

OSMonto

An Ontology for OpenStreetMap tags

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Outline

- Motivation
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- OSMonto
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Motivation

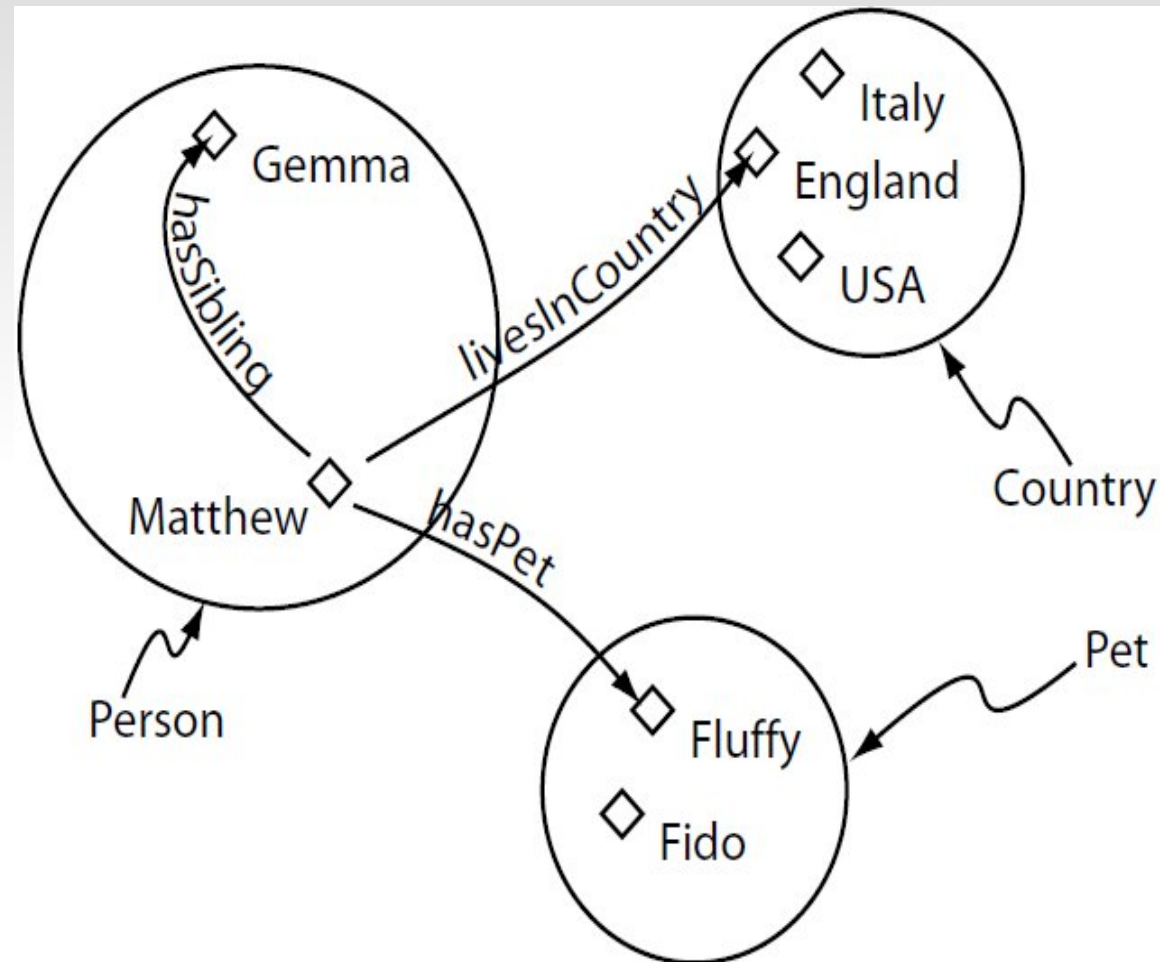
- Hierarchical representation of OSM tags
- Provides a better overview (via tools like Protégé) and aims towards automatic maintenance
- Ontological semantics via mappings: different versions or semantically related tags can be united
- Ease access to the tags for search and navigation in an OSM map (DO-ROAM)

Related Work

- Taginfo (<http://taginfo.openstreetmap.org/>)
- Tagwatch (<http://tagwatch.stoecker.eu/>)
- OSM wiki
(http://wiki.openstreetmap.org/wiki/Map_features)

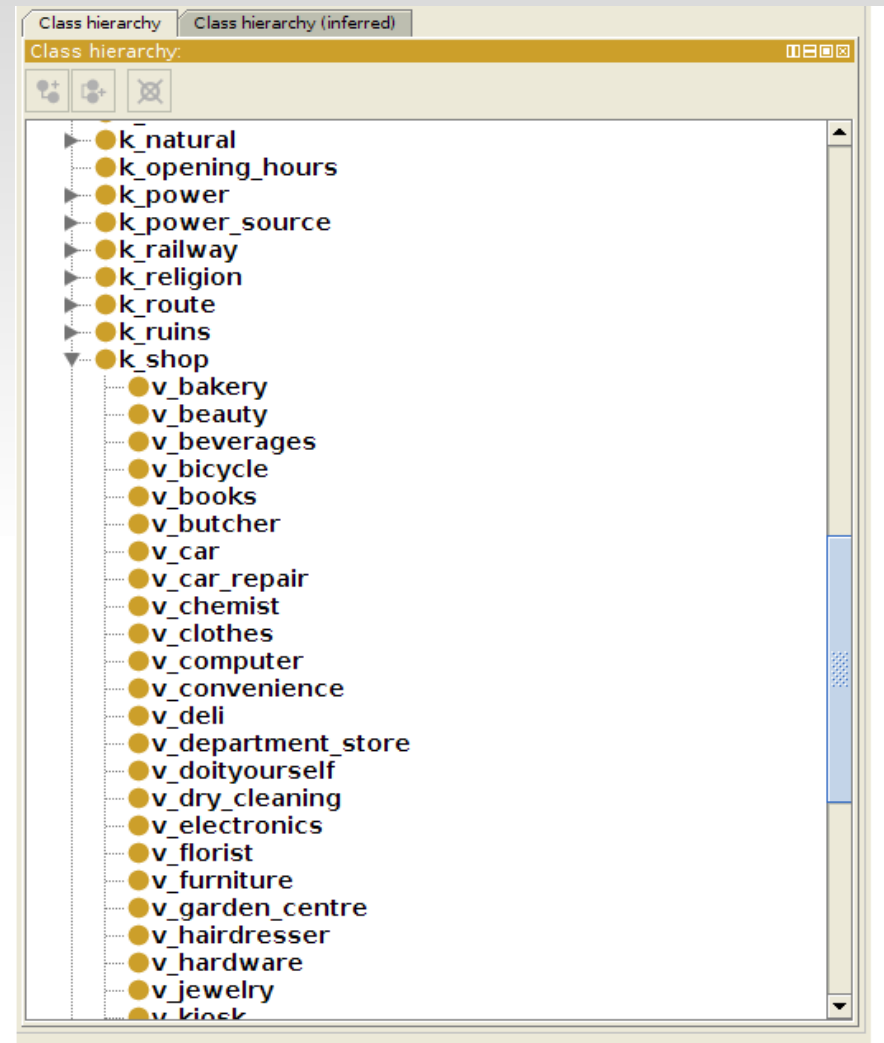
Ontologies

- Capture knowledge about some domain by describing its concepts and the relationships between them
- Wide range of applications in computer science



OSMonto

- OSM tags are of form
`< tag k = "key" v = "value">`
- Keys become superconcepts of their values
- Some tags can be used only in presence of other tags => roles
- Dynamic aspect: OSM community can introduce new tags or modify existing ones
- Threshold for selecting a tag as relevant => errors are reduced
- <http://wiki.openstreetmap.org/wiki/>



DO-ROAM

- focus on **usability**
- **evolving** set of activities organized as an ontology related to OSMonto
- **linguistic analysis** (synonyms for now) for free text search
- **OpenStreetMap** data: open source, constantly developing, sometimes better than Google Maps; partly language-agnostic

The screenshot displays the DO-ROAM web application interface. At the top left, the title "DO-ROAM" is visible. Below it is a search bar with the placeholder text "Where am I?" and a "Go" button. A small text box provides examples: "examples: 'Alkmaar', 'Regent Street, Cambridge', 'CB2 5AQ', or 'post offices near Lünen' more examples...".

On the left side, there is a vertical list of filters with checkboxes and expandable categories (indicated by chevrons):

- ☐ all Activities
- ☐ Leisure >
- ☐ Landscape >
- ☐ Health >
- ☐ ChargingStation
- ☐ CivilService >
- ☐ Cosmetics >
- ☐ Finance >
- ☐ PublicTransport >
- ☐ Shopping >
- ☐ Tourism >
- ☐ Parking
- ☐ PlacesOfWorship >
- ☐ Education >
- ☐ Gastronomy >

Below the filters is a search input field, a "Restrict to time:" section with dropdowns for "Mon", "20", and "30", and a "Duration:" section with dropdowns for "1" and "30".

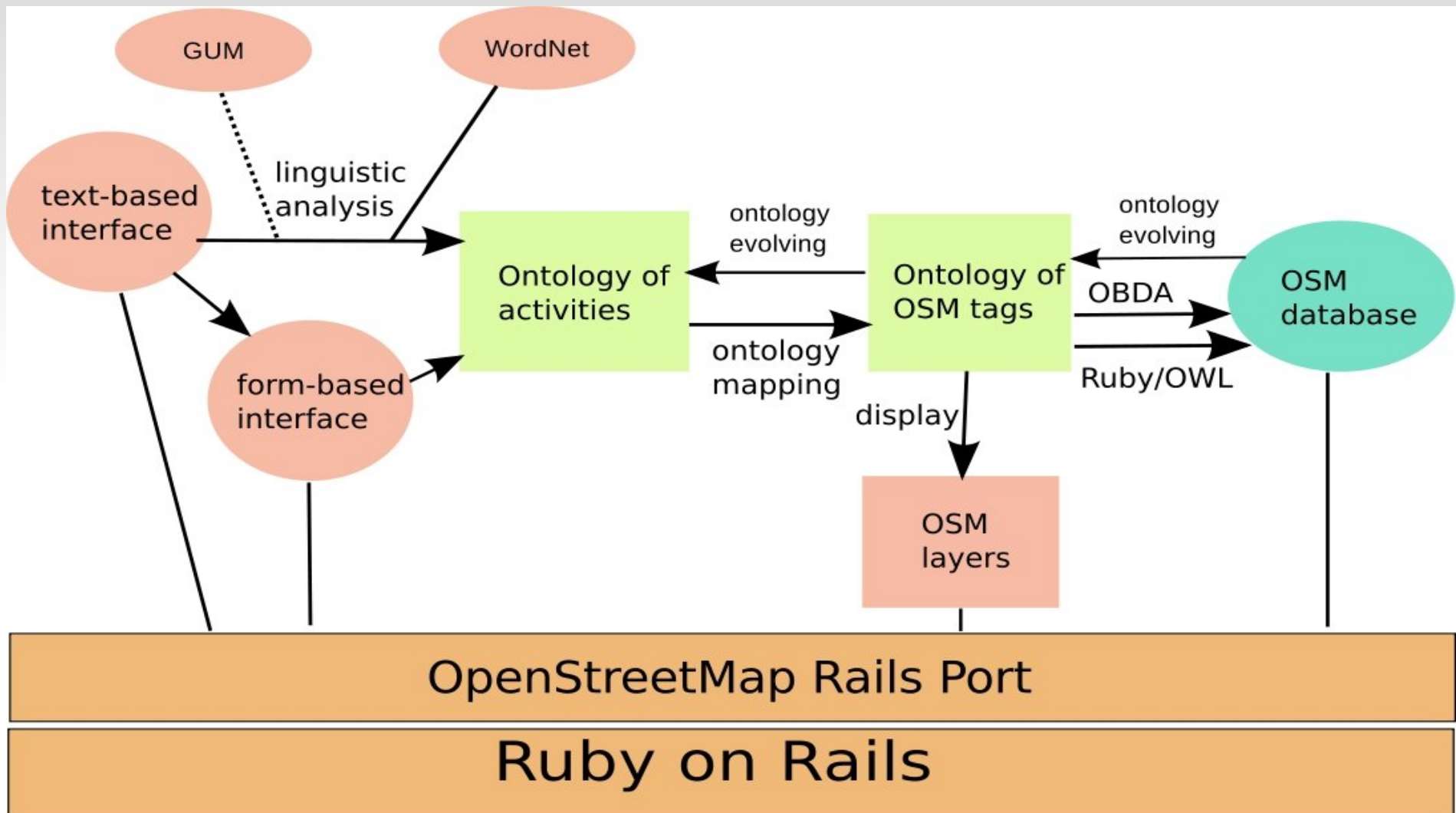
On the right side, a map of Bremen is shown. A pop-up menu is open over the map, listing various accommodation types with checkboxes:

- ☐ Acomodation >
- ☐ InformationService >
- ☐ PlacesOfInterest >
- ☐ Guestroom
- ☐ Hostels
- ☐ Hotels
- ☐ YouthHostel
- ☐ Camping
- ☐ Motels

At the bottom of the map, there is a scale bar showing "1000 m" and "2000 ft".

Logos for "Universität Bremen" and "Deutsches Forschungszentrum für Künstliche Intelligenz GmbH" are visible at the bottom of the interface.

General Tool Architecture



Route Planning System



Conclusions and future work

- OSMonto provides structure for OSM tags and means of adding additional semantics to them
- Reference for the OSM community and possible insights on how to extend and structure OSM tags
- Extend ontology with more roles and concepts to allow to infer missing information using OBDA (restaurant with chinese name or in China Town -> Chinese cuisine)