

# SWAD–Europe Deliverable 2.1: Project Technical Plan

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Abstract:

This document describes the overall technical plan for the SWAD-Europe project.

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Comments on this document are welcome and should be sent to the [public-esw@w3.org](mailto:public-esw@w3.org) list.

An archive of this list is available at <http://lists.w3.org/Archives/Public/public-esw/>

## Contents

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- [Introduction](#)
  - [Project Objectives](#)
  - [General Approach](#)
  - [Maintaining Relevance](#)
  - [W3C, SWAD and Standards](#)
  - [Target Communities](#)
    - [Internet, Web and Open Source developer Community](#)
    - [Academic and Research Community](#)
    - [Content and Tool Producers](#)
    - [Industry and Commerce](#)
  - [European and International Involvement](#)
  - [Advisory Group](#)
    - [Membership](#)
    - [Internal Communications](#)
  - [Mailing Lists and Other Tools](#)
  - [Technical Coordination Issues](#)
- 

## Introduction

This document describes the overall technical plan for the SWAD-Europe project. It is intended to provide background information to project participants, advisory group members and other collaborators. SWAD-Europe uses the technologies of the Semantic Web (XML, RDF, ontologies, ...) as a basis for technical interoperability across workpackages. SWAD-Europe is not a distributed software development project, although the project partners and several workpackages share a focus on the use of RDF-based tools to provide interoperability between independently developed tools. There are few hard dependencies between workpackages, but a great many opportunities for overlap. This document provides some background on the technical coordination approach adopted in the project, and describes the practical machinery of collaboration within the project (mailing lists etc.), the role of the SWAD-Europe Advisory Group, as well as identifying a number of specific cross-workpackage issues

and opportunities.

## Technical Coordination: Objectives

The workplan identifies the following objectives relating to technical coordination of the project. Presentation slides from the project kickoff meeting are [also available](#), and provide an overview of the project and its goals.

The purpose of the technical coordination workpackage in SWAD-Europe is...

- To ensure technical and architectural consistency of software, research, demonstration and dissemination activities throughout the project, coordinated both internally and with stakeholder communities
- To provide ongoing technical overview and direction for the project
- Coordinate dependency management decisions concerning inter-workpackage re-use (eg. code sharing)
- Establish and manage an international Advisory Group to inform technical content of work (also required for WP3)
- To maintain a close relationship between project directions and the web community through participation in relevant (e.g. W3C) coordination activities and coordination groups

The role of this document is to help ensure that the diverse strands of research, implementation and outreach which constitute the project share a common technological and architectural approach, and that this is consistent with the work and goals of W3C's activities in related areas.

To ensure the high quality and ongoing relevance of SWAD-Europe's technical and scientific work (in research, demonstrators and dissemination), SWAD-Europe has an independent Advisory Group, drawing on representatives from the four stakeholder communities outlined [below](#).

It is important that SWAD-Europe activities can draw upon and feed into relevant standards activities, at W3C and elsewhere. Wherever possible, this will be achieved through existing W3C mechanisms such as Coordination Groups, Interest Groups, and W3C's network of national Offices, both European and world-wide.

The project adopts an open approach to project technical discussions, so that the developers contributing to each workpackage should have good access to discussions happening elsewhere in the project. External feedback and contributions are possible through public mailing lists, providing early and informal input into technical design choices from all interested parties.

### General Approach

Technical coordination of SWAD-Europe involves a number of mechanisms and strategies; these are described in more detail below. Project-internal coordination and dependency management mechanisms are accompanied by a number of mechanisms designed to relate the production of SWAD-Europe's formal contracted deliverables to the needs of four key target communities.

The initial technical workplan for SWAD-Europe was created during 2001 and early 2002, and as such reflects some contemporary concerns such as the relationship between XML and RDF, or between the Semantic Web and Web Services architecture. Maintaining relevance and responsiveness to unanticipated industry developments is a major challenge for European projects. The technical coordinator, with expert and stakeholder input through the Advisory Group, is responsible for ensuring that all workpackages undertake useful and relevant work, and that this is done within the constraints imposed by the initial project plan.

### Maintaining Relevance

Web technology is a rapidly evolving field, and it is impossible at project creation to anticipate all relevant industry trends. The WP2 coordination role, alongside that of the Project Manager, may therefore involve close liaison with SWAD-Europe's Project Officer to ensure that the technical content of SWAD-Europe's formal project deliverables remains relevant to current industry and consumer needs. This might (through consultation with the Advisory Group) involve proposing re-prioritisation of effort and focus amongst the agreed deliverables, to remain responsive to a changing environment and user needs.

W3C's Semantic Web initiative is based around the idea that there are some generic technologies and strategies that can be applied to a wide variety of information management problems, providing a powerful unifying approach to Web-based information management. In the SWAD-Europe project, we put this idea to the test by exploring the application of W3C Semantic Web technology to a variety of

real-world application areas. SWAD-Europe combines work in some relatively new territory (distributed trust systems), work on cross-domain supporting technology (query languages and APIs to support tool developers, scalable storage systems), alongside community outreach, demonstration and documentation activities.

Rather than explore technical issues in the abstract, SWAD-Europe places a strong emphasis on grounding technical and standards work in practical, real world scenarios. The role of WP2 (Technical and Scientific Coordination of Research and Demonstrations) is to ensure that all these diverse activities are conducted in a consistent and mutually beneficial manner, and that a practical balance is found between technology sharing across work-packages and dependency minimisation.

The general approach proposed here for managing technical consistency throughout the project is to combine an open approach to project communications with the use of W3C Semantic Web specifications and draft specifications as common cross-project standards. This approach both reduces the need for rigid and expensive technical coordination between workpackages, while providing a valuable deployment testbed for these Semantic Web specifications.

## W3C, SWAD and Standards

SWAD-Europe embodies a strong commitment to the role of standards as a foundation for the evolution of the Web into a *Semantic Web*. SWAD-Europe was created to support W3C's [Semantic Web Activity](#), which includes an Advanced Development component to ensure that W3C's formal standards work is complemented by field testing, prototyping and quality assurance activities.

SWAD-Europe has been designed to contribute to this initiative in the following ways:

- undertaking exploratory implementation and design work in 'pre-consensus' areas (such as RDF Query), laying groundwork for possible later standardisation through W3C Process
- providing 'life after standardisation' support for existing W3C specifications, by developing tools and worked scenarios that promote the adoption of these standards
- researching and reporting on "hot topic" issues that have arisen during the standardisation process (eg. XML Schema language convergence, Semantic Web 'versus' Web Service concerns etc.)
- combating 'acronym overload' by providing analysis, use cases and tools that showcase practical strategies for combining multiple standards within a single application (eg. using SVG, MathML, RDF annotations and XML Schema together)

In addition to W3C's activities, the work of numerous standardisation and industry bodies (eg. IETF, ISO, Dublin Core Metadata Initiative, RSS...) is relevant to SWAD-Europe's goals and to the ongoing coordination of the research, documentation and demonstrators produced within the project. While the primary focus of the project is to support W3C's Semantic Web initiative, involvement with other standardisation efforts will be encouraged.

Two specific mechanisms are planned as part of WP2's technical and scientific coordination: liaison through the SWAD-Europe Advisory Group and through W3C's Semantic Web Activity. It is not possible to coordinate directly with every relevant standards-related group. WP2's Advisory Group activity is intended to ensure that a representative cross-section of the stakeholder community has representation within the project. More detailed liaison with other standardisation efforts will be conducted through consultation with W3C's Semantic Web Coordination Group; Dan Brickley (W3C) is - as RDF Interest Group chair - a member of the SWCG and provides a connection to the planning and coordination work of W3C's Semantic Web Coordination Group.

## Target Communities

The following communities in particular are the focus of SWAD-Europe's work. The project identifies four primary consumers of the project's output; these are described in more detail below. Representatives of each will be solicited for the Advisory Group; in addition, the ongoing technical work within the project will be conducted in a manner that encourages frequent and informal communication between project team members and representatives of these groups. This approach combines aspects of the outreach and dissemination work (see WP3) with the technical coordination strategy. Rather than adopt a rigid top-down approach to technical design, SWAD-Europe deliverables will be produced in a collaborative environment that solicits direct involvement from interested stakeholders.

The quality and relevance of SWAD-Europe's contribution to the development of the Semantic Web, and the Web as a whole, will be monitored through close links to W3C via the Semantic Web Activity, and through the establishment of an independent, international *Advisory Group*, with members drawn from the four main consumer groups for SWAD-Europe. These categories also inform the education and

outreach aspects of the project described in WP3. These groups, while initially described here due to their role in scientific and technical quality assurance, will also be relevant to the management of many of the other workpackages.

### **Internet, Web and Open Source developer Community**

Since RDF became a W3C Recommendation in 1999, it has seen significant adoption by Web developers and opensource software projects. SWAD-Europe builds on this, and on W3C's existing Open Source software projects (such as Amaya, CWM, SiRPAC, Jigsaw) by acknowledging and explicitly focussing on Internet-oriented opensource software projects as a key Semantic Web stakeholder community.

### **Academic and Research Community**

The ideas and technologies currently termed "Semantic Web" are largely derived from long-established work in Computer Science, Information Retrieval, Knowledge Representation, Logic and related areas. Semantic Web development requires an understanding of the additional architectural and pragmatic requirements imposed on traditional technology from these fields by the global, distributed Web architecture. Many experts from the academic and research community have an in-depth understanding of the relevant theory, literature and tools, but little familiarity with Web and Internet standards and the architectural principles of the Web. SWAD-Europe will seek ways of drawing academic researchers (and their students) into the Semantic Web developer community, through (for example) FAQ documents, sample datasets and student project proposals.

### **Content and Tool Producers**

If SWAD-Europe is to succeed in stimulating Semantic Web adoption throughout Europe, it will need to provide tools, technology and advice to make it easier to publish data online in Semantic Web (RDF, WebOnt etc) form. Several workpackages produce tools (eg. XSLT translations) that could facilitate this. By focussing on Content and Tool producers as a critical consumer of SWAD-Europe deliverables, the probability of these tools resulting in more RDF/XML online content is greatly increased. Following the scenario-led approach of the SWAD-Europe demonstrator and outreach activity, there will be a strong emphasis on the production of simple, clearly written documents for mainstream developer and content producing audiences. Providing tool-supported answers to common questions like "How (and why!) do I deploy Dublin Core and RSS on my website" is a major activity of the project.

### **Industry and Commerce**

To date, Semantic Web technology (particularly RDF and Ontology languages) adoption has been most rapid in the academic, research and open source / internet environment. A number of companies have products, services and data formats that employ RDF, but often commercial solutions adopt a solely XML-based approach. SWAD-Europe will not focus directly on outreach to and involvement of corporate stakeholders; instead, SWAD-Europe's deliverables are intended to provide the raw materials (FAQs, free tools etc) that make the Semantic Web approach more attractive and understandable to such an audience. The SWAD-Europe project consortium includes commercial representation (HP Labs, Stilo), and further input from Industry will be solicited through W3C.

### **European and International Involvement**

The Semantic Web community is an international one. SWAD-Europe is committed to maintaining and building upon existing international collaborations, to the adoption and promotion of international standards, and to increasing the involvement and visibility of European Semantic Web developments on the world stage. This is supported by the SWAD-Europe Advisory Group (below), and through liaison with W3C, in particular through W3C's international Offices network.

### **Advisory Group**

Technical coordination will be supported by the creation and active involvement of a SWAD-Europe Advisory Group. AG membership will include representatives from each of the four groups outlined above.

Given the nature of SWAD-Europe, the project seeks to maintain an Advisory Group who will take an active and practical interest in the work of the project, through mailing lists and other online fora.

Feedback received through discussion with potential AG members has led to a revision of the original plan, with a reduced emphasis on face to face and telephone meetings, and an increased emphasis on electronic fora and practical rather than strategic input into the work of the project.

The role of the SWAD-Europe Advisory Group is to:

- Monitor and support SWAD-Europe's commitment to a major European role in the creation of the Semantic Web,
- Help the project draw upon external technical expertise.
- Discuss project work, reports and priorities with SWAD-Europe participants and other partners. This may involve minuted telephone and IRC conferences, but will be conducted primarily through use of the SWAD-Europe public [mailing list](#), [public-esw](#).
- meet face to face where feasible, typically co-located with other SW and Web meetings
- Ensure liaison with non-European Semantic Web initiatives, including but not limited to DARPA's DAML program and the Joint EU/US Agent Committee

## Membership

The initial membership of the Advisory Group is currently under discussion within the project team.

Representation from the US will include Professor James Hendler, Director of Semantic Web and Agent Technologies, University of Maryland, continuing his advisory role during the project proposal stage.

## Review Role

SWAD-Europe Advisory Group members may be asked to provide more formal review of project deliverables, and to identify additional reviewers with appropriate expertise.

## Internal Communications

The technical direction of SWAD-Europe is provided to situate each workpackage within an overall architecture, including related technologies not directly examined within the project. It will be necessary to identify relevant committees, organisations and standards bodies to liaise with, and communicate this information to the project partners.

Most SWAD-Europe technical discussions are conducted on publicly-archived mailing lists, which will be open to all project team members from partner sites, as well as to Advisory Committee members and other collaborators. This work will involve identifying, analysing and discussing appropriate technical designs within the project consortium, disseminating design decisions made within the project to other W3C efforts, and liaising extensively with all project partners and related organisations.

**Mailing Lists and Other Tools** - The project maintains a publically readable mailing list, [public-esw](#). This is the primary forum for technical discussion amongst the project team, and may also be posted to by the Advisory Group, W3C RDF Interest Group collaborators, Advisory Group members and other interested parties.

Wherever possible, the project makes use of existing mailing lists, rather than create SWAD-Europe lists that could fragment or duplicate existing discussions. Where there is a need for a new list, this can be created as a project-oriented list, or (alternatively) proposed as a sub-list of the RDF Interest Group.

## Relevant mailing lists

[www-rdf-interest](#)

The main RDF Interest Group (and W3C Semantic Web) mailing list.

[www-rdf-rules](#)

RDFIG list for discussing rules and query technology for RDF, with an emphasis on implementations and testing. (relates to WP7)

[www-annotation](#)

W3C Web annotation mailing list. (relates to WP 12.2)

[www-rdf-calendar](#)

RDFIG list for discussion of calendar and scheduling systems in RDF.

## Weblog

A [SWAD-Europe weblog](#) has been established, to allow project participants and collaborators to share information about work in progress and other items of interest.

The weblog is also [syndicated using RDF \(RSS 1.0\)](#)

## Wiki

A [SWAD Europe Wiki](#) system is also available for use both by project partners and also the wider membership of the RDF Interest Group. For more details see the [Weblog entry](#) that announces it.

## Internet Relay Chat (IRC)

Many RDF developers use IRC as a means for sharing information and ideas. The [RDF Interest Group channel \(#rdfig\)](#) is a well known meeting place, and has an [associated weblog](#) generated from IRC-based annotation of URLs.

**Technical Coordination Issue List** - The following issue list describes some of the main points of overlap and opportunities for collaboration that exist in the [SWAD-Europe workplan](#).

## General Issues

- What if any tools do we use in common? (Redland, Jena, InKling, ...?)
- Which established or proof-of-concept RDF vocabularies (ontologies/schemas), if any, do we use within the project? Dublin Core (simple? qualified?), RSS 1.0 (with extensions?), [Geo markup?](#), Wordnet?, TAP?, SWAP/contact?, FOAF?, any others?
- What test data can we share between workpackages? (see [scalability report](#) for an initial survey).
- What application scenarios can we document that cross workpackage boundaries?
  - Image annotation?
  - Querying a server?
  - Sitemap data?
  - Purchase orders in RDF?
  - Ontologies, thesauri and weblogs?
  - Calendar sharing and query?

## Workpackage specific issues

Brief notes on workpackage and report-specific issues.

- WP4 [sw\\_soap\\_design\\_report](#): W3C's work will include a demo drawing on Annotation-based scenarios, including discussion of PICS and image annotation.
- WP4 [xml\\_graph\\_serialization\\_report](#): this is very close to the WP5 area of work, mapping between XML syntaxes and graph data models.
- WP7: query test cases: several people have asked for shared test datasets, as well as query test cases. WP10 needs this too, at least.
- WP8: this begins late in the project, yet thesauri would be useful in various other places, such as image annotation. W3C work may include Wordnet-in-RDF, and may be brought forward so that WP4 and WP9 can use it.
- WP10: see WP7 re dataset sharing.
- Further [collaboratively maintained notes](#) on technical overlaps, scenarios etc. are maintained in the ESW Wiki.