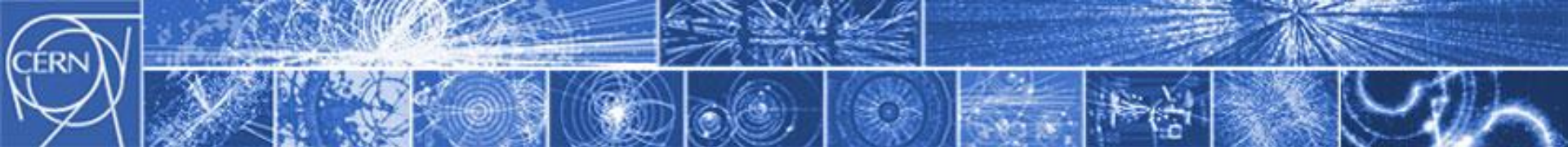


# CERN Report (II)

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Rolf-Dieter Heuer  
ECFA Meeting  
Frascati  
1 July 2010



# Scientific Strategy

- Full exploitation of LHC physics potential
  - Reliable operation (including consolidation and LINAC 4)
  - Remove bottlenecks to benefit from nominal luminosity for both machine and detectors
  - Focused R&D and prototyping for High-Luminosity LHC
  - Re-establish standards for technical and general infrastructure
- Preparation for the long-term future (>2015)
  - Energy frontier
    - CLIC/ILC collaboration and R&D (for detectors and machine)
    - Generic R&D for High-Energy LHC (i.e. high field magnets)
  - R&D for high-power proton sources (HP-SPL) e.g for  $\nu$ -physics
- World-class fixed-target physics programme

# LHC Strategy (I)

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## Full exploitation of the LHC physics potential

→ maximize integrated luminosity useful for physics

- Longer running periods (~ two years)
- Longer shutdowns in between, coordinated activities between experiments and experiments/machine
- Physics Run 2010/11 @ 7 TeV
- decide about slightly higher energy later in the run
- Shutdown 2012 to prepare LHC towards 14 TeV (copper stabilizer consolidation, He-release valves, . . .)
- Physics Run 2013/14 @ ~ 14 TeV

# LHC Strategy (II)

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**Full exploitation of the LHC physics potential  
→ maximize integrated luminosity useful for  
physics**

- LHC operation until around 2030, aim at  $\int L dt \approx 3000/\text{fb}$
- Between 2010 and ~2020: **~design luminosity ( $\sim 10^{34}/\text{cm}^2/\text{s}$ )**  
connection of LINAC4 earliest 2015  
detector modifications to optimize data collection
- **High Luminosity LHC (HL-LHC)** from ~2020 to ~2030  
luminosity around  $5 \times 10^{34}/\text{cm}^2/\text{s}$ , luminosity leveling  
new Inner Triplet around 2020 (combine both phases)  
detector upgrades around 2020 → R&D NOW

# LHC fills lecture halls because it...



- addresses fundamental science questions
- stimulates general interest
- fascinates and inspires
- stimulates fantasy
- increases knowledge
- educates
- trains scientists and engineers for tomorrow
- drives innovation and technology
- and, and, and

→ use this interest to promote  
our field and basic science in general



# *Universe of Particles* – the new permanent CERN exhibition



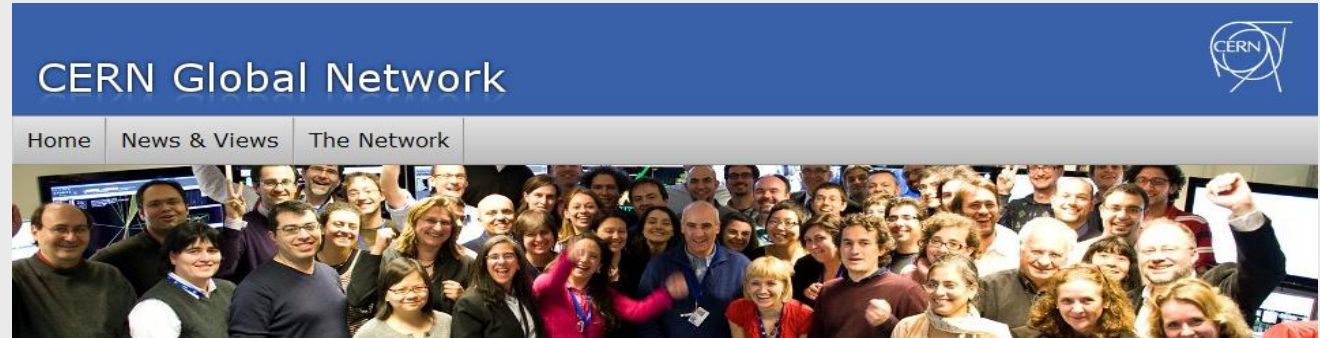
From 1 July 2010 - Immersive and interactive  
Open daily (except Sunday) from 10:00-17:00  
Start and end point of CERN visits  
New exhibition will attract (even) more visitors  
**GUIDES (“EXPLAINERS”) ARE NEEDED!**



# CERN Global Network

A facilitator  
for knowledge  
exchange

- ❑ Dedicated web site



Visibility for partnership opportunities across the Network

- ❑ Member database

Professional networking for CERN “Alumni”

Useful data on researcher’s mobility and career evolution in Europe

Discussion fora for special interest groups

- ❑ Interactions between individual and institutional members

Exchange of best practices between institutions in specific thematic areas

# Knowledge Transfer through Procurement

Results from a survey of companies involved in technology-intensive procurement contracts with CERN (1997-2001).

178 questionnaires analyzed, related to 503 MCHF procurement budget.

## Results:

- 44% indicated technological learning
- 42% increased their international exposure
- 38% developed new products
- 36% indicated market learning
- 13% started new R&D teams
- 52% would have had poorer sales performance without CERN
- 41% would have had poorer technological performance



# Opening the door...

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- Council opened the door to greater integration in particle physics when it recently unanimously adopted the recommendations to examine the role of CERN in the light of increasing globalization in particle physics.
  - *Particle physics is becoming increasingly integrated at the global level.*
  - *Council's decision contributes to creating the conditions that will enable CERN to play a full role in any future facility wherever in the world it might be.*
- The key points agreed by Council include:
  - *All states shall be eligible for Membership, irrespective of their geographical location;*
  - *A new Associate Membership status is to be introduced to allow non-Member States to establish or intensify their institutional links with CERN;*
  - *Associate Membership shall also serve as the obligatory pre-stage to Membership.*
- Applications for Membership from Cyprus, Israel, Serbia, Slovenia and Turkey have already been received by the CERN Council, and are undergoing technical verification.
- *"This is a milestone in CERN's history and a giant leap for particle physics", said Michel Spiro, President of the CERN Council. "It recognizes the increasing globalization of the field, and the important role played by CERN on the world stage."*