



EUROPEAN
COMMISSION

Community research



Research Infrastructures for innovation and development

Financing Research & Development to serve economy

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Presented by H. CRUTZEN





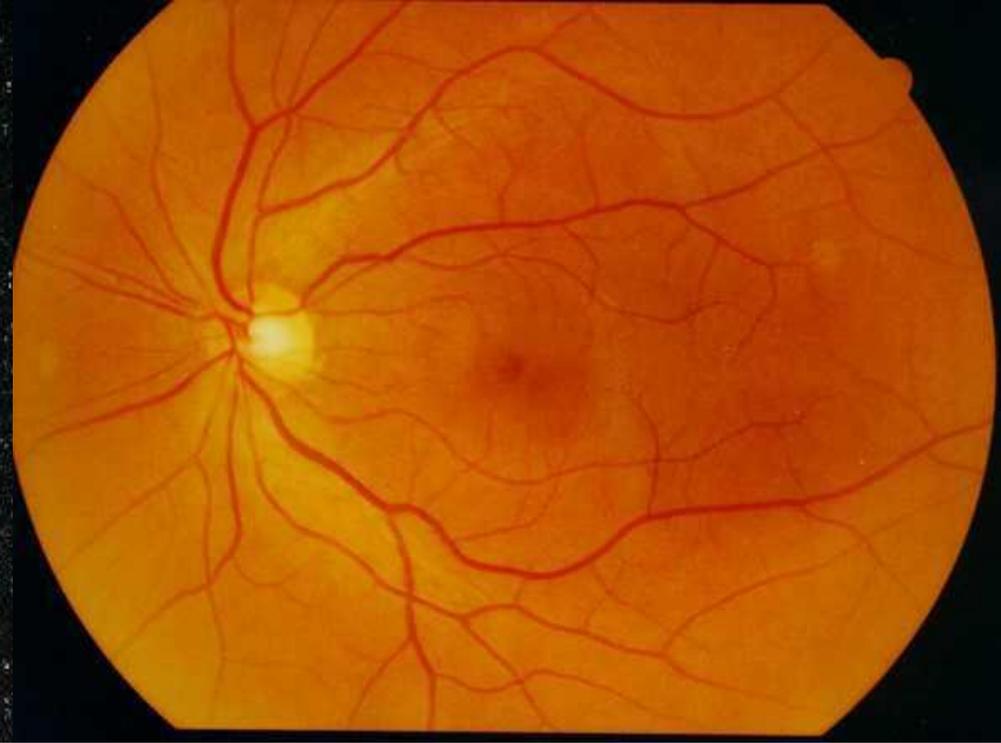
World-class research infrastructures

Key element of the Lund & Donostia declarations (July 09 – Jan 10)

- Essential for Europe's researchers to stay at the forefront of research development
- Key component of Europe's competitiveness in "frontier" research

Key Challenges:

- *Overcoming fragmentation in Europe*
- *Coping with increasing costs / complexity*
- *Improving efficiency of (and access to) research services, incl. e-infrastructures*



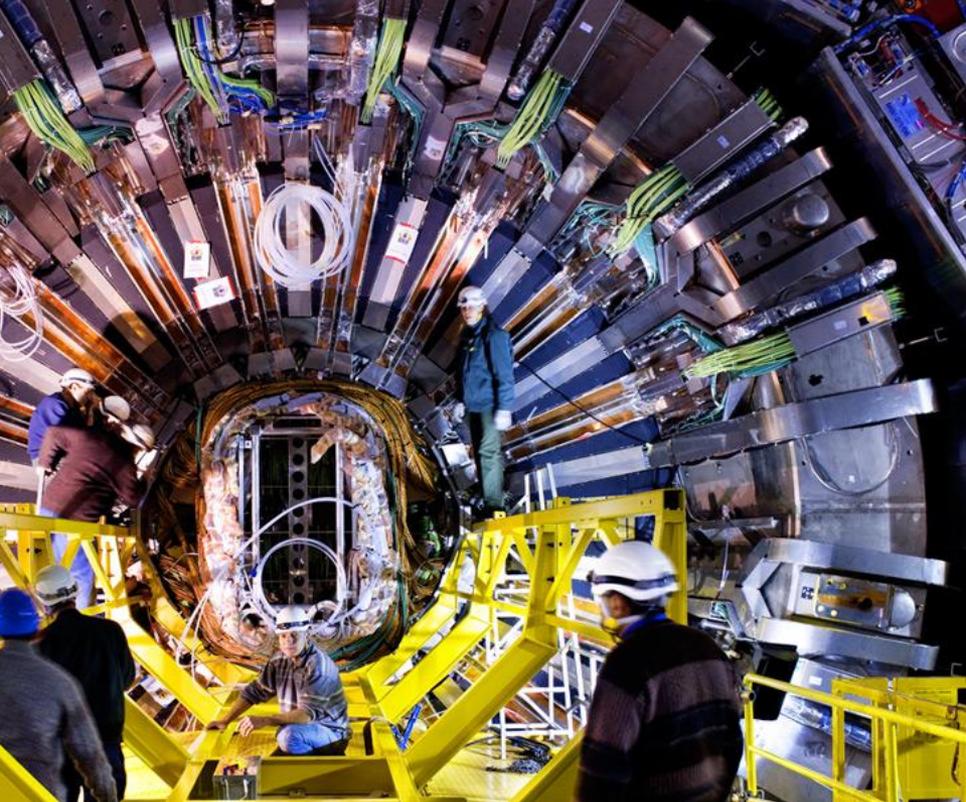
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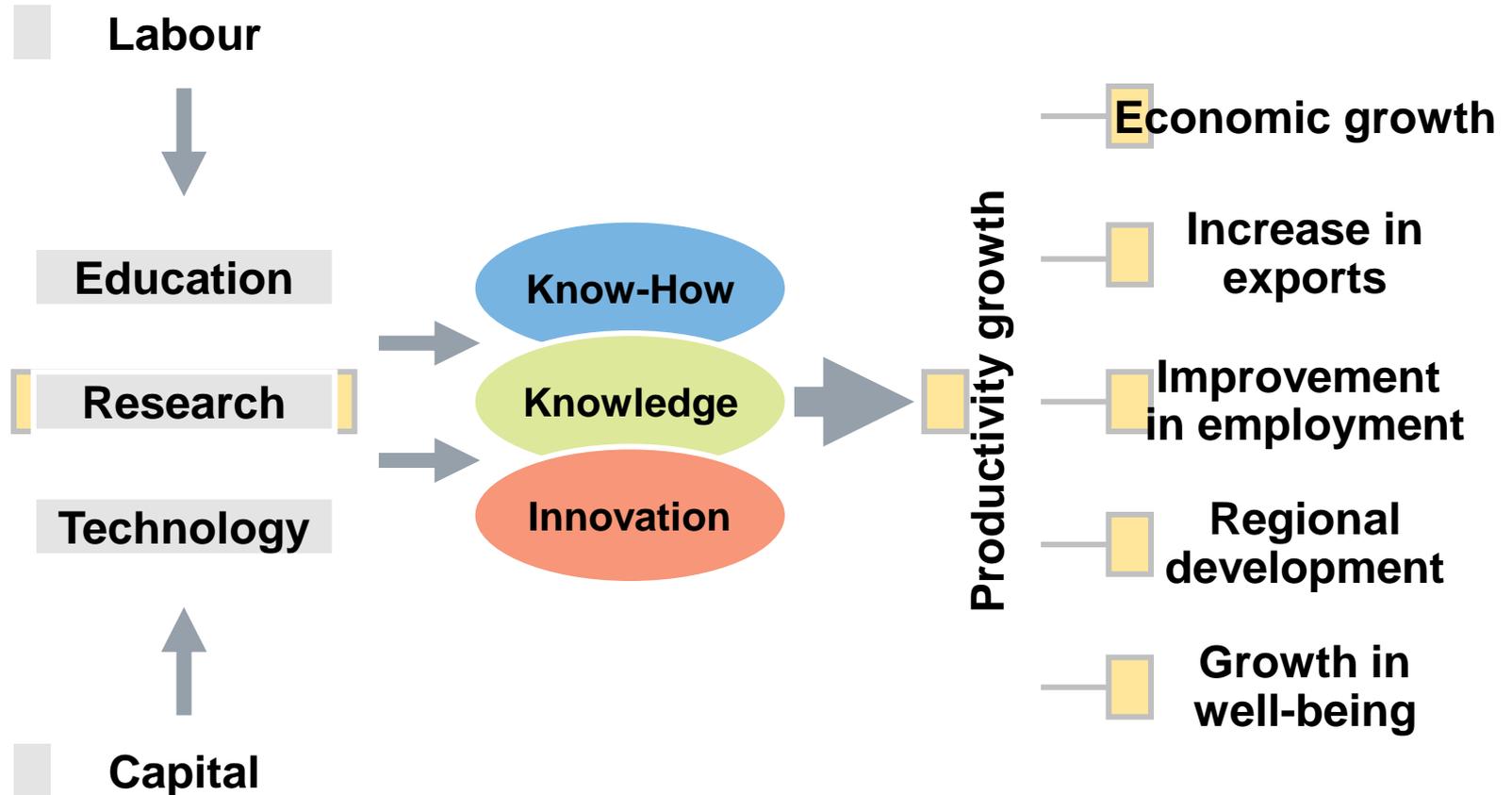
First approach to measure industrial impacts at European level ...

(data from ERID Watch - 2008)

- ✓ Rather big market ~8-9 B€ per year
- ✓ Increase of 5.5% over the last 10 years
 - o new products (e.g. Medical drugs)
 - o Leading edge technologies
 - o Secondary industrial products (e.g. DNA sensors)
- ✓ Marketing image & global markets for technologically-based companies



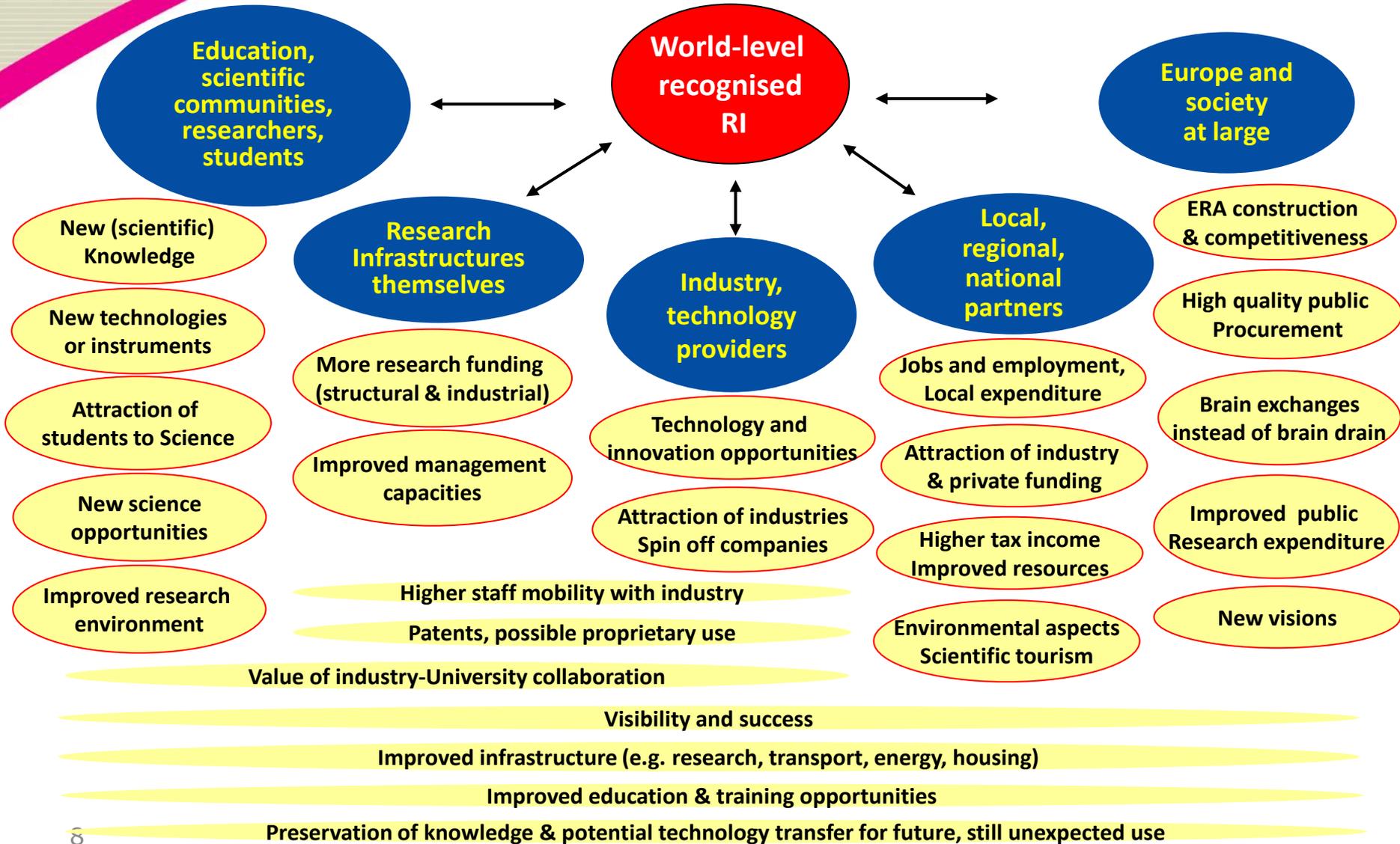
Sources of economic growth



According to this growth model, economic growth is rooted in education, research and technology.



Rough analysis of Returns and Stakeholders





In brief...

Impacts can be generated ...

- **almost immediately**, at **medium term**, and at **longer term**, i.e. creation of spin-offs, knowledge and data for further (still unexpected) use
- At **societal** (e.g. use of internet), at **health & environment level** (e.g. helping to understand climate change issues), at **economical level** (e.g. gains in scale and scope, increased industrial competitiveness, new technologies / products)

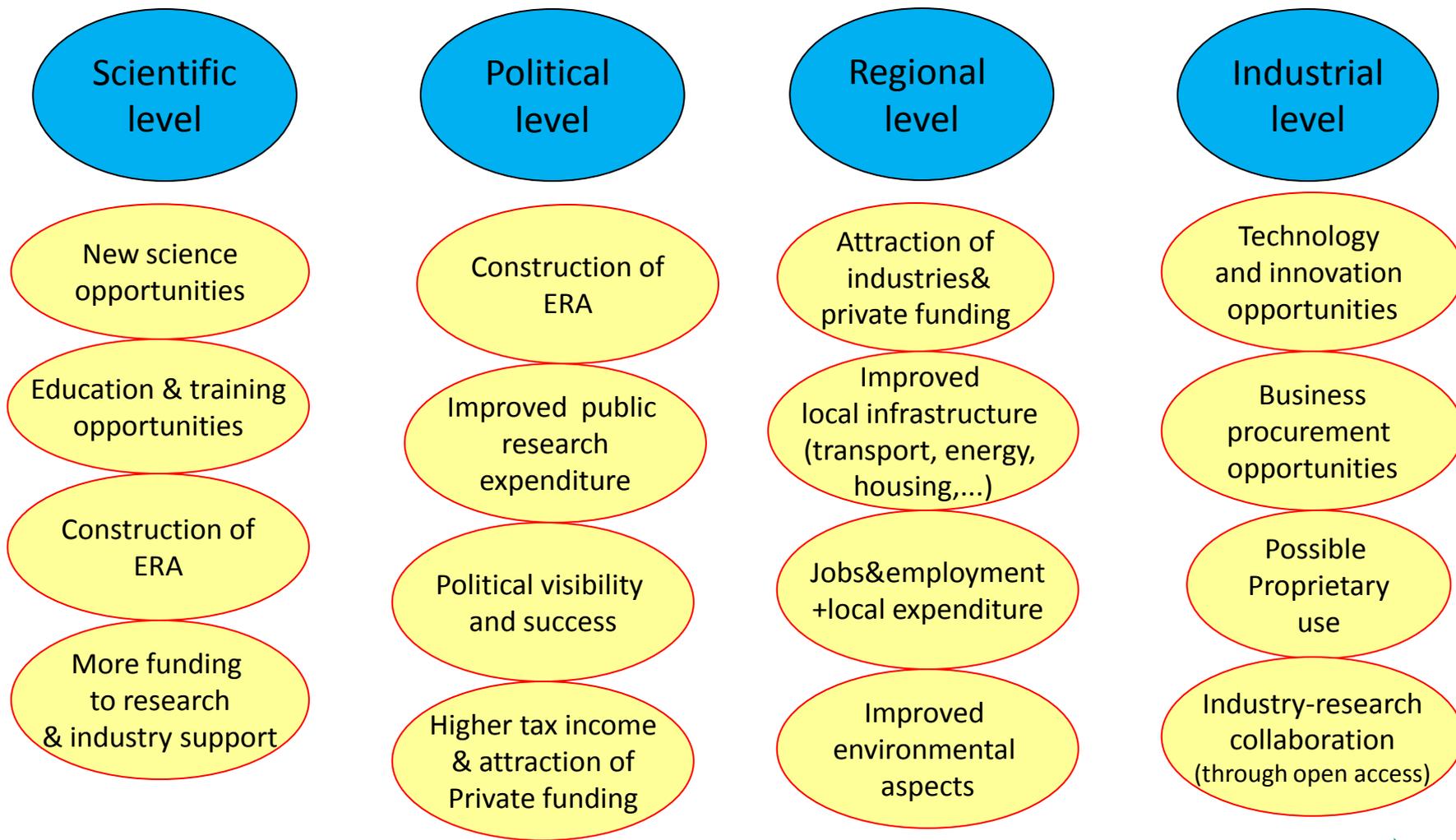




Direct / indirect effects of individual RIs

- By themselves, RIs generate shorter-term **direct impacts**, i.e. as demanders of new technology or through gains in scale and scope
- RIs generate also many medium to longer-term **indirect impacts**:
 - The results of the research work they allow,
 - The training of people,
 - The organizational changes they stimulate,
 - The opportunities they give for regions, etc.

Who aims at what?



Increasing economic & short term motivation

However, returns may vary according to local, regional or national environments...





Success factors identified...

- Established User / supplier relationships:
pre-existence of networks / business models is of high importance for impact generation
- Relevant expertise:
mix of knowledge on socio-economic and relevant scientific/technical domains is key
- Ex-ante analysis of impacts:
based on possible retrospective analysis or modelling (only possible if data collected and retained)

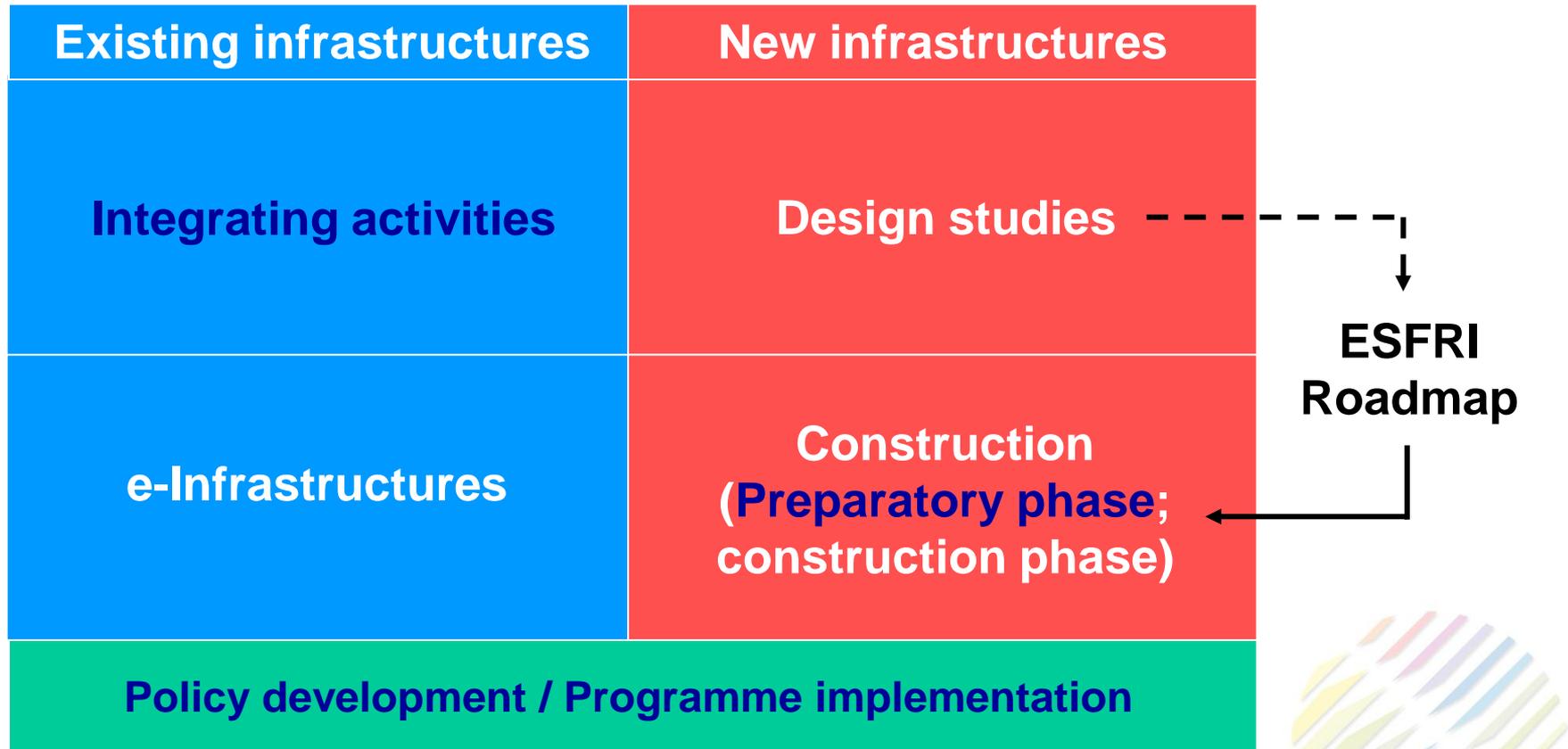


Barriers to generation of impacts ...

- Non adequate planning of work or lack of business model towards users and/or suppliers
- Non-availability or lack of a critical mass of data
- Lack of maturity of the Discipline or its information use
- Non-Availability of Relevant expertise and/or Personnel
- ... *also imperfect or Partial methodologies, meaning that although impacts are there, nobody is really aware ...*



Support given by FP7 Research Infrastructures action



(calls FP7-INFRASTRUCTURES-2011)



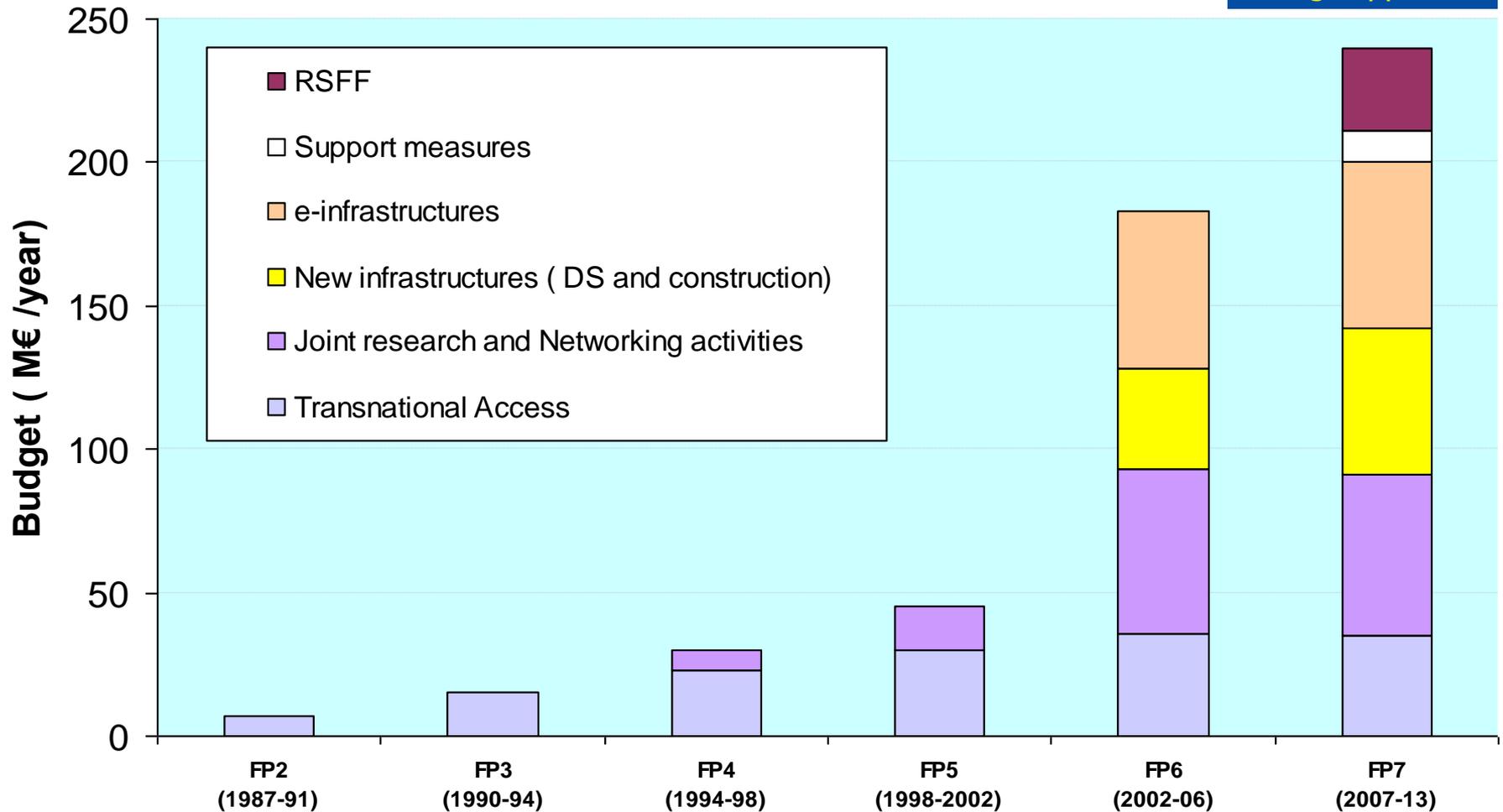
Main FP activity: *Integrating RIs at EU level*

- **Collaboration of existing research infrastructures**
 - ➔ **Normally all major RI's in Europe in one field**
- **Three types of obligatory activities**
 - ➔ ***Networking Activities***
 - ➔ ***Trans-national Access + Service Activities***
 - ➔ ***Joint Research Activities***

2,5% of EU needs
About 550 RIs
supported under FP
until now

A steady evolution since 20 years...

About 550 RIs being supported





The Virtuous Cycle

Increase of
quality of research

Increase of new
financial resources



Increased attraction
of human resources
and ideas:
invent to discover!

More innovation and quality procurements:
economic and social returns

CHALLENGE: To aim at a self-sustaining cycle!



Vision?

The knowledge society...

- A fully integrated, consistent, efficient eco-system of Research Infrastructures, serving researchers and society in all S&T fields
- Research Infrastructures as knowledge industry for the knowledge society and source of attraction for world scientists
- Based on widely used and efficient e-infrastructures



Which are the key factors affecting the vision?

- Capacity (or not) to develop a *favorable environment* for EU research (not just national)
- Capacity (or not) to strengthen relations with *education* and with *industry*
- Capacity (or not) to *work together* to face increasingly complex problems / costly solutions
- Capacity (or not) to face *research internationalization*
- Stimulating Working environment
- Socially-friendly hosting environment
- Favorable financial / eco environment
- Politically « working together »



The need to assess a RI

A possible evaluation matrix to be looked at...

		inputs			Overall RI environment
		Excellence	Management	Potential impacts	
outputs	Science	Frontier research	Research services	Knowledge creation	
	Europe	EU S&T challenges	Governance	European leadership	
	Economy	Grand Challenges	Balanced budget	Socio-economic impacts	

Research-innovation bridge



Need to characterize the overall environment!

- Overall positive environment needed to generate impacts, although inputs are present...
 - Stimulating Working environment (W)
 - Socially-friendly hosting environment (S)
 - Favorable Financial / eco environment (F)
 - Politically « working together » (P)

As if a theoretical equation was:

Impacts: function (E, M, T, W, S, F, P...)



Questions ?

