

# **EU 2020 Strategy flagship initiative «Digital agenda for Europe» for R&D and higher education in Latvia**

**Irina Arhipova**

**Director of Science, Technology and Innovation Department**

**Gita Revalde**

**Director of Higher Education Department**

**Latvia Ministry of Education and Science**

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# Planned actions

- Leverage more private investment for ICT research and innovation.
- Reinforce the coordination and pooling of resources.
- Propose measures for 'light and fast' access to EU research funds in ICT.
- Financially support joint ICT research infrastructures and innovation clusters.
- Develop a new generation of web-based applications and services.

# Planned actions

- Member States to double annual public spending on ICT research and development
- Member States to Engage in large-scale pilots financed by the Competitiveness and Innovation Programme

# Guidelines of Research and Technology for 2009 – 2013

- renewal and development of scientific intellectual potential and research infrastructure;
- increase of state investment for research and technology also achieving private funding;
- competitiveness of scientific activities in international level;
- transfer of knowledge and technology.

## ES 2020 Flagship initiative: “Innovative Union”

- The aim of this is to re-focus R&D and innovation policy on the challenges facing our society, such as climate change, energy and resource efficiency, health and demographic change.
- "Innovation Union" to improve framework conditions and access to finance for research and innovation so as to ensure that innovative ideas can be turned into products and services that create growth and jobs.

# Innovation Union commitments

- By 2015, Member States together with the Commission should have completed or launched the construction of 60% of the **priority European research infrastructures** currently identified by the European Strategy Forum for Research Infrastructures (ESFRI).
- The potential for innovation of these (and ICT and other) infrastructures should be increased. The Member States are invited to review their Operational Programmes to facilitate the use of cohesion policy money for this purpose.

# Latvian national infrastructure roadmap development



- Latvian national roadmap is a long term planning instrument that lists research infrastructures on national importance, either new or in need of upgrading.
- The development of national roadmaps, connected to the ESFRI Roadmap,
  - is helping to develop the required overall coherent policy by evaluating and prioritizing national resources dedicated to existing research infrastructures (both national and pan-European)
  - as well as by assessing the option of attracting or supporting new pan-European research infrastructures.

# ESFRI roadmap 2010

48 new - or major upgrade of - Research Infrastructures of pan-European interest

(+ 3 additional projects from the CERN Council strategic roadmap for particle physics\*)

Social Sc. & Hum. (5)	Life Sciences (13)		Environmental Sciences (9)		Energy (7)	Material and Analytical Facilities (6)	Physics and Astronomy (10)		e-Infra-structures (1)
SHARE	BBMRI	ELIXIR	ICOS	EURO-ARGO	ECCSEL	EUROFEL	ELI	TIARA*	PRACE
European Social Survey	ECRIN	INFRA FRONTIER	LIFEWATCH	IAGOS	Windscanner	EMFL	SPIRAL2	CTA	
CESSDA	INSTRUCT	EATRIS	EMSO	EPOS	EU-SOLARIS	European XFEL	E-ELT	SKA	
CLARIN	EU-OPENSREEN	EMBRC	SIAEOS	EISCAT_3D	JHR	ESRF Upgrade	KM3NeT	FAIR	
DARIAH	Euro BioImaging	ERINHA BSL4 Lab		COPAL	IFMIF	NEUTRON ESS	SLHC-PP*	ILC-HIGRADE*	
	ISBE	MIRRI			HiPER	ILL20/20 Upgrade			
	ANAEE				MYRRHA				

 Distributed research infrastructures  
 Single sited research infrastructures



# Latvia's participation in ESFRI projects

	Research Institution	ESFRI projects
1	University of Latvia, Faculty of Social science	CESSDA
2	Institute of Mathematics and Computer Science University of Latvia	CLARIN
3	Institute of Philosophy and Sociology University of Latvia	ESS
4	Latvian Biomedical Research and Study Centre	BBMRI
5	Institute of Mathematics and Computer Science University of Latvia	ELIXIR (GLOBAL)
6	Latvian Biomedical Research and Study Centre, Latvian Institute of Organic Synthesis	INSTRUCT
7	Institute of Physics University of Latvia	European Spallation Source
8	Institute of Solid State Physics University of Latvia	PRINS
9	Institute of Mathematics and Computer Science	PRACE

# Latvia participation in ERIC

- **Materials and Analytical Facilities:**
  - ESS - European Spallation Source in Lund
- **Social Sciences & Humanities:**
  - CLARIN - Common Language Resources and technology Initiative
  - ESS - The European Social Survey
- **Biological and Medical Sciences:**
  - The pan-European Biobanking and Biomolecular Resources Research Infrastructure (BBMRI)

**Development of research and technologies**

**Transfer of knowledge and technologies**

**Innovative entrepreneurship (new products – goods, services, technologies)**

**2.1.1.3.2. Science academic network**

**Technology transfer contact points in universities**

**Business incubators – support for new innovative entrepreneurs**

**2.1.1.2. Support for participation in international research programmes, exhibitions**

**Competence centres**

**Support for introducing new products and technologies in production**

**2.1.1.1. Applied research projects**

**Development of new products and technologies**

**2.1.1.3.1. 1.call –Development of research base infrastructure**

**2.1.1.3.1. 2.call – Development of commercial research infrastructure**

**Investment projects with high added value**

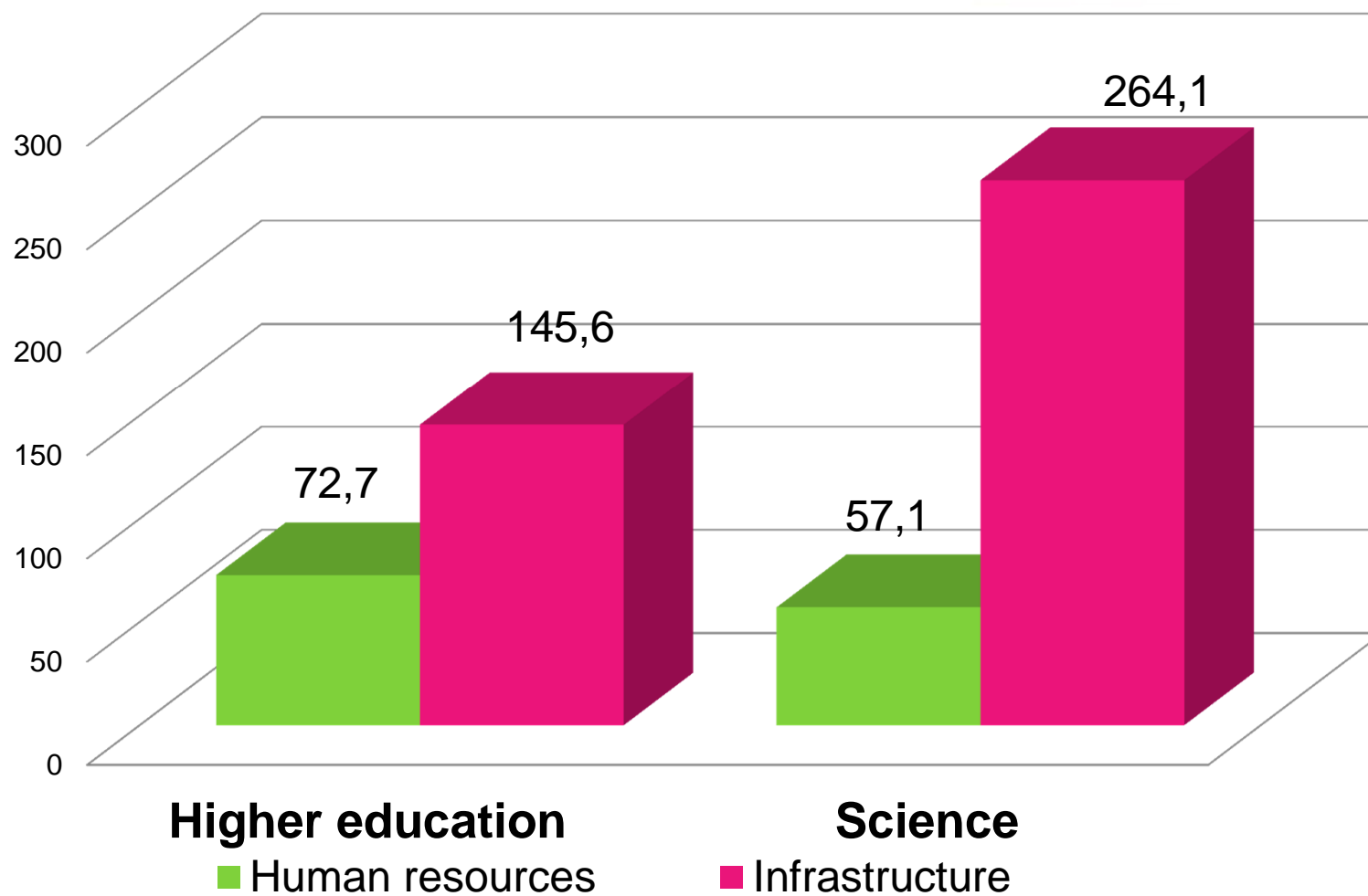
**1.1.1.2. Support for involvement of human resources in science (ESF)**

**Activities for motivation increasing and starting the business**

**Ministry of Education and Science**

**Ministry of Economy**

# EU Structural Funds for HE and Science in 2007-2013 (mln. EUR)



## ERDF activity 2.1.1.3.2

“Improvement of IT infrastructure and IT system  
for the research needs”

- Development of next generation’s data transmission network for the provision of scientific operations in order to join the united European academic network and improve IS
- ERDF financing – 14 960 676 EUR.

# Planned Activities of Academic Network

- development of connection to the European and international research and education networks;
- purchase of new and modernization of existing equipment and software to ensure access and use of the research and education networks for end-users, such as research personnel and students;
- establishment of a national research and education network with connection to all major regional research and academic institutions;
- establishment of new and modernization of existing research data centers;
- purchase of new computing hardware and data-processing research equipment;
- provision of access to international research and education data bases;
- purchase and implementation of research and education mobility solutions;
- establishment of integrated training environment;
- establishment of research projects` planning, control and accounting environment and results publication and promotion system.

## ERDF activity 2.1.1.3.1 Research Infrastructure Development – **1st call**

- Support for two project types:
  - non-commercial project;
  - project of ‘combined form of aid’
- ERDF funding – 56 348 117 LVL
- Project applicants – scientific institutions of NLRC
- ERDF funding per project – 0.7 – 17 mln LV

## ERDF activity 2.1.1.3.1

# Research Infrastructure Development – 2nd call

- Support for commercial research infrastructure projects
- ERDF funding – 46 348 118 LVL
- Project applicants – scientific institutions and enterprises
- Priority projects – projects which foresee cooperation between scientific institution and innovative enterprise (cooperation form – commercial company formed from a scientific institution and enterprise; “spin-off” company)



# Implementation activities (1)

To concentrate human resources, infrastructure and financial resources as well as to facilitate competitiveness of scientific institutions at the international level:

- concentration of resources and development of the system, which is based on operating strategies of scientific institutions;
- implement three level of hierarchy of scientific institutions:
  - scientific institutions on regional level (20);
  - NLRC - national level research centers (9);
  - ESFRI road map level research centers (4-5);

## Implementation activities (2)

- ① NLRC – framework for cooperation among scientific institutions and for concentration of scientific resources to ensure European-level research in national research priorities:
  - Energy and environment.
  - Innovative materials and technologies.
  - National identity.
  - Social health.
  - Sustainable use of local resources - new products and technologies.
- ① The main criteria are presence of corresponding field in national economy and a potential of scientific discoveries and implementation of innovations.

## Implementation activities (3)

- MoES has already defined the scientific institutions that have quality of research activities, scientific potential and international competitiveness for qualification to form National level research centers (NLRC)
- NLRC objective is
  - scientific excellence,
  - concentration of research infrastructure (prevention of its fragmentation and
  - commercialization of science/industry-science partnership).

# NLRC in prior research fields

- ⦿ NLRC on the Use of Energy and Environmental Resources Extraction Technologies (including Transport and Mechanical Engineering Centre).
- ⦿ **ICT and Signal-Processing Technologies NLRC (including Space Data Processing Centre).**
- ⦿ Nanotechnologies and Nanomaterials NLRC.
- ⦿ Pharmacy and Biomedicine NLRC(including Pharmaceutical Technology Study and Research Centre and Biopharmaceutical Centre).
- ⦿ Health and Clinical Medicine NLRC
- ⦿ NLRC on the Use of Forest and Water Resources
- ⦿ NLRC on the Use of Agricultural Resources and Food Technologies
- ⦿ Latvian Cultural Heritage and Creative Technologies NLRC
- ⦿ Social Economy and Public Administration NLRC.

# Organization of NLRC ICT and Signal-Processing Technologies

- Riga Technical University
- Institute of Electronics and Computer Science
- University of Latvia
- University of Latvia, Institute of Mathematics and Computer Science;
- Ventspils University College Institute of Engineering  
“Ventspils International Radio Astronomy Center”.

5 prior research fields 2010-2013	9 NLRC (MoES)	6 Competence centres (MoE)	Prior economy fields
Energy and environment	Energy and environment (including transport and engineering)	Environment, bioenergetics and biotechnologies	Transport and logistics
		Transport engineering	Technologies and metal industry
Innovative materials and technologies	<b>ICT (Space data processing)</b>	ICT	ICT
	Nanostructured and multifunctional materials, design and technology	Industry of electric and optic equipment	Industry of electric and optic equipment
Social health	Pharmacy and biomedicine	Pharmacy and chemistry	Chemistry and related industry
	Health and clinical medicine		
Sustainable use of local resources (forest, water, food)	Forest and water resources	Forestry	Forestry, forest industry
	Agricultural resources and food technologies		Food industry
National identity	Latvian cultural heritage and creative technologies. Social economy and public administration.		

# Baltic states cooperation

- Enhanced opportunities for shared use of research and development infrastructure:
  - Enhanced of shared use and development of ICT R&D centers' and infrastructures as well as improvement of mobility of knowledge and skills which could be brought together under the concept of Baltic Technology Institute
  - Output: create a roadmap and map national R&D competences for establishing virtual umbrella organization named Baltic Technology Institute (BTI), which may become a virtual pan-Baltic network for R&D staff.
  - Baltic prime Minister meeting – November 2011,

# Nordic-Baltic cooperation

- The purpose of the project is to establish an infrastructure that enables both free movement of knowledge and development of eScience.
- This infrastructure is called “The Baltic Ring” and consists of high capacity network interconnecting the research and education communities of the countries around the Baltic Sea.
- The NCM suggested that the countries support that NORDUnet takes the initiative to organize a consortium to establish the Baltic Ring.

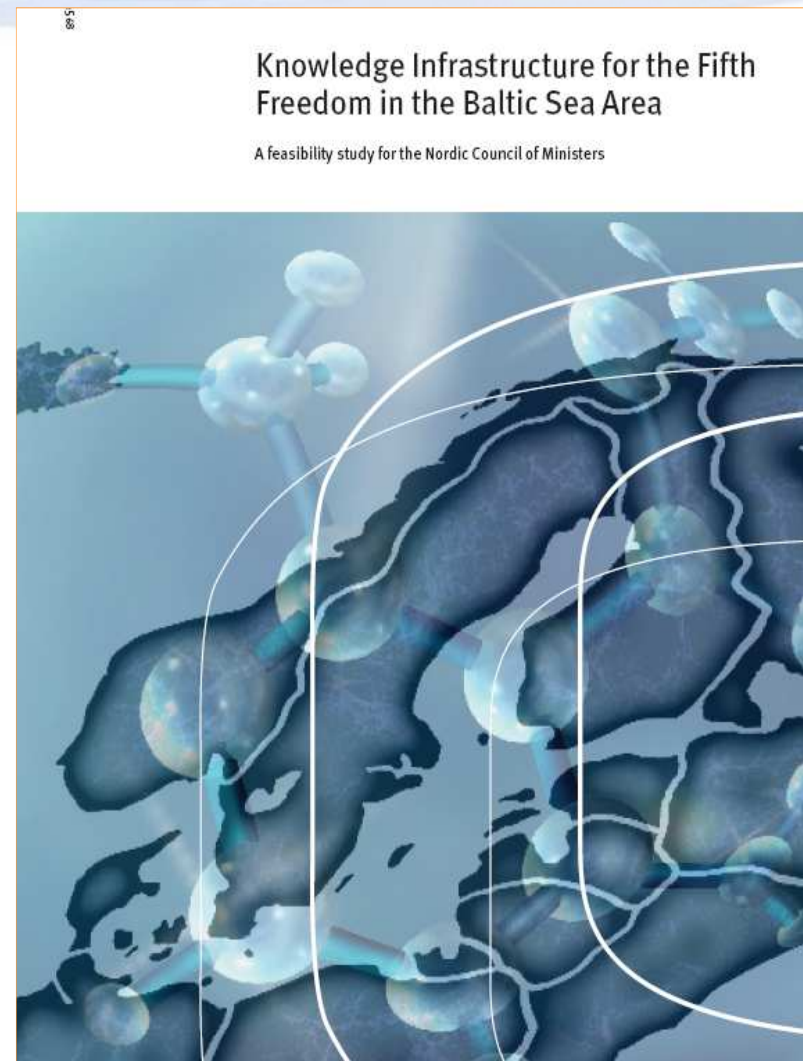






Figure 2: The current suggested topology for the Baltic Ring network (Apr 2011).

# Knowledge triangle: Education ICT case

- Qualified human resources - crucial for digital agenda and R&D in ICT
- “essence of education **is learning to learn**, i.e. helping people to improve their learning skills, thus enabling them to acquire and process information themselves. Here **digital literacy** assumes pivotal importance”
- Full integration of ICT in education and training
- Creating e-skills

# Modernisation agenda of HE system

- **To exploit the transformational benefits of ICTs and other new technologies** to enrich teaching, improve learning experiences, support personalised learning, facilitate access through distance learning, and virtual mobility, streamline administration and create new opportunities for research.

# Modernisation agenda

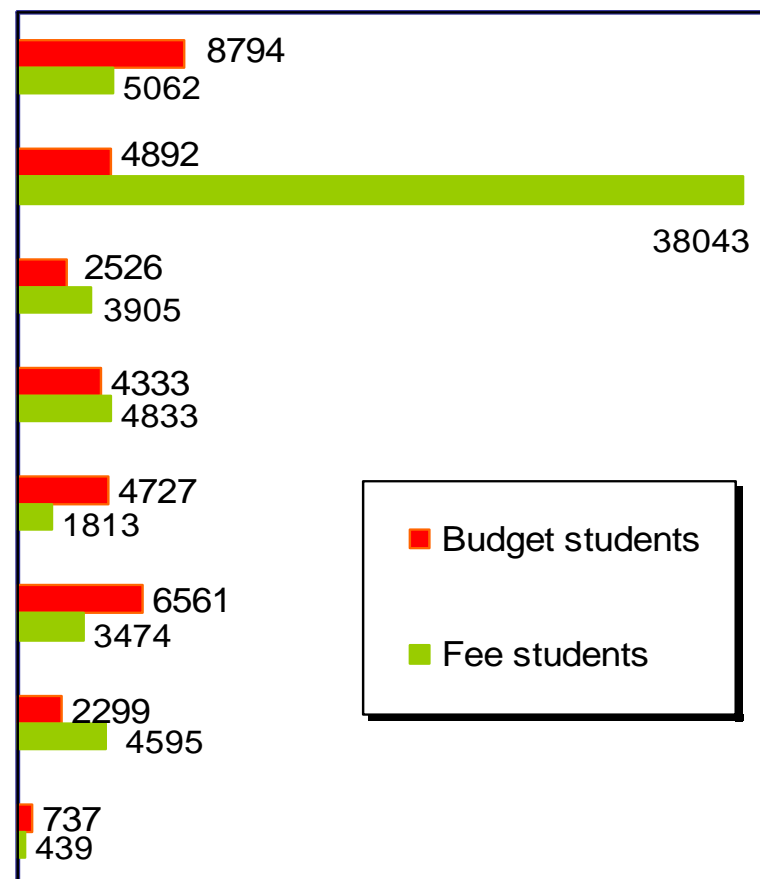
- **“Encourage a greater variety of study modes** (e.g. part-time, distance and modular learning, continuing education for adult returners and others already in the labour market), by adapting funding mechanisms where necessary.”
- In Latvia – e-courses in 12 higher education institutions, more than 50 programmes are offered in the form of distance learning

# Situation in Latvian HE

## Every second student - in social sciences

- Engineering, production, building
- Social sciences, entrepreneurship, law
- Education
- Humanities, art
- Natural sciences, math, IT
- Medicine
- Services
- Agriculture

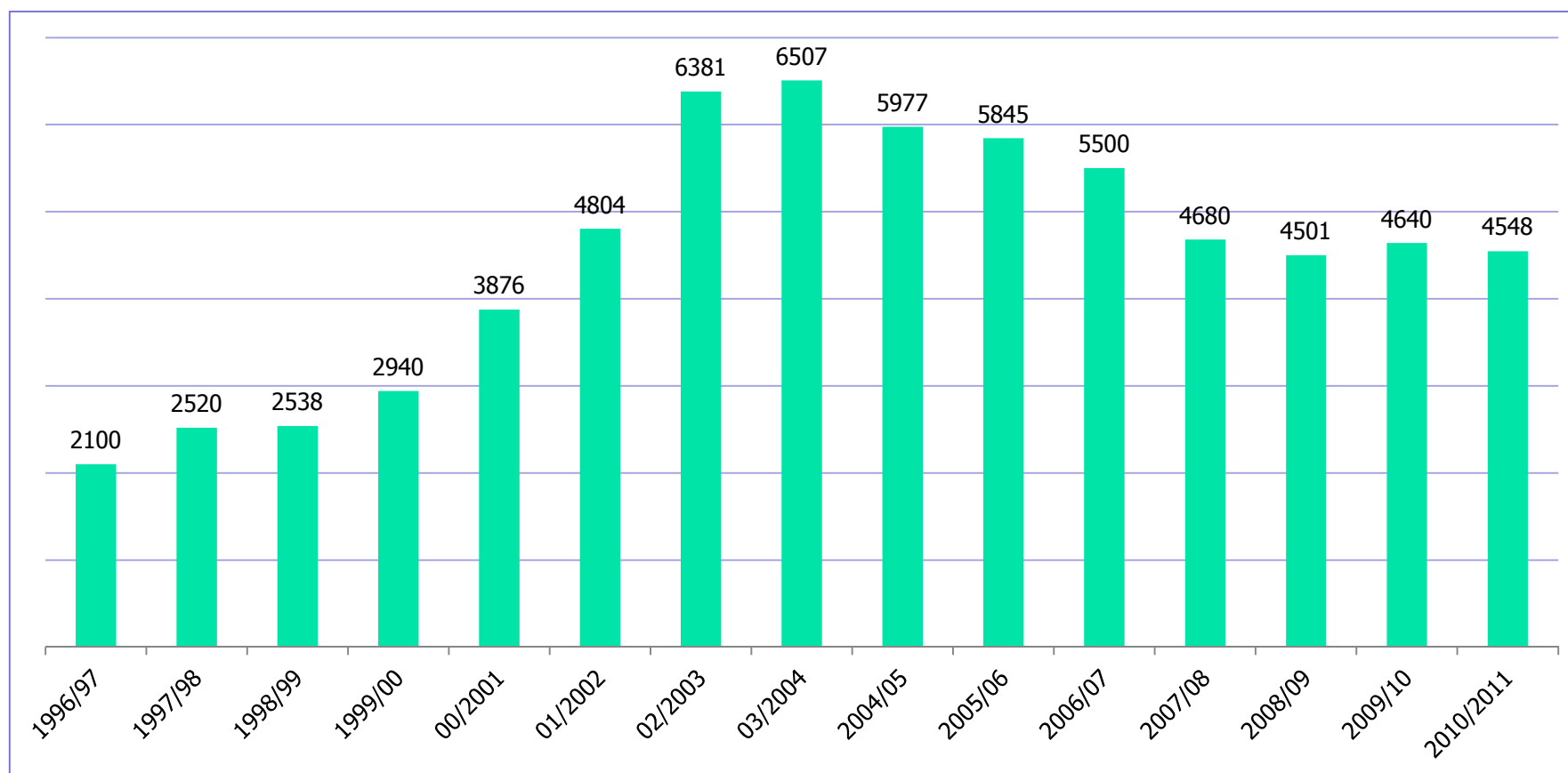
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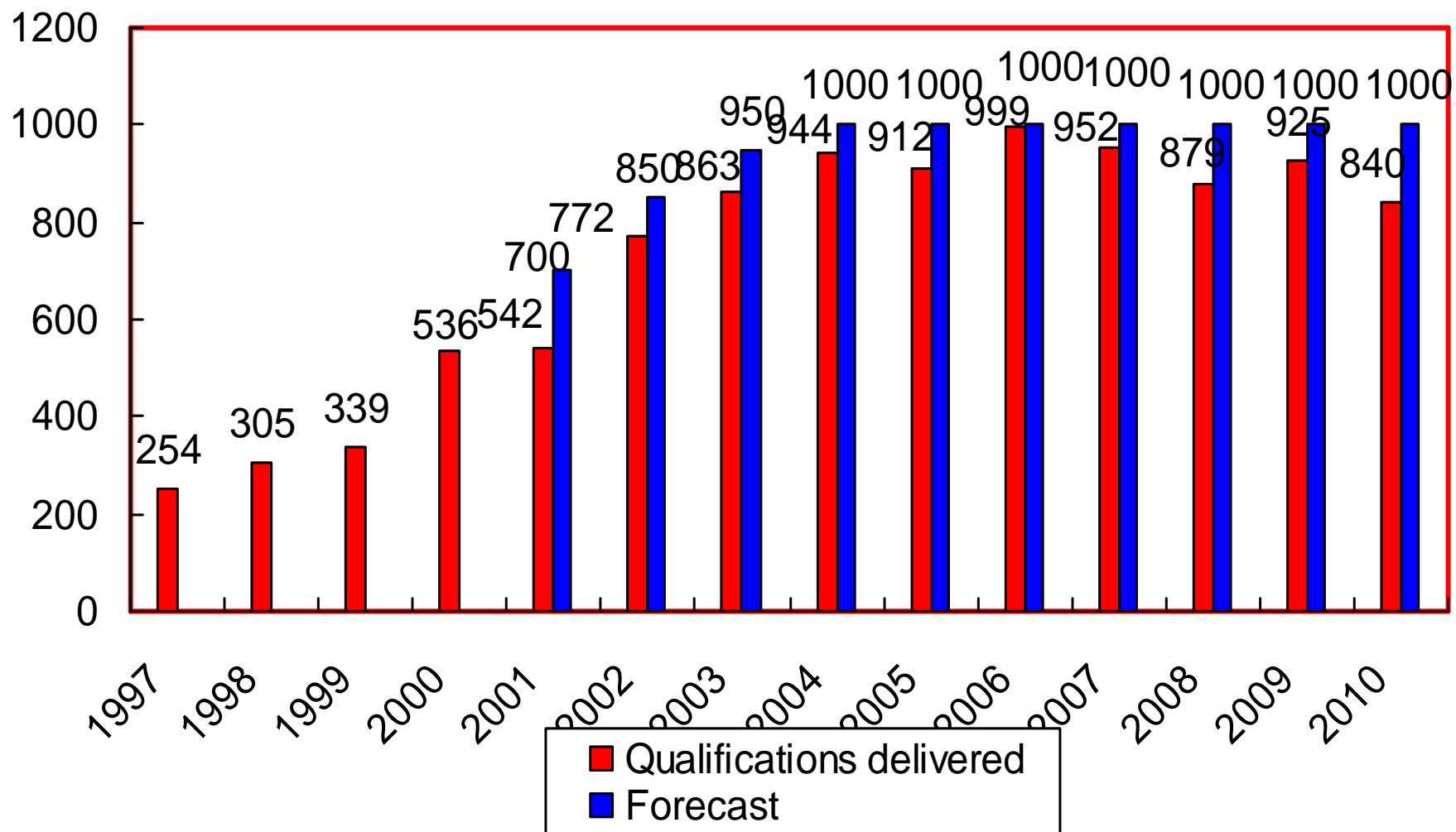
IT is one of the state priorities for the distribution of the budget places

# Number of students in IT in Latvia

- IT in 8 state HEI, 2 state colleges, 4 private HEI



# Delivered qualifications in IT





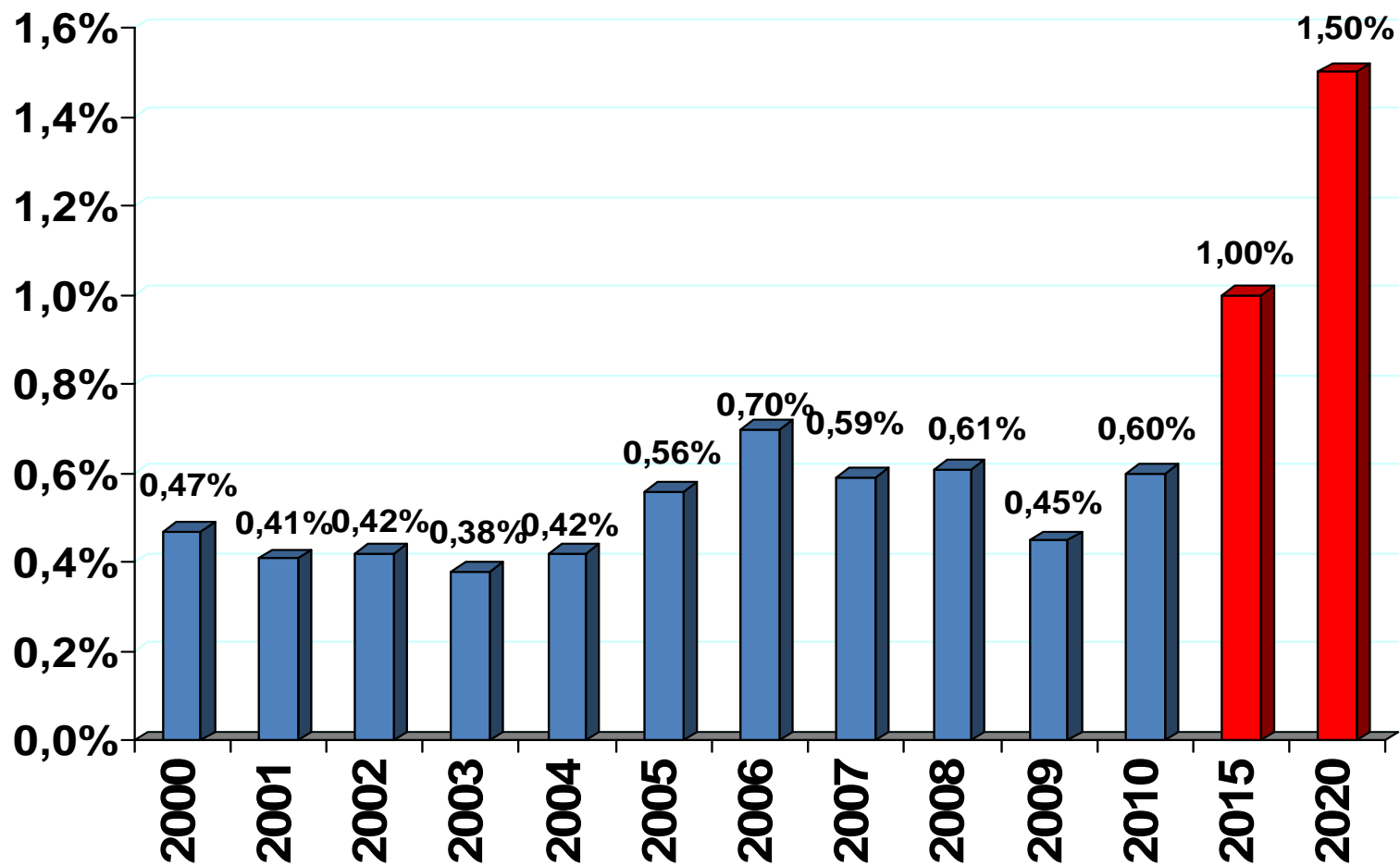
# Amendments to the Law on Higher Education Establishments

- Recognition of the prior learning (possibility to recognise also experience in the labour market) – can be very useful for IT jobs
- Flexible learning paths – possibility to combine courses and modules
- Learning outcomes have to be defined in study courses, modules and programmes
- Joint study programmes



# R&D Expenditure (% of GDP)

**EU-27: 2,01% in 2009 and 3% in 2020**



Thank you for your attention!