

The background is a dark blue, abstract composition of numerous thin, glowing light trails that radiate from a central point, creating a sense of depth and movement. In the upper right quadrant, there is a larger, more complex structure that resembles a particle detector or a complex network of connections, with a central glowing sphere and various internal components. The overall aesthetic is futuristic and scientific.

# European Research Infrastructures: Challenges and Opportunities

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CERN

# The Framework

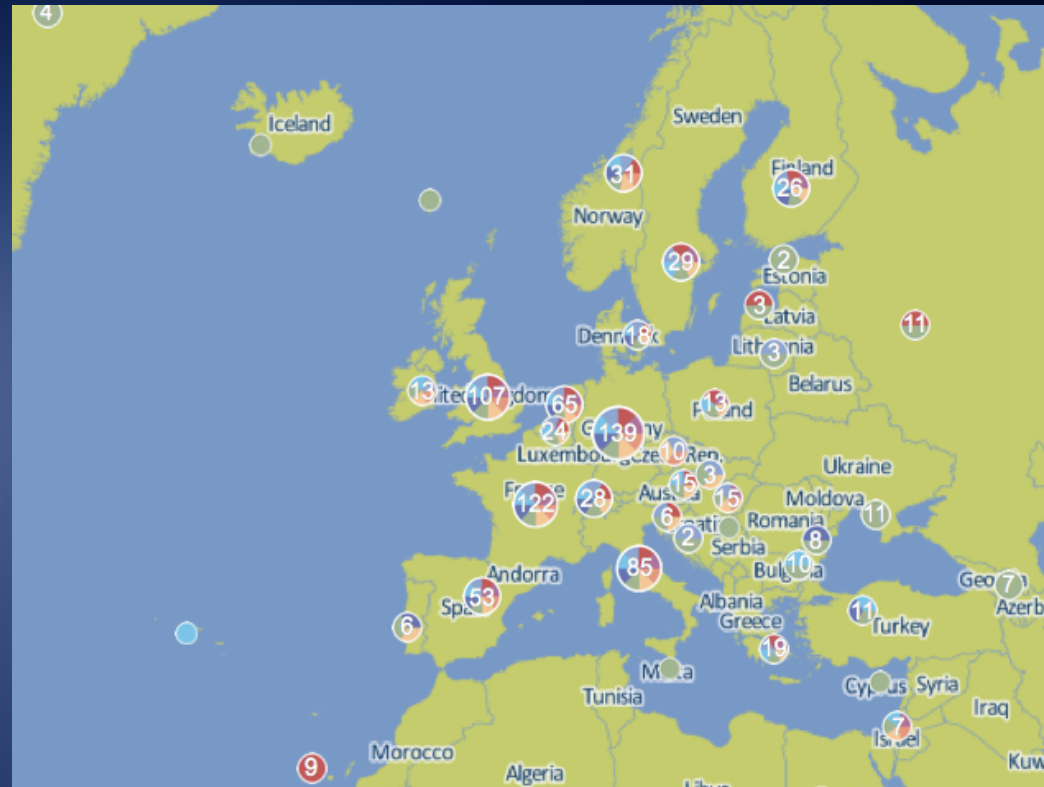
Global competition on Knowledge is one of the key elements emerged from globalization, with new powerful actors coming on the stage.

Questions:

- Does Europe have a common understanding of the urgency of this quest?
- Does Europe have a common strategy on the issue?
- Are we ready to re-discuss the priority of Knowledge in the Member States political agendas?

# 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?



# European Research Infrastructures are key because...

- They deal with ambitious, scientific challenges that are order-of-magnitude harder than what e.g. industry can address. This is why their impact is disruptive
- They are project driven, they design, build and operate extreme instrumentation, e.g.
  - Complex detectors
  - Sophisticated analysis software
  - High volume data processing capabilities etc.
- They DO things, they CONNECT new things together in new ways
- They are good at creating options (new solutions, technologies with potential)
- They work in a collaborative manner and can handle complex tasks (cross-management of different technologies); they know how to handle ambiguity

# European Research Infrastructures are key because...

- They have the culture of permanent evaluation
- They know how to make good use of industry capabilities and can push their abilities further
- They are very international and pool together dedicated resources from the research communities
- They can be competitive – while collaborating. They can do both
- They think long-term and take care of the next generation of scientists and put a lot of effort in training/education programs.

## New and old ERI's

As the new state-of-the-art RIs are coming into operation,  
Shall older facilities be phased out?

Cost/benefit analysis missing on the European scale

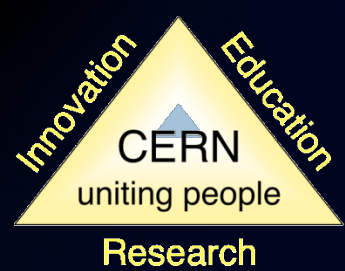
Not a simple question, likely to require a case by case answer.

A good task for the imminent roadmapping exercise of ESFRI,  
which should be preceded, as a prerequisite, by a thorough  
national assessment of the respective RIs.

# Recuperating the vision

RIs have played a historical role in the construction of the EU: the visionary idea of the Founding Fathers to create an ecosystem for Knowledge, co-owned by the European citizens, has been proven visionary and has resulted in a number of success stories.

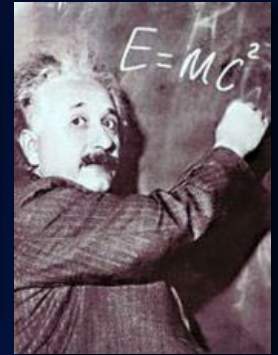
The process is not complete: in order to establish a sustainable ERA, it is necessary to incorporate the national RIs into a coherent scheme, by devolving local policies to a common strategy.



# One Example: CERN

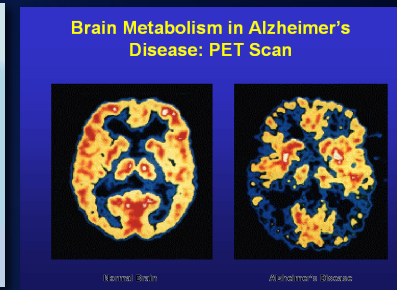
- **Push back** the frontiers of knowledge

E.g. the secrets of the Big Bang ...what was the matter like within the first moments of the Universe's existence?

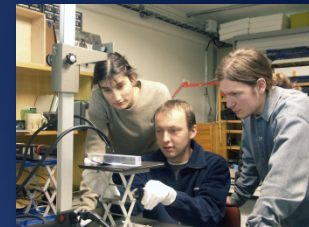


- **Develop** new technologies for accelerators and detectors

Information technology - the Web and the GRID  
Medicine - diagnosis and therapy



- **Train** scientists and engineers of tomorrow



- **Unite** people from different countries and cultures





# So What To Do with ERIs?

- Encourage the scientific communities to make better use of different ERIs (global, pan European, national) to **collaborate and compete.**
- Implement new and more integrated governance schemes, aimed to grant continuity and sustainability, while increasing networking and synergies among ERIs.
- Reinforce the culture of permanent evaluation.
- Establish the conditions to connect **Open Science to Open Innovation** – make it easy for industry to access ERIs and make use of them, **without compromising their research mission**

# So What To Do with ERIs?

- Engage the next generation of scientists and entrepreneurs by mixing cross-disciplinary student teams and experienced researchers
- Create a dedicated program in H2020 that is science-driven but integrates industry and education in a sustainable way.
- Create a strong and coherent frame to develop, distribute and stabilize **strategic ICT tools**, to be used across the boundaries of sciences, to allow Europe to respond to the Big Data Challenge.
- Implement an European wide scheme to encourage mobility, capable to overcome the winner/loser paradigm.

## In conclusion

- The race for knowledge has reached a global dimension, which is redesigning the world map
- Europe needs to rise to the challenge with a common strategy
- Research infrastructures are a privileged ground to implement visionary policies

Let's not miss the opportunity

THANK YOU!