

Semantic Web Technologies II

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Semantic Web 2.0 II

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Übersicht

- Semantic Web
 - BT Digital Library
 - Project Halo

- Semantic Web 2.0? Web 3.0?
 - Semantic Blogging
 - OntoGame
 - Other examples

Semantic Web

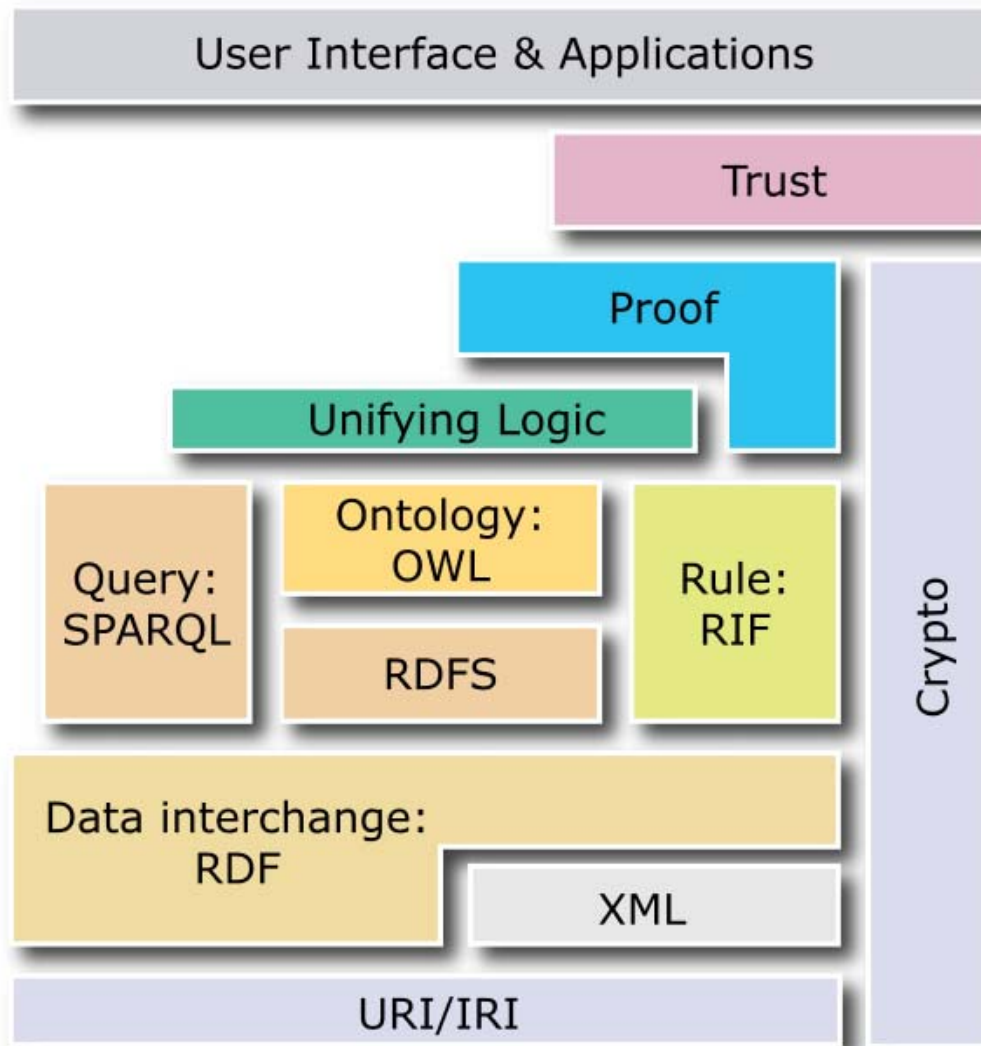
Definition Semantic Web

“The **Semantic Web** provides a common framework that allows **data** to be shared and reused across application, enterprise, and community boundaries. It is a collaborative effort led by W3C with participation from a large number of researchers and industrial partners. It is based on the Resource Description Framework.”

W3C, 2008

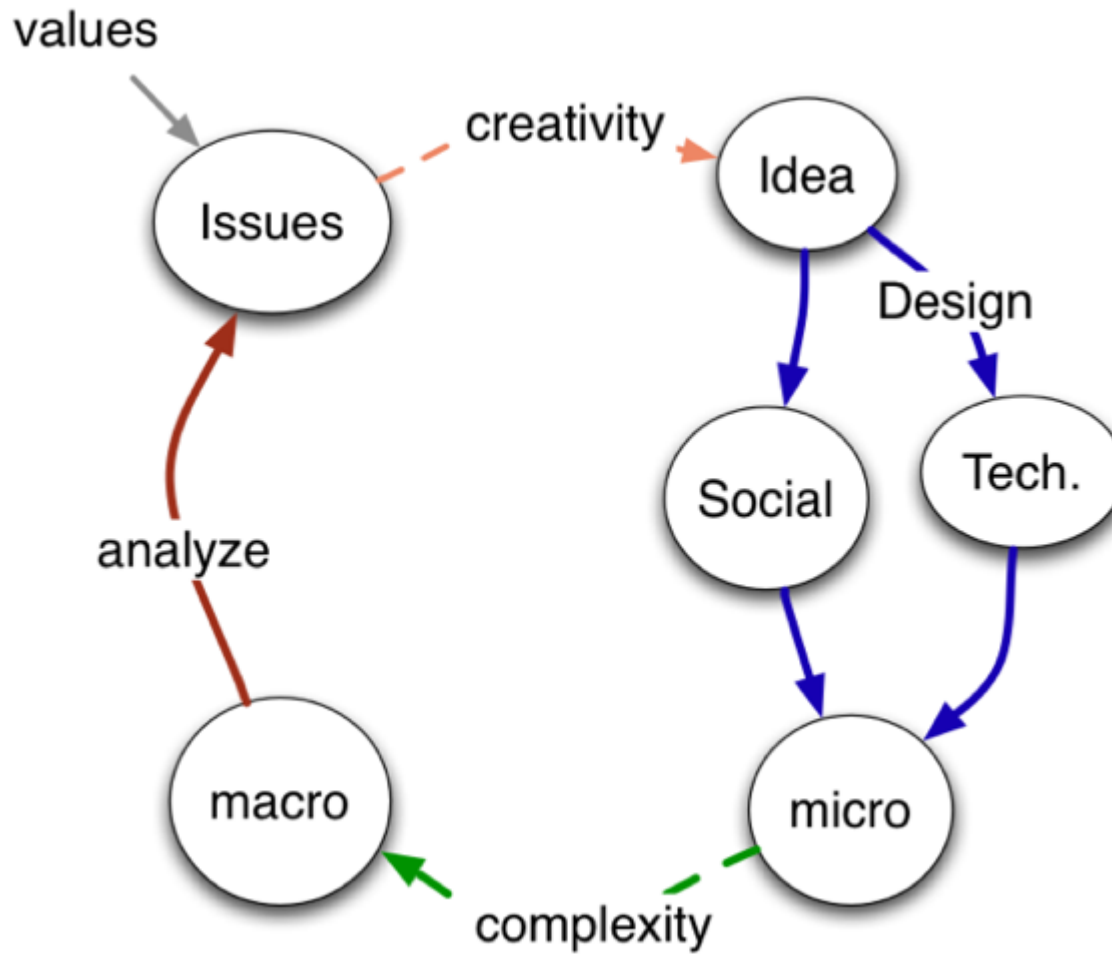
<http://www.w3.org/2001/sw/>

Current Semantic Web Layer Cake



- case studies in closed domains
- complex & comprehensive modeling
- team of knowledge engineers
- sophisticated reasoning
- unwieldy tools and obscure specifications

Web Science Cycle



Semantic Web

Example: BT Digital Library

Scenario (BT Digital Library)

Bob works as technology analyst for British Telecom. His daily work includes research on new technological trends, market developments as well as the analysis of competitors.

Bob's company maintains a digital library that gives access to a repository of internal surveys and analysis documents. The company also has a license with an academic research database which is accessed via a separate interface.

Depending on his work context, Bob uses the topic hierarchies, the full-text search functionalities or metadata search facilities provided by the two libraries to get access to the relevant data.

However, Bob is often annoyed by the differing topic hierarchies and metadata schemes used by the two libraries as well as by a cumbersome syntax for metadata queries.

Heterogeneity of content

Heterogeneity of search facilities

Heterogeneity of data models (schemas)

Interface design challenge

Why Ontology-Based Digital Libraries?

Immediate support for unified structured queries against metadata and documents

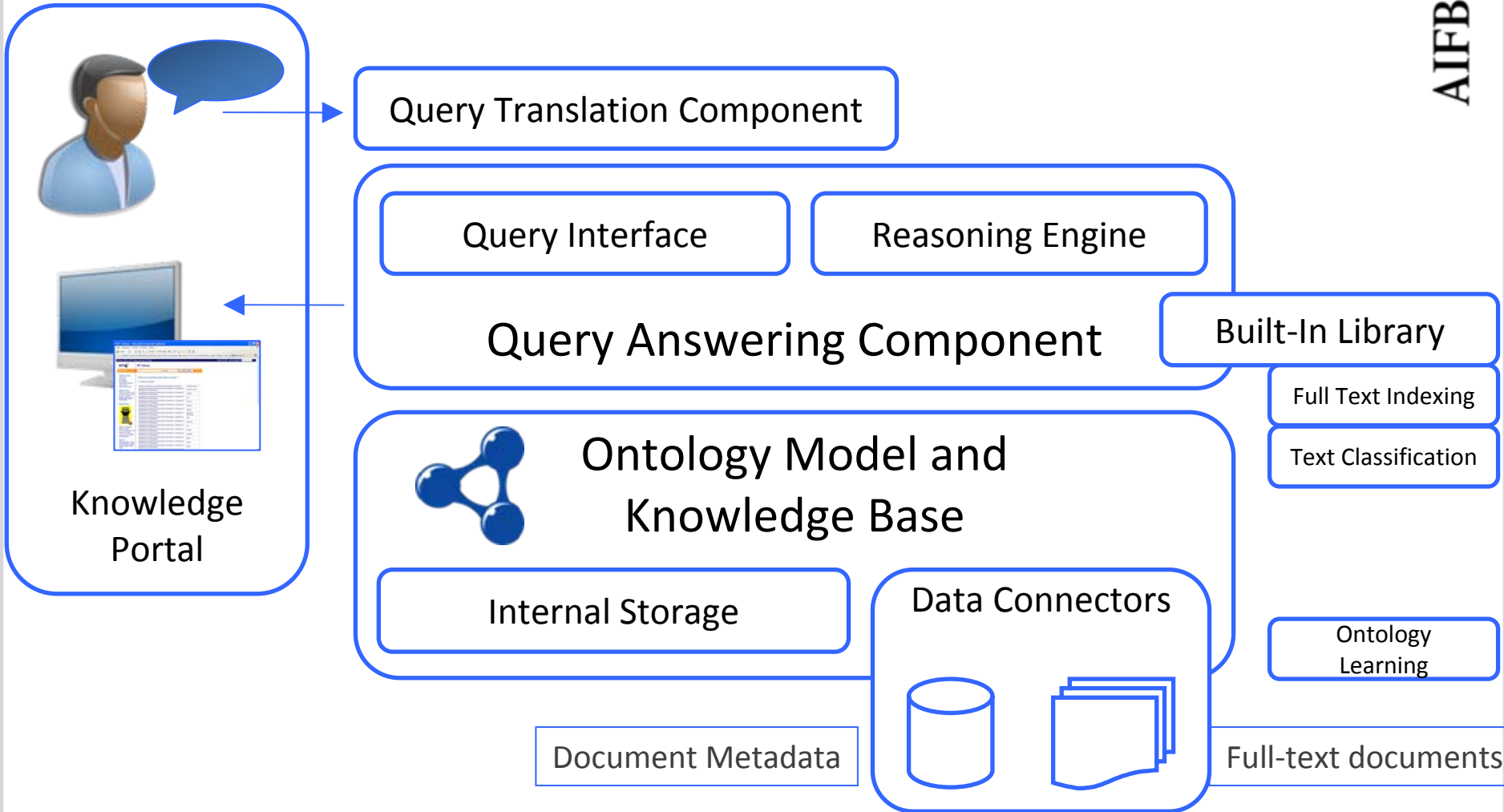
Easy integration of heterogeneous knowledge sources

Easy integration with knowledge elicitation methods from unstructured content

Mapping to natural language queries

Generic, flexible and modular architecture


Conceptual Architecture



Ontology Model and Knowledge Base

- Ontology (PROTON top level ontology)
 - global conceptual model
 - aligned with established schemas (e.g. Dublin Core)
- Knowledge base of the digital library
 - actual bibliographical metadata, topic hierarchies, and full-text document content
 - data aligned with global ontology via mapping axioms

| | | |
|---------------------|------------------|---------------------|
| swrc: Book | rdfs: subclassOf | protont: Document |
| expl : document5127 | rdf: type | swrc: InProceedings |
| expl : document5127 | protont: title | "Digital Libraries" |



- Query answering against knowledge base (SPARQL)

```
SELECT ?x WHERE {
  ?x rdf:type <http://proton.semanticweb.org/2005/04/protonu#Article> .
  ?x <http://proton.semanticweb.org/2005/04/protont#hasSubject> ?y .
  ?y rdfs:label ?z .
  match(?z, "Intellectual Capital")
}
```

- Presentation layer for underlying content
- Interaction via standard interfaces
 - keyword-search, topic browsers etc.
- Interaction via natural language queries
 - converts natural language queries into SPARQL
- Translation step comprises
 - deep parsing of the questions
 - roughly, linguistic frames become query constraints
 - lexicon describes possible realizations of elements

"Who wrote books on 'digital libraries'?"
"Which journal articles were written by 'Tim Berners-Lee' (and for which journal)?"

Scenario Revisited



“Which journal articles were written by 'Tim Berners-Lee' for which journal?”



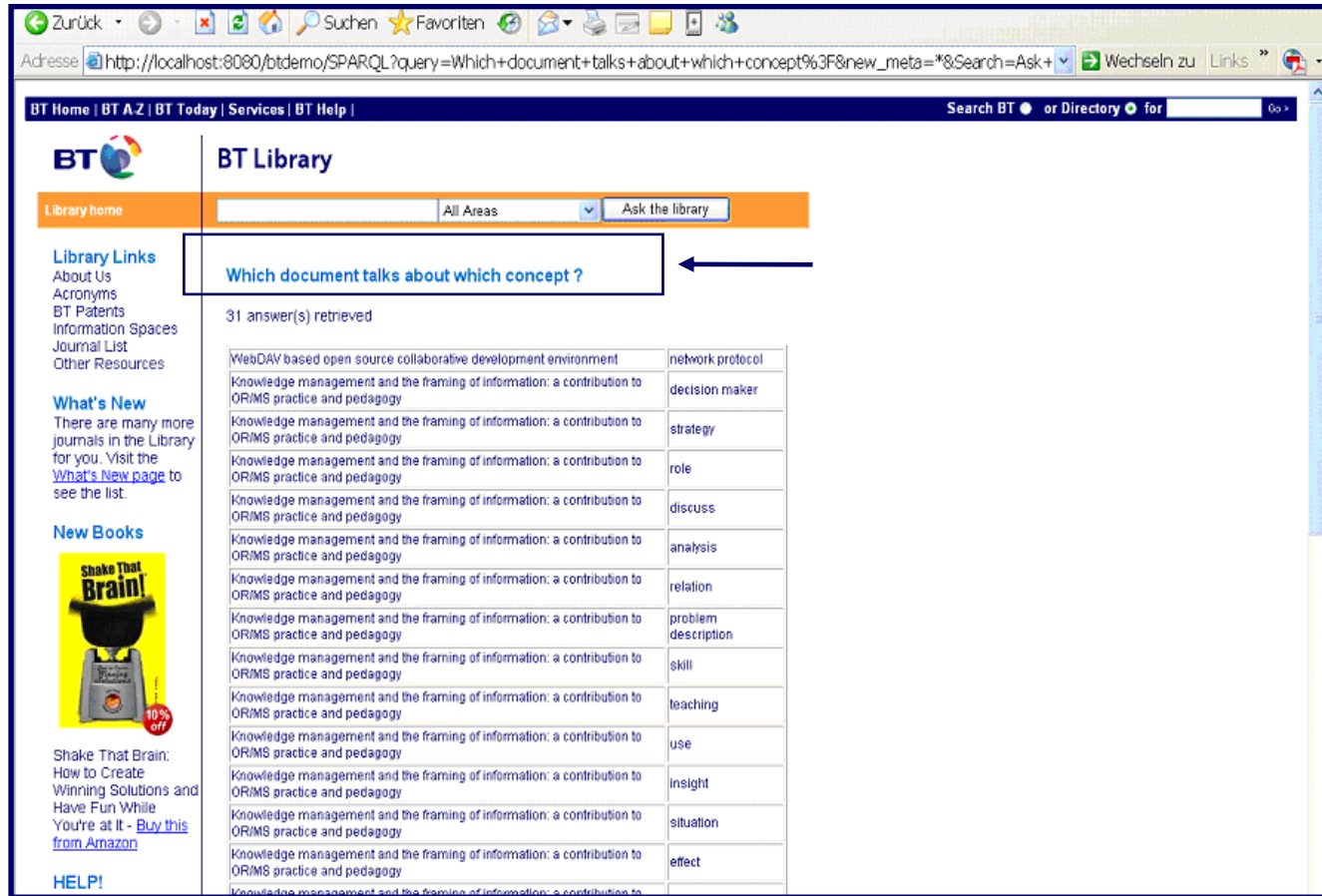
```
PREFIX protonu: <http://proton.semanticweb.org/2005/04/protonu#>  
PREFIX protont: <http://proton.semanticweb.org/2005/04/protont#>
```

```
SELECT ?x ?z WHERE {  
  ?x rdf:type protonu:Article .  
  ?x protont:documentAuthor ?y .  
  ?y rdfs:label ?ys .  
  match(?ys, "Tim Berners Lee") .  
  ?z rdf:type protonu:Journal .  
  ?x protonu:publishedWithin ?z  
}
```



| | |
|----------------------------------|---------------------------|
| "The Semantic Web" | "The Scientific American" |
| "WWW: Past, Present, and Future" | "IEEE Computer" |
| [...] | [...] |

The BT Digital Library



The screenshot shows a web browser window displaying the BT Digital Library interface. The address bar shows a SPARQL query: `http://localhost:8080/btdemo/SPARQL?query=Which+document+talks+about+which+concept%3F&new_meta=*&Search=Ask+`. The page header includes navigation links like "BT Home", "BT A-Z", "BT Today", "Services", and "BT Help". A search bar contains the query "Which document talks about which concept?". Below the search bar, a box highlights the query text, with an arrow pointing to it. The search results section shows "31 answer(s) retrieved" and a table of results. The table has two columns: the first column contains the document title, and the second column contains the concept. The document titles are all "Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy". The concepts listed are: network protocol, decision maker, strategy, role, discuss, analysis, relation, problem description, skill, teaching, use, insight, situation, and effect.

| Document Title | Concept |
|--|---------------------|
| WebDAV based open source collaborative development environment | network protocol |
| Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy | decision maker |
| Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy | strategy |
| Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy | role |
| Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy | discuss |
| Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy | analysis |
| Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy | relation |
| Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy | problem description |
| Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy | skill |
| Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy | teaching |
| Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy | use |
| Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy | insight |
| Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy | situation |
| Knowledge management and the framing of information: a contribution to ORIMS practice and pedagogy | effect |

Screenshot from BT Digital Library

Semantic Web

Example: Project Halo

Project Halo

- “Building a digital Aristotle”
- A system that...
 - Encompasses much of the world’s knowledge
 - Reasons over that knowledge
 - Answers novel scientific questions
 - Explains these answers
 - Is quite ambitious
- Multi-stage effort:
 - Start with a specific science (Chemistry)
 - Challenge with several teams
 - Answer AP-style questions
- Complete information at <http://www.projecthalo.com/>

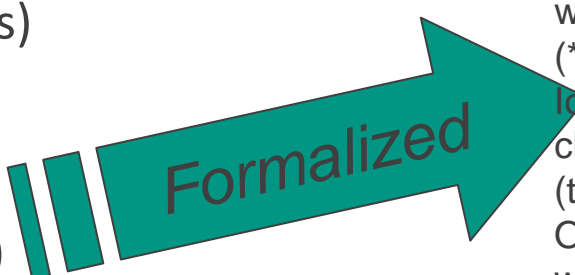


Formalizing questions

Example

Which of the following compounds will produce a gas when HCl is added to the solid compound? HCl is a strong acid producing a yellow-green colored gas above the acid solution.

- Ba(OH)₂ (s)
- CaCO₃ (s)
- CuSO₄ (s)
- Na₃PO₄ (s)
- NaCl (s)

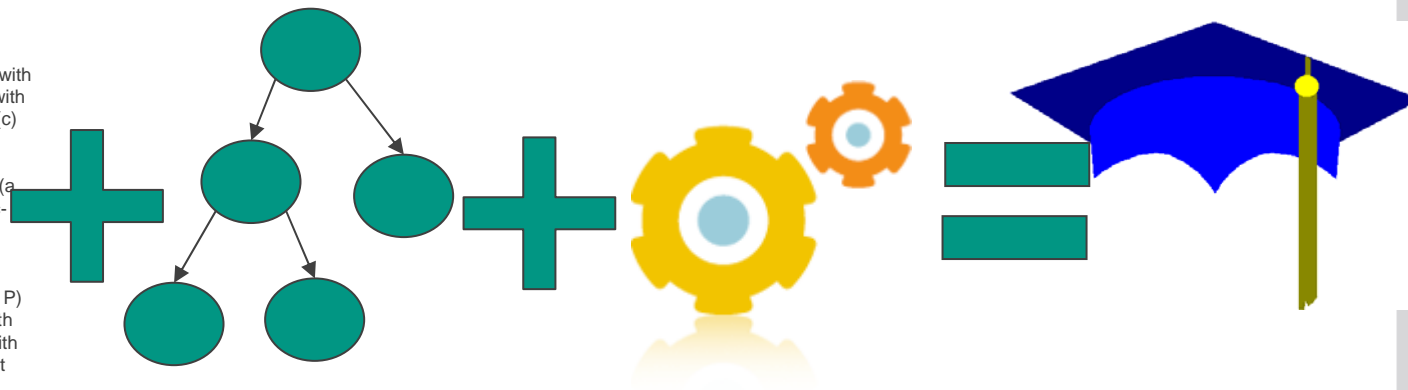


```
(every QF1 has (context ((:pair "(a)
Ba(OH)2(s)" (a Reaction with (raw-material
((a HCl-Substance) (a Ba_OH_2-Substance
with (state ((a State-Value with (value
(*solid)))))))))) (:pair "(b) CaCO3(s)" (a
Reaction with (raw-material ((a HCl-
Substance) (a CaCO3-Substance with (state
((a State-Value with (value (*solid))))))))))
(:pair "(c) CuSO4(s)" (a Reaction with (raw-
material ((a HCl-Substance) (a CuSO4-
Substance with (state ((a State-Value with
(value (*solid)))))))))) (:pair "(d) Na3PO4(s)"
(a Reaction with (raw-material ((a HCl-
Substance) (a Ionic-Compound-Substance
with (state ((a State-Value with (value
(*solid)))) (has-basic-structural-unit ((a
Ionic-Compound with (nested-atomic-
chemical-formula ((a Chemical-Formula with
(term ((:seq (:pair 3 Na) (:pair 1 P) (:pair 4
O)))))))))))))) (:pair "(e) NaCl(s)" (a Reaction
with (raw-material ((a HCl-Substance) (a
NaCl-Substance with (state ((a State-Value
with (value *solid)))))))))) (output ((forall
(the context of Self) where (oneof2 (the
result of (the2 of It)) where ((the value of
(the state of It2)) = *gas)) (the1 of It) (comm
[QF1-output-1] Self))))))
```

Background knowledge

- Formalizing questions is “just” question understanding
- Needs a huge amount of background knowledge = ontology
- And a reasoner to answer the question using the ontology

```
(every QF1 has (context ((:pair "(a) Ba(OH)2(s)" (a
Reaction with (raw-material ((a HCl-Substance) (a
Ba_OH_2-Substance with (state ((a State-Value with
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Value with (value (*solid)))))))))) (:pair "(d) Na3PO4(s)" (a
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Compound-Substance with (state ((a State-Value with
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Compound with (nested-atomic-chemical-formula ((a
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(raw-material ((a HCl-Substance) (a NaCl-Substance with
(state ((a State-Value with (value (*solid)))))))))) (output
((forall (the context of Self) where (oneof2 (the result of
(the2 of It) where ((the value of (the state of It2)) = *gas))
(the1 of It) (comm [QF1-output-1] Self))))))
```



Evaluation

- Correctness
 - Was pretty high
- Justification
 - Considerably lower than correctness
- Speed
 - Was critical, but all systems faired well



- Results:
 - Human mean average in this test is AP-2.82
 - Project Halo scored an AP-3 – they would have passed!

Result browser

- <http://www.projecthalo.com/halotempl.asp?cid=2>

QUESTION CHOOSER

MC1 Which of the following compounds will produce a gas when HCl is added to the solid compound? HCl is a strong acid producing a yellow-green colored gas above the acid solution.

MC2 When lithium metal is reacted with nitrogen gas, under proper conditions, the product is:

MC3 Sodium azide is used in air bags to rapidly produce gas to inflate the bag. The products of the decomposition reaction are:

MC4 When calcium carbonate is heated it decomposes forming:

Calcium carbonate reacts with acids to produce gas

MC5 The most likely products for the reaction of NH₃ with oxygen are:

Oxygen is reactive with many chemical compounds while nitrogen gas is very unreactive.

MC6 Which solution has the highest conductivity?

MC7 Which of the following is a non-electrolyte?

MC8 Which of the following combinations would produce a precipitate?

MC9 A solution of nickel nitrate and

RESULTS BROWSER

BROWSE QUESTIONS: << PREV | NEXT >>

QUESTION MC 1 Which of the following compounds will produce a gas when HCl is added to the solid compound? HCl is a strong acid producing a yellow-green colored gas above the acid solution.

a. Ba(OH)₂ (s)
b. CaCO₃ (s)
c. CuSO₄ (s)
d. Na₃PO₄(s)
e. NaCl(s)

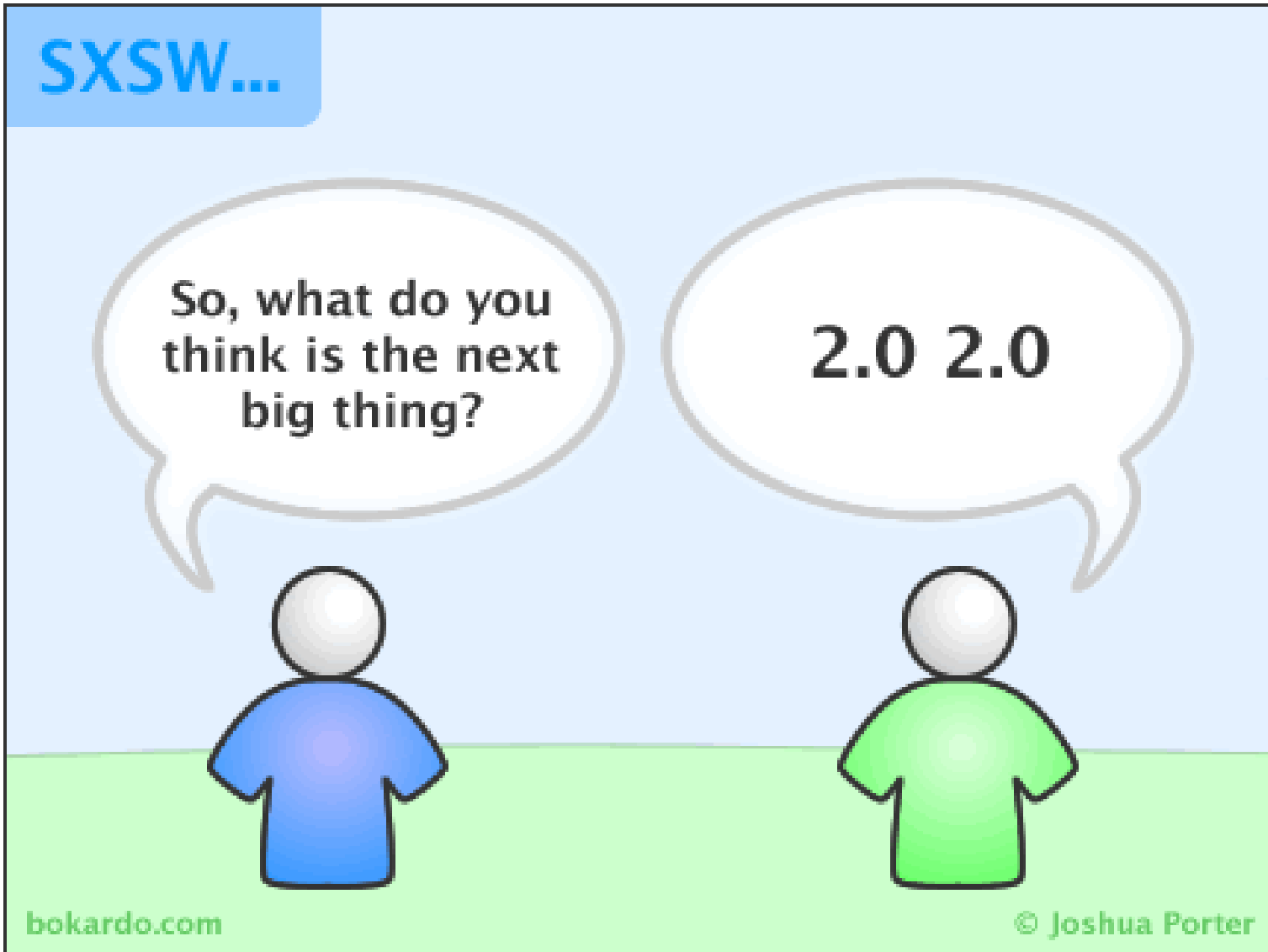
CORRECT ANSWER
(b) CaCO₃ (s)
HIDE ANSWER

RESULTS DETAIL

SCORING MATRIX

| TEAMS | ENCODING | SME I GRADES | | | SME II GRADES | | | SME III GRADES | | |
|-----------|----------|--------------|---------|------|---------------|-------|------|----------------|-------|------|
| | | ANSWER | JUST. | VIEW | ANSWER | JUST. | VIEW | ANSWER | JUST. | VIEW |
| CYCORP | | 0/1.0 | 0/1.0 | | 0/1.0 | 0/1.0 | | 0/1.0 | 0/1.0 | |
| ONTOPRISE | | 1/1.0 | 0/1.0 | | 1/1.0 | 0/1.0 | | 1/1.0 | 0/1.0 | |
| SRI | | 1/1.0 | 0.5/1.0 | | 1/1.0 | 1/1.0 | | 1/1.0 | 0/1.0 | |

Semantic Web 2.0



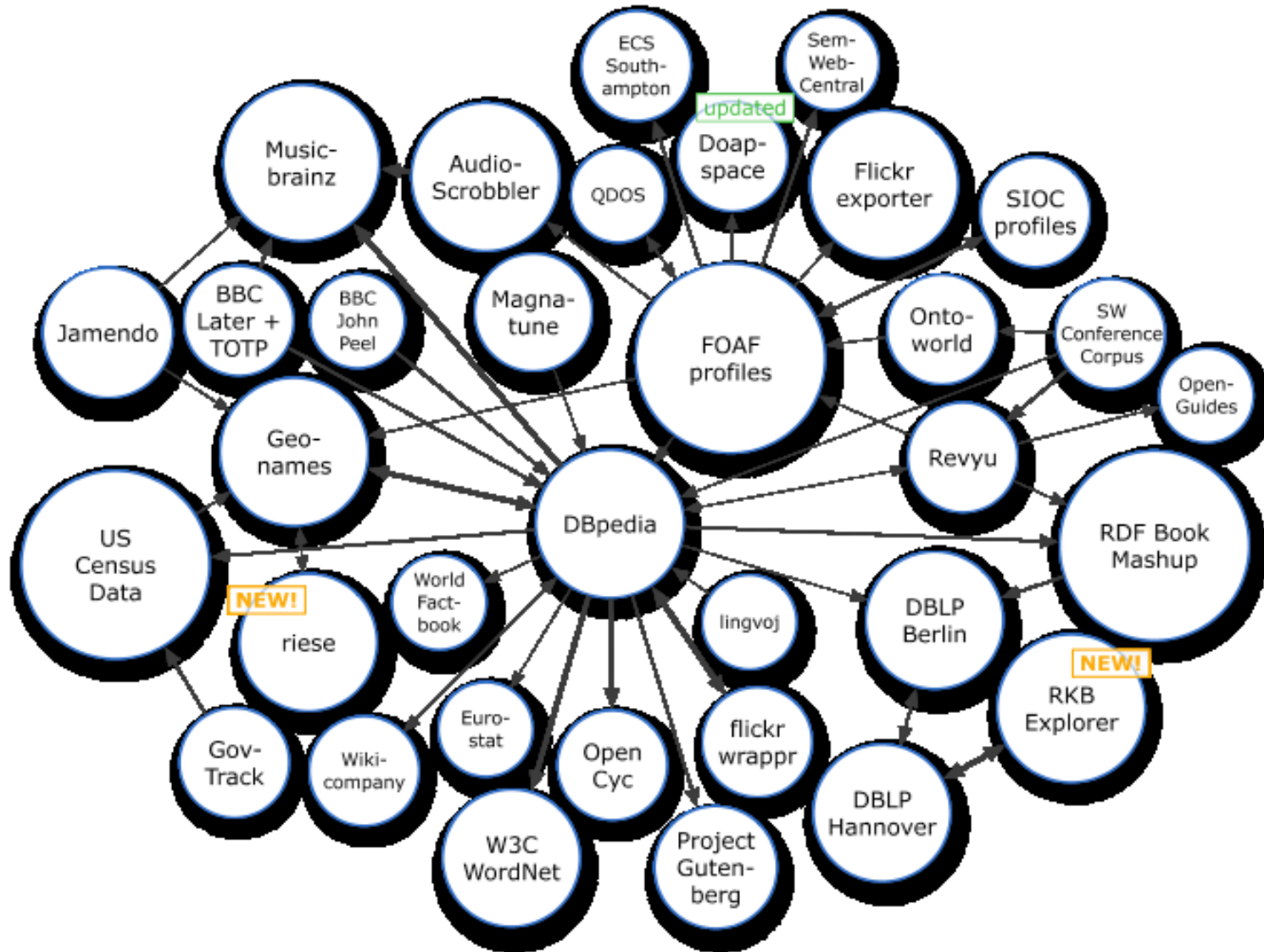
Semantic Web + Web 2.0 = Web 3.0?

| | Web 2.0 | Web 3.0 |
|--------------|--|--|
| Tagging | <ul style="list-style-type: none"> ▪ annotieren mit ambigen Stichwörtern ▪ Singular/Plural-Problem ▪ Synonyme ▪ Keinerlei Intelligenz | <ul style="list-style-type: none"> ▪ annotieren mit eindeutigen Stichwörtern ▪ Inferenz (Tag „Hund“ folgert Tag „Tier“) |
| Mashups | <ul style="list-style-type: none"> ▪ Mashups vorab von Hand programmiert | <ul style="list-style-type: none"> ▪ Spontan durch End-Nutzer (siehe Piggybank) |
| Suche | <ul style="list-style-type: none"> ▪ Stichwortsuche oder Tag-Suche <i>findet</i> Dokumente | <ul style="list-style-type: none"> ▪ Strukturierte Suche kombiniert Daten und <i>erzeugt</i> Dokumente |
| Zeithorizont | <ul style="list-style-type: none"> ▪ 2004 - 2008 | <ul style="list-style-type: none"> ▪ 2008 – 2012 |

Semantic Web of Data

- A World Wide Web (of data)
- Bottom-up, user-centred approach
- “A little semantics goes a long way”

Linked Data



■ Creation

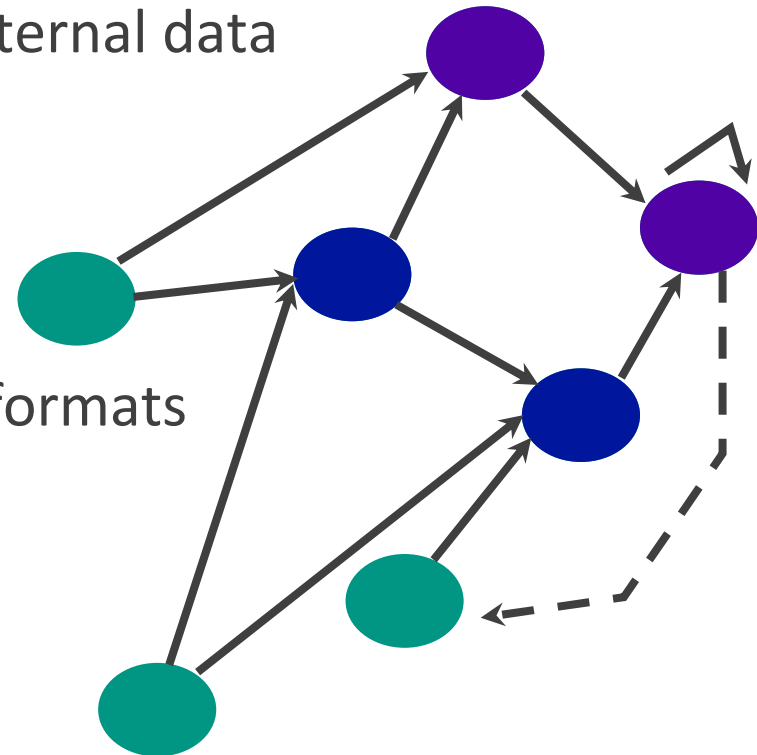
- expose application-internal data
- tags

■ Exchange

- aggregators
- other data, e.g microformats
- data reconciliation

■ Reuse

- mashups



Semantic Web Application

- Nicht notwendig: RDF Backend
 - Implementierung ist irrelevant
 - Kann aber auch RDF-basiert sein – Joost
- Wichtig: Schnittstellen nach außen
 - RDF
 - SPARQL
 - Datenaustausch
- Nicht sein sondern schein

Semantic Web 2.0

Idea: Semantic Blogging

Chrissie's Blog



- loves to blog about movies she's seen for her friends
- “typical blogger”
 - blogging for 3 years
 - knows some HTML and CSS
 - can subscribe to RSS feeds
 - no knowledge of Semantic Web

Everything pink - Chrissies blog

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Pirates of the Caribbean 3

June 21st, 2007

I just went with [Till](#) into the last part of the Pirates of the Caribbean, where our heroes (the adoringly cute [Orlando Bloom](#) and Keira Knightly reprise their roles) go to the end of the world to save the one and only Captain Jack Sparrow ([Johnny Depp!](#) xOxOx!) from the claws of the Kraken. And guess what - Jack Sparrows daddy has a special appearance, played by old Rolling Stone Keith Richards! Weeeeha!

Best movie of the year, until know, without a question! Tons of fun, and colorful action.

no comments yet – [post your comment](#) - [backtrack](#)

Chrissie's blog workflow



- create new entry
 - enter title, write text, annotate with few tags like genre
- publish
 - entry saved in blog database
 - entry displayed on front page, archived, added to RSS feeds

Chrissie's **Smooov** blog workflow



- **configure Smooov to show certain info**
- create new entry
 - **specify writing movie review**, enter title, write text, **identify movie**, annotate with few tags
- publish
 - entry saved in blog database
 - **Smooov processes entry**
 - entry displayed on front page, archived, added to RSS feeds

Everything pink - Chrissies blog

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Director [George Verbinski](#)
 Running time 126 minutes
 Starring [Johnny Depp](#), [Keira Knightley](#), [Bill Nighy](#), [Orlando Bloom](#), [Geoffrey Rush](#)
 Info from [Wikipedia](#)

no comments yet – [post your comment](#) - [backtrack](#)

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See Pirates of the Caribbean 3 in the **Gloria**:
 Today 16:00, 18:30, 21:00
 Tomorrow 16:00, 18:30, 21:00
[Reserve tickets now](#)

Old Rolling Stone Keith Richards!
 Weeeeha!

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Web Data Ecosystem

Everything pink - Chrissies blog

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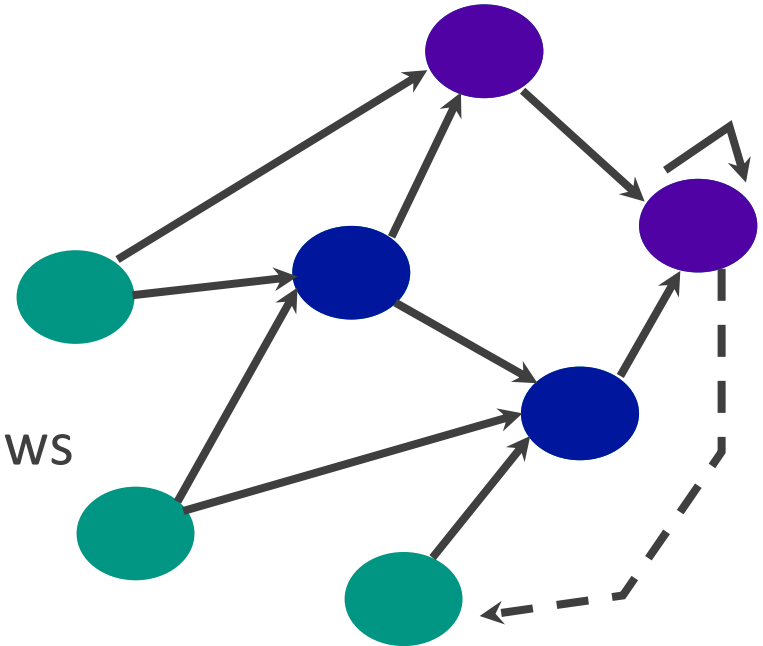
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Director: George Clooney
Running time: 125 minutes
Starring: Johnny Depp, Keira Knightley, Orlando Bloom, Geoffrey Rush
Info from Wikipedia

See Pirates of the Caribbean 3 at the Cinema
Times: 19.00, 19.30, 21.00
Times: 19.00, 19.30, 21.00
Release: 19.06.07



- Exchange
- show aggregated reviews
- Reuse
- spot trends
- immediately produce meaningful movie recommendations

Web 2.0 or Semantic Web

blogging

AJAX

large-scale interlinking of data

standardised APIs

niche vocabularies

well-defined data export

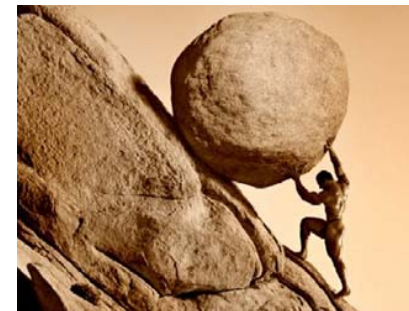
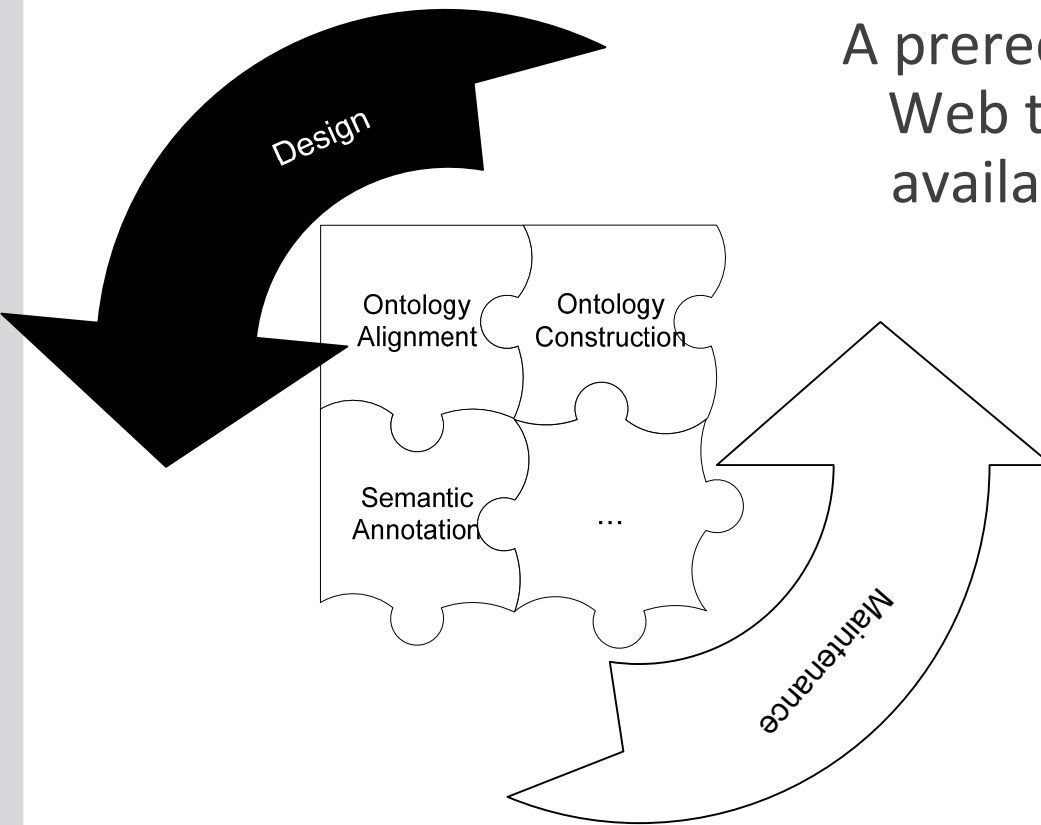
data reconciliation

Semantic Web 2.0

Example: OntoGame

Lack of Human Contribution

A prerequisite for the Semantic Web to become a reality is the availability of **annotated data**.



Building the Semantic Web is not a one-time task, but a **continuous effort**.

**There are tasks that are easy for humans but
difficult for computers**



Cf. Von Ahn

Not all the tasks on the Semantic Web can be
automated.

Some at least partly require human intelligence.

The Million Dollar Question

How can we motivate people to dedicate their valuable time to build the Semantic Web?

- The EU can fund it
- We can hope for pure altruism
- **We can make it fun!**

A Huge Success: Luis von Ahn's Games with a Purpose

10
MILLION
LABELS
COLLECTED

The ESP Game

As seen on CNN and
newspapers around the world!



Some people are playing the game **more than 40 hours** per week.

The game collected **more than 10 million consensual image labels.**

The OntoGame Idea and Principles

Make people weave the Semantic Web by playing cool multi-player online games.

1. Fun and intellectual challenge
2. Consensus
3. Massive content generation

10 Challenges

1. Identifying suitable tasks in semantic content creation
2. Designing games
3. Designing a usable, attractive interface
4. Identifying suitable knowledge corpora
5. Preventing cheating
6. Defusing typical pitfalls of conceptual modeling
7. Distribution of labor
8. Fostering user participation
9. Deriving formal representations
10. Scalability and performance

OntoPronto: Creating a Huge Domain Ontology

ontogame

time left
1:44

score
2

ontogame

all data taken from wikipedia.org

Lupicinus

Lupicinus was a roman lietenant of Valens in Thrace in the late fourth century AD.[1]



your choice

Is this wikipedia page about a:

single object or happening
= instance →

or rather describing a:
set/type of objects
← = class

hint → „Dog“ is a class (as several entities of this class exist)
„Lassie“ is an instance

YOUR PARTNER INFO

SKIP OK

OntoTube: Annotating YouTube videos



The screenshot shows the 'ontogame' interface. At the top right, there are two digital displays: 'time left' showing '1:43' and 'score' showing '30'. The main video player displays a video of Tim Berners-Lee with the title 'Tim Berners Lee on the Semantic Web' and a subtitle 'Tim Berners Lee Director, World Wide Web Consortium'. Below the video player is a question: 'Is this video **fiction** or **non fiction** ?'. There are two radio buttons below the question, with the 'non fiction' button selected. At the bottom, a progress bar shows 'YOUR AGREED ON - NON FICTION'. Below the progress bar are two buttons: 'SKIP' and 'OK'.

Evaluation

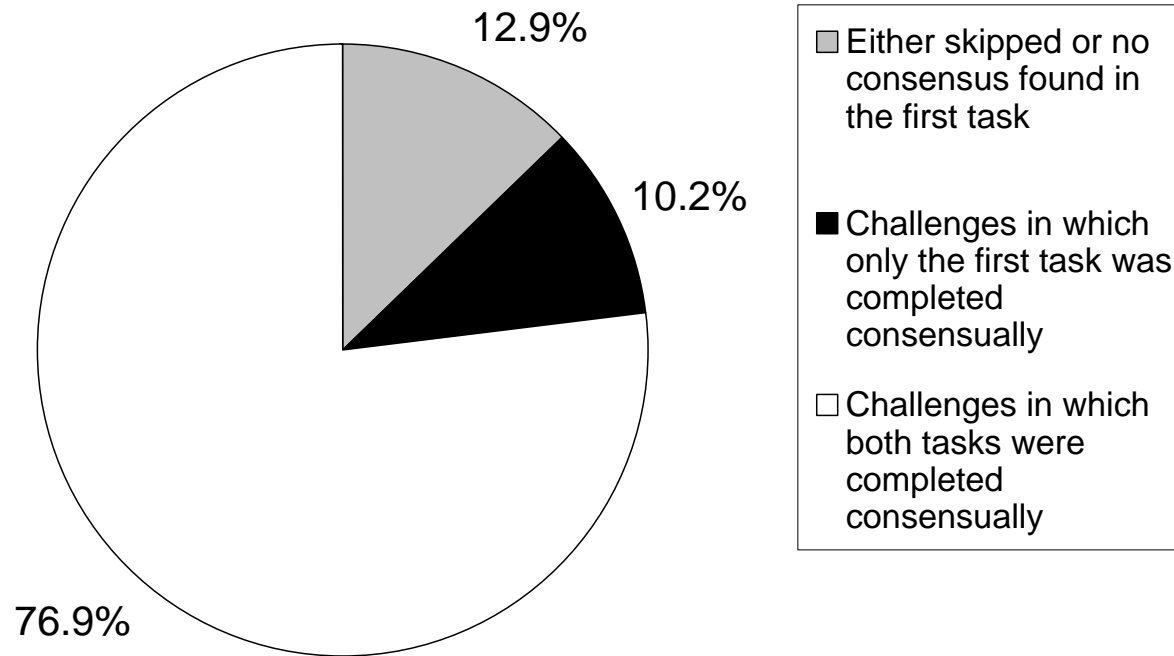
- Snapshot of RDF data 2 weeks after release
- 271 registered players within 2 weeks, 90% male
- More than 2500 games, 400 articles
- Is the game fun?
- Is the ontological data produced correct?

Katharina Siorpaes and Martin Hepp: Games with a Purpose for the Semantic Web.

IEEE Intelligent Systems, Vol. 23, No. 3, pp. 50-60, May/June 2008.

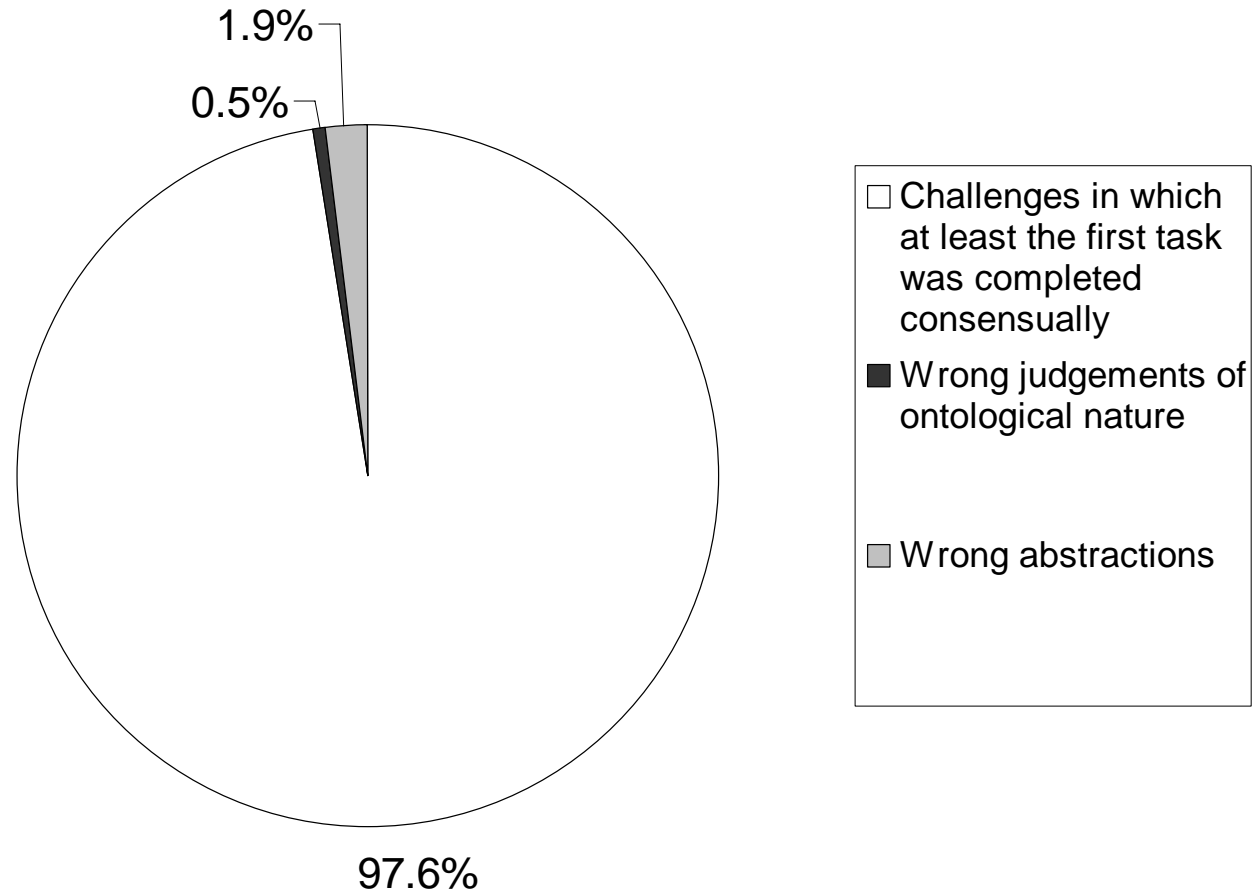
Fun Factor

- 35 players completed a survey
- Rules were understandable
- Entertaining (enthusiasts over-represented)
- Most rated the game „cool“ and entertaining
- Side effects: learning PROTON and Wikipedia
- Social component is weak (no communication, gender, age, nationality, etc.)
- „Constructive entertainment“



- Either skipped or no consensus found in the first task
- Challenges in which only the first task was completed consensually
- Challenges in which both tasks were completed consensually

Correctness

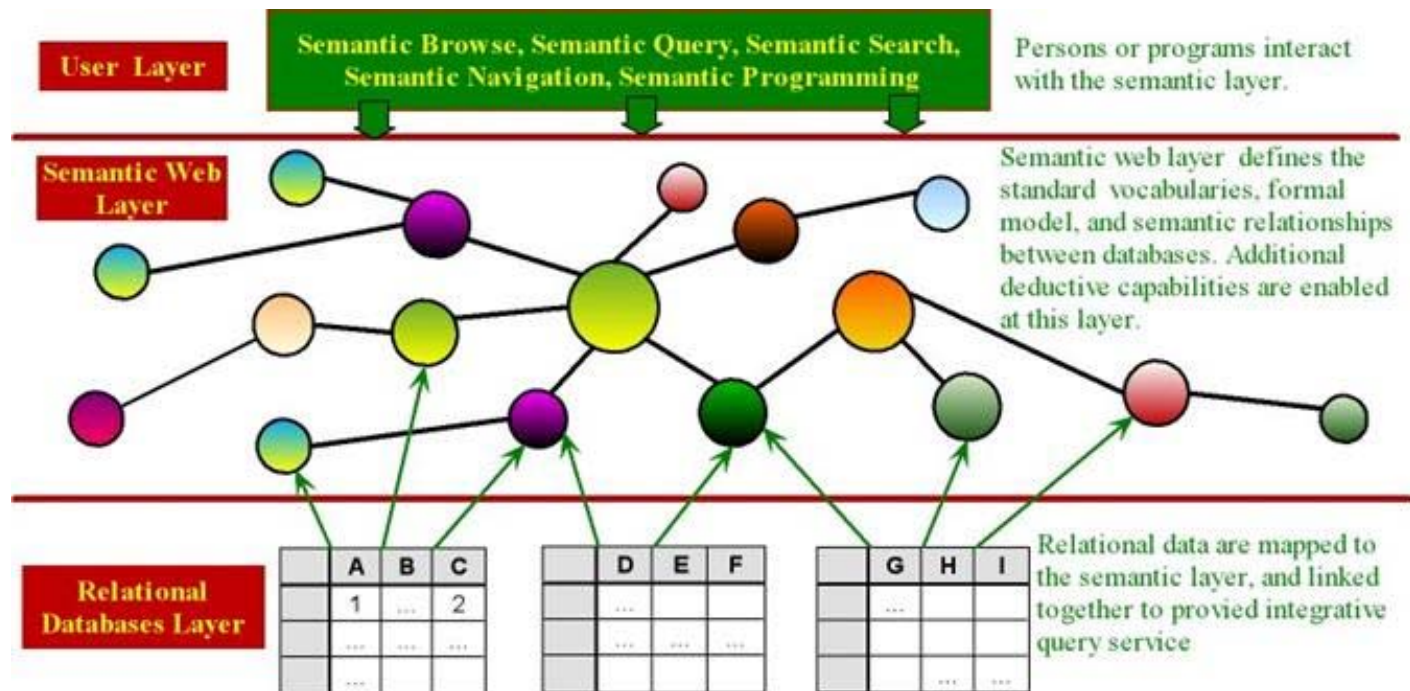


OntoGame

- Obviously, games for ontology construction, population, and alignment will not solve the knowledge acquisition bottleneck
- But they are a new way of combining human and computational intelligence and providing incentives
- Promising results
- Further incentives by increasing the human factor – e.g. „Meet your soulmate game“ 😊

Kurze Beispiele

- Problem: Information über Traditionelle Chinesische Medizin (TCM) ist über **viele Institute und Datenbanken** in China verteilt. Die Datenstrukturen sind völlig unterschiedlich.
- Lösung: Integration der Datenbanken in einen verteilten Semantischen Grid, Suche und Dienste auf den integrierten Daten



Courtesy of Huajun Chen, Zhejiang University, CACSM ([SWEQ Case Study](#))

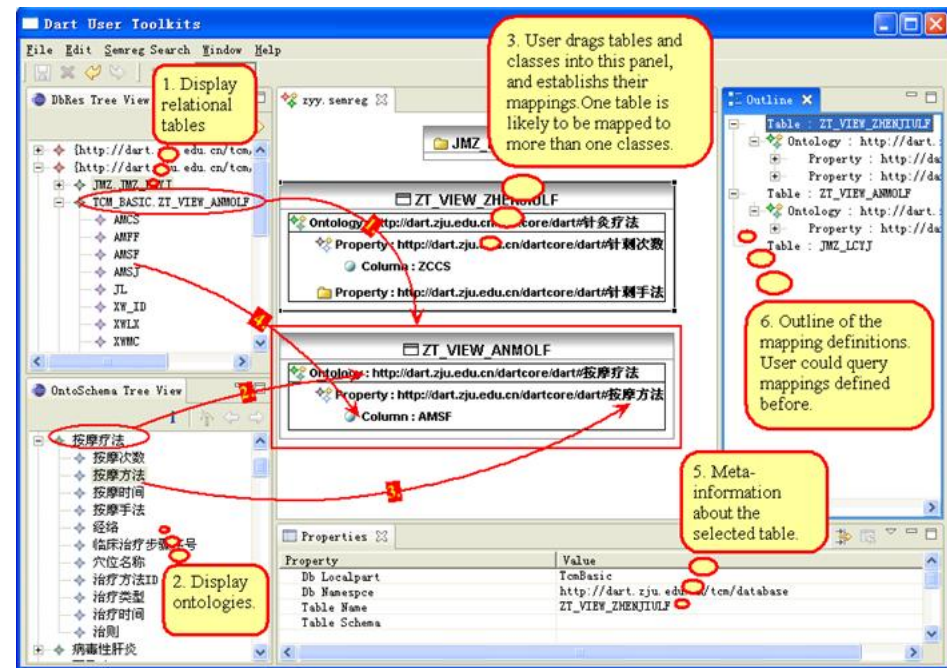
■ Datenintegration mit DartMapping

- <http://ccnt.zju.edu.cn/projects/dartmapping/>

- Tool zum Mapping der Relationalen Datenbanken in die Ontologie

- definiert Regeln, mit denen SPARQL queries in SQL umgewandelt werden

- Daten aus verschiedenen Datenbanken durch Ontologie vernetzt



1. Display relational tables

2. Display ontologies.

3. User drags tables and classes into this panel, and establishes their mappings. One table is likely to be mapped to more than one classes.

4. Outline of the mapping definitions. User could query mappings defined before.

5. Meta-information about the selected table.

6. Outline of the mapping definitions. User could query mappings defined before.

| Property | Value |
|--------------|-------------------------------------|
| Db Localpart | TemBasic |
| Db Namespace | http://dart.zju.edu.cn/tcm/database |
| Table Name | ZT_VIEW_ZHENJIULF |
| Table Schema | |

- <http://search.cintcm.com/TcmSearch/tcmBasicSearch.luc>
- online seit 2005
- Suchanfragen werden mit der Ontologie ausgedrückt

The screenshot shows the TcmSearch website interface. A search bar is at the top left. Below it, a table lists various categories with checkboxes and dropdown menus. A yellow callout box points to the search results area, stating: "When full text search returns too much results, clicking the classes leads to a dynamic form-based query interface by which user could specify semantic query, thereby getting more accurate and appropriate results." Another yellow callout box points to the table, stating: "Based on the semantic relations defined at the ontological level, user can keep searching and navigating over the integrated databases without the awareness of the database boundaries." On the right side, there are two red-bordered boxes: "Synonyms and Paronyms" and "Semantic association", both containing lists of related terms.

Vodafone live!

- Problem: Vodafone ist einer der größten Mobilfunkkonzerne der Welt. Verschiedene Anbieter liefern Content (Klingeltöne, Spiele, etc) die über die Plattform *Vodafone live!* weltweit vertrieben wird. Die Daten verschiedenster Anbieter müssen integriert werden, sie sind komplex
- Lösung: Vodafone live! veröffentlichte ein RDF Vokabular, das die Content Provider einhalten. Die Metadaten werden in RDF geliefert und die Inhalte darüber in die Plattform integriert
- Projekt:
 - Content ist primär Klingeltöne, Spiele, Wallpapers.
 - Metadaten über: kompatibles Endgerät, Content Ratings (Adult, Gaming, Violence, ...), Gültigkeitsdauer des Angebots
 - Genaue Dokumentation, Validierung des XML über XML Schema
 - Einbindung der Provider wichtig



Courtesy of Kevin Smith, Vodafone Group R & D ([SWEO Use Case](#))

Vodafone live!

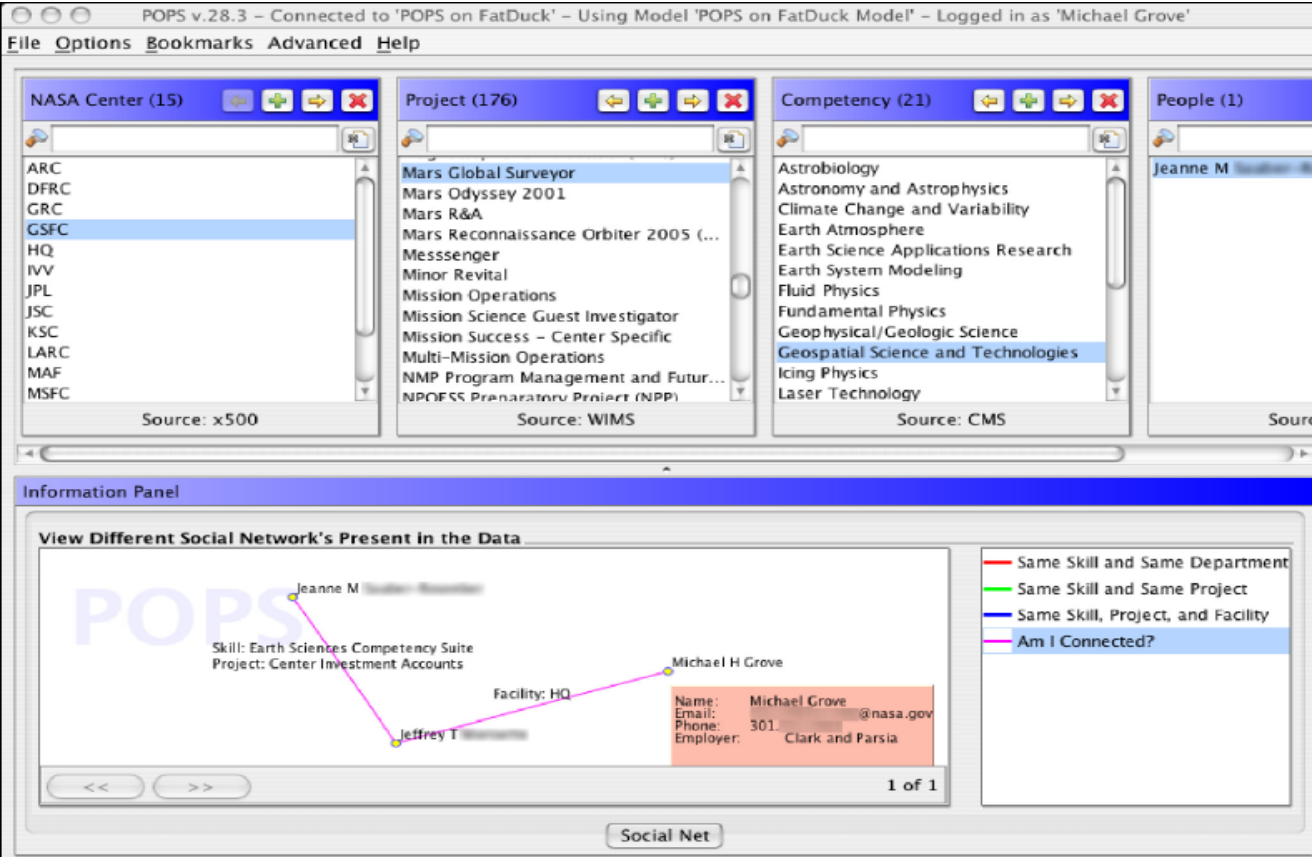
- Drei Vokabulare verwendet
 - Dublin Core für Metadaten
 - [PRISM](#) für Embargos und Gültigkeitsdaten
 - [Internet Content Ratings Association \(ICRA\)](#) Vokabular für Bewertung nach Gewalt, Erotik, oder Gambling
 - Wenige Erweiterungen
- Über das Portal kann nun der Benutzer sein Profil eingeben (Endgerät, Rating) und spezifische Inhalte finden
- Erhöhte den Umsatz signifikant, da durch die präzise Beschreibung die Inhalte besser gefunden wurden



Courtesy of Kevin Smith, Vodafone Group R & D ([SWEQ Use Case](#))

NASA Expert Finder

Expertise locator for nearly 70,000 NASA civil servants using RDF integration techniques over 6 or 7 geographically distributed databases, data sources, and web services...



POPS v.28.3 – Connected to 'POPS on FatDuck' – Using Model 'POPS on FatDuck Model' – Logged in as 'Michael Grove'

File Options Bookmarks Advanced Help

NASA Center (15) Source: x500

- ARC
- DFRC
- GRC
- GSFC**
- HQ
- IVV
- JPL
- JSC
- KSC
- LARC
- MAF
- MSFC

Project (176) Source: WIMS

- Mars Global Surveyor
- Mars Odyssey 2001
- Mars R&A
- Mars Reconnaissance Orbiter 2005 (...)
- Messenger
- Minor Revital
- Mission Operations
- Mission Science Guest Investigator
- Mission Success – Center Specific
- Multi-Mission Operations
- NMP Program Management and Futur...
- NPOFSS Preparatory Project (NPP)

Competency (21) Source: CMS

- Astrobiology
- Astronomy and Astrophysics
- Climate Change and Variability
- Earth Atmosphere
- Earth Science Applications Research
- Earth System Modeling
- Fluid Physics
- Fundamental Physics
- Geophysical/Geologic Science
- Geospatial Science and Technologies**
- Icing Physics
- Laser Technology

People (1) Source: ...

- Jeanne M

Information Panel

View Different Social Network's Present in the Data

POPS

Skill: Earth Sciences Competency Suite
Project: Center Investment Accounts

Facility: HQ

Name: Michael Grove
 Email: @nasa.gov
 Phone: 301
 Employer: Clark and Parsia

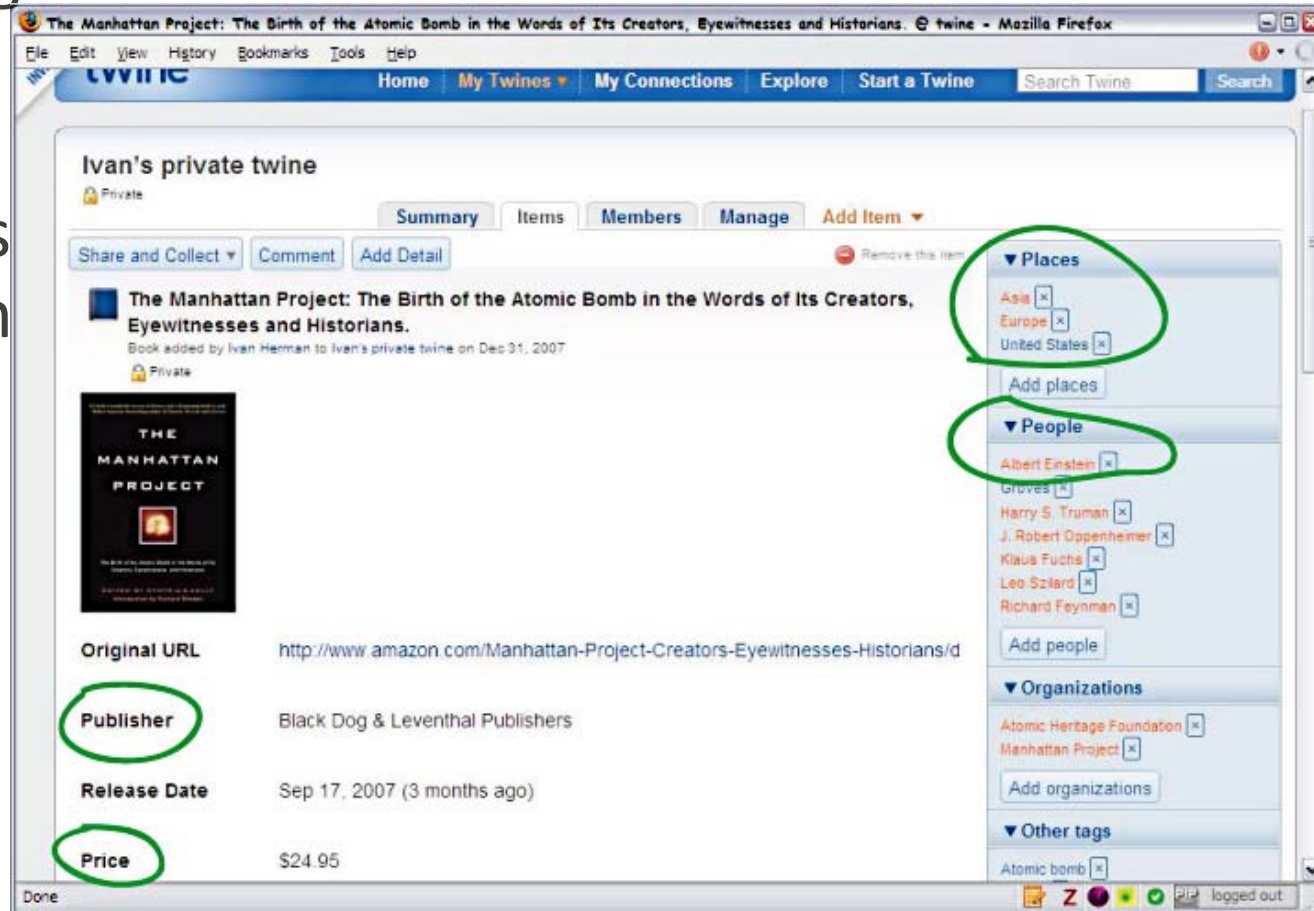
Legend:
 - Same Skill and Same Department
 - Same Skill and Same Project
 - Same Skill, Project, and Facility
 - Am I Connected?

1 of 1

Social Net

Twine

- “Social Bookmarking on Steroids”
- Item relationships are based on ontologies
- Internals in RDF, will be available via APIs and SPARQL



The screenshot shows a Twine page for the book "The Manhattan Project: The Birth of the Atomic Bomb in the Words of Its Creators, Eyewitnesses and Historians". The page is titled "Ivan's private twine" and is marked as "Private". The book cover is visible, along with the title and a brief description. The metadata section includes the following information:

| | |
|------------------|--|
| Original URL | http://www.amazon.com/Manhattan-Project-Creators-Eyewitnesses-Historians/d |
| Publisher | Black Dog & Leventhal Publishers |
| Release Date | Sep 17, 2007 (3 months ago) |
| Price | \$24.95 |

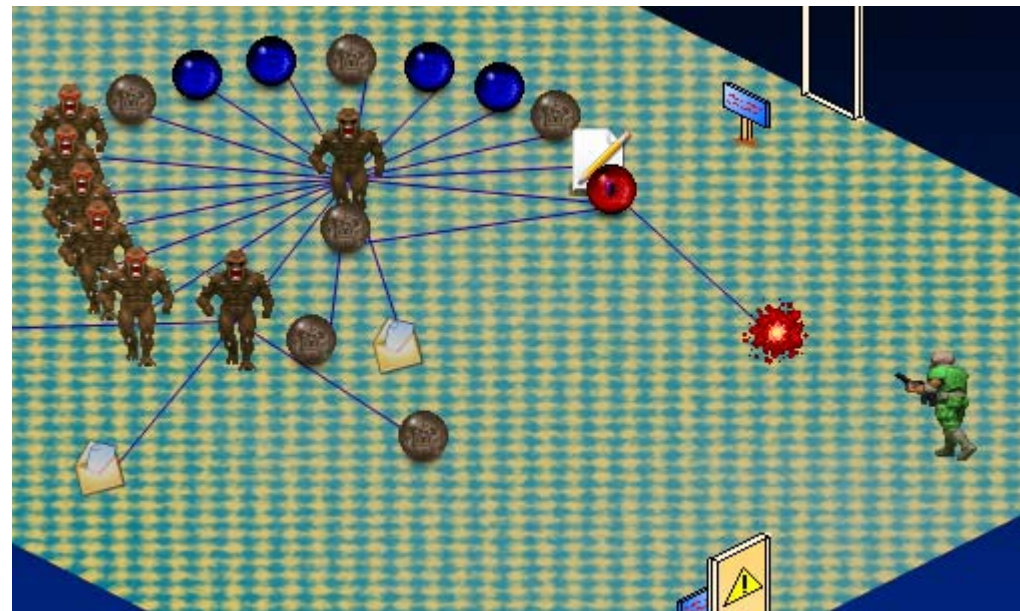
The right sidebar contains sections for "Places" (Asia, Europe, United States), "People" (Albert Einstein, Groves, Harry S. Truman, J. Robert Oppenheimer, Klaus Fuchs, Leo Szilard, Richard Feynman), "Organizations" (Atomic Heritage Foundation, Manhattan Project), and "Other tags" (Atomic bomb).

RDFRoom



- www.dfki.uni-kl.de/~grimnes/2006/03/RDFRoom/
- RDFRoom is an isometric RDF viewer. It gives the user ways to view and manipulate his RDF data that might make him see the data in a brand new perspective.

“A lone soldier has been stranded in an alien world, filled with resources, literals and shifty anonymous nodes. Room upon room are filled with named graphs - can he find a way out?”



- Mittwoch: F-Logik? Semantic Web 2.0?
- Montag: Übungen
- 11 Anmeldung für Prüfung, aber nur 8 Termine bisher
- Seminar Collective Intelligence

- Folien und Bilder von Katharina Siorpaes, Max Völkel, Anupriya Ankolekar, Leo Sauermann, Ivan Herman, Tim Berners-Lee und anderen