



Welcome to the World of Standards



TOWARDS A COMMON SEMANTIC DATA MODEL FOR SMART CITIES

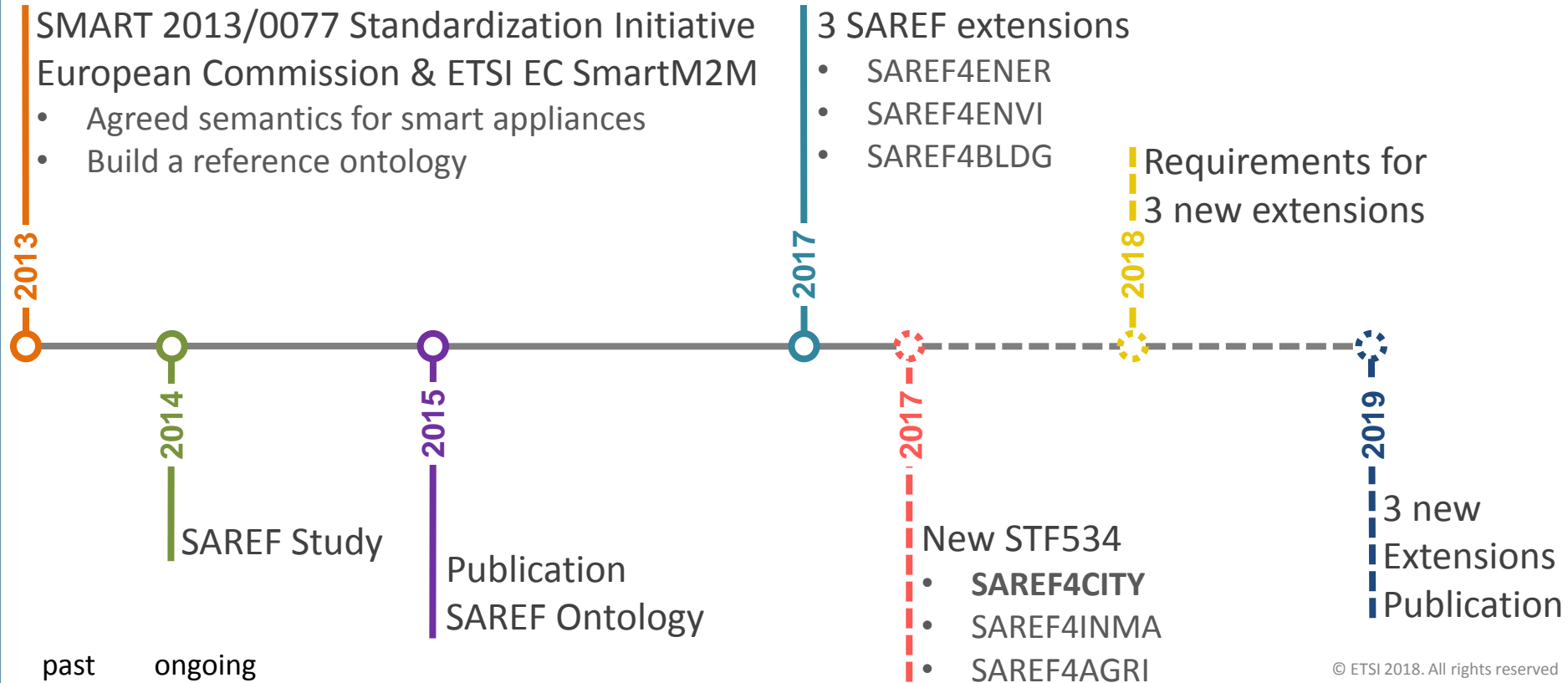
María Poveda-Villalón (UPM), Raúl García-Castro (UPM), Laura Daniele (TNO)

1st ITU Workshop on Data Processing and Management for IoT and Smart Cities & Communities

Brussels, 19 February 2018



SAREF OVERVIEW



SAREF FAMILY OF ONTOLOGIES

<http://saref.linkeddata.es/> Catalogue (UPM's site, not official)

Ontologies

SAREF extensions registry

Here you can find the list of SAREF family of ontologies

Filter by title or domain:

| Ontology | Serialization | License | Authors | Language | Domain | Description |
|--|----------------------------------|----------|--|----------|---|--|
| SAREF: the Smart Appliances REFERENCE ontology | html turtle | CC-by4.0 | Laura Daniele María Poveda-Villalón Raúl García-Castro | en | smart appliances IoT | The Smart Appliances REFERENCE (SAREF) ontology is a shared model of consensus that facilitates the matching of existing ... See more |
| SAREF extension for environment | html turtle xml N-Triples | CC-by4.0 | María Poveda-Villalón Raúl García-Castro | en | environment light pollution photometer SAREF | This ontology extends the SAREF ontology for the environment domain, specifically for the light pollution domain, including ... See more |
| SAREF extension for building devices | html turtle xml N-Triples | CC-by4.0 | María Poveda-Villalón Raúl García-Castro | en | building building device device IFC SAREF | This ontology extends the SAREF ontology for the building domain by defining building devices and how they are located in ... See more |
| SAREF extension for energy | html turtle | CC-by4.0 | Laura Daniele | en | smart appliances energy | SAREF4ENER is an extension of SAREF for the Energy domain that was created in collaboration with Energy@Home ... See more |

Includes:

- SAREF ontology
- SAREF4ENVI
- SAREF4BLDG
- SAREF4ENER

To be included (when available):

- **SAREF4CITY**
- SAREF4INMA
- SAREF4AGRI

SAREF4CITY PROCESS

Related initiatives & stakeholders search

Public Administrations

- **Madrid**
- ...

Associations

- AIOTI
- **FEMP**
- ...

Projects

- **H2020:**
AGILE, BIG IoT, bloTope, CREATE-IoT, Autopilot, replicate, smartency, smarter together, synchronicity, activAGE, iof2020, My smart life, Inter-IoT, Ruggedised, SHAR-LLM - Sharing cities, symbloTe, TagItSmart!, U4IoT, MONICA, **VICINITY, ESPRESSO**

Platforms

- **FIWARE**
- ...

Standardization

- **AENOR CTN 178**
- OGC CityGML
- ETSI ISG CIM
- CityInd
- oneM2M
- ...

SAREF4CITY PROCESS

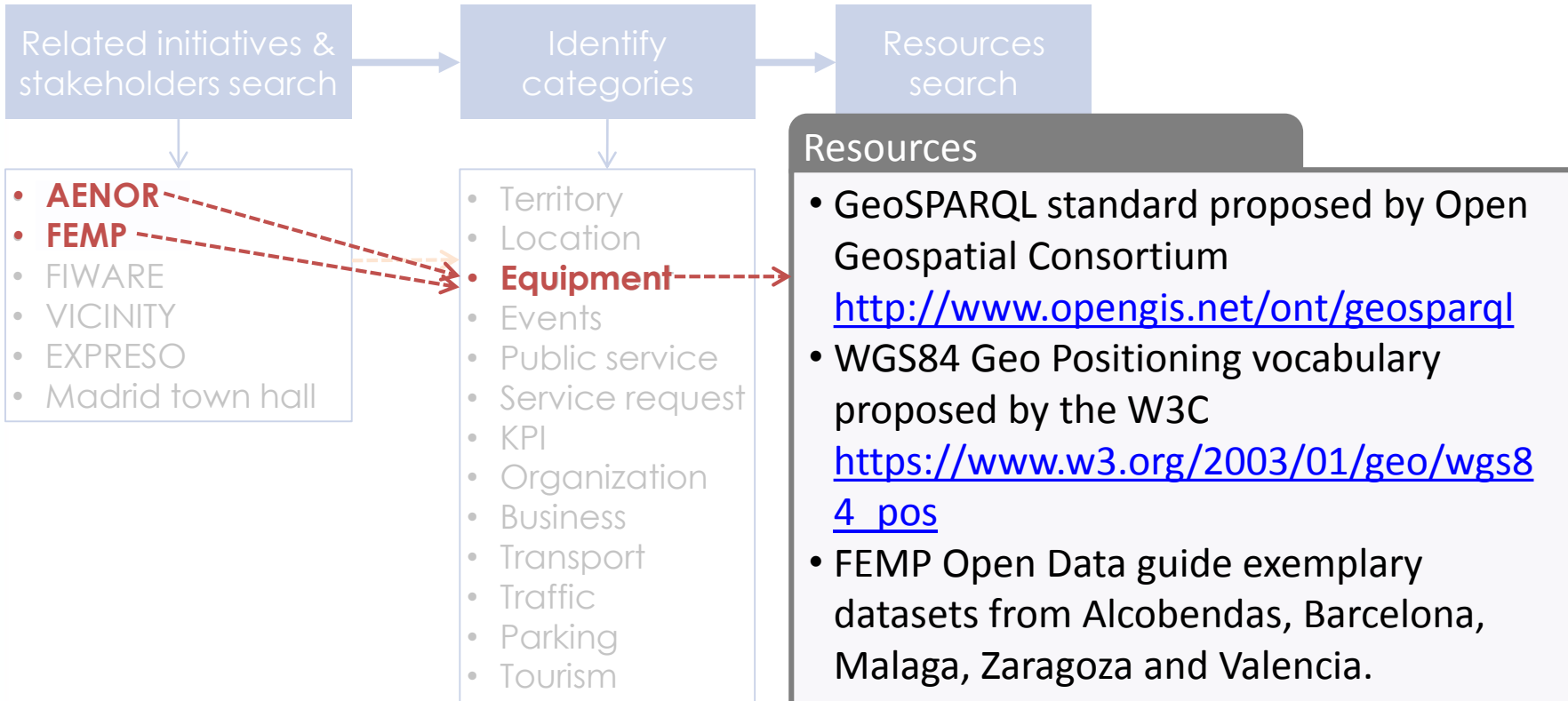
Related initiatives & stakeholders search

- **AENOR**
- FEMP
- FIWARE
- VICINITY
- EXPRESO
- Madrid town hall

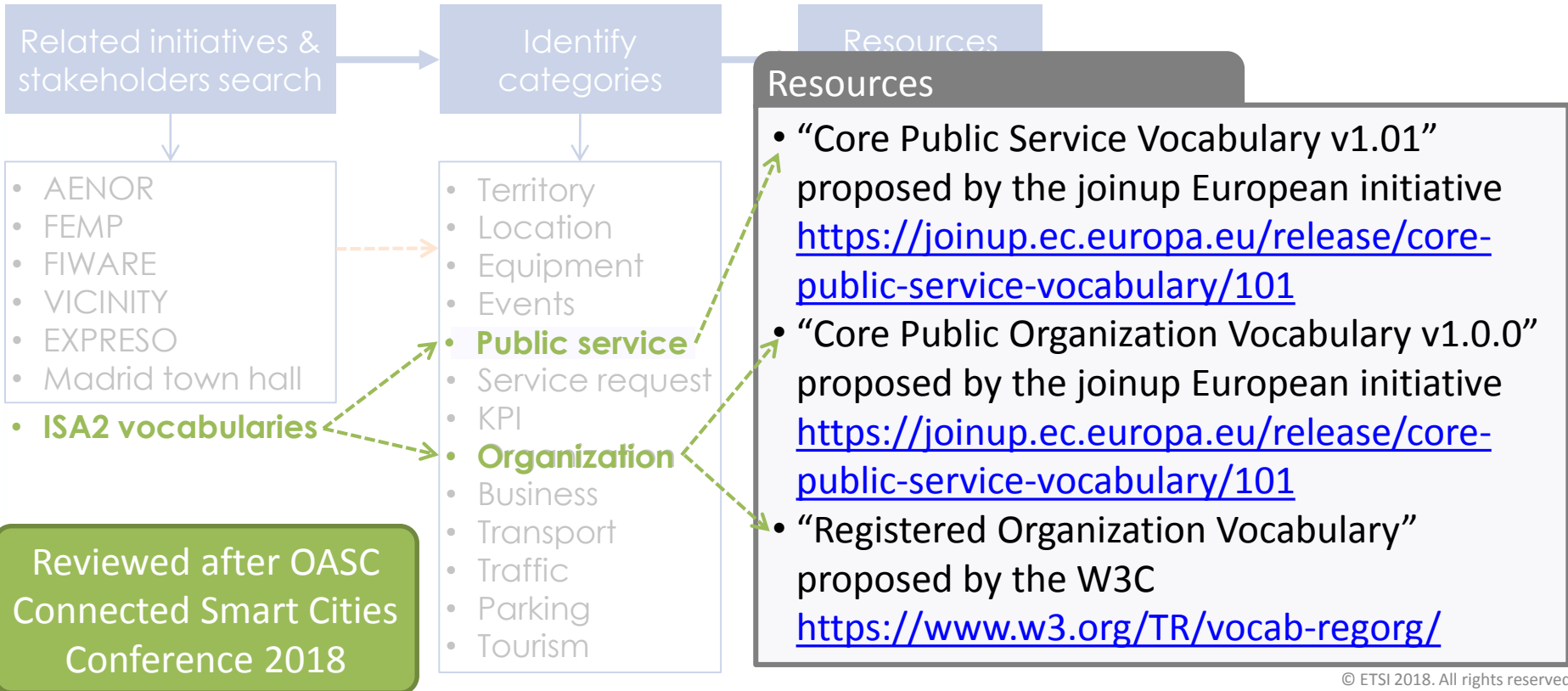
Categories

- Business catalog ←---
- Cultural Agenda ←---
- ~~Population~~
- ~~Air quality~~
- ~~Contracts, public procurement and service providers~~
- ~~Municipal budget and budget execution~~
- Public park loads ←---
- Bus timetable, line, stops and fares ←---
- Traffic ←---
- Touristic places ←---
- City street guide ←---

SAREF4CITY PROCESS



SAREF4CITY PROCESS

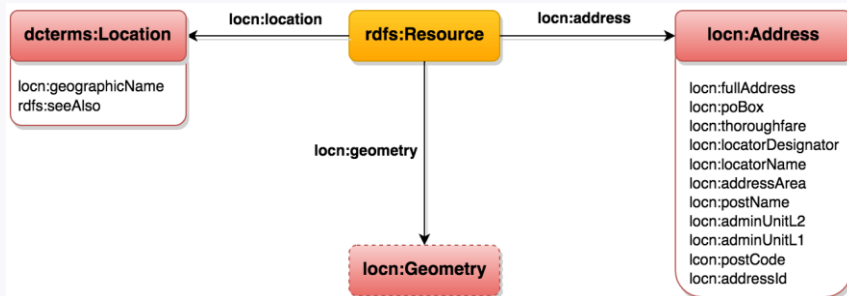


Related initiatives & stakeholders search

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Requirements

- From <https://www.w3.org/ns/locn>

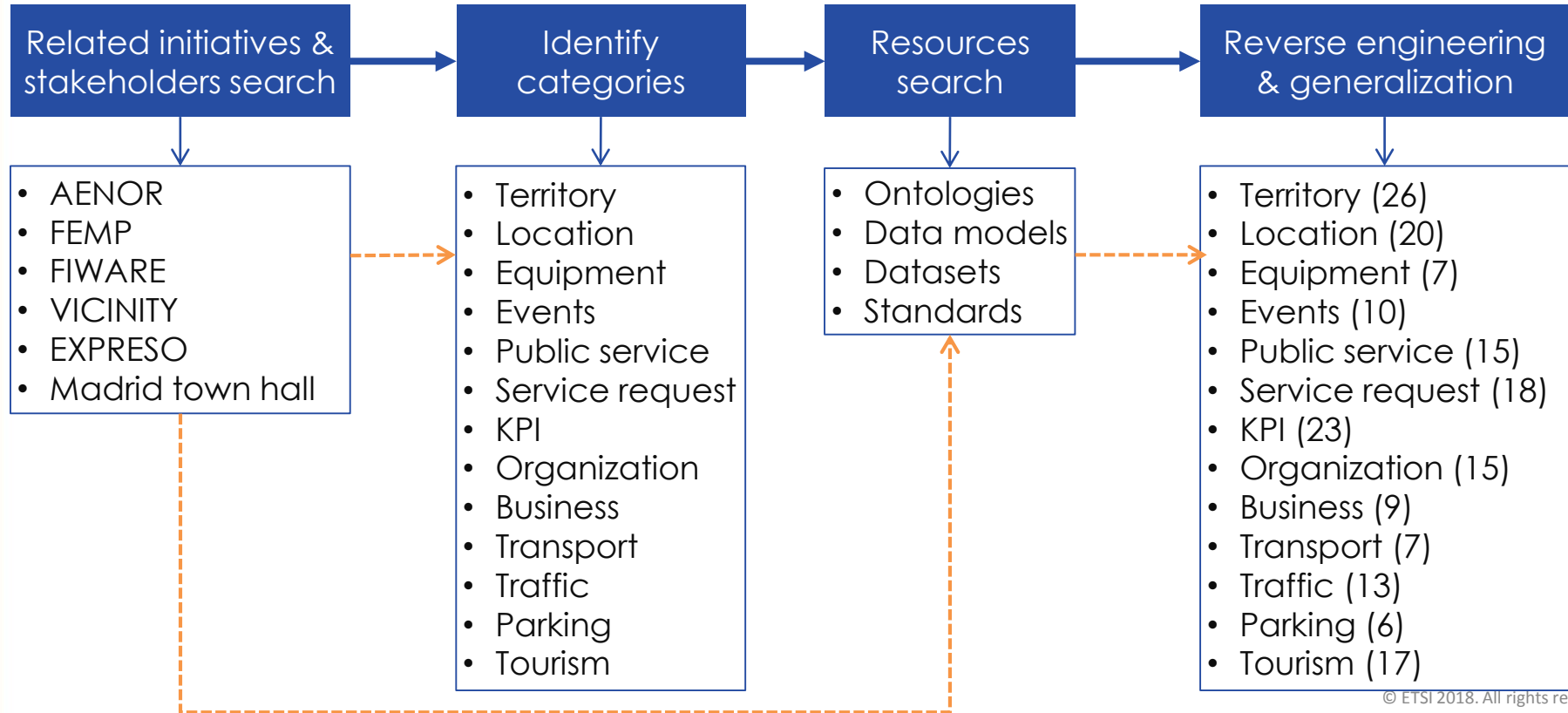


- A resource can have a location
- A resource can have an address
- An address has a full address
- An address can have a post office box number
- ...

Resources

Reverse engineering & generalization

SAREF4CITY PROCESS



- Requirement **validation** with
 - European **projects** for example VICINITY, SYNCHRONICITY...
 - Abstract and group requirements to ease the validation
 - IoT Week workshop, Bilbao June 2018
- **Implementation**
 - **Reuse** stable models, used for the requirements and others:
 - <http://lov.okfn.org/>
 - <http://smartcity.linkeddata.es/>
 - <http://sensormeasurement.appspot.com/?p=ontologies#city>
 - **Create** new conceptualizations when needed
- Explore **relations** with other approaches, like **Web of Things?** IoT

- We are aware we are not the only ones doing this
 - **Requirements** extracted in a methodical way from **existing resources**
 - **Plug** existing **solutions** rather than reinvent the wheel
 - Reuse what is already done (and **working**)
 - Incorporate stakeholders **feedback**
- We are still on time to include **your input**:
 - **Use cases**
 - **Models**

Thank you for your attention!