• Places to do a PhD
• Forces
• Reputation
• Collaboration
• Knowledge
• Culture
• Assistance
Places to do a PhD

Academia

ENST

Major IT industry

HP Labs

CERN

Major IT user
Industry / public
Scientific / not

openlab
Forces

Evaluation

Sound

Original

Published

Need

Research
de facto solution

Practical outcome

Use cases

Implementation

Use cases

Problem analysis

Solutions evaluation

Disruptive innovation

Development

Latest products

Research projects

Labs orientations

CERN openlab presentation - 2009
Forces

- Evaluation
  - Sound
  - Original
  - Published

- Problem analysis
  - Need
    - Research
      - Engineering de facto solution
    - Practical outcome

- Implementation
  - Use cases

- Development
  - Latest products
  - Research projects
  - Labs orientations

Use cases

Problem analysis

Solutions evaluation

Disruptive innovation
Forces

Evaluation

Sound
Original
Published

Implementation
Use cases

Solutions evaluation

Need

Research
de facto solution

Practical outcome

Development

Latest products
Research projects
Labs orientations

Use cases
Problem analysis
Solutions evaluation
Disruptive innovation
Reputation

- Rigorous
- Cutting-edge
- Viable

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Collaboration

Interested and uncompromising
- Ensures contribution to a world-wide effort
- Checks scientific rigor
- Teaches how to write

Academia don't pay but in the end they rule

Best people willing to collaborate
- Submit problems
- Provide info

Student seen as free labor
- Select projects;
Implementation is not research
- Defend credits for work done

Labs present valuable projects, support and network
- opportunity to participate

Research is not communication
- Disappointing results are ok

Academia don't pay but in the end they rule
Knowledge

Scientific expertise
- What is already covered
- What remains open

Experience
- System administration
- Computer architecture
- Networks
- Compilers
- Data warehousing
- Technology watch
- Mathematics

Technology
- What is available
- How it works
- Future directions
Culture

Communities and conventions
- Conferences, journals
- Domain-specific communities
- Doctoral students community
  - Reviews

Communication
- Synthetic
- Regular
- Result-oriented

Down-to-Earth
- Benefit / price

Team
- Broad areas of work
- Summer students

Teaching

Sensitive to evolutions
Assistance

Academic training
Mentoring
Financing

Supervision
- Constant and dependable
- When needed
- Relevant and precise
- Leaving freedom of initiative

Tools
- Computing power
- Admin rights and software
- Scientific software
- IEEE, ACM and libraries
Conclusions

• Freedom of initiative was a specific agreement, not a rule in openlab.

• Experience more valuable to me than expected diploma

• Among the lessons I learnt, I value most
  – “Stand on my own two feet”
  – Face and solve problems in broad areas

• Georges Charpak:
  “CERN is a school of freedom”