Ontology Registries: current developments and opportunities

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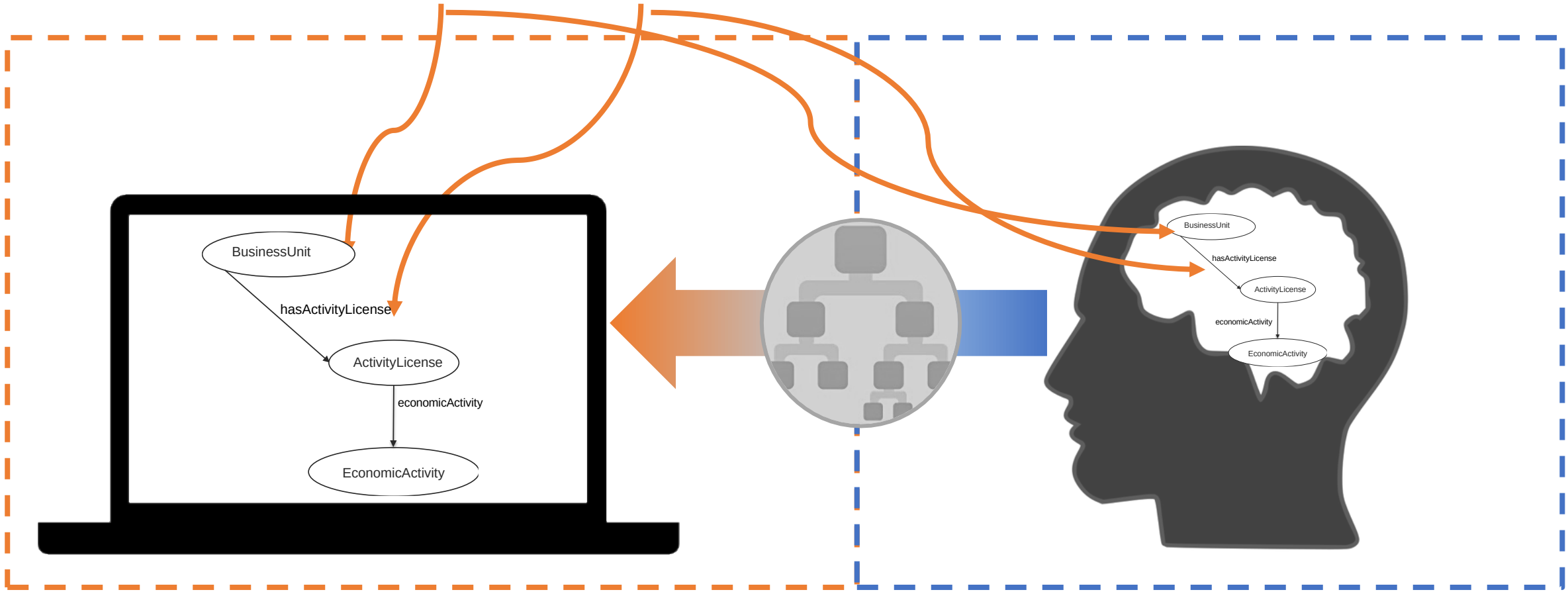
17/10/2023

SEMIC, Madrid

(https://www.w3.org/standards/semanticweb/ontology)

A vocabulary defines the **concepts** and **relations** used to describe and represent a **domain** of interest



- Increase interoperability
- Reduce development time & resources

Within organizations (e.g. OEG)

AURORAL

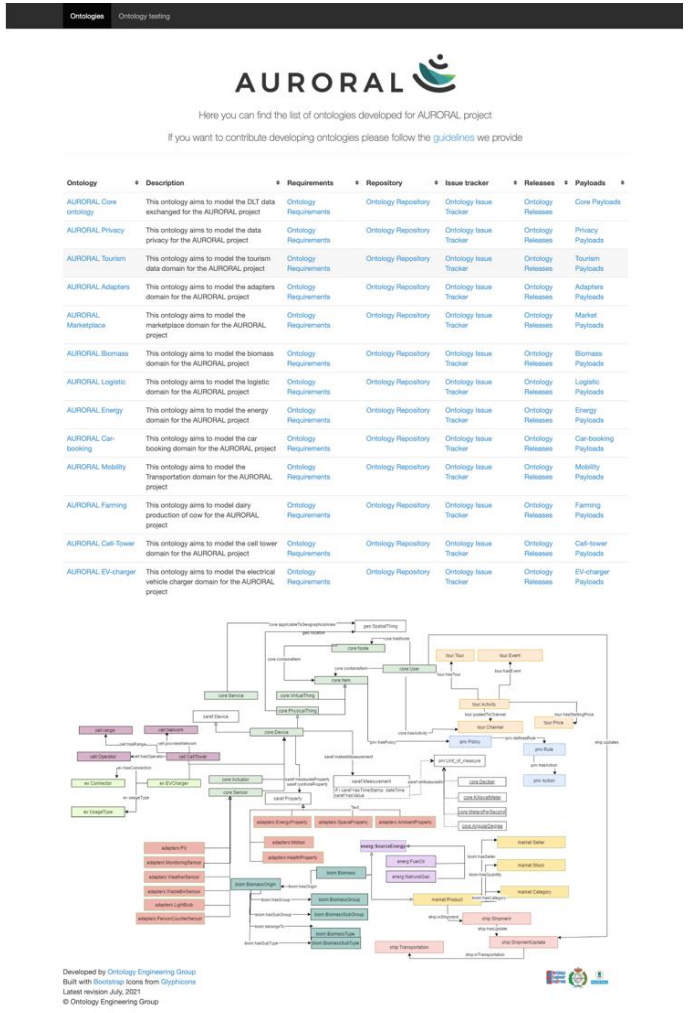
COGITO

BIMERR RENOVATION 4.0

DELTA

VICINITY 2020

CIUDADES ABIERTAS



Specific portals per project, organization

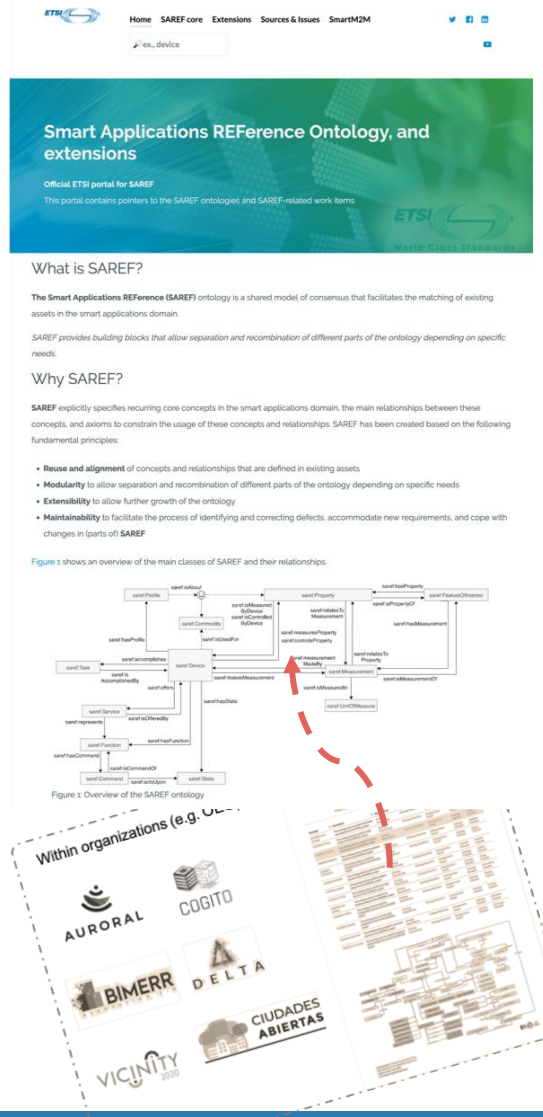
joinup

OGC® Making location count.

W3C Word Wide Web Consortium

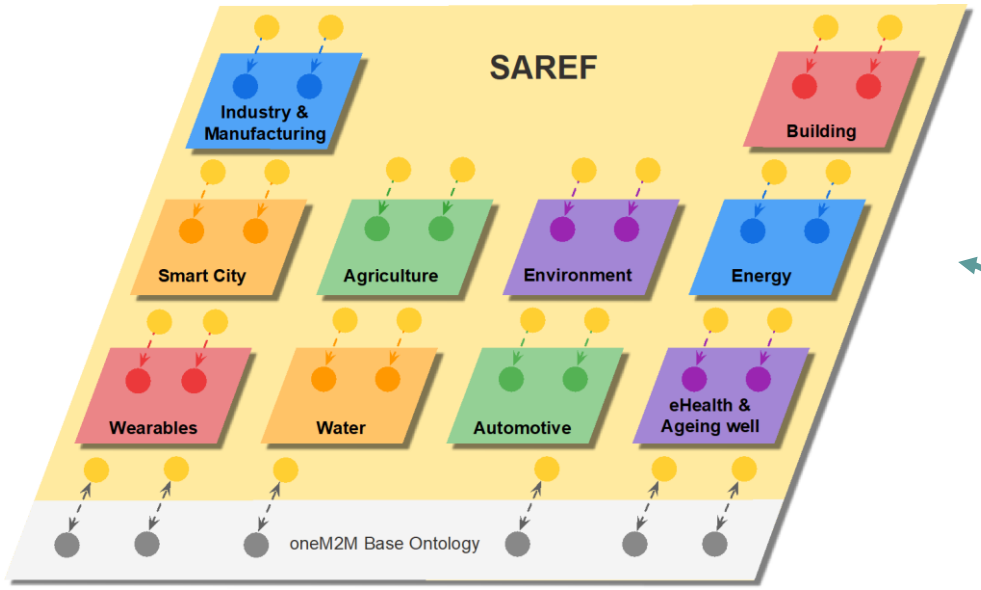
ETSI

- Increase interoperability
- Reduce development time & resources



Within standardization bodies

ETSI



joinup

ISO

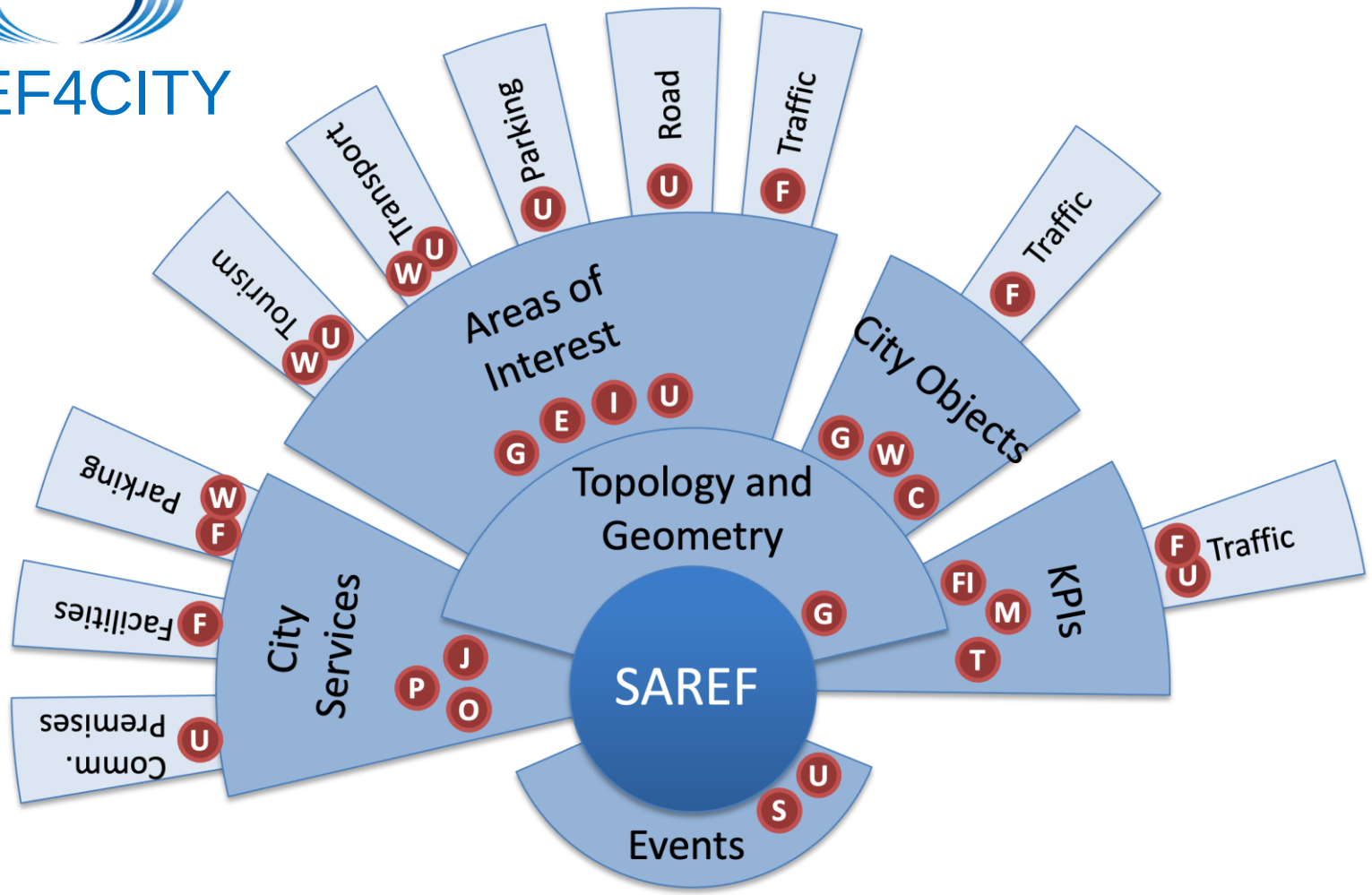
W3C
Word Wide Web Consortium

FIWARE

OGC®
Making location count.

ETSI

SAREF4CITY



Requirements:

- E — EU Metadata Registry
- F — FEMP Open Data Guide exemplary datasets
- FI — FIWARE data model for KPIs
- I — ISA Programme Location Core Vocabulary
- J — Joinup Core Public Organization Vocabulary
- P — Joinup Core Public Service Vocabulary
- C — OGC CityGML
- G — OGC GeoSPARQL
- S — schema.org
- U — Vocabulary referenced by AENOR UNE 178301:2015
- O — W3C Registered Organization Vocabulary
- W — W3C WGS84 Geo Positioning vocabulary
- M — ISO/IEC 30182:2017
- T — ITU-T Y.4903/L.1603 (10/2016)

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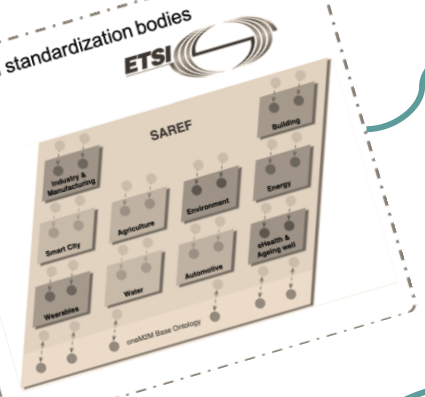
- Reduce development time & resources

Within standardization bodies



Within organizations (e.g. OEG)

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COGNITO

BIMERR

DELTA

CIUDADES ABIERTAS

VICINITY 2020

Within community efforts / Open Calls

Connect and share data collected locally through a secure and privacy-preserving framework.

Engage with external technology and application providers in exploiting their data by offering advanced horizontal services.

Participate in digital marketplaces as commodities services and platforms.

All through an easy-to-implement interoperable way and open application interfaces (APIs) based on open standards.

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Open Calls

joinup

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Making location count.

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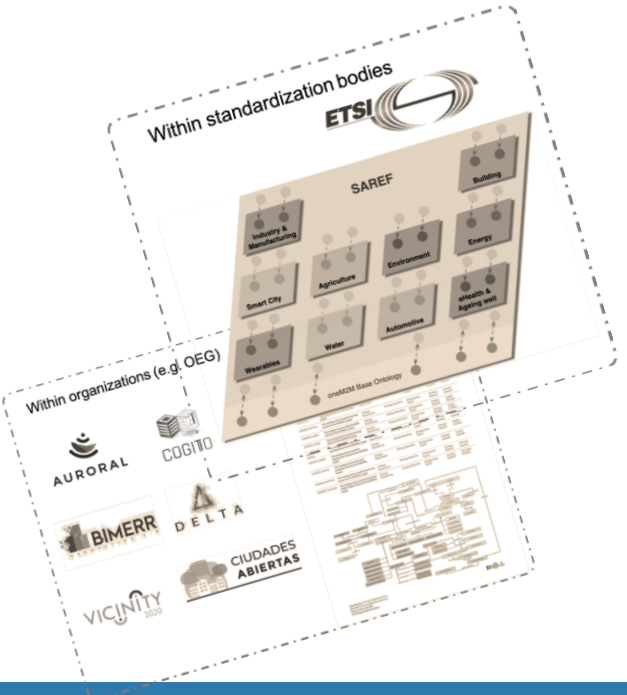
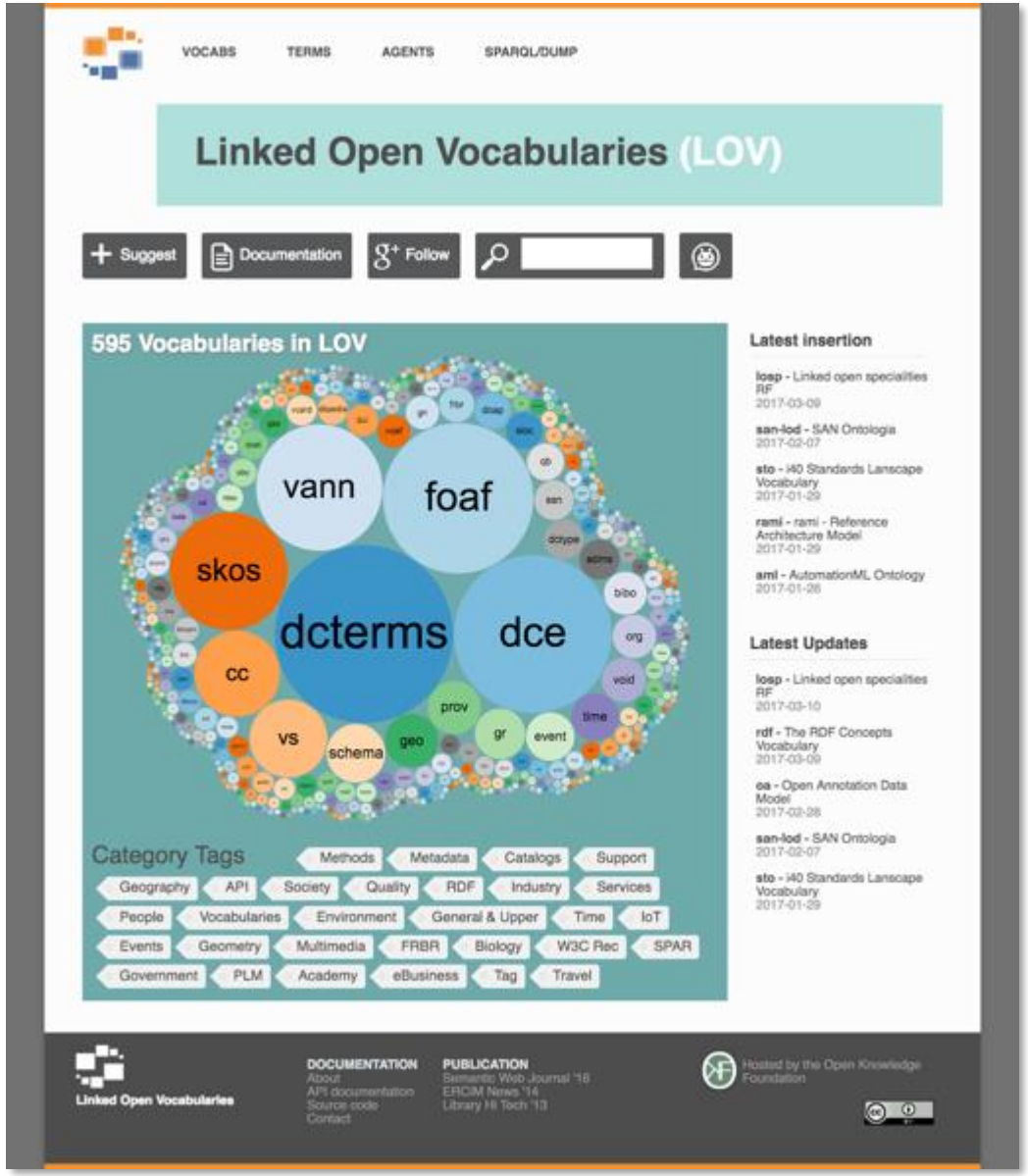
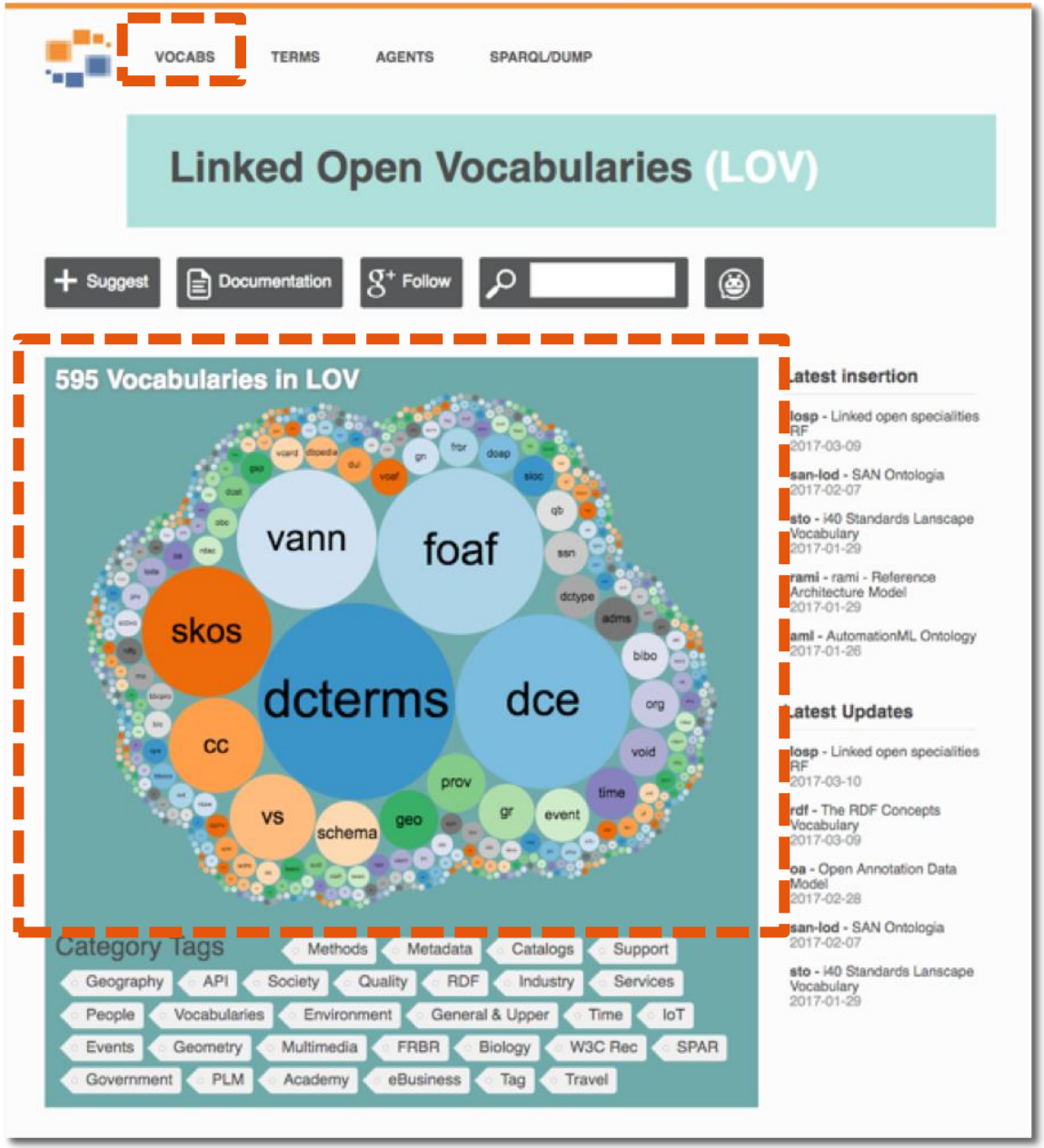


Current Technologies - Linked Open Vocabularies

- **Mission: promote and facilitate the reuse of well documented vocabularies in the Linked Data ecosystem**

- Vocabularies registry and index
  - http://lov.linkeddata.es/
- Datalift (original project)
  - http://datalift.org/
- Started at 2011
- Hosted by OEG




VOCABS
TERMS
AGENTS
SPARQL/DUMP
Linked Open Vocabularies (LOV)
Suggest
Documentation
Follow
595 Vocabularies in LOV
vann
foaf
skos
dcterms
dce
cc
vs
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geo
prov
gr
event
time
void
org
bibo
adms
dctype
Latest insertion
Latest Updates
Category Tags
Methods
Metadata
Catalogs
Support
Geography
API
Society
Quality
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Industry
Services
People
Vocabularies
Environment
General & Upper
Time
IoT
Events
Geometry
Multimedia
FRBR
Biology
W3C Rec
SPAR
Government
PLM
Academy
eBusiness
Tag
Travel

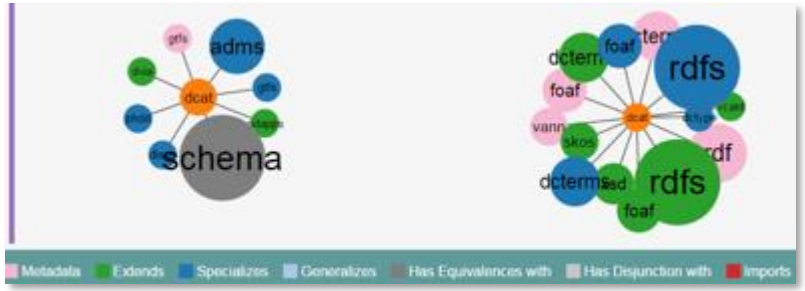
Data Catalog Vocabulary (dcat)

Metadata

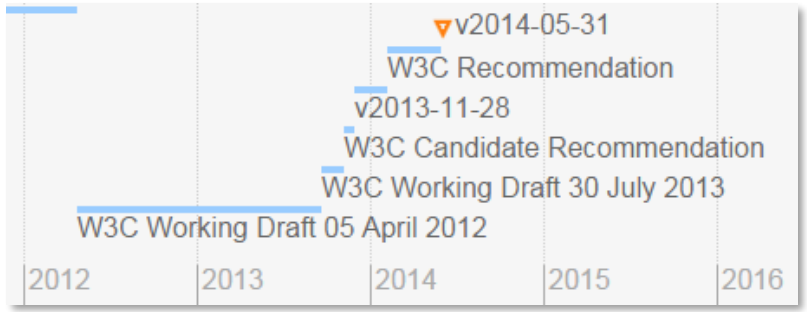
URI	http://www.w3.org/ns/dcat
Namespace	http://www.w3.org/ns/dcat#
homepage	http://www.w3.org/TR/vocab-dcat/
Description	DCAT is an RDF vocabulary designed to facilitate interoperability between data catalogs published on the Web @en
Language	Arabic ar, Greek el, English en, Spanish es, French fr, Japanese ja
Contributor	Richard Cyganiak http://google.com/+RichardCyganiak; Phil Archer https://plus.google.com/103670676337547906055; Fadi Maali

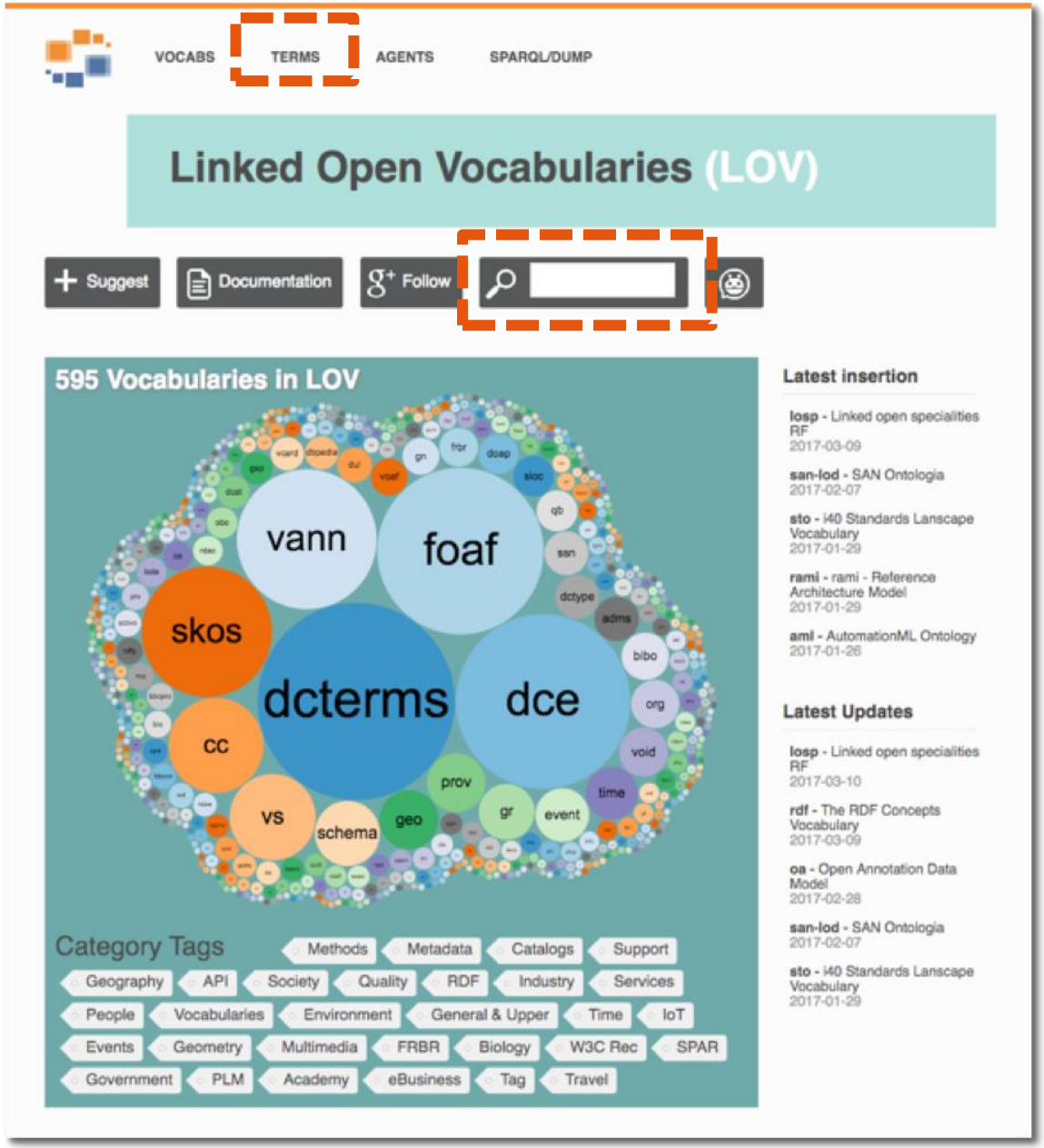
Connection with other applications

Relationships



Versions

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frbr
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voaf
dul
dcat
Latest insertion
losp - Linked open specialities RF
2017-03-09
san-lod - SAN Ontologia
2017-02-07
sto - i40 Standards Lanscape Vocabulary
2017-01-29
rami - rami - Reference Architecture Model
2017-01-29
ami - AutomationML Ontology
2017-01-26
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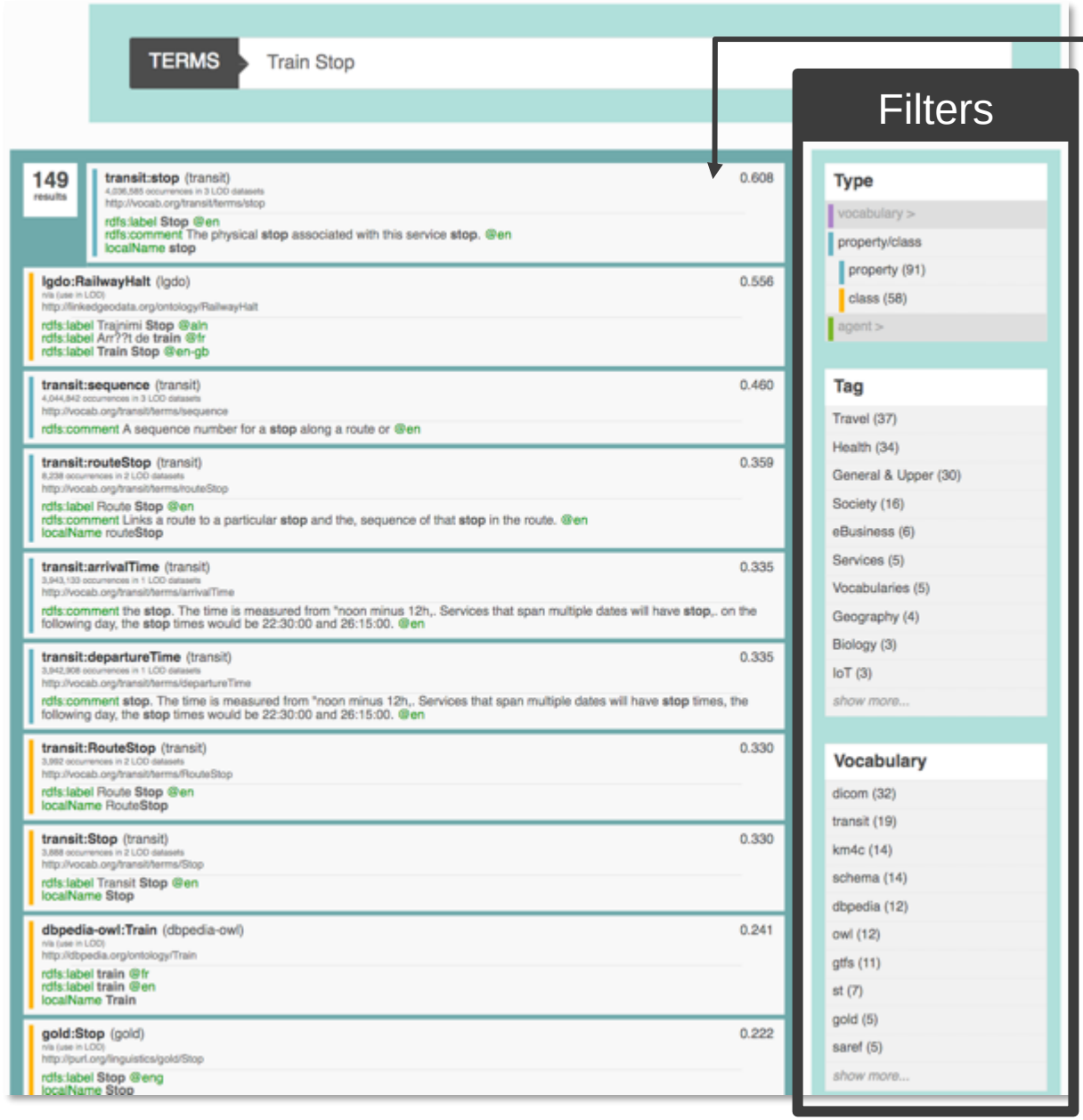
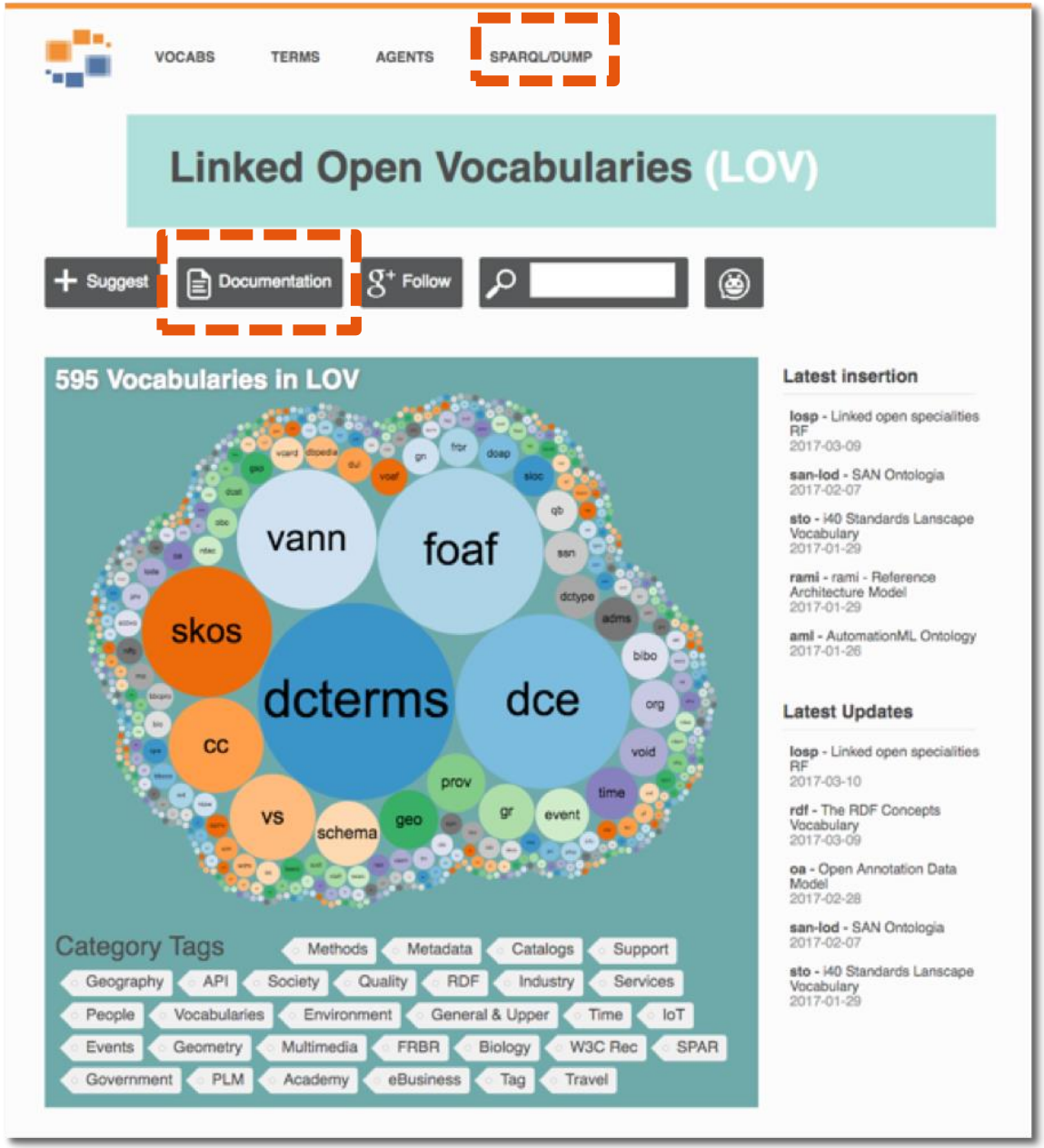
Search terms



Ranked

- Term appearing in primary and secondary annotations
- Vocabulary popularity in LOV
- Term use in LOD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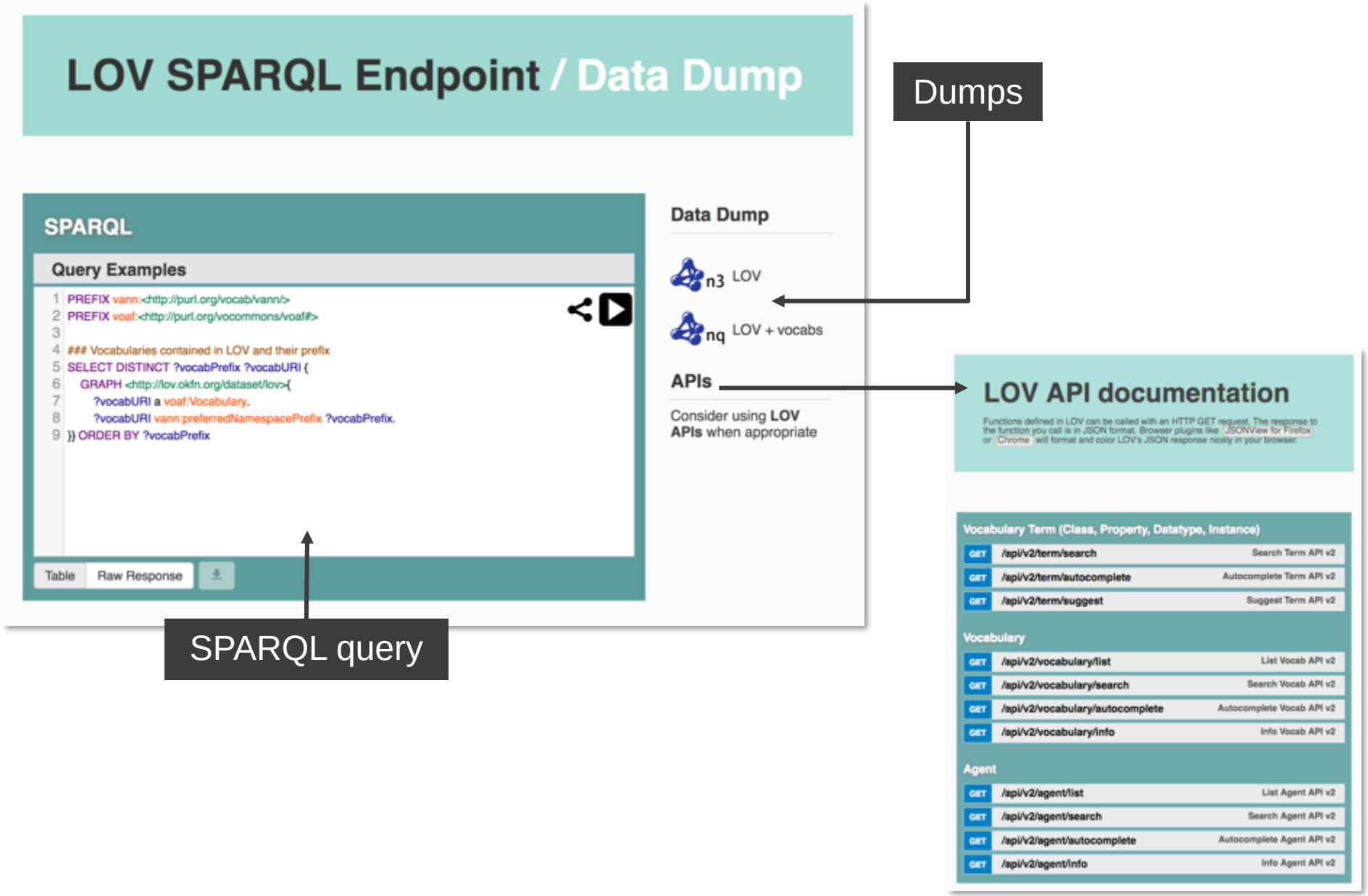
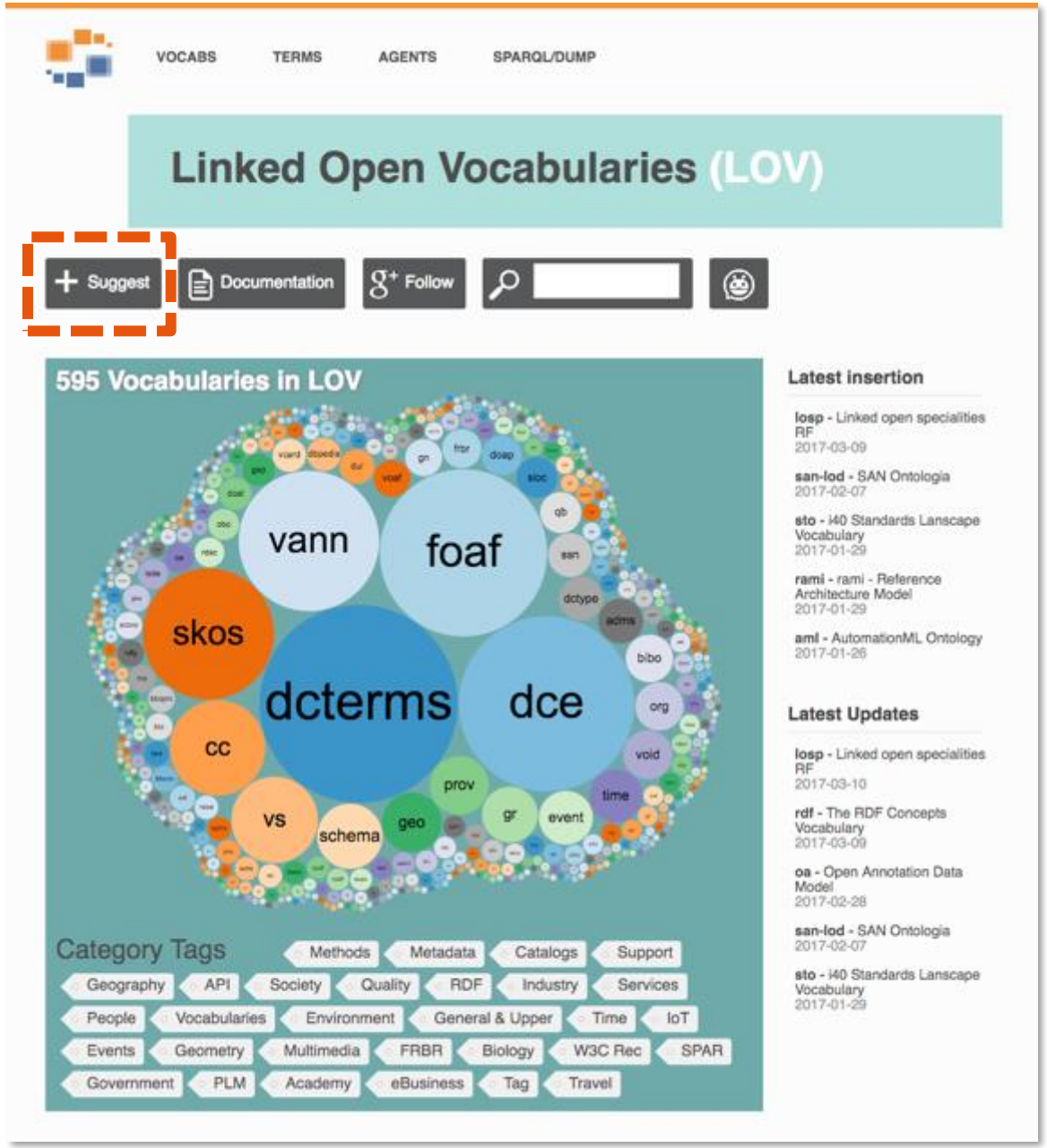

LOV SPARQL Endpoint / Data Dump
SPARQL
Query Examples
1 PREFIX vann:<http://purl.org/vocab/vann/>
2 PREFIX voaf:<http://purl.org/vocommons/voaf#>
3
4 ### Vocabularies contained in LOV and their prefix
5 SELECT DISTINCT ?vocabPrefix ?vocabURI {
6 GRAPH <http://lov.okfn.org/dataset/lov>{
7 ?vocabURI a voaf:Vocabulary.
8 ?vocabURI vann:preferredNamespacePrefix ?vocabPrefix.
9 }} ORDER BY ?vocabPrefix
Table
Raw Response
Data Dump
n3 LOV
nq LOV + vocabs
APIs
Consider using LOV APIs when appropriate
Dumps
SPARQL query
LOV API documentation
Functions defined in LOV can be called with an HTTP GET request. The response to the function you call is in JSON format. Browser plugins like JSONView for Firefox or Chrome will format and color LOV's JSON response nicely in your browser.
Vocabulary Term (Class, Property, Datatype, Instance)
GET /api/v2/term/search Search Term API v2
GET /api/v2/term/autocomplete Autocomplete Term API v2
GET /api/v2/term/suggest Suggest Term API v2
Vocabulary
GET /api/v2/vocabulary/list List Vocab API v2
GET /api/v2/vocabulary/search Search Vocab API v2
GET /api/v2/vocabulary/autocomplete Autocomplete Vocab API v2
GET /api/v2/vocabulary/info Info Vocab API v2
Agent
GET /api/v2/agent/list List Agent API v2
GET /api/v2/agent/search Search Agent API v2
GET /api/v2/agent/autocomplete Autocomplete Agent API v2
GET /api/v2/agent/info Info Agent API v2

Features – Suggest vocabs



Suggestions & Quality checking

SUGGEST

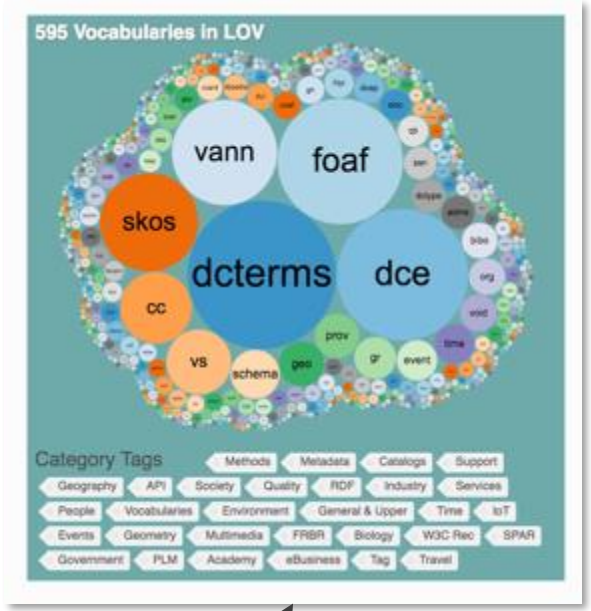
Enter the vocabulary URI to recommend

Recommendations for vocabulary metadata description

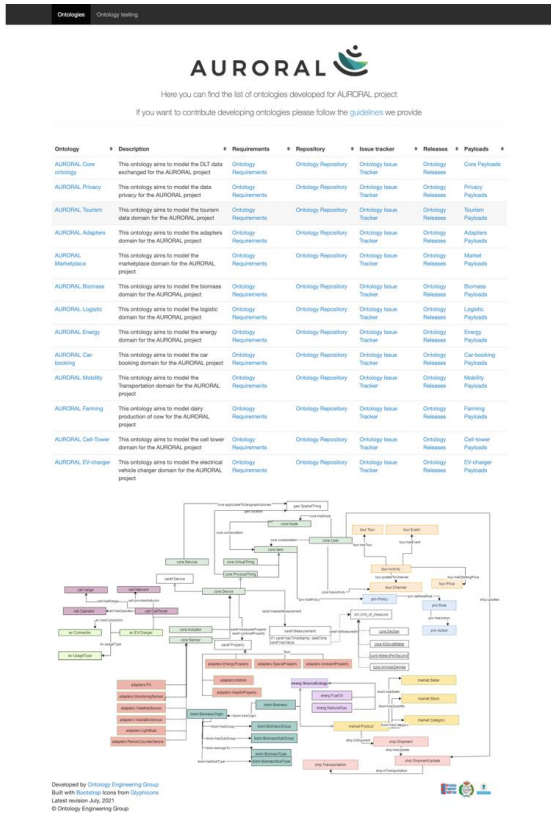
Authors

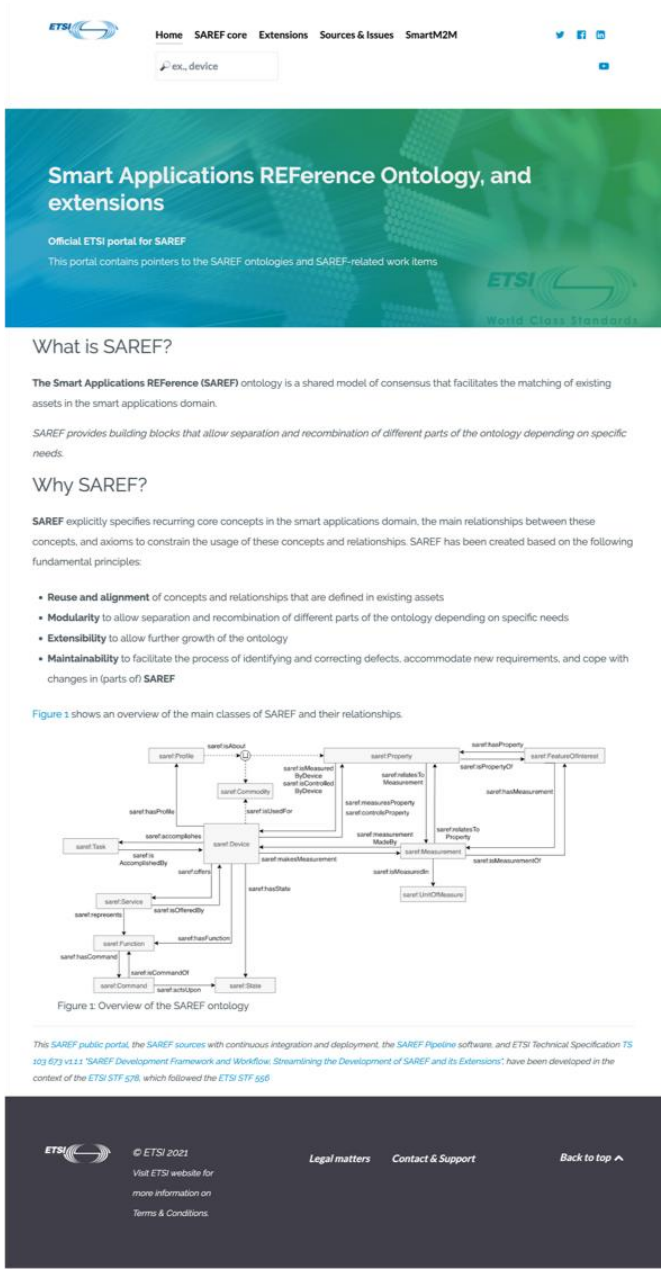
LOV curation team

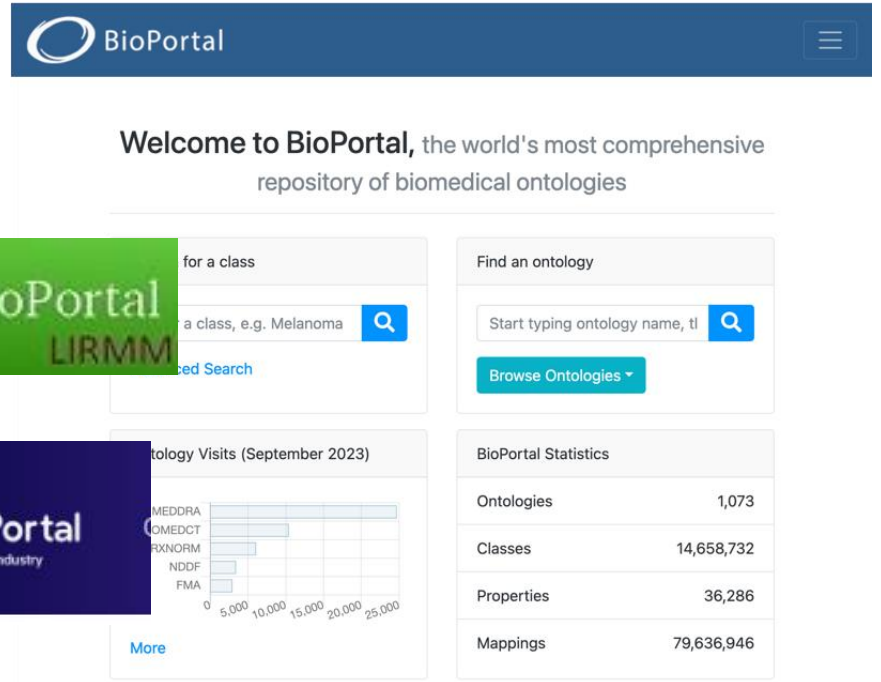
- **Metadata**: title, description, authors, dates, vann, version, etc.
- **Human readable**: labels and comments
- **Publication**
- **Licence**



Other registries







AgroPortal LIRMM

IndustryPortal Ontologies for industry

Ontobee

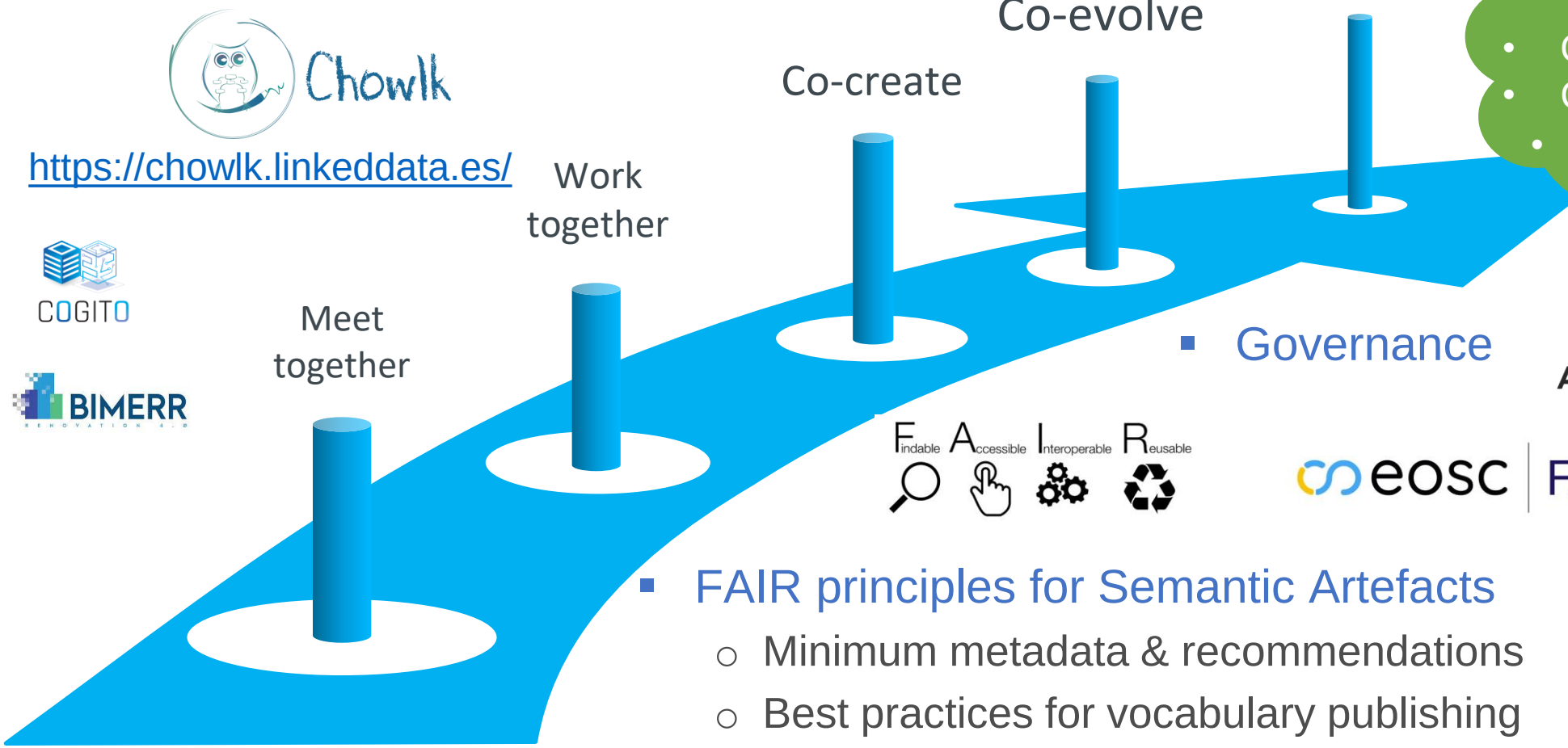
FAIRsharing

BARTOC.org Basic Register of Thesauri, Ontologies & Classifications

- To ease transfer of knowledge

Chowlk

https://chowlk.linkeddata.es/



- Federated services
- Ontology parliament
- Ontology reuse support
- Combination
- Understandability

COGITO

BIMERR

- Governance

AURORAL

Findable Accessible Interoperable Reusable

eosc | FAIR-IMPACT

- FAIR principles for Semantic Artefacts
  - Minimum metadata & recommendations
  - Best practices for vocabulary publishing
  - FAIR by design methodology
- API &metadata aligments

Foops!

https://w3id.org/foops/

Slide adapted from
Raúl García-Castro

Thanks!

Acknowledgments: Raúl García-Castro

Image by tartila / Freepik