

**6th IFIP International Conference on Information
Technology for BALANCED AUTOMATION SYSTEMS
in Manufacturing and Services**

=== Manufacturing in a knowledge-driven society ===

BASYS'04

Vienna . AUSTRIA

27 – 29 Sept 2004



CONFERENCE PROGRAMME



IFIP WG 5.5 COVE



Holonic Manufacturing Systems

SCOPE

BASYS'04 will address Information Technology for Balanced Automation Systems in Manufacturing and Services. The focus of the conference will be to explore new challenges faced by the integration of Knowledge and Technology as major drivers for business changes considering Product and Services Life Cycles.

BASYS'04 is the 6th of a series of conferences devoted to the advances of IT in the context of balanced integration of automation and human involvement in manufacturing and services. Creating appropriate frameworks for exploring the best synergies between humans and automated systems represents an enormous challenge in terms of processes characterization, modeling, and development of adequate support tools. Previous conferences took place in Victoria, Brazil (1995), Lisbon, Portugal (1996), Prague, Czech Republic (1998), Berlin, Germany (2000), and Cancun, Mexico (2002).

COMMITTEES

Conference Chair: A Min Tjoa, *Technical University of Vienna, Austria*

Program Chair: Luis M. Camarinha-Matos, *New University of Lisboa, Portugal*

Track co-chairs:

Track A: Vladimír Marik, *Czech Technical University, Czech Republic*
and E. H. Van Leeuwen, *BHP Billiton, Australia*

Track B: Hamideh Afsarmanesh, *University of Amsterdam, The Netherlands*

Track C: Mauro Onori, *Royal Institute of Technology, Sweden*

Track D: Luis Seabra Lopes, *University of Aveiro, Portugal*
and Olga Stepankova, *Czech Technical University, Czech Republic*

Programme Committee

Track A: Multi-agent systems in Manufacturing

- J. Barata (PT)
- R. W. Brennan (CAN)
- M. Deen (UK)
- M. Fletcher (UK)
- W.A. Gruver (CAN)
- K. Hall (US)
- P. Kopacek (A)
- D. Kotak (CAN)
- J. Lazansky (CZ)
- V. Marik (CZ) [Co-Chair]
- D. McFarlane (UK)
- J. Mueller (DE)
- D. Norrie (CAN)
- E. Oliveira (P)
- M. Pechoucek (CZ)
- L. Sheremetov (MEX)
- A. Smirnov (RUS)
- S. Tamura (J)
- A. Tharamurajah (AUS)
- P. Valckenaers (BE)
- E. H. Van Leeuwen (AUS) [Co-Chair]

Track B: Networked enterprises

- H. Afsarmanesh (NL) [Chair]
- P. Bernus [AU]
- L. M. Camarinha-Matos (PT)
- W. Cellary (PL)
- S. Dudstar (AT)
- H. Erbe (DE)
- C. Garita (CR)
- T. Goranson (US)
- T. Kaihara (JP)
- K. Kosanke (DE)
- G. Kovács (HU)
- A. Molina (MX)
- L. Nemes (AU)
- G. Olling (US)
- J. Pinho Sousa (PT)
- G. Putnik (PT)
- R. Rabelo (BR)
- W. Shen (CA)
- A Min Tjoa (AT)
- R. Wagner (AT)

Track C: Integrated design and assembly

- T. Arai (US)
- R. Bernhardt (DE)
- B. Lindberg (SE)
- R. Molfino (IT)
- D. Noe (SI)
- M. Onori (SW) [Chair]
- S. Ratchev (UK)
- B. Raucant (BE)
- I. Rudas (HU)
- M. Santocchi (IT)
- G. Schreck (DE)
- R. Tuokko (FI)
- H. Van Brussel (BE)

Track D: Machine learning and data mining in industry

- M. Barata (PT)
- M. Botta (IT)
- M. Bohanec (SI)
- P. Brezany (AT)
- Y. Kodratoff (F)
- D. Mladenec (SI)
- H. Motoda (JP)
- S. Moyle (UK)
- J. Paralic (SK)
- T. Rauber (BR)
- J. Rauch (CZ)
- L. Seabra Lopes (PT) [Co-Chair]
- O. Stepankova (CZ) [Co-Chair]
- D. Wettschereck (UK)
- F. Zelezny (CZ)

Steering Committee

- L. M. Camarinha-Matos (PT) [chair]
- H. Afsarmanesh (NL)
- V. Marik (CZ)
- H. Erbe (DE)

SESSIONS

27 September 2004

08:30 Registration
09:00 Opening session

09:30 **Keynote 1**
NETWORKED RFID IN INDUSTRIAL CONTROL: CURRENT AND FUTURE
Duncan McFarlane - University of Cambridge, UK

10:30 *Coffee break*

11:00 Parallel sessions

A1 – Holonic Manufacturing Control

Chair: Vladimir Marik

IMPLEMENTATION ISSUES WITH HOLOGIC CONTROL DEVICE COMMUNICATION INTERFACES

Jason J. Scarlett, Robert W. Brennan, Francisco Maturana, Ken Hall, Vladimir Marik, Douglas H. Norrie

MAKING A PERFECT 'GIN AND TONIC': MASS-CUSTOMISATION USING HOLOGNS

Martyn Fletcher, Michal Pechoucek

HOLOGIC MANUFACTURING CONTROL: A PRACTICAL IMPLEMENTATION

Paulo Leitão, Francisco Casais, Francisco Restivo

B1 – Infrastructures for networked enterprises

Chair: Hamideh Afsarmanesh

INTELLIGENT AND DYNAMIC PLUGGING OF COMPONENTS – AN EXAMPLE FOR NETWORKED ENTERPRISES APPLICATIONS

Moisés L. Dutra, Ricardo J. Rabelo

A WEB SERVICES / AGENT-BASED MODEL FOR INTER-ENTERPRISE COLLABORATION

Akbar Siami Namin, Weiming Shen, Hamada Ghenniwa

INTEROPERABILITY AMONG ITS SYSTEMS WITH ITS-IBUS FRAMEWORK

Luis Osório, Manuel Barata, C. Gonçalves, P. Araújo, A. Abrantes, P. Jorge, J. Sales Gomes, G. Jacquet, A. Amador

12:30 *Lunch break*

14:00 Parallel sessions

A2 – Holonic Systems: Implementation & Simulation Aspects

Chair: Ken Hall

CONTINGENCIES-BASED RECONFIGURATION OF HOLOGIC CONTROL DEVICES

Scott Olsen, Jason J. Scarlett, Robert W. Brennan, and Douglas H. Norrie

THE MaBE MIDDLEWARE

Alois Reitbauer, Alessandro Battino, Bart Saint Germain, Anthony Karageorgos, Nikolay Mehandjiev, Paul Valckenaers

AGENT-BASED SIMULATION: MAST CASE STUDY

Vladimír Mařík, Pavel Vrba, Martyn Fletcher

B2 – Collaboration support infrastructures

Chair: Ricardo Rabelo

ANALYSIS OF REQUIREMENTS FOR COLLABORATIVE SCIENTIFIC EXPERIMENTATION ENVIRONMENTS

Ersin C. Kaletas, Hamideh Afsarmanesh, L. O. Hertzberger

A KNOWLEDGE MANAGEMENT BASED FRAMEWORK AS A WAY FOR SME NETWORKS INTEGRATION

Gerardo Gutiérrez Segura, Véronique Deslandres, Alain Dussauchoy

COLLABORATIVE E-ENGINEERING ENVIRONMENTS TO SUPPORT INTEGRATED PRODUCT DEVELOPMENT

Ricardo Mejía, Joaquín Aca, Horacio Ahuett, Arturo Molina

15:30 *Coffee break*

16:00 Parallel sessions

A3 – Agent-based Architectures

Chair: Robert Brennan

AGENT-BASED ARCHITECTURE FOR INFORMATION HANDLING IN AUTOMATION SYSTEMS

Teppo Pirttioja, Ilkka Seilonen, Pekka Appelqvist, Aarne Halme, Kari Koskinen

AN INTELLIGENT AGENT VALIDATION ARCHITECTURE FOR DISTRIBUTED MANUFACTURING ORGANIZATIONS

Francisco P. Maturana, Raymond Staron, Kenwood Hall, Pavel Tichý, Petr Šlechta, Vladimír Mařík

MULTI-AGENT BASED FRAMEWORK FOR LARGE SCALE VISUAL PROGRAM REUSE

Mika Karaila, Ari Leppäniemi

B3 – Performance measurement

Chair: George Kovacs

APPLYING A BENCHMARKING METHODOLOGY TO EMPOWER A VIRTUAL ORGANISATION

Rolando Vargas Vallejos, Jefferson de Oliveira Gomes

A CONTRIBUTION TO UNDERSTAND COLLABORATION BENEFITS

Luis M. Camarinha-Matos, António Abreu

PREDICTIVE PERFORMANCE MEASUREMENT IN VIRTUAL ORGANISATIONS

Marcus Seifert, Jens Eschenbaecher

19:00 **Welcome reception**

28 September 2004

09:30 **Keynote 2**

MODEL-BASED INTEGRATION OF KNOWLEDGE AND TECHNOLOGY

Dimitris Karagiannis - University of Vienna, Austria

10:30 *Coffee break*

11:00 Parallel Sessions

A4 – Agent-based Solutions

Chair: Misbah Deen

INTEGRATING MULTI-AGENT SYSTEMS: A CASE STUDY

Francisco Maturana, Raymond Staron, Fred Discenzo, Kenwood Hall, Pavel Tichý, Petr Šlechta, Vladimír Mařík,

David Scheidt, Michael Pekala, John Bracy

ALARM ROOT CAUSE DETECTION SYSTEM

Milan Rollo, Petr Novák, Jiří Kubalík, Michal Pěchouček

A METHODOLOGY FOR SHOP FLOOR REENGINEERING BASED ON MULTIAGENTS

José Barata, Luis M. Camarinha-Matos

B4 – Modeling in networked enterprises

Chair: Arturo Molina

MULTI LAYERS SUPPLY CHAIN MODELING BASED ON MULTI AGENTS APPROACH

Samia Chehbi, Yacine Ouzrout, Aziz Bouras

A FORMAL THEORY OF BM VIRTUAL ENTERPRISES STRUCTURES

Rui Sousa, Goran Putnik

A DISTRIBUTED KNOWLEDGE BASE FOR MANUFACTURING SCHEDULING

Maria Leonilde R. Varela, Joaquim N. Aparício, Sílvio do Carmo Silva

12:30 *Lunch break*

14:00 Parallel session + Tutorial

D1 – Case-Based Reasoning and Soft Computing

Chair: Peter Brezany

USING DATA MINING FOR VIRTUAL ENTERPRISE MANAGEMENT

L. Loss, R. J. Rabelo, D. Luz, A. Pereira-Klen, E. R. Klen

MINING RULES FROM MONOTONE CLASSIFICATION MEASURING IMPACT OF INFORMATION SYSTEMS ON BUSINESS COMPETITIVENESS

Tomáš Horváth, František Sudzina, Peter Vojtáš

AN APPLICATION OF MACHINE LEARNING FOR INTERNET USERS

Machová Kristína

B5 – Management of collaborative networks

Chair: Toshiya Kaihara

EFFICIENTLY MANAGING VIRTUAL ORGANIZATIONS THROUGH DISTRIBUTED INNOVATION MANAGEMENT PROCESSES

Jens Eschenbaecher, Falk Graser

SME-SERVICE NETWORKS FOR COOPERATIVE OPERATION OF ROBOT INSTALLATIONS

Peter ter Horst, Gerhard Schreck, Cornelius Willnow

INFORMATION INFRASTRUCTURES AND SUSTAINABILITY

Rinaldo C. Michelini, George L. Kovacs

TUTORIAL 1

HANDS-ON JADE

Organizer: Michal Pechoucek, Czech Technical University

Topics: Introduction to multi-agent system development, FIPA specifications, programming in JADE, migration concept in a-globe and comparison of other FIPA-compliant platforms

15:30 *Coffee break*

16:00 Parallel session + Tutorial

D2 – Machine Learning in Automation

Chair: Olga Stepankova

EVALUATING A SOFTWARE COSTING METHOD BASED ON SOFTWARE FEATURES AND CASE BASED REASONING

Christopher Irgens, Sherif Tawfik, Lenka Landryova

REDUCTION TECHNIQUES FOR INSTANCE BASED TEXT CATEGORIZATION

Peter Bednár, Tomáš Futej

APPLICATION OF SOFT COMPUTING TECHNIQUES TO CLASSIFICATION OF LICENSED SUBJECTS

Jiří Kubalík, Marcel Jiřina, Oldřich Starý, Lenka Lhotská, Jan Suchý

ONE-CLASS LEARNING FOR HUMAN-ROBOT INTERACTION

QingHua Wang, Luis Seabra Lopes

C1 – New Approches to Assembly System Design

Chair: Svetan Ratchev

KNOWLEDGE-BASED REQUIREMENTS ENGINEERING FOR RECONFIGURABLE PRECISION

ASSEMBLY SYSTEMS

Hitendra Hirani, Svetan Ratchev

DEFINITIONS, LIMITATIONS AND APPROACHES OF EVOLVABLE ASSEMBLY SYSTEM PLATFORMS

Henric Alsterman, Mauro Onori

BENEFITS OF MODULARITY AND MODULE LEVEL TESTS

Patrik Kenger

TUTORIAL 1

(Continuation)

20:00 **Conference dinner**

29 September 2004

09:00 **Panel**

e-WORK IN EXTENDED AND VIRTUAL ENTERPRISES

Organizer: Heinz-H. Erbe, Technical University of Berlin

10:30 *Coffee break*

11:00 Parallel sessions

A5 – Collaborative & Mobile Solutions

Chair: Martyn Fletcher

AGENT-BASED DISTRIBUTED COLLABORATIVE MONITORING AND MAINTENANCE IN MANUFACTURING

Chun Wang, Hamada Ghenniwa, Weiming Shen, Yue Zhang

MOBILE ACCESS TO PROCESS KNOWLEDGE: AN AGENT-BASED APPROACH

Leendert W. M. Wienhofen

RELIABLE COMMUNICATIONS FOR MOBILE AGENTS – THE TELECARE SOLUTION

Octavio Castolo, Luis M. Camarinha-Matos

D3 – Data Mining for Decision-Making

Chair: Jan Paralic

KNOWLEDGE ACQUISITION FROM HISTORICAL DATA FOR CASE ORIENTED SUPERVISORY CONTROL

Alexei Lisounkin*, Gerhard Schreck*, Hans-Werner Schmidt

CEPSTRAL ANALYSIS IN TOOL MONITORING

Igor Vilcek, Jan Madl

INTELLIGENT DIAGNOSIS AND LEARNING IN CENTRIFUGAL PUMPS

Jiří Kléma, Ondřej Flek, Jan Kout, Lenka Nováková

12:30 *Lunch break*

14:00 Parallel sessions + Tutorial

A6 – Intelligent Systems and Optimization

Chair: Michal Pechoucek

AN EMPIRICAL RESEARCH IN INTELLIGENT MANUFACTURING: A FRAME BASED REPRESENTATION OF AI USAGES IN MANUFACTURING ASPECTS

M. R. Gholamian, S. M. T. Fatemi Ghomi

PREFERENCE BASED SCHEDULING FOR AN HMS ENVIRONMENT

S. Misbah Deen, Rashid Jayousi

OPTIMIZATION ALGORITHM FOR DYNAMIC MULTI-AGENT JOB ROUTING

Leonid Sheremetov, Luis Rocha, Juan Guerra, Jorge Martinez

C2 – Assembly Sensors and Simulation

Chair: Benoit Raucent

AUTOMATED SYSTEM FOR LEATHER INSPECTION: THE MACHINE VISION

Mario Mollo Neto, Oduvaldo Vendrametto, José Paulo Alves Fusco

A SIMULATION BASED RESEARCH OF ALTERNATIVE ORGANIZATIONAL STRUCTURES IN SEWING UNIT OF A TEXTILE FACTORY

Halil Ibrahim Koruca, Ceren Koyuncuoglu, Gultekin Silahsor, Gultekin Ozdemir

MODELLING AND SIMULATION OF HUMAN-CENTRED ASSEMBLY SYSTEMS - A REAL CASE STUDY

Anna M. Lassila, Sameh M. Saad, Terrence Perera, Tomasz Koch, Jaroslaw Chrobot

TUTORIAL 2

SOME FREE SW SYSTEMS FOR DATA MINING FROM CENTRAL EUROPE

Organizer: Olga Stepankova, Czech Technical University

- SumatraTT - DataTransformation Tool for DM
Petr Aubrecht, Olga Stepankova et al. (CTU, Prague)
- LISp-Miner system for DM teaching and research
Jan Rauch et al. (University of Economics, Prague)
- Grid knowledge discovery system
Peter Brezany (University of Vienna)
- Java library for support of text mining and retrieval
Peter Bednar, Jan Paralic (TU, Kosice)

15:30 *Coffee break*

16:00 Parallel sessions + Tutorial

A7 – Agent-based Planning and Scheduling

Chair: Leonid Sheremetov

AGENT SYSTEM APPLICATION IN HIGH-VOLUME PRODUCTION MANAGEMENT

Martin Reháč, Petr Charvát, Michal Pěchouček

MULTI-AGENT BASED ROBUST SCHEDULING FOR AGILE MANUFACTURING

Toshiya Kaihara, Susumu Fujii

FUSION-BASED INTELLIGENT SUPPORT FOR LOGISTICS MANAGEMENT

Alexander Smirnov, Mikhail Pashkin, Nikolai Chilov, Tatiana Levasheva, and Andrew Krizhanovsky

C3 – Assembly Configuration & Applications

Chair: Mauro Onori

VERTICAL INTEGRATION ON INDUSTRIAL EXAMPLES

Andreas Dedinak, Christian Wögerer, Helmut Haslinger, Peter Hadinger

DECISION SUPPORT WHEN CONFIGURING AUTOMATIC SYSTEMS

Magnus Sjöberg

A MAINTENANCE POLICY SELECTION TOOL FOR INDUSTRIAL MACHINE PARTS

Jean Khalil, Sameh M Saad, Nabil Gindy, Ken MacKechnie

TUTORIAL 2

(Continuation)

17:30 Closing session

ORGANIZERS



Co-ORGANIZERS



Holonic Manufacturing
Systems



New University of Lisbon



PROCEEDINGS

Conference proceedings, entitled “**Emerging Solutions for Future Manufacturing Systems**“, are published by Kluwer Academic Publishers.

LOCATION

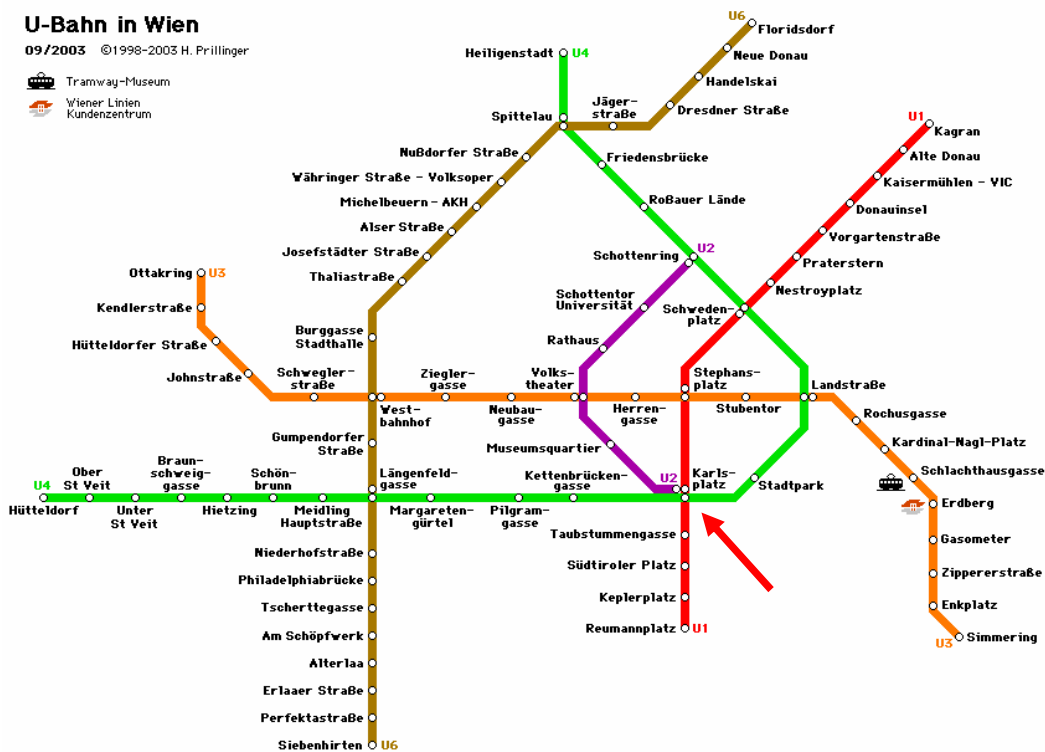
Vienna University of Technology - "Freihaus" - Wiedner Hauptstrasse 8-10 - A-1040 Vienna, Austria



U-Bahn in Wien

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Tramway-Museum
 Wiener Linien
 Kundenzentrum



Hotel reservation and registration:

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SESSIONS OVERVIEW

	27 Sep 04		28 Sep 04			29 Sep 04		
08:30	Registration							
09:00	Opening					Panel		
09:30	Keynote 1		Keynote 2					
10:30	Coffee break		Coffee break			Coffee break		
11:00	A1	B1	A4	B4		A5	D3	
12:30	Lunch break		Lunch break			Lunch break		
14:00	A2	B2	D1	B5	Tutorial 1	A6	C2	Tutorial 2
15:30	Coffee break		Coffee break			Coffee break		
16:00	A3	B3	D2	C1	Tutorial 1	A7	C3	Tutorial 2
						Closing session		
19:00	Welcome reception							
20:00			Conference dinner					

Keynote 1 – Networked RFID in industrial control

Keynote 2 – Model-based integration of knowledge and technology

Session A1 – Holonic Manufacturing Control

Session A2 – Holonic Systems: Implementation & Simulation Aspects

Session A3 – Agent-based Architectures

Session A4 – Agent-based Solutions

Session A5 – Collaborative & Mobile Solutions

Session A6 – Intelligent Systems and Optimization

Session A7 – Agent-based Planning and Scheduling

Session B1 – Infrastructures for networked enterprises

Session B2 – Collaboration support infrastructures

Session B3 – Performance measurement

Session B4 – Modeling in networked enterprises

Session B5 – Management of collaborative networks

Session C1 – New Approaches to Assembly System Design

Session C2 – Assembly Sensors and Simulation

Session C3 – Assembly Configuration & Applications

Session D1 – Case-Based Reasoning and Soft Computing

Session D2 – Machine Learning in Automation

Session D3 – Data Mining for Decision-Making

Tutorial 1 – Hands-on JADE

Tutorial 2 – Some free software systems for data mining

Panel – e-Work in extended and virtual enterprises