Dr. Wieselhuber & Partner GmbH
Unternehmensberatung

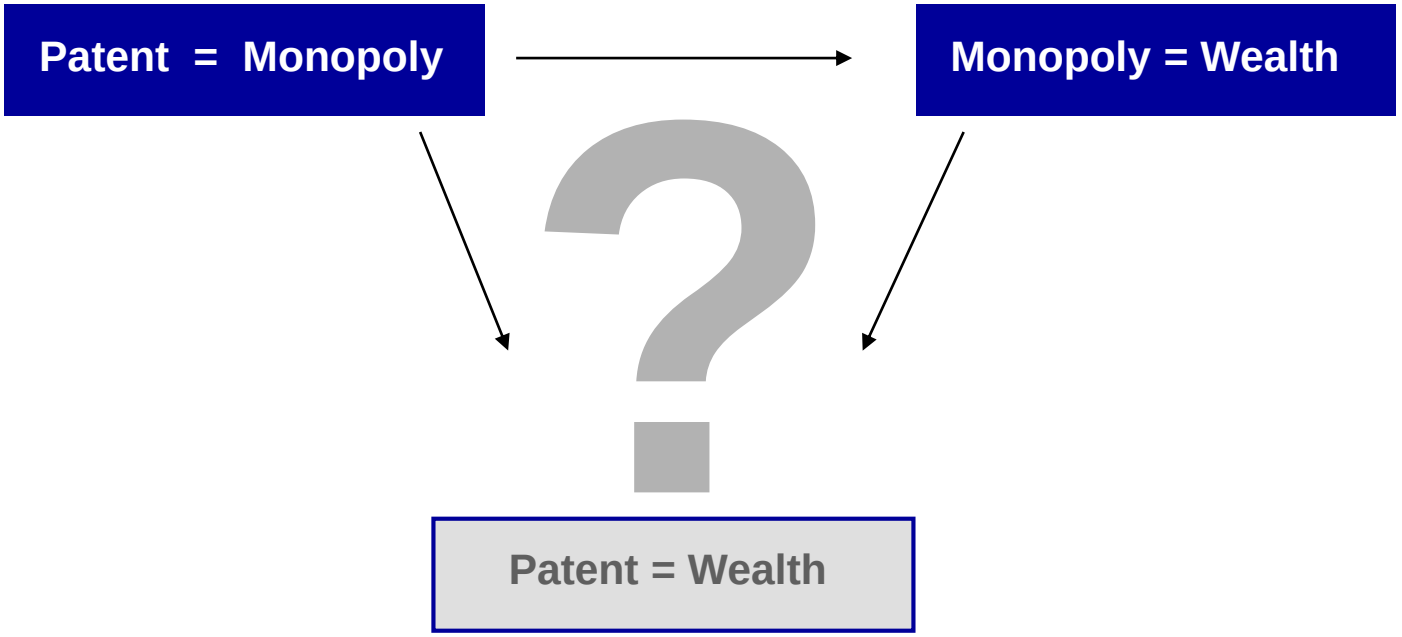
STEINBEIS UNIVERSITY, BERLIN
STEINBEIS-TRANSFER-INSTITUTE
INTELLECTUAL PROPERTY MANAGEMENT

10th December 2018

Von der Erfindung zum Patent

Verwertung von gewerblichen Schutzrechten durch Lizensierung, Verkauf etc.

Dr. Stephan Hundertmark, MBR

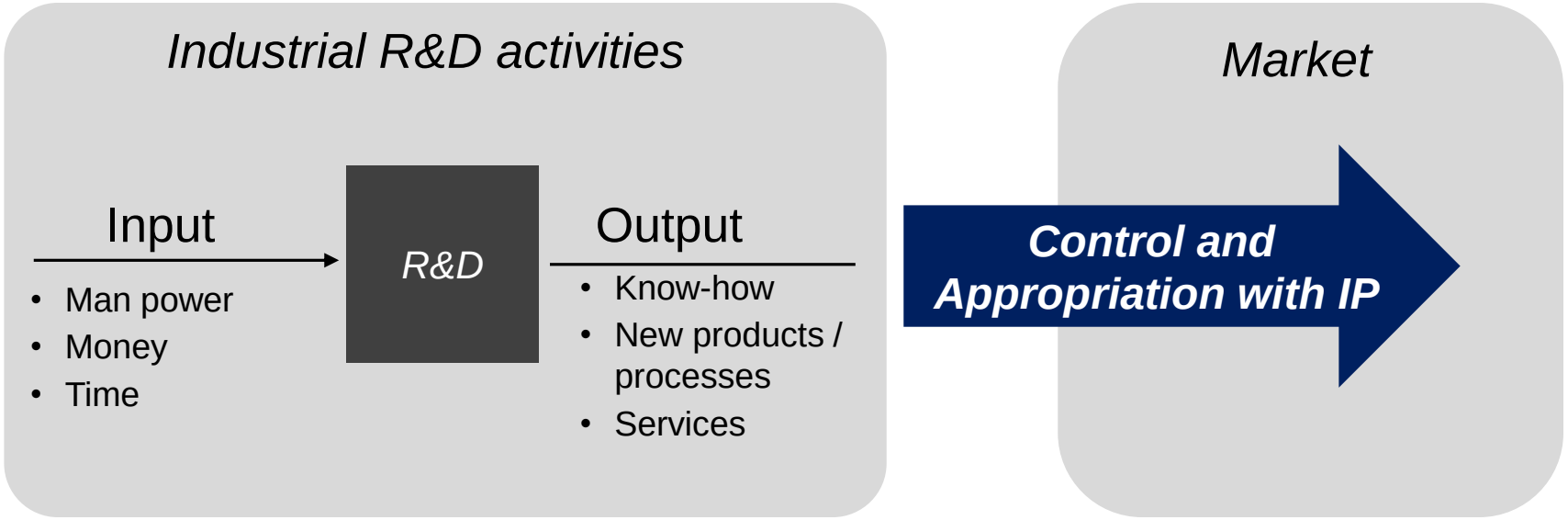


Lernziele

- „Intellectual Property“ ist mehr als Patente
- Verwertung von Patent über verschiedene Funktionen aus Unternehmenssicht
- Funktion von Marken, Designs und Betriebsgeheimnissen sowie Lead times und Komplementärgütern
- Kombinationen von IP ermöglichen effektiven Schutz für die Kapitalisierung von Erfindungen, Technologien und know-how
- Abhängigkeit der Effektivität der IP von der technologischen Komplexität, dem Produkt-Lebenszyklus und der Unternehmensgröße
- Ökonomische Eigenschaften von Intellectual Property:
  - Nicht-rivalität im Konsum, Skalierbarkeit,
  - Versunkene Kosten
  - Inverse Wertentwicklung
  - Notwendigkeit von Komplementärgütern für eine kommerzielle Verwertung
- Open Innovation als Markt für Technologie
- Mythen & Fakten zu Intellectual Property Management in Unternehmen

Economic relevance of Intellectual Property Rights

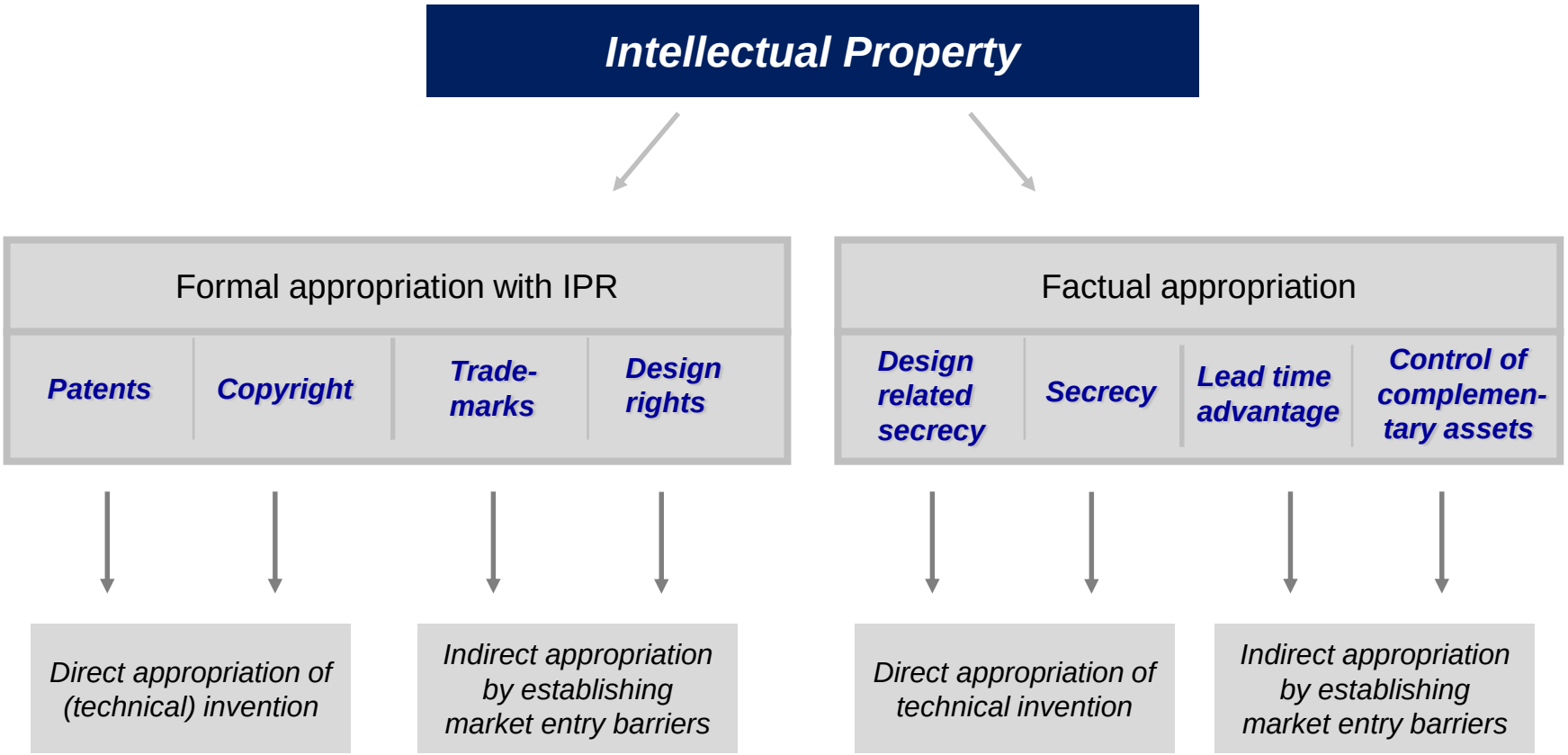
Relevance of Intellectual Property



Problem: R&D and technology is a cost.
Only a business that exploits technology in markets creates income.

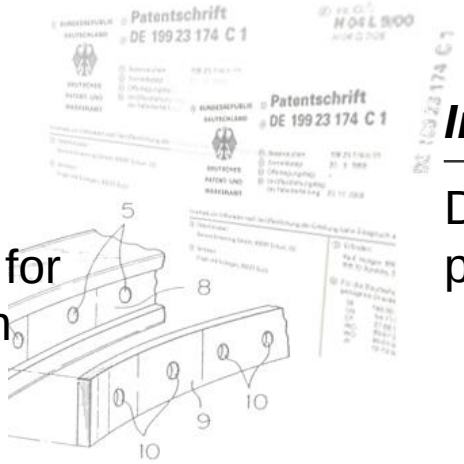
Objective: Intellectual Property controls and allows for appropriation of R&D results to enable market exploitation to realize a return on investment (ROI).

Types of Intellectual Property



Stimulation of innovative investments and technology diffusion

Economic function of patents



Protection

Temporal and territorial limited prohibition right for commercial exploitation

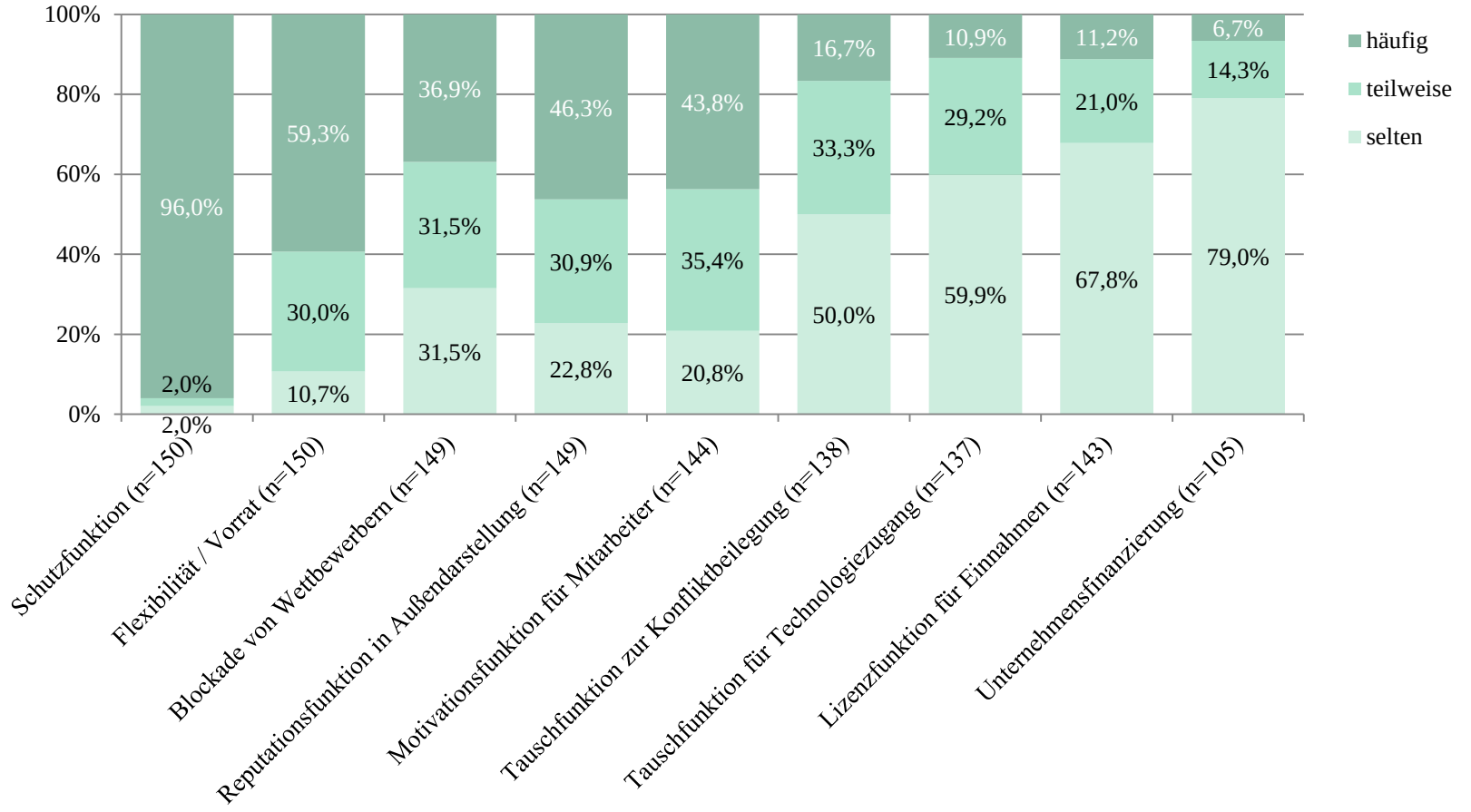
Information

Disclosure requirement to promote the prior art

Patent functions in business

Protection	*Protection of own products / processes against copying*
Reserve / Improvement	*Protection of future or improved products / processes*
Blocking	*Patents not used by owner – only for blocking competitor's products*
Cross licensing	*Access to third party technologies through cross licensing*
Licensing-out	*Better market penetration, generating income through licensing*
Patent transfer / M&A	*Generating income or cost savings; providing basis for cooperations, joint ventures or start-ups*
Confusion / Intimidation	*Confusing or intimidating competitors*
Reputation / Motivation	*Improving company image; promoting sales; motivating employees*

Usage of Patent functions



Source: Hundertmark (2012), Nutzen und Management von Schutzinstrumenten

Patents - Reasons not to file

Reasons for high-ranked R&D officers not to file a patent application:

Elements	Product ranking	Process ranking
Competitors bypass the patent	**1**	**1**
IPRs are not enforced against infringers	**2**	**3**
Not meeting patentability requirements due to a low degree of inventive ingenuity	**3**	**2**
By patenting information is revealed	**4**	**4**
Rapid technology cycles	**5**	**5**
Usage permitted to competitors because of a cross-licensing-agreement	**6**	**6**
The granting of a license is judicially arranged	**7**	**7**

Levin/Klevorick/Nelson/Winter, Appropriating the Returns from Industrial Research and Development, Brookings Papers on Economic Activity 3/1987, p.783-831.

Functions of trademarks and brands

- *Controlling of brands as a communication instrument*
- *Reducing consumers search costs and risk from innovations by signalling quality*
- *Commanding higher prices and differentiation from competitors*

Disadvantages:

- *Establishment of new brands is very costly*

> *Establishing barriers of entry and appropriating innovations indirectly and not by protecting the underlying technology*

"Such an Asset [Trademark] which can be created by means of a technological lead and that subsequent improves the initial innovator's ability to develop and effectively commercialize successive product or service improvements, and in addition constitutes a significant market entry barrier for following companies, represents complementary brand equity."

Source: Jennewein, K. (2005), p. 227.

Functions of design rights influencing consumer choice

- *User and usage-oriented design (e.g. according to typical usage habits)*
- *Aesthetic design results in additional customer benefit and hence choice*
- *Semantic and symbolic design can be used for signalling by customers*

Disadvantages:

- *No protection for design features that are relevant for the technical function*

Establishing barriers of entry and appropriating innovations indirectly and not by protecting the underlying technology

"Yet aesthetic design may be one of the most important factors in explaining consumer preference in some product markets […]."

Source: Krishnan/Ulrich (2001), p. 114

Trade secret characteristics

- *Information is limited to a certain group of people within a company and is not codified industry knowledge*
- *Applies to any information that is sufficiently valuable to provide the owner with an actual or potential competitive advantage in the marketplace*
- *Relates to the company's business*
- *Broader than patent protection and need not meet the patent requirements of being novel, useful and non-obvious*

„Negative know-how“:
Trade secrets can also include information about what does not work. Competitors would economically benefit from knowing procedures/formulas which did not work, saving time and costs avoiding a “trial and error“ procedure by developing solutions for a certain process.

Disadvantages:

- Costs to keep secrecy increase with value and diffusion of the innovation

- Knowledge dissemination usually ranges from 6 to 15 month, despite secrecy

Lead-time Advantages

In fast-cycle industries patents are inapt to protect innovations due to approval periods of patent offices

First -mover in market introduction of innovations

Time advantages compared to competitors in terms of:

- *Learning curve effects leading to lower production costs / higher quality*
- *Opportunity to protect relevant technologies by other types of IP*
- *Establish reputation as innovative company and development of trademarks*
- *Control of complementary assets and vertical alliances with suppliers and distributors*

Establishing barriers of entry resulting in bigger market share and higher profitability

Disadvantages:

- *High costs and resource requirements*
- *Dependent on successful innovation*

Complementary assets for the exploitation of IP

Additional factors are needed for the usage and exploitation of IP:

- ***technology***
- ***know-how***
- ***capital***
- ***skilled personnel***
- ***production facilities***
- *[…]*

Types of complementary Assets

Generic

- Can be acquired on the free market
- Generate low margins
- Used in commercialization of several tech. applications
- Supplied under almost perfect market conditions

Innovation specific

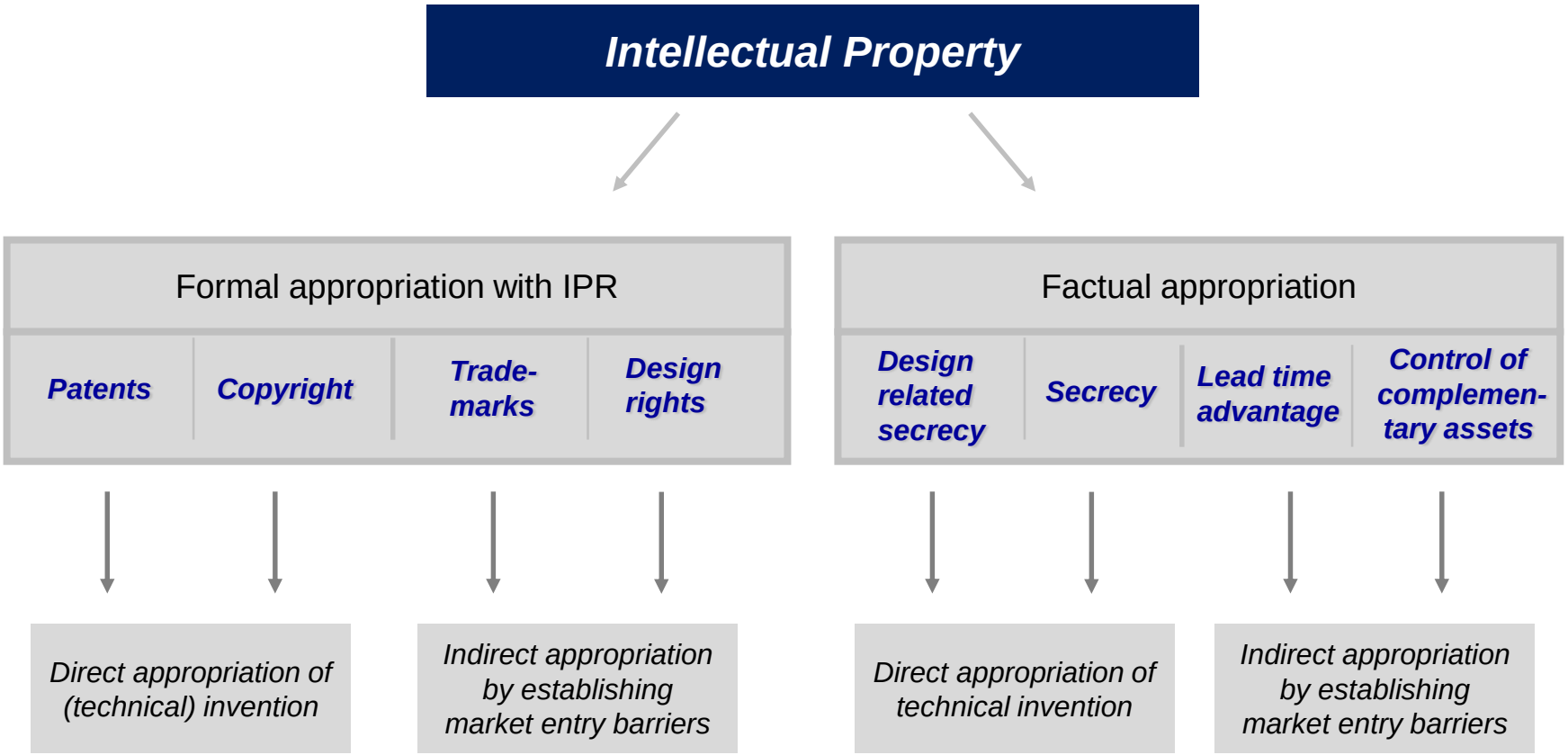
- Can be used strategically
- Developed in respect to a specific innovation
- Generate high margins
- Asset control, beyond patent rights

"… controlling the specific complementary asset is equivalent to controlling the underlying intellectual asset and the ultimate commercial value […]. This has the advantage of protecting a technology without having to reveal the technology itself."

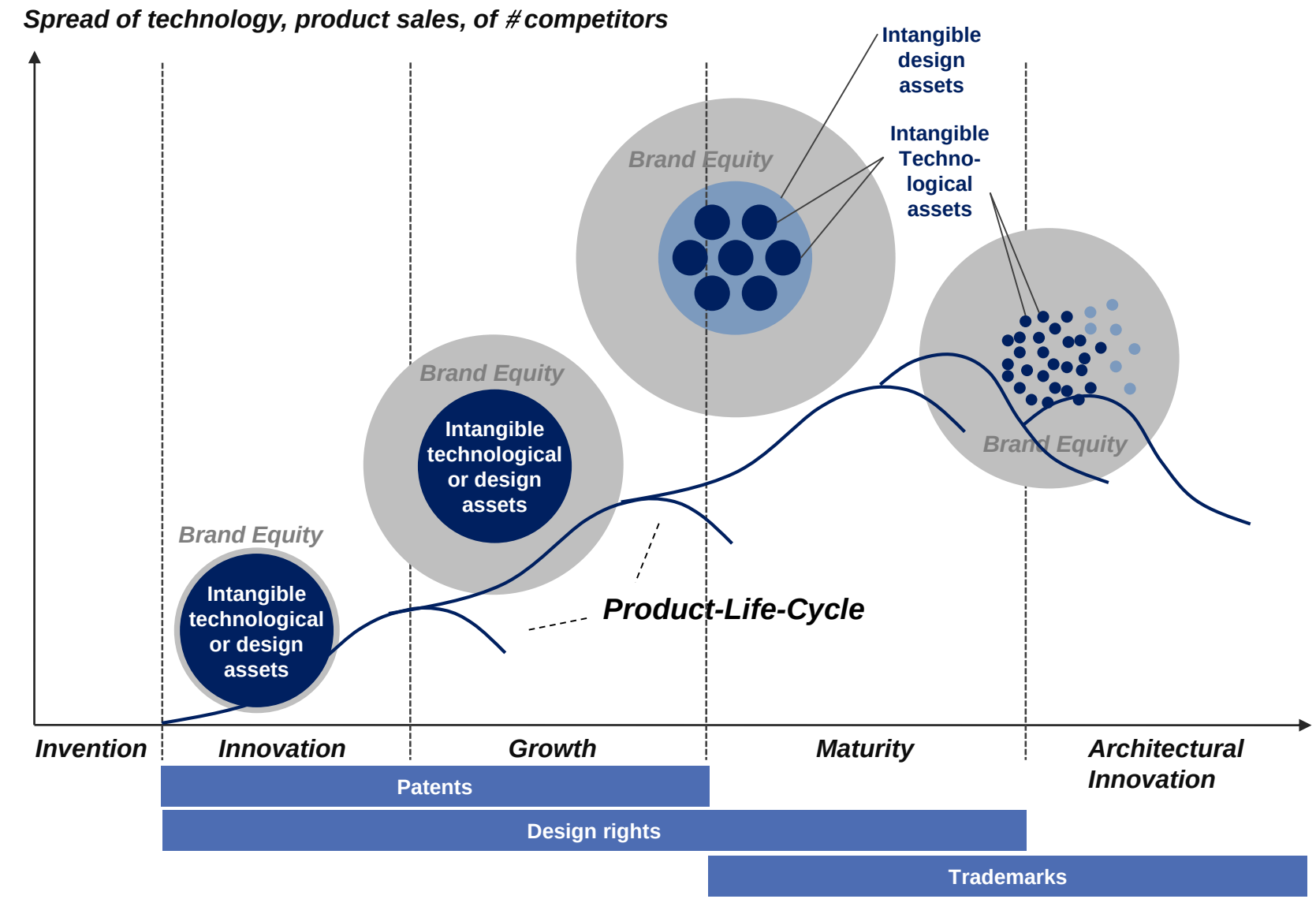
Source: Sullivan/Edvinsson (1996), p. 258

Source: Jennewein, K.: Intellectual Property Management, p. 182

Types of Intellectual Property

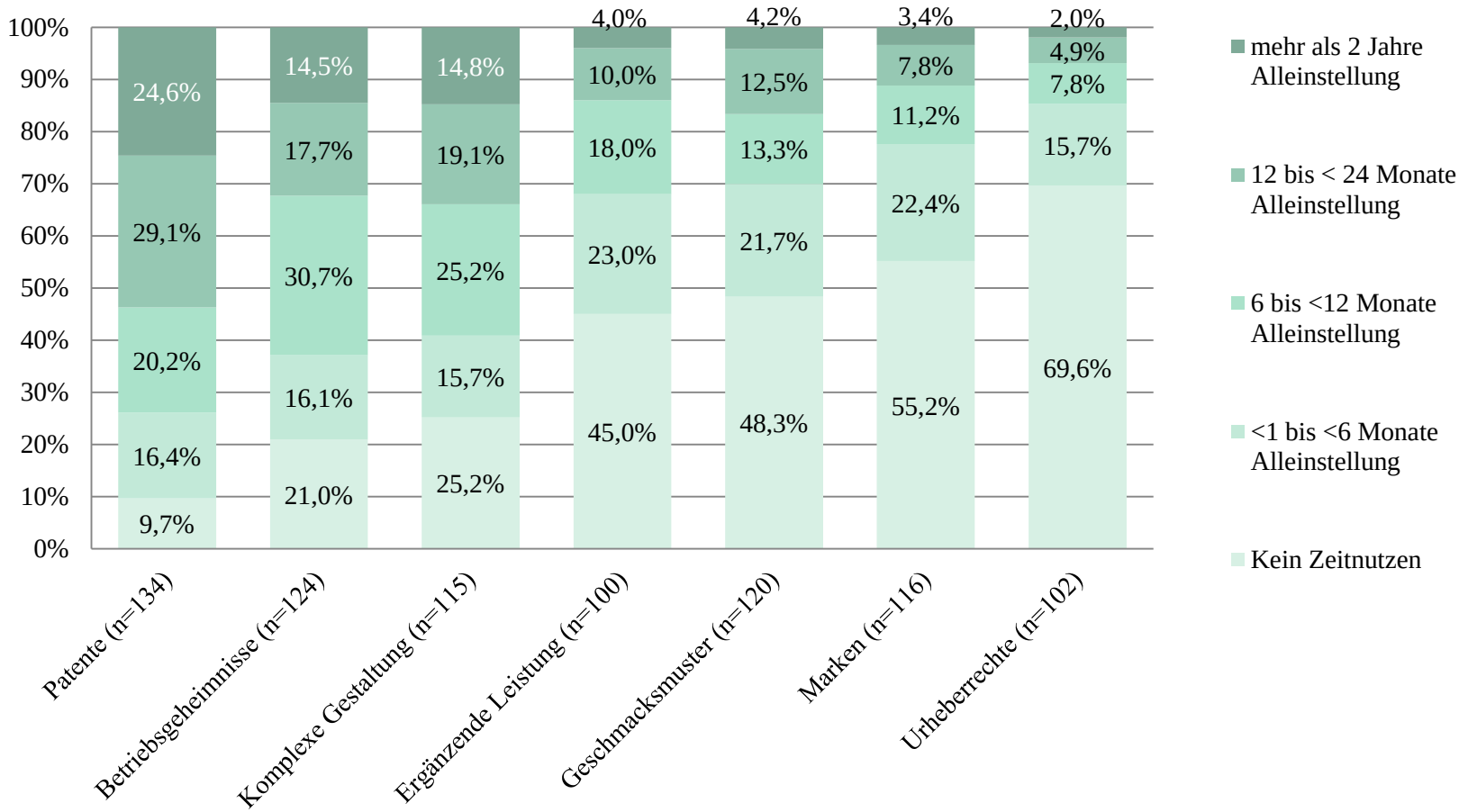


Combining IP throughout the Product-lifecycle



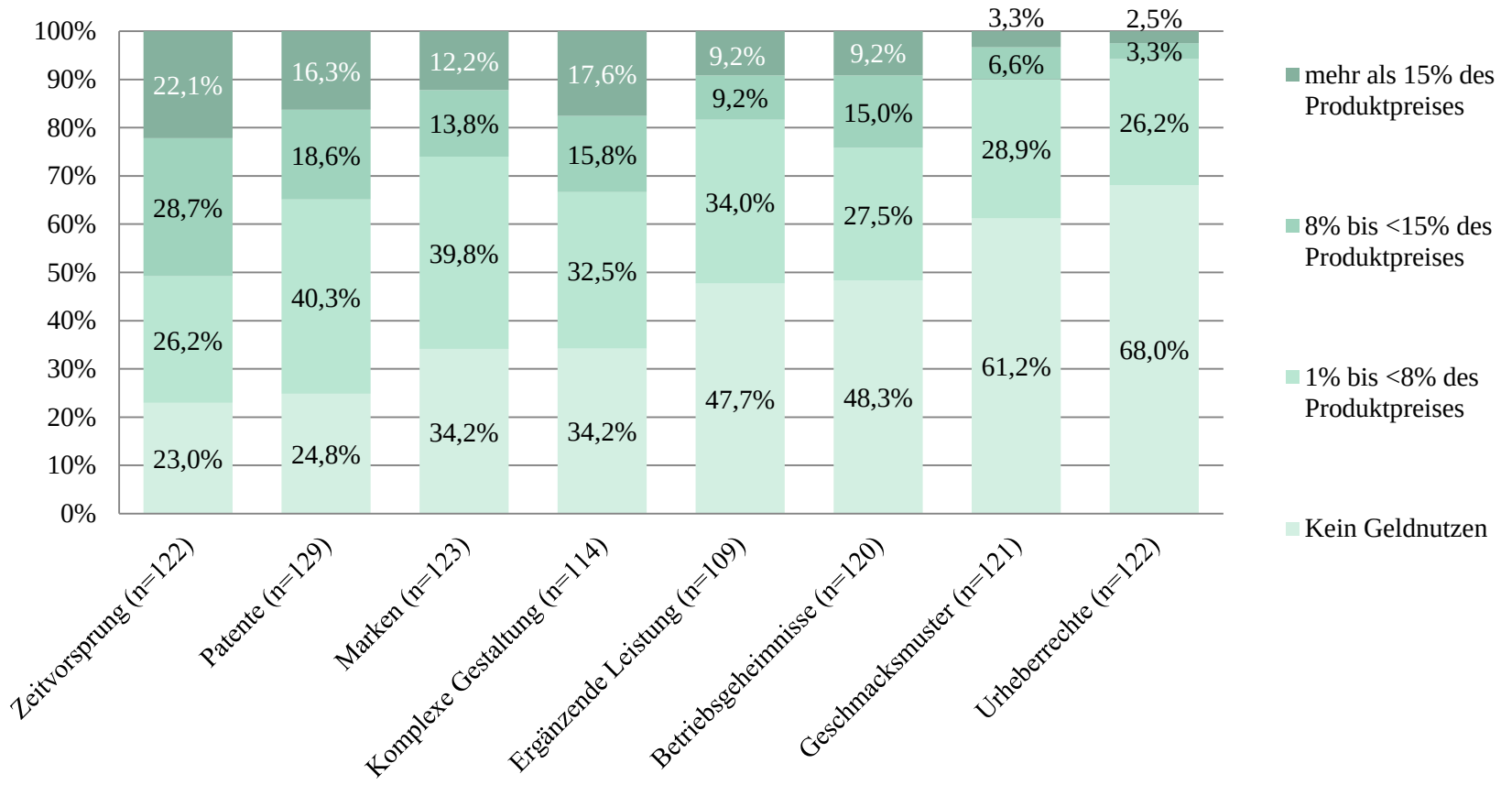
Source: Jennewein, K.: Intellectual Property Management (modified)

Empirical Validation of Business Impact



Source: Hundertmark (2012), Nutzen und Management von Schutzinstrumenten

Empirical Validation of Business Impact



Aus der Steigerung des Anteils gezielt kombinierter Schutzinstrumente für Neuprodukte um eine Einheit steigt der realisierte Geldnutzen der Schutzinstrumente um den Faktor 2,6.

Source: Hundertmark (2012), Nutzen und Management von Schutzinstrumenten

Economic value of IP

Economic Characteristics of IP

Nonrivalry in consumption	IP can be used in multiple parallel applications to generate income.
Scalability in use	In contrast to tangible assets scalability of IP is only limited by market volumes.
Sunk costs	Investment in IP and related costs cannot be used within other purposes.

Inverse value development of IP throughout Usage

Intangible Assets have no use-related abrasion or decline of value

Usage of IP increases the value

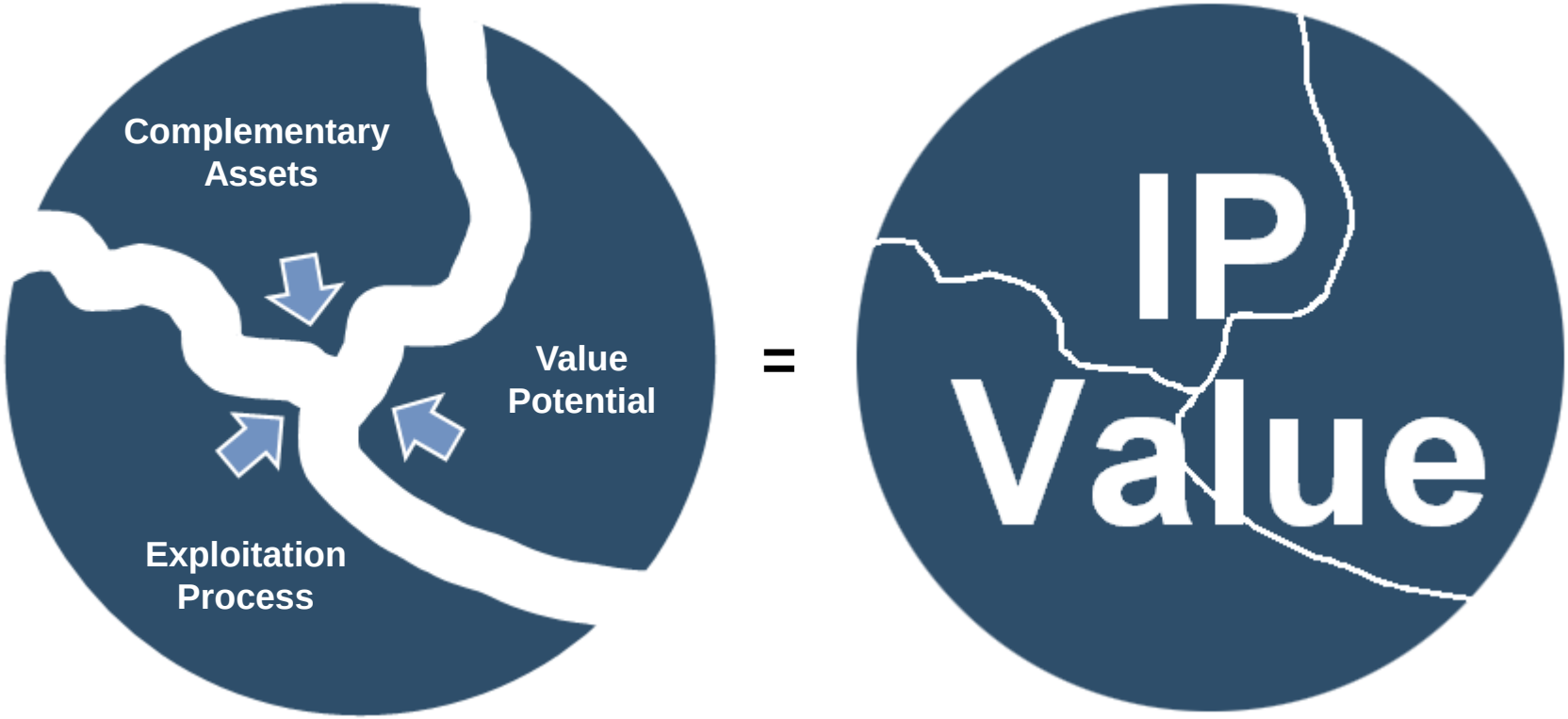
- ***Increasing value of brand names by usage***
- ***Establishment of a technological standard boosts the value of IP***

Requirement of complementary Assets to exploit IP

Use and exploitation of IP requires additional factors

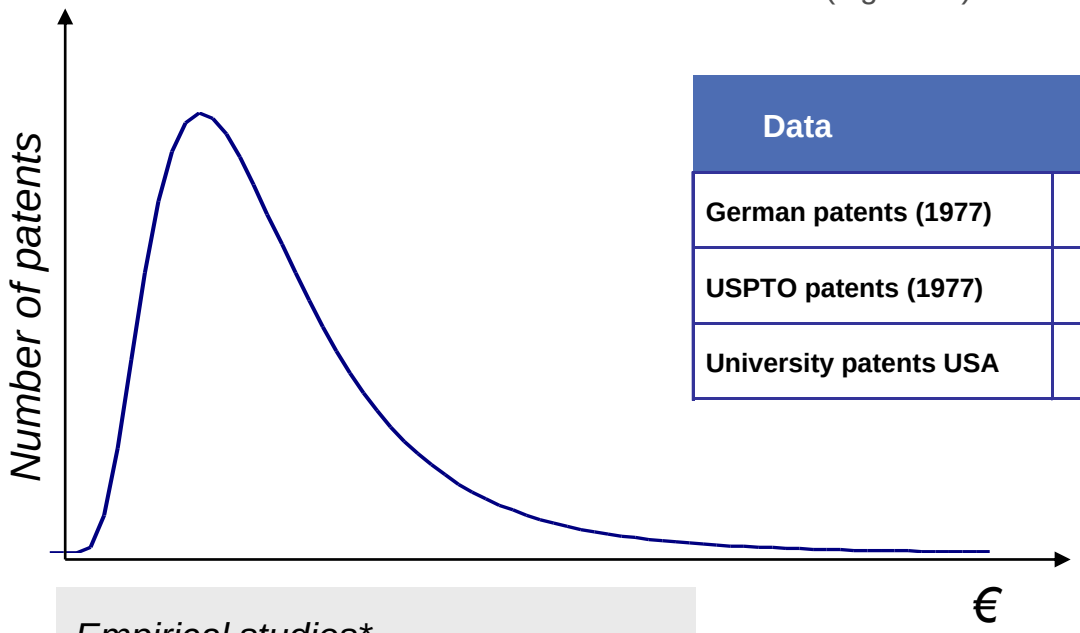
- ***technology***
- ***know-how***
- ***capital***
- ***skilled staff***
- ***production machinery***
- ***[…]***

Value Constitution of IP



Value of patents

Patent Portfolio Value Distribution (log-norm)



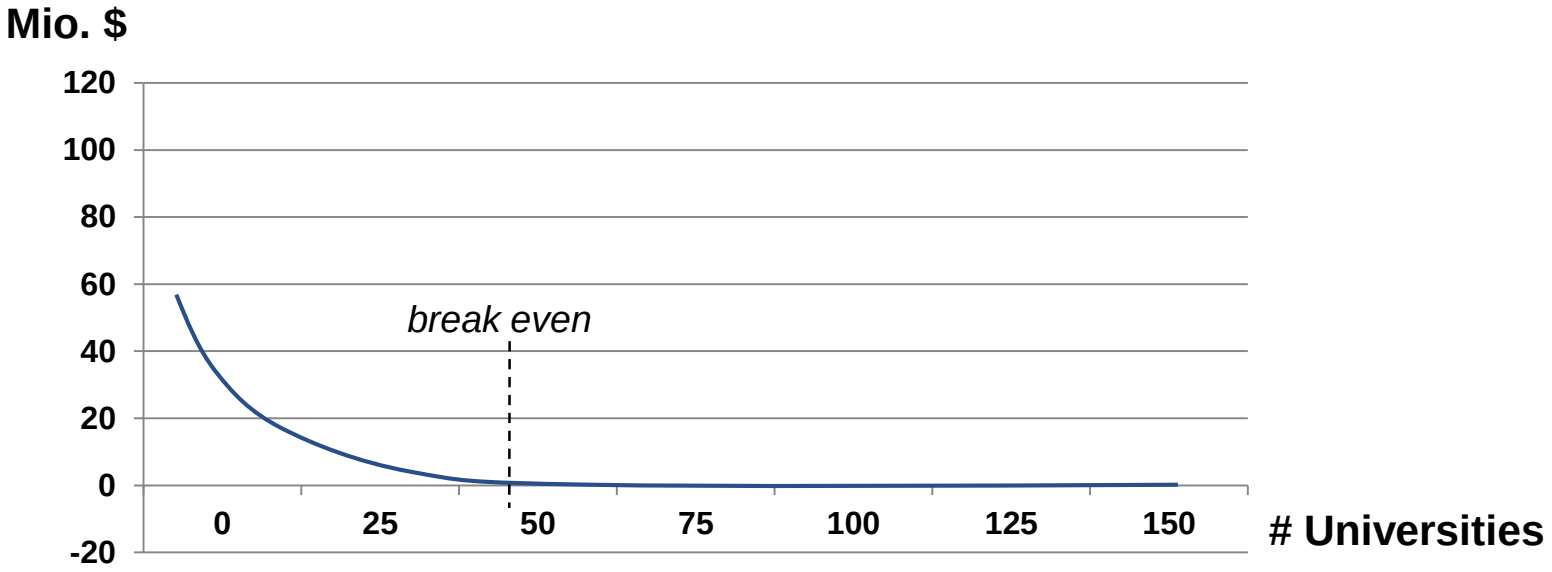
*Empirical studies**

Data	Number of patents	Value of TOP 10% patents
German patents (1977)	772	88%
USPTO patents (1977)	222	83%
University patents USA	411	92%

*) Source: Scherer, Harhoff, Kukies (2000) Journal of Evolutionary Economics

Dose of Reality

Net licensing returns of U.S. Universities



Only 10 Universities with more than 20 Mio. $ in 5 years

Only 20 out of 148 universities obtain 83% of all net licensing return
=> majority earns negligible or negative returns

Nearly 60% of universities earn negative profits from maintaining TTOs

*) Bulut, H./Moschini, G. (2009): US Universities' net return from patenting and licensing: a quantile regression analysis; in: Economics of Innovation and New Technology; Vol. 18/No. 2; 123-137.

Markets for technology

Why technology transfer occurs

Changing competitive environment and industrial R&D activities

Shorter Product-Life-Cycles

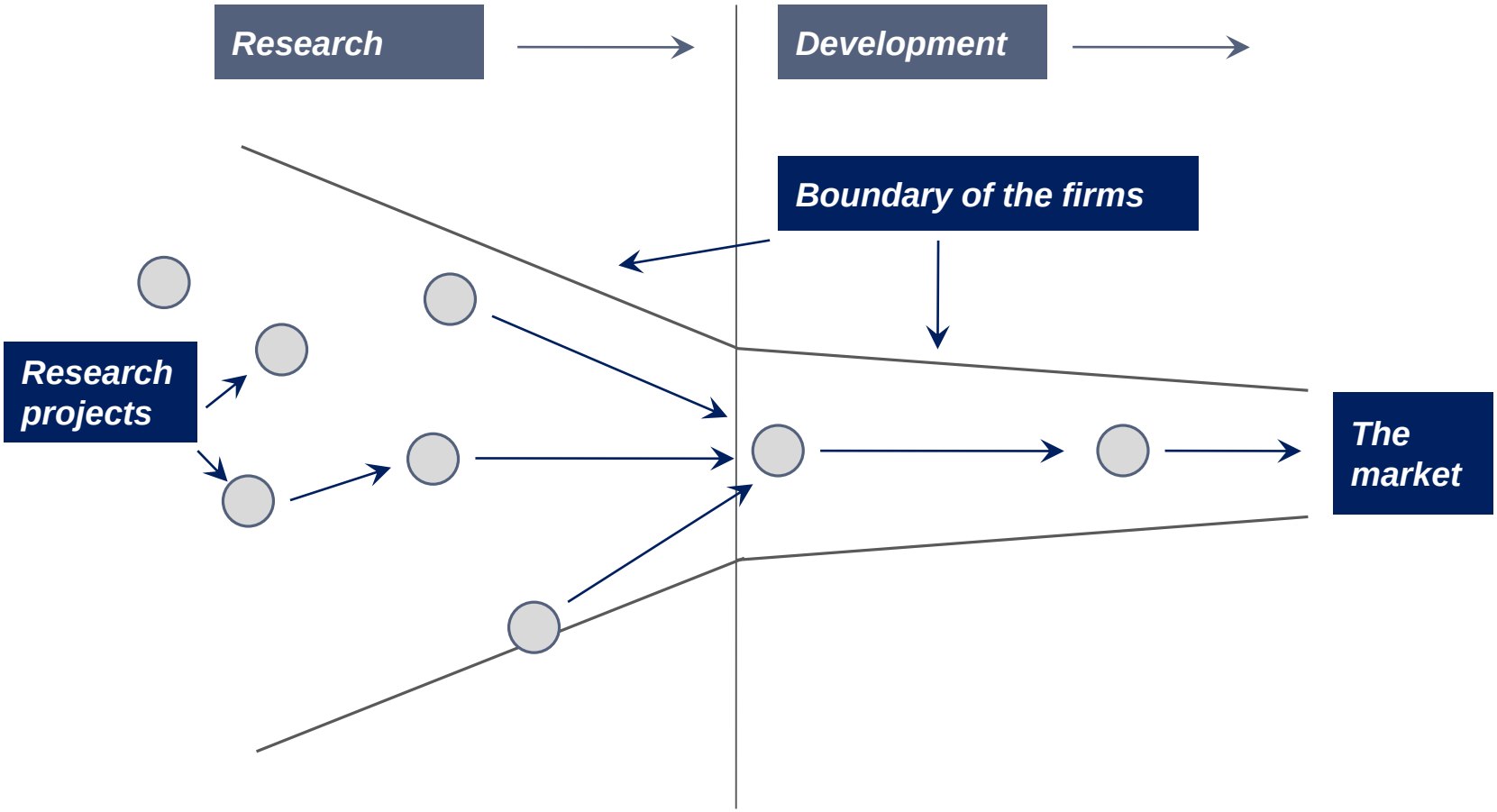
Resource Restrictions
➡ development time and costs

Increasing Competition
➡ globalization

Advances in Science
➡ new technologies, products, and markets

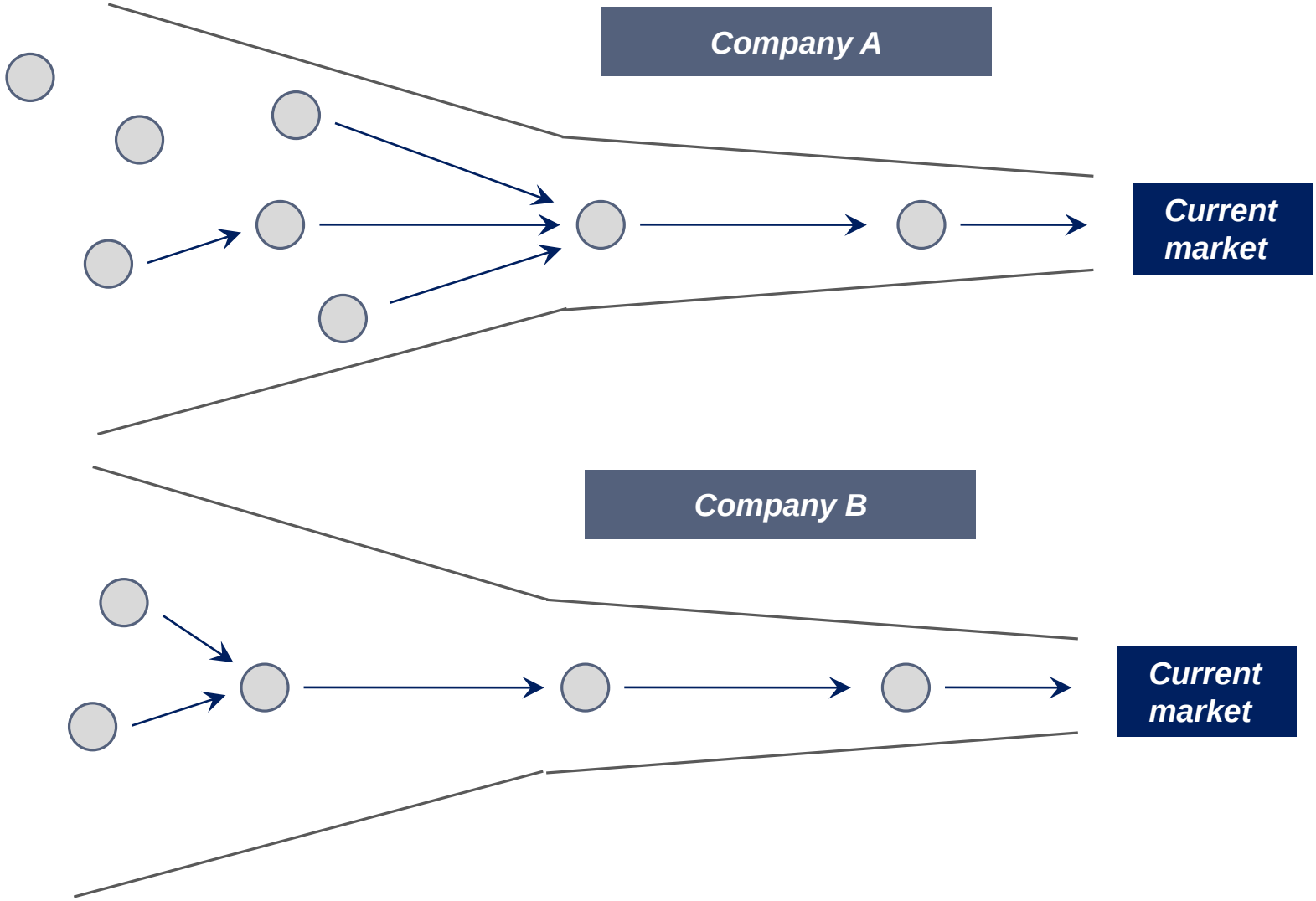
Emerging of open innovation promotes technology / IP transfer

The closed paradigm for managing industrial R&D



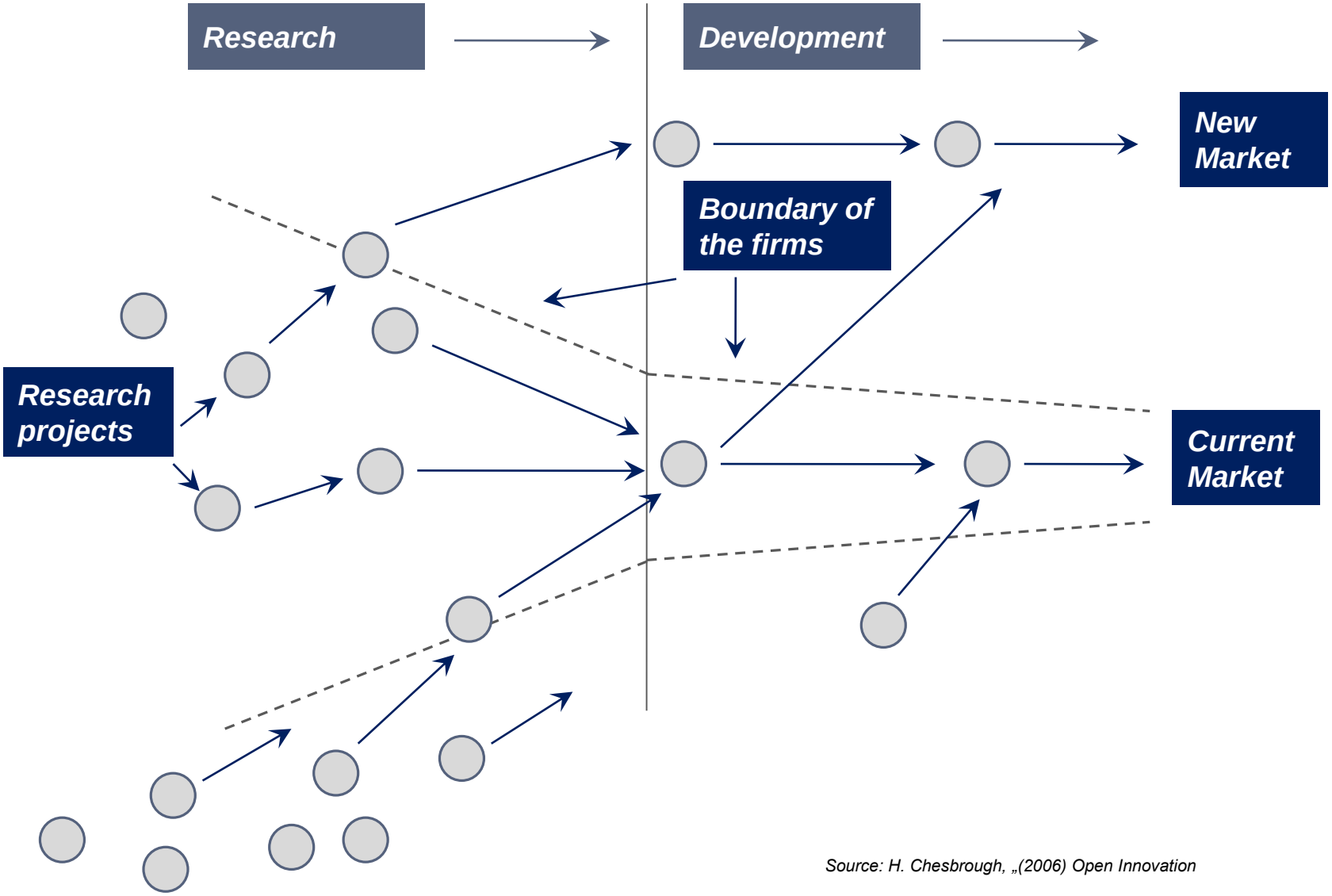
Source: H. Chesbrough, „(2006) Open Innovation

The knowledge landscape in Closed innovation



Source: H. Chesbrough, „(2006) Open Innovation

The open innovation paradigm of industrial R&D



Source: H. Chesbrough, „(2006) Open Innovation

Apple: App Store

Apple's App Store is Open Innovation

Infrastructure to integrate external software applications into Apple products

- **smart people and solutions outside of the company**
- **not everything can be developed inside**
- **platform to exploit and profit from external innovation**
- **open business model enables dominant market position**
- **IPR and control of complementary assets to control the platform**

What drives technology markets

Innovation Activities and IP Benefits are Industry specific:

- ***Technological complexity***

  Discrete and complex technologies

- ***Product life cycle and predominant output***

  Time to realise return on investment in product or process innovation

- ***Company size***

  Company bargaining position and resources

- ***Competition structure***

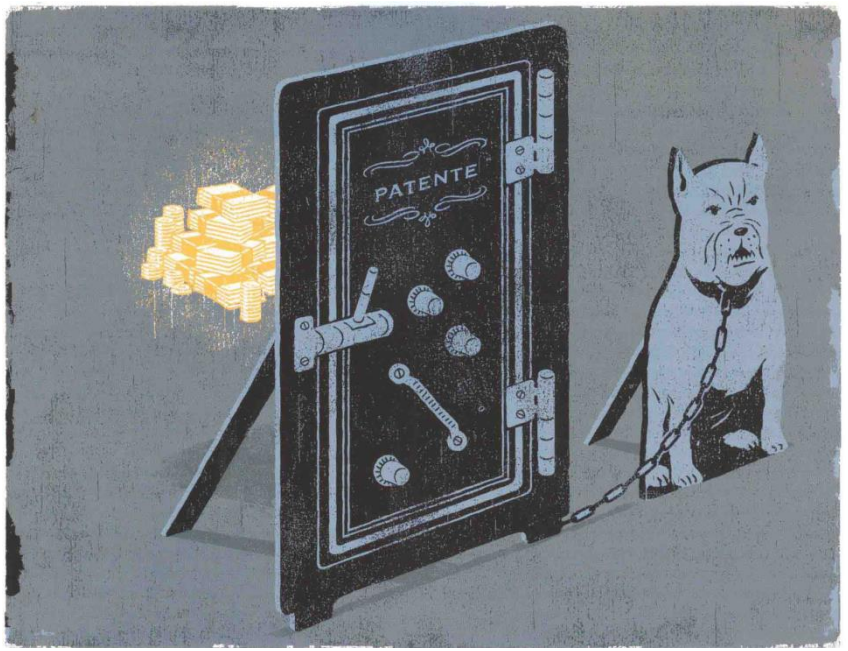
  Vertical or horizontal transactions

Economic impact of Patents

Harvard Business manager

Patente – Mythos und Wirklichkeit

Wurzer/ **Hundertmark**/ Sullivan, July 2009



most prominent myths about patents and their economic impact

Myth 1: *Patents protect my business against plagiarism*

It's a myth because…

Plagiarism and fakes seldom focus on sophisticated (protected) technologies
but
on cheap and low quality materials, production processes and design.

Solution:

Comprehensive know-how protection and IP strategy!
- know-how protection includes global supply chain and distribution channels
- full-fledged use of available IPR, including design rights, secrecy, trademarks
- strict enforcement of IPR

**) Estimated for Germany based on numerous sources like OECD, VDMA, IDW, DPMA, EPA etc.*

Myth 2: *Patents don't help to protect my business model*

It's a myth because…

Manager think of patents only as of legal rights to protect technical inventions
but
most business models rely on technical components along the value chain.

Solution:

Protect technical components and customer relevant features along the value chain!

- example DELL: order handling, PC assembling, shipping
- example NESPRESSO: coffee capsules, machines, distribution channels
- example GILLETTE : Blades, handles, package

**) Estimated for Germany based on numerous sources like OECD, VDMA, IDW, DPMA, EPA etc.*

Myth 3: *Patents are no true (financial) assets*

➡ ***It's a myth because…***

Manager believe patents cannot be leveraged to create earnings or support their financial power

but

patent value can be realized through licensing, collateralizing and fund structures.

➡ ***Solution:***

Leveraging of patents beyond their protection function!
- licensing or sale of patents
- patents as collateral for dept or sale-and-license-back solutions
- transfer to patent funds

**) Estimated for Germany based on numerous sources like OECD, VDMA, IDW, DPMA, EPA etc.*

Myth 4: *many patents = high innovativeness*

It's a myth because…

A lot of patents equal first and fore most a lot of costs and only a very small fraction of all patents have economic value

but

many politicians, companies and stakeholder claim that their large number of patents represents their innovativeness and hence business success.

Negative results are patent thickets, uncertainty about protected technologies, misleading public grants

Solution:

Cautious and reasonable patent application and maintenance!
- business relevance of patent protection
- assessment of market effect of patents

**) Estimated for Germany based on numerous sources like OECD, VDMA, IDW, DPMA, EPA etc.*

Myth 5: *Patents are lawyer and patent attorney business*

It's a myth because…

Patents are crucial to many business models and the success of innovations ***but***
business manager dismiss patents and delegate any related activities to administration and the legal department.

Solution:

Business management needs to have patents on their agenda!
- identify crucial IP along the value chain
- leverage patents and use them to promote innovations

**) Estimated for Germany based on numerous sources like OECD, VDMA, IDW, DPMA, EPA etc.*

Myth 6: *A lot of Patents make my business bulletproof*

It's a myth because…

large patent portfolios may offer long term protection and a balance of power in symmetric competition

but

product life cycles are decreasing, products consists of numerous components, and non-practicing entities impose asymmetric threats to big companies.

Solution:

Business management needs to have patents on their agenda!
- join forces in trusts, pools or through cross-licensing
- don't overestimate patent benefits in terms of risk protection

**) Estimated for Germany based on numerous sources like OECD, VDMA, IDW, DPMA, EPA etc.*

Myth 7: *Open innovation needs no patents!*

It's a myth because…

Open innovation without clear ownership imposes uncertainty and high costs for business activities

but

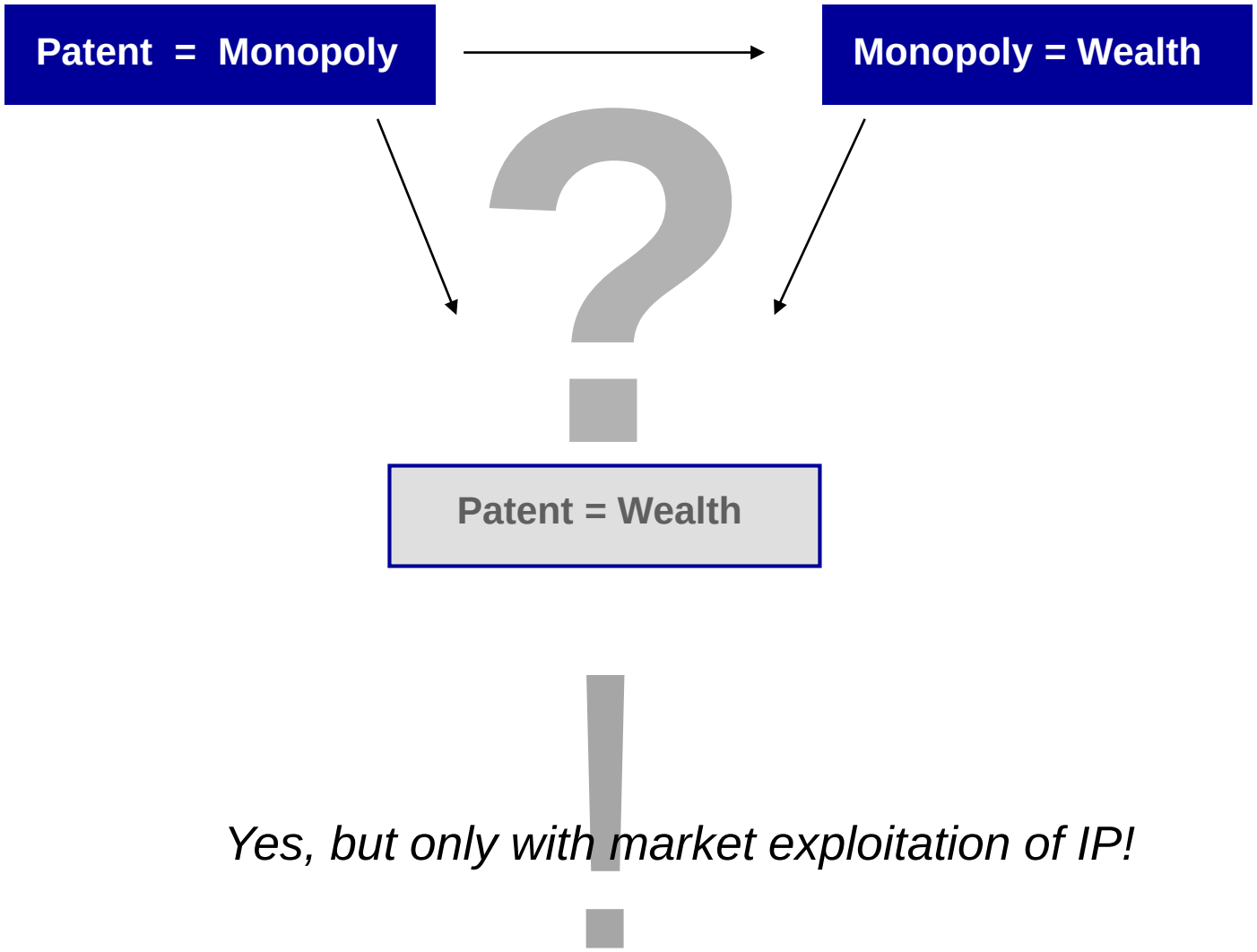
patents help clarify ownership, ease transfer and if collectively pooled they prevent monopolized internalization of economic benefit.

Solution:

Don't perceive patents solely as tools for individual ownership!

- patents reduce transaction costs and ease diffusion of innovation
- patents in open innovation reduce uncertainty, risk and hence costs
- support open innovation to establish platforms for services and Apps

**) Estimated for Germany based on numerous sources like OECD, VDMA, IDW, DPMA, EPA etc.*



Yes, but only with market exploitation of IP!

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