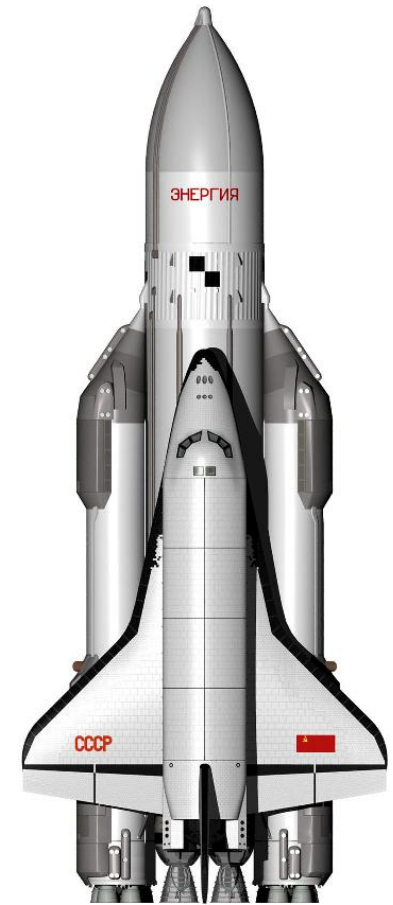
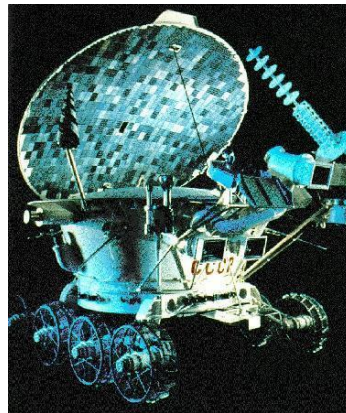


First Baltic Space Activities Roundtable Tallinn, 26-01-2010

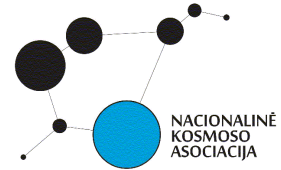
Vidmantas Tomkus, Director of
Lithuanian National Space Association

Historical review

- The Lithuanian Energy Institute and the The Institute of Biochemistry participated in the soviet space program "Mars"
- The Institute of Botany researched plant-physiology at zero gravity conditions at Salyut and Mir orbital stations
- The Faculty of Semiconductor Physics of Vilnius University developed photodetector arrays of robotic vision systems for the Lunar rover "Lunokhod"
- The Lithuanian Textile Institute developed the technology of heat insulation panels for the shuttle "Buran"
- Kaunas University of Technology researched a piezoelectric control and vibrotechnics systems of liquid-fuel rocket engines

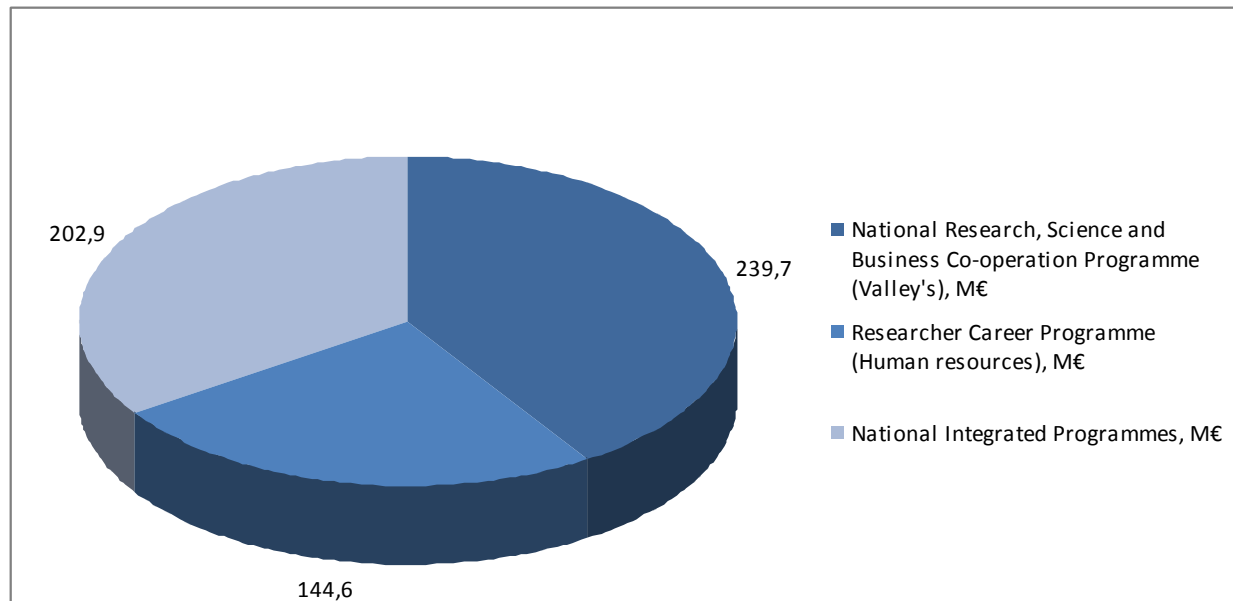


Objectives of State Policy

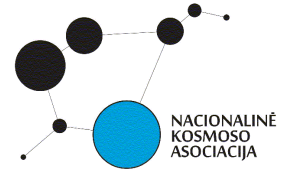


- Lithuanian Space policy comprise common means of supporting Horizontal activities in R&D, Establishing High-Tech Start-up companies, and its growth
- Lithuanian Space policy is compliant with the funding programs of EU structural support:

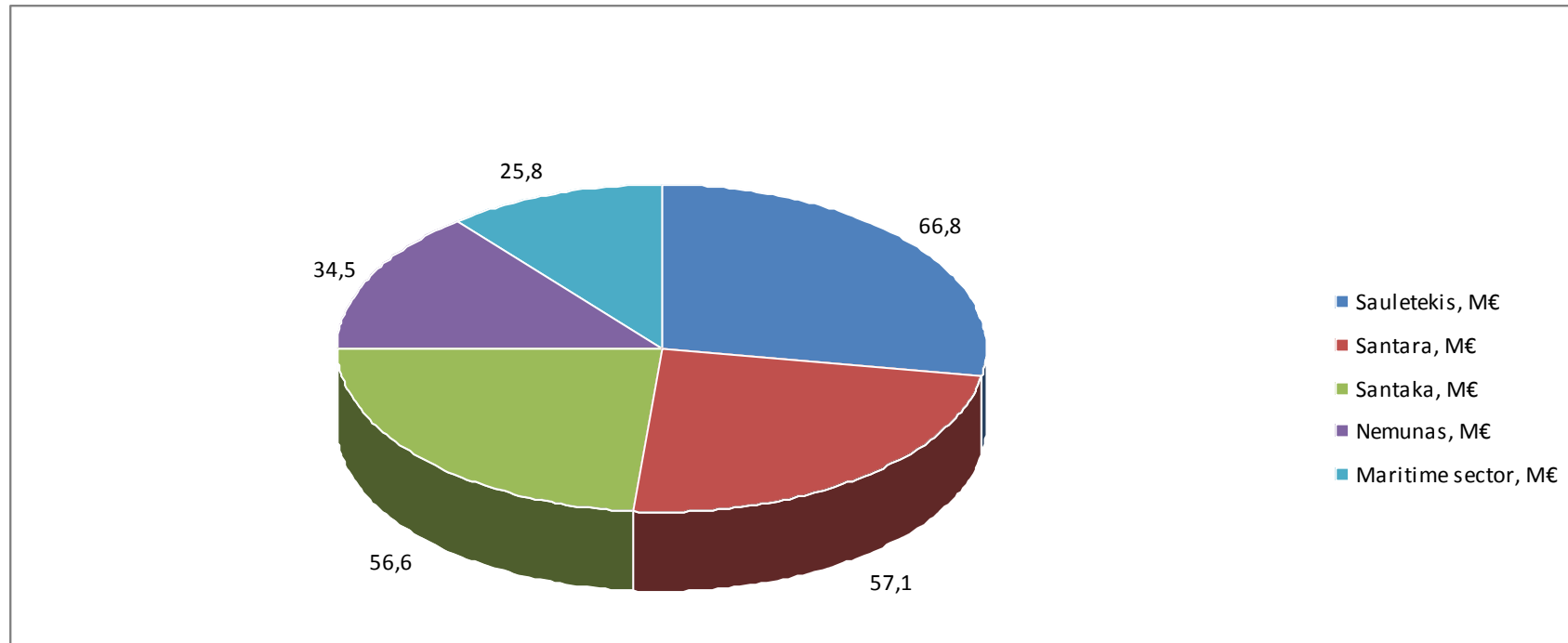
Ministry of
Education and Science



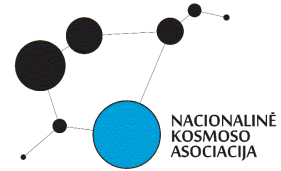
Ministry of Education and Science



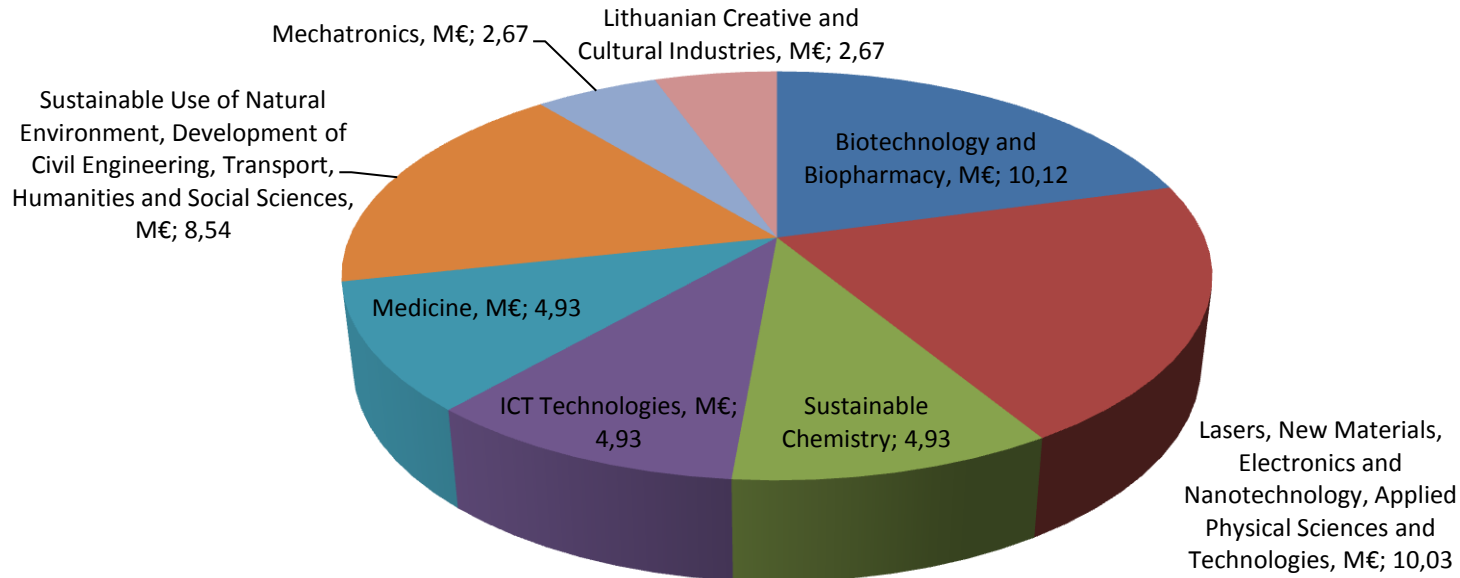
EU Structural Assistance implemented by Ministry of Education and Science (1st stage) 2009-2011
Integrated Science, Studies and Business Centre Valley programme



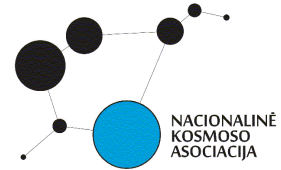
Ministry of Education and Science



EU Structural Assistance implemented by Ministry of Education and Science (1st stage) 2009-2011
National Integrated Programmes



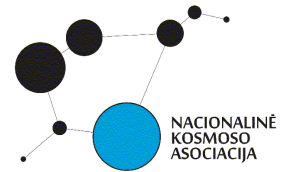
Ministry of Education and Science



For Co-ordination of Integrated Science, Studies and Business Centre Valley programme and National Integrated Programmes in July 2009 four Joint Research Programme (JRP) were approved:

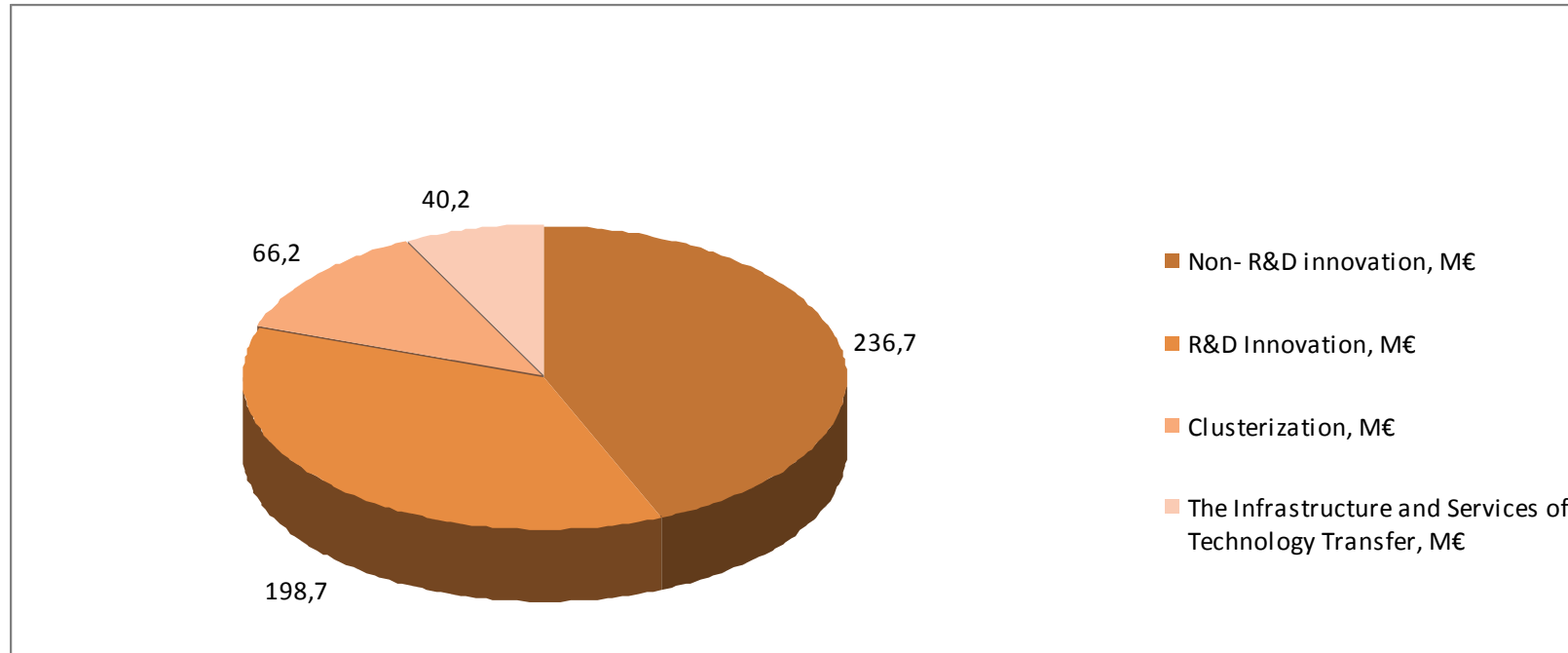
- 1. Joint Research Programme of Engineering and ICT Technologies
- 2. Joint Research Programme of Material Sciences, Physical and Chemical Technologies
- 3. Joint Research Programme of Life Sciences
- 4. Joint Research Programme of Nature Resources and Agrarian Sciences

Ministry of Economy

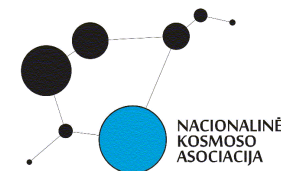


EU Structural Assistance implemented by Ministry of Economy 2007-2013

- Lithuanian economic stimulus package, ~1450 mln EUR, promoting the export and investments
- Clustering and investment into High –Tech and Creative Industries



National Space Association (NSA) R&D Institutions



NACIONALINĖ
KOSMOSO
ASOCIACIJA



Vilnius University
Universiteto g.3, LT-01513 Vilnius
www.vu.lt, info@cr.vu.lt
tel. +370 5 2687001,
fax. +370 5 2687009



Institute of Mathematics and Informatics
Akademijos g. 4, LT-08663 Vilnius
www.mii.lt, mathematica@ktl.mii.lt
tel. +370 5 2109300,
fax. +370 5 2729209

Bchi

Institute of Biochemistry
Mokslininkų g. 12, LT-08662 Vilnius
www.bchi.lt, biochemija@bchi.lt
tel. +370 5 2729144,
fax. +370 5 2729196



Kaunas University of Technology
K.Donelaičio g. 73, LT-44029 Kaunas
www.en.ktu.lt, rastine@ktu.lt
tel. +370 37 300000,
fax. +370 37 324144



Institute of Chemistry
A.Goštauto g. 9, LT-01108 Vilnius
www.chi.lt, chemins@ktl.mii.lt
tel. +370 5 2648884,
fax. +370 5 2649774



Institute of Botany
Žaliųjų ežerų g. 49, LT-08406 Vilnius
www.botanika.lt, botanika@botanika.lt
tel. +370 5 2711618,
fax. +370 5 2729950



Vilnius Gediminas Technical University
Saulėtekio al. 11, LT-10223 Vilnius
www.vgtu.lt, rastine@adm.vgtu.lt
tel. +370 5 2745030,
fax. +370 5 2700112



Institute of Physics
Savanorių pr. 231, LT-02300 Vilnius
www.fi.lt, fi@fi.lt
tel. +370 5 2661640, +370 5 2661643
fax. +370 5 2602317



Institute of Geology and Geography
T.Ševčenkos g. 13, LT-03223 Vilnius
www.geo.lt, info@geo.lt
tel. +370 5 2104690,
fax. +370 5 2104695



Klaipėda University
H.Manto sg. 84, LT-92294 Klaipėda
www.ku.lt
tel. +370 46 398900,
fax. +370 46 398902



Semiconductor Physics Institute
A.Goštauto g. 11, LT-01108 Vilnius
www.pfi.lt, spiadm@pfi.lt
tel. +370 5 2619759,
fax. +370 5 2627123



Lithuanian Institute of Horticulture
Kauno g. 30, Babtai, LT- 54333 Kaunas reg.
www.lsi.lt, institutas@lsi.lt
tel. +370 37 555210,
fax. +370 37 555176



Lithuanian University of Agriculture
Studentų g. 11, LT-53361 Akademija
Kaunas reg.
www.ktu.lt, rastine@ktu.lt
tel. +370 37 752300,
fax. +370 37 397500

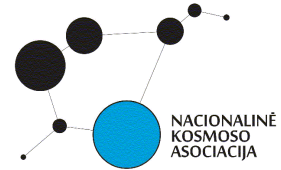


Lithuanian Energy Institute
Breslaujos g. 3, LT-44403 Kaunas
www.lei.lt, rastine@mail.lei.lt
tel. +370 37 401801,
fax. +370 37 35127



Institute of Ecology of Vilnius University
Akademijos g. 2, LT-08412 Vilnius
www.ekoi.lt, ekoi@ekoi.lt
tel. +370 5 2729257,
fax. +370 5 2729352

National Space Association (NSA) Enterprises



UAB "Arcus Novus"
Liepiškės, LT-13266 Vilnius reg.
www.arcus.lt, info@arcus.lt
tel. +370 5 2101250,
fax. +370 5 2101249



UAB "Minatech"
Savanoriu pr. 302-23, LT-51421 Kaunas
www.minatech.lt, vaidas@minatech.lt
tel. +370 37 425532,
fax. +370 37 771310



UAB "GPS Partner"
Laisvės pr. 71B- 62, LT-07189 Vilnius
www.leica.lt, www.gpspartneris.lt,
mail@gpspartneris.lt
tel. +370 37 451504,
fax. +370 37 451497



UAB "SatGate"
Liepiškės, LT-13266 Vilnius reg.
www.satgate.net, info@satgate.eu
tel. +370 5 2101250,
fax. +370 5 2101249



Institute of Aerial Geodesy Ltd.
Pramonės pr. 13, LT-51327 Kaunas
www.agi.lt, info@agi.lt
tel. +370 37 451504,
fax. +370 37 451497

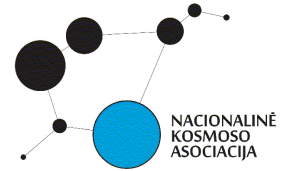


Technology park "Litepa"
Liepiškės, LT-13266 Vilnius reg.
www.litepa.lt, info@litepa.lt
tel. +370 5 2101245,
fax. +370 5 2101249



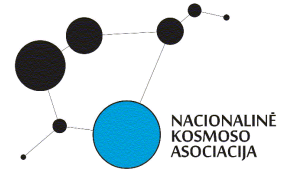
UAB "B.G.M."
M.K.Čiurlionio g. 17, LT-03104 Vilnius
www.bgm.lt, mail@bgm.lt
tel. +370 5 2163530,
fax. +370 5 2163532

Objectives and Tasks of NSA

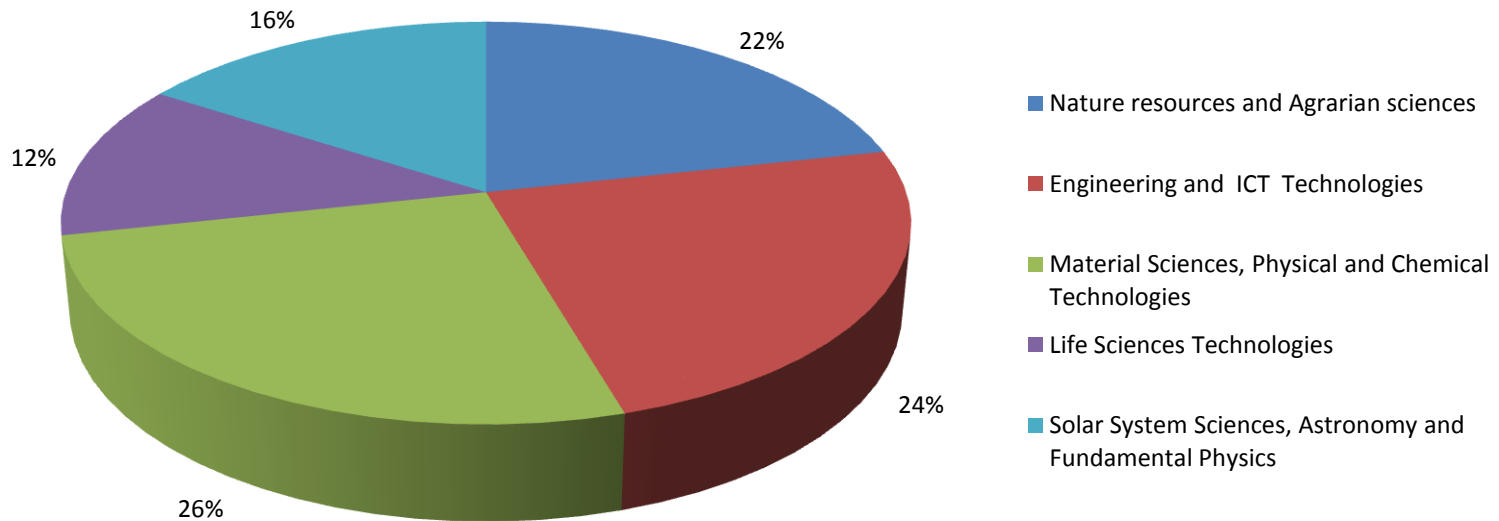


- To promote and support educational, R&D, innovative and other public activities in space related fields
- To seek favourable conditions for actors in this field in order to enhance Lithuanian science and business competitiveness in Europe and the whole world
- To play a role of experts for business and governmental institutions dealing with space related issues
- To create favourable conditions for the members of Association to develop independently educational, science and business activities in space related fields

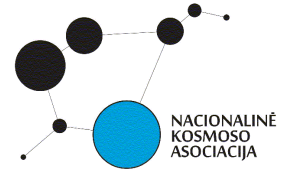
National Space Association



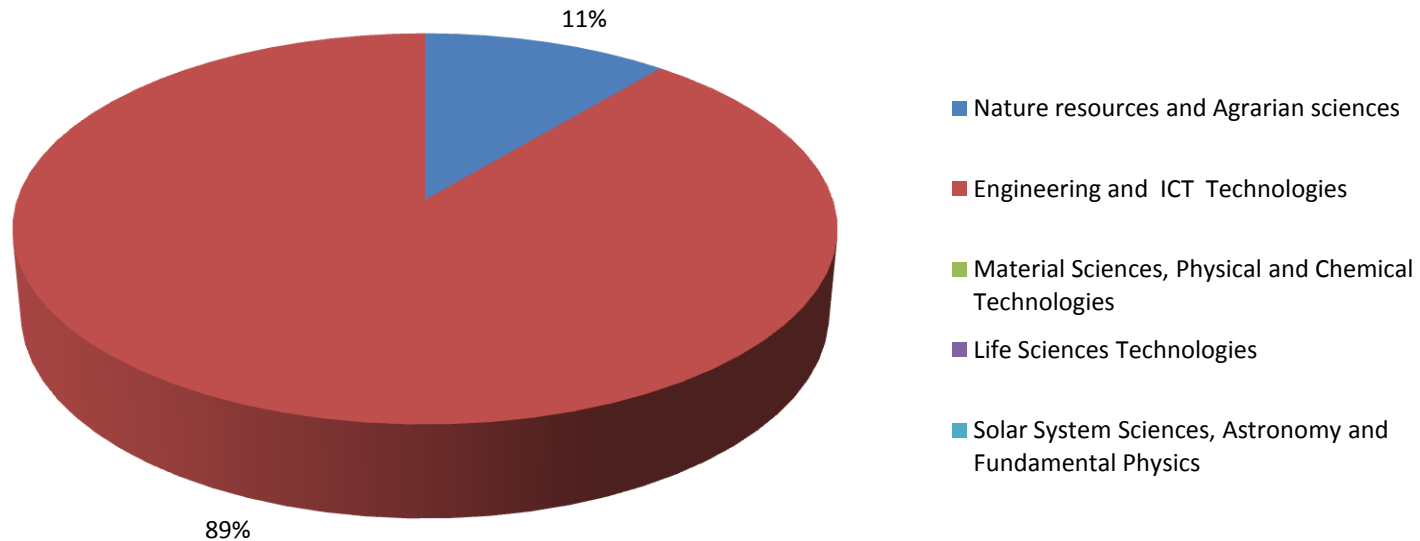
R&D Institutions of NSA involved in Joint Research Programmes (JRP) and Solar System Science, Astronomy and Fundamental Physics



National Space Association



Enterprises of NSA involved in Joint Research Programmes (JRP) and Solar System Science, Astronomy and Fundamental Physics



JRP of Engineering and ICT Technologies

- Piezoelectric actuators of Laser optics



- Micro stencil for printing of holographic copy protection



- High temperature resistant plasma coatings

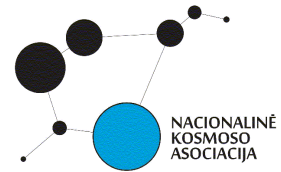


- Study of Chlorine-free technologies of Solid Propulsion



- FPGA programmed Data processors for Satellite Telecommunication equipment

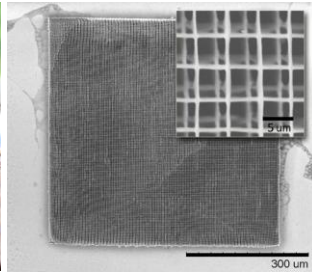
JRP of Material Sciences, Physical and Chemical Technologies



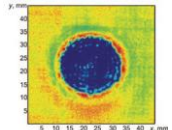
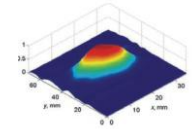
- Study of photoluminescence spectra with sub micrometer spatial resolution



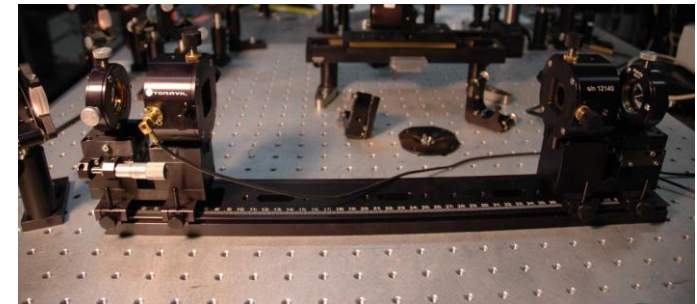
- Formation of submicrometer metamaterials



- Non-destructive testing of composite aircraft materials



- Semiconductor based Kit for Terahertz Time-Domain Spectroscopy



- Laser processing of thin-film solar cells

JRP of Life Sciences Technologies

- Identification and construction of enzymes and biosensors for analysts and biotechnology industry



- Non-invasive optical and ultrasonic tomography



- New remote processing techniques and spectral analysis of hazard aerosols

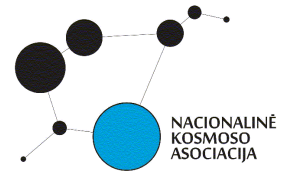
- In-vivo bio imaging of quantum dots



- New therapies of cancer targeting



JRP of Nature Resources and Agrarian Sciences



- Improvement of nutritional quality of leafy vegetables using solid-state lighting



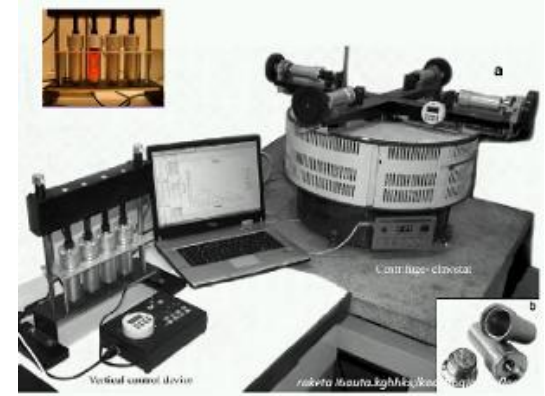
- Impact on growth of plants under exposure of Solid-state lighting



- Study of gravity and light-effects on growth and morphology of leaves



- Development of environment protection and land, water and forest management technologies. Bloom in the Baltic



- Network of differential GPS stations of Vilnius Gediminas Technical University for measurement of shifting of Earth's crust

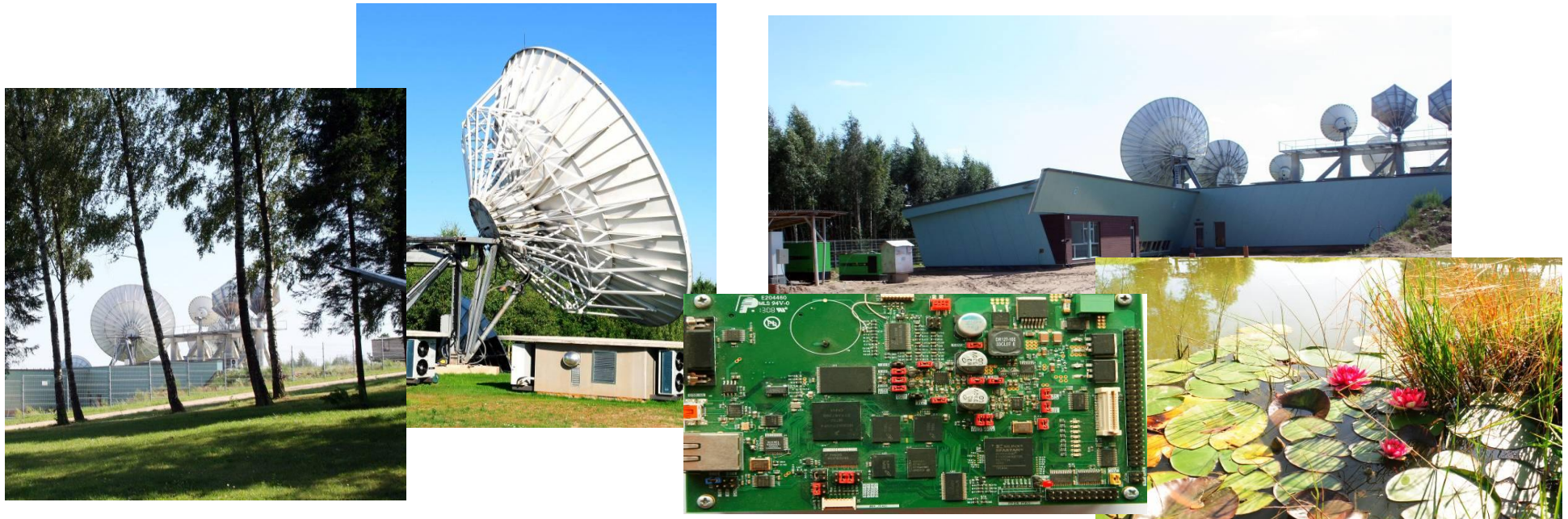




- Lithuanian and international awards for innovations in mapping and GIS
- 2005 certified ISO 9001:2000
- Experience in interpretation of space imagery:
 - For LTDBK50000 digital map of Lithuania (SPOT 10m imagery)
 - For EU Corine Land Cover project (Landsat TM imagery)
 - For military mapping:
 - Topographic maps TOP50LT 1:50K (CIB imagery)
 - MGCP project (Quick Bird imagery)
- Participation in EU INSPIRE directive based projects:
 - GMES project : Geoland 2 database
 - eContent + project : Nature SDI+ database

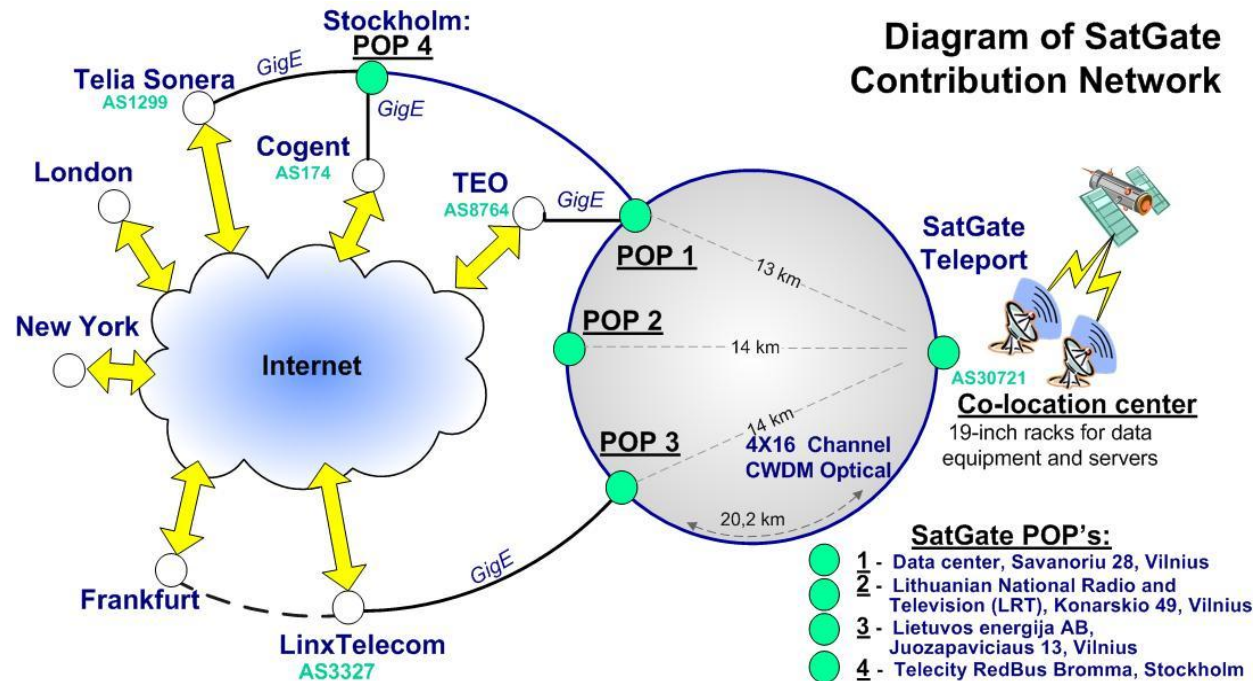


- **Telecommunications and development of investment projects**
- **Owner of satellite teleport and data centre Vilnius, Lithuania**
- **Research and development of satellite communications technology**
- **Production of specialised satellite communication equipment**



SatGate UAB

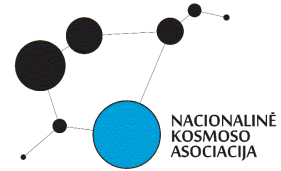
- Satellite Broadband solutions
- Teleport services for Voice and Data Communications
- Internet connectivity services
- Audio & Video broadcast Projects



- Official representative of Leica-Geosystems
- Installation and maintenance overground units of GPS network
- GPS network binding to terrain



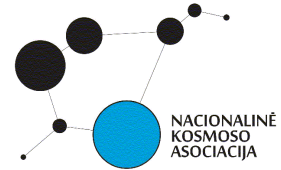
Automatization and Mechatronics Selteka UAB



- ▶ ISO 9001:2000 certified by KEMA
- ▶ IPC-A-610D certified by RENEX
- ▶ SMD technology
- ▶ Manual inserting lines
- ▶ 100 % Quality control
- ▶ R&D group



Optics and Optoelectronics. Ekspla UAB



More than 20 years in laser business

Product range:

- Lasers and Laser systems for R&D
- Industrial lasers
- Material processing workstations
- Power supply units and optoelectronic assemblies

Customers:

- NASA (USA)
- Berkeley University (USA)
- Hitachi Research Centre (Japan)
- California Davis University (USA)
- Nuclear Research Centres (Israel, Japan)
- Rutherford Appleton Laboratory (UK)
- National Research Centre (France)
- Max Planck Institute (Germany)



TECHNOLOGICAL ADVANTAGES

Owens unique thermal spraying technologies for depositing catalytic materials on the metal substrate and producing catalytic coatings on thin (30–40 microns) metal strip

PATENTS

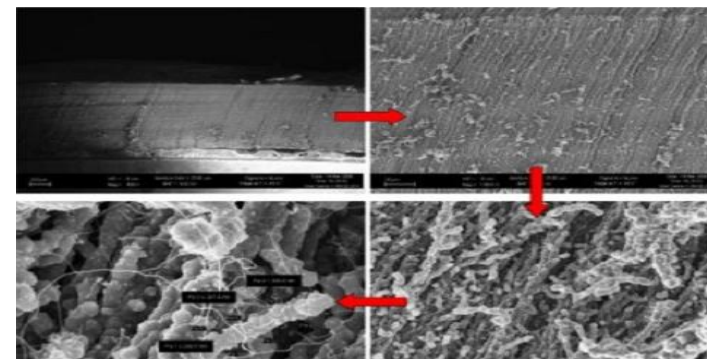
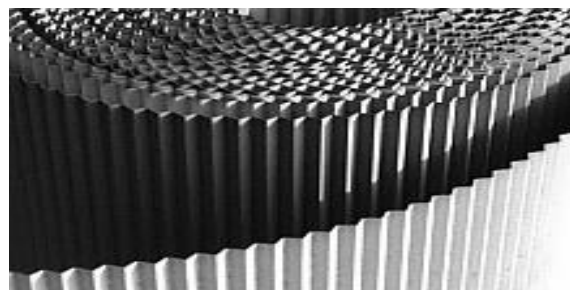
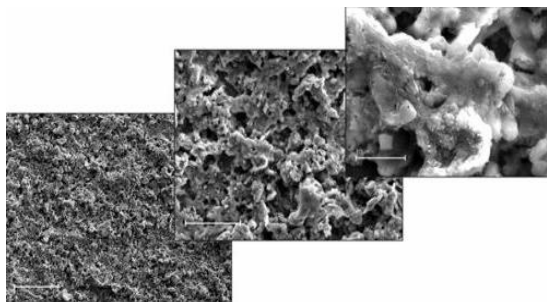
Latest PCT applications:

WO2008063038, WO2006041273, WO2004079035

PARTNERS: POLITO, UNIBO, VTT, CERTH, CSIC, FIAT, Gaz De France, MTS, MEL, GE, SINTEF, ECN and others.

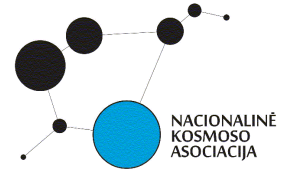
APPLICATIONS:

Steam Reforming, Biofuel gasification, Carbon Nano Tubes growing



Aviation and Aerodynamics.

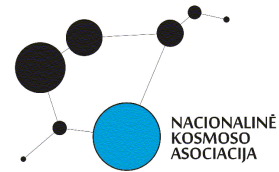
AB „Sportinė aviacija“



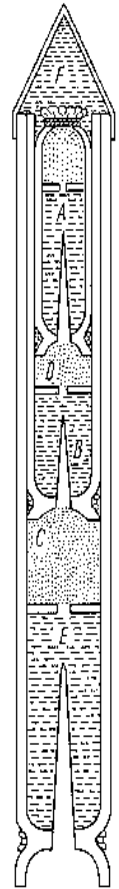
- Counts over 35 years experience in designing and manufacturing composite high quality gliders
- Engineering department with experienced staff having in it's disposal materials and structures testing facility, flight testing equipment
- Production facility certified under the JAR-21 requirements and holding Lithuanian CAA production facility approval
- The newest sailplane of company LAK-20 is designed to meet the latest standarts of the gliding industry



Lithuanian Steps Towards ESA



- 2006-2008, Ministry of Education and Science coordinates activities of Inter-ministerial working group on space issues
- 2007, National Space Technology Platform was established
- 2008, case study “Lithuanian Space Potential” was prepared
- 2008, Lithuanian Prime Minister assigns Ministry of Education and Science to start negotiations with ESA, Approval of the Recommendations by the Governmental Commission
- 2009, National Space Association was established
- 2010, Ministry of Education and Science and Ministry of Foreign Affairs started formal procedures of signing of Co-operation agreement with ESA

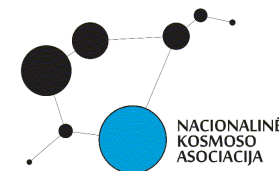


Lithuanian Steps Towards ESA



First official visit of delegation of Lithuania in ESA headquarters, Paris in Dec, 2008

Strategic Plan to Join ESA



Cooperation with ESA, 2010-2012

Planning and signing of European Cooperating State Agreement, 2012



European Cooperating State, 2013

Planning and signing of Plan for European Cooperating State, 2013



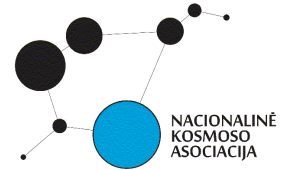
Associate Member State, 2014-2018

Signing of ESA Convention, 2018



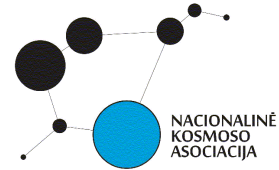
ESA Member State, 2018

The Vision and Mission



- Lithuanian Space sector seeks implementation of National R&D and High-Tech competencies in Space projects
- ESA training on Technical Requirements and Certification in specific ESA projects required
- Establishing partnership with National Space Agencies and ESA
- Co-operation with partners from ESA-member and Co-operating States in R&D FP7 projects
- Running of Quality system and Products Certification procedures
- Public awareness
- Valorisation of Space sector Project Results on Social & Economic impact on National Economy

Possible Start-up's in ESA tenders



AO5658 ESA TELECOM NEWCOMERS' INITIATIVE - CALL FOR PROPOSALS

Closing date: 31/12/2012

End-User products, Communication terminals, Operational services:

- Enabling Technology for Satcom
- Satcom Applications and Services
- Location Based Communication Applications (combination of satellite communications and navigation)

AO6124 ARTES 20 (INTEGRATED APPLICATIONS PROMOTION PROGRAMME)

Closing date: 31/12/2012

Utilisation of at least two existing and different space assets :

- Satellite Communications, Earth Observation,
- Satellite Navigation, Human Spaceflight technologies and others

FP7-SPACE-2010-1, activity - 9.2 Strengthening the foundations of Space science and technology,

Topic - Space transportation for space exploration,

Sub-topic - IN-FLIGHT NAVIGATION AND CONTROL. Title: HiS-CoTrans

High speed Coordinate transformation algorithms for any flight and navigation aims including gyroscopes, rotation wheels, precession, nutation.

THANK YOU!

Vidmantas Tomkus

National Space Association
Gedimino pr. 3, LT-01103
Vilnius, Lithuania
Tel. +370 5 210 1250
Fax +370 5 210 1249
E-mail: vto@space-eu.lt
www.space-lt.eu

