

## Managing IP in R&D Collaborations

CARDS / WIPO University Research and Development Initiative  
Regional Workshop on Searching of IP Information for University IP  
Coordinators  
Skopje, Macedonia, June 7<sup>th</sup> to 9<sup>th</sup>, 2006

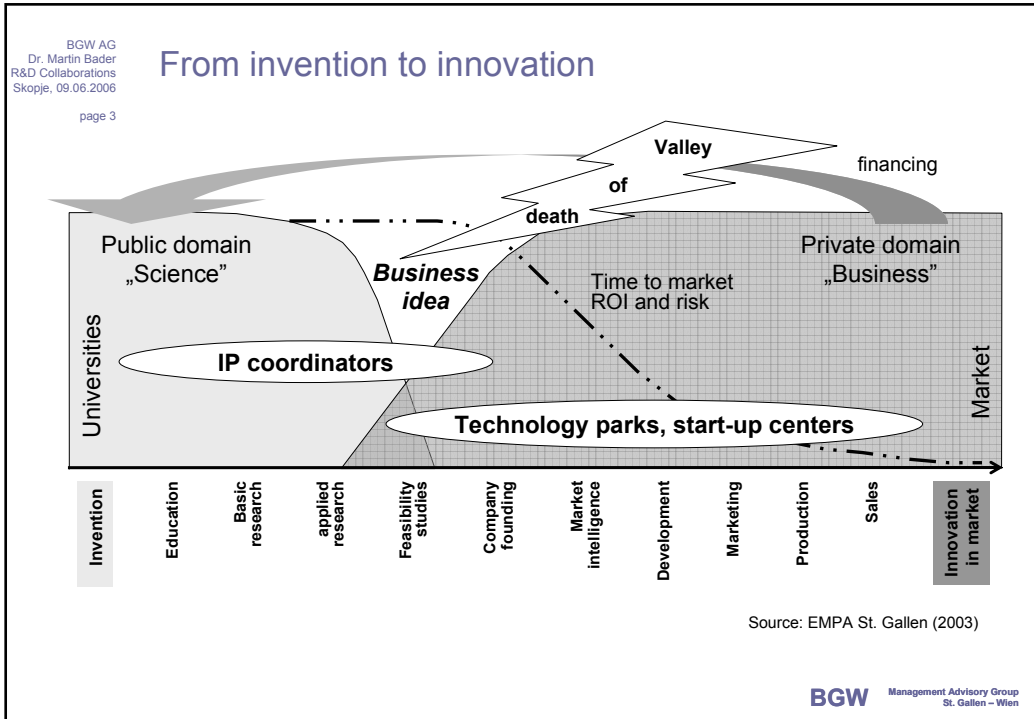
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## Agenda

- 1. Need for collaborative innovation processes
- 2. Universities and collaboration with research customers
- 3. How to deal with intellectual property issues (IP) in collaborations
- 4. Summary and managerial implications



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Skopje, 09.06.2006  
page 4

### Bridging the gap

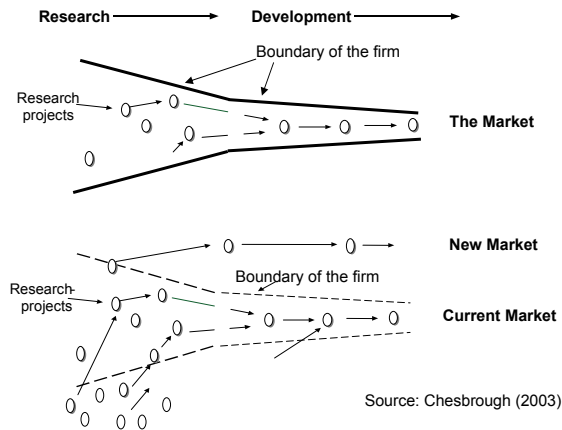
- One key issue is to establish professional relations between universities and R&D institutions and their sponsors of R&D activities (i.e. either collaborative research activities to create new IP or utilization of existing IP)
- Technology parks, venturing activities, and similar efforts are also trying to bridge this gap
- On the university and R&D organization side the “WIPO University Initiative” is aiming to do the same by helping universities to:
  - Create awareness about IP system
  - Design and adopt IP policies
  - Identify, assess, and develop their IP assets

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## Change of innovation paradigm

### Trends

- Faster innovation cycles
- Shorter product life cycles
- Technological change
- Globalization of markets
- Increasing competition
- Changing customer demands

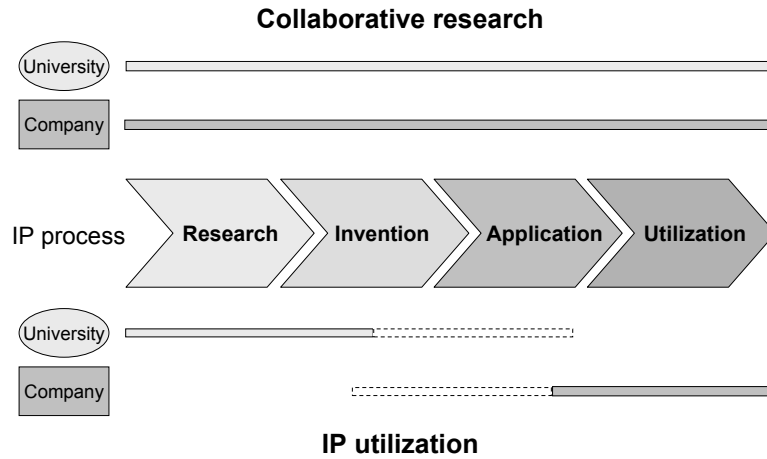


**Integration of externals into innovation process for better, more customer-oriented new products!**

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## Two ways for universities to profit from IP



## Collaborative research

- Collaborative research means a cooperation (i.e. integration of the company into the university's innovation process) to come up with new innovative ideas starting from the very beginning
- Looking from the university point of view this is one means of financing its R&D activities
- Relevant questions for this approach are:
  - How to manage the process of integrating an external company efficiently and effectively? This involves aspects of strategy, selection, organizational design, and interaction management
  - How to consider and solve IP-related questions in those types of R&D cooperations? In other words, how to divide the cake before it is even baked?

## Objectives of IP coordinator functions

- To be reference center for researchers, academic staff and students
- Acquire knowledge on the use of the IP system and know-how
- Provide access to technical information contained in patent documents to support research and development projects

Above objectives are inward focused and aimed at improving the generation of new knowledge/IP

- An additional **focus** could be set **to the outside** – meaning to the collaborative development and commercialization of IP and therefore to companies as “customers” of the university or R&D organization!

## Need for effective IP management at CARDS universities

### Message from chapters 1 and 2

- Strong need and trend towards collaborative innovation activities (to commercialize knowledge) both in B-2-B markets and in the scientific world (universities and R&D organizations)
- A key feature is the development of and control over knowledge as intellectual property (IP)
- IP coordinators therefore play a vital role in the successful commercialization of the public sector research base
- Some universities, especially in the Anglo-American world are already very successful in marketing their IP

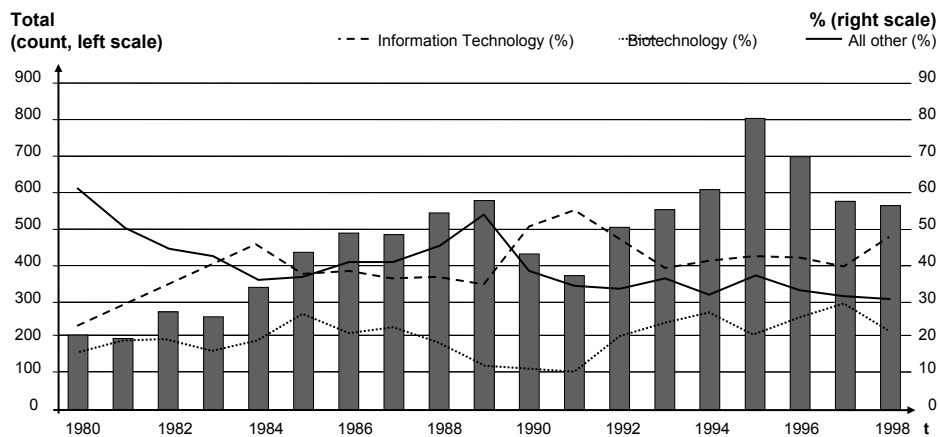
## Agenda

page 11

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## Continuous average growth of R&D partnerships during last decades

page 12



Note: Information technology comprises computers, telecommunications, semiconductors, industrial automation and software

Source: OECD 2002, National Foundation 2000, Appendix Table 2-67, on basis of MERIT/CATI database

## However, there is still a high failure rate of R&D collaborations

- **“Only 45% were found to be successful for all partners”**  
study based on 880 cooperative arrangements and joint ventures  
(*Harrigan 1988*)
- **“Alliance failure rates in the 50-60%”**
  - recent studies:  
(*Spekman et al. 1996, Dacin et al. 1997, Frerichs 1999, Duysters et al. 1999, Kelly et al. 2002*)
  - recent studies by consulting companies:  
(*Kok and Wildeman 1998 - KPMG, Andersen Consulting 1999, Stafford 1994 - McKinsey, Coopers & Lybrand*)

## There is a growing demand for managing intellectual property in R&D collaborations

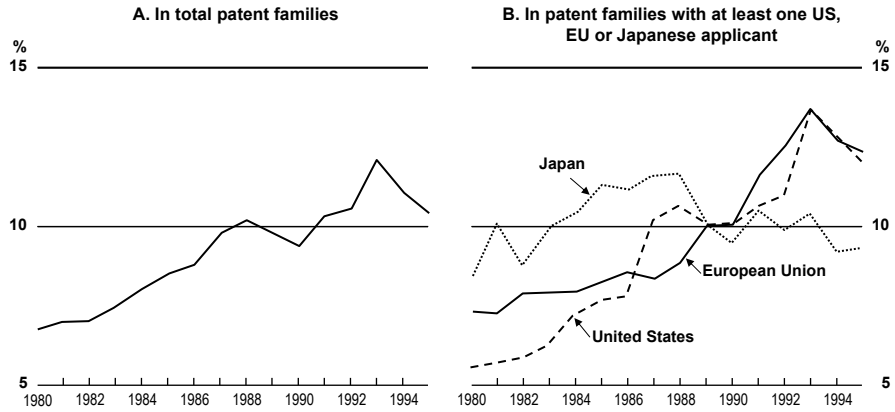
- **Increasing demand for using external, complementary intellectual property**  
(*Chesbrough 2003*)
- **Increasing willingness to share intellectual property with external partners**  
(*Kline 2003*)
- **Increasing share of formal and informal R&D collaborations between companies**  
(*Hagedoorn 2003, 1993; Bouty 2000; Osborn 1990, von Hippel 1988*)

\*Source: IRI R&D Trend Forecast for 2003, Increase in Alliances and Joint Ventures

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### Average growth of jointly owned patents

page 15



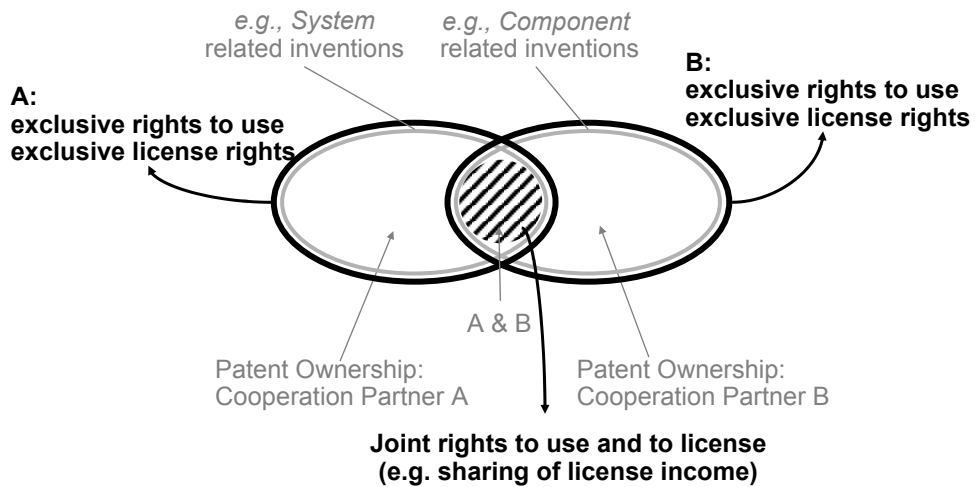
Note: A triad patent family is a patent applied for at the EPO and the JPO and granted by the USPTO for inventions that share one or more priority dates. Applications are sorted by priority date (date of first filing worldwide) for granted patents only (granting date up to 2000). Co-applications in patent families with at least one US, EU or Japanese applicant, as presented in the figure on the right, are not mutually exclusive.

Source: OECD 2002

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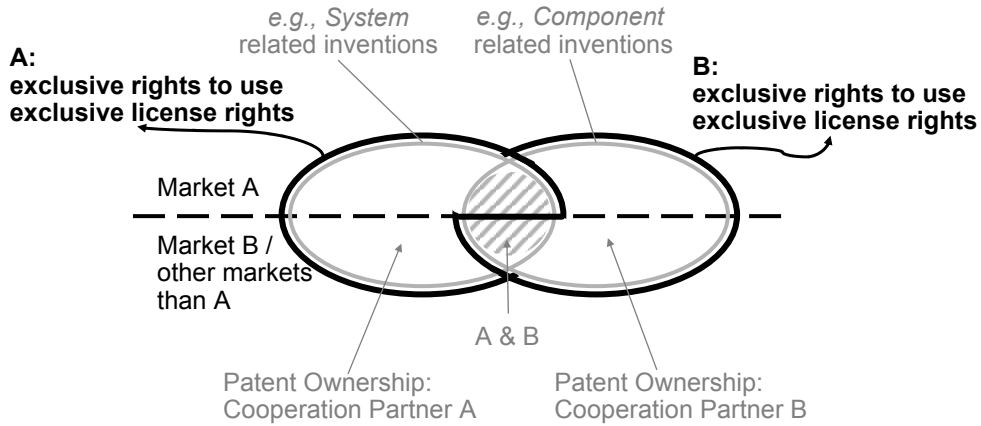
### Fully mutual rights to use and licensing rights might contradict original motivation of the partners

page 16



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page 17

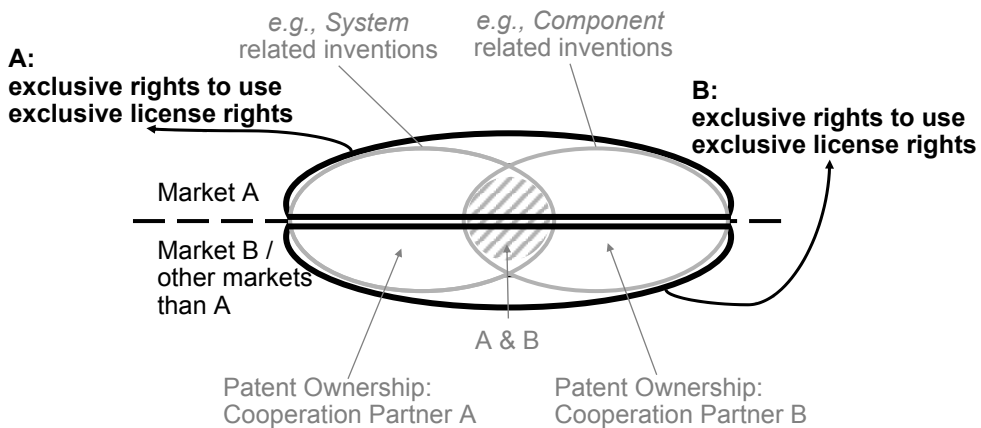
**Possible Solution: separating jointly owned rights to use and joint licensing rights**



**Purpose:**  
e.g., to keep exclusivity within a certain market field, e.g. pharma, chemistry

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page 18

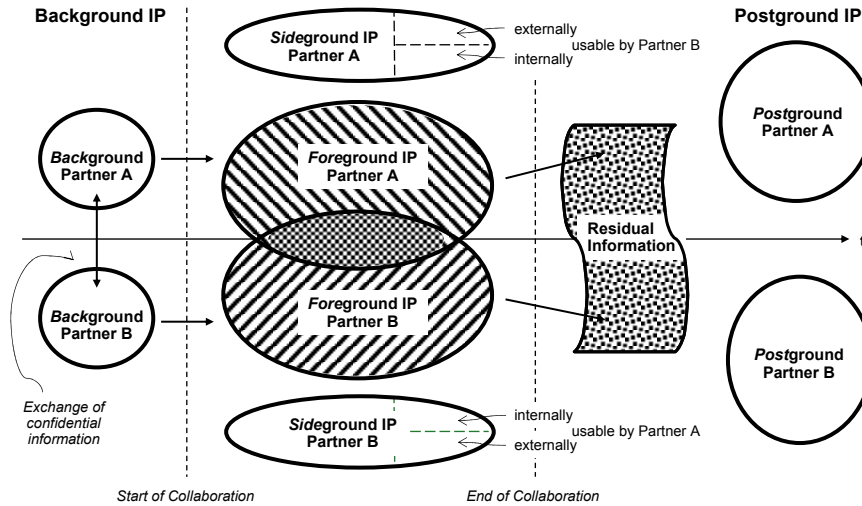
**Possible Solution (II): market defined, exclusive rights of use and joint licensing rights**



**Purpose:**  
e.g., to enable maximum collaborative exchange (research teams!);  
while keeping exclusivity between Market A and B

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page 19

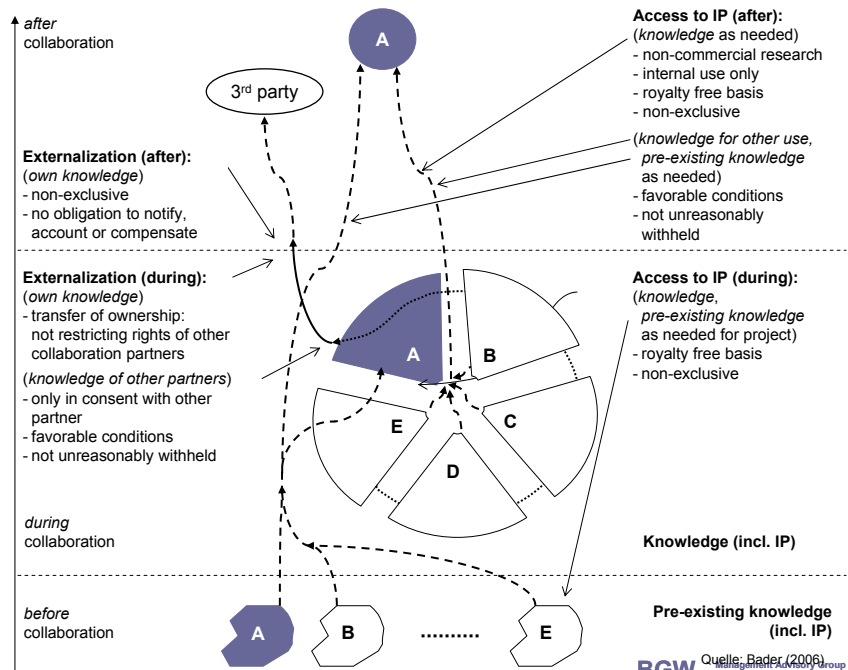
### An R&D collaboration has a past and a future!



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page 20

### Check the access and exit possibilities of collaborative IP



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## Protection of competitive advantage

There are various aspects to consider in R&D collaborations...

- *Patent ownership (sole and joint inventions)*
- *Rights to use*
- *(Sub-) licensing rights*
- *Enforcement of rights*
- *Costs*
- *Administration*
- *Prosecution*
  
- *Watch out !*  
*there are further rights being important for a R&D collaboration, e.g., background IP ...*

## Characteristic dimensions for managing intellectual property in R&D collaborations

### Collaboration Focus Dimension

#### In-bound

- Access trusted innovators
- Access new resources
- Gain know-how and IP
- Situatively select best-in-class technology and IP

#### Out-bound

- Multiply technology leadership
- Generate new products
- Leverage own technology
- Enrich and update own technology by collaborative returns

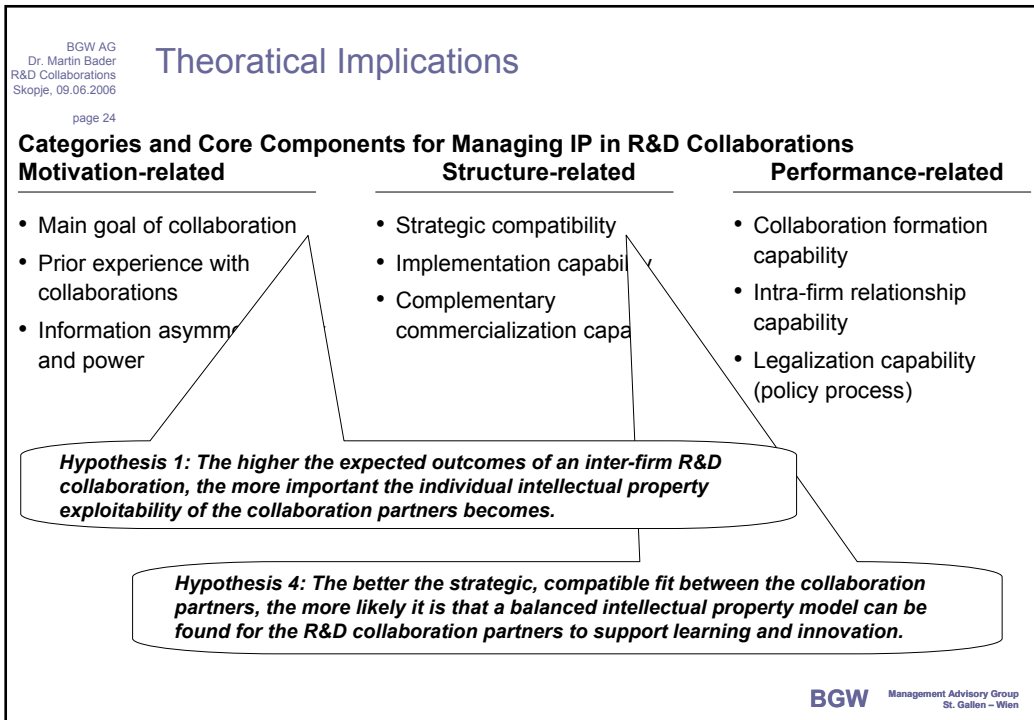
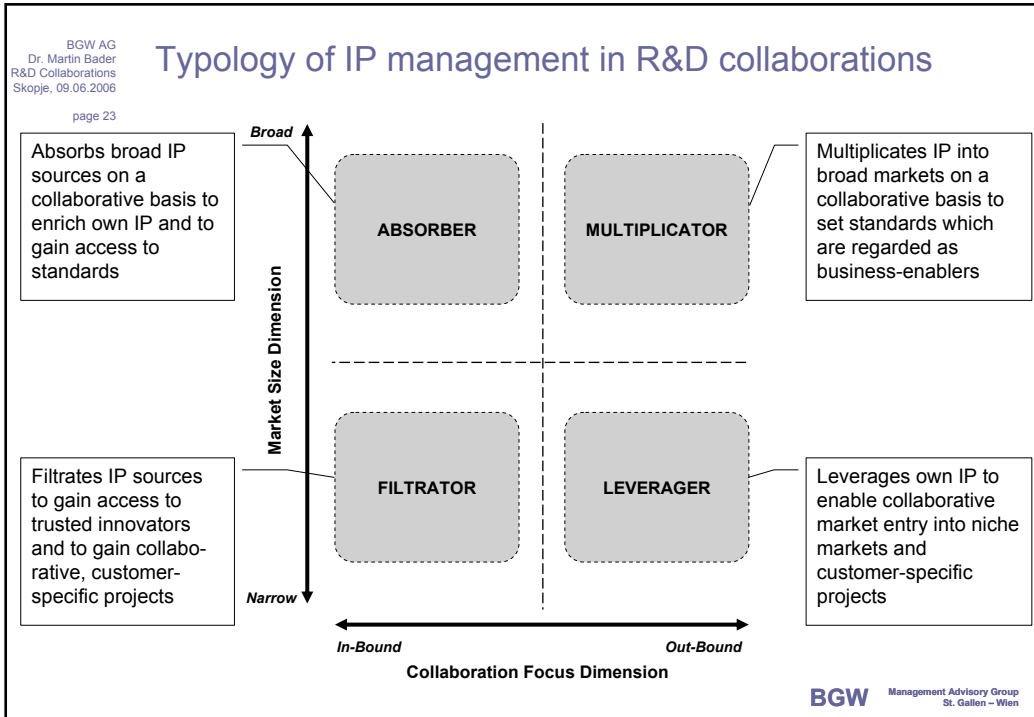
### Market Size Dimension

#### Narrow

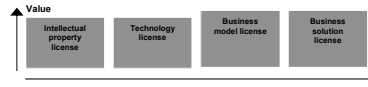
- Enable customer specific projects and solutions due to IP
- Collaboratively enter niche markets
- Participate in other market segments while having low own risk

#### Broad

- Enable and get access to standards due to IP
- Enter broad markets
- IP works as business-enabler
- Broad access to IP, e.g., to reduce own exposure

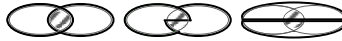


## Managerial Implications



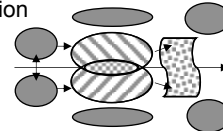
### Scope of Contract

- Understand the individual needs and positions of the collaboration partners
- Understand the collaboration partner's business model and the role of collaborative IP for it



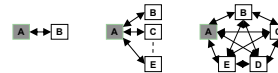
### Terms of Contract

- Clarify and set the terms of the collaboration before entering the collaboration
- Balance the contracts to counter imbalance of power



### Procedural Aspects

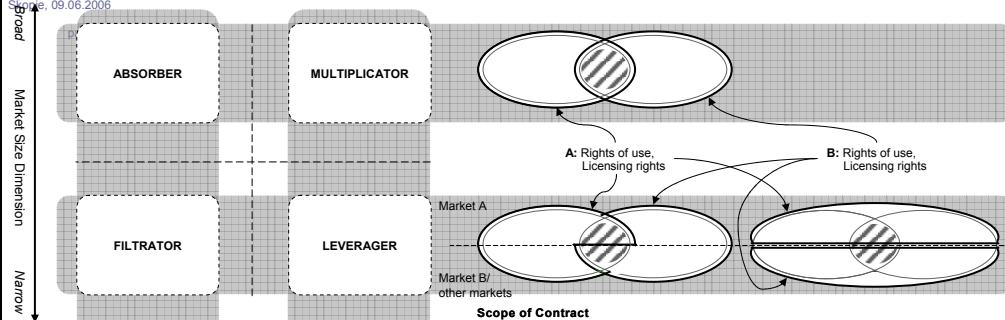
- Insure back-license on collaborative improvements and further developments, or respectively, secure the relevant intellectual property to be able to operate independently post collaboration
- Deal with the various stages of collaboratively generated IP
- Setup and optimize the (internal) process between the collaborating and negotiating levels



### Collaborative Settings

- Focus on the skills and the know-how of the collaboration team to create a win-win situation
- Deploy experienced staff for the collaboration selection process

## Summarized model for managing IP in R&D collaborations



### Scope of Contract

- Understand the individual needs and positions of the collaboration partners
- Understand the collaboration partner's business model and the role of collaborative IP for it

### Terms of Contract

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## Summary with respect to collaborative research

- Identification and description of determinants and design factors for early customer integration
- Development of conceptual managerial model of early customer integration focussing on manufacturer goals and resulting customer roles
- Providing a guideline for role-specific design and execution of successful early customer integration

### **Transformation to collaborative research**

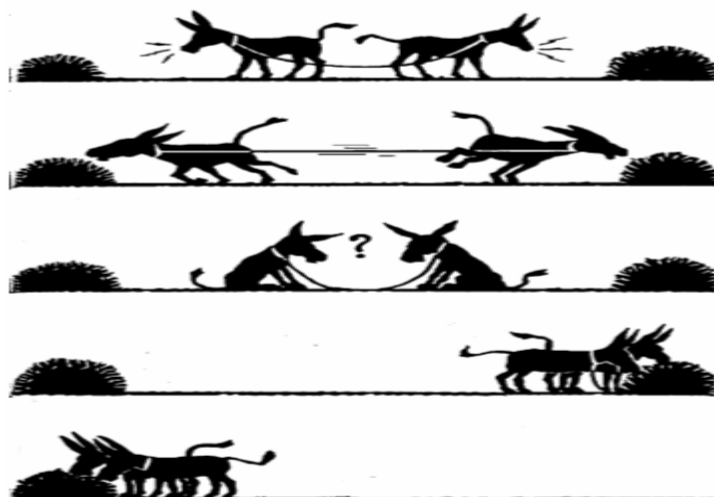
- Seeing companies as customers and actively approaching them to foster collaborative research (and therefore the generation of new IP) may be a new worthwhile role of IP coordinators at universities and R&D organizations.
- The integration of those companies is very similar to early customer integration in the B-2-B world. Therefore it has to be managed as integration process looking at strategic, cultural and organizational issues.
- The distribution of potential IP rights stemming out of those collaborative efforts is particularly difficult and requires thorough preparation.

## Managerial Implications (II)

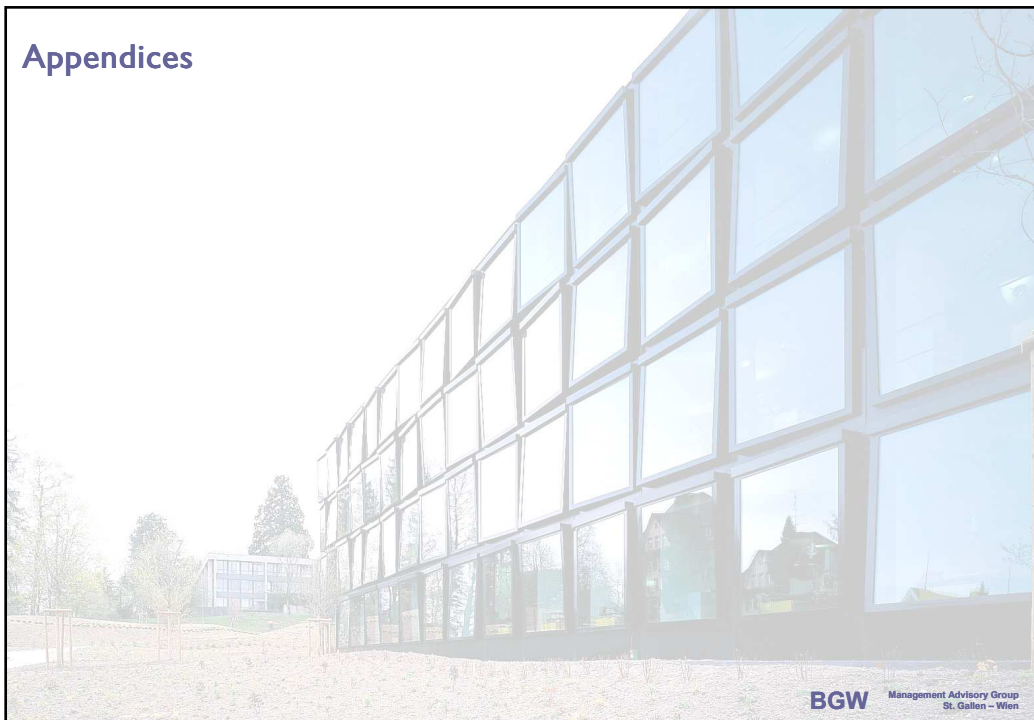
### Success Factors for Managing Intellectual Property in R&D Collaborations

1. Determination of dominant typology
2. Assessment of scope of contract
3. Establishment of terms of contract
4. Incorporation of procedural aspects
5. Consideration of collaborative settings
6. Demarcation from existing intellectual property
7. Regular communication
8. Invention checks at early milestone markers in the innovation process
9. Efficient patent portfolio management from the beginning on
10. Definition of exit strategies at the early stages of the collaboration

## Thank You!



## Appendices



## BGW AG – Management Advisory Group

- BGW AG is a spin-off from the Institute of Technology Management (ITEM) of the University of St.Gallen (HSG)
- Offices in St.Gallen and Vienna
- Development of sustainable, well-fitting solutions in innovation and intellectual property management
- Extensive project management and support: from goal definition, facilitation studies, analyses and concepts to activity plans and succeeding implementation
- The relation to the Institute of Technology Management of the University of St.Gallen (ITEM) enables the access to current and important developments and insights into the international innovation management and strategy research
- International team with a large set of focused practitioner's and academic's experiences:  
Dr. Martin A. Bader, Dr. Christoph H. Wecht, Prof. Dr. Oliver Gassmann

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**BGW AG: Competence team with a large set of experiences**



**Dr. oec. Martin A. Bader**, Managing Partner

- Intellectual property expert
- European Patent Attorney, Swiss Patent Attorney
- Former Vice President and Chief Intellectual Property Counsel, *Infineon Technologies*



**Dr. oec. Christoph H. Wecht**, Managing Partner

- Innovation management expert
- Extensive, international experiences as development engineer and project manager, in Austria, Germany and the USA
- Former head of Knowledge Management & Innovations, *Continental*



**Prof. Dr. Oliver Gassmann**, Partner

- Ordinarius for technology management and managing director of the Institute of Technology Management of the University of St.Gallen
- Member of various economic and academic councils
- Former Vice President Technology, *Schindler*

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Skopje, 09.06.2006  
page 34



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**Business Experience**

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Management Advisory Group St.Gallen and Vienna, since 2005

**Infineon Technologies AG** *Vice President and Chief Intellectual Property Counsel*  
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**Siemens Aktiengesellschaft** *Director Innovation and Patent Management,*  
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*Patent Counsel; Erlangen, Germany, 1995 – 1998*

**Education**

**University of St.Gallen** Institute of Technology Management  
Doctoral thesis on IP management in R&D collaborations; November 2005

**Qualification as European Patent Attorney**, 2000

**University of Karlsruhe** Dipl.-Ing. in electrical engineering, June 1995

**University of Southampton** Tripartite Exchange Program, 1993 - 1994

**ESIEE, Ecole Supérieure d'Ingénieurs en Electrotechnique et Electronique, Paris**, 1994 - 1995

## Current Projects and Workshops on Innovation Management

- Technology portfolio analysis with German technology enterprise, Munich; 2-day workshop for development and evaluation of a company wide technology portfolio
- Open innovation processes - early customer integration including the dealing with intellectual property. workshop; as part of course series „Innovation V“; Lustenau, Austria
- Research project with Syngenta Crop Protection, Basel; internal survey on innovation cultur and concept for an innovation workshop for an international meeting of research and development managers
- Outside-in innovation through partnering, expert workshop circle with 11 enterprises; duration from 4/2003 to 9/2003; expert support
- Research project with Hilti, Schaan, Liechtenstein; development of an integrated idea management concept
- Research project with Schindler, Ebikon, Switzerland; development of a corporate standardization and normation strategy
- Research project with SIG, Neuhausen , Switzerland; international market survey and strategy concept for the introduction of a new generation of mechanical engineering machinery
- u.nets – “Mit regionalen Unternehmensnetzwerken zum Erfolg“. EC funded project for supporting regional enterprise networks; by FH Vorarlberg, University of St.Gallen and FH Liechtenstein; two workshop circles in the SME-environment


## Current Projects on Intellectual Property Management

- Expert workshop series “Intellectual Property Management”, with ten multinational German, Swiss and Dutch companies from different industry sectors; focus on: IP management in the service industry sector
- Technology Transfer Project, IP Due Diligence Project; Germany
- International benchmarking project “Licensing of Intellectual Property”; chemical-, pharmaceutical- and biotechnology industry; Germany, Switzerland, The Netherlands
- “Multiplication Opportunities of Intellectual Property”, software industry, Germany
- Conductance of workshop series “Intellectual Property Management”, with nine multinational companies from different industry sectors, Germany, Switzerland, Liechtenstein
- International benchmarking research study “Strategic Technology Management – Globalization and Market Orientation in R&D”; one of four focus topics: intellectual property management, incl. collaborations; Switzerland, Germany, Great Britain, USA
- “Intellectual Property Management in Collaborations”; preliminary study for a global electronic industry, The Netherlands
- “External Marketing of Intellectual Property”; chemical industry, Belgium
- “Intellectual Property Management in Collaborations”; telecommunication services industry, Switzerland
- “Intellectual Property Management”; furniture component industry, Germany


**Publications on Innovation Management**

- *Das Management aktiver Kundenintegration in der Frühphase des Innovationsprozesses.* Wecht, C.H. (2006). Deutscher Universitäts-Verlag (Gabler Edition Wissenschaft), Wiesbaden, forthcoming
- Extreme Customer Innovation in the Front-End: Learnings from a New Software Paradigm. Gassmann, O.; Sandmeier, P.; Wecht, C.H. (2006). *International Journal of Technology Management IJTM* (33/1): 46-66
- Fit für China? Ein Überblick. Gassmann, O. ; Wecht, C.H.; Han, Zh. (2005). *KMU Life* (4): 34-35
- Early Customer Integration Into the Innovation Process - Towards a Conceptual Managerial Model. Gassmann, O.; Wecht, C.H. (2005). *Proceedings of the 12th International Product Development Management Conference*; Copenhagen, Denmark
- Creating Knowledge Together with Your Customers – The Case of Early Customer Integration (ECI) Into the Innovation Process. Wecht, C.H. (2005); in *Knowledge Management: Nurturing Culture, Innovation and Technology; Proceedings of the 2005 International Conference on Knowledge Management*; Hawamdeh, S. (Ed.); World Scientific, New Jersey et. al.
- Early Customer Integration Into the Innovation Process. Gassmann, O.; Wecht, C.H. (2005). *Proceedings of the 14th International Conference on Management of Technology*; Vienna, Austria
- Von der Kundenorientierung zur aktiven Kundenintegration. Sandmeier, P.; Wecht, C.H. (2004). *Technische Rundschau* (4): 31-33
- Innovationsprozesse: Öffnung statt Alleingang. Gassmann, O.; Sandmeier, P.; Wecht, C.H. (2004). *io new management* (1-2): 22-27
- Market Engineering: Gezielte Beeinflussung von Marktregeln. Auch in Unternehmensnetzwerken können die Geschäftsprozesse optimiert werden. Dür, A.; Hillbrand, C.; Meusburger, M.; Wecht, C.H.(2003). *io new management* (9): 10-14

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Skopje, 09.06.2006  
  
page 38



**Physica-Verlag**  
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**Intellectual Property Management in R&D Collaborations**  
The Case of the Service Industry Sector

**Bader, Martin A.**  
2006, ~280 pages  
ISBN: 3-790-817023

This work examines the current, relevant and complex problem of how companies can take an intellectual property lead within research and development collaborations. Special emphasis is placed on the early phases of the innovation process and the service industry sector, in which intellectual property management is still a new phenomenon. The author derives archetypes for managing intellectual property in collaborations and analyses their strengths and weaknesses. The findings of the book are based on a series of interviews with companies in a variety of industries and regions, as well as on a detailed examination of the service companies IBM, SAP, Swisscom and SwissRe. The author offers organizational and managerial recommendations based both on his extensive industry background and on scientifically induced hypotheses, and has thus written a book of interest to both scientists and practitioners.

**Keywords:**

- Intellectual Property Management
- Patent Management
- R&D Management
- Research Collaboration
- Service Industry Sector

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## Das Management aktiver Kundenintegration in der Frühphase des Innovationsprozesses

**Wecht, Christoph H.**

2006, ~254 Seiten, mit 40 Abb. und 9 Tab.

ISBN: 3-8350-0190-6

Innovation wird durch Veränderungen des Wettbewerbsumfeldes immer mehr zur Schlüsselkompetenz erfolgreicher Unternehmen. Mit einer Öffnung ihres Innovationsprozesses können Unternehmen dem stetig zunehmenden Innovationsdruck gerecht werden. Im Sinne eines Paradigmenwechsels von einer geschlossenen hin zur einer offenen Innovation gilt es, externe Partner in den Prozess zu integrieren, wobei die Rolle des Kunden als Innovationsquelle immer wichtiger wird.

Christoph H. Wecht untersucht die Frage, wie eine aktive Integration von Kunden in die Frühphase des Innovationsprozesses effizient und effektiv gestaltet und geführt werden kann. Hierbei ist vor allem die aktive Rolle des Kunden als Wertschöpfungspartner in der Frühphase des Innovationsprozesses des integrierenden Herstellers von Bedeutung. Fallstudien innovativer Vorreiterunternehmen dienen zusammen mit theoretischen Ansätzen aus der Literatur dazu, relevante Aspekte des Kundenintegrationsprozesses zu identifizieren. Der Autor entwickelt eine Methode der frühen Kundenintegration in den Innovationsprozess und gibt operative Handlungsempfehlungen.

Schlagworte: Fallstudien der frühen Kundenintegration, Konzeptualisierung der frühen Kundenintegration, Spezifische Kundenrollen der frühen Kundenintegration, Ablauf und Organisation der frühen Kundenintegration