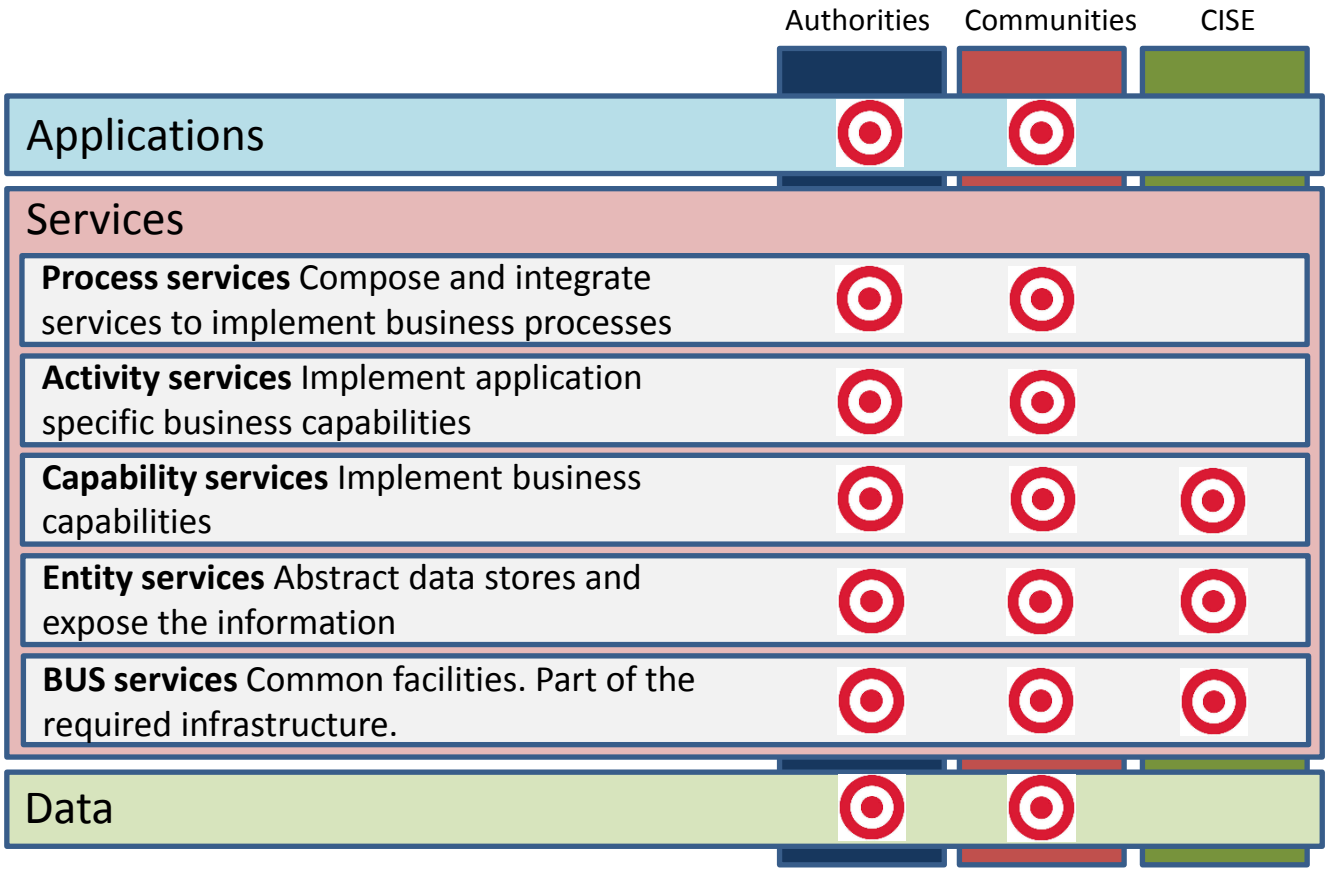
How others feel about it

- Good to have
- Practical

Rational for a common solution

(why not reusing what exists – model, services, system?)

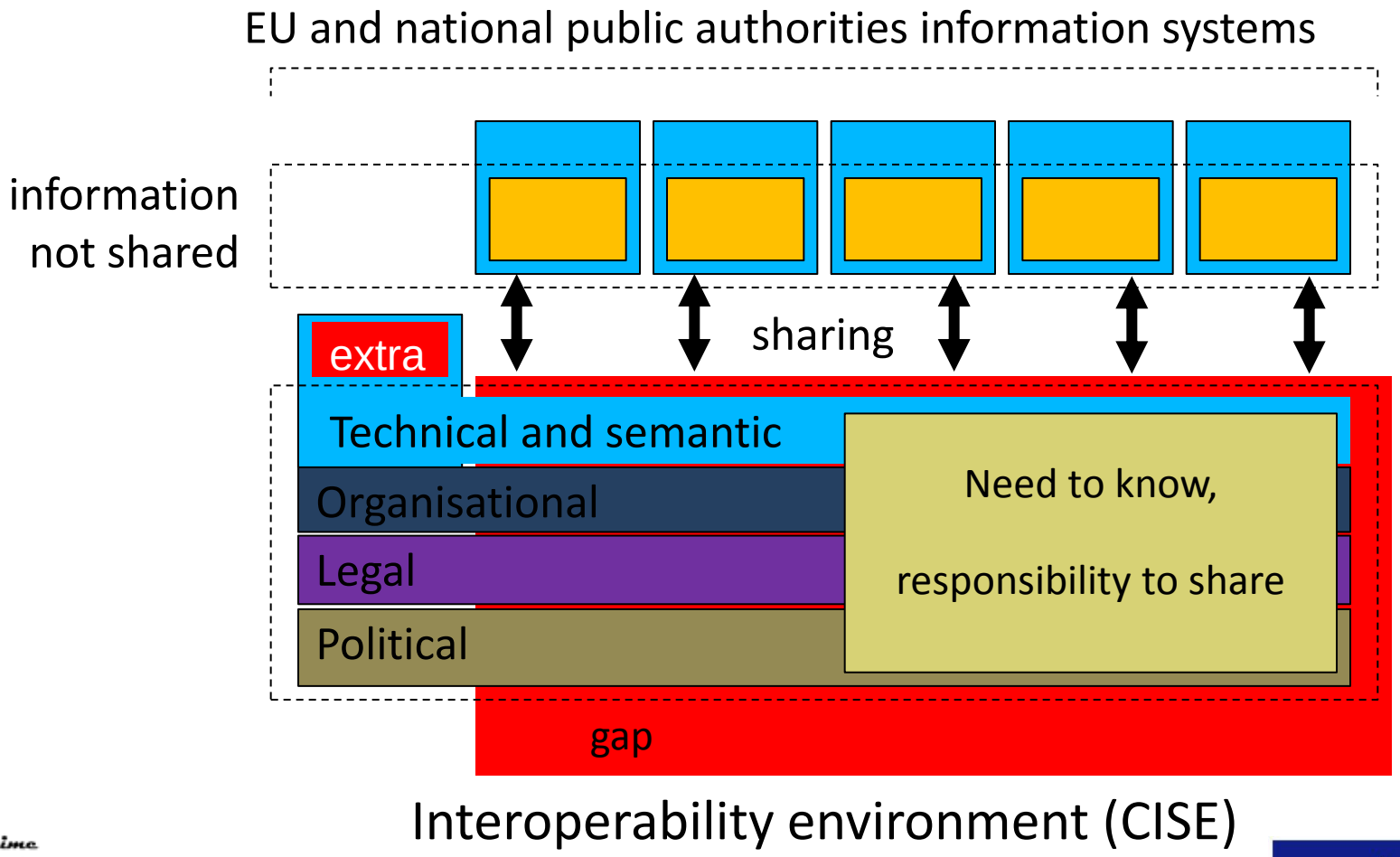
System's anatomy



[1] Cohen, Shy. Ontology and taxonomy of services on a SOA. Architecture Journal. April 2007

Rational for a common solution

(why not reusing what exists – model, services, system?)



Rational for a common solution

(why not reusing what exists – model, services, system?)

- Existing solutions are more complex and do not suffice
- Existing solutions may cause conflicts between interoperability and operational competing requirements
- Existing solutions may raise legal issues
- Existing solutions will cause strong interdependence across sectors

Data model definition

(methodology)

- Core data entities selection
  - To wait or not to wait...
  - Narrowing down the number of entities
- Selecting what to reuse
  - How big is related?
  - What is the point on reusing, after all?
  - Solving conflicts
  - Playing with abstraction

Data model definition

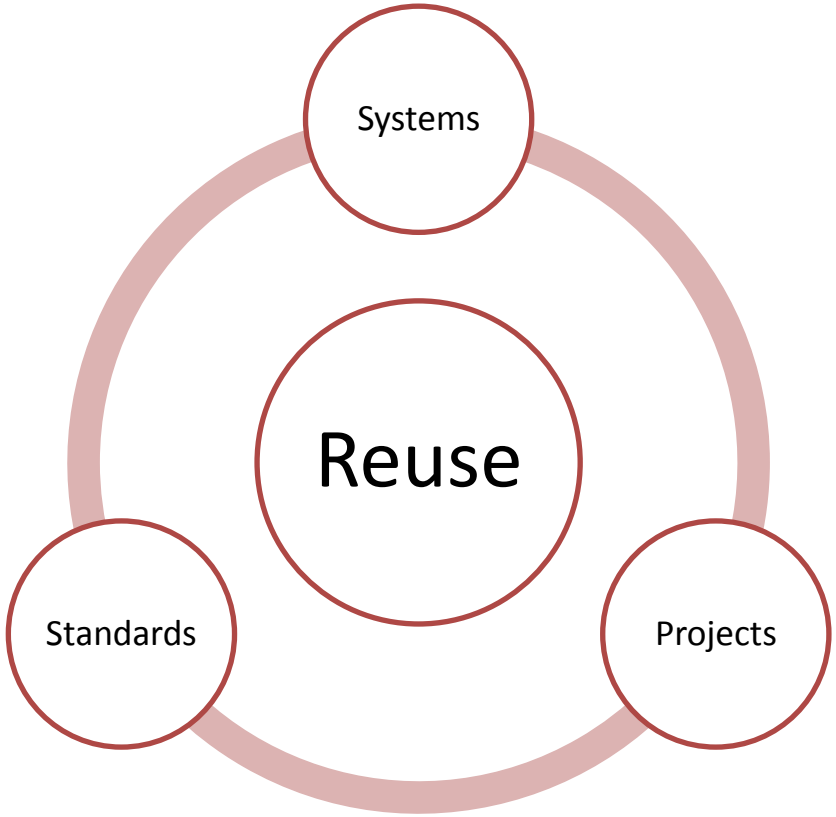
(results)

- Useful, understandable
- Usable, extensible
- Simple, sufficient, flexible
- Special features
  - Auditing
  - Security
  - Reliability
  - Validity
- UML, XSD, OWL
- Aligned with the ISA programme

Data model definition

(results)

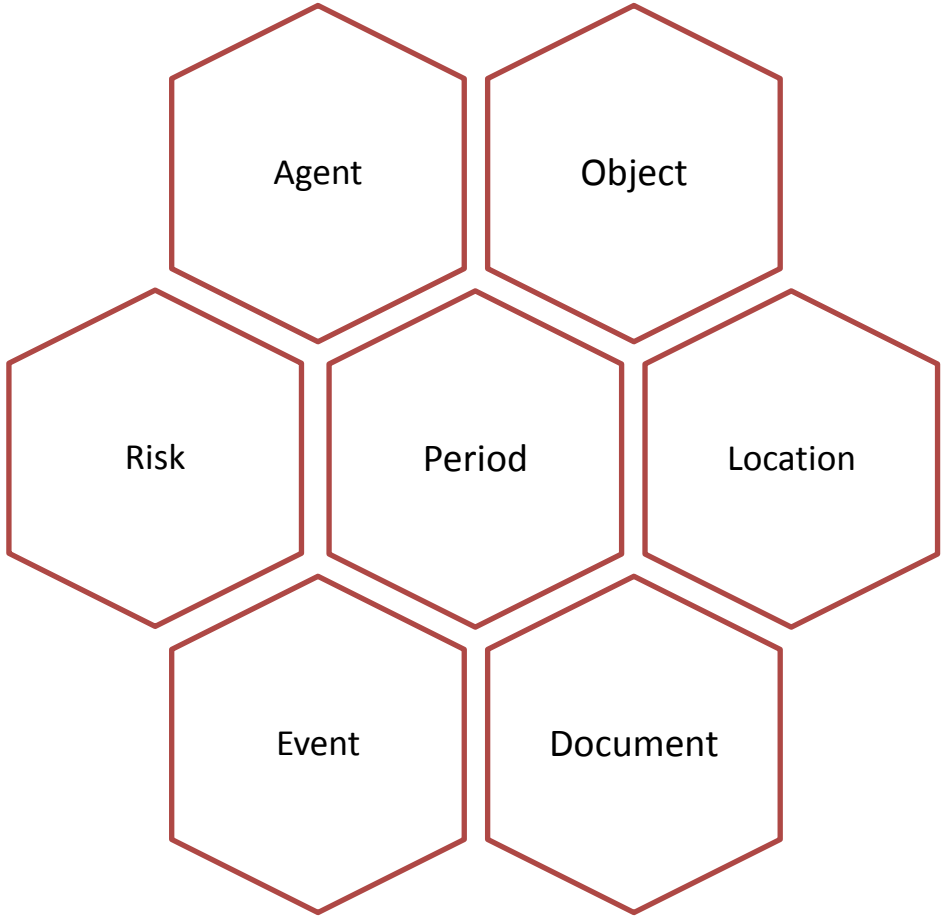
- 18 data entities
- 271 data attributes
- > 50% TAG Data matrix
- 77% reuse rate
- 34 sources



Data model definition

(results)

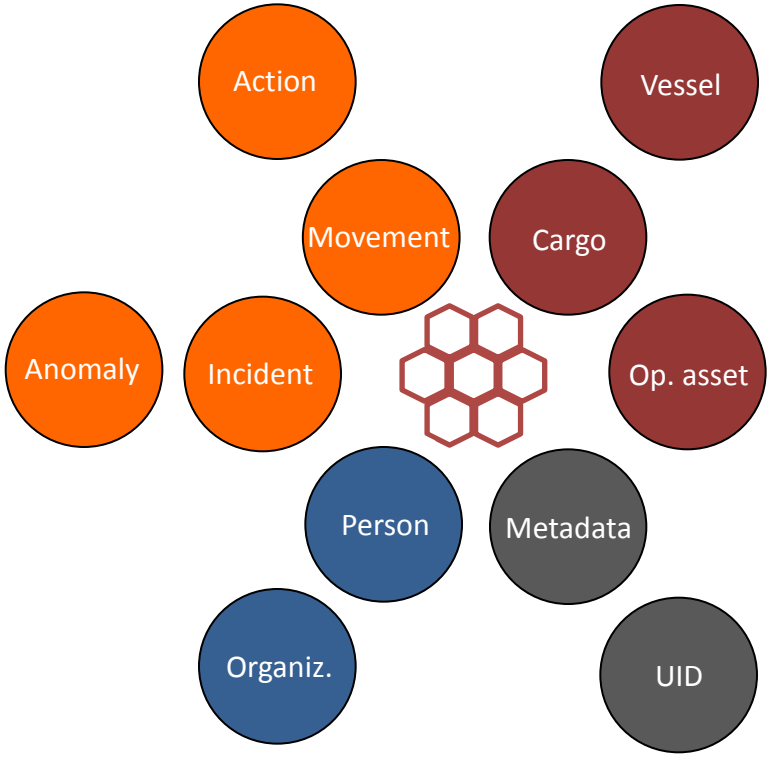
- 7 main entities
- Essential
- Inter-related



Data model definition

(results)

- 11 complementary
- Expressiveness
- Special features



Data model definition

(verification and validation)

- Objectives
  - Expressive enough
  - Technically correct
- TAG review
  - Contributions and recommendations fully adopted
- Independent business review
  - 100% used by the use cases enhanced
- Independent technical review
  - Minor corrections, recommendations

Services definition

(methodology)

- Looking into the services definitions
- Baby steps: entity services first
- The patterns collection
- Putting it all together: The service model

Services definition

(results)

- 15 entity services
- 5 messaging patterns
  - Pull
  - Pull delayed
  - Broadcast pull
  - Push
  - Broadcast push
- Service model
- Up to 75 services
- Extensible
- WSDL

Services definition

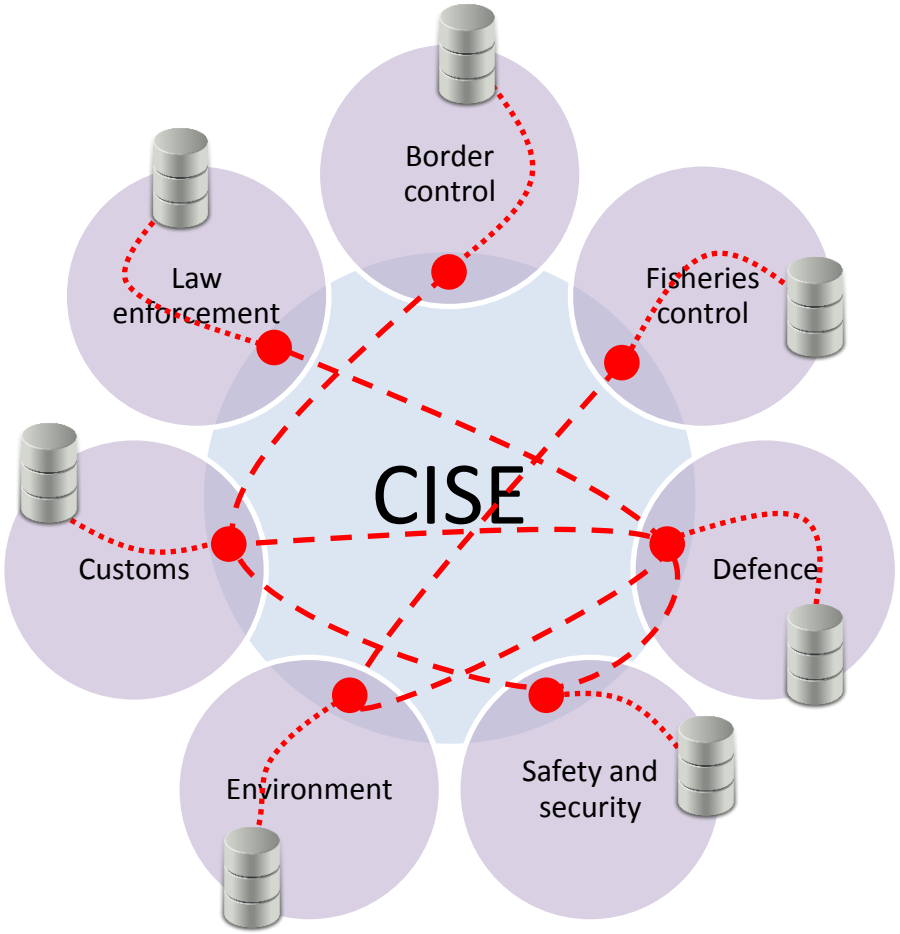
(verification and validation)

- Objectives
  - Adequate
  - Technically correct
- Independent business review
  - Minor corrections, recommendations
- Independent technical review
  - Minor corrections, recommendations

Services definition

('cise' it)

- Realize the services
- Connect them into each other
- Connect them to existing systems
- Enhance it all



Participants

- 35 experts from 11 MS + EUSC
- 2 JRC experts + 4 External experts
- JRC's collaborative tools
- Other tools as necessary
- 5 face to face meetings
- Several virtual meetings
- 12 months

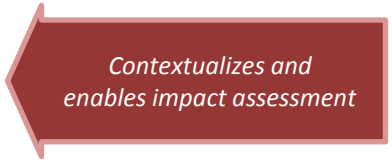
Overall expected benefits

- Lower interoperability costs
- Better interoperability management and governance
- More information shared
- Improved decision processes

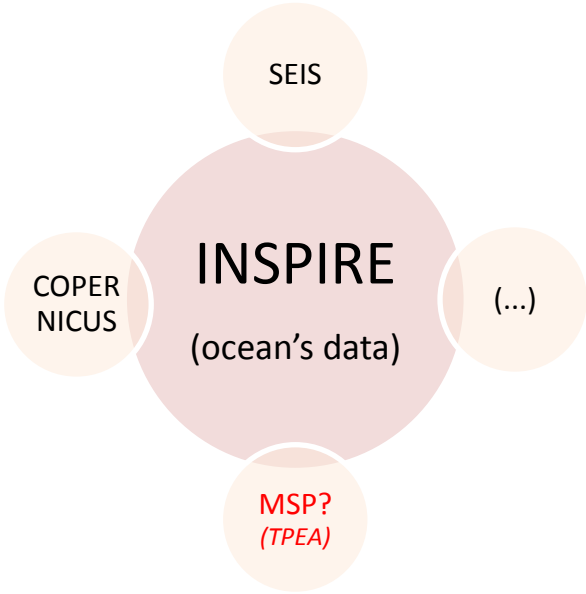
Marine and Maritime Information Exchange
(food for thought)

*Leveraging interoperability. Fostering **sustainable development**. Supporting activities (i.e. Security).*

Exogenous ocean's data. Socio-economic data?



*Leveraging interoperability. Fostering **policy-making**.*



Limits and ocean's data (system, natural resources and socio-economic).

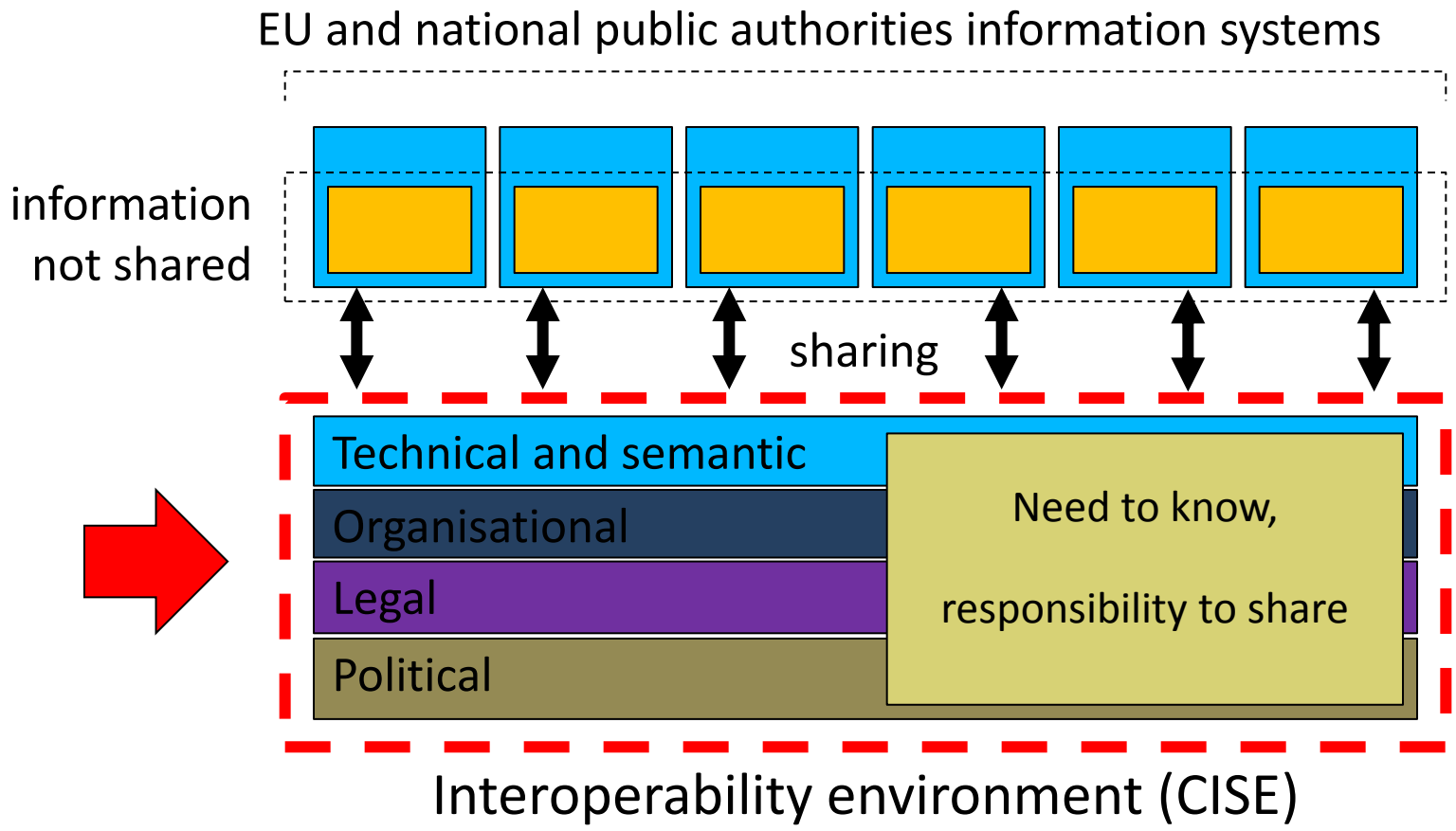
Way ahead

(recommendations)

- Enhance the present deliverables
- Implement and experiment as soon as possible
- Design a technical reference architecture
- Design the information exchange management component
- Design the governance structure
- Adopt and iterative and incremental approach

Way ahead

(how to govern this?)



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