

Latvian Center of the McLeod Institute for Simulation Sciences

Annual Report for the Academic Year 2005/2006

The Latvian MISS Center operates on the basis of the Department of Modeling and Simulation of Riga Technical University. It uses the departmental facilities (including 25 Pentium desk-top PCs, 8 notebooks, 3 laser printers and a photo printer, 5 beamers) and premises.

Web site: <http://briedis.itl.rtu.lv/imb/>

Main directions of activities:

- simulation of logistics systems;
- simulation of service systems;
- simulation of manufacturing systems;
- optimization through simulation;
- simulation-based metamodeling
- simulation-based business games
- simulation methodology
- education in systems modelling
- education in discrete-event simulation

Simulation software:

- discrete-event: ARENA, PROMODEL, SIMUL8
- continuous: STELLA, MATLAB

Specialized simulation tools:

- simulation of supply chains: SIMFLEX

Presented theses in the simulation area:

- 6 Bachelor theses
- 11 Master theses.

Courses taught:

1. For B.Sc. program in Information Technology:
 - Basics of Systems Modelling and Simulation - mandatory
 - Simulation Software Tools - mandatory
 - Simulation Business Games - optional
2. For M.Sc. program in Information Technology:
 - Methodology of Discrete-Event Simulation - mandatory
 - Object-Oriented Modelling - optional
3. For M.Sc. program in Economics:
 - Systems Modelling - mandatory
3. For M.Sc. program in Mechanics:
 - Modelling of Transport Processes - mandatory

4. For Ph.D. program in Information Technology:
 - Statistical Methods in Systems Simulation - optional
 - Methodology of Complex Systems Simulation - optional

Research projects:

1. Research grant from the Latvian Council of Science: *“Development and Implementation of Simulation-Supported Training Methodology in Logistics Based on Case-Studies and Business Games”* (since 2005)
2. Coordinated action of the 6th Framework IST Programme: *“Web-based and Mobile Solutions for Collaborative Work Environment with Logistics and Maritime Applications”*, eLOGMAR-M (since 2004)
3. Research project from the Latvian Council of Science: *“Risk factors, risk assessment and risk management in Latvian agriculture”* (since 2002)
4. Coordinated action of the 6th Framework IST Programme: *“Information Society Promotion in Baltic States”*, IST4Balt (since 2004)
5. Pilot project of the Leonardo da Vinci Programme: *“Competence Framework for Mobile On-site Accelerated Vocational Training in Logistics Information Systems”*, LOGIS-MOBILE (2004-2006)
6. Pilot project of the Leonardo da Vinci Programme: *“Competence Network for Introduction of Modern ICTE Technologies in Vocational Learning in Social Systems Simulation and Research”*, SocSimNet (2004-2006)
7. Specific targeted research project of the 6th Framework Programme: *„Extended Collaborative Integrated Life Cycle Supply Chain Planning System”*, ECLIPS (since 2006)

Cooperation with European simulation centers:

1. Student exchange:
 - With the Genova MISS Centre (Italy): a student from Riga worked 3 months in Genova, preparing a Master thesis in the area of transport systems simulation.
 - With the Spanish MISS Centre (Spain): a student from Riga worked 4 months in Barcelona, preparing a Master thesis in the area of logistics systems modeling.
 - With the University of Ghent (Belgium), Department of Industrial Management:
 - a student from Riga worked 5 months in Ghent, preparing Master thesis in the area of logistics systems simulation.
 - a student from Ghent worked 5 months in Riga, preparing Master thesis in the area of logistics systems simulation.
 - With Magdeburg Otto-von-Guericke University (Germany), Department of Logistics: a student from Riga worked 3 months in Magdeburg, preparing a Master thesis in the area of supply chain management.
 - With Linkoping University (Sweden), Economic Information Systems Laboratory: a student from Riga worked 3 months in Linkoping, preparing a Master thesis in the area of simulation in health care.
 - With the University of Ljubljana (Slovenia):

- two students from Riga worked 3 months in Ljubljana, preparing Master theses in the area of supply chain simulation-based management.

2. Professor's exchange:

- With the Spanish MISS Centre (Spain), Universitat Autònoma de Barcelona, System Engineering Department:
 - In February, 2006 Prof. Yuri Merkuryev and Prof. Galina Merkuryeva from Riga Technical University taught an intensive course in Barcelona in simulation-based analysis and metamodelling of supply chains
- With the University of Ghent (Belgium), Department of Industrial Management:
 - In March, 2006 Prof. Rik Van Landeghem from the University of Ghent taught an intensive seminar in Riga in Supply Networks Design.
- With Magdeburg Otto-von-Guericke University, Department of Logistics:
 - In November, 2005 Prof. Gaby Newmann from Magdeburg Otto-von-Guericke University taught an intensive course in logistics simulation
 - In June, 2006 Prof. Galina Merkuryeva from Riga Technical University taught an intensive course in Magdeburg in simulation-based metamodelling
- With the University of Ljubljana (Slovenia):
 - In April, 2006 Prof. Yuri Merkuryev and Prof. Galina Merkuryeva from Riga Technical University taught intensive courses in Ljubljana in simulation-based analysis and metamodelling of supply chains

Cooperation with other MISS centers:

With the Genoa (Italy), Spanish and Marseille (France) MISS Centers:

- Organization of the annual HMS (Harbour, Maritime & Multimodal Logistics Modelling and Simulation) international workshop:
 - HMS'2005 was held in Marseille, France in October, 2005;
 - HMS 2006 will be held in Barcelona, Spain in October, 2006.
- Student exchange: See above.

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