INSPIRE interoperability users and use cases (by those who could not come)

Workshop ”Use of INSPIRE data” – 20-21 November 2018 – Warsaw

ISN18.138

Introduction

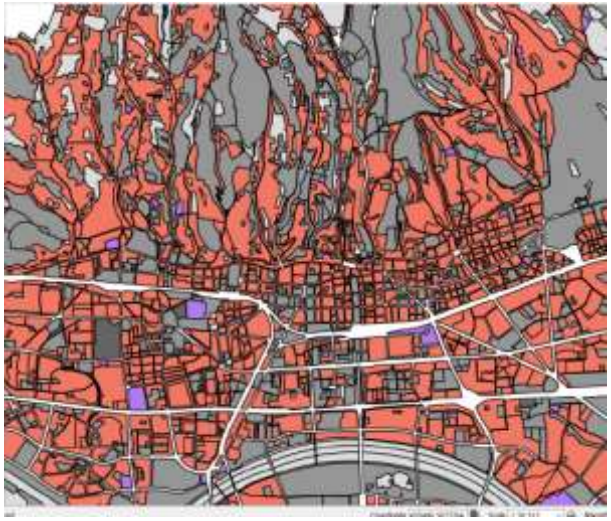
- Sources:
  - INSPIRE conference 2018
    - One of key topics was « **Use of INSPIRE** »
    - Those who haven't not been invited
  - Other events
    - Workshop about extensions of INSPIRE (June 2017)
    - Workshop EuroSDR WG 3D (October 2018)
  - Preparation of current workshop
    - Those who couldn't come

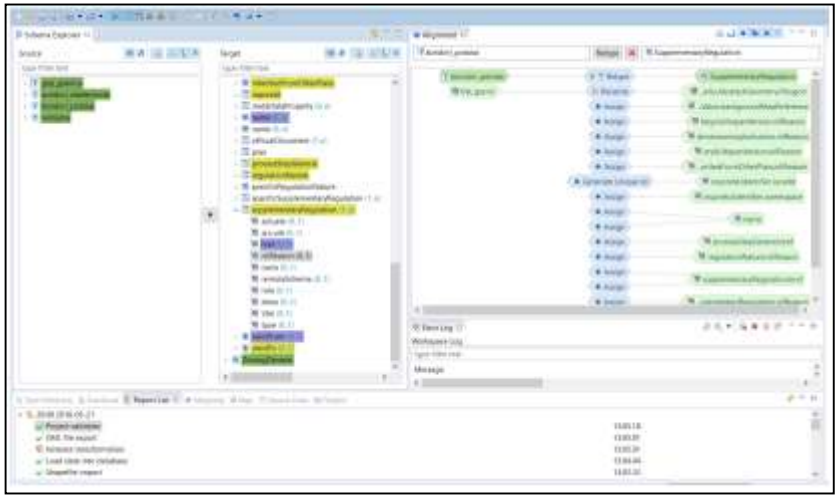
Get a summary of use cases from the users who are not attending the current workshop

Use of INSPIRE data

National example

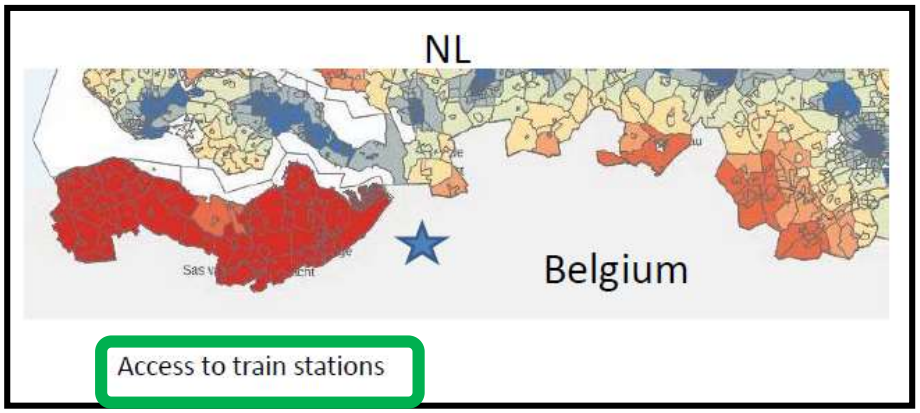
- User: City of Zagreb
- INSPIRE theme: planned LU
- Use case:
  - delivery of data according to INSPIRE
  - potential interest for national users
    - Poorer than source data
    - But **better documented**
      - Local data not always understandable





Cross-border example

- User: Statistic Institute (Netherlands)
- Use case: **Proximity statistics across borders**



- INSPIRE themes:
  - AD
  - TN

Cross-border example

Conclusions

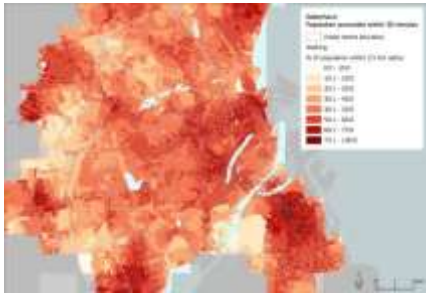
- Harmonized complex features generally don't work in GIS-tools
- You need to be a GIS, OGC and INSPRE export to download data
- Retrieving cross border geodata is still troublesome and the Annex I deadline of November 2017 has not been reached, but 10 years ago, it was all much worse

From INSPIRE 2018 conference

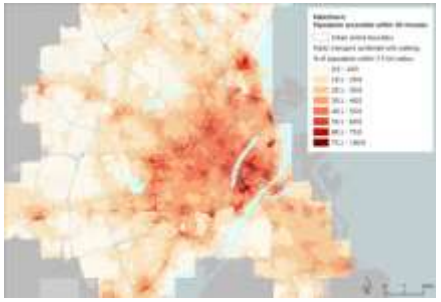
Pan-European examples (1)

- User: DG REGIO (Hugo Poelman)
- Use case: **accessibility to public transport**
  - Set of indicators

Stops and departures within walking distance



Accessibility by walking

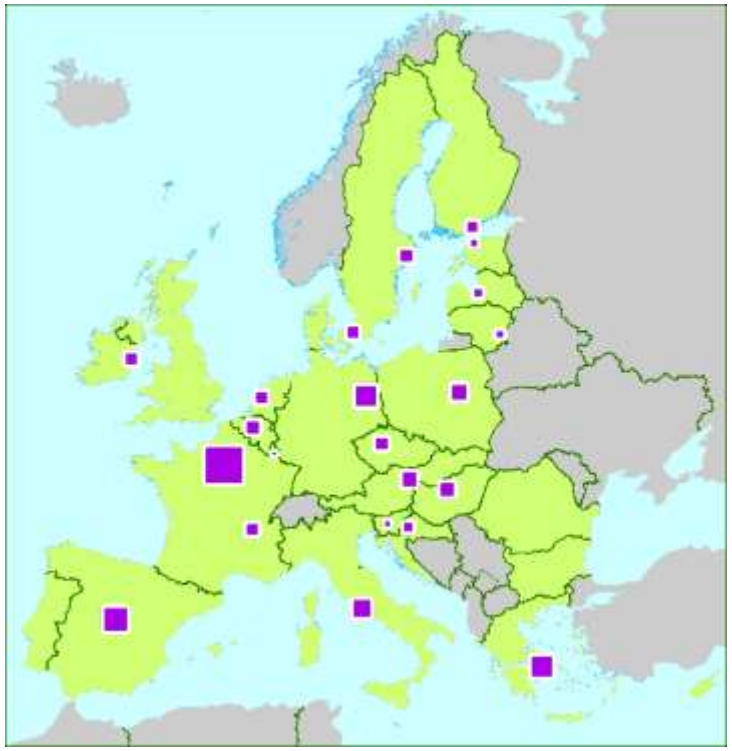


Accessibility relative to neighbouring population

- INSPIRE themes:
  - PD - TN - BU

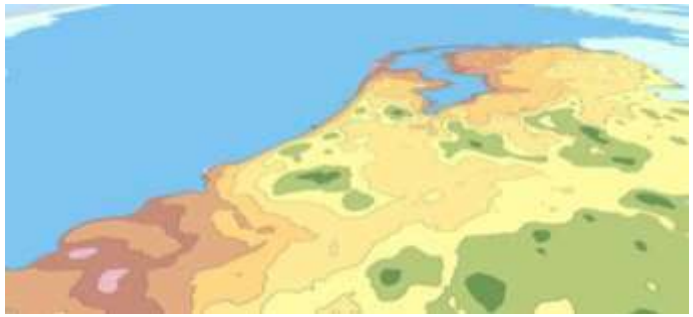
Pan-European examples (1)

- Conclusions
  - Allow comparisons between cities and between modes
  - Challenges
    - Open, timely and harmonised data
    - Computation resources



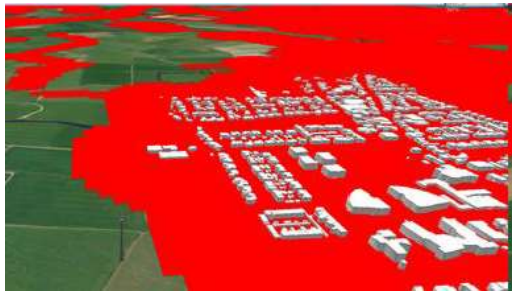
Pan-European examples (2)

- Users: Geonovum, Geodan, University Amsterdam, TU Delft
- Geographic coverage:
  - Netherlands (?)
  - But potentially whole Europe
- Use case: **wind turbine planning**
  - Simulate location of wind turbine
  - Assess impact



Yield of wind turbines

Shadow



Land use

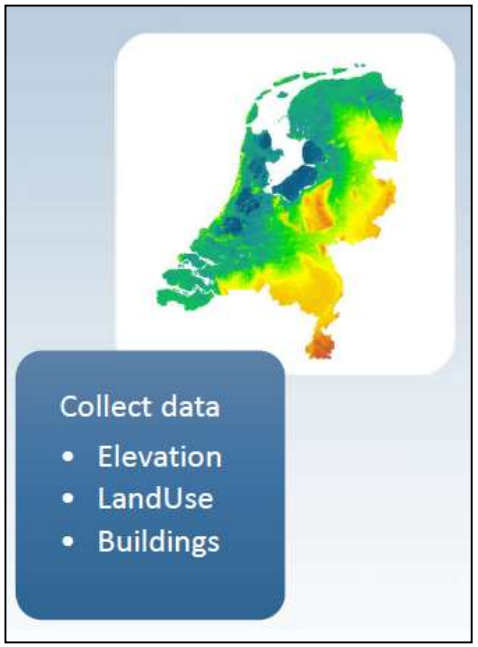
Pan-European examples (2)

- INSPIRE themes:

Input Data	Service Type	INSPIRE Theme	An-nex	comments
Building Address	WFS	Addresses	I	
Building Footprint	WFS	Buildings	III	
Building Height Data	WFS	Elevation	II	in combination with the previous
Aerial Photo	WMS	Orthoimagery	II	
Terrain Height Model	WMS	Elevation	II	
Wind Velocity	WMS	Meteorogical geographical features	III	Also energy resources theme
Electricity Demand	WMS		-	
Existing wind Turbine Locations	WFS	Energy resources	III	
Restriction Elements	WFS		-	based on local legislation
Vegetation	WFS	Land cover	II	
Landuse	WMS	Land use	III	
Humidity	WMS	Meteorogical geographical features	III	

Pan-European examples (3)

- Users: Geodan, University Amsterdam, GRID (Warsaw)
- Geographic coverage:
  - Netherlands and Poland
  - Potentially, whole Europe
- Use case: **EcoCraft**
  - City model from real (INSPIRE) data
  - Children receive a budget to improve energy efficiency of buildings
  - And should assess costs and benefits of 3 options
    - wind turbine
    - solar panels
    - isolation



Minecraft environment

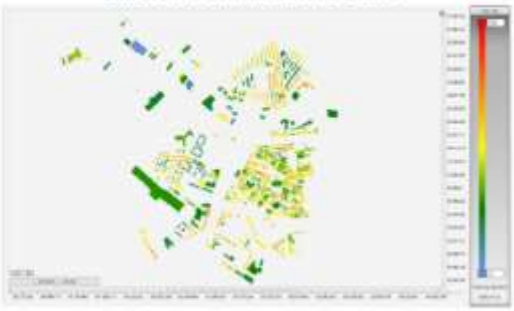
Pan-European examples (4)

- Users: ELISE Energy Pilot
- Geographic coverage:
  - Test areas in Zwolle (NL) and Essen (DE)
  - Potentially, whole Europe

- Use case: “Comparative analysis of different methodologies and datasets for **Energy Performance Labelling of buildings**”
  - Energy heating demand simulations with SimStadt software
- INSPIRE themes : BU

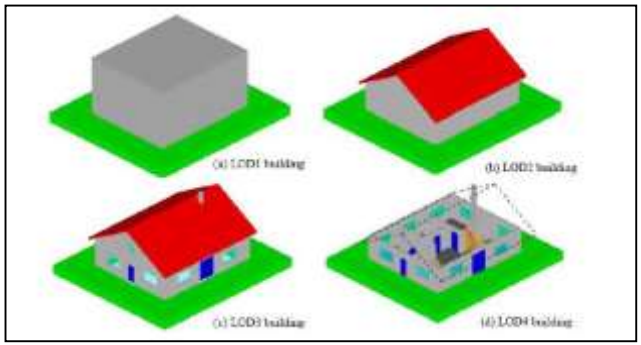
Labels Zwolle issued by RVO

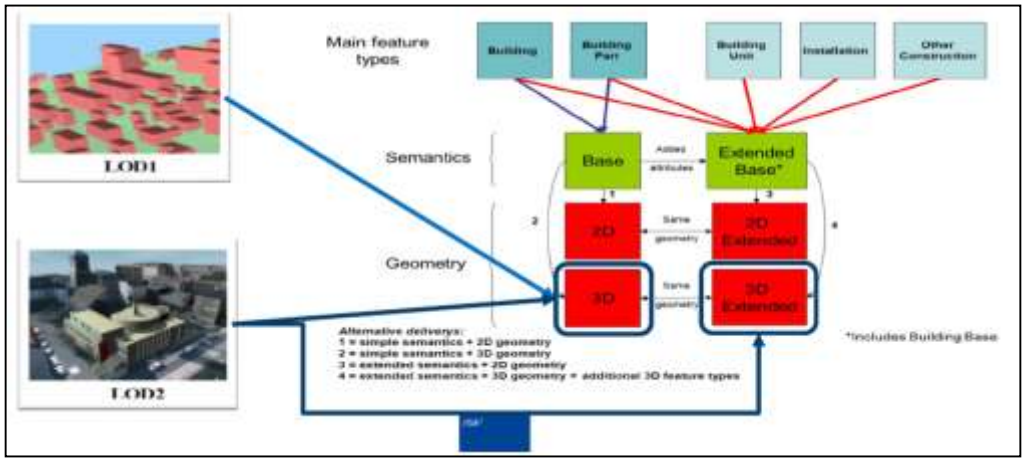
Simstadt Simulation results



Pan-European examples (4)

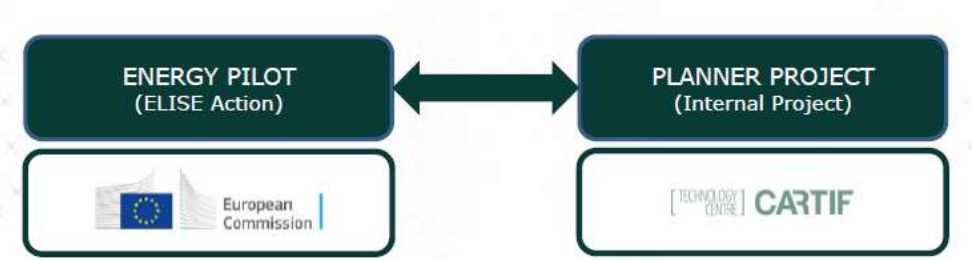
- Conclusions:
  - Need for **interoperable data**
    - Software prefers CityGML data
    - Mapping from INSPIRE BU 3D to CityGML is easily doable





Pan-European examples (4 bis)

- Users: ELISE Energy Pilot



- Geographic coverage:
  - Spain
- Use case about "**Energy Performance of buildings**"
- INSPIRE themes : BU

Pan-European examples (4 bis)

- Conclusions
  - **INSPIRE role is highly relevant** - in supporting, harmonising, providing the attributes across all member states and making them accessible through catalogues.
    - In addition, location information allows to analyse patterns by location, be able to implement action plans / policies
  - **Common calculation methodology** in member states and registers at national level following the same data model would be highly beneficial to support energy action plans etc.
    - Assuring that the same input data (harmonised across Europe and terminology) is deployed combined with the same calculation methodology will ensure reliable and comparable results across member states.

Use of INSPIRE data models

INSPIRed data models

- Workshop about “INSPIRE extensions” - June 2017

  => INSPIRE data models used as starting point

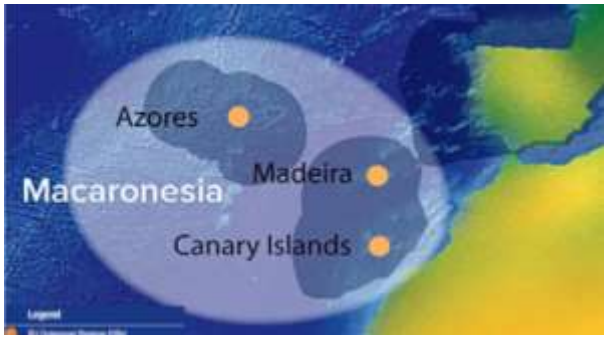
  - In European projects – often with “formal “ extensions (inheritance)
  - For new products or national standards - often more flexible adaptations

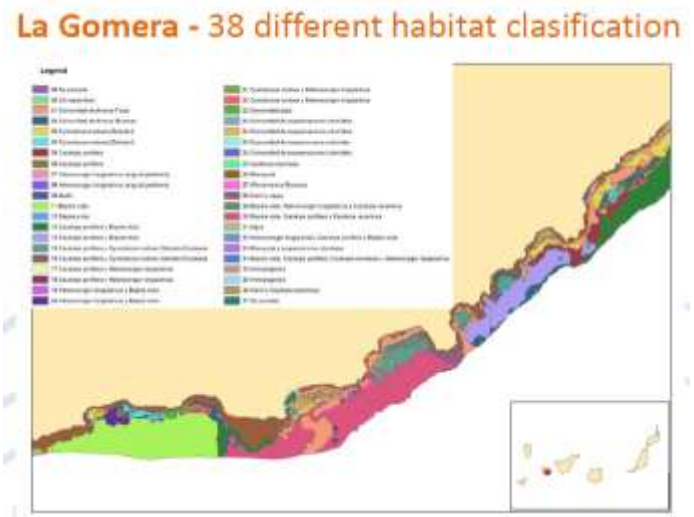
- Workshop EuroSDR WG 3D

  – National standards based on CityGML and on INSPIRE BU in Finland and Sweden

INSPIRed data models (1)

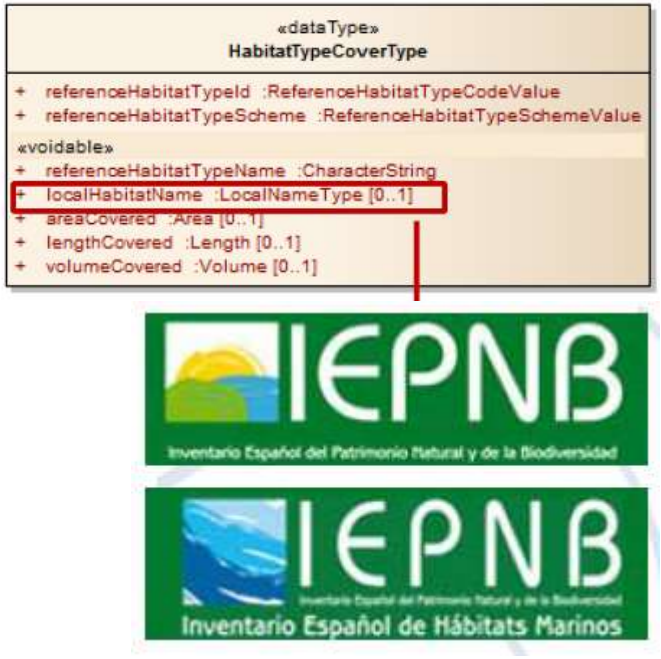
- User: project PLASMAR
- Geographic extent: Macaronesia
- Use case: **Harmonization of benthic habitats cartography** (Canary islands)
- INSPIRE theme: HB





INSPIRed data models (1)

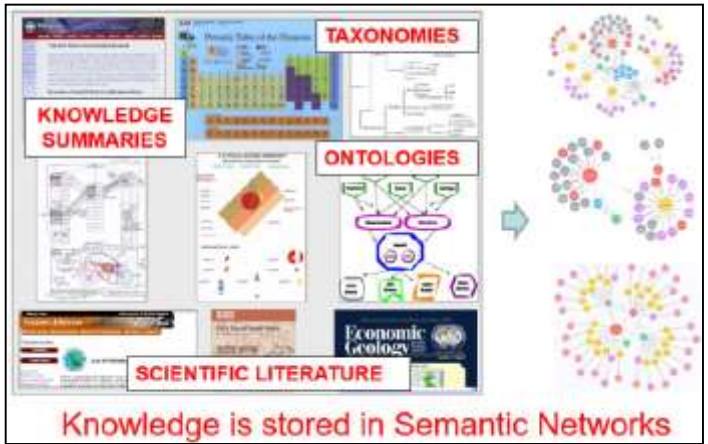
- Data modelling:
  - Use of INSPIRE data model
  - European classification too generic
  - Use of Spanish classification (localType)
  - User: project PLASMAR
- Delivery
  - Flat and simplified structure, format .shp
  - Correspondence between long attribute names of INSPIRE and short ones of ESRI documented in metadata



Geometry
InspireID/Namespace
InspireID/LocalID
Habitat/HabitatTypeCoverType/referenceHabitatTypeScheme
Habitat/HabitatTypeCoverType/referenceHabitatTypeId

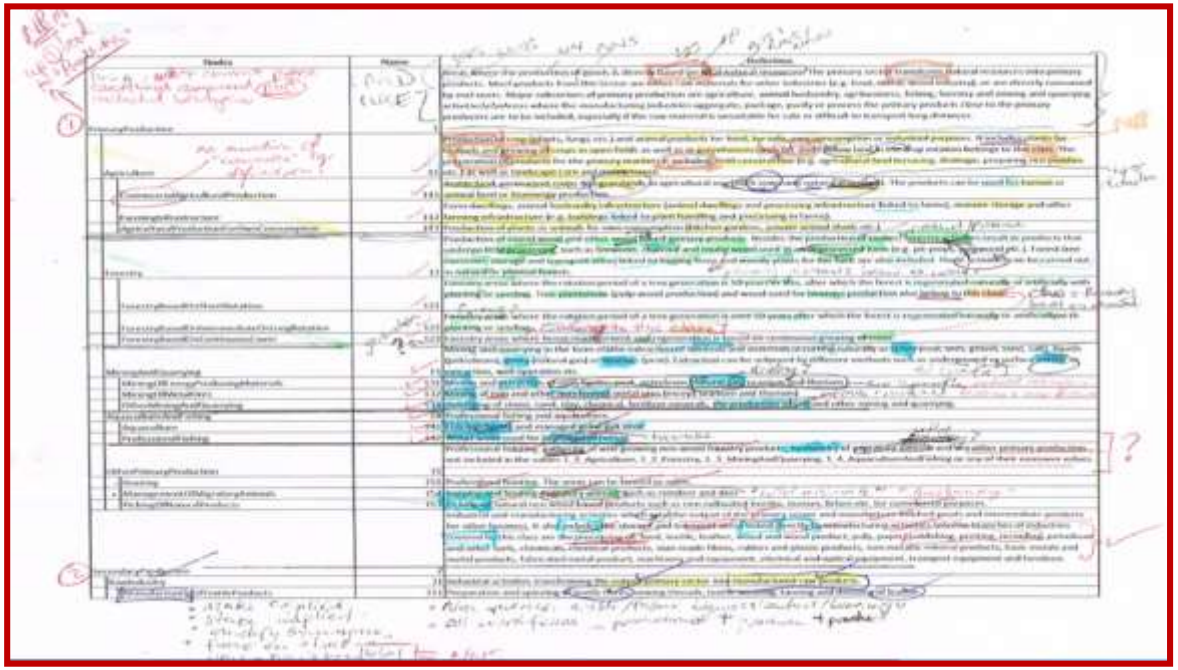
Ontologies (1)

- User: Minerva Intelligence (private company)
- Use case: use of INSPIRE code list for **artificial intelligence** (e.g. mineral exploration)
- Geographic extent: Europe or whole world (?)
- INSPIRE themes: LU, MR



Ontologies (1)

- Conclusions
  - Improvements required to transform INSPIRE code list into Aristotelian definitions (class /sub-class)



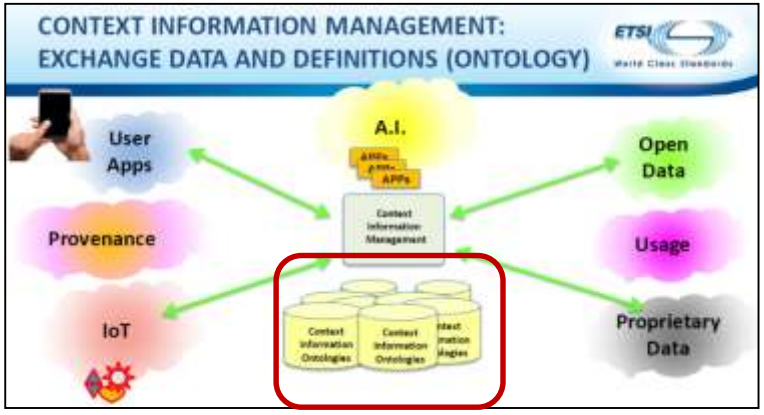
Review of HILUCS

Ontologies (2)

- User: Lindsay Frost (ETSI)
  - Recognized European Standards Organization (telecommunications)
- Use case:
  - Industry Specification Group for cross-cutting Context Information Management
  - *ISG CIM will specify protocols running 'on top' of **IoT** platforms and allowing exchange of data together*
  - **Interoperability is not as good as desired** for IoT projects mainly due to "every developer creates own definitions" – time lost to understand data .

ETSI launches new group on Context Information Management for smart city interoperability

ETSI ISG CIM has the mission to create an open API to facilitate exchange of data + metadata, using JSON-LD, with constraints to ensure interoperability and scaleability, and with recommendations for implementers to reference (a few) important ontologies in several domains (e.g. Smart Cities).



Ontologies (2)

- Conclusions:
  - Difficult discovery
    - ETSI have found INSPIRE data specifications and registry by chance
    - ETSI didn't look aware of INSPIRE schemas in RDF
    - ETSI has some concerns about quality of ontologies (including INSPIRE ones)
      - Has anybody check if an ontology is complete and accurate compared to INSPIRE directive?
    - ETSI has not yet investigated in detail use of INSPIRE data models
  - But big interest
    - As **there will be lots of data attached to the INSPIRE ontologies**
  - Involved INSPIRE themes:
    - Still unknown
    - Likely, at least AD, TN, BU