



know how to use Know-how

halo- extension and SMW+

Leveraging
business readiness of
Semantic MediaWiki

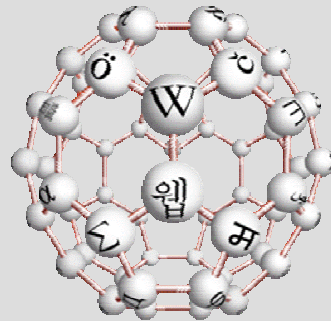
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SemanticWiki mini-series Session-3 “*Semantic Wikis: The Wiki Way to the Semantic Web*”

The SMW+ application stack



MediaWiki

- Powerful Wiki engine
- Basic CMS feature set

Semantic MediaWiki

- Powerful semantic Wiki engine
- Authoring of explicit knowledge within content
- Basic reasoning capabilities

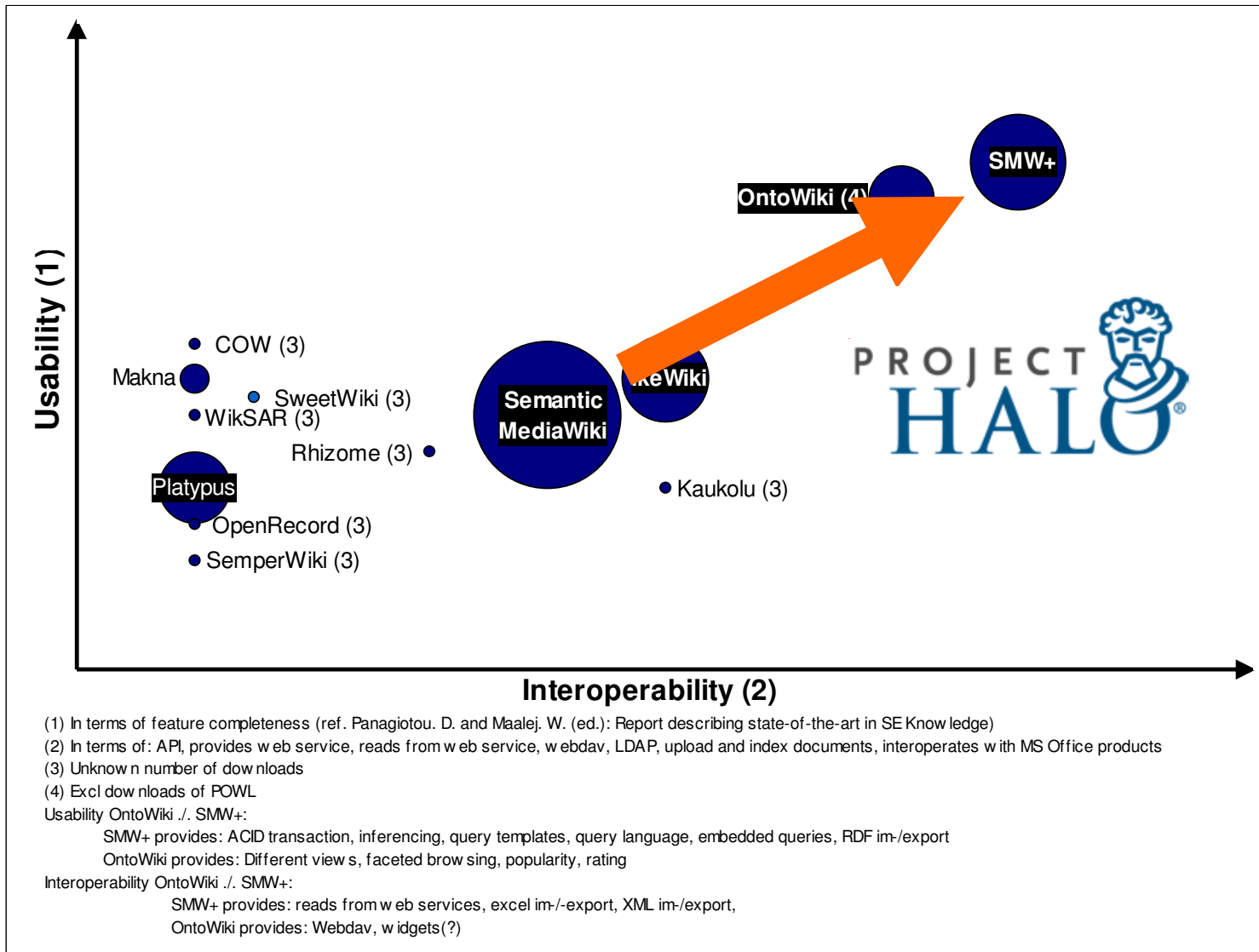
halo extension

- User-centric extension to Semantic MediaWiki
- Boosts usability
- Increases exploitation of semantics

SMW+

- Shrink wrap software product
- Comes with ready to use ontology
- Easy to procure and install
- Standard support contract available

Target setting for the halo extension



Most popular features of the **halo extension**



- **enhancing wiki navigation**
features to ease and speed up navigation and access to articles, as well as semantic data, in the Wiki, like an **ontology editor** and **autocompletion**
- **improving knowledge authoring**
features to allow easy and expressive addition of semantic data to the Wiki, like a **semantic toolbar** and **advanced annotation mode** to introduce semantic markup
- **simplifying knowledge retrieval**
features to query knowledge and access information stored in the Wiki, like a **query interface** and an **ontology enhanced search page**
- **gardening the knowledgebase**
features that allow users to detect inconsistencies and continuously improve the quality of the authored knowledge, like a **consistency bot**
- **improving interoperability**
features to re-use data residing in legacy systems and to improve reasoning, like accessing **external web services** and other **data stores** and plugging in **Jena or OntoBroker**

Enhancing Wiki navigation – *auto*completion

search

- P Author
- P CausedChangeRequest
- P EventHasAudience
- P HasAuthor
- P HasIntendedAudience
- P Has Author
- P Has Intended Audience
- P HelppageAudience
- P Issue author
- P UseCaseHasAuthor
- C Autocompletion
- I Automatic Debugging
- I Autowiki
- I Amal Kumar Raychaudhuri
- I Ammonium lauryl sulfate

Fertig

Software Documentation Darkmatte

SPARQL Transformer

answering of SPARQL queries normally requires a triple store
possible to transform SPARQL queries to ASK, that meet cor
basis for such a transformation is the abstract syntax tree (A:
rease the RAP (RDF-Framework for PHP) parser for the purpo
load it from [here](#) and extract it to *SemanticMediaWiki/libs*.

supported SPARQL subset

ne structure of the query graph must be restricted.

- All selected variables must appear on first level (subject or
- Exactly one of these variables must appear on subject pos
- No cycles in the query graph.
- All predicates and objects of rdf:type must be ground.

only a subset of language constructs are supported:

- SELECT ... WHERE
- OPTIONAL
- LIMIT
- ORDER BY
- FILTER

There are restrictions for OPTIONAL and FILTER:

- OPTIONAL may appear only on statements with wiki prop
- FILTER may appear only on statements with wiki propertie

Enhancing Wiki navigation – *ontology editor*

columns:
Press Ctrl+Alt+Space to use auto-completion. (Ctrl+Space in IE)

Filter Browsing Reset Hide Instances

C Category Tree | **P** Property Tree

Add subcategory | Add category on same level | Rename

Firewheeler Enter title | Cancel

- ⊕ AIP Usability Engineering (open)
- ⊕ Car (open)
- ⊕ City (open)
- ⊕ Communication (open)
- ⊕ Company (open)
- ⊕ Deliverable (open)
- ⊕ Document (open)
- ⊕ Element (open)
- ⊕ Eval Committee (open)
- ⊕ Event (open)
- ⊕ GardeningLog (open)
- ⊕ Glossar (open)
- ⊕ Halo (open)
- ⊕ Hello (open)
- ⊕ Helppage (open)
- ⊕ Lead (open)
- ⊕ Load test (open)
- ⊕ MarketingEvent (open)
- ⊕ Meeting (open)
- ⊕ Milestone (open)

Filter

I Instances

Rename instance | Delete instance

E-type	(open)
Golf	(open)

Filter

P Properties Type/Range

Add property to domain: 'Car'

Name:

Min.

cardinality:

Max.

cardinality:

Add type Add range

Enter title | Cancel

Body	(open)	(0)	String
			0 ... *
Has power	(open)	(2)	Number
			0 ... *
Manufactured by	(open)	(1)	Company
			0 ... *

Filter

Improving knowledge authoring – *annotation mode*



The screenshot shows the Project HALO Semantic Wiki interface in 'annotate' mode. The article title is 'Annotating Hydrogen'. The main text describes hydrogen's properties and production. A 'Specify this property' dialog box is open, showing options like 'Can be produced at', 'Can be produced by', and 'Can be produced from'. The 'Annotations & Help' sidebar on the right displays categories (Chemical elements, Nonmetal), properties (Create, Has part), and a table of physical properties for hydrogen.

Project HALO Semantic Wiki

article | discussion | **annotate** | edit | history | protect | delete | move | watch | refresh

Annotating Hydrogen

With an atomic mass of 1.000794 g/mole (unit), hydrogen is the lightest element. It is also the most **abundant**, constituting roughly 75% of the universe's elemental mass.^[1] **Stars** in the **main sequence** are mainly composed of hydrogen in its **plasma** state. Elemental hydrogen is relatively rare on Earth, and is industrially produced from **hydrocarbon**s, after which most free hydrogen is used "captively" (meaning locally at the production site), with the largest markets about equally divided between fossil fuel upgrading (e.g., **hydrocracking**) and in **ammonia** production (mostly for the fertilizer market). However, hydrogen can easily be produced from water using the process of **electrolysis**.

The most common form of hydrogen has a single **proton** and no **neutrons**. In **ionic** form, it can exist as a **cation** (becoming a **cation** composed of a bare proton) or a negative **anion** (becoming a **hydride**). Hydrogen can form compounds with most elements and is present in a wide variety of **minerals**. It plays a particularly important role in **acid-base chemistry**, where it acts as a **proton donor** between soluble molecules. As the only neutral atom for which the **quantum mechanics** of the electron can be studied analytically, study of the energetics and bonding of the hydrogen atom is a **fundamental** part of quantum mechanics.

Specify this property.

Property: **can be produced from**

This property can be produced at **hydrocarbon**

This property can be produced by **hydrocarbon**

This property can be produced from **hydrocarbon**

Annotate a category.

Nomenclature

The word "hydrogen" has several different meanings:

- the *name of an element*.
- an *atom*, sometimes called "H dot", that is abundant in space but essentially absent on earth, because it **dimerizes**.
- a *diatomic molecule* that occurs naturally in trace amounts in the Earth's atmosphere; chemists increasingly refer to H₂ as dihydrogen^[2] to distinguish this molecule from atomic hydrogen and hydrogen found in other compounds.
- the atomic *constituent* within all organic compounds, water, and many other **chemical compounds**.

The *elemental* forms of hydrogen should not be confused with hydrogen as it appears in chemical compounds.

Annotations & Help

Categories

- Chemical elements
- Nonmetal

Properties

Create | Has part

- Can be produced by: hydrocarbon
- Was discovered by: Paracelsus
- was first synthesized by: Paracelsus
- Is used as: an ingredient in some rocket fuels

Help

Annotation hints

No hints for this article.

Don't forget to save your work!

Save annotations | Save & exit

Phase	
Density	
Melting point	(−259.14 °C, −434.45 °F)
Boiling point	20.28 K (−252.87 °C, −423.17 °F)
Triple point	13.8033 K, 7.042 kPa
Critical point	32.97 K, 1.293 MPa

Improving knowledge authoring – *semantic toolbar*

Manuals/Main Page_v1.1 > Halo Extension > Main Page > OntologyBrowser > IsSubsectionOf >

property discussion annotate edit history delete move protect watch wysiwyg refresh

Editing Property:IsSubsectionOf

This article defines the property:Is Subsection of

```

[[Has type::Type:page]]
[[Has domain and range::Category:Content; Category:Content]]
[[Has max cardinality::1]]
[[Has min cardinality::1]]
[[Is inverse of::Property:Related to]]
[[Category:Transitive properties]]

```

Press Ctrl+Alt+Space to use auto-completion. (Ctrl+Space in IE)

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Summary:

Links to Other Pages

Tools

Categories

Properties

Annotate	Create	Sub/Super	Has part
Has type	Type:page		
Has domain and range	Category:Content		
	Category:Content		
Has max cardinality	:1		
Has min cardinality	:1		
Is inverse of	Property:Related to		

Property Characteristics

Domain: Content

Range: Content

Inverse of: Related to

Type: page

Min. cardinality: Annotation URI, Boolean, Chemical equation, Chemical formula, Code, Date, Email, Geographic coordinate, Glossary Term, Mathematical equation, Number, Page, String, Temperature, Text, URL

Max. cardinality: page, n-ary

Transitive

Symmetric

Apply

Ontology Browse

Help

Annotation hints

Simplifying knowledge retrieval- *query interface*

OntologyBrowser > IsSubsectionOf > QueryInterface >

special

Query Interface

Query Tree Navigation

[Main Query](#)

- [-] Main Query
 - [-] Categories:
 - Content
 - [-] IsSubsectionOf
 - Page = whales

Property name:

Show in results:

Value must be set:

String =

End user

Gardener

Administrator

[Add](#) [Cancel](#)

Help

How can I find close matches?
 How can I formulate a query?
 What is a query?
 (more)

Ask your own question

Table Column Preview

Article title	IsSubsectionOf
---------------	----------------

Query Layout Manager

Format: Sort by: Order:

Link: Limit: Headers: show

Intro: Mainlabel: Default:

Simplifying knowledge retrieval- *combined search*

Commercial and production use

user manual

Search > User manual > Search >

special

Search results

No triples found!

You searched for **user manual**

For more information about searching SMWForum, see [Help](#).

Showing below up to **20** results starting with #1.

View (previous 20) ([next 20](#)) ([20](#) | [50](#) | [100](#) | [250](#) | [500](#))

Page title matches

- [User manual](#) (90 bytes)
1: {{#ask: [[IsSubsectionOf:User manual]]}}

Page text matches

- [MediaWiki;1.0;last](#) (5,011 bytes)
11: :*Manual:Contents will be the front door to comprehensive ...
12: ...ll be the front door to "MediaWiki generic site user help" (licensed as public domain for easy inclu...
14: :If you are looking to write a free manual for other software, have a look at Wikibooks, whi...
27: ...ved from a user's page when there are no relevant user contributions related to MediaWiki.
- [Project Blog](#) (3,720 bytes)
16: ...ann[Michael Erdmann]] as an ontology expert and [[User:Beccus|Beccus]], expert for knowlegde engineering...
57: This an example of a manual page.
66: Furthermore a real user management, a dicussion forum, the possibility to...
- [Using Auto Completion](#) (2,699 bytes)

Combined Search

The following entities were found in the wiki ontology:

	User		
	User		
	User		
	Manual		
	Manual		

Search for property values that match your search








[Help](#)

Gardening the knowledge base – *consistency bots*

special

Gardening

This is the Gardening toolbox. It provides some tools which helps to keep the wiki knowledgebase clean and consistent.

-  [Check wiki consistency](#)
-  [Materialize template](#)
- content**
-  [Find undefined entities](#)
-  [Find pages without annotations](#)
-  [Find anomalies](#)
-  [Import an ontology](#)
-  [Export ontology](#)

This bot identifies Category leaves (Categories that contain neither subcategories nor instances) and Subcategory number anomalies (Categories with only one or more than eight subcategories).

Check number of sub categories:

Check for category leaves:

Restrict to categories (separated by ;):

- [Component](#)
- [Content](#)
- [TechnicalComponent](#)

Delete category leaves:

Current / Recent bot activities:

User	Action	Start-Time	End-Time	Log	Progress	State	
Daniel	Export ontology	2008-09-23 12:42:21	2008-09-23 12:43:17	Log	100%	finished	<input type="button" value="Cancel Bot"/>
Daniel	Export ontology	2008-09-23 12:41:12	2008-09-23 12:42:02	Log	100%	finished	<input type="button" value="Cancel Bot"/>
Daniel	Export ontology	2008-09-23 12:37:08	2008-09-23 12:37:38	Log	100%	finished	<input type="button" value="Cancel Bot"/>
Joerg	Find undefined entities	2008-09-23 12:35:25	2008-09-23 12:35:31	Log	100%	finished	<input type="button" value="Cancel Bot"/>

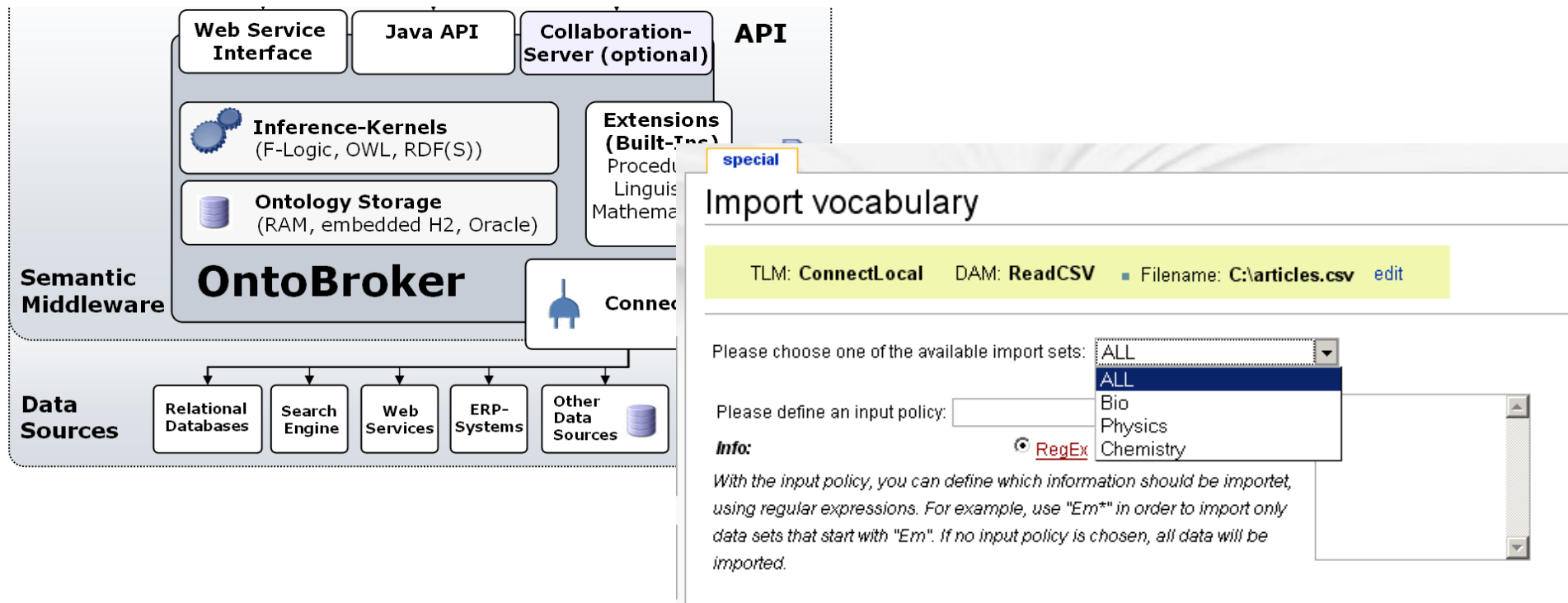
improving interoperability – *OntoBroker connector and import*

OntoBroker® - connector

- Connects seamlessly into SMW+ and complements SMW+ data store
- Full inferencing support (SPARQL and ask-syntax)
- Integrates a multitude of heterogeneous data sources

Framework to import from any data source

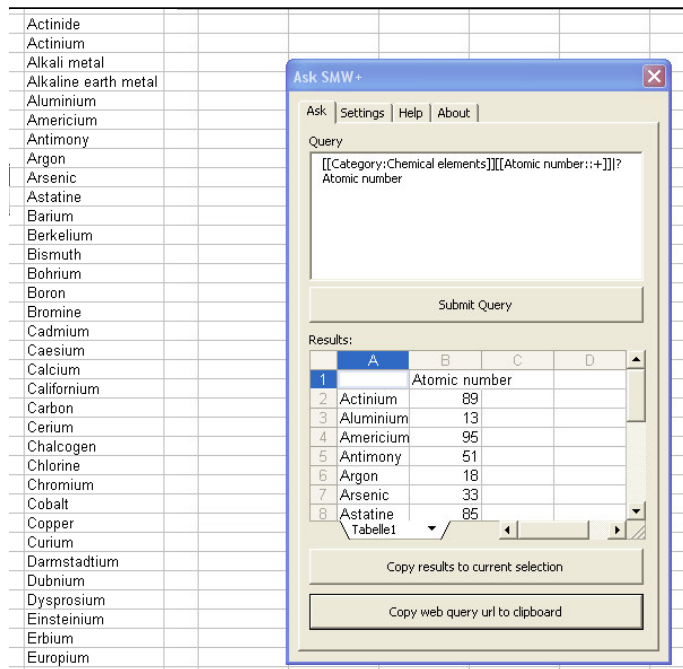
- Allows to import data from CMS, databases, Wikis, files, etcpp (simple data access module needed)
- Primary use case: import an existing vocabulary into SMW+ for re-use



improving interoperability – *Excel-client add on and web service import*

Re-use knowledge in Excel-spread sheets

- VBA-client for MS-Excel connects to remote SMW+
- Enter a SPARQL-query or paste a query built with query interface
- Facts (and property values) are copied into the spreadsheet and kept in synch with SMW+



Ask SMW+

Ask Settings Help About

Query

```
[[Category:Chemical elements]][[Atomic number::+]]?
Atomic number
```

Submit Query

Results:

	A	B	C	D
1		Atomic number		
2	Actinium	89		
3	Aluminium	13		
4	Americium	95		
5	Antimony	51		
6	Argon	18		
7	Arsenic	33		
8	Astatine	85		

Copy results to current selection

Copy web query url to clipboard

Web service interface

- Interactively attach external web services to SMW+
- Allows to query web services through SMW+
- Results from web services are easily accessible from within SMW+
- Allows including web service results in queries

Define Web Service

1. Specify URI 2. Select Method 3. Define Parameters 4. Define Results 5. Define Update Policy 6. Choose Name

1. Please enter the URI of the Webservice:

Help

Please enter the URI of a Webservice. The URI must direct towards the WSDL (Web Service Description Language) file of the Webservice. If you do not have an URI yet, you can search for different Webservice providers on the internet. Please take a look at Web Service Search Engines in order to find what you are looking for.

Web Service Repository

Available Wiki Web Service Definitions

Name	Last Updates	Update	Confirm
AmazonWS		<input type="button" value="Update"/>	<input type="button" value="Confirm"/>
ClearForest	2008-08-15 14:57:24 - 2008-08-15 15:10:59	<input type="button" value="Update"/>	confirmed
NED		<input type="button" value="Update"/>	confirmed
OpenCalais	2008-08-15 14:38:46	<input type="button" value="Update"/>	confirmed
WeatherForecast	2008-08-25 08:19:37 - 2008-08-25 08:25:02	<input type="button" value="Update"/>	confirmed

Work ahead!



- **modularization**
breaking up the halo extension into smaller, separately deployable extensions
- **access control on data**
extend content-based access control to cover data as well. Simplify parameterization of access control.
- **improve web service connector**
open up a wider range of web services (REST, XML postprocessing, method chaining)
- **Data API**
provide programmatic interface to allow 3rd party apps reading and writing semantic data.
- **improved search**
improve semantic forms, drill down, include Lucene and present search hits more professionally.

find more information on <http://smwforum.ontoprise.com>

hosted by Monitor, Vulcan and ontoprise

***„The SMW User Group
is open for everybody
using or intending to
use SMW in a
commercial
environment.“***

- Share your experience
 - Debate in the online forum
 - Learn how others are using SMW
- Learn to apply and customize
 - Online repository with comprehensive user manuals
 - Read about the wealth of business applications and best practices
 - Technical reports about how to deploy, customize and integrate SMW
 - Learn how to contribute the SMW project
- Contribute to the project
 - Add and publish own materials
 - Discuss with the engineering team

Join in the regular user group meetings