

# **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)**
- **The EU (ERA) needs to have same capability**
- **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 —otherwise 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,....

# Research, Development and Innovation:

RAMIRI

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!**

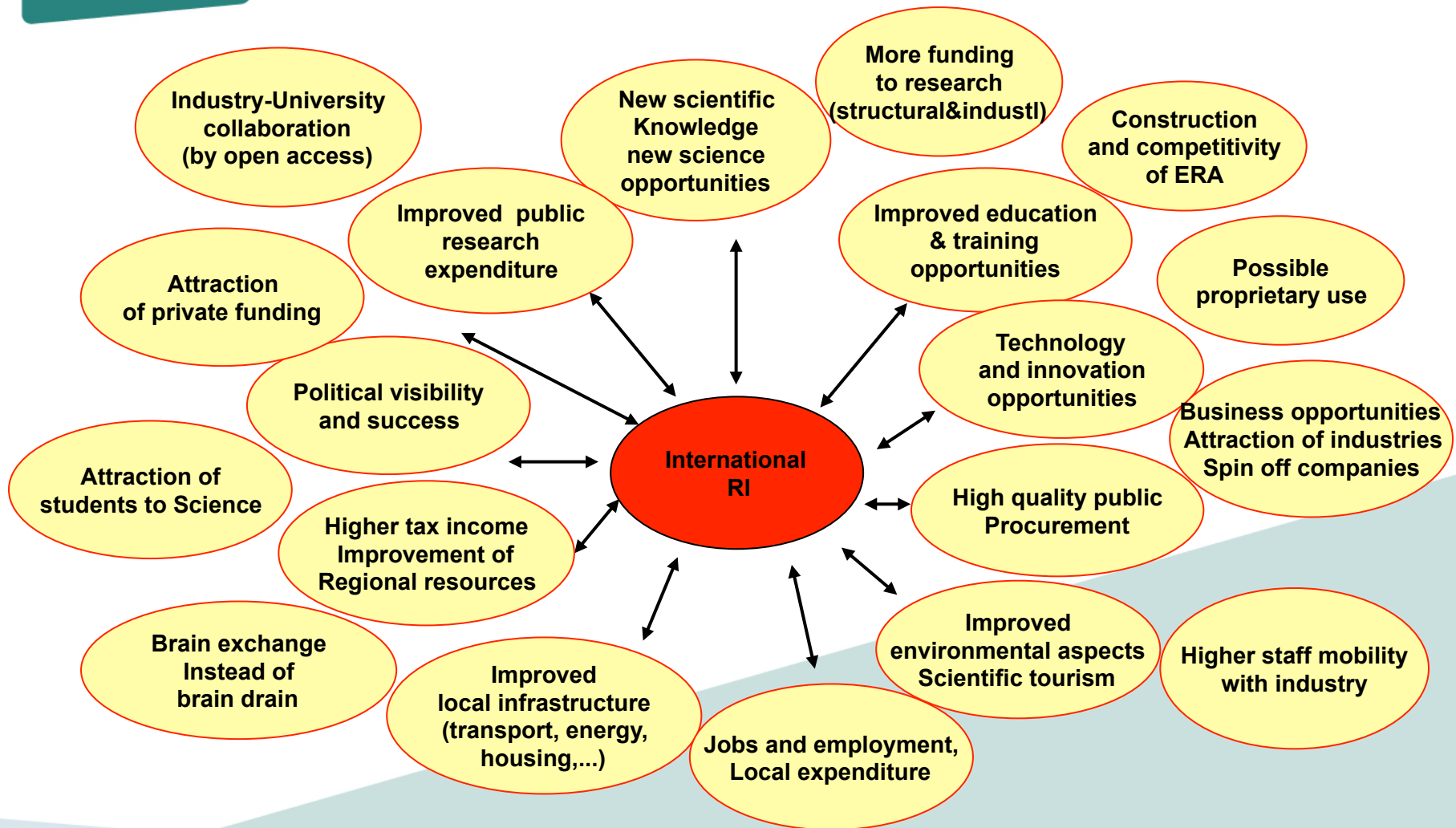
# Development Infrastructures

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,

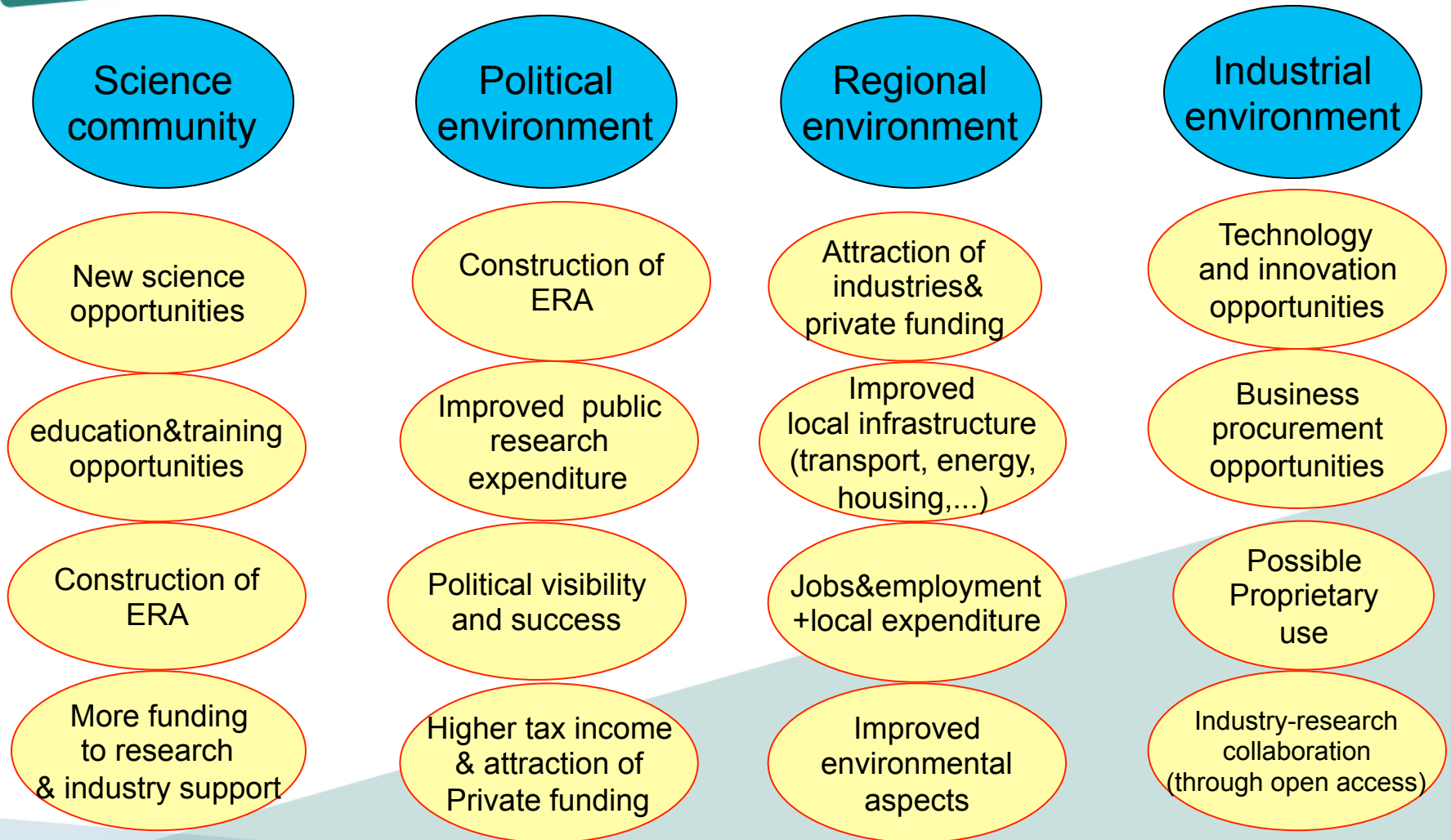
# Returns and Stakeholders





# ....with different motivations

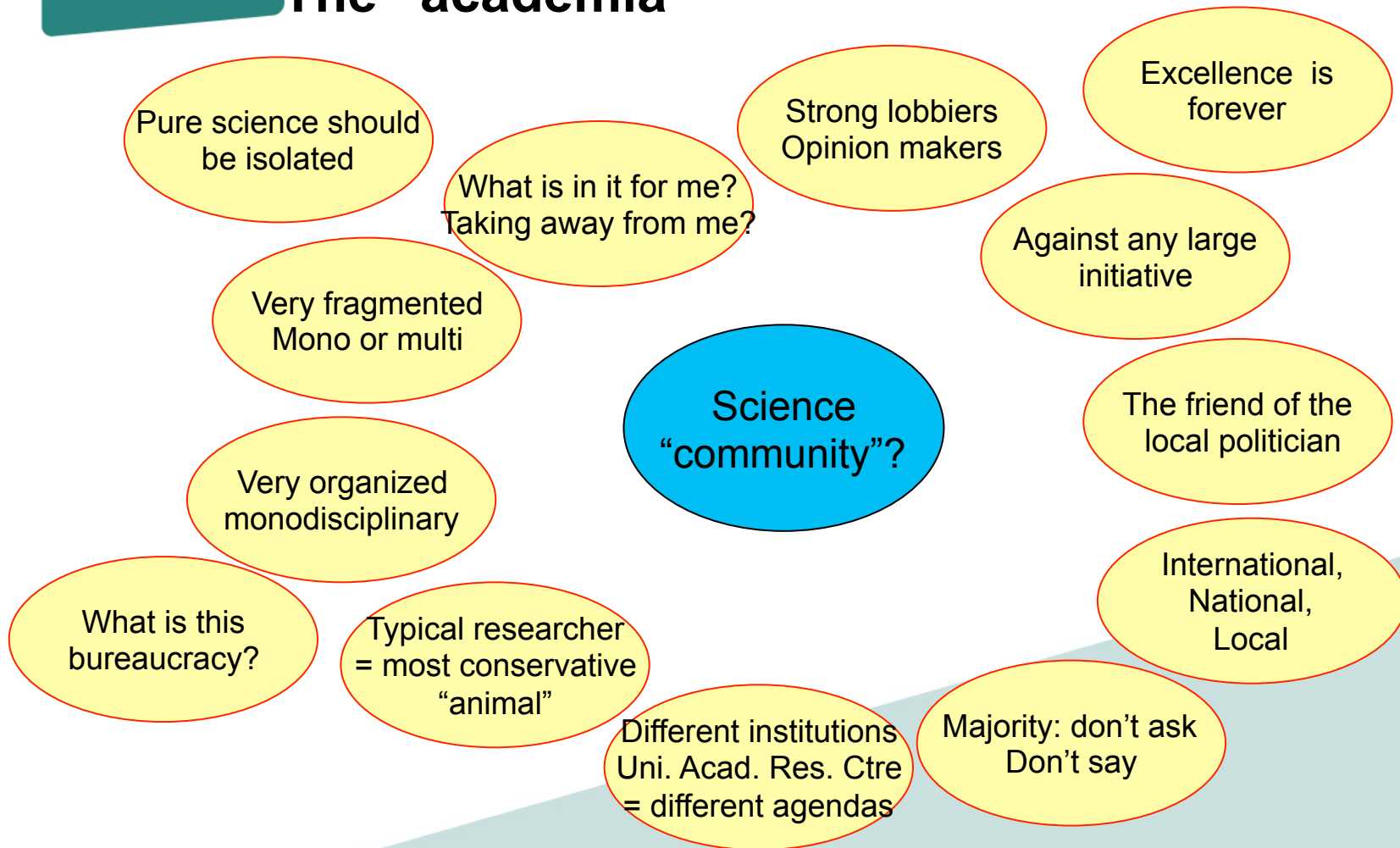
(anthropology of the stakeholders)



Increasing economic motivation

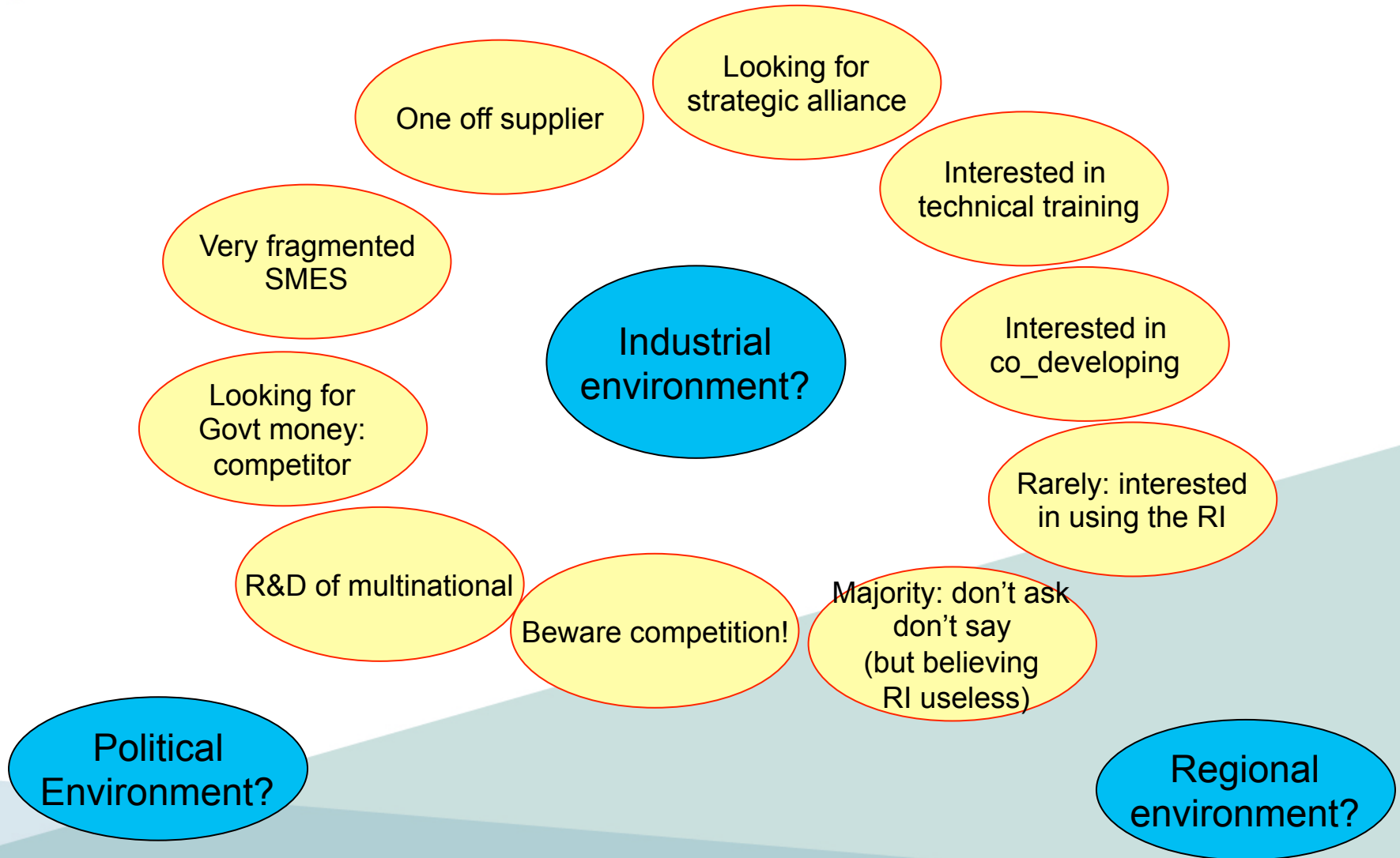
# The picture is a bit more complex

## 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!