A User Interface to Build Interactive Visualizations for the Semantic Web

Miguel Ceriani, Paolo Bottoni and Simona Valentini

WEB-BASED VISUAL EDITOR

Component Panel
- Use, view or modify other pipelines

Pipelines Panel
- Source defined by execution context (e.g. UI events)

Data Sources Panel
- Target defined by execution context (e.g. HTML+SVG view)

Helper Area
- Graph merge of the inputs

Command Buttons
- Graph incrementally updated when an input changes

Editor Area: build the pipeline by dragging, linking and configuring the desired components

Source Code Area: shows the RDF graph (Turtle syntax) that represents the pipeline

PIPELINE COMPONENTS

Datasource
- Data from an RDF graph or an XML document

Input
- Source defined by execution context (e.g. UI events)

Output
- Target defined by execution context (e.g. HTML+SVG view)

Construct
- Graph built querying the inputs

Union
- Graph merge of the inputs

Updatable
- Graph incrementally updated when an input changes

PIPELINE LIFECYCLE

1. EDIT
Create and modify the pipeline with the web-based editor.

2. SAVE
Save the pipeline from the editor. It’s saved on a Graph Store as RDF.

3. EXECUTE
On a machine that offers the execution service, the pipeline is loaded on demand and executed sending a dynamic web page to the browser. When the user interacts with the app, the service computes the changes and updates the page.

4. PUBLISH
Being already represented as RDF, the pipeline can be published on the Semantic Web. Other users can just reference it to use the pipeline “as it is” or to clone it to change some part.

COMPARISON OF (SOME) VISUALIZATION FRAMEWORKS

<table>
<thead>
<tr>
<th>Framework</th>
<th>Query Chains</th>
<th>Interaction</th>
<th>App State Support</th>
<th>Reuse as Service</th>
<th>Reuse as Module</th>
<th>FLOSS</th>
<th>Production Ready</th>
</tr>
</thead>
<tbody>
<tr>
<td>Callimachus</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>LODS/PeaKr/VisualBox</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>DERI Pipes</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>TopoPajl Composer</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>SWOWS</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>

CONTACT INFO

Web Site: www.swows.org
Emails: ceriani@di.uniroma1.it, bottoni@di.uniroma1.it, simo.valentini@hotmail.it