**MINISTER OF EDUCATION AND SCIENCE OF THE REPUBLIC OF LITHUANIA**

**ORDER**
**ON THE AMENDMENT TO THE ORDER NO. V-895 OF THE MINISTER OF EDUCATION AND SCIENCE OF 13 AUGUST 2015 'REGARDING THE APPROVAL OF THE GENERAL ACTION PLAN FOR THE IMPLEMENTATION OF THE PROGRAMME OF THE PRIORITY AREAS OF RESEARCH AND (SOCIO-CULTURAL) DEVELOPMENT AND INNOVATION DEVELOPMENT (SMART SPECIALISATION) AND THEIR PRIORITIES IN THE AREA OF GOVERNANCE OF THE MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF LITHUANIA'**

26 May 2016 No. V-490
Vilnius

I hereby amend the Order No. V-895 of the Minister of Education and Science of 13 August 2015 'On the approval of the general action plan for the implementation of the programme of the priority areas of research and (socio-cultural) development and innovation development (smart specialisation) and their priorities in the area of governance of the Ministry of Education and Science of the Republic of Lithuania' and set it forth as follows:

**MINISTER OF EDUCATION AND SCIENCE OF THE REPUBLIC OF LITHUANIA**

**ORDER**
**ON THE APPROVAL OF THE GENERAL ACTION PLAN FOR THE IMPLEMENTATION OF THE POLICY MEASURES OF HIGHER EDUCATION AND RESEARCH AND (SOCIO-CULTURAL) DEVELOPMENT ADMINISTERED BY THE MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF LITHUANIA WHICH CONTRIBUTE TO THE DEVELOPMENT OF PRIORITY AREAS OF RESEARCH AND (SOCIO-CULTURAL) DEVELOPMENT AND INNOVATION DEVELOPMENT (SMART SPECIALISATION), THEIR PRIORITIES AND RELATED MEASURES**

Implementing the Programme on the implementation of the priority areas of research and (socio-cultural) development and innovation development (smart specialisation) and their priorities approved by the Resolution No. 411 of the Government of the Republic of Lithuania of 30 April 2014 'On the approval of the Programme on the implementation of the priority areas of research and (socio-cultural) development and innovation development (smart specialisation) and their priorities', considering Paragraph 6.2.4 of the Rules on the distribution of the responsibilities and functions among institutions, when implementing the Action programme for EU funds investments 2014–2020 approved by the Resolution No. 528 of the Government of the Republic of Lithuania of 4 June 2014 'On the distribution of the responsibilities and functions among institutions when implementing the action programme for the EU funds investments 2014–2020', considering Paragraphs 30 and 35 of the Project administration and financing rules approved by the Order No. 1K-316 of the Minister of Finance of the Republic of Lithuania of 8 October 2014 'On the approval of the project administration and financing rules',

I hereby approve the general action plan for the implementation of the policy measures of higher education and research and (socio-cultural) development administered by the Ministry of Education and Science of the Republic of Lithuania which contribute to the development of priority

areas of research and (socio-cultural) development and innovation development (smart specialisation), their priorities and related measures (enclosed).

Minister of Education and Science Audronė Pitrėnienė

APPROVED
Minister of Education and Science of the Republic of Lithuania
Order No. V-895 of 13 August 2015
(version of the Order No. V-490 of the Minister of Education and Science of the Republic of Lithuania of 26 May 2016)

# THE GENERAL ACTION PLAN FOR THE IMPLEMENTATION OF THE POLICY MEASURES OF HIGHER EDUCATION AND RESEARCH AND (SOCIO-CULTURAL) DEVELOPMENT ADMINISTERED BY THE MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF LITHUANIA WHICH CONTRIBUTE TO THE DEVELOPMENT OF PRIORITY AREAS OF RESEARCH AND (SOCIO-CULTURAL) DEVELOPMENT AND INNOVATION (SMART SPECIALISATION), THEIR PRIORITIES AND RELATED MEASURES

## CHAPTER I
## GENERAL PROVISIONS

1. The General action plan for the implementation of the policy measures of higher education and research and (socio-cultural) development administered by the Ministry of Education and Science of the Republic of Lithuania which contribute to the development of priority areas of research and (socio-cultural) development and innovation development (smart specialisation), their priorities and related measures (hereinafter – the General action plan) was drawn in accordance with the Programme on the implementation of the priority areas of research and (socio-cultural) development and innovation development (smart specialisation) and their priorities approved by the Resolution No. 411 of the Government of the Republic of Lithuania of 30 April 2014 ‘On the approval of the Programme on the implementation of the priority areas of research and (socio-cultural) development and innovation development (smart specialisation) and their priorities’ (hereinafter – Programme for the implementation of R&D&I priorities), the actions plans for priorities of priority areas of research and (socio-cultural) development and innovation development (smart specialisation) approved by the Orders of the Ministers of Education and Science of the Republic of Lithuania and of Economy of the Republic of Lithuania, the Concept of the creation and development of the integrated research, higher education and business centres (valleys) (hereinafter – Valley concept), the Action programme for EU funds investments 2014–2020 approved by Commission Implementing Decision of 8 September 2014, which approved certain elements of the Action programme for EU funds investments 2014–2020 to secure support from the European Regional Development Fund, Cohesion Fund, European Social Fund and special allocations for the Youth employment initiative for Lithuania in pursuit of the objective of investments into economic growth and job creation (the Commission notified by the document No. C(2014) 6397 about the above-mentioned decision) (hereinafter – Action programme). The General action plan also contributes to the implementation of the national progress strategy Lithuania's Progress Strategy 'Lithuania 2030' approved by the Resolution No. XI-2015 of the Seimas of the Republic of Lithuania of 15 May 2012 ‘On the approval of the national progress strategy Lithuania's Progress Strategy 'Lithuania 2030', the national progress programme 2014–2020 approved by the Resolution No. 1482 of the Government of the Republic of Lithuania of 28 November 2012 ‘On the approval of the national progress programme 2014–2020, the National development programme of higher education, research and (socio-cultural) development 2013–2020’ approved by the Resolution No. 1494 of the Government of the Republic of Lithuania of 5 December 2012 ‘On the approval of the national development programme of higher education, research and (socio-cultural) development 2013–2020’.

The following action plans for priorities of the areas of priority research and (socio-cultural) development and innovation development (smart specialisation) were approved:

1.1. The action plans for priorities of the Priority area of research and (socio-cultural) development and innovation (smart specialisation) ‘Agro-innovation and food technologies’ approved by the Order No. V-59/4-48 of the Ministers of Education and Science of the Republic of Lithuania and of Economy of the Republic of Lithuania of 29 January 2015 ‘On the approval of the action plans for priorities of the Priority area of research and (socio-cultural) development and innovation (smart specialisation) ‘Agro-innovation and food technologies’;

1.2. The action plans for priorities of the Priority area of research and (socio-cultural) development and innovation (smart specialisation) ‘New production processes, materials and technologies’ approved by the Order No. V-133/4-88 of the Ministers of Education and Science of the Republic of Lithuania and of Economy of the Republic of Lithuania of 20 February 2015 ‘On the approval of the action plans for priorities of the Priority area of research and (socio-cultural) development and innovation (smart specialisation) ‘New production processes, materials and technologies’;

1.3. The action plans for priorities of the Priority area of research and (socio-cultural) development and innovation (smart specialisation) ‘Inclusive and creative society’ approved by the Order No. V-290/4-175 of the Ministers of Education and Science of the Republic of Lithuania and of Economy of the Republic of Lithuania of 31 March 2015 ‘On the approval of the action plans for priorities of the Priority area of research and (socio-cultural) development and innovation (smart specialisation) ‘Inclusive and creative society’;

1.4. The action plans for priorities of the Priority area of research and (socio-cultural) development and innovation (smart specialisation) ‘Energy and sustainable environment’ approved by the Order No. V-291/4-176 of the Ministers of Education and Science of the Republic of Lithuania and of Economy of the Republic of Lithuania of 31 March 2015 ‘On the approval of the action plans for priorities of the Priority area of research and (socio-cultural) development and innovation (smart specialisation) ‘Energy and sustainable environment’;

1.5. The action plans for priorities of the Priority area of research and (socio-cultural) development and innovation (smart specialisation) ‘Transport, logistics and information and communication technologies’ approved by the Order No. V-363/4/239 of the Ministers of Education and Science of the Republic of Lithuania and of Economy of the Republic of Lithuania of 17 April 2015 ‘On the approval of the action plans for priorities of the Priority area of research and (socio-cultural) development and innovation (smart specialisation) ‘Transport, logistics and information and communication technologies’;

1.6. The action plans for priorities of the Priority area of research and (socio-cultural) development and innovation (smart specialisation) ‘Health technologies and biotechnologies’ approved by the Order No. V-422/4-293 of the Ministers of Education and Science of the Republic of Lithuania and of Economy of the Republic of Lithuania of 30 April 2015 ‘On the approval of the action plans for priorities of the Priority area of research and (socio-cultural) development and innovation (smart specialisation) ‘Health technologies and biotechnologies’;

2. The General action plan regulates the actions of the Ministry of Education and Science of the Republic of Lithuania (hereinafter – Ministry of Education and Science) through the policy measures of the higher education, research and (socio-cultural) development (hereinafter – R&D) administered by the latter Ministry by direct and/or indirect contribution to the development of the Priority areas of research and (socio-cultural) development and innovation (smart specialisation) (hereinafter – Priority R&D&I development areas) and implementation of their priorities. The General action plan combines the measures established in the Actions plans for the priorities of the priority R&D&I development areas (hereinafter – R&D&I priorities) approved by the Ministers of Education and Science of the Republic of Lithuania and of Economy of the Republic of Lithuania, which are within the responsibility of the Ministry of Education and Science, and contributes to the implementation of the action plans for R&D&I priorities. The General action plan also combines other higher education and R&D policy measures which are within the competence of the Ministry of

Education and Science, through implementation of which indirect contribution is made to the development of Priority R&D&I development areas and implementation of their priorities.

3. The implementation period of the General action plan is 2015–2023.

4. If needed, the General action plan can be amended or supplemented by a separate order of the Minister of Education and Science of the Republic of Lithuania.

## CHAPTER II
## THE ANALYSIS OF THE EXISTING SITUATION AND TRENDS

5. According to data of 2014 of the Innovation Union Scoreboard drawn by the European Commission on the basis of the Flagship Initiative Innovation Union of the Europe 2020 Strategy approved by the Communication from the European Commission No. COM(2010) 546 of 6 October 2010 (hereinafter – Innovation Union Scoreboard), by the aggregate innovation index Lithuania is ranking 25th among the European Union (hereinafter – EU) Member States and belongs to the category of moderate innovators. The highest (sixth) ranking of Lithuania is by human resources, by financial support – 12$^{th}$ position. Despite the progress achieved in recent years, Lithuania is far below the EU average, while belonging to the category of moderate innovators is mainly ensured by the results achieved when implementing the higher education and R&D policy measures. In the global innovation index Lithuania also holds medium position (39th ranking among 143 states), which is ensured mainly by good performance in the segment of human resources and research. It is determined by high percentage of persons with secondary and higher education in the population. The number of researchers has also been growing in the last decade, and in 2012 conditional R&D workers accounted for 0.84% of the total labour force. In 2007–2013, the EU intensely supported increase of attractiveness of researchers' career and enhancement of R&D staff's capacities. The effect of the investments is already observed in the growing rates of researchers' mobility, quality and international character of R&D activities. On the other hand, Lithuania faces the following challenges:

5.1. the number of PhD in Lithuania remains to be nearly two times smaller than the EU average. Furthermore, the post-graduate programmes offered in Lithuania lack competitiveness: according to the MORE 2 study published in 2013, as high percentage as 20% of postgraduate students of Lithuanian nationality studied abroad, while the percentage of foreign postgraduate students studying in Lithuania is only 2%. Even if bigger financing is allocated to postgraduate studies, their quality is determined by two factors: lack of top-level R&D infrastructure and supervisors capable of carrying out top-level researches and training postgraduates. The scale of these challenges strongly differs by study fields. Attraction of postgraduate supervisors from abroad would help to deal with this problem;

5.2. Less than 20% of conditional R&D employees in Lithuania work in business sector, while the EU average is over 50%. In order to achieve increase in the number of researchers working in business sector, incentives for researchers' employment by business must be developed;

5.3. the percentage of students studying in the fields of physics, biomedicine and technology is below the EU average. Biomedicine studies have been attracting increasing number of school leavers with the best school-leaving examination grades in recent years. But, the average grades of enrollers to technology studies remain to be the lowest. In order to tackle with these problems, attractiveness of these fields of studies among school children needs to be increased (e.g. by investing into creation of natural science laboratories and refurbishment of teaching environment), study programmes of these fields need to be improved;

5.4. a vast number of indicators show the inadequacy existing between the competences acquired in higher education system and the competences in demand on the labour market. For example, poll results of youth in employment presented in the comparative analysis of Youth problems study published in 2012, which was conducted by the Department of Youth Affairs under the Ministry of Social Security and Labour, show that less than half young people state working according to their specialities acquired in the higher education system.

6. According to the Statistics Lithuania, during the decade Lithuania's expenses on R&D were growing 3.4% faster on average than the gross domestic product (hereinafter – GDP) (the average growth in the EU was 0.9%). Nevertheless, the GDP expenses on R&D were less than half than the EU average in 2012 (0.9% in Lithuania, 2.07 in EU). In majority EU Member States, more than half of expenses on R&D are covered by business, while in Lithuania the national budget remains being the main R&D funding source. Furthermore, 33% of total R&D expenses in Lithuania were of foreign origin (including 75% EU structural support and other support allocated through the national budget). It means that growing investment of business into R&D is one of the major prerequisites of financial sustainability of the system. In order to achieve this goal R&D demand in business needs to be increased, as well as the capacities of higher education institutions to respond to this demand.

7. According to the Innovation Union Scoreboard, Lithuania is among five EU Member States that achieved the greatest progress in 2006–2013 by the growing number of international publications and very frequently quoted publications. Improved performance is likely to be promoted by increased science funding through tender, other subsidies for scientists and other researchers in 2007–2013, which were granted in the framework of the Researchers' career programme approved by the Order No. ISAK-2335 of the Minister of Education and Science of the Republic of Lithuania of 3 December 2007 ‘On the approval of the researchers' career programme’, and other programmes. In order to ensure further growth of research value and international nature, it is important to continue enhancing researchers' competences to participate in international R&D activities, to help young scientists to prepare themselves for independent R&D activities, to attract 'brains', to grant targeted funding to top quality researches.

8. According to the poll conducted in 2013 within the framework of European Commission's initiative Eurobarometer, 81% of the Lithuanian population believe science and technology opening new opportunities opening to future generations. On the other hand, as high percentage of Lithuanian population as 48% stated being uninformed about the latest research and technology discoveries and being not interested in them. For example, in Sweden only one fifth respondents shared this opinion. According to the latter survey, positive correlation is observed between population's awareness of research and technology achievements and the Innovation Union Scoreboard results. It shows the need to promote research popularisation activities.

9. Promotion of sectoral and regional interaction of research, higher education and business, evolvement nuclei of knowledge economy – integrated centres of research, higher education and business (valleys) is one of the main areas of EU R&D, higher education and innovation policy, under which initiatives increasing investments into R&D and innovations at EU scale are implemented (clusters, technological platforms, joint technological initiatives, ‘Knowledge Regions’, ‘Learning Regions’ programmes, other support programmes and measures).

10. In 2007–2013, a substantial share of the funds of the measures administered by the Ministry of Education and Science was allocated to research and higher education institutions for creation and modernisation of R&D and higher education infrastructure. Established and modernised R&D and higher education centres with state-of-the-art laboratories, high-standard equipment, teaching laboratories for students form the basis for concentrating R&D and higher education potential around the strongest research and higher education institutions or establishments, distinctive R&D and/or higher education activities carried out by which are relevant for the development of country's social, economic, cultural environment and diversity. Investments allocated for creation of R&D and higher education infrastructure of the strongest higher education and research institutions for the basis for valleys meeting international practice to evolve, which create prerequisites for training highest level specialists, for creating new knowledge, products that are competitive at the international arena, creating big value added, promoting establishment of high technology business, introduction of high technology and innovations both in high technology industry and in traditional sectors of economy, culture and social environment. The following largest investments into R&D and higher education infrastructure can be distinguished:

10.1. the largest R&D centre in the Baltic States – the National Centre of Physical and Technological Sciences was established by Vilnius University (hereinafter – VU) together with

Vilnius Gediminas Technical University (hereinafter – VGTU) and State research institute Centre for Physical and Technological Sciences. Centre of Open Access for Scientific Communication and Information of VU library, investing innovation zone under creation in Vismaliukai district from the funds of the Ministry of Economy enhanced the infrastructure of R&D and higher education in Sauletekis district, Vilnius, which after further targeted investments could form the basis of Sauletekis knowledge economy nucleus (valley) under creation with the infrastructure and intellectual potential of R&D and higher education fields of laser and light technology, material science and nanotechnology, semi-conductor physics and electronics, mechanics and transport engineering, Capacities of the future knowledge economy nucleus were enhanced by the development of optoelectronic technology infrastructure carried out by VU and intended for R&D and higher education, creation of infrastructure of material science, nano- and light technology and higher education in these boost areas, creation and modernisation of infrastructure for training biotechnology and biopharmacy specialists and R&D activities, development of efficient scientific calculation infrastructure of Sauletekis valley. The largest biotechnology research centre in the Baltic States was established in the same territory – Joint Centre for Life Sciences uniting intellectual potential of biotechnology and biopharmacy working at VU and VGTU;

10.2. The other exclusive zone of the investments into R&D and higher education infrastructure are Santariškės and Visoriai districts in Vilnius with the Joint Innovative Medicine Centre uniting the intellectual potential of the Innovative Medicine Centre of the State research institute and Vilnius University hospital Santariškės Clinic established there in 2007–2013 from the EU Structural Funds. Nearby, the Joint Nature Research Centre, VU Open Access Centre of Information Technologies with Supercomputer, Visoriai information technology park, modernised National Cancer Institute, VU Institute of Mathematics and Informatics, huge complex of Vilnius University hospital Santariškės Clinic are located. This territory is in particular attractive for business companies in operation and under creation, which are engaged in the fields of medicine, pharmacy, information and communication technologies. Further targeted investments coordinated among the Ministry of Education and Science, Ministry of Economy, and Ministry of Health in this territory are likely to become Santara nucleus (valley) of R&D and higher education of medicine and information and communication technologies, establishment of which is included into the Programme for development of integrated research, higher education and business centre (valley) 'Santara', approved by the Resolution No. 1263 of the Government of the Republic of Lithuania of 24 November 2008 'On the approval of the programme for development of integrated research, higher education and business centre (valley) 'Santara';

10.3. The third concentration of the strongest R&D and higher education infrastructure and intellectual potential is located in Kaunas, where knowledge economy nucleus (valley) called Santaka is under creation on the basis of Kaunas University of Technology (hereinafter – KTU), Lithuanian University of Health Sciences (hereinafter – LSMU) and Lithuanian Energy Institute, which is planned to be established during the implementation of the Programme for development of integrated research, higher education and business centre (valley) 'Santaka' approved by the Resolution No. 1170 of the Government of the Republic of Lithuania of 12 November 2008 'On the approval of the programme for development of integrated research, higher education and business centre (valley) 'Santaka'. KTU National Open Access R&D Centre, LSMU Centre of Latest Pharmacy and Health Technologies, other LSMU infrastructure intended for development of health sciences, R&D infrastructure of the Lithuanian Energy Institute (National Open Access Research Centre for Future Energy Technology, Centre for Hydrogen Energy Technologies), improved infrastructure of KTU R&D and higher education in the fields of sustainable chemistry, mechatronics increased the scientific potential of KTU, LSMU and LEI. This potential by combining its capacities with the base of technology transfer and business incubator of Santaka valley, establishment of which was funded by the Ministry of Economy, following further targeted investments into R&D and higher education infrastructure could become knowledge economy nucleus of harmonised chemistry, mechatronics and related electronic technologies, future energy, information and telecommunication technologies, with the activities of commercialisation of knowledge and technology transfer and R&D outcomes

which are already organised at exceptionally effective level, creating possibilities for the development of knowledge intensive business which is still weak in Lithuania. It is expedient to continue strengthening the latter and future knowledge economy nuclei mentioned in Paragraphs 10.1 and 10.2 of the General action plan, by directing largest investments of the European Union Structural Funds in the period of 2014–2020 intended for development and modernisation of R&D and higher education infrastructure;

10.4. Some of the funds from the European Union Structural Funds in the period 2007–2013 were intended for research and higher education institutions not boasting high performance and potential of higher education or R&D, but distinguished by development of R&D areas and higher education fields that are of strategic importance for the country – agricultural, marine technologies, social sciences, humanities and creative and cultural industries:

10.4.1. by implementing the Programme for development of integrated research, higher education and business centre (valley) 'Nemunas' in Kaunas region and various locations in Lithuania, which was approved by the Resolution No. 1130 of the Government of the Republic of Lithuania of 1 October 2008 'On the approval of the programme for development of integrated research, higher education and business centre (valley) 'Nemunas', network knowledge economy nucleus (valley) called Nemunas is evolving. Here, activities are carried out by Joint Research Centre for Agriculture and Forestry established by Aleksandras Stulginskis University (hereinafter – ASU) together with the Lithuanian Research Centre for Agriculture and Forestry, Competence Centre for Food Science and Technology established by KTU, the R&D infrastructure of the Lithuanian Research Centre for Agriculture and Forestry was upgraded in various locations in Lithuania intended for research of food science technology, biotechnology, agriculture, established Centre for Transfer of Communication and Technology of Nemunas valley, and established LSMU Centre for Animals Wellness and Quality of Raw Materials of Animal Origin. The above-named centres, provided targeted investments into strengthening of R&D and higher education infrastructure and intellectual potential concentration are further made, could become a network knowledge economy nucleus (valley) in the future, uniting the activities of the above-mentioned establishments in the fields of agricultural technology, bioenergy, forestry food technology, safety and health;

10.4.2. Creation of the National Centre for Marine Science and Technology was launched in Klaipeda University (hereinafter – KU), of exclusive importance for strategic goals of Lithuania, as marine country, from the funds of the European Union Structural Funds 2007–2013, and its development was further continued from the European Union Structural Funds 2014–2020, which will unite the R&D intellectual potential of the marine sector of the country in the future. During the last period, KU was provided with modern R&D laboratory and teaching equipment, marine research ship was built and equipped which increased the possibilities of the University to carry out high level research activities in the Baltic Sea and to cooperate with foreign partners. It is expedient to sustain the investments during this period by creating National Centre for Marine Science and Technology and moving the equipment already acquired or to be acquired into the latter centre;

10.4.3. Infrastructure for the development of social sciences and humanities and higher education, despite being of low commercial value added, by its nature is of special importance for preservation and development of the state's identity. On this basis, creation and upgrading of the infrastructure of Vytautas Magnus University (hereinafter referred to as VDU) was financed from the European Union Structural Funds 2007–2013, and from the national budget, by creating a multifunctional centre, upgrading the data repositories. It is expedient to complete construction and installation works of the multifunctional centre from the funds of the European Union Structural Funds of the period 2014–2020, as well as to strengthen the infrastructure of VDU humanities and arts in order to create the environment favourable to international cooperation, partnerships, higher education and R&D, which is necessary in order to strengthen the areas of humanities;

10.4.4. The area of creative industries – Lithuanian Academy of Music and Theatre (hereinafter – LMTA) and Vilnius Academy of Arts (hereinafter – VDA), both engaged in the creative industries, have huge potential in the context of smart specialisation, which is underestimated and not used in full at present. However, these specialised higher education schools

received unequal treatment during the last period of the European Union Structural Funds, since the technological and information infrastructure based in Vilnius and intended for studies of creative and cultural industries, R&D and artistic practice was created and modernised, now offering splendid opportunities for development of design innovations and demonstration of good results of this activity commercialisation. While LMTA received insignificant financing, despite the huge need for modernisation of the higher education infrastructure due to its poor condition. The field of creative and cultural industries was strengthened by establishing VDU International School of Creative Industries. During the period 2014–2020 of the European Union Structural Funds, it is appropriate to continue improving the VDA higher education infrastructure by refurbishing the units located in Kaunas and thus establishing strong centres of creative and cultural industries in two largest cities of Lithuania, capable of realising the substantial potential of design innovations. While, regarding the LMTA infrastructure that is scattered over different locations in Vilnius, it would be appropriate to concentrate in one territory, thus creating a strong nucleus of creative and cultural industries, which in the future could gain importance at both Lithuanian and European level.

When strengthening the R&D and higher education system of the country, in particular in the context of smart specialisation, the regional aspect becomes important. R&D&I priorities embracing various segments of the country's economy encode the goal of practical realisation of knowledge and technology developed in the strongest R&D centres, not only by introducing new products to the market but also applying the above-mentioned knowledge and technology for society needs. New knowledge and technology capable of improving processes in business are relevant not only to knowledge intensive business segment, but also to conventional industry creating the major part of the country's GDP, public organisations providing various services to society. For practical application of new knowledge and technology developed during smart specialisation process, conventional and high technology industry, public organisations need to have specialists capable of applying such knowledge and technology for creating value added. In this context, the role of higher education in the regions gains importance. For this purpose, not only universities but also strong colleges are needed, which by training specialists directly intended for labour market, fully merge into the country's higher education and R&D system. The higher education infrastructure of state colleges is developed and modernised according to the Action plan for the improvement of higher education infrastructure of state colleges, approved by the Order No. V-177 of the Minister of Education and Science of the Republic of Lithuania of 9 March 2016 ‘On the approval of the Action plan for the improvement of higher education infrastructure of state colleges’. The goal of this action plan is to create the environment favourable to a capable and motivated person to become a highly-qualified professional, coordinating self-realisation with satisfaction of the country's and society's expectations. For this reason, development of the infrastructure of higher non-university schools is an important part of the smart specialisation process.

11. A part of the planned R&D infrastructure of research and higher education institutions has already been developed, and new research centres are launching their activities. One of the key principles of the activities of these centres is open access, i.e. possibility that is granted under certain conditions to other entities of public and private sector from Lithuania and foreign countries to use the developed infrastructure and services provided on its basis in pursuit of their goals. The first research and higher education establishments started providing open access R&D services back in 2011, while their resources and number of services have been consistently growing depending on the progress of R&D infrastructure project implementation, followed by the growing need for the equipment intended for experimental development. However, it is increasingly observed that the needs of business sector continue growing and demanding for extension of the services provided, which means for the development of a new infrastructure designed not only for fundamental or industrial research but also for experimental development. The need for the equipment for experimental development is in particular urgent recently for research and higher education institutions (in this case, mainly for higher university schools due to their status of public institution) focusing on commercialisation activities. Higher education schools are intensely encouraged to earn money for their functioning, and one of the ways is to participate in economic activities by

establishing new knowledge intensive companies based on the groups of researchers or students, which could realise new knowledge developed in research and higher education institutions and prototypes of technology or products developed on the basis of that knowledge. Once the above-mentioned groups of researchers or students reach R&D outcome suitable for commercial application, the experimental development equipment starts playing a very important role, which research and higher education institutions are short of at the moment. In order to fill in this gap, during the period of 2014–2020 attention is planned to be focused on the development of the infrastructure of competence centres at research and higher education institutions and assurance of their effective activities.

12. In order the funds invested into R&D infrastructure would generate tangible effect, the following challenges need to be dealt with:

12.1. to complete the R&D infrastructure under development, the progress of which has been delayed for certain reasons, beyond the control of the Ministry of Education and Science;

12.2. to put the developed R&D infrastructure into effective operation in order to use it in dealing with national and regional challenges and problems, to carry out R&D activities in the fields relevant for economic sectors. When dealing with this challenge, R&D equipment needs to be upgraded on a regular basis to meet high quality and novelty standards and to be suitable for carrying out relevant R&D activities. Continuous support of research databases and other information technology systems and assurance of access to international databases are also important;

12.3. to promote international co-operation and R&D infrastructure integration into international networks. When dealing with this challenge, it is important to support and promote Lithuania's membership at international R&D infrastructures, to develop R&D infrastructure in Lithuania enabling Lithuanian research and higher education institutions to join international networks, to develop high international level centres of excellence (in the context of the General action plan centre of excellence means research centre (group of researchers, or research and higher education institution, or its structural unit) with critical mass of scientific potential and carrying out high level research activities, helping to deal with socially relevant problems and to create innovations affecting country's development and growth), parallel laboratories (in the context of the General action plan parallel laboratory means a form of partnership between Lithuanian researchers' group or structural unit of research and higher education institution and foreign researchers' group or a structural unit of research and higher education institution with exclusive competence in the research area that is new and relevant for Lithuania, which is used to prepare a group of Lithuanian researchers and to provide them with necessary competences for carrying out high level R&D activities in the new research area, to apply the generated competences and knowledge in high education process, R&D and innovation development processes, education of new generation of researchers and other activities), and other activities that are needed in order to ensure Lithuanian researchers' involvement when dealing with regional and global problems and challenges.

13. Considering the common provisions laid down by the Regulation (EU) No. 1303/2013 of the European Parliament and of the Council of 17 December 2013 on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and the general provisions laid down by the aforementioned Regulation on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006 (OJ 2013 L 347, p. 320) (hereinafter – Common Regulation), EU Member State when preparing documents on the use of EU support 2014–2020 must assess fulfilment of *ex ante* conditionalities for R&D and innovations as stipulated in that Member State's Partnership. In order to concentrate human, financial and other resources, to provide maximum validation of the effect of EU funds on R&D and innovations and to attract private funds into this field, *ex ante* conditionality obligated Lithuania for the period 2014–2020 to establish the limited number of R&D and innovation priorities reasoning them with the available potential of R&D and innovations and considering potential trends in R&D and innovation development.

14. Implementing the conditionality mentioned in Paragraph 13 of the General action plan, in 2012 Lithuania launched the process of preparation of smart specialisation strategy, during which following the assessment of the existing and competitive research potential of R&D and innovation area, the potential of innovative activities of knowledge-based business and the abilities of this potential to suggest solution of national, regional or global challenges and to respond to future trends that will have the major impact on country's development, Priority R&D&I development areas were established and approved by the Resolution No. 951 of the Government of the Republic of Lithuania of 14 October 2013 'On the approval of priority areas of research and (socio-cultural) development and innovation development (smart specialisation)'. Once the Priority R&D&I development areas were established, specific R&D&I priorities in them were searched for. A wide circle of experts representing different interests were included into the process of establishing R&DI priorities – expert discussions among representatives of research, business and state institutions w&ere held, comprehensive polls of research and business representatives were conducted, future challenges, trends and technology were reviewed, the potential of R&D and innovations in each Priority R&D&I development area was reviewed. Through synergy combination of the above-mentioned and other methods, when establishing R&D&I priorities the set goal was to aggregate actual, already matured ideas of research and business cooperation of big scale and great effect jointly suggested by research and higher education institutions and economic entities for the period of 2014–2020 of the EU Structural Support, as well as the existing potential of research and business and investment possibilities of private sector in implementation of the priorities. R&DI priorities and their implementation procedure were established the programme for implementation of R&DI priorities.

15. Considering the information provided in this chapter of the General action plan, the following strengths, weaknesses, opportunities and threats are established:

15.1. Strengths:

15.1.1. total expenses on R&D nearly tripled in 10 years;

15.1.2. At the Innovation Union Scoreboard, Lithuania's human resources are ranked above the EU average;

15.1.3. big investments were made into modernisation of the high education and R&D infrastructure in 2007–2013;

15.1.4.the volumes of international research publications and very frequently quoted research publications were rapidly growing.

15.2. Weaknesses:

15.2.1. business investments into R&D still nearly two times below the EU average;

15.2.2. Too small number of PhDs graduate in Lithuania, PhD studies in international context are not competitive;

15.2.3. only small part of R&D workers are employed in business sector;

15.2.4. the brightest school leavers rarely choose technology studies when applying to higher education schools;

15.2.5. imbalance between demand and supply of competences;

15.2.6. quite a lot of planned infrastructure objects of higher education and R&D (including the major ones) were not finished by the deadline;

15.2.7. By absolute ratings, Lithuania lags significantly behind the EU averages in the Innovation Union Scoreboard.

15.3. Threats:

15.3.1. Lithuania is incapable to devote equal attention on the development of all R&D areas with the resources available;

15.3.2. maintenance and regular upgrading of the modernised infrastructure of higher education and R&D will be too costly and will demand disproportionally big share of the budget of research and higher education institutions;

15.3.3. further development and maintenance of R&D infrastructure of global level are too costly even for the wealthiest countries;

15.3.4. too small part of the society show systematic interest, receive information and make daily use of knowledge about research and technology achievements – research popularisation system is functioning ineffectively.

15.4. Opportunities:

15.4.1. sustainable structural changes can be achieved by directing resources towards implementation of R&D&I priorities;

15.4.2. once the developed R&D infrastructure is put into effective operation, the general level of research and higher education institutions should rise, more income should be attracted from business sector;

15.4.3. the European and other international research infrastructures under development and involvement of Lithuanian research and higher education institutions in their activities should increase the effect of investments into R&D infrastructure;

15.4.4. structured partnerships with foreign research centres holding exclusive competences in a certain science branch should make Lithuanian researchers' R&D competences grow faster;

15.4.5. according to the polls, society think positive about the effect of research and technology.

16. In order to make effective use of strengths and opportunities and to minimise the effect of weaknesses and to avoid threats, the following solutions are suggested:

16.1. to promote business investments into R&D by increasing business R&D demand and competences, improving competences of research and higher education institutions to respond to business demand through promotion of establishment of knowledge intensive companies;

16.2. to improve the quality of postgraduate studies, to make targeted investment into the infrastructure of higher education and R&D (e.g. by establishing parallel laboratories), to attract foreign researchers of high international level to guide postgraduate students and carry out R&D activities;

16.3. to promote researchers' employment in business companies;

16.4. to increase popularity of physical, biomedical and technology studies by investing into refurbishment of natural science laboratories in schools, to promote research popularisation activities;

16.5. to improve study programmes by including employers, to train specialists according to R&D&I priorities;

16.6. to complete essential modernisation of the infrastructure of higher education and R&D, to put the developed infrastructure into effective operation;

16.7. to promote top quality research, to develop international competences of researchers, to help PhD researchers to prepare themselves for independent research activities, to support students' R&D activities;

16.8. to make thematic concentration of resources for the implementation of R&D&I priorities;

16.9. put the developed infrastructure of higher education and R&D into effective operation, making more intense use of it for R&D activities and attracting business investment into the creation of competence centres of joint use;

16.10. to participate in international project of research infrastructure in order to gain access to the top level research infrastructure and to make better use of the R&D infrastructure already developed in Lithuania;

16.11. to promote systematic and structured cooperation with foreign research centres of exclusive competences, by establishing centres of excellence and parallel laboratories;

16.12. to develop research popularisation system and infrastructure, to promote the initiatives for popularisation of research and technology.

## CHAPTER III
## GOAL AND OBJECTIVES

17. The goal of the General action plan is by implementing the measures of higher education and R&D policy administered by the Ministry of Education and Science to contribute to the development of Priority R&D&I development areas and implementation of R&D&I priorities.

18. In order to achieve the goal of the General action plan, the objectives were set with consideration of the SWOT analysis presented in Paragraph 15 of the General action plan:

18.1. to prepare, enhance and concentrate R&D intellectual potential capable of contributing to the implementation of R&D&I priorities and realisation of the outcomes created during this process;

18.2. to carry out R&D activities relevant to economic sector, tackling major national challenges and problems and responding to potential future trends;

18.3. to promote the processes of transfer of knowledge and technology, R&D outcomes commercialisation in research and higher education institutions by creating prerequisites for effective cooperation between public and private sectors in R&D field and for interaction between higher education, research and business;

18.4. to concentrate and modernise the infrastructure of higher education and R&D, to create prerequisites for its effective use in implementation of R&D&I priorities.

## CHAPTER IV
## REASONING OF THE NEED FOR THE ACTIVITIES OF THE MEASURES OF THE HIGHER EDUCATION AND RD POLICY IMPLEMENTING THE OBJECTIVES SET IN THE GENERAL ACTION PLAN

19. When establishing the measures relevant for the whole R&D system, all or individual R&D&I priorities, the conclusions of the joint expert group of Lithuanian Academy of Science and Lithuanian Council of Science "Expert Consulting and Roadmap Revision", reports drawn by Visionary Analytics headed consortium "Suggestions regarding the logic and funding needs of the smart specialisation priorities" and "Roadmap of the implementation of smart specialisation priorities", the report of Technopolis Group and Ernst&Young "Final report of Valleys monitoring project, including final report of R&D infrastructure projects monitoring (T.5.5.)", the report of the Lithuanian Academy of Science "Science popularisation system", report of Visionary Analytics and Technopolis Group "Assessment of the possibilities of Lithuania's participation in international research infrastructures", the report of the Lithuanian Council of Science "Roadmap for Lithuanian research infrastructures", high-level expert group's report "Assessment of ESFRI roadmap projects" commissioned by the Directorate General for Research and Innovation of the European Commission, Regulation (EC) No. 723/2009 of the European Council of 25 June 2009 concerning the Community legal framework for a European Research Infrastructures Consortium (ERIC) (OJ 2009 L 206, p. 1–8) (hereinafter – Regulation No. 723/2009) and Council Regulation (EU) No 1261/2013 of 2 December 2013 amending Regulation (EC) No 723/2009 concerning the Community legal framework for a European Research Infrastructures Consortium (ERIC) (OJ 2013 L 326, p. 1–2) (hereinafter referred to as Regulation No. 1261/2013). Measures of higher education and R&D policy and their activities needed for the implementation of the General action plan were chosen after considering the solutions laid down in Paragraph 16 of the General action plan, suggested on the basis of the strengths, weaknesses, opportunities and threats identified in Paragraph 15 of the General action plan.

20. Implementing the object "To prepare, enhance and concentrate R&D intellectual potential capable of contributing to the implementation of R&D&I priorities and realisation of the outcomes created during this process", it is important to combine various measures administered by the Ministry of Education and Science which create harmonious and effective specialists' education and qualification improvement ecosystem. In order to implement this objective, it is planned to support specialists' training in all stages of higher education, to provide them with a possibility to choose researcher's career and prerequisites for building necessary competences, to fill in gaps of competences with foreign specialists who may make impact on the quality of individual research and

higher education institutions or the whole R&D system of the country, to develop and enhance capacities of researchers and other experts to participate in R&D activities at national and international level, to develop and strengthen the research potential of knowledge intensive companies by attracting to them high level researchers and other specialists, to promote interdisciplinary, intersectoral and international mobility of specialists. The objective will be fulfilled through the following measures:

20.1. measure Financing first- and second-cycle studies and integrated studies and studies not offering degrees. When implementing this measure financed from the national budget of the Republic of Lithuania, state support is planned to be allocated to study destinations of university, college, private higher education schools, to implement targeted funding of study programmes. This measure applies to the whole system of Lithuanian higher education and is implemented responding with maximum possible flexibility and speed to labour market needs. In the course of implementation of Priority R&D&I development areas and implementation of individual R&D&I priorities, labour market needs will inevitably change (in particular, in new knowledge intensive sectors), demand for specialists capable of applying and participating in application of newly-developed R&D results will evolve. Therefore, funds assigned for the measure will be reallocated on a yearly basis, directing the support to study programmes that prepare specialists to be in demand in the nearest future. State higher education schools receive financing for studies according to the principle "money following a student" – budget funds are assigned to programmes chosen by the best enrollers. In order to prevent situation when study programmes that are unpopular among enrollers but important for the state do not receive enough students, targeted financing is assigned to them, obligating the graduate of the programme to work for a certain period of time according to the acquired speciality that is in demand on the market;

20.2. the measure Study cost compensation including specialists' training in smart specialisation study programme is planned to be implemented by supporting two types of activities, i.e. by compensating the study cost to excellent students of higher education schools and financing certain study programmes preparing specialists needed for smart specialisation process. Cost paid for studies will be compensated in accordance with Article 71 of the Law on Research and Higher Education. The second activity of the measure, i.e. specialists' training in smart specialisation study programmes, is directly intended for the implementation of R&D&I priorities since during its implementation, it is planned to fund study programmes preparing specialists who will participate in the process of R&D&I priorities implementation in the future – will participate in R&D activities (i.e. will join the circle of scientists and other researchers), by organising the dispersion of the results developed by R&D activities (i.e. will join the circle of science managers), by realising the results of R&D activities (i.e. will join the group of knowledge intensive and other companies), and otherwise participate in this process. Demand for funds assigned for these activities differs between individual R&D&I priorities and is determined by the number of jobs to be created during the implementation of the respective R&D&I priority;

20.3. the measure Funding and development of postgraduate places (attraction of foreign students) is needed in order to increase the number of postgraduates and to improve the study quality. This measure is implemented by combining funds of the national budget of the Republic of Lithuania assigned to postgraduate studies, by assigning funding to postgraduate studies in the fields of education relevant for the whole R&D system, and money from the EU Structural Funds assigned to postgraduate studies by funding postgraduate studies in certain fields of education that are relevant for the implementation of R&D&I priorities. During implementation of this measure, it is planned to support postgraduate study programme by financing postgraduate places (in particular, in the fields of physical and technology sciences and art: design, media, visual communication, marketing); to support research activities carried out by postgraduates; to support postgraduate process in research and higher education institutions and knowledge intensive companies. During implementation of this measure, funding of postgraduates' studies, postgraduates' travel, scholarships, R&D activities, in case of foreign postgraduates – their movement, visits is planned. Demand for funds needed for postgraduate process differs by individual R&D&I priorities. On one hand, the major part of funds

are planned to be assigned to those R&D&I priorities where the biggest shortage of specialists capable of carrying out R&D activities is observed, to prevent failure of the implementation of the entire R&D&I priority due to this shortage, while on the other hand, to those R&D&I priorities, where the potential of public and private entities participating in their implementation process is exceptionally high, taking into consideration also the fact that volumes of research and business cooperation are also bigger, while due to business investment into R&D activities and infrastructure higher demand for scientists and other researchers can be expected. Some of the funds from the EU Structural Funds assigned for this measure is planned to be kept in reserve by directing it to appropriate R&D&I priorities once interim assessment of their implementation is completed, which is planned for 2018, depending on the assessment results and the demand for research staff at that moment. This measure is planned to be implemented in combination with the measure described in Paragraph 20.4 of the General action plan, the goal of which is to attract foreign scientists and to support their R&D activities in Lithuania;

20.4. the measure Attraction of foreign scientists to carry out research is needed in order to enhance human R&D capacities needed for the implementation of R&D&I priorities. During the assessment of the potential of research and higher education institutions, shortage of scientists and other researchers of high international level in individual science areas was discovered. In long-term perspective this shortage can determine not only decreased intensity of R&D activities in research and higher education institutions or their individual units, but also reduced scope of preparation of specialists carrying out R&D activities that are relevant for the implementation of R&D&I priorities, i.e. the process of new postgraduate preparation can slow down, while postgraduates will not meet the market demands. If research and higher education institutions lack high level researchers capable of gathering like-minded specialists, groups of researchers are reluctantly formed which are capable through joint efforts to tackle urgent problems by carrying out necessary R&D activities, including problems relevant for the implementation of R&D&I priorities. It can also result in poor performance in the Framework Programme for Research and Innovation Horizon 2020 (hereinafter – Horizon 2020 Programme), approved by the Regulation (EU) No. 1291/2013 of the European Parliament and of the Council of 11 December 2013, establishing the framework programme for research and innovation Horizon 2020 (2014–2020) and repealing the Decision No. 1982/2006/EC (OJ 2013 L 347, p. 104–173) and in other international programmes. Implementing the activity Attraction of foreign scientists and R&D activities, attraction of foreign scientists capable of leading postgraduate studies and carrying out R&D activities into Lithuanian research and higher education institutions, creation of adequate conditions for their long-term employment and living in Lithuania will be funded. The demand for funds under his measure differs between individual R&D&I priorities and mainly depends on research and higher education institutions or their individual units, competences of scientific staff to be involved in the implementation of an appropriate R&D&I priority are expected to be improved effectively. Allocation of funds for the implementation of appropriate R&D&I priorities also depends on the maturity of an appropriate R&D&I priority, i.e. bigger demand for fundamental or industrial research in order to implement the priority, because in case of certain R&D&I priorities, supply of specialists to the labour market capable of realising developed R&D results rather than developing them is much more important.

20.5. the measure Development of students' entrepreneurship and creativity is needed in order to introduce studies and/or teaching/learning methods promoting students' creativity, entrepreneurship and leadership into research and higher education institutions carrying out study process. This goal contributes to the common goal, i.e. to improve the quality of studies by concentrating the available resources to enhance the crucial factors determining the quality of higher education – to improve the contents of studies to make them satisfy the labour market needs better, while students would acquire more practical skills, to provide career services to students, to improve professionalism of academic staff. These activities have been carried out since 2007–2013 funding period of the EU Structural Funds, when innovative entrepreneurship development models were integrated into the study programmes of various fields in higher education schools, lecturers improved their knowledge and skills of application of innovative methods in developing students'

entrepreneurship, and other related activities. In February 2014, strategic assessment of the priorities in the field of education and research during the programming period of 2014–2020 of the EU structural support was conducted by PPMI Group, public enterprise Public Policy and Management Institute and Ekonominės konsultacijos ir tyrimai, UAB. The assessment showed that to improve the quality of higher education and to ensure better compliance of higher education with the needs of labour market and society, in the period 2014–2020 investments should be directed to improvement of contents, methods, aids of studies, involvement of social partners into the processes of studies content and assessment One of the suggestions made by the experts to prepare students better for the labour market, to starting their own business, to increase graduates' employment and to create new jobs is to improve the contents of studies and implementation of study programmes by applying new methodical tools, teaching and lecturing contents and technologies, including introduction of studies and/or teaching methods promoting creativity, entrepreneurship and leadership into higher education institutions and acquisition of students' entrepreneurship and practical skills. Implementing this measure it is expected to contribute to dealing with problems determining high unemployment rate among youth with higher education, non-conformity of acquired education and competences to the needs of the labour market and society. Development of students' entrepreneurship and creativity acquires special importance in the process of smart specialisation, since introduction of technologies developed by the strongest Lithuanian groups of researchers to the market or other application for social needs represent the crucial component of smart specialisation idea. Development of strong, knowledge intensive business sector plays a very important role;

20.6. the measure Promotion of internship after completion postgraduate studies is needed in order to provide young researchers with a possibility to prepare themselves for independent research work, to improve their scientific, pedagogical and academic management qualification, to promote their ongoing self-improvement, acquisition and deepening of new knowledge and skills, and also to provide young researchers with a possibility to initiate their own research themes and projects, thus ensuring development of competences and qualification of human resources, to increase intersectoral, interinstitutional, interaxial and international mobility of researches, thus creating conditions for science development and innovation. Intersectoral, interinstitutional, interaxial and international mobility provides young researchers with a possibility to share experience, knowledge and methodology, thus enabling to deal with science problems, to initiate innovative and significant research themes. Attempts are also made to attract young researchers from abroad to Lithuanian research centres for post-PhD internship, to attract human resources to the research sector, thus increasing efficiency of the R&D sector. Alternative and attractive scientific career 'paths' offering an opportunity to avoid inflexible career system is one of the ways to retain and attract brains. Because of the limited number of permanent jobs at research institutions and very slow career pace (young researchers in majority of research institutions have no possibility to initiate their own research themes), a part of scientists leave the research sector and pursue civil service career or business career. Others leave for other countries which are more attractive in terms of scientific career. Post-PhD internships provide young scientists with a possibility to stay in the research sector, to initiate and develop new research themes. Attraction of human resources increases efficiency of the R&D sector. This measure is closely related with the measure described in Paragraph 20.3 of the General action plan and is relevant for the whole R&D system, therefore it is not to be attributed to any individual R&D&I priorities;

20.7. the measure Development of scientists and other researchers' capacities to participate in international research programmes is needed in order to promote researchers from research and higher education institutions to take more active participation in international initiatives, thus not only strengthening cooperation with foreign researchers and their groups but also securing support of international organisations for their R&D activities. During the implementation of this measure, researchers' general capacities and competences will be enhanced (practical training for researchers to enhance their capacities to prepare project applications and to carry out R&D projects). By implementing this measure, participation of scientists, other researchers, science managers of research and higher education institutions in targeted training, seminars, other events of international

programmes, meetings for preparation of project applications, Lithuanian representatives' participation in EU and other international working groups, committees, commissions related with R&D is planned to be financed, as well as promotion of more active involvement in the implementation of the Horizon 2020 Programme. This measure is relevant for the whole R&D system, therefore it is not to be attributed to any individual R&D&I priorities;

20.8. the measure Qualification improvement of scientists and researchers in knowledge intensive companies is needed in order to enhance the scientific potential of knowledge intensive companies, their capacities to carry out R&D and innovation activities, to promote knowledge intensity of business and business investment into R&D. During implementation of this measure, employment of scientists and other researchers in very small, small and medium knowledge intensive enterprises is planned by covering some of the employer's costs. Major attention is planned to be focused on knowledge intensive companies involved in the implementation of R&D&I priorities.

20.9. the measure Development of the competences of scientists, researchers and cooperation development through scientific idea exchanges, scientific trips from and to Lithuania is needed in order to contribute to the common goal of the whole R&D system to develop competences of scientists and other researchers at EU level, to strengthen international cooperation in the R&D field. The strategic assessment of the priorities in the field of education and research during the programming period of 2014–2020 of the EU structural support conducted by PPMI Group, public enterprise Public Policy and Management Institute and Ekonominės konsultacijos ir tyrimai, UAB showed that the R&D field would be boosted by enhancement of the capacities of research and higher education institutions to attract high level researchers from abroad to Lithuania, possibilities to send own researchers to foreign partners, so that Lithuanian researchers working in high level researchers' teams would acquire new competences and skills. When implementing this measure, interinstitutional, international and intersectoral mobility is planned to be promoted through tender, i.e. to support experienced researchers' internships in foreign scientific institutions and knowledge intensive companies, to finance Lithuanian researchers' participation at international conferences, idea trade fairs and other scientific events, to support the initiatives promoting foreign scientists and other researchers to come to Lithuanian research and higher education institutions to work and carry out R&D activities, to bring back emigrated Lithuanian researchers. Strong R&D potential and possibilities to maintain effective international relations with the strongest foreign science centres and researchers' groups form an important component of smart specialisation process, in order to use unique competences and experiences unknown to Lithuanian researchers in tackling national challenges;

20.10. the measure Making Lithuanian science more international is needed in order to contribute to the common goal of the whole R&D system to strengthen international cooperation in the R&D field, to extend the scope of participation in international R&D projects. During implementation of this measure, Liaison Office is planned to be opened in Brussels. This Office is planned to organise seminars, to provide organisational assistance, to search for contacts which would strengthen the international character of Lithuanian science. Through these initiatives, awareness of Lithuanian science would be increased, possibilities for scientists' networking and exchange would be created. Strong R&D potential and possibilities to maintain effective international relations with the strongest foreign science centres and researchers' groups form an important component of smart specialisation process, in order to use unique competences and experiences unknown to Lithuanian researchers in tackling national challenges;

20.11. the measure Practical placement by profession, partnership with social partners and their inclusion into the improvement and implementation of practical placement organisation is needed in order to strengthen higher education links with the labour market and profession. This goal contributes to the common goal, i.e. to improve the quality of studies by concentrating the available resources to enhance the crucial factors determining the quality of higher education – to improve the contents of studies to make them satisfy the labour market needs better, while students would acquire more practical skills, to provide career services to students, to improve professionalism of academic staff. These activities have been carried out since the funding period 2007–2013 of the EU Structural

Funds, when the activities intended to enhance practical skills of students in real or simulated companies according to new practical placement organisation models (systems) were funded. Lecturers' competences were also improved to train them to be students' practical placement supervisors. In June 2014, preliminary assessment in the final report of the Lithuanian action programme of EU Structural Funds 2014–2020 conducted by public enterprise Public Policy and Management Institute identified lack of possibilities for students to acquire practical skills as one of the major problems in higher education. The experts suggest strengthening result-oriented study programmes and increasing their flexibility. When implementing this measure, support is planned to be provided to students' practical placements, development of partnerships with social partners and their inclusion into organisation and implementation of practical placements, financial promotion of students' practical placements in companies and organisations. This measures is important for smart specialisation process, since it provides future specialists with a possibility to acquire knowledge needed for the labour market and to join the labour market quicker and more effectively after their graduation or during their studies;

20.12. the measure Development of students' capacities to carry out R&D activities is needed in order to train young researchers and to improve their qualifications. During the implementation of this measure, three types of activities are planned to be supported: first – students' scientific practical training in summer; second – students' research in their free time from studies; third– PhD's internships in foreign science centres. The first activity is intended for students of the first and second cycle of studies willing to carry out research under the supervision of highly-qualified researchers under an individual research programme. Scientific practical training is intended to promote students to familiarise themselves with research carried out at Lithuanian research and higher education institutions, to introduce scientific works and projects carried out at the institution offering a place for practical training to students, as well as the latest research instruments, equipment, databases and other resources of research infrastructure. The second activity will offer an opportunity to students of the first and second cycle of studies to carry out research at research and higher education institutions in their free time from studies. This type of support differs from scientific practical training during summer because it is carried out during studies (in spring or autumn semester) and is of deepening rather than cognitive character. The purpose of this activity is through research to provide students with daily research skills, to include students into the themes of research carried out at their higher education, into research carried out in the institution under national and international science programmes, to deepen professional knowledge and practical (laboratory) skills. The third activity will give an opportunity to students of the third cycle (postgraduates) to visit the best foreign science centres to familiarise themselves with the new research methods and to use research infrastructure that is not available in Lithuania. Internship offers a splendid opportunity to establish scientific contacts with the best researchers of the science field (branch) of postgraduate studies, to bring new ideas and acquire competences which would essentially improve the quality of postgraduate studies and broaden postgraduate's professional opportunities in the future, and would also increase postgraduate's chances to find highly-qualified job in Lithuania. This measure is important for smart specialisation process, since it contributes to the development of new generation of researchers who will join the processes of dealing with challenges relevant for Lithuania.

21. When fulfilling the objective To carry out R&D activities relevant to economic sector, tackling major national challenges and problems and responding to potential future trends, it is important to combine various measures administered by the Ministry of Education and Science, to provide Lithuanian researchers with a possibility to carry out high level research and other R&D activities individually, in Lithuanian and foreign research groups, in cooperation with researchers from other research and higher education institutions or with business companies, which would create not only new knowledge but also results, application of which can create high value added. The key mechanism of the implementation of R&D&I priorities is joint initiatives of higher education, research and (socio-cultural) development and innovation (hereinafter – joint initiatives). Implementation of these initiatives is expected to make the major contribution to the process of implementation of R&D&I priorities, since R&D activities (from new knowledge and capacities to

create new products to creation of prototypes suitable for commercial use) in the themes relevant to economic sectors are planned to be funded. The measures described in Paragraphs 21.3 and 21.4 of the General action plan implemented by the Ministry of Education and Science, in combination with the measure Intellect LT of the Ministry of Economy, will form the joint initiative support scheme. The purpose of the joint initiatives is through actions of the Ministry of Education and Science and the Ministry of Economy, combining their administered R&D and innovation policy measures, to initiate projects, on the basis of which original technology and high value added products (their prototypes) would be developed. The joint initiatives face a challenge to harmonise and combine funding systems of public sector, to which R&D is traditionally attributed to, and private sector, to which innovation activity is attributed, into one single system, which would have an incentive effect without EU state support rules ensuring fair competition. Implementation of these measures is aimed at strengthening science–business cooperation, promotion of knowledge commercialisation and technology transfer, business investment into R&D. The objective will be fulfilled through the following measures:

21.1. the measure Securing funding for the R&D activities relevant for settlement of top-level problems of strategic importance for society and the state and economic development. Implementing this measure funded from the national budget of the Republic of Lithuania, it is planned to implement national science programmes, serving as the basis for initiation of research needed in order to tackle the identified problems in certain fields of strategic importance for the state and society. The list of the eligible national science programmes was approved by the Order No. V-949 of the Minister of Education and Science of the Republic of Lithuania of 11 October 2013 ‘On the approval of the list of national science programmes’. This measure is relevant for the whole R&D system, therefore it is not to be attributed to any individual R&D&I priorities. However, new knowledge developed during its implementation can be useful when implementing individual R&D&I priorities;

21.2. the measure Research carried out by high level researchers' groups is needed in order to develop fundamental and applied knowledge needed for the implementation of R&D&I priorities. When implementing this measure, it is planned to deal with problems and challenges, to respond to future trends identified during R&D&I priorities identification process, by financing through tender fundamental research in the themes relevant to economic sectors. Demand for funding allocated for this activity differs between individual R&D&I priorities and mainly depends on scientific potential in certain science branches that are relevant for the implementation of R&D&I priorities. Despite quite precise identification of science branches with the greatest scientific potential during the R&D&I priorities identification process, in the context of the implementation of R&D&I priorities it would be inexpedient to focus attention exclusively on those branches, since potential can grow once the above-mentioned activities are launched. Therefore, it is planned to keep a part of the funds allocated for this activity as a reserve and to assign it to appropriate R&D&I priorities after interim assessment of their implementation, which is planned for 2018, depending on the trends of scientific potential growth and its activity quality to be identified during the assessment;

21.3. the measure Implementation of R&D projects contributing to the implementation of the priorities of smart specialisation strategy is one of the measures of the joint initiatives support scheme, aimed at promoting research and higher education institutions and public enterprises engaged in R&D to develop original, practicable knowledge by carrying out independent R&D works by themes planned in the action plans of R&D&I priorities, which would be interesting and useful for business development, therefore would promote knowledge and technology transfer processes, business and science cooperation, business investment into R&D. This measure is intended for deeper research in R&D&I priorities themes and should contribute to generation of R&D application ideas giving high competitive advantage, verification of the concepts of products and technology and their transfer to the economic entities on market basis. Despite this measure being intended mainly for research and higher education institutions, implementation of this measure will increase their incentives to establish spin-offs on the basis of received R&D results. When implementing this measure, it is planned through tender to support projects of research and higher education institutions (business companies are planned to be potential partners) embracing R&D activities aimed at

developing results complying with R&D activity themes and relevant to economic entities, which later could be commercialised and which are carried out in accordance with the Recommendations for Lithuanian research and higher education institutions regarding the rights arising from intellectual activity results approved by the Order No. ISAK-2462 of the Minister of Education and Science of 1 December 2009 'On the approval of the Recommendations for Lithuanian research and higher education institutions regarding the rights arising from intellectual activity results'. R&D activity themes relevant to economic sectors are defined in the action plans of the R&D&I priorities, indicated in Paragraph 1 of the General action plan;

21.4. the measure Implementation of joint science–business projects contributing to the implementation of the priorities of smart specialisation strategy is one of the measures of the joint initiatives support scheme, aimed at promoting effective cooperation between research and higher education institutions, public enterprises engaged in R&D and business companies by carrying out independent R&D works to develop original, practicable knowledge which would be interesting and useful for business development, therefore would promote knowledge and technology transfer processes, business and science cooperation, business investment into R&D. This measure, same as the measure described in Paragraph 21.3 of the General action plan, is intended for deeper research in R&D&I priorities themes and should contribute to generation of R&D application ideas giving high competitive advantage, verification of the concepts of products and technology and their transfer to the economic entities on market basis. But differently from the previous measure, this measure is intended for research and higher education institutions with business partner (partners) investing into joint project activities and based on preliminary distribution of R&D and related activities, costs and results (intellectual property rights). This feature of the measure also separates it from research commissioned by business companies. During the implementation of this measure, it is intended through tender to support projects of research and higher education institutions embracing R&D activities aimed at developing results complying with R&D activity themes and relevant for economic sectors, as well as their cooperation partners – knowledge intensive companies implementing business process and organisational innovations. R&D activity themes relevant to economic sectors are defined in the action plans of the R&D&I priorities, indicated in Paragraph 1 of the General action plan. This measure is one of the main instruments intended to form sustainable science and business partnerships, it is an important advantage of this measure if compared with possible alternatives (separately funding R&D activities carried out by research and higher education institutions only or R&D and innovation activities carried out by business companies only). The measure Implementation of joint science and business projects contributing to the implementation of R&D&I priorities is planned to be implemented together with the measure Intellect LT of the Ministry of Economy by creating a joint measure. Supporting the projects implemented under the measure Implementation of joint science and business projects contributing to the implementation of R&D&I priorities, needs of business sectors will be indirectly considered, therefore a probability for developed R&D results to be relevant for business companies and to be used in developing new products and technologies significantly increases. The implementation of the measure is planned in two stages, by publishing the first invitation to tender by 2018, and the second after the interim assessment of the R&D&I priorities implementation, which is planned for 2018. Funds allocated for the second invitation to tender are planned to be directed to appropriate R&D&I priorities depending on the interim assessment results and new partnerships which can form during that period in yet undiscovered niches or strengthened potential in appropriate science branches and business fields;

21.5. the measure Promotion of international character of R&D activities (implementation of market-oriented science and business projects through cross-border network). When implementing this measure, support will be granted to projects funded under European programme for research, technology development and cooperation Eureka, aimed at enhancing capacities of scientists and other researchers to join the European research space. During the implementation of this measure, it is planned through tender to support market-oriented international level R&D projects of applied nature which are implemented jointly by research and higher education institutions and business companies. These projects by their essence are similar to projects planned to be implemented under

the measure Implementation of joint science and business projects contributing to the implementation of R&D&I priorities, described in Paragraph 21.4 of the General action plan, but of lower value. Funds allocated under this measure are planned to target R&D activity themes that are relevant for the implementation of R&D&I priorities;

21.6. the measure ‘R&D activities of parallel laboratories’ is needed in order to establish and promote structured long-term partnerships between Lithuanian research groups or structural units of research and higher education institutions and foreign research groups or structural units of research and higher education institutions with exclusive competences in research areas that are new for Lithuania and relevant for the implementation of R&D&I priorities. When implementing this measure, it is planned through tender to support R&D activities jointly carried out by Lithuanian and foreign research and higher education institutions, internships of high level Lithuanian scientists and other researchers in foreign research and higher education institutions, visits of high level foreign scientists to Lithuanian research and higher education institutions. During identification of R&D&I priorities and policy measures of higher education and R&D relevant to their implementation it was discovered that this activity is relevant for two R&D&I priorities of the Priority R&D&I development area Health technology and biotechnology: Molecular technology for medicine and biopharmacy and Advanced medicine engineering for early diagnostics and treatment, but possibility to fund these activities in other fields, if needed, is not rejected;

21.7. the measure Improvement of scientists' qualifications through high level international and national research and (socio-cultural) development projects is needed in order to promote international level research and mobility of experienced and young scientists, and to attract high level scientists to Lithuanian research space, to increase its competitiveness in the world. When implementing this project, it is planned to finance international level scientists' initiated research of several years' duration, by covering all the expenses needed for the implementation. The measure is partly related with the measure Attraction of foreign scientists to carry out research described in Paragraph 20.4 of the General action plan, but it is not limited by thematic specifics (the measure described in Paragraph 20.4 is intended for the implementation of R&D&I priorities), but is rather intended for research in any field;

21.8. the measure Risk capital for research, (socio-cultural) development and innovation activities is needed in order to promote research and higher education institutions to develop original, practicable knowledge , science and business cooperation, business investment into R&D and innovation. It is expedient to apply financial measures for R&D and innovation activities, thus ensuring continuity of financing, attraction of private funds and minor competition distortion. Upon lending or investing funds assigned to financial measures, they come back, become national funds and can be reinvested in pursuit of the same goals. This way long-term financing mechanism is developed, which is independent from the need of funding from the EU structural and investment funds. Financial measures would enable more effective pursuit of results in R&D and innovation field, while attracted private funds would increase the scale and effect of invested funds.

22. When implementing the object To promote the processes of knowledge and technology transfer, commercialisation of R&D results in research and higher education institutions, by creating prerequisites for effective cooperation between public and private sectors in R&D fields and for interaction of higher education, science and business , it is important through combination of various measures administered by the Ministry of Education and Science to develop the ecosystem of knowledge and technology spread and commercialisation in research and higher education institutions, which would ensure comprehensive support to researchers and students trying to commercialise their developed R&D results. Following modernisation of R&D infrastructure and upgrading of equipment for R&D activities in many research and higher education institutions, the question of putting this equipment into effective operation is tackled. It is increasingly understood that with support of the European Structural Funds decreasing in the future or with slow increase of national budget funding for R&D, research and higher education institutions using huge investments into their infrastructure modernisation, which enabled them to buy lacking laboratory equipment or to upgrade the existing one and thus significantly improving or extending the quality and scope of R&D

activities, themselves must at least maintain their infrastructure and ensure effective operation of the equipment, and in exceptional cases, even to upgrade it. The best way to fulfil this objective is to enhance internal competences of R&D commercialisation of research and higher education institutions, to extend the scope of commercialisation of R&D results developed by research and higher education institutions and cooperation with business in order to earn money from newly-developed ideas, technology, their prototypes, by providing R&D services to business, and from similar activities. In several recent years, when observing development of these processes in research and higher education institutions, it was determined what type of state intervention would be relevant for R&D results commercialisation system to evolve. The need for development of certain measures was validated by the Tender for projects of commercialisation development of R&D results of research and higher education institutions implemented in 2014 (the description of the tender procedure was approved by the Order No. 2V-109 of the Director of Science, Innovation and Technology Agency of 9 September 2014 'On the approval of the tender financing procedure of projects of commercialisation development of R&D results of research and higher education institutions)', during which support was granted to the preparation of feasibility study of commercialisation of R&D results of research and higher education institutions and/or development of knowledge and technology transfer centres (in the context of the General action plan, knowledge and technology transfer centre means a structural unit of a research and higher education institution and/or other organisational unit (including separate legal entity) engaged in knowledge and technology transfer and other R&D results commercialisation activities (providing support to identification, testing, commercialisation, intellectual property protection of researchers and students' ideas with high commercial potential, promoting entrepreneurship), establishment and maintenance of contacts with private sector and other research and higher education institutions regarding R&D results commercialisation, organising effective provision of open access services on the basis of the infrastructure of a research and higher education institution and access to open access infrastructure). Research and higher education institutions self-assessed their knowledge and technology transfer, science and business cooperation systems, their development possibilities. Such systems or their embryonic forms already exist in individual research and higher education institutions, while the goal pursued by the Ministry of Education and Science is development of such internal science management competences in all research and higher education institutions, in which following support granted for the period of several years such processes would be further supported by the institutions themselves and would bring benefits to them (incomes from intellectual activity commercialisation, which could be reinvested into their main activities). To fulfil this objective, not only measures described in Paragraphs 22.1–22.4 of the General action plan, but also measures described in Paragraphs 21.3 and 21.4 of the General action plan are used, which also create prerequisites for science and business cooperation, however if considering their contents they are to be attributed to R&D activities. Activities of transfer of knowledge and technology, innovation already existing or planned to be developed in research and higher education institutions, entrepreneurship promotion, cooperation with business are planned to be supported through implementation of the following measures:

22.1. the measure R&D results commercialisation (support to commercialisation of ideas of scientists and other researchers and students working/studying in research and higher education institutions, support to young innovation companies under formation (start-ups). Work with new knowledge intensive spin-offs in a research and higher education institution is one of the fields of effective promotion of knowledge and technology transfer, innovation, entrepreneurship in a research and higher education institution. It is most relevant to research and higher education institutions with public enterprise status, i.e. universities. Work with new knowledge intensive spin-offs includes provision of various legal services (consulting on intellectual property protection, company establishment, etc.) to employees or students intending to start new knowledge intensive business according to their ideas, support to starting activities of such companies, assurance of the rights of university to intellectual property by receiving revenue from such company's activities, etc. To promote these activities the Ministry of Education and Science has been recently implementing a

measure funded from the national budget, under which support is granted to new knowledge intensive spin-offs based in research and higher education institutions to start their activities. It is planned also to use the measure Commercialisation and promotion of international character of R&D results supported from the EU Structural Funds to develop this activity. When implementing this measure, it is planned to assign small amount subsidies to cover initial costs of establishment and business start of knowledge intensive spin-offs founded in research and higher education institutions to the extent allowed by the EU state support rules ensuring fair competition. This measure will supplement the measures described in Paragraphs 21.3, 21.4, 22.2 and 22.4 of the General action plan intended to promote the activities of competence centres and innovation and technology transfer centres founded in research and higher education institutions, open access services provision to researchers of other research and higher education institutions, to business companies, while by including the measure of competence centre infrastructure development described in Paragraph 23.6 of the General action plan, it will form the common support system of the process of R&D results commercialisation organised by research and higher education institutions. Demand for funds granted for this activity differs between individual R&D&I priorities and mainly depends on the possibilities of formation of new knowledge intensive spin-offs in research and higher education institutions determined during R&D&I priorities identification process and start-up costs, which depend on the specifics of an economic sector, in which the spin-off will carry its activities. Some of the funds assigned for this activity are planned to be kept in reserve and to be directed to appropriate R&D&I priorities after interim assessment of their implementation, which is planned for 2018, during which development dynamics of individual economic sectors, activity duration of new knowledge intensive spin-offs established before 2018, their achieved results and possibilities to consolidate themselves in the Lithuanian and international markets should be determined.

22.2. the measure Enhancement of scientists and other researchers' capacities to commercialise R&D results, transfer of knowledge, innovation and technology, R&D marketing. Assurance of effective operation of R&D laboratory equipment (functioning of open access centres) embracing the work of science managers (intermediaries between researchers of research and higher education institutions directly working with R&D equipment and external interested parties (other institutions, business companies)) – to identify services of research and higher education institutions which the latter can provide by the R&D equipment available and potential, which would be relevant to business companies or other market participants and direct communication with external consumers of such services (i.e. 'trade' in services provided by research and higher education institutions). This activity is carried out by supporting the project Open Access of Research (MITAP) implemented by Science, Innovation and Technology Agency. Under this project, open access to services needed for research and R&D results in research and higher education institutions has been promoted since 2012, by enhancing competences of scientists, other researchers, members and/or employees of research and higher education institutions and other organisations to identify services needed for research and commercialise research results. Similar project is planned to be implemented in the future, by extending the above-mentioned activities to organisation of common R&D marketing using Open R&D Lietuva mark at the national level. These activities are planned to be supported by implementing the measure Enhancement of scientists and other researchers' capacities to commercialise R&D results, transfer of knowledge, innovation and technology, R&D marketing;

22.3. the measure Promotion of the activities of the centres for innovation and technology transfer at research and higher education institutions. The purpose of the measure is to guide researchers of research and higher education institutions to carry out R&D activities that are relevant for dealing with social, economic problems of the country (to participate in smart specialisation process). This activity requires specialists with experience in both scientific and management activities, who are capable of identifying problems encountered by business sectors (rather than by individual companies), which can be solved by institution's researchers, who know which knowledge and technology, that institution's researchers are capable of, are in demand on the market, capable of guiding researchers in the direction of such knowledge and technology development, other specialists of the institution towards other activities that can meet market needs. When implementing this

measure, it is planned to finance the activities of internal units established in research and higher education institutions carrying out transfer of innovation, knowledge, technology and similar functions, searching for new ideas, and providing consulting to groups of researchers and students. This measure is closely related with the measure described in Paragraph 22.1 of the General action plan, under which support will be provided to new knowledge intensive companies founded on the basis of ideas of researchers or students' groups. Internal units within research and higher education institutions performing innovation, knowledge, technology transfer and similar functions can contribute by their activities to the implementation of more than one R&D&I priority, therefore funds are planned to be granted through tender to research and higher education institutions with well-developed R&D results commercialisation systems, possibilities to develop R&D results relevant to economic sectors, helping to deal with national problems and challenges and with clear visions of such activity maintenance and development;

22.4. the measure ‘Promotion of competence centres activities is needed in order to create prerequisites for researchers and students’ groups with exclusive R&D competences to experiment ideas with commercial potential, by providing these groups with necessary aids (materials, reagents), providing comprehensive consulting services, and if needed, to maintain the staff technically servicing the experimental (testing) development equipment of research and higher education institutions acquired under the measure ‘Creation and development of R&D&I material base for implementation of joint science and business projects in research and higher education institutions (creation and development of competence centre R&D&I infrastructure)’ described in Paragraph 23.6 of the General action plan, to provide researchers with necessary materials, who carry out R&D activities of exclusive competence on the basis of such equipment which are relevant to a certain business sector or commissioned by individual business companies. When implementing this measure and supplementing it with the activities under the measure described in Paragraph 23.6 of the General action plan, the following outcomes are expected: more active involvement of researchers and students of research and higher education institutions into R&D results commercialisation activities, by establishing new knowledge intensive spin-offs, more intense cooperation with business (more R&D orders from business) since possibility to carry out experimental (testing) development activities is attractive to business entities willing to test their new ideas in practice, by developing prototypes of technology and products suitable for commercial use. Financing of competence centres will be based on the proof that a research and higher education institution has an organisational structure complying with the concept of centres with exceptional competences (not a legal entity but intellectual potential with exclusive R&D competences (team of researchers and students and experimental development infrastructure enabling experimental (testing) development activities in certain theme (complying with the themes relevant to business sectors as established in action plans of R&D&I priorities), tackling specific economic, social problems relevant to the state and society.

23. To fulfil the objective To concentrate and modernise the infrastructure of higher education and R&D, to create prerequisites for its effective use in implementation of R&D&I priorities, it is important through combination of various measures administered by the Ministry of Education and Science to develop and modernise high level infrastructure important for further development of R&D system of the country, to ensure constant maintenance of its high level, thus creating the best conditions for researchers to carry out high level R&D activities and create high value added results. The objective will be fulfilled through the following measures:

23.1. the measure Development of infrastructure for research and higher education is needed in order to improve data transfer and other infrastructure needed for provision of innovative electronic services in Lithuania to research and higher education institutions. Lithuanian Research and Education Network LITNET (hereinafter – LITNET) has been providing internet and other related information technology services (data transmission, parallel and distributed computing, etc.) to researchers, lecturers and students of Lithuanian research and higher education institutions for over 20 years by now. LITNET activities are carried out by 6 Lithuanian universities coordinated by the Ministry of Education and Science. LITNET is trying to provide the latest and most advanced

information technologies, as far as practicable, needed by the science of the country, which are not offered by commercial suppliers yet. LITNET is the essential factor in providing necessary resources and services to science and higher education, ensuring effective use of R&D equipment concentrated in research and higher education institutions. Once Lithuanian researchers take active participation in the implementation of R&D&I priorities, it is planned that requirements for LITNET internet speed will significantly increase, the need for installing new information technologies will arise. With the hardware and software resources available, LITNET will find it difficult to satisfy growing needs of researchers of the country, therefore the network needs to be upgraded. R&D infrastructure and intellectual potential concentrated in Lithuanian research and higher education institutions will play the key role in developing R&D results relevant for implementation of R&D&I priorities, therefore this measure is relevant to implementation of all R&D&I priorities. The need for investment into LITNET is planned and based also on the other important information provided in the Programme for operation assurance and development of the Lithuanian Research and Education Computer Network LITNET in 2012–2016 LITNET-3 approved by the Order No. V-242 of the Minister of Education and Science of the Republic of Lithuania of 13 February 2012 ‘On the approval of the Programme for operation assurance and development of the Lithuanian Research and Education Computer Network LITNET in 2012–2016 LITNET-3’. This measure is related with the measure To ensure the operation of the Lithuanian research and education computer network LITNET described in Paragraph 23.10 of the General action plan. The latter is intended to ensure effective operation of the LITNET and is funded from the national budget of the Republic of Lithuania.

23.2. the measure Development of science popularisation infrastructure is needed in order to develop virtual and/or physical infrastructure designed to popularise science and technology, to inform society about the latest scientific achievements, to carry out socially responsible R&D and innovation activities and coordinate these activities. Science popularisation system survey conducted by the Lithuanian Academy of Sciences back in 2007 identified lack of science popularisation structure in Lithuania as the main science popularisation problem. The same conclusion was restated in the Science Popularisation System study conducted by the Lithuanian Academy of Sciences in 2014. Implementing this measure, such structure is planned to be developed thus laying the foundation for development of Lithuanian science popularisation system. The main project planned to be implemented on the basis of this activity is foundation of science and technology popularisation centre performing science popularisation functions. Science Popularisation System study conducted in 2014 names such centres as one of the most important places of science and technology popularisation. When implementing this measure, despite it is being intended for the whole R&D system by its content, major attention is planned to be focused on popularisation and dissemination of results achieved during implementation of R&D&I priorities;

23.3. the measure Development of open access research and experimental activity centres of natural sciences, technology, engineering and mathematics adapted for school children. Development of complex education of natural sciences, technology, engineering, mathematics and creativity in many foreign countries is called in English abbreviation STEAM – *Science, Technology, Engineering, Art (creative activities), Mathematics* (hereinafter – English abbreviation STEAM). The measure Development of open access research and experimental activity centres of natural sciences, technology, engineering and mathematics adapted for school children will play an important role when implementing the Action plan of complex education of natural sciences, technology, engineering, mathematics and creativity which is currently under preparation, aimed at increasing school children's interest in natural sciences, technology, engineering and mathematics and building school children's competences of creativity, initiative and entrepreneurship thus forming the culture of innovation in Lithuania. Upon implementation of this action plan, school children's interest in STEAM general education subjects and their achievements in building general and specific competences and choosing STEAM-related career are expected to increase; while increased availability of STEAM education will create prerequisites for mitigating inequalities in children's performance. Essential changes in STEAM education are planned in the fields of education content modernisation and improvement of teachers' competences, in order to achieve the goal it is important

to inform all interested parties, general public and to promote interest in STEAM and STEAM education novelties. The measure Development of open access research and experimental activity centres of natural sciences, technology, engineering and mathematics adapted for school children will directly contribute to the implementation of one of the planned goals To improve school children's performance in STEAM of the Action plan for complex education of natural sciences, technology, engineering, mathematics and creativity, the objective To ensure development of infrastructure and learning environment needed for STEAM education (equipment, laboratories, other premises for creative activities). When implementing this measure, stationary, mobile and virtual natural science laboratories and learning environment openly accessible to all Lithuanian school children are planned to be developed. This measure is closely related with the measure Development of science popularisation infrastructure described in Paragraph 23.2 of the General action plan, since it will contribute to popularisation of science and technology among children and youth. This measure, despite being relevant to implementation of all R&D&I priorities, by its content is to be attributed to the R&D&I priority ‘Modern self-development technologies and processes’ of Priority R&D&I development area ‘Inclusive and creative society’;

23.4. the measure Improvement of the infrastructure of centres of excellence and parallel laboratories in smart specialisation areas is needed in order to create prerequisites for formation of partnerships of the units or research groups of Lithuania and foreign research and higher education institutions, in order leading R&D centres would evolve in those fields in Lithuania. This measure is planned to be implemented as follows:

23.4.1. by developing the infrastructure of high international level centres of excellence in Lithuanian research and higher education institutions through concentration of the existing resources and in cooperation with the leading foreign R&D centres in an appropriate field, attempts are made to develop R&D centres with critical mass and carrying out top level R&D activities in Lithuania. Structured partnerships with foreign partners should accelerate knowledge takeover, growth of R&D capacities, provide access to high level R&D infrastructure which is not available in Lithuania. Through the implementation of this measure, it is planned to identify research and higher education institutions, their individual units or several research and higher education institutions or their units engaged in R&D activities in a certain field and to finance development of R&D infrastructure in them. Lithuanian research and higher education institutions together with their partners in foreign research and higher education institutions submitting an application (business plan) under the Teaming action of Spreading excellence and widening participation of the Horizon 2020 Programme embracing partnership of the most advanced research institutions and institutions of regions with low performance rates of research, technological development and innovation (R&D&I), are planned to be given priority in allocating funding under this measure (provided the European Commission allocates funding for the implementation of the business plan of a centre of excellence). Application (business plan) Centre of Excellence in Science and Technology for Healthy Ageing (HEALTH–TECH) under the above mention measure was submitted by KTU, LSMU and VU together with their partners Lundo University (Sweden) and Teknologial Tutkimuskeskus VTT technical research centre (Finland). The Centre of Excellence in Science and Technology for Healthy Ageing is planned to accumulate knowledge, experience and resources needed for dealing with the problems of age-related illness diagnostics, monitoring, treatment and cure. If the above-mentioned application would not be granted funding by the European Commission, the funds allocated for this measure are planned to be used in developing centres of excellence at Lithuanian level. Applicants of specific projects (specific research and higher education institutions) would be known after separately organised selection;

23.4.2. when developing physical and virtual infrastructure of parallel laboratories in research and higher education institutions, Lithuanian research groups or units of research and higher education institutions must establish partnerships with the leading foreign R&D centres. This infrastructure would serve as a basis for forming a Lithuanian research group capable of carrying out top level R&D and higher education activities in the field that is new for Lithuania, which would be supported through the implementation of the measure R&D activities of parallel laboratories described in Paragraph 21.6 of the General action plan. The measures Improvement of the

infrastructure of centres of excellence and parallel laboratories and R&D activities of parallel laboratories are inseparable and supplementing each other – projects eligible to funding under the measure R&D activities of parallel laboratories selected through competition are planned to be granted support by the mode of state project planning for development of necessary infrastructure;

23.5. the measure Joining international research infrastructures (ESFRI) and upgrading and development of open access R&D infrastructure needed for joining international research infrastructure (ESFRI) is needed in order to ensure sustainability of the operation of R&D and innovation infrastructure developed in research and higher education institutions and to fulfil the requirements for joining the European research infrastructures, which would provide access to Lithuanian scientists and other researchers to high level R&D and innovation infrastructure of the best European R&D and innovation centres. When implementing the programmes for the development of integrated science, higher education and business centres (valleys) during 2007–2013 funding period, significant investments were made into development and upgrading of R&D and innovation infrastructure in research and higher education institutions. Modern infrastructure and resulting growth in scientific potential served as a basis for identifying Priority R&D&I development areas and their priorities and will provide prerequisites for their implementation by developing new knowledge, technology, products, processes and methods. Modern R&D and innovation infrastructure because of its unique possibilities and exclusiveness also enabled research and higher education institutions and their scientists to strengthen relations with science centres and their scientists of other countries. It resulted in increased possibilities for participation in joint project, international invitations for research and innovation programmes, development of other forms of international cooperation. One of the forms of international cooperation is joining international R&D and innovation infrastructures and active participation in them, by providing Lithuanian scientists and other researchers with access to high level R&D laboratory equipment of the most famous international R&D and innovation centres, also putting the research infrastructure developed in Lithuania into effective operation. Development of European R&D and innovation infrastructures promote international cooperation by creating prerequisites for evolvement of scientific communities embracing different countries. Studies conducted in Lithuania show that integration into European R&D and innovation infrastructures is the most effective way for Lithuanian research and higher education institutions to get access to the top level R&D and innovation infrastructure, development and maintenance of which at national level would require more financial and human resources than available. Assessments commissioned by the European Commission show that development of European R&D and innovation infrastructures is an important condition of European science competitiveness, since top level research requires very expensive research infrastructure, development and operation costs of which are so big that can be covered only by cross-border cooperation. At research infrastructure roadmaps the European strategy forum for R&D and innovation infrastructure (ESFRI) identifies research infrastructures of pan-European importance, which are already under development or could be developed in the future through cooperation of EU Member States. ESFRI Roadmap published in 2010 identified 48 research infrastructure projects that could be implemented through cooperation of the Member States. New ESFRI Roadmap published on 10 March 2016 identified 21 high-maturity level research infrastructures, including six new projects and 29 projects that reached the stage of implementation in 2015. Terms and conditions of such infrastructure development and operation are laid down in the Council's Regulation (EC) No. 723/2009 of 25 June 2005 concerning the Community legal framework for a European Research Infrastructures Consortium (ERIC) and the Council's Regulation (EU) No. 1261/2013 amending Regulation (EC) No. 723/2009 concerning the Community legal framework for a European Research Infrastructures Consortium. In order to determine priorities for development of national research infrastructures and their integration into the European R&D and innovation infrastructures, Member States draw national roadmaps. The Lithuanian research infrastructures roadmap was approved by the Resolution No. VIII-22 of the Lithuanian Council of Science of 7 July 2014 ‘On the approval of the list of projects of the Lithuanian research infrastructures roadmap’. In order to sustain positive trends of international cooperation, to continue developing it by using the possibilities offered by the

modern R&D and innovation infrastructure in Lithuania, as well as to create prerequisites for other high level R&D activities, including development of Priority R&D&I development areas and implementation of their priorities, ongoing maintenance of the high level of the R&D and innovation infrastructure and incentives for research and higher education institutions to join international R&D&I infrastructures complying with the strategic interests of Lithuania must be ensured. Newly acquired R&D laboratory equipment is planned to wear out by 2020, therefore in order to sustain its high level it needs regular upgrading, which requires investments. Due to limited possibilities to support upgrading of the R&D laboratory equipment during 2014–2020 funding period, when allocating funds for certain research and higher education institutions consideration will be taken of the possibilities to join international R&D and innovation infrastructures, to achieve significant results by developing priority R&D&I development areas and implementing their priorities, the scope of investments made into the equipment in 2007–2013, Action programme provisions, scope of use of the available equipment, achieved results and intellectual potential available. Considering limited financial possibilities of the country, it is planned to obligate research and higher education institutions themselves to cover costs (operating), membership fees and other related expenses of participation in international infrastructures for at least five years after the completion of infrastructure development and upgrading projects. It should also encourage research and higher education institutions to make more responsible planning of their R&D and innovation infrastructure development, upgrading and extension and to avoid cases of ineffective use of newly-acquired equipment. In preparation for these activities, an international expert assessment of R&D and innovation infrastructure available in the Lithuanian research and higher education institutions was organised in March 2016. When assessing the R&D and innovation infrastructures, the experts considered their importance for further social-economic development of the country, R&D activities carried out, level and possibilities for international cooperation, possibilities of effective and useful joining international R&D and innovation infrastructures, compliance with Priority R&D&I development areas and their priorities, etc. During the assessment, the experts also took into consideration whether R&D and innovation infrastructure planned to be developed or upgraded is of national, institutional level, or intended exclusively for the implementation of one research project. Based on the expert assessment, the list of priority R&D&I infrastructures was drawn, which is presented in Paragraphs 4.5.1–4.5.18 of Annex 2 of the General action plan. During the implementation of this measure, it is planned to finance projects of acquisition of open access R&D equipment, and equipment needed for integration into international R&D and innovation infrastructures, participation (operating) costs, membership fees and other related expenses of research and higher education institutions participating or pursuing participation in international R&D and innovation infrastructures.

23.6. the measure Development and extension of a material base for implementation of co-projects of science and business at the research and higher education institutions (development and extension of the R&D&I infrastructure of competence centres ) Competence centre of a research and higher education institution (or exclusive competence) means critical mass of exclusive R&D competence in a certain R&D field of a research and higher education institution (intellectual potential and R&D infrastructure), included into R&D result development (from idea to prototype) and its realisation. The goal of the measure is to enhance the exclusive competence of a research and higher education institution by creating conditions for its researchers or students' groups to test their scientific ideas at the experimental (testing) development stage before developing a product or technology prototype suitable for commercial use. It could promote more active establishment of new knowledge intensive spin–offs in research and higher education institutions, encourage research and higher education institutions to cooperate more actively and effectively with business (available equipment, which can be used to carry out experimental (testing) development activities, is attractive to business entities interested in possibilities to test new ideas in practice by developing technology or product prototypes suitable for commercial use, therefore the number of business orders is likely to increase). Through the implementation of the measure of development of competence centre infrastructure, acquisition of experimental (testing) equipment needed for development of certain

themes (established in the action plans of R&D&I priorities) would be supported. Experimental-technological equipment to be acquired will have to supplement the applicant's R&D infrastructure effectively, which is intended to carry out R&D activities in the field complying with the declared exclusive competence and to create prerequisites for researchers and/or students' groups to use it in experimental (testing) development works. When selecting projects, it is planned to assess if experimental–technological equipment to be acquired is a missing part of the R&D infrastructure of the institution, which once acquired would ensure possibilities for effective R&D activities in an appropriate field up to R&D-based idea adaptation, preparation for commercialisation and/or investment-attractive object development. Projects implemented under this measure will be funded by the Ministry of Education and Science and project promoters (research and higher education institutions). Financial contribution of a research and higher education institution would be one of the conditions proving that the latter institution finds cooperation with business companies of certain sectors useful and is determined to invest its own funds, that once the new equipment is put into operation, benefits would increase in the future. When assessing possibilities to finance acquisition of equipment needed for experimental (testing) development, the capacity of scientific potential working in appropriate themes, scope of cooperation with business companies (business orders, earned money, joint projects, licences, patents, etc.), available equipment used for research in appropriate themes of a research and higher education institution will also be assessed. Equipment to be purchased by a research and higher education institution must be relevant to a certain business factor (e.g. food, biotechnology, lasers, etc.), rather than to specific business companies. This measure is planned to supplement effectively the measures implemented by the Ministry of Economy, under which business companies are provided with a possibility to develop or upgrade their technological infrastructure. This measure will also be useful in order equipment needed for the whole R&D cycle would be concentrated in research and higher education institutions, which would enable the institutions to carry out complex extensive projects from acquisition of knowledge and capacities to create new products up to development of prototypes suitable for commercial use, which could not only result in more effective cooperation with business, development of better scientific results, but would also provide researchers or students planning to start their own knowledge intensive business with a possibility to test their ideas. This measure may significantly affect implementation of other measures stipulated in the General action plan, since it will create prerequisites for implementation of joint initiatives described in Paragraphs 21.3 and 21.4 of the General action plan, commercialisation of R&D results as stipulated in Paragraph 22.1 of the General action plan, supplement R&D infrastructure being developed under the measures Improvement of the infrastructure of centres of excellence and parallel laboratories in smart specialisation areas (Paragraph 23.4 of the General action plan) and Joining international research infrastructures (ESFRI) and upgrading and development of open access R&D infrastructure needed for joining international research infrastructures (ESFRI) (Paragraph 23.5 of the General action plan). Exclusive R&D competence centres operating in research and higher education institutions can contribute by their activities to the implementation of more than one R&D&I priority, therefore funds are intended to be allocated through tender by taking into consideration the possibilities of research and higher education institutions to combine the newly-acquired equipment for experimental development with R&D equipment already available, in order to implement the R&D&I priorities;

23.7. the measure R&D&I infrastructure modernisation in smart specialisation areas is needed in order to enhance and concentrate R&D potential which will play an important role in smart specialisation process. Research and higher education institutions are institutions that can carry out and make significant contribution to all activities needed for the implementation of R&D&I priorities. R&D activities carried out research and higher education institutions, on the basis of which innovative technology, products, processes, methods are developed, specialists joining scientists and researchers' potential, which is needed in pursuit of ongoing process of new knowledge and technology development, are trained, as well as specialists joining the labour market and capable of participating in adaptation of new knowledge, technology for practical application, processes of new product manufacturing, provision of new services. Research and higher education institutions, in

particular with public enterprise status, can take active participation in new knowledge and technology dissemination, commercialisation processes by fulfilling business R&D orders, providing open access to their R&D infrastructure, providing appropriate services on the basis of this infrastructure to economic entities in public and private sectors, realising patents licences, creating conditions for researchers or students' groups to establish new knowledge intensive spin-offs, commercial activities of which could bring economic benefits. New knowledge intensive spin-offs established on the basis of strong scientific potential, maintaining sustainable relations with research and higher education institutions, can effectively supplement knowledge intensive sector which is weak in Lithuania yet and join introduction of innovative technology, products, processes, methods to the market and otherwise apply processes for public needs which enhance competitiveness of the country and increase the impact of knowledge and highly-qualified labour intensive economic activities of big value added on GDP and structural economic changes of the country. Allocating funding under this measure for R&D infrastructure development and upgrading at universities, as well as for higher education infrastructure development and modernisation, described in Paragraph 23.8 of the General action plan, the Roadmap for Investment into Higher Education System drawn in 2016 by the Ministry of Education and Science (hereinafter – Roadmap for Investment into Higher Education Science) is referred to. Upon completion of the analysis of higher education network state and review of the results of the investments made into the higher education system during 2007–2013 funding period of the European Union Structural Funds in the Roadmap for Investment into Higher Education System attention is focused on the major principles, criteria, conditions to be observed when reorganising the Lithuanian higher education system, higher education institutions (universities and colleges), education and research activities carried out in them are assessed, financing principles are adjusted. This way, major problems of the system and arising challenges would be responded to, best use of allocated funds could be ensured (from the national budget and European Union Structural Funds) by enhancing the potential available in Lithuania, through its ongoing upgrading and essential improvement of higher education quality. One of the aspects of higher education quality improvement is restructuring of the network of higher education schools. The Roadmap for Investment into Higher Education System identify the universities that can become university network restructuring centres in the future, around which Lithuanian R&D and higher education potential could be concentrated depending on R&D areas and studies implemented. The named universities include VU, KTU, LSMU and VGTU, which in the context of Lithuania are distinguished as having quite high quality of higher education and R&D. The exclusive quality of higher education and R&D in the context of Lithuania is determined by such aspects as total number of students and its dynamics, admission dynamics, change in the number of enrolled students once minimum pass mark is introduced, strong study fields of the university, scope of R&D activities and revenues from them, R&D orders placed by economic entities and their volumes, researchers' number and international publications of universities. Investment into the infrastructure of the above-mentioned universities could bring immense value added for R&D and higher education system. Based on the above-mentioned aspects, the largest university in the country – VU stands out by its potential in both higher education and R&D fields, therefore significantly bigger investment is planned to be allocated for its infrastructure development if compared with other universities. According to the Roadmap for Investment into Higher Education System, KTU, LSMU and VGTU also are distinguished for their capacity to develop important higher education and R&D areas and in particular R&D results commercialisation results and possibilities. KTU and LSMU show an initiative to merge. In the future, it could serve as a basis for evolvement of a strong university not only at Lithuanian but also at regional level. VGTU stands out for its stable number of students, despite negative demographic trends, number of researchers and international scientific publications. Further investments into their infrastructure development eventually could have significant impact on their potential enhancement and preparation for optimisation of the higher schools network. Having assessed the present combined R&D potential concentration and the trends of decreasing number of students at universities, the other university which can become the concentration centre of the future universities network (with certain exceptions) is likely to be VDU, though by its results and trends it

lags behind KTU, LSMU and VGTU. Based on that, it is planned to allocate less funds to its R&D and higher education infrastructure development than for KTU, LSMU and VGTU. Small share of funds from the European Union Structural Funds 2014–2020 is planned to be allocated for infrastructure development of the universities which lag far behind the leading universities by their R&D and higher education quality and potential. Such universities are ASU, Lithuanian Educology University (hereinafter – LEU), Siauliai University (hereinafter – SU), and Lithuanian Sports University (hereinafter – LSU). The determining factor when deciding to allocate smaller investments into the infrastructure of the above-mentioned universities was the changes in the number of enrolled students once the minimum pass mark will be introduced (once the minimum pass mark of 4 is introduced, the number of applicants into these universities would decrease by more than one third). Considering the above-mentioned, during the future universities network concentration these universities will likely become divisions of the other universities or specialised universities with high potential in exclusive higher education or R&D areas. Those exclusive areas are planned to be enhanced by making investment into corresponding infrastructure. Another important task of the measure 'R&D&I and higher education infrastructure modernisation in smart specialisation areas' is to continue concentration of R&D and higher education infrastructure in the territories with high potential of higher education, science and knowledge intensive business and possibilities of close interaction of these three segments. The long-term goal of Lithuania – valleys meeting international practice which create prerequisites for training top level specialists, creating new knowledge, products that are competitive at the international arena, creating big value added, promoting establishment of high technology business, introduction of high technology and innovation both in high technology industry and in traditional sectors of economy, culture and social environment. To fulfil this goal significant funding from the EU Structural Funds was granted in 2007–2013, which helped new modern equipped R&D centres to evolve and the existing ones to extend, which immensely enhanced the capacities of Lithuanian researchers to carry out high level fundamental and applied research, to cooperate with business and high level foreign science centres. Broadly applied open access principle allows all interested parties to benefit from the possibilities offered by new equipment. The attempts to establish solid scientific foundation for future development of valleys were successful, while by combining funds allocated under the measures administered by other ministries, development of infrastructure for practical knowledge use was launched. However, despite huge investment attention on R&D infrastructure concentration and investments allocated for that purpose, the task was completed partly only and quite a lot of scientific units of research and higher education institutions still lag behind the concentrating nuclei (valleys), they have obsolete laboratory equipment only, need upgrading. The existing situation limits capacities of researchers working there not only to carry out high level fundamental and applied research, to cooperate with business and strong foreign science centres, but also to fully join the R&D system of a respective research and higher education institution, thus resulting in a contrast created inside the institution, some infrastructure of which was upgraded. In majority of cases, quite important higher education segment remains incomplete in the valleys, while effective and close interaction of higher education, research and business is the crucial condition for international practice meeting valleys to function. Usually, it is difficult or even impossible to separate infrastructure needed for R&D and higher education activities, because both higher education and R&D activities are carried out in the faculties of higher university schools, the staff can be both academic and scientific at the same time (scientists and researchers may not only train new specialists but also carry out R&D activities), the equipment in science laboratories also can be used not only for R&D but also for students' practical activities. It must be noted that the unity of science and higher education is one of the key elements of effective functioning of a modern research and higher education institution. Taking this into consideration, the major infrastructure development projects planned by the Ministry of Education and Science for 2014–2020 will target relocation of the units (faculties) of higher university schools to the territories where the potential of higher education, science and knowledge intensive business is concentrated – R&D centres, science and technology parks, knowledge intensive business incubators, investment innovation zones are already established

or are under development. Faculty of a University with scientific and academic potential, research and higher education laboratories is the place where the foundation for smart specialisation processes is built – new knowledge of fundamental, applied character is developed, which serves as the basis for development of new technology, products, processes, methods, training of future specialists who will join researchers or labour market in the future. Apart from the above-mentioned, another important criterion determining the scope of investments to be allocated for R&D and higher education infrastructure in individual universities is their capacity to make investment in equal parts with the Ministry of Education and Science into their infrastructure development. This condition urged the universities to plan their R&D and higher education infrastructure development more effectively, by developing only those projects which would ensure long-term benefits not for the university only but also for the state. When implementing the measure described in this Paragraph of the General action plan, the Ministry of Education and Science is planning to support the development of R&D-related infrastructure – development and modernisation of research laboratories of the units (faculties), creation of new R&D units, centres for carrying out applied R&D activities, modernisation of the existing research units. Universities co-financing projects with the Ministry of Education and Science or implementing new projects from their own funds, will develop the infrastructure needed for higher education and R&D activities. During the implementation of this measure, it is planned to finance development and modernisation only of those R&D and higher education infrastructure objects, activities of which meet R&D&I priorities – the demand for researchers and other specialists to be trained in R&D and higher education infrastructure object is based on the studies analysing the needs of the market and/or individual economic sectors, the existing R&D and higher education infrastructure of research and higher education institutions is not sufficient and does not satisfy the quality requirements for training researchers and other specialists, R&D activities to be carried out in the new R&D and higher education infrastructure object comply with the themes relevant for economic sectors as established in the action plans of R&D&I priorities, capacities to train high international level researchers capable of carrying out such R&D activities are planned. This measure is combined with the measure Infrastructure concentration in research and higher education institutions, modernisation of teaching and learning environment, described in Paragraph 23.8 of the General plan, the goals of which coincide in principle, only less strict requirements regarding compliance with R&D&I priorities are applied to its implementation. Investment into R&D and higher education infrastructure projects will be used to develop and expand the infrastructure useful for society, promoting effective competition on the domestic market, improving the quality of public services, choices and availability, investment into objects will not only bring revenues to research and higher education institutions, which will ensure infrastructure maintenance and/or reinvestment into their main activities, but will also bring social, educational, cultural, scientific, health and social security result. Investment into R&D and higher education infrastructure projects will be used to develop and expand the infrastructure useful for society, promoting effective competition on the domestic market, improving the quality of public services, choices and availability. Investment into objects will not only bring revenues to higher university schools, which will ensure infrastructure maintenance and/or reinvestment into their main activities, but will also bring social, educational, cultural, scientific, health and social security result. Through investment into R&D and higher education infrastructure objects, economic growth of Lithuania is promoted, economic independence and international competitiveness are enhanced. During the implementation of the measure Modernisation of R&D and higher education infrastructure in smart specialisation areas, implementation of the following projects is planned to be supported:

23.7.1. project Construction of laboratory building of the Faculties of Mechanics, Electronics and Transport Engineering. Project will be implemented by VGTU. R&D and higher education activities carried out at the Faculties of Mechanics, Electronics, Transport Engineering, VGTU is in particular important in pursuit of the goals of smart specialisation process. R&D activities carried out in these Faculties of VGTU and the nature of specialists trained there determine future contribution of the researchers of these Faculties to the implementation of many smart specialisation priorities. One of the Priority R&D&I development areas is ‘Transport, logistics and information and

communication technologies'. Researches of the Faculties of Electronics and Transport Engineering, VGTU have sufficient working experience to contribute to the implementation of R&D&I priority 'Smart transport systems and information and communication technologies' (specifically, by researching and developing electronic route planning for various types of transport, digital radio, positioning and data transfer, object internet technologies, smart systems and means, researching and developing traffic flow modelling and forecasting). During the implementation of R&D&I priority 'Advanced electronic contents, content development technologies and information interoperability, researchers of the Faculties of VGTU subject to relocation are likely to contribute to research and development of innovative information and program system engineering, e-commerce, system compatibility and interaction assurance, big volume data analysis, mathematical modelling, visualisation, electronic content security and safe information interaction technologies. VGTU researchers' contribution into the implementation of R&D&I priority 'Information and communication technology infrastructure, cloud computing solutions and services' is also important (namely, by researching and developing modelling and integration methods and technology of activity processes and rules, information system modernisation, change management automation and transposition into electronic space, technology of automation, optimisation of business and public sector management processes). Substantial contribution of the researchers of the Faculties of Mechanics, Electronics, Transport Engineering of VGTU is expected into the development of the Priority R&D&I development area 'New production processes, materials and technologies'. When implementing the R&D&I priority 'Functional materials and coatings', VGTU researches will contribute to research and development of surface modification with layers of materials and nanocomposites, physical impact measuring and material recognition technologies. In search of R&D solutions for development of composite and constructive materials of exclusive properties (resistant to external effects, highly tenacious, highly deformative, light), necessary technologies will be researched and developed. Substantial interest of VGTU researchers is expected into the implementation of R&D&I priority 'Flexible technological systems for product creation and production' (namely, by researching and developing virtual product development technologies, materials and resources economising production and service provision methods, innovative robotic technologies, intellectual production and service provision control systems and their development technologies). VGTU researchers are also expected to contribute to the implementation of the priorities of Priority R&D&I development area 'Health technology and biotechnology'. R&D&I priority 'Advanced medical engineering for early diagnostics and treatment' will be implemented with VGTU researchers involved in research and development of biomedical engineering, electronics, mechatronics, biomechanics, laser and ultrasound diagnostics and treatment technologies. By researching and developing electronic and mobile technologies for public health, VGTU researchers will contribute to the implementation of R&D&I priority 'Advanced applied technologies for individual and public health'. At present, the Faculties of Mechanics, Electronics, Transport Engineering of VGTU are located in different places in the central part of Vilnius City, they are geographically remote from the central VGTU campus in Sauletekis district – Faculty of Electronics is situated at Naugarduko g. 41, Faculties of Mechanics and Transport Engineering at J. Basanaviciaus g. 28 and 28B. For successful implementation of smart specialisation process a close interaction of higher education, science and knowledge intensive business plays a very important role, the interaction is the most effective if physical closeness of the following segments is ensure – students and researchers must be provided with convenient accesses to research units of VGTU and other research and higher education institutions, conditions of practical placement, business must be provided with the possibility to employ students without detaching them from their academic activities. Taking this into consideration, when implementing the project Construction of a building of laboratories of the Faculties of Mechanics, Electronics and Transport Engineering, remote VGTU units are planned to be relocated to Sauletekis district, in Vilnius. The objective to move Faculties of Mechanics, Electronics and Transport Engineering of VGTU into Sauletekis district, in Vilnius, where academic and scientific infrastructure of VU and VGTU is concentrated: modernised Civil engineering science centre of VGTU, Laser research centre with modern high-power laser complex

Naglis of VGTU are in operation, two largest R&D centres in Lithuania will be opened in autumn 2015 – National centre of physical and technological sciences and Centre of life sciences, modern VU library National open access scientific communication and information centre (MKIC), VU and VGTU students' campuses are located, investment innovation zone is under development in geographically convenient location Vismaliukai district, was established in the Programme for development of integrated science, higher education and business centre (valley) 'Sauletekis' approved by the Resolution No. 1262 of the Government of the Republic of Lithuania of 24 November 2008 'On the approval of the programme for development of integrated science, higher education and business centre (valley) 'Sauletekis'. Ambitious goals that were set in the programme to concentrate scientific and academic potential of lasers, light technology, material science, nanotechnology, semiconductor physics, electronic and civil engineering, academic potential of chemistry, mechanics, transport engineering stalled because of financial recession and were not fully fulfilled during the EU structural support period of 2007–2013, following reallocation of the planned funds for other national priorities. An important component of higher education to concentrate the potential of science, higher education and knowledge intensive business in Sauletekis district was left empty for this reason, and it may have adverse impact on further development of this territory, as the nucleus of knowledge economy. Relocation of VGTU Faculties to Sauletekis district will not end with the project Construction of a building of laboratories of the Faculties of Mechanics, Electronics and Transport Engineering. On the basis of the agreement No. S-344/12523 between the Ministry of Education and Science and VGTU of 8 May 2015 'Agreement on the development and modernisation of research and (socio-cultural) development and higher education infrastructure from the funds of the European Union Structural Funds 2014–2020 and Vilnius Gediminas Technical University', VGTU will pursue the goal of implementation of other projects related with the relocation of the Faculties of Mechanics, Electronics and Transport Engineering from Vilnius centre by its own or partners' funds. Attempts will be made to implement the following projects: Construction of an educational building of the Faculties of Mechanics and Transport Engineering and Construction of an educational building of the Faculty of Electronics, by allocating approximately EUR 16 million of its own or partners' funds. Funds received from the sale of the old buildings of the Faculties situated in prestigious locations of Vilnius which can be broadly used for commercial purpose, other redundant real estate of VGTU are planned to be used in pursuit of these goals. The process of state property investment into VGTU was launched in February 2015;

23.7.2. the project Construction of a new building of the Faculty of Mathematics and Informatics of VU. This project will be implemented by VU. The report of the survey of the demand and supply and need of information and communication technology (hereinafter – ICT) specialists in 2011–2020, in Lithuania conducted by INFOBALT association showed the shortage of over 6,000 ICT specialists to be formed by 2016. The forecast of supply–demand of ICT specialists in Lithuania in 2014–2016 conducted by INFOBALT association in 2013 confirmed the above-mentioned market trends – ICT companies will need 17,500 specialists by ICT companies by 2016, while higher education schools are capable of training about 3,200 ICT specialists. R&D and higher education activities carried out in the Faculty of Mathematics and Informatics of VU are highly important in pursuit of smart specialisation goals – the nature of R&D activities and trained specialists determines future contribution of the researchers of this Faculty to the implementation of many R&D&I priorities – technologies, products, processes, methods needed for the implementation of many R&D&I priorities require high level knowledge and capacities of mathematical analyses, application of methods and application of information technologies. One of the Priority R&D&I development area is 'Transport, logistics and information and communication technologies'. R&D works carried out by the researchers of the Faculty of Mathematics and Informatics, VU are highly important in pursuit of the implementation of its priorities 'Advanced electronic content, technology to create it and information interaction' and 'Information and communication technology infrastructure, cloud computing solutions and services'. When implementing the above-mentioned two R&D&I priorities, the contribution is planned to be made by developing technologies of information and program system engineering, electronic commerce, system compatibility and interaction, big volume data

analysis, mathematical modelling, visualisation technologies, technology of electronic content security and safe information interaction, technology of integration of Lithuanian written and spoken language, culture into digital space, technology of automation and optimisation of management process of business and public sector, technology of information system modernisation and change management automation, data virtualisation, cloud computing, digital media technology, safety technology of electronic services and cloud computing, the importance of which for Lithuanian economic development through smart specialisation process is established in the action plans of R&D&I priorities of 'Advanced electronic contents, content development technologies and information interoperability' and 'Information and communication technology infrastructure, cloud computing solutions and services' of the Priority R&D&I development area 'Transport, logistics and information and communication technologies' approved by the Order No. V-363/4-239 of the Minister of Education and Science of the Republic of Lithuania and of the Minister of Economy of the Republic of Lithuania of 17 April 2015 'On the approval of the action plans for priorities of the Priority area of research and (socio-cultural) development and innovation (smart specialisation) 'Transport, logistics and information and communication technologies'. R&D activities carried out by the researchers of the Faculty of Mathematics and Informatics, VU are planned to contribute to the implementation of other R&D&I priorities. Development of social technology, design and audiovisual media technology, mixed competence development technology, formal education and non-formal education didactics technology is important for the implementation of the priorities Modern self-educational technology and processes and Boost technology and processes of innovation development and installation of the Priority R&D&I development area 'Inclusive and creative society'. Development of biobank services and product development technologies, public health electronic and mobile technologies, technology for development of programmed aids for treatment, diagnostic and treatment equipment development technologies, methods and interactive technologies increasing possibilities of healthy lifestyle education and health promotion, genomic and postgenomic testing technologies is important for the implementation of the priorities of Priority R&D&I development area 'Health technologies and biotechnologies'. Technologies for development of smart and autonomous mechatronic and robotic systems with artificial intellect components are important for the implementation of the R&D&I priority 'Flexible technological systems for product creation and production' of the Priority R&D&I development area 'New production processes, materials and technologies'. At present, the Faculty of Mathematics and Informatics of VU is situated in three different locations in Vilnius, quite remote from each other: at Naugarduko g. 24, Šaltinių g. 1 and Didlaukio g. 47. For successful implementation of smart specialisation process a close interaction of higher education, science and knowledge intensive business plays a very important role, the interaction is the most effective if physical closeness of the following segments is ensure – students and researchers must be provided with convenient accesses to research units of VU and other research and higher education institutions, conditions of practical placement, business must be provided with the possibility to employ students without detaching them from their academic activities. Considering the above-mentioned, when implementing this project, a part of the Faculty of Mathematics and Informatics of VU is planned to be relocated to Visoriai district, in Vilnius. The aim to relocate the Faculty of Mathematics and Informatics of VU to Visoriai, where the Institute of Mathematics and Informatics of VU is based, Visoriai information technology park is expanding, cluster of information and communication technology business is evolving, is established in the Programme for the development of integrated science, higher education and business centre (valley) 'Santara', approved by the Resolution No. 1263 of the Government of the Republic of Lithuania of 24 November 2008 'On the approval of the Programme for the development of integrated science, higher education and business centre (valley) 'Santara'. Ambitious goals set during the preparation of this programme to concentrate the potential of information and communication technology science, higher education and business in Visoriai district by forming one of the Santara valley segments faltered due to the financial crisis and remained unfulfilled during the EU structural support period of 2007–2013, following the reallocation of funds for other national priorities. An important component of higher education to concentrate the potential of science, higher education and knowledge intensive

business in Santara valley was left empty for this reason, and it may have adverse impact on further development of this territory, as the nucleus of knowledge economy. Despite the financial crisis, the plans to relocate the Faculty of Mathematics and Informatics of VU to Visoriai have not been abandoned and related works are carried out, at slower pace though – during the EU structural support period of 2007–2013, the project implemented from the funds administered by the Ministry of Education and Science is intended to prepare a technical project for the relation of the Faculty of Mathematics and Informatics of VU to Visoriai. The new infrastructure of the Faculty of Mathematics and Informatics of VU is planned to be used by the students of all study programmes provided at the Faculty of Mathematics and Informatics of VU. Computer laboratories, information technology (data) centre, innovative computing laboratory, research laboratory for the development of mobile and other information technology, and laboratories enabling other R&D activities are planned to be installed in the building. Relocation of the information technology studies next to the segments of science and knowledge intensive business would mean a close interaction which is in particular important in pursuit of the smart specialisation goals. The infrastructure of the Faculty of Mathematics and Informatics of VU planned to be developed in Visoriai will provide broader possibilities in the future for its use also by the students of other scientific and higher education institutions, researchers and other specialists. Based on the agreement No. S-439/KS-14300-1118 between the Ministry of Education and Science and VU of 8 May 2015 ‘Agreement on the development and modernisation of research and (socio-cultural) development and higher education infrastructure from the funds of the European Union Structural Funds 2014–2020 and Vilnius University’, the latter higher institution will attempt to finance 49% of the project value from its own and its partners' funds (Ministry of Education and Science – 51%), which amounts to approximately EUR 11 million;

23.7.3. the project Construction of a new building of the Faculty of Medicine of VU. The project will be implemented by VU. Market and sectoral studies conducted at the global level and in Lithuania show that the need for medical professional qualification specialists and the necessity for qualification improvement of the latter specialists will be growing. Trial "day photograph" analysis of the medical staff number, demand and workload commissioned by the Ministry of Health in 2011 forecasted changes in the demand of doctors' professional qualification jobs by 2015 in Lithuania demonstrate the trends of growing demand. Based on the data of Statistics Lithuania and Ministry of Education and Science, The Faculty of Medicine of VU offer three out of 9 most promising profession study programmes – medicine, Nursing and dentistry. R&D and higher education activities carried out in the Faculty of Medicine of VU are in particular important in pursuit of the smart specialisation goals – the activities carried out in the Faculty will contribute to the implementation of the priorities of the Priority R&D&I development area Health technology and biotechnology. When dealing with social challenges, such as: prevention of chronic and lifestyle-related illnesses (cardiovascular, oncological, neurodegenerative), threat of medicine-resistant infections, mental health state of society, ageing society, it is planned to research and develop advanced applied technology, advanced treatment technology, public health electronic and mobile technology, advanced applied technology for enhancement of mental health of society and prevention, diagnostics, monitoring, intervention and assessment of most frequent mental health problems (suicides, dependence, children's mental health and other mental problems), methods for providing and organising health care services. At present, the Faculty of Medicine of VU is located at M.K.Čiurlionio g.21, Vilnius. For successful implementation of smart specialisation process a close interaction of higher education, science and knowledge intensive business plays a very important role, the interaction is the most effective if physical closeness of the following segments is ensure – students and researchers must be provided with convenient accesses to research units of VU and other research and higher education institutions, conditions of practical placement, business must be provided with the possibility to employ students without detaching them from their academic activities. The present infrastructure of the Faculty of Medicine of VU is of poor condition, the Faculty lacks laboratories, experimental research base needed for development or R&D and higher education activities which would be competitive in the Lithuanian health system and at international

level. For this reason, the Faculty does not have sufficiently strong and harmonious relations with health care institutions and appropriate business companies, and this weakens the quality of medicine science, higher education and professional qualification improvement of doctors. Considering the above-mentioned, when implementing this project, a part of the Faculty of Medicine of VU is planned to be relocated to Santariškės district, in Vilnius. Laboratories oriented exclusively to the implementation of R&D&I priorities are planned to be installed in the new building of the Faculty of Medicine of VU. The goal to relocate the Faculty of Medicine of VU to Santariškės, where the National Cancer Institute, state research institute Innovative Medicine Centre, Vilnius University Hospital Santariškės Clinic, business companies engaged in medicine and pharmacy activities are based, is established in the Programme for the development of integrated science, higher education and business centre (valley) 'Santara' approved by the Resolution No. 1263 of the Government of the Republic of Lithuania of 24 November 2008 'On the approval of the programme for the development of integrated science, higher education and business centre (valley) 'Santara'. Ambitious goals set during the preparation of this programme to concentrate the potential of innovative medicine technology, molecular medicine and biopharmacy science, higher education and business in Santariškės district by forming one of the Santara valley segments faltered due to the financial crisis and remained unfulfilled during the EU structural support period of 2007–2013, following the reallocation of funds for other national priorities. An important component of higher education to concentrate the potential of science, higher education and knowledge intensive business in Santariškės and Visoriai districts was left empty for this reason, and it may have adverse impact on further development of this territory, as the nucleus of knowledge economy. Despite the financial crisis, the plans to relocate the Faculty of Medicine of VU to Santariškės have not been abandoned and related works are carried out, at slower pace though – during the EU structural support period of 2007–2013, the project implemented from the funds administered by the Ministry of Education and Science is intended to prepare a technical project for the relation of the Faculty of Medicine of VU to Santariškės. The new infrastructure of the Faculty of Medicine of VU would provide additional possibilities to carry out priority research, would increase the synergy of medical science specialists and R&D knowledge. Besides, broader opportunities for cooperation with researchers of Lithuanian and foreign research and higher education institutions would open. Cooperation and better coordination of R&D activities would enable more rational use of human and financial resources, thus ensuring higher R&D performance rates, creating commercial suitability of technology and products and securing further development of R&D-based medicine sector. The modernised infrastructure would be intended not only to carry out high value added R&D activities, but also to train highly-qualified researchers and to improve their qualifications. The new infrastructure of the Faculty of Medicine of VU would enable stronger inclusion of students into R&D activities, while alumni with research work experience are planned to have better competences by working in research and higher education institutions and health care establishments. The national progress strategy Lithuania's Progress Strategy Lithuania 2030 approved by the Resolution No. XI-2015 of the Seimas of the Republic of Lithuania of 15 May 2012 'On the approval of the National progress strategy Lithuania's Progress Strategy 'Lithuania 2030' emphasises health as the greatest asset and its importance for both personal and social welfare. For the health system to function harmoniously, the integration of science, higher education and practice is needed. During the implementation of this project, this integration is planned to be ensured and to make significant contribution to more harmonious functioning of the health system and improvement of the health condition of the Lithuanian population. The new infrastructure of the Faculty of Medicine of VU is planned to be relevant and accessible to the researchers and students of Health Care Faculty of Vilnius College, LEU Faculty of Sports and Health, joint projects with LSMU, other Lithuanian and foreign universities are planned to be further developed. Based on the agreement No. S-439/KS-14300-1118 between the Ministry of Education and Science and VU of 8 May 2015 'Agreement on the development and modernisation of research and (socio-cultural) development and higher education infrastructure from the funds of the European Union Structural Funds 2014–2020 and Vilnius University', the latter higher institution will attempt to finance 54% of the project value from its own

and its partners' funds (Ministry of Education and Science – 46%), which amounts to approximately EUR 13.5 million; State real estate managed by VU by trust in the centre of Vilnius is planned to be sold in the future, since it will be no longer needed, once the Faculties of Mathematics and Informatics and of Medicine will be relocated to Santariškės–Visoriai district. Incomes from the sale are planned to be used for further development of VU infrastructure, including the plans to relocate the Faculty of Chemistry to Saulėtekis district in Vilnius. The processes of state property investment into VU are planned to launched in the nearest future;

23.7.4. the project Development of the scientific base of the Faculty of Nursing. This project will be implemented by LSMU. During the implementation of this project, the divisions of LSMU Faculty of Nursing are planned to be relocated to the territory of Kaunas Clinic (Eivinių g. 2, Kaunas), where R&D activities are carried out. R&D and higher education activities carried out in LSMU Faculty of Nursing are important in pursuit of the smart specialisation goals –– in particular when developing the Priority R&D&I development area 'Health technologies and biotechnologies' and implementing one of its priorities Advanced medicine engineering for early diagnostics and treatment. Researchers of the LSMU Faculty of Nursing researchers are capable of researching and developing technology of medical materials (biomaterials), rehabilitation and nanomedicine, biocompatible materials on the basis of additive manufacturing technology, bio ceramics, polymeric composites (capable of replacing metal in the production of implanted medical aids), functional materials used for implants, endo- and exoprosthesis, smart textile, nanomaterials, orthopaedic, smart rehabilitative, compensatory bio mechatronic aids for people with disability, personalised biomaterials and orthopaedic products, biocompatible and nanomaterials-based coatings, prototypes of smart functional and antimicrobial textile materials and prosthesis, bio mechatronic aids for people with disability, participating in the process of validation of the equipment of new generation, personalised and intended for health promotion and physiological monitoring. The researchers of the LSMU Faculty of Nursing are also expected to make substantial contribution during the implementation of the other R&D&I priority 'Advanced applied technology for individual and public health' of the Priority R&D&I development area 'Health technology and biotechnology'. LSMU researchers and other specialists are capable of researching and developing the methods for provision and organisation of health care services, electronic and mobile technology of public health, implementing innovative health promotion solutions, methods and interactive technology broadening the possibilities for healthy lifestyle promotion and health improvement in the institutions, communities and health care system. LSMU Faculty of Nursing is also capable of satisfying the demand for researchers and other specialists capable of researching, developing and applying the above-mentioned technologies, providing health care institutions with nursing, radiology, rehabilitation, sport medicine specialists capable of applying technologies to be developed during the smart specialisation process. At present, the divisions of the Faculty are located in different buildings of LSMU and even different places of the city, there is a lack of uniform scientific base, which makes planning of R&D activities very complicated. During the implementation of the project, scientific base of the Faculty of Nursing of LSMU Medicine Academy will be developed providing suitable conditions for R&D activities and more effective involvement in the development and installation of the above-mentioned innovative technology, products, processes, methods that are important for the smart specialisation process. The scientific base upgraded during the implementation of the project will create conditions for implementation of international R&D projects of broader scale, closer integration of higher education, science and clinical practice. The project Development of the scientific base of the Faculty of Nursing will effectively supplement the project Development of the scientific base of the Faculty of Nursing described in Paragraph 23.8.4. of the General action plan and at the same time will ensure integration of the whole research and higher education base of the Faculty of Nursing into LSMU, also observing the principles of infrastructure optimisation and concentration in order to reduce administrative costs of institutions and to improve the quality of higher education. Based on the agreement No. S-429/PRM15-77 between the Ministry of Education and Science of LSMU of 8 May 2015 the 'Agreement on the development and modernisation of research and (socio-cultural) development and higher education

infrastructure from the funds of the European Union Structural Funds 2014–20250 and of the Lithuanian University of Health Sciences', the financial demand for the development of the whole higher education and scientific base of the Faculty of Nursing of LSMU is EUR 9,794 million. From these funds the Ministry of Education and Science will allocate EUR 4,317 for the project Development of the scientific base of the Faculty of Nursing, EUR 4,75 million for the project Development of the higher education base of the Faculty of Nursing described in Paragraph 23.8.4 of the General action plan, while the remaining amount of EUR 727,000 will be contributed by LSMU. Under the above-mentioned agreement, LSMU will pursue further development of its R&D and higher education infrastructure, by allocating own or its partners' funds in the amount not less than the funds allocated by the Ministry of Education and Science to the implementation of the project Development of the scientific base of the Faculty of Nursing and the project Development of the higher education base of the Faculty of Nursing described in Paragraph 23.8.4 of the General action plan. In addition to the above-mentioned own contribution to be made by LSMU into the Development of the higher education and scientific base of the Faculty of Nursing, by 31 December 2023 LSMU is planning to launch implementation of the project Development of the infrastructure needed for veterinary medical study programme aimed at improving the process of veterinary higher education and science, improving the quality of practical skills of trained veterinary doctors, development of specialisations, concentrating the potential of veterinary sciences and increasing capacities to carry out R&D activities in the field of veterinary, thus ensuring research-based higher education and their quality. The planned value of the project is EUR 8,978 million. LSMU is planning to accumulate the required funds, to borrow them from commercial banks, to receive from the sale of the state real estate managed by LSMU by trust in various locations of Kaunas City and district, that is no longer needed for LSMU activities. The processes of state property investment into LSMU are planned to launched in the nearest future;

23.7.5. the project Centre of new media, technology and design (M-Lab) (1st stage). This project will be implemented by KTU. During the implementation of the project, the pursued goal is to relocate new media, technology and design laboratory into KTU campus. In pursuit of its strategic goals, KTU faces the necessity to concentrate the spread scientific potential, to consolidate researchers' forces for the development of the most promising R&D areas, i.e. to bring the network laboratories closer to the new laboratories based in the National open access R&D centre. Many network laboratories are developing common R&D areas with the National open access R&D centre, but they have remote locations from it in Kaunas. Such situation makes cooperation not only between these laboratories but also with other research and higher education institutions complicated – no 'critical mass' is formed for generation and realisation of new ideas, and more active involvement of researchers in higher education processes, etc. If the common R&D infrastructure is developed, conditions for more intense mutual cooperation would be created, therefore the primary task is to bring the new media, technology and design laboratories close to each other in terms of location. This geographical concentration of infrastructure and human resources in KTU campus would allow bringing research groups of mechatronics, chemistry, future power engineering and information technology together in pursuit of common goals, and would attract more foreign research and business partners and would open broader perspectives for joining international R&D projects. In pursuit of strategic KTU international, interdisciplinary and business cooperation goals, R&D infrastructure needs to be developed – workshops where research could be carried out, as well as prototypes could be developed, produced and displayed, as well as 24 hours open creative spaces for both researchers and students of all stages. Researchers of various research areas, by including business, must be provided with possibilities to carry out R&D projects together from idea to prototype display in one place with all necessary prototyping equipment available. In order to make R&D results attractive to society and business, at M-Lab designers will be working together with researchers' team developing prototype design at the same time. M-Lab project is implemented together with the researchers from Massachusetts Institute of Technology (MIT, US). The mission of M-Lab is unconventional interdisciplinary research at the junction of science, technology and art, development and display of prototypes. The vision of M-Lab is unconventional, creative research

process and dynamic scientific environment, exclusive attention to eco-system design, development of interdisciplinary, practical research combining art, science and technology, taking future challenges into consideration. The purpose and concept of M-Lab stand out from already existing KTU higher education and science organisation forms, transfer of innovation. Exclusivity of M-Lab manifests itself through inclusion of art perspective (critical and creative analysis of technology, inspiration of adaptations and application of technology in developing narratives, speculations and fictions), pedagogics (projects including various groups of society – projects developing innovative methods to reduce negative impact on ecosystems, makers' culture (modification, bricolage, innovative adaptation of existing technology, aids and materials; development and display of functioning prototypes). The project to be implemented is intended to create the space for development and demonstration of unconventional, interdisciplinary research at the junction of science, technology and art. The main users of M-Lab will be scientists and other researchers, students, business (including industry) representatives and other KTU workers. A part of the M-Lab space will be open also to society. Activities and planned results of the project are directly related with satisfaction of target groups' needs – optimum working, creative and learning conditions will be created. Expanded and newly-developed basic infrastructure will ensure efficient functioning of human capital and infrastructure needed for the needs of higher education and science, modernisation of laboratory equipment, use of modern information systems, creation of adequate conditions for students' studies and creation. Due to the nature of the activities to be carried out by M-Lab, once the infrastructure is developed KTU researchers and students will be able to contribute to implementation of many smart specialisation priorities. Special contribution of M-Lab is expected into the implementation of Priority R&D&I development area Inclusive and creative society and of its two R&D&I priorities – 'Modern self-development technologies and processes' and 'Technologies and processes for the development and implementation of breakthrough innovations'. In case of R&D&I priority 'Modern self-development technologies and processes', KTU community is expected to contribute to development of new or essentially improved blended competence development technology, embracing technology of conventional and new media, which would ensure learning availability, flexibility, attractiveness and efficiency, autonomous learning technology improving learning quality, technology for drawing teaching plans integrating various teaching and learning methods and processes in pursuit of learning efficiency and optimum impact on learning and acquisition of skills. In the implementation of the R&D&I priority 'Technologies and processes for the development and implementation of breakthrough innovations', KTU researchers and students are expected to contribute to research of audiovisual media technology that creates value added for business and/or final user, increase competitiveness of a product and service on Lithuanian and export markets, social technology which by using information and communication and other technologies would enable development of social and organisational innovations promoting establishment and growth of innovative companies and social business;

23.7.6. the project Modernisation of the infrastructure of Food Institute and Faculty of Chemical Technology. This project will be implemented by KTU. Since 1 January 2010, KTU Food Institute is integrated into KTU and is its trunk division. The mission of the Institute is international level development of research and applied scientific activities in the field of food, satisfying the needs of the country's economic growth and training of highly-qualified scientist. R&D activities carried out by the researchers of KTU Food Institute are important for the smart specialisation process, in particular, for the development of the Priority R&D&I development area 'Agro-innovation and food technologies' and the implementation of its priority 'Sustainable agro biological resources and safer food' Researchers of KTU Food Institute are capable of researching and developing safer, natural food raw materials, food ingredients and products, food additives, innovative food packaging and storage technology, advanced systems of hazardous organism control and plant nutrition, searching for innovative product development and production processes, identifying the most promising new, safer, natural raw materials of food additives and other ingredients. R&D activities carried out at KTU Food Institute also include research of possibility to use agricultural and food processing waste to improve soil fertility, development and optimisation of

manufacturing technology of new natural food additives, adaptation of new natural food additives to improve safety of food products, testing of new natural food additives technology and production of their prototypes, development and placement on the market of new safer food additives and food ingredients. However, the quality of these R&D activities is also important, the high level of which is difficult to achieve. In pursuit of KTU goals and high results of the interaction of science, higher education and business, KTU infrastructure needs to be optimised, located in one territory by science areas and premises must be equipped according to modern requirements for carrying out higher education and science activities. In order to improve productivity of the activities of the Food Institute, attractive working environment needs to be created, research base needs to be upgraded by integrating it into the Faculty of Chemical Technology. At present the premises of KTU Food Institute are not used very efficiently because of them being located far away from the main KTU campus, layout of premises needs modification, infrastructure needs upgrading, but efficiency of investments by renovating the existing buildings is lower than analogous infrastructure within the territory of KTU campus due to geographical distance and more complex integration into a common virtual network. Some of these activities are difficult to carry out because of geographical distance. The best solution of these problems is integration of the infrastructure of KTU Food Institute into the infrastructure of the Faculty of Chemical Technology, thus achieving effective management of real estate entrusted to KTU. It would allow making investment into consolidated infrastructure of science and higher education of food and chemical technology, providing new possibilities for students and researchers, as well as optimising operating expenses. Activities and planned results of the project are directly related with satisfaction of target groups' needs (students, researchers, other specialists) – optimum working, creative and learning conditions will be created. Expanded and newly-developed basic infrastructure will ensure efficient functioning of human capital and infrastructure needed for the needs of higher education and science, modernisation of laboratory equipment, use of modern information systems, creation of adequate conditions for students' studies and leisure. Once improved, the infrastructure of Food Institute and Faculty of Chemical Technology will further increase the possibilities of KTU to take more effective participation in the smart specialisations process. Based on the agreement No. S-345/SV3-33 between the Ministry of Education and Science and KTU of 8 May 2015 ‘Agreement on the development and modernisation of research and (socio-cultural) development and higher education infrastructure from the funds of the European Union Structural Funds 2014–2020 and Kaunas university of technology’, the latter higher institution will attempt to finance 45% of the project value from its own and its partners' funds (Ministry of Education and Science – 55%), which amounts to approximately EUR 1,2 million. Furthermore, under this agreement, KTU will pursue further development of its R&D and higher education infrastructure concentrating it in KTU campus, allocating its own or partners' funds of no smaller amount than the allocations made by the Ministry of Education and Science for the implementation of the projects described in Paragraph 23.7.5 and present Paragraph of the General action plan. By 31 December 2023, KTU is planning to launch implementation of the following projects: New media, technology and design centre (M–Lab) ($2^{nd}$ stage) (project value is approximately EUR 0,4 million), which will expand the infrastructure and capacities of the New media, technology and design centre to be established during the implementation of the project described in Paragraph 23.7.5. of the General action plan, Non-formal learning and innovation development centre (project value is approx. EUR 6,7 million), Merger of faculties and modernisation of their infrastructure (project value – approx. EUR 1,5 million). These goals are planned to be achieved by using funds to be received from the sale of real estate which was invested into KTU by the Resolution No. 824 of the Government of the Republic of Lithuania of 27 August 2014 ‘On state property investment and increase of the capital of the owner of public enterprise Kaunas University of Technology’ and the Resolution No. 999 of the Government of the Republic of Lithuania of 16 September 2015 ‘On state property investment and increase of the capital of the owner of public enterprise Kaunas University of Technology’, which is no longer needed by the University for performing its functions.

23.7.7. the project Reconstruction of ASU building No. 4E2p (Studentų g. 9, Akademija town, Kaunas District (1st stage). Project will be implemented by ASU. R&D and higher education activities carried out by ASU are important in pursuit of the goals of the smart specialisation process, in particular for the development of the Priority R&D&I development area 'Agro-innovation and food technologies'. Improved infrastructure will enable ASU to take effective participation in the implementation of the R&D&I priority 'Sustainable agro-biological resources and safer food', because researchers will be able to research and develop safer, natural food raw materials, food ingredients and products, food additives, innovative food packaging and storage technology, perspective adapted species of food and fodder plants, primary material of cattle lines and genotypes with targeted quality parameters, advanced systems of hazardous organism control and plant nutrition, innovative effective fertilizers or their components with technological, environmental and logistic properties, biological preparations ensuring sustainable environment, technology of targeted (precise) plant farming and cattle farming. ASU researchers' contribution into the implementation of the R&D&I priority 'Functional food' will be research of functional food components and/or separation of such components, research of impact of functional food components on personal health and wellbeing, development and improvement of agricultural raw materials and their processing technology. Major leveraging of the existing and newly-developed infrastructure of ASUS is planned through the implementation of the R&D&I priority 'Innovative development, improvement and processing of biological raw materials (biorefinery)', because researchers are planned to be extensively included into the research and development new technology of projected composition agricultural raw materials, complex technology of extraction and fractioning of agricultural raw materials, effective technology of physicochemical and biocatalytic processing of agricultural raw materials. Specialists trained in the second object are expected to help in tackling the problem of shortage of human resources associated with the shortage of scientists, other researchers and employees with exclusive competence in food production chain. Trained specialists will be capable of applying the latest innovation in the chain of food raw materials and product manufacturing not only for research purposes but also ensuring production of safer and more sustainable food, competitiveness of companies in daily activities of companies. Considering that a small number of researchers work in these fields, once the infrastructure is upgraded more PhDs are expected to be trained, qualifications of scientific workers are expected to be improved, new research methods are expected to be learnt. Furthermore, planned interdisciplinary postgraduate projects (food, nutrition and agricultural sciences) will be useful for the implementation of the above-mentioned R&D&I priorities, because synergy of these fields is needed for scientific assessment of technology and properties of certain products to be developed. The project is needed also in pursuit of the continuation of the development of R&D&I infrastructure of ASU as stipulated in the Programme for the development of integrated science, higher education and business centre (valley) 'Nemunas' approved by the Resolution No. 1130 of the Government of the Republic of Lithuania of 1 October 2008 'On the approval of the Programme for the development of integrated science, higher education and business centre (valley) 'Nemunas', by developing common infrastructure with the Lithuanian Research Centre for Agriculture and Forestry and the Joint Research Centre for Agriculture and Forestry. ASU had a part of its building repaired, but state investment is needed for final completion of the superstructure and equipment by adapting it to higher education and R&D activities. Obsolete infrastructure determines problems, such as inadequate understanding of the application of epidemiology, mathematical methods to define the conditions for biological objects spread and development, inadequate competences to integrate modern fertilisers manufacturing and agrochemical knowledge, to research and assess the effect and environmental impact of fertilisers. Once the laboratories of agro biotechnology, materials science, food raw materials, agronomic and zoo technical research and premises needed for studies are refurbished, the infrastructural attractiveness and competitiveness of ASU are likely to increase, creating conditions for strengthening of already established relations with foreign higher education schools, by carrying out joint higher education and R&D activities. Based on the agreement No. S-492/107/2016 between the Ministry of Education and Science and ASU of 22 June 2015 the 'Agreement on the development

and modernisation of research and (socio-cultural) development and higher education infrastructure from the funds of the European Union Structural Funds 2014–2020 and Aleksandras Stulginskis University', ASU will attempt to complete the reconstruction of the above-mentioned object by 31 December 2023, by launching the project Reconstruction of the ASU building No. 4E2p (Studentų g. 9, Akademija town, Kaunas District (2nd stage) from its own funds, with the same or bigger amount (EUR 1,013 million) to be allocated by the Ministry of Education and Science for the first stage of reconstruction. Money received from the sale of state real estate managed by ASU by trust in various locations of the country (state property investment into ASU processes is planned for the nearest future) will be assigned for reaching this goal.

23.8. the measure Concentration of research and higher education infrastructure, modernisation of teaching and learning environment. Investment into higher education infrastructure, equipment acquisition, development and upgrading of the basic equipment of higher education is needed in order to develop and modernise the R&D and higher education infrastructure of research and higher education institutions, which is needed for performing their functions. By its essence this measure is similar to the measure Modernisation of R&D and higher education infrastructure in the smart specialisation areas described in Paragraph 23.7 of the General action plan, however no strict requirements for complying with R&D&I priorities will be applied to the projects to be implemented under this measure. However, when implementing this measure, R&D and higher education infrastructure is planned to be developed and modernised, activities to be carried on which basis are likely to impact the economic and social development of the country in the future. The list of the projects of universities funded under this measure complies with the insights and suggestions made in the Roadmap of investment into higher education system regarding further concentration of R&D and higher education infrastructure. In order to sustain high level of higher education and research in the country, regular investments into R&D and higher education infrastructure are needed, because without modern equipment available even the best representatives of academic and scientific community would find it difficult to train high-level specialists in demand on the labour market, to carry out relevant R&D activities and to develop competitive technologies and products, thus increasing competitive advantage of the country. Development of the infrastructure needed for R&D and higher education process includes more than construction of modern research centres and their provision with laboratory equipment. Timely modernisation of the infrastructure needed for academic activities is also important, therefore the projects to be implemented under this measure mainly target this goal. Same as in case of the measure described in Paragraph 23.7 of the General action plan, the measure Concentration of the infrastructure of research and higher education institutions, modernisation of teaching and learning environment is implemented by promoting higher university schools to contribute in equal parts with the Ministry of Education and Science to the planned development of R&D and higher education infrastructure. Higher education schools co-financing projects with the Ministry of Education and Science or implementing new projects from their own funds, will develop the infrastructure needed for higher education and R&D activities. The following projects are planned to be implemented under this measure:

23.8.1. the project Construction of LMTA campus at Olandų g., Vilnius (1st stage). Project will be implemented by LMTA. LMTA is the only specialised university higher school training professional creators and performers of music, theatre, cinema and dance art, art theoreticians and critics, art teachers. The infrastructure to be developed will be used for higher education and R&D (cultural development) activities, dissemination of art and art research. The shortage of modern infrastructure limits the LMTA's possibilities to develop internationalisation by carrying out higher education and R&D activities, to use the available potential of human resources. The new infrastructure is likely to open new possibilities for art business development, interdisciplinary research. The object planned to be developed will be used for the needs of not only LMTA but also of other research and higher education institutions, other entities of public and private sectors. Researchers of various research and higher education institutions, artists and society will be provided with a possibility to open specialised funds and archives of music folklore, music, theatre, cinema, a prerequisite to develop an open access centre of art research will evolve. The team of highly-

qualified lecturers artists and researchers of LMTA, long-term experience of cooperation with Lithuanian art schools and conservatoires, foreign higher education music, theatre and cinema schools, accumulated experience of distance and electronic teaching, art pedagogy studies create prerequisites for LMTA to contribute to the development of the Priority R&D&I development area 'Inclusive and creative society'. During the implementation of the R&D&I priority of this area 'Modern educational technology and processes', LMTA researchers and specialists are expected to contribute to the development and installation of the new or essentially improved blended competence building technology, didactic technology of formal and non-formal education ensuring interactivity of teaching and learning aids, which are oriented to the development of a creative personality open to changes and novelties. When implementing the R&D&I priority 'Technologies and processes for the development and implementation of breakthrough innovations', LMTA researchers are expected to contribute to the research of the possibilities to develop simulation platforms, new design products, services and creative ideas, of the possibilities of technology of recognition and transformation of audiovisual and sensual signals in order to develop new creative products, of the possibilities of quick development of prototypes of technology and systems intended for creation of design products and services. Based on the agreement No. S-441/F16-302 between the Ministry of Education and Science and LMTA of 11 May 2015 the 'Agreement on the development and modernisation of research and (socio-cultural) development and higher education infrastructure from the funds of the European Union Structural Funds 2014–2020 and Lithuanian Academy of Music and Theatre', LMTA will pursue further development of the infrastructure of the new campus at Olandų street, and will launch the project Construction of LMTA campus at Olandų g., Vilnius (2nd stage) by 31 December 2023 from LMTA's own or its partners' funds, the same or bigger amount (EUR 13,033 million) to be assigned by the Ministry of Education and Science to the project Construction of the campus of the Lithuanian Academy of Music and Theatre at Olandų street, Vilnius (1st stage). Money received from the sale of state real estate managed by LMTA by trust located in prestigious places in Vilnius, which will become redundant once LMTA relocates to the campus at Olandų street, is planned to be used for reaching this goal. The processes of state property investment into LMTA are planned to launched in the nearest future; When planning funds for this project, despite the importance of art and creative, cultural industries for the country's economic-social development, no funds were assigned from the European Union Structural Funds during the funding period 2007–2013 for development and modernisation of the infrastructure of this area by concentrating intellectual potential within one territory;

23.8.2. the project Internationalisation by adapting the infrastructure of VDU multifunctional centre. This project will be implemented by VDU. It is a continued project of the realisation of the idea of global' Lithuanians' university, which includes completion of the new building construction, acquisition of higher education equipment, and is aimed at development of modern infrastructure enabling internationalisation of social studies and improvement of the quality of higher education. Infrastructure to be developed during the project implementation will be intended to enhance the existing specialisation of VDU by developing new areas and at the same time strengthening cooperation, offering joint studies and research together with foreign and Lithuanian higher education establishments, business organisations. Infrastructure to be developed will enable development of social sciences, such as politics, economics and management, communication science, by including a new communication field with a big number of students – cultural industries. Infrastructure of the Faculty of Arts is planned to be developed and improved during the implementation of the project for the following art studies: acting, art of new media. Once the infrastructure is improved, international studies in the following fields can be provided: fashion design, music composition at the International School of Creative Industries of VDU (together with UCLAN university, United Kingdom). Infrastructure will enable VDU to enhance studies and research of audiovisual/new arts. Improvement of VDU infrastructure will enable integration and strengthening of links between the fields which are separately developed at present by VDU and KTU (economics, management, public administration, social science, psychology, educology). Based on the agreement No. S-437/45-30 between the Ministry of Education and Science and VDU of 8 May 2015 'Agreement on the

development and modernisation of research and (socio-cultural) development and higher education infrastructure from the funds of the European Union Structural Funds 2014–2020 and Vytautas Magnus University', the latter higher institution will attempt to finance 24% of the project value from its own and its partners' funds (Ministry of Education and Science – 76%), which amounts to approximately EUR 0.3 million;

23.8.3. the project Humanities campus. This project will be implemented by VDU. The project is aimed at promoting international activity of VDU, developing strategic partnership with the leading higher education schools, R&D centres, identifying their commonalities with VDU and implementing mutually beneficial cooperation programmes, developing strategic international partnership in the field of innovation application and technology installation studies, carrying out international interaxial research of technology and innovation applications as established in the strategy of VDU. The goal of the project is creation of the environment favourable to international cooperation, partnerships, studies and R&D, needed for enhancement of humanities areas. During the project implementation, the infrastructure of the building located at Donelaičio g. 52 and Putvinskio g. 23, Kaunas is planned to be improvement (by developing and improving the infrastructure of the Faculty of Arts for art studies, such as acting, art of new media). Improved infrastructure would enable international studies to be provided in the fields such as fashion design, music composition and enhancement of VDU studies and research of audiovisual, new arts. The reconstruction of the building, completion of the new construction and acquisition of equipment will be intended to enhance specialisation of VDU. Improved infrastructure will enable provision of joint study programmes in the field of multilingualism which is under approval, implementation of the projects of cooperation with world's centres of Lithuanian language studies and Lithuanian communities in the world. Based on the agreement No. S-437/45-30 between the Ministry of Education and Science and VDU of 8 May 2015 'Agreement on the development and modernisation of research and (socio-cultural) development and higher education infrastructure from the funds of the European Union Structural Funds 2014–2020 and Vytautas Magnus University', the latter higher institution will attempt to finance 29% of the project value from its own and its partners' funds (Ministry of Education and Science – 71%), which amounts to approximately EUR 1 million. Besides, under the above-mentioned agreement, VDU will pursue further development of its R&D and higher education infrastructure assigning its own or partners' funds in the amount no smaller than the support granted by the Ministry of Education and Science for the implementation of VDU's planned projects. By 31 December 2023, VDU is planning to launch the implementation of the project Development of natural sciences campus at Kaunas Garden of Botany, VDU (the value of the project is EUR 2,18 million), aimed at renovation of the central palace of Aukštoji Freda manor, where wide-ranging activities of science, cognitive education and education could be carried out;

23.8.4. the project Development of the study base of the Faculty of Nursing. This project will be implemented by LSMU. During the implementation of this project, the divisions of LSMU Faculty of Nursing are planned to be relocated to the territory of Kaunas Clinic (Eivinių g. 2, Kaunas). Market and sectoral studies conducted in Lithuania and at global level show future increase in the demand for specialists with medical qualifications and need for qualification improvement of these specialists. Trial "day photograph" analysis of the medical staff number, demand and workload commissioned by the Ministry of Health in 2011 forecasted changes in the demand of doctors' professional qualification jobs by 2015 in Lithuania demonstrate the trends of growing demand. From the establishment of the Faculty of Nursing of LSMU in 1990, the number of its students has been consistently growing, and in recent years, despite unfavourable demographic trends, increasing number of students are enrolled to the study programmes provided at the Faculty of Nursing: 295 students were enrolled this year, the total number of students is 745 at present. The number of students enrolled to postgraduate studies remains stable. At present, the divisions of the Faculty are located in different buildings of LSMU and even different places of the city, there is a lack of uniform scientific base, which makes planning of R&D activities very complicated. With the number of study programmes and students increasing, there is a shortage of premises for theoretical and clinical studies, in particular classrooms with adequate modern equipment for development of

preclinical theoretical skills. Building of clinical skills is the essential element of competence development in order to train health care specialists ensuring patients' nursing, quality of health care services provided and efficient application of health care technologies. Upon implementation of this project, the study base will be created in the Faculty of Nursing of LSMU Medical Academy, which will provide necessary conditions for training highly-qualified health care specialists. Once the study base is modernised during the project implementation, higher quality of nursing and rehabilitation studies will be achieved, highly-qualified specialists will be trained, new interdisciplinary study programmes will be developed, higher education, science and clinical practice will be closer integrated. The project Development of the study base of the Faculty of Nursing will effectively supplement the project Development of the scientific base of the Faculty of Nursing described in Paragraph 23.7.4. of the General action plan, being capable of satisfying the demand for researchers and other specialists, providing health care institutions with nursing, radiology, rehabilitation, sports medicine specialists capable of applying technologies to be developed during the smart specialisation process. These two projects together will ensure the integration of the whole study and scientific base of the Faculty of Nursing into LSMU, thus following the principles of infrastructure optimisation and concentration in order to reduce administrative costs of the institutions and to improve the quality of higher education. Based on the agreement No. S-429/PRM15-77 between the Ministry of Education and Science of LSMU of 8 May 2015 the 'Agreement on the development and modernisation of research and (socio-cultural) development and higher education infrastructure from the funds of the European Union Structural Funds 2014–20250 and of the Lithuanian University of Health Sciences', the financial demand for the development of the whole higher study and scientific base of the Faculty of Nursing of LSMU is EUR 9,794 million. From these funds the Ministry of Education and Science will allocate EUR 4,75 for the project Development of the study base of the Faculty of Nursing, EUR 4,317 million for the project Development of the study base of the Faculty of Nursing described in Paragraph 23.7.4 of the General action plan, while the remaining amount of EUR 727,000 will be contributed by LSMU;

23.8.5. the project Modernisation of study infrastructure at Kaunas Faculty of VDA (1st stage). Project will be implemented by VDA. The need to implement the project was determined by the problems encountered by Kaunas Faculty of VDA – premises available are not suitable for study process because of the present layout, non-conformity to sanitary–hygienic requirements, fire safety, adaptation for people with disability and other requirements established for higher education studies. Technical conditions of the roof constructions do not meet the requirements, there are no possibilities to expand the study programmes and to increase international activity of the faculty, there is a shortage of premises for adequate study activities, obsolete and worn equipment is used in the study process, some equipment needed for studies is lacking, there is no possibility to develop cultural industries and to provide other culture services oriented to more diverse social groups, high premises heating and other operating expenses, the object of cultural heritage in which Kaunas Faculty of VDA is based is breaking down. The goal of the project is to increase availability of higher artistic education and to improve its quality, to enhance and develop cultural space of Kaunas Old Town, to ensure conservation of the cultural heritage. The objective is to adapt the complex of buildings at Muitinės g. 2, Kaunas for the needs of Kaunas Faculty of VDA. Planned activities within the framework of the project include reconstruction of the complex of buildings and its provision with equipment needed for study process. Upon implementation of the project, the quality of art studies is expected to improve: studies will be organised in adequate premises by providing study process (laboratories) with necessary technological equipment, additional spaces will be created in the premises for display of works of art, classrooms, laboratories will be installed, students will have a possibility to work in quality equipped individual working places. A possibility to invite lecturers and artists from Lithuania and foreign will be created. Besides, conditions for developing new study programmes attractive and important to society will be created (art therapy, jewellery and small plastics, illustration, fashion design). Attempts would be made to increase the number of joint study programmes (in particular, international). Another planned outcome of the project is modern contemporary art gallery, where works of art of students, lecturers and invited artists will be

exhibited, interesting cultural events attractive to society will be held, arts incubator will be established – by using the infrastructure available (premises, equipment) creators of various arts, their groups and persons engaged in art-related business (creative industries) would be concentrated in one space and artists would be provided with a possibility to create and display their works to audience, to start their own business, to develop art-related businesses, to promote community to take more active participation in cultural life. Arts incubator would be like a live organism with ongoing process, change of young artists, small and medium business representatives ensured in it. Activities of the Open school of fine art, design and architecture would be expanded – the school will be able to offer more study programmes and to increase the number of students. It will enable development of lifelong learning programme. Reconstruction of the complex of buildings at Muitinės g. 2 and its adaptation to the needs of Kaunas Faculty of VDA are important not only to the institution but also to Kaunas City. Upon implementation of the project, the cultural space of Kaunas Old Town would be further expanded for amateurs, young artists, professional artists, who will influence the image of the city, rally society, become the focus and attraction for residents and visitors. The team of highly-qualified lecturers artists and researchers of VDA, long-term experience of cooperation with Lithuanian and foreign art schools, accumulated experience of distance and electronic teaching create prerequisites for VDA to contribute to the development of the Priority R&D&I development area 'Inclusive and creative society'. Upon implementation of R&D&I priority 'Technologies and processes for the development and implementation of breakthrough innovations' of this area, active participation of VDA researchers into project activities is expected. Based on the agreement No. S-347/ŪS-174 between the Ministry of Education and Science and VDA of 08 May 2015 the 'Agreement on the development and modernisation of research and (socio-cultural) development and higher education infrastructure from the funds of the European Union Structural Funds 2014–2020 and Lithuanian Academy of Music and Theatre', VDA will pursue further development of the infrastructure of Kaunas Faculty and by 31 December 2023 will launch the implementation of the project Study infrastructure modernisation in Kaunas Faculty of VDA (2nd stage), which with the use of VDA's or partners' funds, the same or bigger amount (EUR 3,62 million) to be assigned by the Ministry of Education and Science to the project Study infrastructure modernisation in Kaunas Faculty of VDU (1st stage). Money received from the sale of state real estate managed by VDA by trust located in various places in Kaunas is planned to be used for the implementation of these goals (the process of state property investment into VDA is planned for the nearest future), upon receipt of support from the Ministry of Culture, since the object to be renovated is immovable cultural heritage. The study infrastructure in Vilnius modernised from the European Union Structural Funds 2007–2013 now provides excellent conditions for development of design innovation and display of commercialisation results of this activity. The implementation of the projects Study infrastructure modernisation in Kaunas Faculty of VDU (1st stage) and Study infrastructure modernisation in Kaunas Faculty of VDU (2nd stage) will determine formation of strong centres of art and creative and cultural industries in two largest cities of Lithuania capable of using substantial potential of design innovation available;

23.8.6. the project Foundation of the R&D and higher education centre of Lithuanian Sports University at Birutės g.19, Birštonas. Project will be implemented by LSU. Development of R&D and study base of LS intended for formation of students' practical skills and research related with health promotion, rehabilitation and sports will enable this university to take more active participation in the country's R&D system development and to supplement it with important research studies carried out by their researchers in the field of sports science. These research studies in their essence are important also for the smart specialisation process of Lithuania, in particular when developing the Priority R&D&I development area 'Health technologies and biotechnologies', since LSU researchers are capable of researching and developing applied technology for personal and public health (interactive technology of healthy lifestyle, rehabilitation and education), while trained specialists could participate in the activities of practical application and spread of these technologies at health care institutions. Practical research base to be developed will be the first step towards the creation of the network of such bases in different resorts of the country with immense possibilities for

students to improve their skills, while for researchers to carry out research in real environment with sportsmen. Based on the agreement No. S-452/S-17 between the Ministry of Education and Science and LSU of 11 May 2015 the 'Agreement on the development and modernisation of research and (socio-cultural) development and higher education infrastructure from the funds of the European Union Structural Funds 2014–2020 and Lithuanian Sports University', LSU will pursue further development of R&D and higher education infrastructure of this nature, by 31 December 2023 launching the implementation of the project Foundation of R&D and higher education centre of Lithuanian Sports University at Sporto g. 2/Ramybės g. 24, Palanga, for which the same or bigger amount to be assigned by the Ministry of Education and Science to the project under implementation in Birštonas (EUR 1,013 million). Money to be received from R&D and other services, funds of private investors and other state institutions interested in sports research, provision of rehabilitation services, healthy lifestyle spread are planned to be used for reaching this goal.

23.8.7. the project Concentration and modernisation of R&D infrastructure of Šiauliai University by creating conditions for effective implementation of R&D&I priorities (1st stage). Project will be implemented by ŠU. Results of the assessments conducted by local and foreign experts show that the research and higher education infrastructure of Šiauliai University is obsolete. Modernisation of R&D and higher education infrastructure (classrooms, laboratories) requires big investment. It becomes complicated to carry out research satisfying business needs, to participate in international research projects, to attract top qualification scientists and lecturers, to train top qualification specialists. Considering the above-mentioned, during the implementation of the project R&D infrastructure is planned to be modernised by upgrading laboratory equipment and adapting premises for R&D and innovative studies carried out by ŠU in the field of Educology of social sciences. Investment into the planned activities would ensure concentration of the intellectual capital of the University in one renovated building of Complex 1 of Šiauliai University (P. Višinskio g. 25) adapted for research work in interdisciplinary teams and experimental development, in which the Faculties of Social Welfare and Disability and of Educology are currently based, which by the suggestion of ŠU Senate made in October 2015 and by the decision of ŠU Council adopted in October are currently under restructuring by merging two Faculties into one Faculty of Educology and Social Welfare. Provision of laboratories with modern equipment satisfying the needs of the region will strengthen the capacities of ŠU researchers to carry out high level fundamental and applied research, to cooperate with business and high level foreign scientific centres. By applying the principle of open access, the upgraded infrastructure will be used for the needs of students, researchers and specialists from other science and higher education institutions by implementing joint study programmes, R&D and providing services (health promotion, health research) to the members of the city and the region. Science Institute of ŠU and scientific centres and laboratories (Biomedical engineering; Educational research; Natural science education; Humanitarian research; Gender study; Art study; Disability research; Process modelling; Regional development and Social research centres) operating in it, Social Partnership and Innovation Centre and the Network of researchers' competences if concentrated in one building to be renovated during the project implementation could become a solid scientific base and counterweight to modern R&D centres operating in other universities in Lithuania. In order to ensure the quality of planned studies and R&D in the field of both human resources and infrastructure, material resources of ŠU need to be strengthened by establishing educational modern didactics (in particular, interactive) laboratories needed for realisation of study programmes, which would contribute to enhancement of the capacities and resources of the higher education school, i.e. modernisation of students' learning environment. Besides, favourable environment to train highly-qualified specialists and to contribute to assurance of quality education in the region, development of new knowledge (important for practice and science) would be created. Based on the agreement No. S-491/06-26-D-93 between the Ministry of Education and Science and ŠU of 22 June 2015 the 'Agreement on the development and modernisation of research and (socio-cultural) development and higher education infrastructure from the funds of the European Union Structural Funds 2014–2020 and Šiauliai University', ŠU from its own funds will implement the project Concentration and modernisation of R&D infrastructure of Šiauliai University

by creating conditions for effective implementation of R&D&I priorities (2nd stage), with the same or bigger amount to be assigned by the Ministry of Education and Science to the project Concentration and modernisation of R&D infrastructure of Šiauliai University by creating conditions for effective implementation of R&D&I priorities (1st stage) (EUR 1,361 million). Both projects are planned to be implemented in parallel – ŠU funds will be invested into the renovation of the building and interior. Support from the EU structural funds administered by the Ministry of Education and Science will be used to adapt the premises to R&D and higher education activities, laboratory equipment will be modernised. Money received from the sale of state real estate managed by ŠU by trust in various locations in Šiauliai (state property investment into ŠU processes is planned for the nearest future) will be used to fulfil the obligations of ŠU.

23.8.8. the project Study environment improvement by developing technological-information provision at LEU. Project will be implemented by LEU. This project is aimed at developing the base of independent studies and R&D at the University, by establishing a library in the building of former canteen, the reconstruction of which is almost completed. Open funds with free access to students, scientists and other researchers, university and city community are planned to be developed in the library. The library will be open to everyone willing to use it. Information resources will be accessible at the reading rooms of natural and exact sciences, social-humanitarian, periodical publications and scientific workers. Electronic information resources (subscribed scientific databases, etc.) will be freely accessible to users. R&D products – scientific publications, databases of full text documents, data on the basis of which research studies are conducted – will be registered and collected at the library. The library will have spaces for group work of students, scientists and other researchers carrying out R&D activities, conditions for developing and reviewing creative products developed by consumers will be created. Upon implementation of the project, the capacities of LEU researchers to participate in the implementation of the Priority R&D&I development area 'Inclusive and creative society' will increase. Based on the agreement No. S-490/R12-197 between the Ministry of Education and Science and LEU of 22 June 2015 the 'Agreement on the development and modernisation of research and (socio-cultural) development and higher education infrastructure from the funds of the European Union Structural Funds 2014–2020 and Lithuanian Educology University', LEU will pursue further development of its infrastructure in order to improve the quality of studies and to create conditions for university researchers to participate in R&D activities (which are also relevant for the implementation of the Priority R&D&I development area 'Inclusive and creative society'), by 31 December 2023 launching implementation of the project Study quality improvement by modernising the study infrastructure at Lithuanian Educology University, with the same or bigger amount than the support assigned by the Ministry of Education and Science to the project Study environment improvement by developing technological-information provision at LEU (EUR 1,477 million). Money received from the sale of state real estate managed by LEU by trust in various locations of the country (state property investment into LEU processes is planned for the nearest future) will be assigned for reaching this goal.

23.9. the measure Development of marine valley nucleus by implementing the second stage of infrastructure modernisation is needed in order to complete the implementation of the project Development of marine valley nucleus and study infrastructure modernisation (JŪRA) financed from the EU Structural Funds 2007–2013. The measure Implementation of the second stage of the development of marine valley nucleus and study infrastructure modernisation will be implemented by supporting one R&D infrastructure development project, during which a laboratory building adapted for the laboratories of Marine ecosystems, Marine chemistry, Water transport technology and Marine constructions reliability of KU is planned to be constructed, and research equipment of the latter laboratories is planned to be upgraded. The planned result of these two projects is National centre of marine science and technology, with the marine research potential of KU and other Lithuanian research and higher education institutions concentrated in it, providing basis for development and expansion of the Integrated science, higher education and business centre (valley) for the development of Lithuanian marine sector, the development programme of which was approved by the Resolution No. 786 of the Government of the Republic of Lithuania of 23 July 2008 'On the

approval of the integrated science, higher education and business centre (valley) for the development of Lithuanian marine sector'. R&D infrastructure to be developed is important for the implementation of several R&D&I priorities:

23.9.1. R&D&I priorities 'Smart transport systems and information and communication technologies' (forecasting, modelling activities and search for their new optimisation solutions are planned to be carried out at the seaports of transport and cargo flows), 'Technologies/models for the management of international transport corridors and integration of modes of transport' (models of innovative transport corridors and logistic networks control are planned to be developed), 'Information and communication technology infrastructure, cloud computing solutions and services' (data of big navigational, logistic, cargo and other technological processes is planned to be collected and processed by using cloud computing methods) of the Priority R&D&I development area 'Transport, logistics and information and communication technologies';

23.9.2. R&D&I priorities 'Structural and composite materials' (composite constructive materials and constructions with exclusive properties are planned to be developed for marine sector), 'Flexible technological systems for product creation and production' (technology saving materials and resources are planned to be developed, technology and processes applied in technological systems of shipbuilding and repair are planned to developed, adapted and installed) of the Priority R&D&I development area 'New production processes, materials and technologies';

23.9.3. R&D&I priority 'Energy and fuel production using biomass/waste and waste treatment, storage and disposal' (technology increasing efficiency of biofuel use in sea transport and decreasing environment pollution is planned to be developed) of the Priority R&D&I development area 'Energy and sustainable environment';

23.10. the measure 'To ensure operation of LITNET, the computer network of Lithuanian science and higher education institutions' is needed in order to ensure efficient use of data transmission and other infrastructure needed for provision of innovative electronic services in Lithuanian science and higher education institutions. This measure supplements the measure Development of infrastructure for research and higher education described in Paragraph 23.1 of the General action plan and intended to improve data transfer and other infrastructure needed for provision of innovative electronic services in Lithuania to research and higher education institutions. The present infrastructure of higher education institutions and research institutes is being increasingly digitalised. If before high speed data transmission was needed for completion of objectives of only certain sciences, now scientists in every field of science need reliable and high speed network access to various online information sources. Knowledge sources are currently under development not only in research and higher education institutions but also in other place, e.g. social networks. Ever increasing mobility of scientists, lecturers, students requires for the same access conditions irrespective of location. Lifelong learning promotes development of virtual learning environments with multiple media, including digital television, used. Workplace virtualisation, use of tablets at schools require for adequate data transmission quality. Volume of data transmitted by mobile devices is forecasted to increase by 30 times in the next five years in the world. Digital data volumes double less than in two years and pace of this trend can increase in the world. All this requires constant support of network infrastructure and services provided in it;

23.11. the measure Assurance of accessibility of electronic resources (databases, depositories of publications, etc.) needed for R&D&I I activities is needed in order to provide research and higher education institutions to international R&D databases. Prerequisite for successful researchers' work is possibility of operative access to scientific information. Once Lithuanian researchers start taking active participation in the implementation of R&D&I priorities, the need and importance of access to international R&D databases will significantly increase. In order to reduce expenses, access to databases of scientific articles and other scientific literature needs to be organised on centralised basis, therefore one project will be implemented under this measure. The project will be implemented by the Lithuanian Research Library Consortium with immense experience in this activity and consistently researching changing needs of scientific community. With this measure launched during the last period of EU Structural Funds and continuing its implementation in this period, intensity of

support to research and higher education institutions is gradually decreased and their own contribution is increased (at present, it accounts for 8% of expenses, from 2016 it is planned to account for 15%). The principle of reducing support intensity will remain in order to transit smoothly to the stage when support from EU Structural Funds to this activity will significantly decrease or disappear and this support will have to be replaced with much more modest resources of the national budget of the Republic of Lithuania.

## CHAPTER V
## IMPLEMENTATION OF THE GENERAL ACTION PLAN

24. Implementation of the General action plan is financed from:

24.1. funding of the EU financial support and co-funding;

24.2. funds from the national budget of the Republic of Lithuania;

24.3. funds of research and higher education institutions and other public and private legal persons.

25. The main source of the funds of the measures implementing the objectives of the General action plan is funds of the EU financial support and co-funding:

25.1. Implementation of the measures described in Paragraphs 23.1–23.7, 23.9 and 23.11 of the General action plan is financed from the funds of the measures of the specific objective 1.1.1 ‘To pursue more active use of R&D and innovation infrastructure’ available and under development of the investment priority 1.1 R&D infrastructure improvement, enhancement of capacities to develop R&D activities and promotion of the activities of centres of competence, in particular of European importance of the priority 1 of the action programme – Promotion of R&D and innovation (hereinafter – Priority 1 of the Action programme);

25.2. Implementation of the measures described in Paragraphs 20.4, 21.2–21.6, 21.8, 22.1, 22.3 and 22.4 is financed from the funds of the specific objective 1.2.2.To increase the scale of knowledge commercialisation and technology transfer of the investment priority 1.2 Promotion of business investment into R&D, development of communications and interaction between companies, R&D centres and higher education sector, primarily, by promoting investment into product and service development, technology, innovation for provision of social and public services; also promotion of demand, networking, groups and open innovation by supporting technological and applied science research, installation of pilot lines, actions of advance approval of products and advanced manufacturing capacities of high-impact technology, spread of primary production and general technologies within the framework of the advanced specialisation strategy;

25.3. The implementation of the measures described in Paragraphs 20.2, 20.5 and 20.11 of the General action plan is financed from the funds of the specific objective 9.3.1 In order to improve better compliance of higher education with the needs of labour market and society to improve the quality of higher education and to increase its accessibility of the investment priority 9.3 Improvement of the quality, effect and accessibility of higher and equivalent education in order to increase students' inclusion and to improve learning performance focusing on exclusion groups of the priority 9 of the Action programme – Public education and enhancement of human resources potential (hereinafter – Priority 9 of the Action programme);

25.4. The implementation of the measures described in Paragraphs 20.3, 20.6–20.10, 20.12, 21.7 and 22.2 of the General action plan is financed from the funds of the specific objective 9.3.3 To enhance the capacities and competences of public sector researchers to carry out high-level R&D activities of the investment priority 9.3 Improvement of the quality, effect and accessibility of higher and equivalent education in order to increase students' inclusion and to improve learning performance focusing on exclusion groups of the priority 9 of the Action programme;

25.5. The implementation of the measure described in Paragraph 23.8 of the General action plan is financed from the funds of the specific objective 9.1.1 To improve and concentrate higher education infrastructure in pursuit of higher education of better quality of the investment priority 9.1 Investment into education, vocational training to improve higher education and teaching

infrastructure in order to provide skills and ensure lifelong learning possibility of the Priority 9 of the Action programme.

26. Measures supported from the national budget of the Republic of Lithuania are relevant for the whole system of higher education and R&D, and are not to be attributed to specific R&D&I priorities, but their implementation results can contribute to the implementation of individual R&D&I priorities. The implementation of the measures described in Paragraphs 20.1, 21.1 and 23.10 of the General action plan is financed from the national budget of the Republic of Lithuania. The implementation of the measure described in Paragraph 20.3 of the General action plan is co-financed by the national budget of the Republic of Lithuania and EU Structural Funds.

27. Funds of research and higher education institutions and other public and private legal entities are planned to be attracted for the implementation of the General action plan as follows:

27.1. by implementing the measure described in Paragraph 20.8 of the General action plan, under which researchers will be employed in business companies, by the state partly subsidising their salaries. The other part of researcher's salary should be paid by the researcher's employer, i.e. business company;

27.2. by implementing the measures described in Paragraphs 21.3 and 21.4 of the General action plan, under which joint science and business initiatives would be supported. The Ministry of Education and Science is planning to support R&D activities carried out not only by research and higher education institutions but also by public enterprises at the intensity established in the EU legislation regulating state aid. Furthermore, during the implementation of these measures, business companies are expected to continue developing R&D results in order to develop a product suitable for commercial use from their own funds and funds received under other support schemes;

27.3. when implementing the measure described in Paragraph 21.5 of the General action plan following the principles for the implementation of European research, technology development and cooperation programme Eureka, business companies are also expected to take active participation in the development of products suitable for commercial use to be developed on the basis of R&D results;

27.4. when implementing the measures described in Paragraphs 23.5 and 23.6 of the General action plan, research and higher education institutions are expected to co-finance modernisation of R&D laboratory equipment, and equipment for carrying out experimental development (it is not excluded that the required funds could be attracted by research and higher education institutions from business companies interested in the establishment and development of centres of competence in research and higher education institutions), equipment that is required in order to join international R&D infrastructures, from their own or partners' funds. During the implementation of the measure described in Paragraph 23.11 of the General action plan, research and higher education institutions will co-finance subscription of access to international research and innovation databases from their own funds;

27.5. implementation of some projects supported under the measures described in Paragraphs 23.7 and 23.8 of the General action plan will be fully financed by the Ministry of Education and Science, but research and higher education institutions by signing agreements with the Ministry of Education and Science assumed the obligation to allocate the same or bigger amount of funds for the implementation of their other planned projects of R&D and higher education infrastructure aimed at strategic development. Some projects supported under the measure described in Paragraph 23.7 of the General action plan will immediately receive appropriate part of the funds (co-financing) allocated by research and higher education institutions for their implementation.

28. Table in Annex 1 to the General action plan lists the measures implementing the objectives of the General action plan listed in the (in case of planned measures, specific projects), their goals, mode of project selection, measures implementation, potential (in case of planned projects, they are already known) applicants, target groups to be affected by the measure under implementation or projects implemented on its basis, preliminary measures or funds allocated for their projects and institutions implementing the measures.

29. Table in Annex 2 of the General action plan demonstrates distribution of the funds of the measures implementing the objectives of the General action plan between specific R&D&I priorities.

30. Some measures implementing the objectives of the General action plan are intended to support directly the activities needed for implementation of specific R&D&I priorities, therefore the funds assigned to the implementation of these measures are distributed between specific R&D&I priorities in Table in Annex 2 of the General action plan. In some cases, a part of the funds is planned to be reserved and distributed after the interim assessment of the implementation of R&D&I priorities planned for 2018, depending on achieved results and considering needs of potential implementers of the measures.

31. Some measures implementing the objectives of the General action plan are designed for the implementation of all R&D&I priorities without assigning funds to specific R&D&I priorities. In one case, these measures by their contents are relevant to the implementation of all or majority of R&D&I priorities, in other case, the intention is to promote competition between the entities of public and private sectors implementing R&D&I priorities and thus to determine R&D&I priorities which were identified on the basis of the strongest science and business potential.

32. Some measures implementing the objectives of the General action plan intended for the whole system of higher education and R&D, and are not to be attributed to specific R&D&I priorities, but their implementation results can contribute to the implementation of individual R&D&I priorities.

33. Deadlines for inviting tenders for the implementing measures implementing the objectives of the General action plan or making the lists of projects will be established in accordance with the regulations on administration of action programme of the European Union Fund Investments 2014-2020 approved by the Resolution No. 1090 of the Government of the Republic of Lithuania of 3 October 2014 ‘On the approval of the administration regulations of the action programme of the EU fund investment 2014-2020’.

34. Through the implementation of the General action plan, qualitative and quantitative results will be sought, meeting the assessment criteria established in the Table in Annex 3 to the General action plan, meeting the assessment criteria of the objectives of R&D&I priority implementation programme and the objectives and measures of R&D&I priority action plans to be attributed to responsibility of the Ministry of Education and Science.

35. Implementation of the General action plan is monitored as follows:

35.1. Implementation of the measures implementing the objectives of the General action plan and projects implemented on their basis is monitored following the procedure established by the legislation regulating administration of EU Structural Funds;

35.2. when collecting and analysing data received while monitoring and assessing the action plans of R&D&I priorities – monitoring and assessment of the implementation of the action plans of R&D&I priorities are carried out by the Research and Higher Education Monitoring and Analysis Centre following the procedure established by the Ministers of Education and Science and of Economy.

36. Implementation of the General action plan is coordinated by the Department of Higher Education, Science and Technology of the Ministry of Education and Science and Department of European Union Assistance Coordination of the Ministry of Education and Science.

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General action plan for the implementation of the policy measures of higher education and research and (socio-cultural) development administered by the Ministry of Education and Science of the Republic of Lithuania which contribute to the development of priority research and (socio-cultural) development and innovation development (smart specialisation) areas, their priorities and related measures
Annex 1

## MEASURES IMPLEMENTING THE OBJECTIVES OF THE GENERAL ACTION PLAN AND PROJECTS IMPLEMENTED ON THEIR BASIS

| No. (item No. of the General action plan) | Objectives, measures and projects | Goal of the activity or project | Mode of project selection (measure implementation) | Potential applicants | Target groups | Preliminarily assigned funds of 2014–2020 period, EUR thousand | | Implementing institution |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Assistance from the European Union Structural Funds | Assistance from the national budget of the Republic of Lithuania | |
| 1. | **Objective:** to prepare, enhance and concentrate R&D intellectual potential capable of contributing to the implementation of R&D&I priorities and realisation of the outcomes created during this process | - | - | - | - | **71,103** | **822,154** | - |
| 1.1. (20.1) | **Measure:** financing first- and second-cycle studies and integrated studies not offering degrees | Assigning state assistance to study destinations of university, college, private higher education schools, implementing targeted funding of study programmes | Planning | Higher education institutions | Students of higher education institutions | - | 760,000 (during 2015-2020 period) | Ministry of Education and Science |
| 1.2. (20.2) | **Measure:** compensation of tuition including specialists' training at smart specialisation study programmes | Compensating tuition to well performing students of higher education institutions and training future specialists to join the process of implementation of R&D&I priorities | Planning | Higher education institutions | Students of higher education institutions | 10,137 | - | State Studies Foundation |
| 1.3. (20.3) | **Measure:** funding and development of postgraduate destinations (attraction of foreign youth) | To improve the quality of post-graduation studies by allocating targeted funding to postgraduate studies in certain sciences that are relevant for the implementation of R&D&I priorities | Planning | Research Council of Lithuania | Third-cycle students of research and higher education institutions | 23,170 | 62,154 | European Social Fund Agency |

| No. (item No. of the General | Objectives, measures and projects | Goal of the activity or project | Mode of project selection | Potential applicants | Target groups | Preliminarily assigned funds of 2014–2020 period, EUR thousand | | Implementing institution |
|---|---|---|---|---|---|---|---|---|
| 1.4. (20.4) | **Measure:** attraction of foreign scientists to carry out research activities | To enhance human R&D competences needed for the implementation of R&D&I priorities | Tender (global grant) | Public legal entities engaged in research, higher education and studies fields. | Researchers and students of research and higher education institutions | 14,481 | - | Research Council of Lithuania |
| 1.5. (20.5) | **Measure:** building entrepreneurship and creativity of students | To implement study and/or teaching/learning methods promoting students' creativity, entrepreneurship and leadership in research and higher education institutions | Tender | Higher education institutions | Students of higher education institutions | 1,738 | - | European Social Fund Agency |
| 1.6. (20.6) | **Measure:** promotion of study placements after the post-graduation studies | To create conditions for third-cycle graduates to start independent R&D activities and to prepare themselves for scientific pedagogical career | Tender (global grant) | Research and higher education institutions | Researchers of research and higher education institutions | 7,240 | - | Research Council of Lithuania |
| 1.7. (20.7) | **Measure:** development of scientists and other researchers' competences to participate in international research programmes | To develop competences of scientists, other researchers, science managers to integrate into international space of R&D&I programmes and to intensify science and business participation in R&D&I programmes, to increase the number of R&D&I applications to international programmes | Planning | Agency for Research, Innovation and Technology | Employees of expert institutions in RD system, employees, researchers, science managers of research and higher education institutions | 1,304 | - | European Social Fund Agency |
| 1.8. (20.8) | **Measure:** qualification improvement of scientists and researchers in knowledge intensive companies | To strengthen scientific potential of knowledge intensive companies, their capacities to carry out R&D and innovation activities, to promote knowledge intensity of businesses and their investment into R&D | Tender | Very small, small and medium enterprises | Researchers and students of research and higher education institutions | 2,896 | - | European Social Fund Agency |
| 1.9. (20.9) | **Measure:** building of capacities of scientists, researchers and cooperation development through scientific idea exchanges, scientific visits from and to Lithuania | To develop competences of scientists and other researchers at EU scale, to strengthen international cooperation in R&D field | Tender (global grant) | Public and private legal entities engaged in the field of | Researchers of research and higher education institutions | 4,344 | - | Research Council of Lithuania |

| No. (item No. of the General | Objectives, measures and projects | Goal of the activity or project | Mode of project selection | Potential applicants | Target groups | Preliminarily assigned funds of 2014–2020 period, EUR thousand | | Implementing institution |
|---|---|---|---|---|---|---|---|---|
| | | | | research and/or studies and/or higher education. | | | | |
| 1.10 (20.10) | **Measure:** Increasing internationalism of Lithuanian science | To develop competences of scientists and other researchers at EU scale, to strengthen international cooperation in R&D field | Planning | Research Council of Lithuania | Researchers and other workers of research and higher education institutions | 1,738 | - | European Social Fund Agency |
| 1.11. (20.11) | **Measure:** practicum placements by profession, partnership with social partners and their inclusion into improvement and implementation of organisation of students' practicum placements | To strengthen links between studies and labour market and profession | Tender | Higher education institutions | Students of higher education institutions | 1,738 | - | European Social Fund Agency |
| 1.12. (20.12) | **Measure:** development of students' capacities to carry out R&D activities | To train young researchers and to improve their qualification | Tender (global grant) | Public and private legal entities engaged in the field of research and/or studies and/or higher education. | Students of higher education institutions | 2,317 | - | Research Council of Lithuania |
| 2. | **Objective:** to carry out R&D activities relevant to economic sector, tackling major national challenges and problems, and R&D activities responding to potential future trends | - | - | - | - | **154,665** | **54,275** | - |
| 2.1. (21.1) | **Measure:** to secure funding for R&D activities relevant for tackling top-level problems of strategic importance for society and the state and for economic development | To initiate necessary research to tackle the identified problems by concentrating Lithuanian scientific potential and financial resources | Tender | Research and higher education institutions | Researchers of research and higher education institutions | - | 54,275 | Research Council of Lithuania |
| 2.2. (21.2) | **Measure:** research activities carried out by top-level research groups | To develop fundamental and applied knowledge contributing to the implementation of R&D&I priorities | Tender (global grant) | Public legal entities engaged in research, higher | Researchers of research and higher education institutions | 28,962 | - | Research Council of Lithuania |

| No. (item No. of the General | Objectives, measures and projects | Goal of the activity or project | Mode of project selection | Potential applicants | Target groups | Preliminarily assigned funds of 2014–2020 period, EUR thousand | | Implementing institution |
|---|---|---|---|---|---|---|---|---|
| | | | | education and studies fields. | | | | |
| 2.3. (21.3) | **Measure:** Implementation of R&D projects contributing to the implementation of the priorities of smart specialisation strategy | To promote research and higher education institutions to carry out R&D activities with commercial potential | Tender (to be implemented in two stages) | Research and higher education institutions and university hospitals | Researchers of research and higher education institutions | 35,917 | - | Public enterprise Central Project Management Agency |
| 2.4. (21.4) | **Measure:** implementation of joint science and business projects contributing to the implementation of the priorities of smart specialisation strategy (together with the measure Intellect LT of the Ministry of Economy forming a joint measure) | To promote science and business cooperation through joint R&D and innovation activities | Tender (to be implemented in two stages) | Research and higher education institutions and university hospitals | Researchers of research and higher education institutions, business companies | 30,917 | - | Public institution Lithuanian Business Support Agency |
| 2.5. (21.5) | **Measure:** Promotion of internationalism of RD activities (implementation of market-oriented science and business projects through cross-border network) | To enhance scientists and other researchers' capacities to join the European research space through support to market-oriented applied science and business projects at international level | Tender (global grant) | Research and higher education institutions | Researchers of research and higher education institutions | 2,896 | - | Agency for Research, Innovation and Technology |
| 2.6. (21.6) | **Measure:** R&D activities of parallel laboratories | To establish and promote structured long-term partnerships between Lithuanian research groups or structural divisions of research and higher education institutions and foreign research groups or structural divisions of research and higher education institutions with exclusive competence in the research area new for Lithuania | Tender (global grant) | Public legal entities engaged in research, higher education and studies fields. | Researchers and students of research and higher education institutions | 1,448 | - | Research Council of Lithuania |
| 2.7. (21.7) | **Measure:** scientists' qualification improvement through implementation of high-level international and national research and (socio-cultural) development projects | To promote experienced and young scientists' research activities at international level and mobility, to attract high-level scientists to Lithuanian research space, to strengthen its competitiveness in the world | Tender (global grant) | Research and higher education institutions | Researchers of research and higher education institutions | 49,525 | - | Research Council of Lithuania |
| 2.8. (21.8) | **Measure:** risk capital for research and (socio-cultural) development and innovation activities | To implement financial measures intended for research and higher education institutions carrying out R&D and innovation activities in the fields of smart specialisation | Tender | Research and higher education institutions | Researchers and students of research and higher education | 5,000 | - | Ministry of Finance |

| No. (item No. of the General | Objectives, measures and projects | Goal of the activity or project | Mode of project selection | Potential applicants | Target groups | Preliminarily assigned funds of 2014–2020 period, EUR thousand | | Implementing institution |
|---|---|---|---|---|---|---|---|---|
| | | | | | institutions | | | |
| 3. | **Objective:** to promote the processes of transfer of knowledge and technology, R&D outcomes commercialisation in research and higher education institutions by creating prerequisites for effective cooperation between public and private sectors in R&D field and for interaction between higher education, research and business | - | - | - | - | **39,678** | **1,447** | - |
| 3.1. (22.1) | **Measure:** R&D results commercialisation (support to commercialisation of ideas of scientists and other researchers and students working/studying in research and higher education institutions, support to young innovation companies under formation (start-ups). | To promote the staff and students of research and higher education institutions to commercialise R&D results by establishing knowledge intensive companies | Tender (global grant) | Research and higher education institutions, private legal entities with research and higher education institutions holding stake in them | Researchers, students of research and higher education institutions, business companies | 10,137 | - | Agency for Research, Innovation and Technology |
| 3.2. (22.2) | **Measure:** enhancement of scientists and other researchers' capacities to commercialise R&D results, transfer of knowledge, innovation and technology, R&D marketing. | To promote open access to services and R&D results needed for research, which are available at research and higher education institutions | Planning | Agency for Research, Innovation and Technology | Researchers and students of research and higher education institutions, employees of knowledge intensive companies | 3,475 | - | European Social Fund Agency |
| 3.3. (22.3) | **Measure:** promotion of the activities of the centres for innovation and technology transfer | To create conditions for more effective identification of ideas with commercial potential of employees and students of research and higher education institutions and to support their development | Tender | Research and higher education institutions | Researchers and students of research and higher education institutions | 14,481 | - | Public enterprise Central Project Management Agency |
| 3.4. (22.4) | **Measure:** promotion of the activities of centres of competence | To create conditions for researchers and students' groups to test ideas with | Tender | Research and higher | Researchers, students of | 11,585 | - | Public enterprise |

| No. (item No. of the General | Objectives, measures and projects | Goal of the activity or project | Mode of project selection | Potential applicants | Target groups | Preliminarily assigned funds of 2014–2020 period, EUR thousand | | Implementing institution |
|---|---|---|---|---|---|---|---|---|
| | | commercial potential, by providing them with necessary aids and providing a full package of constative services | | education institutions | research and higher education institutions, business companies | | | Central Project Management Agency |
| 4. | **Objective:** to concentrate and modernise the infrastructure of higher education and R&D, to create prerequisites for its effective use in implementation of R&D&I priorities | - | - | - | - | **225,417** | 1,447 | - |
| 4.1. (23.1) | **Measure:** development of information infrastructure for research and higher education | To improve data transfer and other infrastructure needed for provision of innovative e-services to Lithuanian research and higher education institutions | Planning | Kaunas University of Technology | Researchers and students of research and higher education institutions | 4,344 | - | Public enterprise Central Project Management Agency |
| 4.2 (23.2) | **Measure:** development of science popularisation infrastructure | To develop virtual and/or physical infrastructure for popularisation of science and technology, information of society, socially responsible R&D and innovation activities and coordination of these activities | Planning | Lithuanian Academy of Sciences | Researchers, students of research and higher education institutions, school children, other society groups | 9,201 | - | Public enterprise Central Project Management Agency |
| 4.3. (23.3) | **Measure** Development of open access research and experimental activity centres of natural sciences, technology, engineering and mathematics adapted for school children | To promote school children's interest and preparation to study biomedicine, natural and technology sciences, to create conditions for the quality of teaching/learning to improve | Planning | Education Supply Centre | General education schools, their pupils, teachers | 5,792 | - | Public enterprise Central Project Management Agency |
| 4.4. (23.4) | **Measure:** improvement of the infrastructure of centres of excellence and parallel laboratories in smart specialisation areas | To create conditions for partnerships between the divisions or research groups of Lithuanian and foreign research and higher education institutions for evolvement of science centres leading in these fields in Lithuania | Planning | Activities aimed at the development of the infrastructure of centres of excellence – | Researchers and students of research and higher education institutions | 26,645 | - | Public enterprise Central Project Management Agency |

| No. (item No. of the General | Objectives, measures and projects | Goal of the activity or project | Mode of project selection | Potential applicants | Target groups | Preliminarily assigned funds of 2014–2020 period, EUR thousand | | Implementing institution |
|---|---|---|---|---|---|---|---|---|
| | | | | Kaunas University of Technology, Lithuanian University of Health Sciences, and Vilnius University | | | | |
| 4.5. (23.5) | **Measure:** joining international research infrastructures (ESFRI) and development and modernisation of open access R&D infrastructure, which is needed in order to join international research infrastructures (ESFRI) | To fulfil necessary conditions for joining European research infrastructures (including development of national research infrastructure to the extent needed for participation in in the activities of international infrastructure) and to join them. | Planning | Research and higher education institutions | Researchers of research and higher education institutions | 52,132 | - | Public enterprise Central Project Management Agency |
| 4.5.1. | **Project:** Research infrastructure of national and international access high-intensity and wide-ranging wave ultrashort laser impulses (Laser RI) | To improve the infrastructure intended to research generation of ultrashort light impulses in a wide range of waves and their application at research of interaction between radiation and media, nonlinear optics and parameter phenomena, ultrafast processes and in laser nano- and micro-technology | Planning | Vilnius University, Centre for Physical Sciences and Technology | Researchers of research and higher education institutions | 3,325 | - | Public enterprise Central Project Management Agency |
| 4.5.2. | **Project:** Centre for computer, structural and systems biology (CossyBio) | To improve the infrastructure, which will increase the possibilities to understand and control biological processes at molecular level | Planning | Vilnius University, Lithuanian University of Health Sciences | Researchers of research and higher education institutions | 5,033 | - | Public enterprise Central Project Management Agency |
| 4.5.3. | **Project:** Electronic Lithuanian language resources E-lingua (E-Lingua) | To improve the infrastructure for Lithuanian language resources and technology to join the international network of common language resources and technology infrastructure (CLARIN) which provides easy and direct access to language resources and technology of other European countries | Planning | Vytautas Magnus University | Researchers of research and higher education institutions | 141 | - | Public enterprise Central Project Management Agency |
| 4.5.4. | **Project:** Centre of Spectroscopic Characterization of Materials and | To improve the infrastructure for provision of high scientific level services | Planning | Vilnius University | Researchers of research | 2,950 | - | Public enterprise |

| No. (item No. of the General | Objectives, measures and projects | Goal of the activity or project | Mode of project selection | Potential applicants | Target groups | Preliminarily assigned funds of 2014–2020 period, EUR thousand | | Implementing institution |
|---|---|---|---|---|---|---|---|---|
| | Electronic/Molecular Processes (SPECTROVERSUM) | characterising materials intended for modern semiconductor, nano-, bio- and light technologies, in the broad spectral interval of optical and mass spectroscopy, and training top-competence specialists for work in these fields | | | and higher education institutions | | | Central Project Management Agency |
| 4.5.5. | **Project:** Human Biological Resource Centre (HBRC) | To establish a centre of national biological resources for biomedical, biopharmaceutical and biotechnology research | Planning | Vilnius University, Lithuanian University of Health Sciences, National Cancer Institute, state research institute Innovative Medicine Centre, Vilnius University hospital Santariškės Clinic, Lithuanian University of Health Sciences hospital Kaunas Clinic | Researchers of research and higher education institutions | 5,000 | - | Public enterprise Central Project Management Agency |
| 4.5.6. | **Project:** Lithuanian GRID supercomputing network (LitGrid-HPC) | To improve the infrastructure which provides complex and effective computing possibilities and related services to users and ensures extensive functionality of open access resources of supercomputing systems and data repositories | Planning | Vilnius University | Researchers of research and higher education institutions | 5,000 | - | Public enterprise Central Project Management Agency |
| 4.5.7. | **Project:** European Social Service (ESS LT) | To develop infrastructure needed for | Planning | Kaunas | Researchers | 186 | - | Public |

| No. (item No. of the General | Objectives, measures and projects | Goal of the activity or project | Mode of project selection | Potential applicants | Target groups | Preliminarily assigned funds of 2014–2020 period, EUR thousand | | Implementing institution |
|---|---|---|---|---|---|---|---|---|
| | | monitoring and forecasting dynamics of Lithuanian and European social, political and moral fabric | | University of Technology | of research and higher education institutions | | | enterprise Central Project Management Agency |
| 4.5.8. | **Project:** Molėtai Astronomical Observatory | To improve the infrastructure intended to ensure strong and long-term perspective for effective scientific lending when carrying out spectral, photometric and asteroseismic research of stellar populations of galaxy at international level, to train inclusive and creative scientific society | Planning | Vilnius University, Centre for Physical Sciences and Technology | Researchers of research and higher education institutions | 2,400 | - | Public enterprise Central Project Management Agency |
| 4.5.9. | **Project:** Semiconductor technology centre (PTC) | To develop infrastructure serving as a technological platform for manufacturing semiconductor materials and their combinations and for prototyping optoelectronic products on their basis, creating technology intended for manufacturing medium- and long-distance infrared radiation emitters and detectors, special purpose visible range and ultraviolet light-emitting devices and laser diodes, organic optoelectronic components | Planning | Vilnius University, Centre for Physical Sciences and Technology | Researchers of research and higher education institutions | 4,780 | - | Public enterprise Central Project Management Agency |
| 4.5.10. | **Project:** Innovative Chemistry Centre (INOCHEM) | To improve the infrastructure creating conditions for development of innovative, effective, cost-effective and environmentally friendly methods of organic compounds synthesising at micro level, formation of optical layers, membranes and other related methods applied in the science and industry of biotechnology, electronics and optoelectronics | Planning | Centre for Physical Sciences and Technology, Vilnius University | Researchers of research and higher education institutions | 5,000 | - | Public enterprise Central Project Management Agency |
| 4.5.11. | **Project:** Ultrasonic non-destructive testing, measurement and diagnostics centre (ULTRATEST) | To develop infrastructure needed for carrying out research by developing innovative ultrasound methods and appropriate technologies of measurement, research, non-destructive testing, technical and medical diagnostics and monitoring of | Planning | Kaunas University of Technology | Researchers of research and higher education institutions | 3,215 | - | Public enterprise Central Project Management Agency |

| No. (item No. of the General | Objectives, measures and projects | Goal of the activity or project | Mode of project selection | Potential applicants | Target groups | Preliminarily assigned funds of 2014–2020 period, EUR thousand | | Implementing institution |
|---|---|---|---|---|---|---|---|---|
| | | properties of materials | | | | | | |
| 4.5.12. | **Project:** Nuclear Research Centre (NRC) | To develop infrastructure for nuclear medicine and biopharmacy research, which would improve the quality and accessibility of medical services provided | Planning | Lithuanian University of Health Sciences, Kaunas University of Technology, Lithuanian University of Health Sciences hospital Kaunas Clinic | Researchers of research and higher education institutions | 4,000 | - | Public enterprise Central Project Management Agency |
| 4.5.13. | **Project:** Cluster of Applied Chemistry and Biopharmacy (AChePha) | To develop infrastructure needed for joining international processes of development, characterisation and application of innovative materials and processes in chemical industry, biopharmacy, power engineering and environment protection sectors | Planning | Kaunas University of Technology, Lithuanian University of Health Sciences, Kaunas Magnus University, Aleksandras Stulginskis University, Klaipėda University, Lithuanian Energy Institute | Researchers of research and higher education institutions | 2,160 | - | Public enterprise Central Project Management Agency |
| 4.5.14. | **Project:** Human Welfare and Development Research Infrastructure (HUMRE) | To improve the infrastructure intended for interdisciplinary social and biomedical research of health, ageing person's welfare, retirement and access to the data related with this research | Planning | Vilnius University | Researchers of research and higher education institutions | 349 | - | Public enterprise Central Project Management Agency |
| 4.5.15. | **Project:** Lithuanian Data Archive for | To improve the virtual digital infrastructure | Planning | Vytautas | Researchers | 80 | - | Public |

| No. (item No. of the General | Objectives, measures and projects | Goal of the activity or project | Mode of project selection | Potential applicants | Target groups | Preliminarily assigned funds of 2014–2020 period, EUR thousand | | Implementing institution |
|---|---|---|---|---|---|---|---|---|
| | Social Science and Humanities (LiDA) | for collection, long-term storage and spread of empiric data of humanities and social science | | Magnus University | of research and higher education institutions | | | enterprise Central Project Management Agency |
| 4.5.16. | **Project:** Gama Knife Infrastructure Development (Gama Knife) | To develop infrastructure enabling research of oncological and neurodegenerative human brain illnesses in new directions and faster application of fundamental science-created products in clinical practice | Planning | Lithuanian University of Health Sciences | Researchers of research and higher education institutions | 4,000 | - | Public enterprise Central Project Management Agency |
| 4.5.17. | **Project:** Infrastructure of experimental animal research (RIFA) | To ensure network infrastructure for carrying out research with linear and transgenic experimental animals meeting international standards | Planning | State research institute Innovative Medicine Centre, Lithuanian University of Health Sciences | Researchers of research and higher education institutions | 3,000 | - | Public enterprise Central Project Management Agency |
| 4.5.18. | **Project:** Open Access Centre for Micro-, Nanotechnology and Analysis (APC KTUMMI) | To improve the infrastructure for research of microstructures, microsystems, micro electro mechanics, optoelectronics, nano-optics, semiconductors devices and for development of related technology | Planning | Kaunas University of Technology | Researchers of research and higher education institutions | 1,513 | - | Public enterprise Central Project Management Agency |
| 4.6. (23.6) | **Measure:** development and extension of a material base for implementation of co-projects of science and business at the research and higher education institutions (development and extension of the R&D&I infrastructure of centres of competence) | To create conditions for researchers and students of research and higher education institutions to test ideas with commercial potential, to increase the number of R&D orders from business companies | Tender | Research and higher education institutions | Researchers, students of research and higher education institutions, business companies | 8,689 | - | Public enterprise Central Project Management Agency |
| 4.7. (23.7) | **Measure:** modernisation of the R&D and higher education equipment in the areas of smart specialisation | To modernise the R&D and higher education infrastructure of research and higher education institutions in consideration of the implementation of R&D&I priorities | Planning | Higher education university institutions | Researchers and students of research and higher education institutions | 49,988 | - | Public enterprise Central Project Management Agency |

| No. (item No. of the General | Objectives, measures and projects | Goal of the activity or project | Mode of project selection | Potential applicants | Target groups | Preliminarily assigned funds of 2014–2020 period, EUR thousand | | Implementing institution |
|---|---|---|---|---|---|---|---|---|
| 4.7.1. (23.7.1) | **Project:** construction of laboratory building of the Faculties of Mechanics, Electronics and Transport Engineering | To contribute to the implementation of the project for relocation of the Faculties of Mechanics, Electronics and Transport Engineering of Vilnius Gediminas Technical University to Saulėtekis students' campus – to develop R&D base of the Faculty subject to relocation. | Planning | Vilnius Gediminas Technical University | Researchers and students of research and higher education institutions | 11,584 | - | Public enterprise Central Project Management Agency |
| 4.7.2. (23.7.2) | **Project:** construction of a new building of the Faculty of Mathematics and Informatics of VU | To relocate a part of the Faculty of Mathematics and Informatics of Vilnius University to Visoriai district, in Vilnius | Planning | Vilnius University | Researchers and students of research and higher education institutions | 11,584,5 | - | Public enterprise Central Project Management Agency |
| 4.7.3. (23.7.3) | **Project:** Construction of a new building of the Faculty of Medicine of VU | To relocate a part of the Faculty of Medicine of Vilnius University to Santariškės district, in Vilnius | Planning | Vilnius University | Researchers and students of research and higher education institutions | 11,584,5 | - | Public enterprise Central Project Management Agency |
| 4.7.4. (23.7.4) | **Project:** development of the scientific base of the Faculty of Nursing | To relocate the research divisions of the Faculty of Nursing of Lithuanian University of Health Sciences to the territory of Kaunas Clinic (Eivinių g. 2, Kaunas) | Planning | Lithuanian University of Health Sciences | Researchers and students of research and higher education institutions | 4,317 | - | Public enterprise Central Project Management Agency |
| 4.7.5. (23.7.5) | **Project:** Centre of new media, technology and design (M-Lab) (1st stage) | To relocate the laboratories of new media, technology and design to the campus of Kaunas University of Technology | Planning | Kaunas University of Technology | Researchers and students of research and higher education institutions | 8,405 | - | Public enterprise Central Project Management Agency |
| 4.7.6 (23.7.6) | **Project:** Modernisation of the infrastructure of Food Institute and Faculty of Chemical Technology | To launch relocation of Food Institute and Faculty of Chemical Technology of Kaunas University of Technology to the campus of Kaunas University of Technology | Planning | Kaunas University of Technology | Researchers and students of research and higher education institutions | 1,500 | - | Public enterprise Central Project Management Agency |
| 4.7.7. (23.7.7) | **Project:** Reconstruction of ASU building No. 4E2p (Studentų g. 9, Akademija town, Kaunas District) (1st stage) | To continue the development of higher education and R&D infrastructure of ASU by establishing a Joint Research Centre for | Planning | Aleksandras Stulginskis University | Researchers and students of research | 1,013 | - | Public enterprise Central |

| No. (item No. of the General | Objectives, measures and projects | Goal of the activity or project | Mode of project selection | Potential applicants | Target groups | Preliminarily assigned funds of 2014–2020 period, EUR thousand | | Implementing institution |
|---|---|---|---|---|---|---|---|---|
| | | Agriculture and Forestry | | | and higher education institutions | | | Project Management Agency |
| 4.8. (23.8) | **Measure:** concentration of research and higher education infrastructure, modernisation of teaching and learning environment. Investment into higher education infrastructure, equipment acquisition, development and modernisation of basic equipment for higher education | To develop and upgrade the R&D and higher education infrastructure of research and higher education institutions needed for performing their functions | Planning | Research and higher education institutions | Researchers and students of research and higher education institutions | 28,729 | - | Public enterprise Central Project Management Agency |
| 4.8.1. (23.8.1) | **Project:** Construction of LMTA campus at Olandų g., Vilnius (1st stage). | To contribute to the concentration of the infrastructure of Lithuanian Academy of Music and Theatre at Olandų g., Vilnius. | Planning | Lithuanian Academy of Music and Theatre | Researchers and students of research and higher education institutions | 13,033 | - | Public enterprise Central Project Management Agency |
| 4.8.2. (23.8.2) | **Project:** internationalisation by adapting the infrastructure of VDU multifunctional centre | To continue further realisation of the idea of University of World's Lithuanians – to develop modern infrastructure enabling further internationalisation of social science studies and improvement of the quality of studies | Planning | Vytautas Magnus University | Researchers and students of research and higher education institutions | 1,000 | - | Public enterprise Central Project Management Agency |
| 4.8.3. (23.8.3) | **Project:** Campus of post-graduate studies | To create the environment favourable to international cooperation, partnerships, studies and R&D, needed for enhancement of humanities areas | Planning | Vytautas Magnus University | Researchers and students of research and higher education institutions | 2,475 | - | Public enterprise Central Project Management Agency |
| 4.8.4. (23.8.4) | **Project:** Development of the scientific base of the Faculty of Nursing | To relocate the study divisions of the Faculty of Nursing of Lithuanian University of Health Sciences to the territory of Kaunas Clinic (Eivinių g. 2, Kaunas) | Planning | Lithuanian University of Health Sciences | Researchers and students of research and higher education institutions | 4,750 | - | Public enterprise Central Project Management Agency |
| 4.8.5. (23.8.5) | **Project:** modernisation of study infrastructure at Kaunas Faculty of VDA (1st stage). | To increase availability of higher artistic education and to improve its quality, to enhance and develop cultural space of Kaunas Old Town, to ensure conservation of the cultural heritage | Planning | Vilnius Academy of Arts | Researchers and students of research and higher education | 3,620 | - | Public enterprise Central Project Manageme |

| No. (item No. of the General | Objectives, measures and projects | Goal of the activity or project | Mode of project selection | Potential applicants | Target groups | Preliminarily assigned funds of 2014–2020 period, EUR thousand | | Implementing institution |
|---|---|---|---|---|---|---|---|---|
| | | | | | institutions | | | nt Agency |
| 4.8.6. (23.8.6) | **Project:** Foundation of the R&D and higher education centre of Lithuanian Sports University at Birutės g.19, Birštonas. | To develop practical R&D and higher education base of Lithuanian Sports University intended for development of practical skills of students and research related with health promotion, rehabilitation and sports | Planning | Lithuanian Sports University | Researchers and students of research and higher education institutions | 1,013 | - | Public enterprise Central Project Management Agency |
| 4.8.7. (23.8.7) | **Project:** Concentration and modernisation of R&D infrastructure of Šiauliai University by creating conditions for effective implementation of R&D&I priorities (1st stage) | To upgrade the obsolete teaching and research base of ŠU by adapting it for activities of higher education and R&D | Planning | Šiauliai University | Researchers and students of research and higher education institutions | 1,361 | - | Public enterprise Central Project Management Agency |
| 4.8.8. (23.8.8) | **Project:** study environment improvement by developing technological-information provision at LEU | To develop base of individual studies and R&D at the University by establishing a library | Planning | Lithuanian University of Educational Sciences | Researchers and students of research and higher education institutions | 1,477 | - | Public enterprise Central Project Management Agency |
| 4.9. (23.9) | **Measure (Project):** Development of marine valley nucleus by implementing the second stage of infrastructure modernisation | To complete the development of R&D infrastructure needed for the development of integrated science, higher education and business centre (valley) in the Lithuanian marine sector | Planning | Klaipėda University | Researchers, students of research and higher education institutions, business companies | 10,935 | - | Public enterprise Central Project Management Agency |
| 4.10. (23.10) | **Measure:** to ensure the operation of Lithuanian computer network of research and higher education institutions LITNET | To ensure efficient use of data transfer and other infrastructure needed in order provide innovative electronic services at Lithuanian research and higher education institutions | Planning | Research and higher education institutions | Researchers and students of research and higher education institutions | - | 1,447 | Ministry of Education and Science |
| 4.11. (23.11) | **Measure:** Assuring accessibility of electronic resources needed for R&D&I activities (databases, repositories of publications, etc.) | To provide researchers and students of research and higher education institutions with access to international R&D databases | Planning | Lithuanian Research Library Consortium | Researchers and students of research and higher education institutions | 28,962 | - | Public enterprise Central Project Management Agency |

General action plan for the implementation of the policy measures of higher education and research and (socio-cultural) development administered by the Ministry of Education and Science of the Republic of Lithuania which contribute to the development of priority research and (socio-cultural) development and innovation development (smart specialisation) areas, their priorities and related measures, Annex 2

## FUNDS FOR IMPLEMENTATION OF R&D&I PRIORITIES

| | | **Priority R&D&I development areas** | | | | | | | | | | | | | | | | | | **Remaining system of R&D and higher education** | **Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Energy and sustainable environment | | | | New production processes, materials and technologies | | | Transport, logistics and information and communication technologies | | | Health technologies and biotechnologies | | | Agro-innovation and food technologies | | | Inclusive and creative society | | | |
| | | **R&D&I priorities** | | | | | | | | | | | | | | | | | | | |
| | | Smart systems for energy efficiency, diagnostic, monitoring, metering and management of generators, grids and customers | Energy and fuel production using biomass/waste and waste treatment, storage and disposal | Technology for the development and use of smart low-energy buildings – digital construction | Solar energy equipment and technologies for its use for the production of electricity, heat and cooling | Photonic and laser technologies | Functional materials and coatings | Structural and composite materials | Flexible technological systems for product creation and production | Smart transport systems and information and communication technologies | Technologies/models for the management of international transport corridors and integration of modes of transport | Advanced electronic contents, content development technologies and information interoperability and information interaction | Information and communication technology infrastructure, cloud computing solutions and services | Molecular technologies for medicine and biopharmaceutics | Advanced applied technologies for individual and public health | Advanced medical engineering for early diagnostics and treatment | Sustainable agro-biological resources and safer food | Functional food | Innovative development, improvement and processing of biological raw materials (biorefinery) | Modern self-development technologies and processes | Technologies and processes for the development and implementation of breakthrough innovations | | |
| **No .** | **Objectives and measures** | **Preliminary assignments of funds, thousand Euro** | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | **Objective:** to prepare, enhance and concentrate R&D intellectual potential capable of contributing to the implementation of R&D&I priorities and realisation of the outcomes created during this process | - | | | | | | | | | | | | | | | | | | | | | 893 257 |
| 1.1. | **Measure:** financing first- and second-cycle studies and integrated studies not offering degrees | 760,000 | | | | | | | | | | | | | | | | | | | | | 760,000 |
| 1.2. | **Measure:** compensation of tuition including specialists' training at smart specialisation study programmes | 103 | 214 | 214 | 214 | 668 | 125 | 81 | 214 | 39 | 39 | 214 | 214 | 897 | 84 | 129 | 214 | 169 | 169 | 129 | 214 | 5 793 | 10,137 |
| 1.3. | **Measure:** funding and development of postgraduate destinations (attraction of foreign youth) | 644 | 644 | 644 | 1,287 | 1,287 | 644 | 644 | 644 | 322 | 644 | 322 | 322 | 1,287 | 1,287 | 644 | 644 | 644 | 644 | 644 | 644 | - | 85,324 |
| | | 70,838 | | | | | | | | | | | | | | | | | | | | | |
| 1.4. | **Measure:** attraction of foreign scientists to carry out research activities | 14,481 | | | | | | | | | | | | | | | | | | | | - | 14,481 |
| 1.5. | **Measure:** building entrepreneurship and creativity of students | 1,738 | | | | | | | | | | | | | | | | | | | | | 1,738 |
| 1.6. | **Measure:** promotion of study placements after the post-graduation studies | 7,240 | | | | | | | | | | | | | | | | | | | | - | 7,240 |
| 1.7. | **Measure:** development of scientists and other researchers' competences to participate in international research programmes | 1,304 | | | | | | | | | | | | | | | | | | | | | 1,304 |
| 1.8. | **Measure:** qualification improvement of scientists and researchers in knowledge intensive companies | 2,896 | | | | | | | | | | | | | | | | | | | | - | 2,896 |
| 1.9. | **Measure:** building capacities of scientists, researchers and cooperation development through scientific idea exchanges, scientific visits from and to Lithuania | 4,344 | | | | | | | | | | | | | | | | | | | | | 4,344 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.10. | **Measure:** Increasing internationalism of Lithuanian science | 1,738 | | | | | | | | | | | | | | | | | | | | 1,738 |
| 1.11. | **Measure:** practicum placements by profession, partnership with social partners and their inclusion into improvement and implementation of organisation of students' practicum placements | 1,738 | | | | | | | | | | | | | | | | | | | | 1,738 |
| 1.12. | **Measure:** development of students' capacities to carry out R&D activities | 2,317 | | | | | | | | | | | | | | | | | | | | 2,317 |
| 2. | **Objective:** to carry out R&D activities relevant to economic sector, tackling major national challenges and problems, and R&D activities responding to potential future trends | - | | | | | | | | | | | | | | | | | | | | 208,936 |
| 2.1. | **Measure:** to secure funding for R&D activities relevant for tackling top-level problems of strategic importance for society and the state and for economic development | 54,271 | | | | | | | | | | | | | | | | | | | | 54,271 |
| 2.2. | **Measure:** research activities carried out by top-level research groups | 397 | 376 | 217 | 1,147 | 1,306 | 1,265 | 753 | 872 | 356 | 434 | 712 | 712 | 1,326 | 990 | 614 | 770 | 672 | 474 | 553 | 594 | - | 28,962 |
| | | 14,422<br>(Funds to be distributed between R&D&I priorities after interim assessment of their implementation planned for 2018) | | | | | | | | | | | | | | | | | | | | |
| 2.3. | **Measure:** Implementation of R&D projects contributing to the implementation of the priorities of smart specialisation strategy | 35,917 | | | | | | | | | | | | | | | | | | | - | 35,917 |
| 2.4. | **Measure:** implementation of joint science–business projects contributing to the implementation of the priorities of smart specialisation strategy | 30,917 | | | | | | | | | | | | | | | | | | | - | 30,917 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.5. | **Measure:** Promotion of internationalism of R&D activities (implementation of market-oriented science and business projects through cross-border network) | 130 | 269 | 89 | 89 | 98 | 279 | 89 | 89 | 89 | 89 | 483 | 119 | 263 | 263 | 129 | 179 | 129 | 89 | 89 | 89 | - | 2,896 |
| 2.6. | **Measure:** R&D activities of parallel laboratories | - | - | - | - | - | - | - | - | - | - | - | - | 1,448 | | - | - | - | - | - | - | - | 1,448 |
| 2.7. | **Measure:** scientists' qualification improvement through high-level international and national research and cultural development | 49,525 | | | | | | | | | | | | | | | | | | | | | 49,525 |
| 2.8. | **Measure:** risk capital for research and (socio-cultural) development and innovation activities | 5,000 | | | | | | | | | | | | | | | | | | | | - | 5,000 |
| 3. | **Objective:** to promote the processes of transfer of knowledge and technology, R&D outcomes commercialisation in research and higher education institutions by creating prerequisites for effective cooperation between public and private sectors in R&D field and for interaction between higher education, research and business | - | | | | | | | | | | | | | | | | | | | | | 39,678 |
| 3.1. | **Measure:** R&D results commercialisation (support to commercialisation of ideas of scientists and other researchers and students working/studying in research and higher education institutions, support to young innovation companies under formation (start-ups). | 407 | 81 | 81 | 81 | 203 | 163 | 41 | 81 | 203 | 203 | 1,221 | 1,221 | 122 | 41 | 41 | 203 | 203 | 163 | 190 | 523 | - | 10,137 |
| | | 4,665<br>(Funds to be distributed between R&D&I priorities after interim assessment of their implementation planned for 2018) | | | | | | | | | | | | | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.2. | **Measure:** enhancement of scientists and other researchers' capacities to commercialise R&D results, transfer of knowledge, innovation and technology, R&D marketing | 3,475 | | | | | | | | | | | | | | | | | | | | | | | 3,475 |
| 3.3. | **Measure:** promotion of the activities of the centres for innovation and technology transfer | 14,481 | | | | | | | | | | | | | | | | | | | | | | | 14,481 |
| 3.4. | **Measure:** promotion of the activities of centres of competence | 11,585 | | | | | | | | | | | | | | | | | | | | | | - | 11,585 |
| 4. | **Objective:** to concentrate and modernise the infrastructure of higher education and R&D, to create prerequisites for its effective use in implementation of R&D&I priorities | - | | | | | | | | | | | | | | | | | | | | | | | 226,864 |
| 4.1. | **Measure:** development of information infrastructure for research and higher education | 4,344 | | | | | | | | | | | | | | | | | | | | | | | 4,344 |
| 4.2 | **Measure:** development of science popularisation infrastructure | 9,201 | | | | | | | | | | | | | | | | | | | | | | | 9,201 |
| 4.3. | **Measure** development of open access research and experimental activity centres of natural sciences, technology, engineering and mathematics adapted for school children | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 5,792 | - | - | | | 5,792 |
| 4.4. | **Measure:** improvement of the infrastructure of centres of excellence and parallel laboratories in smart specialisation areas | 26,645 | | | | | | | | | | | | | | | | | | | | | | - | 26,645 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.5. | **Measure:** joining international research infrastructures (ESFRI) and development and modernisation of open access R&D infrastructure, which is needed in order to join international research infrastructures (ESFRI) | 52,132 | | | | | | | | | - | 52,132 |
| 4.6. | **Measure:** development and extension of a material base for implementation of co-projects of science and business at the research and higher education institutions (development and extension of the R&D&I infrastructure of centres of competence) | 8,689 | | | | | | | | | - | 8,689 |
| 4.7. | **Measure:** modernisation of R&D and higher education infrastructure in smart specialisation areas | 49,988 | | | | | | | | | | 49,988 |
| 4.8. | **Measure:** concentration of research and higher education infrastructure, modernisation of teaching and learning environment. Investment into higher education infrastructure, equipment acquisition, development and modernisation of basic equipment for higher education | 28,729 | | | | | | | | | | 28,729 |
| 4.9. | **Measure:** Development of marine valley nucleus by implementing the second stage of infrastructure modernisation | 10,935 | - | - | - | - | - | - | - | - | - | 10,935 |
| 4.10. | **Measure:** to ensure the operation of Lithuanian computer network of research and higher education institutions LITNET | 1,447 | | | | | | | | | | 1,447 |

| | | | |
|---|---|---|---|
| 4.11. | **Measure:** Assuring accessibility of electronic resources needed for R&D&I activities (databases, repositories of publications, etc.) | 28,962 | 28,962 |

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General action plan for the implementation of the policy measures of higher education and research and (socio-cultural) development administered by the Ministry of Education and Science of the Republic of Lithuania which contribute to the development of priority research and (socio-cultural) development and innovation development (smart specialisation) areas, their priorities and related measures, Annex 3

## ASSESSMENT CRITERIA OF THE IMPLEMENTATION OF OBJECTIVES AND MEASURES OF THE GENERAL ACTION PLAN

| No . | Tasks and measures | Assessment criteria of objectives and measures | Value of criterion | |
|---|---|---|---|---|
| | | | 2018 | 2023 |
| | **Goal:** by implementing the measures of higher education and R&D policy administered by the Ministry of Education and Science to contribute to the development of Priority R&D&I development areas and implementation of R&D&I priorities | Total expenses for R&D (in % of GDP) | 1.4 | 2.2 |
| | | Revenues of research and higher education institutions from intellectual activity results (total revenues in %) | 0.1 | 0.3 |
| | | Employment in knowledge intensive sectors (in %) | 11.8 | 16 |
| **1.** | **Objective:** to prepare, enhance and concentrate R&D intellectual potential capable of contributing to the implementation of R&D&I priorities and realisation of the outcomes created during this process | To compare the number of students majoring in physical and engineering studies (in %) with the total number of students | 24 | 27 |
| 1.1. | **Measure:** to finance first- and second-cycle studies and integrated studies not offering degrees | Number of post-graduate alumni (ISCED 6) per one thousand population aged 25–34 | 1 | 1.1 |
| 1.2. | **Measure:** compensation of tuition including specialists' training at smart specialisation study programmes | | | |
| 1.3. | **Measure:** funding and development of postgraduate destinations (attraction of foreign youth) | | | |
| 1.4. | **Measure:** attraction of foreign scientists to carry out research activities | | | |
| 1.5. | **Measure:** building entrepreneurship and creativity of students | | | |
| 1.6. | **Measure:** promotion of study placements after the post-graduation studies | | | |
| 1.7. | **Measure:** development of scientists and other researchers' competences to participate in international research programmes | | | |
| 1.8. | **Measure:** qualification improvement of scientists and researchers in knowledge intensive companies | | | |
| 1.9. | **Measure:** building capacities of scientists, researchers and cooperation development through scientific idea exchanges, scientific visits from and to Lithuania | | | |
| 1.10. | **Measure:** Increasing internationalism of Lithuanian science | | | |

| No . | Tasks and measures | Assessment criteria of objectives and measures | Value of criterion | |
|---|---|---|---|---|
| 1.11. | **Measure:** practicum placements by profession, partnership with social partners and their inclusion into improvement and implementation of organisation of students' practicum placements | | | |
| 1.12. | **Measure:** development of students' capacities to carry out R&D activities | | | |
| **2.** | **Objective:** to carry out R&D activities relevant to economic sector, tackling major national challenges and problems, and R&D activities responding to potential future trends | Number of publications in frequently quoted scientific periodicals (units) | 2,166 | 2,587 |
| 2.1. | **Measure:** to secure funding for R&D activities relevant for tackling top-level problems of strategic importance for society and the state and for economic development | The number of joint projects implemented by business and research and higher education institutions (number) | 47 | 107 |
| 2.2. | **Measure:** research activities carried out by top-level research groups | | | |
| 2.3. | **Measure:** Implementation of R&D projects contributing to the implementation of the priorities of smart specialisation strategy | Number of new companies that received investment | 10 | 70 |
| 2.4. | **Measure:** implementation of joint science–business projects contributing to the implementation of the priorities of smart specialisation strategy | | | |
| 2.5. | **Measure:** Promotion of internationalism of R&D activities (implementation of market-oriented science and business projects through cross-border network) | | | |
| 2.6. | **Measure:** R&D activities of parallel laboratories | | | |
| 2.7. | **Measure:** scientists' qualification improvement through implementation of high-level international and national research and (socio-cultural) development projects | | | |
| 2.8. | **Measure:** risk capital for research and (socio-cultural) development and innovation activities | | | |
| **3.** | **Objective:** to promote the processes of transfer of knowledge and technology, R&D outcomes commercialisation in research and higher education institutions by creating prerequisites for effective cooperation between public and private sectors in R&D field and for interaction between higher education, research and business | R&D&I orders implemented by research and study institutions and commissioned by business (thousand EUR) | 6,369.3 | 8,636.6 |
| | | Revenues of higher education and research institutions from intellectual activity results (thousand, EUR) | 430,4 | 1,038,1 |
| 3.1. | **Measure:** R&D results commercialisation (support to commercialisation of ideas of scientists and other researchers and students working/studying in research and higher education institutions, support to young innovation companies under formation (start-ups). | Patent applications (number) | 33 | 112 |
| 3.2. | **Measure:** enhancement of scientists and other researchers' capacities to commercialise R&D results, transfer of knowledge, innovation and technology, R&D marketing. | Post-graduate studies implemented together with business entities (number of post-graduate students) | 30 | 68 |
| 3.3. | **Measure:** promotion of the activities of the centres for innovation and technology transfer | | 22 | 77 |
| 3.4. | **Measure:** promotion of the activities of centres of competence | Number of knowledge-intensive spin-offs at higher education and research institutions (number) | | |
| **4.** | **Objective:** to concentrate and modernise the infrastructure of higher education and R&D, to create prerequisites for its effective use in implementation of R&D&I priorities | External users from foreign research and study institutions, Lithuanian and foreign business companies, who have used the refurbished infrastructure of open access researches (funds received from such users (thousand, EUR) | 1,888 | 2,711,9 |
| 4.1. | **Measure:** development of information infrastructure for research and higher education | Number of researchers working in the improved base of research infrastructure (equivalents to | | |
| 4.2. | **Measure:** development of science popularisation infrastructure | | | |

| No . | Tasks and measures | Assessment criteria of objectives and measures | Value of criterion | |
|---|---|---|---|---|
| 4.3. | **Measure** development of open access research and experimental activity centres of natural sciences, technology, engineering and mathematics adapted for school children | full-time work) | 779 | 1,075 |
| 4.4. | **Measure:** improvement of the infrastructure of centres of excellence and parallel laboratories in smart specialisation areas | | | |
| 4.5. | **Measure:** joining international research infrastructures (ESFRI) and development and modernisation of open access R&D infrastructure, which is needed in order to join international research infrastructures (ESFRI) | | | |
| 4.6. | **Measure:** development and extension of a material base for implementation of co-projects of science and business at the research and higher education institutions (development and extension of the R&D&I infrastructure of centres of competence) | | | |
| 4.7. | **Measure:** modernisation of R&D&I and higher education equipment in the areas of smart specialisation | | | |
| 4.8. | **Measure:** concentration of research and higher education infrastructure, modernisation of teaching and learning environment. Investment into higher education infrastructure, equipment acquisition, development and modernisation of basic equipment for higher education | | | |
| 4.9. | **Measure:** Development of marine valley nucleus by implementing the second stage of infrastructure modernisation | | | |
| 4.10. | **Measure:** to ensure the operation of Lithuanian computer network of research and higher education institutions LITNET | | | |
| 4.11. | **Measure:** Assuring accessibility of electronic resources needed for R&D&I activities (databases, repositories of publications, etc.) | | | |

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