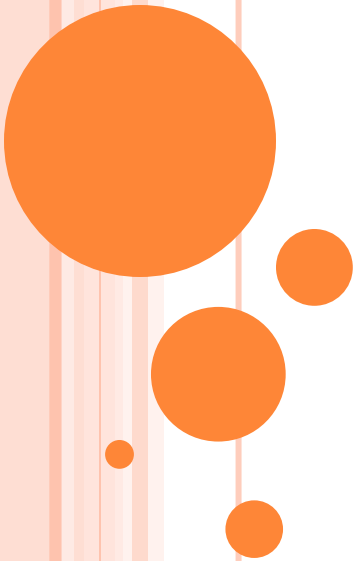

Introduction to Semantic Web and Social Networks

Module 1

Web

- The World Wide Web (WWW), commonly known as the Web, is an information system where documents and other web resources are identified by Uniform Resource Locators (URLs), which may be interlinked by hyperlinks, and are accessible over the Internet.

- Web 1.0- Web of Documents
  - The first iteration of the web represents the web 1.0, which is the “read-only web.”
- Web 2.0- Web of Applications
  - It is the “read-write” web.
  - It’s the ability to contribute content and interact with other web users.
  - It has dramatically changed the landscape of the web in a short time.

Limitations of current web

- Keyword based
- Time Consuming
- Consistent terminology
- Failure to remove outdated information
- Missing of intelligence

How to improve current Web?

- Increasing automatic linking among data
- Increasing recall and precision in search
- Increasing automation in data integration
- Increasing automation in the service lifecycle
- Adding semantics to data and services in the

- In each of these cases semantic technology would drastically improve the computer's ability to give more appropriate answers

Emergence of Semantic Web

- Tim Berners-Lee envisioned a *read/write Web* (the very first browser also worked as an HTML editor), the Web was a read-only medium for a majority of users. (1989 - 2005)
- The web of the 1990s was much like the combination of a phone book and the yellow pages and despite the *connecting power of hyperlinks* it instilled little sense of community among its users.

- This passive attitude toward the Web was broken by a series of changes in usage patterns and technology that are now referred to as Web 2.0.
- The set of *innovations in the architecture and usage patterns* of the Web led to an entirely different role of the online world as a *platform for intense communication and social interaction*.
- The resulting increase in our capacity to obtain information and social support online can be quantified.

- The first wave of *socialization on the Web was due to the appearance of blogs, wikis* and other forms of web-based communication and collaboration.
- Blogs and wikis attracted mass popularity from around 2003 .
- What they have in common is that they both significantly *lower the requirements for adding content to the Web*: editing blogs and wikis did not require any knowledge of HTML any more.

- Blogs and wikis allowed individuals and groups to claim their personal space on the Web and fill it with content at relative ease.
- Even more importantly, despite that weblogs have been first assessed as purely personal publishing.
- Nowadays the blogosphere is widely recognized as a densely interconnected social network through which news, ideas and influences travel rapidly as bloggers reference and reflect on each other's postings.

- The first online social networks (also referred to as social networking services) entered the field at the same time as blogging and wikis started to take off.
- In 2003, the first-mover *Friendster25* attracted over five million registered users in the span of a few months , which was followed by Google and Microsoft starting or announcing similar services.
- Although these sites feature much of the same content that appear on personal web pages, they provide a central point of access and bring structure in the process of personal information sharing and online socialization.

- Following registration, these sites allow users to post a profile with basic information, to invite others to register and to link to the profiles of their friends.
- The system also makes it possible to visualize and browse the resulting network in order to discover friends in common, friends thought to be lost or potential new friendships based on shared interests.

- These vastly popular systems ***allow users to maintain large networks of personal and business contacts***.
- *The latest services are thus using user profiles and networks to stimulate different exchanges*: photos are shared , bookmarks are exchanged , plans and goals unite members

- The ***design and implementation*** *of Web applications* have also evolved in order to make the user experience of interacting with the Web as smooth as possible.
- In terms of design, the new websites put the emphasis on a ***clean, accessible and attractive appearance*** that interferes the least possible with the functionality of the application.
- In terms of implementation, the new web sites are relying on new ways of *applying some of the pre-existent technologies like AJAX.*

Semantic Web

- The Semantic Web is the application of advanced knowledge technologies to the Web and distributed systems in general.
- The Semantic Web is a mesh of data that are associated in such a way that they can easily be processed by machines instead of human operators.
- It can be conceived as an extended version of the existing World Wide Web, and it represents an effective means of data representation in the form of a globally linked database.

Web 2.0 + Semantic Web =Web 3.0

- Web 2.0 is often contrasted to the Semantic Web, which is a more conscious and carefully orchestrated effort on the side of the W3C to trigger a new stage of developments using semantic technologies.
- Web 2.0 mostly effects ***how users interact with the Web***, while the Semantic Web opens new ***technological opportunities for web developers in combining data and services from different sources***.

- The opportunities that arise by the combination of ideas from these two developments are…
- 1
  - In Web 2.0 users are willing to provide **content** as well as **metadata**.
  - These metadata provided by the users ***bootstrap the Semantic Web***.
  - The form articles and facts organized in tables and categories in Wikipedia, photos organized in sets according to tags in Flicker or structured information embedded into homepages and blog positioning using micro formats

- 2
  - Due to the extensive collaborations online many applications have access to significantly ***more metadata about the users***.
  - Information about the ***choices, preferences, tastes and social networks*** of users means that the new breed of applications are able to build on a much richer user profiles.

- Semantic technology can help in ***matching users with similar interests***.
- Social -semantic systems that can provide ***recommendations based on both the social network of users and their personal profiles*** are likely to outperform traditional recommender systems as well as purely network-based trust mechanisms

- 3. In terms of *technology* what the Semantic Web can offer to the Web 2.0 community is
  - A *standard infrastructure for the building creative combinations of data and services.*
  - Standard formats for *exchanging data and schema information,*
  - *support for data integration.*
  - *standard query languages and protocols for querying remote data sources*
  - provide a platform for the easy development of mashups.