

Intellectual Property Rights Exploitation

Thomas Bereuter, CLP

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STYRIAN ACADEMY for Sustainable Energies

Introduction of Thomas Bereuter

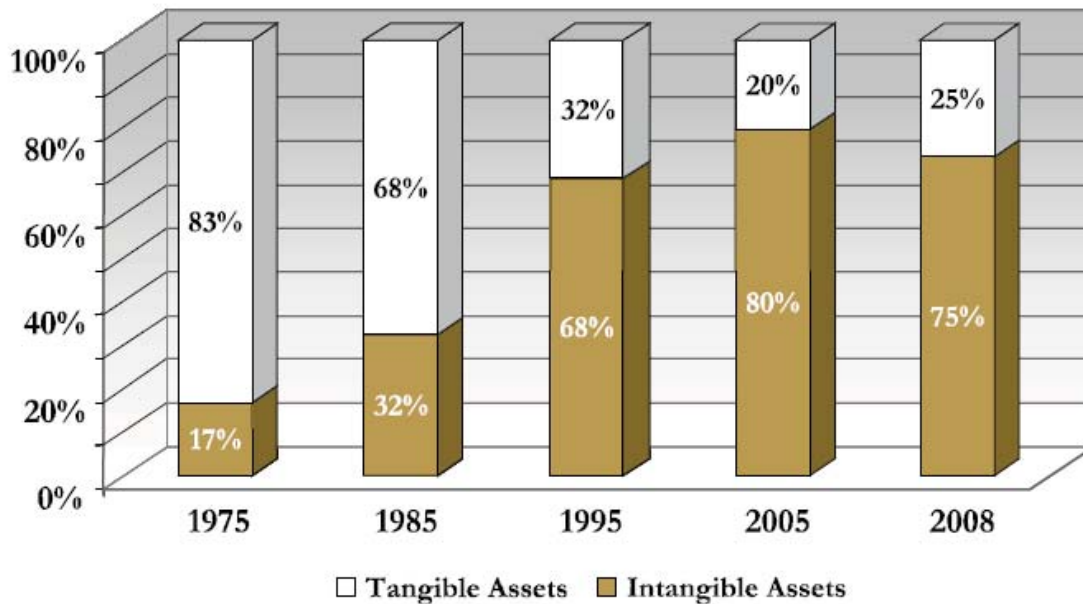
▪ **Tasks at Graz University of Technology**

- Set up and manage Technology Exploitation Office (TEO)
- CEO Forschungsholding TU Graz GmbH
- CEO Molekulare Biotechnologie GmbH

▪ **Key qualifications**

- Fundamental research (chemistry) at university and R&D in private research labs
- Commercialisation of own patents -> Licensing, Start-up and sale of technology
- Involved in Start-ups and Spin-offs
- Experience as consultant and management in the high-tech sector
- Certified licensing professional

Components of S&P 500 Market Value



Source: Ocean Tomo

Importance of intellectual property (IP)

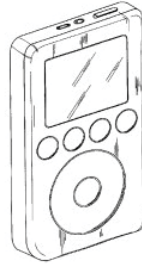


- **Essential business asset** in the knowledge economy
 - Swedish steel-maker Sandvik: 20% of its value is from IP!
- Increases **funding for innovative projects**
 - Without IP many innovative projects would not be profitable because anyone who wanted could simply copy the results
- Protects **small innovative firms**
 - Dolby® Laboratories
 - W. L. Gore & Associates (Gore-Tex®)
- Needed to release IP into the **public domain** under **controlled conditions**:
 - Linux (GPL): improvements must be free too!

Examples of valuable intellectual property



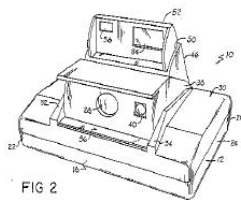
Coca-Cola®



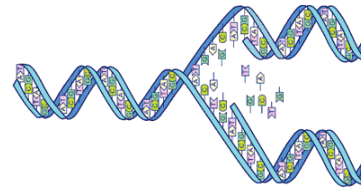
Apple® iPod®



Harry Potter



Instant camera



DNA copying process

What **not** to do when considering filing a patent application



- **No publication** prior to filing
e.g. no article, press release, conference presentation/poster/proceedings or blog entry



- **No sale** of products incorporating the invention prior to filing



- **No lecture or presentation** prior to filing
except under a **non-disclosure agreement (NDA)**



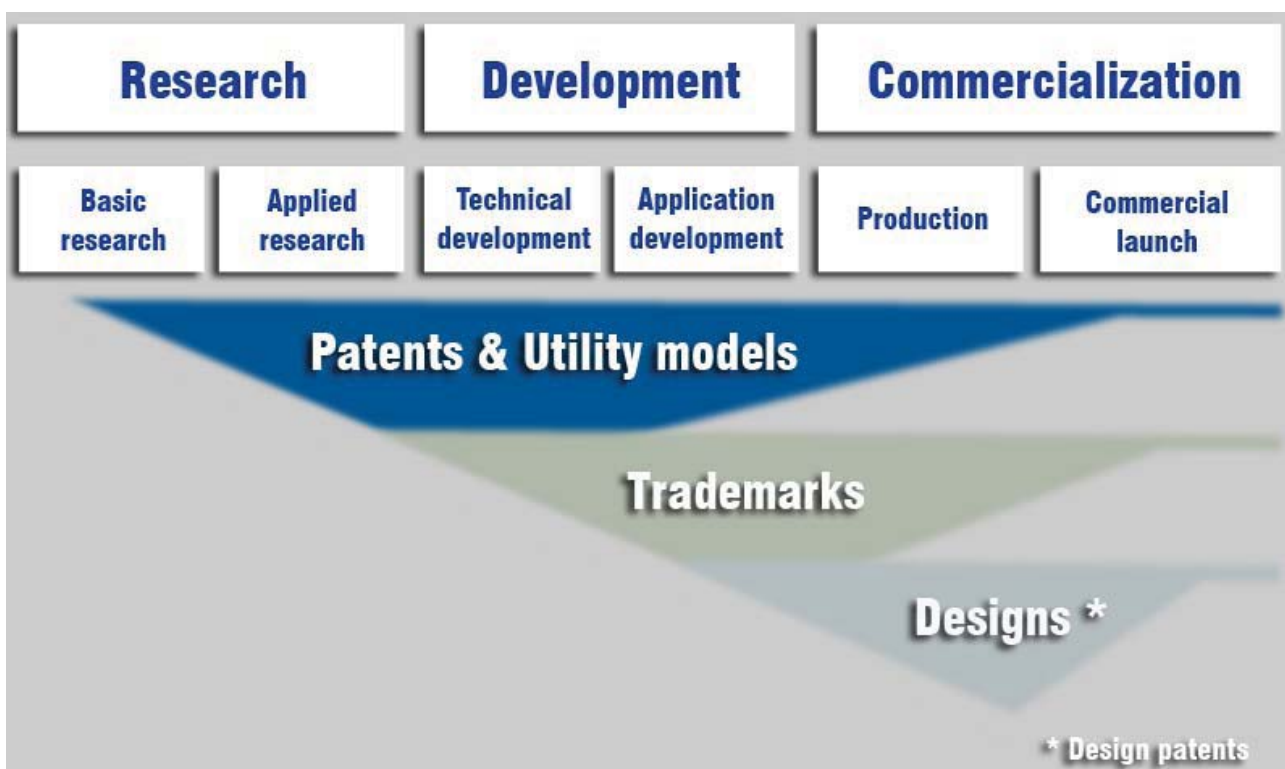
- Seek **professional advice** soon!
- **File before others do!**

Exploitable Intangible Assets

Intellectual property rights

- Patents, Utility patents (*Gebrauchsmuster*), Trade marks, Registered designs (*Geschmacksmuster*)...
- Know-how: Trade secrets
- Software: Copyright, secret source code, domains, in some cases utility patents or patents

Example for Patent: EP1538346A1 -> cf. ep.espacenet.com

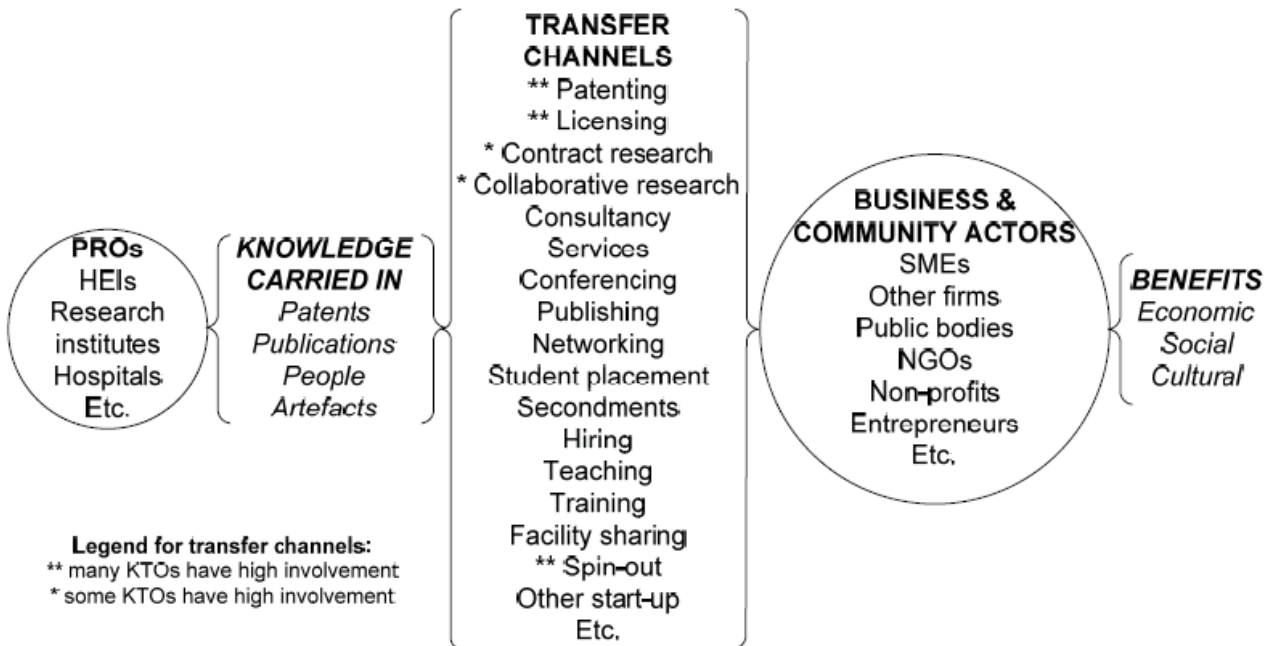


Universities as a Source of Innovations!

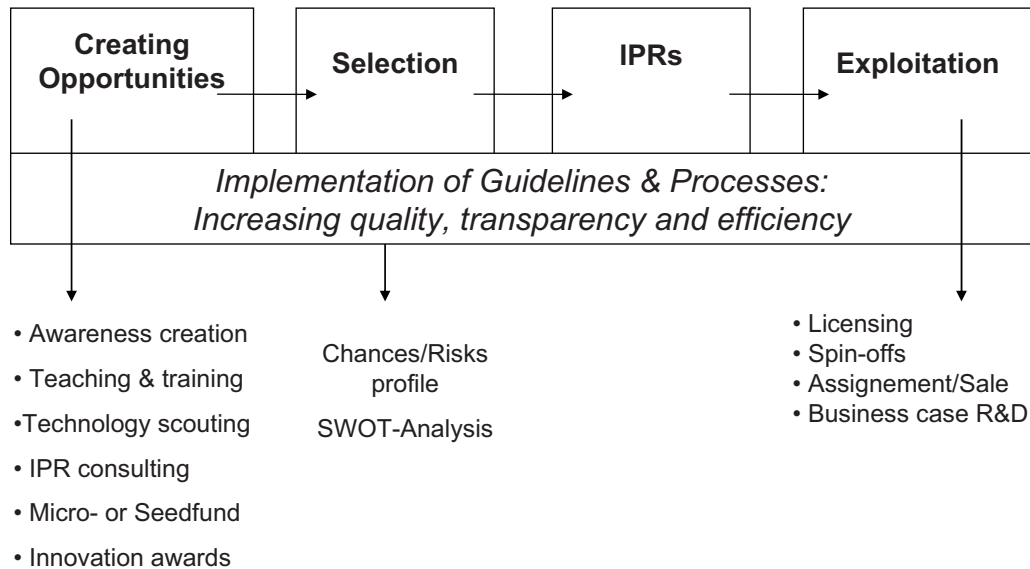
Innovation = Idea + Invention + Diffusion

Reference: Tobias Müller-Prothmann, Nora Dörr: *Innovationsmanagement. Strategien, Methoden und Werkzeuge für systematische Innovationsprozesse*. Hanser, München 2009, ISBN 978-3446417991

Trend to Open Innovation (Henry Chesbrough)



Duties & Responsibilities



Guidelines

Guideline for the exploitation of results of research and development

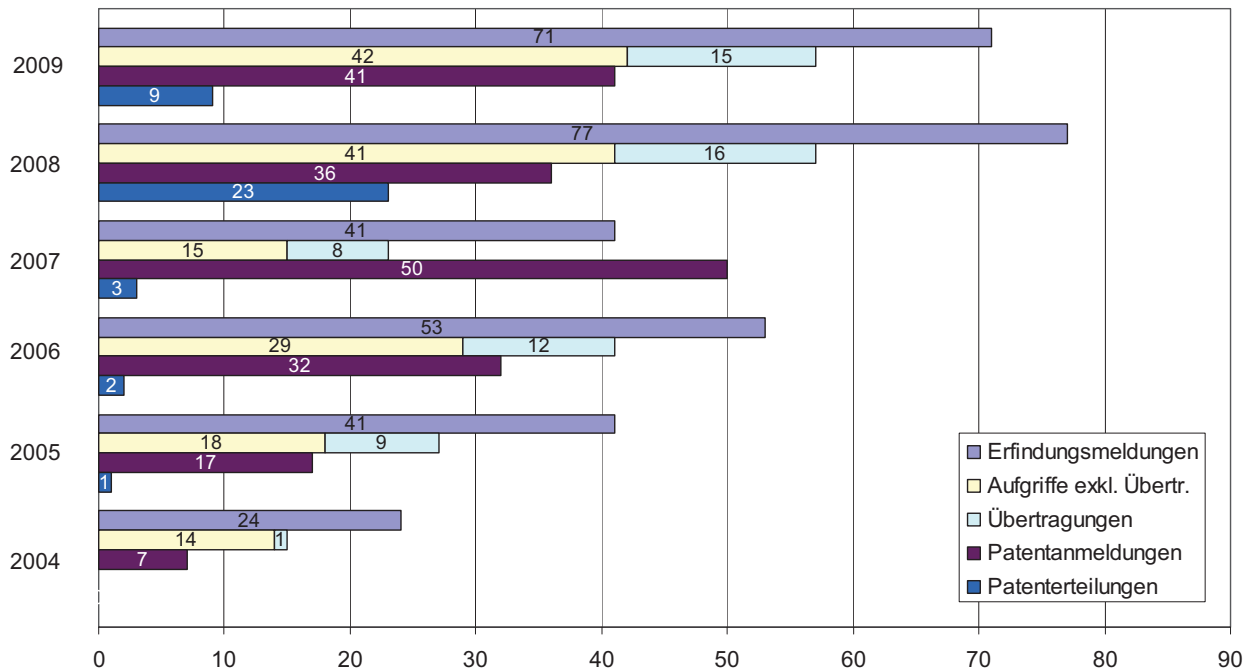
net-revenues shared:

1/3 inventor(s) – 1/3 institute – 1/3 university

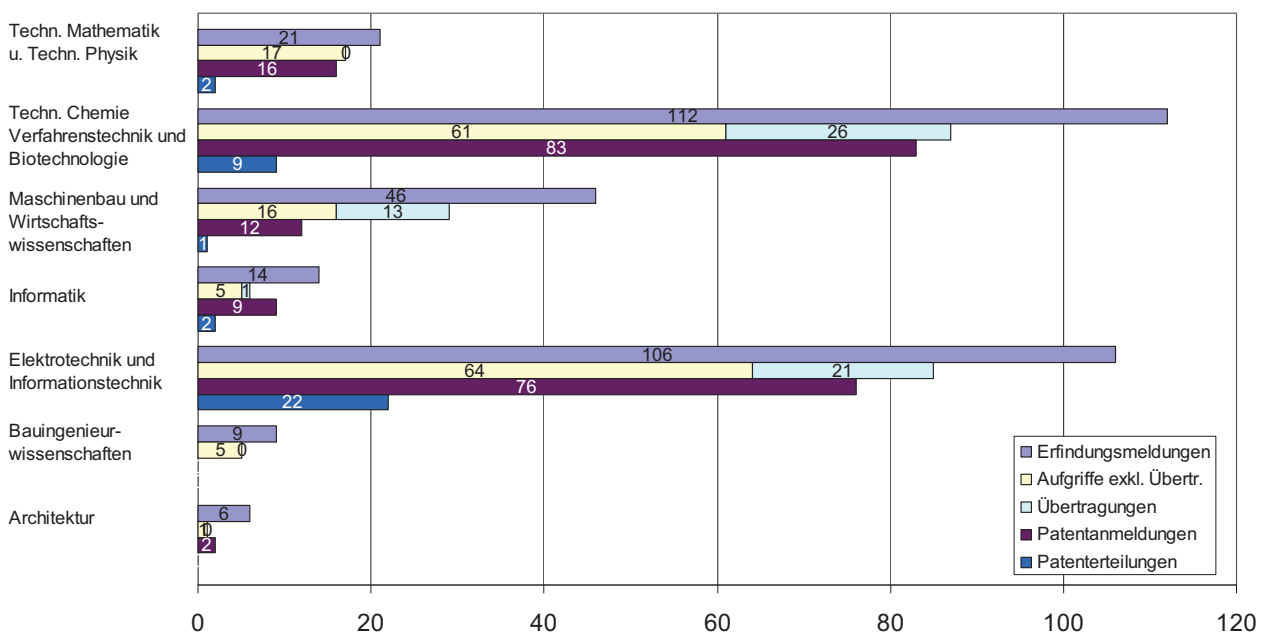
Guideline for the exploitation of IP generated as part of collaboration with business partners

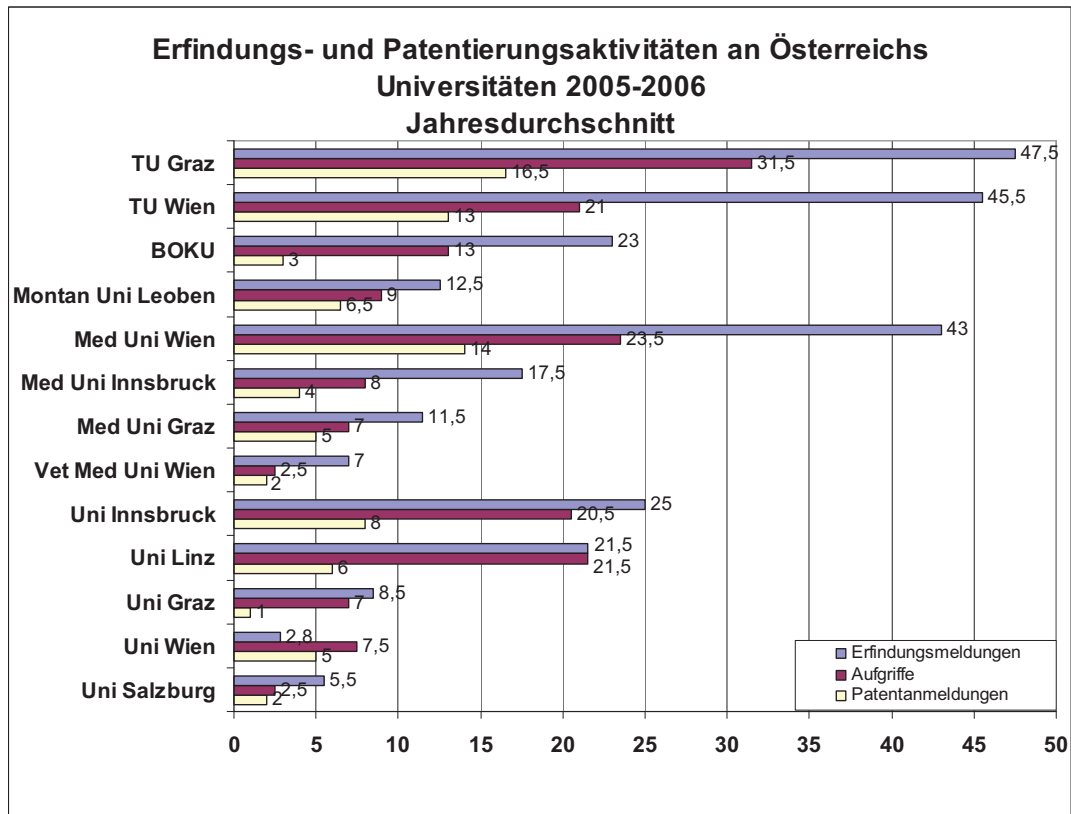
Guideline for the use of the names and the trademarks of the Graz University of Technology

Erfindungen TU Graz 2004 - 2009

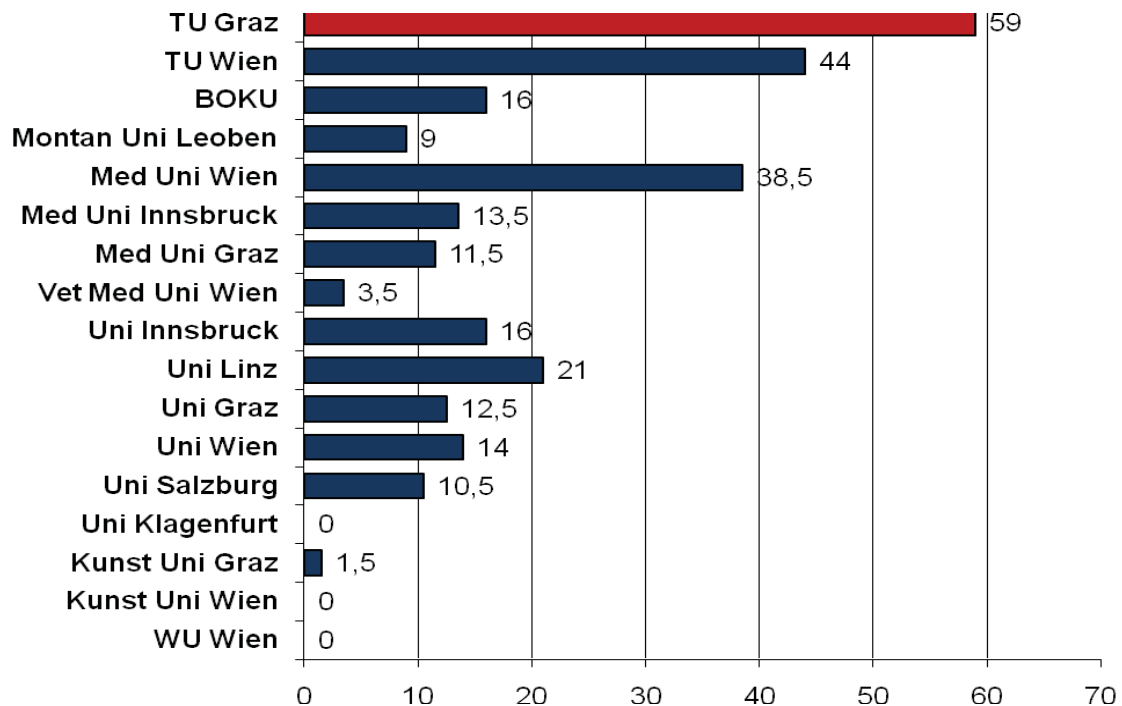


Erfindungen TU Graz 2004 - 2009 nach Fakultäten

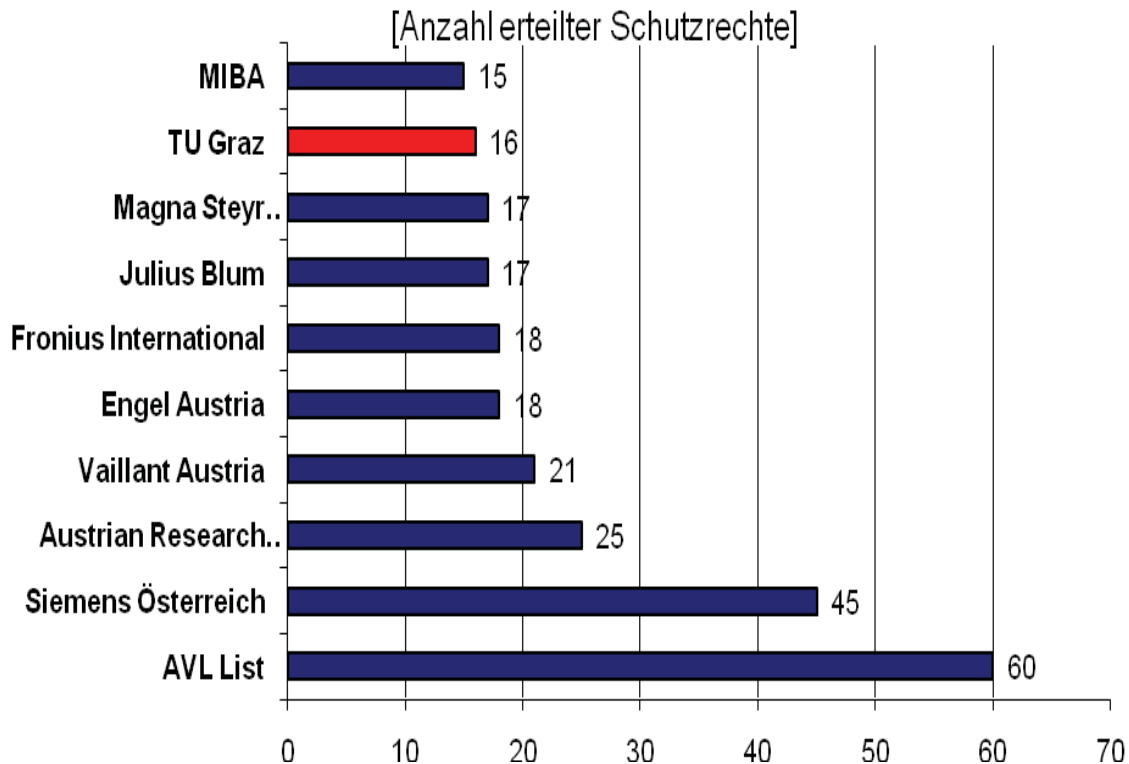




Erfindungsmeldungen an Österreichs Universitäten 2007-2008



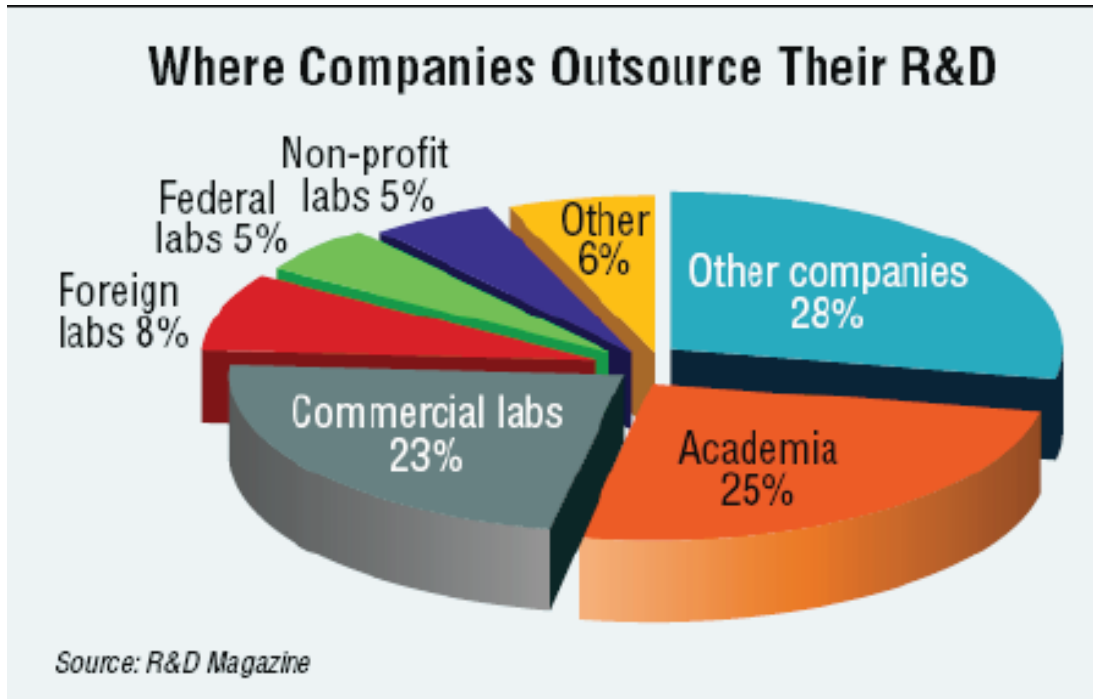
Erfindungsranking des Österreichischen Patentamts



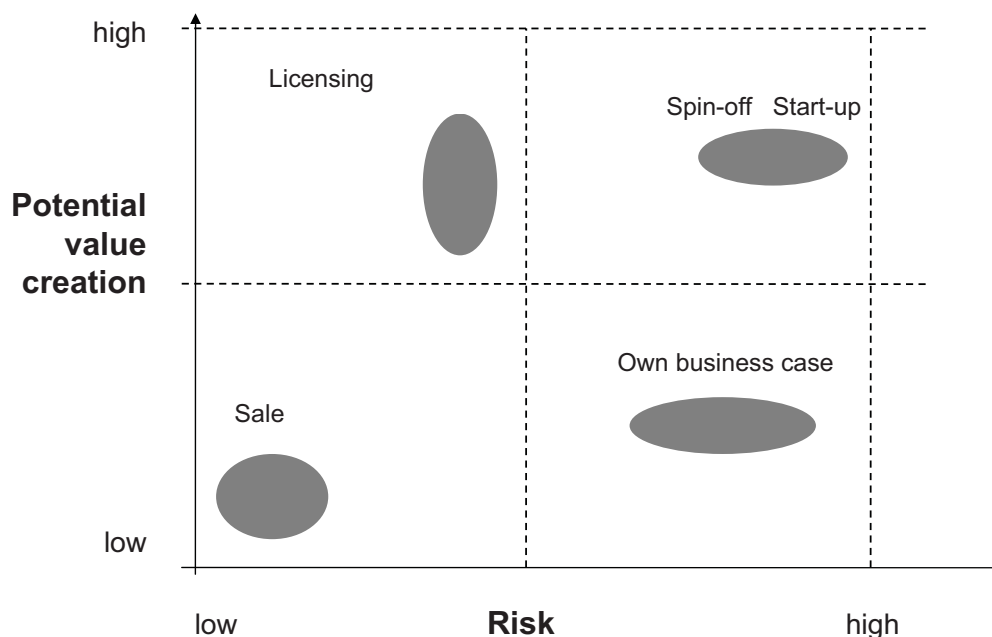
Exploitation options

- Licensing
- Selling (or hybrid with licensing)
- Spin-offs or Start-ups
- Own business case:
R&D, production, sales,...

Business case R&D



Entrepreneur Potential versus Risk



Role of Stakeholders

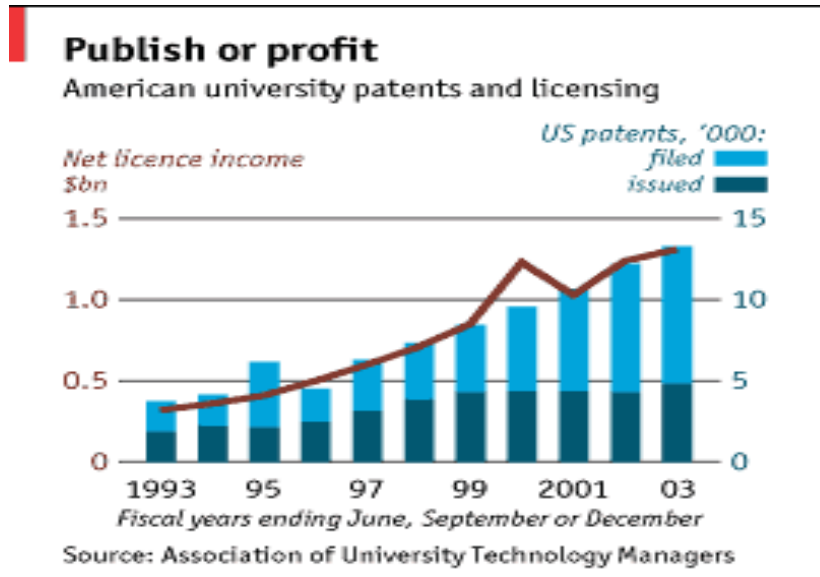


University Law Implemented 2004

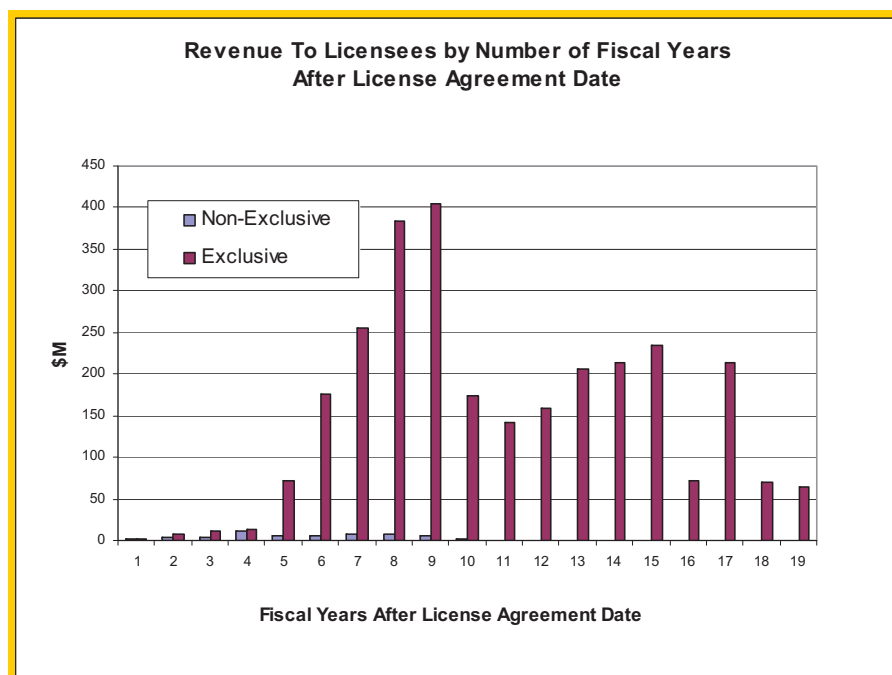
UG 2002 § 106 (3): Ownership of inventions

- Each service invention has to be disclosed immediately to the rectorate...
- If the university intends..., the rectorate has to ... claim **within three months**...
- Otherwise the rights will belong to the inventors...

US Universities: Patents filed/issued since Bayh-Dole Act 1980



US Universities



Motivation for Scientists

- **Patent literature as research intelligence:**
state of the art searches [%]
- **Identification** of inventions
- **Business Development:** collaboration with
third parties -> applied R&D
- **Intellectual capital report:** patent as publication
- **Career** options
- „**Making money** out of technology“

State-of-the-art search

Patent office: any published information!

- Patentes
- Scientific literature and databases
- Any popular literature
- Mass media
- Presentations
- Discussion groups
- Products
- ...

Free Patent Database

INPADOC: ep.espacenet.com

*for more information about various patent
databases see also www.ipr.tugraz.at*

Motivation for Inventors

- Career option: relevant experience
- Making money out of technology
- Succeeding with Vision:
 - ✓ Enabling a lifestyle
 - ✓ For a better world
 - ✓ Science reduced to practice...

Motivation for Companies

Outsourcing

- R&D is expensive, risky and long term oriented
- Product development costs e.g.:
0,5-2 Billion € for new drug?
1 Billion € for computer chip

IPRs

- Monopoly -> innovator advantage and higher profits
-> ROI for R&D
- Counterfeiting/copying costs:
1/10 to 1/100 of development costs

*DiMasi J, Hansen R, Grabowski H (2003). "The price of innovation: new estimates of drug development costs". *J Health Econ* **22** (2): 151–85. [doi:10.1016/S0167-6296\(02\)00126-1](https://doi.org/10.1016/S0167-6296(02)00126-1)

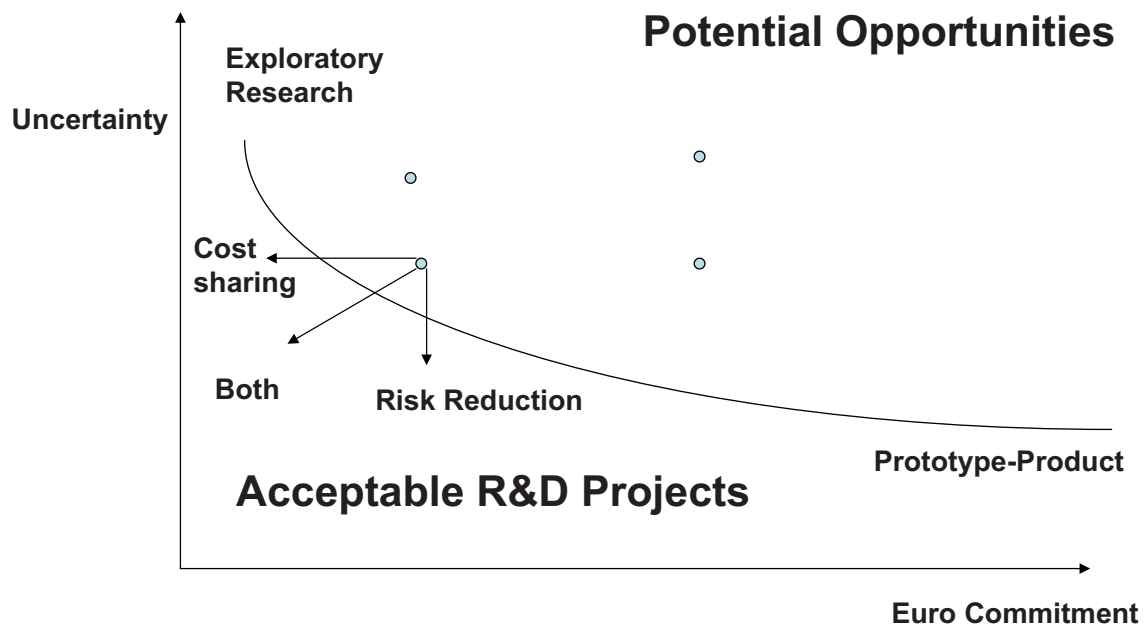
1,000,000,000 *US \$ investment*
7,000,874 *hours of work*
6,587 *experiments*
423 *researchers*
1 *drug*



> *Eight major steps from idea to medicine*

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Risk Reduction = Value Creation

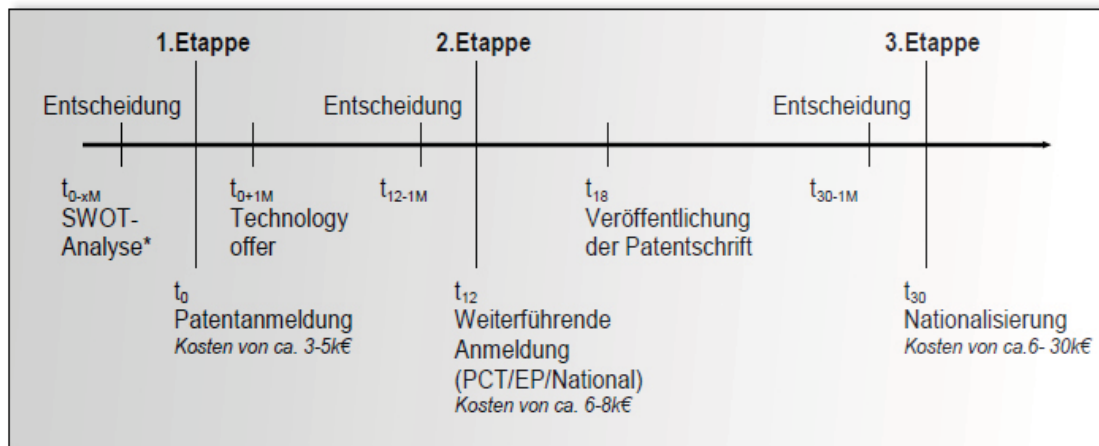


Selection Criteria – Risk vs. Potential

- Legal due diligence
- Technical due diligence
- Market analysis

- Strategic aspects
- Finances

Stage Gate Process



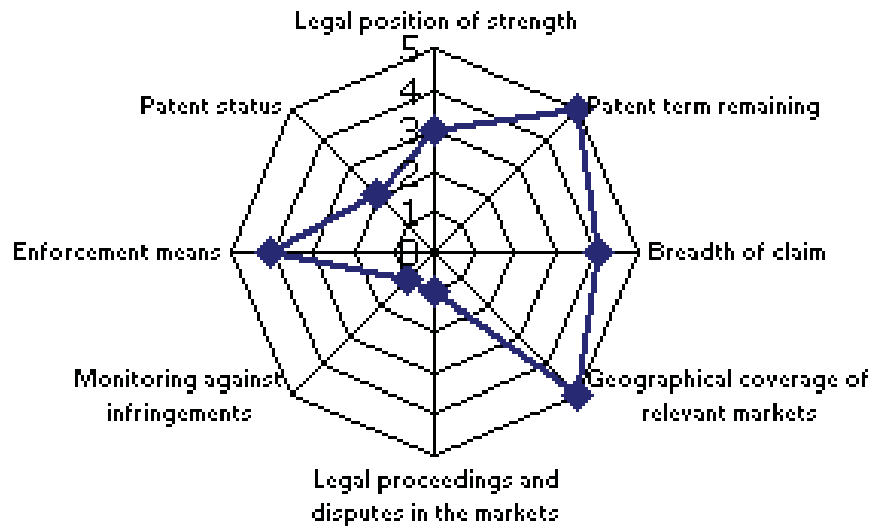
- t_0 Zeitpunkt der Prioritätsanmeldung
- t_{12} Ende des Prioritätsjahres: 12 Monate nach t_0
- t_{30} Ende der Nationalisierungsfrist: 30 Monate nach t_0
- xM variable Anzahl von Monaten
- t_{240} Ablauf des Patentschutzes: i.d.R. nach 20 Jahren (240 Monaten)

Reduction of Legal Risk

- Patentability: **novelty & inventive step**
- Inventors: listed correctly
- **Rights for ownership and commercialisation**
- Rights granted to third parties (options...)
- **Freedom-to-operate (FTO)**
- Legal enforceability of patent

IP Score of EPO

Legal status

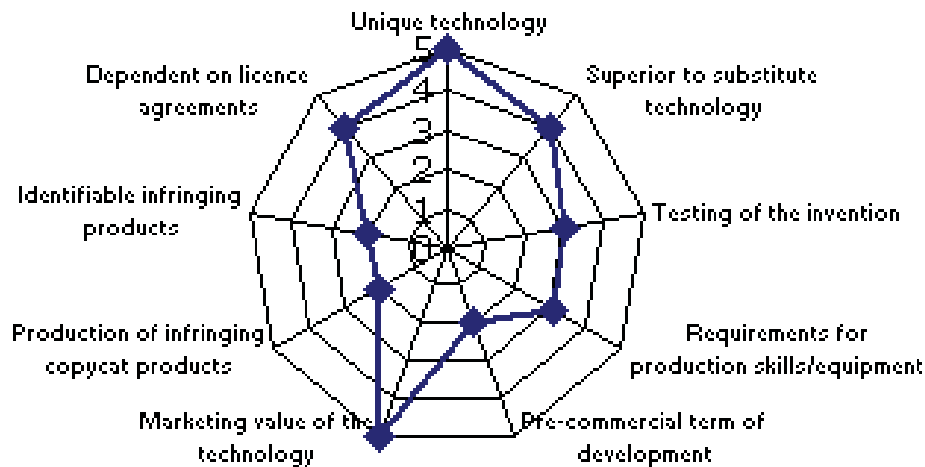


Further reading

Reduction of Technical Risk

- Unique technology
- **Superior to substitute technology**
- **Technical development stage:** theory – proof of principle – lab prototyp – industry prototyp...
- Technical **enforceability** of patent
- Cf. strategic aspects: part of continuing research,...

Technology



Reduction of Market Risk

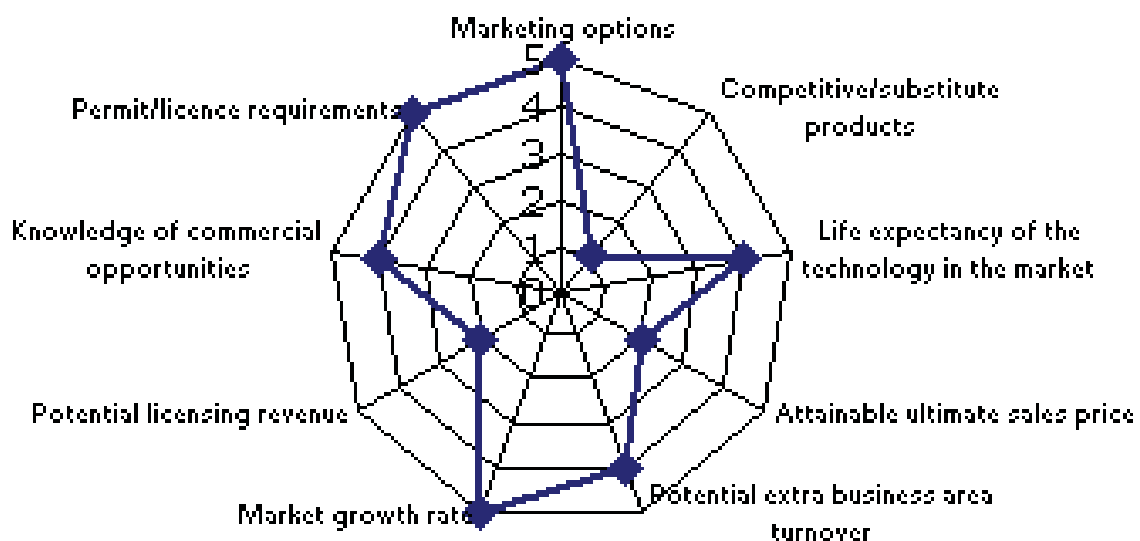
- Technical advantages with economic relevance compared to competition/substitutes -> „**Killer application**“ or „**me too**“ product?
- Markt: size, growth, entry barrier, head start against competition...
- Costs for IPR, product development and sales/marketing vs. margin
- Investments/Risks vs. Potential/Value (**SWOT**)
- Product life cycle

Clear View of Critical First Steps

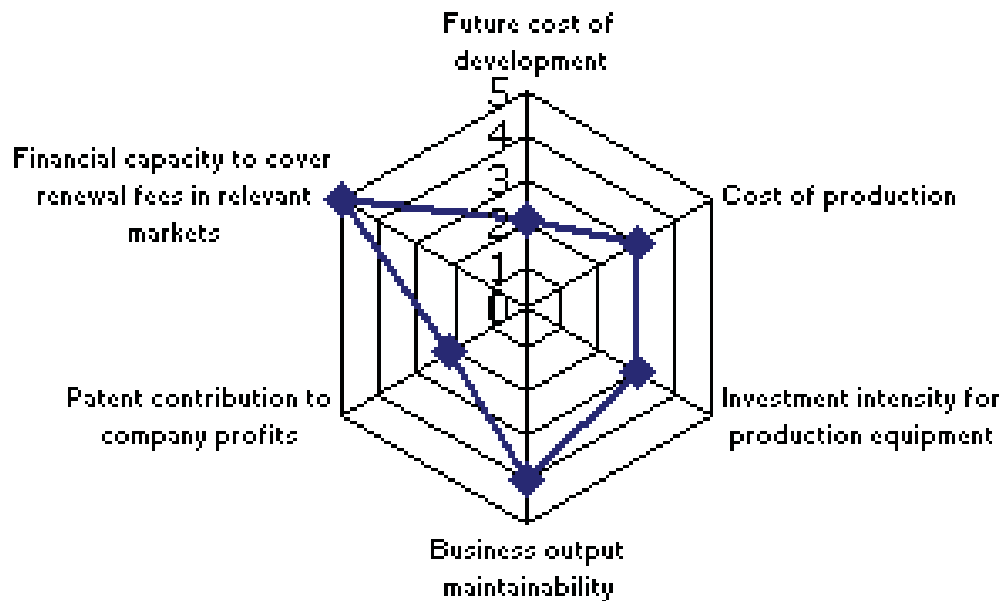
Identification of

- Potential licensees with commitment to invest in development and marketing
- Agents, Technology- or Auction-platforms
- Co-opetitors: **Cooperation with potential competitors**
- Reference (early adopters) or key customers (friendly customers)

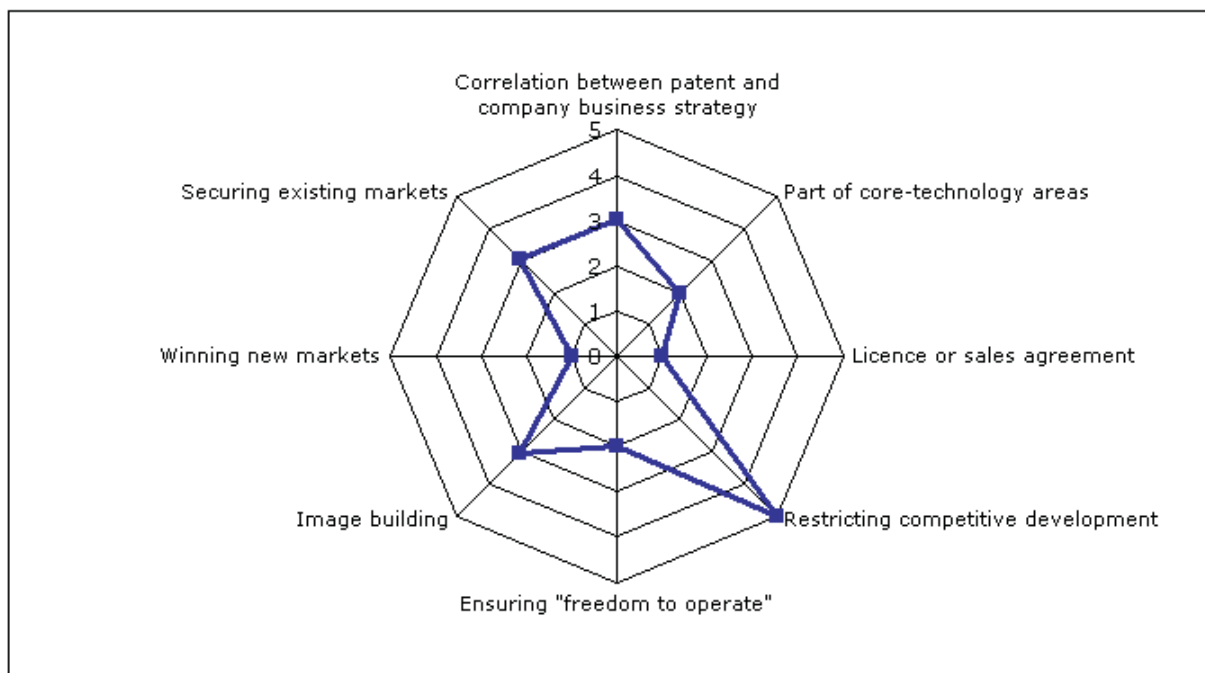
Market conditions



Finance



Patent strategic profile:



Trends in Licensing

- Not-invented-here (NIH) Syndrome
- Economic pressure: „faster, cheaper, simpler“ -> increased awareness for external & complementing technology
- Strong increase of in- and out licensing activities:
Cross licensing and Open Innovation
- Small and Medium Companies (SMEs) -> agility for competitive advantage!

Business case iPod



- Commodity parts (mostly)
- Outsourced R&D and manufacturing
- Overall design and sophisticated software interface (iTunes)
- Continual improvements
 - Overall design by Apple
 - Component parts by partners

Business case iPod - conclusion

- Disassembly of classic vertically integrated company and internal R&D engines
 - Prior models: Bell Labs, Xerox PARC, IBM Research Labs
- New economy of horizontally interconnected research, development, products & services
- Rising importance of computer software, systems integration and business model innovation vs. hardware development

Business Case Design

Non-exclusive license:

Entree license or free license or open access

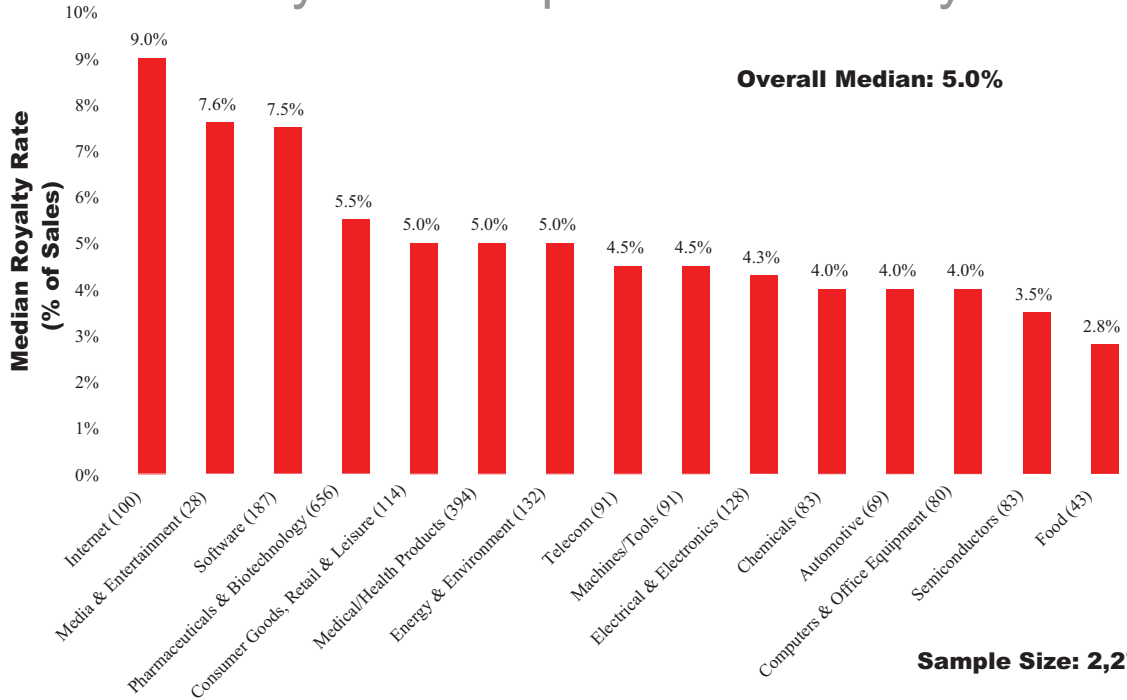
Licensing strategy as part of Business model

Examples:

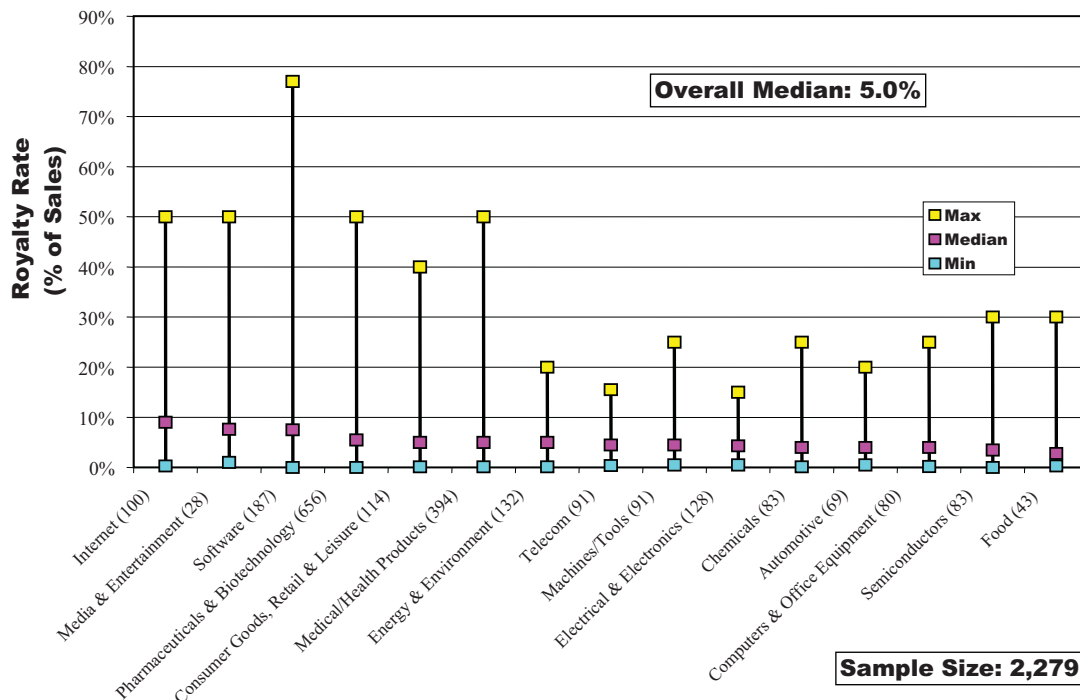
- Pichia pastoris -> Invitrogen/RCT -> open model
- Hans enula -> closed model

- Acrobat reader = for free but not open source;
- Acrobat profesional = regular product

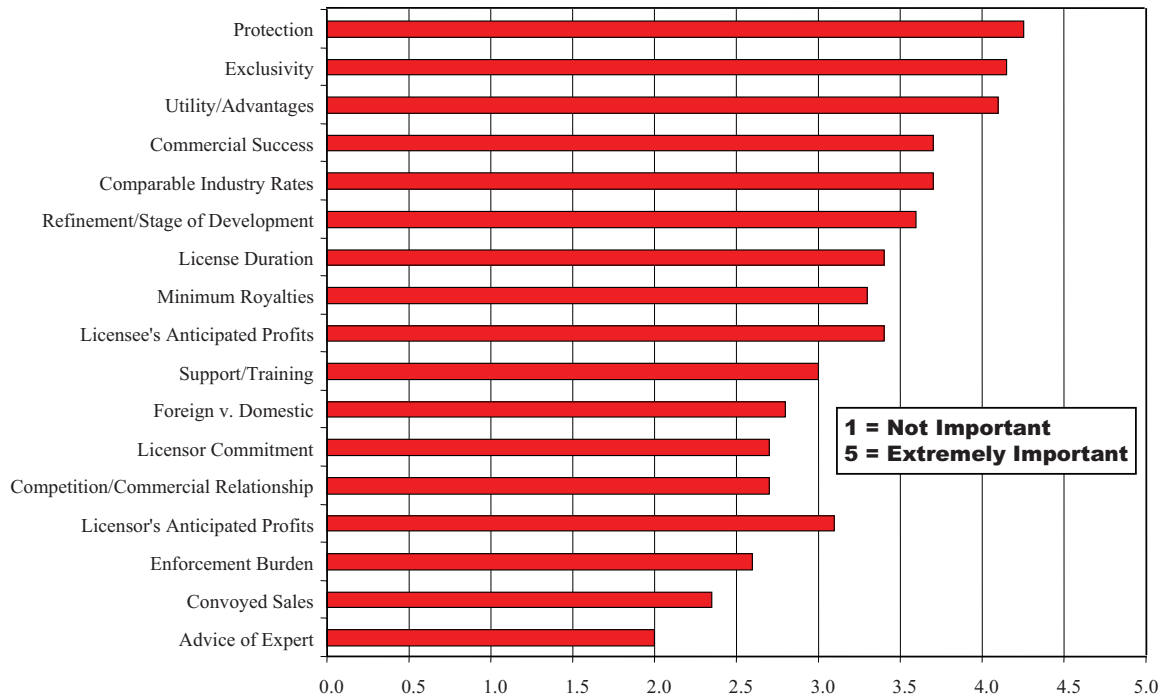
Royalties Depend on Industry



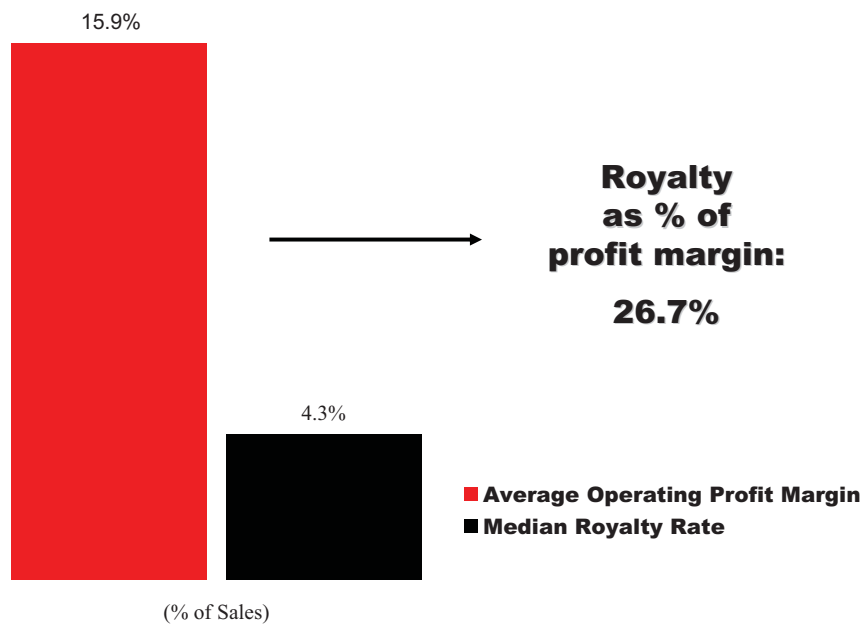
Variability within Industries



Value Drivers



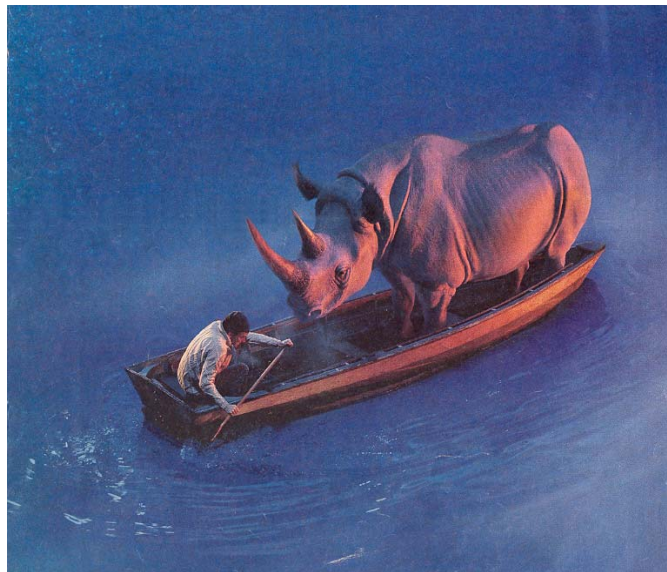
25% Rule



The Four Classic Methods for IP Valuation

- Market comparables
- 25% rule
- Income: Value over time discounted for
 - risk
 - time value of money
- Cost to recreate

Best partner?



Licensee

Business intelligence: Market research,
Patent-DB, Network, Company profiles-DB,
Google & Co., Conferences, NPOs,...

Organisationen

AUTM Association of University Technology
Managers, LES Licensing Executive
Society, ... Alumni, ...

Long list -> Priorities -> Short list

Lead Generation

56 % Inventors

19 % Agents (Technologytransfer,...)

10 % Contact by licensee

7 % Research sponsor

8% Rest

*Journal of the Association of University Technology
Managers, 1999 (1140 licenses surveyed)*

Licensee

Identification of departments

Business Development (BD), Corporate Development, Strategic- & BD, Technology Sourcing, Technology Transfer & Licensing, Licensing, Marketing, Product Management, R&D, ...

Job titles

Manager Licensing, Manager Business Development, Patent Manager, CSO, CEO, ...

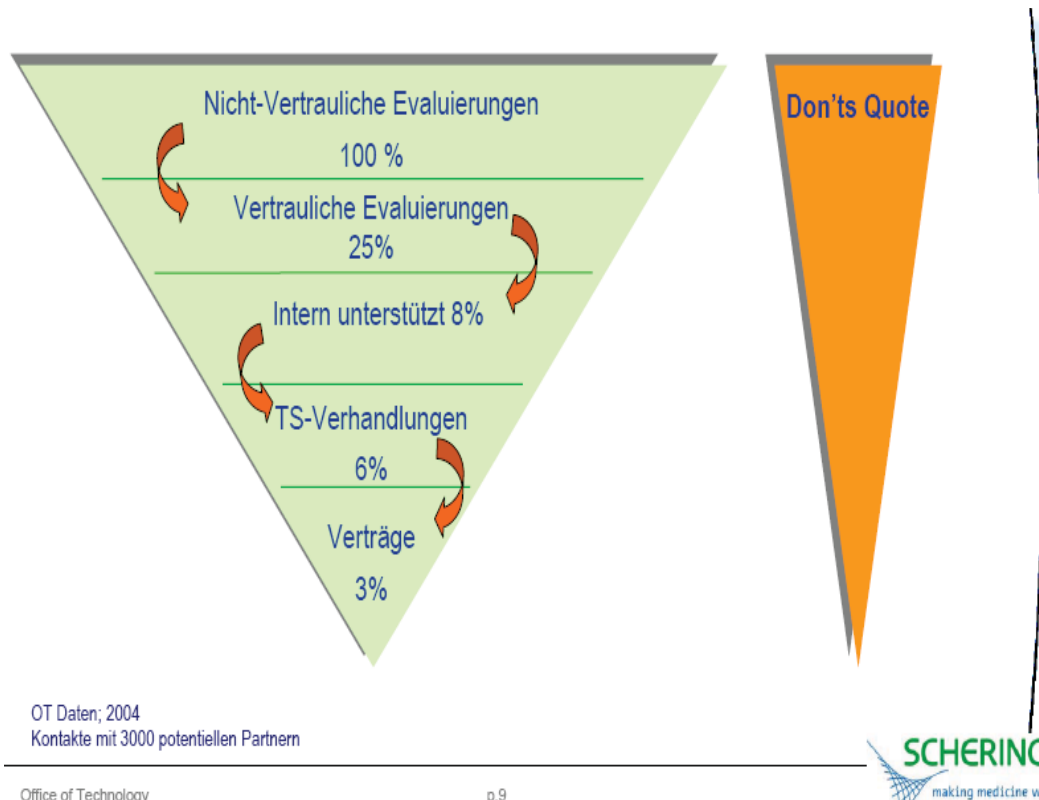
Direct Marketing

- **Cold-call:** „Elevator pitch“
 - **Direct-mail:** Technology offer
 - **Follow-up:** phone call, e-mail
-
- **Meeting:** NDA/CDA
 - **Evaluation** of technology
 - **Negotiation** of term sheet
 - **Deal closing** (attorneys)
-
- **Implementation...**

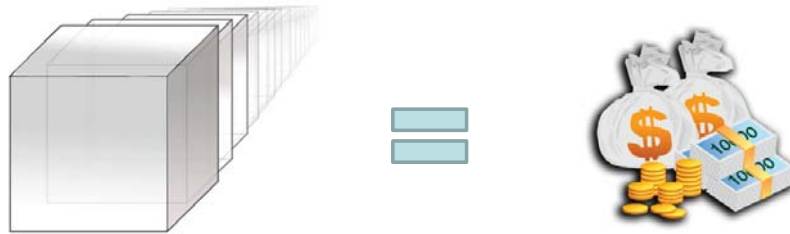
Investment Decision in Case of Intangible Assets

- Decision = dominated by emotions!!!
- Emotions are supported by rationality!!

Marketing has to create a positive sales atmosphere...



The Deal



Win-win by applying options...

- **Exclusive** license vs.
- **Non-exclusive** license
- **Restrictions:**
 - Regional and/or temporally
 - R&D, production, sales
 - Limited of certain applications, products etc.
- **Right to sublicense**
- Right for improvements: Right-of-first refusal/view, Options,...
- Anti-stacking regulation
- Crosslicensing
 - **Technology sale**



Win-win by applying options...

- Option fee & upfront/technology access fee
- Royalties: based on percentage of volume of sales or paid per piece sold or lump sum; minimum royalties
- Fee for sublicense
- Milestone payments
- Licensing of Know-how
- Payments for Technology transfer, improvements, services
- Costs for revision/controlling, value retention by index linking
- Services, in-kind contributions,...

Exclusive License

Upfront/Issue Royalty

This is considered a measure of the licensee's commitment to the license. We can accept equity as a part of the upfront consideration, but there must also be a cash component.

Annual Minimums

Annual Minimum payments are required as a measure of diligence. These payments require the licensee to make a conscious decision each year whether or not they are developing the product. These payments are fully creditable against earned royalties.

Earned Royalties

Earned Royalties are required so that Graz University of Technology can share in the revenues of the product that was developed from or with technology of Graz University of Technology.

Diligence Milestones

These milestones are mutually agreed upon by Graz University of Technology and the licensee. They should provide a realistic and reasonable development plan and ensure that the licensee and Graz University of Technology both have similar expectations regarding the development of the technology. Such milestones may or may not have a financial component.

Exclusive License

Patent Expenses

Exclusive licensees are required to pay patent expenses, both past and future. However, all expenses can be built into the upfront payment instead of continuously billing the licensee.

Sublicensing

Exclusive licensees are granted the right to sublicense the technology. Graz University of Technology shares in the income received for such sublicenses as recognition that the technology originated from Graz University of Technology. The percentage received by Graz University of Technology can vary in recognition of sublicenses that may be for a combination of Graz University of Technology and licensee technology.

**The financial parameters above should be considered as a whole package. A licensee may prefer to pay higher upfront and annual payments so that they can in turn reduce the earned royalty, or a licensee may prefer to back end load the license, reducing the upfront payment and annual payments for the first few years, and paying more at the later stages of development in the form of higher annual payments in the later years, diligence milestone payments and/or higher earned royalties.*

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