Developing an innovation ecosystem: The case of Kaunas University of Technology

Prof. Asta Pundziene,
Vice-Rector for Research at KTU
2015

Kaunas University of Technology

STRATEGY

Leading University in Europe with highly developed knowledge and technology transfer activities

Cultivating Talents

The University encourages development of student competences which empowers their self-expression and successful career

Undertaking Rigour Research & Innovations

By developing new knowledge and technology; enabling transfer into business and society

Integrating Sustainability Principles

In all parts of University life. All KTU activities are focused on prosperity and sustainable development of the State

Inspiring Advancement

Sustainable development of the University ensuring the quality and efficiency of all activities

Investing Into Well-Being

By developing and caring for University's academic environment and infrastructure

KTU Strategic

Priorities

- **Internationalisation**
- **Interdisciplinarity**
- **Innovations & cooperation with business**

10 research institutes

9 faculties

KTU Research institutes

- Biomedical Engineering Institute
- Food Institute
- Institute of Architecture and Construction
- Institute of Defense Technologies
- Institute of Environmental Engineering
- Institute of Materials Science
- Institute of Mechatronics
- Institute of Metrology
- Prof. Kazimieras Baršauskas Ultrasound Research Institute
- Health Telematics Science Institute

KTU Faculties

- Faculty of Chemical Technology
- School of Economics and Business
- Faculty of Electrical and Electronics Engineering
- Faculty of Informatics
- Faculty of Mathematics and Natural Sciences
- Faculty of Mechanical Engineering and Design
- Faculty of Social Sciences, Arts and Humanities
- Faculty of Civil Engineering and Architecture
- Panevėžys Faculty of Technologies and Business

KTU COMMUNITY

2014

11 000
students

1 000
academic staff

775
international students

2 555
graduates

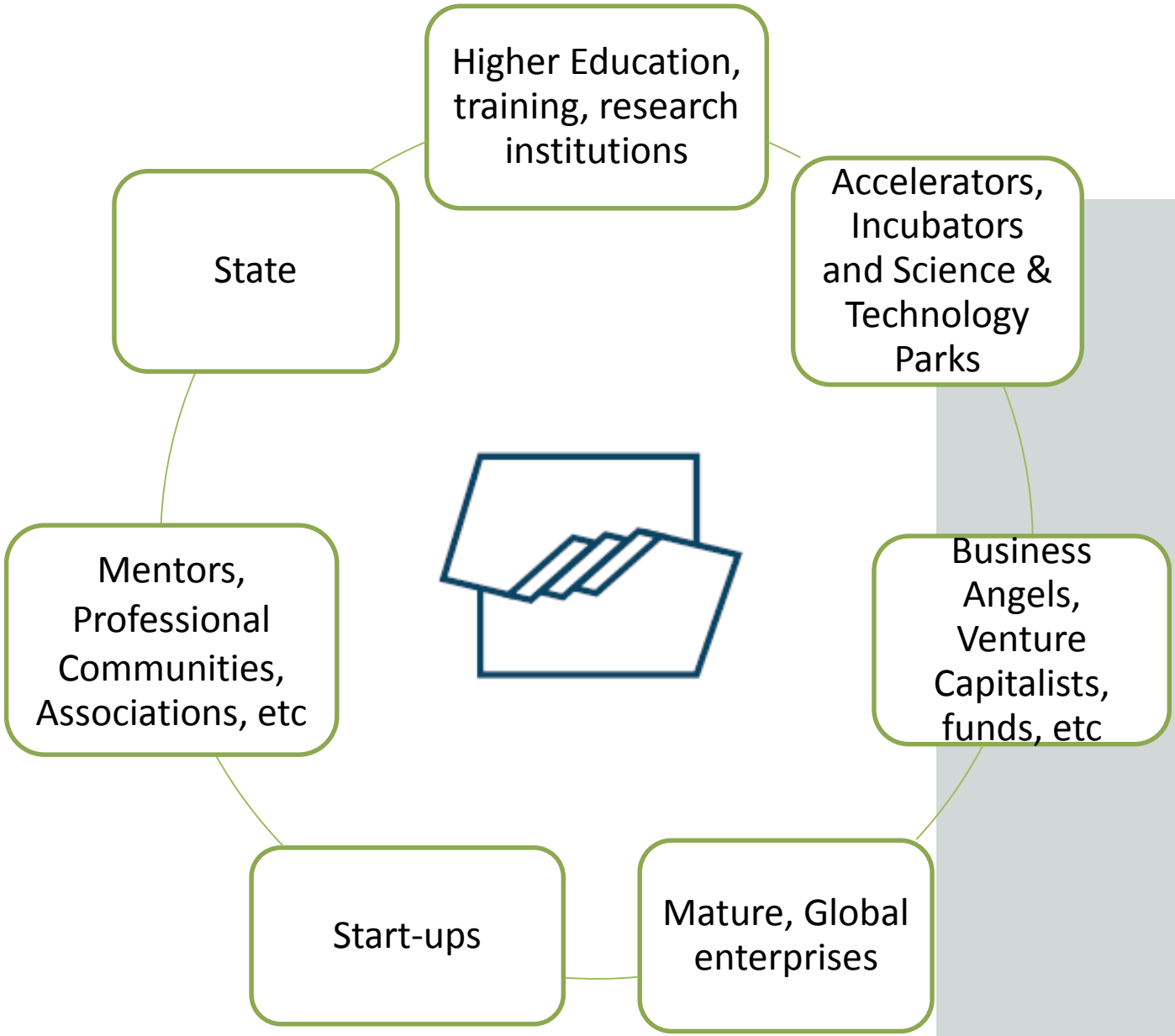
330
PhD students

133 000
alumni

ktu
1922

Innovation ecosystem

Innovation and Entrepreneurship ecosystem



PhD Studies at KTU

KTU DOCTORAL (PHD PROGRAMMES)

17 doctoral (PhD) programmes.
Duration – 4 years.

TECHNOLOGICAL SCIENCES

- Electrical and Electronic Engineering
- Civil Engineering
- Environmental Engineering
- Energetics and Power Engineering
- Informatics Engineering
- Materials Engineering
- Mechanical Engineering
- Measurement Engineering

SOCIAL SCIENCES

- Political Sciences
- Management
- Economics
- Sociology
- Education

HUMANITIES

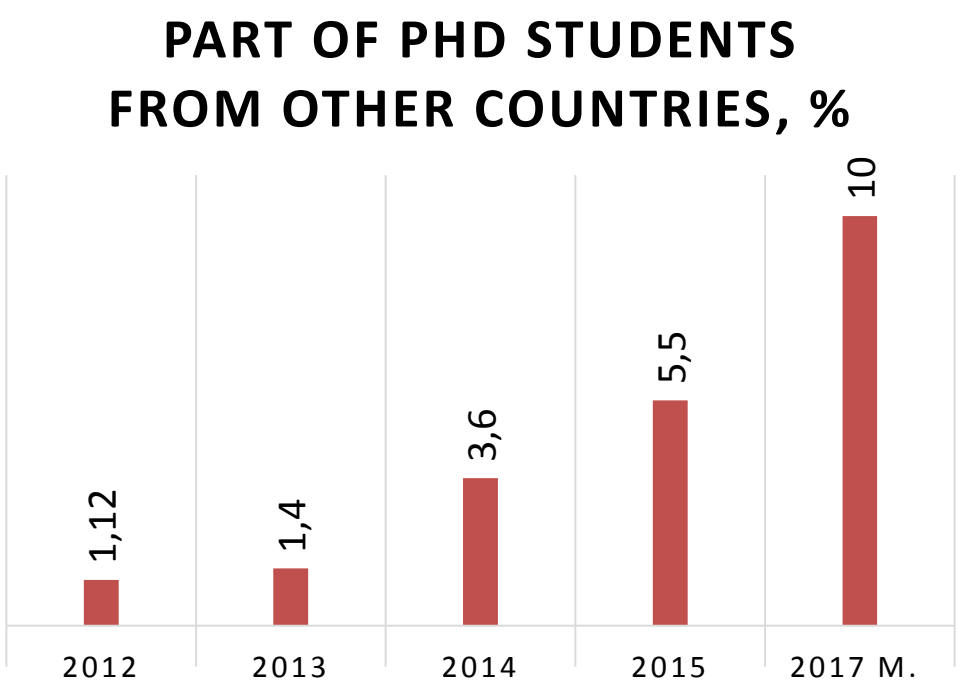
- History and Theory of Arts

PHYSICAL SCIENCES

- Chemistry
- Informatics

International KTU PHD School

- Joint/dual degree PhD programmes
- Open intensive courses in English language for PhD students from other institutions and countries
- At least one module studied abroad
- International PhD students
- PhD Summer school for core competences



Intensive

PHD Courses

KTU welcomes PhD students from other institutions to study one or several PhD modules at our University

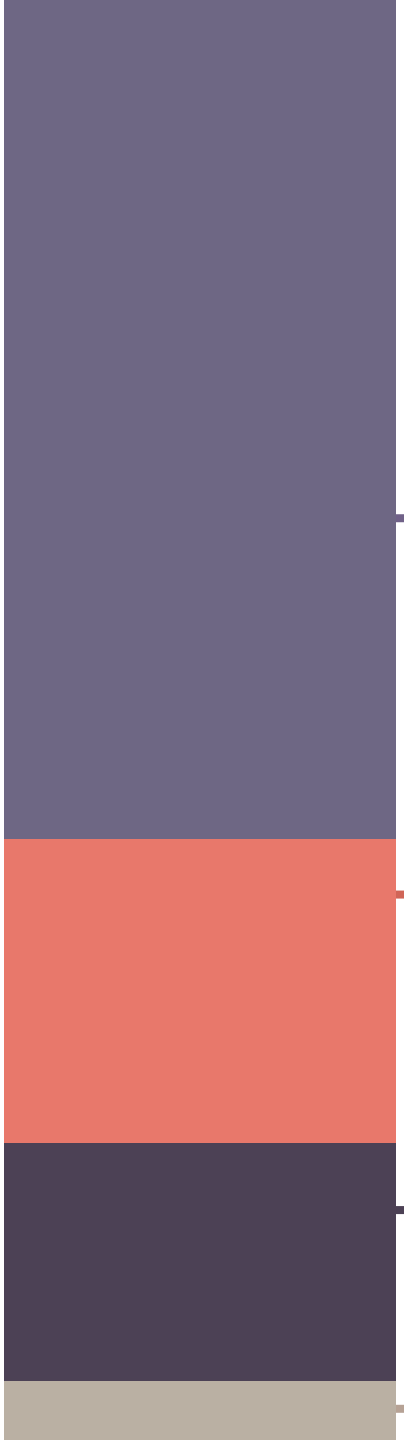
30 intensive PhD modules in English

Duration – one-two weeks

Credits may be transfered to the home institution

KTU PHD Students

Each year 70 students in average join PhD programs



60%

Technological Sciences

23% Social Sciences

15% Physical Sciences

2% Humanities

Research at KTU

KTU Research

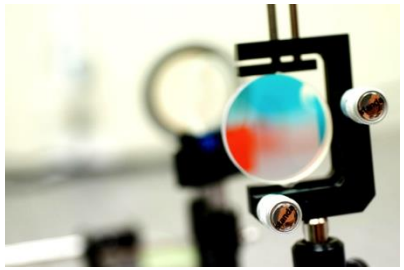
AREAS

Diagnostic and measurement technologies

New materials for high-tech

Smart environments and information technology

Technologies for sustainable development and energy

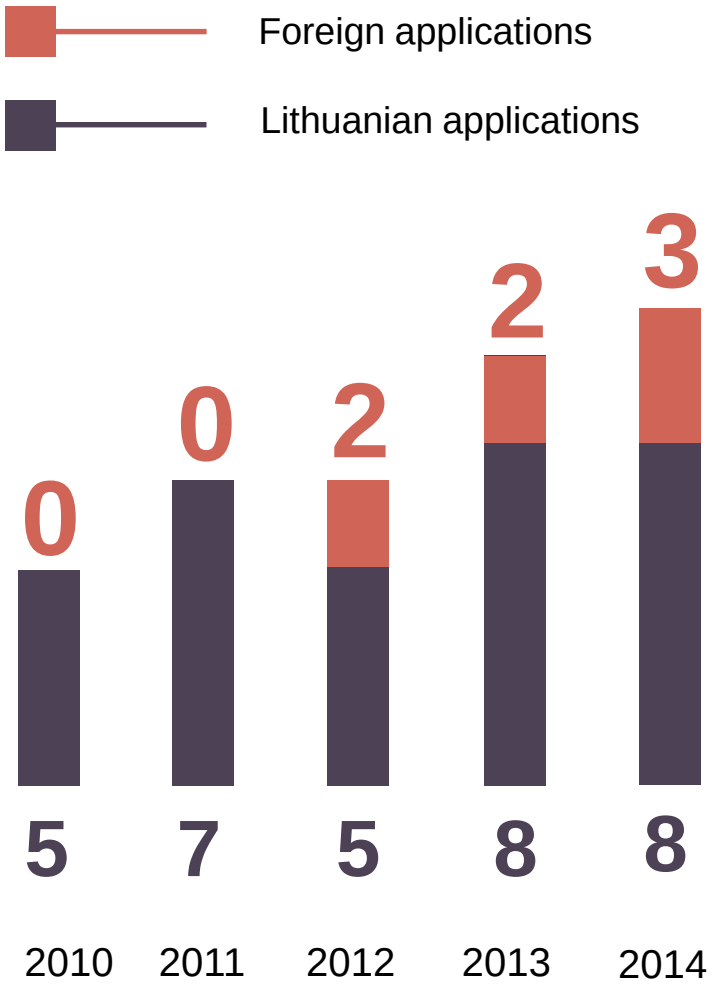


Sustainable growth and social-cultural development

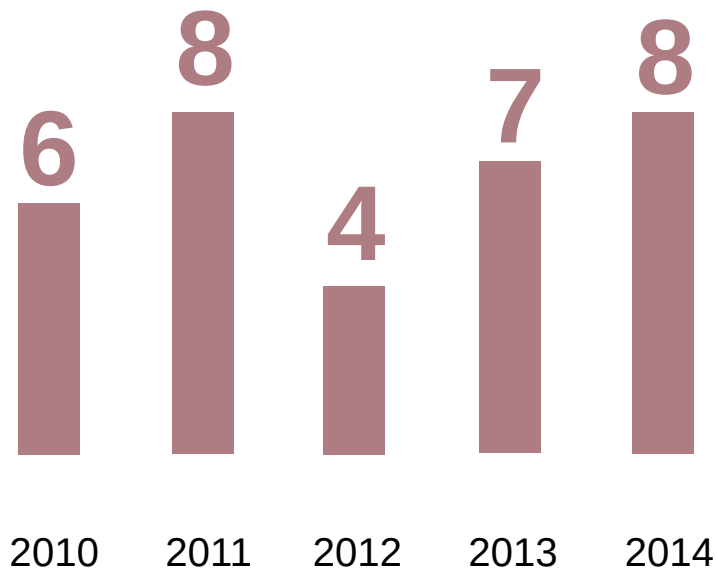
Participation in research, technological development and demonstration projects

programme	2010	2011	2012	2013	2014
FP7	24	28	27	30	22
EUREKA	7	8	7	7	7
EUROSTARS	2	3	3	3	1
COST	27	28	26	25	32
OTHER	30	26	29	23	23

KTU PATENTS



1. Patent applications

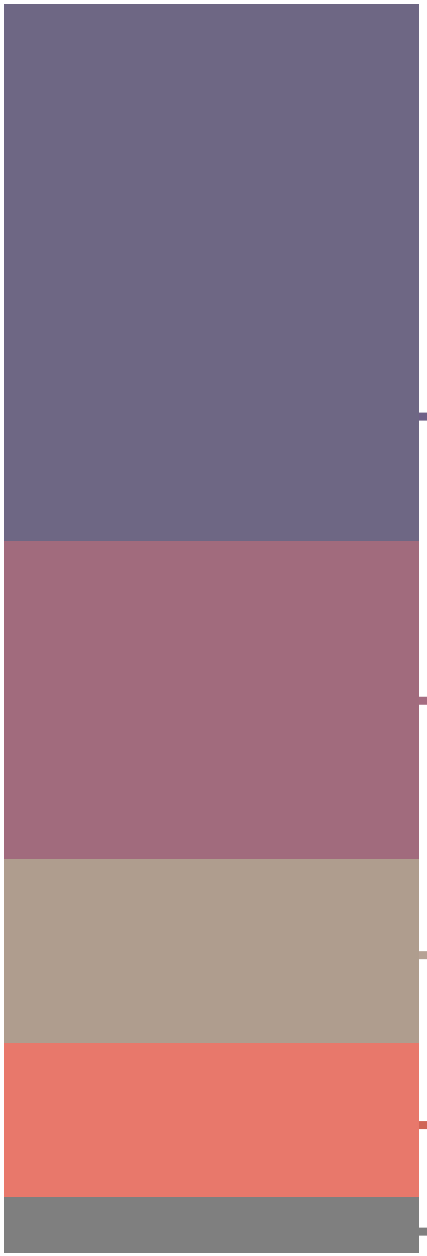


2. Patents

KTU

PATENTS

Patent applications
by research areas:



40% Mechatronics

24% Chemistry and chemical engeneering

18% Mechanical engeneering

12% Electrical engeneering

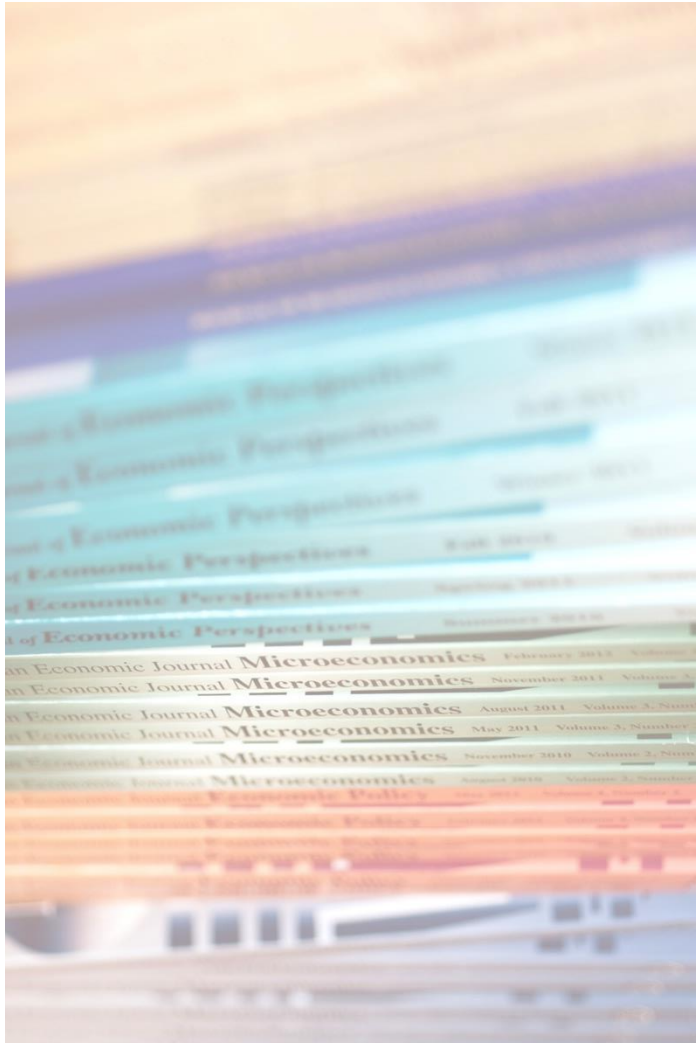
3% Informatics and materials engineering

KTU publishes 14 scientific journals,
5 of which are referred in Thomson Reuters
Web of Science database:

Research

JOURNALS

- **Electronics and Electrical Engineering (IF–0,445),**
- **Information Technologies and Management (IF–0,813),**
- **Mechanics (IF–0,336),**
- **Materials Science (IF–0,455),**
- **Engineering Economics (IF–0,771).**



KTU RESEARCH INFRASCTRUCTURE

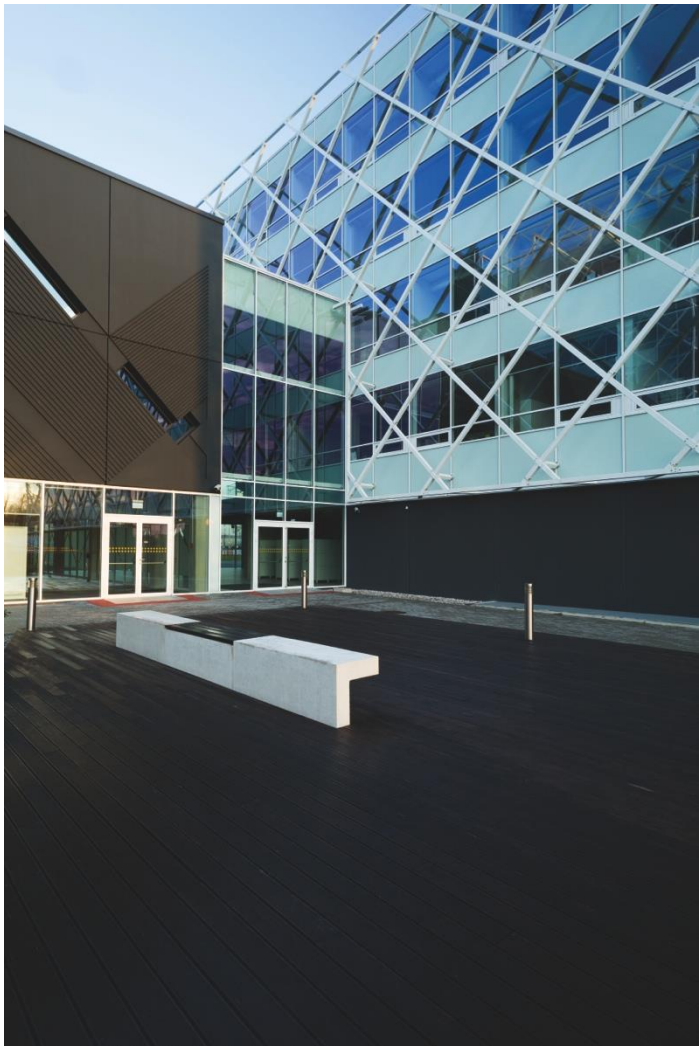
KTU is a founding partner of two integrated science, study, and business valleys - *Santaka* and *Nemunas*:

Santaka KTU Science, Technology Centre and Technological Business Incubator

- **New materials for high technologies**
- **Smart environments and ICT**
- **Diagnostics and measurement technologies**

Food Science and Technology Competence Centre (FSTCC) is part of the integrated science, studies and business valley *Nemunas*

- **Functional food**
- **Food quality and safety research**
- **Sustainable food production processes**
- **Food chain management processes**



KTU RESEARCH INFRASCTRUCTURE

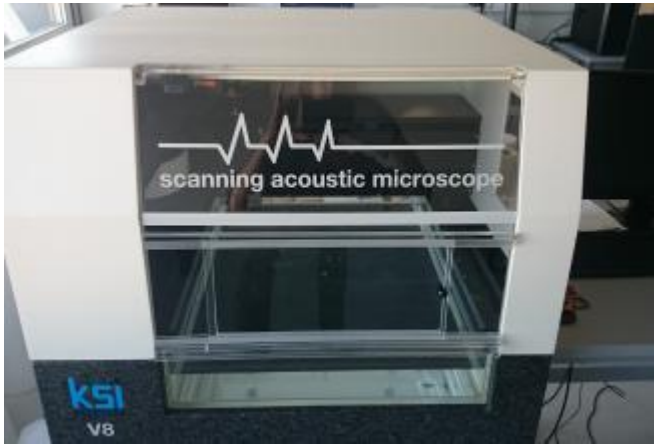
1. Open access center with more than 1000 modern research equipment supporting KTU research strategic priority areas. Available online: **apcis.ktu.edu**

2. There are 6 accredited and certified science laboratories

3. KTU Library stores and continuously replenishes one of the richest collections on science, technology and engineering, providing access to e-resources. University subscribes to 48 international databases provided by 22 services

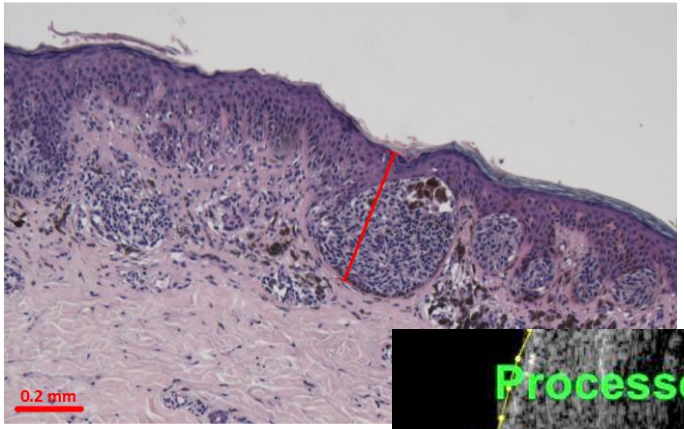
Examples of R&D infrastructure

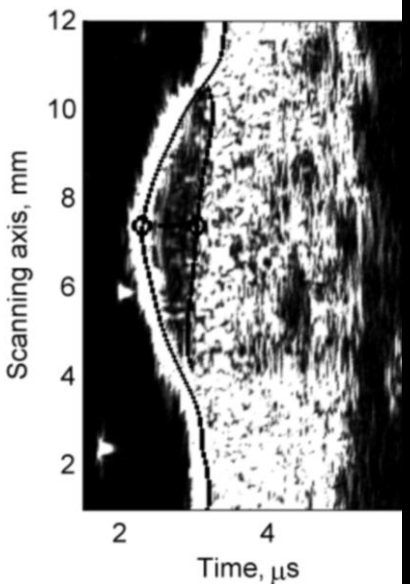
Nuclear magnetic resonance
X-ray microtomograph
Ultrasonic microscope



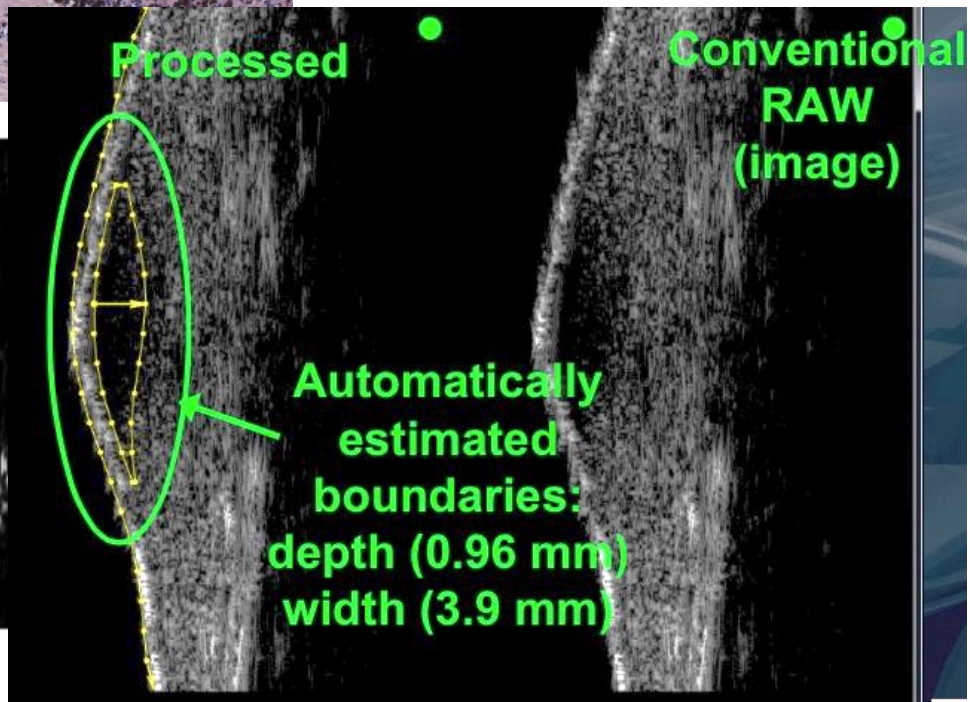
Value proposition

Example of ultrasonic technology prototype for skin degeneration



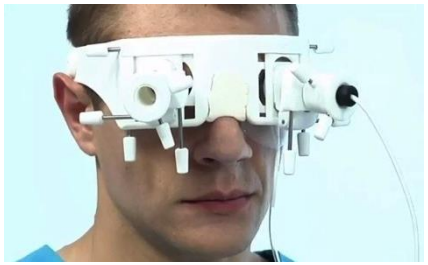


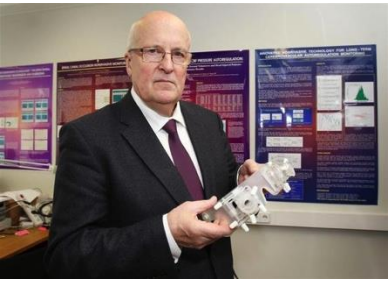
From knowledge to implementation in daily clinical practise



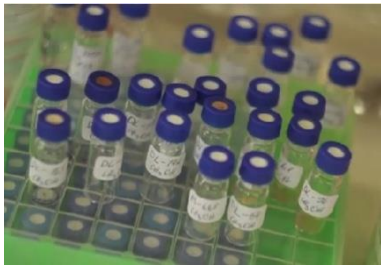
From Idea to Technological Solution - Examples

1. WORLD'S FIRST ACCURATE NON-INVASIVE ABSOLUTE ICP VALUE METER RECOGNITION IN UNITED STATES CONGRESS AND NASA





2. NOVEL MULTIFUNCTIONAL PHYTOCHEMICAL INGREDIENTS FOR INCREASING FOOD BIOLOGICAL VALUE AND SAFETY



KTU FUNDING SOURCES

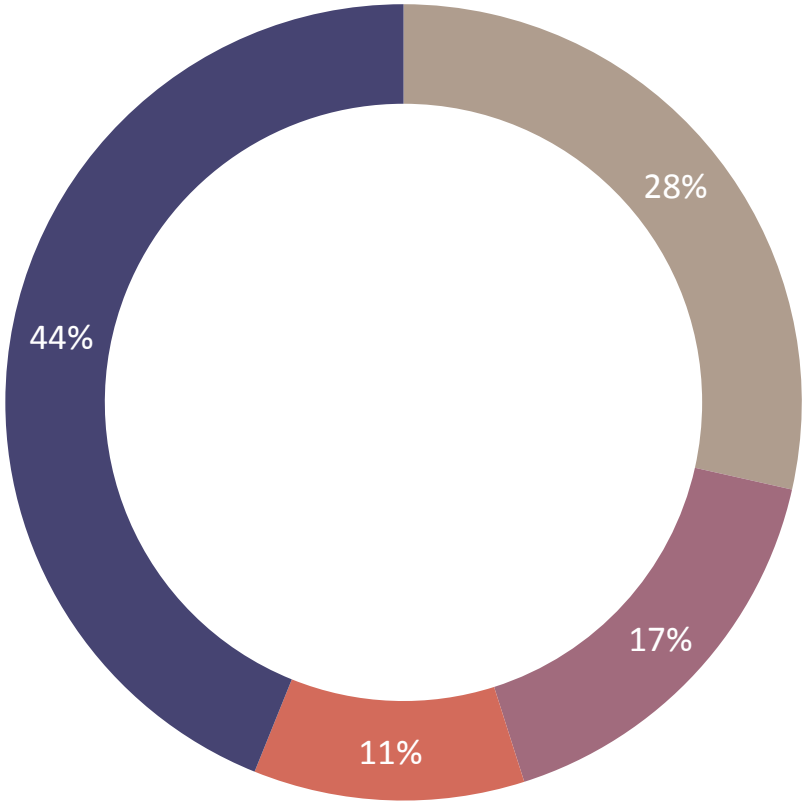
for scientific research

National research grants (e.g., LRC, MITA)

State funding

Research and development contracts for public and private organisations (LT and abroad)

International research grants (Horizon 2020,FP7)



Initiatives for excellence

Centre of Excellence in Science and Technology for Healthy Ageing

HEALTH – TECH

4 STRATEGIC RESEARCH AND INNOVATION TOPICS

Mechanisms for age-related diseases

Biomakers for age-related diseases

Diagnostics and monitoring technologies for age-related diseases

Regenerative technologies for age-related diseases

Integrating Lithuanian Expertise:

Kaunas University of Technology

Lithuanian University of Health Science

Vilnius University

Supported by Advanced Partners:

Lunds University

Teknologian Tutkimuskeskus VTT

THE NEAR FUTURE

THE PERFORMANCE DIFFERENCE

KTU

deep subject knowledge

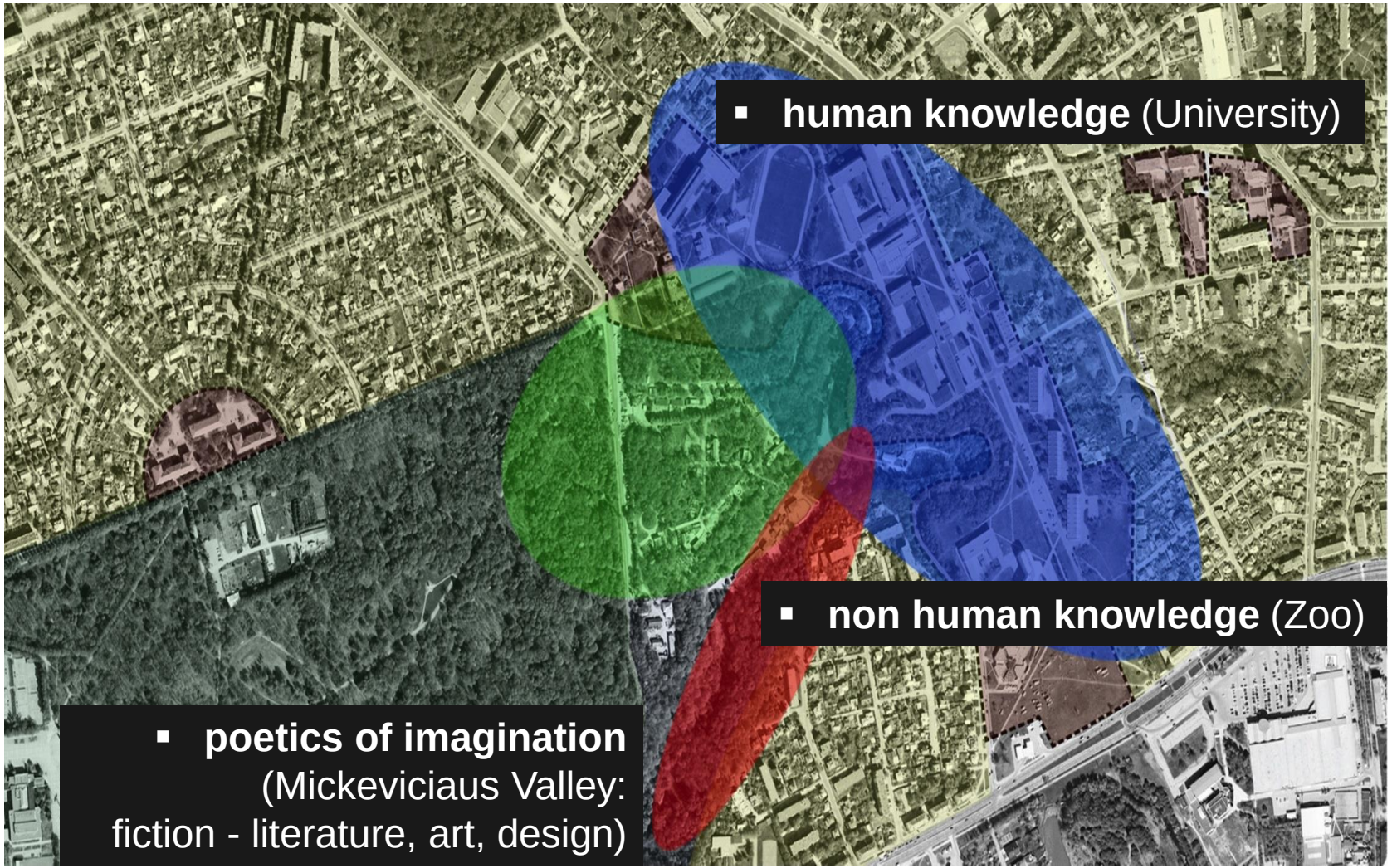
SANTAKA VALLEY

interaction with expertise in business and entrepreneurship

M-LAB

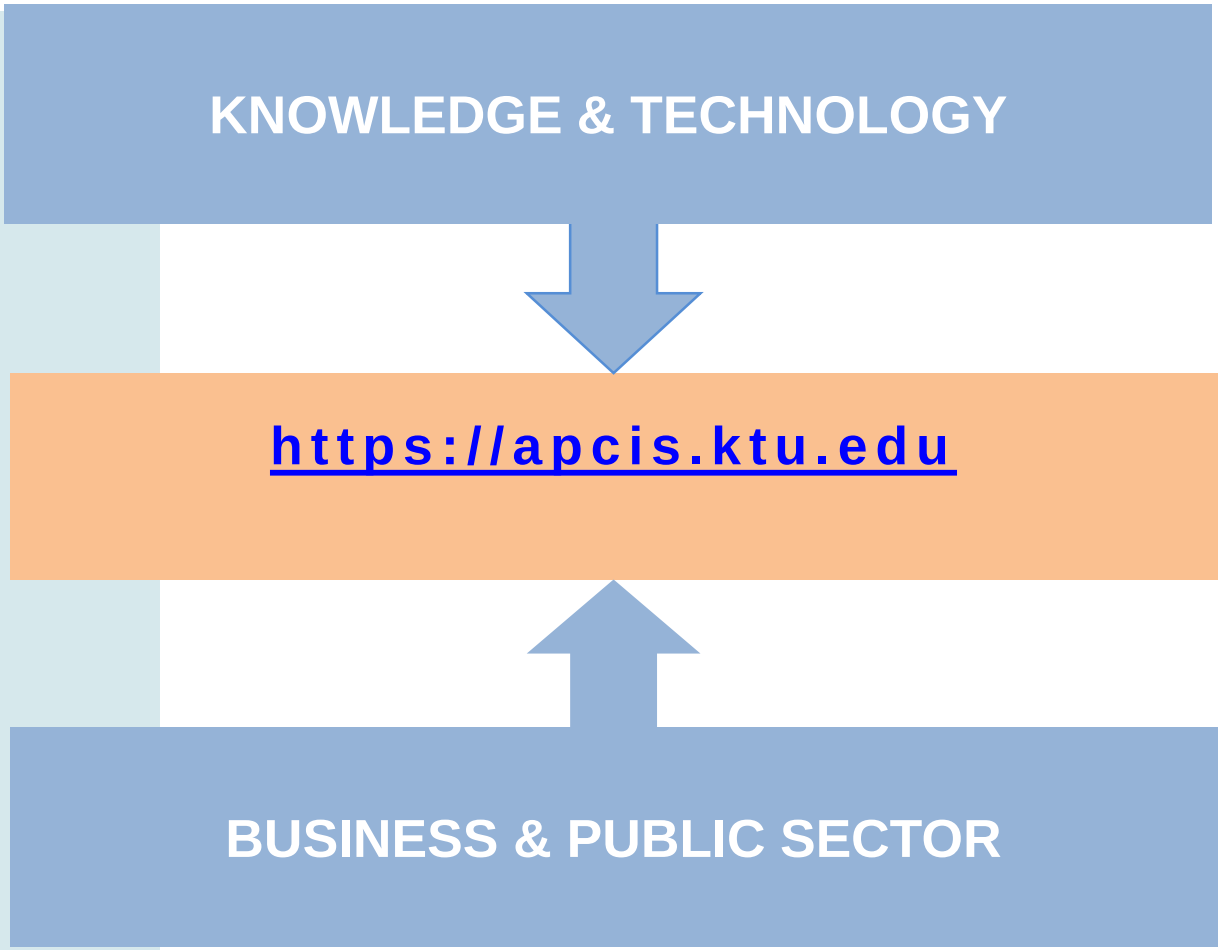
Interdisciplinary thinking and research in science, technology and the intersection of art

KTU M-LAB: THE INTERSECTION OF 3 AREAS



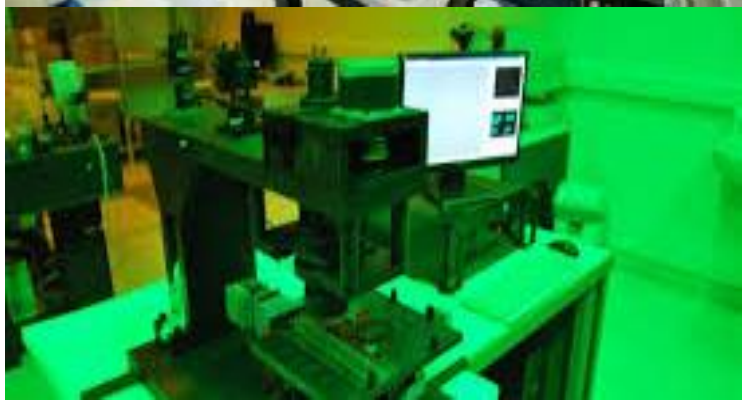
Knowledge and technology transfer

INOVATION AND ENTREPRENEURSHIP CENTRE



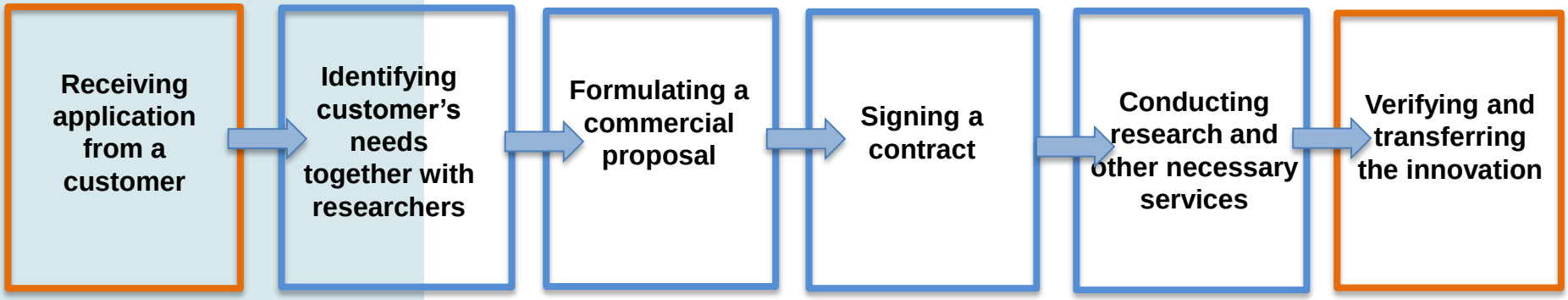
NATIONAL INNOVATION AND ENTREPRENEURSHIP CENTRE (NIEC)

- **Knowledge exchange and technology transfer (sales)**
- **Intellectual property management**
- **Young business incubator (KTU Startup Space)**
- **Promoting entrepreneurship mindset and activities**
- **Consultations for science and business**



OPEN ACCESS CENTER INFORMATION SYSTEM (APCIS)

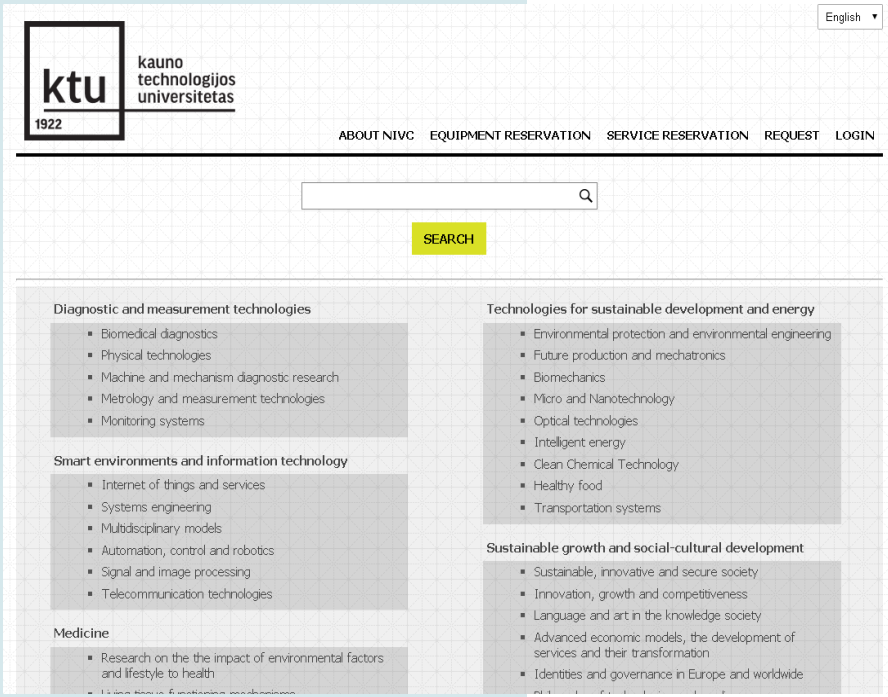
Science – business collaboration

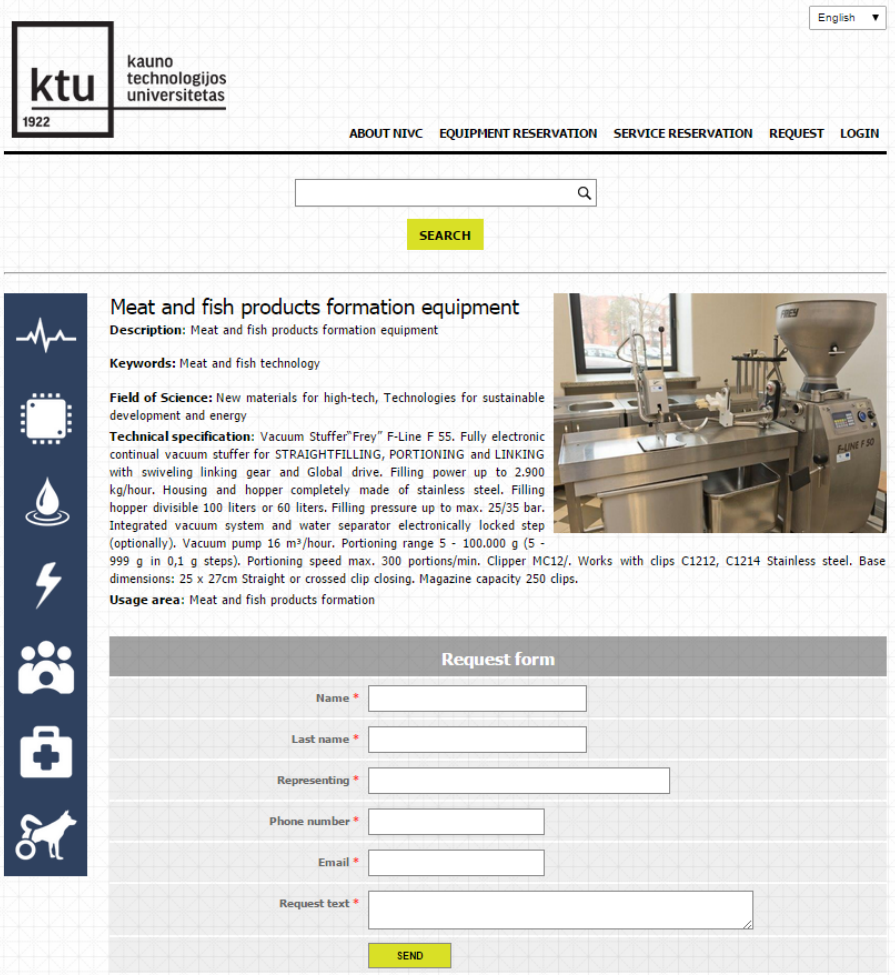


One step from order to service

OPEN ACCESS CENTER INFORMATION SYSTEM (APCIS)

Open access center with more than 1000 modern research equipment supporting KTU research strategic priority areas. Available online: https://apcis.ktu.edu





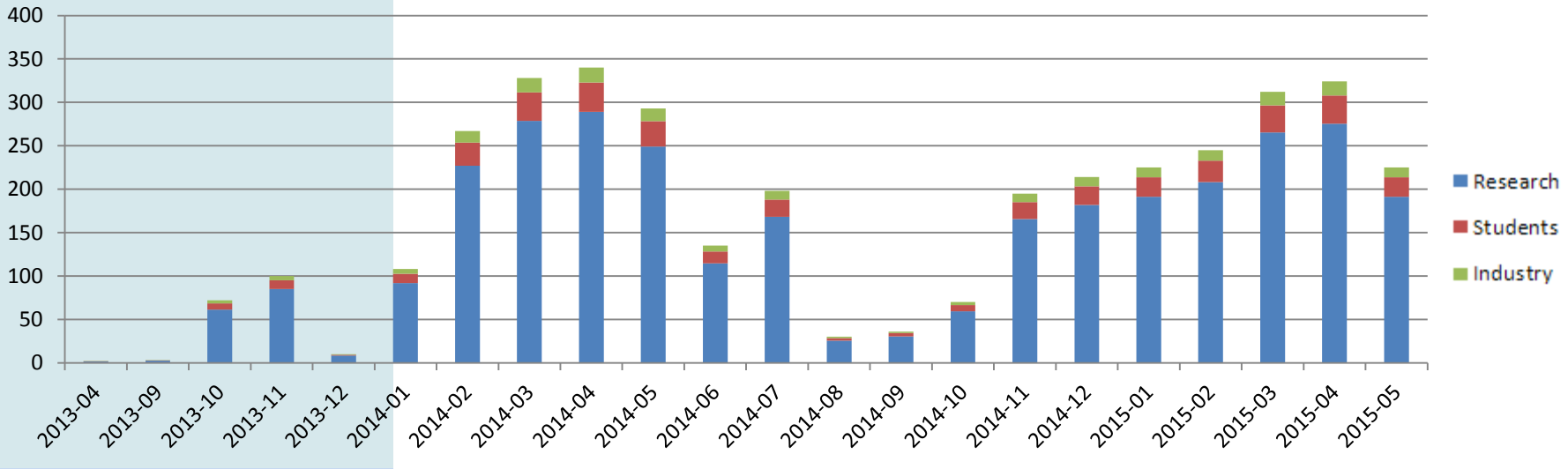
E-Science catalogue

OAC R&D EQUIPMENT WORKLOAD EXAMPLES

Faculty of Chemical Technology
700MHz nuclear magnetic resonance spectrometer

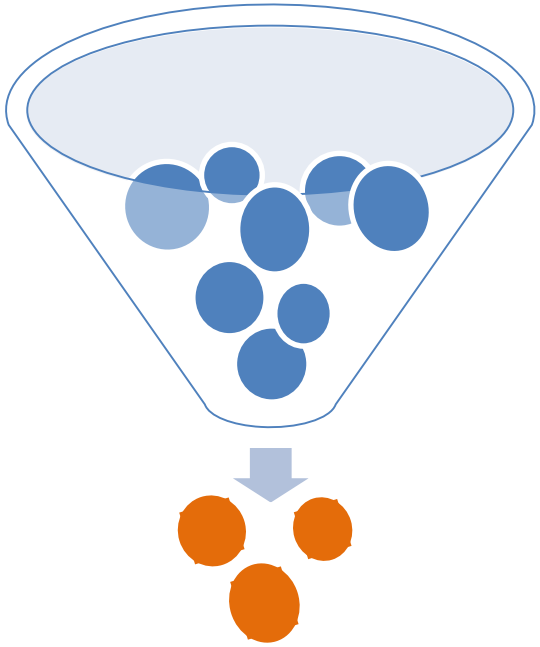
Workload: **~90%** (on 151 work-hours / month basis) – 3727 tests./20 mo., average: 186 tests/mo.

research: 85%	-	115 hours / month
education: 10%	-	14 hours / month
Industry contracts: 5%	-	7 hours / month



Intellectual Property Protection and Management

Intellectual property management and commercialization employing Stage-Gate method



1. Disclosure of inventions
2. Pre-selection
3. Periodic evaluations
4. Marketing
5. Commercialization

Strategic PARTNERSHIPS

Following the signing of a joint venture agreement in February 2014 by Kaunas University of Technology (KTU), Lithuanian University of Health Sciences (LUHS), and Lithuanian Energy Institute (LEI), KTU IEC was renamed to **National Innovation and Entrepreneurship Centre (NIEC).**
In 2015 Vytautas Magnus University joint the center

ktu 1922

LITHUANIAN UNIVERSITY OF HEALTH SCIENCES

LEI

ktu
1922

PARTNERS

ktu
1922

Fostering Entrepreneurship

New study modules registered at KTU:

- **TECHNOLOGY ENTREPRENEURSHIP: for undergraduate students (launched in September 2013)**

STANFORD UNIVERSITY

- **TECHNOLOGY VENTURES: for postgraduate students**

Internationally acclaimed business gurus teaching at the modules:

- **Chris Burry, US Market Access Center, USA**
- **Ken Singer, UC Berkeley, USA**
- **Will Cardwell, Aalto University, Finland**
- **Fabian Sepulveda, Aalto University, Finland**
- **Business representatives from national and international companies**

The First University **START UP SPACE** in Lithuania

Helps to try out entrepreneurs career

[redacted]
Thematic communities of entrepreneurs

Develops entrepreneurship and innovation culture

[redacted]
among researchers and students

Develops companies and products using University IP

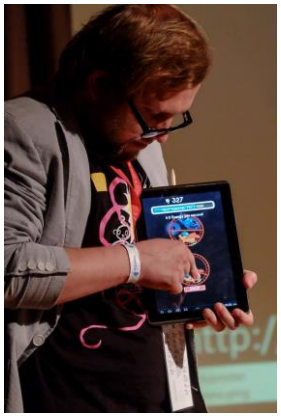
[redacted]
Start-ups and spin-offs

The goal is to support young minds in their development process in the context of education, research and practical application

KTU Startup Space

The first **academic** "Start-up" Center in Lithuania

More than 44 startups are established per three years



BLIU BLIU SEARCHNODE SNEAKY BOX techn seo Helis Power of Eye

KTU START UP SPACE

2012–2015

> 44 Successful companies

> 150 Prototypes

> 150 Ideas

> 4 000 Event participants

15 000 Students

Mobile apps labs infrastructure

More than 40 mobile apps projects are created per year

Omnitel

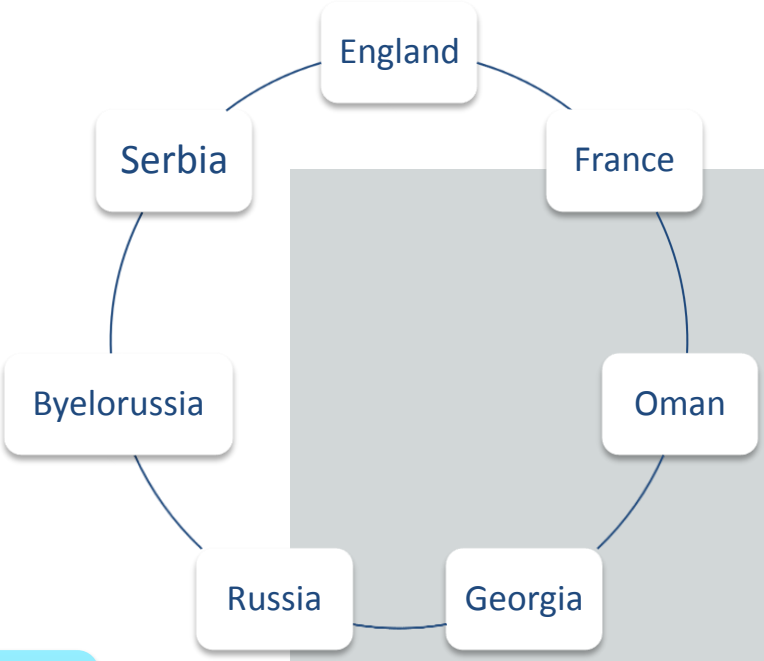
SAMSUNG

.NF
NET FREQUENCY

The most successful startups

PM AM

Representatives in 7 countries



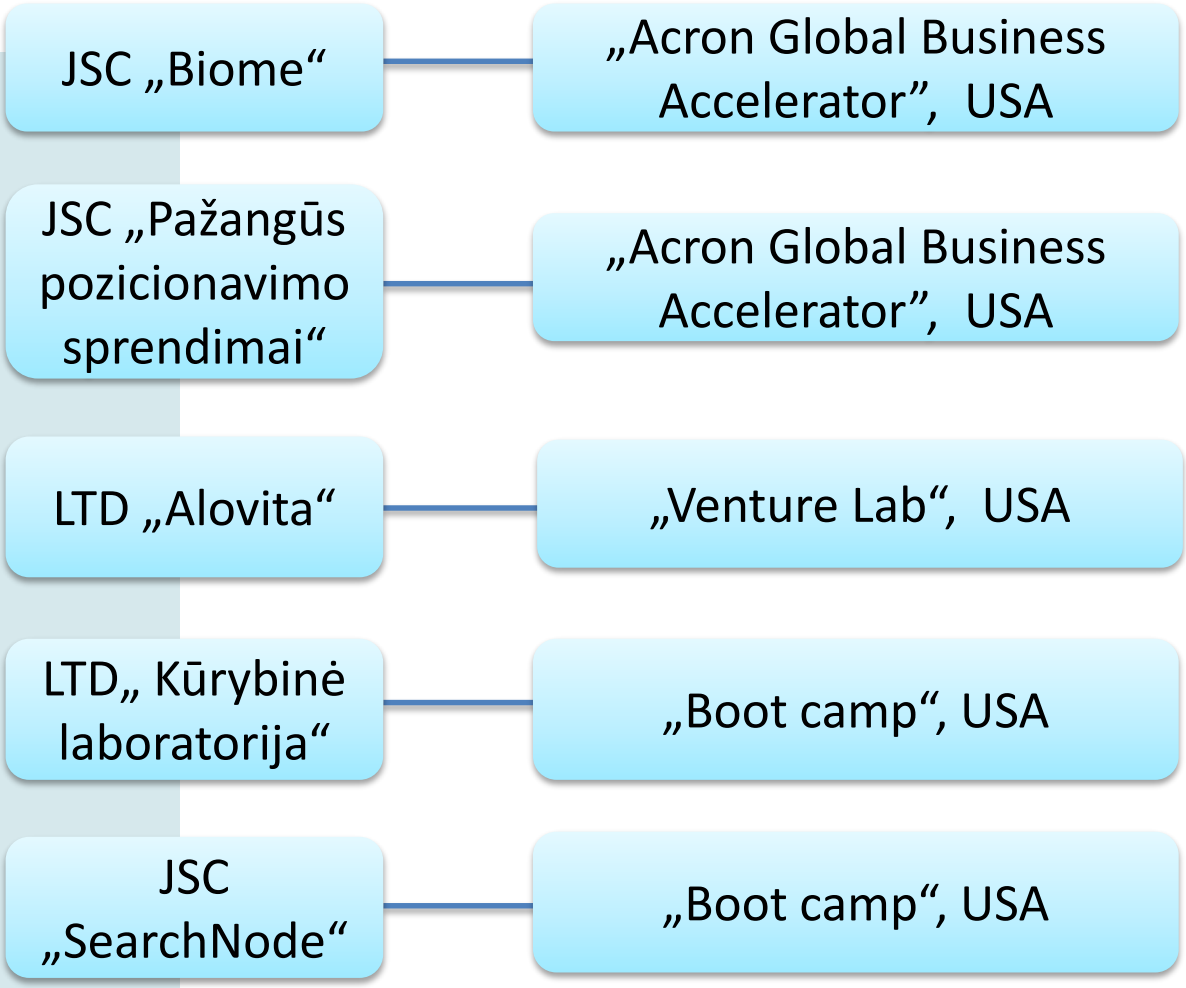
TINY LAB PRODUCTIONS

Turnover 50 001 - 100 000 €

SNEAKYBOX

12 employees

KTU Startups mobility



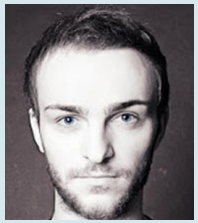
KTU Startup cooperate

Startups community:

Game Jam

Mentors community:



Aalto University

SRI International

Akron BioMedical Corridor

Practica Capital

BÜRÓ

Berkeley

NEXTURY VENTURES

TeleSoftas
In touch with mobile

us•mac
US MARKET ACCESS CENTER

Partners:

KTU Startup space strategic guidelines 2016-2020

Advance the development of the students' start-ups;

Expand the geography and quality of the network of university born start-ups mobility;

Enhance the system of spin-offs development ;

To **improve relations between researchers and students**, to encourage innovation among researchers and students;

To **support the ideas of young people** in their development process, bringing together education, research and practical application;

Support the development of the investors community.

Thank You