Dalla ‘Open Science’ alla ‘Open Innovation’

Un Cammino per l’Europa tra Utopia e Necessità

Piacenza, 2 Dicembre 2017
Sergio Bertolucci
Unibo e INFN


An economy only based on “value for me” is no longer an option for a world facing Societal Challenges at a planetary scale.


Global Sustainability
needs an economy based
on “value for many”.

European Research Infrastructures or Research Infrastructures in Europe?

- A rich scenario of Global, European and National RI's
- A great asset for Europe
- Is it used optimally?

From Open Science to Open Innovation

- European RIs have succeeded in establishing the paradigm of **Open Science**, establishing an extended **ecosystem,** where the research communities are fostering a **culture of mutual trust,** balancing **competition and collaboration**.
- Their potential to generate innovation is **largely untapped**, due to the lack of a corresponding **ecosystem at the European scale**, which needs to include also the **private sector (industry, investors, entrepreneurs)**.
- The lack of such an eco-system impairs the development of policies of adequate scale, and it is one of the main causes of the **declining competitiveness of Europe in innovation**.

From Open Science to Open Innovation

Use the lesson learned from the **Open Science** environment to translate the **theoretical models of Open Innovation** (e.g. Henry Chesbrough "*Open Innovation: The New Imperative for Creating and Profiting from Technology." HBS Press. 2003.* ISBN 978-1422102831) into the European specific environment, **proposing realistic models** of Open Access and IPR protection, fit to follow innovation from the early stage of Technical Readiness Level (TRL) all the way to market.

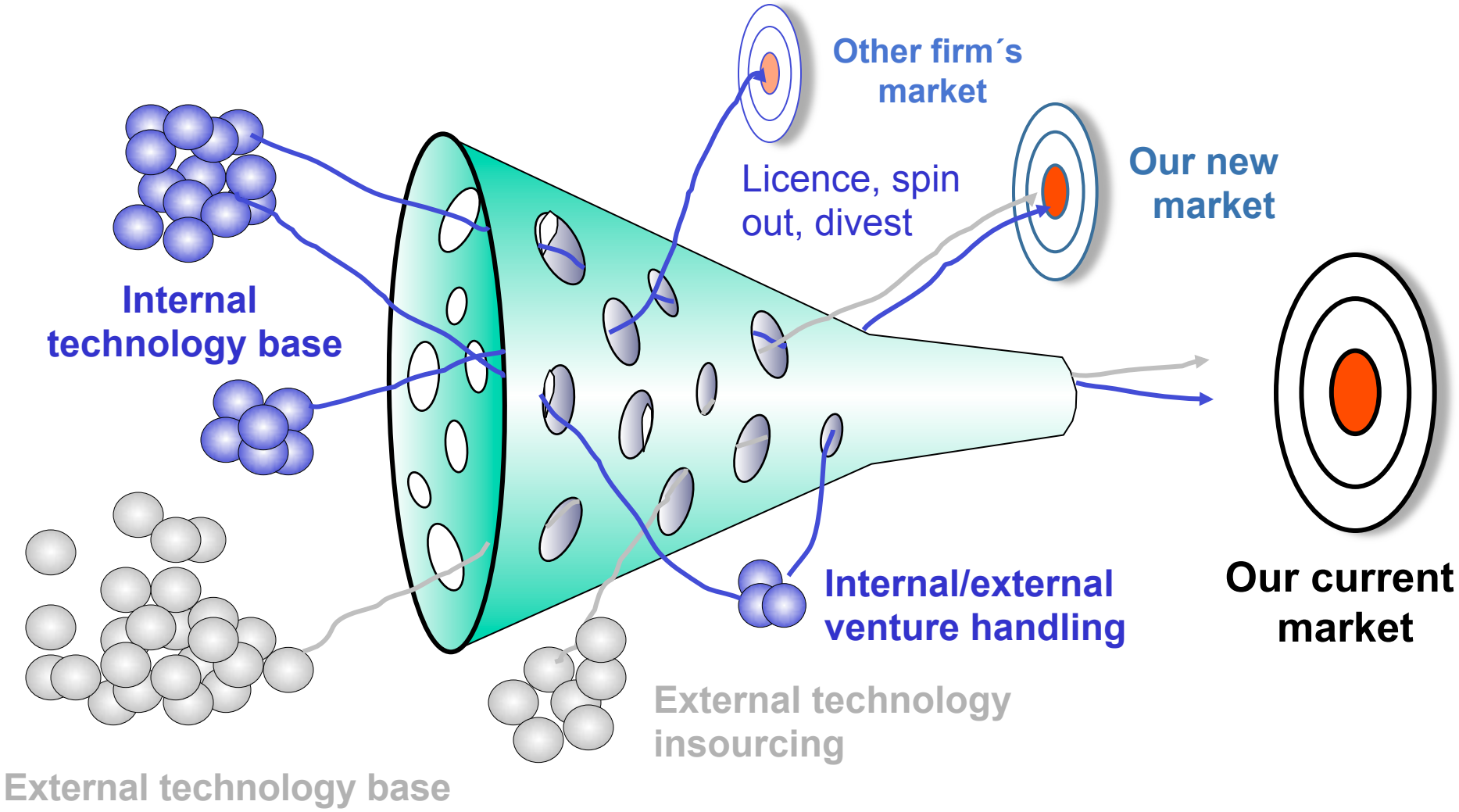
This is a fundamental point for the creation of trust necessary to the establishment of a European innovation ecosystem.

What is Open Innovation?

Open innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively."

Henry Chesbrough, 2003

Open innovation

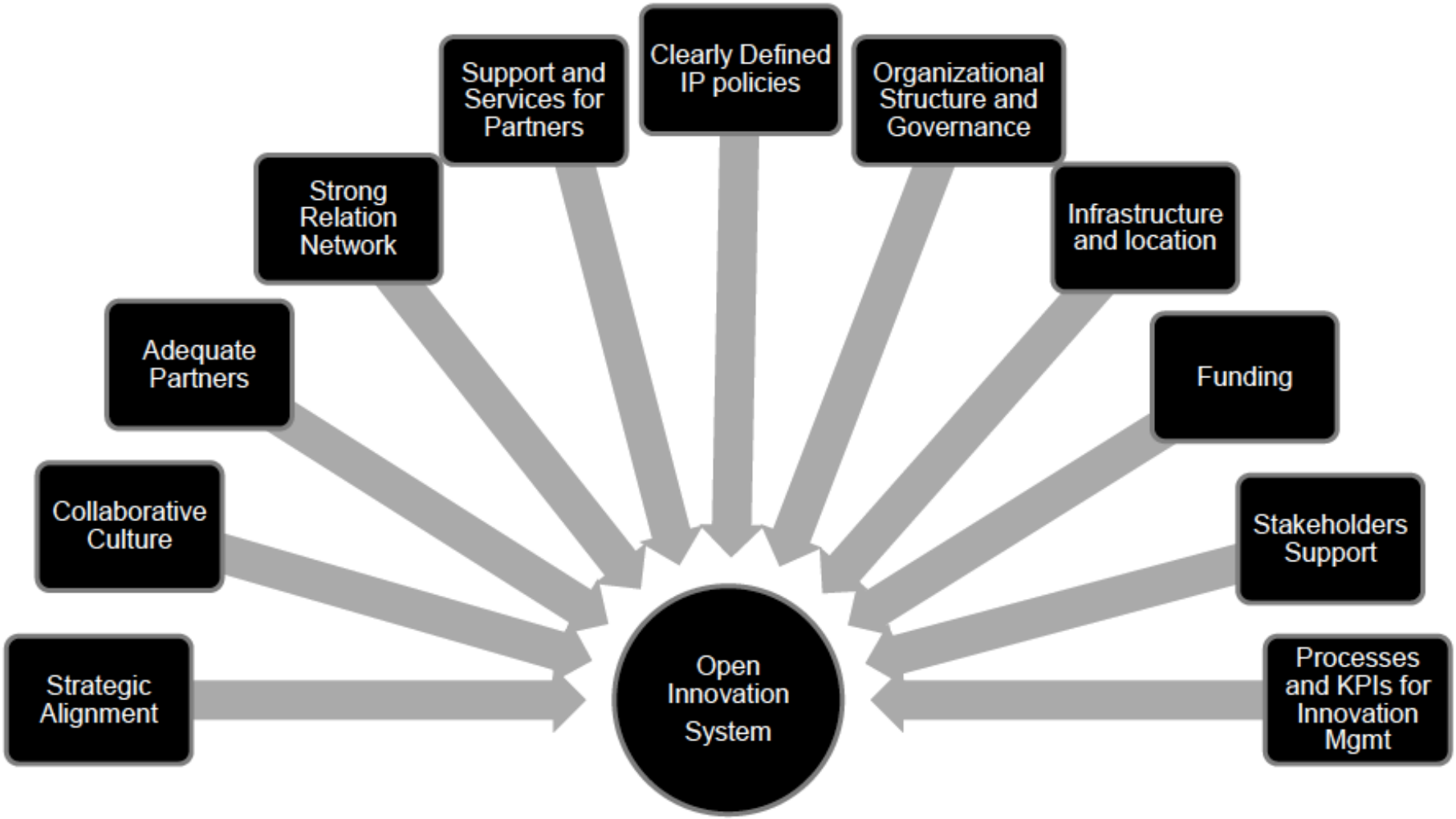


Henry Chesbrough, 2003

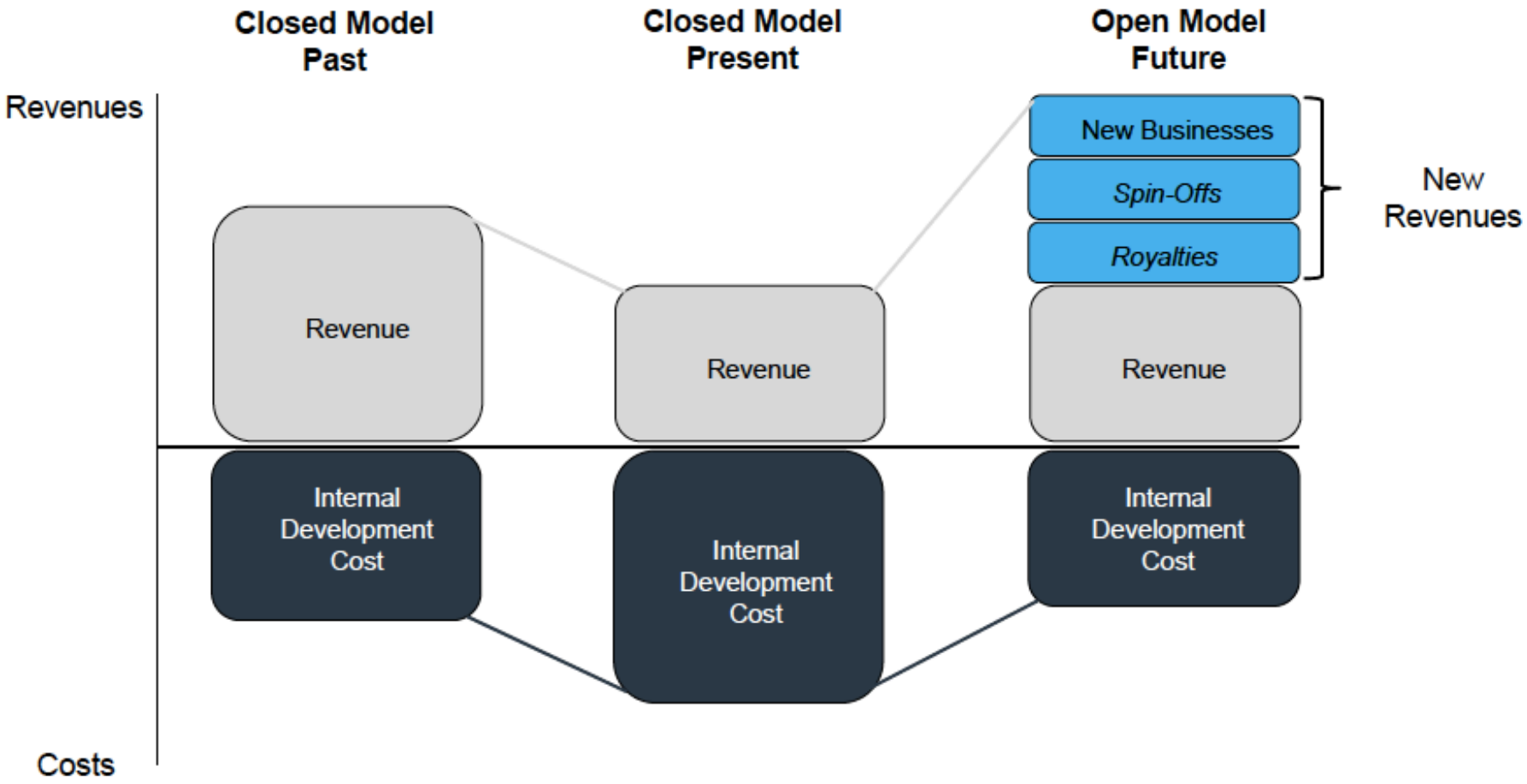
Closed Innovation	Open Innovation
Most of the smart people in our field work for us	Not all of the smart people work for us, so we must find and tap into the knowledge and expertise of bright individuals outside our company
To profit from R&D, we must discover, develop and ship ourselves	External R&D can create significant value; internal R&D is needed to claim some portion of that value
If we discover it, we will get it to market first	We don´t have to originate the research in order to profit from it
If we are the first to commercialize we will win	Building a better business model is better than getting to market first
If we create the most and the best ideas in the industry, we will win	If we make the best use of internal and external ideas we will win
We should control our intellectual property (IP) so that our competitors don´t profit from our ideas	We should profit from others´ use of our IP, and we should buy others´ IP whenever it advances our own business model

Collaborazione e competizione

Key Factors in Open Innovation



The benefits of OI



ATTRACT

A proposal for a dedicated, interdisciplinary program within H2020 and beyond to **co-develop with RIs and industry breakthrough sensor & imaging technologies**

*The purpose is to address demanding challenges in **both** science and societal needs (e.g. health, sustainable materials and information and communication technologies)*

It involves the detector R&D community from many fields including e.g. biology, physics, astronomy, space exploration, nuclear engineering, medical sensing and imaging, related computing (ICT) and others

ATTRACT

From Open Science to Open Innovation: balancing collaboration and competition

- **ATTRACT is poised to connect Open Science to Open Innovation .**
- **It proposes a new *co-innovation* paradigm between Industry, Business, Investors, Innovation Specialists and European Research Infrastructures.**
- ***Co-innovation* seeks a strong and open cooperation from the beginning of the innovation value chain on identified breakthrough and win-win technology and business opportunities.**

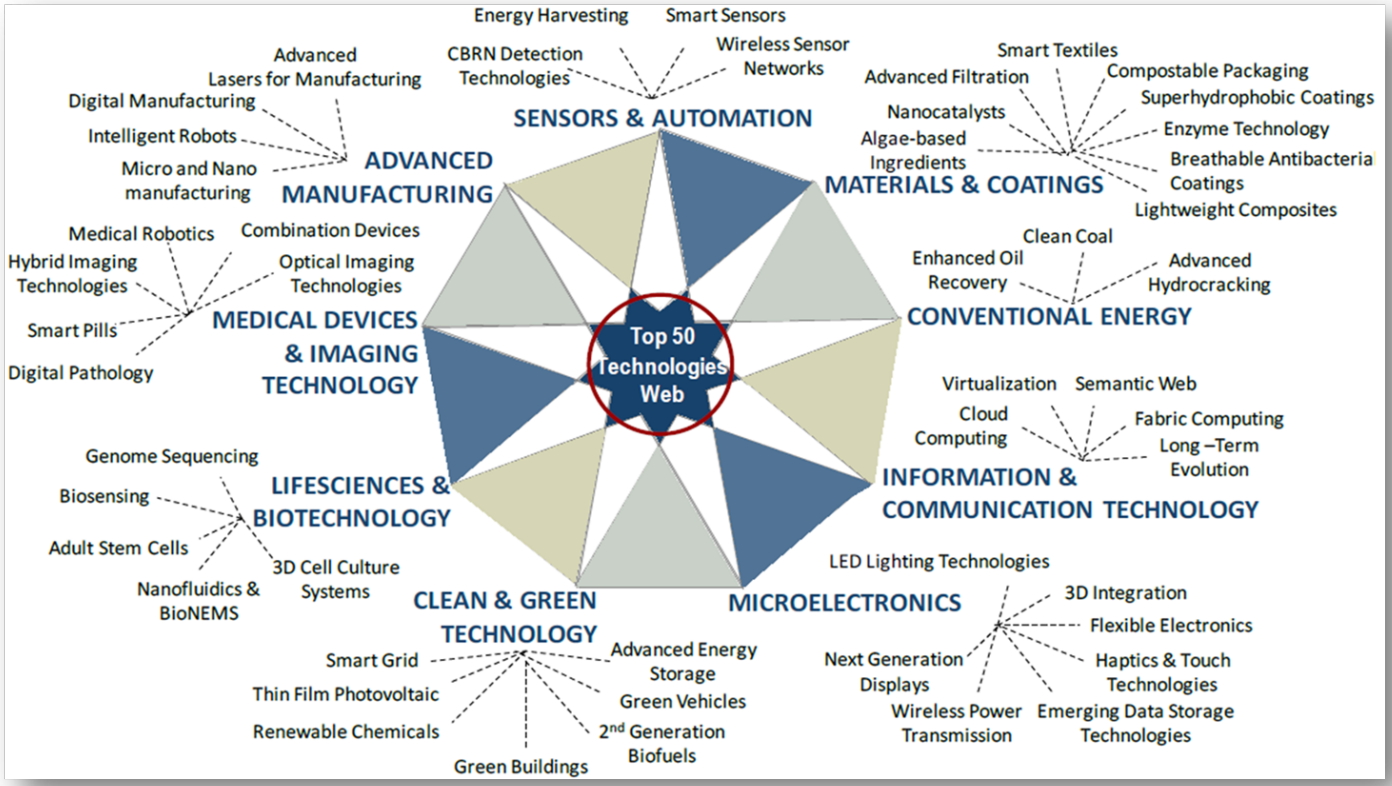
Co-Innovation: a “value for many" proposition

A simple way to understand it:

We all make the best fishing gear and then each one decides what to fish…

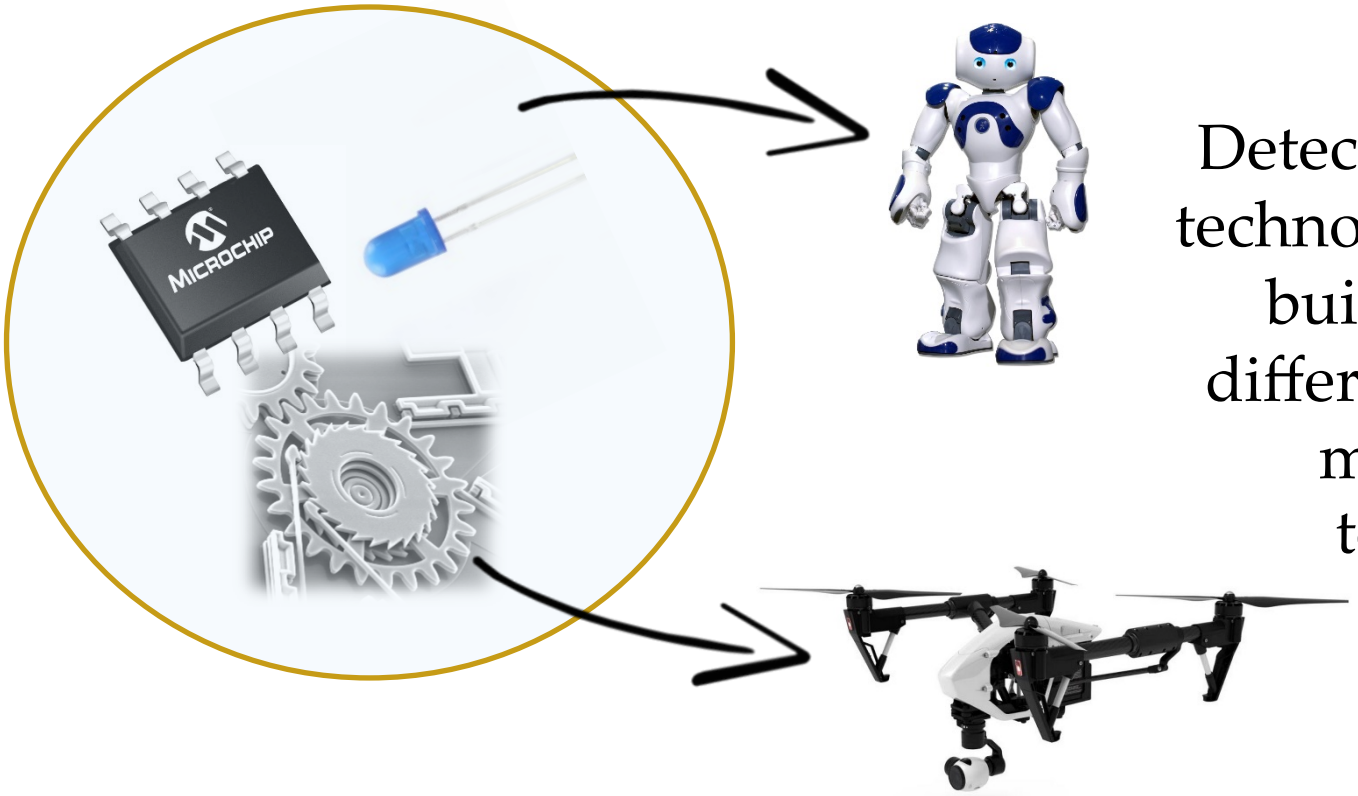
ATTRACT Focus: Detection and Imaging Technologies WHY?

- …are and will be fundamental for ourselves and our society.
- …are at the core of industrial competitiveness.
- …translate into direct economic and wealth value.



Source: Frost & Sullivan, Megatrends in Technology Convergence

Co-Innovation: combinatorial technology evolution



Detection and imaging technologies become the building blocks of different and evolving more complex technologies.

W. Brian Arthur, ***The Nature of Technology: What it is and How it Evolves,*** **Free Press, Simon & Schuster, August 2009.**

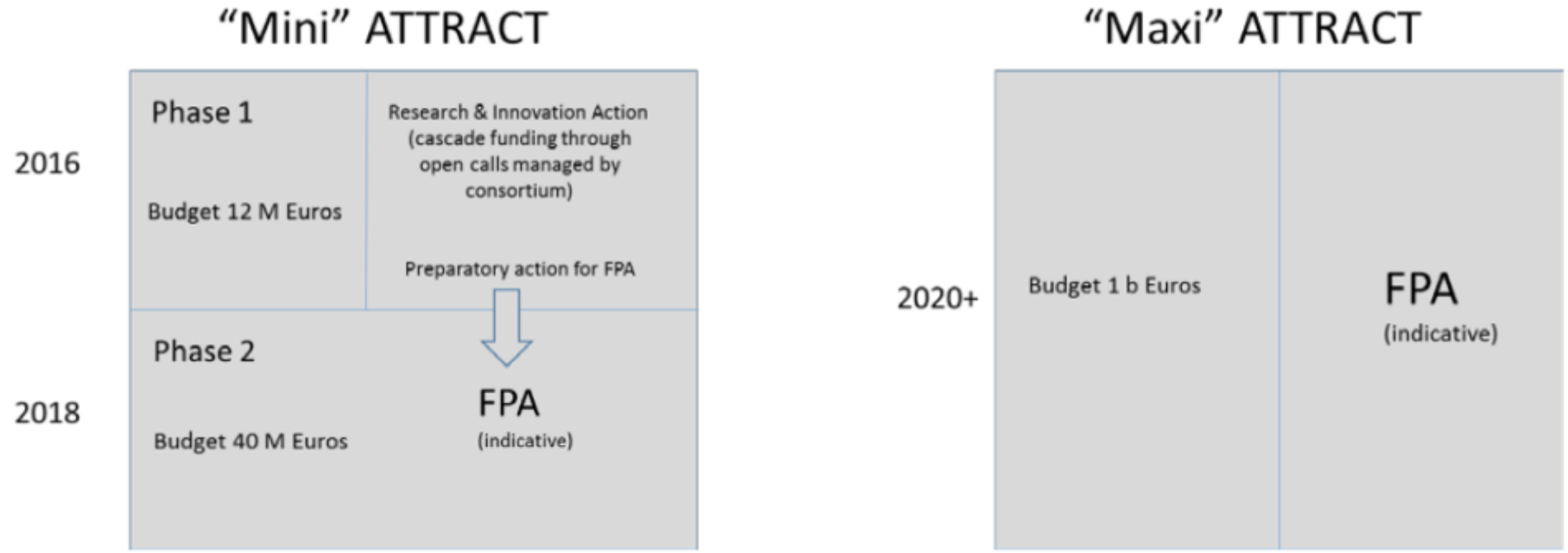
ATTRACT

Built on a consortium of ERIs & industrial partners interested and specialized in sensor and imaging technology

The consortium proposes to be mandated by EU in the framework of H2020 (initially) to:

- *Organize open calls*
- *Monitor and peer review their execution*
- *Promote a strong training program on innovation*
- *Develop evaluation tools for quantitative impact assessment*

ATTRACT : an evolutionary approach



FPA : EU Framework Partnership Agreements

The ’16-’17 H2020 Work Program

The EC-RTD has published its H2020 Work Programme for 2016 – 2017.
http://ec.europa.eu/rearch/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-infrastructures_en.pdf

It includes a call:
“Future Detection and Imaging Technologies” (INFRAINNOV-1-2017), which is up to 20 M Euros and with a deadline on 29/03/2017.

The description of this call is very much in line with the description and plans of ATTRACT (see the ATTRACT “White Paper” on the web site www.attract-eu.org).

We applied to it and we won the call (Aug. 2017)

ATTRACT

“Mini” ATTRACT : 2 phases

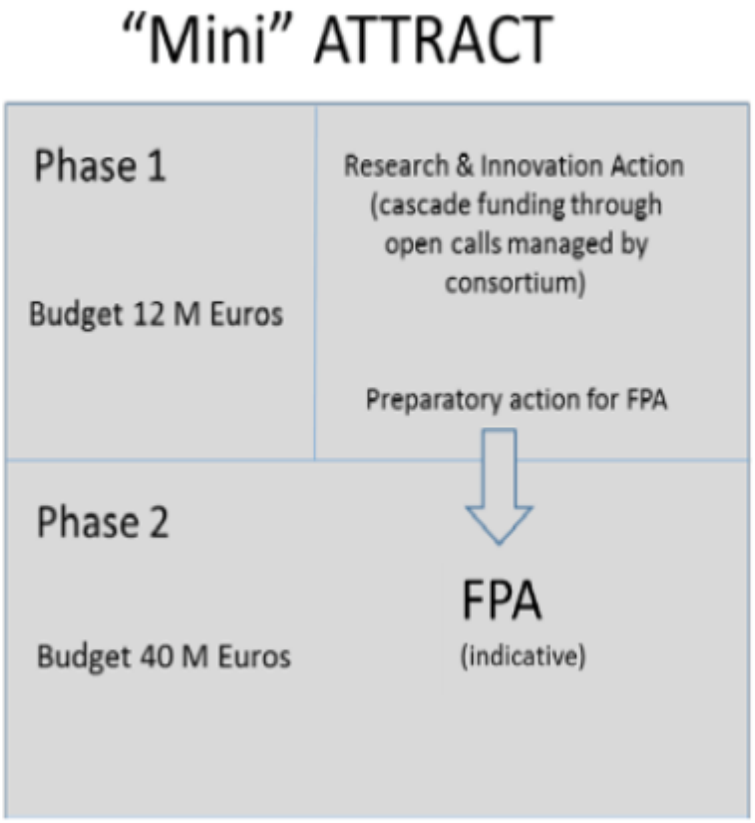
Select and finance ~200 potential breaking through proposals for a quick potential evaluation via an open call:

- feasibility demonstrators
- at least one SME and one ERI involved

2016

- Select and finance ~10 of the best Phase 1 selected projects:
- 3-4 years of execution
- monitor performances
- define an optimal model for “maxi” ATTRACT

2018



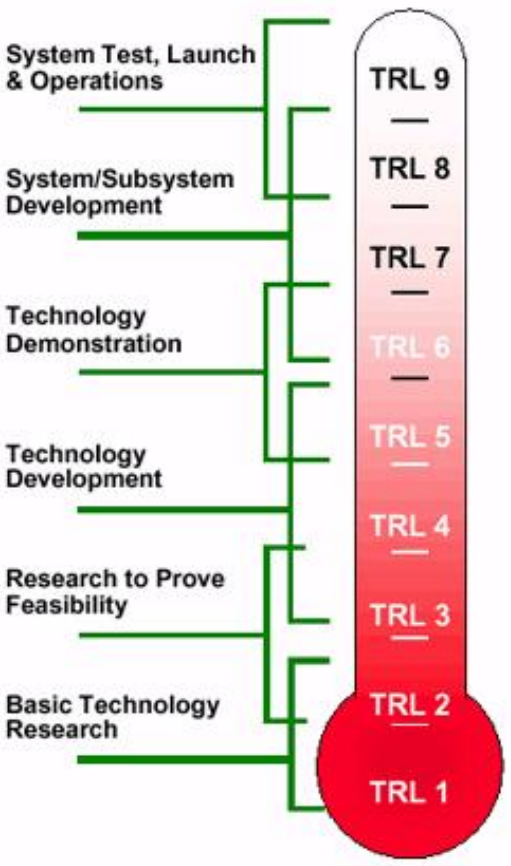
“Mini-ATTRACT” phases 1 and 2: targeted results

Phase 1

- A wide scope of technologies with breakthrough potential (TRL 2 to 4).
- Selection process based on industrial scalability and social added value.

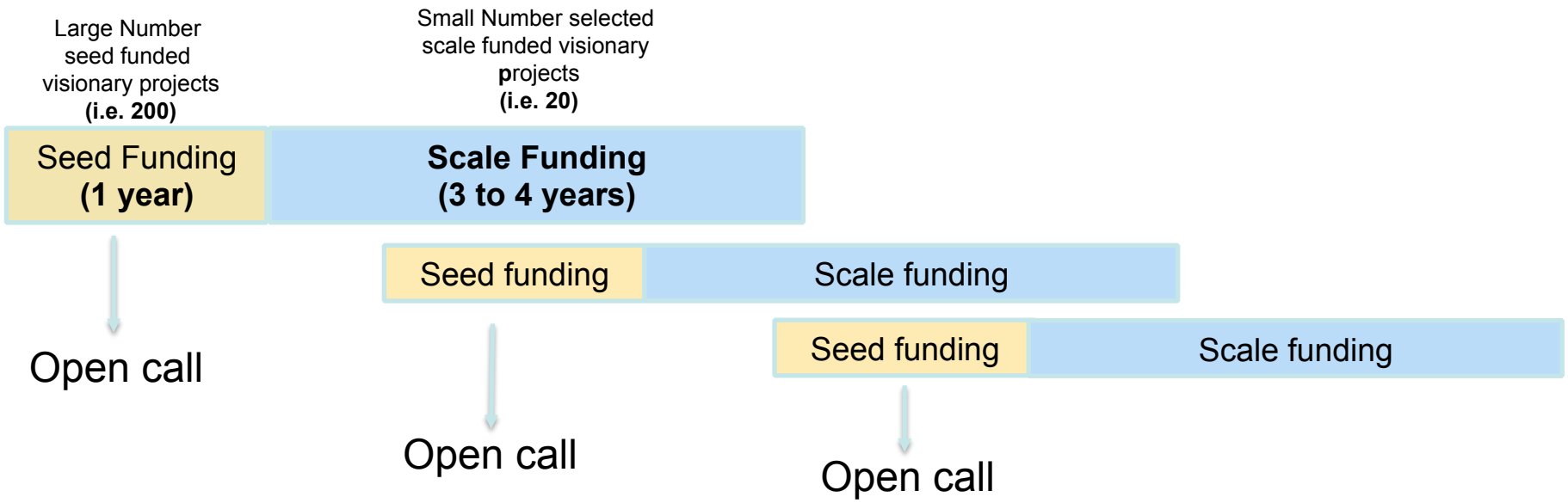
Phase 2

- Scalability of phase 1-selected technologies towards industrial deployment (TRL 5 to 9).
- Construction and establishment of a self-sustained initiative (“Maxi” ATTRACT).



ATTRACT

ATTRACT: How it might look like



"Mini" ATTRACT phases 1 and 2 represent a new funding instrument that will help Horizon 2020 to deliver innovation.

They are designed to streamline the value chain from the development of technologies towards their market application.

Furthermore, ATTRACT incorporates the fundamental value of co-innovation through collaboration and competition which is essential for exploiting the untapped potential of ERIs-SMEs-Large corporations.

Public funding is used for ramping-up the ATTRACT initiative, thereby generating trust between ERIs-SMEs and large firms.

Creating an ecosystem of trust

Technologies
from ATTRACT
projects (public funding)

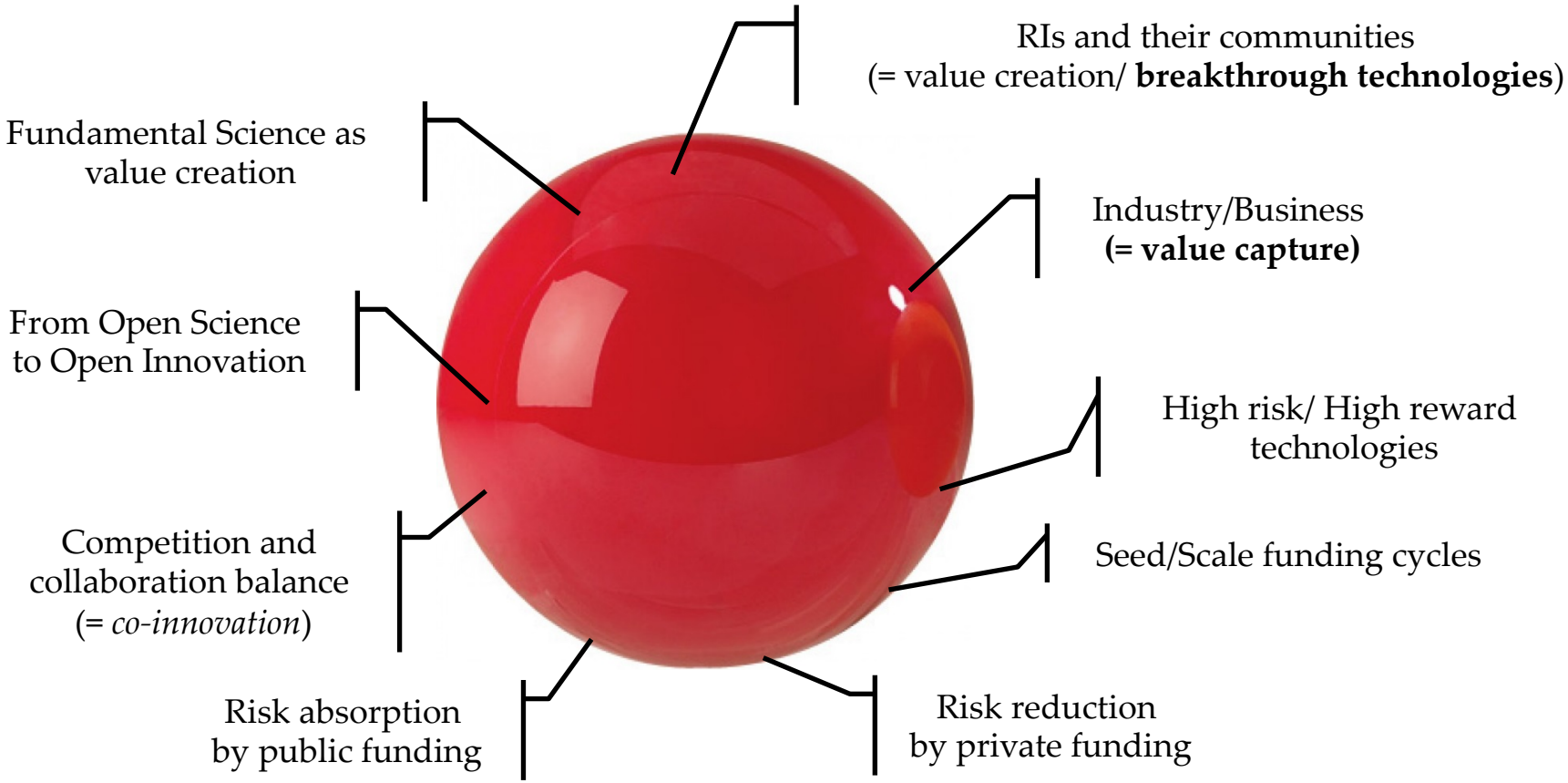
ATTRACT

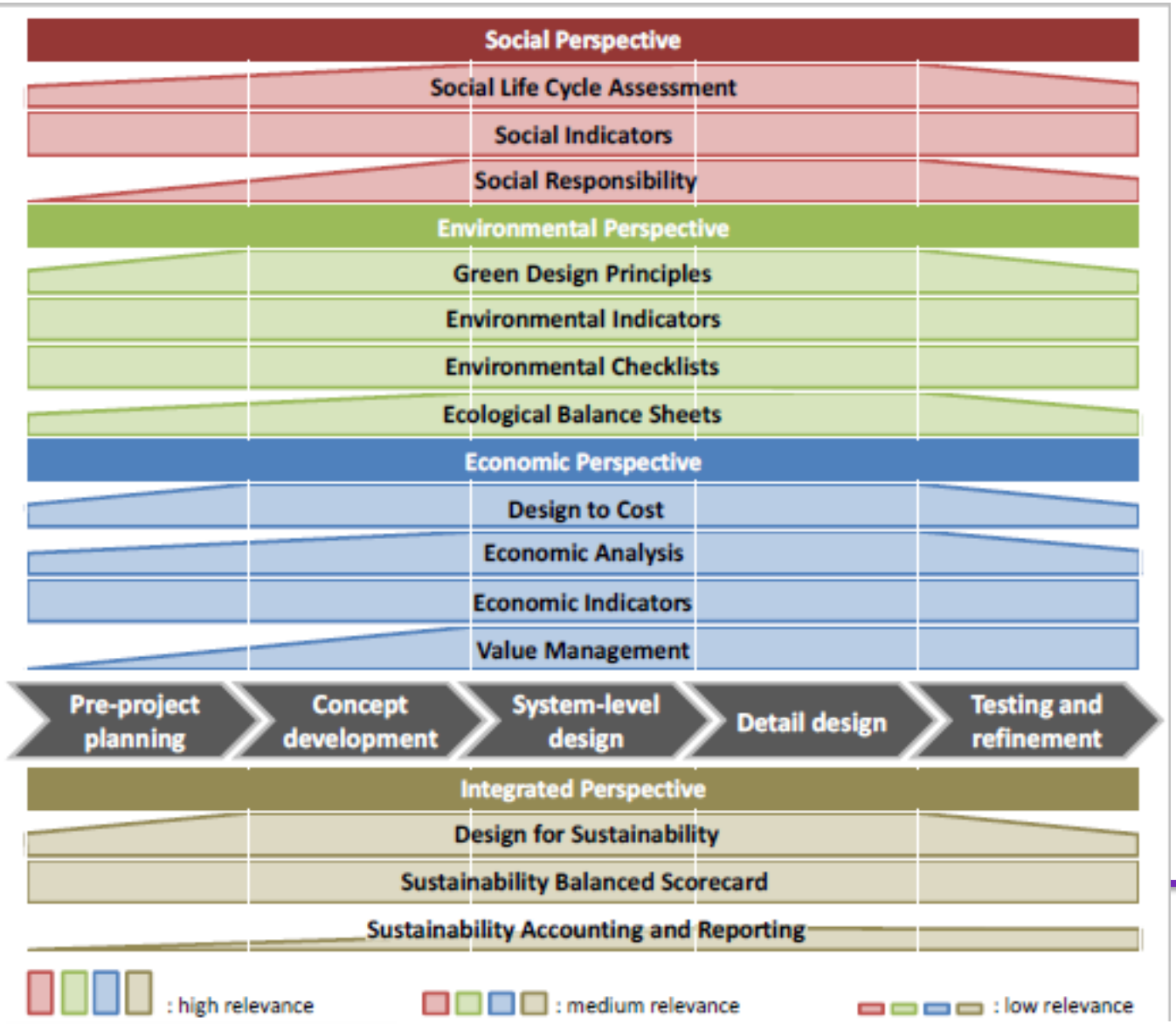
The “ATTRACT Store of Innovation” (iStore)

- Repository for ATTRACT-funded technologies.
- Loose IP governing regulation (i.e. open source regime).
- Available of course to the ATTRACT community but open to others, too…
- Whoever takes something…must give something back…
- “Free riders” are detected by the user community.
- Possibility to further develop “in-house” technologies outside the iStore and protect them.
- Open source platforms have demonstrated to be generators of new business opportunities.
- Aligned with the EC Policy of openness for public funding.
- Technologies constantly improved by the user community.

ATTRACT

We Leverage


RIs and their communities
(= value creation/ **breakthrough technologies**)
Fundamental Science as value creation
Industry/Business
(= value capture)
From Open Science to Open Innovation
High risk/ High reward technologies
Competition and collaboration balance
(= *co-innovation*)
Seed/Scale funding cycles
Risk absorption by public funding
Risk reduction by private funding



Picture from reference.

ATTRACT will also foster a design-driven perspective, which is essential for sustainable R&D.

Design-for-sustainability is key for an innovation process wanting to connect with Society (i.e. Social Life Cycle Assessment).

Schimpf, S. and Binzer, J. (2012), *Sustainable R&D: a conceptual approach for the allocation of sustainability methods and measures in the R&D process*. Proceedings of the R&D Management Conference, Grenoble, France, May 23-25, 2012

How to measure impact?

Is this “all there is”?

Some organizations start to question the GDP as an indicator to measure value.

New interesting propositions are on the table.

In ATTRACT we want to investigate possible links to apply those indicators.

http://www.oecdbetterlifeindex.org/

http://www.socialprogressimperative.org/


Thank you