

# Latvian Center of the McLeod Institute for Simulation Sciences

## Annual Report for the Academic Year 2004/2005

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 23 Pentium desk-top PCs, 4 notebooks, 2 laser printers, 3M overhead projector, and Mitsubishi, NEC and SONY beamers) and premises.

### *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 discrete-event simulation

### *Simulation software:*

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

### *Specialized simulation tools:*

- simulation of supply chains: SIMFLEX

### *Presented theses in the simulation area:*

- 11 Bachelor theses
- 7 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 Application of Simulation-Based Tools for Analysis and Optimization of Logistics Systems"
2. Coordinated Action of the 6<sup>th</sup> Framework IST Programme: "*Web-based and Mobile Solutions for Collaborative Work Environment with Logistics and Maritime Applications*", eLOGMAR-M

*Cooperation with European simulation centers:*

1. Student exchange:

- With the University of Ghent (Belgium), Department of Industrial Management: 3 students from Riga worked 3 months in Ghent, preparing Master theses in the area of logistics systems simulation.
- With the Delft University of Technology (The Netherlands), Department of Systems Engineering: a student from Riga worked 3 months in Delft, preparing a 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 logistics systems modeling;
  - a student from Magdeburg worked 3,5 months in Riga, preparing a Course project in the area of warehouse simulation.
- With the Genova MISS Centre (Italy): a student from Riga worked 3 months in Genova, preparing a Master Thesis in the area of logistics systems simulation.
- With Linkoping University (Sweden), Economic Information Systems Laboratory: a student from Riga worked 3 months in Linkoping, preparing an Engineering Diploma in the area of simulation tools.
- With the University of Ljubljana (Slovenia):
  - a student from Riga worked 3 months in Ljubljana, preparing an Engineering Diploma in the area of transport logistics;
  - two students from Ljubljana worked 3 months in Riga, preparing Diploma Theses in the area of warehouse simulation.

2. Professor's exchange:

- With the University of Ghent (Belgium), Department of Industrial Management:
  - In October, 2004 prof. Henri Muller from the University of Ghent taught an intensive seminar in Riga in Industrial Logistics Management
  - In April, 2005 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, 2004 Prof. Gaby Newmann from Magdeburg Otto-von-Guericke University taught an intensive course in logistics simulation
- In June, 2005 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, 2005 Prof. Yuri Merkuryev and Prof. Galina Merkuryeva from Riga Technical University taught intensive courses in Ljubljana in Supply Chain Management and in Simulation-based Metamodelling

*Cooperation with other MISS centers:*

With the Genoa MISS Center:

- Organization of the annual HMS (Harbour, Maritime & Multimodal Logistics Modelling and Simulation) international workshop:
  - HMS'2004 was held in Rio de Janeiro, Brasil, in September 16-18, 2004.
  - HMS'2005 will be held in Marseille, France, in September 20-22, 2005.
- Student exchange: See above.

*Conference organization:*

- The 19<sup>th</sup> European Conference on Modelling and Simulation, ECMS 2005 was held in Riga, Latvia, in June 1-4, 2005, <http://www.scs-europe.net/conf/esm2005/index.html>
- A special session in “Logistics in Simulation” will be organized at the 12<sup>th</sup> IFAC Symposium on Information Conytol Problems in Manufacturing, INCOM'2006 (May 17-19, 2006, Saint-Etienne, France), <http://www.emse.fr/incom2006>

***Prof. Yuri Merkuryev***

*Director of the Latvian MISS Center*

*Riga Technical University*

*1, Kalku Street*

*LV-1658 Riga, Latvia*

*Tel. +371-7089514*

*Mob. tel. +371-9454253*

*Fax +371-7089513*

*E-mail: [merkur@itl.rtu.lv](mailto:merkur@itl.rtu.lv)*

*July 7, 2007*