

e-SKILLS IN EUROPE

LITHUANIA

COUNTRY REPORT

JANUARY 2014

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1 Overview

Recent years have seen a number of positive developments in the country's **e-skills** domain: a start-up culture is growing, various programs for start-ups are being launched to help new entrepreneurs, such as StartupSauna (Finland's partnership with Kaunas University of Technology) and StartupHighway. These projects encourage especially entrepreneurship in the ICT field.

Lithuanian ICT companies expand and become internationally known, as well as their specialists. Many skilled ICT specialists are employed in successful global companies, such as Google. Also large companies, such as Barclay, are coming to Lithuania to develop their businesses. However, they hire all the best programmers and ICT specialists to work low-skilled jobs. This situation forced universities to prepare more ICT specialists. ICT companies, for their part, are forced to continuously search for new ICT specialists. Currently, the **shortage of ICT specialists** is increasing. The demand for them is expected to increase in the next few years. At the moment large international banks are opening their departments in Lithuania and thus increase the demand for highly skilled ICT specialists.

Experts assert that many young people are still choosing studies different from ICT. Some school graduates who might be interested in ICT studies in the future do not study subjects related to ICT, choosing a different specialisation at school. Those who finish ICT studies have a decent qualification, which, however, should be more proficient. High schools and universities provide students with only basic ICT knowledge. If students want to work with a specific ICT, they must additionally study in centres of competence development. To this end, structural changes in ICT departments demand a new approach to the ICT education. However, requirements are becoming more and more bureaucratic, which hinders adaptation to the changing environment.

As about educators, fast changes in the ICT sector require constant qualification improvements, which is time-consuming. Low wages in the teaching field constrain teachers and professors to shift to the private sector.

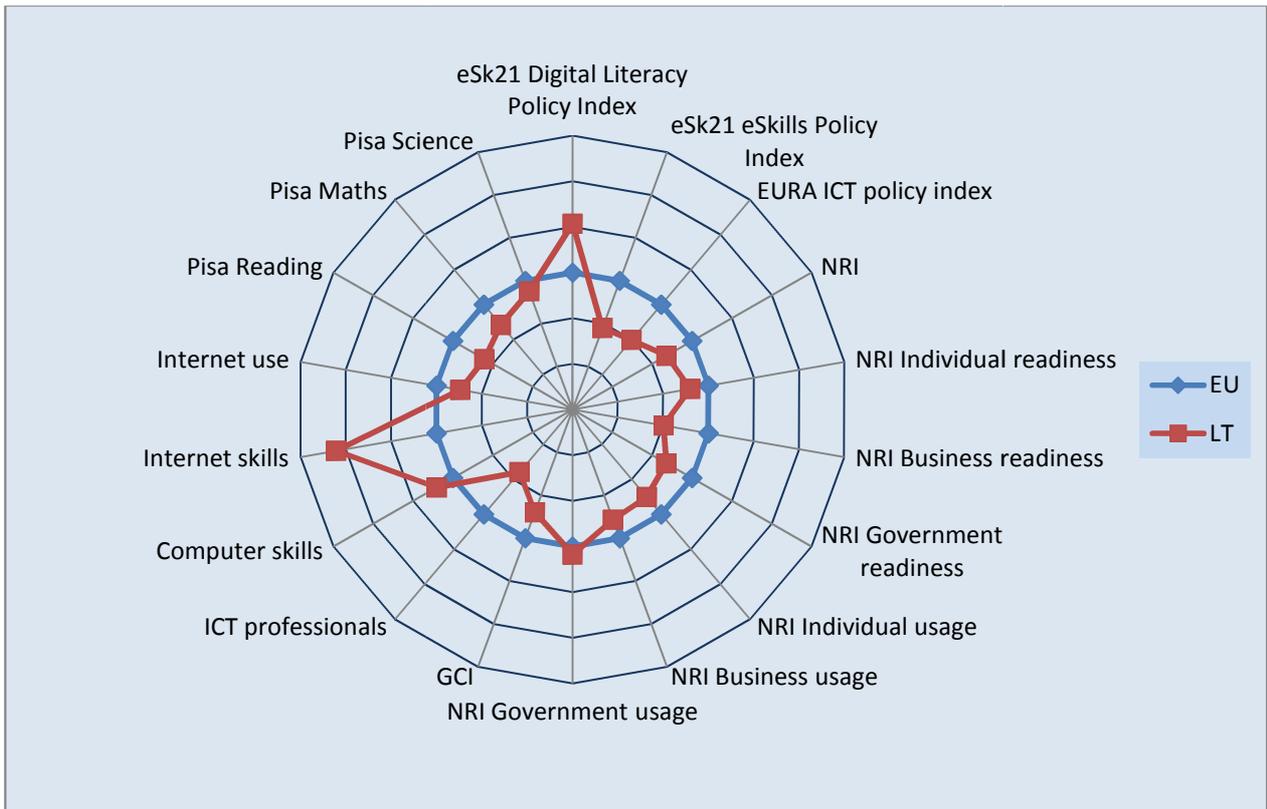
Another weak point is a lack of overall vision and coordinated work in ICT field. There is no single organization or state institution that would oversee all areas related to ICT. Separate organizations are responsible for separate fields. At the end, it leads to overlapping of functions, since different organizations oversee the same areas of interest. Beginning from 2010 there are no documents, strategic decisions about e-decisions, e-governance to be found. An initiative related to the e-sector job positions used to be once initiated by the Government Office, but it was cancelled due to the crisis.

Experts don't seem to share the view about the future of ICT specialists in the country. One group believe in positive future for ICT specialists due to the growing salaries and increasing prestige of this profession. With it, number of ICT students is supposed to grow. Another group believe that the number of ICT specialists and their competence will decrease in the future even more, due to the fact that many ICT graduates and professionals go abroad.

Public Policy and Management Institute suggested to implement 8 initiatives in the period between 2014 and 2020. Those related to ICT skills are Lithuania's residents – clever internet users and ICT skills and ICT solutions for future business.

2 Indicators on innovation, competitiveness and ICT skills

Lithuania						
	Score 2009/2010	Rank 2009/2010	Score 2011/2012	EU27 Rank 2011/2012	Change (Rank)	Comment
eSkills21 study: 'e-skills' index 2010	1	24				Max.: 5.0
eSkills21 study: 'Digital literacy' index 2010	4	6				Max.: 9.0
EuRA e-skills index	2	23				Max.: 5.0
ICT practitioners in % of total employment 2012			1.88%	25		EU average: 3.43%
Digital literacy skills of the population 2009/11:						
• Individuals with high level of computer skills	27%	13	32%	6	↑	EU average: 28.52%
• Individuals with high level of Internet skills	13%	3	27%	2	↑	EU average: 13.67%
• Individuals using the Internet (last three months)	58%	19	64%	2	↑	EU average: 71.33%
Global Competitiveness Index (GCI) 2010/12	4.3	22	4.41	17	↑	Max.: 5.61 EU median: 4.52
Networked Readiness Index (NRI) 2010/12	4.4	19	4.2	19	↔	Max.: 5.6. EU median: 4.5
• Individual readiness	5.67	17	4.89	19	↓	
• Business readiness	4.56	22	3.98	22	↔	
• Government readiness	4.29	19	3.87	18	↑	
• Individual usage	3.51	17	4.71	17	↔	
• Business usage	4.74	20	3.51	17	↑	
• Government usage	4.29	19	4.29	13	↑	
PISA scores (2009) in:						
• Mathematics	477	22				EU median: 493
• Science	491	18				EU median: 498
• Reading	468	23				EU median: 489

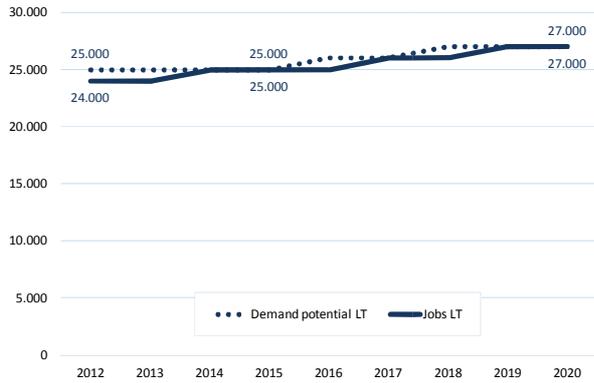


3 E-skills demand and supply forecasts 2012 – 2015 - 2020

Lithuania			
	LT	Rank EU27	EU27
ICT practitioner workforce 2012	24,000	22	7,403,000
ICT practitioner workforce 2012 as percent of total workforce	1.9%	25	3.4%
Assumed excess demand 2012	600	21	274,000
Forecast excess demand 2015	700	20	509,000
Forecast excess demand 2020	1,000	20	913,000
Forecast ICT practitioner jobs 2015	25,000	22	7,503,000
Forecast ICT practitioner jobs 2020	27,000	22	7,950,000
Workers 2012 - Management, business architecture and analysis level	6,900	20	1,477,000
... as percent of total workforce	0.5%	15	0.7%
Workers 2012 - ICT practitioners, professional level	11,000	23	3,393,000
... as percent of total workforce	0.9%	22	1.6%
Workers 2012 - ICT practitioners, technician and associate level	6,100	24	2,532,000
... as percent of total workforce	0.5%	27	1.2%
Growth core ICT workforce 2001-2010	9.3%	2	3.0%
Growth core ICT workforce 2008-2010	3.4%	9	2.6%
Growth core ICT workforce 2011-2012	6.0%	12	3.9%
Growth broad ICT workforce 2011-2012	5.4%	13	1.8%
ISCED 5A/B first degree graduates in Computer Science, 2011	824	20	113,000
... graduates per 1000 population aged 20-24	3.8	12	3.6
... graduates 2011 as percent of 2006 (= peak EU)	69%	23	88%
Vocational training graduates in Computer Science, 2011	124	21	67,000

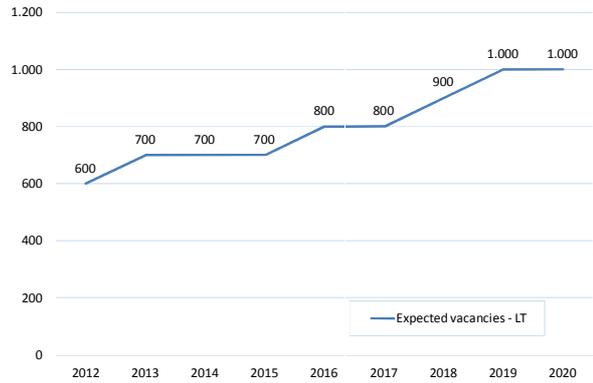
Sources and notes: see annex.

ICT workforce: Demand and Jobs in Lithuania 2012-2020 (Main Forecast Scenario)



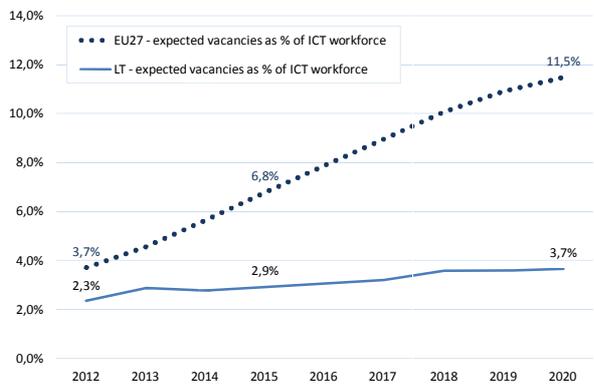
Source: empirica 2013

e-Skills shortage: Potential vacancies in Lithuania 2012-2020 (Main Forecast Scenario)



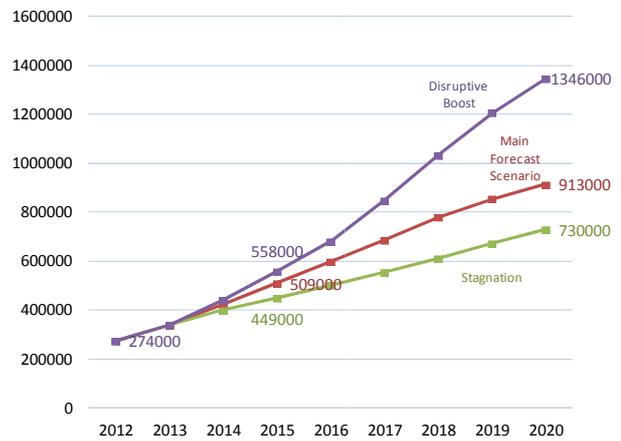
Source: empirica 2013

Potential vacancies as percent of ICT workforce Lithuania 2012-2020 (Main Forecast Scenario)



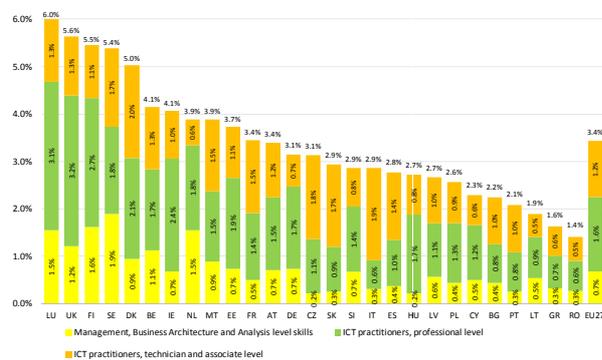
Source: empirica 2013

Potential vacancies in Europe (EU27) by scenario 2012-2020



Source: empirica 2013

ICT practitioner workforce as percent of total workforce in EU Member States in 2012



Source: empirica 2013

First degree graduates in Computer Science (ISCED 5A/B) per 1000 population aged 20-24, 2011



Source: empirica 2013

4 Policy and major stakeholders initiatives

An active policy for developing information society and promoting **digital literacy** has been pursued during the last decade in Lithuania:

The **Lithuanian Information Society Development strategy for 2005-2011** aimed at developing information society in various directions (development of knowledge economy, modernization of public administration, development of IT infrastructure).

The **Lithuanian Information Society Development Programme for 2011-2019** (approved in 2011 but currently being updated) aims at improving the life quality and business environment of Lithuanians through the ICT usage. There are three priorities outlined in the Programme: improvement of e-skills, development of e-services and ICT infrastructure, as well as promotion of take-up.

The **Programme for Universal Computer Literacy**: digital literacy is regarded as relevant universal knowledge. It implies competencies in communication technologies and skills in hardware and software on the user level. The programme aimed at creating conditions for all country residents to acquire computer literacy skills, ensuring an adequate quality of teaching digital literacy and conducting the monitoring of the digital literacy programme. Within the context of developing digital literacy implementation measures, the following aspects should be brought into focus: inclusion of IT into the curriculum of educational institutions, development of relevant to it infrastructure (in educational institutions, public institutions and households), other political measures (for example, taxation mechanisms). For instance, during the project “Bibliotekos pažangai” (Library Progress) approximately 61,000 Lithuanian citizens participated in digital literacy training in public libraries. According to number of computer literacy training participants, this was the largest project in Lithuania’s history.

Apart from the above mentioned legal acts, other programmes aimed at promoting digital literacy are being implemented in Lithuania in different spheres of social and economic life. They include the following:

Strategies for Introducing ICT in the Lithuanian Education System (2001-2004, 2005-2007, 2008-2012) cover both general education and vocational training in the field of ICT. The main objective of the third strategy for the period 2008-2012 was to create a digital content in education and to develop modern teaching and learning services. Within the framework of this project, the methodology of applying ICT in education was developed and about 3,000 teachers were trained.

Lithuanian Virtual University Programme (LVU) 2007–2012 was devoted to science, studies and education. The main aim of the programme was to expand the information infrastructure and to reduce digital exclusion.

A number of universities have implemented, in partnership with INFOBALT and Visorui IT Park, the initiative “**Update, creation and implementation of bachelor and master level computer science and computer engineering study programs**”. The aim is to upgrade existing and to create new bachelor and master level computer science and computer engineering study programmes in order to better meet the demand of the labour market and to offer attractive course programmes to students. All new courses include work placement in research and manufacturing companies for developing students' practical competences.

Educational portals: The aim of the educational portal **E-school** established by the Centre of Information Technologies in Education is to provide educational information and e-services to educational workers, students and their parents. This educational portal seeks to improve accessibility to the educational content and to create conditions for using e-communication tools.

AIKOS system, designed by the Ministry of Education and Science, is an information, counselling and guidance system, providing information about various learning opportunities. The portal hosts 2,800 study and vocational training programmes.

Improving broadband infrastructure: The main objective of the following projects was to provide an internet access to the broad public, boosting digital literacy and minimizing **digital divide** in this way. The Lithuanian **PIAP initiative** Lithuania established and renovated more than 800 “Public Internet Access Points”. **The RAIN-2 project’s** (2009 – 2013) main objective has been to connect citizens, governmental and municipality institutions as well as businesses in the country's rural periphery to broadband Internet services. It is planned to lay down an additional 4,400 km of fibre-optic cables and to connect 770 towns and villages. Once the project is completed, 98% people living in the Lithuania’s rural areas will have the opportunity to use broadband Internet; 660,000 citizens, 2,000 businesses and 9,000 public organisation will benefit from the measure.

Boosting employability: Several attempts were made to intensify **employability** and to boost business activities with five integrated science, study and business centres, the so-called **valleys**: “Saulėtekis” (Sunrise) Valley and “Santara” Valley in Vilnius, “Santaka” Valley and “Nemunas” Valley in Kaunas, Lithuanian Marine Sector Development Valley in Klaipėda. This project aims at upgrading the scientific infrastructure, in-service qualification of the employees, as well as implementation of new teaching methods and measures. New scientific and business centres were established with the EU financial support.

Integration of persons from social risk groups into the labour market is a part of several state policy priorities. The Ministry of Social Security and Labour and the Labour Exchange Training Agency have allocated significant resources to implement measures of promoting integration and re-qualification of the above mentioned persons. One of the trends of vocational counselling and re-qualification is the development of IT competencies of the target group to speed up the integration in the labour market. The Lithuanian Labour Exchange Training Centres offer more than 30 vocational teaching programmes for persons with disability.

An important stakeholder in the country's e-skills field is **INFOBALT**, the association of ICT companies in Lithuania. INFOBALT has put significant effort into raising awareness about the issue of lack of skilled ICT professionals in Lithuania, which has been reflected in the mass media and the political debate. Several initiatives and projects aimed at easing the professional e-skills shortage in the short term and building fundamental changes in the education system long term are already being implemented in cooperation with higher education institutions, the Ministry of Education, the Ministry of Communications, the Ministry of Economy, private businesses and other stakeholders. These activities include:

- A range of initiatives for awareness raising as part of the **European e-Skills Week** in 2010, 2012 and 2013. This comprised multiple visits of ICT business managers and professionals to meetings at schools, a website for publishing the videos from the meetings, and a major one-day event (**IT Night**) offering contests, discussions, and entertainment.
- **ICT Practice** – Development and implementation of an internship (work placement) scheme for ICT students (2010-2012). The project sought to establish more opportunities for students in ICT related courses to gain practical skills and hands-on experience before they get employed. The project included activities for better aligning student internships with business expectations and priorities.
- Project “**Increasing competitiveness of ICT sector SMEs by strengthening employees' special skills**” (2009-2012), which offered SMEs in the ICT sector financial support for providing specialist training to ICT professionals.
- Project **PATINKA! – Attractive IT innovations shape the future** (2013-2014), implemented in partnership with the Association of Lithuanian Computer Science Teachers (LInMA). PATINKA! focuses on creating more opportunities for Lithuanian school children to get in acquaintance

with the creative potential of ICTs. The project targets 150 computer science teachers at schools to start being involved with private training centres, and develops sustainable networks of non-formal education activities for children. This project aims at filling the gap for attractive technology education and building awareness by engaging at least 1,500 children of 10-18 years age during 20 months into ICT area and developing their future skills, as well as building up teachers' skills in 8 selected programs - computer graphics, web technology, programming, robotics, project management academy, the school of youngster programmers (distance learning), creative engineering lab, and hacker school).

From early on, a multi-stakeholder approach has been used for addressing the challenges surrounding development of the Information Society in Lithuania. In 2002 already, **Window to the Future (Langas į ateitį)** was set up, a joint initiative by leading Lithuanian businesses from the ICT sector and the country's largest banks with the objective to implement a network of Public Internet Access Points (PIAPs), provide training in ICT user skills and encourage take-up of ICT and online services.

For the coming years, the most important partnership covering the e-skills issue will likely be the **National Digital Coalition**, which brings together a broad range of stakeholders: the association "Langas į ateitį", the Ministry of Transport and Communications, the Ministry of Social Security and Labour, the Ministry of Education and Science, the association Infobalt, Vilnius University, Kaunas University of Technology, the National Association of Distance Education (NADE), the Lithuanian Computer Society, ECDL Lithuania, the Lithuanian County Public Libraries Association, and the Lithuanian IT Teachers' Association (LIAMA)¹. The aim of the Coalition, which was launched in November 2013, is threefold:

- To provide the country's population with ICT user skills and to foster lifelong learning, i.e. the continuous updating and improvement of ICT skills, making best use of all parts of the education system (primary, secondary, tertiary and non-formal education);
- To support employability of young Lithuanians by improving their digital skills according to the needs of the labour market, and to encourage them to choose STEM / ICT professions;
- To foster awareness of the public about the importance of digital literacy and ICT skills.

In the **digital entrepreneurship** area, there a number of innovative and successful initiatives have been implemented in Lithuania, albeit as yet of limited scope. Many of these have been initiated by the **Ministry of Communications and Information Society's Development Committee (ISDC)**, with objectives & indicators included in the Information Society Development Program 2011-2019. The public agency **Enterprise Lithuania** ("Versli Lietuva"), plays an important role in implementation. It is generally responsible for providing support to entrepreneurs and business start-ups in the country. Enterprise Lithuania runs initiatives which are specifically targeting digital entrepreneurs, such as "Startup Monthly Vilnius", "startup Lithuania", "Startup Nitro" vouchers, the "Startup Highway" accelerator, and others. A project facility has been set up by the Ministry of Education for supporting students who are interested in establishing a business; It has run 16 projects already, involving about 1,600 students, mentors and researchers, most of which dealing with digital entrepreneurship. Projects have been using international entrepreneurship models to build and coach student teams.

INFOBALT is managing a project "**Learning to develop High Technology Business (MOKAT)**" which focuses on student entrepreneurship via the DEMOLA Network financed by the Ministry of Education & Science Lithuania under the "Quality improvement and internationalization of studies" facility. The project aims to implement an open innovation ecosystem based on facilitated entrepreneurship and co-creation model called DEMOLA which involves business partners, students

¹ <http://www.skaitmeninekoalicija.lt/en/#Stakeholders>

and universities. DEMOLA is currently operating in Finland, Hungary, Slovenia and Sweden. The purpose of this model is to enhance students' entrepreneurship skills in the Lithuanian ICT sector and related STEM industries. DEMOLA provides an opportunity for multidisciplinary student teams to take on challenging cases provided by businesses, align universities and businesses by including DEMOLA project work as part of their study programs, and involve university teachers in co-creating digital innovations in order to gain practical experience and deeper understanding of business issues.

In addition, the organisation **AppCamp** has in 2012 set up mobile app labs at four Lithuanian universities in partnership with Omnitel (a part of TeliaSonera) and Samsung.

Summary Assessment of Lithuanian e-Skills Activities: ●●

Lithuania's activities are concentrating on distance learning education and PIAPs. The Lithuanian Information Society Development Programme for 2011-2019 makes explicit mention of ICT practitioner skills, though. In 2013, a National Digital Coalition was launched to step up efforts in developing e-skills and supply of suitably qualified ICT practitioners.

Summary Assessment of Lithuanian Digital Literacy Activities: ●●●●

Lithuania has a range of activities covering the full spectrum of digital literacy activities, with the Programme for Universal Computer Literacy at its core.

Summary Assessment of Lithuanian e-Leadership & Digital Entrepreneurship activities: ●●

The country has some initiatives that aim to foster digital entrepreneurship but are as yet limited in their scope.

Like in the precursor study² the assessment of the information gathered resulted in two activity indices, one for digital literacy and one for e-skills computed for each country. These were computed based on data from 2009 and 2013. The e-leadership skills activity index was computed only for 2013, as no data had been collected on this topic in 2009. In the following the focus will be on the e-skills activity index; we first mapped the e-skills activity index values against the Networked Readiness Index (NRI)³ for each of the 27 Member States.

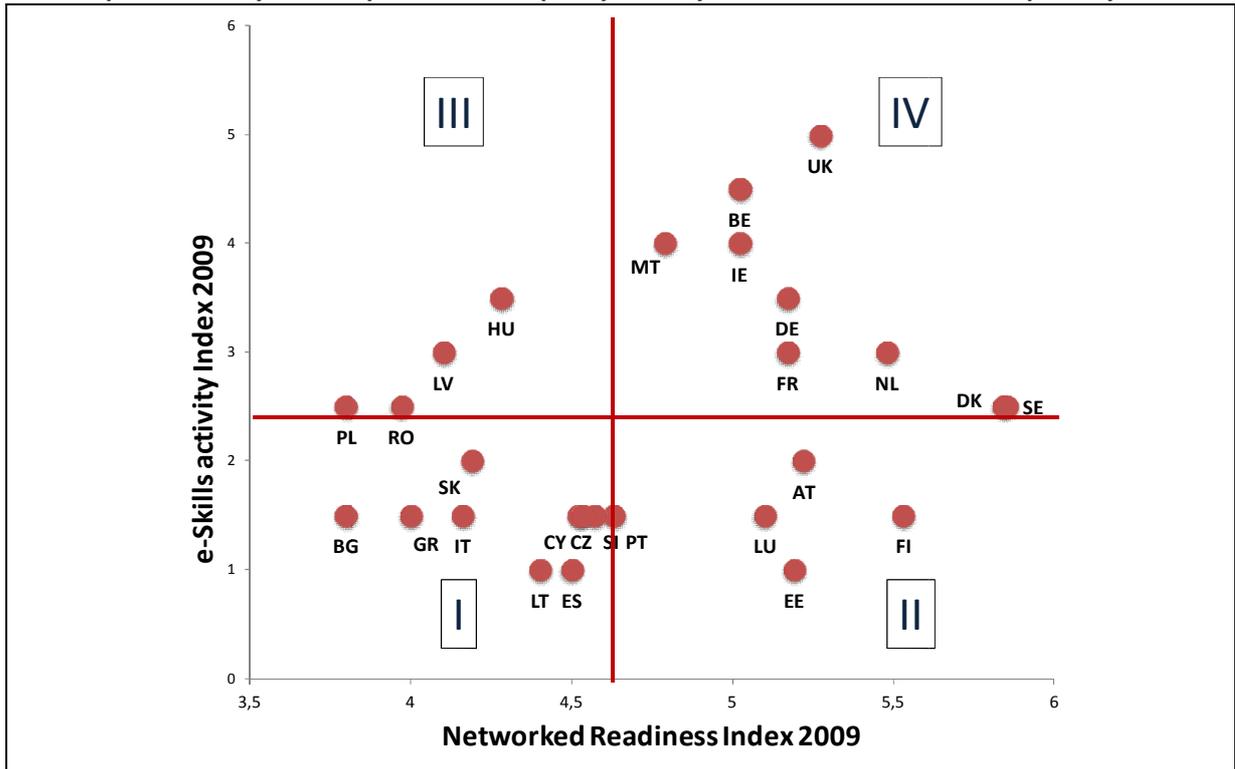
This allows for putting the results of the e-skills policy and activity analysis in the different countries in the wider context of each country's propensity to exploit the opportunities offered by ICT using data which can be obtained from the country values on the Networked Readiness Index (NRI).

The following figure allows a comparison of the results from this exercise for 2009 and 2013. In the graphical illustrations four quadrants are shown which are built by using the European averages on the NRI and those on the e-skills policy activity index for the respective years in order to group the countries into four main clusters.

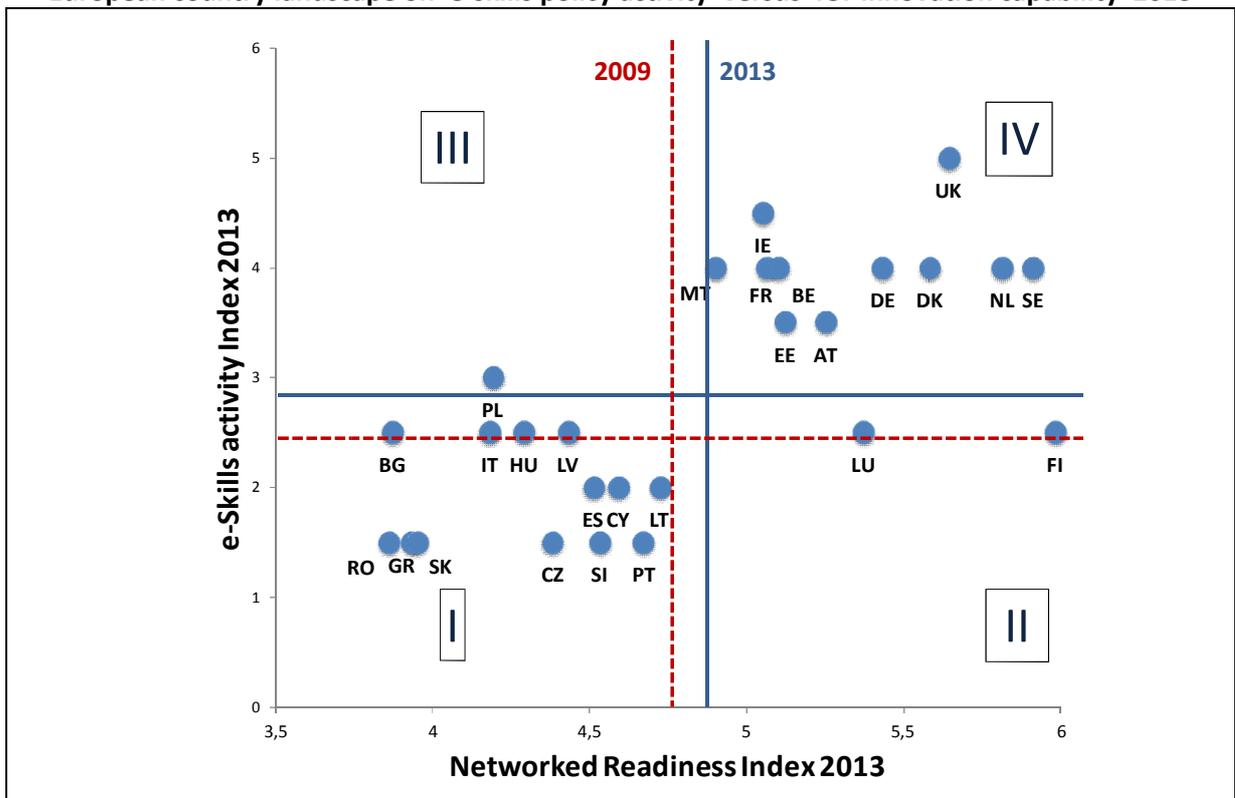
² Hüsing, T. and Korte, W.B. (2010) "Evaluation of the Implementation of the Communication of the European Commission 'e-Skills for the 21st Century'", URL: http://ec.europa.eu/enterprise/sectors/ict/files/reports/eskills21_final_report_en.pdf

³ The World Economic Forum's Networked Readiness Index (NRI) measures the propensity for countries to exploit the opportunities offered by ICT. It is published annually as part of the Global Information Technology Report. The NRI is a composite of three components: the environment for ICT offered by a given country (market, political and regulatory, infrastructure environment), the readiness of the country's key stakeholders (individuals, businesses, and governments) to use ICT, and finally the usage of ICT amongst these stakeholders. For further information on the NRI see www.weforum.org/issues/global-information-technology.

European country landscape on 'e-skills policy activity' versus 'ICT innovation capability' 2009



European country landscape on 'e-skills policy activity' versus 'ICT innovation capability' 2013



Overall and for e-skills related policies and initiatives a strong increase of activity levels over the five-year time span can be identified. The unweighted average e-skills policy index score increased from 2.4 to 2.9 between 2009 and 2013. This is encouraging news.

Our analysis revealed that in 2009 three of the four quadrants are well populated by different countries with only 7 countries belonging to the group of top performers both, in terms of e-skills policy index as well as NRI, and 11 Member States constituting those best described as low activity countries (bottom left quadrant).

Five years later the situation has changed significantly; we are now faced with a situation which can be described as a dichotomy in Europe on these indicators: top performing countries as opposed to countries with low activity levels and NRI performance, with only three countries (Poland, Luxembourg and Finland) in transition phases between these clusters.

The group of top performers has grown from 7 to 11 with Sweden, Denmark, Austria and Estonia entering this cluster to which the United Kingdom, the Netherlands, Belgium, Ireland, Malta, Germany and France already belonged in 2009. However, the group of low activity countries is still substantial in terms of numbers of countries with 13 EU Member States – almost 50% showing a below average performance on the NRI and on the e-skill skills policy activity index.

EU Member States fall into two very distinct groups: 41% of the Member States are top performers, almost 50% are low activity countries, and 11% located between these two clusters.

While the former have been successful on the e-skills front and capable of exploiting ICT to become innovative and more competitive the latter group of low activity countries still has a rather long way to go to achieve both.

A look at the Member States' positions in the NRI ranking (Networked Readiness Index) reveals that again, those countries with high NRI positions also show high e-skills policy activity levels. The countries moving up in terms of migrating into the 'top performers' cluster include Sweden, Denmark, Austria and Estonia, as well as the Netherlands and France which managed to further increase their e-skills policy activity level.

Countries at the risk of losing ground include Hungary, Latvia and Romania which dropped down into the first cluster of countries, i.e. those lagging behind.

European country clusters on 'e-skills policy activity' versus 'ICT innovation capability' 2013

I : low NRI + Low level of e-skills policy activity	II : High NRI + low level of e-skills policy activity
Romania, Greece, Slovakia, Czech Republic, Slovenia, Portugal, Spain, Cyprus, Lithuania, Bulgaria, Italy, Hungary, Latvia	Luxembourg, Finland
III : Low NRI + high level of e-skills policy activity	IV : High NRI + high level of e-skills policy activity
Poland	United Kingdom, Ireland, Sweden, Netherlands, Denmark, Germany, Belgium, France, Malta, Austria, Estonia

5 Selected multi-stakeholder partnerships

The following is a list of multi-stakeholder partnerships of major relevance to the e-skills issue:

- **Lithuanian national computer literacy primers:** The project, an initiative of the Ministry of Internal Affairs in cooperation with the Information Society Development Committee of the Government, the Information Technology Centre at the MES, Lithuanian Association of Municipalities and the SEB Bank, ran from 2007 to 2008 and had a budget of € 2.7 million. It consisted of training measures in computer literacy. The applied computer literacy skills programme was consistent with the ECDL programme e-Citizen. It was implemented at national level in 60 different Lithuanian municipalities. Particular attention was paid to the rural population and the elderly. The courses took place in 442 classrooms and 41 public internet access points. The project employed more than 400 teachers. Achievements included 50,413 participants in the courses in Lithuania, over 20% of which came from rural regions and about 15% were older than 60. The programme was considered very successful and effective, though some stakeholders were disappointed about the low participation rates among disabled people.
- **Online Services for a Lithuanian e-Citizen:** The project consisted of a partnership between the association *Langas į ateitį* (Window to the Future) and a whole range of stakeholders: social partners, the Lithuanian Labour Exchange (PES), Public Internet Access Points Association, the national network of libraries and the Association of Persons with Disabilities. Funding came from the EU's Structural Funds. The project ran from 2010 to 2012 and targeted adult residents lacking skills to use ICTs and e-services. Training courses attended by more than 16,000 residents were organised during the project implementation period. The training courses were concentrated on three main target groups: unemployed, people with disabilities and the country's rural population. 8,670 project participants were unemployed and 6,942 were from rural areas. This project has now ended, but experience gained during this project is being used to implement a follow-on project (Window to the Future, see below)
- **Population computer literacy project:** This project (2010-2013) has taught computer skills to individuals, particularly those living in disadvantaged and rural areas, in order to help them to adapt to the changing working and business environment. During the project it is planned to train 5,300 individuals, with the focus on individuals of aged 45 and older. The objective of this project is to increase the population's adaptability to the changes in the market while developing digital literacy skills that are necessary for successful implementation of information and communication technologies in everyday activities. It has been operated by Infobalt in cooperation with public libraries and other local stakeholders in the Kaunas region.
- **ICT implementation in everyday activities skill training for population of Kaunas and the surrounding districts:** In the context of the project the Kaunas Communication School organizes computer literacy courses in Druskininkai, Kaunas, Kaunas district, Kelmė district, Tauragė, Jonava, Jurbarkas, Lasdijai and Ignalina municipalities. Those who complete the course and pass the examination are issued with the ECDL basic certificates. The main project goal is to increase the adaptation of population to market changes while developing computer skills that are needed for successful ICT implementation in everyday activities. The total budget of the project, which runs from 2010 to 2013, is about € 546,000.
- **Enhancement of the competitiveness of SMEs by strengthening of employees' specific skills:** The project (2009-2012) consisted of trainings in which employees of a total of 59 companies from the country's ICT sector participate. The training programme was focused on specialised knowledge and an uptake of new technologies. Training takes place not only in Lithuania, but in other countries as well. In Lithuania participants were taught basic skills and were then sent to foreign countries to improve competences in their field of specialisation. The main project

goal was to improve general and specific skills of specialists who work in the ICT sector, thereby increasing the competitiveness of the sector at large. The total budget was roughly € 500,000. The project was lead by INFOBALT in cooperation with 59 private sector companies from Lithuania.

- **Window to the Future (Langas į ateitį)** is a multi-stakeholder partnership in which leading Lithuanian businesses, such as mobile telecommunications company Omnitel, fixed telecommunications company TEO L, the country's largest banks (e.g. Swedbank, SEB) as well as the largest Lithuanian ICT companies Alna and ATEA are working together to support the development of the information society in the country. The alliance was set up in 2002 already. The mission is to promote the use of Internet and e-services in Lithuania and hereby stimulate the growth of living standard as well as Lithuania's competitiveness within Europe and the world at large. Langas į ateitį implements projects in three main fields of activities: Establishment of Public Internet Access Points (PIAPs); Training of the population to use ICT, and promotional activities to encourage people to develop and use e-services.

6 Success of e-skills policies and activities in meeting the objectives of the EU e-skills agenda and other relevant European initiatives

The extent to which policies, initiatives and multi-stakeholder partnerships have been successful in helping meet the objectives of the EU e-Skills agenda and other relevant European e-Skills initiatives as seen by national experts is further described below along key actions and action lines of the EU e-Skills strategy and other relevant EU initiatives.

“Longer term cooperation”

No significant initiatives in this area can be recognized. Several minor steps, such as various work groups and conferences, were taken. Consequently, there are no concrete results at the moment. In the short term (2014-2020), there are several initiatives and activities planned. The development of target set and special measures for strategic documents is currently in progress.

“Human resources investment”

A lot of progress has been achieved in this area with the help of governmental and EU funds support, in particular in the area of training programs. The most important outcomes from already finished projects are:

- Training of specialists and workers in private and public sector. These trainings enabled organizations to examine different activity implementation models.
- Enterprises pay a lot of attention and invest in their employees (especially in the ICT sector). However, commonly only large and wealthy companies are able to do that.
- There are no visible improvements in transparency of qualifications; credit transfer between formal, non-formal and industry-based ICT educations and certifications. For example, there is no mechanism to implement discussions about the recognition of informal education.

“Attractiveness of ICT jobs”

Presently, it lacks attention to this area: ICT specialists have been prepared according the general procedure, without any priorities that could attract more students to ICT studies. According to the data from Europe’s Digital Competitiveness Report, in 2011 3.2 % of all EU workers were working in the ICT sector, while there were only 1.8% working in the ICT sector in Lithuania at that time. Since approval of the Lithuania’s Information Society Development Program for 2011-2019, there has been a strategic priority task to decrease the gap between the demand and supply of ICT specialists and to reach the average of the EU.

Preliminary enrolment of secondary school graduates to a state IT exam this year have increased by 25% compared to last year in absolute figures, which is an exception between all state exams enrolment equal or lower because of 10% decrease in number of school graduates. There is also growing interest in ICT and e-skills from younger students at secondary schools from our experience (mention: e-skills week, “Bebras” international IT and computer science contest which attracted 24 thousand kids in LT last autumn with 30% annual growth).

“Employability and e-inclusion”

During the last few years, ICT related trainings were actively financed by the EU structural support funds. Those projects have attracted considerable interest and directly contributed to the reduction of digital divide, because such trainings were mostly directly targeting excluded groups – residents of remote areas, the unemployed and so on. Trainings were organized not only for the certain

society groups (to solve the problem of digital divide), but also for employees working in ICT. Another task for the near future is to ensure that society groups facing digital divide, attend such trainings, e.g. older people or people with low income. The focus should be laid on quality rather than quantity. Furthermore, formal standardized training should be switched to flexible training models.

“Lifelong acquisition of e-skills”

Lifelong learning projects are being funded and there are ICT projects amongst them. One important project funded by the EU structural support funds is intended for the establishing of e-learning platform. This platform would have an informal web page for learning and self-assessment. It is supposed to provide users with learning materials and study programs. Such platform is planned to be constantly improved by adding new material and should become the number 1 tool available online, enabling people to train where and when it is convenient for them.

“Closing the e-Skills gap”

The increasing importance of ICT in various sectors of the economy and the increasing demand for specialists in these areas, cause the discrepancy between the demand and supply of professionals. It was found out that in Lithuania and in the EU, demand for ICT professionals by far exceeds their supply. In the future, this problem is expected to aggravate. Additionally, the international competition for high-level ICT professionals will grow. Shortage of ICT professionals is observed, among other things, due to the lack of students' interest in technology and stereotypes based on ICT professional image, as well as small number of ICT students and unpopularity of ICT profession among women. Experts provide the following suggestions to combat the shortage of ICT professionals:

- increase the quality of ICT study programs;
- constantly assess ICT related study programs and their popularity;
- provide an opportunity for pupils to get familiar with ICT and to attend ICT related courses after class sessions;
- promote ICT within society, esp. raising the prospects of the ICT profession;
- implement lifelong learning programs to support the professional development of ICT professionals.
- Another possible solution would be an implementation of a selective immigration policy: to simplify the work and residence permit for ICT professionals from countries outside the EU.

The problem with the demand for ICT specialists is generally considered as serious and expected to stay serious in the future. Currently, strategic actions are being taken to close e-Skills gaps. Specific activities are implemented by updating ICT related study programs and higher education institutions' technical infrastructure. In the future, it is planned to continue these important activities. The following new actions are planned: (a) Establishment of informal ICT related clubs for pupils, to encourage their interest in ICT and provide a basic level of ICT skills; (b) improving the training base; internationalization of training; students' mobility.

Some studies have shown that one of the reasons for insufficient supply of ICT professionals in Lithuania is a limited choice and availability of non-formal education in ICT area for children of all ages.

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Annex: data sources

	Source
eSkills21 study: 'e-skills' index 2010	eSkills21 study carried out by empirica. Report available at http://goo.gl/WKV7r
eSkills21 study: 'Digital literacy' index 2010	
EuRA e-skills index	EU-RA 2009: Financial and fiscal incentives for e-Skills: State of play in Europe. Synthesis report. http://www.e-skills-funding.com/images/stories/PDF/synthesisreport.pdf
ICT practitioners in % of total employment 2012	LFS data made available by Eurostat
Digital literacy skills of the population 2009/11:	Eurostat, database "isoc_ski"
• Individuals with high level of computer skills	
• Individuals with high level of Internet skills	
• Individuals using the Internet (last three months)	
Global Competitiveness Index (GCI) 2010/12	The Global Competitiveness Report 2011-2012: http://www.weforum.org/reports/global-competitiveness-report-2011-2012
Networked Readiness Index (NRI) 2010/12	The Global Information Technology Report 2011-2012: www.weforum.org/issues/global-information-technology
• Individual readiness	
• Business readiness	
• Government readiness	
• Individual usage	
• Business usage	
• Government usage	
PISA scores (2009) in:	OECD, http://www.oecd.org/pisa/
• Mathematics	
• Science	
• Reading	

Indicator	Source	Further remarks
ICT practitioner workforce 2012	Eurostat Labour Force Survey. Some imputations and assumptions not in the original data but done by empirica apply	The definition can be looked up in the final report, Gareis et al. 2014: E-SKILLS: MONITORING AND BENCHMARKING POLICIES AND PARTNERSHIPS IN EUROPE.
ICT practitioner workforce 2012 as percent of total workforce		LFS based, number of ICT practitioners / number of workers in all occupations
Assumed excess demand 2012	Empirica, IDC	This is calculated using the percentage of vacancies per existing job and is based on a survey carried out in 2012. As some countries were not covered, several assumptions apply
Forecast excess demand 2015		Forecasts are scenario based and the methodology can be found in the final report (see above). Forecast of demand in the six largest countries (DE, UK, FR, IT, ES, PL) is based on country specific economic scenarios, for the 21 smaller countries only an aggregate scenario was developed and figures allocated according to ICT employment shares.
Forecast excess demand 2020		
Forecast ICT practitioner jobs 2015		
Forecast ICT practitioner jobs 2020		
Workers 2012 - Management,	Based on Eurostat Labour Force	LFS based, definitions can be looked up in the final

business architecture and analysis level	Survey, some definitions and calculation by empirica. Some imputations and assumptions not in the original data but done by empirica apply.	report.
... as percent of total workforce		
Workers 2012 - ICT practitioners, professional level		
... as percent of total workforce		
Workers 2012 - ICT practitioners, technician and associate level		
... as percent of total workforce	Based on Eurostat Labour Force Survey, some definitions and calculation by empirica. Some imputations and assumptions not in the original data but done by empirica apply.	ISCO-88 groups 213 and 312. Due to the break in series in 2010/11 only partly comparable to later data.
Growth core ICT workforce 2001-2010		
Growth core ICT workforce 2008-2010		
Growth core ICT workforce 2011-2012		ISCO-08 groups 25 "ICT professionals", 35 "Information and communications technicians".
Growth broad ICT workforce 2011-2012		Equals the "ICT practitioner workforce"
ISCED 5A/B first degree graduates in Computer Science, 2011	Eurostat, database "educgrad_5"	This figure represents a count of first degrees in ISCED 5A and first qualifications in 5B. See discussion of this indicator in the final report.
... graduates per 1000 population aged 20-24	Eurostat, databases "educ_grad5" and „demo_pjangroup"	Graduates as above. The denominator is used to make data comparable but there is no age restriction in the number of graduates. Some imputations and assumptions may apply.
... graduates 2011 as percent of 2006 (= peak EU)		
Vocational training graduates in Computer Science, 2011	Eurostat, database "educ_grad5"	Number of Computing graduates in Upper secondary education (level 3) - pre-vocational and vocational programme orientation and Post-secondary non-tertiary education (level 4) - pre-vocational and vocational programme orientation. Some imputations and assumptions may apply.