Semantic Media Wiki & Extensions

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Outline

- Semantic Media Wiki fundamentals
- Architecture and development
- Challenges and Functionality
- Ontology in the SMW
- Extensions
- Discussion
Semantic Media Wiki fundamentals
Wiki Hawaiian: "fast"

Ward Cunningham, 1994

WikiWikiWeb (WikiBase, Perl based)

Exchange of ideas easier

WYSIWYG

Creation + Editing + Interlinking

History…

MediaWiki

Wikipedia

Extensions top – multiuser – rich content

From untyped hyperlinks to meaningful connections between content pages

Maintain a Knowledge Base

Semantic Wiki

Early 2000s

From untyped hyperlinks to meaningful connections between content pages

Semantic annotation within pages

Formatted representation

Semantic Search

Markus Krötzsch, Denny Vrandečić and Max Völkel 2005

MediaWiki Extension

MediaWiki Foundation, 2002
Architecture and development
SMW Architecture

Challenges and Functionality
Addressed challenges

- Consistency of Content
- Accessing Knowledge
- Reusing Knowledge

Main characteristics

- It is based on semantic annotation of web content (i.e. web pages)
- Annotations make statements about articles
- Categories: pages classification
- Relations: annotations of existing links between articles
- Attributes: relate articles to things that are not articles (e.g. Data Type)
- Dynamic pages creation via inline queries

- Enable user collaboration
- Structured and organized Knowledge
- Information sharing
Ontology in the SMW
Ontology in the SMW

- Persistent storage in SMW Database tables
- Articles mapping
  - Every article corresponds to exactly one ontology element (class, instance, property)
  - Article Category mapping to OWL Class
  - Relation of articles (links) mapping to OWL Object Property
  - Attributes of articles mapping to OWL Data Type Property, Annotation Property and Object Property
Reusing existing Ontology

- Import Ontology: modify wiki pages to represent the relationships of the imported OWL DL Document
- Vocabulary use: map wiki pages to elements in the ontology

External Knowledge reuse

- Export Ontology (OWL/RDF)
- Ontology reuse in other applications
Extensions

SMW Extensions : Halo

- Semantic annotations enhancement
- Auto-completion
- Graphical query interface
- Ontology browser

http://en.wikipedia.org/wiki/Project_Halo
SMW Extensions : MetaVid

- Audio/Visual media meta-stream
- Media search engine
- Sequencer

http://metavid.org/wiki/MetaVidWiki_Software
SMW Extensions : Semantic Forms

- Add/Edit Data
- Create Categories, Properties and templates
- Querying

SMW Extensions: Semantic Query Form Tool

- User friendly query forms
- Inline queries
- Existing values selection

http://www.mediawiki.org/wiki/Extension:SemanticQueryFormTool
Discussion
Ideas and Questions

- Flexibility of coding and error handling
- "On the fly" interaction with the ontology
- Extend auto-completion with more intelligent input recommendation
- Inject self-implemented algorithms for queries
- User profiling
- Heterogeneity of media input