

MONET

The European Model Based Systems & Qualitative Reasoning Network

Many physical and industrial systems are made up of common, inter-connected components. The resulting overall system can be difficult to analyse, predict or diagnose because of the complexity of the possible behaviours of components and their interactions. Model Based Systems and Qualitative Reasoning (MBS & QR) technology can directly help in this situation.

These techniques can assist industry to build explicit models of systems or products in a manner that reflects their actual structure and behaviour. They allow the simulation of systems that are too complex or where the knowledge is too imprecise for numerical methods to be adopted. Such models enable knowledge re-use, make product knowledge accessible to non-technical users, and provide support during the product life cycle. This technology can reduce time to market by allowing an early analysis of designs, by supporting concurrent engineering, and by improving product quality. It can also provide improved support for maintenance, diagnostics, documentation and repair.

These are new methods with great potential as an enabling technology in a wide range of application domains. Commercial software products are now on the market and applications are being developed and deployed, giving participating companies a lead over their competitors.

MONET OBJECTIVES

The MONET Network of Excellence provides a long-term framework for technology transfer, research integration and co-operation that will:

- ★ Promote technology transfer into industry
- ★ Co-ordinate European research in MBS & QR systems

MONET ACTIVITIES

- ★ Aid the transfer of MBS & QR systems technology to industrial applications.
- ★ Organise information concerning operational industrial applications of MBS & QR systems.
- ★ Provide surveys on state of the art and identify research opportunities and target applications.
- ★ Increase the understanding and awareness of the key topics in MBS & QR systems.
- ★ Co-ordinate European MBS & QR systems research and initiate co-operative projects.

THE TECHNOLOGY

Model Based Reasoning is the symbolic processing of an explicit representation of the internal workings of a system in order to predict, simulate and explain the resultant behaviour of the system from the structure, causality, functional and behaviour of its components.

Qualitative Models aim to capture the fundamental aspects of a system or mechanism, while suppressing much of the detail. Methods such as abstraction and approximation are often used to build models based on qualitative rather than numerical aspects of a system.

ACTIVITY AREAS

Industrial Sectors - An important aspect of the network is the identification of application opportunities, technological gaps and targets for research into MBS & QR systems. At present we have industrial members active in the following sectors: Automotive and Aerospace; Information Technology; National Utilities; Health Care; Process Industries; Manufacturing Systems; Biotechnology.

Application Domains - The technology has a wide range of applications in many domains, including: process modelling and simulation, diagnosis,

explanation and monitoring; control, prediction and interpretation; design, product configuration, design evaluation and planning, training and tutoring systems.

Research Fields - Within the scope of research we include most forms of model-based reasoning and qualitative simulation, including: functional and causal modelling; qualitative modelling; modelling ontology; abstraction, aggregation and approximation; integration of mixed models; fuzzy QR; qualitative conceptual modelling for spatial, functional, kinematic and dynamic design.

INTERDISCIPLINARY SCOPE

MONET is open to all sizes and types of organisation. The technology is generic and therefore the network is essentially interdisciplinary in nature. At present, network members include major European research institutions & universities, high technology SME's, large systems providers (Bosch and Siemens) as well as end users (Fiat and Electricité de France).

WHY SHOULD I JOIN THE NETWORK?

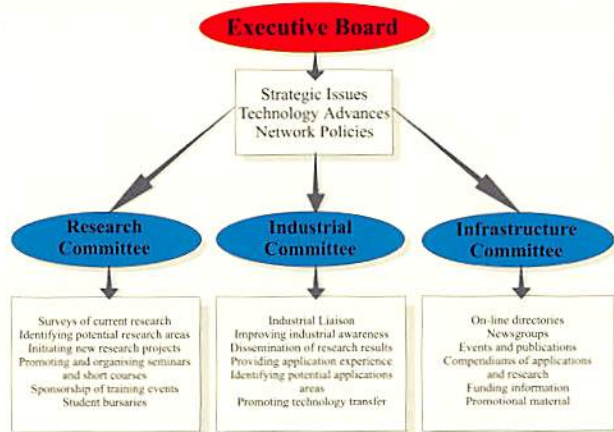
Because it is a simple, efficient and, best of all, a **FREE** way to keep up to date with this important area. The network is open to potential end users as well as active researchers and so, if you are interested in applying or just exploring MBS & QR methods in your industry or field, you should join MONET. Membership is **FREE** and provides access to considerable expertise and information through the mutual interests of the network community.

MONET offers information, contacts, expertise, materials and support. It maintains repositories of information such as industrial case studies and state of the art reports, and can provide or support seminars and demonstrations. Channels of communications are assisted in the form of newsletters, events and electronic multimedia. Furthermore, MONET can provide financial support for workshops, meetings, technological visits and scientific staff exchanges.

MONET ORGANISATION

MONET is structured to be as efficient and smooth running as possible. Full-time technical and administrative members of staff are at hand to deal with the day-to-day running of the network and provide assistance in communications, information and technical support for network members.

The governing committees consist of distinguished members of the European MBS & QR community who are active in both the industrial and academic sectors.



The combination of committed staff, experienced industrialists and eminent academics ensures that MONET provides a comprehensive and professional resource for the network community.

FURTHER INFORMATION

Information concerning the structure of MONET and details of present members may be accessed via the World Wide Web at:

<http://MONET.aber.ac.UK>

Alternatively, complete and return the enclosed request form..

MONET is a non-profit making organisation

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A EUROPEAN NETWORK OF EXCELLENCE IN
MODEL BASED SYSTEMS & QUALITATIVE REASONING

MBS
&
QR



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