Why ATTRACT?

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ATTRACT Project Administrative Office

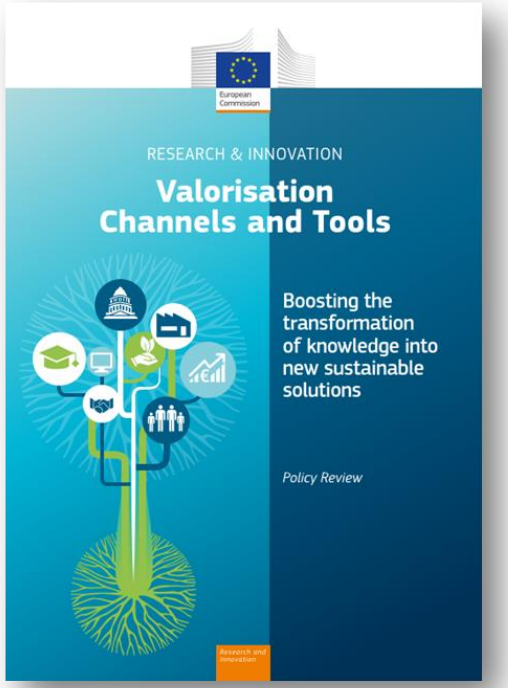
And our “impact in Brussels” and beyond?

6 February 2023

[ATTRACT was chosen as one of the most relevant projects supporting the New European Innovation Agenda]

Forbes [Example]

Big science, deep tech, and startups: how to fix this uncomfortable partnership?



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Systematizing serendipity for big science infrastructures: The ATTRACT project

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[CERN IdeaSquare highlighted on a pier basis with other innovations hubs outside Europe such as the Hitachi and the University of Tokyo Joint Research Laboratory.]

Why ATTRACT?

Is the potential of European Research Infrastructures as Innovation Engines fully exploited ?

- The European Commission defines Research Infrastructures (RI) as facilities providing resources and services for research communities to conduct research **and foster innovation***.
- Is it really the case? We mean, is the potential of RI with respect to boosting innovation fully utilized?
- This is the question that the ATTRACT Consortium, in a dialogue with the EC, posed before conceiving, designing and deploying the ATTRACT initiative.
- The answer seek was not related to the traditional role of considering RI as access facilities for industry.
- It had to do with how the technology generated for pushing the limits of Fundamental Science, which is the mission of RIs, could translate faster and more streamlined into industrial applications, new business and social wealth.
- And as well, how the communities behind RIs could benefit from industrial know-how (e.g. advanced and high scale manufacturing capacity) for pushing their research-driven mission.

* https://ec.europa.eu/info/research-and-innovation/strategy/european-research-infrastructures_en

ATTRACT as an answer to the question

A novel Ecosystem focusing on breakthrough detection and imaging technologies

The dialogue between the ATTRACT Consortium and the EC led to key insights*:

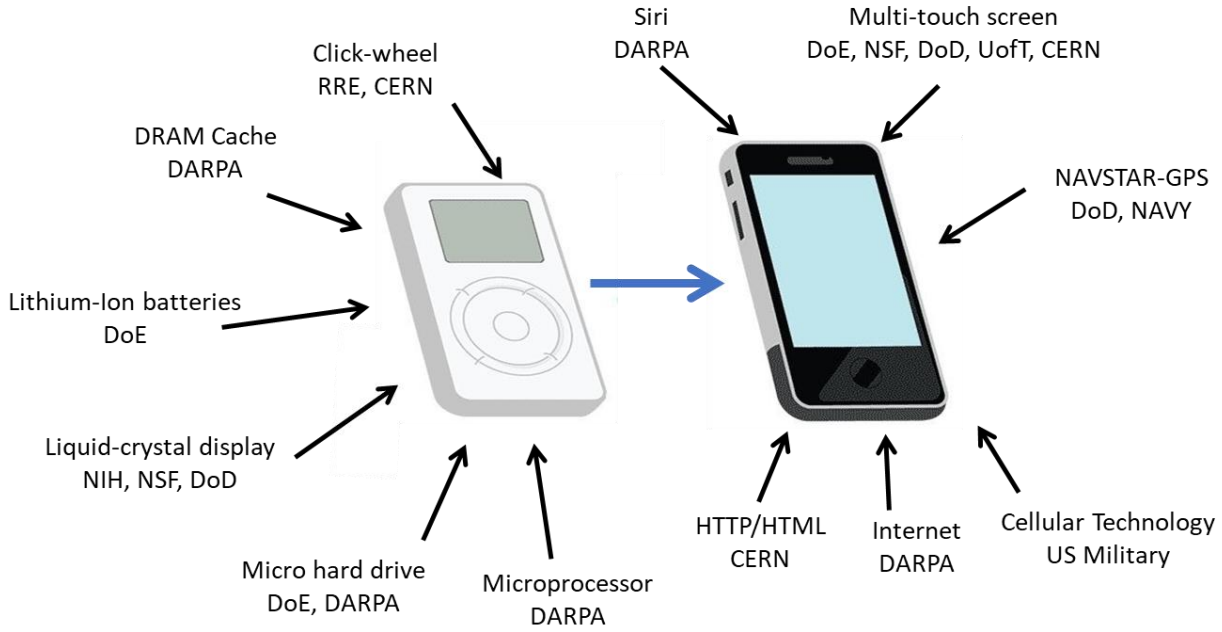
1. The innovation potential of European RIs is only partially exploited.
2. There is a clear need for identifying win-win R&D&I opportunities between the industrial communities and those behind RIs beyond the existing frameworks and practices.
3. A novel action framework was necessary for enabling those opportunities incorporating the paradigm of "Open Science, Open Innovation, Open to the World".
4. Such framework should be prone to be tested, by generating, gathering and analyzing data. Only then, it should be possible to corroborate its validity and consider a significant scaled-up deployment.

- Many of them have been reflected in the EC policy paper, *Sustainable Research Infrastructures,* *https://ec.europa.eu/info/sites/default/files/research_and_innovation/research_by_area/documents/swd-infrastructures_323-2017.pdf*

ATTRACT: Key pillars (1)

"Where does breakthrough Innovation come from?"

Public Funding: Key for helping nascent breakthrough technologies, many of them even at the conceptual level, mature for raising the interest of private capital .



DARPA: Defense Advance Research Project Agency
RRE: Royal Radar Establishment
CERN: European Organization for Nuclear Research
DoE: Department of Energy
NIH: National Institute of Health
NSF: National Science Foundation
DoD: Department of Defence
UofT: University of Toronto

ATTRACT: Key pillars (2)

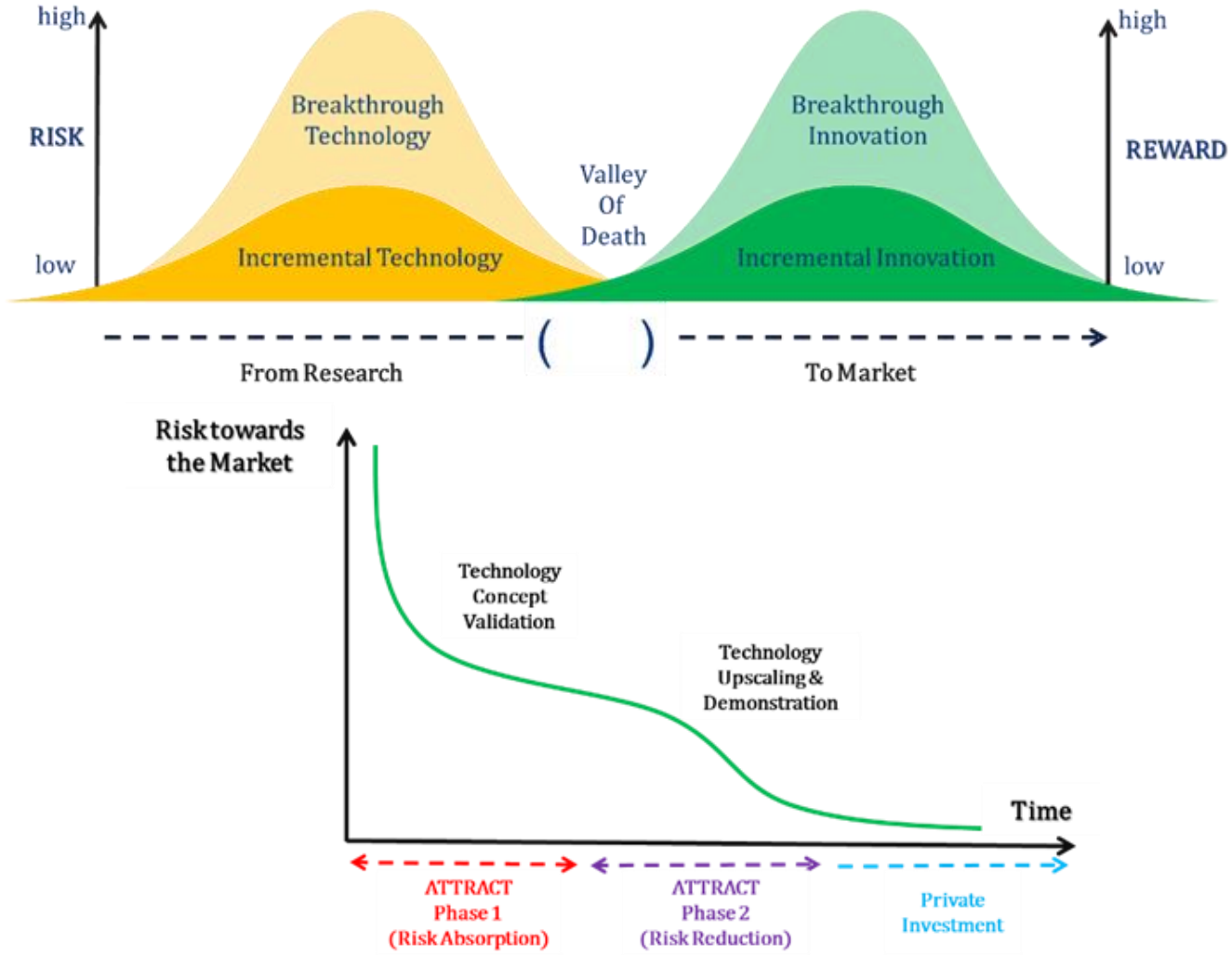
"Not two Valleys of Death look the same"

Phase approach to funding: Breakthrough Technologies (coming from Fundamental Research) are very risky to invest upon for private capital.

De-risking them needs public funding:

First, a **risk-absorption stage**, where ideas and concepts could reach a prototype level and technology concept validation.

Second, a **risk-mitigation stage**, where the most promising concepts are further helped raising towards a pre-market product.

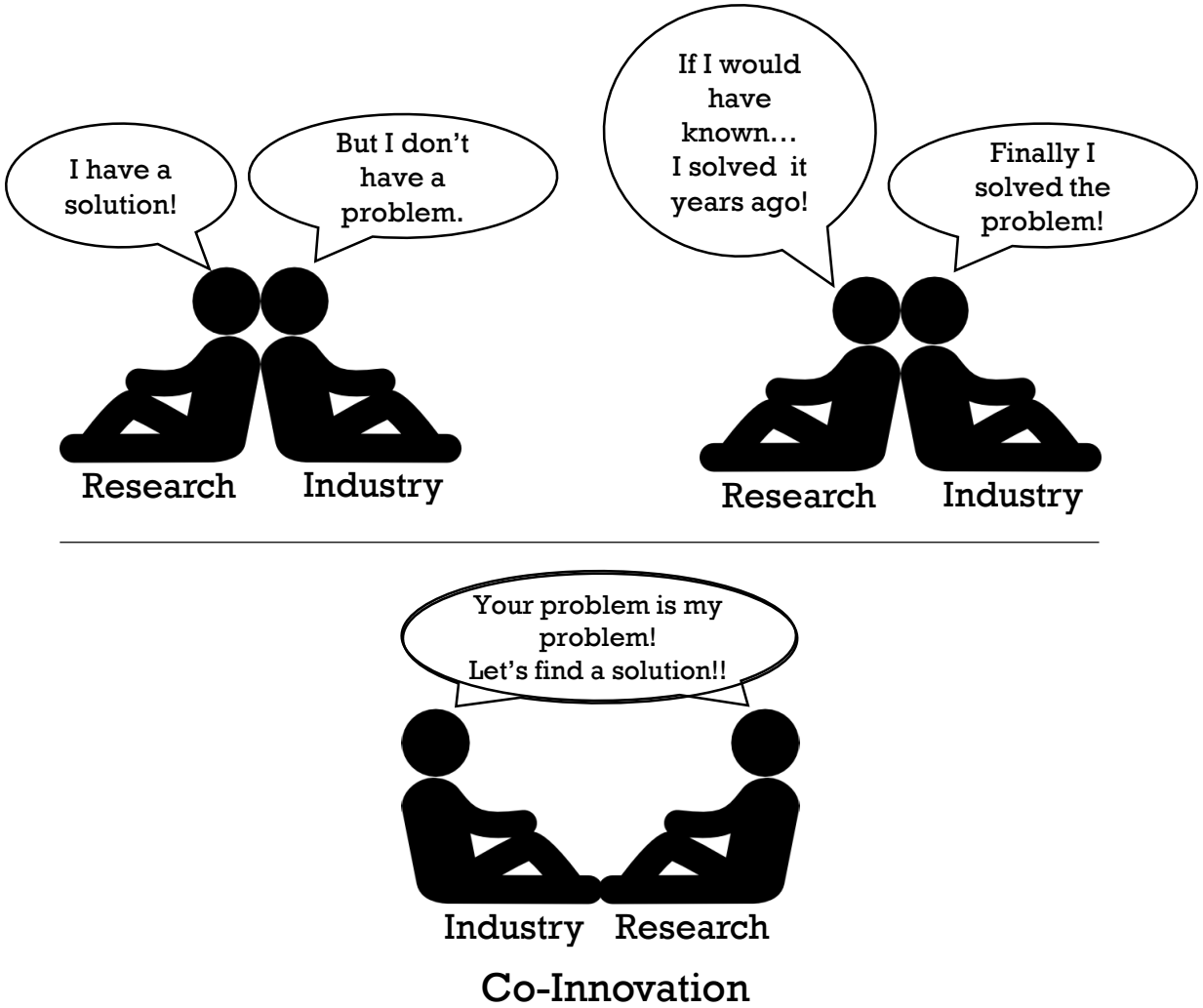


ATTRACT: Key pillars (3)

"Trust and shared know-how is not built in one day"

Co-Innovation:

- Bridge between two communities (research and industry) that in principle have different motivations and goals for undertaking R&D&I (capital and/or resource intensive) efforts .
- Entails the identification and collaboratively pursuing of win-win outcomes, starting already at the conceptual stages of a technology development and enduring them until the later stages of the innovation value chain (e.g. commercialization).
- Departs from research-industry relationships established as simply customer-supplier ones.



ATTRACT: Key pillars (4)

"Young people want to change the world"

Young Innovators Projects:

- ATTRACT is facilitating the integration of interdisciplinary MSc level students tems working side by side with professional researchers from academia and industry developing the R&D&I funded projects.

- These Young Innovators' goal is prototyping technology solutions specifically addressing the United Nations Sustainable Development Goals,

- They use a Design Thinking approach inspired by the technology developed by the projects.

ATTRACT: Why Detection and Imaging?

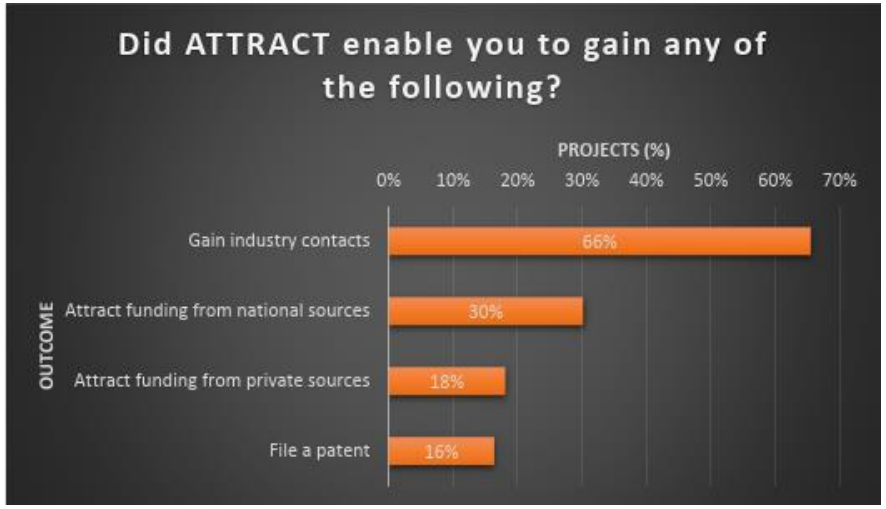
Are you able to point a field in the picture with nothing to do with Detection and Imaging?

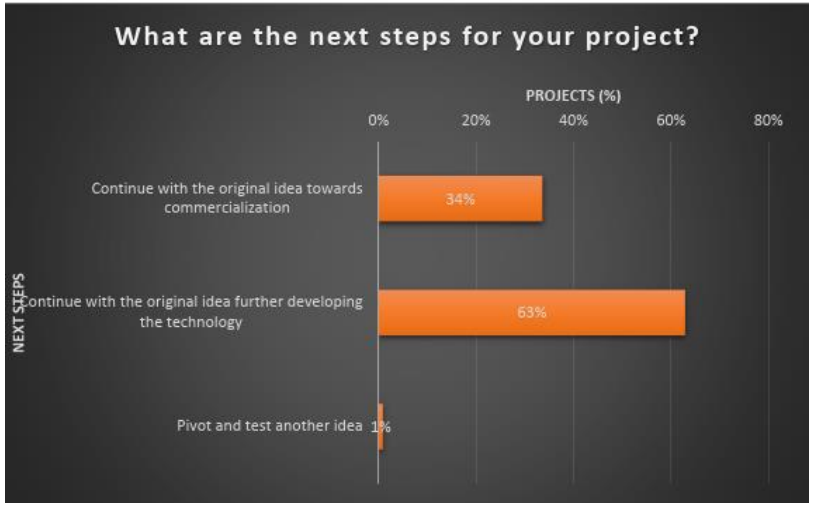
- The scientific mission of European RIs as well as their R&D associated communities is strongly coupled with detection and imaging technology instrumentation (including computing).

- Detection and Imaging technologies are and will be at the core of future industrial developments applications and business (e.g. IoT, Smart Cities, Autonomous Transport, Sustainable Agriculture, etc).

ATTRACT: Some figures of merit (1)

"How are we doing even just after Phase 1?"





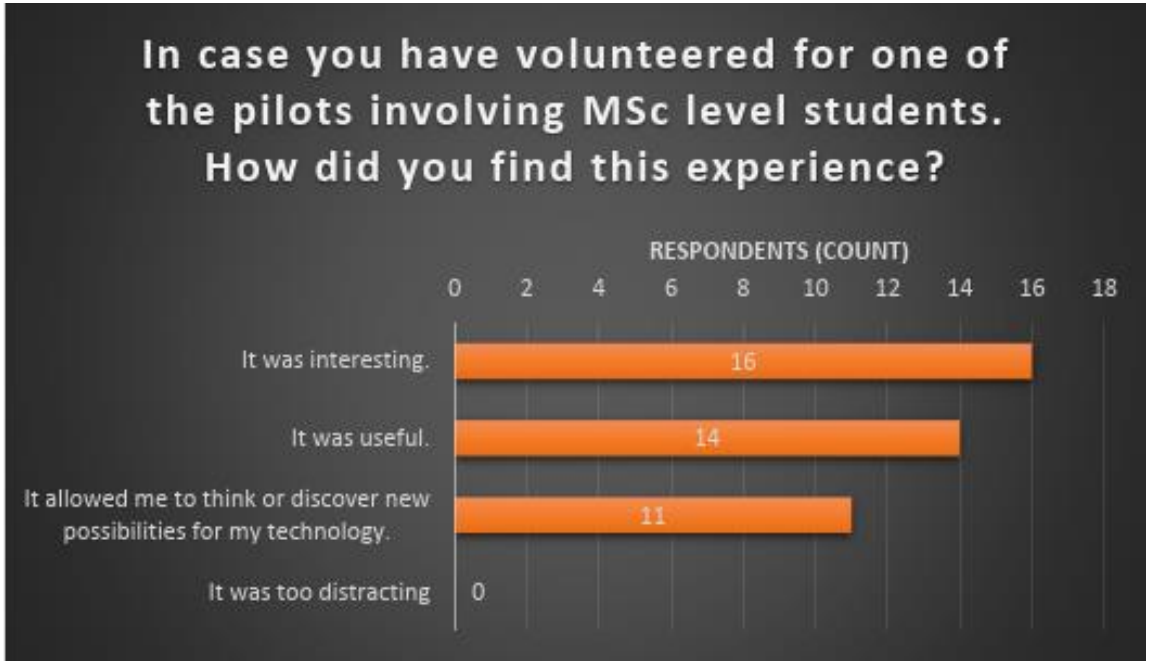
Even at low TRL, 18% of the funded projects got private investment.

30% of the project got additional National Funding.

34% of the project will go towards commercialization.

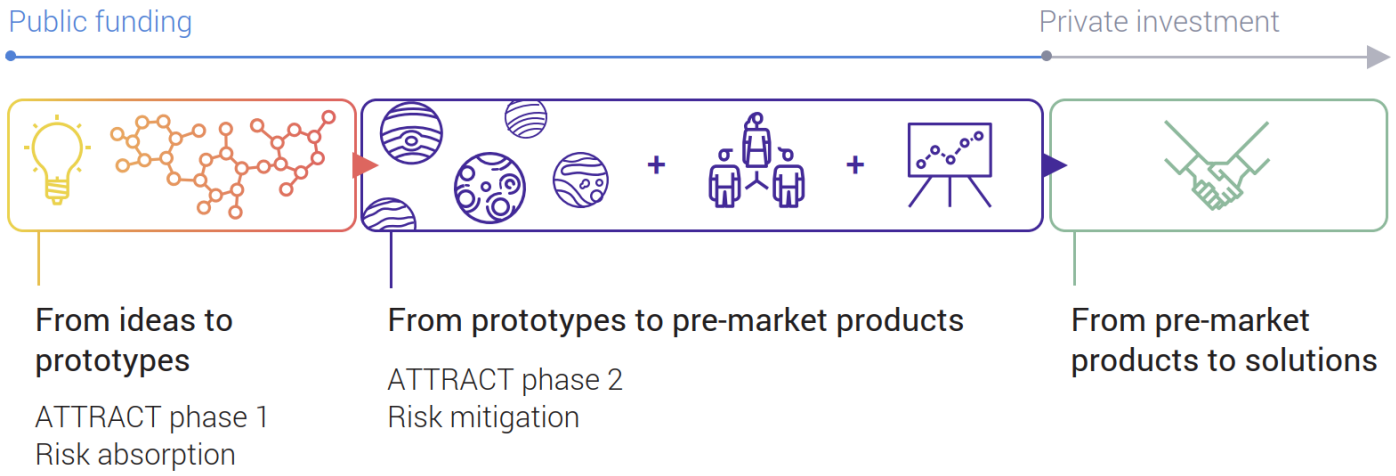
ATTRACT: Some figures of merit (2)

"How are we doing even just after Phase 1?"



11 projects discovered new potential applications of their technology proposed by the interdisciplinary MSc student teams.

ATTRACT Phase 2



De-risking them requires two public funding stages:

1. **Risk absorption**: Ideas and concepts reach a prototype level.
2. **Risk mitigation**: The most promising ones are leveraged towards a pre-market product.

- 18 R&D&I projects funded coming from Phase 1 for achieving TRL 7.
- Upscaling of the involvement of young innovators with the ATTRACT Academy.
- A foresight socio-economic study about the impact of ATTRACT started.

ATTRACT: Video Summary

https://youtu.be/tfFIjlk5wb0

ATTRACT Phase 3 foreseen open call

- The existing paradigm for Earth monitoring is still largely based on networks of sparse measurement stations and/or in situ human-operated measurements systems.

- This technology paradigm is highly unsuitable for providing data and information matching the continuous spatiotemporal and heterogeneous dynamics of the Earth as a global system and understanding its causes and related phenomena.

ATTRACT Phase 3 foreseen open call (TRL 3)

- Novel and breakthrough detection and imaging technologies are sought, capable of collecting data (physical, chemical, biological, etc, characteristics) with high specificity and extreme sensitivity (orders of magnitude beyond those being the state of the art) while offering high spatial and temporal resolution and massive parallelism.
- Proposed technologies should be suitable for seamless integration into pervasive, low-cost and low-power ICT systems (e.g. portable, wearable, IoT, etc).

ATTRACT Phase 3 foreseen open call

Examples of Challenges

- Availability and sustainable management of food and water resources.
- Sustainable consumption and production patterns.
- Combatting climate change and its associated impacts.
- Sustainable use of the oceans, seas, rivers and other natural water resources and preservation of their (bio)-diversity.
- Sustainable use and preservation of terrestrial ecosystems and their (bio)-diversity.

ATTRACT Phase 3 foreseen open call

Could we turn every citizen into a data gathering agent for contributing to the sustainability of Planet Earth?

Thanks!

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