



# BUDOVANIE INOVAČNÉHO EKOSYSTÉMU V KOŠICIACH



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# What is an Innovation Ecosystem?

(the analogy with biological ecosystems)

## Biological ecosystem

- is a complex set of relationships among
- the **living resources**, **habitats**, and **residents** of an area,
- whose functional goal is to maintains an equilibrium sustaining state.

The *equilibrium* state is described  
by modeling the energy dynamics  
of the ecosystem operations

# Innovation ecosystem

models the economic dynamics  
of the complex relationships  
that are formed between:

## **actors**

- **material resources** (funds, equipment, facilities, etc.)
- **human capital** (students, faculty, staff, industry researchers, industry representatives, etc.)

or

## **entities**

(e.g. the universities, business firms, venture capitalists, industry-university research institutes, Centers of Excellence, funding agencies, policy makers, etc.)

whose functional goal is to enable

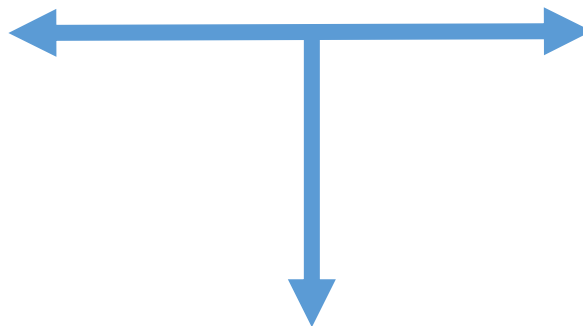
- **technology development**
- **and innovation.**

The innovation ecosystem comprises two distinct, but largely separated economies,

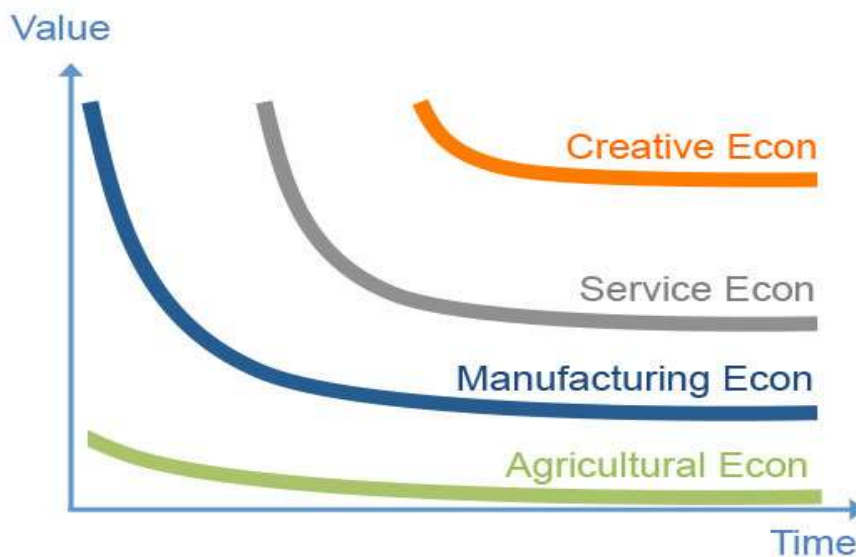
1. **knowledge economy**, (driven by fundamental research),
2. **commercial economy**, (driven by the marketplace).



Cooperation



## RIS KSK 2016 + (Regional Innovation Strategy)



# VÍZIA RIS 2016+: KOŠICKÝ KRAJ HOSPODÁRSKY RASTIE A DISPONUJE ROZVINUTOU INOVAČNOU ZÁKLADŇOU A OTVORENOU SPOLUPRÁCOU VO VÝSKUME, VÝVOJI A INOVÁCIÁCH

(merateľné ukazovatele: napr. ekonomická výkonnosť kraja, investície do VaV, počet inovujúcich firiem, počet startupov, počet VaV pracovníkov, počet excelentných pracovísk, Univerzitných Vedeckých Parkov, Technologických a Kompetenčných Centier, počet patentov, podiel tovarov a služieb s vyššou pridanou hodnotou, podiel tovarov a služieb s vyššou pridanou hodnotou na exporte)

POSLANIE: VZÁJOMNOU SPOLUPRÁCOU VŠETKÝCH AKTÉROV VYUŽITÍM VNÚTORNEHO INOVAČNÉHO POTENCIÁLU A DOSTUPNÝCH FINANČNÝCH ZDROJOV DOSIAHNUŤ PROSPERITU KOŠICKÉHO KRAJA

## PILIERE RIS 2016+

EXCELENTNOSŤ  
VO VÝSKUME A  
VÝVOJI

KOMERCIALIZÁCIA  
VÝSKUMU A  
INOVÁCIÍ

PODPORA  
INOVATÍVNEHO  
PODNIKANIA  
A NOSNÝCH A  
PERPEKTÍVNYCH  
ODVETVÍ

KVALITNÉ ĽUDSKÉ  
ZDROJE PRE  
ZVÝŠENIE  
INOVAČNEJ  
A TECHNOLOGICK  
EJ VÝKONNOSTI  
KRAJA

REGIONÁLNY INOVAČNÝ EKOSYSTÉM EURÓPSKEJ ÚROVNE







## TUKE – is a strong player



Cities	2
Campuses	3
Buildings	80
Area	50 ha

# TUKE – is really a strong player !

**1**

## interesting composition of faculties

1. Mining, Ecology, Process Control and Geotechnology (1952)
2. Metallurgy (1952)
3. Mechanical Engineering (1952)
4. Electrical Engineering and Informatics (1969)
5. Civil Engineering (1977)
6. Economics (1992)
7. Manufacturing Technologies (campus in Presov) (1992)
8. Arts (1998)
9. Aeronautics (former University of military) (2005)

**more than  
77.000 alumni**

**2**

## teacher/student

**10 658** students,

**808** pedagogical staff

**750** others (administration, technicians)

**3**

## robustness

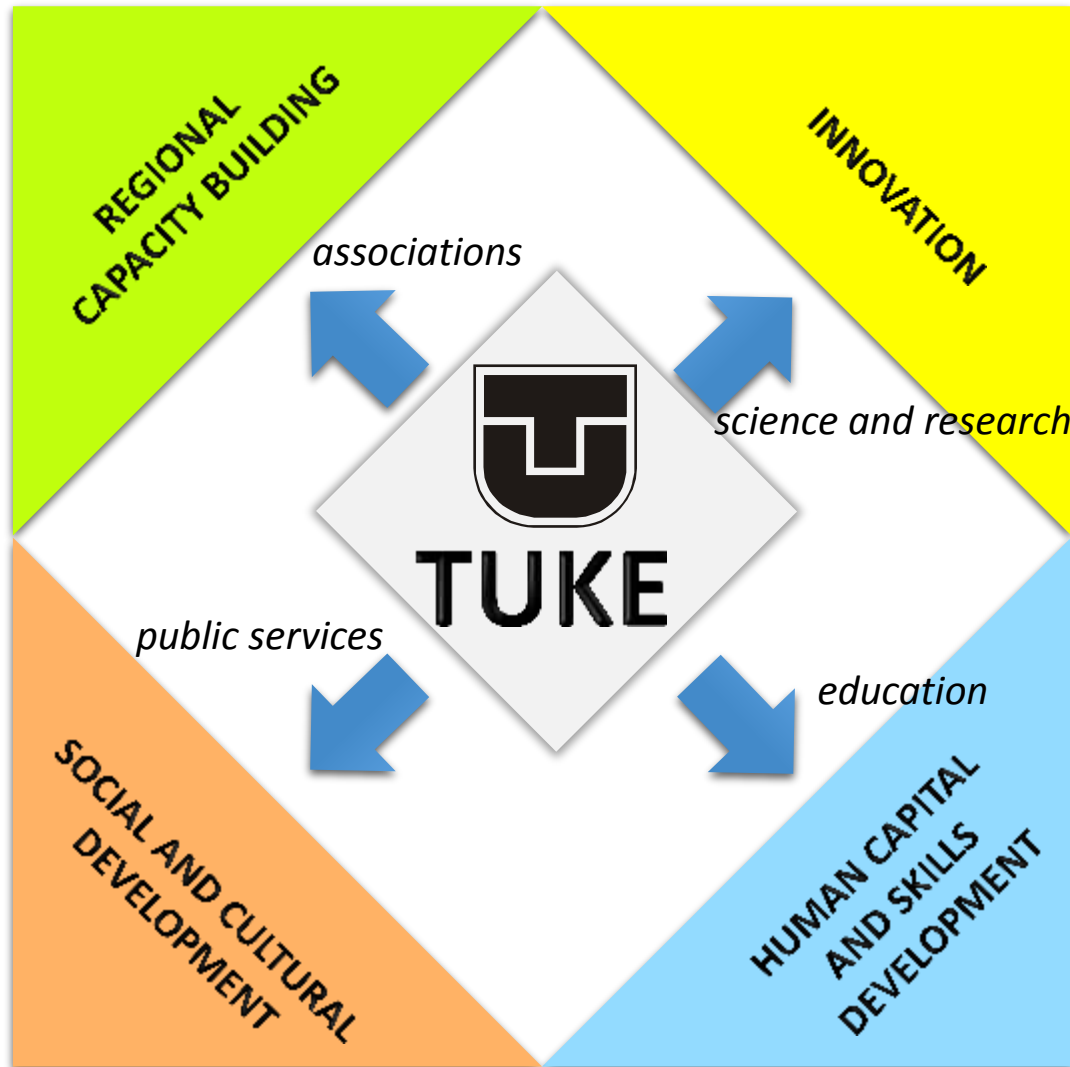
→ **125** mil. EUR total current assets !!!

→ **73** mil. EUR total revenue FY 2014:

└→ **42** mil EUR government support  
└→ **31** mil EUR from other sources!



**POSITION**  
**of the Technical University of Kosice**  
**in innovation ecosystem**



# Human capital and skill development = education +



**U. S. Steel Košice, s.r.o.**  
A Subsidiary of United States Steel



- T-Systems Slovakia – about 20 tailored courses,
- VW Slovakia: „IngA“, Internship, labs, etc.,
- US Steel Kosice Internships,
- RWE – TUKE agreement about PhD support,
- CISCO Academy programme,
- Embraco - about 40 courses,
- etc.



# Social and cultural development = public services

**Steel  
PARK**  
creative factory



U. S. Steel Košice



# Innovation = science and research



Centre of information and communication technologies for knowledge-based systems



Centre of gaining and processing of earth resources



Centre for integrated research of progressive building structures, materials and technologies

## RESEARCH CENTERS



Center of research and control of technical, environmental and human risks of sustainable development of production and products in mechanical engineering



Centre of integrated research and use of progressive materials and technologies in auto electronic





# Industry – University Research centers&Labs & Lecture halls



CISCO IPv6 Lab



CISCO Telepresence



embraco  
POWER IN. CHANGE SIN.



VW robotic cell



Laboratory IBM



METROTOM Carl Zeiss



Laboratory ABB



Uss



Uss

U. S. Steel Košice  
United States Steel LLC



Volkswagen Slovakia

VW



T Systems



# COMPETENCY CENTRE

## KC ZATIPS

### COMPETENCY CENTRE FOR KNOWLEDGE TECHNOLOGIES APPLIED AT INNOVATION OF PRODUCTION SYSTEMS FOR INDUSTRY AND SERVICES

**Žilinská univerzita** - Faculty of Mechanical Engineering

**IPM SOLUTIONS**- R&D activities in areas of CAD/CAM/CAE solutions and products .

**ELCOM** – SME with R&D activities in application of information and communication technologies and support systems for SMEs

**Prešovská univerzita v Prešove** - Faculty of Humanities and Natural Sciences with the Department of Geography and Regional Development .

**CEIT SK** - research SME, R&D activities, projects and products mainly in bioengineering, bionic, digital and virtual enterprises and intelligent control for production systems and smart products

**ITKON** – SMEs with R&D activities in customer driven applications of ICT mainly in different areas of water resources management

**T-Systems Slovakia** – daughter company of Deutsch Telecom with research oriented on field of cloud computing

**ZTS VVÚ** – research oriented SME with orientation on development and production intelligent mobile robotic systems.

**The Technical University of Kosice** is holder and coordinator of the KC ZATIPS

**ANTIK Telekom** - SME with R&D activities in internet and telecommunication services, technologies and systems

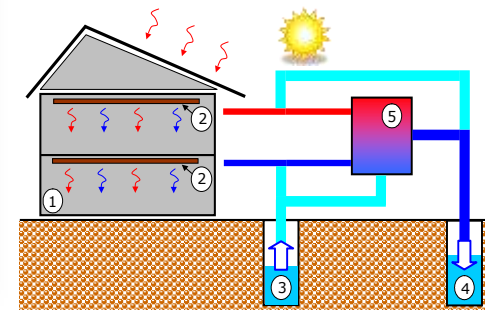
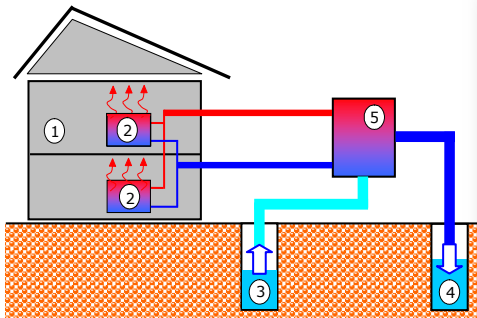


## Research centre for efficient integration of the renewable energy sources

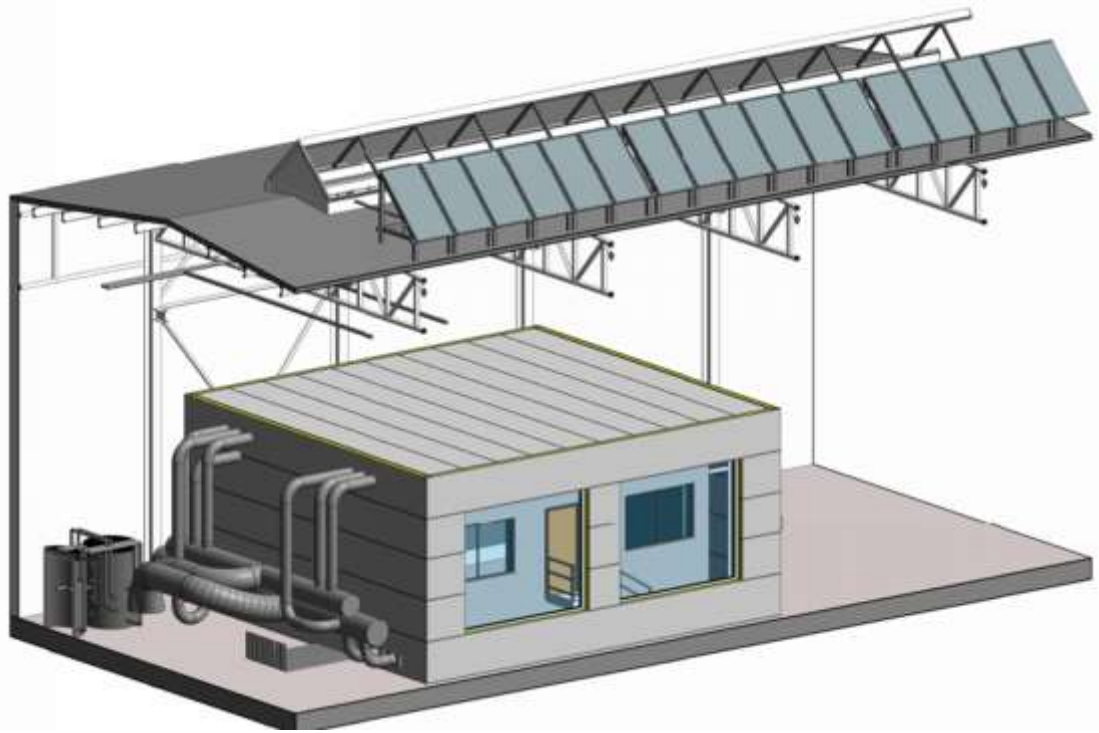


### Main R&D activities are oriented to:

- Technologies of the **biomass** utilisation in energy sector;
- **Solar** energy and technologies for **hydrogen** utilisation and storage;
- Efficient exploitation of the **geothermal** resources;
- Efficient integrations of different renewable energy (**smart low energy building**);
- **Intelligent control systems** ;
- The integrated support for the risk's life-cycle management.



# Smart low energy building in practise



# UCITT - University Center for Innovation, Technology Transfer and protection of intellectual property rights



## The services fully support:

- Preparation, development and performance of national and international R&D activities.
- Efficient collaboration and technology transfer with social and commercial practice.
- Development and establishment of relevant „Spin – off“ and „Start – up“ firms.
- Human resource development for management and administration of research and TT.
- Marketing in the fields of R&D and Technology Transfer.

For more information, visit the website <http://ucitt.tuke.sk>



# Science and technology park - TECHNICOM



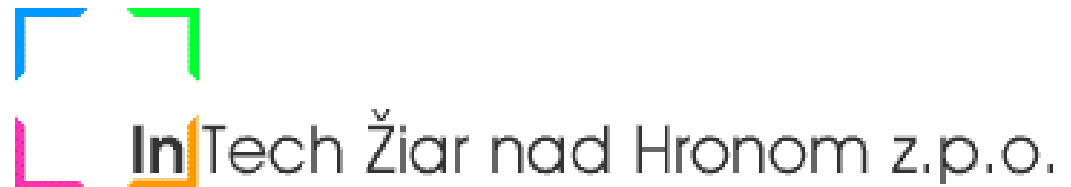
## MISSION

- “Win to Win” collaboration between academic and public research organisations
- Producing expected and required outcomes for technology transfer
- **Incubator for „Hi-Tech“ companies and Spin-off, Start-up initiatives**
- Management, development and operation issues are provided by the UCITT
- Consultancy, expertises, technical and technological support for the transfer of research and development knowledge and products
- Relevant support for education and training activities





# Regional capacity building = **associations**



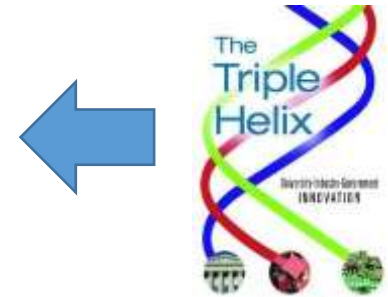
- more students
- more new jobs
- more IT and high-tech companies

# KOŠICE IT VALLEY – ÚSPEŠNÝ PRÍBEH



**Zakladajúci členovia združenia (10) v roku 2006 :**

- Univerzity (TUKE, UPJŠ)
- Regionálna samospráva (KSK)
- ICT firmy (T-Systems, NESS, Siemens PSE, VSE IT, Cisco, ST, Microsoft)



- v súčasnosti ... viac ako 50 členov
- cca **8500** nových ICT pracovných pozícií
- z toho **70-80%** absolventov TUKE

For more ambitious students



## Some of new START - UPs

- FIREFLY
- GALLILEO
- Get Farmer
- Chargebrella
- Emomime
- HoneyLOG
- VARIM
- Crop Tek
- CEELABS
- Vizualizacky.sk
- EFEOS
- Fixer



# How to make the innovation ecosystem sustainable and robust

## Svätopluk vision

Tri prúty Svätopluka

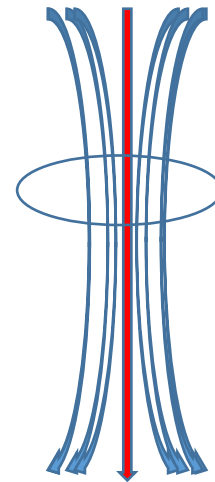


## EU vision



## TUKE vision

The Multi Helix – Mnoho prútov





**THANK YOU**