

Ontological representation of social individuals

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Example: FOAF Ontology

- The Friend-of-a-Friend (FOAF) ontology is an OWL based format
- It represents personal information and an individual's social network
- FOAF is highly expressive as it use powerful OWL vocabulary to characterize individuals.
- FOAF can extend basic ontology with domain-specific knowledge about identity (as it use RDF/OWL representation)

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- FOAF is an experimentation for Semantic Web technology
- FOAF vocabulary describes personal attribute information (FOAF Profile) found on homepages (name, email address, projects, interests etc.)
- FOAF profiles also contains a description of individual's friends using same vocabulary used to describe individual himself

Drawbacks of centralized service

- Centralized social network services is used by Friendster, Orkut, LinkedIn etc.
- Centralized one has no. of drawbacks:
 - Under database owner control and protect data or not upto him
 - Profile stored cant be exported in legally – so can't be transferred to other system
 - Do not allow users to control the information they provide

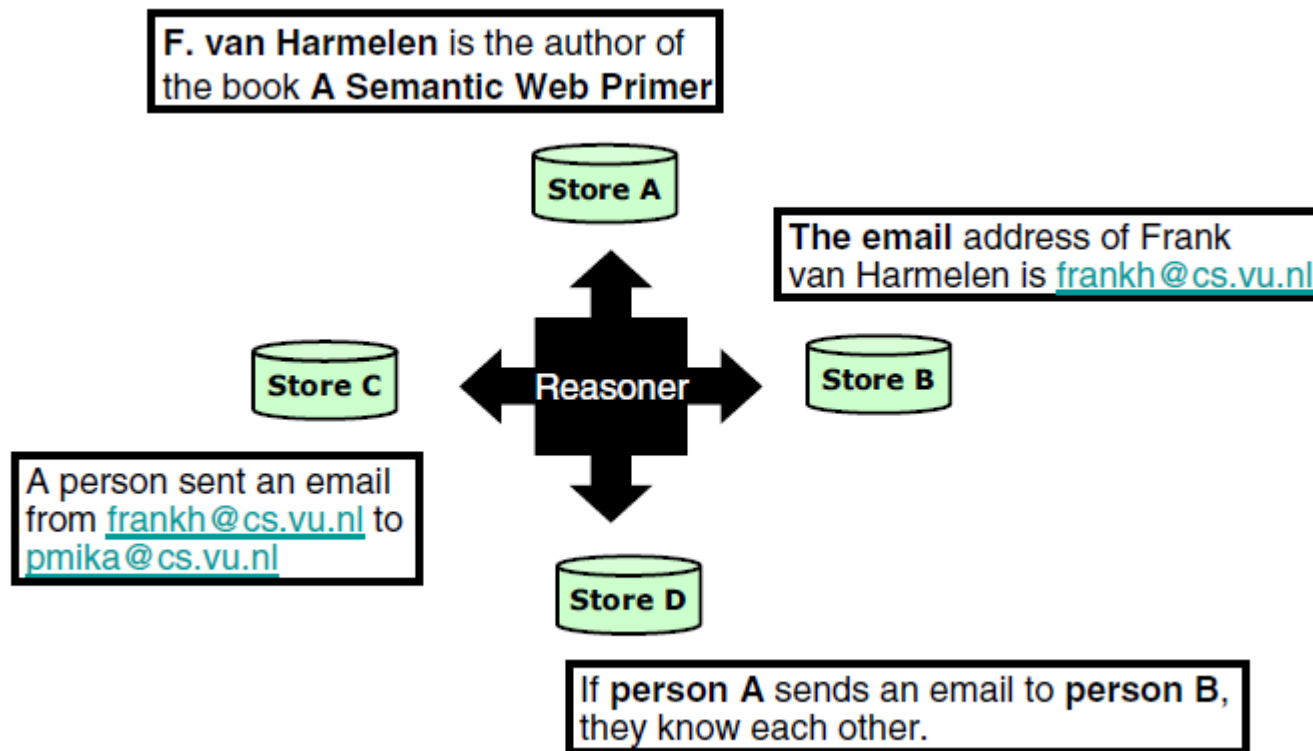
FOAF merits

- Centralized problems are addressed in FOAF using Semantic Web technology
- FOAF profiles created & controlled by individual user and shared in a distributed fashion
- Link individual profiles using *rdfs:seeAlso* mechanism
- Related profiles discovered by crawling the FOAF links by RDF crawlers
- FOAF links to members of same web site (black-holes)

Identification in FOAF

- Distributed nature of FOAF data wanted ontology designer to address the issues of identification and aggregation
- Identify person using characteristic property (email, homepage etc.)
- Done in RDF, Creating blank node (unidentified resource, existential quantifier) with identifying details
- Ex. There exists a person A who knows person B

Example of Identity Reasoning



Reasoner can conclude “Peter Mika knows the author of the book *A Semantic Web Primer*”

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- OWL uses Inverse Functional Properties (IFP) - properties whose value uniquely identifies a single object
- If 2 resources have same value for an inverse-functional property then they must denote the same object
- Ex. Email address is IFP as every email id belongs to a single person
- Name is not IFP as many person can have same name

FOAF stable Ontology

- FOAF owners keep vocabulary and semantics stable
- When meaning of terms changes it is generalized
- Ex. *foaf:knows* (*foaf:knowsWell* and *foaf:friend* are removed due to overlap meaning)
- Description of *foaf:schoolHomepage* extended to describe university homepages

Adoption in FOAF

- For adoption, terms are extended than added to vocabulary
- In RDF, create subclass and subproperty to add new properties to existing class
- Ex. In DOAP (Description of open source project) & Burst (publication in openacademia) FOAF is adopted to represent maintainers and authors

FOAF vocabulary for relationships

- FOAF has rich ontology for characterizing individuals but poor for describing relationship
- single *foaf:knows* relationship has no ontological restrictions – intentionally made
- RDF/OWL language extendability allows to define more precise notions of relationships.

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- *Ex. of extendability using subclass & sub-property*
- *example:supervises between a example:Teacher and a example:Student*
- *where supervises is a subPropertyOf “knows” and Teacher and Student are subclasses of foaf:Person*