Interoperability through Linked Data

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Search and explore data from Sweden

Data & APIs
Explore datasets and APIs

Concepts
Explore concepts and terminologies

Specifications
Explore specifications of information and data models
Publication of data requires structure

How do we make datasets discoverable?  
Metadata

How do we access datasets?  
Protocol

How do we understand the datasets’ content?  
Semantics
DCAT-AP: Linked Entities

Catalog → Dataset → Concept
Publisher → Dataset
Contact point → Dataset
Distribution → Dataset → Specification

Visualisation
How do we make data understandable?

Alt 1: Description
We describe directly in the metadata how the data can be understood and worked with.

Alt 2: Documentation
We point to documents or web sites describing the data.

Alt 3: Specification
- Well thought out information
- May consist of several parts
  - Text aimed at people
  - Schemas for validation
  - Examples
  - ...

How do we refer to specifications in a consistent way?
Search specifications

Search

The page updates automatically when you apply filters

Theme Organization

36 results
Manage concepts in terminologies

“named collection of concepts that have a common theme and are jointly managed”

Synonyms: taxonomy, vocabulary, (ontology)
Need for concepts and terminologies

- Common vocabulary for communication
- Transparent data models
  - System integration
  - Interoperability between organisations
- Categorization
- Improved findability

clear semantics
Search concepts

Search

The page updates automatically when you apply filters

Terminologies

5644 results
Connecting the dots

BBQ areas in Lomma

BBQ areas

Documentation

Web site

Schema

CSV Schema

Software

Specification

ENTRYSCAPE

prof:hasResource

prof:hasResource

prof:hasResource

municipality codes

Open Standard

Open Terminology

Open Data

Open Source
Linked Data makes everything possible

Unique identification of entities
HTTP for access
Interoperable format RDF
Relationships between entities
Metadata with semantics
Beyond datasets to more general entities
Tourism in Sweden - beyond datasets to more general entities
How do we use search engines?

Where does the information come from?

```json
{
  "@context": "http://schema.org",
  "@type": "Restaurant",
  "address": {
    "@type": "PostalAddress",
    "addressLocality": "Örebro",
    "addressRegion": "Örebro län",
    "postalCode": "70211",
    "streetAddress": "Kungsgatan 14"
  },
  "aggregateRating": {
    "@type": "AggregateRating",
    "ratingValue": "3.7",
    "reviewCount": "41"
  },
  "name": "Restaurang Clarion Hotel",
  "openingHours": [
    "Mo-Th 17:00-22:00",
    "Fr-Sa 16:00-22:00"
  ],
  "priceRange": "$$$",
  "servesCuisine": [
    "Swedish",
    "Mediterranean"
  ],
  "telephone": "+(46) 19-6706707",
  "url": "https://www.nordicchoicehotels.se/hotel/sverige/orebro/clarion-hotel-orebro/featured-amenities/restaurang/"
}
```
Each time we search for information

Google

X opening hours
Y address
Z book

Showing information given that it is structured
schema.org

A common standard for expressing properties about things on the web

Well rooted in the tourism industry

Relations from thing and “no things”
Example - a museum

Museum

schema:Museum

rdf:type

longitude - latitude - spatial

opening hours - phone - hasCredential

address - email -memberOf

review - url

name - price

description - image
Relations and reuse

Museum

Restaurant

Store

Exhibition

Experience

containsPlace

containedInPlace

location

itinerary

schema:Place

schema:Event

offers
Access all entities from one API

All museums in Sweden

user

get schema:Museum

Restaurant

Store

Exhibition

Experience
Swedish tourism - a part of the knowledge graph
Open discussion
Questions?

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