



Research Infrastructures: Making the case and setting the scene

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Definition of a Pan-EU RI (ESFRI)

A “Facility” for service to “Research” which:

- *Offers cutting-edge, essential service to research, on a non-economic basis, within an ERA outlook;*
- *Awards free open access through international peer-review competition at world level;*
- *Results published/shared in the public domain;*
- *Proprietary and/or training access is marginal;*
- *Clear pan-European added value: e.g. at least 30% of selected users coming from non-host countries.*

Can be single sited, distributed, virtual;... lifetimes between years (satellites) and centuries (libraries)...

Why are we here?

- **RIs are needed in all science fields**
- **No single EU Country can provide them all**
- **While other Nations can: e.g.: India, US, China..., (only in few cases global approach needed)**
- **Europe must compete with them as a Union**
- **Most EU Countries can contribute with their RIs or by participating in joint ones**
- **We need to develop, operate, upgrade, reorient, ... pool, limited resources, as an overall EU “system”**
- **This requires common understanding and “culture”**
- **And this is the scope of RAMIRI**

Research: what does it mean?

Political + media discourse mix together, under the name of “Research”, three activities with very different goals & economic aspects: Research, Development, Innovation

These are well defined by international rules:

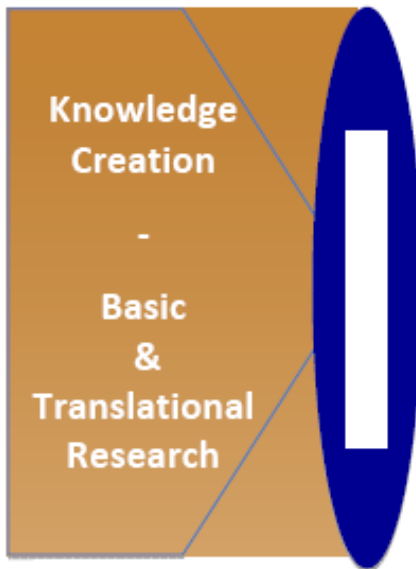
- Research: produces new knowledge, i.e. discoveries (previously unknown!!, i.e. unpredictable) : (very rare economic return to investor: 100% public allowance)
- Development: produces new solutions, i.e. inventions*, by the use of existing knowledge: (some economic return to investor, albeit risky: ≈50% public allowance)
- Innovation: successfully improves existing solutions (economically self-sustaining: <≈25% allowance), rarely connected only to S&T, but often to finance, marketing, organization,.....

*new products, processes, methods,....



The "Innovation Ecosystem"

INPUT



"INTERACTION FIELDS"



OUTPUT



Pan-EU RIs cover the area between knowledge creation and proof of relevance

... and time is needed

Research, Development and Innovation:

R A M I R I

which drivers?

- Driver to new knowledge: mainly curiosity and exploring (other motivations are less driving)
- Driver to inventions: need to solve a problem (economic, defense, sport,.....research)
- Driver to innovations: need to win (a market, a challenge, a competition,.....and in research!)
- Research is a powerful driver for Development (D), for Innovation (I)....and Education (E).
- Success is based on “peer competition ”: same driver!
- This is why RIs **MUST** offer “open access” for R: owners will reap benefits in D, I, E (and improve their R)

Therefore.....

- Research Infrastructures are “non economic” (Research is a non self-sustaining activity)
- But...if they compete to be attractive at world level, then: they must continuously “develop”, “innovate”, “educate”: these parts can provide economic gains.
- International RIs need special qualities to be attractive and need to please many “stakeholders”, each one expecting a different part/taste of the “pie”
- Planning, governing, managing RIs means to understand all stakeholders, respond and account in the most complete and effective way: therefore RIs are also powerful drivers of quality in **Management!**



EUROPEAN COMMISSION

Community research

RIs as innovation motors

Research
always unpredictable
...blue sky

Development
always based on
existing knowledge

Innovation
always responding
to a challenge:
industrial, sports,...



RI fuel:
Curiosity &
Excellence

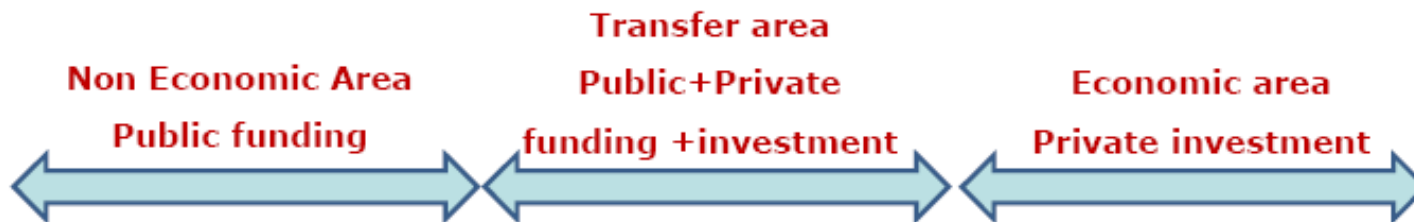


Industry fuel:
Market &
Relevance



Increased quality of
research, attraction of:
competition, junior
talents, funding, ideas etc

Increased
competitiveness,
attraction of
new investments



From Carlo Rizzuto, September 2011

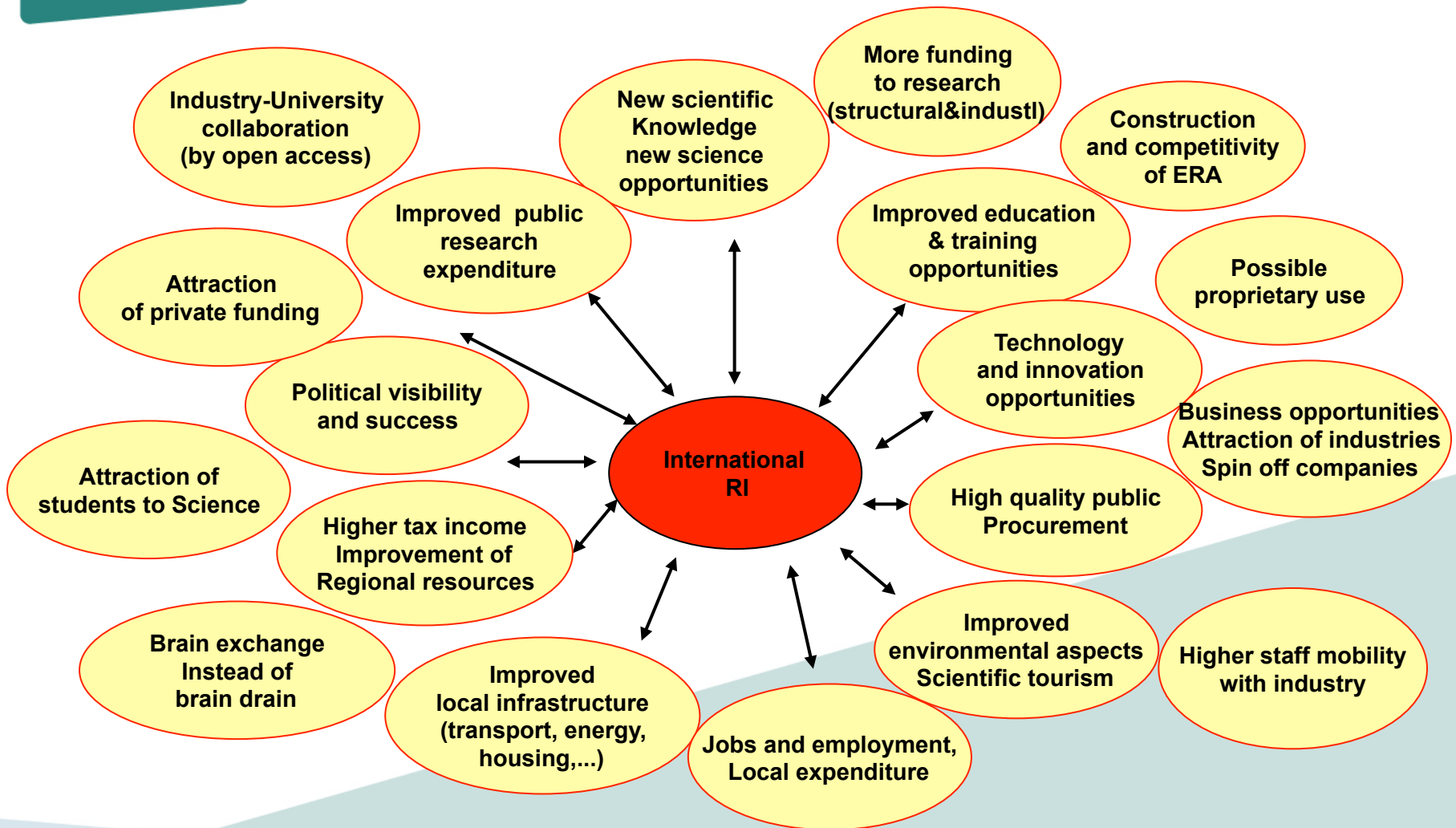
Development Infrastructures

Some infrastructures imply (mainly) Development activities, but often are called RIs (and sold as such):

- The International Space Station and ITER
- A Formula 1 car and most “test facilities” (e.g. wind tunnels, simulation chambers, etc)
- A young Marconi developing the Radio...
- Most industrial “applied research” is, in fact “development”

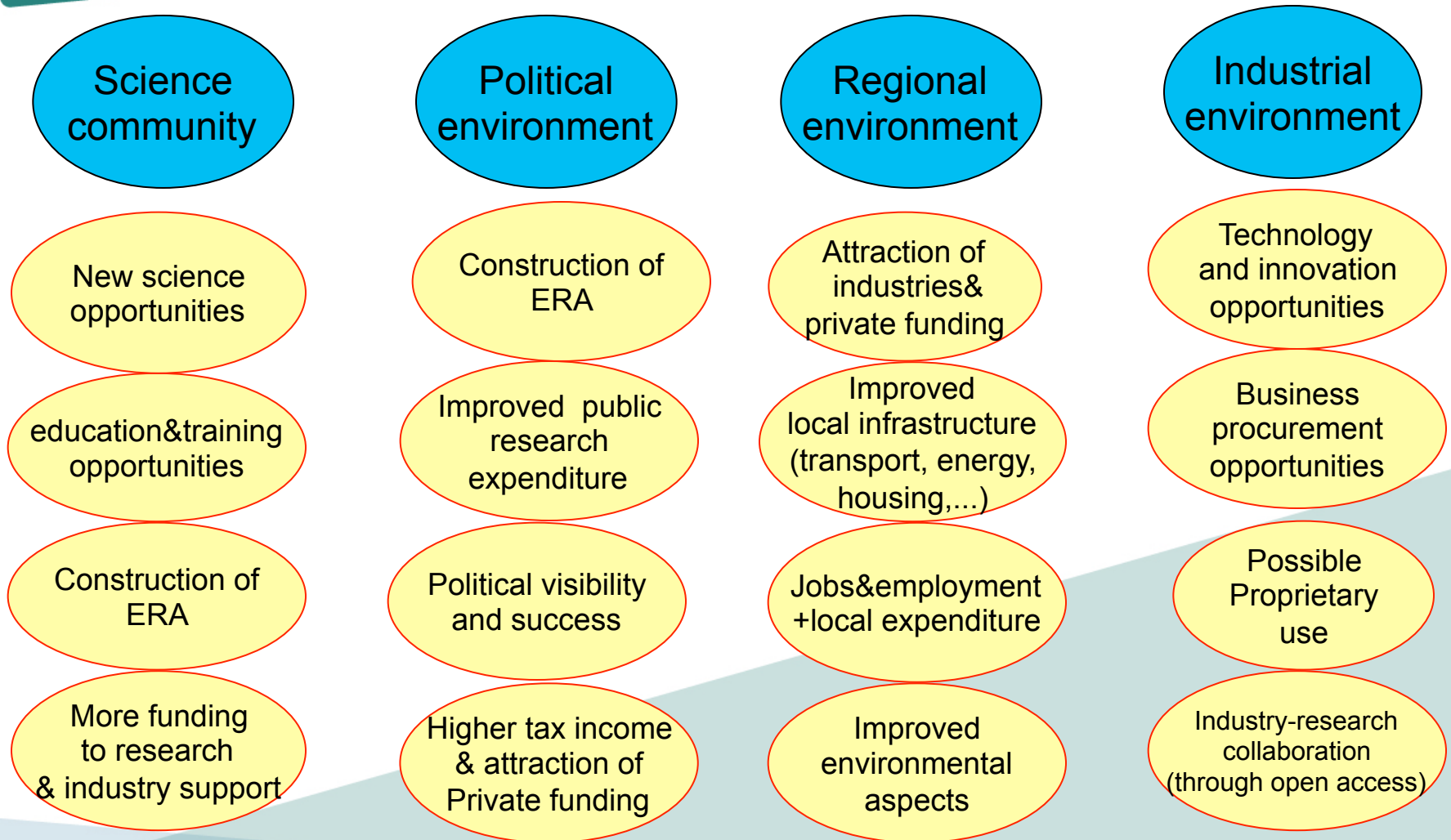
Its main driver is “relevance” as well as quality,

Returns and Stakeholders



....with different motivations

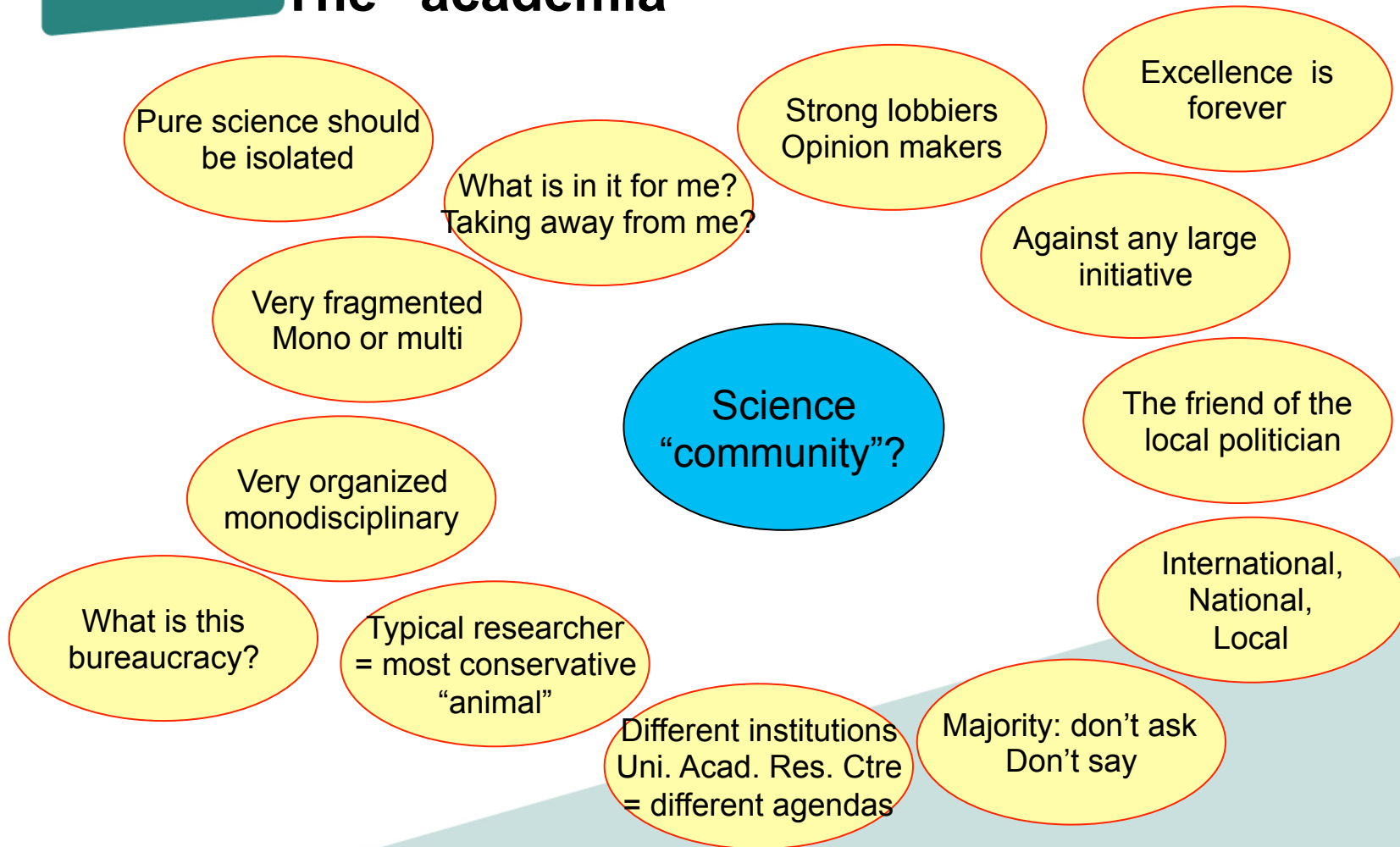
(anthropology of the stakeholders)



Increasing economic motivation

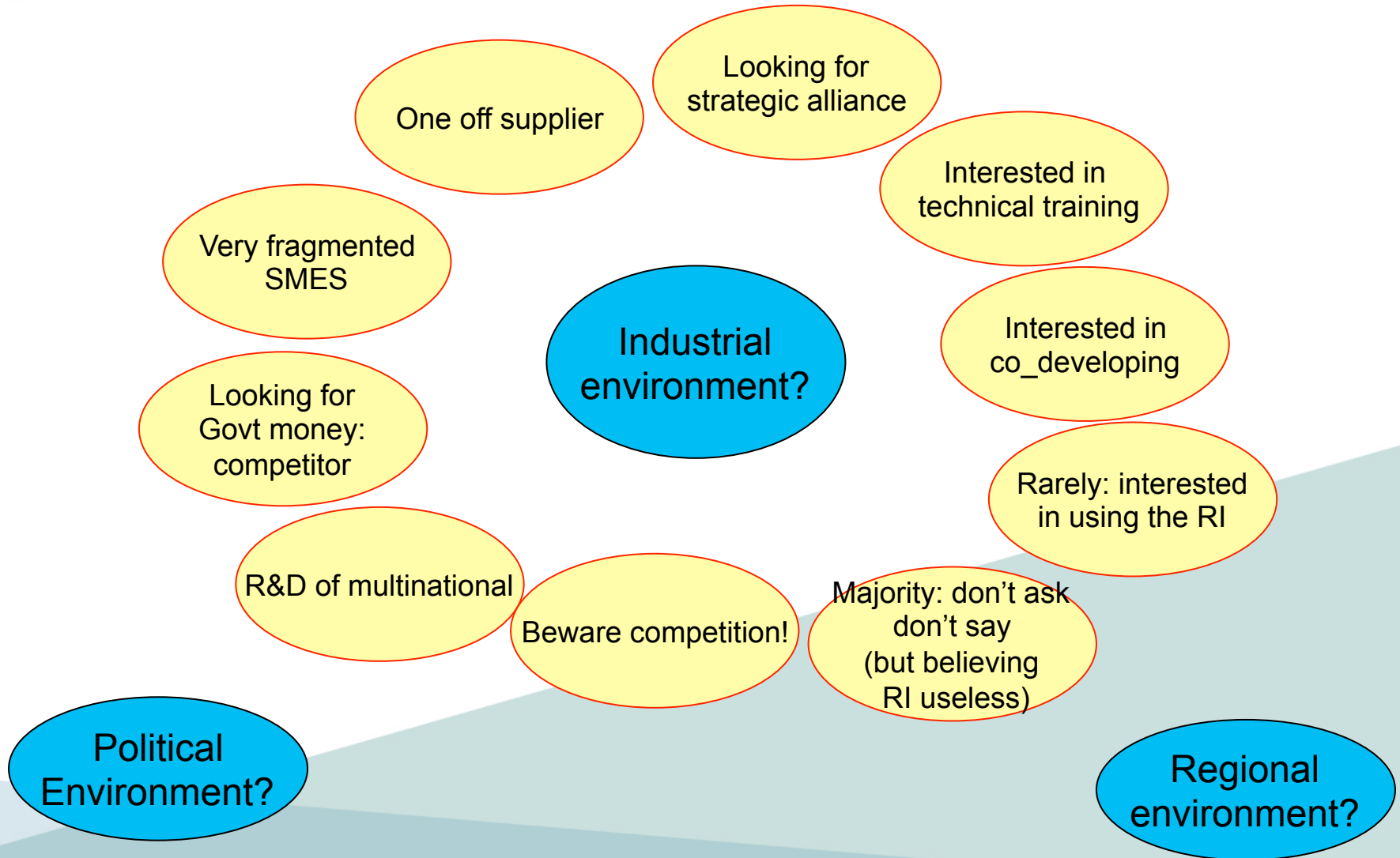
The picture is a bit more complex

The “academia”



The picture is a bit more complex

the industry



Summary

- **Our problem is:**
- **How can we explain? (not always data available)**
- **How can we obtain? (fund raising, and best use)**
- **How can we ensure results? (and get sustainability)**
- **How can we manage a complex environment...**
- **.....to achieve something which is very different from “normal” economic culture?**
- **Which are the “narratives” and “best practices” used until now?: can they be improved?**

examples of “narrative”

- Who invented the RI's? (in the middle ages...)
 - What other accepted activity is popularly known and similar enough? (Olympic games...)
 - How can “open access” be justified?
 - How are socio-economic returns optimized?
-And now let's work seriously!

RESOURCES

Financial resources

- What are the current and potential sources of revenue for our activities?
- What is the agenda of the funders?
- What do they expect from our activities?
- How to reach and convince them?

Non-financial resources

- Do we have sustainable access to technology / scientific know-how do we need?
- What is our training strategy? Is it adapted to the phases of our activity?

ACTIVITY

How can we evidence the outputs and the relevance of our activities?

Do we have sustainable access to the non-financial resources we need?

Partners

- Do we need partners? What for?
- Do they share our strategy?
- Are the partners sustainable?
- How strong is our partnership?
- How much do we depend on them?

Research infrastructure

- What is the RI's 'mission'?
- What is the timeframe for that mission?
- What is the institutional and legal framework?

Competitors

- Who are they?
- How are they positioned in the field?
- How can we compete against them? How can we differentiate ourselves from them?

USERS & BENEFITS

Our offer - What content? What process of definition, monitoring and promotion?

Can we disseminate our results and generate extra revenues?

Direct beneficiaries of our services

- Who are they? How large is our user community?
- What do they expect from a research infrastructure like ours?
- What is needed to ensure

Other benefits of our activities

- What other benefits could our activities potentially generate?
- What channels would be necessary to disseminate these benefits?
- Do we have a strategy to put