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A Distributed Semantic Microblogging Platform

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Abstract. The application showcases the ideas of a distributed, Semantic-
Web enabled microblogging architecture, providing a way to leverage this
new Web 2.0 practice to the Semantic Web.

Key words: Microblogging, SIOC, Data Portability, Linked Data Web

Microblogging is one of the recent social phenomena of Web 2.0 but unlike
blogs or wikis has not yet been leveraged to the Semantic Web. To achieve this
goal, we designed a semantically-enabled distributed architecture for semantic
microblogging, which relies on an open world of publishing clients and aggrega-
tion servers that exchange data modelled in RDF.

When users write microblog posts within their clients, RDF files are created
on the client webservers, describing the posts using FOAF and SIOC, and
pushed live to a number of aggregation servers. Thus, the user really owns his
data and can reuse it locally for other purposes, either browsing or merging with
other RDF data, while aggregation servers are mainly dedicated to providing a
browsing interface for shared communities. To model updates, we extended the
SIOC types module with a MicroblogPost class, as well as Microblog to
model the service itself.

Thanks to the use of existing libraries, the code of both the client and the
server is really light. The client uses the SIOC PHP API to create the RDF
files from an HTML form submission, and is only 57 lines of code. This file is
pushed to some aggregation servers (choosed from the list of servers stored in the
client configuration file) using CURL. Regarding the server, we rely on ARC which
provides a lightweight environment for developing RDF-based applications
in PHP. The server uses the SPARUL LOAD instruction to store received
updates in the server backend store, and a single SPARQL query to render a
view of public updates. To make the interface fancier, we use Exhibit to
display a faceted view of these latest updates. These facets include date and au-
thor but also some user-defined data. Indeed, the server features a preprocessor

¹ http://code.google.com/p/smob/
² http://wiki.sioc-project.org/index.php/PHPExportAPI
³ http://arc.semso.org
that allows users to use some semantic hashtags in their updates. The current implementation includes a GeoNames\footnote{http://geonames.org} mapping, allowing users to use tags like 
\#geo:paris\_france to retrieve the URI of the related resource, thus providing a way to leverage location-based microblogging to the Linked Data Web. Consequently, this mapping permits the use of the geographical rendering part of Exhibit, as shown on Fig. 1. Other simple topics can be extracted with a similar processor and can also be linked to DBPedia with a given prefix.

Fig. 1. Geographical faceted browsing of updates with Exhibit

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References