The funding model of the Christian Doppler Research Association

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The Christian Doppler Research Association at a glance

• The CD-Association was the first public private partnership model implemented in Austria to promote innovativeness
  – by supporting the cooperation between businesses and scientists
  – in the field of application-orientated basic research.
  – The cooperation takes place in specially established research units:
    ▪ “Christian Doppler Laboratories” at universities
    ▪ “Josef Ressel Centres” at universities of applied sciences

  – 2017: a budget of ~ EUR 27 Mio
    of which 50% is funded in cash by ~ 160 commercial partners
    collaborating with +/- 1000 scientists in 76 CD-Labs and 11 JR-Centres
    for basic research in the fields of the commercial partners

• Several independent programme evaluations confirm the success of the Christian Doppler funding model.
• The OECD examined the CD model as “good practice model” in 2010 and 2014.
Characteristics of a Christian Doppler Laboratory / Josef Ressel Centre

• A Christian Doppler Laboratory / Josef Ressel Centre is …
  – a medium sized research unit
  – with a limited duration of operation (max. 7 years)
  – hosted by and embedded in a university, university of applied sciences, or other public research institution.
  – managed by a head of the Lab/Centre, employed by the hosting institution.

• The focus is on basic research
  … of application-orientated topics
  … selected by industry.
  – Scientists and industrial partners develop together and agree on the research programme.
  – All research is performed in close collaboration with the industrial partners.
  – The researchers have a high degree of scientific freedom:
    True basic research (progress in the state of the art) and publications are “musts”!
  – It is for the commercial partners to transfer the research results into new products or processes (no contract R&D).
3 dimensions of the CDG model, key to its success, but often overlooked when supporting KT?

1. **The structure of the CDG makes it possible to**
   - accurately target the funding structure on the practical needs of co-operative research with “normal” industrial partners
   - and to quickly adjust them to changes

2. **The model strengthens the strengths of existing research structures. No new research institution (legal entities).**

3. **The model supports a partnership at eyes level which generates KT at its best with a flow in both directions**
Dimensions of the CDG model, key to its success, but often overlooked when supporting KT (1)

1. The flexible structure and “private” nature of the CDG, integrating all stakeholders
   - The independence of the CD-society: it is an association of the industrial partners, usually represented by their research directors:
     ▪ The Academia dominated CD-Scientific Board decides, based on scientific criteria, about the quality of a research proposal and the researchers and its eligibility to be funded
     ▪ The Industry dominated CD-Executive Board decides about the concept of the funding structure, its development and its implementation
       • Only few political objectives imposed, that are not directly supporting excellent Research and Knowledge Transfer
       • The research programme is based on a research issue of a company: no political top-down research priorities (glittery topics), not targeting at “down to earth” industries (without lobbies, but responsible for the GDP)
     ▪ Representatives of the Ministry of Science, Research and Economy have the right to veto decisions
   - This makes it possible to accurately target the structure on the practical needs of co-operative research and to quickly adjust them to changes
Dimensions of the CDG model, key to its success, but often overlooked when supporting KT (2)

2. Strengthening the strengths of existing research structures.

- The CD-model integrates a Lab into an existing institute, with its senior scientists, postdocs and PhD’s and its infrastructure
  - No creation of parallel institutions: no costly build-up of new overhead
    - No termination of employed staff at the end of the funding period or in case of premature closure. (The head of Lab is usually a professor or senior scientist at the institute and PhD’s always have to find jobs after graduation.)
    - No unclear IPR-situations, no commercial conflicts of the industrial partners with a newly created “PPP research company”.
- A CD-Lab/JR-Center strengthens existing research structures
  - 7 years of research on a new relevant topic with prime publications creates a new field of competence with international visibility for the institute.
    - 30% of the resources are scientific freedom for the scientific partner:
      - The CD-Labs proved to serve as a career-platform for the scientists involved
      - New methods developed, new equipment invested stay with the institute
    - The attractiveness of the competence interesting to the industrial partners usually results in a continuation of the co-operation
    - Often PhD’s, trained in topics of the industrial partners, get positions with them.
Dimensions of the CDG model, key to its success, but often overlooked when supporting KT (3)

3. A partnership at eyes level generates KT at its best, flowing in both directions
   - A good question is usually half of the answer:
     ▪ Specified problems and precise questions of the industry to be answered by basic research are in themselves “specific Knowledge“ usually not available to academia.
     ▪ Especially at the beginning of a project the KT often needs to flow from the industrial to the academic partner: the trust to disclose commercially relevant often secret knowledge is a precondition for a successful Lab.
   - Fixed, but adequate terms for CD-Labs/JR-Centres:
     ▪ sufficient time (max. 7/5 years) and critical mass (up to 4,7/2,0 Mio€ budget for the lifetime)
     ▪ help to generate the identification of the industrial partner with “his Lab” and a research mindedness in the company.
   - Special attention to the ability of the industrial partners to absorb the research findings, since it is for him to convert them into new products and processes.
Thank you for your attention!

Further information:

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Success story:
A budget of ~ EUR 27 Mio in 2017 for basic research in the field of
~ 160 commercial partners collaborating with
+/- 1000 scientists in 76 CD-Labs and 11 JR-Centres
Thematic openness (2017)

CD Laboratories by thematic clusters 2017

Number of CD Laboratories

- Chemistry: 9
- Life Sciences and Environment: 16
- Mechanical Engineering and Instrumentation: 6
- Mathematics, Computer Sciences, Electronics: 16
- Medicine: 15
- Metals and Alloys: 8
- Non-metallic materials: 4
- Economics, Law and Social Sciences: 2
829 headcount in 72 CD Labs (2016)
~25% Non-Austrian commercial partners (2016)
Haio Harms
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1985 - 1991  TD and CEO South Pacific Viscose, Indonesia
1991 - 2008  Director R&D and Director Corporate Services
             Lenzing AG, Austria
since 2000   Member of the Executive Board of the Christian Doppler
             Research Association
2008 - 2015  CEO Kelheim Fibres, Germany
e.g.: CD-Lab for Surface-Physical and Chemical Fundamentals of Paper Strength

**Head:** ao.Univ.Prof.Dr. Robert Schennach  
**University:** Technical University Graz  
**Commercial partners:** Lenzing AG, Mondi Frantschach GmbH, Kelheim Fibres GmbH  
**Duration:** 1.3.2007 - 28.2.2014

- **Research issue:** Understand paper strength –  
  Basic research to gain insight into the nature and the strength of fiber-fiber-bonds.  
  ➔ methods/experiments to measure the bond energy between the fibers  
  ➔ model systems  
  ➔ quantitative bonding mechanism between individual paper fibers

- **Objectives of the commercial partners:**  
  – improve the strength properties of paper  
  – control the role of water for the properties of cellulosic substrates  
  – decrease both the wood consumption and the energy needed in papermaking.

- **Cumulative budget in 7 years:** ~ EUR 2 Mio  
  – 2 Postdocs, 9 Completed Dissertations, 13 Completed Diploma thesis  
  – 2 patents, 35 reviewed papers, 16 invited / 42 other presentations, 30 posters
Best Practice elements of the CDG funding models (1)

1. “Bottom up” / thematic openness!
   - The research programme is based on a research issue of a company.
   - No thematic restrictions.
   - Research is „breathing“: new research topics can be developed and new commercial partners can join the collaboration.

2. Equal benefits for science and commercial partners
   - The CD-Lab/JR-Centre is intended to be a chance …
     - … for its head: to develop his/her own field of internationally recognised academic excellence.
     - … for the hosting research institution: to develop specialised competence in fields of interest for innovative companies
     - … for young scientists (graduants, PhD, postdocs, habilitants).
   - 30% of the resources are scientific freedom for the scientific partner.
   - Commercial partners gain access to basic research, lasting competitive advantages, young scientists and patents.
Best Practice elements of the CDG funding models (2)

3. Quality of research and researchers as the ruling principle
   - A CD-Lab/JR-Centre and the grant for the first 2 years are awarded based on a peer reviewed application and evaluation by the CD Scientific Board.
   - A continuation is granted based on mid term evaluations of the quality of the research and the publications in high quality journals.

4. Fixed, but adequate terms
   - Sufficient time: CD Labs/JR Centres will be closed after 7/5 years without exception.
   - Critical mass: For the lifetime of a CD Lab/JR Centre the total budget can be up to EUR 4,7 / 2,0 Mio.
   - A scientist can head a CD Lab/JR Centre only once.

5. Integration into existing structures
   - CD Labs/JR Centres have no legal personality: they are integrated into the hosting research institution. No parallel structures are created.
   - The hosting research institution is the employer of the head of the CD Lab/JR Centre. It contributes its existing research infrastructure.
6. **Funding in cash only**
   - Running costs and additional infrastructure are jointly covered by public funding and the company partners (higher share of public funding for SME’s).
   - Cash only: no in-kind services are accepted as a company contribution.

7. **Direct integration of all stakeholders**
   - Companies are not merely recipients of publicly funded research:
     - they are members of the CDG Association shaping its rules and processes and taking part in decision making
     - under the authority of the CDG Scientific Board for quality
     - and the authority of the Ministry of Science, Research and Economy for the system.

8. **International openness**
   - Either the scientific or the commercial partner has to be based in Austria:
     - Companies from abroad as commercial partners for a Lab/Centre in Austria.
     - Labs/Centres based at a university outside Austria with Austrian companies.