

# SEMIC: Promoting semantic interoperability among EU Member States

## Webinar: Implementing ISA<sup>2</sup> Core Vocabularies in JSON-LD

Friday, 26 January 2018  
14:00-16:00 CET

# Webinar description

## **Description:**

In this Webinar, implementers of ISA<sup>2</sup> Core Vocabularies will present their projects, outlining their approach using JSON-LD. Participants can discuss with the presenters and among themselves to gain a better understanding of the benefits and the challenges related to using JSON-LD for these vocabularies.

## AGENDA

Opening, tour de table and introduction (15 minutes)

Presentations by implementers (60 minutes)

Discussion (30 minutes)

Summary and conclusions (15 minutes)

## Tour de table

- Your name
- Your organisation
- Experience with the Core Vocabularies
- Experience with JSON-LD

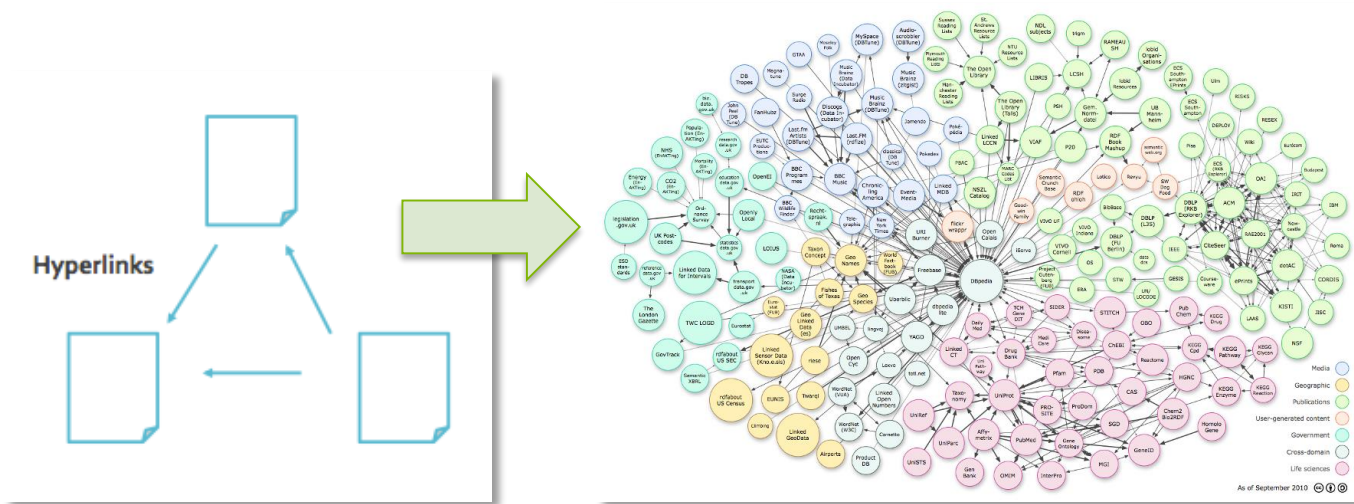
# The ISA<sup>2</sup> Core Vocabularies and Application Profiles

- Data models
  - Simplified
  - Re-usable
  - Extensible
  - Context-neutral
- Starting point for
  - New systems development (logical data model)
  - Information exchange between systems (common baseline)
  - Data integration
  - Open data publishing



# ISA<sup>2</sup> Core Vocabularies as Linked Data

- Evolution from a **document-based Web** to a Web of **interlinked data**.



Web of documents...

Web of linked data...

## Providing information in Machine and Human readable formats

*"Linked data is a set of design principles for sharing machine-readable data on the Web for use by public administrations, business and citizens."*

*- EC ISA Case Study: How Linked Data is transforming eGovernment*



# Syntaxes and formats for Linked Data

- RDF/XML
- Turtle
- Notation3 (N3)
- RDFa (HTML annotations)
- JSON-LD
- ...

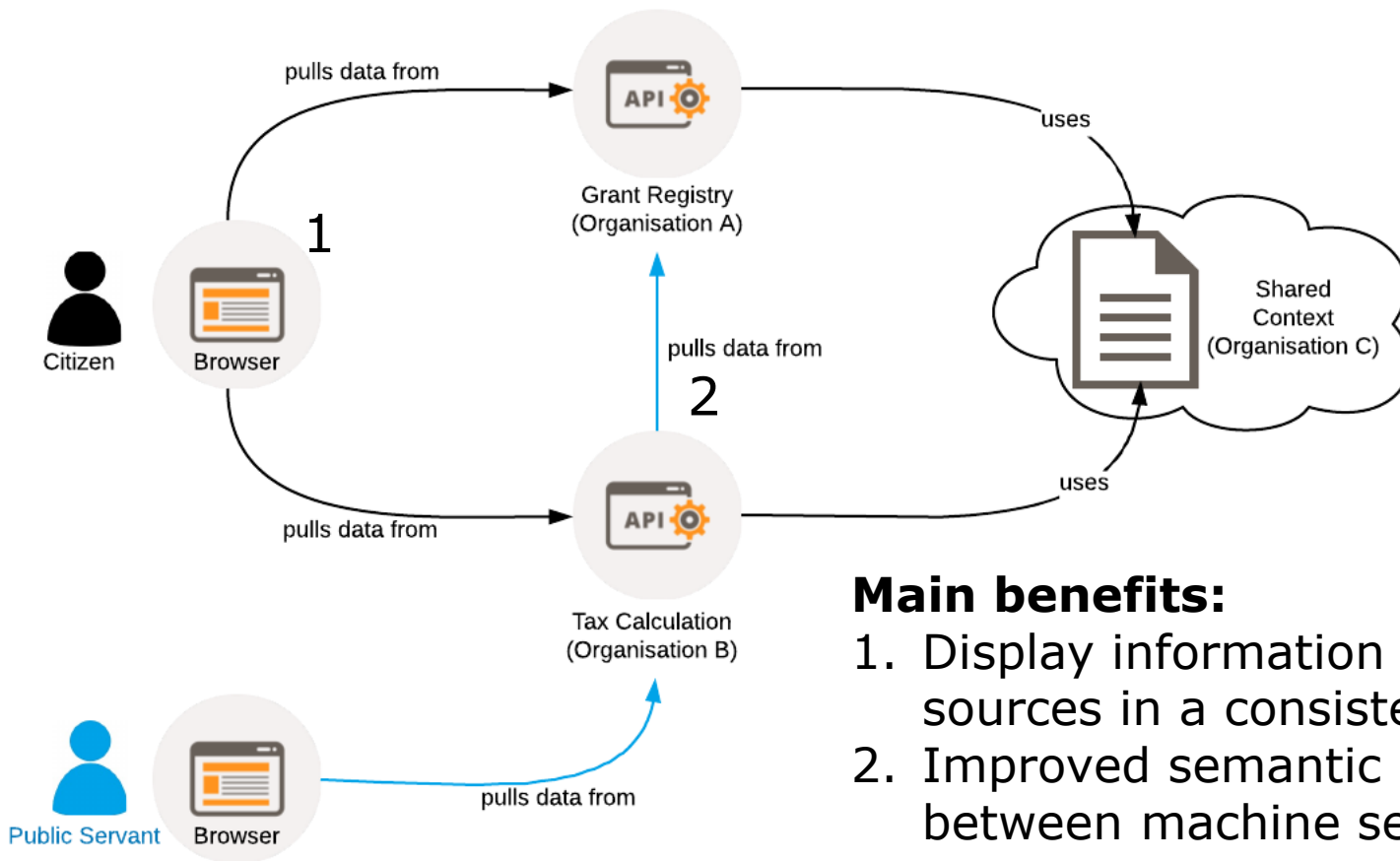


## Focus of this webinar: JSON-LD

- 100% compatible with JSON,  
a popular format for data exchange on the web
- Allows JSON to be interpreted as Linked Data
- With minimal changes to structure



# JSON-LD context as a shared vocabulary of terms



## Main benefits:

1. Display information from different sources in a consistent way
2. Improved semantic interoperability between machine services

## AGENDA

Opening, tour de table and introduction (15 minutes)

Presentations by implementers (60 minutes)

Discussion (30 minutes)

Summary and conclusions (15 minutes)



Raf Buyle

# FLANDERS



Vlaamse  
overheid

# JSON-LD Webinar

*ISA - European Commission - Webinar, 2017  
Open Standards for Linked Organisations (OSLO)*

*Raf Buyle, Ziggy Vanlishout*

INFORMATIE  
VLAANDEREN

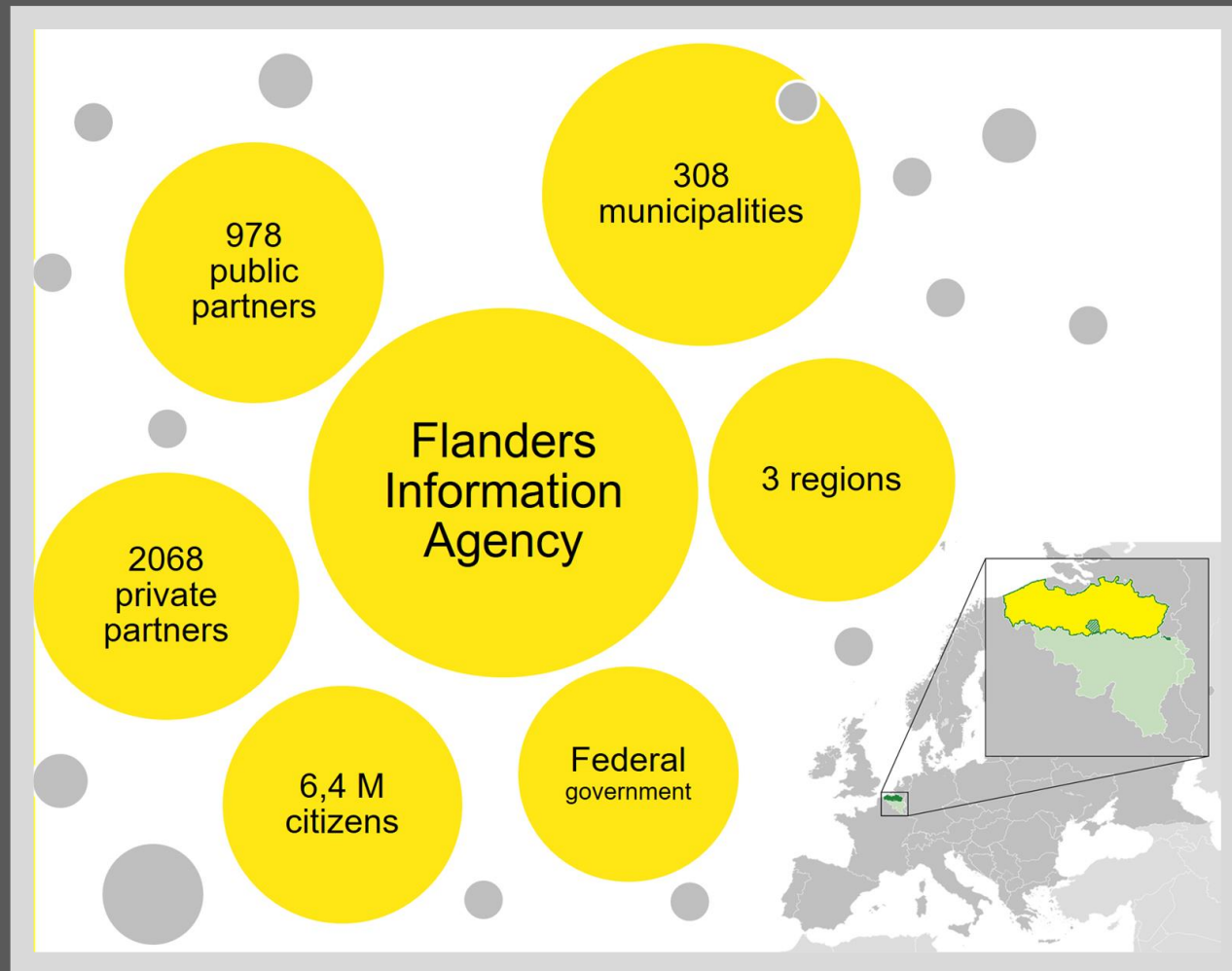


# OUTLINE

- Interoperability strategy - 5'
- Implementing JSON-LD - 5'
- Evaluation - 15'
- Recommendations and Future work - 5'



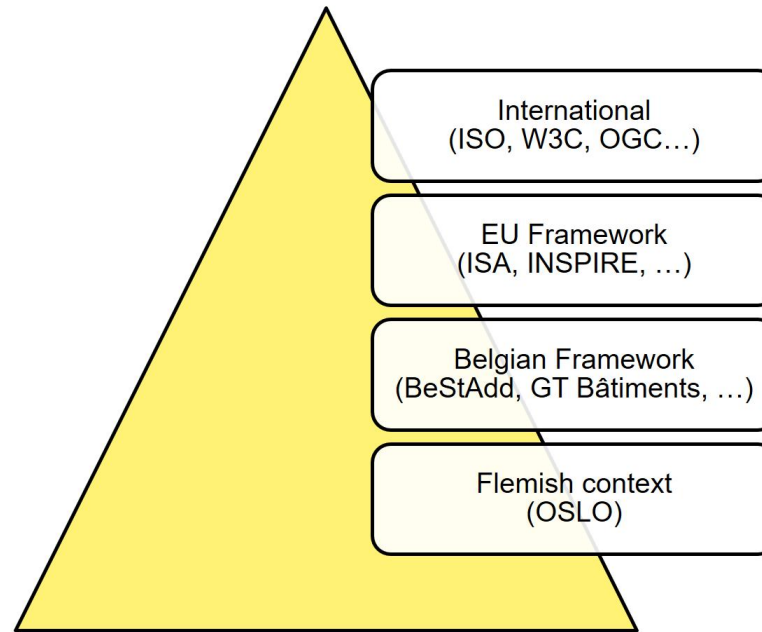
# Complex ecosystem



How can we develop a scalable technique for raising and implementing *semantic* and *technical interoperability*, within an operational public sector context?

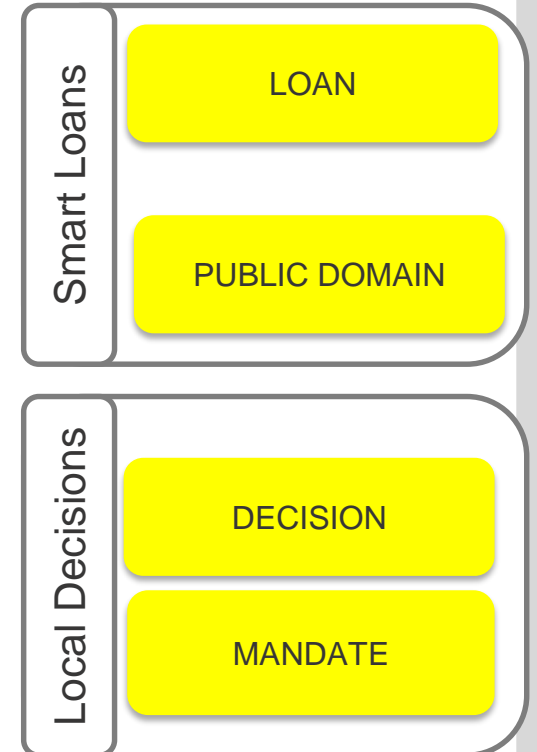


# Semantic Interoperability



# Thematic domains

<http://data.vlaanderen.be/ns/>



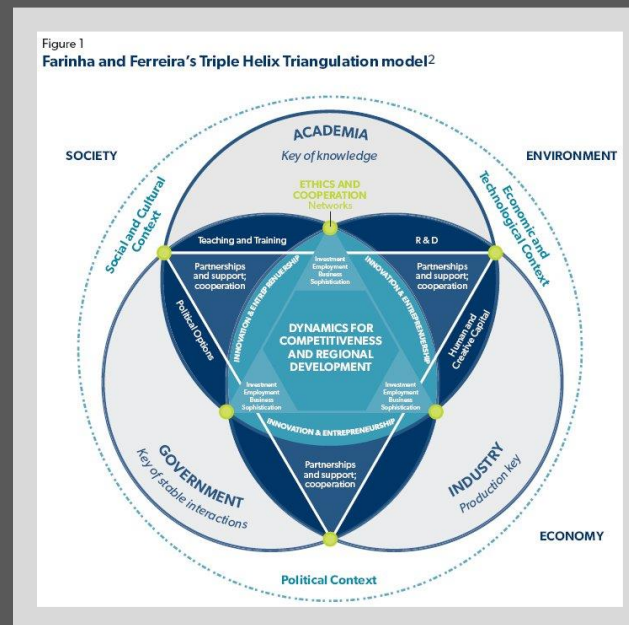
# Bridging the gap between modelling and implementation

How to *maintain semantic agreements*,  
provide *persistent unambiguous identifiers*  
and design an interface which is *ideal for programming* environments and can be *easily interpreted* by clients?

# Stakeholders

## Co-creation

- > 90 authors from 45 organizations in the **public sector private sector & academia.**
- Triple Helix approach



# Stakeholders

**Applications:** the high-impact project “smart digital assistant”

- supporting citizens on the portals of **local, regional and federal** government.
- integrating information of various public services with back-office applications from different **software vendors.**

# The Web as a Blueprint

http://data.vlaanderen.be/id/adres/3706808



Gegevens	
label	adres 2584882
versie	<a href="http://data.vlaanderen.be/doc/adres/2584882/v11">http://data.vlaanderen.be/doc/adres/2584882/v11</a>
huisnummer	11
busnummer	
officieel toegekend	✓
straatnaam	<a href="#">Wolverstraat</a>
gemeentenaam	<a href="#">Nieuwerkerken</a>
postinfo	<a href="#">3850</a>
geometrie	<a href="#">geometrie adres 2584882</a>
status	<a href="#">InGebruik</a>

Machine friendly

Persistent Identifiers: URIs

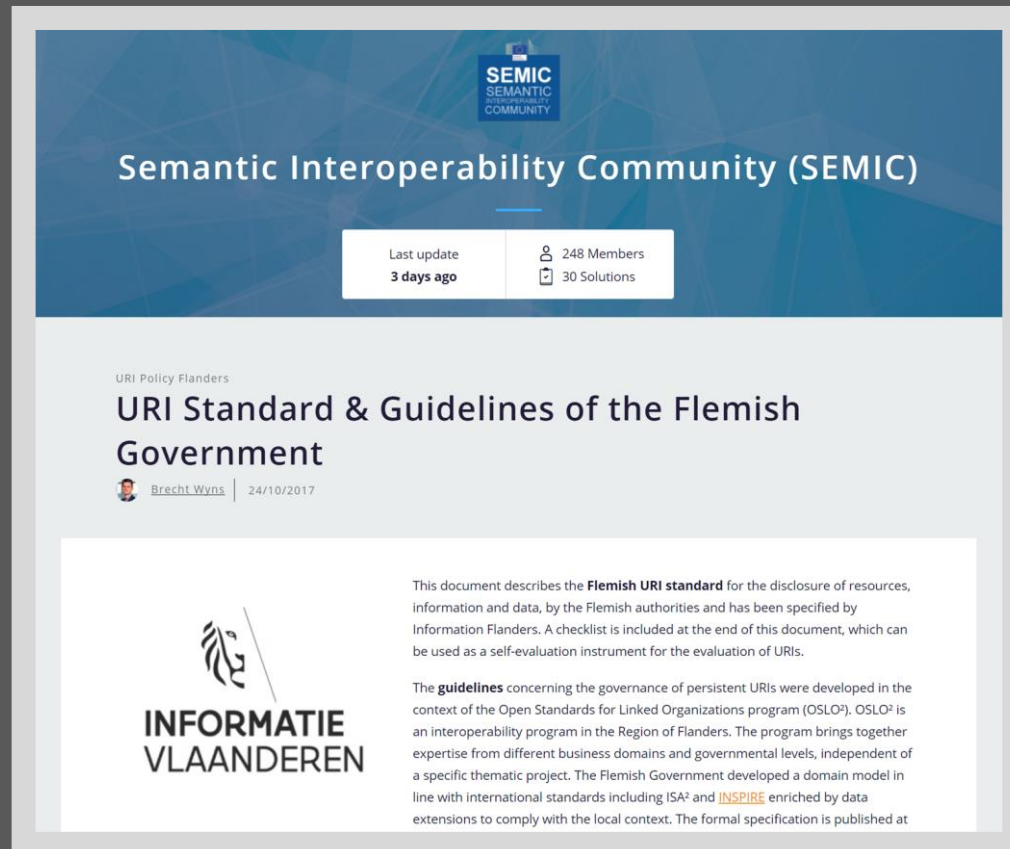
Dereferenceable HTTP URIs

Standardised Information (RDF)

Links to other information

# Flemish URI Standard

<https://joinup.ec.europa.eu/document/uri-standard-guidelines-flemish-government>



**SEMIC**  
SEMANTIC  
INTEROPERABILITY  
COMMUNITY


## Semantic Interoperability Community (SEMIC)


Last update  
**3 days ago**

248 Members  
30 Solutions

URI Policy Flanders

### URI Standard & Guidelines of the Flemish Government

 [Brecht Wyns](#) | 24/10/2017

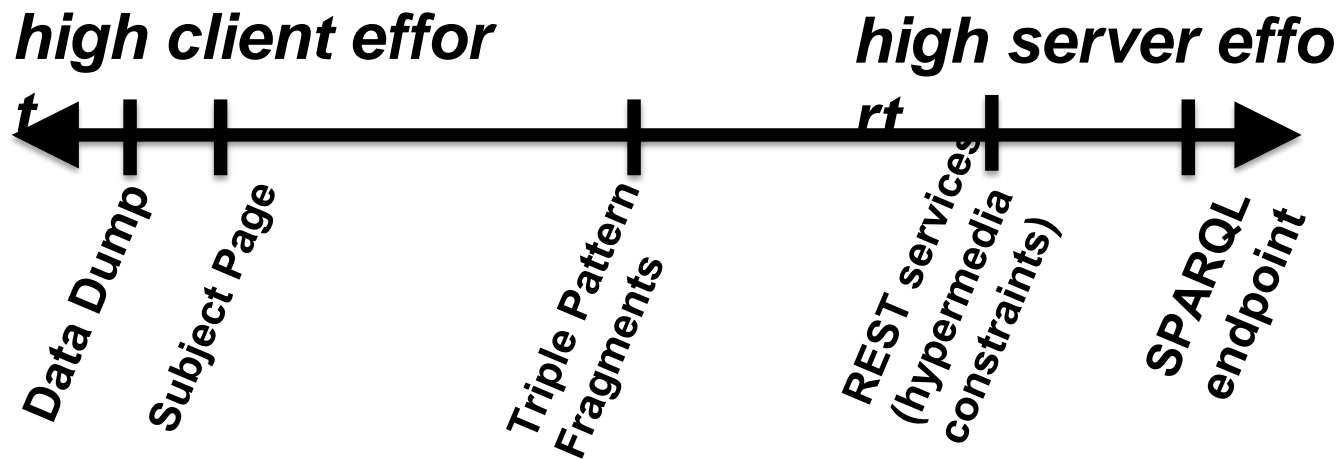


This document describes the **Flemish URI standard** for the disclosure of resources, information and data, by the Flemish authorities and has been specified by Information Flanders. A checklist is included at the end of this document, which can be used as a self-evaluation instrument for the evaluation of URIs.

The **guidelines** concerning the governance of persistent URIs were developed in the context of the Open Standards for Linked Organizations program (OSLO<sup>2</sup>). OSLO<sup>2</sup> is an interoperability program in the Region of Flanders. The program brings together expertise from different business domains and governmental levels, independent of a specific thematic project. The Flemish Government developed a domain model in line with international standards including ISA<sup>2</sup> and **INSPIRE** enriched by data extensions to comply with the local context. The formal specification is published at

# Linked Data Products

There is more to Linked Data publishing than just the two extremes



<http://linkeddatafragments.org/>



# Linked Data Address Products

## A data dump

all triples in an entire dataset

<http://data.vlaanderen.be/dumps>

## A subject page

triples about a specific subject in a dataset

<http://data.vlaanderen.be/id/adres/2584882>

## A SPARQL endpoint

triples that correspond to a SPARQL query

<http://data.vlaanderen.be/sparql>

## Linked Data Fragments (BAIfa)

*scalable triples* > [http://bit.ly/geo\\_ldf\\_deck](http://bit.ly/geo_ldf_deck)

[http://bit.ly/geo\\_ldf](http://bit.ly/geo_ldf)

# JSON for Linking Data

## Linked Data

- + facilitates machine-readable data
- - often perceived as complex and verbose

## JSON

- + is a popular a lightweight data-interchange format, easy for humans to read and write
- - the data is not self-describing

# JSON for Linking Data

## JSON-LD

- + is a lightweight Linked Data format, based on the already successful JSON format
- + facilitates machine-readable data
- + is a loveable data format for programming environments
- - no formal standardized method for data validation  
(solution in this slide-deck)
- - the data is machine readable, the methods (controls) aren't  
(solution in this slide-deck)

# JSON and JSON-LD

- JSON-based format to serialize Linked Data
- **Low effort** to create interoperable services
- **Smooth upgrade** path from JSON to JSON-LD

JSON

```
{
  "voorkeursnaam": "Agentschap Informatie Vlaanderen",
  "alternatieveNaam": "AIV"
}
```



JSON-LD

```
{
  "@context": "http://data.vlaanderen.be/context/organisatie.jsonld",
  "@id": "http://data.vlaanderen.be/id/organisatie/OVO002949",
  "@type": "Organisatie",
  "voorkeursnaam": "Agentschap Informatie Vlaanderen",
  "alternatieveNaam": "AIV"
}
```

# Existing services?

- "retrofit" the semantics onto existing JSON services

```
{
  "voorkeursNaam": "Agentschap Informatie Vlaanderen",
  "alternatieveNaam": "AIV",
}
```



```
{
  "naam": "Agentschap Informatie Vlaanderen",
  "afkorting": "AIV",
}
```

```
{
  "@context": {
    "Organisatie": "http://www.w3.org/ns/org#Organization",
    "voorkeursNaam": "http://www.w3.org/2004/02/skos/core#prefLabel",
    "alternatieveNaam": "http://www.w3.org/2004/02/skos/core#altLabel"
  },
  "@id": "http://data.vlaanderen.be/id/organisatie/OVO002949",
  "@type": "Organisatie",
  "voorkeursNaam": "Agentschap Informatie Vlaanderen",
  "alternatieveNaam": "AIV",
}
```



```
{
  "@context": {
    "Organisatie": "http://www.w3.org/ns/org#Organization",
    "naam": "http://www.w3.org/2004/02/skos/core#prefLabel",
    "afkorting": "http://www.w3.org/2004/02/skos/core#altLabel"
  },
  "@id": "http://data.vlaanderen.be/id/organisatie/OVO002949",
  "@type": "Organisatie",
  "naam": "Agentschap Informatie Vlaanderen",
  "afkorting": "AIV",
}
```

# The context of the conversation

## Real world “shared context”

- a conversation takes place in a shared environment
- shared contexts allows to use shortcut terms

## JSON-LD “shared context”

- It allows two applications to use shortcut terms to communicate with one another more efficiently
- Mapping of a json field/structure to a RDF

## Referenced “shared contexts”

- each vocabulary (and application profile) has a central context
- Re-use by referencing (via URI)

# Shared Context

shared context (per application profile)

```
{
  "@context": {
    "Organisatie": "http://www.w3.org/ns/org#Organization",
    "voorkeursNaam": "http://www.w3.org/2004/02/skos/core#prefLabel",
    "alternatieveNaam": "http://www.w3.org/2004/02/skos/core#altLabel"
  },
  "@id": "http://data.vlaanderen.be/id/organisatie/OVO002949",
  "@type": "Organisatie",
  "voorkeursNaam": "Agentschap Informatie Vlaanderen",
  "alternatieveNaam": "AIV"
}
```

```
{
  "@context": "http://data.vlaanderen.be/context/organisatie.jsonld",
  "@id": "http://data.vlaanderen.be/id/organisatie/OVO002949",
  "@type": "Organisatie",
  "voorkeursNaam": "Agentschap Informatie Vlaanderen",
  "alternatieveNaam": "AIV"
}
```

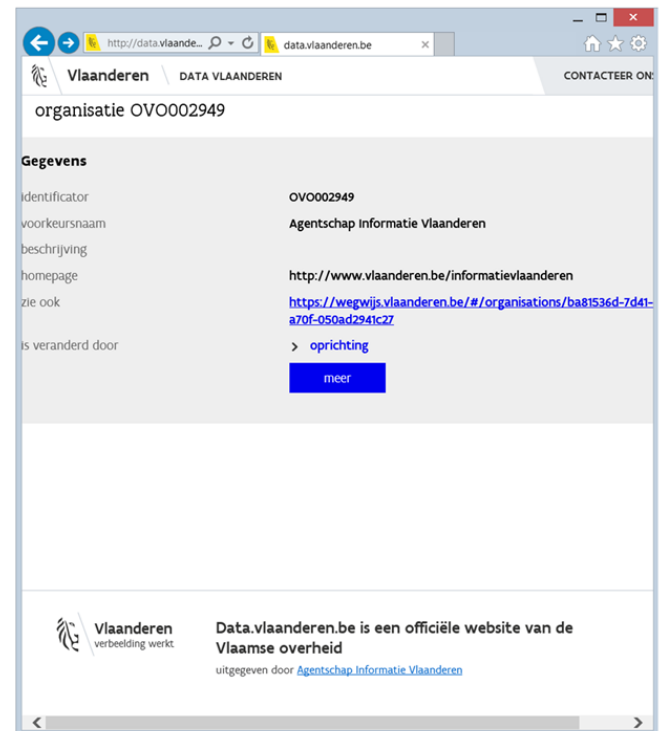
# Shared Context (examples)

<b>Person</b>	<a href="http://data.vlaanderen.be/context/persoon.jsonld"><u>http://data.vlaanderen.be/context/persoon.jsonld</u></a>
<b>Organisation</b>	<a href="http://data.vlaanderen.be/context/organisatie.jsonld"><u>http://data.vlaanderen.be/context/organisatie.jsonld</u></a>
<b>Address</b>	<a href="http://data.vlaanderen.be/context/adres.jsonld"><u>http://data.vlaanderen.be/context/adres.jsonld</u></a>
<b>Public Service</b>	<a href="http://data.vlaanderen.be/context/dienst.jsonld"><u>http://data.vlaanderen.be/context/dienst.jsonld</u></a>
<b>Feedback</b>	<a href="http://data.vlaanderen.be/context/melding.jsonld"><u>http://data.vlaanderen.be/context/melding.jsonld</u></a>
<b>Notification</b>	<a href="http://data.vlaanderen.be/context/notificatie.jsonld"><u>http://data.vlaanderen.be/context/notificatie.jsonld</u></a>
<b>Consent</b>	<a href="http://data.vlaanderen.be/context/toestemming.jsonld"><u>http://data.vlaanderen.be/context/toestemming.jsonld</u></a>
<b>Loan</b>	<a href="http://data.vlaanderen.be/context/transactie.jsonld"><u>http://data.vlaanderen.be/context/transactie.jsonld</u></a>
<b>Transactional Service</b>	<a href="http://data.vlaanderen.be/context/transactie.jsonld"><u>http://data.vlaanderen.be/context/transactie.jsonld</u></a>



# Persistent unambiguous identifiers and a referenced shared context

```
{  
  "@context": "http://data.vlaanderen.be/context/organisatie.jsonld"  
  "@id": "http://data.vlaanderen.be/id/organisatie/OVO002949",  
  "@type": "Organisatie",  
  "voorkeursNaam": "Agentschap Informatie Vlaanderen",  
  "alternatieveNaam": "AIV"  
}
```



The screenshot shows a web browser window with the URL <http://data.vlaanderen.be>. The page title is "organisatie OVO002949". The main content area is titled "Gegevens" and contains the following information:

identificator	OVO002949
voorkeursnaam	Agentschap Informatie Vlaanderen
beschrijving	
homepage	<a href="http://www.vlaanderen.be/informatievlaanderen">http://www.vlaanderen.be/informatievlaanderen</a>
zie ook	<a href="https://wegwijs.vlaanderen.be/#/organisations/ba81536d-7d41-a70f-050ad2941c27">https://wegwijs.vlaanderen.be/#/organisations/ba81536d-7d41-a70f-050ad2941c27</a>
is veranderd door	> oprichting
	<a href="#">meer</a>

At the bottom of the page, there is a footer with the Vlaanderen logo and the text: "Data.vlaanderen.be is een officiële website van de Vlaamse overheid" and "uitgegeven door [Agentschap Informatie Vlaanderen](#)".

# Shared Context with local extensions

```
{
  "@context":
  [
    "http://data.vlaanderen.be/context/persoon.jsonld",
    {
      "img" { "@id": "http://xmlns.com/foaf/0.1/img", "@type": "@id" }
    }
  ],
  "@id": "http://data.vlaanderen.be/id/persoon/1234",
  "@type": "Persoon",
  "voornaam": [ "Jan" ],
  "achternaam": [ "Janssens" ],
  "img": "http://example.org/profielfoto-jan-janssens.jpeg",
}
```

# Conformance validation

## JSON-LD

- Has no formal standardized method for data validation

## SHACL

- Shapes Constraint Language
- W3C Recommendation 20 July 2017
- A language for validating RDF graphs against a set of conditions.
- expresses all constraints for an application profile, a REST call often only expose a subset

## Examples

- Person, Organisation, Address, Public Service, Feedback, Notification, Consent, Loan, Transactional Service, Road
- Examples on GitHub: [SHACL - GitHub](#)

# Technical Implementation

## Shapes Constraint Language (SHACL)

```
1 ▼ schema:OrganisatieShape
2   a sh:NodeShape ;
3   sh:targetClass org:Organization ;
4 ▼   sh:property [
5       sh:name "voorkeursNaam" ;
6       sh:description "Naam waarmee de organisatie
7           bij voorkeur wordt aangeduid." ;
8       sh:datatype xsd:string ;
9       sh:minCount 1 ;
10      sh:path skos:prefLabel ;
11  ] ;
12  sh:closed false .
```

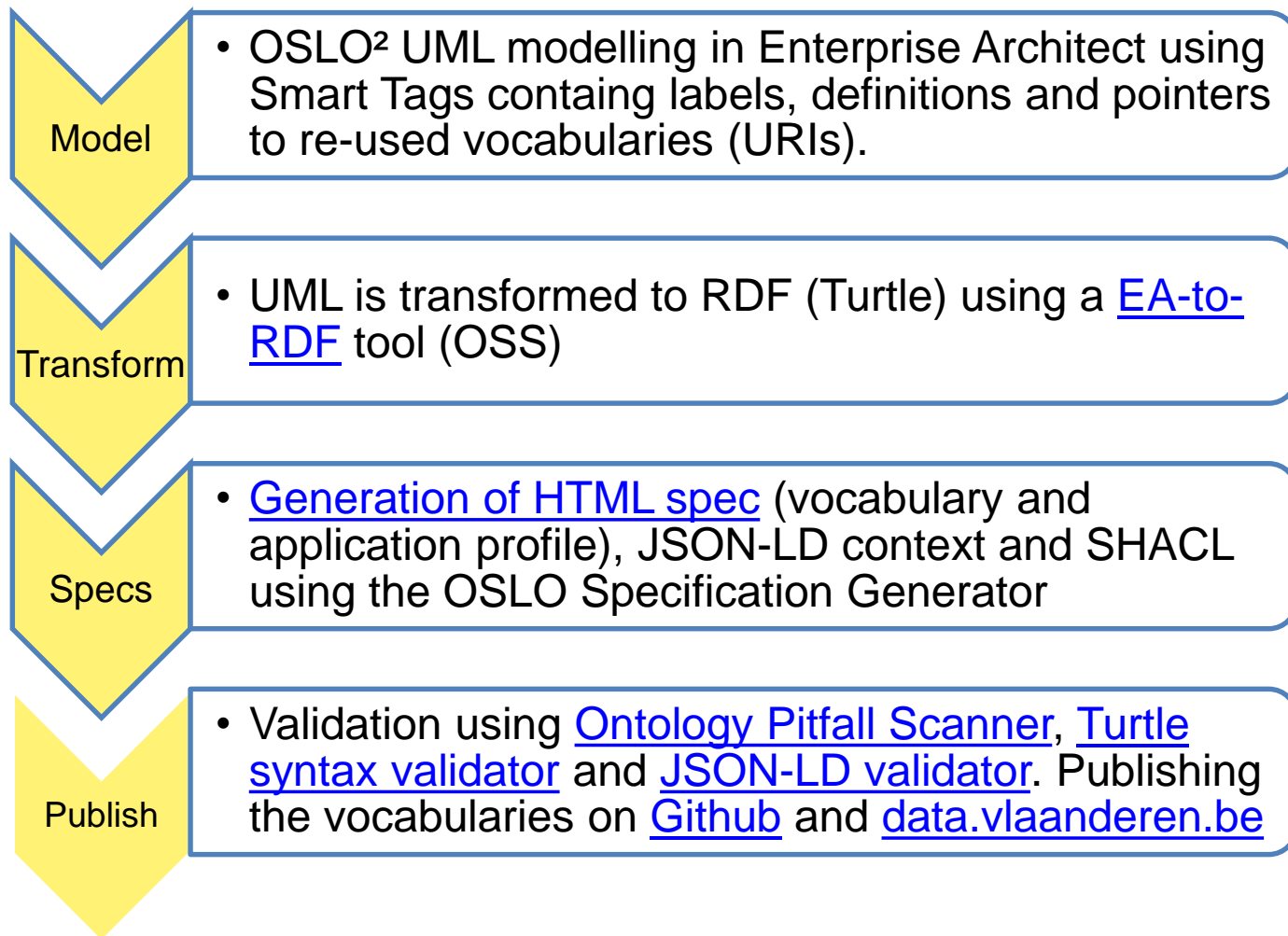
# Tools - Data persistence

- There is *no one size fits all*
- Data sources are semantic interoperable (exactMatch)
- Data is stored in both **Relational Databases** and **Graph Databases**

## Tools

- **Triple store:** or RDF store is a purpose-built database for the storage and retrieval of triples (Virtuoso as a Berkeley DB/Cache)
- **Document Store:** JSON-LD Objects (MongoDB as a Berkeley DB/Cache)
- **'REST' services:** on-the-fly generation of JSON-LD.

# OSLO Toolchain



Bespoke technical connectors cause **multiple investments**.

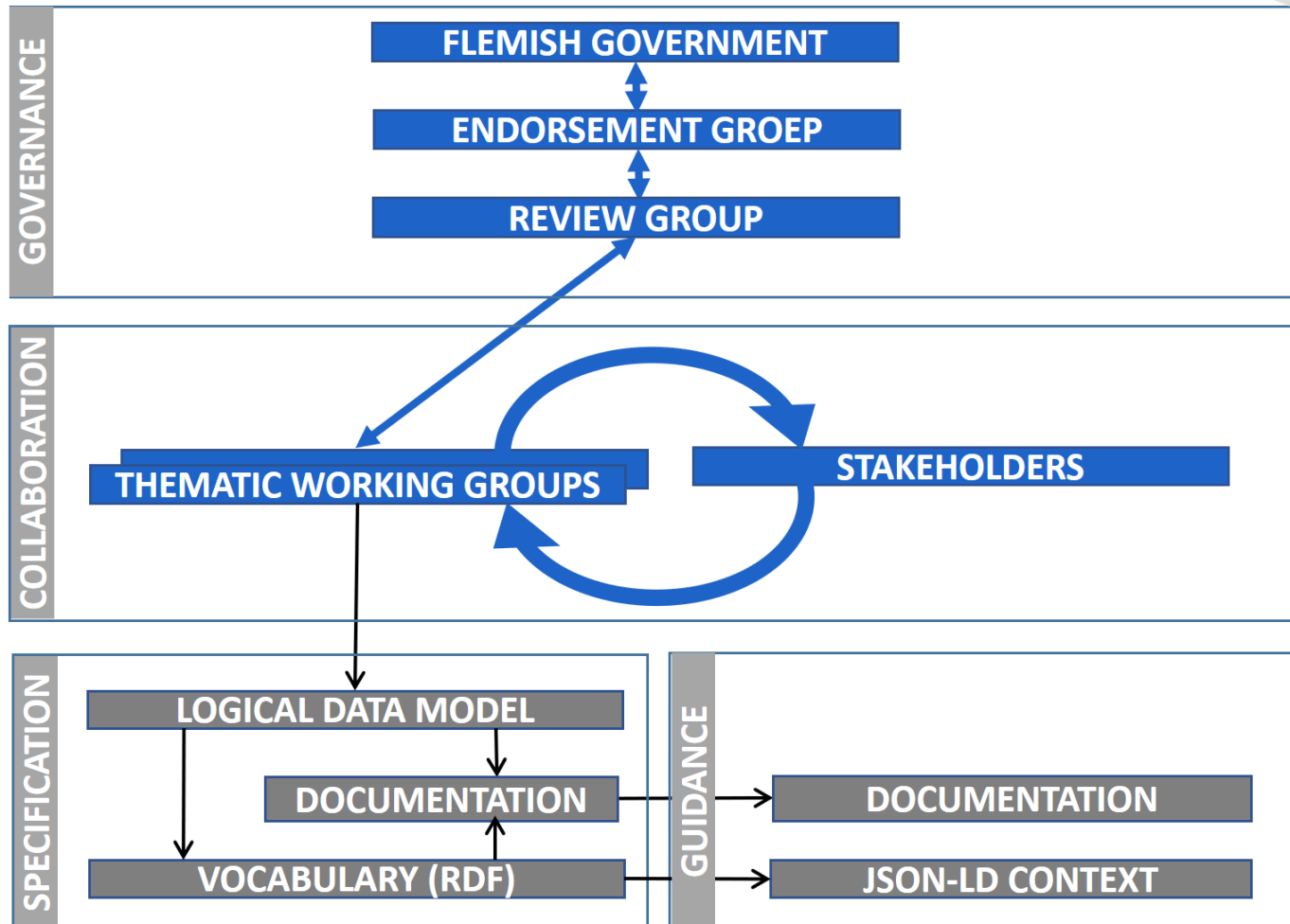
How can we build interoperable, **hypermedia-driven Web APIs**, which enable **generic clients**?

# Generic Clients

- Flemish Government will ratify a standardised approach for building better APIs
- Specifying a number of concepts commonly used in Web APIs it enables the creation of generic API clients.
- Approach: Open working groups
- Deadline: December 2018
- Evaluating the Hydra Core Vocabulary, a Vocabulary for Hypermedia-Driven Web APIs: [link](#)



# Governance: bottom-up consensus-based approach with a formal top-down approach



# Take-Away

JSON-LD facilitates a scalable technique for raising and implementing *semantic* and *technical interoperability*, within an operational public sector context

## JSON-LD

- Low barrier approach to add semantics to data.
- JSON is a popular format
- Smooth upgrade path from JSON to JSON-LD
- The lack of strict schema definitions allows developers a larger degree of freedom, while still maintaining interoperable data.

Referenced “shared contexts”

SHACL

Next step? Towards generic Clients.

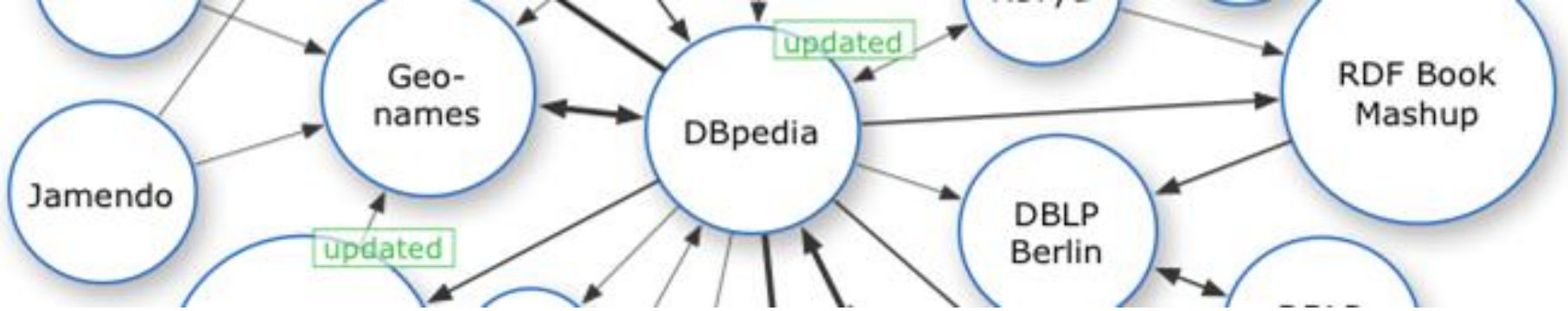
<https://overheid.vlaanderen.be/informatie-vlaanderen>



@info\_vlaanderen @rafke @ziggyvanlishout

Marco Combetto, Gabriele Francescotto

# TRENTINO



# Implementing ISA<sup>2</sup> Core Vocabularies in JSON-LD

joinup

Webinar

26 January 2018



*Marco Combetto*  
*Digital Innovation Manager*

*Gabriele Francescotto*  
*CEO & CTO*



# Motivation behind

---

- Improve the quality of PA published (open) data and increase the reuse by establishing a shared common structure with a robust non-ambiguous semantics, validated by state-of-the art ontological analysis techniques.
- Extend semantic interoperability from local to higher levels of governance through the use of ISA<sup>2</sup> Core Vocabularies in order to include also of the Province's Web portal
- Demonstrate the applicability of the ISA<sup>2</sup> Core Vocabularies in a real interoperability scenario

# Wishlist

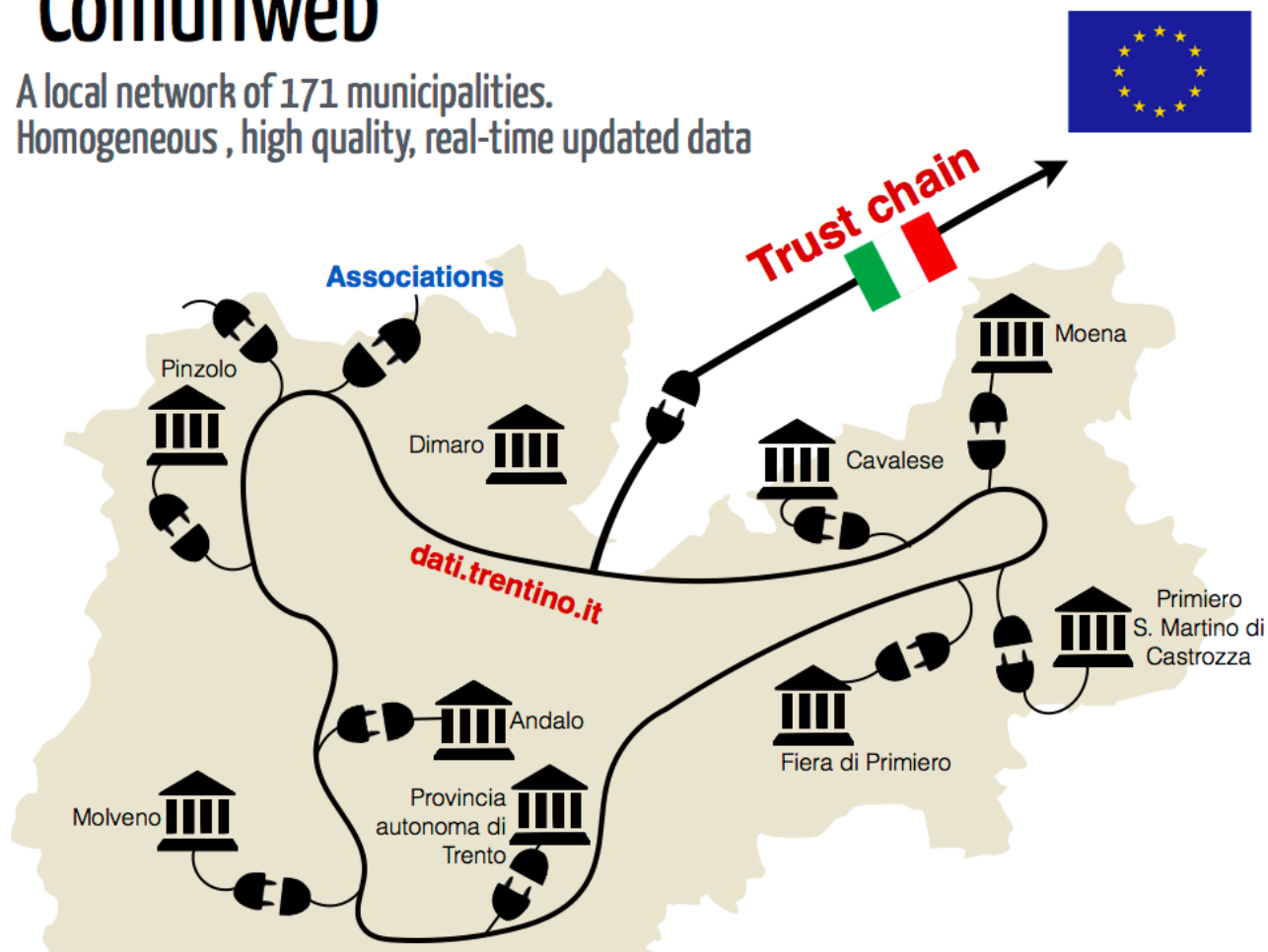


- 
- Reduced integration costs due to the use of interoperable standards, allowing for information to be easily shared and re-used at an european level;
  - Increase in local interoperability, starting from provincial and municipalities level, then national and EU via this integration of data models;
  - Improved quality and value of data as their structure will be homogenised and potential reuse of data (SMEs, others)
  - Develop useful interoperability tools and allow semantic annotation at a microdata level
  - Showing concrete example of alignment of business oriented schema (schema.org) and institutional oriented schema (ISA<sup>2</sup> Core Vocabularies) in order to allow develop of services by third parties in a subsidiary way

# A Web Digital Data Infrastructure

## Comunweb

A local network of 171 municipalities.  
Homogeneous, high quality, real-time updated data



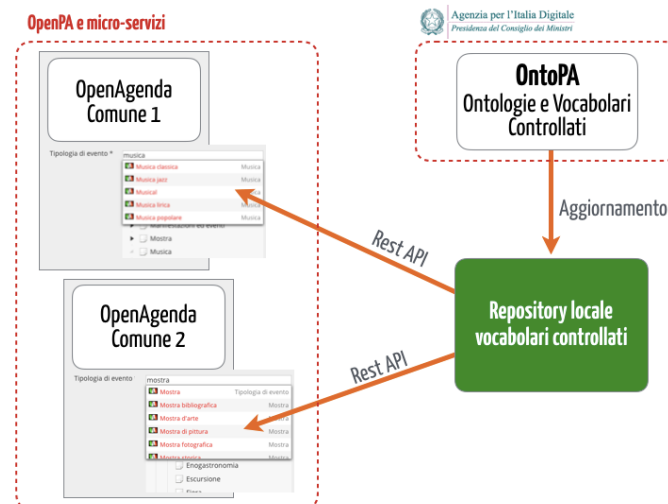


# Improving semantic interoperability

## ISA2 Core Vocs

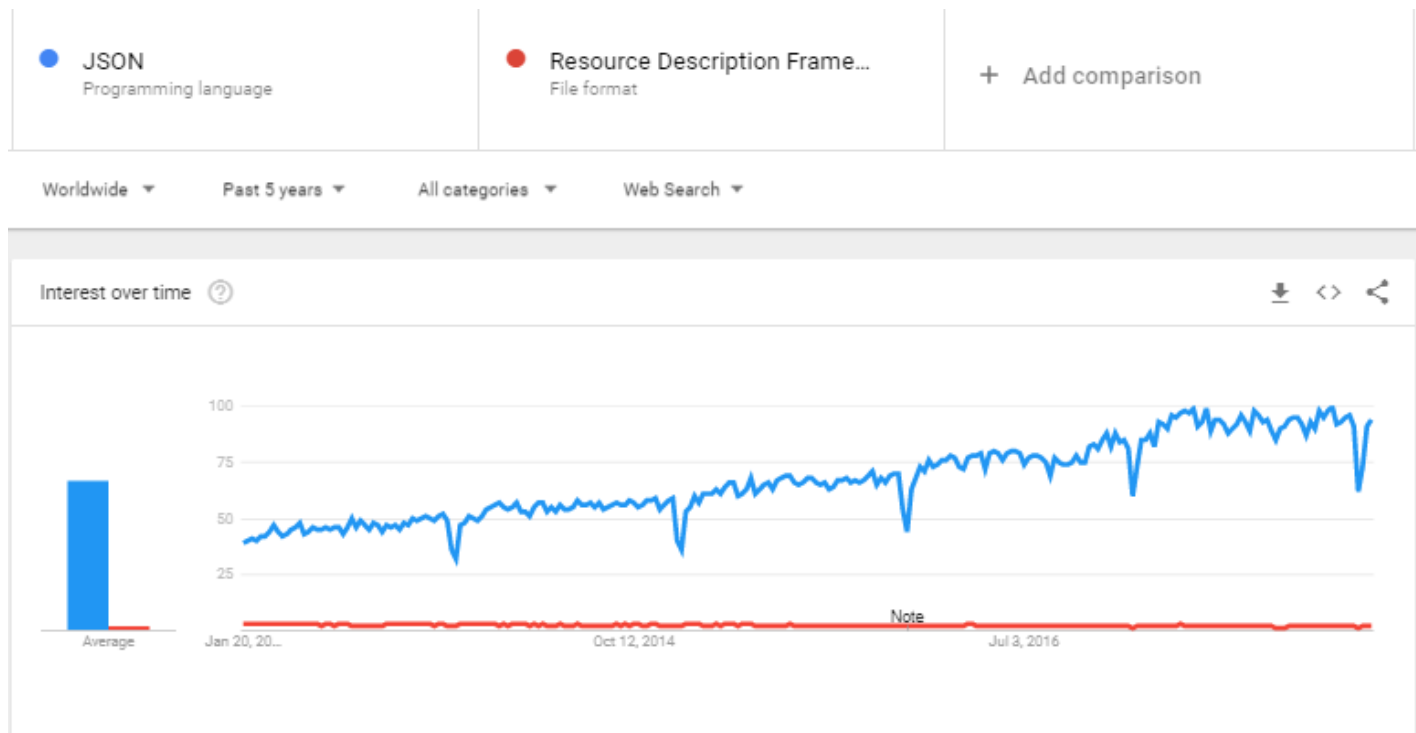


## OntoPA (Ontologies and Vocabularies for PA)



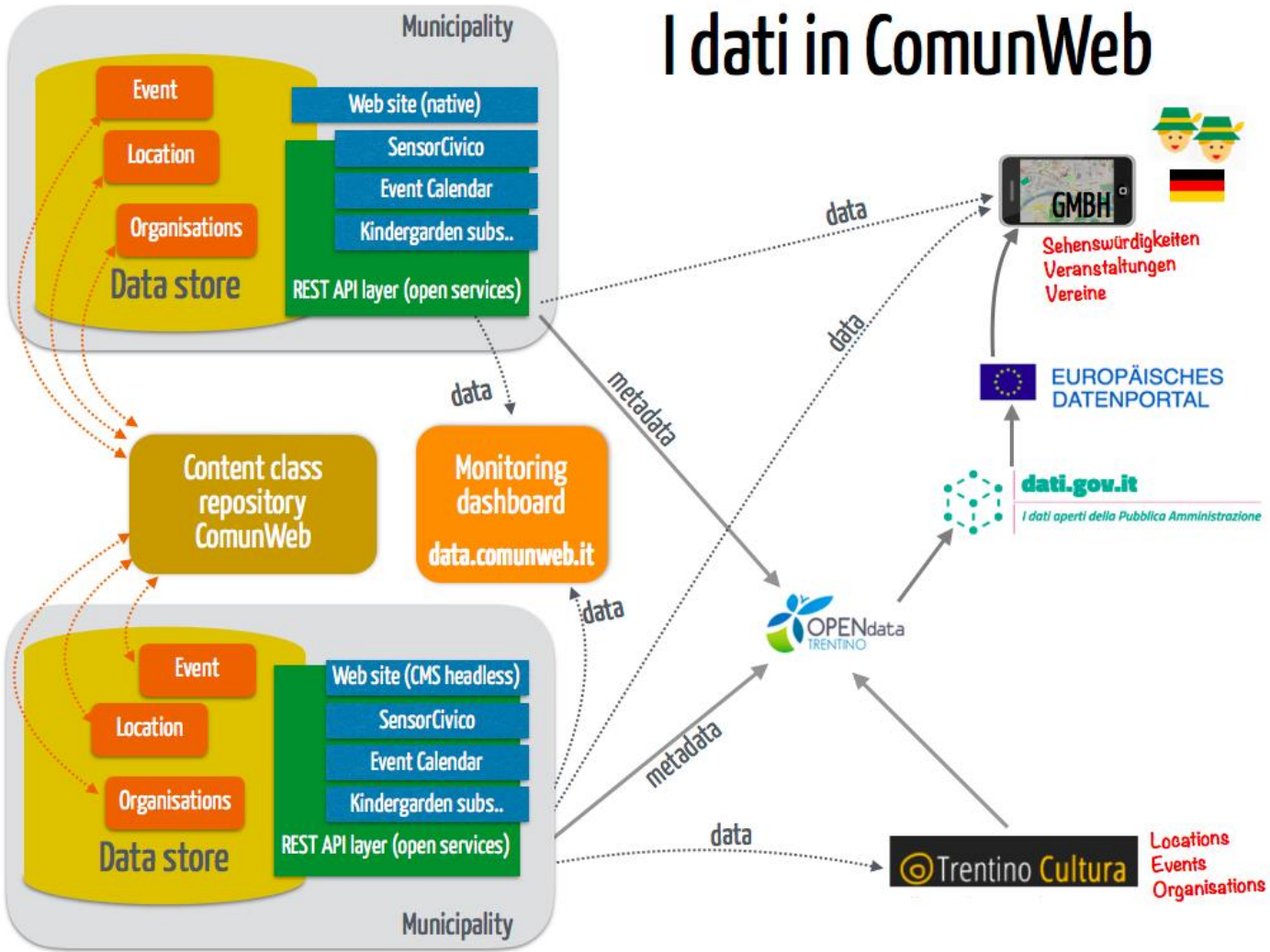
# Why JSON-LD?

JSON is much better known in the APP and BOT developer community, compared to other formats, better known in the research world; the choice of JSON-LD thus contributes to dramatically increase the impact of the services provided

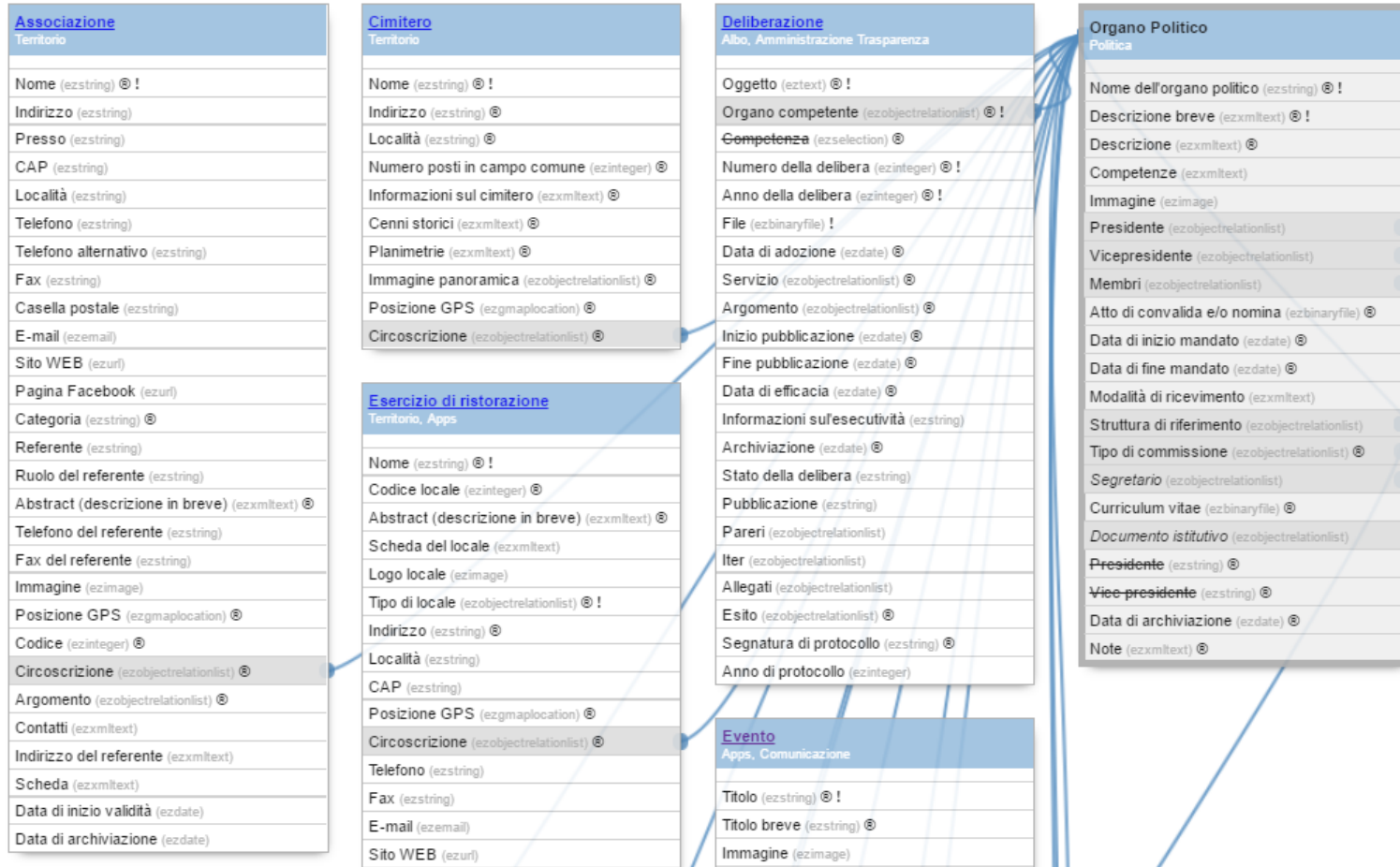


(Source Google Trends)

# ComunWeb architecture



# Class relations in ComunWeb platform



# Classes implemented (on going)

---

- Service (organizational unit)
- Area (organizational unit)
- Contact Point
- Location
- Relevant Businesses on territory (e.g. Pharmacies)
- Public\_service
- OpeningHours
- Person\_cpsvit (a first version of citizen)
- Event
- Address
- Municipality
- Association

```
{
  (work_in_progress): "@todo Make this api endpoint jsonld and hydra compliant",
  servizio: "http://corevoc.opencontent.it/api/jsonld/v1/corevocs/OrganizationalUnit",
  contact_point: "http://corevoc.opencontent.it/api/jsonld/v1/corevocs/ContactPoint",
  area: "http://corevoc.opencontent.it/api/jsonld/v1/corevocs/OrganizationalUnit",
  servizio_sul_territorio: "http://corevoc.opencontent.it/api/jsonld/v1/corevocs/LegalEntity",
  location: "http://corevoc.opencontent.it/api/jsonld/v1/corevocs/Location",
  public_service: "http://corevoc.opencontent.it/api/jsonld/v1/corevocs/PublicService",
  opening_hours: "http://corevoc.opencontent.it/api/jsonld/v1/corevocs/openingHours",
  person_cpsvavit: "http://corevoc.opencontent.it/api/jsonld/v1/corevocs/Person",
  event: "http://corevoc.opencontent.it/api/jsonld/v1/corevocs/Event",
  address: "http://corevoc.opencontent.it/api/jsonld/v1/corevocs/Address",
  comune: "http://corevoc.opencontent.it/api/jsonld/v1/corevocs/PublicOrganization",
  associazione: "http://corevoc.opencontent.it/api/jsonld/v1/corevocs/Organization"
}
```

JSON-LD as a format, allowing the use of metadata coming from different vocabularies.



# Enabling multiple mapping without coding

<b>Partita IVA (vat_id)</b> [ezstring]	<input checked="" type="checkbox"/> Enable	<b>Mapping String ID</b>	<b>Publish as</b>	<b>Namespace</b>	<b>Internal Identifier</b>	<b>Title/name</b>	<b>Description</b>	<b>DataType</b>	<b>Parameters</b>
		schemaorg	vatID	schema	vatID	Vat ID	The Value-added Tax ID of the organization or pers...	string	
		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Offerta di servizi (makes_offer)</b> [ezobjectrelationlist]	<input checked="" type="checkbox"/> Enable	<b>Mapping String ID</b>	<b>Publish as</b>	<b>Namespace</b>	<b>Internal Identifier</b>	<b>Title/name</b>	<b>Description</b>	<b>DataType</b>	<b>Parameters</b>
		schemaorg	makesOffer	schema	makesOffer	Makes Offer	"A pointer to products or services offered by the ...	collection	
		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Fondatore dell'associazione (founder)</b> [ezobjectrelationlist]	<input checked="" type="checkbox"/> Enable	<b>Mapping String ID</b>	<b>Publish as</b>	<b>Namespace</b>	<b>Internal Identifier</b>	<b>Title/name</b>	<b>Description</b>	<b>DataType</b>	<b>Parameters</b>
		schemaorg	founder	schema	founder	Founder	A person who founded this organization. Supersedes...	collection	
		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Impiegati e collaboratori (employee)</b> [ezobjectrelationlist]	<input checked="" type="checkbox"/> Enable	<b>Mapping String ID</b>	<b>Publish as</b>	<b>Namespace</b>	<b>Internal Identifier</b>	<b>Title/name</b>	<b>Description</b>	<b>DataType</b>	<b>Parameters</b>
		schemaorg	employee	schema	employee	Employee	Someone working for this organization. Supersedes ...	collection	
		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Obiettivi e finalità (purpose)</b> [ezobjectrelationlist]	<input checked="" type="checkbox"/> Enable	<b>Mapping String ID</b>	<b>Publish as</b>	<b>Namespace</b>	<b>Internal Identifier</b>	<b>Title/name</b>	<b>Description</b>	<b>DataType</b>	<b>Parameters</b>
		corevocs	purpose	cpov	purpose	purpose	purpose	string	
		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

SAVE

# JSON-LD Public Organization

```
{  
  "@context": {  
    "hydra": "http://www.w3.org/ns/hydra/core#",  
    "@vocab": "http://corevoc.opencontent.it/api/jsonld/vocab#",  
    "Organization": "http://www.w3.org/ns/org#Organization",  
    "name": "http://www.w3.org/ns/cpov#name",  
    "legalName": "http://www.w3.org/ns/cpov#legalName",  
    "PreferredLabel": "http://www.w3.org/ns/cpov#PreferredLabel",  
    "description": "http://www.w3.org/ns/cpov#description",  
    "Address": "https://www.w3.org/ns/locn#Address",  
    "homepage": "http://www.w3.org/ns/cpov#homepage"  
  },  
  "@id": "\ation/4350",  
  "@type": "Organization",  
  "name": "Istituto Oikos",  
  "legalName": "Istituto Oikos onlus",  
  "PreferredLabel": "Oikos",  
  "description": "Istituto Oikos è un'organizzazione non-profit impegnata in Europa e nei paesi in via di sviluppo nella tutela della biodiversità, per una gestione responsabile delle risorse naturali, per la diffusione di modelli di vita più sostenibili come strumenti di sviluppo sociale ed economico e di lotta alla povertà.",  
  "Address": "Via Scaricle, 40 38070 Ragoli TN",  
  "homepage": "http://www.istituto-oikos.org/"  
}
```



# JSON-LD Microdata

Provincia autonoma di Trento

**Core Vocabularies**

Home | Data search | Classes list | Alia's organizzazioni | Alia's eventi

Core Vocabularies > Alia's organizzazioni > Culturali > Scuola Musicale dei Quattro Vicariati OperaPrima

## Scuola Musicale dei Quattro Vicariati OperaPrima

OperaPrima è parte del Sistema delle Scuole Musicali del Trentino ed è associata alla Società Italiana per l'Educazione Musicale.

È attiva da più di vent'anni nei comuni di Ala, Avio, Brentonico, Mori e Ronzo-Chiemis e in altri centri della Vallagarina, dove ha offerto la possibilità a migliaia di giovani di **crescere con la musica**. Il percorso formativo ha come obiettivo la **formazione musicale ed espressiva della persona**, come previsto dagli orientamenti didattici della Provincia Autonoma di Trento.



**Indirizzo** Via R. Zandonai 1, Picalcante di Ala  
**Presso** Centro Polifunzionale Picalcante  
**CAP** 38051  
**Località** Picalcante di Ala  
**Teléfono** 0464-680000  
**Fax** 0464-680000  
**E-mail** segreteria@operaprima.org  
**Sito WEB** Sito web dell'associazione

Punto di contatto per "Sede amministrativa - OperaPrima" Punto di contatto per "Sede di Mori - OperaPrima" Punto di contatto per "Segreteria Didattica - OperaPrima"

**Categoria** Scuola Musicale  
**Argomento** musica, teatro e danza  
**Contatti** Presidente: Beatrice Gobbi  
Direttore: Corrado Bungaro  
Facebook: Scuola Musicale dei Quattro Vicariati OperaPrima  
**Referente** Corrado Bungaro  
**Ruolo del referente** Direttore  
**Indirizzo del referente** e-mail: direzione@operaprima.org  
**Telefono del referente** 3465789377  
**Posizione GPS**



**Catalogo dei servizi offerti** Scuola musicale Interventi do Concertistiche  
**Luogo presso la quale ha sede** Centro Polifunzionale - Picalcante  
**Fondatore dell'associazione** Valentino Debiasi  
**Impiegati e collaboratori** Corrado Bungaro Gianluigi Falga  
**Obiettivi e finalità** 08.2.1 Attività culturali

Pagina pubblicata Giovedì, 08 Giugno 2017 - Ultima modifica: Martedì, 13 Giugno 2017

```
603 <div class="openpa-full-last-modified">
604 <small>Pagina pubblicata Giovedì, 08 Giugno 2017 - Ultima modifica: Martedì, 13 Giugno 2017</small>
605 <a href="http://corevoc.opencontent.it/api/jsonld/schemaorg/NGO/4591" target="_blank">
606 <small style="display: inline; padding: 2px 6px 2px 6px; font-size: 75%; font-weight: 700; line-height: 1; color: #fff; text-align: center; white-space: nowrap; vertical-align: baseline; border-radius:
607 .25em; background-color: #5b0de">JSON-LD schemaorg</small>
608 </a><a href="http://corevoc.opencontent.it/api/jsonld/corevoce/Organisation/4591" target="_blank">
609 <small style="display: inline; padding: 2px 6px 2px 6px; font-size: 75%; font-weight: 700; line-height: 1; color: #fff; text-align: center; white-space: nowrap; vertical-align: baseline; border-radius:
610 .25em; background-color: #5b0de">JSON-LD corevoce</small>
611 </a>
612 </div>
613
614 </div>
```

```
<script type="application/ld+json">{
  {
    "@context": {
      "hydra": "http://www.w3.org/ns/hydra/core#",
      "vocab": "http://corevoc.opencontent.it/api/jsonld/schemaorg/vocab#",
      "NGO": "http://schema.org/NGO",
      "name": "http://schema.org/name",
      "legalName": "http://schema.org/legalName",
      "description": "http://schema.org/description",
      "address": "http://schema.org/address",
      "telephone": "http://schema.org/telephone",
      "faxNumber": "http://schema.org/faxNumber",
      "email": "http://schema.org/email",
      "url": "http://schema.org/url",
      "contactPoint": {
        "@id": "http://schema.org/contactPoint",
        "@type": "#id"
      },
      "image": "http://schema.org/image",
      "hasPOB": "http://schema.org/hasPOB",
      "aggregateRating": "http://schema.org/aggregateRating",
      "areaServed": "http://schema.org/areaServed",
      "dissolutionDate": "http://schema.org/dissolutionDate",
      "foundingDate": "http://schema.org/foundingDate",
      "foundingLocation": "http://schema.org/foundingLocation",
      "globalLocationNumber": "http://schema.org/globalLocationNumber",
      "hasOfferCatalog": {
        "@id": "http://schema.org/hasOfferCatalog",
        "@type": "#id"
      },
      "location": "http://schema.org/location",
      "memberOf": {
        "@id": "http://schema.org/memberOf",
        "@type": "#id"
      },
      "numberOfEmployees": "http://schema.org/numberOfEmployees",
      "parentOrganization": {
        "@id": "http://schema.org/parentOrganization",
        "@type": "#id"
      }
    },
    "@id": "http://corevoc.opencontent.it/api/jsonld/schemaorg/NGO/4591",
    "@type": "NGO",
    "name": "Scuola Musicale dei Quattro Vicariati OperaPrima",
    "legalName": "Scuola Musicale dei Quattro Vicariati OperaPrima",
    "description": "OperaPrima è parte del Sistema delle Scuole Musicali del Trentino ed è associata alla Società Italiana per l'Educazione Musicale. È attiva da più di vent'anni nei comuni di Ala, Avio, Brentonico, Mori e Ronzo-Chiemis e in altri centri della Vallagarina, dove ha offerto la possibilità a migliaia di giovani di crescere con la musica. Il percorso formativo ha come obiettivo la formazione musicale ed espressiva della persona, come previsto dagli orientamenti didattici della Provincia Autonoma di Trento.",
    "address": "Via R. Zandonai 1, Picalcante di Ala",
    "telephone": "0464-680000",
    "faxNumber": "0464-680000",
    "email": "segreteria@operaprima.org",
    "url": "http://www.operaprima.org",
    "contactPoint": {
      {
        "@id": "http://corevoc.opencontent.it/api/jsonld/schemaorg/ContactPoint/4668",
        "@type": "http://schema.org/ContactPoint"
      },
      {
        "@id": "http://corevoc.opencontent.it/api/jsonld/schemaorg/ContactPoint/4671",
        "@type": "http://schema.org/ContactPoint"
      },
      {
        "@id": "http://corevoc.opencontent.it/api/jsonld/schemaorg/ContactPoint/4672",
        "@type": "http://schema.org/ContactPoint"
      }
    },
    "numberOfEmployees": {
      "da": 1 a 3
    },
    "vatID": "00673370222",
  }
}
```

```
725 "http://corevoc.opencontent.it/api/jsonld/schemaorg/NGO/4591",
726 "@type": "NGO",
727 "name": "Scuola Musicale dei Quattro Vicariati OperaPrima",
728 "legalName": "Scuola Musicale dei Quattro Vicariati OperaPrima",
729 "description": "OperaPrima è parte del Sistema delle Scuole Musicali del Trentino ed è associata alla Società Italiana per l'Educazione Musicale. È attiva da più di vent'anni nei comuni
730 di Ala, Avio, Brentonico, Mori e Ronzo-Chiemis e in altri centri della Vallagarina, dove ha offerto la possibilità a migliaia di giovani di crescere con la musica. Il percorso formativo ha come
731 obiettivo la formazione musicale ed espressiva della persona, come previsto dagli orientamenti didattici della Provincia Autonoma di Trento.",
732 "address": "Via R. Zandonai 1, Picalcante di Ala",
733 "telephone": "0464-680000",
734 "faxNumber": "0464-680000",
735 "email": "segreteria@operaprima.org",
736 "url": "http://www.operaprima.org",
737 "contactPoint": {
738 {
739 "@id": "http://corevoc.opencontent.it/api/jsonld/schemaorg/ContactPoint/4668",
740 "@type": "http://schema.org/ContactPoint"
741 },
742 {
743 "@id": "http://corevoc.opencontent.it/api/jsonld/schemaorg/ContactPoint/4671",
744 "@type": "http://schema.org/ContactPoint"
745 },
746 {
747 "@id": "http://corevoc.opencontent.it/api/jsonld/schemaorg/ContactPoint/4672",
748 "@type": "http://schema.org/ContactPoint"
749 }
750 },
751 "numberOfEmployees": {
752 "da": 1 a 3
753 },
754 "vatID": "00673370222",
755 }
```

# JSON-LD Links

---

## Overall classes

<http://ontopa.opencontent.it/opendata/console>

## Mapping implemented by the tool

<http://ontopa.opencontent.it/api/jsonld/v1/corevocs>

<http://ontopa.opencontent.it/api/jsonld/v1/schemaorg>

## OntoPA

[http://ontopa.opencontent.it/api/opendata/v2/content/search/classes%20%5Btipologia istituto e luogo della cultura%5D](http://ontopa.opencontent.it/api/opendata/v2/content/search/classes%20%5Btipologia%20istituto%20e%20luogo%20della%20cultura%5D)

[http://ontopa.opencontent.it/api/opendata/v2/content/search/classes%20%5Btipologia di evento pubblico%5D](http://ontopa.opencontent.it/api/opendata/v2/content/search/classes%20%5Btipologia%20di%20evento%20pubblico%5D)

# Maintenance and validation issues

---

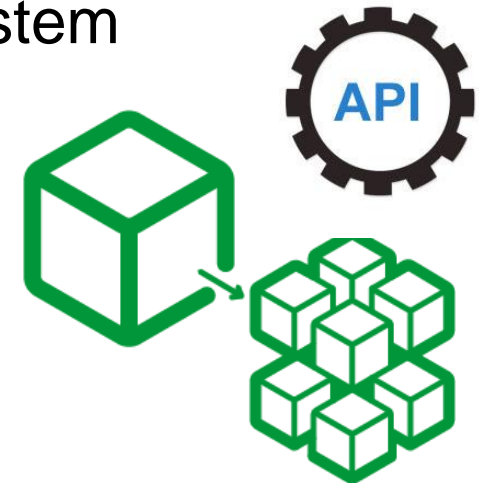


Still lot of manual work, no  
automated check  
Further development required

# Mission accomplished?

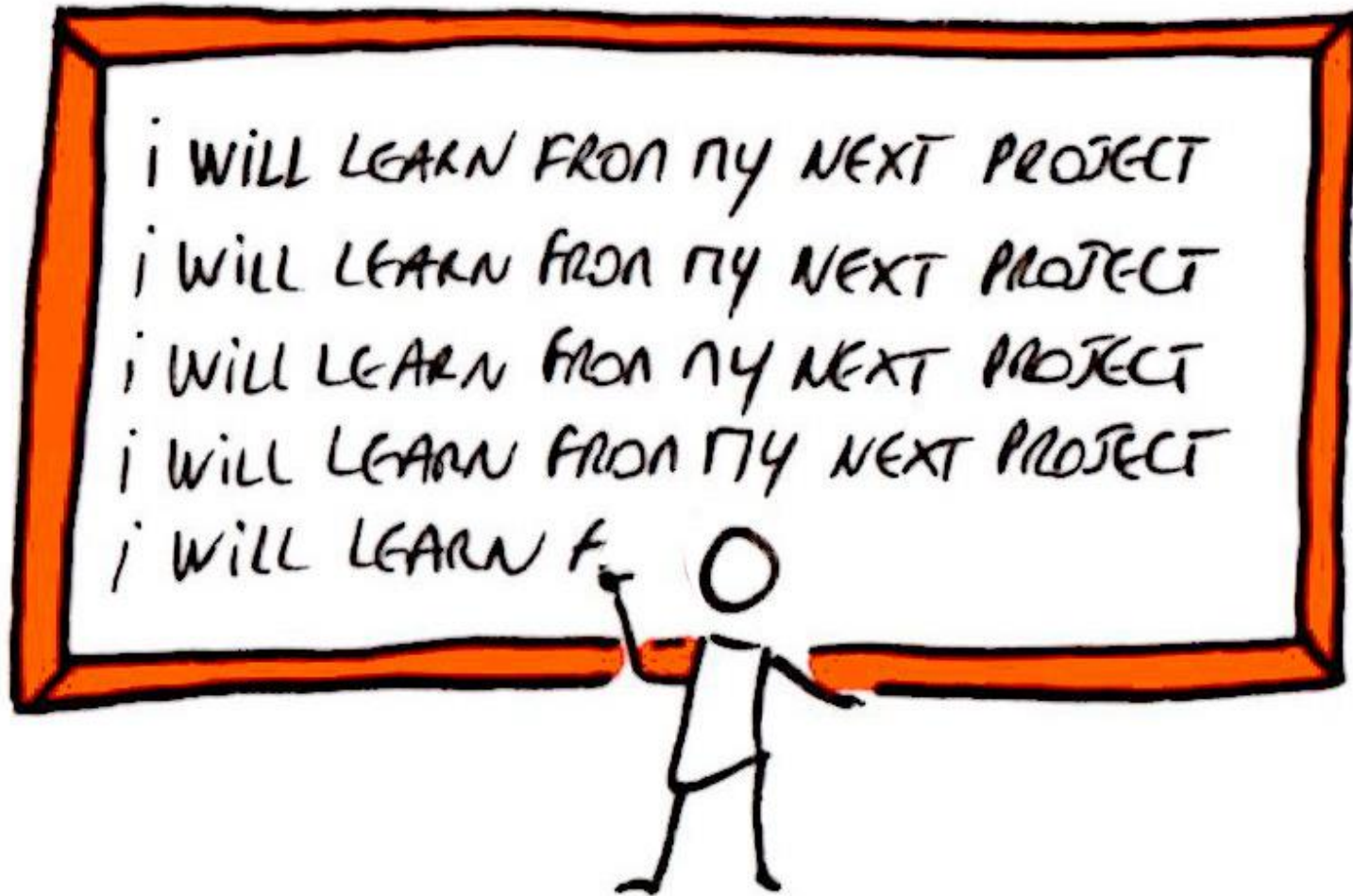


- Still few are using JSON-LD (not a lot of data are available)
- Internally
  - JSON skills available, JSON-LD comes natural
  - Facilitate shifting to API-based ecosystem
  - Helps in cracking silos
- Externally
  - As well, who is already using JSON
  - Web/Mobile developers
  - API and Microservices
  - Italian Digital Team is embracing it strongly



# Lessons Learnt

---



# Contacts



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Emidio Stani

# **SEMIC – ISA<sup>2</sup> PROGRAMME**



# Releasing ISA<sup>2</sup> Core Vocabularies and Application Profiles in JSON-LD

- DCAT-AP (in progress)

```
{
  "@context":
  {
    "Agent": "http://xmlns.com/foaf/0.1/Agent",
    "Catalog": "http://www.w3.org/ns/dcat#Catalog",
    "CatalogRecord": "http://www.w3.org/ns/dcat#CatalogRecord",
    "Checksum": "http://spdx.org/rdf/terms#Checksum",
    "Concept": "http://www.w3.org/2004/02/skos/core#Concept",
    "ConceptScheme": "http://www.w3.org/2004/02/skos/core#ConceptScheme",
    "Dataset": "http://www.w3.org/ns/dcat#Dataset",
    "Distribution": "http://www.w3.org/ns/dcat#Distribution",
    "Document": "http://xmlns.com/foaf/0.1/Document",
    "Frequency": "http://purl.org/dc/terms/Frequency",
    "Identifier": "http://www.w3.org/ns/adms#Identifier",
    "Kind": "http://www.w3.org/2006/vcard/ns#Kind",
    "LicenseDocument": "http://purl.org/dc/terms/LicenseDocument",
    "LinguisticSystem": "http://purl.org/dc/terms/LinguisticSystem",
    "Literal": "http://www.w3.org/2000/01/rdf-schema#Literal",
  }
}
```

- Core Person Vocabulary
- Core Public Organisation Vocabulary
- ...



# Ways to reuse existing context files

1. Refer to existing JSON-LD context
2. Extend existing JSON-LD context with local terms
3. Include multiple JSON-LD contexts

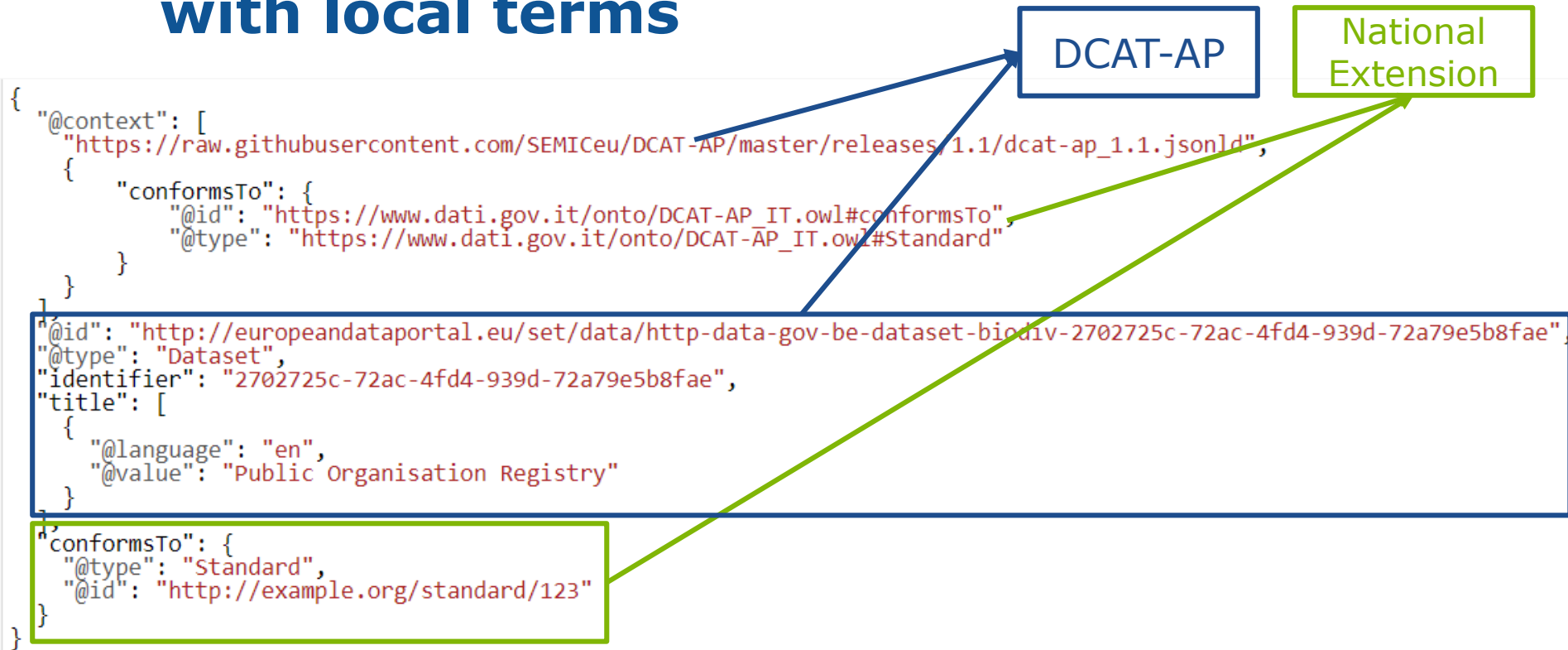
# 1. Refer to existing JSON-LD context

DCAT-AP JSON-LD  
context

Instance data

```
{
  "@context": [
    "https://raw.githubusercontent.com/SEMICeu/DCAT-AP/master/releases/1.1/dcat-ap_1.1.jsonld"
  ],
  "@id": "http://europeandataportal.eu/set/data/http-data-gov-be-dataset-biodiv-2702725c-72ac-4fd4-939d-72a79e5b8fae",
  "@type": "Dataset",
  "identifier": "2702725c-72ac-4fd4-939d-72a79e5b8fae",
  "title": [
    {
      "@language": "en",
      "@value": "Public Organisation Registry"
    }
  ]
}
```

## 2. Extend existing JSON-LD context with local terms



### 3. Include multiple JSON-LD contexts

DCAT-AP

CPOV

```
{
  "@context": [
    "https://raw.githubusercontent.com/SEMICeu/DCAT-AP/master/releases/1.1/dcat-ap_1.1.jsonld",
    "https://raw.githubusercontent.com/SEMICeu/CPOV/master/releases/1.0/cpov_1.0.jsonld"
  ],
  "@id": "http://europeandataportal.eu/set/data/http-data-gov-be-dataset-biodiv-2702725c-72ac-4fd4-939d-72a79e5b8fae",
  "@type": "Dataset",
  "identifier": "2702725c-72ac-4fd4-939d-72a79e5b8fae",
  "title": [
    {
      "@language": "en",
      "@value": "Public Organisation Registry"
    }
  ],
  "contactPoint": {
    "@id": "http://example.org/PublicOrganisation/123",
    "@type": "PublicOrganisation",
    "prefLabel": "Public Organisation 123"
  }
}
```

## AGENDA

Opening, tour de table and introduction (15 minutes)

Presentations by implementers (60 minutes)

Discussion (30 minutes)

Summary and conclusions (15 minutes)

## Discussion

- Where do you see value in JSON-LD?
- Should SEMIC publish a reusable JSON-LD context?
- Which tools are necessary/available for creation, maintenance and validation of JSON-LD data? Can those be shared and re-used?
- Do you have existing JSON based web services that could be transformed into JSON-LD using the Core Vocabularies?
- JSON-LD 1.0 vs. 1.1
- ...

## AGENDA

Opening, tour de table and introduction (15 minutes)

Presentations by implementers (60 minutes)

Discussion (30 minutes)

Summary and conclusions (15 minutes)

# Summary and conclusions



**Project Officers** [suzanne.wigard@ec.europa.eu](mailto:suzanne.wigard@ec.europa.eu)  
[ana-maria.murarasu@ec.europa.eu](mailto:ana-maria.murarasu@ec.europa.eu)

## ***Promoting semantic interoperability in Europe***

### **Visit our initiatives**

<b>ADMS</b> ASSET DESCRIPTION METADATA SCHEMA	<b>StatDCAT-AP</b> FOR STATISTICAL DATASETS	<b>GeoDCAT-AP</b> FOR GEOSPATIAL DATASETS	<b>DCAT-AP</b> FOR DATA PORTALS IN EUROPE	<b>CORE</b> PUBLIC ORGANISATION VOCABULARY
<b>CORE</b> PERSON VOCABULARY	<b>CORE</b> BUSINESS VOCABULARY	<b>CORE</b> CRITERION & EVIDENCE VOCABULARY	<b>CORE</b> LOCATION VOCABULARY	<b>CORE</b> PUBLIC SERVICE VOCABULARY

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