

# SWAD–Europe Deliverable std 3.10: Dissemination and Exploitation: Developer Outreach Report

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Abstract:

(from workplan) Public Report summarising findings from developer outreach.

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Completed

## SWAD–Europe Developer Outreach Report

This document summarises SWAD-Europe's work on developer outreach after the first year of the project, noting trends and issues that arose during collaborations with Semantic Web developers.

### Workshops and Online Discussion

The [SWAD-Europe Web site](#) [reports](#) on the details of the project's activities. These include face-to-face workshops as well as virtual workshops and discussion, using email, Web, Wiki, Weblog and IRC chat technologies. Technical findings and proposals of the project have been disseminated to the Semantic Web developer community, in particular through the W3C RDF Interest Group and related fora.

### Key Issues

This is a qualitative rather than quantitative analysis, based on the SWAD-Europe project team's various interactions with developers regarding Semantic Web technology, and on the author's experiences in chairing RDF Interest Group discussions between 1999-2003. This document does not attempt to reproduce a summary of each SWAD-Europe workshop; for details of these see the listing of [reports](#) on the SWAD-Europe site.

These observations focus on the need to identify concerns, trends and opportunities regarding the developer community's view of "Semantic Web" technology.

**Note:** this version of the document focusses on findings derived from active participation in Semantic Web discussions and SWAD-Europe developer workshops. As such it has built-in biases. Participants in this work may be early adopters, unrepresentative in terms of skills, language ability, knowledge of W3C/standards etc.

**Terminology variation across developer groups** - The *terminology* relating to the "Semantic Web" causes some confusion. Unlike "RDF", "XML", "RDF/XML", "OWL" etc., the phrase "Semantic Web" appears to evoke a variety of expectations and associations, since it is not the name for a specific, formally specified technology. In particular, many developers with background in the AI and Knowledge

Representation world appear to associate it specifically with the application of Ontology (eg. OWL) and Rule (eg. N3) technology to data exchange on the Web. By contrast developers on the more RDF-oriented lists (eg. www-rdf-interest) seem to use it as a name for the project to deploy RDF on the public Web. Meanwhile members of communities less closely tied to W3C also use "Semantic Web" to describe their work, even if not based on RDF or OWL (eg. Topic Maps, Thesauri, etc.). By contrast, developers working with other W3C non-RDF XML technology (XQuery, XSLT etc) do not appear to have adopted this as a slogan to characterise their work.

**XML "versus" RDF - developer perceptions** - The early years of RDF deployment saw much debate characterised in terms of a perceived opposition or conflict between RDF technology and XML technology. While this had some basis in technical issues, these were exacerbated by social differences: XML developers and RDF developers tended to be different people. On the evidence of discussions observed during the SWAD-Europe work, the situation in 2002/3 is vastly improved from the situation in, for example, 1999/2000. While technical and architectural issues remain, there does not now appear to be the same level of confusion, even hostility, present in online and face-to-face developers discussions regarding RDF's role in the standards world. In particular, the boundaries between the XML and the RDF developer world have blurred.

Many active developers (eg. opensource and commercial tool creators, working group members, technology advocates and analysts) can no longer be simply classified as "RDF" or "XML" developer. While concerns remain about the need for clarifying the relationship between RDF and XML technologies (APIs, query languages, schema languages etc.), there has in the last 1-2 years been a notable shift in tone. Many XML-oriented developers are familiar with the basics of RDF (perhaps aided by increased availability of RDF toolkits such as Jena, Redland, Inkling, Cwm). Similarly, many RDF-oriented developers are now familiar with other parts of the XML standards family, most notably XSLT is being very widely used and referenced in RDF discussions.

**Query languages** - During 2002-3 there has been a notable increase in work (collaboration, discussion, announcements etc.) relating to RDF query. The SWAD-Europe supported discussions on the www-rdf-rules list, including scheduled IRC chats on RDF query testcase interoperability, were provided to support this 'pre-consensus' informal work. Collaborative discussion around RDF query technology has focussed on identifying a "lowest common denominator" approach to testing the functionality of RDF query systems. There are 15-20+ RDF query systems available, with varying facilities and robustness.

Developer discussion regarding appropriate next steps has been fairly limited, suggesting a need for more explicit community consultation through the RDF Interest Group. There is certainly a concern expressed by a number of developers regarding risk of premature standardisation, as well as questions about strategies to ensure RDF query technology is as simple and lightweight as possible, despite competing requirements. As in many fora, there is also concern amongst developers regarding technology overlap: the relation between RDF query languages and other systems, including but not limited to RDF APIs, RDF path languages (eg. XPath-for-RDF and XPath-esque systems), XSLT, hypothetical RDF transformation languages, OWL, RDF rule languages (eg. N3, DAML-Rule proposals) and W3C's current area of Query work, XML Query.

Despite this, there is recognition in the RDF developer community that most deployed RDF-query capable systems have significant overlap in functionality. Many systems implement variations of the RDFdb-derived query languages 'Squish' and 'RDQL', often with locally created extensions or profiled subsets. The existence of this body of work suggests that there is real demand for a widely agreed RDF query language, and that work on transitioning some such language to standards track should be considered soon.

## Conclusions

The following brief conclusions can be drawn:

- XML and RDF are now well known and understood *as technologies*, and many developers consider both technologies to be useful tools in their portfolio; however the 'big picture' of how they can be combined effectively in the "Semantic Web" is still emerging, and there is some variation in the way the phrase "Semantic Web" is popularly understood.
- There are significant unanswered questions regarding the relationship between any hypothetical RDF query work and related (existing or anticipated) W3C RDF and XML technologies. There is a significant body of work in the developer community (much of it opensource and backed up by collaborative discussion in RDF IG fora) relating to RDF query, and significant common core functionality in existing RDF query systems. RDF and Semantic Web developers are aware of both trends and are looking to W3C to set expectations regarding next steps.

