



TRANSPORTA  
UN SAKARU  
INSTITŪTS

# **Evaluation of the research performance of TTI**

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**2006-2011**

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## GENERAL INFORMATION

Institution	<b>Transport and Telecommunication Institute</b>
Address	<b>1 Lomonosov street, Riga LV-1019, Latvia</b>
Phone	<b>+37167100594</b>
Internet home page	<a href="http://www.tsi.lv">www.tsi.lv</a>
Unit or equivalent (department, laboratory, faculty, institution)	<b>Institution</b>
Address	<b>1 Lomonosov street, Riga LV-1019, Latvia</b>
Phone	<b>+37167100594</b>
Head of the Institution/Unit	<b>Igor Kabashkin</b>
Phone	<b>+37167100594</b>
E-mail	<a href="mailto:kiv@tsi.lv">kiv@tsi.lv</a>
Contact person for the Evaluation	<b>Mihails Savrasovs</b>
Phone	<b>+37167100584</b>
E-mail	<a href="mailto:mms@tsi.lv">mms@tsi.lv</a>

### ***G.1. Institution's/Unit's research profile***

*(give estimate of the percentage)*

<b>Research fields</b>	<b>(%)</b>
<b>Transport and Traffic</b>	<b>50</b>
<b>Information Technologies</b>	<b>15</b>
<b>Computer Science</b>	<b>15</b>
<b>Electronics and Telecommunication</b>	<b>10</b>
<b>Economics</b>	<b>5</b>
<b>Management</b>	<b>5</b>

### ***G.2. Other relevant fields connected to the Institution's/Unit's research profile***

(Mark with x the columns 1, 2 or 3, where 1=collaboration, 2=joint projects, 3=integrated in the group. More than one column can be marked in the same row)

<b>Research fields</b>	<b>1</b>	<b>2</b>	<b>3</b>
Sociology	X		
Mathematics	X		
Physics	X		

# 1. RESOURCES

## 1.1. Staff in 2006-2011 (person-months or FTE)

	2006	2007	2008	2009	2010	2011
<b>Academic personnel</b>	<b>20</b>	<b>32</b>	<b>32</b>	<b>44</b>	<b>39</b>	<b>39</b>
Professors	2/1,25	8/4	8/4,25	10/5,25	12/ 6,5	11/ 5,5
Associated Professors	2/ 1	2/ 1	2/ 1	2/ 1	2/ 1	3/ 1,75
Docents	5/ 2,25	7/ 3,5	5/ 2,25	9/ 4,5	1/ 0,5	2/ 1,25
Lecturers	6/ 2,75	6/ 2,75	6/ 2,75	6/ 2,75	6/ 2,75	5/ 2,25
Assistants						
<b>Doctorants, from above</b>	<b>5/ 2,5</b>	<b>9/ 4,25</b>	<b>11/5,25</b>	<b>15/7,25</b>	<b>18/ 9,5</b>	<b>18/ 9,5</b>
<b>Research personnel</b>						
Leading researchers						
Researchers						
Research Assistants						
Doctorants, from above						
<b>Other academic personnel</b>						
Visiting Professors	-	-	1/ 0,25	3/1,75	1/0,75	4/ 2
Visiting researchers						
Visiting research students	1	2	-	1	11	8
<b>Total active academic and research personnel</b>	<b>117</b>	<b>117</b>	<b>111</b>	<b>97</b>	<b>91</b>	<b>92</b>
Administrative personnel <sup>1)</sup>	26/13,25	25/12,5	20/ 5	22/9	26/11,5	28/12,5
Technical personnel <sup>2)</sup>	34/ 17	32/ 16	30/ 15	36/17,5	38/ 19	30/ 15
Other (e.g., cleaners) <sup>3)</sup>	67/ 4	68/ 5	52/1,5	56/1,5	54/1,5	40/1,5
<b>Total staff at the institution/unit</b>	<b>244</b>	<b>242</b>	<b>213</b>	<b>211</b>	<b>209</b>	<b>190</b>

<sup>1)</sup> Includes all administrative personnel

<sup>2)</sup> Includes all technical personnel

<sup>3)</sup> Includes all personnel not included in the other categories in the table.

## 1.2. Academic and postdoctoral researchers (personnel with doctoral degree)

Name, Surname	Academic position	Time period
Alexander Andronov	Visiting Professor	01/2006-06/2009
	Professor	09/2009-till present
Natalia Gode	Associated Professor	01/2006-till present
Alexander Grakovski	Associated Professor	01/2006-06/2008
	Scientific project researcher	01/2006-01/2007
	Professor	06/2008-till present
Gennady Gromov	Assistant Professor	01/2006-01/2011
	Associated Professor	01/2011-till present
Sharif Guseinov	Associated Professor	01/2006-till present
Igor Kabashkin	Professor	01/2006-till present
Eugene Kopytov	Rector	01/2006-07/2010
	Professor	01/2006-till present
Rostislav Kopytov	Assistant Professor	09/2006-01/2007
	Professor	01/2007-till present



Valery Kutev	Assistant Professor	09/2006-01/2007
	Professor	01/2007-till present
Vladimir Labendik	Visiting Professor	04/2007-09/2009
	Professor	10/2009-till present
Alexey Latkov	Professor	01/2006-till present
Alexander Medvedev	Associated Professor	01/2006-11/2008
	Professor	11/2008-till present
Boriss Misnevs	Associated Professor	01/2006-06/2008
	Professor	06/2008-till present
Sergey Orlov	Associated Professor	12/2006-till present
Natalia Petuhova	PhD student	01/2006 -03/2011
	Assistant Professor	10/2011-till present
Anatoly Pozdnakov	Assistant Professor	01/2006-till present
Oleg Schiptsov	Assistant Professor	09/2006-till present
Alla Seryogina	Assistant Professor	09/2006-till present
Yury Sikerzhitsky	Professor	01/2006-till present
Alexander Stetjuha	Professor	01/2006-till present
Juri Tolujew	Visiting Professor	01/2006-till present
	Professor	02/2007-till present
Boriss Tsilker	Associated Professor	01/2006-till present
George Utehin	Assistant Professor	01/2006-till present
Irina Yatskiv (Jackiva)	Associated Professor	01/2006-06/2008
	Professor	06/2008-till present

## 2. RESEARCH OUTPUT

### 2.1. Describe the Institution's/Unit's research

The high school management was organised in full accordance with the law of the Republic of Latvia "On Higher Education Establishments" and the democracy principles declared in the TTI Satversme (Constitution). The organisational structure of the Transport and Telecommunication Institute is presented on figure below.

The normative documents regulating the high school major functions realisation technology, as well as TTI and its structural units' management bodies operation principles are as follows:

- TTI Constitution;
- Regulations on Revision Committee;
- Regulation on Arbitration;
- Set of TTI Regulations and Decisions of the TTI Senate.

The high school academic staff representatives and students are welcome to investigate texts of all the TTI normative documents in the TTI Library.

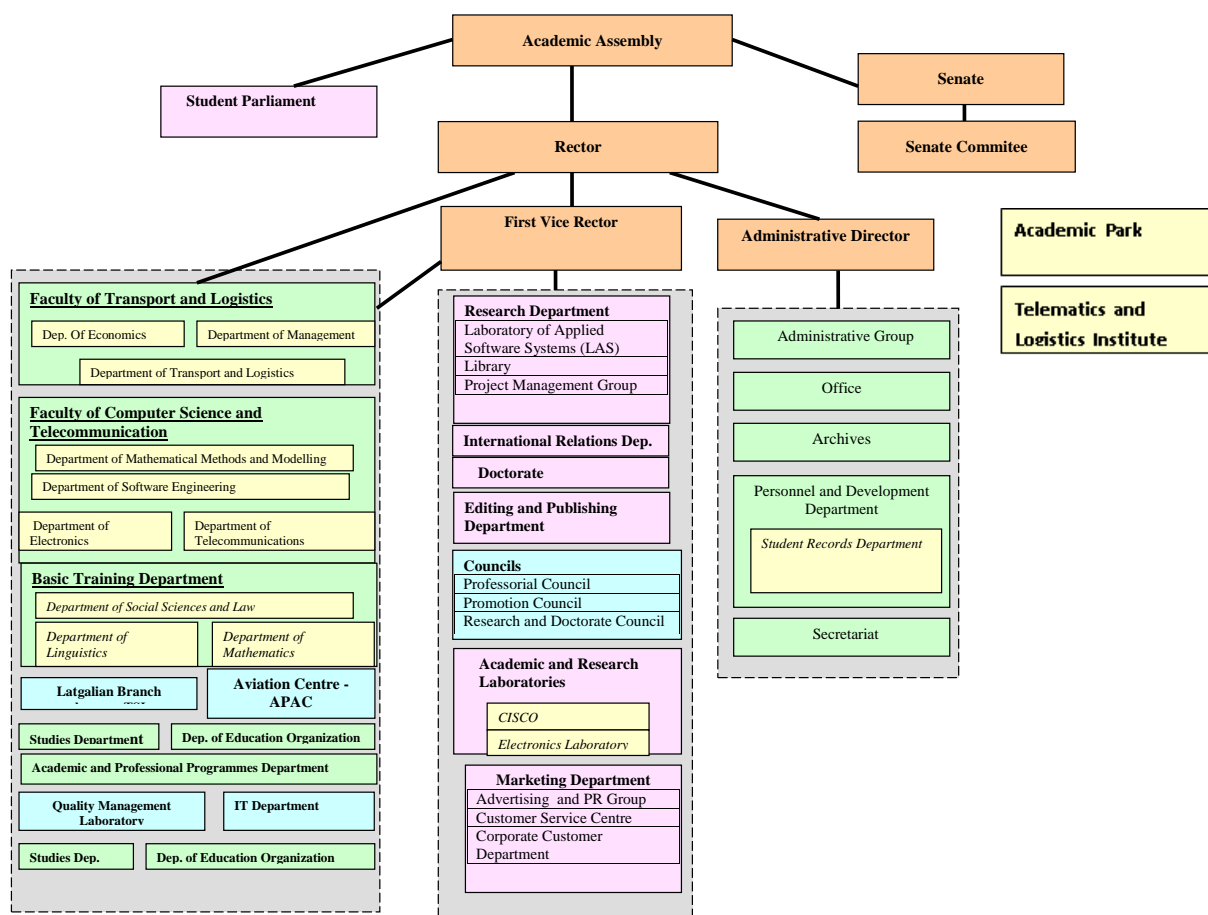


Figure 1. Structure of TTI

The main directions of staff research activities could be presented by the following application areas and directions:

#### A. Transport

- ✓ **Intermodal Transport Network**

The main objective of the research actions is to provide a framework of analysis that can act as a decision aid in transport policies and a set of recommendations that will help to establish the priorities to be given to different projects involving trans-European connections and intermodal transport.

The research activity has been directed towards:

- evaluating European and national projects and public decisions concerning transport networks;
- exploring the factors favourable to the establishment of transnational and intermodal infrastructures, and to the creation of transport networks integrated at all the European, national and regional European levels. When necessary, analysing the obstacles, which hindered or even excluded these factors;
- analysing the actors' strategy in each country's private sector, and the strategy of professional organisations and interest groups representing the different modes of transport;
- showing the benefits of intermodality in a context characterised by a continuous growth of transport demand and by the current integration of the European area (East-West; North-South). Showing these advantages will benefit the government and national organisations in charge of representing the different modes of transport at the European level;
- analyse and modelling of policy, administrative, economic, financial and management decisions taken to solve the problems that have arisen to date owing to the integration of transport networks.

#### ✓ **Urban Transport Development Programme**

The main research activities within the frame of this concept are as follows:

1. Improvement of normative and legislative systems relating to the city traffic processes:
  - a complex systemised approach to the identification and solution of the task aimed at the efficiency of the city traffic system functioning.
2. Traffic light modernisation concept for the City of Riga:
  - modernisation of traffic light objects;
  - construction and modernisation of communications;
  - preparation of the project for the City Traffic Management Centre.
3. Development of public transport in Riga:
  - determination of priority for public transport;
  - optimisation of the route network;
  - increase of cost effectiveness of municipal enterprises;
  - establishment of information system for passengers.
4. Analyse and modelling of parking places organisation on the streets and multi-storey garages.
5. Development of urban transport telematics:
  - automatic incident detection;
  - adaptive urban traffic control systems;
  - parking information systems;
  - VMS (Variable Message Signs)-based traffic control;
  - emergency management;
  - RDS (Radio Data System)-based and GSM-based navigation and route guidance;
  - digital maps;
  - electronic payment and tolling;

- public transport information systems;
- fare collection systems.

The main goal of the research is investigation and identification of the Riga city transport problems as set of interrelated parts (all transport modes, land-use, decision-making and financing processes) on the base of system approach and elaboration of Riga City Transport Development Concept.

#### ✓ **Transport Simulation and Modelling**

The main research activities are as follows:

- Development of micro and macro-level traffic models
- Development of transport infrastructure models
- Analysis of traffic flow program tools
- Case studies development

For Latvia the tasks of transport modelling and simulation are especially important, because there are several European corridors passing through its capital – Riga, which capacity in many aspects is identified by the efficiency of logical system of the urban agglomeration. The transport models are useful means for decision-making process in transport. The area of decision-making in transport can be divided into two ones: the stage of planning and the stage of operating. The main goal of using modelling, for example, at the stage of planning the transport node is the analysis of future decisions and their influence on common situation around. The availability of the simulation model at the pre-planning and planning stages will allow analysing the possible design solutions and finding out an optimal one.

### **B. Information and Communications Technologies**

#### ✓ **Integrated Transport Information Systems**

The key goal of Integrated Transport Information System (ITIS) design is to ensure competitiveness of Latvian logistics operations by investing to the infrastructure and supporting services including information technology. ITIS is not one single system in Latvia, but a process in implementing new logistics and telematics applications in a phased and managed way.

The main research activities within the frame of ITIS are the following:

- 1) Setting up Electronic Data Interchange Service Centre in Latvia;
- 2) Co-operation between Customs and border crossing functions in exchange of information;
- 3) Latvian National Intermodal Portal definition and creating a virtual single point of entry to the telematics services relating to all modes of transport;
- 4) Port Community System design, the main idea of which is the "single desk principle" to simplify the user's access to several services via one system interface without switch between several different systems.

#### ✓ **Intelligent Transport Systems**

The Intelligent Transport Systems (ITS) are analysed in a theoretical framework to determine their deployment application potential and what standards must be maintained to maximize the efficiency of the various deployments. The purpose of the study is to identify the ITS user services appropriate to Latvia and Riga metropolitan area and develop a Strategic Deployment Plan and National ITS Architecture based on user services.



✓ **Aerodrome Traffic Movement, Information & Control System**

The key goal of Aerodrome Traffic Movement, Information & Control System (ATMICS) development is to start preparation for implementation of new air navigation technologies at airport. ATMICS will unite different air navigation and aerodrome services in one information system for better cooperation, faster reaction in case of emergency situation.

✓ **Computer Networks, Analysis and Optimal Projection of Computer Networks, Modern Network Technologies**

Practical Method for Estimation of Network Stochastic Characteristics. The Study of Modern Networks Technologies Typical Structures Effectiveness. The mathematical and scale models of networks and fragments of networks for investigating performance of Computer Networks with homogenous and heterogeneous flows of transaction.

*C. Electronics*

✓ **Improving of Radio Systems and Complexes Efficiency by Means of Reception and Processing Equipment Optimisation**

Efficiency of many radio electronic systems and complexes is determined, in common case, by types of using signals and its modulation mode in transmitter devices as well as features of using radio receivers construction, its noise immunity and electromagnetic adaptation. In this research work specific algorithms are developed for improving of radio systems and complexes efficiency by means of reception and processing equipment optimisation.

✓ **Subsurface Radar Sounding**

Methods and facilities of subsurface radar sounding for geological, archaeological and ecological applications are investigated. Ground Penetrating Radar (GPR) can be used as main technical devices for many practical works in this area. Limitations as well as the advantages of the radar subsurface sounding methods over the traditional geophysical methods are investigated in detail by mean of solving the following problems: mathematical modelling of GPR; development of GPR signals digital processing new methods; analysis of conditions for GPR signals propagation in different soils and development of the concrete recommendations for GPR practical applications. Examples of such applications are: radar measurements of snow cover height, freshwater ice thickness and ice accumulation to forecast floods; determination of lakes and rivers degree of silting; efficient detection liquid leakage places in pipe-line and underground storages.

✓ **Development of New Structures for Digital Filters**

The study is done in the area of new digital technologies. New structures for digital filters with most effective program realizations (maximum of performance particularly) are described. Some wave structures are designed. These can be used to achieve top characteristics of the frequency domain. Systems with frequency characteristics have been constructed which are invariant to multipliers capacity limitation.

✓ **Maintenance of Air Navigation Systems**

The research activity has been directed towards: Reliability-centred maintenance; Reliability programme development; Maintainability programme development.

#### **D. Applied Multivariate Statistical Methods**

The research has been devoted to the further development and perfection of the methods of statistical analysis in transport, economic and other spheres.

The main research activities within this frame are:

- Forecasting the transport development and transport flows
- Indicators of transport development constructing

Also, the research in this sphere has been devoted to the further development and perfection of methods of statistical analysis and efficient decision making on huge amount of data (Data mining) and small samples of the data. However, in practice, we deal, as a rule, with small samples.

#### ***2.2. Number of scientific publications and other outputs 2006-2011***

	2006	2007	2008	2009	2010	2011
1. Original articles in anonymously refereed scientific journals cited in <i>Thompson Reuter Web of Science</i> , SCOPUS, ERIC or Engineering Village	3	4	15	9	20	16
2. Articles in other refereed scientific edited journals and conference proceedings	72	63	69	30	102	37
3. Monographs published <sup>1)</sup>	1	4	3	1	1	1
4. Other scientific publications <sup>2)</sup>	14	11	11	10	18	5
5. Text books and other research-related publications	6	4	10	5	10	7
6. Patents/ including international						
7. I Computer programs and algorithms <sup>3)</sup>						
8. Registered cultivares						
9. Conferences abstracts	7	2	6	24	46	21
10. Visiting lectures						
11. Articles, radio and television programmes and journals popularising science						
12. Other						

<sup>1)</sup> Includes PhD theses and monographs in university series

<sup>2)</sup> Includes edited proceedings, collections and special issues of scientific journals, and unrefereed scientific articles

<sup>3)</sup> Approximates the number of programs and algorithms that have been in use outside the unit.

### ***2.3. Lists of most important publications by academic personnel and researchers with doctoral degree (max 7 publications/person)***

#### **Alexander Andronov**

- Afanasyeva H., Andronov A.: On Robustness of Resampling Estimators for Linear Regression Models, The Special Issue of the International Journal "Communication on Dependability and Quality Management" (ISSN 1450- 7196), Vol. 9, No 1, 2006, pp. 5-11.
- Andronov A.: On Nonparametric Estimation of Expectation of Random Variables Function under Dependent Observations, Journal of statistical planning and inference, 137, 2007, pp. 3828-3837.
- Andronov A., Fioshina H. and Fioshin M.: Statistical Estimation for a Failure Model with Damage Accumulation in a Case of Small Samples, Journal of Statistical Planning and Inference, 139, 2009, Issue 5, pp. 1685-1692.
- Andronov A., Chepurin E. and Hajiyeu A.: On Solving Statistical Problems for the Stochastic Processes by the Sufficient Empirical Averaging Method, Statistical Models and Methods for Biomedical and Technical Systems. Eds. F.Vonta, M.Nikulin, N.Limnios and C.Huber. Birkhauser, Boston, pp. 435-444.
- Andronov A.: On a Copula for Failure Times of System Elements, Mathematical and Statistical Models and Methods in Reliability. V.V Rykov, N.Balakrishnan, M.S.Nikulin (eds.), Springer Science + Business Media, LLC, 2010, pp. 39-50.
- Andronov A.M.: Markov-Modulated Birth-Death Processes, Automatic control and computer sciences, 2011, Vol.45, No 3, pp. 123-132. ISSN 0146-4116.
- Andronov A., Revzina J.: Simple Correlated Flow and Its Applications, Lecture Notes in Computer Science, Nr 6751. Springer-Verlag, Berlin – Heidelberg, 2011, pp.288-300.

#### **Natalya Gode**

- Gode N., Serjogina A.: The Problem of Labour Market Balance Achievement in Latvia, Proceedings of the International conference "Economic Growth Conditions in Countries with Market Economy", (Pereslav-Hmelnickiy, Ukraine, April 23-25, 2008), Економічний вісник університету. Вып. 5, pp. 327-332.
- Gode N., Serjogina A.: Potentialities of Dean's Static Model in the Process of Synchronous Investment and Financial Planning in the Field of Transport, Proceedings of the 7th International Conference "Reliability and Statistics in Transportation and Communication (RelStat'07)", (Riga, Latvia, October 24-27, 2007), Riga, Transport and Telecommunication Institute, ISBN 978-9984-818-00-9, pp.188-193.
- Gode N., Serjogina A.: Risk and Profitableness of Investments in Foreign Securities, Proceedings of the 6th International Conference "Reliability and Statistics in Transportation and Communication (RelStat'06)", (Riga, Latvia, October 25-28, 2006), Riga, Transport and Telecommunication Institute, ISBN 9984-9865-9-4, pp.261-265.
- Bruksle I., Gode N.: Factors of Economic Growth in Terms of National Economy of Latvia, Proceedings of International Conference, (Liepaya, April 29-30, 2010), Vol. XIII, 2011, pp.541-549.
- Gode N.: Increase of Life Standard of Population as necessary Condition of Integration of Latvia in European Union, Paper Human Capital in process of Transformation of Central and Eastern Europe, Torun, Poland, 2010, pp. 123-131

Gode N., Yots O.: Outlook and Ways of Accession of Latvia in Euroregion, Proceedings of Conference (Minsk, October 14-15, 2010), Vol. 1, Minska, NIEI, Ministry of Economics of the Republic of Belarus, pp. 102-110.

Gode N., Balode H. Possibilities of Application Monetary Tools in Achievement of High Quality Growth of Economy of Latvia. Management and Sustainable Development, 2011, (2), 13, volume 29, University of Forestry, Bulgaria, pp. 12-16.

### **Alexander Grakovski**

Grakovski A., Odnakish N.: The elimination of image pre-processing errors in transport telematics tasks on the basis of spline-binarization and cellular automata methods, TRANSPORT and TELECOMMUNICATION. Riga: TTI, 2006, vol.7, No 2, pp. 350-358. (ISSN 1407-6160, ISSN 1407-6179 (on-line))

Grakovski A., Murza A.: Development of Segmentation Method Based on "Mass Centre" Approach for Video Surveillance Data of Transport Vehicles Flow, TRANSPORT and TELECOMMUNICATION. Riga: TTI, 2010, vol. 11, No 2, pp. 18-29. (ISSN 1407-6160, ISSN 1407-6179 (on-line))

Grakovski A., Kabashkin I., Ressin A.: Intelligent Transport System for Intra-City Logistics based on WWW-Technologies, TRANSPORT and TELECOMMUNICATION. Riga: TTI, 2008, vol. 9, No 3, pp. 30-38. (ISSN 1407-6160, ISSN 1407-6179 (on-line))

Grakovski A., Ovchinnikov V., Kamenchenko S.: Acoustic signals processing and appliance for the problem of traffic flow monitoring, TRANSPORT and TELECOMMUNICATION. Riga: TTI, 2010, vol. 11, No 1, pp. 4-10. (ISSN 1407-6160, ISSN 1407-6179 (on-line))

Batenko A., Grakovski A., Kabashkin I., Petersons E., Sikerzhicki Y.: Problems of Fibre Optic Sensor Application in Weight-in-Motion (Wim) Systems, Proceedings of the 11th International Conference "Reliability and Statistics in Transportation and Communication" (RelStat'11), (Riga, Latvia, October 20-22, 2011), Riga, Transport and Telecommunication Institute, pp. 311-316. (ISBN 978-9984-818-46-7).

Revzina J., Grakovski A.: Cisco Networking Academy Learning Technologies Integration into the National Academic Standardised Study Programme, Proceedings of Fifth International Conference on Networking and Services (ICNS-2009), (Valencia, Spain, 20-25 April, 2009), IEEE Computer Society Conference Publishing Services (CPS), Los Alamitos, California Washington • Tokyo, 2009, pp.592-596. (ISBN 978-0-7695-3586-9)

Berezhnoy A., Grakovsky A., Nesterov A.: The "Green Wave" Mode Production on the Two-Lane Highways During the Construction Works Time Period, TRANSPORT, Vilnius, VGTU, 2007, Vol. XXII, No 4, pp. 263-268. (ISSN 1648-4142 print / ISSN 1648-3480 online TRANSPORT, [www.transport.vgtu.lt](http://www.transport.vgtu.lt) )

### **Gennady Gromov**

Gromovs G.: International Standards for the use of Biometrics, Computer Modelling and New Technologies, Volume 13, No.3, TSI, 2009, pp. 49-57. ISSN 1407-5806

Gromovs G.: A statistical sample analysis of Latvian Logistics service, Transport and Telecommunication, TSI, 2009, v. 10, N 1, pp. 14-19. ISSN 1407-6160

Zinovjevs E., Gromovs G.: Control of Reliability of Distributed Transactions, Proceedings of the 7<sup>th</sup> International Conference "Reliability and Statistics in Transportation and Communication (RelStat'07)", (Riga, Latvia, October 24-27, 2007), Riga, Transport and Telecommunication Institute, pp.305-311. ISBN 978-9984-818-00-9

Gromovs G., Zinovjevs E., Kuznecovs V., Slepečecs J., Trezkova N., Baranova L.: „Transporta un biznesa loģistika” studiju programmas aktualizācija, Starpaugstskolu zinātniski praktiskā un mācību metodiskā konference „Mūsdienu izglītības problēmas”. 2007. gada 22.-23.februārī, Rīga, 2007, 104.-105. lpp.

### **Sharif Guseynov**

Kobasko N.I., Guseynov Sh.E.: Microstructure and hardness prediction at the core of steel parts of any configuration during quenching, Journal of ASTM International (JAI), Published by the American Institute of Physics (AIP) and the American Society for Testing and Materials, Vol. 8, Issue 8, pp. 17-28, 2011.  
[http://www.astm.org/DIGITAL\\_LIBRARY/JOURNALS/JAI/PAGES/JAI103525.htm](http://www.astm.org/DIGITAL_LIBRARY/JOURNALS/JAI/PAGES/JAI103525.htm)

Guseynov Sh.E.: Analytical method for inverse problems of deep magneto telluric sounding, In Book: Progress in Industrial Mathematics, Springer Mathematics in Industry series, Published by Springer, pp. 136-141, 2011.

Guseynov Sh.E.: On-line monitoring of random stocks of divisible productions in interrelated warehouses, International Journal on Advanced Materials Research, Trans Tech Publications inc. Vol. 222, pp. 333-336, 2011. doi:10.4028/www.scientific.net/AMR.222.333

Guseynov Sh.E., Bagirov Sh.G.: Distributed mathematical models of undetermined "without preference" motion of traffic flow, International Journal of Discrete and Continuous Dynamical Systems: Series A (DCDS-A), Published by American Institute of Mathematical Sciences (AIMS), pp. 734-743, 2011.

Guseynov Sh.E., Rimshans J.S., Kopytov E.A.: Solution of the model of exhaust concentration dynamics in urban atmosphere under unknown turbulent air flow velocity, International Journal of Procedia Environmental Sciences, Vol. 4, Series: Urban Environmental Pollution, Published by Elsevier, pp. 35-42, 2011.  
<http://www.sciencedirect.com/science/article/pii/S1878029611000314>

Kaupuzs J., Guseynov Sh.E., Rimshans J.S., Medvid A.: Modeling of surface structure formation after laser irradiation, International Journal of Recent Advances in Fluid Mechanics, Heat & Mass Transfer and Biology, pp. 49-56, 2011.

Guseynov Sh.E., Berezhnoy A.V.: Mathematical model for the analysis of expert assessments in education, International Journal on New Trends in Education and their Implications (IJONTE), ISSN 1309-6249, Vol. 2, No 4, pp. 9-18, 2011, [www.ijonte.org](http://www.ijonte.org)

### **Igor Kabashkin**

Kabashkin I.: Optimal Monitoring Strategies. Wiley Encyclopaedia of Operations Research and Management Science, ISBN 9780470400630, Wiley, 2011, 8 Volume Set. 6408 p.  
Kabashkin I.: Optimal Monitoring Strategies. Wiley Encyclopaedia of Operations Research and Management Science, On-line ISBN 9780470400531. Wiley on-line library Published Online. DOI: 10.1002/9780470400531.eorms0608;  
<http://onlinelibrary.wiley.com/doi/10.1002/9780470400531.eorms0608/full>

Kabashkin I., Lotter H.-J.: United European Virtual Transport Education Environment, IEEE, Educational Technology and Society, (ISSN 1436-4522), Vol. 13, N 1, 2010, pp. 393-402.

Kabashkin I.: Rail Baltica. Transnational Integration through Coordinated Infrastructure and Regional Development – Brussels, 2008. (ISBN 978-9984-818-03-0), 48 p.

Kabashkin I.: Port, Hinterland and Logistics Centres: New Realities: Case Study in Latvia. – Riga, 2008. (ISBN 978-9984-9904-9-1), 32 p.

- Kabaškins I.: Transporta sastrēgumu monitoringa metodoloģijas izstrāde plūsmu uzlabošanai pilsētā. Rīga: 2008. 72 lpp. (ISBN 978-9984-818-12-2)
- Kabashkin I.: Regional Logistics & ICT Profile: Latvia. Baltic Regional Report 54:2007 (Turku School of Economics), Turku, 2007. (ISBN 978-951-564-493-0), 167 p.
- Kabashkin I.: Reliability Model of Intelligent Transport Systems, Proceedings of the 7th International Conference on Intelligent Transport Systems Telecommunications, (Sophia Antipolis, France, June 6-8, 2007), IEEE, Laurence Grammare, 2007, pp. 450-454.

### **Eugene Kopytov**

- Kopytov E., Santalova D.: Application of the Single Index Model for Forecasting of the Inland Conveyances. Recent Advances in Stochastic Modeling and Data Analysis, (Ed. Christos H. Skiadas). World Scientific Publishing Co. Pte. Ltd., pp. 268-276, 2007. (British Library Cataloguing-in-Publishing Data)
- Kopytov E., Demidovs V., Petukhova N.: Application of Temporal Elements in the Railway Schedule Systems, Transport and Telecommunication, Volume 9 No 2, ISSN 1407-6160, Riga: Transport and Telecommunication Institute, pp. 14-23, 2008. (Scopus database)
- Kopytov E. A., Demidovs V.: Virtual Data Models in Anticipatory in Decision System of Railway Transportation, International Journal of Computing Anticipatory Systems, (Ed. by D. M. Dubois), Published by CHAOS, Vol. 19, Belgium, Institute of Mathematics, University of Liege, pp. 135-145, 2006.
- Guseynov, S.E., Rimshans, J., Kopytov, E.A.: Solution of the model of exhaust concentration dynamics in urban atmosphere under unknown turbulent air flow velocity. Procedia Environmental Sciences, 2011, 4, Elsevier, pp. 35-42. (Scopus database)
- Kopytov E.A., Pavlov A.N., Zelentsov V.A.: New Methods Calculating the Genome of Structure and the Failure Criticality of the Complex Objects' Elements, Transport and Telecommunication, 2010, Vol. 11 (4) ISSN 1407-6160, Riga: Transport and Telecommunication Institute, pp. 4-13. (Scopus database)
- Kopytov E., Petukhova N., Demidovs V.: Methods for Railway Schedule Periodicity Support in Temporal Databases, Proceedings of 9th JOINT CONFERENCE ON KNOWLEDGE-BASED SOFTWARE ENGINEERING, JCKBSE'10 (Kaunas, Lithuania, August 25-27, 2010), pp. 178-191.
- Kopytov E., Muravjovs A.: Simulation of inventory control system for supply chain “producer – wholesaler – client” in ExtendSim environment, Proceedings of the 25<sup>th</sup> European conference on modeling simulation, ECMS-2011 (Poland, Krakow, June, 2011), pp. 580-586.

### **Rostislav Kopytov**

- Kopytov R.: Enhancing Management Reliability: Undertaking the Responsibility of Business, Proceedings of the 10th International Conference “Reliability and Statistics in Transportation and Communication” (RelStat'10), (Riga, Latvia, October 20–23, 2010), pp.286-296. ISBN 978-9984-818-34-4, Transport and Telecommunication Institute, Riga, Latvia
- Kopytov R.: Enhancing Business Reliability: Improving Value-Based Management by Measuring Investment Attractiveness, Proceedings of the 9th International Conference “Reliability and Statistics in Transportation and Communication” (RelStat'09), (Riga, Latvia, October 21–24, 2009), Riga, Transport and Telecommunication Institute, ISBN 978-9984-818-21-4, pp. 211-221.



- Kopytov R.: Selfregulated and Adapted to Changes Performance Management Model, Proceedings of the International Symposium on STOCHASTIC MODELS in RELIABILITY ENGINEERING, LIFE SCIENCE and OPERATIONS MANAGEMENT, Industrial Engineering and Management Department, SCE (Shamoon College of Engineering), 2010, pp. 552-563
- Kopytov R.: Manager Principles as Basis of Management Style Transformation, Vestnik BNTU. 2011, No 3, pp. 66-72.
- Kopytov R., Faingloz L.: Ways of Transforming Aims into Results at Successful Companies, Technological and Economic Development of Economy, Baltic Journal on Sustainability. 2008, 14(3), pp. 312-326.
- Kopytov R.: Principles of Management: Actual Obligations Undertaking Mechanisms. Riga: Transport and Telecommunication Institute, 2010, 175 p. ISBN 978-9984-818-28-3. (in Russian). Kopytov R.: Principles of Management: Demanded Possibilities Integration Mechanisms. Riga: Transport and Telecommunication Institute, 2010, 183 p. ISBN 978-9984-818-30-6. (in Russian)
- Kopytov R.: Management and Financial Control, textbook. Riga: Transport and Telecommunication Institute, 2006. 199 p. ISBN 9984-9904-1-9 (in Russian)

### **Valery Kutev**

- Kutev V., Pozdnyakov A., Krainyukov A.: A New Approach to Calculating X-ray Patterns of the Diffractometer for Nanostructured Coatings, Proceedings of The VIII International Conference "Machines, Technologies, Materials 2011"(Varna, Bulgaria, September 19-21, 2011), Vol.2: "Machines. Materials", pp. 171-174.
- Krainyukov A., Kutev V.: Results of inverse problem solution for radar monitoring of roadway coverage, Transport and Telecommunication, 2008, Volume 9, No 2, pp. 4–13. Transport and Telecommunication Institute, Riga, Latvia. ISSN 1407-6160
- Krainyukov A., Kutev V., Opolchenov D.: Reconstruction of the roadway coverage parameters from radar subsurface probing data, Proceedings of the 8th International Conference "Reliability and Statistics in Transportation and Communication" (RelStat'08), (Riga, Latvia, October 15–18, 2008), pp. 146-154. ISBN 978-9984-818-11-5.
- Krainyukov A., Kutev V., Opolchenov D.: Approach to Hardware Implementation of Genetic Algorithm for Inverse Problem of Roadway Coverage Subsurface Probing Solution, Transport and Telecommunication, 2010, Volume 11, No 4, pp. 14–28. Transport and Telecommunication Institute, Riga, Latvia. ISSN 1407-6160
- Krainyukov A., Kutev V.: Using of Radar Monitoring for Road Coverage Quality Estimation, Proceedings of the 11th International Conference "Reliability and Statistics in Transportation and Communication" (RelStat'11) (Riga, Latvia, October 19–22, 2011), Transport and Telecommunication Institute, Riga. ISBN 978-9984-818-47-4, pp. 275-283.
- Opolchenov D., Kutev V.: Comparable analysis of transport monitoring systems, Proceedings of the 11th International Conference "Reliability and Statistics in Transportation and Communication"(RelStat'11) (Riga, Latvia, October 19–22, 2011), Transport and Telecommunication Institute, Riga. ISBN 978-9984-818-47-4, pp. 356-363.
- Kutev V., Pozdnyakov A., Krainyukov A.: A New Approach to Calculating X-ray Patterns of the Diffractometer for Nanostructured Coatings, International Virtual Journal "Machines, Technologies, Materials", 2011, No 7, pp. 44-47 (in English), <http://mech-ing.com/journal/7-2011.html>

## **Vladimir Labendik**

- Kopytov E., Labendik V., Osis A., Tarasov A.: Neural Networks Application for Analysis of Flight Information in Aircraft Engine Diagnostic System, Scientific & Research Journal "Transport and Telecommunication", Vol. 7, No 2. ISSN 1407-6160. Riga: Transport and Telecommunication Institute, 2006. pp. 287-294.
- Antons A., Engelbrechts A., Dolacis J., Arsanica A., Labendiks Vl., Labendiks V., Kravalis J., Gerdt O.: Peculiarities of the Convective Drying of Pine Wood Loose Model Material Applying the Pneumo-impulse Method, Annals of Warsaw University of Life Sciences. – SGGW Forestry and Wood Technology. No 63, 2008., pp. 17-21.
- Valavichius V., Paramonov Yu., Kleinhofs M., Labendik V.: New Opportunities for Aviation Transport Reliability Study Offered by MATLAB, Scientific Proceedings of Riga Technical University, 6 series "Transport and Engineering. Transport. Aviation transport", Nr.20. Riga: Publishing house "RTU", 2006, pp.7-17.
- Yunusov S., Kopitov E., Labendik V.: Expert Systems for Evaluating the Aircraft Power Plants' Technical Condition, Scientific & Research Journal "Transport and Telecommunication", Vol. 11, No 1. ISSN 1407-6160. Riga: Transport and Telecommunication Institute, 2010, pp. 31-37.
- Yunusov S. Kopitov E. Labendik V.: Turbofan Thrust Control on Flight Information in Aircraft Diagnostic System, Scientific Journal „Ultragarsas“, Vol. 60, No 3, Lithuania, Kaunas: Technologija, 2006, pp. 20-23.
- Yunusov S., Kopytov E., Labendik V., Savkov K., Urbah A.: Informational Support of Carrying Out Experiments on Producing Nano-Coverings, Proceedings VIII International Congress "Machines – Technologies – Materials". (Varna, Bulgaria, September 19-21, 2011). pp.26-28.

## **Alexey Latkov**

- Latkov A., Gartela I.: Evaluation of Parameters of Network with Random Multiple Access, Proceedings of the 6th International Conference „Reliability and Statistics in Transportation and Communication (RelStat'06)“, (Riga, Latvia, October 25-28, 2006), Riga, Transport and Telecommunication Institute, ISBN 9984-9865-9-4, pp.1140-144.
- Latkov A., Gartela I., Svirchenkov Yu.: To the Question of Exactness of Estimation of Parameters Analitical and Scale Model of Computer Networks, Proceedings of the International Conference „Mathematical Methods of Analysis and Optimization of the Communication Networks“, (Grodno, BSU, January 29-February1, 2007), pp.118-123.
- Alhimovich E., Latkov A., Svirchenkov J., Svirchenkov A.: Network Stochastic Characteristics Direct Measurement System, Proceedings of the International Workshop Distributed Computer Communication Networks (DCCN'07). Theory and Applications, (Moscow, Russia, September 10-12, 2007), pp.32-38.
- Latkov A., Skabcov N.: To the Issue of Post-Server Protection System, Proceedings of the 10<sup>th</sup> International Conference "Reliability and Statistics in Transportation and Communication (RelStat'2010)", (Riga, Latvia, October 20-23, 2010), ISBN 978-9984-818-34-4, Riga, Transport and Telecommunication Institute, pp. 15-21.
- Andronov A., Latkov A., Revzina J.: Internet Traffic Description on a Base of Markov–Additive Process of Arrivals, Proceedings of the International Conference „Baltic Congress on Future Internet Communications“, (Riga, Latvia, February 16-18, 2011), Transport and Telecommunication Institute, pp.212-217.

Skabcovs N., Latkov A.: Enterprise Security Perimeter – E-mail Server Protection, Proceedings of the International Conference „Baltic Congress on Future Internet Communications”, (Riga, Latvia, February 16-18, 2011), Transport and Telecommunication Institute, pp.237-233.

### **Alexander Medvedev**

Grakovski A., Medvedev A.: Methodology of Freight Transport Flows Optimisation in Lagre City (on example of Riga city), International Conference on Operational Research: Simulation and optimisation in business and industry, (Tallinn, Estonia, May 17-20, 2006), Kaunas, Tehnologija, pp. 218-222

Yatskiv I., Medvedev A., Savrasovs M., Kreits E.: Analysis and Forecast of the Urban Public Transport Flow in Jurmala City, The 7<sup>th</sup> International Conference “Reliability and Statistics in Transportation and Communication (RelStat’07)”, (Riga, Latvia, October 24-27, 2007), Riga, Transport and Telecommunication Institute, pp. 79-93. ISBN 978-9984-818-00-9

Gromule V., Yatskiv I., Medvedev A.: Investigation of Bus and Coach Service Quality of the Basis of Information System for Riga Coach Terminal, Transport and Telecommunication, vol.9, No 2, 2008. Riga: TTI, 2008, pp. 30-45. ISSN 1407-6160, ISSN 1407-6179.

Savrasov M., Medvedev A., Sincova E.: Riga Airport Baggage Handling System Simulation, Proceedings 23rd European Conference on Modelling and Simulation ECMS 2009, (Madrid, Spain, June 9-12, 2009), pp. 384-390. CD. ISBN 0-9553018-9-0, 978-0-9553018-9-6.

Medvedev A., Vladimirov N., Konopiev S., Cvetkov Y., Lomza J.: Maintenance of Rolling Stock Serviceable Condition as the Factor for Providing of Traffic Regularity, Proceedings of the 9th International Conference “Reliability and Statistics in Transportation and Communication” (RelStat’09), (Riga, Latvia, October 21–24, 2009), Riga, Transport and Telecommunication Institute, pp.10-14. ISBN 978-9984-818-21-4 (CD)

Yatskiv I., Savrasov M., Yurshevich E., Medvedev A.: Simulation as a Tool of Decision Support Process: Latvia-Based Case Study, First International Conference on Road and Rail Infrastructure, (Opatia, Croatia, May 17-18, 2010), pp. 217-222. ISBN 978-953-6272-38-9

Grakovski A., Medvedev A., Ressin A.: Intelligent System of Operational Planning of Supply Chain for Small and Medium Enterprises (SME), Networks for Mobility. The 3<sup>rd</sup> International Symposium, (Stuttgart, Germany, October 5-6, 2006), Proceedings, Abstracts and CD-Rom – Universität Stuttgart, 2006, CD-Rom, 10 p.

### **Boris Misnevs**

Misnevs B.: eLEARNING IN LATVIA: Dimensions of E-Learning Education in Latvia, in „eLEARNING Practices”. Ed. Ugur DEMIRAY. Eskisehir-Turkey, Anadolu University-2010, pp. 379-409.

Misnevs B., Melkian A.: Model of Assessment of the Emergency Danger on the Railways, Proceedings of the Second International Conference on Computer Modeling and Simulation, (Sanya, China, January 22-24, 2010), vol. 3., pp. 28-32.

Shenberg Y., Misnevs B.: Research of a Statistical Process Control in Software Engineering Project, Transport and Telecommunication, Vol. 7, No 1, 2006, ISSN 1407-6160, Riga, Transport and Telecommunication Institute, pp.70-75.

Misnevs B., Fila N., Yackiv I.: Development and Research of University Computer Decision Support System, Proceedings of the 12th International Conference of European University Information Systems, (Tartu, Estonia, June 28-30, 2006), pp. 521-525.

- Kalachev N., Mishnev B., Krivchenkov A.: Application of Video Systems for Problem-Oriented Practicums. Bulletin of N.E. Bauman MSTU. Ser. "Natural Sciences". 2010. No 1, Moscow, pp. 108-115. (in Russian)
- Fila N., Misnevs B., Utekhin G.: Methodology of Study Programs Improvement by Using Key Performance Indicators, Proceedings of the 33rd International Convention, MIPRO, 2010, Opatia, Croatia, pp. 884-890.
- Misnevs B., Melikyan A.: Model of Assessment of the Emergency Danger on the Railways, Proceedings of International Conference on Computer Modeling and Simulation, 2009. ICCMS '09. Vol. 3, Digital Object Identifier: 10.1109/ICCMS.2010.382, 2010, pp. 28-31.

### **Sergey Orlov**

- Orlov S., Tsilker B.: Synthesis of Criteria of Efficiency for Aerospace Embedded Computers, Proceedings of the 5th International Conference on Operational Research: Simulation and Optimization in Business and Industry, (Tallinn, Estonia, May 17-20, 2006), pp. 223-226.
- Orlov S., Laptiev D.: The Metrics Suite in Generative Technologies for Reliability and Efficiency Increment of Transport Software, Proceedings of the 6th International Conference "Reliability and Statistics in Transportation and Communication (RelStat'06)", (Riga, Latvia, October 25-28, 2006), Riga, Transport and Telecommunication Institute, ISBN 9984-9865-9-4, pp. 209-214.
- Orlov S., Tsilker B.: Quality Estimation in Post-Object Technologies of Software Development for Transport Systems, Proceedings of the International Conference "Modelling of Business, Industrial and Transport Systems (MBITS'08)", (Riga, Latvia, May 7-10, 2008), Riga, Transport and Telecommunication Institute, ISBN 978-9984-818-04-7, pp. 298-302.
- Orlov S., Tsilker B.: Efficiency of Onboard Computer Systems for Space Vehicles and Stations, Transport and Telecommunication, 2010, Vol. 11, No 2, ISSN 1407-6160, pp. 60-67.
- Orlov S., Vishnyakov A.: Architecture Estimation for Logistics and Transport Software, Proceedings of the 10th International Conference "Reliability and Statistics in Transportation and Communication" (RelStat'10), (Riga, Latvia, October 20-23, 2010), Riga: Transport and Telecommunication Institute, 2010, ISBN 978-9984-818-34-4, pp. 233-242.
- Tsilker B., Orlov S.: Computing Parallelization Efficiency Estimation in the Intelligent Transportation Systems, Proceedings of the 10th International Conference "Reliability and Statistics in Transportation and Communication" (RelStat'10), (Riga, Latvia, October 20-23, 2010), Riga: Transport and Telecommunication Institute, 2010, ISBN 978-9984-818-34-4, pp. 218-224.
- Orlov S., Vishnyakov A.: Metric Suite Selection Methods for Software Development of Logistics and Transport Systems, Proceedings of the 11th International Conference "Reliability and Statistics in Transportation and Communication" (RelStat'11), (Riga, Latvia, October 19-22, 2011), Riga, Transport and Telecommunication Institute, pp. 301-310.

### **Natalia Petukhova**

- Kopytov E., Petukhova N.: Application of Temporal Databases in Modelling of Railway Processes. Proceedings of the International Symposium on STOCHASTIC MODELS in RELIABILITY ENGINEERING, LIFE SCIENCE and OPERATIONS MANAGEMENT, SMRLO'10 (Beer Sheva, Israel, SCE – Shamoon College of Engineering, February 8-11, 2010), pp. 586-594.
- Kopytov E., Petukhova N., Demidovs V.: Methods for Railway Schedule Periodicity Support in Temporal Databases. Proceedings of 9th JOINT CONFERENCE ON KNOWLEDGE-

BASED SOFTWARE ENGINEERING, JCKBSE'10 (Kaunas, Lithuania, August 25-27, 2010), pp. 178-191.

Kopytov E., Petukhova N., Demidovs V.: Data Presentation and Transformation in Train Schedule Information Systems. Proceedings of the 10th International Conference on Modeling and Applied Simulation, MAS'2011 (Rome, Italy, September 12-14, 2011), pp. 216-225.

Kopytov E., Demidovs V., Petukhova N.: Application of Temporal Elements in the Railway Schedule Systems. Transport and Telecommunication, Vol. 9, No 2, TSI Riga, pp. 14-23, 2008.

Kopytov E., Petukhova N., Demidovs V.: Choice of the Model of Presenting Temporal Data in the System of the Train Traffic Schedule. Proceedings of the International Symposium on the Analytic Hierarchy Process for Multi-criteria Decision Making, ISAHp'2011 (Sorrento, Italy, 15-18 June, 2011).

Petukhova N.: Investigation of Temporal Data Models in Information Systems on the Railway. Proceedings of the 7th International Conference "Reliability and Statistics in Transportation and Communication, RelStat'07 (Riga, Latvia, October 24-27, 2007), pp. 168-177.

Kopytov E., Demidovs V., Petukhova N.: Modelling of Railway Schedule in Temporal Databases. Proceedings of the International Conference "Modelling of Business, Industrial and Transport System" (Riga, Latvia, May 7-10, 2008), TSI Riga, pp. 107-116.

### **Anatoly Pozdnyakov**

Kutev V., Pozdnyakov A., Krainyukov A.: A New Approach to Calculating X-ray Patterns of the Diffractometer for Nanostructured Coatings (in English), Proceedings of the 8<sup>th</sup> International Conference „Machines, Technologies, Materials 2011”, vol.2 Machine, materials, (Varna, Bulgaria, September 19-21, 2011), pp. 171-174.

Kutev V., Pozdnyakov A., Krainyukov A.: A New Approach to Calculating X-ray Patterns of the Diffractometer for Nanostructured Coatings, International Virtual Journal "Machines, Technologies, Materials", 2011, No7, pp.44-47 (in English), <http://mech-ing.com/journal/7-2011.html>

Kutev V., Pozdnyakov A.: Automation of the Quality Estimation Process for Nanostructured Coatings, Abstracts of the 11<sup>th</sup> International Conference RELIABILITY and STATISTICS in TRANSPORTATION and COMMUNICATION (RelStat'11), (Riga, Latvia, October 19-22, 2011), p.84. ISBN 978-9984-818-47-4

### **Oleg Schiptsov**

Guseinov Sh.E., Kopitov E.A., Shchiptsov O.V.: Mathematic Models of Exhaust Concentration Dynamics in City Atmosphere, Monograph, Riga: Transport and Telecommunication Institute, 2009. 136 p. (in Russian) ISBN 978-9984-818-23-8

Schiptsov O., Grishin S., Rimshans J., Kopitov E., Gusejnov Sh.: Time-Dependent Problem for Determination of Exhaust Concentration in Urban Transport System, Proceedings of the International Conference "Modelling of Business, Industrial and Transport Systems (MBITS'08)", (Riga, Latvia, May 7-10, 2008), Riga, Transport and Telecommunication Institute, ISBN 978-9984-818-04-7, pp. 177-184.

Gusejnov Sh.E., Solovjov J.O., Schiptsov O.V.: Construction and Investigation of One Continuous Nonstationary 3D Mathematical Model for Monitoring of Noise Pollution in the Area Surrounding an Airport, Transport and Telecommunication, Vol.11, No 3, 2010, pp. 4-14.

- Grishin S., Kopitov E., Schiptsov O.: Decision Support System in the Field of Urban Transport Ecology, Proceedings of the 10<sup>th</sup> International Conference “Reliability and Statistics in Transportation and Communication”, (RelStat’10), (Riga, Latvia, October 20–23, 2010), Riga, Transport and Telecommunication Institute, ISBN 978-9984-818-34-4, pp. 361-367.
- Rimshans J.S., Gusejnov Sh.E., Morevs P., Gingulis E., Schiptsov O.V.: Construction of the mathematical model on the Ollendorf method for filtration of weakly compressible chemical compound in the porous heterogeneous 3D medium, The 4<sup>th</sup> Congress of the World Mathematical Society (TWMS), (Baku, Azerbaijan, July 1-3, 2011).
- Schiptsov O., Grishin S., Rimshans J., Kopitov E., Gusejnov Sh.: Mathematical Model for Determination of Exhaust Concentration in Urban Atmosphere under unknown Turbulent Air Velocity, Additional Issue of Extended Abstracts of the 8<sup>th</sup> International Conference “Reliability and Statistics in Transportation and Communication”, (Riga, Latvia, October 15-18, 2008), pp.9-14.
- Grishin S., Kopytov E., Schiptsov O.: Investigation of the Interrelated Tasks of Estimating Transport Influence on the Urban Ecology. SMRLO’09, Beer Sheva, Israel, 2009.

### **Alla Serjogina**

- Gode N., Serjogina A.: Potentialities of Dean’s Static Model in the Process of Synchronous Investment and Financial Planning in the Field of Transport. Proceedings of the 7th International Conference “Reliability and Statistics in Transportation and Communication (RelStat’07)”, (Riga, Latvia, October 24-27, 2007), Riga, Transport and Telecommunication Institute, ISBN 978-9984-818-00-9, pp.188-193.
- Serjogina A.: Main Directions of Stimulation Policy of Foreign Investments Attraction to Economy of Latvia, (in Russian) *Ekonomia i miedzynarodowe stosunki gospodarcze* 15. PRACE NAUKOWE nr 1166 Akademii Ekonomicznej im. Oskara Langego we Wroclawiu, 2007, pp.162-168.
- Gode N., Serjogina A.: Problem of Foreign Capital Attraction in Economics of Latvia, *Tautsaimniecības attīstības problēmas*. RTU 47. Starptautiskā zinātniskā konference, Referātu tēzes, (Rīga, 2006. gada 21.-23. septembris), lpp. 78.
- Gode N., Serjogina A.: Risk and Profitableness of Investments in Foreign Securities, Proceedings of the 6th International Conference “Reliability and Statistics in Transportation and Communication (RelStat’06)”, (Riga, Latvia, October 25-28, 2006), Riga, Transport and Telecommunication Institute, ISBN 9984-9865-9-4, pp.261-265.
- Gode N., Serjogina A.: Main Direction for Influencing the Endogenous Regional Development in Latvia, Proceedings of the International Scientific Conference. Economic Science for Rural and Regional Development, N12, Jelgava, 2007, 92-97. pp.

### **Yuri Sikerzhitsky**

- Sikerzhitskiy J., Mrochko V.: Indicators of the Efficiency of Automatic Vehicle Location Systems, *Rīgas Tehniskās Universitātes zinātniskie raksti. MAŠĪNZINĀTNE UN TRANSPORTS*. ISSN 1407-8015. Izdevniecība “RTU”, Rīga, 2006, pp. 106-109.
- Sikerzhitsky Yu., Konovalenko M.: Optimum Phase Shift Meter on the Basis of Kalman’s Filter in Multipath Channel Systems, *Transport and Telecommunication*, Vol. 7. No 4, 2006. ISSN 1407-6160, ISSN 1407-6179. Rīga, Transport and Telecommunication Institute, 2006, pp.45-48.
- Sikerzhitsky Yu., Petrunina M.: Random Parameter’s application in Subsystems of Logistic Model for Transportation Process, Additional Issue of Extended Abstracts of the 8<sup>th</sup> International



Conference „Reliability and Statistics in Transportation and Communication (RelStat'08)”, (Riga, Latvia, October 15-18, 2008), pp.25-31.

Sikerzhitsky Yu., Petrunina M.: The Utilization of the Efficiency Measures for the Transportation Process in the Road Construction and the Maintenance, The First International Conference on Road and Rail Infrastructure, (Opatia, Croatia, May 17-18, 2010), pp.389-394.

Sikerzhitsky Yu., Petrunina M.: The Design of Dynamic Cargo Transportation Model with the Purpose of its Optimization, The Second International Conference on Engineering Systems Management & Applications, (Sharjah, UAE, March 30 – April 1, 2010), is accepted for publication in IEEE Xplore proceeding on 29.05.2010.

### **Alexander Stetjuha**

Stetjuha A.: Simulation in the Process of Price Formation, Proceedings of the International Conference “Modelling of Business, Industrial and Transport Systems (MBITS'08)”, (Riga, Latvia, May 7-10, 2008), Riga: Transport and Telecommunication Institute, 2008, ISBN 978-9984-818-04-7, pp. 39-45.

Stetjuha A.: Possibilities of Using the Econometric Methods in Forming the Tariffs for Road Transportation, Proceedings of the International Conference “Reliability and Statistics in Transportation and Communication” (RelStat'10), (Riga, Latvia, October 20-23, 2010), Riga: Transport and Telecommunication Institute, 2010, ISBN 978-9984-818-34-4, pp. 327-334.

Stetjuha A.: Price Discrimination in Transport Business, AUTOBUSY Technika, Eksploatacija, Systemy Transportowe. 6/2010 ISSN 1509-5878. p.7, CD, pp.1-8.

Stetjuha A., Yurevich A.: Production Function and Neuron Networks Application for Elaborating the Scenario of the Branch Development (on the Example of the Latvian Forestry), Management and Sustainable Development. University of Forestry, Chief Editor Assoc. Prof. Ivan Paligorov, Vol. 13 29, 2011, pp 175-182.

Stetjuha A.: Economic Orientation Training in Logistics, Starpaugstskolu zinātniski praktiskās un mācību metodiskās konferences „Mūsdienu izglītības problēmas” raksti, Transporta un sakaru institūts, Rīga, Latvija, 2009, 159.-164.lpp.

Stetjuha A.: Price Discrimination as the Crisis Impact Damper, Proceedings of the 9th International Conference “Reliability and Statistics in Transportation and Communication” (RelStat'09), (Riga, Latvia, October 21–24, 2009), Riga: Transport and Telecommunication Institute, 2009, ISBN 978-9984-818-21-4, pp.240-249.

### **Juri Tolujew**

Schenk M., Tolujew J., Reggelin T.: A Mesoscopic Approach to the Simulation of Logistics Systems, Advanced Manufacturing and Sustainable Logistics, (Eds. W. Dangelmaier et al.), Springer Berlin Heidelberg, 2010, pp. 15-25.

Klimov R., Merkuryev Y., Tolujew J.: A Theoretical Framework for Simulation-Based Analysis of Supply Chain Risk Management, Managing Risk in Virtual Enterprise Networks: Implementing Supply Chain Principles, (Ed. Stavros Ponis), Business Science Reference, Hershey, New York, 2010, pp. 162-182.

Merkuryev Y., Pečerska J., Tolujevs J.: Simulation-based analysis of logistic systems, Humanities and Social Sciences: Latvia. Modelling Latvian Economy, Vol. 4(57)/2008, Institute of Economics, Riga, pp. 27-48.

Neumann G., Tolujew J.: The impact of the simulation user on simulation results: to what extent human thinking can be replaced by algorithms? Proceedings of the 22nd European Modeling & Simulation Symposium, (Fes, Morocco, October 13-15, 2010), pp. 309-314.

- Schenk M., Tolujew J., Reggeline T.: Comparison of Three Methods of Implementation of Mesoscopic Flow Models, Proceedings of the International conference „Logistics and Supply Chain Management: Modern Trends in Germany and Russia”, (Cottbus, Germany, May 6-9, 2009), Culliver Verlag Göttingen, pp. 36-44.
- Tolujew, J., Savrasov, M.: Mesoscopic Approach to Modelling a Traffic System, Proceedings of the International Conference “Modelling of Business, Industrial and Transport Systems (MBITS’08)”, (Riga, Latvia, May 7-10, 2008), Riga: TTI, 2008, p. 147-151. ISBN 978-9984-818-04-7.
- Tolujew J., Zmanovska T.: Numerical Modelling of Processes in Logistics Flow Systems, Proceedings of the 11th International Conference on Reliability and Statistics in Transportation and Communication (RelStat’11), (Riga, Latvia, October 19-22, 2011), pp. 241-248. ISBN: 978-9984-818-46-7

### **Boris Tsilker**

- Nikolsky V., Tsilker B., Pyatkov V.: Synthesis of Combined Control Servo Systems Operating under Conditions of Regular Chaos, Automatic Control and Computer Sciences, 2009, Vol. 43, No. 5, pp. 257–262.
- Krebss V., Tsilker B.: Coverage Estimation in Sinergic Networked Intelligent Transportation Systems with Non-Isotropic Nodes, Transport and Telecommunication, 2010, Vol. 11, No 4, ISSN 1407-6160, pp. 36-45.
- Tsilker B., Pyatkov V.: Coverage Ensuring for Wireless Networks Service Area with Obstacles, Proceedings of the 9<sup>th</sup> International Conference “RELIABILITY and STATISTICS in TRANSPORTATION and COMMUNICATION” (RelStat’09), (Riga, Latvia, October 21-24, 2009), Riga, Transport and Telecommunication Institute, ISBN 978-9984-818-21-4, pp. 319-328.
- Tsilker B., Orlov S.: Synthesis of criteria of efficiency for aerospace embedded computers, Proceedings of the 5th International Conference on Operational Research: Simulation and Optimization in Business and Industry, (Tallinn, Estonia, May 17-20, 2006), pp. 223-226.
- Tsilker B., Orlov S.: Quality Estimation in Post-Object Technologies of Software Development for Transport Systems, Proceedings of International Conference “Modeling of Business, Industrial and Transport Systems, (Riga, Latvia, May 7-10, 2008), Riga, Transport and Telecommunication Institute, ISBN 978-9984-818-04-7, pp. 298-302.
- Tsilker B.: Coverage Ensuring in Heterogeneous Wireless Networks, Proceedings of the 8<sup>th</sup> International Conference “RELIABILITY and STATISTICS in TRANSPORTATION and COMMUNICATION” (RelStat’08), (Riga, Latvia, October 15-18, 2008), Riga, Transport and Telecommunication Institute, ISBN 978-9984-818-11-5, pp. 302-312.
- Orlov S., Tsilker B.: Efficiency of Onboard Computer Systems for Space Vehicles and Stations, Transport and Telecommunication, 2010, Volume 11, No 2, pp. 60-67.

### **George Utehin**

- Utehin G.: Quality Management Systems. Textbook. Riga: Transport and Telecommunication Institute, 2010. 118 p. (in Russian)
- Utehin G.: Use of Statistical Techniques in Quality Management Systems, Proceedings of the 8th International Conference “Reliability and Statistics in Transportation and Communication”

(RelStat'08), (Riga, Latvia, October 15-18, 2008), Riga, Transport and Telecommunication Institute, pp. 329-334. ISBN 978-9984-818-11-5.

Fila N., Misnevs B., Utekhin G.: Methodology of Study Programs Improvement by Using Key Performance Indicators, Proceedings of the 33st International Convention „Computers in Education”, MIPRO 2010, (Opatia, Croatia, May 24-28, 2010), pp. 128-134.

Misnevs B., Utekhin G.: Study Programs as a Management Object, (in Russian), Starpaugstskolu zinātniski praktiskās un mācību metodiskās konferences “Mūsdienu izglītības problēmas” raksti, Transporta un sakaru institūts, Rīga, ISBN 978-9984-818-24-5, 53-63. lpp.

Utekhin G.: Quality Management Systems at the Enterprises and Organizations. Textbook. Riga: Biznesa Komplekss Ltd., 2005. 124 p. ISBN 9984-761-33-9 (in Russian)

### **Irina Yatskiv**

Andronov A., Kolmakova N., Yatskiv I.: A Quasi Regression Model for Polytomous Data and Its Application for Measuring Service Quality, International Journal of Mathematics and Computers in Simulation, Issue 2, Volume 4, 2010, pp. 50-57.

Gertsbakh I., Yatskiv I.: Dynamic Classification: Economic Welfare Growth in EU During 1995-2004, Proceedings of International Conference “Data mining-2006”, (Prague, July 11-13, 2006), pp.53-62

Yurshevich E., Yatskiv I.: Decision Support System for Transport System Management and Microscopic Traffic Modeling, Proceedings of the 7-th International Scientific Conference TRANSBALTICA (Vilnius, Lithuania, May 5-6, 2011), pp.74-81.

Yatskiv I., Yurshevich E., Savrasov M.: Practical aspects of modelling in the transport node reconstruction in Riga, the 23<sup>rd</sup> European Conference on Modelling and Simulation (ECMS 2009), (Madrid, Spain, 2009), pp. 295-300. ISBN: 0-9553018-8-2

Yatskiv I., Yurshevich J., Pticina I.: Analysis of Mobility and Reliability Measures on the Particular Transport Node at the Stage of its Reconstruction, Proceeding of the International Conference “Modelling of Business, Industrial and Transport Systems (MBITS'08)”, (Riga, Latvia, May 7-10, 2008), pp. 152-157. ISBN 978-9984-818-04-7 (Thomson ID)

Gertsbakh I., Yatskiv I., Platonova O.: Constructing Social and Economic Indicators for EU Countries Using Dynamic Classification: Case Studies, Proceedings of International Conference “Data mining-2008”, (Cadiz, May 26-28, 2008), pp.153-162. ISBN: 1-84564-110-8 (Scopus ID)

Yatskiv I., Pticina I.: Construction of the Urban Public Transport System's Quality Indicator with Missing Data, Transport and Telecommunication, Vol.11 (2), 2010, pp. 4-11. ISSN 1407-6160 (Scopus ID)

## ***2.4. Copies of the Institution's/Unit's best publications***

### **Original research publications:**

1. **Andronov A., Kolmakova N., Yatskiv I.:** A Quasi Regression Model for Polytomous Data and Its Application for Measuring Service Quality, International Journal of Mathematics and Computers in Simulation, Issue 2, Volume 4, 2010, pp. 50-57.
2. **Andronov A., Latkov A., Revzina J.:** Internet Traffic Description on a Base of Markov–Additive Process of Arrivals, Proceedings of the International Conference „Baltic Congress on Future Internet Communications”, (Riga, Latvia, February 16-18, 2011), Transport and Telecommunication Institute, pp.212-217.

3. **Andronov A.**, Revzina J.: Simple Correlated Flow and Its Applications, Lecture Notes in Computer Science, Nr 6751. Springer-Verlag, Berlin – Heidelberg, 2011, pp.288-300.
4. Berezhnoy A., **Grakovsky A.**, Nesterov A.: The "Green Wave" Mode Production on the Two-Lane Highways During the Construction Works Time Period, TRANSPORT, Vilnius, VGTU, 2007, Vol. XXII, No 4, pp. 263–268. (ISSN 1648-4142 print / ISSN 1648-3480 online TRANSPORT, [www.transport.vgtu.lt](http://www.transport.vgtu.lt))
5. Fila N., **Misnevs B.**, **Utehin G.**: Methodology of Study Programs Improvement by Using Key Performance Indicators, Proceedings of the 33rd International Convention, MIPRO, 2010, Opatja, Croatia, pp. 884-890.
6. Gertsbakh I., **Yatskiv I.**: Dynamic Classification: Economic Welfare Growth in EU During 1995-2004, Proceedings of International Conference “Data mining-2006”, (Prague, July 11-13, 2006), pp.53-62.
7. **Grakovsky A.**, **Kabashkin I.**, Ressin A.: Intelligent Transport System for Intra-City Logistics based on WWW-Technologies, TRANSPORT and TELECOMMUNICATION. Riga: TTI, 2008, vol. 9, No 3, pp. 30–38. (ISSN 1407-6160, ISSN 1407-6179 (on-line))
8. Grishin S., **Kopytov E.**, **Schiptsov O.**: Investigation of the Interrelated Tasks of Estimating Transport Influence on the Urban Ecology, Proceedings of the International Symposium on STOCHASTIC MODELS in RELIABILITY ENGINEERING, LIFE SCIENCE and OPERATIONS MANAGEMENT, (Beer Sheva, Israel, February 8-11 2010) SCE - Shamoon College of Engineering, 8 pages.
9. **Guseynov Sh.E.**, Bagirov Sh.G.: Distributed mathematical models of undetermined "without preference" motion of traffic flow, International Journal of Discrete and Continuous Dynamical Systems: Series A (DCDS-A), Published by American Institute of Mathematical Sciences (AIMS), pp. 734-743, 2011.
10. **Kabashkin I.**: Optimal Monitoring Strategies. Wiley Encyclopedia of Operations Research and Management Science, ISBN 9780470400630, Wiley, 2011, 8 Volume Set. 6408 p.  
**Kabashkin I.**: Optimal Monitoring Strategies. Wiley Encyclopaedia of Operations Research and Management Science, On-line ISBN 9780470400531. Wiley on-line library Published Online. DOI: 10.1002/9780470400531.eorms0608; <http://onlinelibrary.wiley.com/doi/10.1002/9780470400531.eorms0608/full>
11. Klimov R., Merkuryev Y., **Tolujew J.**: A Theoretical Framework for Simulation-Based Analysis of Supply Chain Risk Management, Managing Risk in Virtual Enterprise Networks: Implementing Supply Chain Principles, (Ed. Stavros Ponis), Business Science Reference, Hershey, New York, 2010, pp. 162-182.
12. Kobasko N.I., **Guseynov Sh.E.**: Microstructure and hardness prediction at the core of steel parts of any configuration during quenching, Journal of ASTM International (JAI), Published by the American Institute of Physics (AIP) and the American Society for Testing and Materials, Vol. 8, Issue 8, pp. 17-28, 2011. [http://www.astm.org/DIGITAL\\_LIBRARY/JOURNALS/JAI/PAGES/JAI103525.htm](http://www.astm.org/DIGITAL_LIBRARY/JOURNALS/JAI/PAGES/JAI103525.htm)
13. **Kopitov R.**, Faingloz L.: Ways of Transforming Aims into Results at Successful Companies, Technological and Economic Development of Economy, Baltic Journal on Sustainability. 2008, 14(3), pp. 312-326.
14. **Kopytov E.**, Demidovs V.: Virtual Data Models in Anticipatory in Decision System of Railway Transportation, International Journal of Computing Anticipatory Systems, (Ed. by D. M. Dubois), Published by CHAOS, Vol. 19, Belgium, Institute of Mathematics, University of Liege, pp. 135-145, 2006.

15. **Kopytov E., Petukhova N., Demidovs V.:** Methods for Railway Schedule Periodicity Support in Temporal Databases. Proceedings of 9th JOINT CONFERENCE ON KNOWLEDGE-BASED SOFTWARE ENGINEERING, JCKBSE'10 (Kaunas, Lithuania, August 25-27, 2010), pp. 178-191.
16. **Misnevs B.:** eLEARNING IN LATVIA: Dimensions of E-Learning Education in Latvia, in „eLEARNING Practices”. Ed. Ugur DEMIRAY. Eskisehir-Turkey, Anadolu University-2010, pp. 379-409.
17. Nikolsky V., **Tsilker B.**, Pyatkov V.: Synthesis of Combined Control Servo Systems Operating under Conditions of Regular Chaos, Automatic Control and Computer Sciences, 2009, Vol. 43, No. 5, pp. 257–262
18. **Orlov S., Tsilker B.:** Efficiency of Onboard Computer Systems for Space Vehicles and Stations, Transport and Telecommunication, 2010, Vol. 11, No 2, ISSN 1407-6160, pp. 60–67.
19. **Stetjuha A.:** Price Discrimination in Transport Business, AUTOBUSY Technika, Eksploatacija, Systemy Transportowe. 6/2010 ISSN 1509-5878. p.7, CD, pp.1-8.
20. **Tolujew J., Zmanovska T.:** Numerical Modelling of Processes in Logistics Flow Systems, Proceedings of the 11th International Conference on Reliability and Statistics in Transportation and Communication (RelStat'11), (Riga, Latvia, October 19-22, 2011), pp. 241-248. ISBN: 978-9984-818-46-7
21. **Tolujew, J., Savrasov, M.:** Mesoscopic Approach to Modelling a Traffic System, Proceedings of the International Conference “Modelling of Business, Industrial and Transport Systems (MBITS'08)”, (Riga, Latvia, May 7-10, 2008), Riga: TTI, 2008, p. 147-151. ISBN 978-9984-818-04-7.
22. **Yatskiv I., Medvedev A., Savrasovs M., Kreits E.:** Analysis and Forecast of the Urban Public Transport Flow in Jurmala City, the 7<sup>th</sup> International Conference “Reliability and Statistics in Transportation and Communication (RelStat'07)”, (Riga, Latvia, October 24-27, 2007), Riga, Transport and Telecommunication Institute, pp. 79-93. ISBN 978-9984-818-00-9
23. Yunusov S., **Kopitov E., Labendik V.:** Turbofan Thrust Control on Flight Information in Aircraft Diagnostic System, Scientific Journal „Ultragarsas”, Vol. 60, No 3, Lithuania, Kaunas: Technologija, 2006, pp. 20-23.

#### **Monographs, books:**

1. Kabashkin I.: Regional Logistics & ICT Profile: Latvia. Turku School of Economics, Turku, 2007. (ISBN 978-951-564-493-0), 167 p.
2. Kabashkin I.: Port, Hinterland and Logistics Centres: New Realities: Case Study in Latvia. Riga: TTI, 2008. 32 p. ISBN 978-9984-9904-9-1.
3. Kabashkin I.: Rail Baltica. Transnational Integration through Coordinated Infrastructure and Regional Development – Brussels, 2008. 48 p. ISBN 978-9984-818-03-0.
4. Kabaškins I.: Transporta sastrēgumu monitoringa metodoloģijas izstrāde plūsmu uzlabošanai pilsētā (Methodology of monitoring the road traffic congestion for improving the traffic flows within the city). Rīga, 2008. 72 lpp. ISBN 978-9984-818-12-2
5. Guseinov Sh.E, Kopitov E.A., Schiptsov O.V.: Mathematical Models of Exhaust Concentration Dynamics in City Atmosphere. Monograph. Riga: Transport and Telecommunication Institute, 2009. 136 p. ISBN 978-9984-818-23-8 (in Russian)
6. Orlov S.A., Tsilker B.Ya.: Computer and Systems Management. Basic Course on Architecture and Structure of Modern Computer Aids. 2-edition. Pub.: Piter, 2011. 688 p. ISBN 978-5-49807-862-5 (in Russian)

7. Orlov S.A.: Software Design Technologies: Textbook for Higher Schools. Complex Software Systems Design. 3<sup>rd</sup> edition. Pub.: Piter, 2006. 527 p. ISBN: 5-94723-820-9 (in Russian)



### 3. DOCTORAL TRAINING

#### 3.1. Number of students in 2006-2011

	2006	2007	2008	2009	2010	2011
Completed their Master degree	97	125	103	102	103	80
Started post-graduate studies	3	9	3	8	7	3

#### 3.2. List of doctoral dissertations in 2000-2006 and present employment

Name (given name and family name)	Topic of dissertation	Year of completing the degree	Present employment (job description, organisation)
Vasilijs Demidovs	Development of models of the Dataware of Decision Support Systems at the Railway	20.06.2006. TTI	Head of Database Management Systems Unit of Information Technology Center of Latvian Railway
Helen Afanasyeva	The Estimation of Transport Logistic Processes Models on the Base of Intensive Computer Methods of Statistics.	04.07.2006 TTI	Researcher Institut für Informatik Technical University of Clausthal, Germany
Andrejs Solomenikovs	Simulation Modelling and Research of Marine Container Terminal Logistics Chains. Case study of Baltic Container Terminal.	17.04.2007 TTI	Researcher Riga Technical University
Andrejs Romanovs	Application of multi-criteria analysis methods to the tourist information system development	19.12.2006 TTI	Docent Riga Technical University
Alexander V. Berezhnoy	Investigation of the Traffic Flow Models Managing Parameters Influence on the Efficiency of the Urban Traffic Control	7.10.2008 TTI	IT senior specialist Ltd."Inserviss Group" Docent Riga Technical University
Vaira Gromule	The System of Monitoring the Quality of the Coach Terminal Services for the Realisation of a Conception of a Passenger Logistics Centre in a Multimodal Transport System	15.12.2010 TTI	Director of the Board JSC „Riga International Coach Terminal”
Natalia Petukhova	Temporal Data Models in the Information Systems on the Railway Transport.	30.03.2011 TTI	Main Specialist/DBA of Database Management Systems Unit of Information Technology Center of Latvian Railway
Takhir Mamirov	The Development of Problems Resolution Methods of Precise Vibrodiagnostics of Transport Aggregates.	8.09.2011 TTI	Ltd. "Diatom Enterprises", Straupes street 5/1, Riga, Latvia – programmer, Project manager Ltd. "Technical Craft", Kaivas street 50/5-55, Riga, Latvia – member of the board

## 4. NATIONAL AND INTERNATIONAL COLLABORATION

### 4.1. National collaboration

Organisation	Type of collaboration	Field of science
<b>UNIVERSITIES</b>		
Riga Technical University	Common projects - LZP	Engineering
University of Latvia	Common projects - LZP	Engineering
Daugavpils University	Common projects - LZP	Engineering
<b>Other HEE, Graduate schools, colleges</b>		
Latvian Transport Development and Education Association	INTERREG projects	Transport
Transport Department of Riga City Council	Common projects	Transport
Development Department of Riga City Council	Common projects	Transport
<b>Public research institutes</b>		
<b>Enterprises</b>		
„REMEX”, Ltd.	Common projects	Logistics
„IMINK”, Ltd.	Common projects	Transport
„KEMEK Engineering”, Ltd.	Common projects	Engineering
„Latvian National metrology centre”, Ltd.	Common projects	Engineering
JSC „Riga International Coach Terminal”	Common projects	Transport
„Road Transport Administration”, State Ltd.	Common projects	Transport
„Telematics and Logistics Institute”, Ltd.	Common projects	Transport
State JSC „Latvijas Gaisa Satiksme”	Common projects	Transport
„Rīgas Satiksme”, State Ltd	Common projects	Transport
<b>National conferences and workshops organised by the institution/unit</b>		
Current Situation and Possible Development of Latvian Transport and Logistics Sector. 11 May, 2011. TTI, Riga		
Transport corporate expenditure at national and regional budgets: level of compensation. 3 May, 2011. TTI, Riga		
Research and Academic Conference <i>Research and Technology – Step into the Future, Riga, April, 2011</i>		
Research and Academic Conference <i>Research and Technology – Step into the Future, Riga, December, 2010</i>		
Research and Academic Conference <i>Research and Technology – Step into the Future, Riga, April, 2010</i>		

Industry Software Engineering: talent management, career management. 27 January, 2010. TTI, Riga
Research and Academic Conference <i>Research and Technology – Step into the Future</i> , Riga, December, 2009
<b>Latvian Supply Chain Cluster (LSCC)</b> – a consortium of leading manufacturers, logistics and R&D institutions, was established in 2009 with the primary goal of value creation for all supply chain partners, including manufacturers, suppliers, distributors, customers, and customers' customers.
Research and Academic Conference <i>Research and Technology – Step into the Future</i> , Riga, April, 2009
Telecommunications industry in Latvian. 29 April, 2009. TTI, Riga
Research and Academic Conference <i>Research and Technology – Step into the Future</i> , Riga, December, 2008
Role of NGOs in a Changing World: emphasis on transport and logistics. 11 December, 2008. TTI, Riga
Day of Mathematics. 30 November, 2008. TTI, Riga
Opportunities for regulation of road freight transport market. 11 July, 2008. TTI, Riga
Research and Academic Conference <i>Research and Technology – Step into the Future</i> , Riga, April, 2008
Development of Mobility Plan for Riga and Riga Area. 25 January, 2008. TTI, Riga
Research and Academic Conference <i>Research and Technology – Step into the Future</i> , Riga, December, 2007
Research and Academic Conference <i>Research and Technology – Step into the Future</i> , Riga, April, 2007
Research and Academic Conference <i>Research and Technology – Step into the Future</i> , Riga, December, 2006
Research and Academic Conference <i>Research and Technology – Step into the Future</i> , Riga, April, 2006

#### **4.2. Visits abroad (minimum duration of visit: one month)**

Name	Target organisation	Country	Purpose of the visit	Year	Duration in months

#### **4.3. Visits to the Unit (minimum duration of visit: one month)**

Name of visitor	Home organisation	Country	Purpose of the visit	Year	Duration in months

#### **4.4. Most important foreign collaborators**

Name and Organisation	Type of collaboration	Country
UNIVERSITIES		
Vilnius Gediminas Technical University	Common research projects „Safer Heavy Goods Traffic”, „The Impact of the market Structure on Safety and Security in BSR”	Lithuania

Hamburg University of Technology, Institute of Business Logistics and General Management	Common research Project in the area of simulation application in logistics sphere (common workshops, publications, project proposal)	Germany
Universidad Politécnica de Madrid	Scientist exchange in the frame of common research activities on subject modelling public transport passenger flows in the era of intelligent transport systems	Spain
University of Liege	Common research in area 3D urban models (chapter in the book, project proposals)	Belgium
Ben Gurion University	Common research, seminars for master and PhD students and papers in Data Mining field.	Israel
RESEARCH INSTITUTES		
Fraunhofer Institute for Factory Operation and Automation	Common researches in the area of application of mesoscopic approach to the simulation of logistics systems, 2008-2010	Germany
Fraunhofer Institute for Factory Operation and Automation	Knowledge exchange in the area of 3D virtual reality technologies application for the training, education and research	Germany
Institute of Logistics and Warehousing	Common FP7 project „B2BLOCO”	Poland
INRETS Laboratoire Ingénierie Circulation Transport	Common Projects: COST Actions TU0804, TU0903	France
Centre for Maritime Studies, University of Turku	Common workshops	Finland
Enterprises		
<b>International conferences, workshops and seminars organised by the institution/unit</b>		
<b><i>COST TU0801 “3D issues for Transport Systems”</i></b> , TTI, Riga, Latvia, October 20, 2011		
The international Conference <b><i>“Reliability and Statistics in Transportation and Communication”</i></b> , (RelStat-11), TTI, Riga, Latvia, October 19-22, 2011.		
The International Debate <b><i>“The integrated transport system in the Baltic Sea Region - the transit role of Latvia”</i></b> . September 14, 2011. Riga, Latvia		
International Inter-higher School Scientific and Educational Conference. <b><i>Actual Problems of Education</i></b> . February 24-25, 2011. TTI, Riga, Latvia.		
The International Conference <b><i>“Baltic Congress on Future Internet Communications”</i></b> . February 16-18, 2011. TTI, Riga, Latvia		
International Workshop <b><i>“Rail Baltic Growth Corridor”</i></b> . January 18-19, 2011. Riga, Latvia		
The international Conference <b><i>“Reliability and Statistics in Transportation and Communication”</i></b> , (RelStat-10), TTI, Riga, Latvia, October 20-23, 2010.		
The International Research and Practical Conference <b><i>“State and Prospects of Aviation Specialists Training”</i></b> . July 8-9, 2010. TTI, Riga		
The 2nd International Symposium <b><i>“Space &amp; Global Security of Humanity”</i></b> , July 5-9,		

2010, TTI, Riga, Latvia
International Inter-higher School Scientific and Educational Conference. <b><i>Actual Problems of Education</i></b> . Riga, Latvia, TTI, February 25-26, 2010.
The international Conference <b><i>“Reliability and Statistics in Transportation and Communication”</i></b> , (RelStat-09), TTI, Riga, Latvia, October 21-24, 2009.
Regional Workshop of World Bank on Public-Private Partnerships in Roads and the Current Global Financial Crisis. May 11, 2009. TTI, Riga
International Inter-higher School Scientific and Educational Conference. <b><i>Actual Problems of Education</i></b> . Riga, Latvia, TTI, February 19-20, 2009.
The international Conference <b><i>“Reliability and Statistics in Transportation and Communication”</i></b> , (RelStat-08), TTI, Riga, Latvia, October 15-18, 2008.
International Conference „ <b><i>State and Prospects of Aviation Specialists Training</i></b> “, July 1-5, 2008, TTI, Riga, Latvia.
The International Conference <b><i>“Modelling of Business, Industrial and Transport Systems (MBITS’08)”</i></b> , TTI, Riga, May 7-10, 2008.
International Inter-higher School Scientific and Educational Conference. <b><i>Actual Problems of Education</i></b> . Riga, Latvia, TTI, February 21-22, 2008.
The international Conference <b><i>“Reliability and Statistics in Transportation and Communication”</i></b> , (RelStat-07), TTI, Riga, Latvia, October 24-27, 2007.
The third WP3 Workshop of InterBaltic Project, June 26-27, 2007. TTI, Riga
International Inter-higher School Scientific and Educational Conference. <b><i>Actual Problems of Education</i></b> . Riga, Latvia, TTI, February 22-23, 2007.
International Conference „ <b><i>The Process of European Integration and Development of Latgalian Region</i></b> “. 16 November, 2006, Daugavpils. TTI
The international Conference <b><i>“Reliability and Statistics in Transportation and Communication”</i></b> , (RelStat-06), TTI, Riga, Latvia, October 25-28, 2006.
International Workshop <b><i>“Integrating Logistics Centre Networks in the Baltic Sea Region (InLoC)”</i></b> . April 26-27, 2006, TTI, Riga
Regional Workshop of World Bank on Public-Private Partnership (PPP) in Transport. March 6-8, 2007. TTI, Riga.
International Inter-higher School Scientific and Educational Conference. <b><i>Actual Problems of Education</i></b> . Riga, Latvia, TTI, February 23-24, 2006.

#### ***4.5. Describe the most important outcomes of the visits and collaboration contacts (max. 2 pages)***

*Describe here e.g. key joint publications, researcher training, adoption and use of new technologies or new approaches.*

TTI pays special attention to the collaboration of scientific personnel with colleagues from others research centres and universities. As a result of this collaboration are common papers with researchers from Ber-Sheeva University, Gediminas University, Magdeburg University and others. Also, in collaboration with the mentioned Universities some Conferences have been organized (see p. 27).

A good example of synergetic effects is a support of COST actions by TTI. These actions are focused on experience exchange between scientific experts in different application areas. Currently the institute takes part in 5 different actions. It gives a great opportunity for PhD students and research staff to obtain new technologies and new approaches. The impact of these meetings has a big influence on obtaining new technologies. As an example, in COST TU0801 the academic and scientific staff of TTI obtained knowledge about technologies of application of 3D models in urban

environment. This knowledge is reflected by scientific publication in this field. And TTI was the organizer of scientific workshop within the frames of this COST Action “3D models for Transport Systems” in October 2011.

Also collaboration with the University of Fraunhofer (Magdeburg, Germany) referred to the transferring of technology of creating virtual reality worlds to TTI. This knowledge will be used in developing new ideas for PhD students and approaches of student education in the aviation sphere. Besides, the obtained technology and software will be applied for creating of 3D virtually centre in TTI.

ERASMUS program implemented in TTI gives an opportunity to establish new scientific contacts (for instance, with Zilina University), it refers to more active participation in international conferences and a growth of the number of joint publications and common scientific projects.

Common scientific projects within the frames of various EU programs give an opportunity to find new scientific projects and lead to the knowledge and best practices transfer not only to TTI, but general to Latvia. A good example here is the B2BLOCO project within the frames of the FP7 Program. The outcome of this project is of great importance because of linking different types of institution in the area of transport in a network. This network will unite scientific organization and SME for more intensive integration of new technologies in practice that is of the essence for both parties.

#### ***4.6. Non-academic collaboration***

<b>Name and Organisation</b>	<b>Type of collaboration</b>	<b>Country</b>
<b>Enterprises and standardisation organisations</b>		
<b>Other organisations</b>		



## 5. OTHER SCIENTIFIC AND SOCIETAL ACTIVITIES

### 5.1. Invited presentations in scientific conferences

Name	Topic of presentation	Name and time of the conference
Alexander Andronovs	Signatures and Spectra. Theory foundation and applications in an evaluation of reliability and risk	Plenary session on conference „ <i>Reliability and Statistics in Transport and Telecommunication</i> ”, TTI, Riga, Latvia, 21.10.2011
Alexander Andronovs	Triangular symmetric copula	<i>The Third International Conference “Problems of Cybernetics and Informatics</i> . September 6-9, 2010, Azerbaijan National Academy of Science, Baku, Azerbaijan.
Alexander Grakovski	New approach of engineering teaching	Plenary session Inter-Higher School Scientific and Educational Conference "Actual Problems of Education" (February 19-20, 2009), Transport and Telecommunication institute, Riga, Latvia
Sharif E. Guseynov	Complementary slackness between the lowest terms coefficients of the 3D parabolic equation and the Newton boundary conditions constants	The International Conference on Scientific Computation and Differential Equations (SciCADE2011), July 11-15, 2011, The Fields Institute in Toronto, Toronto, Canada
Sharif E. Guseynov	Assessment of the Influence of External Earth Terrain to the Atmospheric Air Flow	The 7th International Congress on Industrial and Applied Mathematics (ICIAM 2011), July 18-22, 2011, Vancouver, Canada
Sharif E. Guseynov	Construction of the mathematical model on the Ollendorff method for filtration of weakly compressible chemical compound in the porous heterogeneous 3D medium	The 4th Congress of the Turkic World Mathematical Society (TWMS), July 1-3, 2011, Baku, Azerbaijan
Sharif E. Guseynov	Two-dimensional macroscopic non-deterministic model of traffic	The 4th Congress of the Turkic World Mathematical Society (TWMS), July 1-3, 2011, Baku, Azerbaijan

	flow motion "without preference"	
Sharif E. Guseynov	Mathematical Models of Gene Activity Regulation Processes: Mechanical Perturbation of DNA Structure	The International Conference on New Trends in Education and Their Implications (ICONTE-2011), April 27-29, 2011, Antalya, Turkey
Sharif E. Guseynov	Stabilization conditions for asymptotic solutions of some class of mathematical biosciences	The 16th European Conference on Mathematics for Industry (ECMI), July 26-30, 2010, Wuppertal, Germany
Sharif E. Guseynov	Determination of time-dependent sensitivity coefficient of non- deterministic 2D traffic flow	The 2nd International Conference on Mathematical Sciences (ICMS2 2010), University Kebangsaan Malaysia, Putra World Trade Centre, November 30-December 03, 2010, Kuala Lumpur, Malaysia
Sharif E. Guseynov	Stabilization conditions for asymptotic solutions of some class of mathematical models in epidemiology	The Molecular Epidemiology and Evolutionary Genetics of Infectious Diseases Conference (MEEGID X), November 03-05, 2010, Amsterdam, The Netherlands
Sharif E. Guseynov	Inverse problems for PDE and ODE systems with incomplete information originated in molecular biology	The International Congress of Mathematicians (ICM2010), August 19-27, 2010, Hyderabad, India
Sharif E. Guseynov	On One Time- Dependent Model for Determination of Exhaust Concentration in Urban Transport System	The International Conference on Urban Environmental Pollution 2010, June 20-23, 2010, The Westin Boston Waterfront in Boston, Boston, USA
Sharif E. Guseynov	Mathematical Modelling of Distribution of Mechanical Indignation in DNA Structure	The 1st International Workshop on The Role and Impact of Mathematics in Medicine (RIMM-2010), Henri Poincaré Institute, June 10-12, 2010, Paris, France

Sharif E. Guseynov	A note on determination of the economic welfare growth index in EU	The 15th International Conference "Mathematics. Computing. Education", January 19-24, 2009, Pushchino, Russia
Sharif E. Guseynov	Analytical-numerical solutions in closed form for the one dimensional PBL turbulence model	The 2nd International Conference "Problems of Cybernetics and Informatics" (PCI'2008), September 10-12, 2008, Baku, Azerbaijan
Sharif E. Guseynov	Unique existence and determination of time-dependent sensitivity coefficient of 2D traffic flow on the multilane road with T-junction	The 5th European Congress of Mathematics (ECM-2008), July 14-18, 2008, Amsterdam, The Netherlands
Sharif E. Guseynov	A Model with Nonlinear Equation for Intensive Steel Quenching and its Analytical Solution in Closed Form	The 15th European Conference on Mathematics, June 30-July 04, 2008, University College London, London, United Kingdom
Sharif E. Guseynov	Coefficient inverse problem for determination of the sensitivity coefficient in traffic flow density model	The 1st International Conference on Soft Computing Technologies in Economy, November 19-21, 2007, Baku, Azerbaijan
Sharif E. Guseynov	On new analytical approach to some classes of mathematical physics inverse problems	The 6th International Congress on Industrial and Applied Mathematics (ICIAM-2007), 16-20 July, 2007, Zurich, Switzerland
Sharif E. Guseynov	Some mathematical models with nonlinear boundary conditions for intensive steel quenching and its analytical solutions	The 3rd International Conferences on Research and Education in Mathematics (ICREAM-3), April 09-13, 2007, Kuala Lumpur, Malaysia
Sharif E. Guseynov	Mathematical Modelling of the	The International Conference on Problems of Cybernetics and Informatics, October 03-05, 2006,

	Intensive Quenching of Steel Process	Baku, Azerbaijan
Sharif E. Guseynov	On one method for reducing of the 3-D inverse thermal conductivity problem in multi-layered domain to the 1D inverse problem and the uniqueness theorem	The 11th International Conference on Mathematical Modelling and Analysis (MMA-2006), June 01-04, 2006, Jurmala, Latvia
Sharif E. Guseynov	On the uniqueness theorem for one nonstationary 3-D inverse heat conductivity problem in a layered domain	The 9th International Conference on Applied Mathematics (MATH'2006) under the aegis of the World Scientific and Engineering Academy and Society, May 27-29, 2006, Istanbul, Turkey
Igor Kabashkin	Baltic Vector of Transport Development.	Gastvortragsreihe Logistik 2011. Logistik als Arbeitsfeld der Zukunft – Potenziale, Umsetzungsstrategien und Visionen. – Franhofer Institut Fabrikbetrieb und –automatisierung, Magdeburg, 2011, Magdeburg University, 27 April, 2011, Germany.
Igor Kabashkin	Baltic Vector of Transport Development.	International Conference „Latvian Transport and Logistics 2010”. 8 December, 2010, Riga, Latvia
Igor Kabashkin	Models of Transport Development in Spatial Planning.	The 2nd International Scientific Conference “Spatial Strategy for Sustainable Development”, 14-17 September, 2010, Riga, Latvia
Igor Kabashkin	New Trends in Education and Training of Future Aviation Professionals.	The 2 <sup>nd</sup> International Conference "Training of Aviation Specialists. Reality and Trends". 8 - 9 July 2010, Riga, Latvia.
Igor Kabashkin	Baltic Vector of Transport Development.	XIII International Conference TRANSBALTICA 2010. 3-4 June 2010, Riga, Latvia.
Igor Kabashkin, Hans-Jörg Lotter	Globalisation of Transport Needs and New Transport Training Environment.	XIII Conference of the UERO Working Group on Transportation, 23-25 September 2009, Padova, Italy.
Igor Kabashkin	European Neighbourhood Policy: New Projects in Freight Transport.	The 11th International Conference „TransBaltica 2008”. 13 June 2008, Riga, Latvia
Igor Kabashkin	Transport and	The 1st International Northern Dimension Forum,

	Logistics Development: Baltic and EU Context.	St.Petersburg, 13-14 May 2008.
Igor Kabashkin	Transport and Logistics Development in Latvia: Baltic and EU Context.	International Conference „EU Support for Transport Sector. Effect on Business, Science and Society“. 9 April 2008, Vilnius, Lithuania.
Igor Kabashkin	Logistics Centres in the Baltic Sea Region.	The Third International Railway Logistics Seminar, Kouvola, Finland 5-7 June 2007.
Igor Kabashkin	Transport System Development of the Baltic States in the European Projects.	International Conference „TRANSESTONIA 2007: The New Winds“, 16 May 2007, Tallinn, Estonia.
Igor Kabashkin	Logistics Centres Development in Latvia.	International Scientific Conference TRANSBALTICA'2007. 11-12 April 2007, Vilnius, Lithuania.
Igor Kabashkin	„Transportation Logistics in the Baltic States“.	Gastvortragsreihe Logistik 2007. Logistik als Arbeitsfeld der Zukunft – Potenziale, Umsetzungsstrategien und Visionen. – Franhofer Institut Fabrikbetrieb und –automatisierung, Magdeburg, 2007 Magdeburg University, 28-30 May 2007, Germany.
Igor Kabashkin	PPP in Transport Education in Latvia.	Workshop of Word Bank on Public-Private Partnership (PPP) in Transport, 6-8 March 2007, Riga, Latvia.
Igor Kabashkin	Education Support of Transport Logistics Needs in Latvia.	International Scientific Symposium „Role of Transport Sciences Faculties in European Transport System Development“. 26-27 October 2006, Sarajevo Bosnia and Herzegovina.
Igor Kabashkin	Role of Baltic Countries in Transport Co-operation between Europe and Asia.	IX International Conference „TransBaltica'2006“. 16 June 2006, Riga, Latvia
Igor Kabashkin	Trends of Transport and Logistics Development in Latvia: Infrastructure, Logistic Centres and Supply-chain Management.	International Conference „Eastern Europe - New Logistics Resources“. International Federation of Warehousing and Logistics Associations. May 29-June 02, 2006, Riga Latvia.
Igor Kabashkin	„Intermodal Junctions in EU Transport Technology Research“	International Conference „Multimodal Transport and Mobility“, Berlin Technical University, 26-28 September 2006, Berlin, Germany.

Eugene Kopytov	Development and Investigation of Complex Mathematical Models for Analysis, Evaluation and Prediction of Aqueous and Atmospheric Ecosystems in Latvia	Plenary session of the conference “Reliability and Statistics in Transportation and Communication” (RelStat’11), Riga, Latvia, 20.10.2011
Alexander Stetjuha	Production Function and Neuron Networks Application for Elaborating the Scenario of the Brunch Development (on the Example of the Latvian Forestry)	Management and Sustainable Development, 25-27 2011, March , Jundola, Bulgaria .University of Forestry. XIII International scientific conference. Plenary Session.
Alexander Stetjuha	Models of Oligopolistic Markets	Erasmus Programme. Staff Mobility – Teaching Assignment. University of Economics and Innovation in Lublin (Poland). From 10 May 2010 to 14 May 2010.
Juri Tolujew	Engineering traditions of production and logistics system simulation	All-Russian Conference „Simulation Modelling: The Theory and The Practice” (St. Petersburg, Russia, October 19-21, 2011)
Irina Yatskiv	The simulation as a mean for strategic decision-making in transport	Seminar of Association of Pan European Coach Terminal (7-9 June, 2010)
Irina Yatskiv	The Programme "Transport and Business Logistics“ - the experience of realization in TTI	International conference „Logistics and Supply Chain Management: Modern Trends in Germany and Russia”, Cottbus, Germany, May 6-9, 2009
Irina Yatskiv	The future of official statistics	Inter-Higher School Scientific and Educational Conference "Actual Problems of Education" (February 19-20, 2009), Transport and Telecommunication Institute, Riga, Latvia
Irina Yatskiv	Public Transport Service Quality Estimation on the Basis Statistical Analysis	The Third International Conference “Problems of Cybernetics and Informatics”, Baku, Azerbaijan, 2010

## 5.2. Memberships in editorial boards of scientific journals

Name	Journal	Period
Sharif E. Guseynov	The International Journal on New Trends in Education and Their Implications, ISSN 1309-6249. <a href="http://www.ijonte.org/">http://www.ijonte.org/</a>	2011 to present
Sharif E. Guseynov	The Journal "Proceedings of the Liepaja University", ISSN 1691-614X. <a href="http://www.liepu.lv">www.liepu.lv</a> , <a href="http://www.imsit.liepu.lv/">http://www.imsit.liepu.lv/</a>	2010 to present
Sharif E. Guseynov	The Journal "Azerbaijan Journal of Mathematics: An International Journal", ISSN: 2218-6816. <a href="http://www.azjm.org/">http://www.azjm.org/</a>	2010 to present
Sharif E. Guseynov	The International TWMS Journal of Pure and Applied Mathematics, ISSN 2076-2585.	2009 to present
Sharif E. Guseynov	Scientific Journals on Mathematics of the World Scientific and Engineering Academy and Society. <a href="http://www.wseas.org">http://www.wseas.org</a>	2007 to present
Sharif E. Guseynov	The Journals of the International Institute of Physics (IoP). <a href="http://referees.iop.org/atom/electref.nsf">http://referees.iop.org/atom/electref.nsf</a>	2006 to present
Igor Kabashkin	Journal "Transactions on Transport Sciences" (ISSN 1802-971X), Czech Republic, Member of the Board	2007 to present
Igor Kabashkin	Journal "Technological and Economic Development of Economy" (ISSN 1392-8619), Lithuania, Member of the Editorial Board	2002 to present
Igor Kabashkin	Journal "Aviation" (ISSN 1392-1534), Lithuania, Member of the Board	2002 to present
Igor Kabashkin	Journal "Transport and Telecommunication" (ISSN 1407-6160), Latvia, Editor	2000 to present
Igor Kabashkin	Journal "Journal of Air Transportation" (ISSN 1093-8826), USA, Co-Editor	1999 to present
Igor Kabashkin	Journal "Transport" (ISSN 1392-1533), Lithuania, Member of the Board	1999 to present
Igor Kabashkin	Journal "Computer Modelling and New Technologies" (ISSN 1407-5806), Latvia, Editor	1996 to present
Eugene Kopytov	Journal "Computer Modelling and New Technologies" (ISSN 1407-5806), Latvia	2002 to present
Vladimir Labendik	Riga Technical University scientific publication compilation "Mechanical Engineering and Transport"	2001-2009
Boriss Misnevs	Journal of Air Transportation, University at Nebraska, Omaha, USA	2002-2007
Irina Yatskiv	Journal "Transport and Telecommunication" (ISSN 1407-6160), Latvia, Member of the Board	2006 to present
Irina Yatskiv	International Journal "Maintenance and Reliability", Polish Maintenance Society (Warsaw), Member of the Editorial Board,	2005 to present
Irina Yatskiv	Research and Technology – Step into the Future Scientific & Research Journal of TTI, (ISSN 1691-2853, ISSN 1691-2861)	2004 to present

### ***5.3. Prizes awarded to researchers, honours and scientific positions of trust***

<b>Name</b>	<b>Prize, position etc.</b>
Alexander Andronovs	Federal Agency of Airtransport of Russian Federation Appreciation, 2010.
Gennady Gromov	Appreciation from Riga City Council for the best PhD, master, bachelor student scientific work, connected with Riga city traffic problems, 2009.
Sharif E. Guseynov	“A scientist of the year” Decision of Ministry of Education and Science, Republic of Latvia, Liepaja City Council
Eugene Kopytov	Ministry of Education and Science, Republic of Latvia, Appreciation, 2010.
Eugene Kopytov	Ministry of Education and Science, Republic of Latvia, Appreciation, 2007.
Vladimir Labendik	UNESCO and Ministry of Education and Science, Republic of Latvia, Appreciation 2010.
Vladimir Labendik	UNESCO and Ministry of Education and Science, Republic of Latvia, Appreciation 2007.
Vladimir Labendik	UNESCO and Ministry of Education and Science, Republic of Latvia, Appreciation 2006.
Irina Pticina	Appreciation from Riga City Council for the best PhD, master, bachelor student scientific work, connected with Riga city traffic problems 2009.
Mihails Savrasovs	Appreciation from Riga City Council for the best PhD, master, bachelor student scientific work, connected with Riga city traffic problems 2010.
Mihails Savrasovs	Appreciation from Riga City Council for the best PhD, master, bachelor student scientific work, connected with Riga city traffic problems 2009.
Mihails Savrasovs	Appreciation from Riga City Council for the best PhD, master, bachelor student scientific work, connected with Riga city traffic problems 2008.
Mihails Savrasovs	Appreciation from Riga City Council for the best PhD, master, bachelor student scientific work, connected with Riga city traffic problems 2007.
Alexander Stetjuha	Appreciation from Riga City Council for the best PhD, master, bachelor student scientific work, connected with Riga city traffic problems, 2006.
Irina Yatskiv	Latvian Education Fund, JSC “DATI” targeted program “To Education, Science and Culture” appreciation, 2010.
Irina Yatskiv	Appreciation from Riga City Council for the best PhD, master, bachelor student scientific work, connected with Riga city traffic problems, 2010.
Irina Yatskiv	Appreciation from Riga City Council for the best PhD, master, bachelor student scientific work, connected with Riga city traffic problems, 2008.
Irina Yatskiv	Latvian Education Fund, JSC “DATI” targeted program “To Education, science and culture” appreciation, 2008.
Irina Yatskiv	Latvian Education Fund, JSC “DATI” targeted program “To



	Education, science and culture” appreciation, 2007.
Irina Yatskiv	Latvian Education Fund, JSC “DATI” targeted program “To Education, science and culture” appreciation, 2006.

#### ***5.4. Memberships in committees and in scientific advisory boards of business companies or other similar tasks of no primarily academic nature***

<b>Name</b>	<b>Tasks</b>	<b>Period</b>
Alexander Andronovs	USA Statistics Association, member	200-2012
Alexander Grakovski	Ministry of Transport, Electronic Communication Sector Council, expert	2010 to present
Sharif E. Guseynov	Member of the International Program Committee of the IV Congress of the Turkic World Mathematical Society (TWMS), July 1-3, 2011, Baku, Azerbaijan. <a href="http://www.ecom.az/">http://www.ecom.az/</a>	2011
Sharif E. Guseynov	Member of the Advisory Board of the 2nd International Conference on New Trends in Education and Their Implications (ICONTE 2011), April 27-29, 2011, Antalya, Turkey. <a href="http://www.iconte.org/">http://www.iconte.org/</a>	2011
Sharif E. Guseynov	Member of the Russian-speaking Academic Science Association (RASA). <a href="http://www.dumaem-po-russki.org">http://www.dumaem-po-russki.org</a>	2010 to present
Sharif E. Guseynov	Member of the SIAM: Society for Industrial and Applied Mathematics (Science and Industry Advance with Mathematics). <a href="http://www.siam.org">http://www.siam.org</a>	2008 to present
Sharif E. Guseynov	Member of the Senate of the Institute of Mathematical Sciences and Information Technologies, University of Liepaja. <a href="http://www.imsit.liepu.lv/">http://www.imsit.liepu.lv/</a>	2007 to present
Sharif E. Guseynov	Member of the International Society of Difference Equations. <a href="http://www.isdedes.com/">http://www.isdedes.com/</a>	2006 to present
Sharif E. Guseynov	Member of the IAENG Society of Operations Research. <a href="http://www.iaeng.org">http://www.iaeng.org</a>	2006 to present
Sharif E. Guseynov	Member of the IAENG Society of Industrial Engineering. <a href="http://www.iaeng.org">http://www.iaeng.org</a>	2006 to present
Sharif E. Guseynov	Member of the American Mathematical Society. <a href="https://www.ams.org">https://www.ams.org</a>	2004 to present
Sharif E. Guseynov	Member of the Latvian Operation Research Society	2003 to present
Sharif E. Guseynov	Member of the European Mathematical Society. <a href="http://www.emis.de">http://www.emis.de</a>	2002 to present
Sharif E. Guseynov	Member of the Latvian Mathematical Society. <a href="http://www.mathematics.lv">http://www.mathematics.lv</a>	2001 to present
Sharif E. Guseynov	Member of the International Scientific Committee of the World Scientific and Engineering Academy and Society, the 5th International Conference on Mathematical Biology and Ecology (MABE'09), Zhejiang Wanli University, January 10-12, 2009, Ningbo, China. <a href="http://www.wseas.us/conferences/2009/ningbo/mabe/">http://www.wseas.us/conferences/2009/ningbo/mabe/</a>	2009
Sharif E.	Member of the International Program Committee of the	2007

Guseynov	1st International Conference "Soft Computing Technologies in Economy", November 19-21, 2007, Baku, Azerbaijan (Organizers: Azerbaijan State Economic University, International Fuzzy Management and Economics Committee (IFMEC), The Ministry of Communication and Information Technologies of Azerbaijan, Institute of Cybernetics of The National Academy of Sciences of Azerbaijan (ANAS), Institute of Information Technologies of ANAS). <a href="http://www.scte2007.az">www.scte2007.az</a>	
Sharif E. Guseynov	Member of the International Program Committee of the Special Session "Quench-Process Design, Equipment and Non-Destructive Control of Materials" within the 5th IASME / WSEAS International Conference "Heat Transfer, Thermal Engineering and Environment", August 25-27, 2007, Athens, Greece. <a href="http://wseas.org/conferences/2007/athens/hte/session1.htm">http://wseas.org/conferences/2007/athens/hte/session1.htm</a>	2007
Sharif E. Guseynov	Member of the International Program Committee of the 8th International Scientific and Technical Congress "Equipment and Technologies for Heat-Treatment of Metal and Alloy" (OTTOM-8), May 28 – June 01, 2007, Kharkov (Organizers: The National Academy of Sciences of Ukraine; Ministry of Education and Science of Ukraine; National Science Center "Kharkov Institute of Physics and Technology"; G.V.Kurdyumov Institute of Physics of Metals of NAS of Ukraine; National Metallurgical Academy of Ukraine; Association of Metal Scientists and Thermal-ists of Ukraine; Ukrainian Vacuum Society). <a href="http://www.ottom.com.ua/">http://www.ottom.com.ua/</a>	2007
Igor Kabashkin	International Committee on the International Global Aerospace Monitoring System (IGMASS) Project Implementation, Member	2010 to present
Igor Kabashkin	Riga Transport Public Council, expert	2004 to present
Igor Kabashkin	Scientific Advisory Training Centre in Transport and Logistics, consultant	2003 to present
Igor Kabashkin	Latvian Vehicle Training Advisory Society, consultant	2002 to present
Igor Kabashkin	Joint OECD/ECMT Transport Research Committee (OECD – Organisation for Economic Co-operation and Development, ECMT – European Conference of Ministers of Transport), Member.	2000 to present
Igor Kabashkin	COST (European Co-operation in the Field of Scientific and Technical Research) Technical Committee on Transport and Urban Development, Member.	1999 to present
Igor Kabashkin	Riga Business Development Council , expert	2007-2009
Eugene Kopytov	European Quality Assurance Network for Informatics Education (EQANIE), expert	2011 to present
Eugene Kopytov	Higher Education Quality Assessment Board, expert	2008 to present
Eugene Kopytov	EUROPEAN OECD/ECMT Joint Transport Research Committee, member	2005 to present
Eugene Kopytov	Higher Education Accreditation Commission, member	2007-2011
Vladimir	Dangerous goods (ADR) transport security consultant	2006 to present

Labendik		
Boris Tsilker	„SAFEGE. Modernisation of the Signalling System Latvian – West Rail Corridor”, project expert	2009-2011
Irina Yatskiv	Member of the Programme Committee “Simulation modeling: theory and practice. (ИММОД-2011)”, Sankt-Petersburg (19-21 October 2011)	2011
Irina Yatskiv	Member of the Management Committee of European COST Action TU0903 “Methods and Tools for Supporting the Use, Calibration and Validation of Traffic Simulation Models”	2009 to present
Irina Yatskiv	Member of the Management Committee of European COST Action TU0801 “Semantic Enrichment of 3D City Models for Sustainable Urban Development”	2008 to present
Irina Yatskiv	Member of the Management Committee of European COST Action TU0804 “Survey Harmonization with New Technologies Improvement”	2008 to present
Irina Yatskiv	Director of the Latvian Operation Research Society	2006 to present
Irina Yatskiv	Member of the Programme and Organisation Committee of The international Conference “Reliability and Statistics in Transport and Communication”, (RelStat), Riga, Latvia	2005 to present
Irina Yatskiv	Member of the Latvian Simulation Society	2002 to present
Irina Yatskiv	Member of the Programme Committee of the Central European Forum on Maintenance 2007 (CEFOM-07), Wroclaw, Poland, (21-23/10, 2007)	2007

## 6. THE INSTITUTION'S/UNIT'S SELF-ASSESSMENT

### ***6.1 SWOT – evaluation of the Unit's scientific strengths, weaknesses, opportunities and threats***

#### ***Strengths***

- Skilled, stable and competent teaching staff;
- Transparent TTI personnel policy;
- Cooperation with foreign universities and professionals (ERASMUS program), the involvement of foreign lecturers in the study process, involvement of teaching staff and students in international projects;
- Transparency of management of the higher educational institution;
- High students' motivation and students' participation in the promotion of scientific research activities;
- High growth dynamics;
- The existence of virtual learning spaces and up-to-date technical equipment for distance learning;
- Three international scientific journals are issued, which are included in the Latvian Science Council list of the indexed journals, a journal published for young researchers, and twice a year students' scientific conference is being held;
- The leading personnel of the higher educational institution – are active lecturers, elected professors who represent Latvia in international scientific organizations:
  - COST - (European Commission on Cooperation in the field of Science and Technical Research), Technical Committee on Transport and Urban Development and Technical Committee on Information and Communication Technologies;
  - Joint Transport Research Centre of the OECD (Organisation for Economic Cooperation and Development) and ECMT (European Organisation of Ministers of Transport);
  - FP7 Technical Committee on Transport.
  - ICTRI (International Conference of Transport Research Institutions);
- TTI is a based organization and its managers are actively participating in management of the leading scientific public organizations:
  - Riga City Council of Public Transport,
  - Research Society of Latvian Operations,
  - Latvian Association of Transport,
  - Development and Education,
  - Latvian Transport Union;
- Active participation in scientific and pedagogical activities by the higher educational institution;
- Involvement in the study process of the practitioners and foreign lecturers;
- There is an opportunity to continue postgraduate studies in TTI;
- The only private higher educational institution with its Doctorate and Promotion Council;
- Students have got the opportunity to acquire professional certifications IBM, Microsoft, Cisco, ECDL, ACITP WebDesign, LCCI, there has been concluded a specialized partner agreement with Microsoft, CISCO about the establishment on TTI basis the Microsoft Academy and CISCO Academy;
- Modern library materials and good technical support;
- TTI and partners - employers' scholarships;

- Good research facilities in transport modelling.

### ***Weaknesses***

- The lack of our own hostels (student hotel);
- The leadership of the higher educational institution is undergoing great representative actions on sociable basis, representing Latvia in the leading European, international and national scientific organizations;
- Insufficient exchange of scientific personnel in the field of transport and logistics in the EU;
- Scarce support by business and government in the priority areas of research of the institute;
- The gap in the age between the younger and older generations of researchers;
- Insufficient the English language skills for the older generation of researchers;
- Active leaders of research projects are in the same time leaders of the organization. This does not allow them to devote enough time for research and scientific supervision.

### ***Opportunities***

- Strictly defined niche of higher educational institutions for the market of education services;
- Accession to the EU, as a motivating factor in acquiring a high-quality education;
- The increase in market demand for highly skilled professionals in the business and logistics;
- TTI is well known in the European research area;
- Declaration of Human Development as a priority direction in Latvian Development Plan from 2007 to 2013;
- An acute need for new professionals in the spheres of engineering, science and transport in public and private companies.

### ***Threats***

- Competition from the other sides of the Latvian higher educational institutions in the conditions of the existing financing system of higher education;
- State provides limited funding for non-governmental scientific organizations;
- The priority status for transport has not been highlighted by Ministry of Education and Science;
- The ability to leave for other countries to experts in the field of transport and logistics in the economic crisis and the lack of sufficient support from the government;
- Demographic crisis in Latvia;
- Decline of training level of the school graduate;
- Students' insolvency and crediting limitation of the study, by increasing of student fees and inflation rate in the country;
- Cyclical development of labour market.
- Limited access to EU funds as being a non-governmental institution of higher education;
- The imperfection of public policy in demand of the specialists in the field with higher education;
- Not a very positive attitude towards the students' immigration from abroad

## ***6.2. Evaluate the Unit in relation to its leading scientific competitors***

In the Latvian market of research services TTI occupies a unique niche in the field of transport modelling, intelligent transportation systems, systems analysis of complex transportation systems and transportation analytics.

In this segment TTI is competitive in the European Research Area, which proves its involvement in a large number of European projects in this area.

### ***6.3. The Institution's/Unit's research strategy (relation to the state/parent organisation's strategy, research priority areas, development measures, performance indicators)***

Research is an integral part of the TTI mission and work. It is supported by Research Strategy, the purpose of which is to ensure that the Institute can continue to produce a significant volume of high quality work and respond to the rapidly changing environment in Latvia and world wide in relation to research and its funding.

#### ***TTI Vision Statement***

The TTI is an internationally recognised research establishment offering high quality teaching in an innovative learning environment and attracting eminent scholars and outstanding students from a global recruitment market.

#### ***TTI Mission Statement***

The mission of the Transport and Telecommunication Institute is adaptive to the needs of society academic and scientific activities at the international market in the interdisciplinary areas based on the fundamental achievements in the sphere of high technologies in the form of open cooperative environment.

#### ***Research Strategy Vision***

TTI is an internationally-recognised research-intensive establishment that has a strong practitioner focus.

#### ***Strategic Goals for Research***

1. Create stronger research base, with a larger community of researchers and research postgraduates drawn from a global recruitment market, contributing to the advancement of knowledge in the context of an applied research ethos with strong practitioner focus.
2. Conduct broad-based research of global significance with a number of high profile, internationally-recognised 'research clusters'.
3. Support an active, pervasive research culture fostering high achievement, encouraging innovation and enriching the student learning experience.
4. Become a research partner of choice for internationally recognised universities, national and multi-national businesses, Latvian and foreign governmental organisations, national and international NGOs.
5. Become an internationally recognised centre of excellence for the education of research postgraduates.
6. Develop high quality research infrastructure and facilities enabling world class research teams to compete for funding and recognition, nationally and internationally.

7. Achieve sustainability in terms of the financial profile of research undertaken, the physical infrastructure and facilities required to support world class research, and the intellectual capital to undertake research of global significance

### ***Aims and Objectives***

#### **Aim 1: To raise the TTI international profile as an innovative, research-intensive university**

- 1.1. Promote internationally significant, cross-disciplinary research clusters.
- 1.2. Develop a number of “flagship” institutional research and innovation partnerships with internationally renowned research intensive universities across the globe.
- 1.3. Lead/join consortia of peer institutions to increase the impact/recognition of research expertise at institutional level.
- 1.4. Invest strategically in internationally-competitive research groups.
- 1.5. Support international exchange programmes for researchers and postgraduate research students and other individual/departmental international links.
- 1.6. Influence the national and international research agenda through membership of key policy-forming committees.
- 1.7. Enhance the marketing and promotion of the TTI's research capability through the deployment of web-based tools.
- 1.8. Ensure that the TTI's research continues to inform and enhance its teaching activities.
- 1.9. Strengthen intellectual capital by recruiting outstanding researchers and postgraduate research students from an international market.
- 1.10. Develop closer, long term relationships with international businesses, governments and community/NGO groups.

#### **Aim 2: To strengthen the TTI research base, developing its applied ethos and practitioner focus**

- 2.1. Strengthen research planning at departmental level, including succession planning and selective investment.
- 2.2. Invest in intellectual capital by making new, high quality academic appointments, in accordance with institutional equalities and diversity procedures.
- 2.3. Strengthen the research base by increasing numbers of postgraduate research students, in accordance with institutional equalities and diversity procedures.
- 2.4. Expand Doctorate provision in line with the TTI applied research ethos.
- 2.5. Increase the research capacity of academic staff by improving business processes.
- 2.6. Develop long-term, strategic relationships with business, the professions, the public services, and the voluntary sector.
- 2.7. Increase external funding for endowed academic posts.
- 2.8. Increase and diversify external funding for research, including increasing agility at forming cross-disciplinary teams to exploit new funding opportunities.
- 2.9. Support student entry into research career paths through provision of independent research projects at undergraduate and taught postgraduate levels.

### **Aim 3: To promote excellence in research and innovation**

- 3.1. Enhance induction and mentoring processes for early career research appointments.
- 3.2. Invest strategically in new staff appointments to support institutional and departmental research priorities.
- 3.3. Enhance training for postgraduate research students.
- 3.4. Recognise and reward research excellence through appropriate HR policies.
- 3.5. Enhance central staff development programme.
- 3.6. Promote exchange of good practice at departmental level.
- 3.7. Engage in systematic benchmarking activities.

### **Aim 4: To develop sustainable high quality research infrastructure, facilities and support services**

- 4.1. Increase external funding to invest in capital research projects.
- 4.2. Implement full economic costing to build funds for capital renewal and maintenance projects.
- 4.3. Maximise returns on the commercialisation of intellectual property to generate funding to support the research base.
- 4.4. Integrate central support for research, clarifying roles and responsibilities.
- 4.5. Enhance management information by utilising the functionality of new software systems, particularly personnel and finance.

## ***6.4. The societal impact of the Institution's/Unit's activities***

TTI is actively involved in the creation of an innovative network of organizations and businesses primarily in the transport sector. The Institute is the leader in Latvian Transport Development and Education Association (LaTDEA). The President of TTI and President of LaTDEA is one and the same person at present.

The purpose of LaTDEA is to perfect the transport system of the Republic of Latvia and the related infrastructure by promoting the strengthening of a potential of the research, educational institutions and transport organizations.

The main tasks of LaTDEA are the following:

1. To advance academic education, professional training, level of qualification and re-qualification of the transport branch staff in compliance with the international requirements;
2. To upgrade an expansion of the fundamental and applied research with the aim of the development of transport in Latvia, professionalism and competence raising of the higher school scientific and pedagogic employees, raising of the skill level of the transport enterprises employees;
3. To promote the development of the international (export, import, transit) transportation, creation of the multimodal transport transportation and corridor by developing a cooperation with the neighbouring countries and forwarding integration in the transport systems of Europe and the world;
4. To assist a support and development of the transport infrastructure in compliance with the international requirements;



5. To promote transportation safety (passenger, freight) and creation of the friendly-to-environment transport systems;
6. To attract investments for development and realization of the scientific, research and production projects in transportation;
7. To cooperate with the related institutions of other countries of the world for achieving objectives and tasks of the Society;
8. To conduct other activities necessary for achieving objectives of the Society.

The TTI plays a key role as research institution in the Latvian Transport Union.

TTI is the only one research organization in two business Latvian clusters – Latvian Aviation Cluster and Latvian Supply Chain Cluster.

TTI is a member of different associations of SME and large enterprises in different areas: Latvian Logistics Association, Latvian Transit Business Association, Latvian Association of Electronics and Latvian Electrical Engineering and Electronics Industry Association, Latvian Information and Telecommunication Technology Association, Latvian Telecommunication Association and others.

### ***6.5. Assess the role of the Institution/Unit in doctoral training as well as academic and societal need for doctoral training within the Institution's/Unit's research fields***

TTI PhD students have a wide range of possibilities for improvement their knowledge and skills. These possibilities could be divided on the following groups:

- ***Scholarships and grants.***  
(„Support for Implementation of the Transport and Telecommunication Institute Doctoral Degree Program „Telematics and Logistics”, Contract No.2009/0159/1DP/1.1.2.1.2/09/IPIA/VIAA/006, 2009-2013). Scholarships are provided for the 1st, 2nd and 3rd year PhD students on the competition basis. Scholarship gives an opportunity for students to put more emphasis to research. Also additionally PhD students obtain grants for participation in conferences. This grant allows students to take part in the international conferences where the research results may be presented.
- ***Institute gives a possibility for PhD students to take part in European Cooperation in the area of Science and Technology - COST actions within the frames of the FP7 programmes.***  
COST Actions enable break-through scientific developments leading to new concepts and products and thereby contribute to strengthening PhD students' research and innovation capacities and providing networking opportunities for early career investigators. Eight PhD students are involved in different COST activities in domain “Transport and Urban Development”: COST TU0801, COST TU0804, COST TU0902, COST TU0904, COST TU0104 and in domain “Information and Telecommunication Technologies”: COST ICU906.
- ***Conferences and workshops.***  
The PhD students of TTI have possibility to take part in all international scientific conferences and workshops hosted by TTI for free of charge.

- ***Scientific cooperation in PhD programme:***
  - Each year one PhD student is invited to take a presentation in International Logistics PhD Student Workshop in Magdeburg (Fraunhofer).
  - On the base of ERASMUS Programme PhD students have an opportunity to visit the EU academic and scientific establishments for research cooperation (Gediminos Technical University, University of Zilina, University of Ljubljana).
- ***Library service and scientific journals.***

PhD students have a possibility to use a library service for their researches. The library provides access to a wide-range of different scientific literature (periodic journals and monograph) and to the on-line scientific databases (like Springer Links). PhD students have an opportunity to publish their scientific research works in two scientific journals hosted by TTI: "Transport and Telecommunication" (journal is included in SCOPUS and Elsevier Database), "Computer Modelling and New Technologies". This opportunity is provided for free for the TTI PhD students.
- ***Scientific projects.***

PhD students have a possibility to participate in different kinds of scientific projects (at the EU, national, and municipal levels). This opportunity gives a possibility to practical application of their research results. As an example a number of projects could be mentioned here: B2BLOCO (within the frames of the FP7 Programme), TransLaB (in bilateral co-operation programme) and others.
- ***TTI resources:***
  - By request TTI could provide working place with computer and printer. This gives an opportunity for PhD students to have more productive work.
  - PhD students have access to all laboratories of TTI (Laboratory of Applied Software Systems, CISCO Laboratory, Laboratory of Electronics, Laboratory of Quality Management).

## ***6.6. Assess the Institution's/Unit's research infrastructure available***

TTI has an access to different information databases, hardware and software in affiliate programs and membership participation in various international scientific organizations.

TTI for example is a member of the next international research organizations with access to shared scientific resources:

- American Institute of Aeronautics and Astronautics (AIAA)
- The Institute of Electrical and Electronics Engineers (IEEE)
- Association for Computing Machinery (ACM)
- International Telecommunication Academy
- International Academy of Astronautics
- Organisation for Economic Co-operation and Development (OECD)
- International Transport Forum
- European Conference of Transport Research Institutions and others
- European Co-operation in the Field of Scientific and Technical Research
- And others

There are a large number of laboratories in Transport and Telecommunication Institute. These laboratories are open for the students and for the institute's academic and scientific staff. Laboratories support their research activities by providing different kinds of resources. These resources include software, technical equipment, documentation, etc. In detail provided resources could be displayed by the name of laboratory.

### **Laboratory of Applied Software Systems**

One of the main goals of this laboratory is to provide for the students and staff an access to the modern software in different application areas. Laboratory provides not only software by itself, but also a consultancy. The available software could be divided to the following groups:

- *Software for statistical data processing* - this group includes the following software: Statistica, SPSS and R statistics. These software systems allow doing complex statistical data analyses and providing powerful options for data visualization.
- *Mathematical calculations* – this group includes the following software: MatLab and MathCAD. Using this software a complex mathematical calculation could be performed. Also this software system includes the possibilities for signal processing and analysis. Besides, it could be mentioned that laboratory have a possibility to do high performance computing using Microsoft HPC server. By this, an opportunity to do large and time-consuming calculations and data analyses is ensured.
- *Simulation software* – laboratory have a number of universal and specialized simulation software, which could be used for analysis of the systems behaviour. Among universal simulations AnyLogic, ExtendSim and GPSS systems could be mentioned. These tools could be used for any application area and it gives an opportunity for simulation model construction and experimentation with it. Among specialized software PTV VISION VISSIM and PTV VISION VISUM software could be mentioned. These tools for traffic flows simulation on microscopic and macroscopic levels are used. Here it must be mentioned that Transport and Telecommunication Institute has a commercial version of these software and has an opportunity to realize commercial projects. Besides, the laboratory has a specialized software for business processes modelling such as BPWin and Business Studio software. This software gives opportunity to do analysis, reengineering, and efficiency estimation of business processes.

### **CISCO Laboratory**

The goal of the laboratory is to provide an experimentation environment for researches in the field of networking. The laboratory has a number of networking equipment and software from CISCO company. This equipment includes routers (like Cisco 2801), switches (Cisco Catalyst 2960) and wireless routers (Linksys WRT350N). This allows doing different kind of natural experiments and collecting real data from network.

### **Electronics and Telecommunications Laboratory**

The main aim of the mentioned laboratory lies in the area of study process for Bachelor's and Master's programmes in Electronics and Telecommunications. There is experimental equipment for wide fields of Electrical Engineering, Electronics and Telecommunications: from electrical circuits and sources, electronics and microelectronics devices up to radio electronics, GSM/GPS/GPRS, telephony, satellite and fibre-optic digital communications equipment (mobile laboratory devices). Most of them could be applied to Master's and Doctor's researches, especially wave propagation and antenna analysis equipment (WATS-2002 Wave and Antenna training system), RFID technology devices (13.56MHz RFID Trainer or RFID training kit HBE-RFID-REX), digital signal processor "Black fin" (ADSP-BF535 by "Analogue Devices, Ltd.", USA), fibre-optic communication system (KL-900D fibre-optic transmission training system by K&H M.F.G. Co., Ltd., Taiwan), fibre-optic weight in motion (WIM) sensors ("SensorLine, Ltd.", Germany) and others.

Also there are a number of laboratories, which are developed to support study process. Among them the following could be mentioned: Laboratory of Microsoft, Laboratory of Aviation, laboratory of Quality Management, etc.

## **7. FUNDING**

## 7.1. The Institution's/Unit's funding for scientific activities

(Expressed in thousand LVL)

Source of Funding	2006	2007	2008	2009	2010	2011	Total
<b>State budget funding</b>							
Core (maintenance) funding	0	0	0	0	0	0	0
State budget funding for research development in HEE	0	0	0	0	0	0	0
Grants of the Latvian Council of Science	19.8	45.1	23.3	14.6	23.3	23.3	149.4
State Research Programs*	0	0	0	0	-25.6	-32.0	-57.6
<b>Other funding</b>							
Contract research	0	9.3	30.8	58.5	3.2	14.4	116.2
ESF, ERAF funding	0	36.4	73.4	122.4	242.8	155.8	630.8
Framework Program projects	0	4.0	4.2	7.5	7.5	2.0	25.2
Other international project funding	21.8	0.2	3.8	4	5.5	15.1	50.4
Private funding	0	0	0	0	25.6	32.0	57.6
Other	32.3	7.2	8.2	0	1.6		49.3
<b>Total</b>	<b>73.9</b>	<b>102.2</b>	<b>143.7</b>	<b>207</b>	<b>283.9</b>	<b>210.6</b>	<b>1021.3</b>

\* In State Research Program TTI take part as a private institution as executor of the project "Latvijas transporta sistēmas harmonizācijas ilgtermiņa programmas izstrāde" (Development of the long-term programme of the Latvia transport system harmonization) without state financing, but with self financing.

**7.1.1.Characterise the international competitiveness of the Institution/Unit in attracting the funding** (number of projects granted, types of the projects (EU Framework Programmes, European Cooperation in Science and Technology (*COST*), North Atlantic Treaty Organisation (*NATO*), other international projects) in 2006.-2011).

**EU Framework Program projects:** (*Networks of Excellence, Specific targeted research Project, Collaborative Project*):

1. Baltic-to-Balkan Network for Logistics Competence (B2B LOCO), FP7, 2009.-2011., 28912 EUR
2. Public Transport Systems' Accessibility for People with Disabilities in Europe (PTaccess), 2007.-2008., FP6, 8200 EUR
3. Scientific Forum on Transport Forecast Validation and Policy Assessment (TRANSFORUM), FP6, 2004.-2006., 12000 EUR.

**Other EU Framework Program projects:**

1. COST TU1004: Modelling public transport passenger flows in the era of intelligent transport systems, 2011, – 322.01 EUR.
2. COST TU0903: Methods and tools for supporting the use, calibration and validation of traffic simulation models, 2008-2012, – 7737.04 EUR.
3. COST TU0902: Integrated assessment technologies to support the sustainable development of urban areas, 2009-2013, – 1681.75 EUR.
4. COST TU0804: Survey Harmonisation with New Technologies Improvement (SHANTI), 2008-2012, – 5945.60 EUR.

5. COST TU0801: Semantic enrichment of 3D city models for sustainable urban development, 2008-2012 – 7966.63 EUR.
6. COST Action 355: Changing behaviour toward a more sustainable transport system, 2004-2008, – 4657.32 EUR.
7. Improvement of the air cargo transport sector by service oriented ICT methods and processing logistic network (Baltic.AirCargo.Net). (with TTI participation), INTERREG, 2011-2013, – 68000 EUR.
8. Connecting Authorities for Safer Heavy Goods Traffic in the Baltic Sea Region (CASH), (with TTI participations), INTERREG, 2009-2012, – 28000 EUR.
9. Modernisation of the Signalling System (Latvian East-West Rail Corridor), 2009-2012, – 12600 LVL.
10. Towards an integrated transport system in the Baltic Sea Region (TransBaltic), (with TTI participation), INTERREG, 2009-2011, – 28000 EUR.
11. Wide Area Multilateralisation Study. European Organisation for the Safety of Air Navigation 02.05.2006-02.05.2009, – 12750 EUR.
12. Baltic COntainer Railway Transit” (CORAT), 2008, – 18000 EUR.
13. EAST-WEST-WINDOW, INTERREG, 24.09.2007-30.11.2008, – 4130 LVL.
14. Developing Regions through Spatial Planning and Logistics & ICT Competence (LogOnBaltic), INTERREG, 01.01.2006-31.12.2007, – 14000 EUR.
15. Mobility and health: Regional services in the enlarged EU, INTERREG, 2006-2007, – 33000 EUR.
16. Short Term Actions to Reorganize Transport of goods (START), 25.09.2006-15.12.2007, – 26000 EUR.
17. InterBaltic – Intermodality and Interoperability in the Baltic Sea Region, INTERREG, 01.01.2006-31.12.2007, – 45000 EUR.
18. The Baltic Tangent, INTERREG, 18.04.2005-27.04.2007, – 25000 EUR.
19. InLoC – Integrating Logistics Centre Networks in the Baltic Sea Region, INTERREG, 02.08.2004-01.11.2006, – 45000 EUR.
20. The evaluation of Rail Baltica alternative strategies of development, INTERREG, 2007, – 6962 LVL.
21. The Northern Transport Axis. Pilot for the analytical support framework to monitor the implementation of the infrastructure and “soft” measures proposed by the High Level Group, 2006-2007, EC DG TREN, – 6800 EUR.
22. Rail Baltica, INTERREG, 2005-2007, – 12000 EUR.
23. Rail Baltica. Feasibility study on Rail Baltica railways. Comparative analysis, INTERREG, 2007, – 7000 EUR.
24. Joint action of Baltic metropolises towards the development of coordinated investment approach in the Baltic Sea Region (BaltMet Invest). 2006, – 413 LVL.
25. Development of academic staff’s educational training program in the field of computer science and information technology in an enterprise”), contract No. 2006/0111/VPD1/ESF/PIAA/05/APK/ 3.2.5.2./0144/0139,05.07.2006-06.01.2007, – F LVL.
26. „Support for implementation of the Transport and Telecommunication Institute doctoral degree programme „Telematics and logistics””, contract No.2009/0159/1DP/1.1.2.1.2/09/IPIA/VIAA/006, 2009- 2013, – 484696 LVL.
27. „Support for implementation of TTI master degree programme „Master of Natural Sciences in Computer Science””, contract No. 2009/0163/1DP/1.1.2.1.1/09/IPIA/VIAA/006, 2009-2012, – 165 240 LVL.
28. “Optical fiber sensor applications for automatic measurement of the weight on the move: research and development”, contract No. 2010/0280/2DP/2.1.1.1.0/10/APIA/VIAA/094, 2010-2013, – 273 674 LVL.

29. "Information and communication technologies as a single academic resource in the Transport and Telecommunication institute", contract No. 2010/0180/3DP/3.1.2.1.1/09/IPIA/VIAA/023, 2010-2012, – 1 740 690 LVL.

**Other international projects:**

(NATO, The scientific cooperation of Latvia, Lithuania and Taiwan, bilateral co-operation projects (Latvia-Byelorussia, Latvia-France), LIFE, others)

1. IBM Academic Initiative - "Service Oriented Architecture (SOA)", 2009, – 3451.50 LVL.
2. Development of the Model of Intelligent Transport System of Europe-Asia Multimodal Corridor for Optimization of Latvia-Belarus International Logistics Chain (TransLaB), 23.11.2007-01.12.2009, – 38594 LVL.

**7.1.2 Characterise the potential contribution of the Institution/Unit in economical development – the orientation to commercialisation of the research and implementation of the results of research** (collaboration with **industry partners/merchants**, contract research, Market-oriented research projects, and International support program for market-oriented R&D and innovation projects by industry to develop innovative and competitive products (*EUREKA*) in 2006.-2011):

**Contract research projects**

1. Modelling of new coach station project in Riga, 01.05.2006-30.09.2006, – 4720 LVL.
2. CEMEX management system and process analysis (fitting on ISO 9001:2000 standard check), 2007, – 1062 LVL.
3. Analysis and forecast of the urban public transport system flow in Jurmala city, 01.04.2007-10.08.2007, – 5900 LVL.
4. Emergency localisation and removal process simulation model, 01.06.2009-31.08.2009, – 4000 LVL.
5. Development of Liepaja city macroscopic model for decision making, 01.09.2007-10.11.2007, – 590 LVL.

**Other**

1. Development of the long-term programme of the Latvia transport system harmonization (LATRANS), 2010-2013, – 86000 LVL.
2. Development of Technology for Industrial Multicomponent Nanostructure Sheeting, 2010-2013, – 42000 LVL.
3. Pedestrian and transport flows analysis for pedestrian street creation in Riga city, 01.09.2010-28.02.2011, – 6700 LVL.
4. Development of the intellectual transport system model, 2010-2013, – 36900 LVL.
5. Riga city mobility plan. Development of general approach, 2008, – 4000 LVL.
6. Waste collection without containers, transport routes optimisation in Riga city centre, 2006-2007, – 9000 LVL.
7. Investigation of the possibilities of creating the freights distribution / logistics centres in Riga 2007, – 14000 LVL.
8. Methodology of monitoring the road traffic congestion for improving the traffic flows within the city, 21.05.2007-20.08.2007, – 8850 LVL.
9. Profile of the regional logistical and informational communication technologies for Latvia, 2006-2007, – 6962 LVL.
10. Investigation of Riga transport node capacity (Tornakalns district) on basis of microscopic simulation, 01.09.2006-10.11.2006, – 11741 LVL.

11. Model of the transport node Krasta Street-Maskavas Street-Slavu bridge with three level flyover, 10.08.2007-10.11.2007, – 10679 LVL.
12. The intellectual net in the region and its implementation in the functioning concept of the pilot project and the national model development on the basis of Daugavpils Academic park, 01.01.2006- 31.12.2009, – 18217 LVL.
13. Disordered condensed environments fundamental mathematical and computer modelling. 2001-2007, – 1508 LVL.
14. The National Transport Development Programme, 1996-2010, – 8000 LVL.

## ***7.2. Evaluate the role of different funding sources (State and different funding organizations) in promoting the scientific and societal impact of research***

The state has almost no research support for the activities of nongovernmental research organizations.

TTI as a research organization is able to access on a tender basis only to grant of the Latvian Council of Science.

In the period from 1999 to the present time TTI has always 1-2 grants of the Latvian Council of Science.

In Latvia, there is a special state research program, in which only governmental educational and scientific organizations can participate. Despite the fact that TTI is included in the Register of scientific institutions in Latvia, it has no right to apply for funds for the programme. In those circumstances TTI carries out the research work on the program at its own expense, although all the results of the investigations are included in the results of a national programme.

TTI is actively involved in getting projects at national and European level.

During the last 3 years TTI has been involved in 9 projects at national and 19 projects at European level.

The scientific activity is reflected in the ongoing international conferences. There are 3 annual International Research Conferences with TTI as a host organisation and 1-3 additional International Conferences and Workshops at TTI base. During the last 3 years TTI was a host organisation of many international conferences (see point 4.4 of the report for examples).

TTI launches three international scientific journals, which are distributed both in hard copy and in electronic version via the website:

- Transport and Telecommunications " (ISSN 1407-6160),
- Computer Modelling and New Technologies " (ISSN 1407-5806),
- Research and New Technologies – Step into the Future (ISSN 1691-2853)