Digitising European Industries - Member States Profile: Lithuania

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Summary

**General Background:** Lithuania is a small economy with about 3 million inhabitants. The institutional environment is overall stable, transparent, and market friendly [1]. Lithuania is a major trading partner of Russia, Poland, Latvia, Germany and the U.K. Lithuania’s economy is the largest of the three Baltic states, but its GDP is about one-tenth of the size of Poland’s economy. Since 2011, there has been a high economic growth. Wages are among the lowest in Europe and a very high number of skilled people are leaving the country. Skills shortages are becoming an important bottleneck for Lithuania’s growth. Lithuania’s digitization level according to DESI in 2017 was slightly above the EU average. Lithuania is significantly lacking ICT specialists. However, individuals and enterprises are making good use of digital technologies in Lithuania. The Lithuanian industry can make use of a number of clusters and “valleys” due to the Lithuanian innovation policy of the past years.

In May 2017, the Lithuanian government approved the establishment of a national “Industrial Competitiveness Commission ‘Pramonė 4.0’” as the management basis of the National Industry Digitalisation Platform “Pramonė 4.0” (“Industry 4.0”) and for developing a digitalisation initiative in Lithuania. Lithuania also puts a focus on Digital Innovation Hubs (DIH).

**National Strategies towards “Digitizing European Industries”:** The Ministry of Economy and the Ministry of Education and Science are the main institutions responsible for the innovation policy in Lithuania. The Lithuanian Government has taken a number of measures to meet the challenges of digitization in its economy. In 2013, a Lithuanian Innovation Development Programme 2014–2020 [2] has been approved by the government. The strategic goal of the program is to enhance competitiveness of the Lithuanian economy through the development of the effective innovation system promoting economic innovation. A “Digital Agenda for the Republic of Lithuania 2014-2020”, coordinated by the Ministry of Transport and Communications, was approved in March, 2014. In addition, Lithuania in 2014 developed and adopted the “Next Generation Internet Access Development Plan” for 2014–2020. The broadband targets aim at a 100% coverage with 30 Mbps by 2020 and of having over 100 Mbps subscriptions for 50% of households by 2020. The national agency for science, innovation and technology MITA is responsible for implementing the innovation policy in Lithuania.

**Digitising European Industry (DEI) - Pillar 1**

*Digital industrial Platform actions:* First steps towards the industry 4.0 platform “Pramonė 4.0” resulted from a bilateral German-Lithuanian Conference on “Industry 4.0” (5/2016). A working group was set up consisting of the German-Baltic Chamber of Commerce, the Lithuanian Engineering Association LINPRA, the Lithuanian IT-association INFOBALT, the Lithuanian Confederation of Industrialists LPK, universities as well as other stakeholders. The group is supported by various Lithuanian ministries. In June 2017, the Lithuanian minister of Economy, Mindaugas Sinkevičius, informed the European commission about the establishment of a National Industry Digitization Platform “Pramonė 4.0”. The minister also announced to establish thematic working groups to address current challenges and future-related issues. A coordination group of the National Industrial Competitiveness...
Commission 'Pramonė 4.0'\(^1\) was established by the order of the Minister of Economy after the first National Industrial Competitiveness Commission 'Pramonė 4.0' which was held on August 2017.

An earlier platform initiative in the area of Digitizing European Industries resulted from the FP6/FP7 initiative “Manufuture”. Projects of national importance were funded through EU Structural Funds and high technology projects (Mechatronics, Information technologies, Nanotechnologies) were funded by the State Science and Studies Foundation.

**Research, Development and Innovation Actions:** Organized by the Research Council of Lithuania, Lithuania conducts scientific research in several National Research Programmes (NRP). The program “Towards future technologies (2016–2021)” is designed to create the preconditions for the development of future technologies and to enhance the potential of Lithuanian studies and research institutions. Furthermore, Lithuania runs a program in “Green Industry Innovation” to promote the cooperation of Lithuanian and Norwegian businesses. Other research activities are performed in the area of smart cities, with innovation activities in the cities of Vilnius, Kaunas and Klaipeda.

**Digitising European Industry (DEI) - Pillar 2**

**Standardisation actions:** The Lithuanian Standards Board intends to contribute to the activities of the National Industry Digitization Platform “Pramone 4.0” concerning upcoming standardization issues.

**Regulatory Framework:** In the area of regulations, Lithuania has a focus on stimulating innovation according to the Lithuanian Innovation Development Programme 2014–2020 \(^2\). Furthermore, Lithuania has published measures for the implementation of the OECD recommendation on the Lithuanian innovation policy \(^3\), including a Smart Specialization Strategy and a one-stop-shop business support system (Lithuanian Innovation Centre). Lithuania has also developed regulations and financial support for the protection of industrial property rights (patents of inventions at the European and International level).

**Pilot factories and testbeds:** The Research Council of Lithuania in 2015 has published a roadmap for the improvement of Lithuanian research infrastructures, which fosters the following areas: a grid infrastructure for High-Performance Computing (LitGrid-HPC; Vilnius University), a pulse laser research infrastructure (Vilnius University), the Centre of Semiconductor Technology (PTC, Vilnius University), a research Infrastructure of Mechatronics (Mechatronika, Kaunas University) and a Open Access Centre for Micro-, and Nanotechnology (MNAAPC, at Kaunas University).

**Digitising European Industry (DEI) - Pillar 3**

**Digital Innovation Hubs actions:** The “Advanced manufacturing digital innovation hub initiative” (“Pažančios gamybos technologijų centras”) is directly connected to the national Pramone 4.0 strategy and is coordinated by LINPRA (Engineering Industries Association of Lithuania). This DIH is a continuation of the former “Manufuture Lithuania” initiative. Several “valley” clusters and larger enterprises and research organizations are engaged.

Organized by LINPRA, another DIH is the Virtual Engineering Industry Competition Centre (VIPKC). It acts as an intermediary between engineering industry companies and R&D&I service providers. A DIH on digital industrial IOT, 5G and SMART AE is run by the Lithuanian ICT Association INFOBALT. A DIH on Digital Robotics is run by the Lithuanian Robotics Association and partner enterprises.

In his letter to the EU (06/2017), minister Sinkevičius announced the setup of a new DIH that will support SMEs in their digital transformation. The hub shall also play an important role for the

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1. http://www.industrie40.lt/platform/
assessment of the digital skills needed. For the setup of this DIH, the Ministry of Economy intends to cooperate with industry associations, academia and innovative businesses as well as on the EU level.

Digitising European Industry (DEI) - Pillar 4

Skills development: Trainings in Industry 4.0 related topics are provided by the Smart Manufacturing competence center InTechCentras together with LINPRA. It participates in the 4Change Project tackling the skills gaps of metalworkers and has set up a program in human resource development that fosters the skills of employees in dealing with new technologies.

Specific national measures

Innovation promotion: Lithuania has kicked off several measures to stimulate R&D activities in businesses as well as business-science cooperation. Also, there is a program of innovation vouchers that can be used by Enterprises to finance a needed service. The country is also working on modernizing its public procurement processes.

Lithuania offers R&D investors a deduction of capital assets at an enhanced rate of 200% since 2008. Tax based stimulation of innovations is also forced via the project “InoSpurt” which aims at the implementation of EU Structural Fund investments.

Lithuania is planning ICT Investments through ESIF structural funds with a total budget of EUR 353 million. There is a focus on intelligent transport systems (EUR 58 million) and e-Government / e-Procurement solutions (EUR 101 million).

Facilitate access to finance: Seed and Venture Capital Fund have been launched in 2011 under the European JEREMIE initiative. In 2012, the Baltic Innovation Fund was formed as a “fund of funds” initiative by EIF in collaboration with the government of Estonia and Latvia. The Lithuanian government has regulated activities of crowd funding in Lithuania in 2016.

Lithuania has been working intensively to attract foreign investments to the country. A more business-friendly legal base is being prepared, free economic zones that are particularly favorable to foreign investments have been created, and the state is involved in implementing an investment promotion policy. Lithuania provides a very good environment for the setup of service and data centres. In recent years, Lithuania has managed to attract global giants such as Barclays and Western Union. Lithuania also promotes foreign investments in industry.
I. General Background

Overall economic situation of the country

Lithuania is a small open economy with about 3 million inhabitants. According to OECD [1], the institutional environment is overall stable, transparent, and market friendly. The country has taken significant efforts to work more closely with the international community. Lithuania’s gross domestic product is €38.63 billion a year (Eurostat)², that makes it the largest economy of the three Baltic states, but just one-tenth of the size of Poland’s economy. Since 2011, economic growth has been one of the highest among European countries, reflecting a swift recovery from the global financial crisis thanks to the economy’s high flexibility. Thus, Lithuania’s economy has almost doubled in size since 2000 (Belgium: 32%; Italy: 12%). In 2016, the industrial production growth rate has been 2.8%. Lithuania’s inhabitants have an average per capita income of €11,800, wages are among the lowest in Europe. A very high number of skilled people are leaving the country to be employed abroad and skills shortages continue to be high and risk becoming an important bottleneck for Lithuania’s growth.

Lithuania’s major trading partners are Russia, Poland, Germany and Latvia. The country is diversifying, other important trading partners are Estonia, The Netherlands, Belarus, the United Kingdom, Sweden and the USA. Refined petroleum is Lithuania’s leading export, followed by fertilizers, wheat, and chemicals. Other relevant industries in Lithuania encompass areas such as metal-cutting machine tools, electric motors, agricultural machinery, television sets, refrigerators and freezers, shipbuilding (small ships), furniture, textiles, optical equipment and lasers.

For some years, the Lithuanian industry is organized in clusters. Examples are the Lithuanian Plastics Cluster³, the Baltic Automotive Components Cluster⁴, the health technologies cluster iVita⁵ or the Laser & Engineering Technologies cluster LITEK⁶. This is due to an active cluster development as part of the Lithuanian innovation policy.

Overall strategy / situation concerning the digitization of manufacturing / production

In May 2017, the Lithuanian government approved the establishment of the National Industrial Competitiveness Commission ‘Pramonė 4.0’. This Commission is regarded as a management basis of the National Industry Digitalisation Platform “Pramonė 4.0” and for developing a digitalisation initiative in Lithuania. As part of its industry 4.0 initiative, Lithuania also puts a focus on Digital Innovation Hubs (DIH) as a contribution to the Digitising European Industry Strategy⁷.

Next to governmental initiatives, such organizations as the Engineering Industries Association of Lithuania (LINPRA), the Lithuanian Confederation of Industrialists (LPK) and Lithuanian Robotics Association (LRA) play an important role in strategy building for the Lithuanian industry.

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³ http://plasticscluster.com/benefits/
⁴ http://www.bacc.lt/en/httpwww-bacc-ItAbout-us/
⁵ http://www.i-vita.lt/en.html
⁷ Personal communication from the Lithuanian ministry of economy
LINPRA is an independent business organisation representing the interests of companies in metal products, machinery and equipment, electro-mechanics and electronics, plastics and rubber industry on a national and international level. LINPRA organises discussions with government, education and science institutions and is lobbying about improvement of sector business environment.

LPK is a major association and lobby group in Lithuania which members include most Lithuanian production enterprises, banks, trading companies, representative offices of foreign firms, research institutes, and educational establishments. One of the main objective of LPK is to create the most favourable conditions for economic, technical and social progress of Lithuanian enterprises regardless their ownership form. For this purpose, LPK holds regular committee sittings and discussions on urgent economic issues of the country, also holds meetings with ministers and other officials.

LRA is nonprofit organization prioritizing robotics sector and addressing national policy challenges that restrict from pursuing robotics growth potential and creating local networks and placing to work together across the value chain.

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### Fact Sheet Lithuanian National Strategy ‘Industry 4.0’

<table>
<thead>
<tr>
<th>Ministry in Charge</th>
<th>Ministry of Economy of the Republic of Lithuania [Website]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contact Person</strong></td>
<td>Mindaugas Sinkevičius, Minister of Economy Gedimino Av. 38, 01104 Vilnius, Lithuania Phones: +370 706 64 845 / +370 706 64 868 Fax: 8 706 64 762; E-mail: <a href="mailto:kanc@ukmin.lt">kanc@ukmin.lt</a></td>
</tr>
<tr>
<td></td>
<td>Laura Brigytė (<a href="mailto:Laura.Brigyte@ukmin.lt">Laura.Brigyte@ukmin.lt</a>), Chief specialist, Industry policy division; Industry and Trade Department</td>
</tr>
<tr>
<td></td>
<td>Lina Sabaitienė (Vice-Minister of Economy of the Republic of Lithuania)</td>
</tr>
<tr>
<td></td>
<td>Ramūnas Burokas (Vice- Minister of Economy of the Republic of Lithuania)</td>
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<tr>
<td></td>
<td>Gricius Vaidas (Head of Industry Policy Division)</td>
</tr>
<tr>
<td><strong>Main Strategy Documents</strong></td>
<td>A strategy document for the implementation of Industry 4.0 in Lithuania is under preparation.</td>
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<tr>
<td></td>
<td>Program of the Government of the Republic of Lithuania (approved by the Seimas on 13 December 2016; see below).</td>
</tr>
<tr>
<td><strong>Related Strategy documents</strong></td>
<td>“Digital Agenda for the Republic of Lithuania”</td>
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<td></td>
<td>“Next Generation Internet Access Development Plan” for 2014–2020</td>
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<td></td>
<td>“Lithuania 2030” [4]</td>
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8. Personal communication, ministry of economy

Digitization level of the country

According to the Digital Economy and Society Index (DESI) [5], Lithuania’s digitization level in 2017 was slightly above the EU average (overall rank: 13), except for Human Capital with a limited progress\(^{10}\). Concerning Connectivity Lithuania is one of Europe’s best performers, in particular in terms of coverage (fixed and mobile). Lithuania ranks number 4 in 4G coverage (96%) and number 7 in subscriptions to fast broadband (61%). However, Lithuania is growing slower than the EU average. While Lithuania reaches a medium ranking in the percentage of individuals with basic digital skills (52%, rank 17), it is significantly lacking ICT specialists (2.1% of individuals; rank 26). However, individuals and enterprises seem to make good use of digital technologies, including reading news online (93%, rank 1), video calls (69%, rank 3), and online banking (73%, rank 8). Lithuania has improved significantly in the integration of digital technologies and in Digital Public Services, including the use of RFID (6.4% of enterprises; rank 4), eCommerce turnover of SMEs (12.2%, rank 6).

An analysis by Śledziewska et al [6] suggests that Lithuanian SMEs are among the leaders of digital transformation in the EU. They operate in a supportive digital environment, benefiting from the developed digital infrastructure. Most of them make full use of various digital technologies such as websites, social media, management and e-commerce tools. However, the authors also suggest that the Lithuanian SMEs to keep pace with the digital revolution, need to invest more in the further improvement of the digital skills of their employees.

National strategies towards digitization (economy, society)

In the past years, Lithuania has taken a number of measures to meet the challenges of digitization in its economy: In March 2014, the Lithuanian government approved an “Information Society Development” program 2014-2020 called “Digital Agenda for the Republic of Lithuania”. In the fourth quarter of 2017, this programme was updated. The strategic goal of the Programme is to improve the quality of life for the Lithuanian population and business environment for companies by using all the opportunities created by the ICT. It encompasses the following main goals and objectives:

- To reduce the digital divide by encouraging the people to gain knowledge and skills required for successful, smart and useful use of the ICT. The objective encompasses increasing the use of internet services in different target groups of the Lithuanian population, encouraging to opt for ICT-related study programmes, to establish flexible personalised teaching and learning conditions in the cyberspace,
- To develop safe and convenient online public and administrative services relevant to the population and businesses (eGovernment, eHealth, intelligent transport services), with the main focus on development of smart online services (when several electronic services intended to meet end-user’s needs for a specific life or business event),
- To foster digitization of cultural and language material with internet access and long-term digital storage. The Open Access strategy\(^{11}\) and cultural heritage digitization\(^{12}\) has been a specific aspect of digitization in Lithuania since 2005 (Ministry of Culture of the Republic of Lithuania).

\(^{10}\) http://ec.europa.eu/newsroom/document.cfm?doc_id=43024
\(^{11}\) https://wessweb.info/index.php/Open_Access_in_Lithuania
\(^{12}\) http://www.minervaeurope.org/publications/globalreport/globalrepdf06/Lithuania.pdf
• To promote the application of ICT in development of e-business; encourage SME to introduce and apply ICT for higher efficiency and competitiveness; improve legal regulation of information society service; to create necessary technical and legal conditions for the data held by public authorities to become publicly accessible, to open these data for the re-use and encourage business to use them to develop new digital products and services.

• To ensure the development of geographically uniform high-speed broadband infrastructure and encourage the use of Internet services by providing the broadband electronic communication networks in areas where the market has failed to ensure infrastructure development, and upgrading and developing the public internet access infrastructure; encourage competition in broadband communication and the use of broadband services.

• To ensure the development of secure, reliable and interoperable ICT infrastructure: use personal identification tools in the cyberspace, to develop solutions for the protection of personal data in cyberspace; streamlining of ICT infrastructure shared among public authorities, and interoperability among public information systems; security of critical information infrastructure and the state information resources.

The implementation of the Programme and the development of composite electronic services is coordinated by the Ministry of Transport and Communications.

In addition, Lithuania in 2014 developed and adopted a “Next Generation Internet Access Development Plan” for 2014–2020[13]. The broadband targets meet that of the European Commission’s Digital Agenda for Europe of 100% coverage with 30 Mbps by 2020. There are also some supportive measures to help implement the targets. The plan also includes the target of having over 100 Mbps subscriptions for 50% of households by 2020.

In November 2013, institutions, companies and organisations agreed to form a National Digital Coalition for the promotion of digital skills for jobs in Lithuania, with the mission of increasing employment and achieving a more effective use of the digital potential.[14]

In 2012, a National Progress Strategy “Lithuania 2030” [4] was developed and approved. It is not exclusively on digitization, but on the future development of the country in general. The strategy is based on input by communities, non-governmental organizations and proactive citizens. “Lithuania 2030” addresses the following objectives:

• Smart Society: a happy society, open to ideas of every citizen, ready for challenges and innovation, politically savvy; adhering to the values of self-governance and solidarity.

• Smart Economy: Flexible and competitive, creating high added value rooted in knowledge, innovation and entrepreneurship. It adheres to the values of social responsibility and sustainable growth.

• Smart Governance: Open, inclusive and goal-oriented, a governance culture that meets the needs of the society by providing high quality, efficient and effective public services. It is highly skilled and able to choose right long-term strategic decisions.

In 28 November 2012, the Government of the Republic of Lithuania approved the “National Progress Programme for Lithuania 2014-2020”. This programme is one of the key national strategy document

that implements the National Progress Strategy ‘Lithuania 2030’. It sets out the directions of implementation of long-term state’s priorities (such as public education, science and culture, active and solidarity society, environment conducive for economic growth, integral economy, focused on high-added value). The program intends to use of European Union financial contribution for these implementations. The programme seeks to foster research-business collaboration, implementation of joint projects and joint use of R&D infrastructures. It also contains a set of demand-side innovation policy measures, e.g. innovative public and pre-commercial procurement, regulation, financial and tax incentives for innovation consumers.
II. National Strategies towards “Digitizing European Industries”

Setup of the Industry 4.0 Platform “Pramonė 4.0”

First steps towards the setup of the National Industry Digitalisation Platform “Pramonė 4.0” resulted from a bilateral German-Lithuanian Conference on “Industry 4.0” held in Vilnius in May 2016.

In order to implement the initiative for the digitisation of industry successfully, in the middle of 2016, industry and business associations, companies and universities together with the government started the works for establishing the national industry 4.0 platform “Pramonė 4.0”. Regarding the proposals from the stakeholders, the Ministry of Economy of the Republic of Lithuania took the lead in coordination of the creation and development of such a platform in order to discuss and examine the issues of establishment and development of an ‘Industry 4.0’ platform. In August 2016, a working group of stakeholders was set up by an order of the Minister of Economy. This was the first step forward concentrating the associated structures of industry and business, enterprises and universities on working together and trying to introduce the opportunities offered by the technical progresses to Lithuania.

The National Industry Digitisation Platform “Pramonė 4.0” established a cooperation between the German-Baltic Chamber of Commerce in Estonia, Latvia, Lithuania (AHK), the Lithuanian Engineering Association LINPRA, the Lithuanian ICT-association INFOBALT, the Lithuanian Confederation of Industrialists LPK, the Ministry of Economy and others ministries of Lithuania, universities and other stakeholders. It was committed to prepare an action plan for establishment of the National Industry Digitalisation Platform “Pramonė 4.0” and to implement common pilot projects. One of the first steps of activities of this group was to evaluate the potential of enterprises in Lithuania to participate in the development of the Industrie 4.0.

In cooperation with business associations, industry and academia, the Ministry of Economy prepared and submitted a resolution concerning the establishment of a National Industrial Competitiveness Commission 'Pramonė 4.0', which was approved on 10 May 2017 by the government. This commission is regarded as the basis for the functioning of the National Industry Digitalisation Platform “Pramonė 4.0” and for the development of digitalisation initiatives in Lithuania.

In June 2017, the Lithuanian minister of Economy, Mindaugas Sinkevičius, informed the European commission about the establishment of a National Industry Digitisation Platform “Pramonė 4.0”. The minister also announced to establish thematic working groups that will address current challenges and that will look at future-related issues in the areas of digital manufacturing, services promoting digitisation, standardisation and legal regulation, R&D&I, human resources, cyber security. Moreover, the minister announced the establishment of a coordination group to discuss and analyse the information provided by these thematic working groups, to make proposals to the National industrial Competitiveness Commission and to coordinate the activities of thematic working groups.

During the first meeting of the National Industrial Competitiveness Commission ‘Pramonė 4.0’ which was held on 29 August 2017 the Ministry of Economy presented a draft order to this commission, concerning the establishment of a Coordination group of the National Industrial

http://www.industrie40.lt/platform/
Competitiveness Commission 'Pramonė 4.0'. After this meeting, on 4 September 2017 the order was approved by the Minister of Economy of the Republic of Lithuania.

Setup of Digital Innovation Hubs

In his letter to the EU (June 2017), minister Sinkevičius announced the setup of a Digital Innovation Hub that will support SME in their digital transformation. The hub shall also play an important role for the assessment of the digital skills needed. For the setup of this DIH, the Ministry of Economy intends to cooperate with industry associations, academia and companies that have already integrated related technologies (Big Data, Cloud computing, IoT, Robotics, Autonomous systems) and which can share their experience with digital innovations and business strategies. The Lithuanian DIH would also like to become part of a European network of Digital Innovations Hubs.

Mr. Gintaras Vilda, the director of LINPRA, also promotes a national initiative on Digital Innovation Hubs (DIHs), which would combine 4 hubs in Vilnius: LRA Digital Innovation Hub (Lithuanian Robotics Association), Laser Digital Innovation Hub (LASERDIH), Lithuanian Laser cluster and Advanced Manufacturing Digital Innovation Hub. He presented this idea on several meetings.

Lithuanian representatives then participated at the Digitising European Industry First Stakeholder Forum in Essen (February 2017) and at a two-day meeting during the G20 finance ministers meeting in Berlin/Germany (March 2017): At this meeting, the ministry of Economy, LINPRA and representatives from the German Foreign Ministry discussed the possibility of cooperation in developing a Lithuanian national initiative on Digital Innovation Hubs.

Cluster Policy, technology “valleys”

In Lithuania, about 50 clusters have been formed as a result of 2007 – 2013 period measures administrated by the Ministry of Economy. The Agency for Science, Innovation and Technology (MITA) is taking an active role in the clusterization process. Acting as a facilitator / coach it represents the state’s interests. The main task is to identify new potential clusters, to coordinate their activities, to assist young clusters, to present their products and services internationally. MITA seeks to ensure the maturity and internationality of the most promising Lithuanian clusters. In October 2016 tripartite cooperation agreements on experimental consultancy services were signed with 10 clusters (engineering clusters among them): “iVITA” Wellness Cluster, Laser and Engineering Technology Cluster, SMART Food Cluster, National Food and Economy Cluster, Smart Technology Cluster, Lithuanian Plastics Cluster, Cluster “Railway LT”, Bio Power Plant Development Cluster, Lithuanian Automotive Component Manufacturers and Exporters Association (LAuGEA) and “Užupis Creative Cluster” Association. Services to clusters will be provided in accordance with the new initiative “Promotion and Development of Innovation Networking (InoLink)” by MITA. The project will be implemented within three years together with the Lithuanian Innovation Center as a partner.

Valleys, in the understanding of the government in Lithuania, are Integrated centres for science, studies and business.‘Valley’ means a concentration of capacities in research, studies and knowledge-intensive business generally in one area, with a common or interrelated infrastructure,

16 Personal communication, ministry of economics
 geared towards building a knowledge economy and thus enhancing Lithuania’s economic competitiveness.

Due to the Lithuanian cluster policy, several of these valleys are successfully operating: such as a photovoltaic technology cluster, an alliance in the Baltic Beverage Industry (ABBI), in the area of Laser and Light Science, in modern housing. Cooperation between academia and industry is organized in "Valleys", specializing in different scientific/industrial research fields: Since 2009, there are five valleys being developed in Lithuania: Santara Valley, Santaka Valley, Nemunas Valley, Sunrise Valley, Baltic Valley.

- Santara Valley (Life Science, ICT)\(^{17}\): Information technology development at Santara Valley is coordinated by Visoriai Information Technology Park (VITP, high-tech technology cluster and Science and Technology park). There are partnerships with Vilnius University Faculties and State research Institute of Mathematics and Informatics; R&D and technology transfer activities focus on: Industrial and business software development; Recognition processes, data analysis and multi-modal optimization of multimedia technologies; Tagging and contextual search of scientific information; Development of new medical devices (wireless communication protocols, databases, remote monitoring system, closed loop control systems)

- Santaka Valley (Biotechnology, ICT)\(^{18}\): Focus areas are: diagnostic and measurement technologies, smart environment and information technologies, new materials for hi-technologies, technologies for sustainable development, and energy, sustainable growth and sustainable evolution of socio-culture. Among the research institutes are: Centre of Real Time Computer Systems; Health Telematics Science Institute; Technology Centre of Information Systems Design; Excellence Centre for Organic Semiconductor Research

- Baltic Valley (Maritime Technologies)\(^{19}\): Klaipėda University and its partners provide an Open Access Centre for Marine Research, aimed to ensure proper operation of the scientific infrastructure and open access to the R&D services for internal and external users, to facilitate science and business cooperation through high level scientific and technological research.

- Sunrise Valley\(^{20}\) (material science, semi-conductor physics, laser technologies): A research park in Vilnius, founded in 2003. In 2015, a new Technology and Innovation centre opened up that is involved in a number of leading research projects in Sunrise Valley, e.g. Ekspla’s development of one of the most powerful lasers in the world in cooperation with a US firm. The Valley also has Lithuania’s only nanoengineering laboratory in Lithuania.

- Nemunas Valley\(^{21}\) (Agrobiotechnology, Bioenergy and Forestry, Food technology, safety and health)

Within the format of the Valley development programs, it is sought to upgrade Lithuanian scientific research infrastructure and provide conditions for active cooperation between business and science. The Valleys offer an infrastructure to carry out applied research and technology development and favorable conditions for the establishment of new or young innovative companies. As an example: Santara Valley, located in northern part of Vilnius, encompasses 4 major research institutes, a

\(^{17}\) http://www.santariskes.eu/index.php?2127924991

\(^{18}\) http://www.santakosslenis.lt/en/

\(^{19}\) http://balticvalley.lt/en/

\(^{20}\) http://sunrisevalley.lt/en/

\(^{21}\) http://www.slenis-nemunas.lt/en
number of pharma producers and private technology development centers. They have commonly attracted €73.3 million in public grants for R&D infrastructure development as well as over €80 million of private investments and EU support.
III. Digitising European Industry (DEI) Pillar 1 - Digital Industrial Platforms actions & Research, Development and Innovation actions

Digital Industrial Platforms actions

The National Industry Digitalization Platform “Pramonė 4.0” aims at advancing industry in the integration of digital solutions and new technologies. It is also supposed to serve as an instrument for the dialogue between the industry, public authorities and the academic community to find efficient solutions for the digitalization of industry at national level. It is registered in the catalogue of initiatives of the Digitizing European Industries.²²

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<tr>
<th>Fact Sheet Lithuanian Platform “Pramonė 4.0”</th>
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<tbody>
<tr>
<td><strong>Lead organization</strong></td>
</tr>
</tbody>
</table>
| **Relevant associations** | • German-Baltic Chamber of Commerce in Estonia, Latvia, Lithuania (AHK),  
• Engineering Industries Association of Lithuania (LINPRA),  
• Lithuanian ICT-association INFOBALT,  
• Lithuanian Confederation of Industrialists (LPK),  
• Lithuanian Robotics Association (LRA),  
• Lithuanian Innovation Center (LIC) |
| **Working Groups** | Digital manufacturing WG  
Digitisation promoting services WG  
Human resources WG  
Standardisation and legal regulation WG  
Cyber security WG |
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| **Website** | [http://www.industrie40.lt/platform/](http://www.industrie40.lt/platform/) |

²² [https://ec.europa.eu/futurium/en/content/digitising-european-industry-catalogue-initiatives](https://ec.europa.eu/futurium/en/content/digitising-european-industry-catalogue-initiatives)
An earlier platform initiative in the area of Digitizing European Industries resulted from the FP6/FP7 initiative “Manufuture”, which was coordinated and implemented by LINPRA initiative. Projects of national importance were funded through EU Structural Funds and high technology projects (Mechatronics, Information technologies, Nanotechnologies) were funded by the State Science and Studies Foundation. LINPRA director Gintaras Vilda takes part at the Manufuture High Level Group.

The National Technology Platform “Manufuture Lithuania” carried out a number of studies\textsuperscript{23} to identify objectives for further development. The results suggested:

- to create infrastructures and to develop competence for continual monitoring, foresight and identification of priorities for development of the Lithuanian engineering industries and related sectors
- to create necessary infrastructure and practice for R&D, implementation of innovative production methods and technologies as well as high added value niche products manufacturing activities;
- to ensure improvement of a national system for engineering education;
- to create prerequisites for both national and international networking at the company, business association and TP levels

In consequence, the Manufuture platform established a database of the R&D service providers and engineering industry companies (VIPKC)\textsuperscript{24} as well as the Smart Manufacturing competence center “InTechCentras”\textsuperscript{25}.

Research, Development and Innovation actions

The Ministry of Economy and the Ministry of Education and Science are the main institutions responsible for the R&I policy in Lithuania. The Ministry of Education and Science is responsible for higher education and R&D policy\textsuperscript{26}. The Ministry of Economy is responsible for developing the innovation environment and coordinates the establishment and the operations of innovation support organisations such as innovation centres, science and technology parks or business incubators.

In 2013, a Lithuanian Innovation Development Programme 2014–2020 [2] has been approved by the government. The strategic goal of the program is to enhance competitiveness of the Lithuanian economy through the development of the effective innovation system promoting economic innovation. Among other, it refers to the high importance of ICT for value creation in all sectors of the economy, without, however, specifying concrete technology areas for research and innovation. Instead as KPIs have been defined:

- the increase of High-technology manufacturing industry’s value added as percentage of GDP from 0,2% (2011) to 0,6% (2020) and
- the increase of ICT sector’s value added as percentage of total value added from 2,5% (2012) to 3% (2020)

\textsuperscript{23} \url{http://www.manufuture.lt/lt/studijos}  
\textsuperscript{24} \url{http://www.vipkc.lt/db/}  
\textsuperscript{25} \url{http://intechcentras.lt/about-us/?lang=en}  
\textsuperscript{26} \url{http://ec.europa.eu/invest-in-research/pdf/download_en/psi_countryprofile_lithuania.pdf}
The national agency for science, innovation and technology MITA is responsible for implementing the innovation policy in Lithuania. It provides free of charge services for clients from business, science and public sectors, interested in possibilities to develop cooperation relations with international partners and get financial support for research and innovation projects. The main activity is the coordination of national (Innovation vouchers, Technological Development Program, R&D Commercialization) and international programs (Horizon 2020, EUREKA, EUROSTARS) of research, technological development and innovation and other financial schemes. MITA provides national financial support for projects participants and promotes business and science cooperation, commercialization of research and protection of intellectual property rights.

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MITA has published an overview on numerous innovative industry solutions from Lithuania. Furthermore, MITA organizes numerous events to stimulate the innovation-friendliness of the Lithuanian businesses. Inspiring success stories of innovative businesses are shared, advantages of innovation activities are explained. Together with the ministry of Economy, MITA organizes the “Innovation Drift” conferences, which are among the biggest and the most ambitious events of innovations in the Baltic Sea Region (12-13th October, 2017, Vilnius).

On the other hand, Lithuania scored highest in the EU for changes in the ICT startup environment, as reported in Digital Transformation Scoreboard 2017 survey\(^29\). According to the Startup Lithuania newsletter, Lithuania is performing above the EU average in four out of seven indicators.

**R&D&I related to Digitizing European Industries:**
Organized by its Research Council\(^30\), Lithuania conducts scientific research in several National Research Programmes (NRP). The research funding is focusing on strategically important problems under the condition of tenders in a public competition. Currently, the program “Towards future technologies (2016–2021)” is designed to create the preconditions for the development of future technologies and to enhance the potential of Lithuanian studies and research institutions and prepare them for participation in the research and technologies programs implemented by the European Space Agency and to create a favorable international context and the conditions for research to build up a basis for developing future technologies, promoting innovations and enhancing Lithuania’s competitiveness and security.

Recently, a EU project on Digital Innovation Networks (“DIGINNO”) has been started, aiming at advancing the Baltic Sea Regions’ performance in non-technological innovation based on increased capacity of innovation actors. There are four partners from Lithuania in the project among a total of 16: Engineering Industries Association of Lithuania LINPRA, Lithuanian ICT association INFOBALT, Office of the Government of the Republic of Lithuania, and The Ministry of Transport and Communications of the Republic of Lithuania. The project’s objective is to advance the digital economy and to speed up the process of moving towards the BSR single digital market by increasing the capacity of policymakers, industry associations, research institutions and industrial SMEs to enable faster and more efficient uptake of digital solutions both in public and private sector.

**Other related research and innovation activities**
Lithuania runs a program in “Green Industry Innovation” to promote the cooperation of Lithuanian and Norwegian businesses. Norway is regarded as a European leader in waste sorting and recycling, since nearly all electricity of the country is generated by hydropower plants, there are over 3,000 public electromobile charging stations, and projects for development of electric-powered ships and ferries are being successfully implemented. During matchmaking events Lithuanian companies can find opportunities to share experience, forge valuable business contacts, and initiate mutually beneficial projects with Norwegian businesses that are far ahead in terms of green innovations.

Lithuania has ongoing research activities in the area of smart cities, with innovation activities in the cities of Vilnius, Kaunas and Klaipeda. There is a focus on sustainable urban mobility (incl. public transport management, electric vehicle charging), energy efficiency, and waste management infrastructure improvement projects. The funding scheme combines EU structural funds and municipal funding is available for all 3 cities. The programs are driven by national 2014-2020 Operational programme thematic priorities.

The Lithuanian Government approved a program on the implementation of the RDI priority (smart specialization) areas and their priorities (Smart Specialisation Programme) in April 2014 as well as action plans for the implementation of the priorities in the first half of 2015. In August 2015, a


\(^30\) [http://www.lmt.lt/en/about.html](http://www.lmt.lt/en/about.html)
general action plan for this program concerning the measures coordinated by the Ministry of Education and Science was also approved. These documents cover the implementation of six priority areas and their twenty specialisations – specific priorities. The priority areas for “Transport, logistics and information and communication technologies (ICT)” is straightly dedicated to promotion of Information and communication technologies.

The Research Council of Lithuania currently runs various programs with only a light relation to the DEI context, namely

- Sustainability of agro-, forest and water ecosystems (2015–2021). understand and forecast the general effects of climate change and the intensive use of ecosystem resources.
- Healthy ageing (2015–2021). obtain scientific knowledge required to extend the duration of a healthy and quality life in Lithuania
IV. Digitising European Industry (DEI) Pillar 2 - Standardization actions, regulation and testbeds

Standardization initiatives

The National standardization institution of Lithuania is Lithuanian Standards Board (LST). Being a member of the European Standardization Organizations (ESO) CEN, CENELEC and ETSI, LST supports and follows the implementation of strategic goals of ESO on Digital transformation heading towards achieving the digital economy and digitalization of standardization. The Lithuanian Standards Board intends to contribute to the activities of the National Industry Digitisation Platform “Pramonė 4.0” concerning upcoming standardization issues.

Regulations

Innovation Policy

The Lithuanian Innovation Development Programme 2014–2020 [2] pursues a broad concept of innovation, both research-driven innovation and innovation in creative solutions, business models, industrial design, branding and services that add value for users in order to involve all actors in the innovation cycle. The strategy covers the following objectives

1. Develop an innovative society by developing new knowledge and its application
   a) develop high-level knowledge, and research and development activities
   b) develop creativeness, entrepreneurship, innovativeness and practical skills and qualification corresponding to market needs within the system of higher education and science
   c) development of innovative business, creating favourable conditions and providing knowledge about the start of the innovative business
2. Enhance the innovation potential of business
   a) promote investments in activities delivering high added-value
   b) promote the introduction of new products to the market
   c) promote the cooperation between different sectors by creating innovations and developing innovations of high impact
3. Promote the cooperation creation of value networking, development and internationalization
   a) promote cooperation between business and science and transfer of knowledge and technology (Cooperation between enterprises implementing technological innovation with national research bodies and universities)
   b) promote the development of clusters and integration in the global value chains
4. Increase efficiency of innovation policy-making and implementation and promote innovation in the public sector
   a) create regulatory environment promoting innovations and to improve the institutional framework for the formation and implementation of the innovation policy
   b) create measures stimulating the demand for innovations that help to address social, economic and environmental challenges (innovative public procurement)

The implementation of the strategy will be managed according to an action plan that indicates two implementation periods (2014–2017; 2018–2020) and the source of funding for each measure. Next
to large companies, also micro, small and medium-sized enterprises, innovative business start-ups, business and public associations should be involved in the measures.

Next to the Innovation Development Programme, Lithuania has published measures for the implementation of the OECD recommendation on the Lithuanian innovation policy [3]. This includes the development of a Smart Specialization Strategy and a one-stop-shop business support system (Lithuanian Innovation Centre31)

**Protection of Industrial Property Rights**

Financial support for the protection of industrial property rights that covers the patents of inventions and design at the European and international level is provided via a specific instrument. The national support is oriented to the acquirement of European patents (EPO) as well as patents issued under the Patent Cooperation Treaty (WIPO) and the registration of a Community design or a design registered under the Geneva Act of Hague Agreement (OHIM, WIPO).

Since 2011, MITA has also been providing financial support for the protection of industrial property rights at the international level. For example, MITA covers 80% of costs of patent attorneys’ services and official fees to eligible applicants (companies, research organizations).

**Pilot Factories and Testbeds**

Furthermore, the Research Council of Lithuania in 2015 has published a roadmap for the improvement of Lithuanian research infrastructures, which in the technical sciences among others promotes the following areas:

- A Grid Infrastructure for High-Performance Computing (LitGrid-HPC) at Vilnius University32
- High-intensity and Broad Spectral Range Ultrashort Pulse Laser Research Infrastructure of National and International Access at Vilnius University
- Centre of Semiconductor Technology (PTC) at Vilnius University33
- Research Infrastructure of Mechatronics (Mechatronika) at Kaunas University34
- Micro-, Nanotechnology and Analysis Open Access Centre (MNAAPC) at Kaunas University35

32 [http://www.supercomputing.vu.lt/](http://www.supercomputing.vu.lt/)
33 [http://www.tmi.vu.lt/atvira-prieiga](http://www.tmi.vu.lt/atvira-prieiga)
34 [http://ktu.edu/lt/mechatronikos-institutas](http://ktu.edu/lt/mechatronikos-institutas)
35 [http://apcis.ktu.lt](http://apcis.ktu.lt)
V. Digitising European Industry (DEI) Pillar 3 - Digital Innovation Hubs actions

Four Lithuanian DIHs are registered so far in the dynamic map of the DIHs identified.36

- The Advanced Manufacturing digital Innovation Hub (Vilnius, operational)
- A DIH of the Lithuanian Laser Cluster (Vilnius, operational)
- The Laser Digital Innovation Hub (LASERDIH; Vilnius, in preparation)
- A Digital Innovation Hub37 from the Lithuanian Robotics Association38 and partner enterprises39 (Vilnius, candidate)

According to LINPRA director Gintaras Vilda, there are also DIHs active in Lithuania on industrial IoT, 5G and SMART AE; run by the Lithuanian ICT Association INFOBALT40 and the company Aedilis, JSC41.

Virtual Engineering Industry Competition Centre (VIPKC)
VIPK centre was established on the initiative of LINPRA, in order to strengthen the accessibility and efficient use of innovation support in areas critical for the assurance of competitiveness of companies in the engineering industry. Functioning on a network base, the VIPKC:

- Brings together the competencies of R&D&I service providers operating in Lithuania and other EU countries, and systematizes them in a way that is understandable to producers and researchers.
- Acts as an intermediary between engineering industry companies/service recipients and R&D&I service providers.
- Is involved in the location of domestic and foreign partners required by companies that operate within the engineering industry.
- Offers specific services provided by its network members (product design, technological training, consultation on international trade agreements, financial support opportunities, etc.)

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Advanced Manufacturing Digital Innovation Hub initiative
The advanced manufacturing digital innovation hub initiative (“Pažančios gamybos technologijų centras”) is directly connected to the strategy of National Industru Digitalisation Platform “Pramonė 4.0” and is coordinated by LINPRA (Engineering Industries Association of Lithuania).

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36 https://www.google.com/maps/d/viewer?mid=1NcRnG0H38PlOyuj-opZ_BjjLcrQ&ll=54.16800660701964%2C23.878975249804625&z=8
37 http://lrobotics.eu/
38 http://lrobotics.eu/
40 https://www.infobalt.lt/en/activities/services/10
41 http://cloudindustries.eu/
As from the website\(^{42}\), it is a continuation of the former “Manufuture Lithuania” initiative (see above), which was established in 2007. Its mission is to integrate Lithuanian ecosystem participants, promote the usage of digital technologies and thus increase the competitiveness of Lithuanian enterprises. The DIH will offer the following scope of Services to enterprises:

- Consulting services (innovation research, recommendations concerning the digital level, strategy building, investment plans, training, matchmaking with other companies and research organizations)
- Technology services (design, installation, Demonstration, testing, prototype production)
- Data services (statistical analysis, quality control, technical documentation and other).
- Collection and processing of data for statistical analysis of characteristics;
- Finance attraction service / EU project preparation and initiation.

The DIH acts as a One Stop Shop that aims at helping companies to digitize their business. It should enable each company to access the digital services in local distance. The participating industry provides exclusive, practical knowledge and skills necessary for digitization.

Sunrise Valley Science and Technology Park as well as Klaipėda Science and Technology Park and the Science and Technology Park of Institute of Physics are among the incubators and accelerators.

Research organizations involved are Kaunas Technical University (KTU), Klaipėda University, Vilnius Gediminas Technical University, Vilnius University, Tallinn University as well as the State research institute Center for Physical Sciences and Technology (FTMC), VTT and Fraunhofer.

There are several larger enterprises engaged (AB „Vakarų laivų gamykla“, KITRON, JSC, BOD Group, UAB, Global Orion, PET, Retal Lithuania) as well as about 20 SMEs.

As private investor, Lit Capital Asset Management UAB (LitCapital)\(^{43}\) is involved. It is an independent professional private equity fund management company (based in Lithuania, founded 2010) that currently manages a EUR 25 million size growth capital fund. The fund was established under the JEREMIE initiative in cooperation with European Investment Fund (EIF) and is aimed at investing into expansion of private Lithuanian companies.

The DIH can demonstrate several “Success stories”.

- In a project finished 2015, Baltec CNC Technologies\(^{44}\), De Futuro and Audimas have developed a “Smart Sensitive Sensor System for Human Health Monitoring (iMON)”.
- In December 2016, UAB Baltec CNC Technologies and their partners started 4CHANGE, the "Industry 4.0 CHAlleNGE: Empowering Metalworkers For Smart Factories Of The Future project under the Erasmus program
- InTechCentras\(^{45}\), being the official representative of the German Innovation Center Industry 4.0 (Germany Innovation Center for Industry 4.0) in Lithuania, provides a three-level training course with a final exam assessment that results in a “Industry 4.0 Driver License”.

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\(^{42}\) [www.manufuture.lt](http://www.manufuture.lt)

\(^{43}\) [http://www.litcapital.lt/EN/](http://www.litcapital.lt/EN/)

\(^{44}\) [http://www.baltec-cnc.com/de/](http://www.baltec-cnc.com/de/)

\(^{45}\) [http://intechcentras.lt/](http://intechcentras.lt/)
Photonics Cluster LITEK
Established in 2011, LITEK cluster has already practiced cooperation between science and SMEs for more than 20 years. Today LITEK unifies 16 companies and organizations working in photonics and engineering field. Among the members is the State research institute Center for Physical Sciences and Technology (FTMC), which is the largest scientific research institution carrying out basic research and technological development in laser technologies, optoelectronics, nuclear physics, organic chemistry, bio and nanotechnologies, electrochemical material science, functional materials, electronics, etc. in Lithuania.

LITEK has strong connections to more than 50 companies and 10 RTOs working in fields of optoelectronic components, including optical materials and lasers and more than 80 companies working in engineering sector. LITEK has a research and training centre with laboratories, clean-rooms & offices and can provide research services to Lithuanian and foreign companies design, experimental production, testing of high power and energy laser systems, prototyping, modelling services and other. The LITEK research and training centre has UV-VIS-IR spectrometer, spherical/aspherical lens polishing equipment, fiber laser technology processing equipment, analytical equipment, 3D printing workstation, optical coating station, various program software, spectrum analyzers, lasers, CNC precise machining bar and other. The goal of the cluster is to create a dynamic center of action, which would have a fully integrated chain of researchers, suppliers, manufacturers and retailers.

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National Innovations and Entrepreneurship Centre
In order to enable the cooperation between business and science in 2012 KTU and Aalto University Centre for Entrepreneurship (ACE, Finland) signed a memorandum to establish “KTU Innovations and Entrepreneurship Centre” (KTU IVC). In 2014 KTU, the Lithuanian University of Health Sciences (LSMU), and the Lithuanian Energy Institute (LEI) signed a joint agreement to rename KTU IVC into “National Innovations and Entrepreneurship Centre (NIVC)”. In 2015, Vytautas Magnus University (VDU) joined the partnership.

NIVC is open to all scientists, researchers, students, and entrepreneurs. NIVC unites and integrates activities of the science and business valleys "Santaka" and "Nemunas". Their aim is to create proper conditions for high-quality research services to businesses by employing the “Single Window” principle, thus making the interaction between research and business more effective. A similarly relevant area of activity is the coordination of technology development and its commercialization by helping to start-up and develop business companies, and to attract the necessary investment.

47 https://www.ftmc.lt/photonic-and-laser-technology
48 http://nivc.ktu.edu/en.htm
VI. Digitising European Industry (DEI) Pillar 4 - Skills development

As part of the manufuture DIH, Intechcentras provides trainings in Industry 4.0 related topics (see above). „InTechCentras“ is a Smart Manufacturing competence center, that offers services such as

- Technological-engineering trainings, project preparation and management
- engineering and management consultations
- Organization of forums for experience exchange
- Solutions for production efficiency and productivity increase application
- Organization of activities regarding the 4th Industrial Revolution „Industry 4.0“

Futurepreneurs program

“Futurepreneurs“, is a 3 month pre-accelerator program for impact driven entrepreneurs (mentorship, education and skill development while they develop their business solutions). Trainings outline 4 sessions for developing a startup from an idea to a viable solution. The project is implemented by Sunrise Valley Science and Technology Park and partially funded by „Erasmus+“ program. The competition is patronized by the Minister of Economy.

4Change Project

The ERASMUS funded 4Change project 49 - "Industry 4.0 CHAlleNGE: Empowering Metalworkers For Smart Factories Of The Future project, with partners from Lithuania, Germany, Latvia and Estonia, strives for tackling skills gaps of metalworkers, enhancing the responsiveness of VET systems to the manufacturing sector-specific labor market needs and demand for new digital and entrepreneurial skills 50. The Consortium intends to translate market needs into an innovative, learning outcome-oriented vocational curriculum, applying ECVET, which will also include periods of work-based learning, interactive training material and CNC simulation software. The project outputs will be developed in close cooperation between private sector and VET providers thus enabling to create the content of VET program that is responsive to changing skills needs in companies and the society. A Model Qualification Standard will be created. There will be changing periods of work-based learning, development of entrepreneurial mind-sets, enhancement of basic and advanced technology skills, and coaching for motivation and innovation.

Human resource development measure „Inostažuotė“

In order to increase the competences and to improve the competitiveness of human resources in companies, the Ministry of Economy has launched a measure „Inostažuotė“. It fosters employees to deal with new technologies and creates possibilities to acquire the necessary skills in R&D&I centers abroad. Businesses will be able to receive funding for staff training (travelling and accommodation expenses, compensation of wages, etc.) The budget of the measure reaches 1.4 M EUR.

Lithuania joined the European digital skills and jobs coalition 51 and introduces national projects to CEEMET (European employers’ organisation of the metal, engineering and technology industries).

49 http://metindustry.eu/projects/linpra/
VII Specific National Measures

Innovation promotion

*Measures for stimulating R&D activities in businesses and business-science cooperation*

Being the largest national R&D program, “Intelect” (“Intelektas. Bendri mokslo–verslo projektai”) aims at encouraging companies to invest in R&D activities for the development of new products, services or processes as well as to invest in R&D infrastructure and certify newly created products. The program is divided in two sub-programs. One is designed for young innovative companies (funding maximum 400,000 EUR), the other addresses mature innovative companies (funding maximum: 4.4 M EUR). The budget for the call 2017 is EUR 100,000,000 (30 M for start-ups; 70 M for mature innovators)\(^{52}\), financed through the European Union Funds Investment Facility; Operational Program No. J05-LVPA-K. Projects must meet priority areas defined in national Smart Specialization Strategy. The measure has been started in 2015. In 2017, a first call has been published in June; and a second phase has been announced for November 2017.

Furthermore, the Ministry of Economy of the Republic of Lithuania has prepared the measure “Inogeb LT” for stimulating R&D and innovation activity in companies. Objective of the measure is to promote technological progress and innovation, providing the innovation advisory and innovation support services to companies in the following areas: innovation partnership, technology transfer, protection of intellectual property rights, establishment of new innovative companies, development of clusterization, expert and methodological support for pre-commercial procurement and other consultation and support services. Through this measure, three projects are implemented by the Agency for Science, Innovation and Technology (MITA) with partners.

Another initiative to stimulate innovation activities in businesses is the Innovation Voucher program. The vouchers entitle companies to buy R&D services or use expertise maintained at research institutions. The appeal of Innovation Vouchers is related to its simplicity and low administrative burden both for beneficiaries and administrators. In Lithuania, there are two types of activities supported under the scheme\(^{53}\): 1) early stage R&D, and 2) preparation of technical feasibility studies. Companies may choose a service from a list which includes nearly 2500 R&D services of different types. Since the scheme is designed to encourage R&D activities in companies, all private legal entities are eligible applicants. Applicants may get funding for up to 70 percent of total project eligible costs. The allocated budget for this measure is 10.1 M EUR.

*Public Procurement Measurements*

In 2014, the Lithuanian Ministry of Economy has published guidelines on innovative public procurement (PPI). In 2015, the government has established the basis for pre-commercial procurement (PCP), which enables the public sector to invest into the establishment of new, innovative products. MITA is appointed as coordinating agency for PCP. In cooperation with the Lithuanian Innovation Centre, MITA provides consultancy services on PCP for public procurers and

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52 http://lvpa.lt/lt/paraiskos/intelektas.-bendri-moksloverslo-projektai-nr.-2-ir-nr.-3-434

businesses. Currently, MITA has set up a 341T€ project to reduce the rate of corruption in the public sector by developing competences of contracting authorities in performance of PCP and PPI\textsuperscript{54}.

In 2017, the Ministry of Economy has started the pre-commercial procurement measure “Ikiprekybiniai pirkimai LT” in the area of socio-economic challenges. It aims at effectively tackling the problems faced by the public sector and at encouraging public authorities to procure R&D services. EUR 29.3 million is allocated for this measure.

**Measures to foster international cooperations**
The measure “InoConnect” aims at encouraging companies to participate in international projects, which would help establishing business contacts and find foreign partners. The objective of the measure is to promote international partnerships and networking and look for possibilities to take part in international European Union R&D&I initiatives via the Enterprise Europe Network (EEN) and thus establish contacts with international partners, which would help increasing the R&D expenditure and R&D services export and attract foreign investments. Under the measure, participation in the events intended for the international R&D&I initiatives is supported. The measure with EUR 1.45 million of allocated budget has been started in 2017.

**Patenting**
To encourage companies to undertake R&D&I activities, while supporting patenting of inventions at international level, the Ministry of Economy has started a measure “Inopatentas” in 2017. The measure is targeted towards the business entities and it has an allocated budget of EUR 3 million.

**Tax incentives [7]**
Lithuania offers R&D investors a deduction of capital assets at an enhanced rate of 200% since 2008. Eligible R&D expenditures include: (i) wages of employees who are directly involved in scientific research and experimental development works including compulsory health insurance contributions and social insurance premiums; (ii) business trips directly related to R&D work (iii) costs of stock, materials and other short term assets; (iv) costs for acquisition of services directly related to scientific research and experimental development works (consulting, leasing, repair, warehousing, telecommunication, etc.); (v) costs for acquisition of scientific research and experimental development works from other natural persons or legal entities; if such work was carried out in the European Economic Area or in a country outside the European Economic Area, but with which the Republic of Lithuania has concluded a double taxation agreement and applies its provisions; (vi) import and input VAT from the above costs that was not deducted according to Law on Value Added Tax provisions.

Expenses incurred by companies carrying out R&D projects can be deducted from taxable income three times; Long-term assets used in the R&D activities can be depreciated within two years. Moreover, companies carrying out investments into new technologies can reduce their taxable profit by up to 50%. Investment expenses exceeding this sum can be postponed to later, consecutive tax periods (up to five years)\textsuperscript{55}.  


\textsuperscript{55} [https://ukmin.lrv.lt/en/sector-activities/innovation/innovation-support-measures](https://ukmin.lrv.lt/en/sector-activities/innovation/innovation-support-measures)
Tax based stimulation of R&D is also forced via the project “InoSpurt” which aims at the implementation of EU Structural Fund investments. Enterprises are encouraged to an active use of the corporate tax relief for R&D: expert consulting will be issued regarding the attribution of economic entities’ activities to R&D types and information on the possibilities of benefiting from corporate tax reliefs for the types of R&D activities” SMEs consulting

Structural Funds
According to the ICT Monitoring Tool [Website], Lithuania is planning the following ICT Investments under ESIF with relevance to smart manufacturing research and dissemination:\[56\]:

- EAFRD - ICT in rural funds: € 4 M.
- 015 - Intelligent Energy Distribution Systems at medium and low voltage levels (including smart grids and ICT systems): €21 M
- 044 - Intelligent transport systems (including the introduction of demand management, tolling systems, IT monitoring, control and information systems): € 58 M.
- 046 - ICT: High-Speed broadband network (access/local loop; >/= 30 Mbps): € 22 M
- 047 - ICT: Very high-speed broadband network (access >/= 100 Mbps): € 22 M.
- 048 - ICT: Other types of ICT infrastructure/large-scale computer resources/equipment (including e-infrastructure, data centres and sensors): € 21 M
- 078 - e-Government services and applications (including e-Procurement, ICT measures supporting the reform of public administration, cyber-security, trust and privacy measures, e-Justice and e-Democracy): € 101 M.
- 079 - Access to public sector information (including open data e-Culture, digital libraries, e-Content and e-Tourism): € 45 M.
- 080 - e-Inclusion, e-Accessibility, e-Learning, e-Education services, digital literacy: € 20 M.
- 081 - ICT solutions addressing the healthy active ageing challenge and e-Health services and applications (including e-Care and ambient assisted living): € 24 M.
- 082 - ICT Services and applications for SMEs, living labs, web entrepreneurs and ICT start-ups): € 15 M.

Which is summing up to a total of EUR 353 million.

Facilitate access to finance

Venture Capital
In 2011, with the emergence of financial intermediaries, Seed and Venture Capital Fund was launched in Lithuania under the European JEREMIE initiative\[57\] and a team of professionals (“CEE Capital”) was appointed to manage it. The purpose of this fund was to enable the establishment of seed fund in Lithuania that is supported by the State. According to the newsletter published on the website of Ministry of Economy of the Republic of Lithuania, the size of this fund was approximately EUR 20.7 million and its aim was to extend financial support to Lithuanian firms that have a high

\[56\] Data were generated by a search tool from the ESIF Operational Programmes (OP) on planned ICT related investments (retrieved on 20/01/2017 from the SFC2014/Infoview database)

growth potential. It was financed under the EU structural funds that were allocated to the JEREMIE holding fund under the management of EIF. Although this increased the amount of risk capital for SMEs in the country, only a few investments were made by innovative enterprises.

In 2012, the Baltic Innovation Fund was formed as a “fund of funds” initiative by EIF in collaboration with the government of Estonia and Latvia. It was created to boost the equity investment into Baltic SMEs with a great growth potential. The fund represented the investment of EUR 52 million by EIF, along with the EUR 26 million from each Baltic government. The aim of EIF was to focus on the Baltic States during the period of four years 2013-2017.

In 2016, the Lithuanian government approved legislation that would make the process of permanent residency easier for non EU/EEA citizens who want to do innovative businesses in the country.

Crowd Funding
The Lithuanian government has regulated activities of crowd funding in Lithuania in 2016. The crowd funding will contribute to the funding of banks and will make it easier and simpler to find potential investors for those who are looking for additional funds (including SMEs). The government hopes that crowd funding platforms will enable the borrowing by individuals for different purposes – funding of business, education, research and other needs (except for consumption).

Investment promotion
Lithuania has been working intensively to attract foreign investments to the country. A more business-friendly legal base is being prepared, free economic zones that are particularly favorable to foreign investments have been created, and the state is involved in implementing an investment promotion policy. Lithuania provides a very good environment for the setup of service and data centers. In recent years, Lithuania has managed to attract global giants such as Barclays and Western Union. Lithuania also promotes foreign investments in industry. Representatives of the Ministry of Economy often meet with the major global companies abroad and invite them to set up in Lithuania. Lithuania aims to strengthen its positions in international markets.

Financial instruments for clusters in 2014-2020
To create favourable environment for clusters and to develop international clusters, in 2014-2020 period, the Ministry of Economy has formed the measure “Inoklaster LT”. It is a support instrument for the operation of clusters (for strategies, insights, market research, training, marketing, attracting new members, collaborating with cluster members, engaging in international networks) and building or upgrading a cluster infrastructure. About EUR 23.7 million will be allocated for these activities. The cluster reaches maturity for about 5 years of operation and even a mature cluster needs methodological, advisory support for developing. The project ”Promotion and Development of Innovative Networking (InoLink)” under the measure “Inogeb LT” aims to increase the number of cluster members, increase the number of joint cluster initiatives, promote cluster turnover growth, create opportunities for attracting international partners, promote the connection to international networks. Budget of the project – EUR 1.43 million.
## VIII Investments for Digitising European Industry

<table>
<thead>
<tr>
<th>Activity (Lithuania)</th>
<th>Timeframe</th>
<th>Notes / Reliability</th>
<th>Amount (M€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESIF structural funds</td>
<td></td>
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<td>353</td>
</tr>
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</table>

**Measures are being funded from both the EU investment funds for 2014–2020 administered by the Ministry of Economy and from private funds**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Timeframe</th>
<th>Notes / Reliability</th>
<th>Amount (M€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digitisation of Industry LT</td>
<td>Periode 2017-2020</td>
<td>Under preparation: 38.862.588 € from the EU investment funds and at least 40.944.520 EUR from private funds</td>
<td>79,8</td>
</tr>
<tr>
<td>KETs ON THE INDUSTRY LT+</td>
<td>Periode 2014-2020</td>
<td>52.421.223 EUR from the EU investment funds and at least 113.353.701 EUR from the private funds <a href="http://www.esinvesticijos.lt/lt/patvirtintos_priemones/dpt-pramonei-lt">http://www.esinvesticijos.lt/lt/patvirtintos_priemones/dpt-pramonei-lt</a></td>
<td>165,8</td>
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<tr>
<td>ECO-INNOVATION LT+</td>
<td>Periode 2014-2020</td>
<td>86.886.005 Eur from the EU investment funds and at least 161.359.724 EUR from the private funds <a href="http://www.esinvesticijos.lt/lt/patvirtintos_priemones/eco-inovacijos-lt-1">http://www.esinvesticijos.lt/lt/patvirtintos_priemones/eco-inovacijos-lt-1</a></td>
<td>248,2</td>
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**Other investments**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Timeframe</th>
<th>Notes / Reliability</th>
<th>Amount (M€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>National conferences</td>
<td>Per year</td>
<td><a href="http://www.industry40.lt/">http://www.industry40.lt/</a></td>
<td>30k</td>
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<tr>
<td>DIGINNO project</td>
<td>Periode 2017-2020</td>
<td>The Project is financed by European Regional Development Fund. Funding received: Lithuanian ICT association INFOBALT 399 483,00 € Office of the Government of the Republic of Lithuania 52 399,00 € The Ministry of Transport and</td>
<td>622k</td>
</tr>
<tr>
<td>Educational activities</td>
<td>Per year</td>
<td><a href="http://www.infomobilis.lt/en.html">http://www.infomobilis.lt/en.html</a></td>
<td>10k</td>
</tr>
<tr>
<td>-----------------------</td>
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<tr>
<td>- professional/career orientation STEAM laboratory Infobus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational training “Industry 4.0”</td>
<td>Per year</td>
<td><a href="http://intechcentras.lt/paslaugos/industry-4-0-mokymai/">http://intechcentras.lt/paslaugos/industry-4-0-mokymai/</a></td>
<td>20k</td>
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<td>Communications of the Republic of Lithuania 109 499,00 €</td>
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<tr>
<td>Engineering Industries Association of Lithuania LINPRA 60 552,00 €</td>
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<td><a href="http://www.itl.ee/index.php?page=407">http://www.itl.ee/index.php?page=407</a></td>
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</tbody>
</table>
References


