

Guidelines for incentivized technology design

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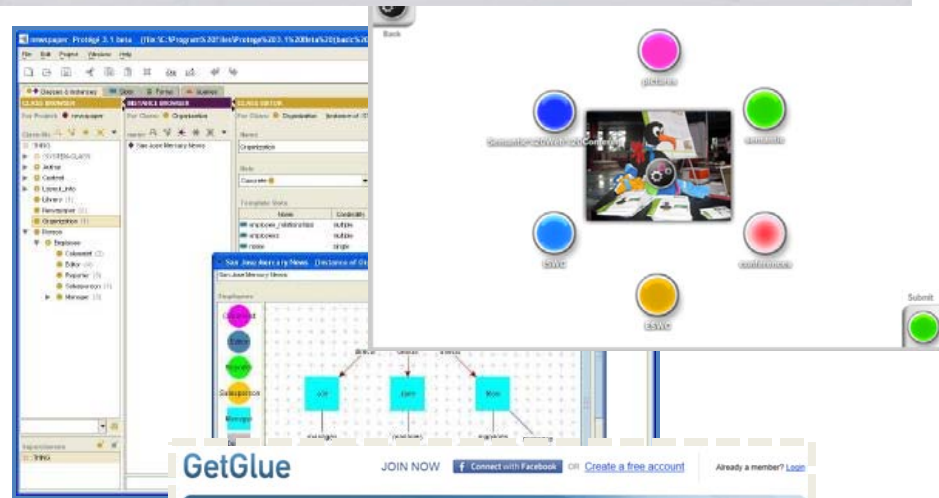
Tutorial at the ISWC2011, Bonn, Germany





What is different about semantic systems?

- It's still about the context of the actual application.
- User engagement with semantic tasks in order to
 - Ensure knowledge is relevant and up-to-date.
 - People accept the new solution and understand its benefits.
 - Avoid cold-start problems.
 - Optimize maintenance costs.





Semantic technologies-specific tasks

WolframAlpha Volunteer Central

Join us in making the world's knowledge computable

Featured Challenges

Notable Computer Help us answer queries

1. Sign up
2. Log in
3. Upload volunteer

rudi studer

Detail [List](#) [Table](#) [Timeline](#) [RDF](#)

Rudi Studer
<http://data.semanticweb.org/person/rudi-studer>



What is it? - [Submit URI](#) - [Website](#) - [Blog](#) - [APIs](#)

person [Search Watson](#)

Found 3046 semantic documents - [Search Options](#)

- <http://vistology.com/ont/bug/import/person.owl>
 - <http://vistology.com/ont/bug/import/person.owl#Person>
 - <http://vistology.com/ont/bug/import/person.owl>
 - <http://vistology.com/ont/bug/import/person.owl#personName>
- <http://vistology.com/ont/bug/similarUnused/class/person.owl>
 - <http://vistology.com/ont/bug/similarUnused/class/person.owl#Person>
 - <http://vistology.com/ont/bug/similarUnused/class/person.owl#Women>
 - <http://vistology.com/ont/bug/similarUnused/class/person.owl>
 - <http://vistology.com/ont/bug/similarUnused/class/person.owl#name>

Freebase

An entity graph of people, places and things, built by a community that loves open data.

Sort by: write activity

Featured Data: TV (35 members), Arts & Entertainment, Products & Services

Google Refine: An open source power tool to fix, discover, experiment, connect and customize your data.

What is Freebase? Learn what an entity graph is, what kind of information it contains, and why you should add your data!

Freebase for Developers: powerful queryable API, JavaScript-based hosting

Travel

The travel commons contains information about places to go, things to see, where to stay, and how to get there.

Travel destination, Tourist attraction, Accommodation, Tour operator, Accommodation type, Accommodation feature

Join Commons, Invite Others

News, Members, Schema

Today

4 weeks ago

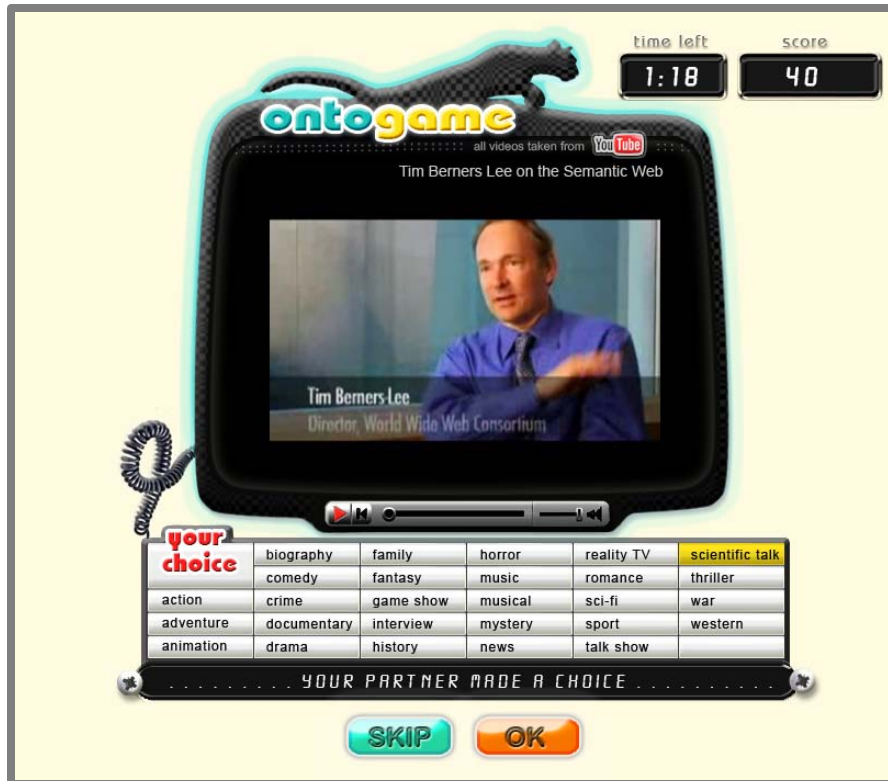
about 9 new topics added including Jantar Mantar, Taipei, Taipei 101, Aceh, Sumatra

2 months ago

about 13 new topics added including The Cameros Inn, Saint Basil's Cathedral



Design issues with GWAPs



- Consensus finding hard: too many options to choose from.
- Game play complex: too many different stages (8 questions).
- Too complex interfaces: players have to choose from widely varying Uis in different stages of the same game.
- Videos too long: for a fast game play, users should not be required to watch the complete video.
- Social factor: the interaction with the partner is too low – players do not enjoy the game because the emphasis on the social component is missing.



Design issues with GWAPs (ii)

- Approach is feasible for mainstream domains, where a (large-enough) knowledge corpus is available.
- Advertisement is important.
- Game design vs useful content.
 - Reusing well-known game paradigms.
 - Reusing game outcomes and integration in existing workflows and tools.
- But, the approach is per design less applicable because
 - Knowledge-intensive tasks that are not easily nestable.
 - Repetitive tasks → players' retention?
- Cost-benefit analysis.



Ten guidelines

- (1) Design your App **Usable**
Effectivity, Efficiency, Satisfaction
- (2) Design your App **Enjoyable**
Joy of Use, Pleasure
- (3) Design your App **for Visibility**
Identity, Belonging, Status, Reputation
- (4) Design your App **Sociable**
Community, Contribution, Interaction
- (5) Design your App **Valuable**
Personal Values, Egoism, Altruism, Collectivism
- (6) Design your App **Explorable**
Experiencing, Testing, Trying, ...
- (7) Design your App **Flexible**
Adaptability, End User Development
- (8) Design your App **in a Participatory Way**
User-centered, Needs-oriented, Practice-based
- (9) Design your App...
- (10) Design your App...



Design your app usable

- ISO 9241, 110: Dialogue Interface Design
- Seven requirements
 - Suitability for the task
 - Self descriptiveness
 - Suitability for learning
 - Controllability
 - Expectation conformity
 - Individualization
 - Error tolerance



Usability requirements

- **Suitability for the task:** The dialogue should be suitable for the user's task and skill level
- **Self-descriptiveness:** The dialogue should make it clear what the user should do next
- **Suitability for learning:** The dialogue should support learning
- **Controllability:** The user should be able to control the pace and sequence of the interaction
- **Expectation Conformity:** The dialogue should be consistent
- **Individualization:** The dialogue should be able to be customized to suit the user
- **Error tolerance:** The dialogue should be forgiving



Example: IBM 1996

IBM Corporation - Mozilla Firefox

Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

http://web.archive.org/web/19961022175210/http://www.ibm.com/ website archiv

IBM Corporation

.....

Lead stories

- [IBM announces third-quarter 1996 results](#)
- [IBM Global Campus: Transforming higher education through the power of network computing](#)
- [...more stories](#)

[Carpe Intranetum: Seize the Power of Intranets](#)

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Fertig



Example: IBM 2010

The screenshot shows the IBM Products website in a Mozilla Firefox browser window. The address bar displays 'http://www.ibm.com/products/us/en/'. The page features a navigation menu with 'Home', 'Solutions', 'Services', 'Products', 'Support & downloads', and 'My IBM'. A search bar is located in the top right. The main content area is titled 'Products' and features a large banner for the 'IBM zEnterprise System' with the tagline 'A New Dimension in Computing' and 'Smarter Systems for a Smarter Planet'. To the left of the banner is a 'Related links' section with a list of topics. To the right is a 'Shop' section with a search box and links to 'Promotions and offers', 'Clearance corner', and 'Ready to buy?'. Below the banner are several product category sections: 'Servers & Systems', 'Software', 'Products for small business', 'Products for medium business', 'Point-of-sale and self-service offerings', 'Workstations', 'Personal computers', 'PC recycling and buyback programs for business', and 'Printing systems and supplies from InfoPrint Solutions Company'. A 'Break through barriers' section features an image of a server and text about the System x3755 M3. A 'Certified Pre-owned Desktops' section features an image of a laptop and text about functionality and savings. The footer of the page contains the word 'Fertig'.



Design your app enjoyable

- Design for fun: Hedonism and emotions
(Hassenzahl 2004)
- *„Having become used to usable products, it seems inevitable that people will soon want something more: products that offer something extra; products that are not merely tools but ‘living objects’ that people can relate to; products that bring not only functional benefits but also emotional ones”* (Jordan 2002: 14)



Joy of use

- **Stimulation:** Desire for self-development.
Tools provide new opportunities for activities
- **Identification**
 - Desire for self-actualization
 - Tools offer new opportunities for self-expression and community membership
- **Evocation:** Tools allow for associations with former, enjoyable memories and feelings

(Hassenzahl 2004)

10/24/2011

www.insemtives.eu

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Pleasure design

- **Physio-pleasure:** Enjoyable sensual experiences, ergonomics, handling, beautiful design, etc
- **Socio-pleasure:** Enjoyable social interactions, tools that are socially facilitating media
- **Psycho-pleasure:** Enjoyable impressions, emotions and cognitions, memories, joy, fun, experienced success, etc
- **Ideo-pleasure:** Accordance with personal values, attitudes, and beliefs; tools allow for representation of personal identity, social status, individuality, etc



Pleasure design (2)

- **Need-Pleasures:** contextual goal-oriented pleasures fulfill direct needs/desires
- **Appreciation-Pleasures:** de-contextual emotional pleasures fulfill hedonistic desires

(Jordan 2002)



Example: White House 1996

Search White House Press Releases, Radio Addresses, Photos and Web Pages - Mozilla Firefox

Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

http://web.archive.org/web/19961227062541/http://www3.whitehouse.gov/

Search White House Press Releases... x Coca-Cola Global Soft Drinks & Be... x

[\[Text version\]](#)

[Library header]

Search White House Press Releases, Radio Addresses, Photos and Web Pages

1. To search White House Press Releases, Radio Addresses, Photos and Web Pages, enter a TERM or PHRASE in the box below which describes your topic of interest (for example, "social security benefits for retired people").

TERM/PHRASE

2. Adjust the START and END dates to limit your search to a specific timeframe. Select from the ITEMS list the number of documents to return from each, then indicate the order in which your results will appear. By "DATE" will return the most recent documents first. By "RELEVANCE" will return the most relevant documents first.

START DATE
01 19 1993

END DATE
12 27 1996

ITEMS RETURNED FROM EACH CATEGORY
10

SORT ORDER
 DATE RELEVANCE

[Footer icon]

[\[White House icon\]](#) [\[Virtual Library icon\]](#) [\[Help Desk icon\]](#)

To comment on this service: feedback@www.whitehouse.gov

Warten auf web.archive.org...



Example: White House 2010

The screenshot shows a Mozilla Firefox browser window displaying the White House website. The address bar shows <http://www.whitehouse.gov/>. The browser tabs include "Welcome to the White House" and "The White House".

The website header features the text "the WHITE HOUSE PRESIDENT BARACK OBAMA" and "THE WHITE HOUSE WASHINGTON". Navigation links include "BLOG", "PHOTOS & VIDEO", "BRIEFING ROOM", "ISSUES", "the ADMINISTRATION", "the WHITE HOUSE", and "our GOVERNMENT". There are also links for "Get Email Updates" and "Contact Us".

The main content area is titled "50 States / 50 Stories" and includes the text: "Learn what's happening in your state and hear stories from people across the country who are benefitting from the Affordable Care Act. [Visit the Map](#)".

A featured article titled "SPEAKING to AMERICA'S YOUTH" is displayed. The text reads: "The President speaks to the concerns of America's young adults in a conference call with college journalists. Read the transcript & listen to the call or learn more about his higher ed agenda." Below the text are buttons for "Learn More" and "Read the Remarks", and a pagination bar with numbers 1, 2, 3, and 4. To the right of the text is a photograph of President Obama on a telephone call.

Below the main article is a "FEATURED TOPICS" section with a sub-heading "HealthCare.gov Is Getting Even Better". The text states: "HealthCare.gov is getting even better. As of today, the site now includes price estimates for all private insurance options, allowing consumers to easily compare health insurance plans." A "Learn More" button is located below the text.

On the right side of the page, there is a "SEARCH the SITE" section with a search box containing the text "Search WhiteHouse.gov" and a "Search" button.

The browser status bar at the bottom left shows the word "Fertig".



Design your app for visibility

- **Enabling practice**, i.e., supporting practice that exists or could exist within the social group that is the intended audience of the social software system
- **Mimicking reality**, i.e., finding or creating metaphors that relate to the real world
- **Building identity**, i.e., providing the community with the mechanisms that allow for the development of an online identity
- **Actualizing self**, i.e., creating mechanisms that allow users to tap into the collective wisdom and experience and use it for their own benefit, learning process and self-actualization



Visibility requirements

- Web 2.0 design (Lazar/Preece 2002, Preece/Shneiderman 2009)
- **Reading:** issues for the attraction/motivation of end users to visit web sites and applications, to 'stay' on the web site, to come back and visit again regularly and so on
- **Contributing:** design recommendations for the attraction/motivation of end users to edit Web content, produce/generate own content, contribute to Web communities and collective repositories, etc
- **Collaborating:** issues for the attraction/motivation of end users to collaborate with others in a user community, to coordinate their contributions with other contributors and so on
- **Trust:** issues about web credibility or security



Design your app sociable

- **Registration issues:** Should people have to register? There are pros and cons: Sensitive data, privacy issues.
- **Trust and security issues:** Trust and security are important issues in any type of online community.
- **Governance issues:** Governance covers many issues from registration to moderation and democracy. The trick is to get just the right level of policies to set the community on a good course as it evolves.



Design your app valuable

- VSD is about systematically considering human values throughout the design and deployment of information and other technologies (Friedman et al. 2006)
- **Motivation for community involvement** (Batson et al. 2002)
 - Egoism, increase one's own welfare
 - Altruism, increase the welfare of another individual or individuals
 - Collectivism, increase the welfare of a group
 - Principlism uphold one or more moral principles



Value-sensitive design

- **Reputation building:** Individuals' desire to establish their reputation and to gain approval from others in the field (Oreg/Nov 2008)
- **Self-development:** The desire for self-development through learning from others in the field, receiving feedback, and enhancing one's abilities and skills (Oreg/Nov 2008)
- **Autonomy:** The freedom of independent decision making (Kuznetsov 2006)
- **Status and Recognition:** The desire for social acceptance and appreciation (Fang/Neufeld 2009)
- **Sense of ownership and control:** The desire for personal power, prosperity and control (Fang/Neufeld 2009)
- **Free software ideology:** Altruistic structure of belief, public good attitude (Fang/Neufeld 2009)



Design your app explorable

- User-experience design
- Error tolerance/undo – redo
- Try-and-error functionality
- Help, tutorials



Design your app flexible

- Design for personalization
- Design for adaptation
- Tailorability
- End-user development



Design your app in a participatory way

- Involve End Users
- Users' „cognitive maps“
- Usability Engineering
- Redesign-Cycles
- Feedback Channels



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