

平成17年度第2回JABEE自主研修会

産業界からの要望

2006年3月4日

富士通研究所 顧問
持田 侑宏

はじめに

- 企業の研究開発のマネジメント
- 海外研究所(特に中国)の運営経験と
北京郵電大学(BUPT)客座教授
- München工大滞在・交流とFraunhofer研究所
の諮問委員の経験

としてのささやかな経験を通して、
産業界から見た、国際化する大学への期待
について考えてみたい

JABEEプログラム点検書と「社会の要求」

全てにおいて教育と社会のかかわりを強く意識

特に

基準1「学習・教育目標の設定と公開」

(1) 項目(a) – (h)

(3) **社会の要求**や学生の要望にも配慮

基準6「教育改善」

6.1 教育点検

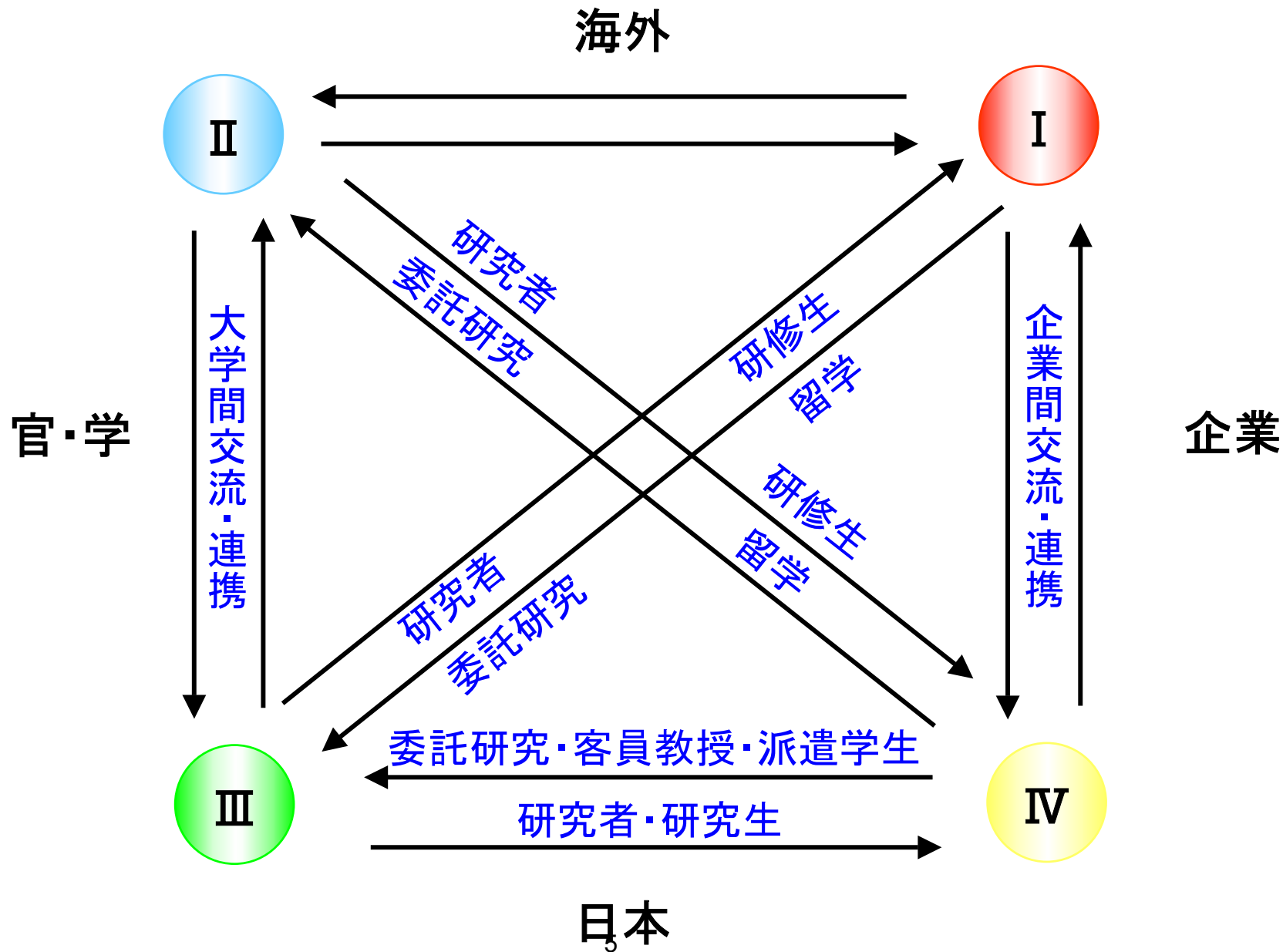
(2) **社会の要求**や学生の要望にも配慮する仕組み

産業界からの大学の教育・研究活動への要望を述べたい。

大学も企業も国際化

- 大学における教育の国際化, ビジネス化
海外大学の事例
 - 企業におけるビジネスも国際化
国際的 研究・開発・ビジネス人材の必要性
 - 鍵のひとつがWA/JABEE
- 大学と企業が力を合わせて世界への貢献を

情報通信分野での交流の多様化の現状



非英語国の例1:ドイツでの英語プログラム International Degree Programmes

(ドイツ学術交流会ホームページ www.daad.de/deutschland/de/index.html)

The screenshot shows the DAAD website interface. At the top, there's a navigation bar with 'DAAD-FAQs direct' and a language selector. The main header features the DAAD logo and the text 'Deutscher Akademischer Austausch Dienst German Academic Exchange Service' along with the slogan 'wandel durch austausch - change by exchange -'. A sidebar on the left contains a menu with categories like 'About us', 'STUDY AND RESEARCH IN GERMANY', 'University', 'Studies', 'Admission', 'Support', 'Learn German', 'Germany', 'Services', 'Download', and 'Contact'. The main content area is titled 'Study and research in Germany' and 'International Degree Programmes'. It contains a paragraph explaining that many German universities offer courses leading to an international degree, with more than 300 courses presented. The text mentions that the range of study opportunities covers undergraduate, graduate, and postgraduate degree courses (Bachelor's, Master's, PhD levels). Below this, there is a list of conditions for the degree courses presented. To the right of the text is a world map graphic with the text 'International Degree Programmes' and 'Ihre Hochschule bietet einen neuen internationalen Studiengang an?' followed by a button 'hier den Studiengang anmelden!'. Below the text is a search section titled 'Please select here the course of your choice by Subject, Course Language, Degree or Town:' with dropdown menus for Subject, Course Language, and Degree, and a 'Town' field. On the right side of the page, there is a 'DAAD worldwide' section with a continent selector and a 'show' button, and a 'DAAD aktuell' section with news about the 'Neues Free Mover Programm erfolgreich gestartet' and 'Friedensnobelpreis f- Wangari Maathai'.

DAAD-FAQs direct
Please select here

DEUTSCH
ENGLISH
ESPAÑOL
OTHER LANGUAGES

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STUDY AND RESEARCH IN GERMANY
University
Studies
Admission
Support
Learn German
Germany
Services
Download
Contact

Questions about studying in Germany?

DAAD search
GO

BOOKMARK THIS PAGE
PRINT THIS PAGE

Yesterday a DAAD scholar and today?

DAAD
Deutscher Akademischer Austausch Dienst
German Academic Exchange Service
wandel durch austausch - change by exchange -

Home

Study and research in Germany

Home < Study and research in Germany < Studies

International Degree Programmes

Many German universities offer courses leading to an **international degree**. The more than 300 courses presented here are designed to attract foreign students looking to study with an international dimension. The range of study opportunities covers **undergraduate, graduate and postgraduate degree** courses (Bachelor's, Master's, PhD levels). The degree courses presented here fulfil most of the following conditions:

- **High academic standards** and **well organised** study programmes
- International degrees, i.e. **Bachelor's** and **Master's**
- Courses taught in **English**, additional German language courses
- **Special Services:** Academic and personal support, study counselling, study periods abroad

International Degree Programmes
Ihre Hochschule bietet einen neuen internationalen Studiengang an?
hier den Studiengang anmelden!

Please select here the course of your choice by Subject, Course Language, Degree or Town:

Subject
- Please select here -

Course Language
- Please select here -

Degree
Town

DAAD worldwide
Select a continent
show

DAAD aktuell
EU-Programme
Neues Free Mover Programm erfolgreich gestartet
Der DAAD hat im Wintersemester 2004/2005 erstmalig das Free Mover Stipendienprogramm Europa aus Mitteln des BMBF durchgeführt. Dabei haben 111 deutsche Hochschulen (von 127 bewilligten) insgesamt 418 Stipendien mit einer...
DAAD-Alumna
Friedensnobelpreis f- Wangari Maathai
Als erste Afrikanerin erhielt die kenianische Umweltschmerzlerin Wangari Maathai den Friedensnobelpreis. Die 64-Jährige ist stellvertretende

Computer Science, Mathematics

英語による修士課程リスト

Home 

Study and research in Germany

[Home](#) [« Study and research in Germany](#) [« Studies](#)

International Degree Programmes

Here you find the results of your search for International Degree Programmes with the degree **Master** , the subject **Computer Science, Mathematics** in **English** .

Please select now a programme for more details and information.

42 programmes found

Page 1 of 2

International Degree Programme	Study area	Degree	1 st 2 nd HEI
Applied Computer Science	Applied Computer Science	Master	Universität Freiburg
Autonomous Systems	Autonomous Systems	Master	Fachhochschule Bonn-Rhein-Sieg
Business Consulting	Business Consulting	Master	Fachhochschule Furtwangen – Hochschule für Technik und Wirtschaft
Cognitive Science	Cognitive Science	Master	Universität Osnabrück
Communication and Information Technology	Communication and Information Technology	Master	Universität Bremen
Communications Engineering	Communications Engineering	Master	Rheinisch-Westfälische Technische Hochschule Aachen
Computational Engineering	Computational Engineering	Master	Technische Universität Dresden
Computational Engineering	Computational Engineering	Doctoral Degree, Master, Ph.D. degree	Universität Erlangen-Nürnberg, Standort Erlangen
Computational Engineering	Computational Engineering	Master	Universität Rostock
Computational Logic	Computational Logic	Master	Technische Universität Dresden
Computational Mechanics (come.tum)	Computational Mechanics	Master	Technische Universität München
	Computational Science and		

International Degree Programmes

Communications Technology

Degree

- Master of Science
Opportunity for Doctorate (Dr.-Ing.) by research for qualified students after completion of the Master

Course language(s)

- Engineering curriculum taught entirely in English
Intensive "German for Foreigners" courses compulsory

Beginning of programme

- Summer semester (March)

Programme duration

- 2 years (4 semesters) for students holding a Bachelor degree, or a Diplom-Ingenieur degree of a German Fachhochschule

Study focus

- Electronics Engineering · Communications Technology
- In-depth fields of study: Communications Engineering, Computer Networks, Integrated Systems, Channel Coding, Optoelectronics, RF and Microwave Systems, Microelectronics

Institution

- Universität Ulm
Communications Technology
89069 Ulm
Phone: 49.731 / 50-26004
Fax: 49.731 / 50-26003
Internet: <http://www.uni-ulm.de/c-tech/>
E-Mail: c-tech@uni-ulm.de

例2 ミュンヘン工大の英語による修士課程 Master of Science in Communications Engineering

MSCE - Master of Science in Communications Engineering - Microsoft Internet Explorer

ファイル(E) 編集(E) 表示(V) お気に入り(A) ツール(T) ヘルプ(H)

戻る 検索 お気に入り

アドレス http://www.master.ei.tum.de/frames/frame.php?nvbar=0&sdbar=1&mnfr=1

TUM International Graduate Program
Master of Science
in Communications Engineering

Home Overview People Academics Applying Info + Tips

MSCE

News

- [Schedule for the WS 2004/05 !!!](#) (September 22, 2004, Pavol Hanus)

The **Master of Science in Communications Engineering** program at the **Technische Universität München** is a two-year high-level International Graduate Program of the Dept. of Electrical Engineering and Information Technology. Participants hold a bachelor's degree in electrical engineering (or equivalent) and have international background. The Program is taught entirely in English.

Overview

[Welcome](#) | [About MSCE](#) | [Information in German](#) | [Press reports](#)

Applying

[Applying online](#) | [Online application FAQ](#) | [Completing the](#)

People

[Professors](#) | [Students](#) | [Photos](#) | [Web Cam](#)

Infotips

[Preparing for Munich](#) | [Financial Issues](#) |

Academics

[Schedule](#) | [1st Semester](#) | [2nd Semester](#) | [3rd Semester](#) | [Labs reports](#)

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CDHK Newsletter

Ihre E-mail Adresse:

Abonnieren

Abbestellen

Abteilung für Elektrotechnik

Vertiefungsrichtungen Gastdozenten	Fachkoordinatoren Mitarbeiter	Kontakt Studienhinweise	Lehrstühle
---------------------------------------	----------------------------------	----------------------------	------------

Vertiefungsrichtungen:

Automatisierungstechnik
Informationstechnik
Technomathematik

[Zurück zum Anfang](#)

Fachkoordinatoren:

Prof. Dr. Chen Yongen
Prof. Dr. Elmar Schrüfer

[Zurück zum Anfang](#)

Kontakt:

Sekretariat Frau Mao Weike
Telefon: 021-6598 2920
Email: maoweike@mail.tongji.edu.cn

[Zurück zum Anfang](#)

Lehrstühle:

Lehrstühle	Stifter	Lehrstuhlinhaber
Angewandte Mathematik	Tongji AG für Wissenschaft I	Prof. Dr. Feng Guosheng
Angewandte Mathematik II	Tongji AG für Wissenschaft II	Prof. Dr. Huang Ziping



MSCEの有力教授が講義

DAAD

德意志学术交流中心北京办事处

常见问题 联系

Gastdozenten:

Elmar Schrüfer Lehrstuhl für Meßsystem- und Sensortechnik der TUM

e.schruefer@ei.tum.de

Thema: Signalverarbeitung

Friedrich Schneider Lehrstuhl für Meßsystem- und Sensortechnik der TUM

f.Schneider@ei.tum.de

Thema: Locale- und verteilte Netze mit Praktikum

Günther Schmidt Lehrstuhl für Steuerungs- und Regelungstechnik der TUM

guenther.schmidt@ei.tum.de

Thema: Intelligenter Roboter

Joachim
Hagenauer Lehrstuhl für Nachrichtentechnik der TUM

hagenauer@ei.tum.de

Thema: Digitaler Mobilfunk

Joerg Eberspächer Lehrstuhl für Kommunikationsnetze der TUM

Joerg.eberspaecher@ei.tum.de

Thema: Ausgewählte Kapitel der Kommunikationsnetze

MITのOpenCourseWareの発展

<http://web.mit.edu/newsoffice/2004/ocw-0922.html>

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OCW report extols progress

Sarah H. Wright, News Office
September 22, 2004

MIT OpenCourseWare (OCW) has flourished in line with the faculty's original vision for it, Steven Lerman, professor of civil and environmental engineering, told the faculty at its monthly meeting Sept. 15. Lerman, who is chair of the OCW faculty advisory committee, and Anne Margulies, executive director of OCW, gave a glowing update on the initiative, which publishes MIT course materials for free on the Internet.

OCW has grown in size and in impact, they reported. In 2002, material for 50 courses was available at the OCW site; on Sept. 17, 2004, materials for 900 courses were available. Currently, the OCW site receives an average of 11,000 visitors daily and 350,000 each month. Visitors include educators and self-learners from the U.S. and around the world and MIT students checking out courses during registration.

"OCW is a 'two-fer:' it helps faculty organize their course materials, and it helps us communicate with each other. I can see how prerequisites I listed are taught. It's also a way to further MIT's mission; embrace faculty values of teaching, sharing best practices and contributing to our fields. Beyond that, OCW counters the privatization of knowledge; it champions openness," said Lerman, who also serves as director of the Center for Educational Computing Initiatives.

Margulies emphasized OCW's success in the global educational marketplace. The site has received more than 20,000 e-mails; its fans write from all over the world. "We've heard from people in Afghanistan, Iraq, the Sudan. Imagine what it means that they find our site even with a civil war going on," she said.

In response to a question from Paul Gray on the cost and sustainability of OCW, Margulies said, "My job is to drive down the cost so it's sustainable here and drive the value up so other universities can replicate what we're doing."

TOOLS

[Print version](#)

RELATED

[Faculty meeting sets positive tone](#) - The faculty celebrated the achievements of President Charles M. Vest, heard updates on MIT's finances and on OpenCourseWare, and welcomed President-elect Susan Hockfield in the academic year's first meeting.
9/22/2004

[MIT OpenCourseWare](#)

More: [Education / teaching](#)



ヨーロッパをめざす 国際的人材育成策

—— 学生のMobility

Enhancing International Cooperation through Mutual Recognition

How can we facilitate the mobility of students?

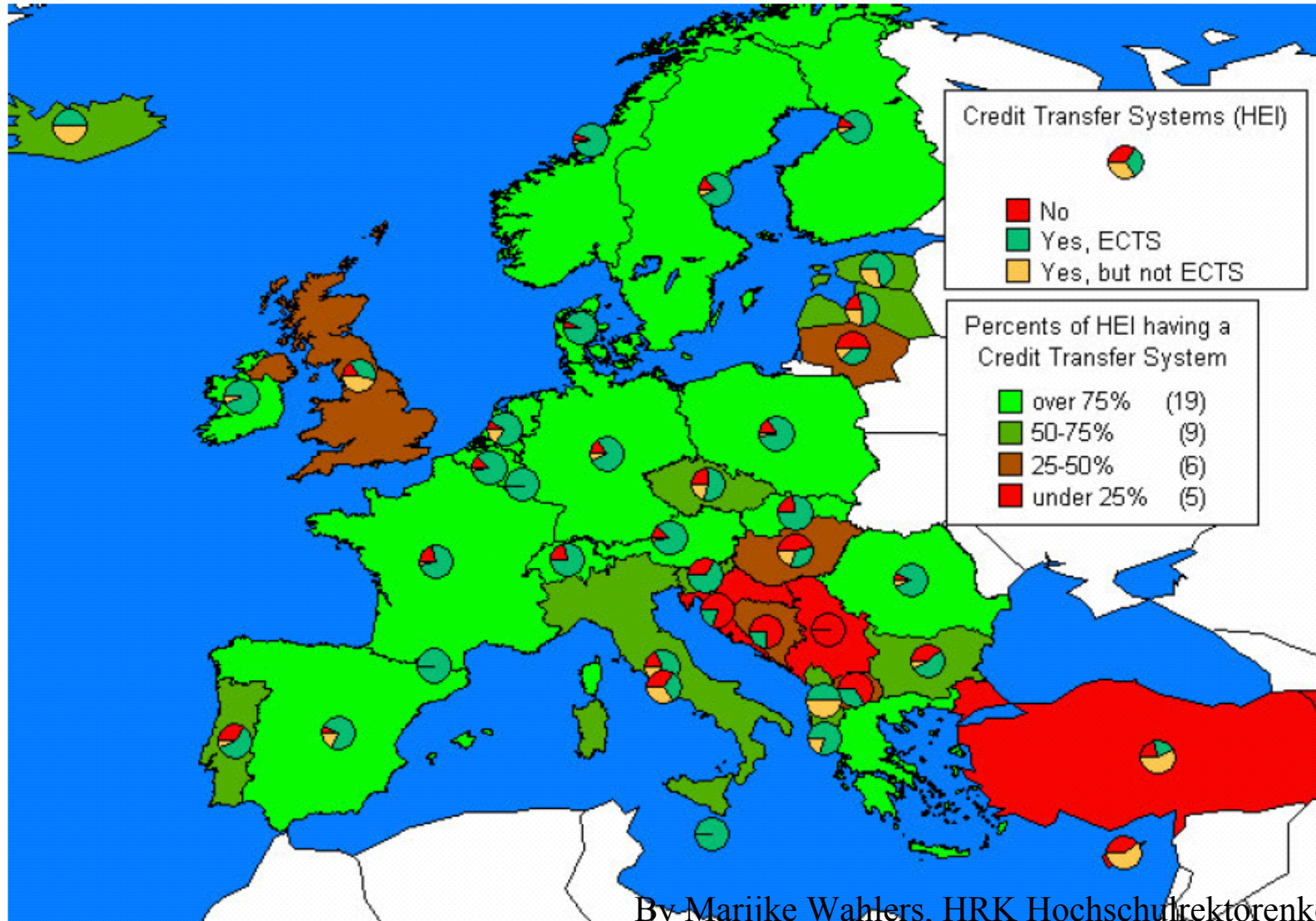
Mutual recognition of study modules and/or degrees enhances the attractiveness and efficiency of studying abroad. It can be achieved through:

- European Credit Transfer System and Diploma Supplement
- Lisbon Convention on the Recognition of Degrees+ Amendment on the Recognition of Joint Degrees
- State Agreements and HRK Framework Agreements

By Marijke Wahlers, HRK Hochschulrektorenkonferenz

ヨーロッパ大学における単位互換システム

European Credit Transfer System (ECTS) and Diploma Supplement



By Marijke Wahlers, HRK Hochschulrektorenkonferenz

単位相互認定による魅力ある学位

Enhancing International Cooperation through Mutual Recognition

Joint Degrees and Double Degrees

Joint degrees and double degrees are “qualifications issued jointly by at least two higher education institutions on the basis of a study programme jointly developed and/or provided jointly by these institutions”.

Double degree: (at least) two national degree certificates

Joint degree: one joint certificate of (at least) two institutions from different countries

By Marijke Wahlers, HRK Hochschulrektorenkonferenz

Bolognaプロセスによる相互認定と期待

- 国際レベルの認証が前提に
- ヨーロッパでもWAが議論の対象
- 大学教育国際化や、国際的学生の育成の期待
(JABEE認証プログラムへの期待も同様)

Bolognaプロセスのドイツでの受けとめ

ダルムシュタット工科大 Prof. Hampeの講演より

2005年12月1日 JABEE国際シンポジウムより



bologna
process

Master course programs
and
quality assurance
in Germany

Manfred J. Hampe

Technische Universität Darmstadt



Master course programs and quality assurance in Germany ©Technische Universität Darmstadt 2005 – p.1/19

- The **Bologna process** leads to an overhaul of the German system of higher education
- Education at **research universities** and **Fachhochschulen**
- Boundary conditions: **Demand from the industry**
- Modularisation
- **Professional profiles** of students entering and leaving graduate courses
- Example: Award winning Master's degree course '**Mechanical and Process Engineering**'
- Study abroad
- **Quality assurance**: From **lecture** via **course** via **degree** course via **department** to **German engineering education**

By Prof. M. Hampe (JABEE国際シンポジウム Dec. 2005)



Institutions of Higher Education:

- numerous, but no one knows how many
- The European University Association has 760 members in 45 countries across Europe
- in Germany: 117 Research Universities, 159 Fachhochschulen (universities of applied science), 57 Art and Music Colleges (333 in total)
- Engineering education in Germany at
 - 23 research universities \rightsquigarrow 1/3 of all engineers
 - 99 Fachhochschulen (universities of applied science) \rightsquigarrow 2/3 of all engineers

By Prof. M. Hampe (JABEE国際シンポジウム Dec. 2005)



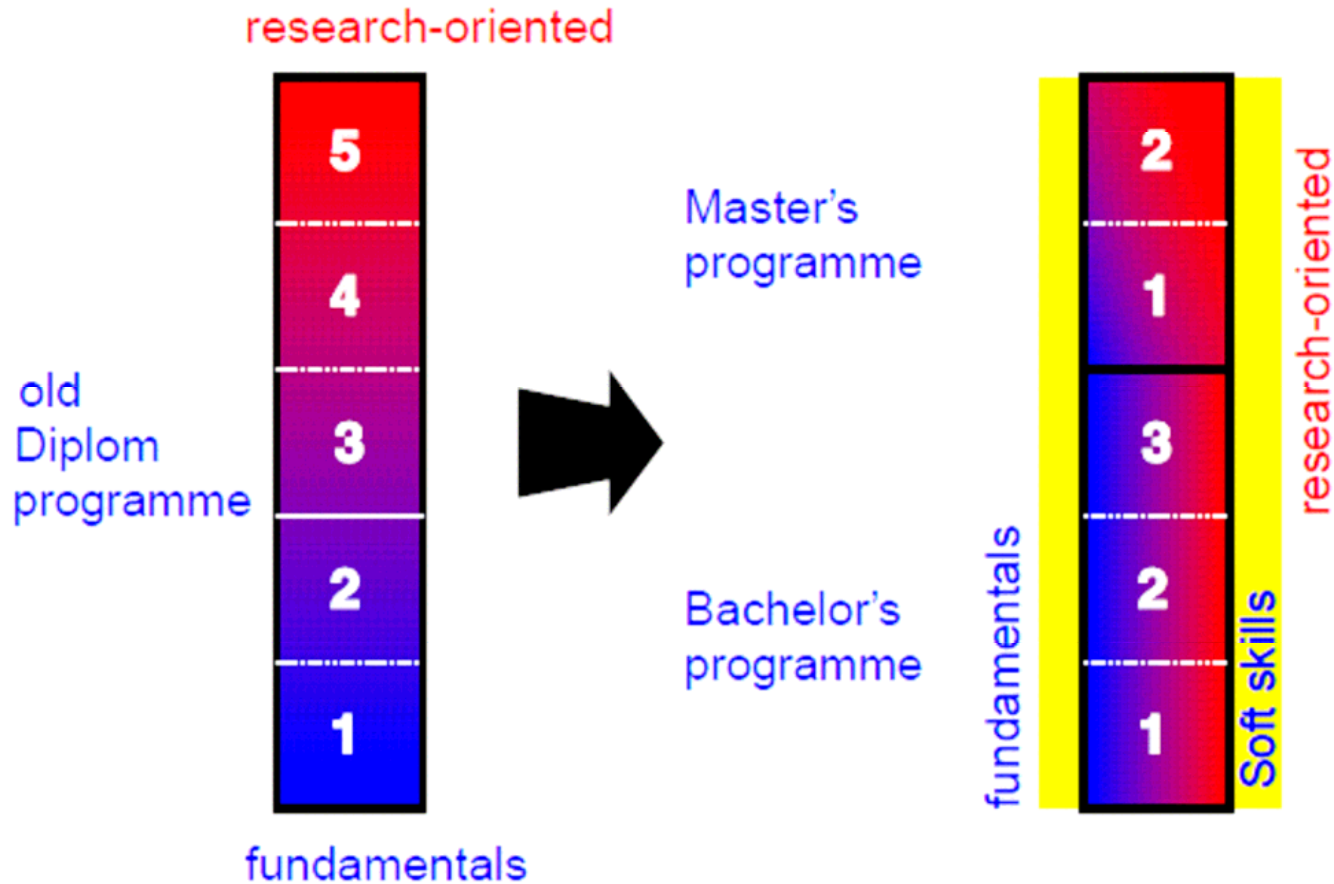
The Bologna Process until 2010

- Adoption of a system of **easily readable and comparable degrees**, also through the implementation of the **Diploma Supplement**, in order to promote European citizens employability and the international competitiveness of the European higher education system
- Until 2009 adoption of a system essentially based on **two main cycles**, undergraduate and graduate. Access to the second cycle shall require successful completion of first cycle studies, lasting a minimum of three years. The degree awarded after the first cycle shall also be **relevant to the European labour market** as an appropriate level of qualification. The second cycle should lead to the master and/or doctorate degree as in many European countries.
- Establishment of a **system of credits** - such as the ECTS
- Promotion of **mobility**
- Promotion of European co-operation in **quality assurance**
- Promotion of the **European dimension** in higher education



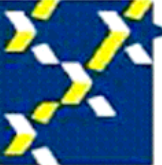
Education profile at a university

- **Researcher**:= Person capable to develop scientific methods and knowledge independently.



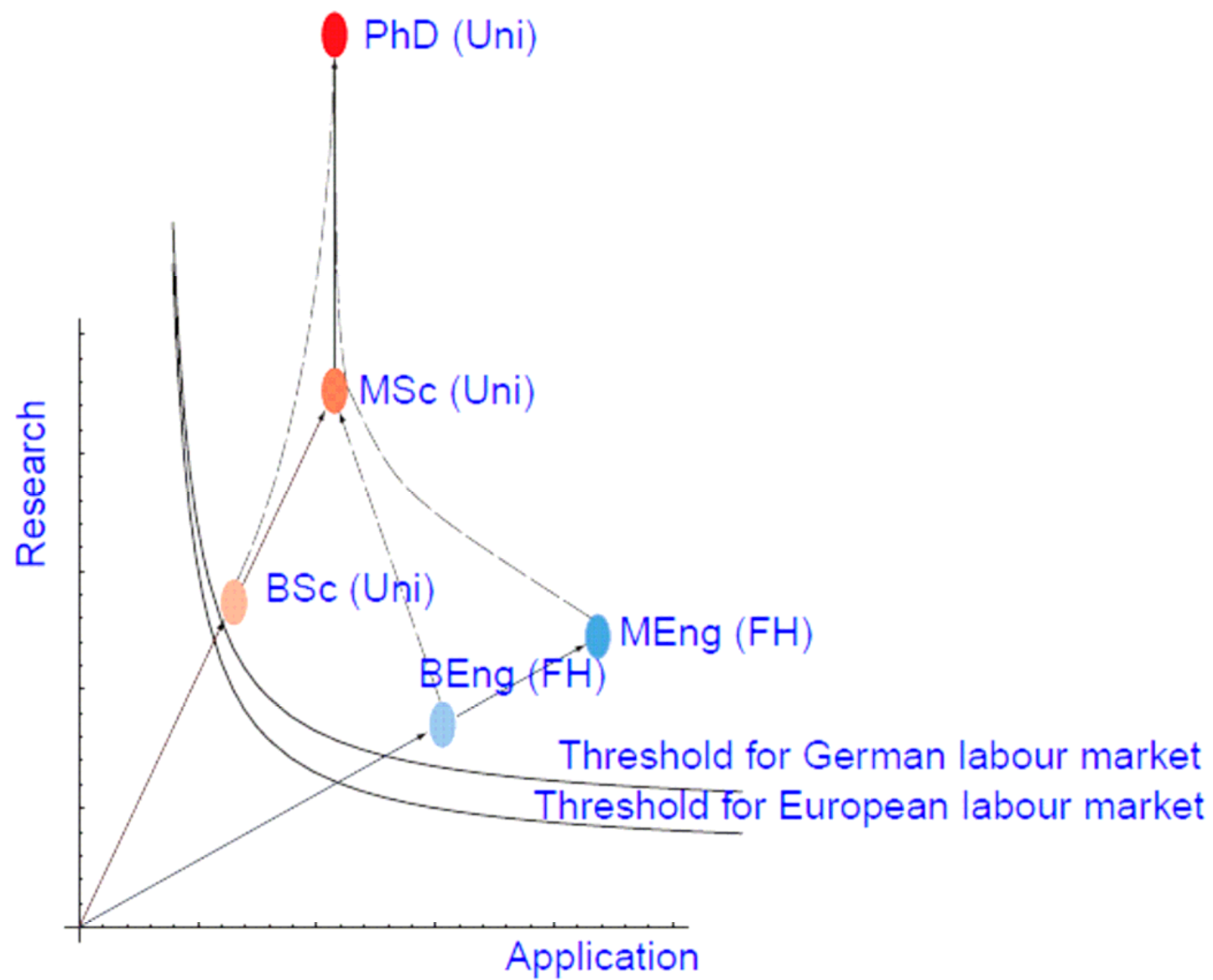
By Prof. M. Hampe (JABEE国際シンポジウム Dec. 2005)





bologna
process

Qualification paths at universities and Fachhochschulen



By Prof. M. Hampe (JABEE国際シンポジウム Dec. 2005)



- **Our philosophy:** All students speak one additional living language besides English and German
- **All** Socrates-Erasmus stipends are placed
- **DAAD** or **Fulbright** stipends
- **>60 %** of our students study abroad for one or two semesters
- **Mandatory courses** in the third year are interchangeable at all **CLUSTER** universities
- Most students go abroad in the first year of the Master's degree course
- **Electives** in the Master's degree course are to be agreed on by the TUD professor in charge

By Prof. M. Hampe (JABEE国際シンポジウム Dec. 2005)



Virginia Tech: Double MSc degree

- Undergraduate degree course “Mechanical Engineering” at Virginia Tech has the same Learning Outcome as the Bachelor’s degree course „Mechanical and Process Engineering“ at TUD
- Joint lectures at TUD and Virginia Tech using video conference technique
- **Senior Year at TUD** as complete 5th and 6th semester of the Bachelor’s degree course
- Selected Germans spend one year at Virginia Tech
- First or second year of the Master’s degree course spent at the partner university \leadsto **Double Master’s Degree**
- **Tuition waiver**

By Prof. M. Hampe (JABEE国際シンポジウム Dec. 2005)



TU9 quality seal:

- TU9 is a group of universities with engineering departments that were founded before 1914 (RWTH Aachen, TU Berlin, TU Braunschweig, TU Darmstadt, TU Dresden, U Hannover, U Karlsruhe, TU Munich, U Stuttgart)
- **Benchmarking** for the mechanical engineering departments
- **Questionnaire** based on the joint evaluation Darmstadt/Kaiserslautern/Karlsruhe
- **Upper and lower limits** for quality relevant data, e.g.
 - Number of publications per year and professor
 - Number of PhD students per year and professor
 - Number of patents per year and professor
- TU9 quality seal is **open for**
 - Other universities
 - Other engineering disciplines

By Prof. M. Hampe (JABEE国際シンポジウム Dec. 2005)



ドイツ修士・学士での企業実習要求

— Hampe教授からの追加情報 —

Bachelor 課程で 12 週間

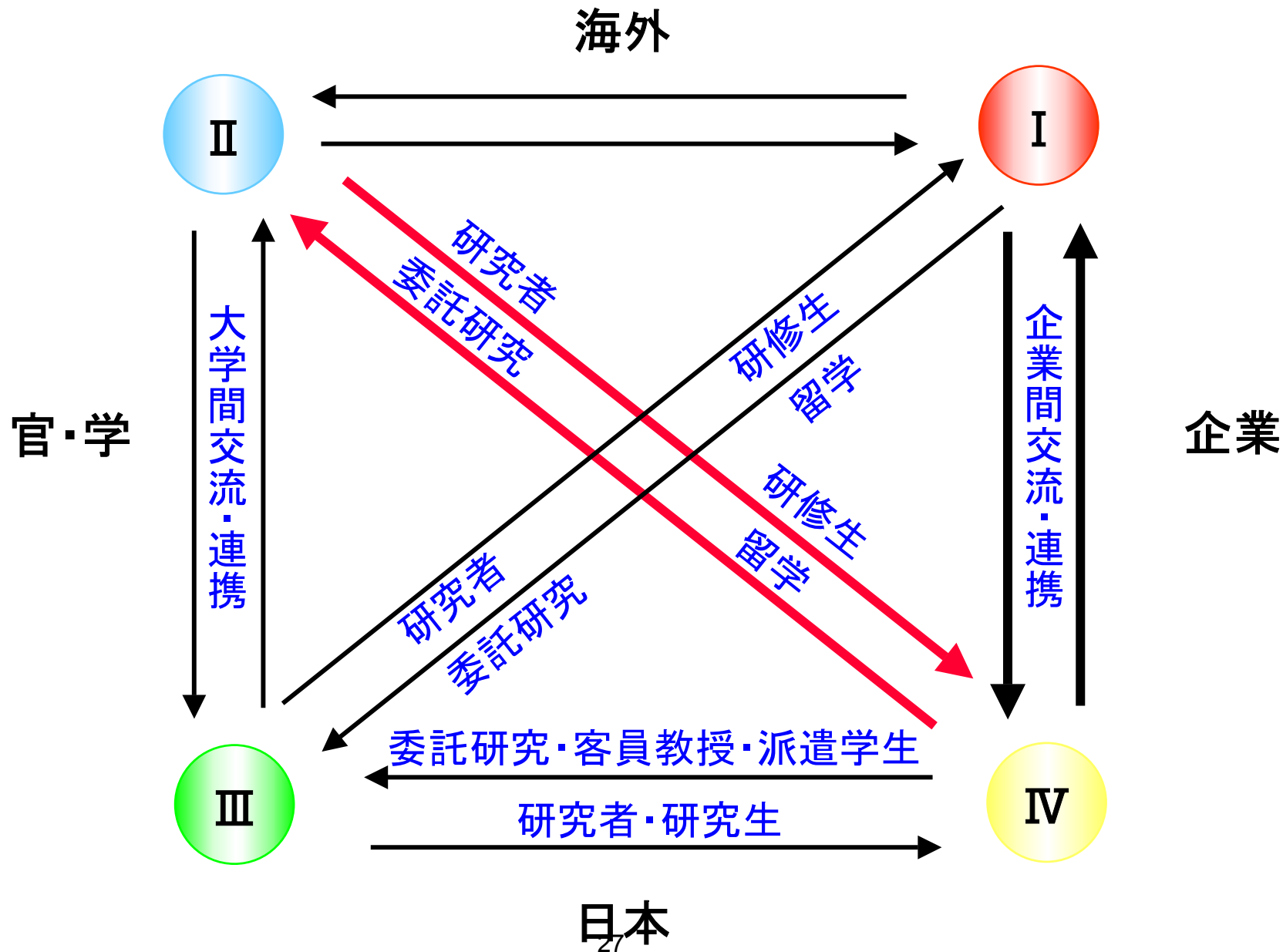
Master 以前または修了までに 8 週間以上

(企業チームプロジェクト参画など)

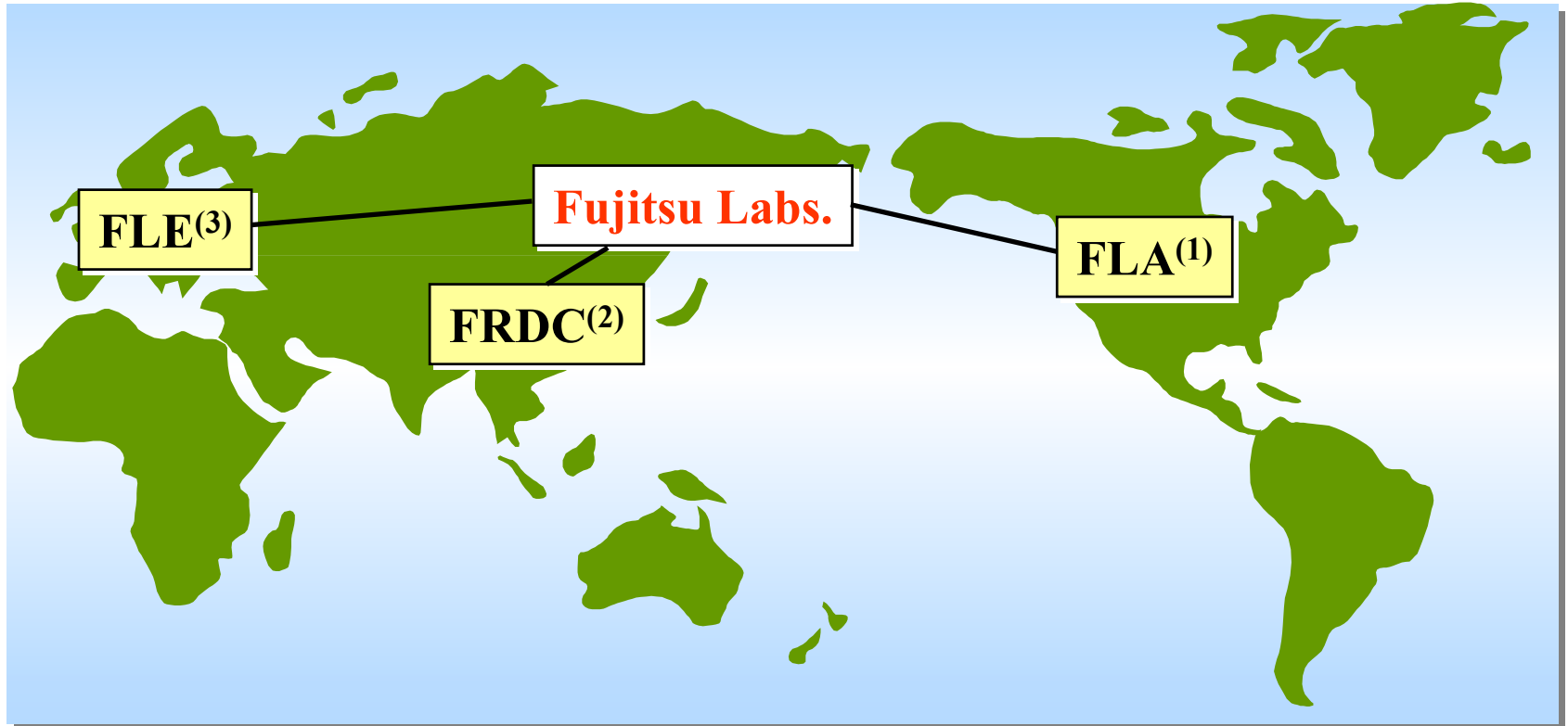
学生は自ら実習場所を探さなければならない

Wir verlangen von unseren Master-Studenten ein mindestens 8-wöchiges Industriepraktikum, das sie vor dem Studium oder während des Studiums zu absolvieren haben. Typischerweise arbeiten die Studenten in einem industriellen Team an einem Projekt mit. Die Studenten müssen sich den Praktikumsplatz selbst suchen. Im Bachelor-Studium dauert das Industriepraktikum 12 Wochen, so dass sie insgesamt 20 Wochen in der Industrie verbracht haben.

海外の大学・研究機関との交流が増大



パートナーとの共同研究拠点としての海外研究所



- (1) FLA: Fujitsu Laboratories of America, Inc. (CA, MD and TX in U.S.A.)
- (2) FRDC: Fujitsu Research and Development Center Co., Ltd. (Beijing in China)
- (3) FLE: Fujitsu Laboratories of Europe Limited (London in U.K.)

委託研究パートナーとしての海外の大学

- 政府・州政府が誘致に熱心(CoE戦略)
- 大学を挙げた推進組織・マーケティング
- マッチングファンドの恩恵
- 博士課程学生・有給研究員が研究の核
- IPRを含む交渉の責任者
- アウトソース契約とスケジュール管理
(研究＝ビジネス)

背景

インセンティブが制度的に作りこまれている

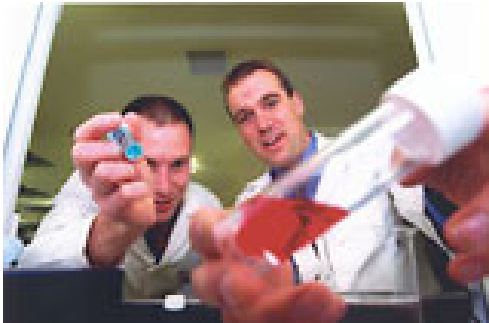
- 研究資金がはじめから潤沢ではなく(例; 70%)
努力によって増える仕組み
- 大学・機関間および大学・機関内に競争がある
- 従って, 研究の出口・顧客を考える

このことによって, Technology Value-Chainが
つながりやすい

(教育—基礎研究—応用研究—開発・製造
—社会・ユーザ)

英国大使館ホームページより

日英協力



英国と日本の間では科学をテーマにした交流が日常的に行われています。毎年一万人以上の日英の研究者が英国大使館やブリティッシュ・カウンシルが主催するセミナーや、ワークショップなどを通じて交流を深めています。



英国の大学の科学者が持つ創造性と、日本の産業界が得意とする事業化・生産性がうまく結びついた連携が数多く存在することが示すように、英国の大学と日本の企業間の交流も両国にとって大きな意味を持ちます。

英国の大学で行われる研究活動の水準は非常に高く、その質に関しては5年に一度の割合で研究評価委員会により評価されます。高等教育基金による資金援助（英国には政府による研究資金援助のシステムが二通りあり、高等教育基金による援助はそのうちの一つです。もう一方のシステムについては上記研究会議の項目をご覧ください。）はこの評価に基づいて行われます。

英国の高等教育における研究活動に関する情報をご希望の方はこちらをご覧ください。[英国の大学](#)

Wed. 17th December 2003

Studying

Research

Business

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Culture & Sport

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HERO is the official gateway site to the UK's universities, colleges and research organisations.

The Zones

Six zones covering all aspects of higher education opportunities. Move your mouse pointer over the above areas to find out what is in each. Click on an area to find out more.

Selected Features**Studying**[House of cards](#)

Abigail Jackson on how students are lured into debt on the high street

Research[Divining the red planet](#)

A three-pronged approach aims to tease out the truth about water on Mars

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Colin Tudge's latest book makes a powerful case for reshaping the future of food production

Culture & Sport[What the land tells us](#)

How to spear an emu, and other Aboriginal

University and College locations

Includes profile and information for each UK [University](#) and all [Further Education](#) Colleges offering HE courses.

Performance Indicators published

The annual report providing comparative data on the performance of all 168 publicly funded higher education institutions in the UK is available from the [HEFCE website](#).

Lambert Review of Business-University Collaboration

The Government asked Richard Lambert to examine how the long-term links between business and British universities can be strengthened to the benefit of the UK's economy. The [final report of the Lambert Review of Business-University Collaboration](#) is available on the HM Treasury web-site.

Bureaucracy and Regulation in Higher Education**Top Ten Pages**

- [Universities & Colleges Homepage](#)
- [Research Assessment Exercise 2001](#)
- [Choosing a course](#)
- [Research - Getting funded](#)
- [Information for international students](#)
- [Inside HE zone homepage](#)
- [Search for online prospectuses](#)
- [Distance learning](#)
- [Register for email update](#)

jobs.ac.uk

The official recruitment website for Higher Education with the most comprehensive listing of academic and related vacancies and studentships from UK University and College Institutions.

**Research Assessment Exercise 2001**

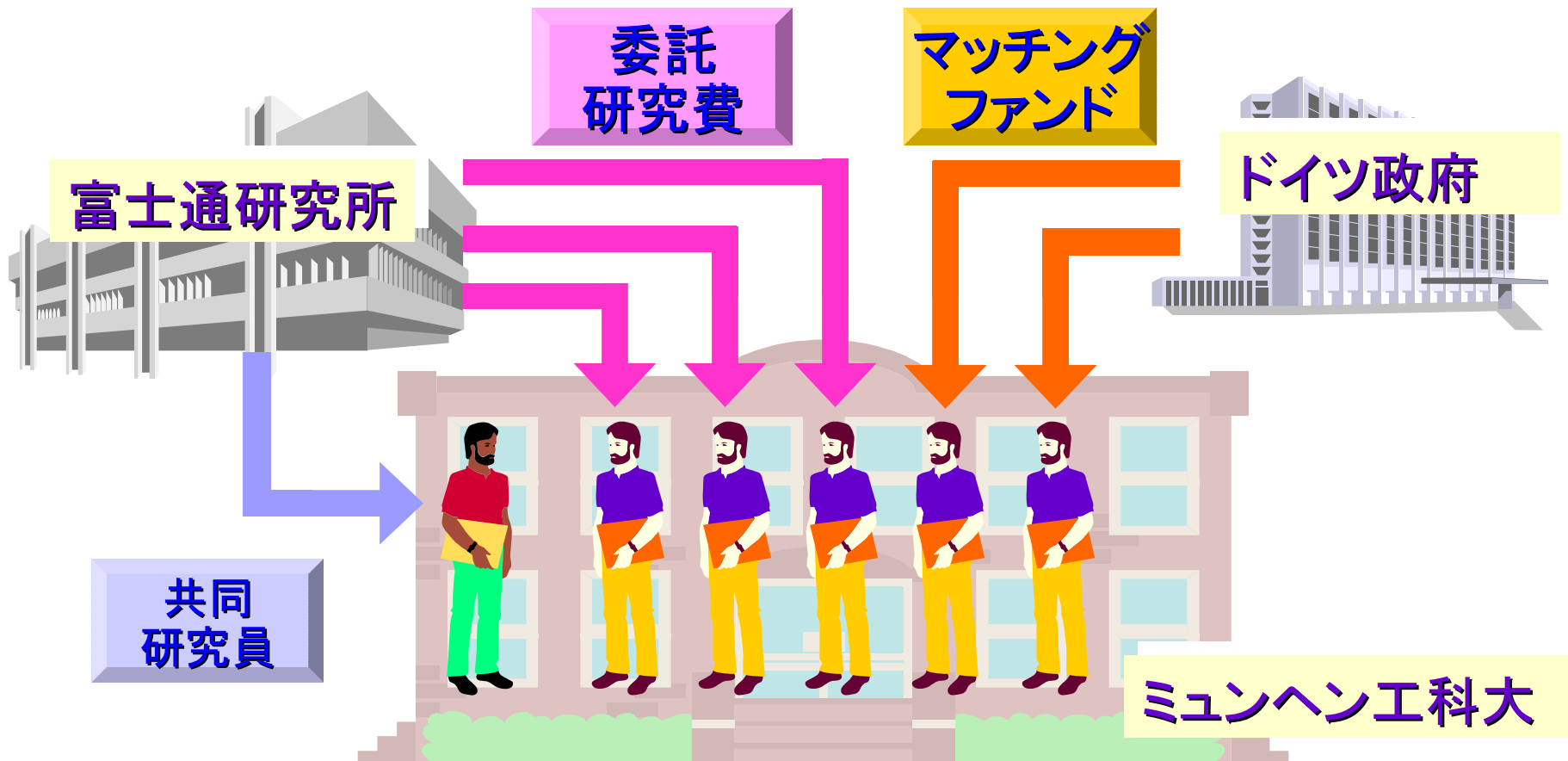
Search or browse the complete [RAE 2001 database](#).

例：ミュンヘン工科大との共同研究

～マッチングファンド活用で共同研究効率化～

富士通研究所委託：政府ファンド＝3：2

国内外で
増加中



例： ある米国大学のPR資料

教育の成果が研究受託のPRに

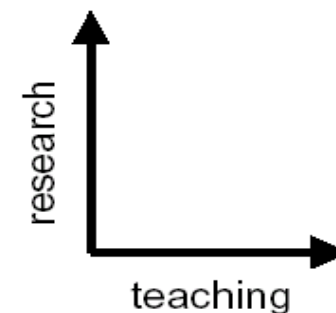
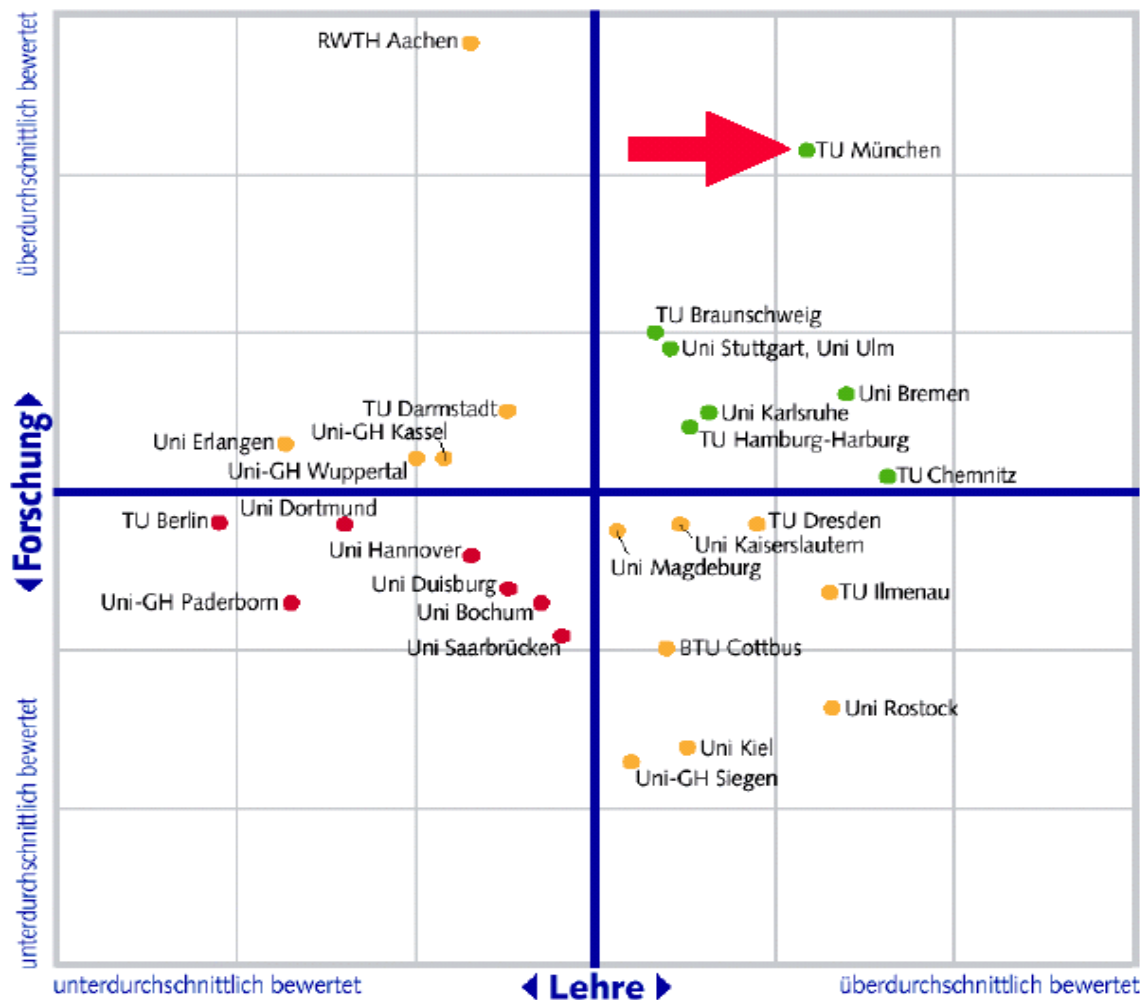
The Undergraduate Program

- Approximately 1700 undergraduate majors
 - 260 B.S. degrees annually
- Balanced combination of theory and practice
- Strong honors program with research projects
- More NSF Fellows than almost all other institutions
- **New ABET accredited Computer Engineering program with 600 students**

例 ミュンヘン工大は教育と研究でのランキングを主張



Ranking



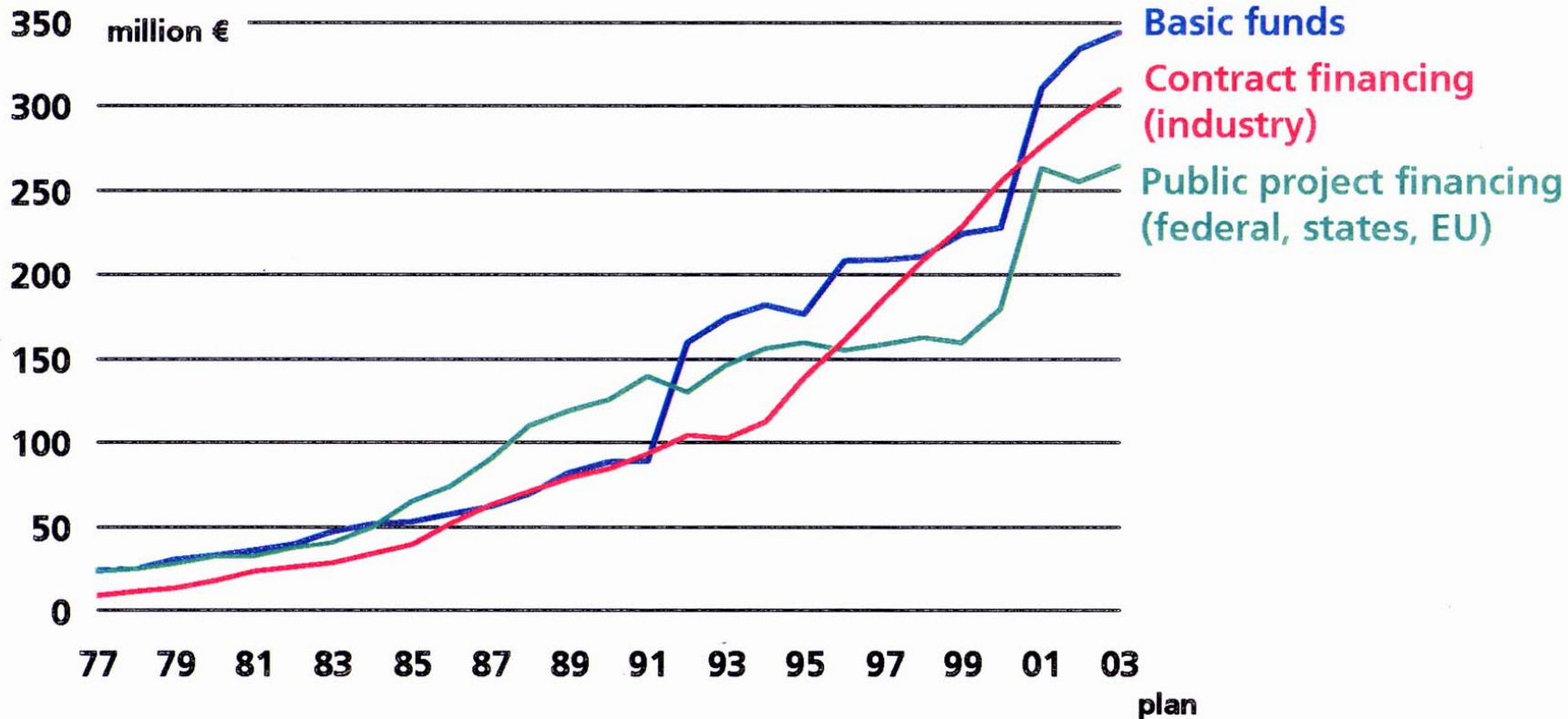
Reference: Centrum für Hochschulentwicklung, published in "Stern Studienführer 2000"

ドイツ Fraunhofer研究所の例

傘下研究所数	58 (含 旧HHI, GMD)
職員総数	12,500人
研究予算年額	1 billion Euro
研究開発分野	電子情報通信, エネルギー, 環境
形態	独立法人 (Semi-governmental)
大学との連携	多くの研究リーダーが大学兼務

例： 研究資金間のバランス (FhG, ドイツ)

Financing of contract research



24. Juni 2002 A2 STV.ppt



例： Balance between R&D-Value Chain and Financing (FhG, ドイツ)

R&D-Value Chain

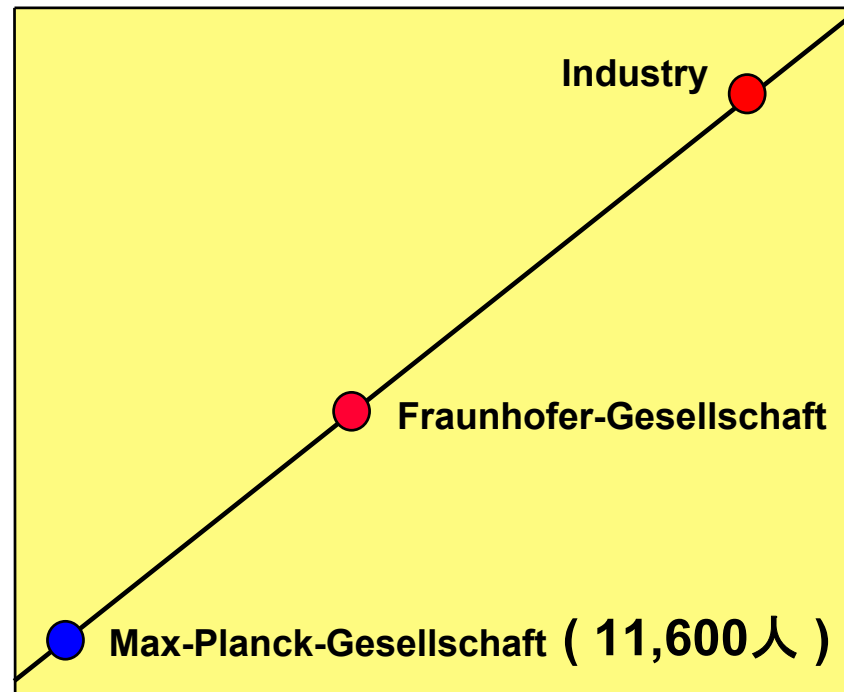
Prototyping,
Technology Transfer

Development,
Engineering

Applied research

Application-
oriented basic
research

Basic
research



100 % public

100 % private Financing

Technology Value Chain の明確な意識

Fraunhofer研究所公開資料より

IMECの例

IMEC

 **IMEC (Interuniversity MicroElectronics Center)** is Europe's leading independent research center in the field of microelectronics, nanotechnology, enabling design methods and technologies for ICT systems.
> [More about IMEC](#)

IMEC in Figures

Personnel (total : 1263 ; status January 1, 2003)

- Staff: 879 members
- Guest researchers & industrial residents: 384
- 85 % directly involved in R&D
- 32 % non-Belgian employees, 50 different nationalities
- average age = 33,6 year
- 62 % university degree
- 10 % PhD students

Financial Accounts

In 2002 IMEC's self-generated income rose by 15% to **104.75 million euro**. Today, IMEC generates 76% of its total budget, the remaining 24% being funded by the Flemish community.

self-generated income (percentages):

- 48,55 % : International industry
- 30,56 % : Flemish industry
- 17,94 % : European Community
- 2,73 % : European Space Agency
- 0,21 % : Government

Annual Accounts in EURO:

- Balance sheet: [assets & liabilities](#)
- [Income/Expenditure & Cost structure](#)

中国の大学の例

活発な競争環境

ハングリー精神(費用の30%が不足)

「ビジネスは受注から始まる」方式

例： 清華大学の企業連携対応組織

- 1983年 科学技術開発部設立
企業との協ルートの開拓
- 1995年 「大学と企業の協力委員会」設立
UICC (University-Industry Cooperation Committee)
内外140余社(海外30%)メンバー
科学技術契約件数・金額増30%/年

清華大学 王大中 学長

日中科学・産業技術交流シンポジウム

2002.7 於：人民大会堂

VI. Level Assessment in First Class Subjects in China

Subject	Rank	No. 1	No. 2	No. 3
Mathematics		Beijing University	Fudan University	Zhejiang University
Physics		Institute of Physics, China Academy of Sciences	Beijing University	Nanjing University
Chemistry		Beijing University	Nanjing University	China University of Science & Technology
Mechanical Engineering		Tsinghua University	Habin Polytechnic University	Xian Jiaotong University
Electronic Science & Technology		Tsinghua University	BUPT	The University of Electronic Science & Technology
Information & Communication Engineering		Tsinghua University	Xian University of Electronic Science & Technology	BUPT
Control Science & Engineering		Northeast China University	Zhejiang University	Tsinghua University
Computer Science & Technology		Defence University of Science & Technology	Tsinghua University	Beijing University
Biomedical Engineering		Zhejiang University	Southeast China University	Shanghai Jiaotong University
Crops Studies		Central China University of Agriculture	China University of Agriculture	Nanjing University of Agriculture
Plant Protection		China University Of Agriculture	Zhejiang University	Nanjing University of Agriculture
Management Science & Engineering		Xian Jiaotong University	Tsinghua University	Habin Polytechnic University

X. Students With Very High Quality (1)

High Pass Rate and Excellent Ratio in English Tests of Band-4 & Band-6 Among 10 Universities of Science & Technology in Beijing in 2001

No.	University Name	Student No. Grade-4	Pass %% Grade-4	Excellence % Grade-4	Student No. Grade-6	Pass % Grade-6	Excellence Grade-6
1	BUPT	1164	82.0	14.3	754	46.8	1.7
2	Tsinghua University	2132	68.2	5.9	470	36.6	1.3
3	BUAA	1884	62.6	2.4	1151	34.1	0.5
4	Beijing Ligong University	625	61.8	5.8	864	28.1	0.8
5	Beijing University of Chemical Engineering	229	61.1	4.8	700	27.3	0.4
6	North China Polytechnic University	1741	61.0	4.1	455	22.4	0.4
7	North China Jiaotong University	1765	56.3	2.7	905	21.3	0.4
8	Beijing University of Science & Technology	1321	43.6	2.3	657	21.2	0.0
9	University of Petroleum	1441	37.3	1.2	145	18.6	0.0
10	Beijing Polytechnic University	967	25.3	0.1	626	16.1	0.0

北京郵電大学(BUPT)の戦略

- 教育・研究の国際化を目指し、英語教育強化
- 英語の授業増強(学長自ら率先)
- 産業界(含 海外)からの客座教授招聘

効果

- 学生の積極性
- 留学生の活躍

企業研究所における努力の例

マーケット指向のソリューション開発

ソリューション

ブロードバンド

ユビキタス

セキュリティ

ITシステム、メディア

ネットワーク、モバイルコミュニケーション

ペリフェラル、ストレージシステム

シリコン、フォト・エレクトロニクス、システムLSI

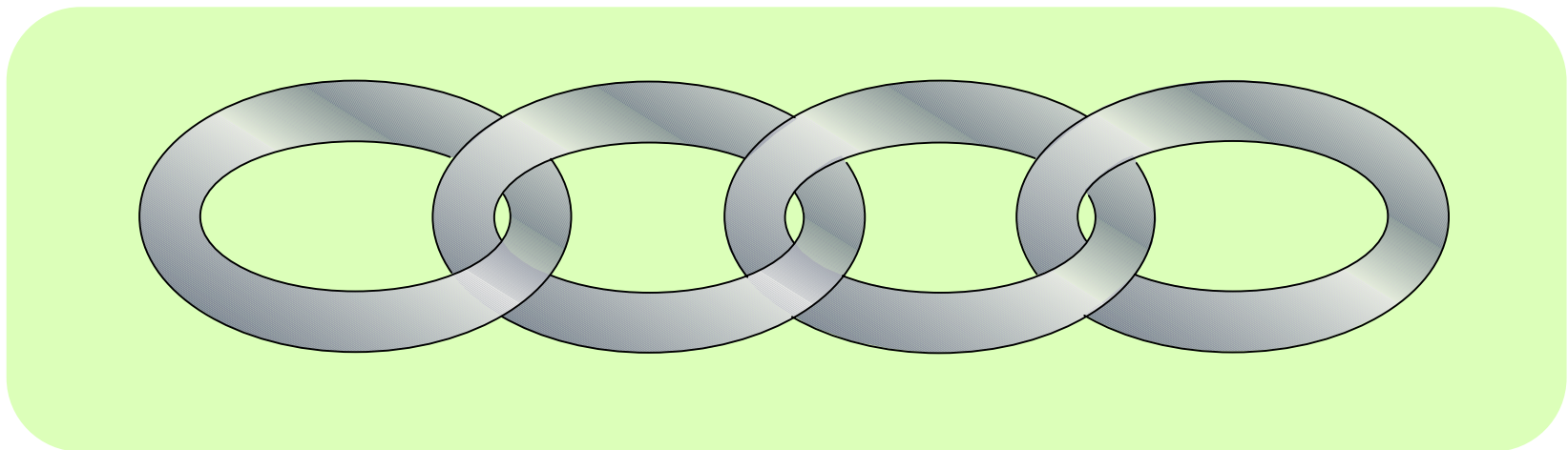
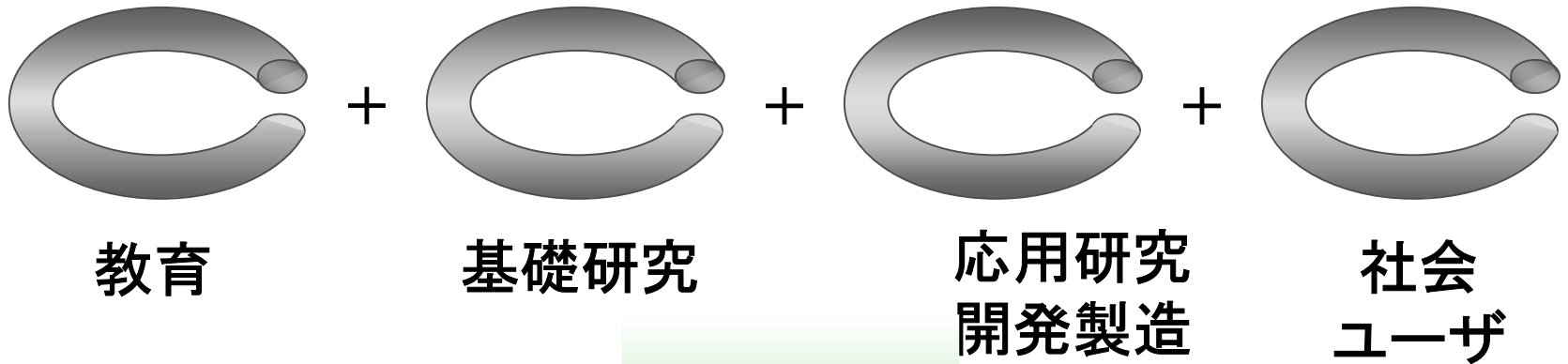
材料、環境

技術
開発

いくつかの提案

産業界は大学の教育と研究に
熱い期待を持っています。
そのための提案です。

テクノロジー バリューチェーンをつなごう



テクノロジー・バリューチェーンをつなごう

日本のバリューチェーンは十分つながっているか？

教育 — 基礎研究 — 応用研究 — 開発・製造 —
— 社会(ユーザ)

成果(Outcome)の出口はどこにつながるか

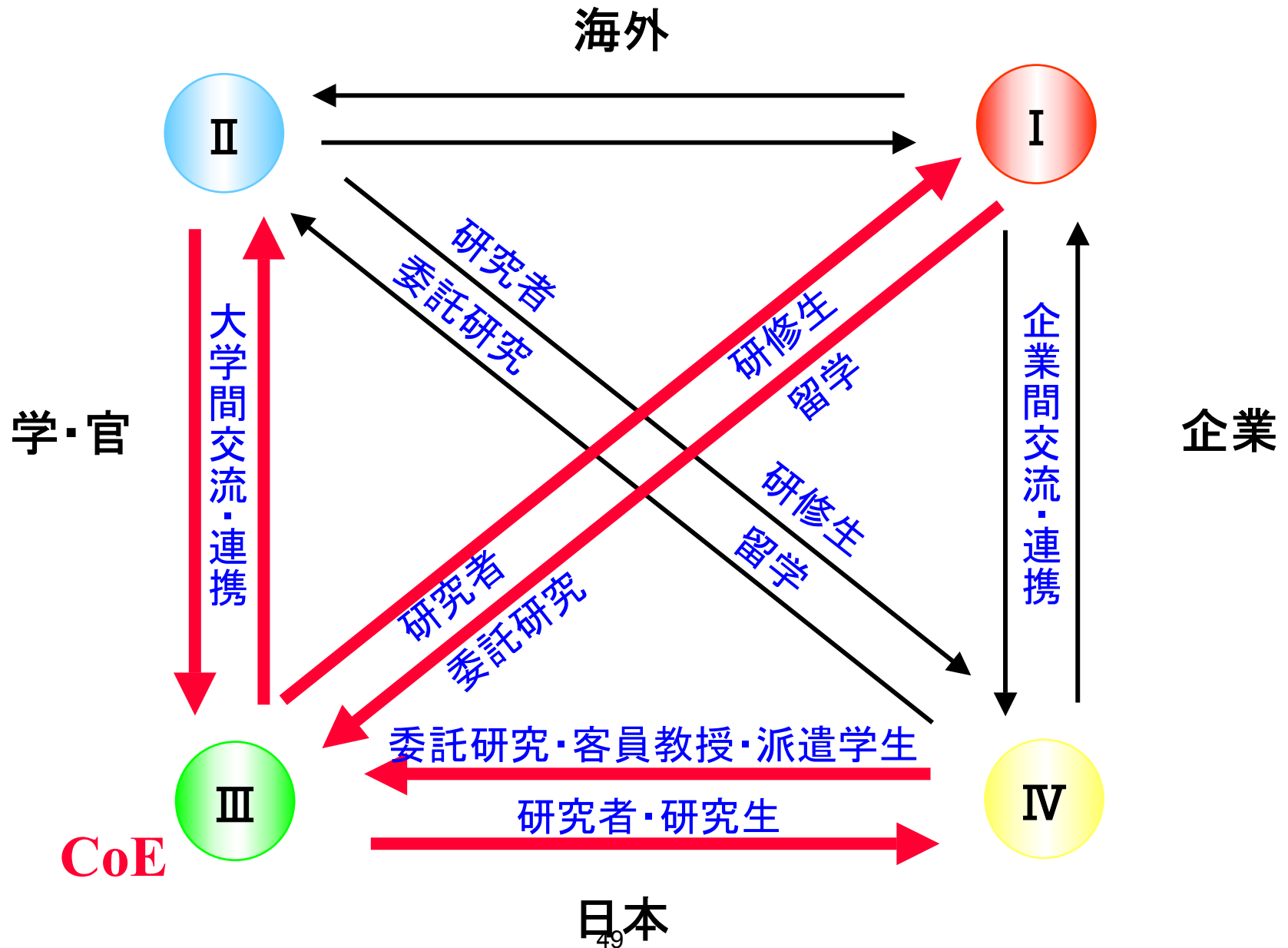
顧客(次段階のPlayer)は誰か

産業界は顧客指向・応用指向(下流方向)にシフトしているため、基礎研究(上流方向)が手薄になり、大学との連携が不可欠に

基礎研究なしに海外から買ってきた技術の組み合わせで行うビジネスに国際競争力はない

- JABEE・学協会の役割りの中心はここに —
- テクノロジー・バリューチェーンを国際的につなぐ努力で
国際的な技術者が育つ —

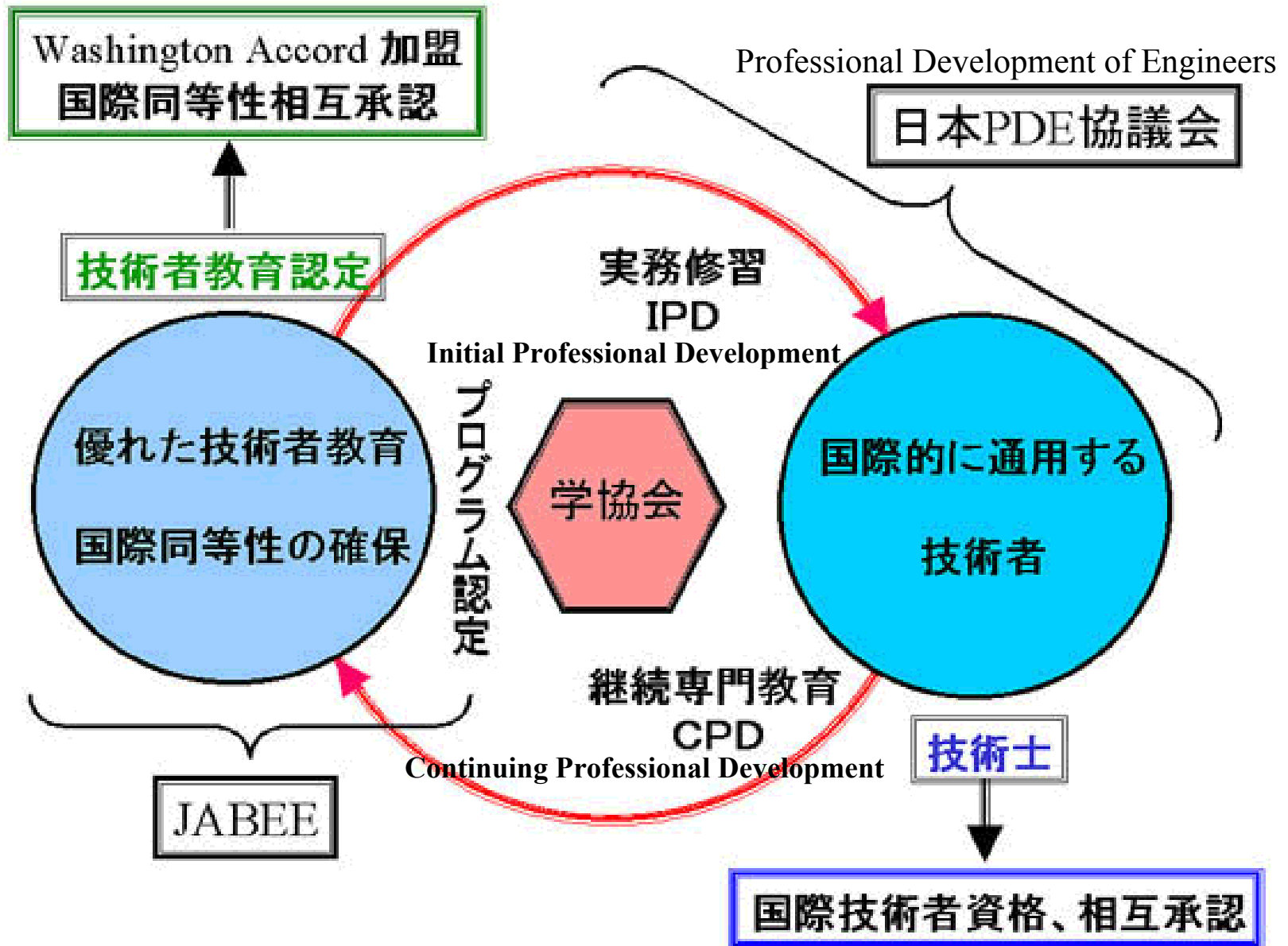
大学を中心とした連携の国際化を



バリューチェーン強化のための人材交流を

- (U → I) インターンシップ
可能なら 6ヶ月程度
- (U → I) 大学教員・研究者の企業滞在
- (I → U) 産業界リーダの大学滞在
- (I → U) 産業界の技術者を対象としたCPD
(Continuing Professional Development)

JABEEと生涯・継続専門教育の連携（産業界期待）



新しい人材への期待

- 基礎力をしっかり持った人材
- 柔軟な人材
- 技術者としての使命感, 職業観を持った人材
- 人生に夢を持った人材
- グローバルな 視野と関心

Center of Excellence

から

さらに

Network of Excellence* へ

* Prof. Djan Khoe, Eindhoven University of Technology

Thank you!

mochida@fujitsu.com