Knowledge and Technology Transfer @ CERN

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CERN TT Group

Grid and Entrepreneurship Workshop – July 26th, 2006
Outline

- TT @ CERN
- CERN & Industry
- Knowledge transfer
CERN, where the scientific knowledge and the technology are transferred to industry and society.
CERN: Science and Technology

In addition of being a centre of excellence for HEP, CERN Member States want to make the Laboratory known as a “centre of excellence for technology and knowledge”

**TT policy:**

- Maximize technology & know-how dissemination throughout the Member States, with equal opportunities.
- Take all the necessary IP protection measures to support dissemination.
TT @ CERN

Technology Transfer is through:

- TT R&D projects:
  - R&D collaborations,
  - Partnerships with Industry,
- Commercialization of IP:
  - Licences,
  - Services & Consultancy,
- Purchasing.

Knowledge Transfer is through:

- People
CERN & Industry

Procurements from 1997 to 2001:

• 6 29 High Tech supplier projects = 1197 MCHF
• Companies < 25 kCHF in orders were ignored
• 178 survey respondents, 5% IT

Results:

• 44% indicated technological learning
• 42% increased their international exposure
• 38% developed new products as a direct result of the supplier project
• 36% indicated market learning
• 17% opened a new market
• 14% started a new business unit
• 13% started new R&D teams because of the CERN project
New products or services developed as a direct result of CERN relationship

**Scale**
- no
- yes

**Respondents (relative values)**
- Magnets
- Vacuum, Mech., Cryog.
- Detectors
- Inf. Tech.
- Electronics
- Other
Knowledge Transfer

- TT through people has become an increasingly recognized component of CERN’s TT activities.
- The transfer of technology is accompanied by a transfer of competences.
- Member States and industry can enhance their technological return by funding the transfer of knowledge to designated people on the basis of defined projects carried out at CERN.
- The high turnover of human resources at CERN contributes to an efficient dissemination of technology and expertise.
Knowledge Transfer

from

The learning process in an individual

The knowledge acquisition in an organization

for

the knowledge transfer from CERN to other institutions

403 individuals, 25% respondents

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The process model

UNDERSTANDING and USE
Why and how?

SCIENTIFIC PROCESS

TECHNOLOGICAL PROCESS

SOCIAL PROCESS

knowledge

explicit

tacit

SCIENCE concepts

TECHNOLOGY products

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Grid and Entrepreneurship Workshop, 26th July 2006
403 individuals, 25% respondents

Technology acquired or skill improved while at CERN

<table>
<thead>
<tr>
<th>Fields</th>
<th>FINNS (38)</th>
<th>ITALIANS (49)</th>
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<tbody>
<tr>
<td>Technology related to the work activity</td>
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<td>12</td>
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<tr>
<td>Information Technology and Electronics</td>
<td>15</td>
<td>19</td>
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<td>Technology process: from conception to spin-offs</td>
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<td>Knowledge related to the work activity</td>
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<td>Project and Personnel management</td>
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<td>2</td>
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<tr>
<td>Not applicable</td>
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B. Bressan, CERN TT Group
### 403 individuals, 25% respondents

**Difference between actual work and CERN experience (average)**

<table>
<thead>
<tr>
<th>Fields</th>
<th>FINNS (30)</th>
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<th>ITALIANS (46)</th>
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<tbody>
<tr>
<td></td>
<td>Physicists (n=16)</td>
<td>Engineers (n=14)</td>
<td>Physicists (n=33)</td>
<td>Engineers (n=13)</td>
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<tr>
<td><strong>Work</strong></td>
<td>2.75</td>
<td>3.14</td>
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<td><strong>CERN</strong></td>
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<td>2.12</td>
<td>2.33</td>
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<td><strong>Scientific stimulation</strong></td>
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<td><strong>Financial considerations</strong></td>
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<td>3.14</td>
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<td><strong>Multicultural aspects</strong></td>
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<td>2.00</td>
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<td>2.51</td>
<td>4.45</td>
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<td><strong>4.30</strong></td>
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Technology promotion

Available tools:
- TT database,
- TT newsletter,
- Booklets,
- Posters,
- Flyers,
- Brochures.

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www.cern.ch/TechnologyTransfer