Intellectual Property Promotion and Technology Innovation Management in South East Europe – from nano to space technologies

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Technology Transfer
The Institute

- 19th century - Stefan-Bolzmann law of black body radiation
- 1949 - Physical Institute formed within SASA
- 1959 - cancer patients brought to JSI for radiotherapy
- 2009 - leading research institution

- basic and applicative
- **natural sciences, life sciences and engineering**
- 799 employees
- 369 PhD's, 39 Msc's, 226 University graduates (2006)
Technology Transfer at JSI

• Science: a source of technology innovation to increase added value.
• After independence in 1991 - more awareness of TT.

  • applicative research in ecology – since 1995 JSI one of ERICo Velenje founders (until then Institute for ecological research since 1992)
  • Technology park founded in 1993 → 1995 TP Ljubljana
  • additional effort - IJS Technology Transfer Office founded on 28.11.1994

for knowledge and TT to education system and industry “Enhance the number of coincidental events.”
Is it really?

- >9,000 citations in 2008
- budget rising every year
- market activities rising 2% / year

- what is a market activity?
- no spin-off
- one start-up in impossible conditions
- start-ups for money drain from EU projects
- low commercial value in patent portfolio
- national patenting for ARRS points
- no process of internal project selection
- lack strategic planning of research according to the NRRP
- no consensual or strategic commitment for return of public funding to the public
TT at NCSU

200 mio EUR for research per year

personnel: - 5 licensing, 6 assessments – each 350 cases at the time
- 7 industry relations

200 researchers active in “Technology park”
70 firms in the park
2006 6 new spin-offs, 18 already in incubator

+ 2.4 mio EUR/year ?
TT at CERN

Patent cases and licenses sold per year.

- Patents filed internally
- Patents obtained
- New licences obtained
- Total licences active

3000 employees (+3x more external collaborators)
2008 yearly budget 675 mio EUR, from 20 member states (SLO)
CERN TT Office earns 0.3% by licensing (after 4 years)
A comparison between NCSU, CERN, JSI

IJS. Patents per year obtained in Slovenia.

IJS. Patents per year, obtained outside Slovenia (potentially larger, foreign partners filed).

<table>
<thead>
<tr>
<th></th>
<th>IJS</th>
<th>CERN</th>
<th>NCSU</th>
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<tr>
<td>income (mio EUR)/y</td>
<td>39</td>
<td>675</td>
<td>200</td>
</tr>
<tr>
<td>employees</td>
<td>800</td>
<td>3000</td>
<td></td>
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<tr>
<td>patents (slo)/y</td>
<td>3.8 (6.8)</td>
<td>6</td>
<td>110</td>
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<tr>
<td>licences/y</td>
<td>12</td>
<td></td>
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<td>2</td>
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<td>patents/100 employees</td>
<td>0.47 (1.3)</td>
<td>JS</td>
<td>0.2</td>
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<tr>
<td>mio EUR/patent spent</td>
<td>10.2 (5.7)</td>
<td>112</td>
<td>2</td>
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<td>% income returned</td>
<td>JSI</td>
<td>0.3</td>
<td>1.2</td>
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120k-0.5mio EUR?
Why R&D – industry cooperation not optimal?

A study in progress, Slovenia, 2009

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# Who blames whom?

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<td>- lack of professional support to obtain financing resources</td>
<td>10 %, 50 %</td>
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<tr>
<td>- ignorance on financing other than ARRS (e.g. TIA, APTI, SPS)</td>
<td>80 %, 20 %</td>
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<td>- intolerance&amp;underestimation of the other side</td>
<td>10 %, 30 %</td>
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<td>20 %, 60 %</td>
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<td>- false motivation - drain EU projects to firms</td>
<td>70 %, 30 %</td>
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<td>- false information on options</td>
<td>30 %, 70 %</td>
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Conceptual misunderstanding?
What can help?

1) Systematic tech-transfer within PRO institutions
2) Networking tech-transfer projects
3) Increase private (industry) investments in R&D
4) Increase absorption potential in SME's - spin-offing
5) Enterprise Europe Network
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The Enterprise Europe Network is the largest network of contact points providing information and advice to EU companies on EU matters, in particular small and medium enterprises (SMEs).

In SEE region member states are:
all EU Member states +
Croatia, Macedonia, Turkey, Serbia ('09)

Not enough:
- state of mind in SEE different that in BeNeLux (SENTERNOVEM).
- EEN too conservative and passive in parts of SEE region
4) Increase technology absorption potential in SEE
   - from nanotech to space technologies

- 80's **robotisation**... – what is our leading horse now?

- **biotech** – JSI produces high-quality personell for industry labs - everything patented – no spin-offs due to big initial input

- **spacetech** – ESA keeps rights of IPR for industry

- **ICT** – many start-ups with small initial investments, little IP, fast changes

- **nanotech, new material** – no industry at SEE – we need to build it
3) Increase industry investments in R&D
(Relation between EIS indicators 2.1 and 2.2)

Public investments vs. private industry investments in R&D activities in Slovenia, Sweden, USA, EU-25 and Germany.
Public investments (innovation indicator 2.1) and private industry investments in R&D activities (innovation indicator 2.2) in Slovenia, Sweden, USA, EU25 and Germany.

Low private investments -> Lower Public investments
High private investments -> Higher Public Investments?
2) Networking TT projects - in SEE

PROJECT 1
University - GREECE
Research Unit, GREECE
Applied Research and Communications Fund, BULGARIA,
University, BULGARIA
Regional Development Agency, ROMANIA
University, ROMANIA
RDA, ITALY
Università, ITALY
Consiglio Regionale, ITALY
University, HUNGARY
Foundation, HUNGARY
Institute, SERBIA
Agency for promotion of entrepreneurship, MACEDONIA
7 countries, 12 partners

R&D process and New Product Development, spin-off company creation and Intellectual Property Rights protection
State of networking in TT in SEE

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*7 countries, 12 partners*

**PROJECT 2**

- Institute, AUSTRIA
- Institute, SLOVENIA
- Science Park, ITALY
- Foundation for Applied Research, HUNGARY
- Institute, CROATIA
- Institute, CROATIA
- Institute, SERBIA
- Institute, BiH
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*8 countries, 9 partners*

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MACEDONIA, SERBIA, ITALY, HUNGARY overlap
AU vs. GREECE

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Macedonia, Serbia, Italy, Hungary overlap
Au vs. Greece

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MACEDONIA, SERBIA, ITALY, HUNGARY overlap
AU vs. GREECE -> political decisions?

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1) Systematic TT activities in PRO

1- **technology and market assessment**
   & IPR protection
   internal call, assessments provided, choice of proper IPR

2- **technology promotion**
   locating and motivating proper partners and funding sources

3- **dissemination**
   - commercialisation
   - TT R&D projects

WITH RESPECT TO PHASE OF TECHNOLOGY DEVELOPMENT
- ready for commercialisation
  - licensing
  - know-how transfer agreements
  - supply agreements (to industry)
  - consultancy agreements
- requires further development
  - TT R&D projects: visits, workshops, calls, spin-offing
Systematic TT

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Active TT with IPR protection

- **internal TT network:** representatives within departments
  - facilitates access to new achievements

- **outer TT network:** larger EU enterprises
  - using new and established networks of other research institutes

- forming a research technology management platform within EU/SEE
  - internal call for technologies,
  - technology & market assessments
  - partner and funding search
  - signature

*value lies within networks AND proper IP protection*
Be fair. Be responsible.
Pay back to the society.
Tech-transfer.

thanks
Is it really?

- >9,000 citations in 2008
- Budget rising every year
- Market activities rising 2% / year

- EU project market activity?
- No spin-off
- One start-up in impossible conditions
- Start-ups for money drain from EU projects
- No commercial value in patent portfolio
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- No process of internal project selection
- Lack of strategic planning of research according to the NRRP
- No consensual or strategic commitment for return of public funding to the public
Steer and supplement existing activities to enable researchers and society to form a fruitful relationship within knowledge and technology transfer in the SEE region.

thanks
USA: Bayh-Dole Act, 1980

**US Congress:** “University and Small Business Patent Procedure Act”
- usage of patent system
  - to promote the utilization of inventions arising from federally supported research or development
  - to maximize participation of SME's, concerns and non-profit organizations

**Institution**
- obliged to report inventions to the **funding agency** - federal funds
- entitled to keep IPR – if declines agency may take over
- obliged to protect IP (patent)
- responsible for IP usage (marketing, licensing)
  - right to all royalties from IP

**Encouraging state production:**
- preferences in licensing are given to SME's and/or firms collaborating within research
- holding an exclusive license that involves selling in the US - substantially manufacture in the US
Basics of active TT based on IPR
- Bayh-Dole Act

Knowledge transfer to educational system
Scientific PR
Technological projects
Research in the field of innovation processes and innovation management
Active TT from R&D organizations for industry

- contract research
- collaborative research
- licencing
- spin-offing
• Problems:
  - No TT educated people → program for Technology brokers
  - No state support/awareness →
    • Innovation vouchers
    • Razpisi TIA JAPTI za povezovanje z gospodarstvom
  - No Intellectual Property Rights (IPR) importance →
    • Educate researchers
    • Establish quality, result oriented TTOs
"Helping SME's":
- To improve innovation strategies of SME's (FEMIRC, IRC, EEN – TRADITION FP5, FP6, FP7!)
- Goal: help SME's and research organizations with joint research and technical collaboration (ready made technologies)
- Activities: company visits, identification of needs and requests, including data to EU IRC data base

"Consultant/expert projects":
- Activities: a single expert for a short period to the industry, with specific research based experience

"Knowledge transfer to educational system":
- Goal: more intensive knowledge and scientific research principles transfer to pre-diploma studies
- Activities: teacher, educator workshops, didactic toys, JSI visits

"Scientific PR":
- Goal: science popularization, informing public about outcome and state of the art in research fields
- Activities: articles, web, TV, radio, ... (EU)

"Technological projects":
- Goal: ensure proper activities for large technical equipment purchase

"Active TT":
PRINCIPLES?
Typical products of PRO

- International class **scientific research**: superb according to CII, >9000 citations/y
- Contacts with **public educational system**: < 0.25% of budget invested in products
- Relations with **industry**: growing