

Data grids for process and product development using numerical simulation and knowledge discovery

SIMDAT

Development of industrial and large-scale products and services pose complex problems. The processes used to develop these products and services typically involve a large number of independent organisational entities at different locations grouped in partnerships and supply chains. Offering connectivity plus interoperability, Grids are a major enabler of improved collaboration and of virtual organisations. They have the potential to reduce substantially the complexity of the development process, thereby improving the ability to deal with product complexity. Applications and associated computing power are central to the product development process; however, data is the heart of the issue. Grid technology is needed to connect diverse data sources, to enable flexible, secure and sophisticated levels of collaboration and make possible the use of powerful knowledge discovery techniques.

The strategic **objectives** of SIMDAT are:

- to test and enhance Grid data technology for product development and production process design;
- to develop federated versions of problem-solving environments by leveraging enhanced Grid services;
- to exploit data Grids as a basis for distributed knowledge discovery;
- to promote de facto standards for these enhanced Grid technologies across a range of disciplines and sectors;
- to raise awareness of the advantages of Data Grids in important industrial sectors.

SIMDAT focuses on **four application areas**: product design in automotive, aerospace and pharma industries as well as a service provision in meteorology. For each of these application areas, a challenging problem has been identified which will be solved using Grid technology.

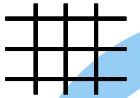
Key to **seamless data access** is the federation of problem-solving environments that use Grid technologies. Delivery of such federated environments will be a major result of SIMDAT.

Seven key **technology layers** have been identified as important to achieving SIMDAT's objectives:

- an integrated Grid infrastructure, offering basic services to applications and higher-level layers;
- transparent access to data repositories on remote Grid sites;
- management of Virtual Organisations;
- scientific workflow;
- ontologies;
- integration of analysis services;
- knowledge services.

continued overleaf ▶

SIMDAT



Contract number
511438

Type of project
Integrated project

Project coordinator
Fraunhofer Institute SCAI

Contact person
Dr Clemens-August
Tholeschloß Birlinghoven
D-54754 Sankt Augustin
simdat@scai.fraunhofer.de

Project website
<http://www.simdat.org>

Maximum Community contribution to project
EUR 11 000 000

Project start date
1 September 2004

Duration
48 months



Impact: The federation of industrial problem-solving environments for product and process design will allow a seamless transition towards Grid technology for key industrial sectors. SIMDAT will therefore improve the usability of Grid technology in engineering, life sciences and earth System Modelling and foster Grid uptake in these and other domains with comparable needs for data handling and knowledge discovery. SIMDAT will furthermore help to drive the revolutionary transformation of computing paradigms from explicit use of data resources towards the virtualisation and federation of these resources.

Project partners

Organisation name and country

FRAUNHOFER GESELLSCHAFT E.V.	DE
EADS CCR	DE
ESI SOFTWARE SA	ES
MSC SOFTWARE GMBH	DE
LION BIOSCIENCE LIMITED	UK
BAE SYSTEMS LIMITED	UK
INFORSENSE UK LTD	UK
INTEL GMBH	DE
NEC EUROPE LTD	UK
THE UNIVERSITY OF SOUTHAMPTON	UK
DEUTSCHER WETTERDIENST	DE
EUROPEAN CENTRE FOR MEDIUM-RANGE WEATHER FORECASTS	INT
MET OFFICE	UK
METEO-FRANCE	FR
ONTOPRISE GMBH INTELLIGENTE LOESUNGEN FUER DAS WISSENSMANAGEMENT	DE
IBM UNITED KINGDOM LIMITED	UK
IDESTYLE TECHNOLOGIES	FR
UNIVERSITE LIBRE DE BRUXELLES	BE
UNIVERSITAET KARLSRUHE	DE
GLAXOSMITHKLINE RESEARCH AND DEVELOPMENT LTD	UK
EUMETSAT	DE
ORACLE DEUTSCHLAND GMBH	DE
AUDI AG	DE
LMS INTERNATIONAL N.V.	BE
REGIENOV - RENAULT RECHERCHE INNOVATION	FR