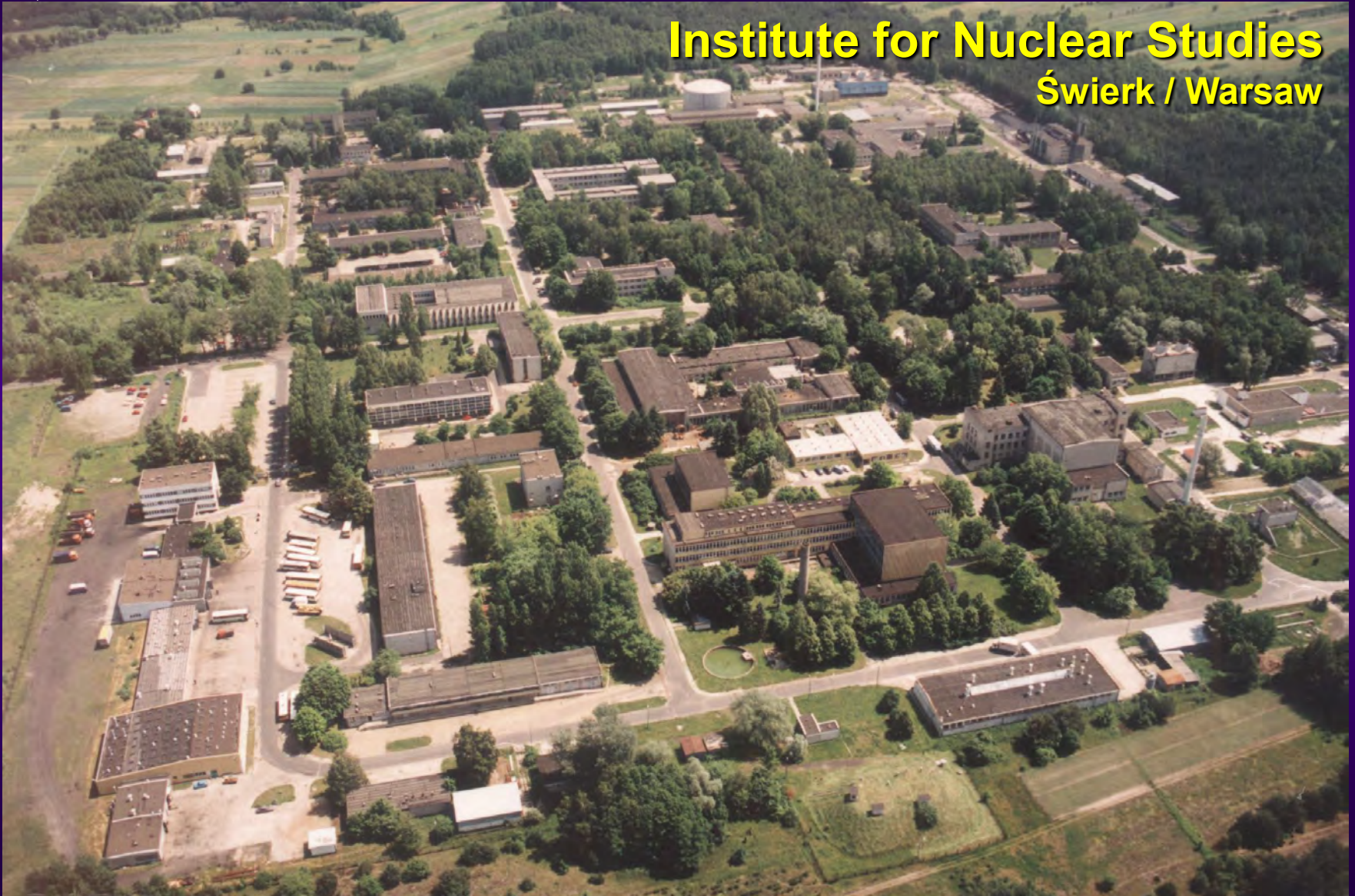




# European Research Area – how to make it?

**Institute for Nuclear Studies  
Świerk / Warsaw**





# IPJ staff: 460 people

10 research units:

~150 researchers, including

- 29 professors
- 18 assoc. profs.
- 78 PhD

□ I category

□ Hirsch index: 7<sup>th</sup> in Poland\*

60 - IFJ PAN

60 - Faculty of Physics, University of Warsaw

56 - IF PAN

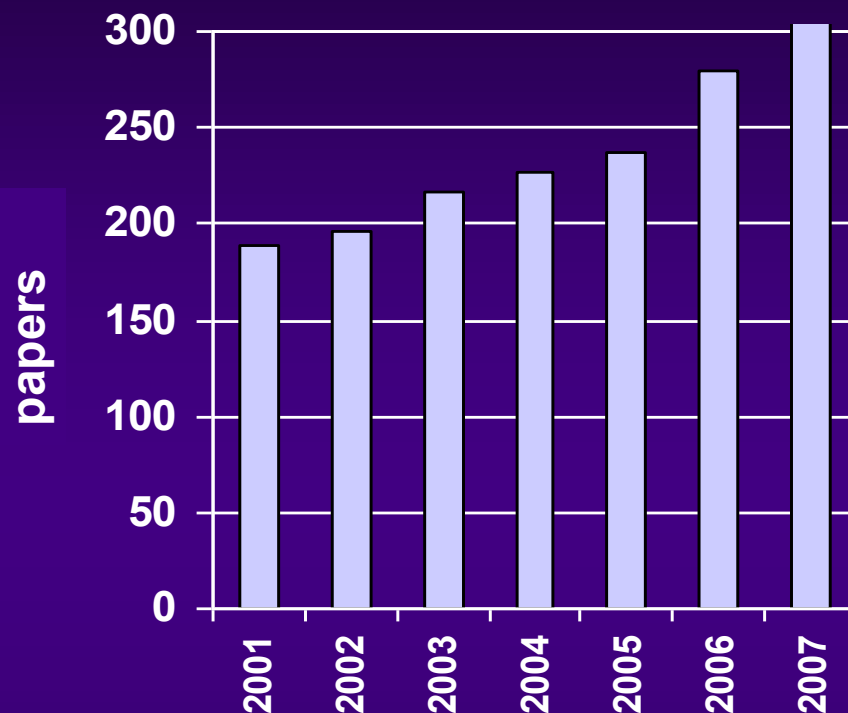
50 - Faculty of Chemistry, University of Warsaw

47 - Faculty of Physics, Jagiellonian University

44 - Medical University of Wasaw

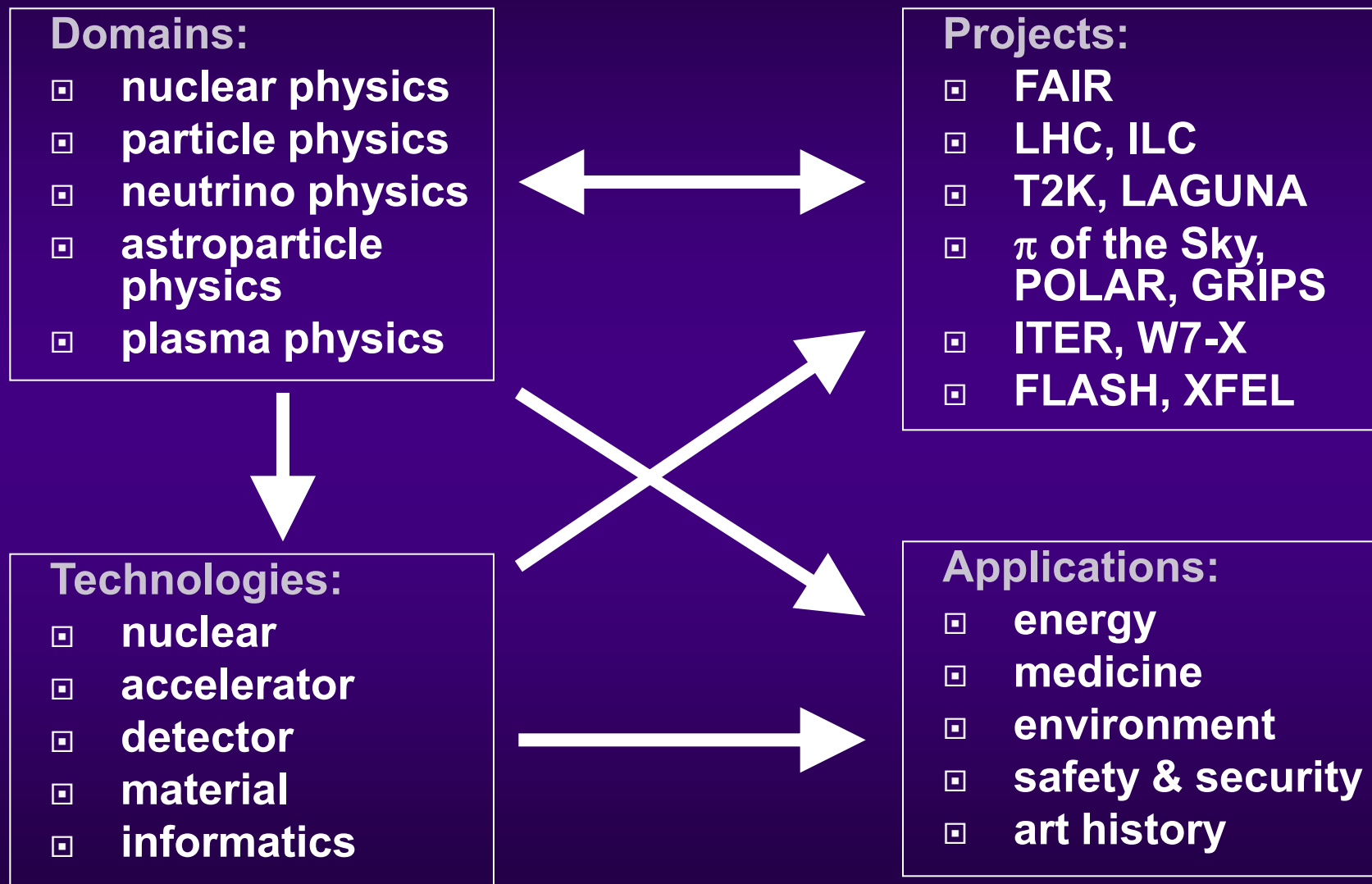
42 - IPJ

□ \*) 2000-2008, R.Kierzek, [www.ibch.poznan.pl](http://www.ibch.poznan.pl)





# Research programme

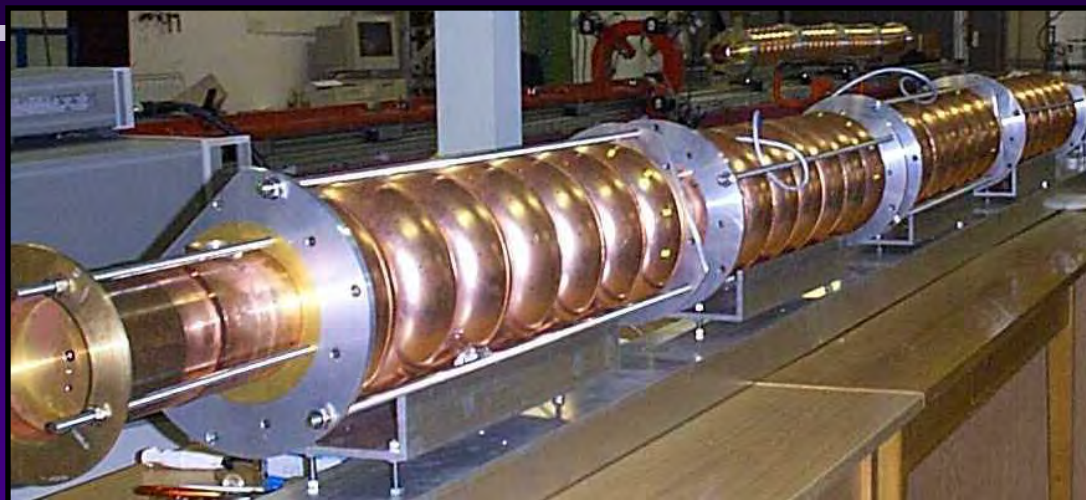






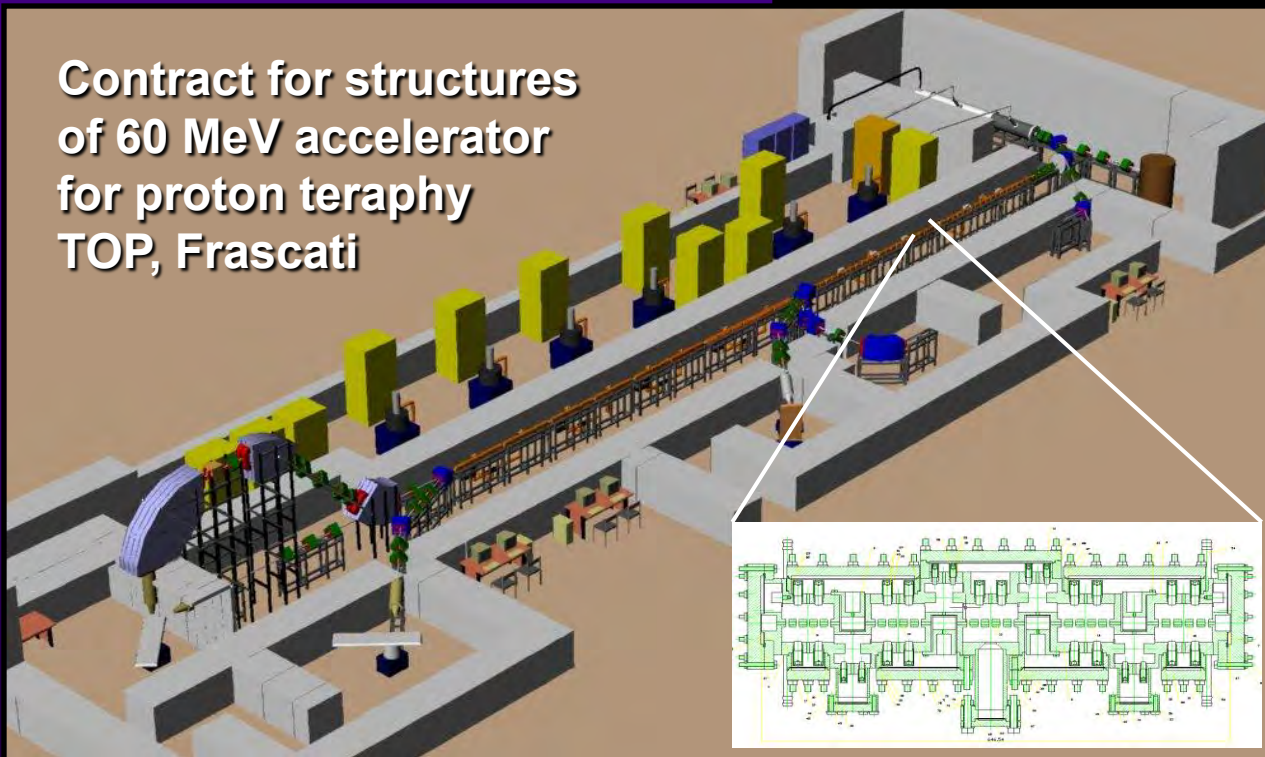
# Accelerator technologies

**Advanced technologies  
developed for science,  
used for application  
in medicine & industry**



**Prototype warm cavities  
1.3 GHz for Tesla-FEL,  
DESY, Hamburg**

**Contract for structures  
of 60 MeV accelerator  
for proton therapy  
TOP, Frascati**



**Accelerator target for  
Isolde, CERN, Geneva**



**Sterylisation  
Radioteraphy  
Radiography**

15.05.2009



Accelerator Coline  
nomination 2007

Table Polkam TBI  
Award 2008

**Accelerators  
for industry  
and medicine**



G.Wrochna, Institut





# IPJ awards

**Prof. Marek Moszyński**  
detector research

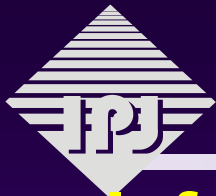
- ▣ **2007 - MNiSW award**  
**„for distinguished achievements**  
**in applied research”.**
- ▣ **2009 – IEEE Distinguished Lecturer**



**MNiSW & PAP award for IPJ:**

**„Science popularizer of the year”**

- ▣ **6500 students/year visiting Świerk**
- ▣ **Science festivals and exhibitions**
- ▣ **Press articles and news service**



# The dark side

- **Infrastructure mostly from 1960-ties**
- **Very low budget**

## CEA France:

**3 300 000 000 € budget**  
**(55% from government)**

**15 322 employees**  
**3 500 scientists**

**215 000 € / person**  
**940 000 € / scientist**

## IPJ Poland:

**2 700 000 € budget**  
**1 100 000 € grants**

**310 employees\***  
**140 scientists**

**12 000 € / person**  
**27 000 € / scientist**

**factor 18**  
**factor 35**

\*) excluding selfsupporting commercial units



# Poland has no National Laboratories!

- ▣ **Three kind of scientific units in Poland:**
  - Universities
  - Institutes of Polish Academy of Sciences (PAN)
  - R+D units (JBR)
- ▣ **Missing element: national laboratories**
  - Full chain from basic to applied research
  - Large research infrastructure for the whole country
- ▣ **Result:**
  - No appropriate funding channel for large infrastructures
  - No research infrastructure on European scale

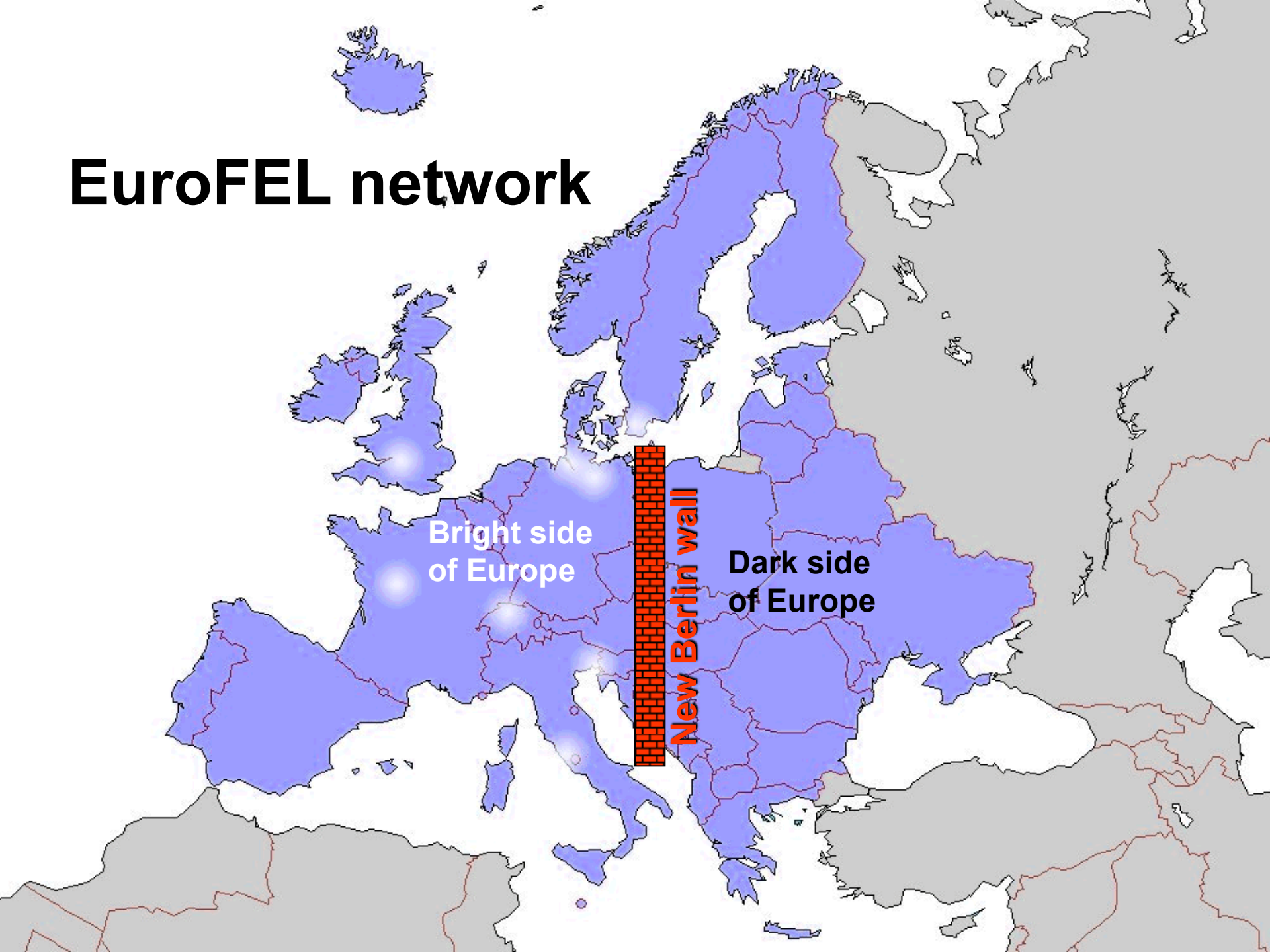




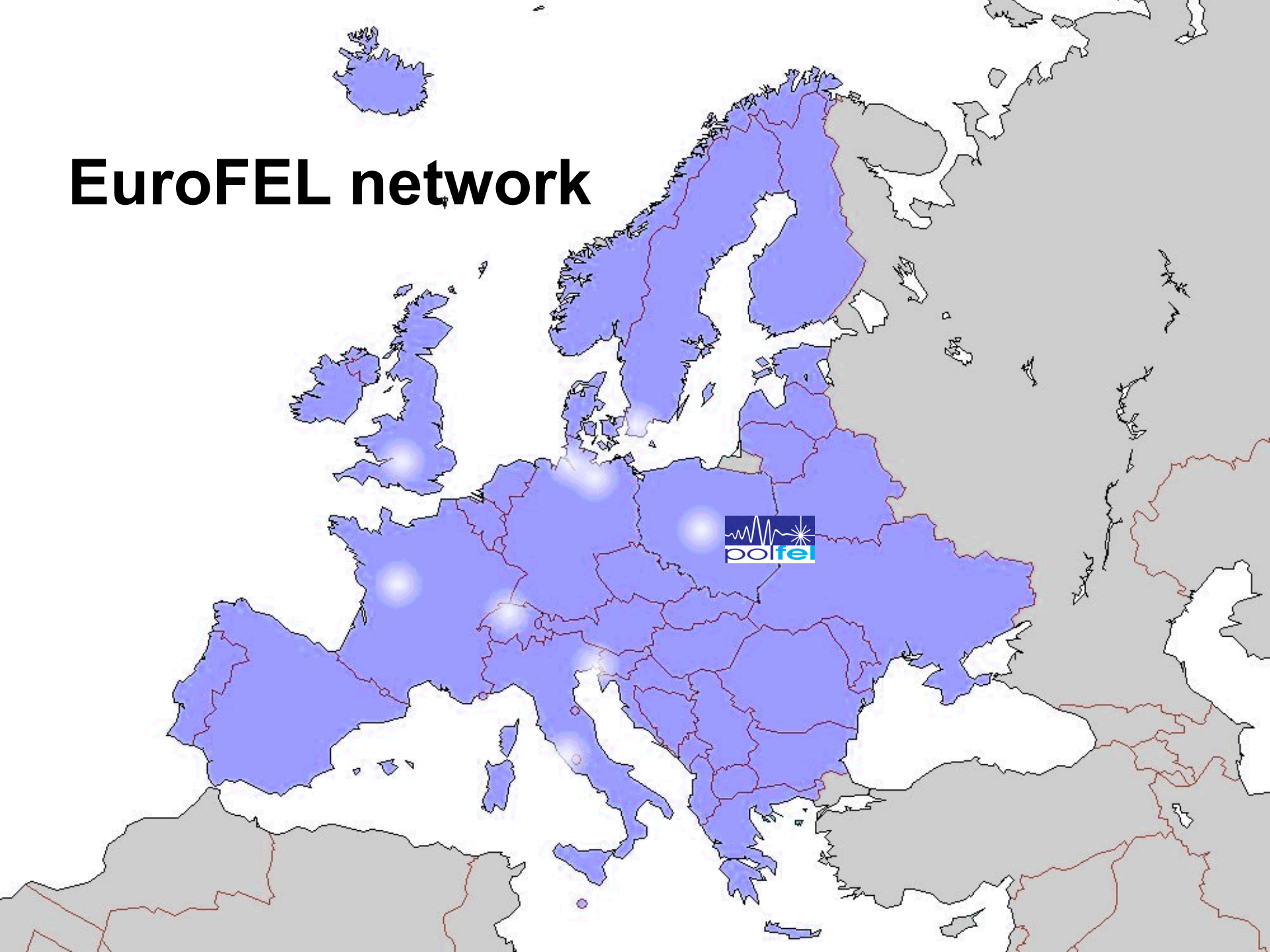
# Time for changes!

- ▣ **Set the goal**
  - European Research Area
- ▣ **Prepare the plan**
  - ESFRI Roadmap
- ▣ **Ensure resources**
  - European Structural Funds for Poland in 2008-2013
    - ▣ 1.3 billion € for research infrastructures ☺
- ▣ **Do it!**
  - In kind contribution to XFEL & FAIR (22M€ + 22M€)
  - Proposal for Polish Free Electron Laser POLFEL
    - node of EuroFEL network (former IRUVX)

# EuroFEL network



# EuroFEL network



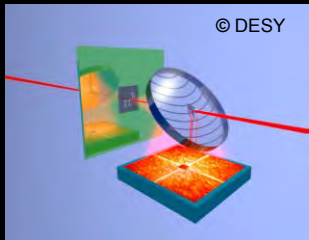




# Free Electron Laser @ Świerk

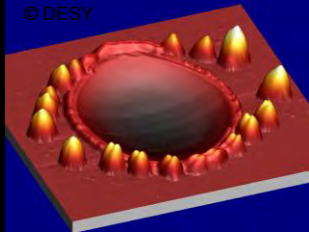
4<sup>th</sup> generation light source driven by electron accelerator

© DESY



**3D-imaging:**  
molecules  
& nano-  
structures

© DESY



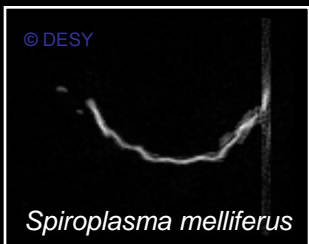
**Material  
studies:**  
dense plasma  
properties

© DESY



**Novel  
technologies:**  
surface  
modification

© DESY

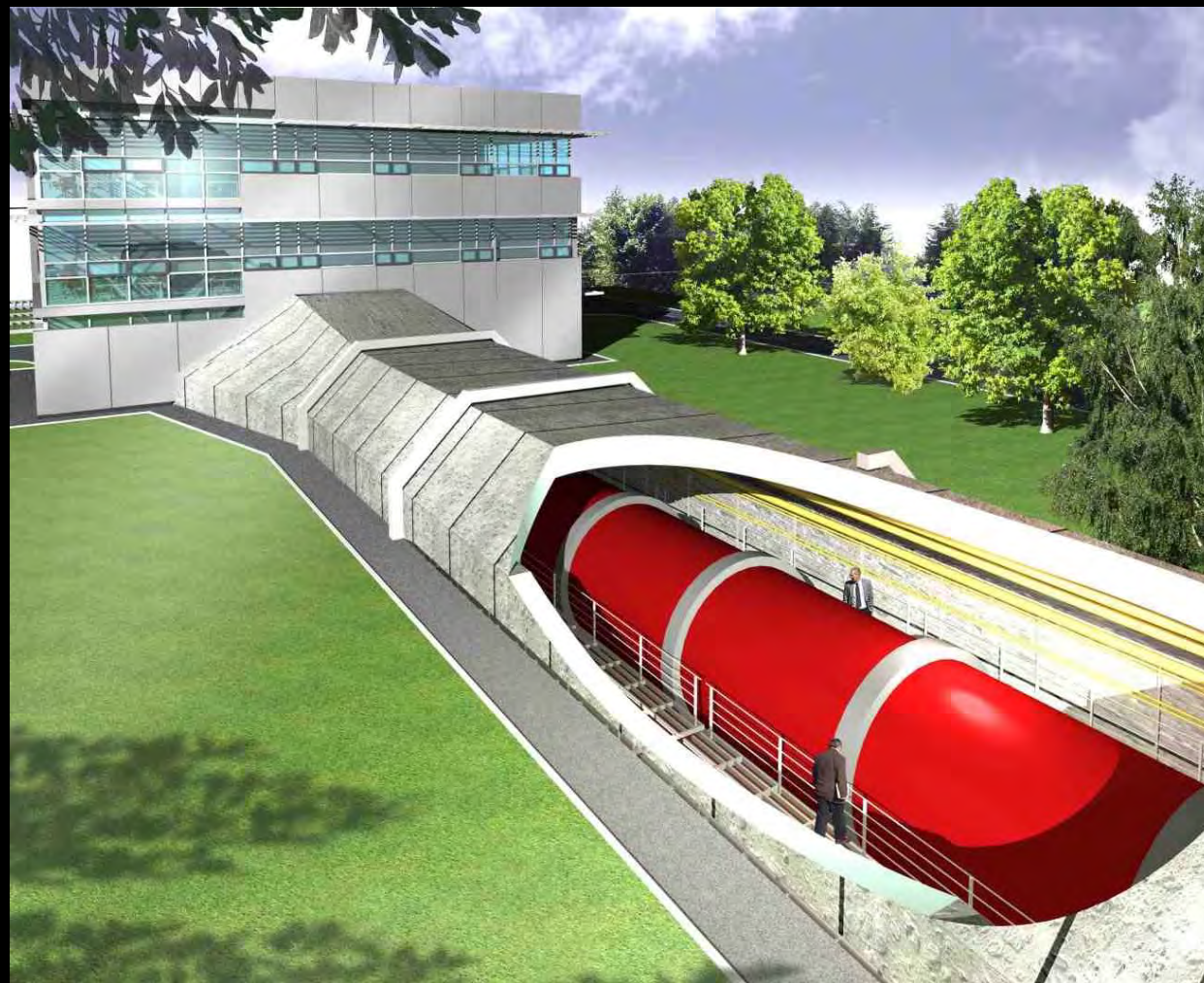


**Live  
sciences:**  
biological cell  
imaging

[www.polfel.pl](http://www.polfel.pl)

Continuous e<sup>-</sup> beam E= **600 MeV**  
Radiation wavelength: **UV → 9 nm**  
Pulse length: **< 100 fs**

Beam power (peak): **0.22 GW**  
Length: up to **400 m**  
Cost: **100 M€ - 200 M€** (1-6 stations)





# Świerk 2013



## Technology Park (A+B)

Nuclear technologies for  
energy, medicine, environment  
new materials, safety+security

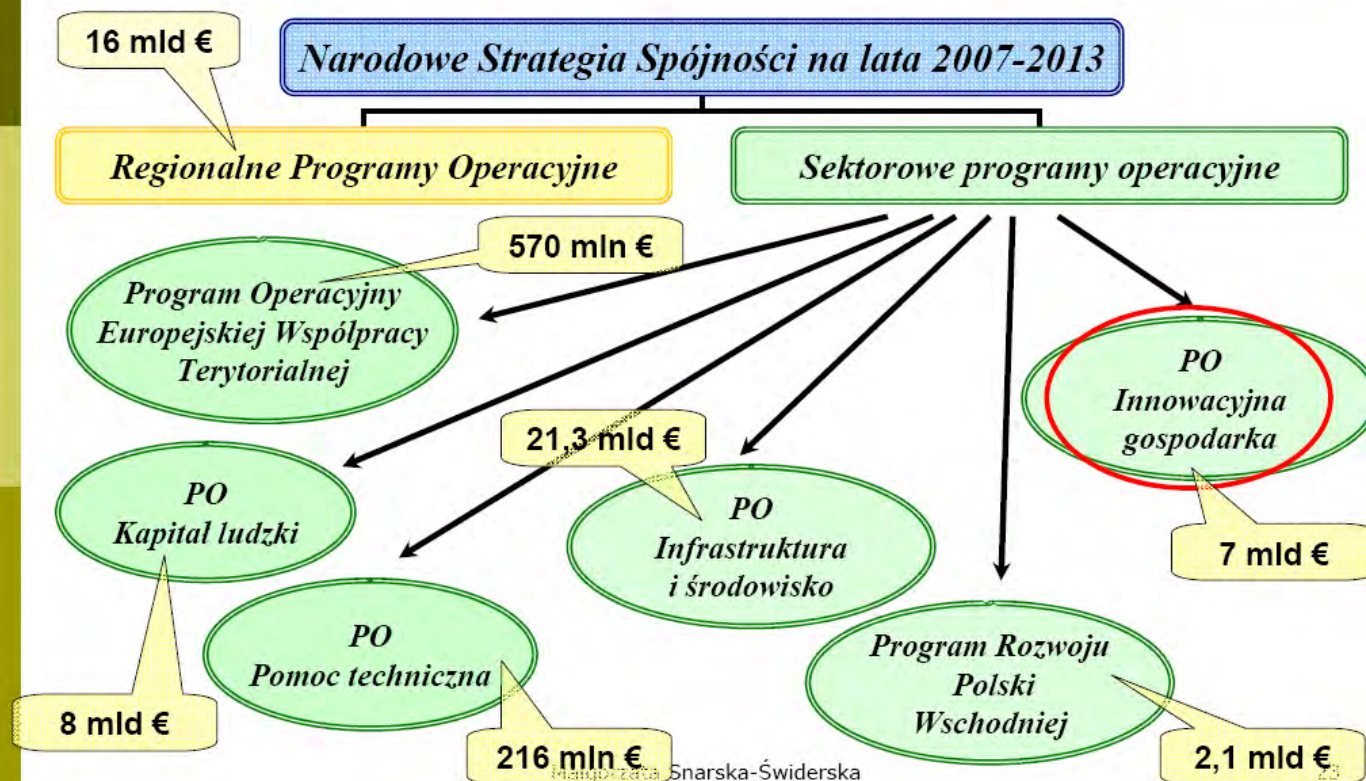
- academic support
- innovative companies
- incubator, labs
- administrative support



# EU structural funds for Poland

*Wdrażanie funduszy strukturalnych w Polsce  
(perspektywa budżetowa 2007-2013)*

**55 bln €**



□ „Innovative economy” – 1.3 bln € for research infrastructures





# 1.3 bln € for research infrastructures?

## **Distribution:**

- ▣ **Misunderstanding what is large infrastructure**
- ▣ **Nontransparent procedure**
- ▣ **Fuzzy criteria**
- ▣ **Diffused responsibility**

## **Result:**

- ▣ **Most of the money already distributed**
- ▣ **Funds dispersed for buildings and table-top equipment**
- ▣ **No single large research device funded**



# What is large infrastructure?

- ▣ Large office buildings?
- ▣ Large number of table-top devices?
- ▣ Something called „bio-nano-techno center”?
  
- ▣ New law for research funding defines large infrastructure as  
„scientific apparatus exceeding 500 000 PLN”  
(~110 000 €)
  - Missing factor 1000 !

# example review

Lp	Kryterium	Maks. pkt	Recenzenci/ eksperci zewn.			Oceny indywidualne członków Zespołu												Średnia arytmetyczna <sup>3</sup>
			1	2	3	Nr 1	Nr 2	Nr 3	Nr 4	Nr 5	Nr 6	Nr 7	Nr 8	Nr 9	Nr 10	Nr 11	Nr 12	
1	Potencjał wykorzystania inwestycji do prac B+R na rzecz gospodarki	20	10	10		5	5	5	5	5	5	5	5	5	12			5,7
2	Priorytetowy charakter badań naukowych lub prac rozwojowych prowadzonych przez wnioskodawcę	15	12	10		10	10	10	10	10	10	10	10	10	10			10
3	Wykorzystanie wspartej infrastruktury do prowadzenia badań naukowych i prac rozwojowych w obszarach tematycznych wskazanych w PO IG	10	5	8		8	8	8	8	8	8	8	8	8	10			8,2
4	Kategoria jednostek naukowych biorących udział w projekcie (zgodnie z zasadami oceny parametrycznej MNiSW)	5	5	5		5	5	5	5	5	5	5	5	5	5			5
5	Poziom przedstawionego przez wnioskodawcę programu badań, do realizacji którego niezbędna jest planowana inwestycja	15	10	2		8	8	8	8	8	8	8	8	8	8			8
6	Zasięg użytkowania aparatury (ogólnokrajowy, środowiskowy, jednostkowy) i przewidywany okres jej wykorzystywania	10	10	5		10	10	10	10	10	10	10	10	10	7			9,7
7	Projekt realizowany w zakresie Polskiej Mapy Drogowej w dziedzinie Dużych Obiektów Infrastruktury Badawczej	5	5	0		0	0	0	0	0	0	0	0	0	0			0
8	Planowany sposób finansowania kosztów utrzymania i użytkowania przedmiotu inwestycji	8	4	4		4	4	4	4	4	4	4	4	4	3			3,9
9	Znaczenie przewidzianych do realizacji prac lub zadań dla rozwoju międzynarodowej współpracy w zakresie nauki i techniki	7	7	6		7	7	7	7	7	7	7	7	7	7			7
10	Projekt ma pozytywny wpływ na polityki horyzontalne wymienione w art. 16 i 17 Rozporządzenia Rady (WE) nr 1083/2006	5	5	2		3	3	3	3	3	3	3	3	3	3			3
RAZEM		100	73	52		60	60	60	60	60	60	60	60	60	65			60,5





# POLFEL review

- ▣ **R+D potential for economy: 5/12**
  - Synchrotrons revolutionized many technologies
  - FELs have even higher potential
- ▣ **Priority of beneficiary research: 10/15**
  - IPJ is the builder, one should judge users
  - IPJ scientific output has been shown
- ▣ **Research program: 8/15**
  - This is ESFRI recommended project
- ▣ **Funding of operation: 4/8**
  - What is expected?



# If not POLFEL – what else?

- ▣ **ESFRI Roadmap infrastructures will be located mainly in old Europe**
  - „New Berlin wall”
  
- ▣ **How to expand European Research Area?**
  - The concept of regional infrastructures
  - ESFRI document on „regional issues” – end 2008
  - 12 countries made proposals
  - **Poland proposed nothing**

**Is there a future for science in Poland?**

**Is there a future for Poland?**







# Polish research in 2015 – which way?

