

A Brief Overview of Semantic Web Deployment

Table of Contents

<u>A Brief Overview of Semantic Web Deployment</u>	1
<u>Semantic Web: Data integration at Web scale</u>	2
<u>Semantic Web Foundation: RDF and OWL</u>	3
<u>Community Involvement</u>	4
<u>Creating Semantic Data – Adobe's XMP</u>	5
<u>Navigating the Semantic Web – Foafnaut</u>	6
<u>Semantic Web in the Client – Haystack</u>	7
<u>Haystack – Managing Photo collections</u>	8
<u>Haystack – Life Sciences Researcher's Desktop</u>	9
<u>Semantic Web in the Enterprise – Sun's Swordfish</u>	10
<u>Semantic Web and Content Management – Brandsoft</u>	11
<u>Semantic Web and Searching – TAP</u>	12
<u>Scalable Storage – Tucana</u>	13
<u>Semantic Web Calendars – Semaview's Sherpa</u>	14
<u>Semantic Web Engines – NetworkInference's Cerebra</u>	15
<u>What this talk didn't cover</u>	16
<u>General Lessons Learned from Deployment</u>	17
<u>Additional information</u>	18

A Brief Overview of Semantic Web Deployment

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International Conference on Dublin Core and Metadata Applications 2004

Dublin Core Corporate Workshop

October 10, 2004

Shanghai, China

Slides are available at: <http://www.w3.org/2004/Talks/1010-semweb-em/>

Semantic Web: Data integration at Web scale

- W3C launched RDF as a data integration mechanism across applications and the Web – "Joining the Web"
- Web of data – provides common data representation framework to facilitate integrating multiple sources to draw new conclusions
- Increase the utility of information by connecting it to its definitions and to its context

Semantic Web Foundation: RDF and OWL

RDF Core and Web Ontology Working Groups

- Semantic Web foundation specifications are W3C Recommendations!
- Lots of hard work by the chairs, working groups participants and public resulting in broadscale implementation and deployment (press release and testimonials)
- Working Groups officially ended May 2004
- Current work underway in Data Access and Best Practices (different talk!)

Community Involvement

Semantic Web benefits from a broad participation from vendors, users, researchers and communities defining enabling technologies

The following are a small sample of the growing set of Semantic Web tools, applications and projects that are crossing organizational, domain and geographical boundaries.

Creating Semantic Data – Adobe's XMP

Adobe's eXtensible
Metadata Platform
(XMP)

Cross product metadata
toolkit

leverage RDF/XML to
enable more effective
management of digital
resources

standardized means for
supporting the creation,
processing, and
interchange of document
metadata across
publishing workflows


focus on reducing cost
and makes for more
effective management of
digital resources

"10 Million Dublin Core
records in RDF/XML by
the end of the year" –
Semantic Web
Developers Day 2002

特集 インターネットにおけるエージェント技術 – 3

Semantic Web における アプリケーション統合

Semantic Web, XML, RDF, Enterprise Application Integration
(企業間アプリケーション統合), e-commerce



James Hendler Tim Berners-Lee Eric Miller
翻訳: 益岡 竜介

1. はじめに

Semantic Web は現在の Web の拡張である。この Semantic Web では、情報にはっきりと定義された意味が与えられ、コンピュータと人間がよりよく利用できることになる。これは Web に関するし、リンクしておくことにより、そのアプリケーションから、より効果的な発見、自己利用に使うという考えに基づいている。も有用な姿に到達するためには、この Semantic Web 進化し、データを自動化されたツールと人共有および処理できる、どこからでもアクセス可能にする。

現在 Semantic Web の多くの要素はすでに存在しており、この技術のビジネスへの応用は日に日に明確になってくる。この技術のビジネスへの応用は日に日に明確になってくる。この技術のビジネスへの応用は日に日に明確になってくる。

```
<rdf:RDF xmlns:rdf='http://www.w3.org/1999/02/22-rdf-syntax-ns#'
  xmlns:iX='http://ns.adobe.com/iX/'
  <rdf:Description about=""
    xmlns='http://ns.adobe.com/pdf/1.3'
    xmlns:pdf='http://ns.adobe.com/pdf/1.3'
    <pdf:ModDate>2002-10-17T09:11:05+09:00
    <pdf:CreationDate>2002-10-17T09:08:40
    <pdf:Creator>Acrobat 5.0 Scan Plug-in for
    <pdf:Producer>Acrobat 5.0 Scan Plug-in
```

Hendler, Berners-Lee, and Miller,
Integrating applications on the Semantic Web
Journal IEE Japan, 122(10):676–680, 2002.

Navigating the Semantic Web – Foafnaut

Social networks – 'Friend of a Friend'

Distributed RDF/XML records describing people, who they know, projects they work on, etc.

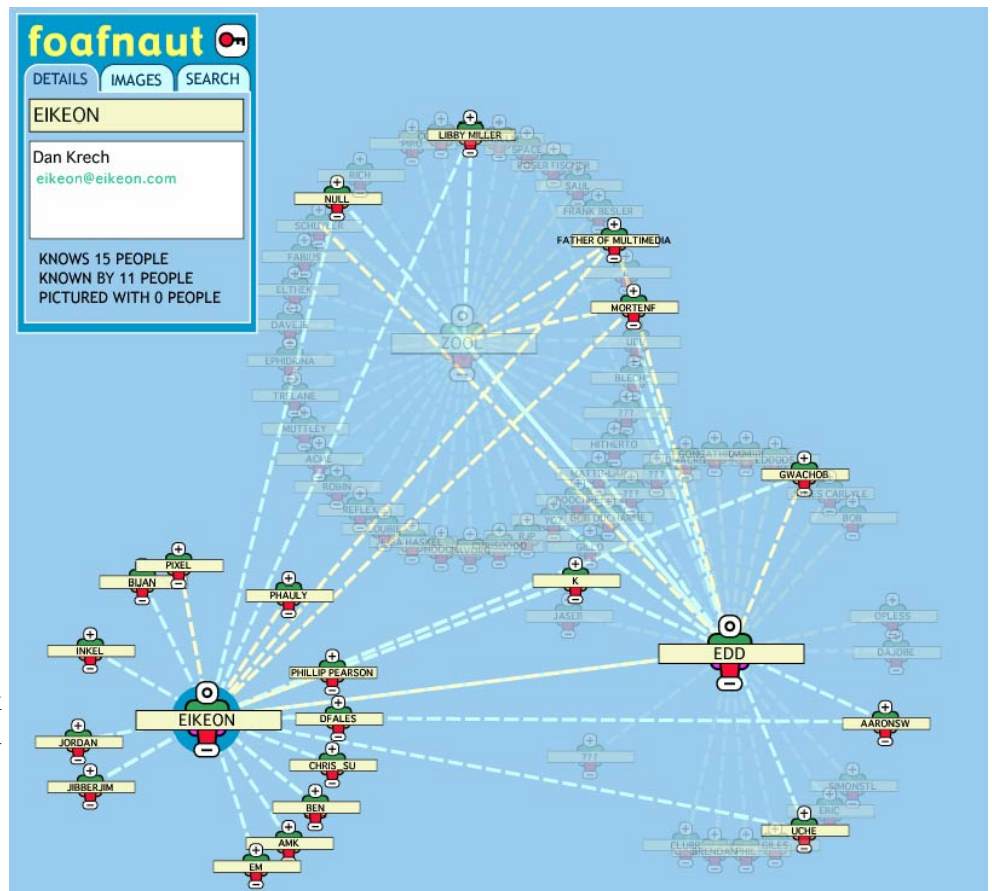
Web interface for displaying complex data

Benefits of SVG, SMIL, RDF integration

Open source collaboration ([credits](#))

Example of RDF network effect combining foaf and rdf image co-depiction

([online demonstration](#))



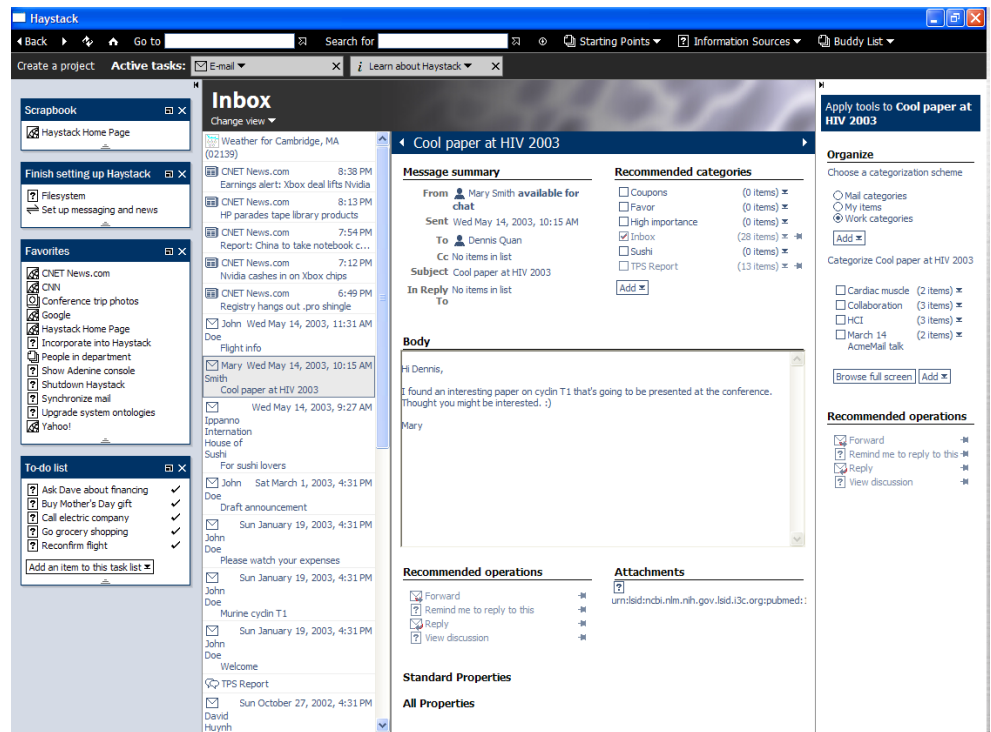
Semantic Web in the Client – Haystack

User configurable
universal information
client

Personalization of
information management

Universal information
client – benefits from
universal model of
information

RDF model represents
everything – data, layout,
preferences, etc.



Haystack – Managing Photo collections

Haystack

Back

Go to

Search for

Starting P

Scrapbook

Haystack Home Page

Active Tasks

Ask Dave about financing

Buy Mother's Day gift

Call electric company


Go grocery shopping

Reconfirm flight


Add an item to this task list

Conference trip photos


Show with collection elements Lay out as a picture album




S_0740




S_0734




S_0725



S_0737



S_0729



S_0741

S_0730

Show picture

Name

S_0730

Date

None specified; click here to add

Author/Creator

None specified; click here to add

Contains


David Huynh

Width

None specified; click here to add

Height

None specified; click here to add



User Dennis is logged into Haystack

Haystack – Life Sciences Researcher's Desktop

The screenshot displays the Haystack Life Sciences Researcher's Desktop interface. The top navigation bar includes a 'Haystack' logo, a 'Back' button, a 'Go to' field, a 'Search for' field, and a 'Starting P' button. The left sidebar contains two panels: 'Scrapbook' with a 'Haystack Home Page' link, and 'Active Tasks' with a list of tasks (e.g., 'Ask Dave about financing', 'Buy Mother's Day gift') and an 'Add an item to this task list' button. The main content area is titled 'Activation and function of cyclin T-Cdk9 (positive tra)' and features a network diagram. The diagram shows a central node 'Activation and function of cyclin T-Cdk9 (positive transcription elongation factor-b) in cardiac muscle-cell hypertrophy' connected to several other nodes. These nodes include 'Cardiac muscle' (labeled 'Member'), 'The Cdk9 and cyclin T subunits of TAK/P-TEFb localize to splicing factor-rich nuclear speckle regions', 'Role of the human and murine cyclin T proteins in regulating HIV-1 tat-activation', 'Hidemasa Oh', 'Lloyd H. Michael', 'Francesco J. Demayo', 'Motoaki Sano', and 'Maha'. Arrows indicate relationships, with labels such as 'Author/Creator' and 'Reference'.

Haystack

Back Go to Search for Starting P

Scrapbook

Haystack Home Page

Active Tasks

Ask Dave about financing ✓

Buy Mother's Day gift ✓

Call electric company ✓

Go grocery shopping ✓

Reconfirm flight ✓

Add an item to this task list

Activation and function of cyclin T-Cdk9 (positive tra

Explore relationships

Min Xie

The Cdk9 and cyclin T subunits of TAK/P-TEFb localize to splicing factor-rich nuclear speckle regions

Author/Creator

Antonio Giordano

Michael D. Schneider

Reference

Author/Creator

Author/Creator

Reference

Role of the human and murine cyclin T proteins in regulating HIV-1 tat-activation

Cardiac muscle

Member

Activation and function of cyclin T-Cdk9 (positive transcription elongation factor-b) in cardiac muscle-cell hypertrophy

Author/Creator

Hidemasa Oh

Author/Creator

Lloyd H. Michael

Author/Creator

Francesco J. Demayo

Author/Creator

Motoaki Sano

Reference

Maha

User Dennis is logged into Haystack

Semantic Web in the Enterprise – Sun's Swordfish

Desire to support effective management and distribution of corporate digital assets.

The Global Knowledge Engineering Group (GKE) in Sun Services division is leveraging W3C's Semantic Web technologies and standards (RDF)

focus on consist use of the Dublin Core Metadata Element Set and several localized terms (e.g. sun:product.)

facilitated by suite of tools and technologies based on Sun's One framework and Open Standards to effectively share RDF vocabularies / taxonomies across the organization

Semantic Web and Content Management – Brandsoft

focus on 'Enterprise Business Models'

Strategic models for controlling and publishing Web sites across extended enterprise operations

Models for content management, page publishing, access

Models represented in RDF

Common models allow for distributed maintenance across organization with coherent integrated result

The screenshot displays the Brandsoft website with a navigation bar at the top containing links for Products, Company, Partners, Support, News and Events, and Services. A 'Sign In' link is available for registered users. The main content area features a large banner for 'ENTERPRISE WEB MANAGEMENT' with the tagline 'Get control of the Web across your extended enterprise'. To the right of the banner are three key benefits: 'COST REDUCTION' (Consolidate Web Sites & Infrastructure), 'CONTROL ENTERPRISE PUBLISHING' (Align & Control Business Strategies), and 'CAPABILITY TO RESPOND' (React Quickly to Market Change). Below the banner, there are three columns: 'PRODUCTS' (describing the Brandsoft Resource Manager), 'SERVICES' (describing the enterprise-class Web resource management platform), and 'NEWS and EVENTS' (announcing 'The 3C's of Enterprise Web Management' on December 4, 2003). At the bottom, there are links for 'Software Overview' and 'Value-Added Services', and a footer with the Brandsoft logo and copyright information.

Semantic Web and Searching – TAP

TAP – designed to help enable the Semantic Web by providing some simple tools that make the web a giant distributed Database.

Local, independently managed knowledge bases can be aggregated

Can be recombined / tailored for different applications

TAP 'Semantic Search' – Demonstrates full-text integrated with structured information searching

Search for "Sting" – do you mean 'Sting' the movie? or 'Sting' as in injury from a bee?

You searched for Musician: [Sting](#)
Or you can search for:
[The Sting \(Movie\)](#) [sting\(injury from animal\)](#)

[Sting - official site - Home Page](#)
FAN CLUB MEMBER? WIN **STING** MERCHANDISE ... 16 NOVEMBER ... in 1991 **Sting** played at the Musikhalle in Hannover on the Soul Cages tour. ...
Description: Official news, discographies, tour dates - the usual. Some good exclusive content. Updated fairly regularly.
Category: [Arts > Music > Bands and Artists > S > Sting](#)
[www.sting.com/](#) - 29k - Nov. 16, 2002 - [Cached](#) - [Similar pages](#)

[Domain Holding Page](#)
Easyspace - Home. Is my Domain Name available? .com. ...
[www.stingchronicity.co.uk/](#) - 19k - Nov. 16, 2002 - [Cached](#) - [Similar pages](#)

[Sting etc.](#)
... Stingetc.com is your source for the latest information about The Police, **Sting**, Andy Summers, and Stewart Copeland. Current project ...
Description: Comprehensive lyrics library, FAQ, annual mailing list survey, chatroom, discographies, and concert reviews.
Category: [Arts > Music > Bands and Artists > S > Sting](#)
[stingetc.com/](#) - 12k - Nov. 16, 2002 - [Cached](#) - [Similar pages](#)

[THE OFFICIAL SITE OF THE CHARLOTTE STING](#)
... Thank you for your support of the Charlotte **Sting** during the 2002 season. ... Get to know the **Sting** star a little better with WNBA.com's 20 Questions. ...
Description: Official site from WNBA.com with news, scores, schedule, information about players and coaches, statistic...
Category: [Sports > Basketball > ... > Professional > WNBA > Charlotte Sting](#)
[www.wnba.com/sting/](#) - 37k - Nov. 16, 2002 - [Cached](#) - [Similar pages](#)

[sting.compaq.com/](#)
[Similar pages](#)

[STING](#)
The summary for this Japanese page contains characters that cannot be correctly displayed in this language/character set.
[www.sting.co.jp/](#) - 24k - Nov. 16, 2002 - [Cached](#) - [Similar pages](#)

[sting - home](#) - [[Translate this page](#)]
[sting.it](#) ... news! 05 set 2002 **STING** - ItalianMec il portale dell'industria
Meccanica inaugura oggi la nuova sezione Bandi ed Appalti ...
[www.sting.it/](#) - 18k - Nov. 16, 2002 - [Cached](#) - [Similar pages](#)

[Samia Sting](#)
Click here to enter [www.sarniastling.com](#).
Description: Official team site includes schedule, tickets, team, news, and merchandise.
Category: [Sports > Hockey > ... > Ontario Hockey League](#)
[www.sarniastling.com/](#) - 2k - Nov. 16, 2002 - [Cached](#) - [Similar pages](#)

[sting](#)
[sting](#) - Stefan Savage [savage@cs.washington.edu](#) [sting](#) is a TCP-based network measurement tool that measures end-to-end network path characteristics. ...
[www.cs.washington.edu/homes/savage/sting/](#) - 3k - [Cached](#) - [Similar pages](#)

People Magazine Profile

Real Name: Gordon Matthew Sumner
Birthplace: Newcastle upon Tyne, England
Birthdate: 10/2/51
Education: Warwick University
Relationships: Frances Eleanor Tomelty (divorced); Trude Styler
Children: Joseph, Katharine (with Tomelty); Michael, Jake, Eliot Pauline, Giacomo Luke (with Styler)
Fact: He gained his nickname by wearing a black-and-yellow striped shirt, like a bee.
[See more...](#)

Information from AllMusic

Top Albums:
Biography:
[See full bio](#)

Playing at Tower Records
[At The Movies \(Japan\)](#): \$30.99
[At This Time *](#): \$14.99
[At This Time *](#): \$14.99
[At This Time *](#): \$14.99
[Brand New Day \(Del.\)](#): \$9.99
[More Tower Records Features](#)

Buy from CDNow
[At This Time](#): \$14.49
[Brand New Day](#): \$15.49
[Very Best Of Sting/Police](#): \$15.49
[Seventh Talk - Sting In Conversation...](#)
[You Still Touch Me \(CD\)](#): \$5.99
[More CDNow Features](#)

Scalable Storage – Tucana

Focusing on using RDF for supporting Enterprise Information Integration (EII)

Develop tools to gather, store and analyze data from relational databases, portals, emails, documents

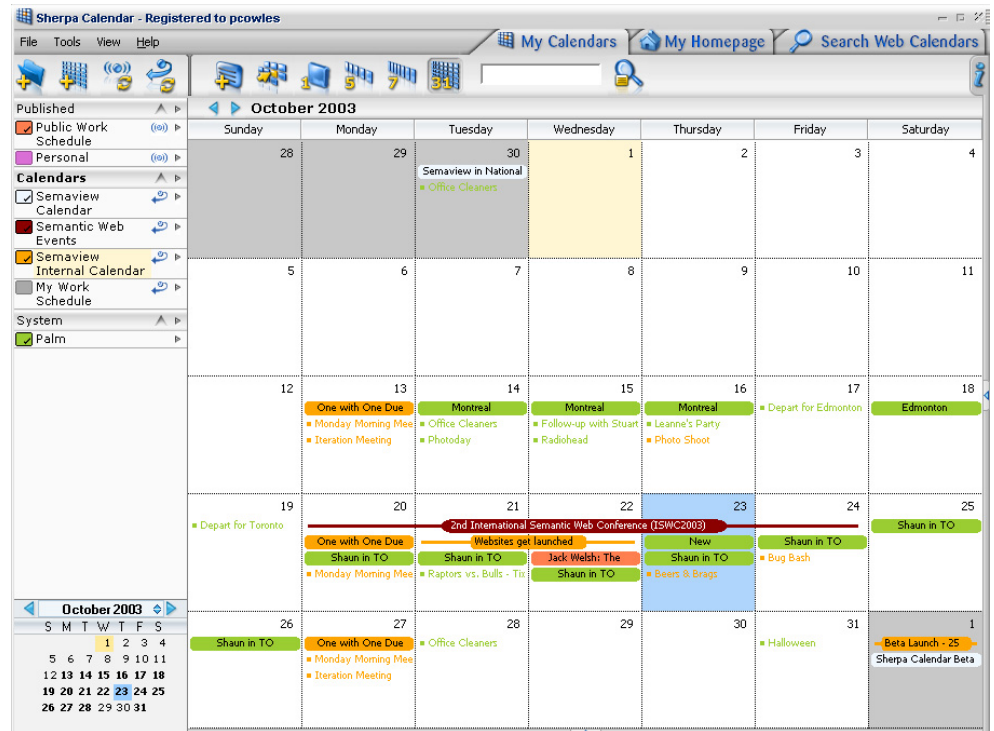
Commercial Tucana Knowledge Server along with Open Source solutions (e.g. Kowari) – "massively scalable, transaction-safe, purpose-built database for the storage and retrieval of metadata."

Semantic Web Calendars – Semaview's Sherpa

RDF representation of
calendar information

Publish and Merge
personal (work, home,
etc) events

Publish and Merge
calendar events of
friends and colleagues



Semantic Web Engines – NetworkInference's Cerebra

commercial product focusing on efficient, scalable reasoning

spin-off of University of Manchester

enterprise-strength software platform that provides business logic inferencing and processing capabilities for developing dynamic policy-driven applications

supports OWL

What this talk didn't cover

but related to deployment ...

Interesting projects: e.g. Simile, SWAD-E

Complementary vocabularies / initiatives: RSS 1.0, FOAF, SKOS, CC, etc.

Enabling Semantic Web toolkits: e.g. HP's Jena, IBM's Semantiks, Sesame, Relands, etc.

Community adoption: e.g. Life Sciences, Creative Commons, etc.

Applications / Best Practices : Describing People / taxonomies, etc.

Specific lessons learned from specific applications

'Gaps' in facilitating integration: ontology construction, simple vs complex, Typing, value standardization, supportive vocabularies, etc.

General Lessons Learned from Deployment

RDF as a general information model is applicable to many uses (many of which we never even thought about)

Common data representation and architecture drives down (technical / social) costs

Facilitates serendipitous interoperability – breaking down the barriers of domain knowledge

When "Anyone can say anything about anything", who you trust is important

Beneficial to solving interoperability in Open (rather than Closed) systems

Closed systems are becoming more and more Open – addressing these issues now seems cost effective in long run

Common semantics, when appropriate, advances the integration of heterogeneous content.

Additional information

W3C World Wide Web Consortium

–<http://www.w3.org/>

W3C Semantic Web Activity

–<http://www.w3.org/2001/sw/>

Eric Miller, W3C Semantic Web Activity Lead

–<http://www.w3.org/People/EM/>