



Report on the
Industrial Track

organised at the
INTEROP-ESA'2005
February 23-25, 2005, Genève, Switzerland



Network of Excellence (NoE)
***Interoperability Research for Networked Enterprise Applications
and Software***

Session Chairs:
Martin Zelm, CIMOSA and Colin Piddington, Cimmedia

Industry Track Report

The INTEROP ESA'2005, First International Conference - including a parallel conference eGov INTEROP'05 - was held at the University of Geneva on 23-25 February 2005 with 160 participants. As part of the conference, on 24 February, an Industrial Track with two consecutive sessions - attended by 35 participants presented experiences of different projects – some EU, some national funded and some supported by industry.

Objective of the Industrial Track was

- to bring together researches, users and practitioners working on various issues of interoperability to share their knowledge and experiences,
- to reach an improved common understanding, across industry and research, on interoperability and
- to identify requirements for further research.

The two sessions chaired by Martin Zelm and by Colin Piddington addressed the subject of interoperability in the domains of architecture and frameworks, applications, infrastructure. In addition, case studies were presented addressing particular interoperability solutions, as seen from an industry application point of view. The 14 contributions with different themes on interoperability are briefly summarised below. The presentations and/or papers are available at <http://interop-esa05.unige.ch>

Architectures and Frameworks

Lillehagen and Karlsen 'Enterprise Architectures – Survey of Practices and Initiatives.' provided an overview of current practices and development initiatives in the field of Enterprise Architecture, and on ongoing initiatives to transform from there, to guide and support new ways of developing, executing and managing computing solutions.

Elvesater, Hahn, Berre and Neple 'Towards an Interoperability Framework for Model-Driven Development of Software Systems' presented an interoperability framework for enterprise applications, providing a foundation for model-driven development of software systems to support the business interoperability needs of an enterprise with a set of reference models.

Adam, Hofer, Zang Hammer Jerrentrup and Leinenbach 'A Collaboration Framework for Cross-enterprise Business Process Management' presented a framework for the planning, implementation and control of cross-enterprise business processes. The framework distinguishes global knowledge within the network and local knowledge of each participating company and employs a process life-cycle model.

Caramihai 'An Agent-based DES Supported Modelling Framework for Enterprises' reported on an agent based modelling framework, supported by the Discrete Event System theory, intended to provide generic models, allowing evaluating interactions among different subsystems, in a complete customer-transparent manner. Two key properties are applied: meeting a given deadline for the whole process and allowing certain undesirable states as mutual blockings.

Aldenucci, Gusmerioli, Vanneschi and Villa, SFIDA: interoperability in innovative c-business models for SMEs through an enabling Grid platform, reported on the objectives of the project “SFIDA” aiming at developing a GRID-based inter-operability platform able to support next generation Supply Chain Management applications specifically addressing the needs of SMEs belonging to industrial districts and dynamic supply networks.

Applications, Infrastructures and Case Studies

Gronmo and Oldevik 'An Empirical Study of the UML Model Transformation Tool (UMT)' presented an open source tool UML Model Transformation Tool (UMT) - that uses UML models to support a model-driven development process e.g. to define transformations, to do code generation, reverse engineering or model-to-model mappings. UMT has been evaluated against a set of desired properties for UML transformation in accordance with ongoing work in the OMG.

Strand and Lundell 'Syndicate Data Incorporation into Data Warehouses: Contrasting Consumer Problems with Supplier Viewpoints'. showed that user organizations and the syndicate data suppliers have interoperability issues with respect to the business and knowledge layers, whereas the interoperability on the ICT-systems layer seems to be prioritized and therefore achieved a higher degree of interoperability.

Toroi, Mykkanen and Eerola 'Conformance Testing of Open Interfaces in Healthcare Applications - Case Context Management' described the conformance testing model of the open interfaces needed to improve software interoperability. Developed and applied in the PlugIT project, the model has been evaluated in several hospital districts and with various proprietary products

Wayell 'Design anywhere, Build anywhere' presented a case study of a large UK Enterprise's inter-enterprise interoperability strategy and achievements, covering years of IT development, the current interoperability requirements and the architecture of the solution(EAI) with the benefits gained with extensive employment of data standards.

Rabe 'Methods for the Analysis of Supply Network Processes at European SMEs' presented control techniques supporting cross-enterprise collaborative Business Process Modelling, conducted in three SME networks within different European regions and with differing levels of technology capability. From analysing the initial results, potentials for improvement as well as constraints for a more sophisticated supply chain control have been identified.

Yu, Li, Li and Hong 'The Accounting Information Sharing Model for ShanghaiGrid' offered a Grid Computing Environment, regarding all resources as Grid Services in an Open Grid Services Architecture (OGSA). An accounting procedure based upon a computational economy model is solving the problem of resource allocation and charging in the grid multiple computer resource environment.

Particular Interoperability Solutions

Popplewell and Harding 'Impact of Moderation through the Distributed Virtual Enterprise Life Cycle' explored the opportunity to apply intelligent, hybrid, knowledge based software Moderators, already demonstrated in the domains of product and manufacturing systems design, to support and enhance collaboration throughout the product and virtual enterprise life cycle.

Kaufman and Claus: 'Interoperability of Knowledge Based Engineering Software' presented a systematic approach to capture design knowledge to be used in future applications as redesign or product lifecycle. Under the umbrella of the OMG Manufacturing Technology and Industrial Systems (MANTIS) Domain Task Force, a framework with a number of industry relevant specifications, PDM, CAD Services, Data Acquisition from Industrial Systems (DAIS & HDAIS), PLM Services, UMS Data Access Facility, and Distributed Simulation Systems have been adopted.

Wagner and Schwarzenbacher 'The Federative Principle in Business Architecture' elaborates on the federative principle, which has proven successful as a behavioural pattern in natural organisms and communities. If accepted as strategic behaviour, the applications and IT structures themselves must be subject to this principle and designed federatively leading to a degree of interoperability.

Requirements for Future Research

From the presentations and discussion, some selected requirements for future research to achieve interoperability are briefly described:

In SME networks, there is a need for research full knowledge based moderation - example of a prediction monitor - to gain operational interoperability.

Integration e.g. interlinking of the key value adding processes like product development and production remains a key challenge. A common modelling language for abstract product specification is required, since adapters or converters are causing undesired costs both in design and in maintenance.

Research on design methodologies for federated holistic enterprise networks is needed. Agent technologies should be applied to capture not only technical but also organisational and social aspects.

The creation and mapping across specific domain ontologies is time consuming and expensive. Research is required to enable more automatic creation of ontologies and to establish enhanced standards for context based mappings.

Attachment 1: Agenda

Session A, Session Chair: Martin Zelm, CIMOSA

February 24, 2005, Morning 09:00 – 12:30

Enterprise Architecture -Survey of Practices and Initiatives, Frank Lillehagen, Dag Karlsen, Computas/Troux, Oslo, Norway (Paper not presented)

Towards an Interoperability Framework for Model-Driven Development of Software Systems, Brian Elvesæter, Axel Hahn, Arne-Jørgen Berre, Tor Neple, SINTEF, Oslo, Norway

A Collaboration Framework for Cross-enterprise Business Process Management, O. Adam, A. Hofer, S. Zang, C. Hammer, M. Jerrentrup, S. Leinenbach, Institute for Information Systems at DFKI, Saarbruecken, Germany

Coffee break

An Empirical Study of the UML Model Transformation Tool (UMT), Roy Grønmo, Jon Oldevik, SINTEF, Oslo, Norway

Syndicate Data Incorporation into Data Warehouses: Contrasting Consumer Problems with Supplier Viewpoints, Matthias Strand, Björn Lundell, Uni Skövde, Sweden

Conformance testing of open interfaces in healthcare applications - Case context management, Tanja Toroi, Juha Mykkänen, Anne Eerola, Uni Kuopio, Finland

M. Villa, M. Aldenucci, S. Gusmerioli, M. Vanneschi, SFIDA: interoperability in innovative c-business models for SMEs through an enabling Grid platform, TXT Solutions/ISTI-CNR/University of Pisa, Italy

Session B, Session Chair: Colin Piddington, Cimmedia

February 24, 2005, Afternoon 14:00 – 17:30

Impact of moderation through the distributed virtual enterprise life-cycle, Keith Popplewell, (Invited Speaker) University of Coventry, UK

The Federative Principle in Business Architecture, Johann Wagner, Siemens Bus Services, Munich, Germany

Design anywhere, Build anywhere, Anne Waywell, CSC-BAe , UK

Interoperability of Knowledge-based Engineering Systems , U. Kaufmann/, PK Fraunhofer, Berlin, Germany, R. Claus, NASA, USA

Coffee break

Methods for the Analysis of Supply Network Processes at European SMEs, Markus Rabe IPK Fraunhofer, Berlin, Germany

The Accounting Information Sharing Model for ShanghaiGrid, Jiadi Yu, Minglu Li, Ying Li, and Feng Hong, Shanghai Jiao Tong University, China (Paper not presented)

DES – Agent based supportive Modelling Framework, Simona Caramihai, ICS, Politechnical University Bucharest, Romania

Attachment 2 : List of Participants

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