SOCIAL WEB & SEMANTIC WEB

Serwah Sabetghadam
July 2012

Outline

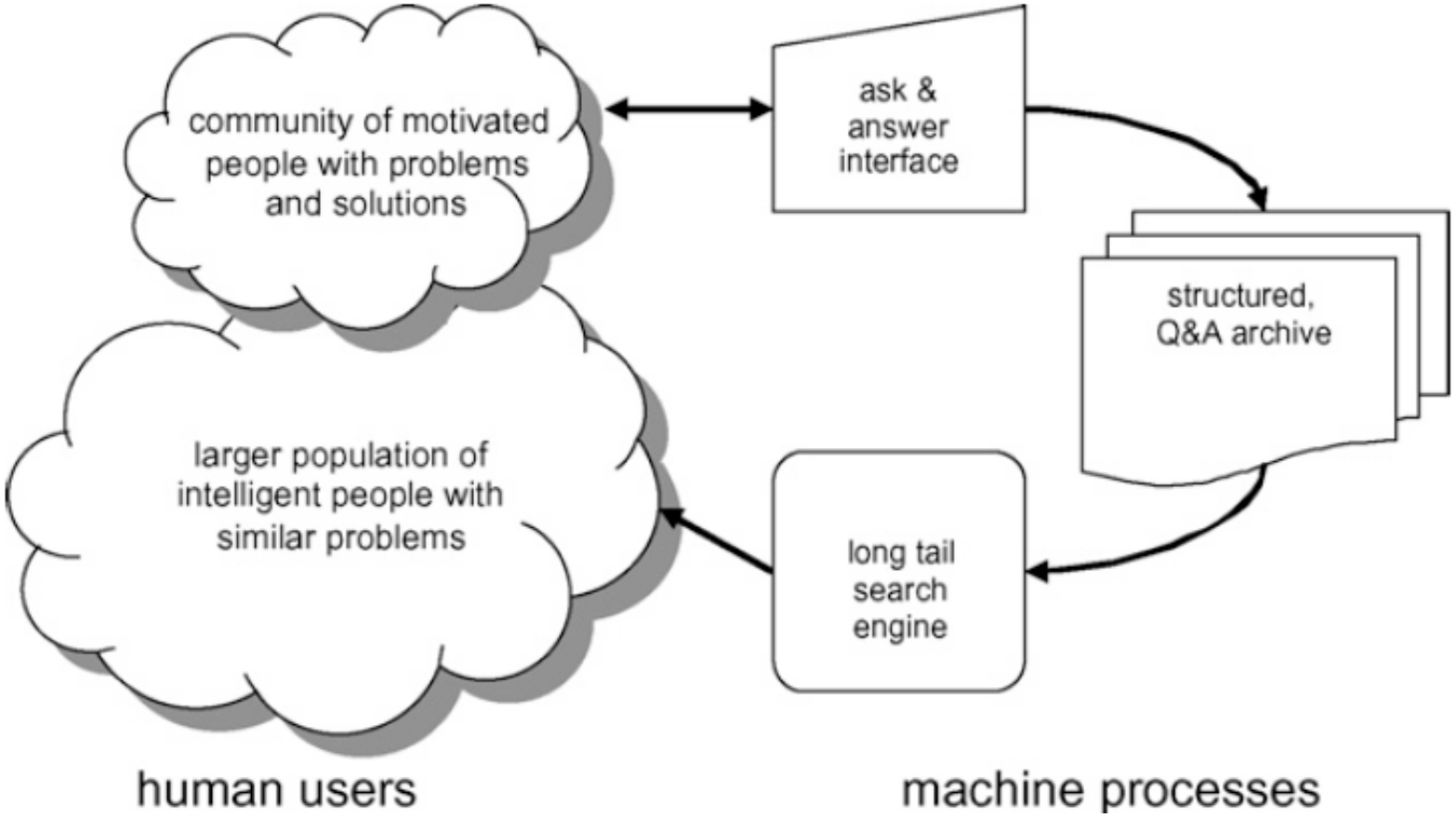
- Social Web
- Semantic Web
- Frameworks
- Standards
- Open projects
- Challenges & Conclusion

Where Social Web meets Semantic Web

- Social Web
  - Ecosystem of participation
  - Value is created by aggregation of many individual user contribution
- Semantic Web
  - Ecosystem of data
  - Value is created by integration of structured data from many sources
- How create a new level of value
  - Both rich with human participation & powered by well-structured inforamtion

Tom Gruber, “Collective knowledge systems: Where the social Web meets the Semantic Web”, Elsevier, 2008

An Example of a Collective Knowledge System



Common characteristics of social web systems

- User-generated content
- Human-machine synergy
- Increasing returns with scale

If we wish to move from collected intelligence to collective intelligence we also add:

- **Emergent knowledge**
  - Computation & Inference over the collected information, leading to answers

The role of technology

- Role of technology in collecting knowledge
  - Capture
    - Cheap sensors, memory, microprocessors
  - Store
    - Cheap disk storage
  - Distribute
    - Internet connecting the planet
  - Communicate
    - Asynchronous collaboration systems (email, wikis, blogs)
  - Collective knowledge: Create new value from the collected data

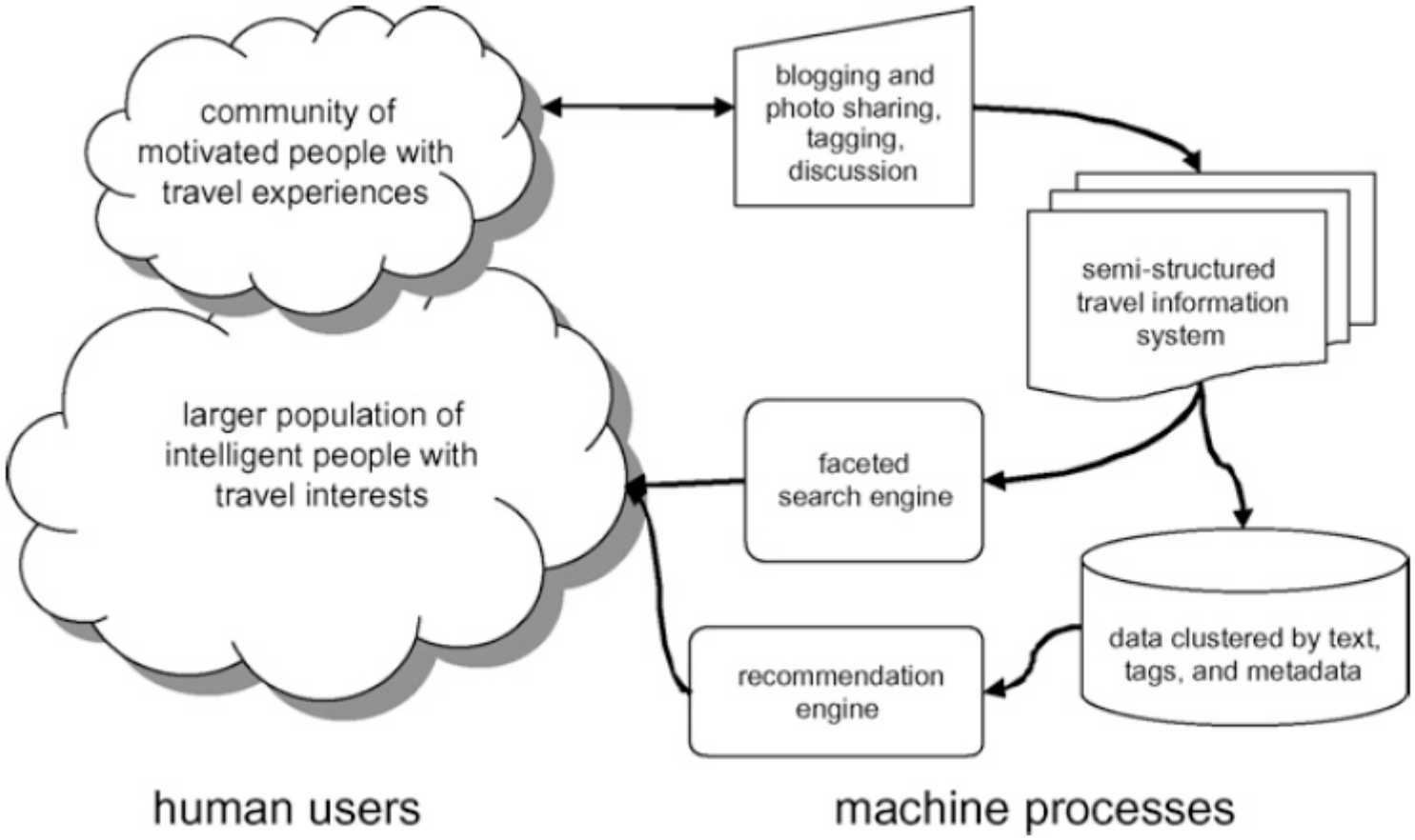
The role of semantic web

- Main role of Semantic Web (SW)
  - Create value from data
  - There are few ways to go beyond summarizing/storing data
- Two major ways SW can change the game
  - Add value to user data
    - Adding structured data
    - Standards and infrastructure enabling data sharing across independent, heterogonous social web applications

Enabling data sharing across applications

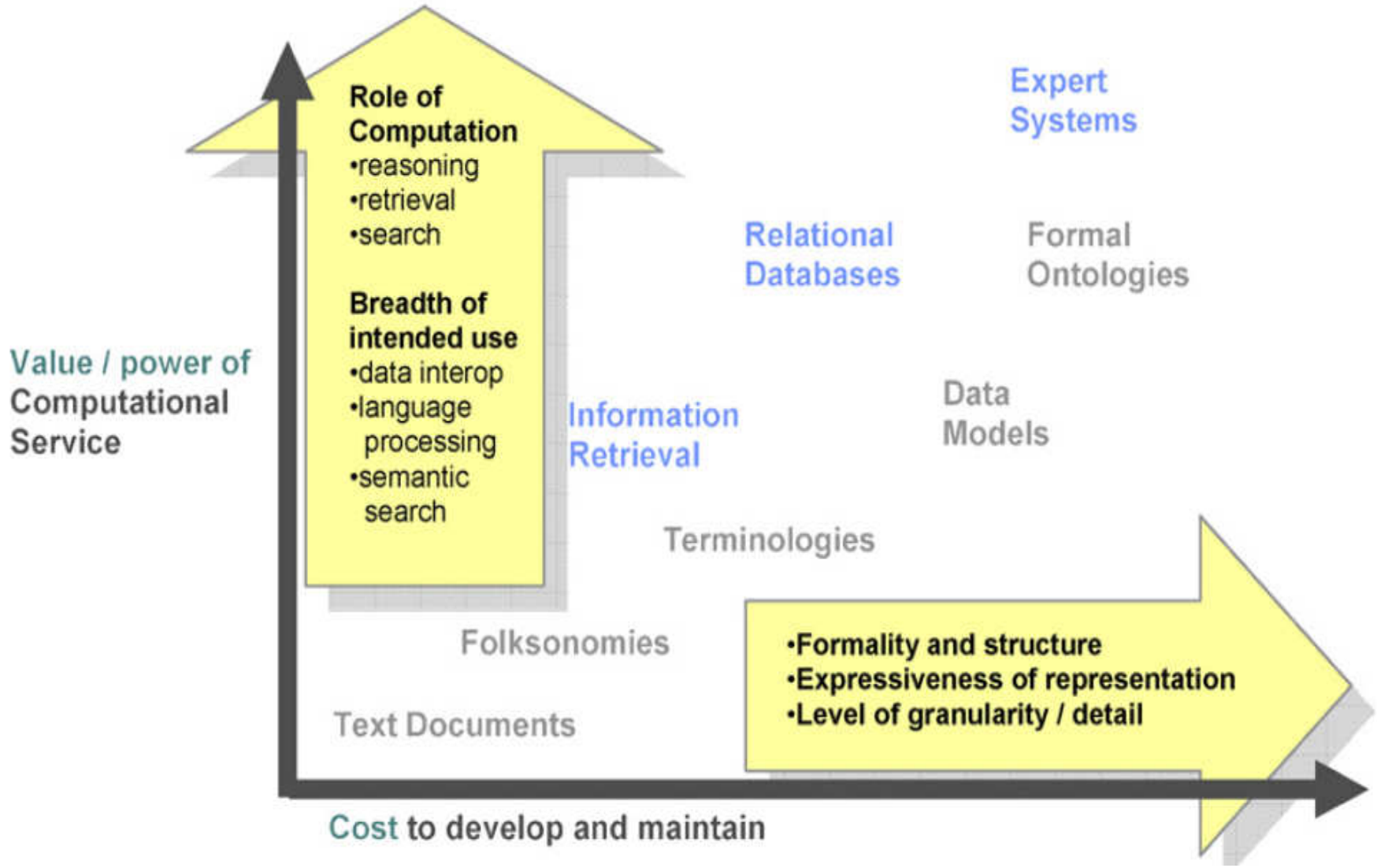
- SW has the machinery to help address interoperability of data from multiple resources
- RDF allows the encoding of structured data be reference to well-maintained namespaces
  - Ties data that is exposed/exchanged to the common vocabularies from the ontologies
  - Allows entities mentioned to be identified unambiguously within a namespace
    - Refere to Paris in 100 pages, all tied to the same entity

Example: Collective knowledge system for travel



Properties of this system

- User generated content
  - Content from real people reporting on their experience
- Human-machine synergy
  - Travel planners can ask many people when they decide where to go
- Increasing returns with scale
  - More people report on their travel experience, the system can offer better coverage of more exotic locations
- Emergent knowledge
  - Offering recommendation for planning a trip based on unsupervied learning from the texts of travel blogs

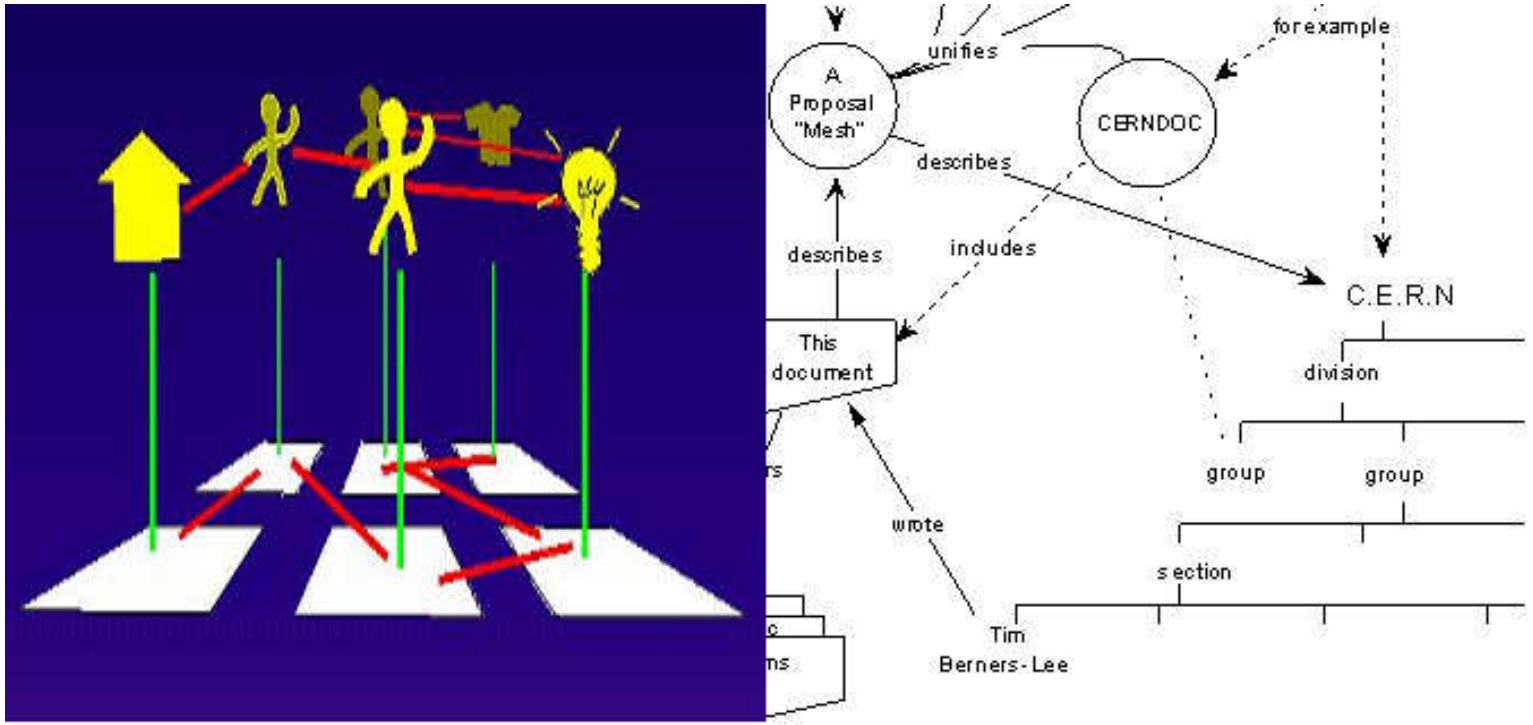

Role of Computation
•reasoning
•retrieval
•search
Breadth of intended use
•data interop
•language processing
•semantic search
Value / power of Computational Service
Expert Systems
Relational Databases
Formal Ontologies
Information Retrieval
Data Models
Terminologies
Folksonomies
Text Documents
•Formality and structure
•Expressiveness of representation
•Level of granularity / detail
Cost to develop and maintain

What we need in order to have this combination?

- Social web frameworks
- Profile Standards
- Social media
- Privacy
- Social networking projects

How is social web in recent years?

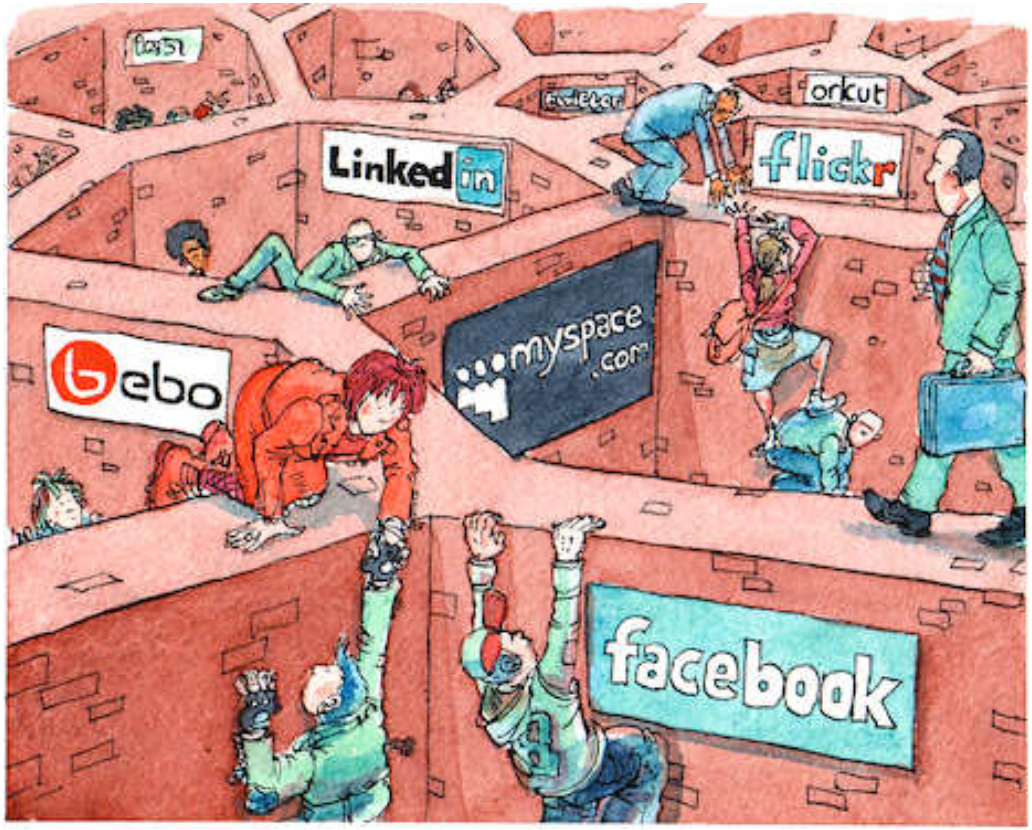
- State of the Social Web in 2010



State of the Social Web in 2010

- Indymedia 1999 pioneering user-generated content management
- Rash of social networking sites
  - Friendster 2002, LinkedIn 2003,Orkut 2004, Facebook 2004, Twitter 2007…
- Users like their profile data be portable
- Contradiction between privacy and portability
- Emergence of privacy controls

Social Web Frameworks



Walled Gardens by David Simonds

Universal, distributed & open Social Web Architecture is needed

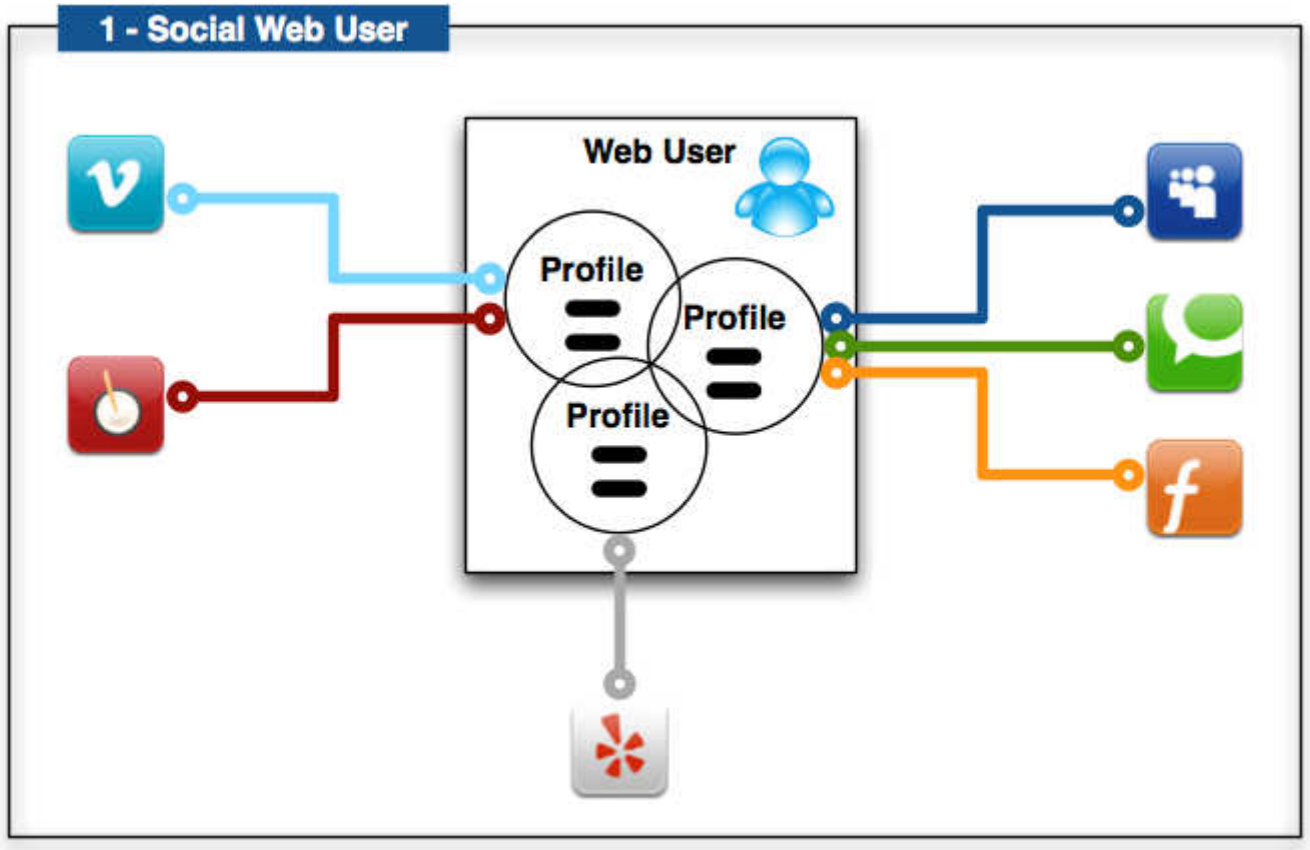
- Lack of this architecture and problems
  - Portability
  - Identity
  - Linkability
  - Privacy

Social web users & Profiles

- How have multiple profiles and share common attributes
- Single

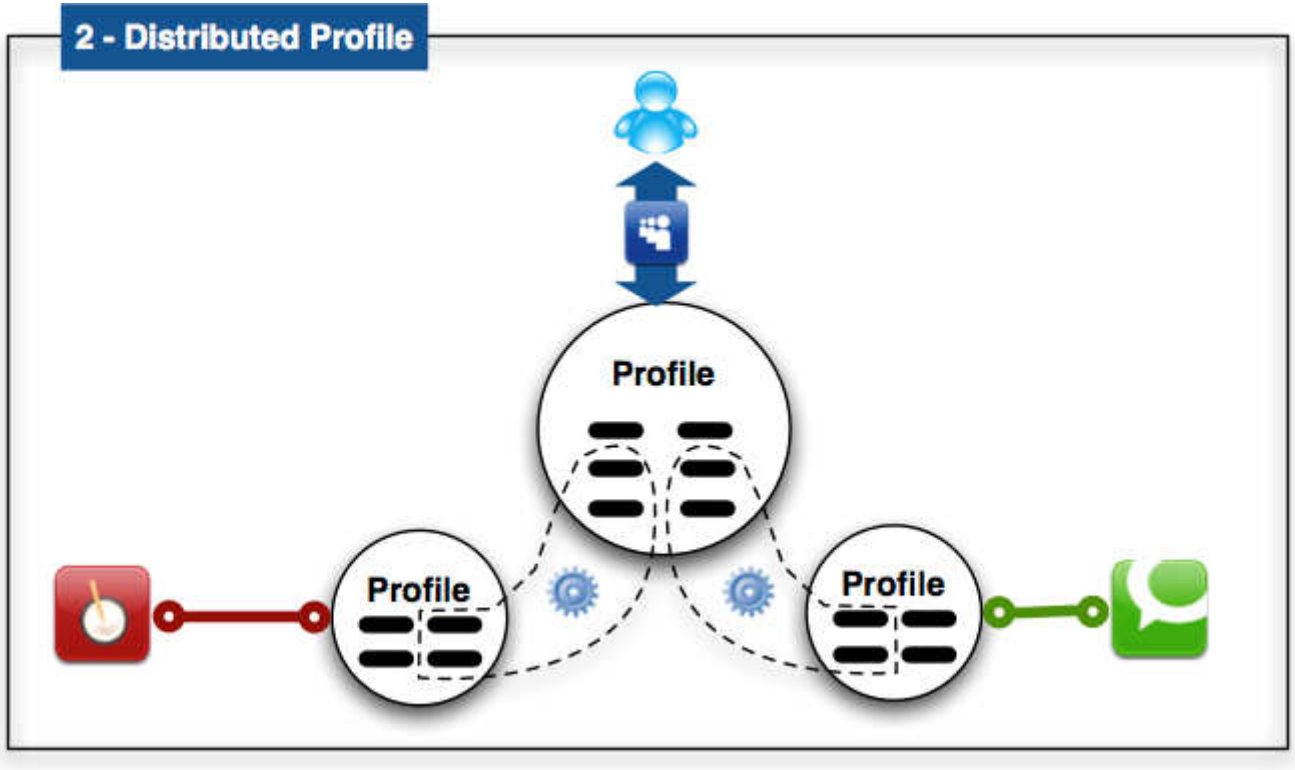
Distributed Soci

Graph



Multiple distributed Social Graph

- A profile is associated with one or more social platforms



Framework characteristics

- Any framework should lead to a core set of functionalities that allow developers interrelate their existing technologies
  - E-Commerce framework
  - Anlyctic frameworks
- But **any** distributed social networking another Walled Garden **unless** based on **open standards**

Profile Standards

- What data format
- Is the profile extendable
- Available standards
  - XRD: XML file to contain capabilities of an identity provider
  - Vcard:type of info found on business cards
  - FAOF: first project using standards to describe social networks
    - Vast majority of data is in FOAF is exported from social networks sites
    - Used to describe both attributes of a user and their social network

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Profile Standards

- Portable Contacts
- OpenSocial: collection of Javascript APIs allow Google Gadgets access profile data

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Social Media

- Any resource that is used in a social relationship with a user
- Blog posts, audio, photos, videos, other resources
- Problem: users can not trust social media
  - More usage nowadays
  - Whether or not trustworthy socail media
  - If it includes monetary fine or not
- Is it possible to safely drag and drop social media across multiple platforms

Social Media Standards

- **Tagging**: powerful method for categorising contents on the web e.g. Flicker, Youtube
- **Microformats**: embed semantic in ordinary HTML by re-using established HTML attrib (rel, class)
- **Open Graph Protocol**
  - Metadata vocabulary for describing documents
  - Serialized as RDFa in meta element of HTML pages

Social Media Standards

- **Payswarm:** supprts web-based payments ranging from cent to dollars
- **Semantic Web:** a language for describing machine-readable data in an extensible manner
  - **Every piece of info:** URI & can be linked to other pieces of information using RDF

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Privacy

- Users should be aware of & ideally in control if whether information about them on social web is public or not
- Policy-centric view: permissions, obligations, other data-handling techniques to control
- Standards
  - **P3P, POWDER**
  - **AIR**: policy language represented in Turtle
  - **Rule Interchange Format**: a format to exchange rules between rule engines oprating on XML and RDF data

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Decentralized Social Networking Projects

- OpenSocialWeb
- Appleseed
- SMOB
  - Semantic Microblogging: a framework for distributewd microblogging based on semantic web technologies

Main Challeng Today: Combining Social Media and the Semantic Web

- Social media should be portable
- Should allow licensing & usage information to move within social data that is cut and pasted across media
- WWW success reason: built on standards that are given to the world on a royalty-free basis
  - The possibility of implementation on different underlying systems
- Golden opportunity for Semantic Web
- **But**, Semantic Web has some problems

Semantic Web Problems

1. RDF has no standard way of inter-operating with Atom & Json
2. The core architecture of RDF does not support expression of rules in RDF
3. Practical issue with URIs: impossible to locate URIs and vocabularies for kinds of social media that user want to find

Next Step!

- Still usres find it easier to use closed platforms
- Next step:To Have a standard-based, open and privacy-aware Social Web

Thanks, Question?