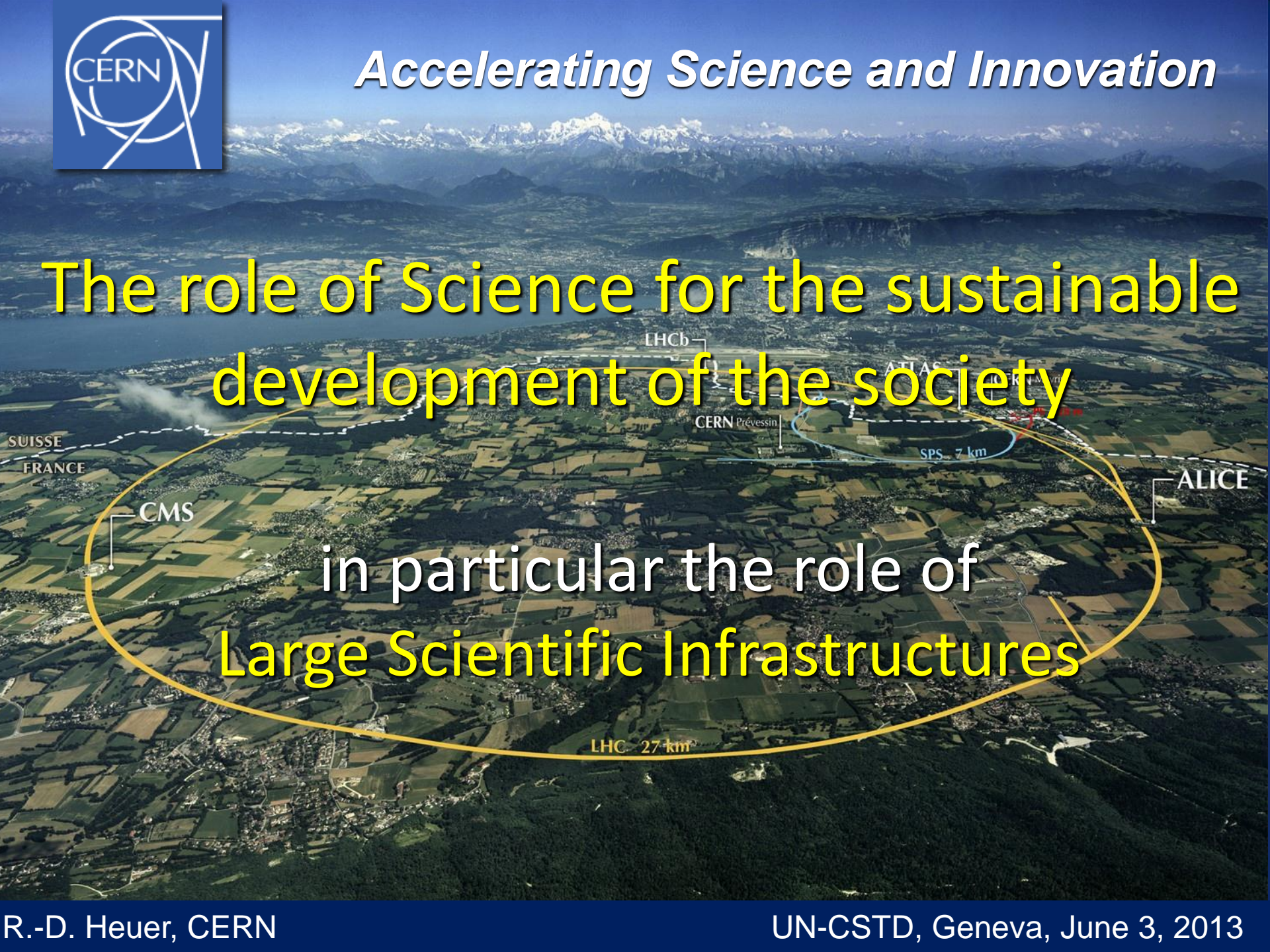




# *Accelerating Science and Innovation*

The role of Science for the sustainable development of the society

in particular the role of  
Large Scientific Infrastructures



# Key Message

In today's challenging period, all regions need to step up support for research and innovation in order to ensure, in a global competitive environment, the sustainable development of science and technology necessary for the upturn and growth of everybody's economy.

## Research Infrastructures (RIs)

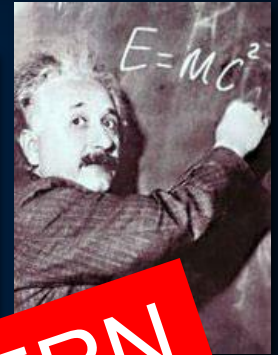
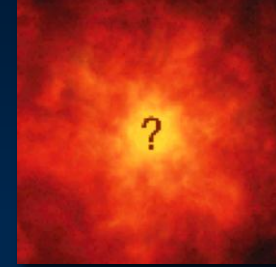
are important 'tools' for this

are vital for large scale projects

# Mission of Research Infrastructures

## ❑ **Research**

Push forward the frontiers of knowledge



## ❑ **Innovation**

Develop new, cutting-edge technologies



Excellent example: CERN

## ❑ **Education**

Train scientists and engineers of tomorrow



## ❑ **Outreach**

Promote Science in Society



# Research

generates **Knowledge**

generates **Innovation**

can generate **Disruptive Innovation**

thereby changing society

Example from CERN:

**World Wide Web**

# The Virtuous Circle

basic research  $\leftrightarrow$  innovation  $\leftrightarrow$  applied research

- Synergy between research and innovation results not only in societal and economic impact but also, and very importantly, in the creation of enhanced opportunities for further developments.
- This circle needs to remain strong, to be unbroken and to be supported over long term.

# Excellence

- Objective - strive for excellence
  - Aspects of excellence
    - In individuals, co-operation, infrastructure (including intellectual challenges);
    - National - Regional - International.
  - Excellence is not (necessarily) 'being unique';  
Competition promotes excellence.
  - Excellence will be attractive and inspiring to all region's research and innovation communities  
**and to society at large.**

# Cooperation

- **International scientific cooperation** is vital  
→ CERN: European Infrastructure, globally used
- **International scientific cooperation** is vital  
for all countries: developed, emerging and developing  
**scientific research needs to be open to everybody**
- **International scientific cooperation**  
provides successful models  
for useful cooperation

Science is a universal language



# Large-scale Science Projects

## ➤ Address

- fundamental science questions

at the forefront of research and technology

## ➤ Need

- large and sustained infrastructures
- global collaboration on long time scales

## ➤ Provide

- unique equipment
- challenging requests for high technology and innovation
- stimulating ideas which in turn attract good people
- occasion to bring people together



# Sociology

## Large International Collaborations

- a place where people learn to work together
- collaboration and competition
- diversity: good opportunity to learn from differences, accept them and learn to work with them
- influence the way we think, planning at general level
- information: role of computing in international collaboration and communication
- experience can be used by individuals and in other fields

**Knowledge transfer through people**

- management through 'common goals'
- management by 'convincing partners'

# Key Issue: Outreach

- All countries need more scientists, engineers, staff, . . .
- targeted outreach activities
- encourage interest in careers in science
- Society needs to realize and appreciate science
- bring innovative science and exciting results (achieved at RIs), and their application to societal challenges, to the notice of society
- need more imaginative and ambitious outreach activities

# Key Issue: Access to Results

- circulation of scientific knowledge needs to be improved
- huge, strongly increasing amount of data and information
- data preservation
- open access to scientific publications
- open access to data

Everybody, independent of region, country, culture  
has to be able

to access scientific results

but also

to make his/her available to everybody else

# Key Message

Governments and decision-makers should not cut on scientific research, as this would reduce the perspectives of growth for the society, and for the welfare of its citizens.

# The role of Large Scientific Infrastructures:

– innovate, discover, publish, share



... and bring the world together