



Christian Doppler  
Forschungsgesellschaft

# 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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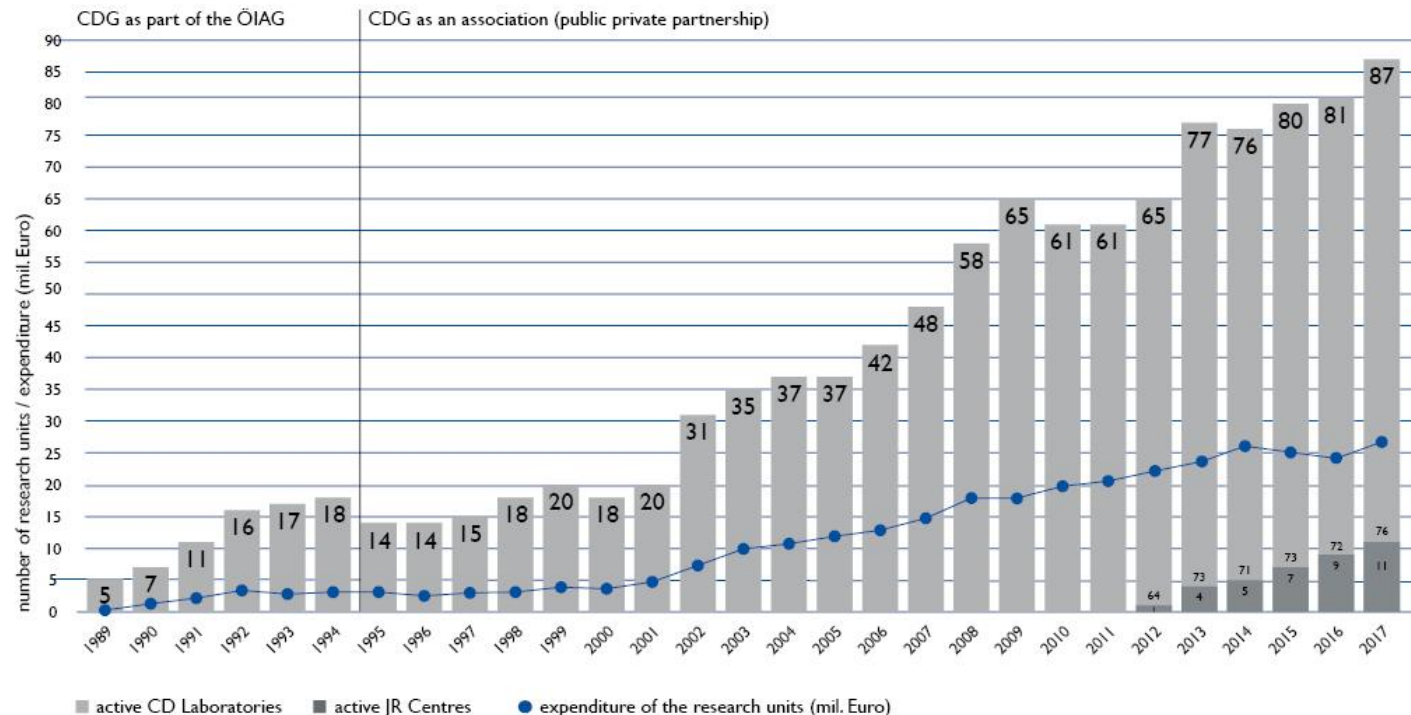


## Success story:

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

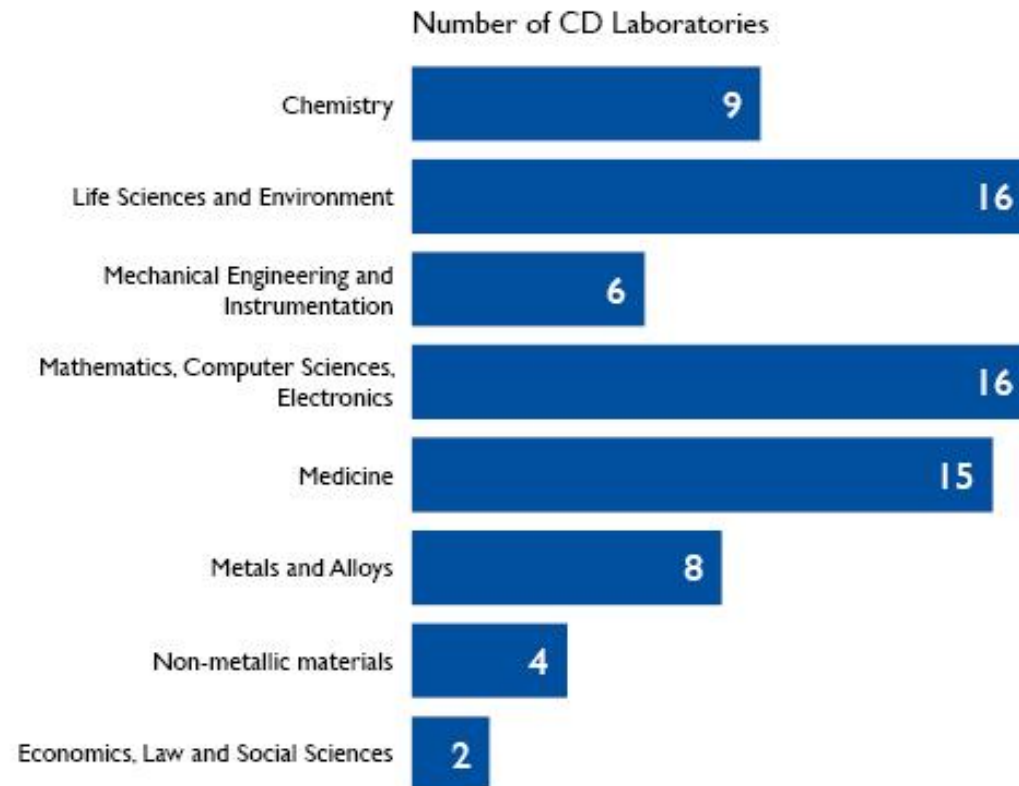
Development of the Christian Doppler Research Association

Dated 01/2018



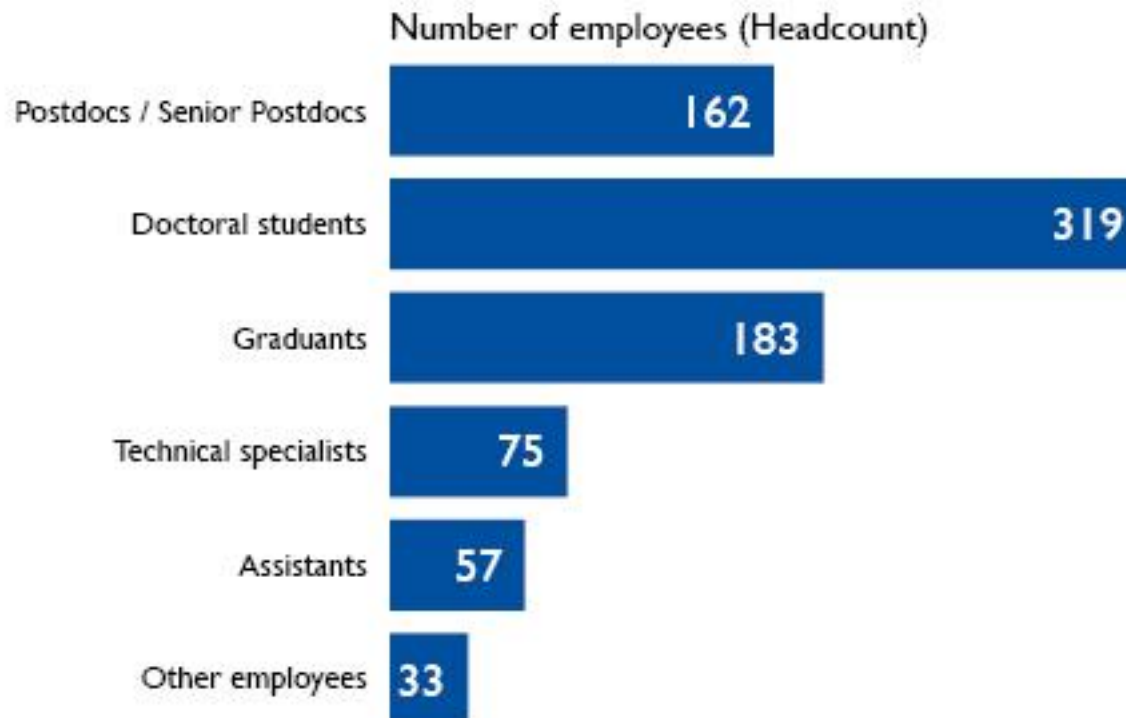
# Thematic openness (2017)

CD Laboratories by thematic clusters 2017



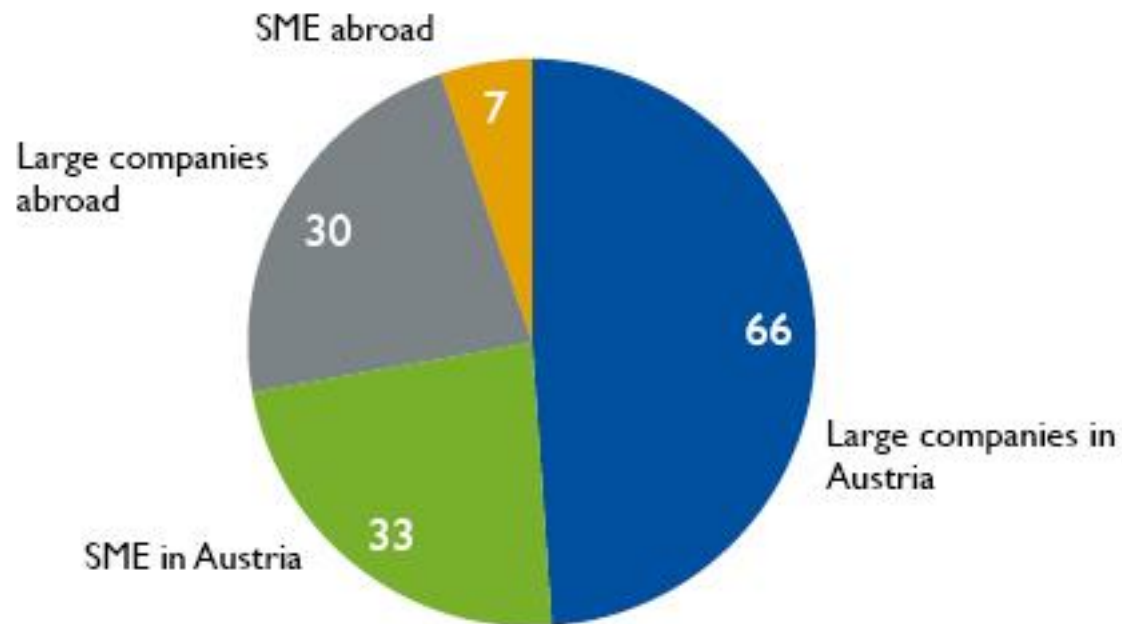
# 829 headcount in 72 CD Labs (2016)

## Staff of the CD Laboratories 2016



# ~25% Non-Austrian commercial partners (2016)

Structure of the commercial partners  
by company size and origin 2016



## Haio Harms

PhD, LL.D

- |             |  |
|-------------|--|
| 1985 - 1991 | TD and CEO South Pacific Viscose, Indonesia                                    |
| 1991 - 2008 | Director R&D and Director Corporate Services<br>Lenzing AG, Austria            |
| since 2000  | Member of the Executive Board of the Christian Doppler<br>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.



# Best Practice elements of the CDG funding models (3)

## 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.