THE INFORMATION WORKBENCH AS A SELF-SERVICE PLATFORM FOR DEVELOPING LINKED DATA APPLICATIONS

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The Potential of Linked Data

- Principles for publishing, sharing and interrelating structured knowledge
- From data silos to a **Web of Data**
- Builds on **W3C standards**: • URIs as names for things • RDF as data model • SPARQL for querying
- Ontologies to describe semantics
- Large corpus of **Linked Open Data** (LOD) from various domains
Example: The Conference Explorer

- Aggregate conference metadata
- Explore conference events, publications, authors, etc.
- Visualize conference statistics

Features

- Conference schedule, timelines, hot topics
- Background information about authors and publications
- Analytics and reports
- Social network statistics

http://conference-explorer.fluidops.net/
Benefits of Linked Data Applications

Data integration
- Semantically integrate and interlink data from different sources
  - Conference metadata
  - Public bibliographic metadata
  - Social Networks

Authoring and publishing
- Augment and contextualize data through interlinking public sources

Improved user experience
- Leverage semantic technologies for better search
- Allow for expressive information needs
Challenges of Developing Linked Data Applications

Discovery and automated integration
- Variety of data formats (RDF, OWL, ...) and query languages (SPARQL)

Heterogeneity in various dimensions
- Location and ownership of data
- Identifiers, structure, vocabularies
- Structured and unstructured data

User interfaces
- Large amounts of data
- Flexible and dynamic schemas
- Meaningful aggregation of the data
- Support expressive information needs

PREFIX foaf: <http://xmlns.com/foaf/0.1/>
SELECT ?name ?org
WHERE {
    ?person a foaf:Person .
    ?person foaf:name ?name .
}
OUR SOLUTION:
THE INFORMATION WORKBENCH™
Data Integration
- Semantic & Linked Data from private and public data sources

Intelligent Data Access and Analytics
- Visual Exploration
- Semantic Search
- Dashboading and Reporting

Collaboration and Knowledge Management
- Wiki-based authoring of data
- Collaborative workflows
Self-Service Application Development Process

The Information Workbench features...

1. Data Discovery and Integration
   - Metadata from global registries
   - Providers for internal and external data

2. Customizing the Frontend
   - Semantic Wiki as frontend
   - Living UI composed from widgets

3. Extending the Platform
   - API and open-source SDK
   - User-defined widgets, providers, etc.
Data Discovery and Integration

- **Metadata** about data sources (void, dcat) essential for dynamic discovery
- Access to metadata from **global registries** (ckan.org, data.gov, etc.)
- Visually **explore** data sets by facets (topic, license, size, etc.)
- Integrate data sets through data providers, RDF import, or federation
Customization of the Frontend

- **Semantic Wiki** for managing and linking structured and unstructured data
- Users **collaboratively** generate, annotate, and update content
- Type-based template mechanism
- Advanced search and information access paradigms
Widgets as Living UI

Large pool of predefined widgets for data access
- Navigation and exploration
- Mash-ups with external data sources
- Dashboards for analytics and reporting

Declarative specification of the UI in wiki-based syntax

```
{{ #widget: TagCloud
| query = 'SELECT ?tag (COUNT(?p) AS ?count)
    semont:isPartOf www2012:proceedings . }
  GROUP BY ?tag'
| input = 'tag'
| output = 'count' }}
```
Extending the Platform

Create your **own components**
- Develop application-specific data providers
- Implement special-purpose widgets

**Extendable** platform
- Well-defined API
- Easy-to-use SDK

Freely available as **Open Source**
[www.fluidops.com/information-workbench/](http://www.fluidops.com/information-workbench/)
APPLICATION DEVELOPMENT
Welcome to the WWW Conference 2012

This is the start page of the Information Workbench WWW2012 Conference Explorer. Browse all publications, events and authors, find out which event takes place when and where and be prepared for a great conference! The Conference Explorer offers more than browsing merely through conference metadata. Whenever a social network account (Facebook, Twitter) is known for some entity we enrich the information with data from that social network.

Interesting Pages
For getting started, here is a list of interesting pages showing how data is integrated.
- Statistics around the conference
- Authors and Publications
- WWW Chairs and Comitee members
- Information about this tool

Tag Cloud
Agents, Grids, and Services  Clustering  Diffusion  E-commerce  Emerging  Regions  Evaluation  Information  Credibility  Information Extraction  Information Usage  Intent
Understanding  Monetization  Multimedia  Performance  Privacy  Queuing  Query  Ranking  Recommendation  Search  Security
Semantic Web  Social Network  Algorithms  Social Network Analysis  Spatio-Temporal Analysis
Temporal Dynamics  Text Mining  Trust and Diversity  User Interaction  Web Applications  Web Mining  Web Security  Web, Context, Economy

People following @www2012lyon on Twitter
Information Workbench – Application Areas

Knowledge Management in the Life Sciences

Digital Libraries, Media and Content Management

Intelligent Data Center Management
CONCLUSION
Summary

**Enormous potential** for Linked Data applications

*Information Workbench* as **open platform** for implementing Linked Data applications

Addressing all aspects of **interacting with Linked Data**
- Intelligent data access, navigation, and exploration
- Dashboards for reporting and analytics
- Collaborative knowledge management, authoring, and publication

“**Self-service**” application development
- Linked Open Data discovery
- Automated data integration
- Customization of the frontend with rich widget pool
- Extensible via API and SDK
Check out our app at the Metadata Challenge!

http://conference-explorer.fluidops.net/

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