

# Latvian Center of the McLeod Institute for Simulation Sciences

## Annual Report for the Academic Year 2003/2004

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 15 Pentium desk-top PCs, 2 notebooks, laser printer, 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:*

- 12 Bachelor theses
- 9 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. Accompanying Measure of the EC 5th Framework IST Program: "Simulation and IT-Solutions: Applications in the Baltic Ports' Areas of the Newly Associated States", Baltports-IT

*Cooperation with European simulation centers:*

1. Student exchange:

- With the University of Ghent (Belgium), Department of Industrial Management: 3 students from Riga (Vadims Shapochkins, Irina Turova and Tatjana Krigere) worked 3 months in Ghent, preparing Master theses in the area of logistics systems simulation. All 3 theses were successfully presented at the home university (i.e., Riga Technical University).
- With Delft Technical University, Department of Systems Engineering: a student from Riga (Daniils Nesterenko) worked 3 months in Delft, preparing a Master thesis in the area of logistics systems simulation. The thesis was successfully presented at the home university (i.e., Riga Technical University).
- With Magdeburg Otto-von-Guericke University, Department of Logistics: a student from Riga (Oksana Odnovola) worked 3 months in Magdeburg, preparing a Master thesis in the area of logistics systems modelling. The thesis was successfully presented at the home university (i.e., Riga Technical University).
- With the Genova MISS Centre:
  - a student from Riga (Inguna Viluma) worked 3 months in Genova, preparing an Engineer Diploma in the area of logistics systems simulation. The diploma was successfully presented at the home university (i.e., Riga Technical University);
  - a student from Genova (Alessio Notari) visited Riga during 2 months for a project work in logistics simulation.

2. Professor's exchange:

- With the University of Ghent (Belgium), Department of Industrial Management:
  - In March, 2004 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 June, 2004 Prof. Galina Merkurjeva from Riga Technical University taught an intensive course in Magdeburg in Simulation-based Metamodelling

3. Project work:

- With Otto-von-Guericke University Magdeburg (Germany): a joint project "Simulation and IT-solutions: Applications in the Baltic port areas of the

newly associated states” of the EC 5th Framework IST Program  
(Accompanying measure No IST-2001-33030 BALTPORTS-IT)

*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'2003 was held in Riga, Latvia in September 18-20, 2003;
  - HMS'2004 will be held in Rio de Janeiro, Brasil, in September 16-16, 2004.
- Student exchange: See above.

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