



# ***SIMDAT***

Data Grids for Process and Product Development using Numerical Simulation and Knowledge Discovery  
Project no.: 511438

Grid-based Systems for solving complex problems – IST Call 2  
Integrated project



## **Deliverable**

### ***D.21.1.7 SIMDAT Standardisation Plans***

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## ***Revision history***

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# 1 Introduction

This document is an initial position paper describing how the SIMDAT consortium intends to influence Grid and Data standards via international bodies like GGF, W3C and OASIS and via European standardisation coordination groups like GSCG and COPRAS. The detailed descriptions of which Standards are to be pursued will be described in detail in SIMDAT documents detailed at the end of this report.

The cost in terms of time and effort required to generate or extend standards should not be underestimated for example the total cost to global enterprises of initiatives like STEP runs into the 100's of millions of Euros<sup>1</sup>. Therefore realistically the SIMDAT consortium within the timeframe of the project will only be able to influence the decision making process with the reliance on goodwill from partner organisations and specific EU Commission long term initiatives funded as part of future calls, to see these types of activities through to completion.

The rapid evolution and uncertainty of Grid standards of the last couple of years has complicated this task as this 'landscape' is continually changing with the big players like Microsoft, HP and IBM often proposing competing standards via different standardisation bodies. Bearing this in mind the SIMDAT consortium aims to maximise its impact on the world community by tracking and adopting 'fit for purpose' industrially relevant Grid and data representation standards, specifications and de-facto standards. We propose to use the concept of a standards 'profile' (e.g. WS-I Basic Profile) that includes Grid Standards and specifications that are SIMDAT endorsed. We aim to use the SIMDAT profile to provide a focus to discussions with bodies like OASIS and GGF.

The project has started the definition of a SIMDAT WSRF profile<sup>2</sup> which is currently under discussion internally in the project. This will provide the first part to a document that will require continuous updating during the project but form the basis for any interactions with the standardisation bodies.

A certain number of the SIMDAT partners are already involved in standardisation activities and we plan to exploit their position within the global standardisation community to ensure that the decisions behind the adoption of the SIMDAT profile are communicated to the appropriate parties. The long term aim is for the specification shortfalls to be addressed by the standardisation bodies to the extent that a SIMDAT profile is no longer required as the standards will meet our requirements.

There are many routes to interact with standards bodies like GGF and OASIS. The project will take a pragmatic approach aimed at maximising impact of the limited resources available. For example we aim to interact with OASIS via their public comment process and possibly approach the GGF community through exploiting the recent GGF/EGA merger via joining Industrial Grid Users Community and Regional Grid Activities.

## 2 SIMDAT and Standardisation

This section provides some background to what SIMDAT considers as being a standard and which standards are relevant to the project

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<sup>1</sup> Industrial and governmental investment in STEP development and implementation is estimated at over €400, 000, 000 over the last twenty-five years

<sup>2</sup> SIMDAT document - Industrial Grid Profile Analysis by IT Innovation

## ***2.1 Definition of Standard***

### **2.1.1 Role of standards**

The main role of IT “standards” is to promote interoperability across different vendors' platforms. However, vendors are businesses who need to maintain competitive advantage through their own unique selling points. Therefore, successful standards are defined at a core layer in the information architecture at which most major vendors agree that the advantage of interoperability outweighs the need for competitive advantage.

In the web and web services areas, URL's, HTTP and XML are standardised, since the need for interoperability outweighs competitive advantage for these core technologies. The packaging technology of SOAP, and the Web Service Description Language (WSDL) are also examples of core technologies where the required functionality is agreed, and the need for interoperability outweighs the need for competitive advantage.

### **2.1.2 Notions of Standards**

The term “standard” can cover different notions, ranging from a public specification issued by a set of companies, to a ‘real’ standard issued by a recognized standardisation body. We distinguish between the following types of “standards”:

- De facto standards – a technology that is used by a vast majority of the users of a function. It may for example be in a product from a single supplier that dominates the market; or it may be a patented technology that is used in a range of products under license; etc. A de facto standard may be embraced by a standardisation initiative, and eventually become a consortium recommendation, or a de jure standard. The important thing is that it is very widely used, meets the needs for functionality, and supports interoperability.
- De jure standards – standards from entities with a legal status in international or national law such the ISO, national standards bodies (e.g. BSI in the UK, ANSI in the US) or continental standards (e.g. European standards). These are strong in the health and safety related areas, in business quality measures and in long term IT areas. In IT these standards do not have to be implemented, or ever used; they just have to be agreed by the appropriate committee procedure – which can take many years.
- Consortium recommendations – Groups of companies agree that a technology is recommended by them to provide some functionality. Such consortia vary in size from groups of a few large manufacturers (e.g. Microsoft, IBM and BEA), through OASIS and W3C to IETF. They also vary in the time it takes to establish a recommendation and the consensus that is behind it.

## ***2.2 Standardisation Contributions***

One of the main objectives of the SIMDAT standardisation activities is to ensure that the results of the SIMDAT project contribute to the future developments of interoperable standards for distributed problem solving environments where necessary and appropriate.

As part of establishing a first baseline for further activities, we identified the following possible types of contributions:

1. Profiles, to integrate existing and new specifications within and across areas
2. New contributions or extensions in specific areas, where appropriate
3. Dissemination of SIMDAT results within standardisation initiatives

### **2.2.1 Profiles**

SIMDAT will focus on, and expects to have its main impact with respect to standardisation in the creation of profiles. A profile identifies how different specifications should be used together to support complex applications. This specifically applies to (but is not limited to) interoperable web services. If individual web services standards are metaphorically seen as pieces of a jigsaw puzzle, that each capture some autonomous functionality, then profiles can be seen as recommended designs of jigsaws and “best practice” guidelines that support work towards implementing comprehensive and potentially complex business functions. Profiles are created in response to the ever-growing number of interrelated specifications, all at different version levels and different stages of development and adoption, and often with conflicting requirements. Profiles integrate and refine dominant web services standard specifications by resolving potential conflicts between them, constraining their extensibility options where necessary, and exploiting their composability characteristics.

### **2.2.2 New contributions or extensions in specific areas**

SIMDAT will propose new contributions where appropriate based on the SIMDAT architecture. These contributions will focus on extensions of existing standards in the case where the use of profiles to compose new functionality is insufficient. These may be pursued by individual partners beyond the end of the project if there is seen to be an advantage to providing interoperability.

### **2.2.3 Dissemination of SIMDAT results**

A large part of the SIMDAT standardisation activity will be the dissemination and discussion of the results and use cases within standardisation initiatives. This will be carried out by partner organisations that have existing internal activities with people who are already involved in standardisation initiatives. (See partner specific activities for details)

## ***2.3 SIMDAT Industrial Grid Profile***

The project has started the definition of an Industrial Grid Profile. This will initially focus on the OASIS WSRF standard and will be based on experience gained from the application prototypes with input from NextGrid.

This document currently provides an analysis of four Grid-related interoperability specifications, with a view to defining an adoption policy for SIMDAT’s industrial Grid developments. The purpose is to understand how these specifications can be used in industrial B2B scenarios. Each specification is described, along with the benefits and issues associated with their adoption.

The final Industrial Grid Profile will be published to the wider community to influence further development of these specifications. (See SIMDAT document Industrial Grid Profile Analysis for more details)

## ***2.4 GSCG Activities***

The Grid Standards Coordination Group (GCSG) is a group formed under the Sixth Framework Programme collaboration activity between the Grid projects. The group was created in January 2005 comprising representatives of the following FP6 Grid projects:

- Akogrimo
- CoreGRID
- DataMiningGrid
- GridCoord

- HPC4U
- inteliGrid
- KW-F GRID
- NextGRID
- OntoGrid
- Provenance
- SIMDAT
- UniGrids

The aim of the group is to ‘*Aid, foster, and manage the collaboration, co-ordination and dissemination of the standardization efforts in the member Grid research projects*’

The GSCG in collaboration with Rigo Wenning of the COPRAS (Cooperation Platform for Research and Standards) have produced a draft document - Clustered Standardization Action Plan for the GRID-Projects organized in the GRID Standardization Coordination Group (GSCG) which is currently under review by the members of the group and is expected to be issued by May 2006. This document is based on input from all Grid research projects from February 2005 therefore will need updating as the standards are continuously changing and the project requirements have also changed due to extended scenarios in the new work plan. These changes including the SIMDAT Profile analysis will be communicated to the GSCG as part of the process agreed at conception of the group.

The next face to face meeting of the GSCG is expected at the next European Grid Technology Days in September.

### **3 Activities per Partner**

This section describes activities per partner that are involved in standardisation activities in SIMDAT. It is expected that more partners will get involved in these activities as the technology platform matures during the project lifetime. All activities have specified delivery milestones to provide time bounded focus to each undertaking.

#### **3.1 Ontoprise**

Ontoprise is actively involved in the W3C via the Rule Interchange Format Working Group. Michael Erdmann<sup>3</sup> is member of the W3C Rule Interchange Format Working Group ([http://www.w3.org/2005/rules/wg\\_participants.html](http://www.w3.org/2005/rules/wg_participants.html)).

Excerpt from Rule Interchange Format Working Group's mission (RIF-WG) ([http://www.w3.org/2005/rules/wg\\_charter#mission](http://www.w3.org/2005/rules/wg_charter#mission)):

*The Working Group is to specify a format for rules, so they can be used across diverse systems. This format (or language) will function as an interlingua into which established and new rule languages can be mapped, allowing rules written for one application to be published, shared, and re-used in other applications and other rule engines. Because of the great variety in rule languages and rule engine technologies, this common format will take the form of a core language to be used along with a set of standard and non-standard extensions. The Working Group is chartered to first establish the extensible core and possibly a set of extensions, and then (in Phase 2) to begin to specify additional extensions based on user requirements. These extensions need not all be combinable into a single unified language.*

Current contributions by Ontoprise and others to the RIF-WG can be found at [http://www.w3.org/2005/rules/wg/wiki/Enterprise\\_Information\\_Integration](http://www.w3.org/2005/rules/wg/wiki/Enterprise_Information_Integration).

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<sup>3</sup> He has a guest researcher status at the Forschungszentrum Informatik (FZI, <http://www.fzi.de/>), which is member of the W3C

Ontoprise propose to focus on the Rule Interchange Format (RIF) standard as SIMDAT can provide use cases with distributed and heterogeneous users using a wide variety of technologies which are not representable with only OWL/RDFS.

Based on the proposed the W3C RIF-WG milestones (see below) the aim is to make sure that the recommendation document in May 2007 at least partially meets SIMDAT requirements.

From <http://www.w3.org/2005/rules/wg/charter#milestones>:

### *2.3. Phase 1 Major Milestones*

- *First Public Working Draft, Use Cases and Requirements 2006 February*
- *First Public Working Draft, Technical Specification 2006 May Last*
- *Call Working Draft, Technical Specification 2006 October*
- *Recommendation 2007 May*

#### **Action:**

PM24: Report of SIMDAT specific contributions containing concrete examples.

## **3.2 ECMWF**

ECMWF participates in the WMO Core Metadata Standard Activity. WMO is developing an ISO 19115 profile in order to describe and discover meteorological datasets. ECMWF is member of the Expert team defining the profile and the input from SIMDAT has been used to influence the standard. A new version of the standard taking into account SIMDAT input will be available early May 2006 and will be discussed at the next meeting of the Expert team in June 2006. This version will focus only on the discovery aspect. The problem of "travelling metadata" will be addressed in the next release.

ECMWF is also heavily involved in the definition of standard in the framework of the WMO Information System: to synchronise/exchange metadata, use of grid technology.

#### **Action:**

PM21: Revised version of standard taking into account SIMDAT input.

## **3.3 Intel**

Intel is involved in a number of GGF working groups (OGSA, JSDL, BES, DAIS, SAGA, ...), and is also represented in the GGF government bodies (GFAC). While the scope of this engagement is larger than SIMDAT, Intel is commenting to proposed standards and giving feedback on existing standards given the experience in SIMDAT. The focal point of Intel's GGF involvement is to make GGF aware of the needs of the industrial and Enterprise Grid users, and ensure that the GGF standards do address this user constituency's needs.

In Oasis, Intel is represented in the WSRF-specific working groups. Comments have been given regarding WSRF, and the evaluation of WSRF's 'fitness for B2B' as discussed above in section 2 will be discussed with both the relevant Oasis groups and the GGF OGSA working group.

#### **Action:**

PM24: Report on initial feedback and future plans for OGSA-DAI

### **3.4 IT Innovation**

IT Innovation will continue the development of an Industrial Grid Profile (See section 2) focusing on analysing important Grid-related interoperability specifications. The initial draft document focuses on WS-Addressing, WSRF, WS-Notification and OGSA Basic Profile. The analysis will be expanded to include specifications related to SLA management such as WS-Agreement, WSDM and WS-Management. The current analysis is undergoing review within the consortium so that consensus can be achieved before publication to wider communities.

Dave De Roure has attended various Grid conferences representing SIMDAT's interests. Dave has not yet provided a report describing the SIMDAT results from these meetings but will report in the next set of collaboration deliverables at PM24.

#### **Action:**

PM24: First version of Industrial Grid Profile Analysis suitable for use as basis of discussions via OASIS public comment process.

### **3.5 InforSense**

InforSense, as the leader of the scientific workflow workpackage, is currently investigating the standardisation issues dealing with workflow systems with regards to interoperability between them. Currently, there is no standards in this area that are widely used. The BPEL language has been suggested as a possible standard for web service orchestration. Similarly, the workflow management coalition had published a set of interoperability standards and languages (including XPDL) for interoperability between workflow systems. In both cases, the requirements for the workflow systems under considerations are drastically different from those for a workflow system for scientific application such as within SIMDAT (Deliverables D5.1.2, D5.1.3 and D5.1. 4). InforSense will develop a usage profile for the use of the workflow languages within SIMDAT and other sister projects (i.e. those using workflows for scientific applications), and will present a more detailed description of the use of BPEL. InforSense, with the help of LMS/NOESIS and IT Innovation will continue their work into enabling interoperability between their workflow systems. By PM 24 this will result in a usage profile document that could be submitted to standardisation bodies such as WfMC and the GGF working group commenting on the use of the existing standards.

#### **Action:**

PM 24: Usage Profile of Workflow Systems for Scientific Applications.

### **3.6 BAE Systems**

The aerospace activity plans in SIMDAT for PM19 to PM30 includes a task to look at the requirements and specification of an Analysis Service interface. This can be seen as the specialisation of the general service container like GRIA for the specific case of Analysis services. This will cover the analysis service life-cycle and involve semantic service descriptions and generation and access to distributed databases. This will be a joint effort between BAE Systems, EADS, MSC with IT Innovation and Ontoprise providing technology/standards guidance. This task,

if successful, will result in a specification that the SIMDAT project could propose to standards bodies. It is unclear at the moment which standardisation would be preferable so this decision will be made once a clear specification is reported.

**Action:**

PM 24: Report on progress towards a Generic Extensible Analysis Service Interface.

**End of Document**