IOTWeek

Dublin — June 20-23, 2022

The role of SAREF as Common Data Model for Energy, Home & Mobility Data Spaces

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GLOBAL VISION:

IoT TODAY AND BEYOND

IOTForum

Ontologies in the Green and Digital Transition

IOTWeek Dublin June 20-23, 2022

- Action Plan on the Digitalisation of Energy (DoEAP) by the European Commission to be published in autumn 2022
  - Digitalisation prerequisite for efficient and effective operation of energy system and markets
- Ontologies used to define the common semantics for different stakeholders to interoperate
- Which ontologies are suitable for this purpose? AIOTI Ontology Landscape Release 1.0* (December 2021)
  - https://aioti.eu/aioti-ontology-landscape-report/
  - Main IoT Ontologies structured by their domain of interest
  - Classification of IoT Ontologies, in particular regarding sustainability (who is maintaining it?) and technology readiness level (how mature is it?)
  - Do you have an ontology to contribute to Release 2.0? Fill out the survey at https://ec.europa.eu/eusurvey/runner/OntologyLandscapeTemplate

SAREF and data spaces

- SAREF and its extensions for Energy, Building, City and Water are a solid example of mature, standardised and sustainable ontologies that can be used as basis to configure Data Spaces for Energy, Home & Mobility
  - Technological basis to enable distributed knowledge federation on top of which data spaces can be established with data sovereignty and governance

List of SAREF ontologies

Below is the list of published SAREF ontologies, and SAREF ontologies under development

- SAREF: the core Smart Applications REFerence ontology
- Ontology patterns:
  - SAREF4SYST: ontology pattern for Systems, Connections, and Connection Points
- Extensions for domains:
  - SAREF4ENER: SAREF extension for the Energy domain
  - SAREF4ENVI: SAREF extension for the Environment domain
  - SAREF4BLDG: SAREF extension for the Building domain
  - SAREF4CITY: SAREF extension for the Smart Cities domain
  - SAREF4INMA: SAREF extension for the Industry and Manufacturing domains
  - SAREF4AGRI: SAREF extension for the Smart Agriculture and Food Chain domains
  - SAREF4AUTO: SAREF extension for the Automotive domain *(under development)*
  - SAREF4EHAW: SAREF extension for the eHealth/Ageing-well domain
  - SAREF4WEAR: SAREF extension for the Wearables domain
  - SAREF4WATR: SAREF extension for the Water domain
  - SAREF4LIFT: SAREF extension for the Smart Lifts domain

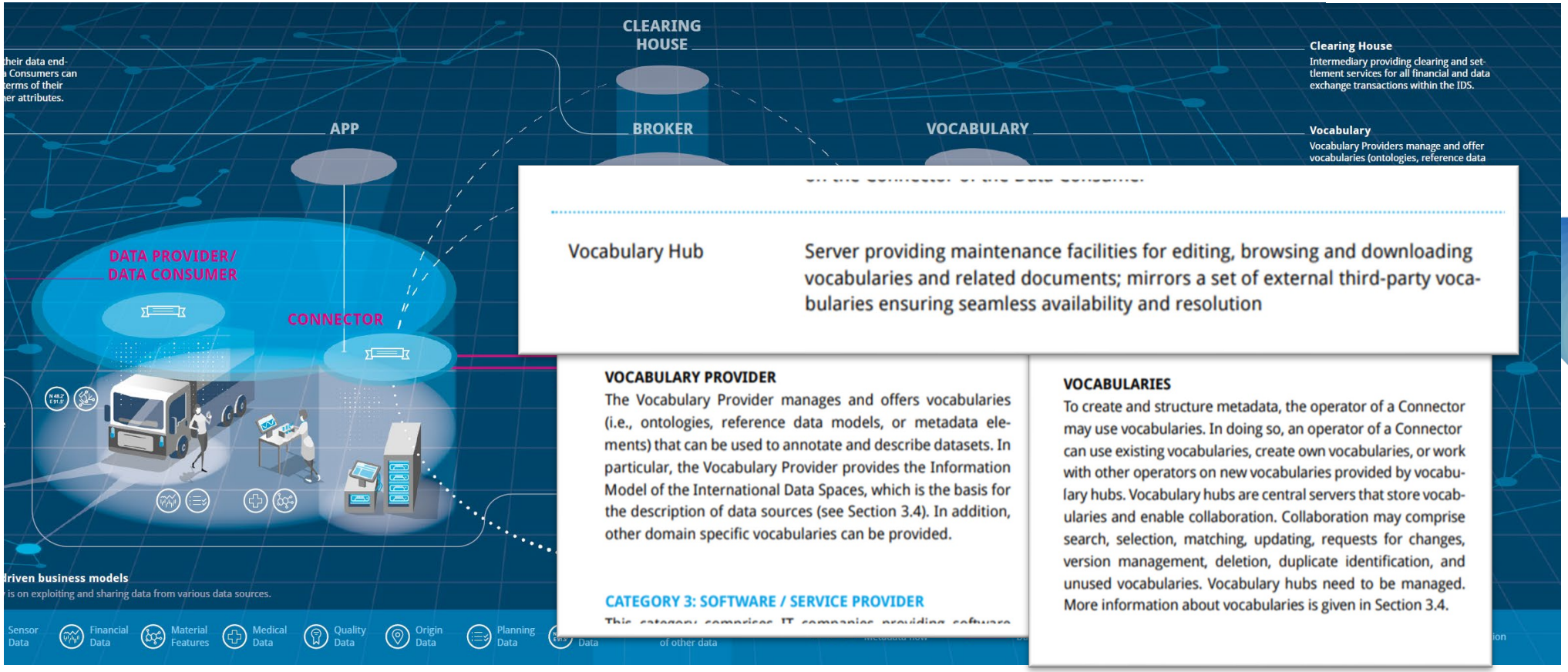
ETSI TS 103 264 V3.1.1 (2020–02)

https://saref.etsi.org/

SAREF, IDSA and vocabularies

- SAREF is also used/positioned as a Vocabulary to configure IDS dataspace components. The Vocabulary Hub allows for easy (re)use of SAREF for this purpose
  - Semantic Treehouse (https://bd4nrg.semantic-treehouse.nl/) as example implementation of Vocabulary Hub provides SAREF and InterConnect ontologies as vocabularies in the H2020 BD4NRG project (https://www.bd4nrg.eu/)

INTERNATIONAL DATA SPACES ASSOCIATION

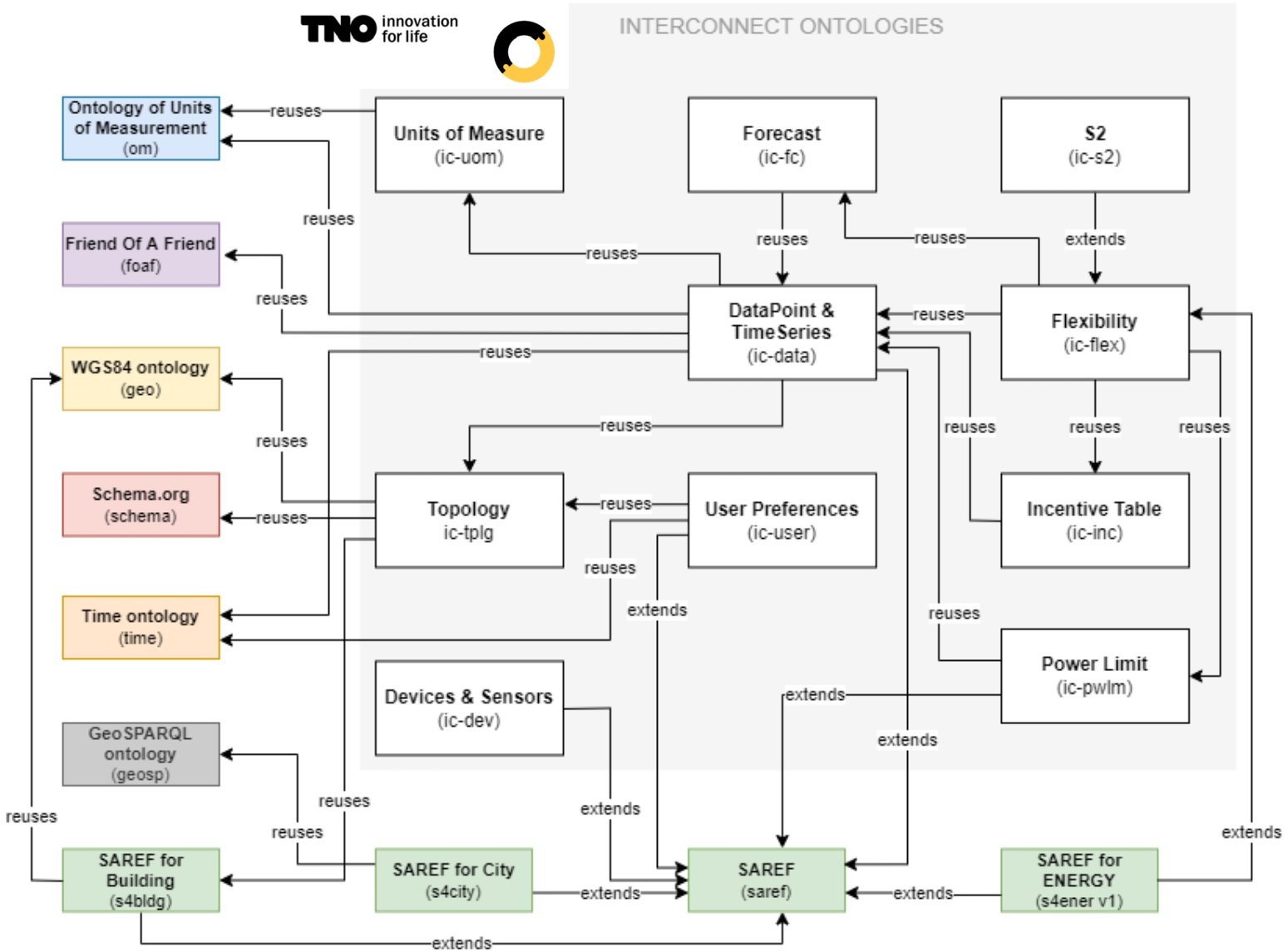


Challenges

- SAREF suite ontologies are flexible semantic models that evolve over time with direct contributions of stakeholders
  - Quick standardization process in ETSI when requirements are clear
  - But requirements are often not clear…
- SAREF suite to be used in combination with other existing ontologies/data models/standards (e.g., in the energy domain, IEC CIM, OCCP, etc.)
- More concepts to be incorporated over time to address new use cases
  - Experiences and challenges from the H2020 InterConnect Large Scale pilot (https://interconnectproject.eu/) as significant example

interconnect

InterConnect ontologies



interconnect

- 112 Use Cases*
  - Smart appliances monitoring and control
  - Energy flexibility
  - Consumption/production forecasting
  - EV charging
  - etc.
- 66 Services from 21 InterConnect partners, based on 166 APIs, for a total of 864 parameters to be "SAREFized" **

*D1.1 Services and Use Cases for Smart Buildings and Grids, https://interconnectproject.eu/resources
**D3.1 and D3.2, yet to be published

Useful links

- Interconnect ontologies wiki
  - Available at https://gitlab.inesctec.pt/groups/interconnect-public/-/wikis/home#interconnect-ontology
  - It describes the ontologies in detail using diagrams, especially for non-ontology experts, so that they do not need to open the ontologies in Protégé
- Interconnect ontologies repository
  - Available at https://gitlab.inesctec.pt/interconnect-public/
  - Public repository aligned with the Interconnect internal repository used for the collaborative ontology development
  - It follows the same structure of the ETSI SAREF repositories at https://saref.etsi.org

InterConnect Open Call

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Interoperable-by-design Prototypes Open Call!

www.interconnect-1-oc.fundingbox.com

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