



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-Boltzmann 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)

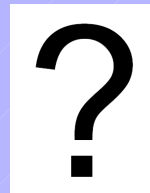


Technology Transfer at JSI

- 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

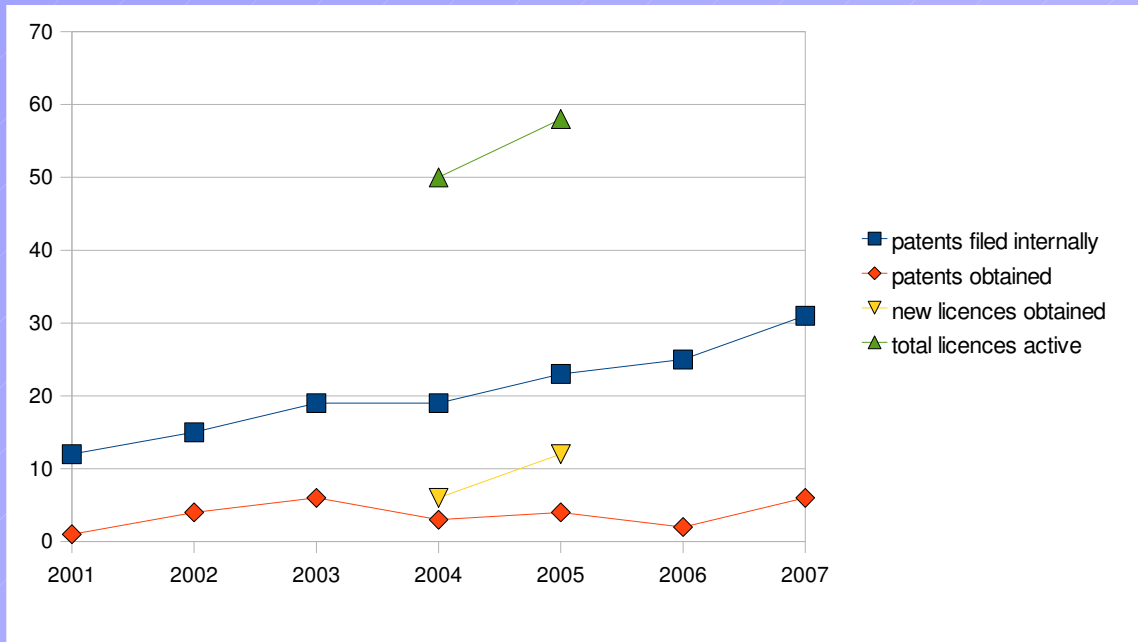
+ 2.4 mio EUR/year ?



ROLLER COASTER OF PATENTING

TT at CERN

Patent cases and licenses sold per year.



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)

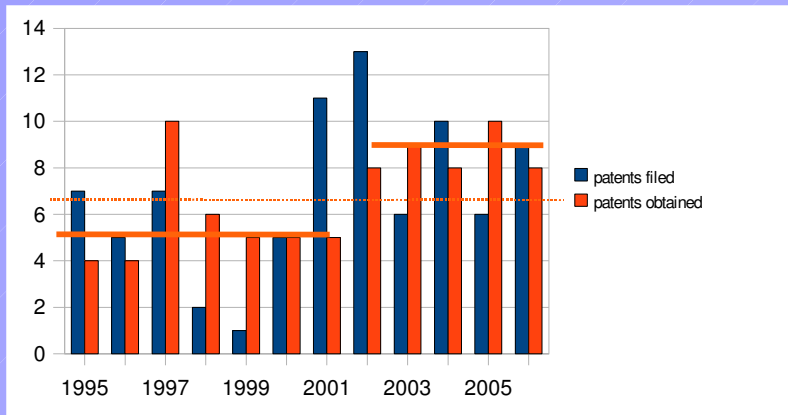


European Organization for Nuclear Research

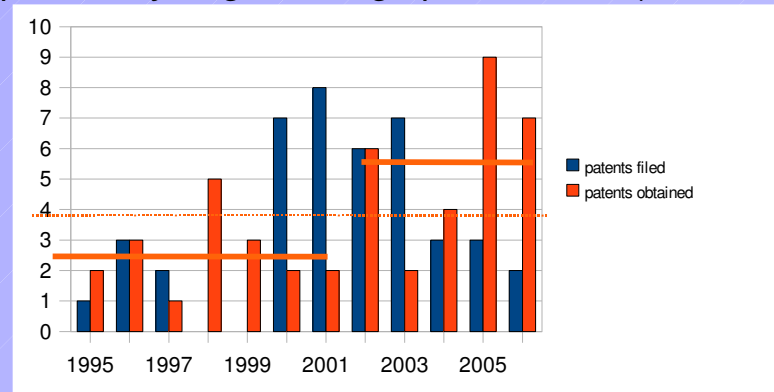
DEFENSIVE PATENTING FOR INCOME

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).



↑ patent valuation

	IJS	CERN	NCSU
income (mio EUR)/y	39	675	200
employees	800	3000	
patents (slo)/y	3.8 (6.8)	6	110
licences/y		12	40
income/y		2	2.4
patents/100 employees	0.47 (1.3)	0.2	
mio EUR/patent spent	10.2 (5.7)	112	2
% income returned		0.3	1.2

120k-0.5mio EUR?



Why R&D – industry cooperation not optimal?

A study in progress, Slovenia, 2009

CONTRACT RESEARCH

FIRM	R&D
- innovation culture in SMEs very low	- no interest if not "important" problems
- no innovation voucher system to pay for small research problem solving	- no interest if small money

COLLABORATIVE RESEARCH

FIRM	R&D
	- lack of professional support to obtain financing resources
	- ignorance on financing other than ARRS (e.g. TIA, JAPTI, SPS)
- intolerance&underestimation of the other side	

LICENSING

FIRM	R&D
- lack of professional technology broking	- false motivation (patents for ARRS points)
	- no systematic financing for patenting

SPIN-OFFING

FIRM	R&D
	- false motivation - drain EU projects to firms
	- false information on options



Who blames whom?

A study in progress, Slovenia, 2009

CONTRACT RESEARCH

FIRM	R&D
- innovation culture in SMEs very low 10 %, 20 %	- no interest if not "important" problems 40 %, 20 %
- no innovation voucher system to pay for small research problem solving 20 %, 30 %	- no interest if small money 30 %, 20 %

COLLABORATIVE RESEARCH

FIRM	R&D
	- lack of professional support to obtain financing resources 10 %, 50 %
	- ignorance on financing other than ARRS (e.g. TIA, JAPTI, SPS) 80 %, 20 %
	- intolerance & underestimation of the other side 10 %, 30 %

LICENSING

FIRM	R&D
- lack of professional technology broking 50 %, 20 %	- false motivation (patents for ARRS points) 30 %, 20 %
	- no systematic financing for patenting 20 %, 60 %

SPIN-OFFING

FIRM	R&D
	- false motivation - drain EU projects to firms 70 %, 30 %
	- false information on options 30 %, 70 %

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





5) Enterprise Europe Network

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).

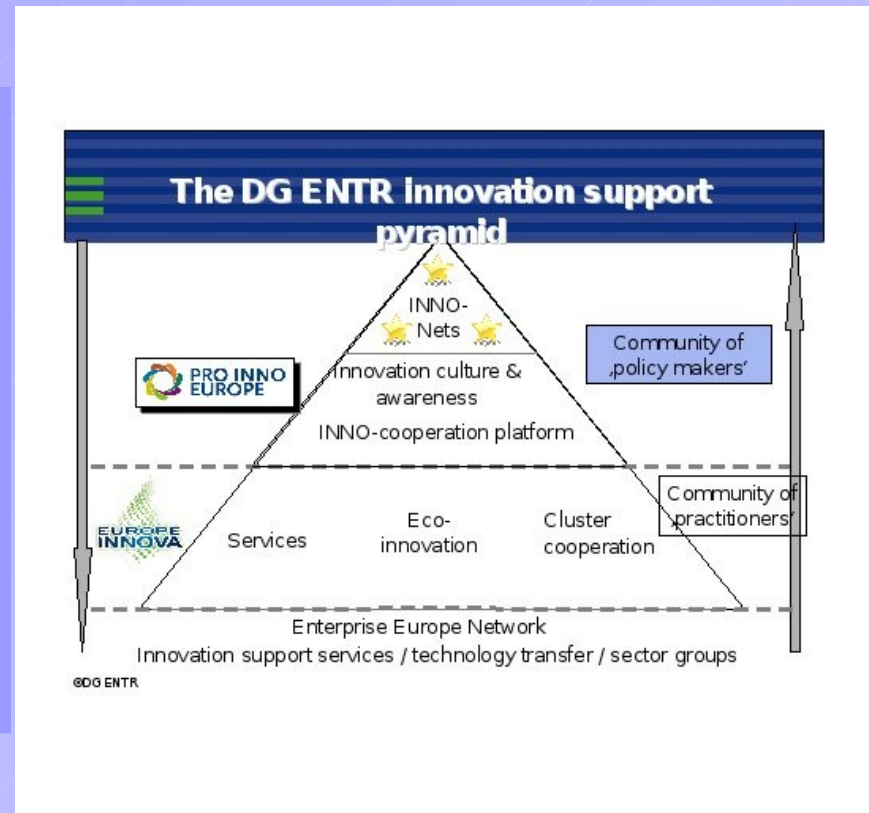
In SEE region member states are:

all EU Member states +

Croatia, Macedonia, Turkey, Serbia ('09)

Not enough:

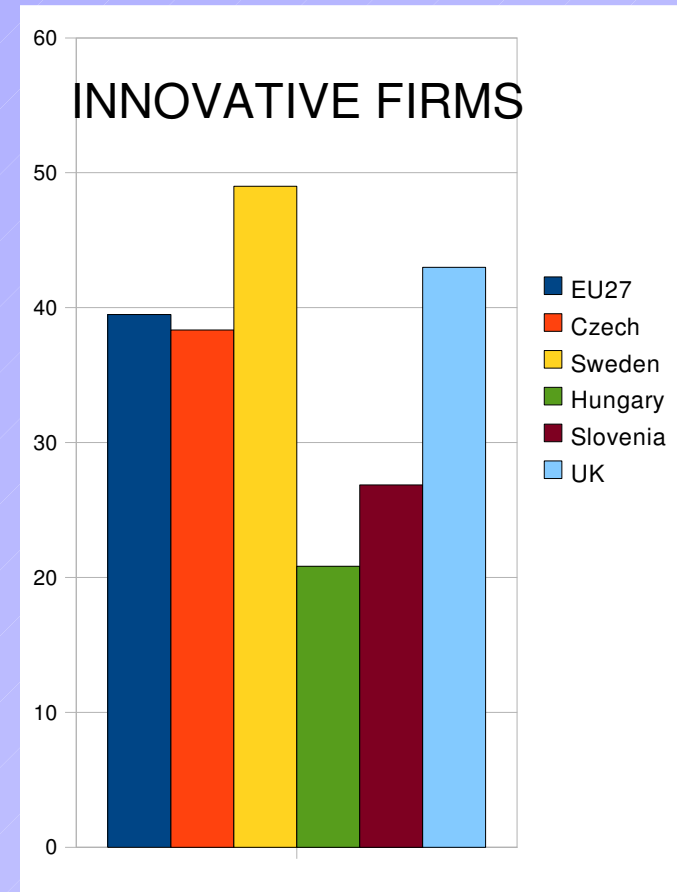
- state of mind in SEE different that in BeNeLux (SENTERNOVEM).
- EEN too conservative and passive in parts of SEE region



4) Increase technology absorption potential in SEE

- from nanotech to space technologies

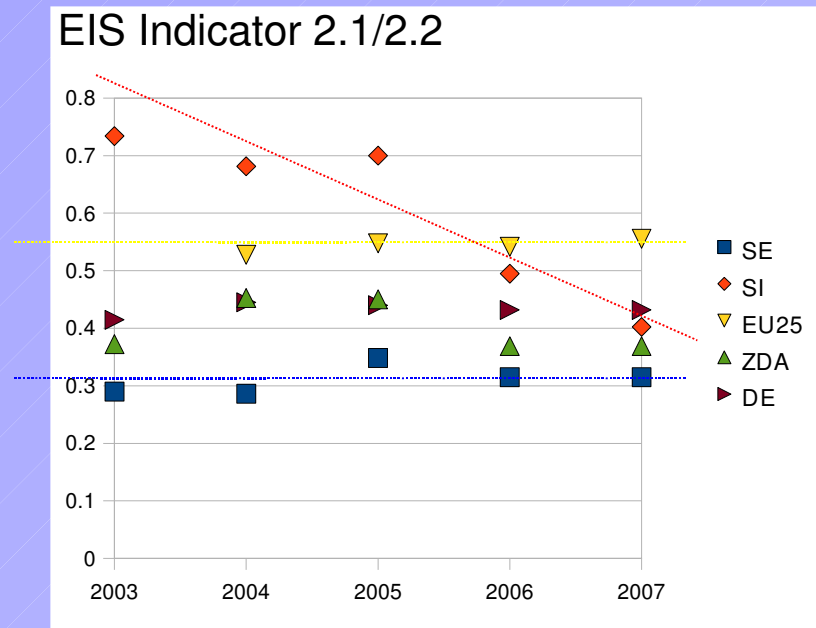
- 80's **robotisation**... – what is our leading horse now?
- **biotech** – JSI produces high-quality personell for industry labs - everything patented – no spin-offs due to big initial input
- **spacetech** – ESA keeps rights of IPR for industry
- **ICT** – many start-ups with small initial investments, little IP, fast changes
- **nanotech, new material** – no industry at SEE – we need to build it



3) Increase industry investments in R&D

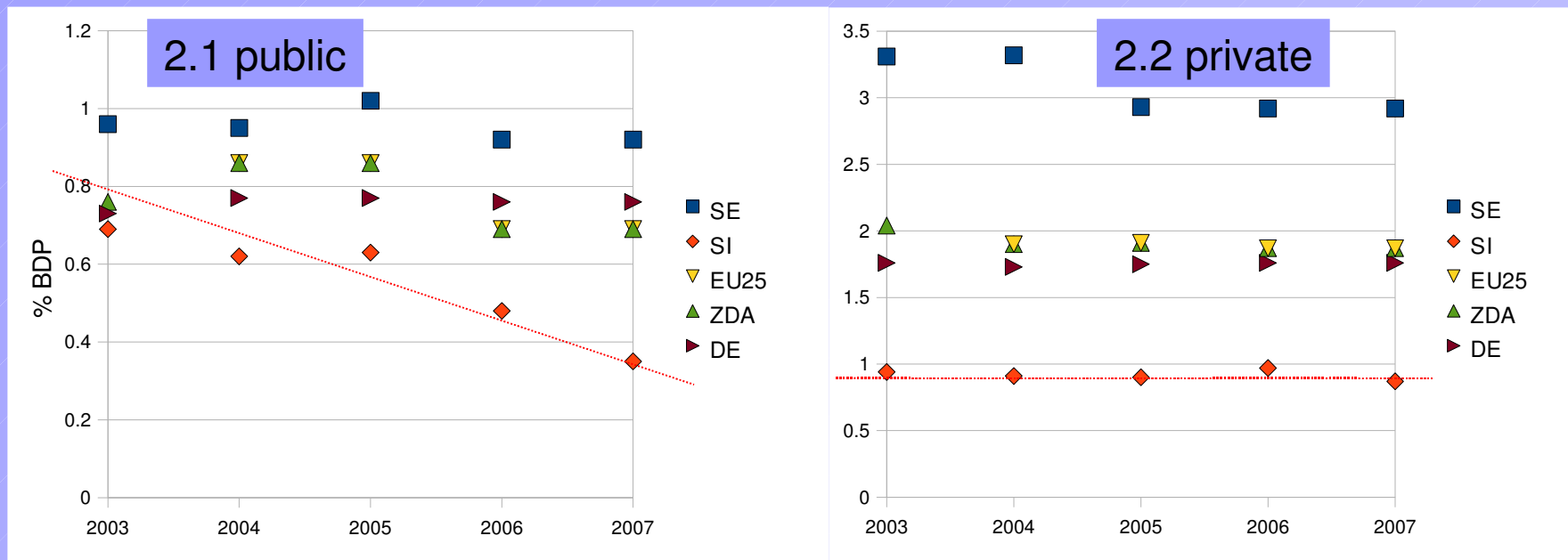
(Relation between EIS indicators 2.1 and 2.2)

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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PROJECT 2

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 Institute, SLOVENIA
 Science Park, ITALY
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 Institute, CROATIA
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 Institute, BiH
 Research Center, MACEDONIA
8 countries, 9 partners



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

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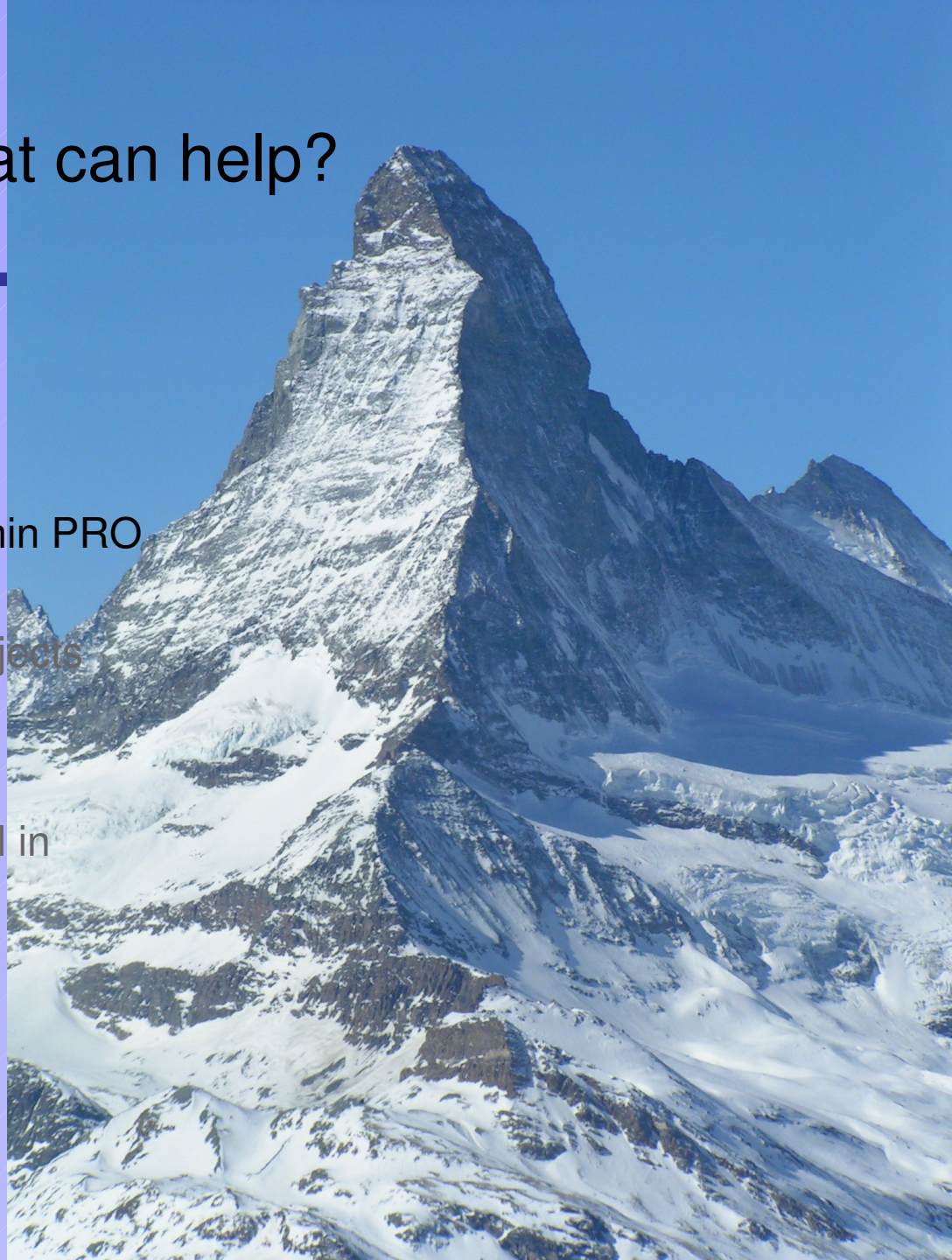
MACEDONIA, SERBIA, ITALY, HUNGARY overlap
 AU vs. GREECE -> political decisions?

R&D process and New Product Development, spin-off company creation and Intellectual Property Rights protection



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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 DEVELOPEMENT

- 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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& IPR protection

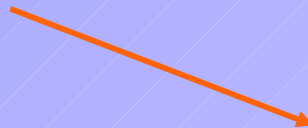
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Active TT with IPR protection

- **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





IJS KTT

Be fair. Be responsible.
Pay back to the society.
Tech-transfer.

thanks



Is it really?

-
- >9.000 citations in 2008
 - budget rising every year
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 - EU project market activity?
 - no spin-off
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IJS KTT

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

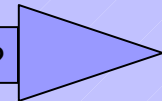
Technological projects

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

OPTIMIZING ?





A

- 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

TTO

"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 periode 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**:
CII, >9000 citations/y

superb according to

- Contacts with **public educational system**:
invested in products

< 0.25% of budget

- Relations with **industry**: growing