# How Many Marriages Last 10 Years? A tale of Industrial Relations for Accelerator and Experiment Controls at CERN

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# CERN openlab in a nutshell

- A science – industry partnership to drive R&D and innovation

- Started in 2002, now in 10th year

- Evaluates state-of-the-art technologies in a very complex environment and improves them

- Test in a research environment today what will be used in industry tomorrow
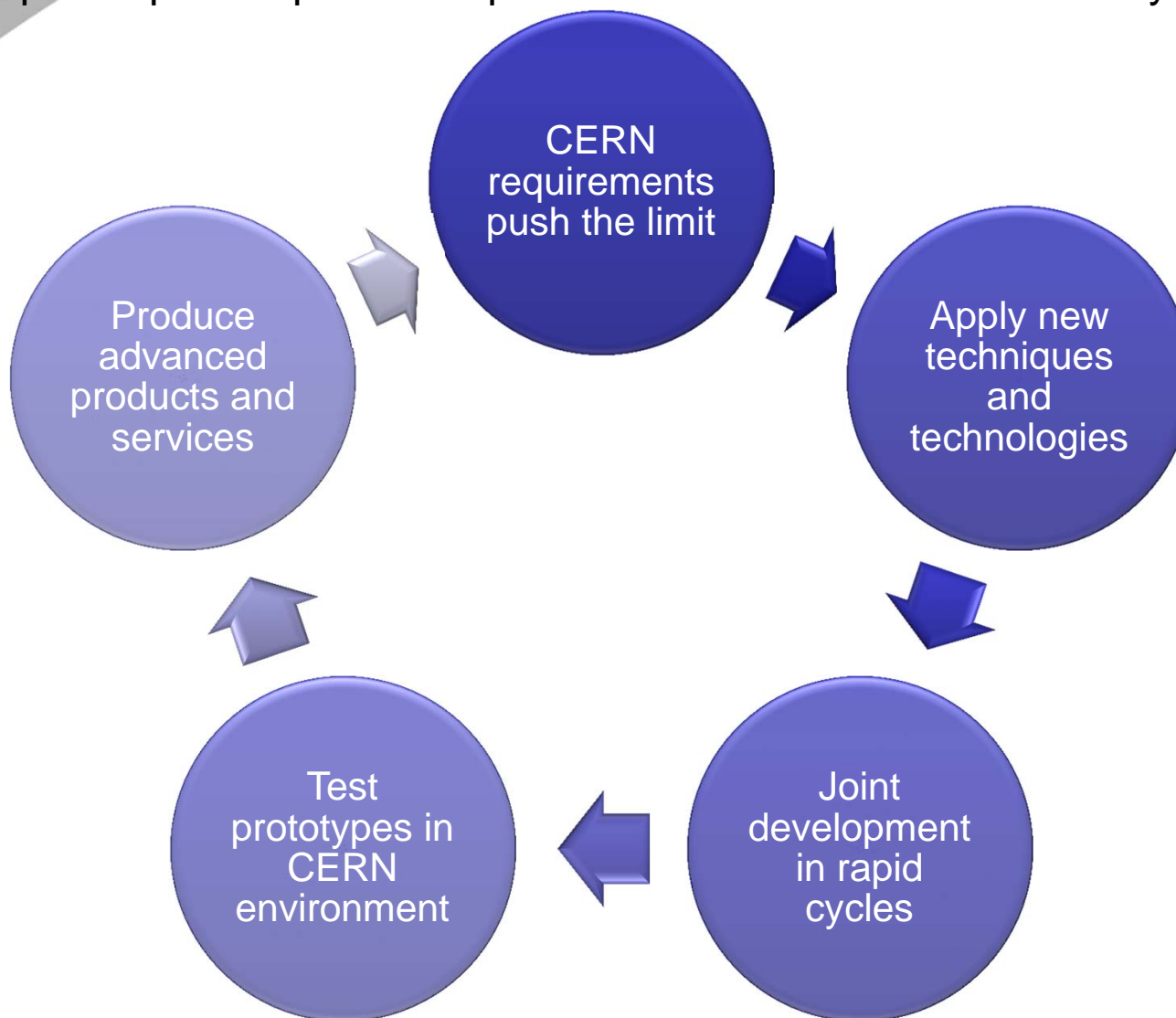
- Training, Dissemination and Outreach

PARTNERS

CONTRIBUTOR (2012)

# Virtuous Cycle

A public-private partnership between the research community and industry



- CERN requirements push the limit
- Apply new techniques and technologies
- Joint development in rapid cycles
- Test prototypes in CERN environment
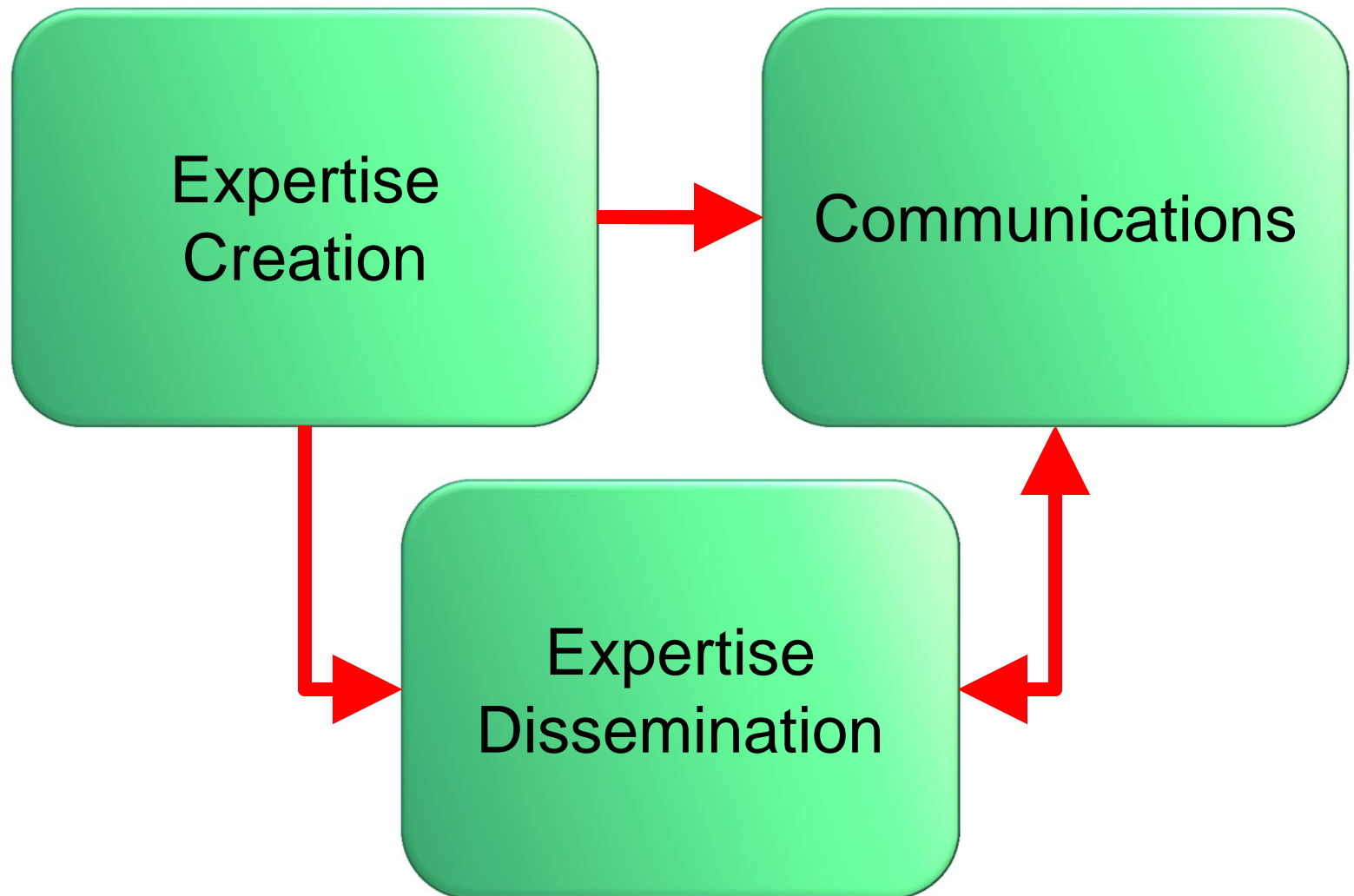- Produce advanced products and services

- **From Partners / Contributors**
  - Mix of
    - in cash for hiring young personnel
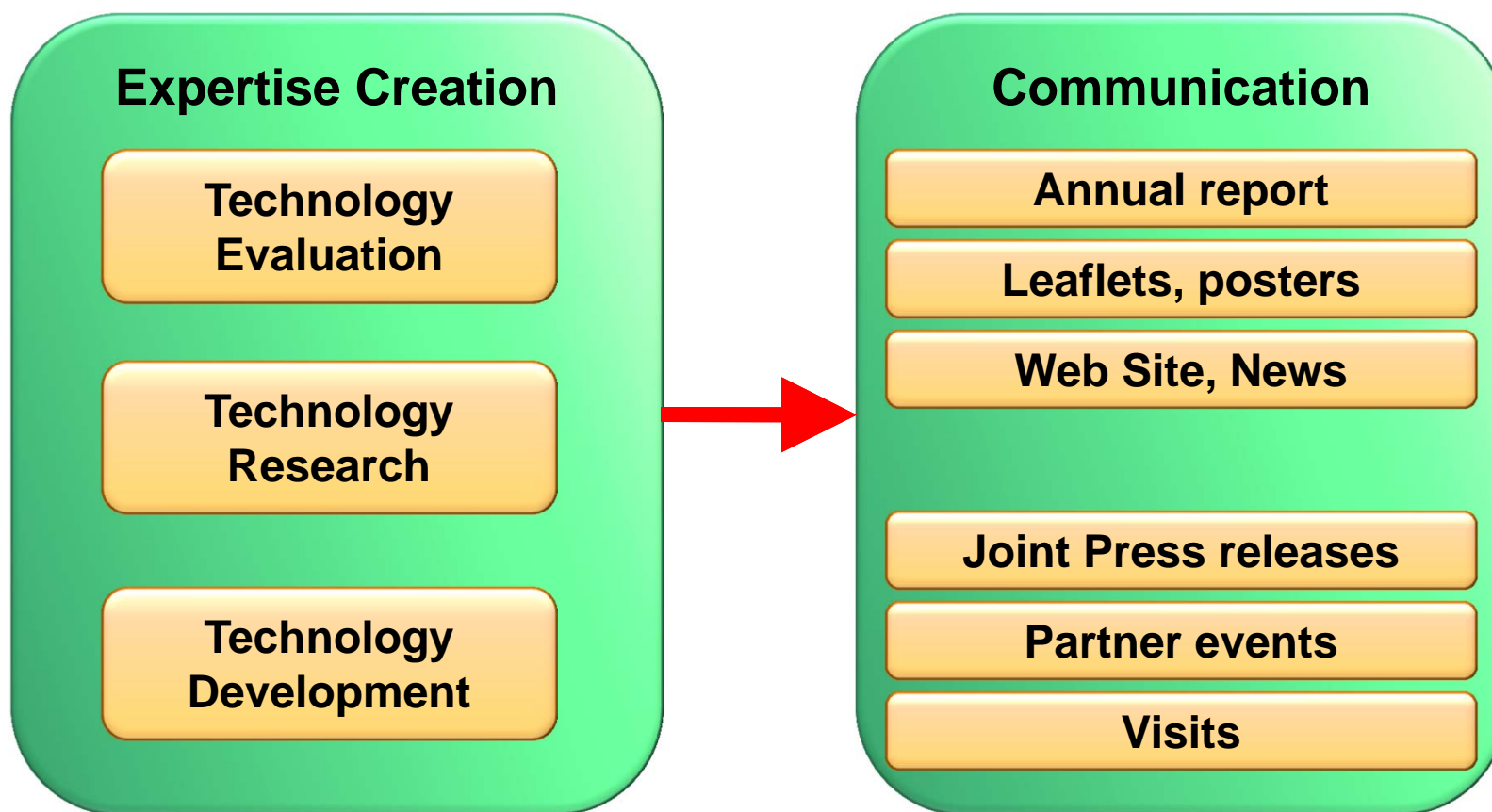    - in kind for carrying out R&D activities

- **From  Partners**

- **From CERN**
  - Technical environment
  - Technical manpower
  - Technical supervision
  - Management resources
  - Communication resources

Expertise Creation

Communications

Expertise Dissemination

## Expertise Creation

- Technology Evaluation
- Technology Research
- Technology Development

## Communication

- Annual report
- Leaflets, posters
- Web Site, News
- Joint Press releases
- Partner events
- Visits

# Communication
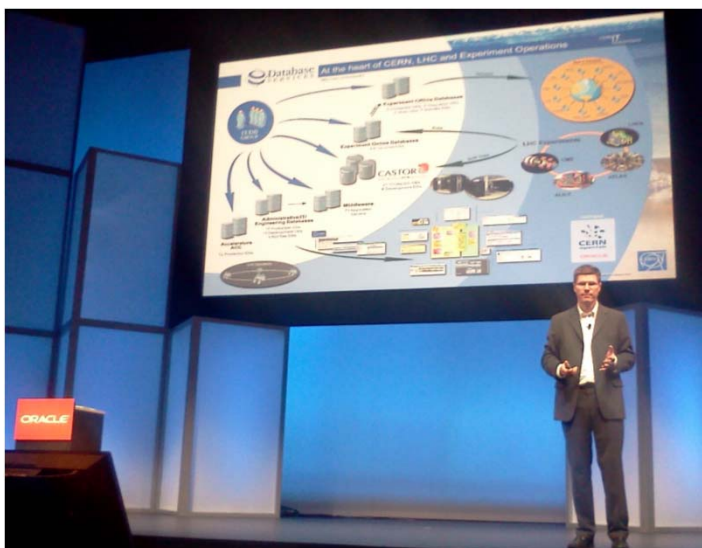
Intel Developer Forum, San Francisco,  Sept. 2011

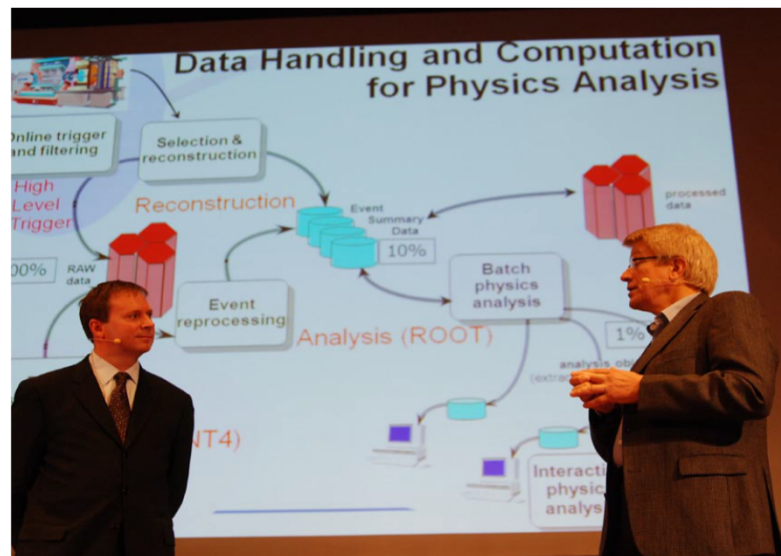http://intelstudios.edgesuite.net/idf/2011/sf/keynote/110915_jr/110915_jr_fl/index.htm

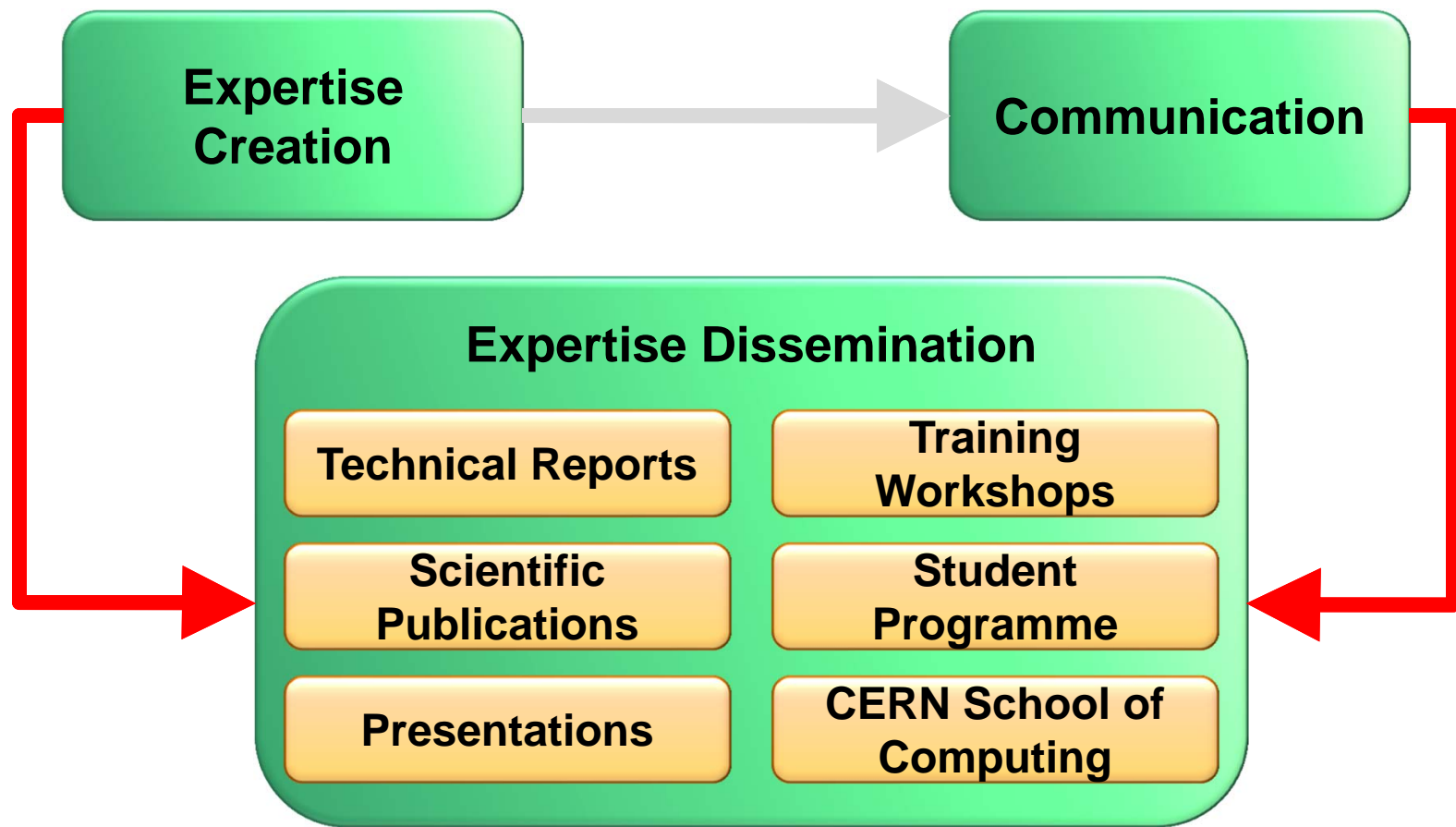Oracle Open World, San Francisco, Oct 2011

International Super Computing, Hamburg, May 2011

**CERN openlab**

**Expertise Creation** → **Communication**

**Expertise Dissemination**

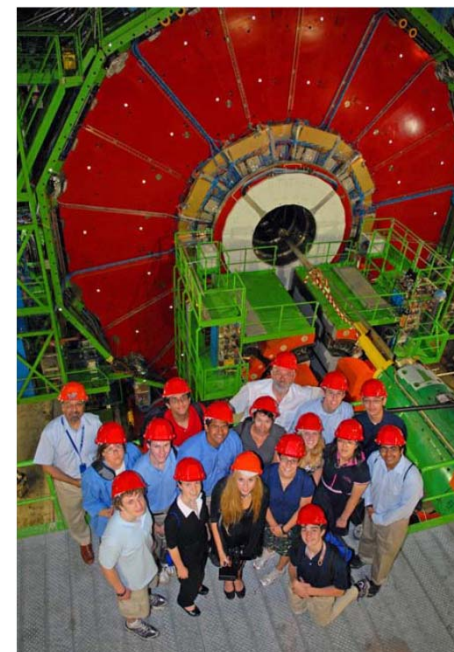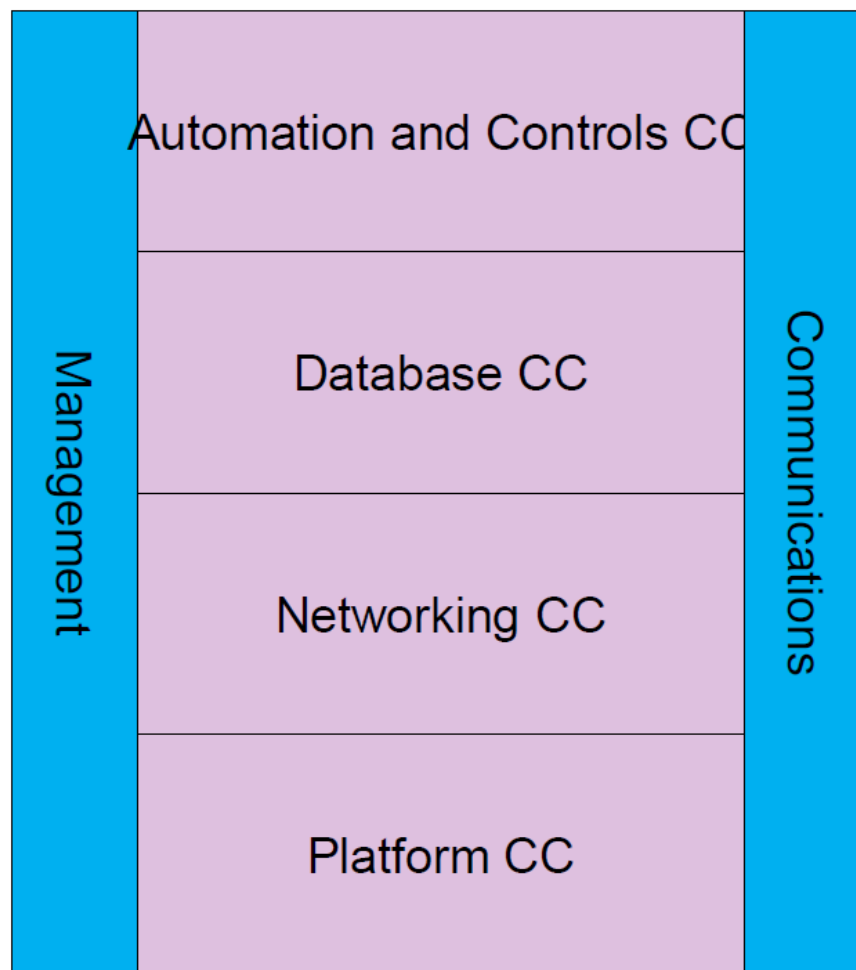| | |
|---|---|
| **Technical Reports** | **Training Workshops** |
| **Scientific Publications** | **Student Programme** |
| **Presentations** | **CERN School of Computing** |

Summer student
programme







Intel ISEF students
visiting CMS experiment

# Openlab structure

```
┌──────┬──────────────────────────────┬──────────────┐
│      │  Automation and Controls CC  │              │
│  M   │                              │  C           │
│  a   ├──────────────────────────────┤  o           │
│  n   │                              │  m           │
│  a   │        Database CC           │  m           │
│  g   │                              │  u           │
│  e   ├──────────────────────────────┤  n           │
│  m   │                              │  i           │
│  e   │       Networking CC          │  c           │
│  n   │                              │  a           │
│  t   ├──────────────────────────────┤  t           │
│      │                              │  i           │
│      │        Platform CC           │  o           │
│      │                              │  n           │
│      │                              │  s           │
└──────┴──────────────────────────────┴──────────────┘
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# GridMap

- Interactive new monitoring visualization of the Grid
  - Introduced at EGEE'07 (Oct'07), v2 in Feb'08, v3 in Mar'09
  - Visual correlation of *importance* and *availability status*
  - Top-level live management views of EGEE and WLCG grids
  - Integrated with OSG sites

http://gridmap.cern.ch

- Used in production by CERN to help manage the Grid

- Technology is reused for other applications at CERN and EDS

- Influential in other communities e.g. D4science project

# Automation and Control Competence Centre
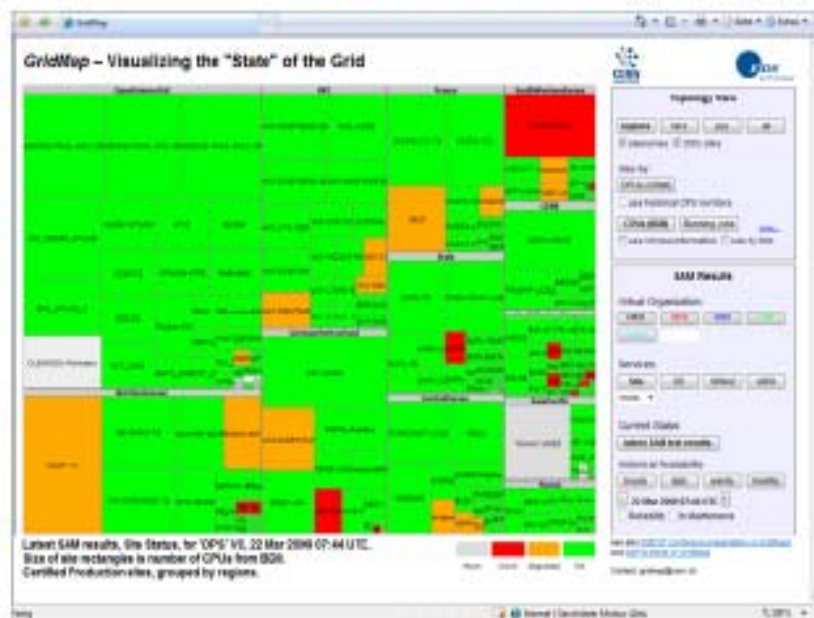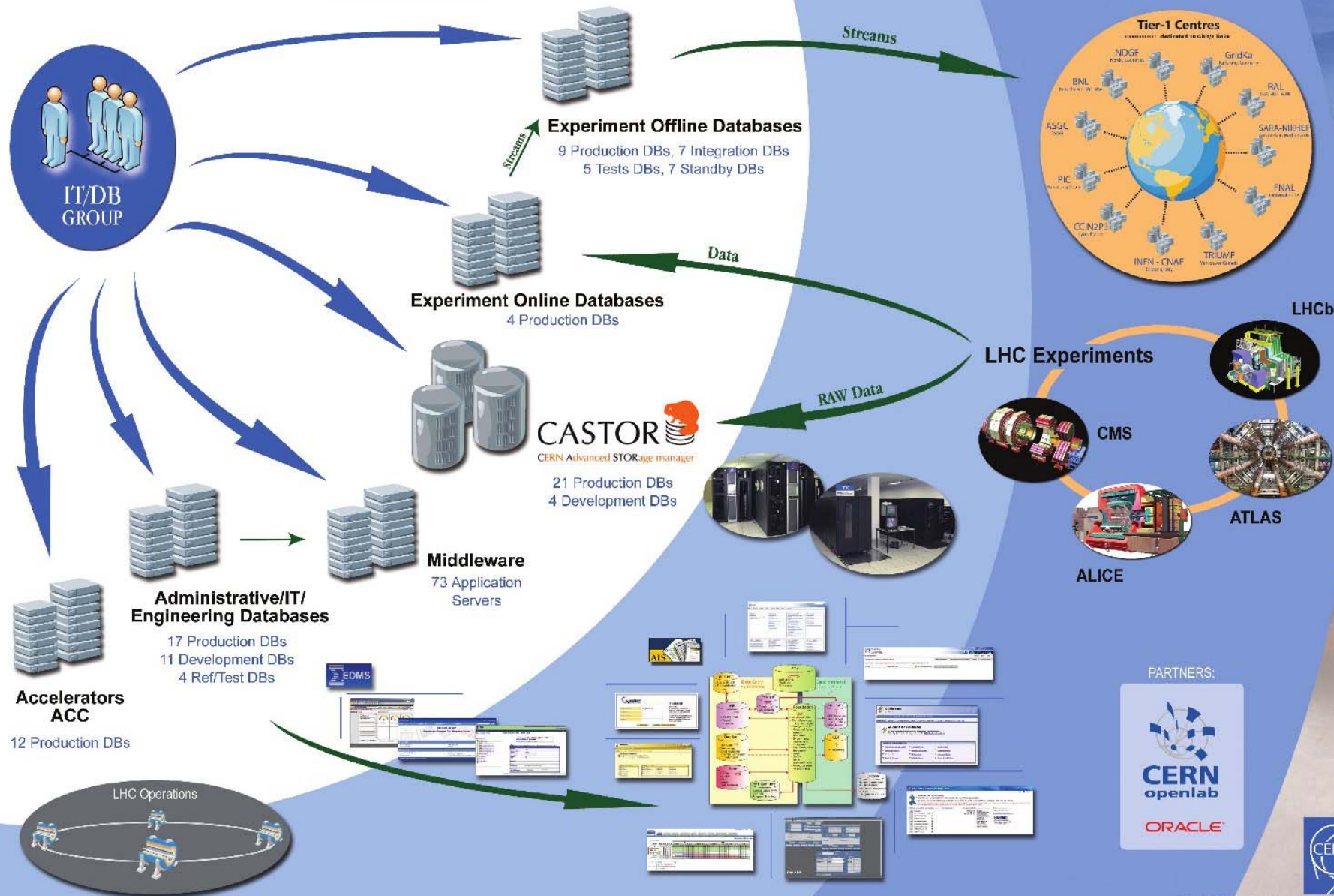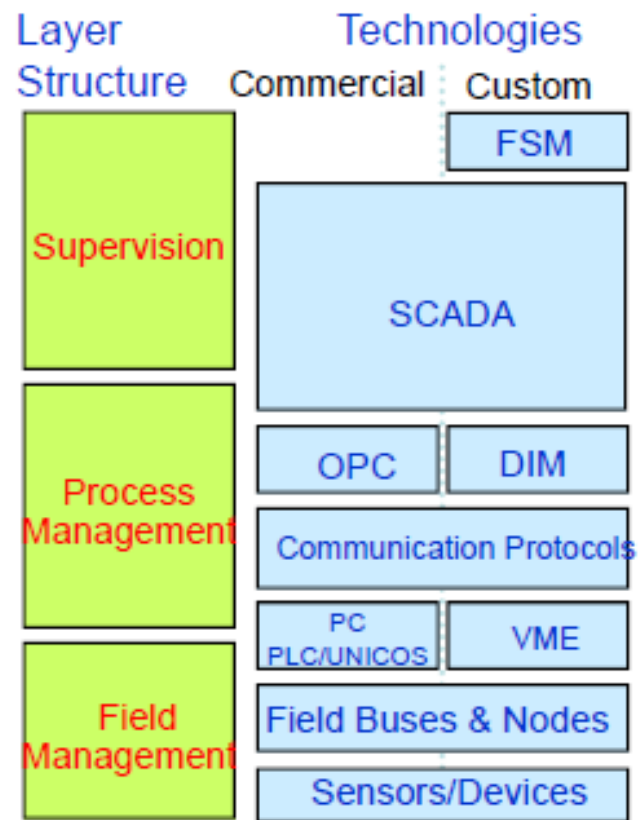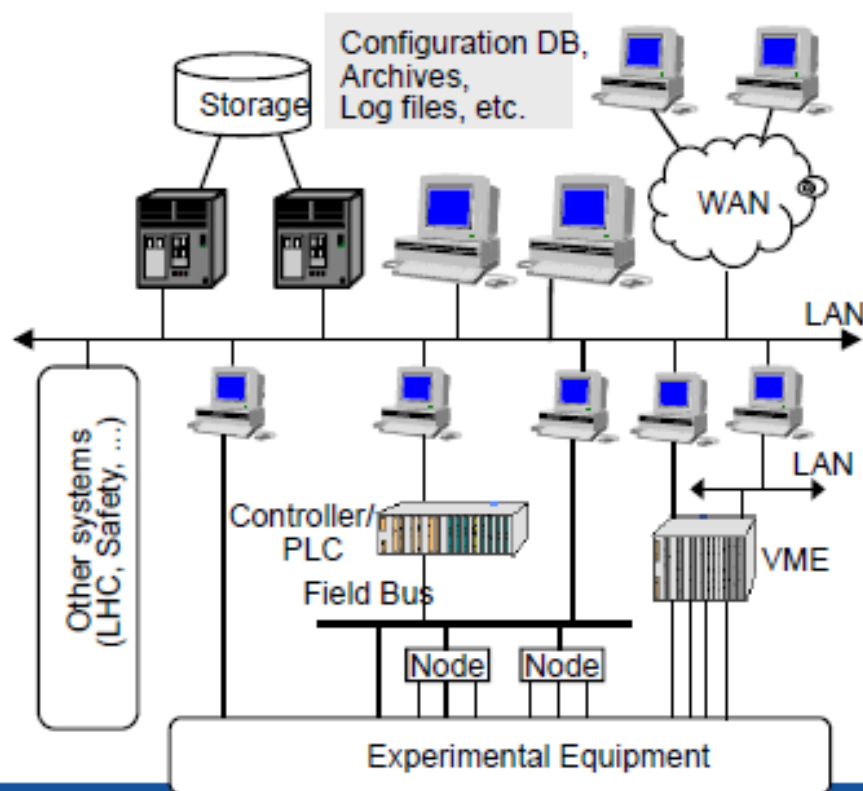
## Why are we at Openlab ?

## Our commitment to Innovation

➤ CERNOpenlab is an innovative IT high-tech lab

➤ Can help us to investigate and implement new technology

➤ Going to become another valuable partner in the global R&D-Network
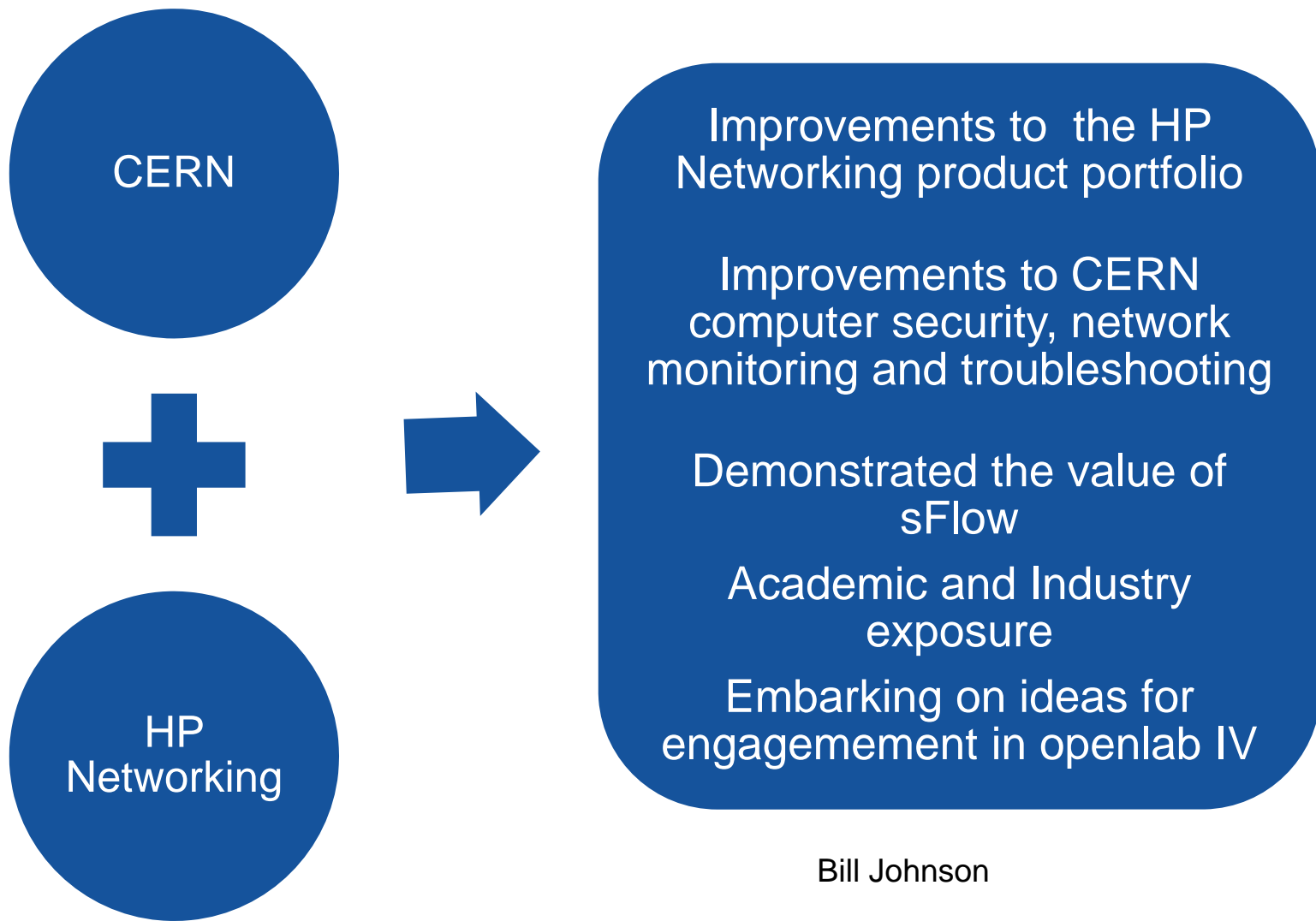
## Siemens products … here at CERN !

**SIMATIC S7**



➤ Hundreds of S7 PLCs and PvSS SCADA Systems

➤ A very large scale application, we can learn from

➤ An excellent reference system

➤ We're eager to see LHC be restarted and running

# CERN/HP – A **Successful** Collaboration

CERN

+

HP
Networking

→

Improvements to the HP
Networking product portfolio

Improvements to CERN
computer security, network
monitoring and troubleshooting

Demonstrated the value of
sFlow

Academic and Industry
exposure

Embarking on ideas for
engagement in openlab IV

Bill Johnson

Sr. Director HPN Research and Development

# openlab recipe – key ingredients

- The extreme demands from CERN's scientific programme
- The alignment of goals between partners
- Trust
- Young researchers with their talents, expertise and energy
- Efficient and lightweight structure
- Regular checkpoints/reviews
- Outreach/communications

- CERN openlab activity is decoupled from CERN's procurement process for goods and services

- Non Disclosure Agreements (NDR) signed by CERN

- A separate collaboration agreement is signed between CERN and each partner/contributor

- A separate collaboration agreement is signed between CERN and each partner
  - Covers scope of work and commitments of resources by each party
  - Flexibility to deal with specific IPR on a case-by-case basis but within the standard rules and practices at CERN

- A win-win public-private partnership between research and industry

- Proven track record of success for partner companies and CERN

- Excellent future prospects
  - CERN's ambitious scientific programme
  - Greater use of commercial components