

Term „Innovation“

- Differentiating innovation from invention
 - Commercial exploitation
 - Utilization at the operational level
- Innovation:
 - Introduces an invention to the market and making it competitive in the market
 - Doing something new in a complex and dynamic world and so the process involves dealing with *uncertainty*.

Types of innovations

- Fundamental innovations
- Disruptive innovations
- Quality-improving innovations
- Adaptive innovations
- Imitations
- Fake innovations

Concept Definition

■ Target Costing

- Strategic cost planning, steering and controlling instrument
- How much a product is allowed to cost from the perspective of the customer?

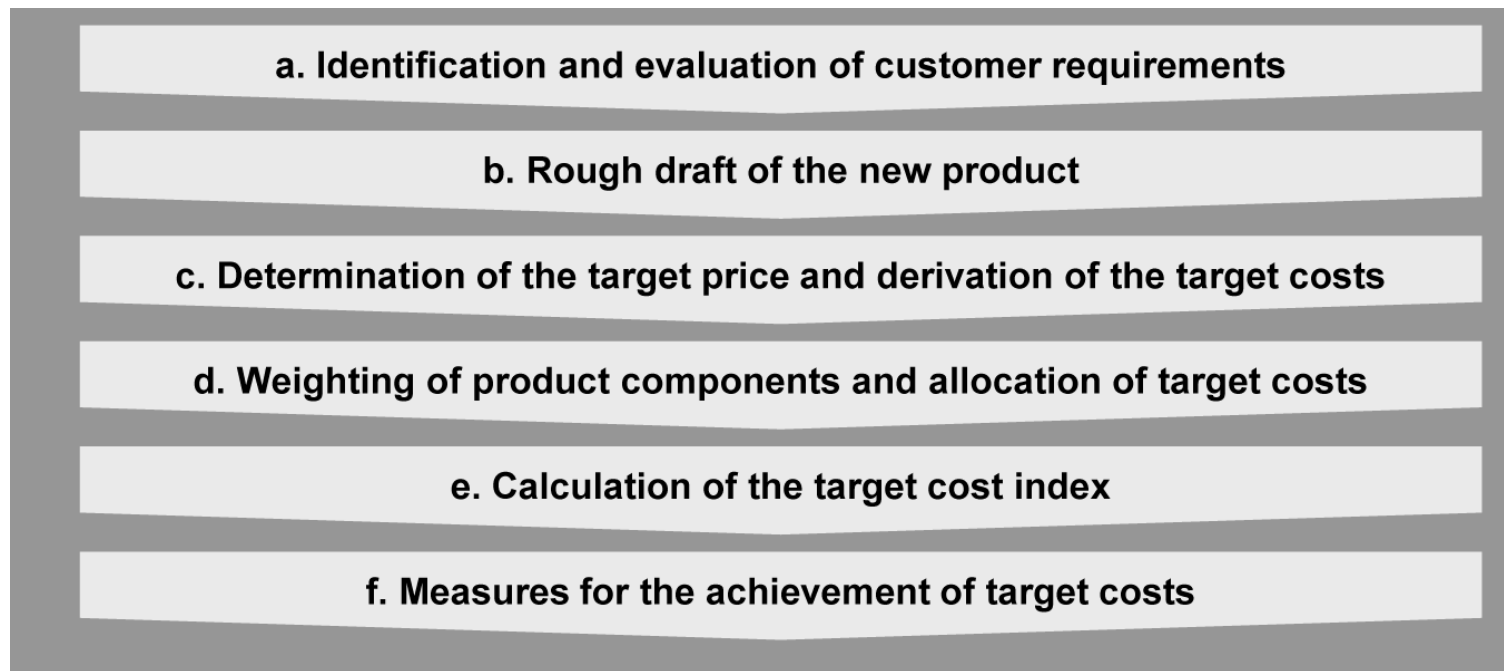
Standard cost accounting (bottom up)	
R&D costs	1,800
+ material costs	1,200
+ manufacturing costs	3,300
+ administrative costs	300
+ distribution costs	680
= primary costs	7,280
+ profit	750
= sales price	8,030
<i>What if the customer are willing to pay just 6,000?</i>	

Target costing (top down)	
target selling price	6,000
- target profit margin	750
= allowable cost	5,250
Target cost splitting	
R&D costs	*1,250
+ material costs	*1,000
+ manufacturing costs	*2250
+ administrative costs	*250
+ distribution costs	*500
= calculated target costs	5,250
<i>* Systematic identification of cost-reduction potentials until target costs <= allowable costs!</i>	

Calculation processes in comparison

Concept Definition

- **Target Costing**
 - Basic Model and Process Steps of Target Costing

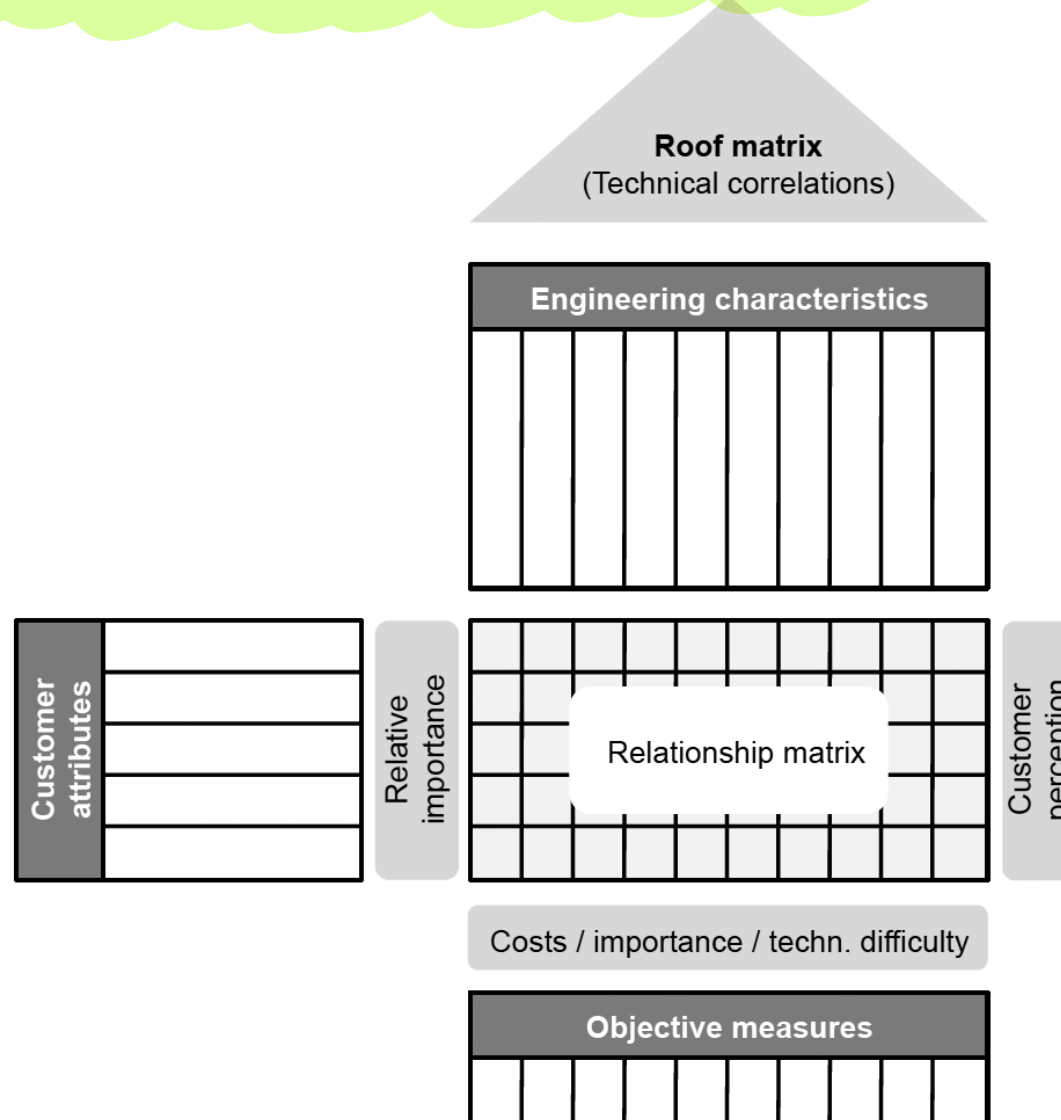


Process steps of target costing

Quality Function Deployment (QFD)

- Quality Function Deployment (QFD) is a method for translating the “Voice of the Customer” into “Action of the Developers”
- Shortening development times, but with improved quality and reduction of costs.
- QFD characteristics:
 - Consistent focus on customer requirements
 - Measurable technical quality features interwoven with customer requirements
 - Use of multi-functional, consensus-committed teams; and
 - Multi-level planning process using planning and communication matrices called House of Quality

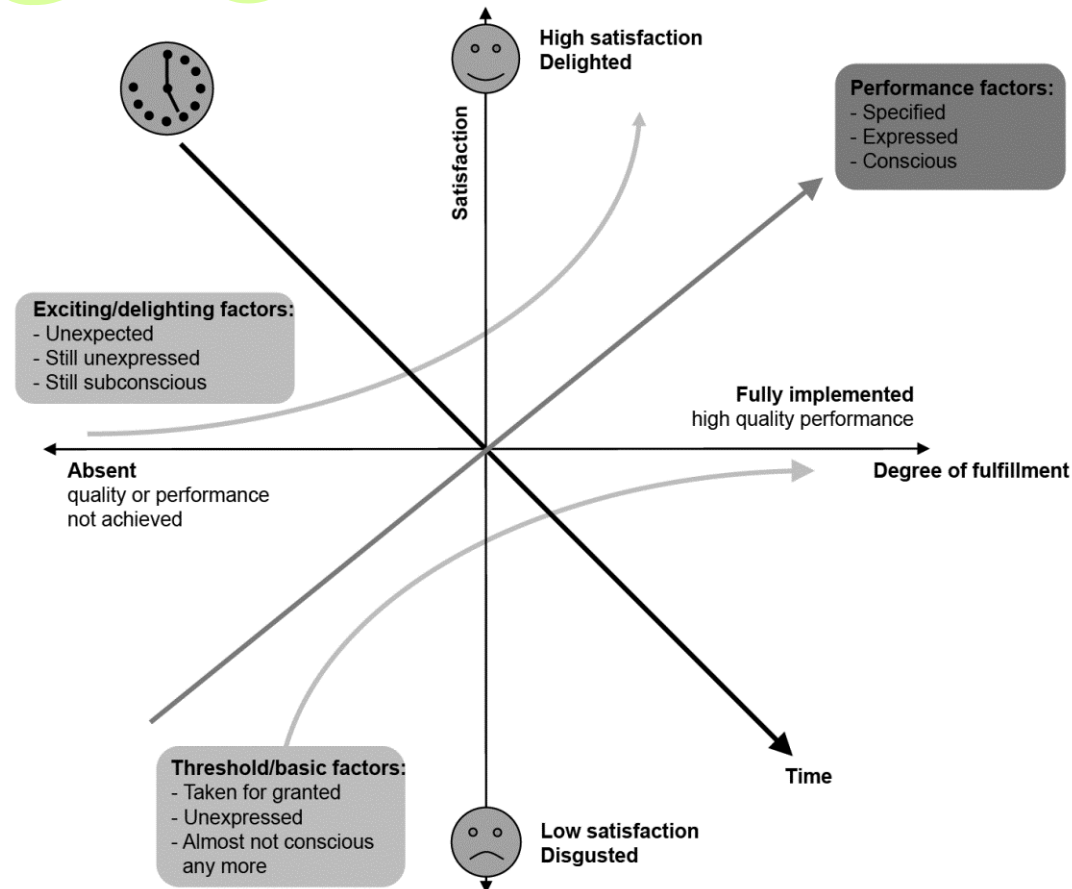
Quality Function Deployment (QFD)



Basic structure of the House of Quality (Based on Hauser/Clausing)

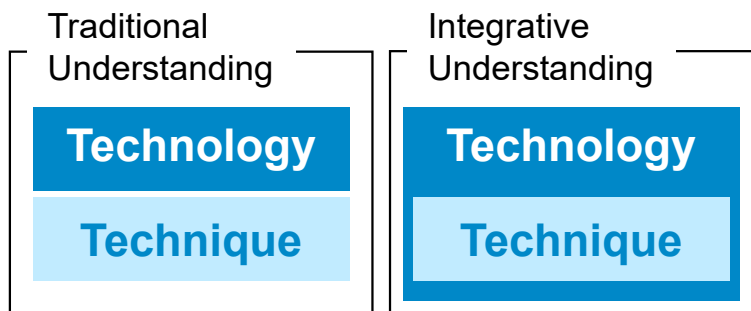
Quality Function Deployment (QFD)

■ Identifying needs - the *Kano Model*



The Kano model (Based on Kano et al.)

Importance of Technologies

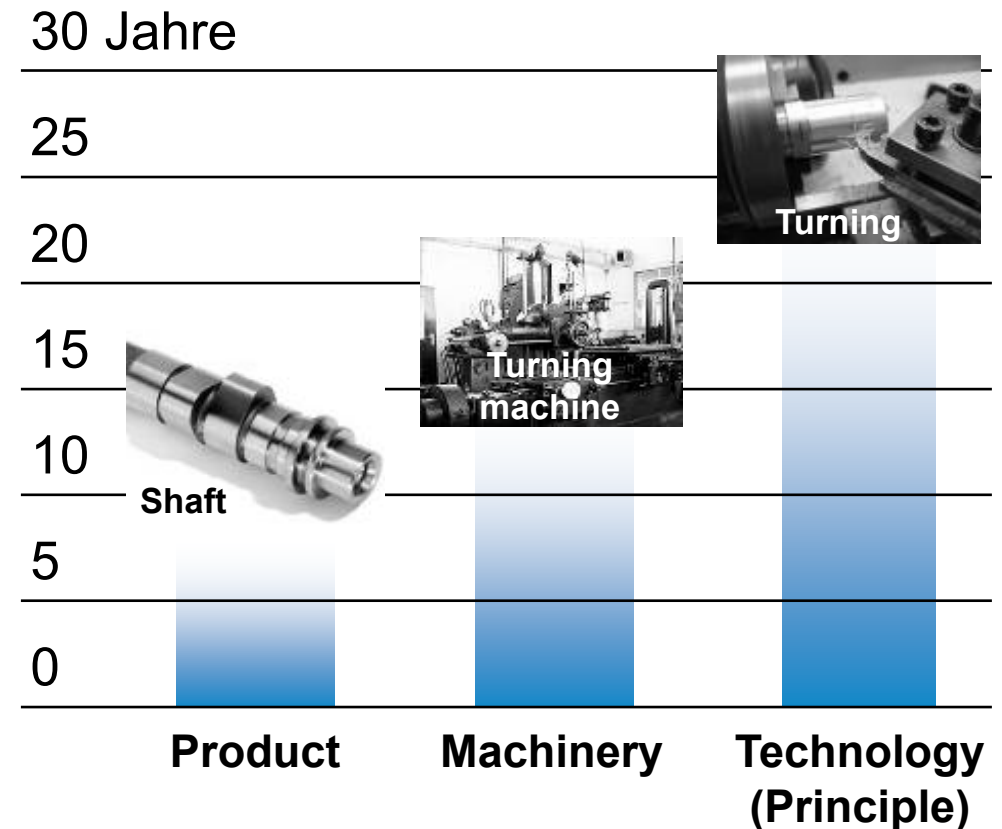


Source: Binder/Kantowsky 1996

- Technologies have usually longer life cycles than products.
- The risk of the rapid substitution of technologies is less than the risk of other skills.
- Once developed advantages can be used more sustainably.

➤ **Technology Management** directs the development and exploitation of technological competencies in a company.

Typical life cycles of products, production equipment and technologies

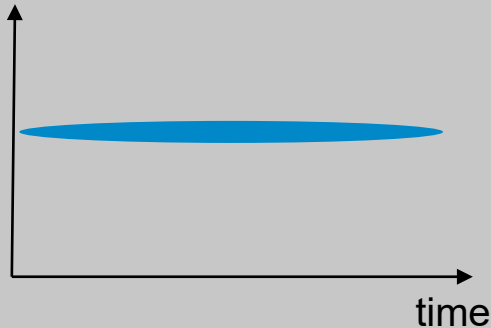


High dynamics of knowledge relevant for competition

Development **yesterday**

- Long development cycles
- Small solution space

Solution space



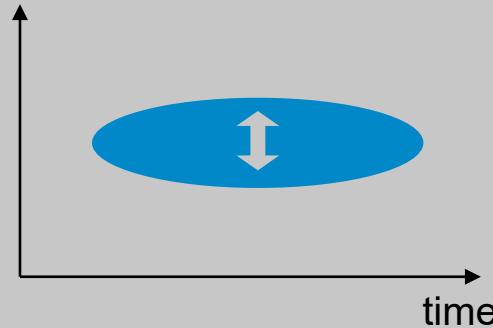
Knowing where something is written



Development **today**

- Medium development cycles
- Medium solution space

Solution space



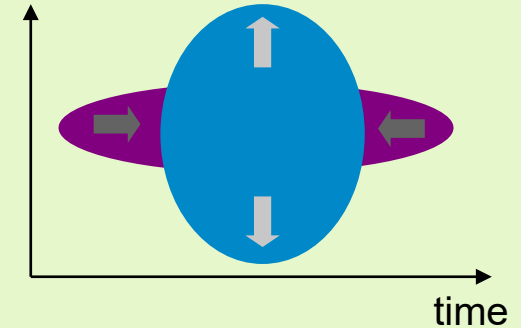
Knowing who knows



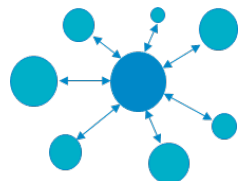
Development **tomorrow**

- shortened development cycles
- Wide solution space

Solution space



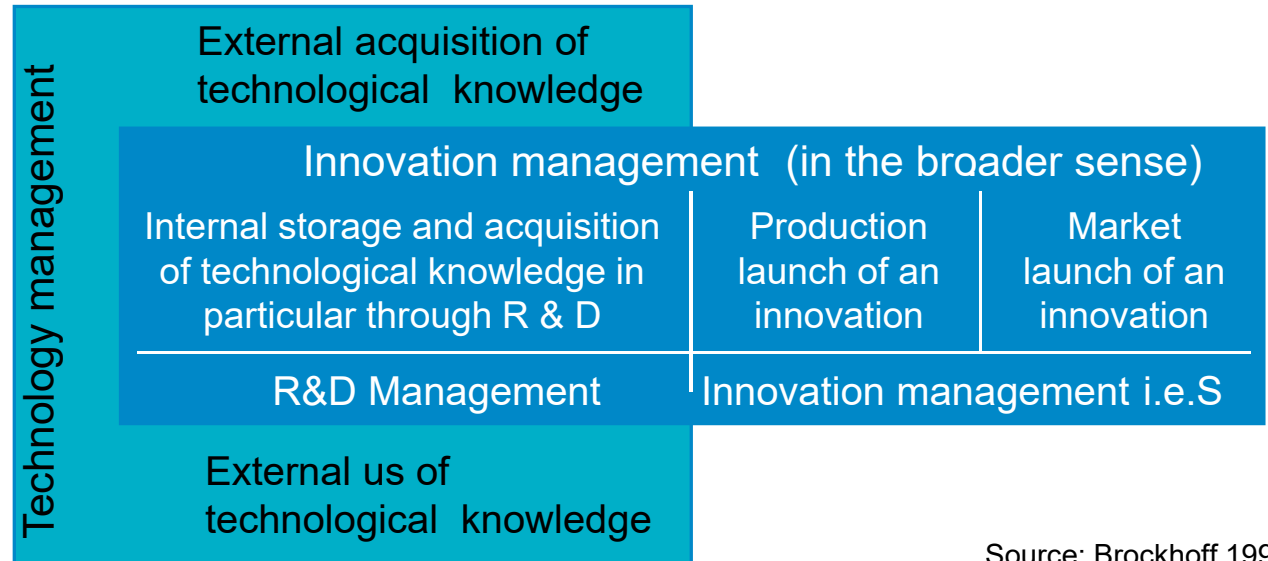
Know-how where knowledge is created



Definitions

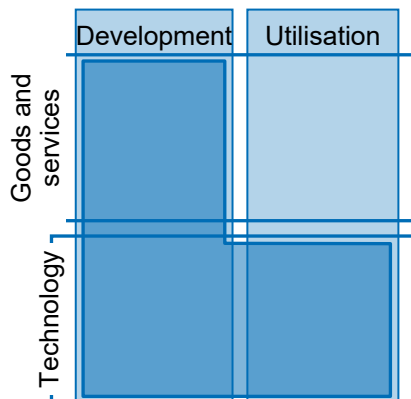
After BROCKHOFF the intersection of technology and innovation management is R&D management (pictured right).

A very similar line represent BINDER and KANTOWSKY (pictured below).

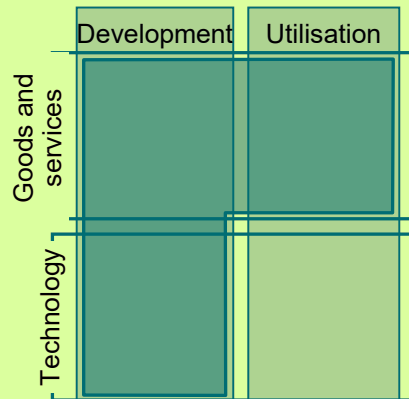


Source: Brockhoff 1997

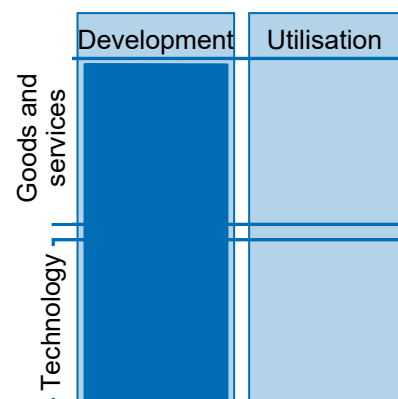
Technology Management TM



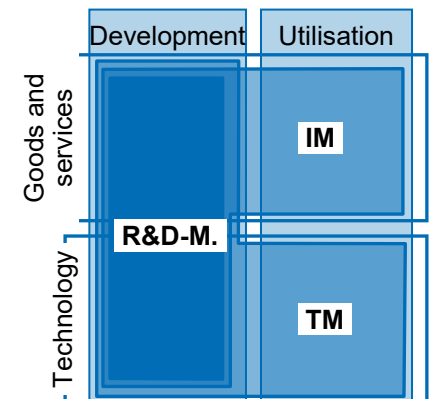
Innovation Management IM



R&D-Management

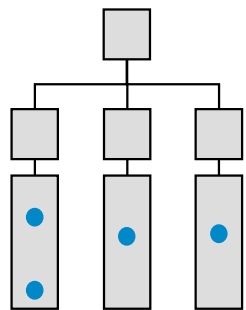


Overview

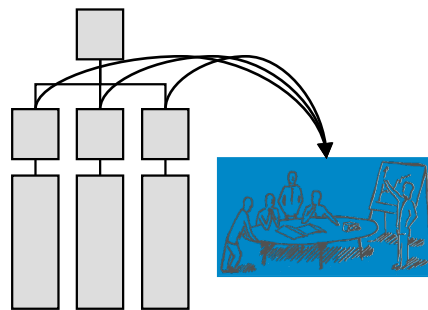


Quelle: Binder; Kantowsky 1996

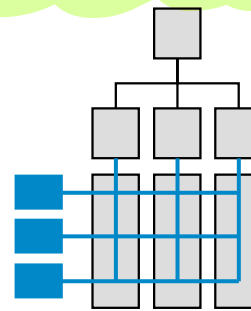
Possible forms of TM organisation



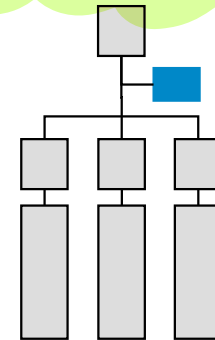
Implicit form



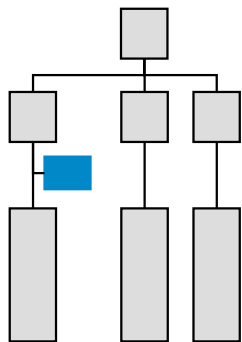
Committee



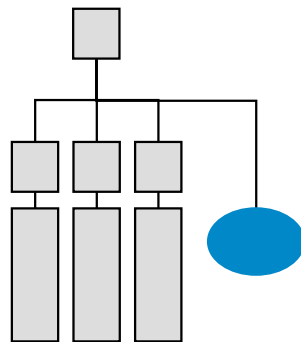
Project-organisation



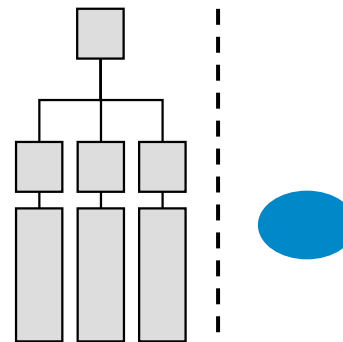
Staff-organisation



Line-function





Centre-organisation



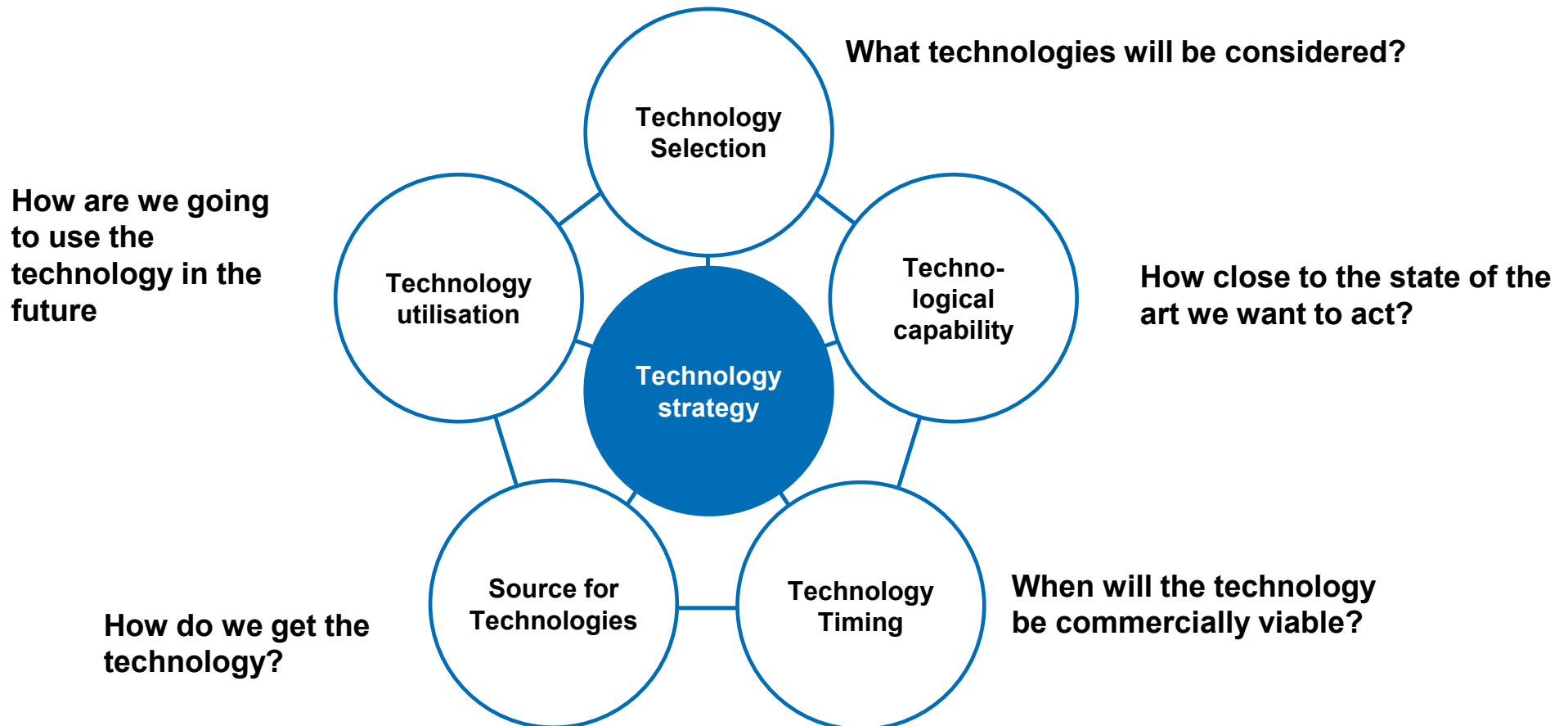
External Service provider

Caption:

-  Corporate-function
-  Technology-management

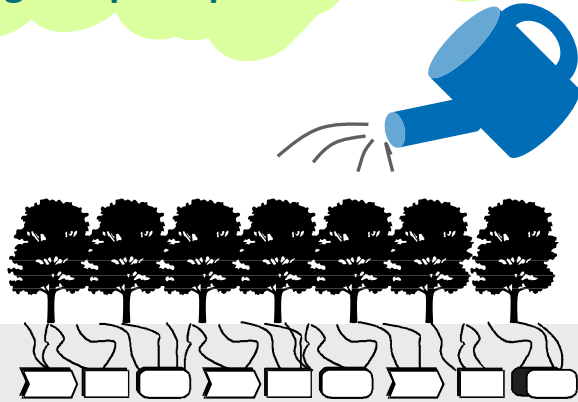
Depending on the corporate strategy and the internal and external areas of influence

Contents and decision dimensions of a technology strategy

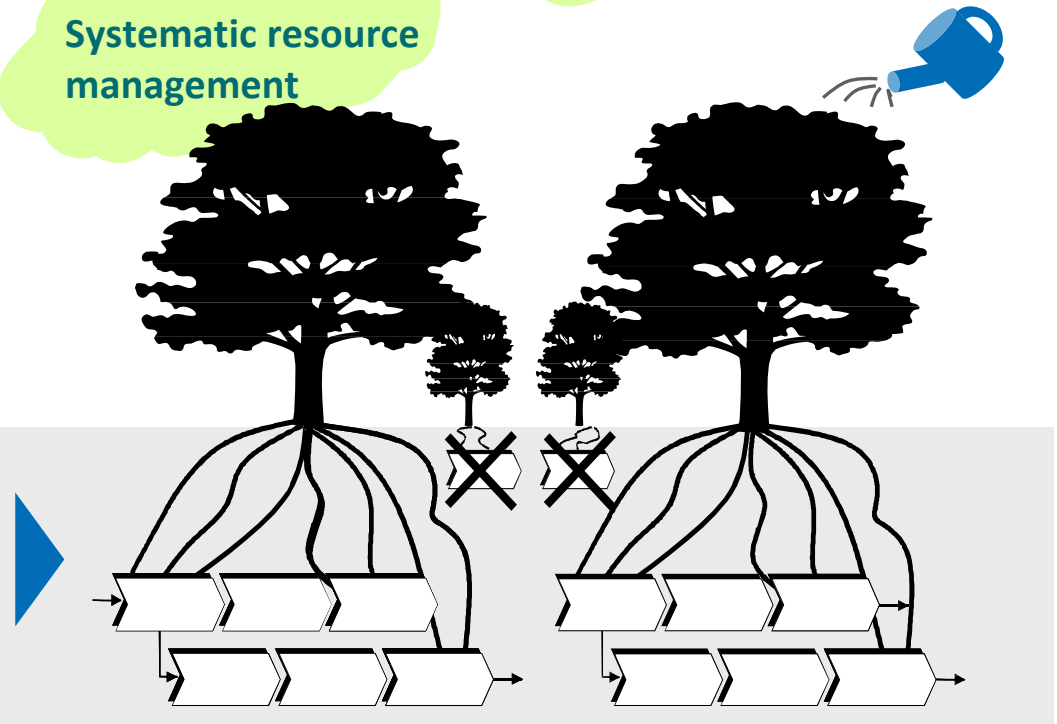


Technology strategy and core competencies

Allocation of resources according to the watering-can principle



Systematic resource management



- interchangeability
- price war
- Hectic and reaction
- lack of transparency
- established structures

- Transparency of their own performance
- Optimization of the value chain
- Reduction of costs
- utility maximization
- Uniqueness in competition

Quelle: Prahalad Hamel

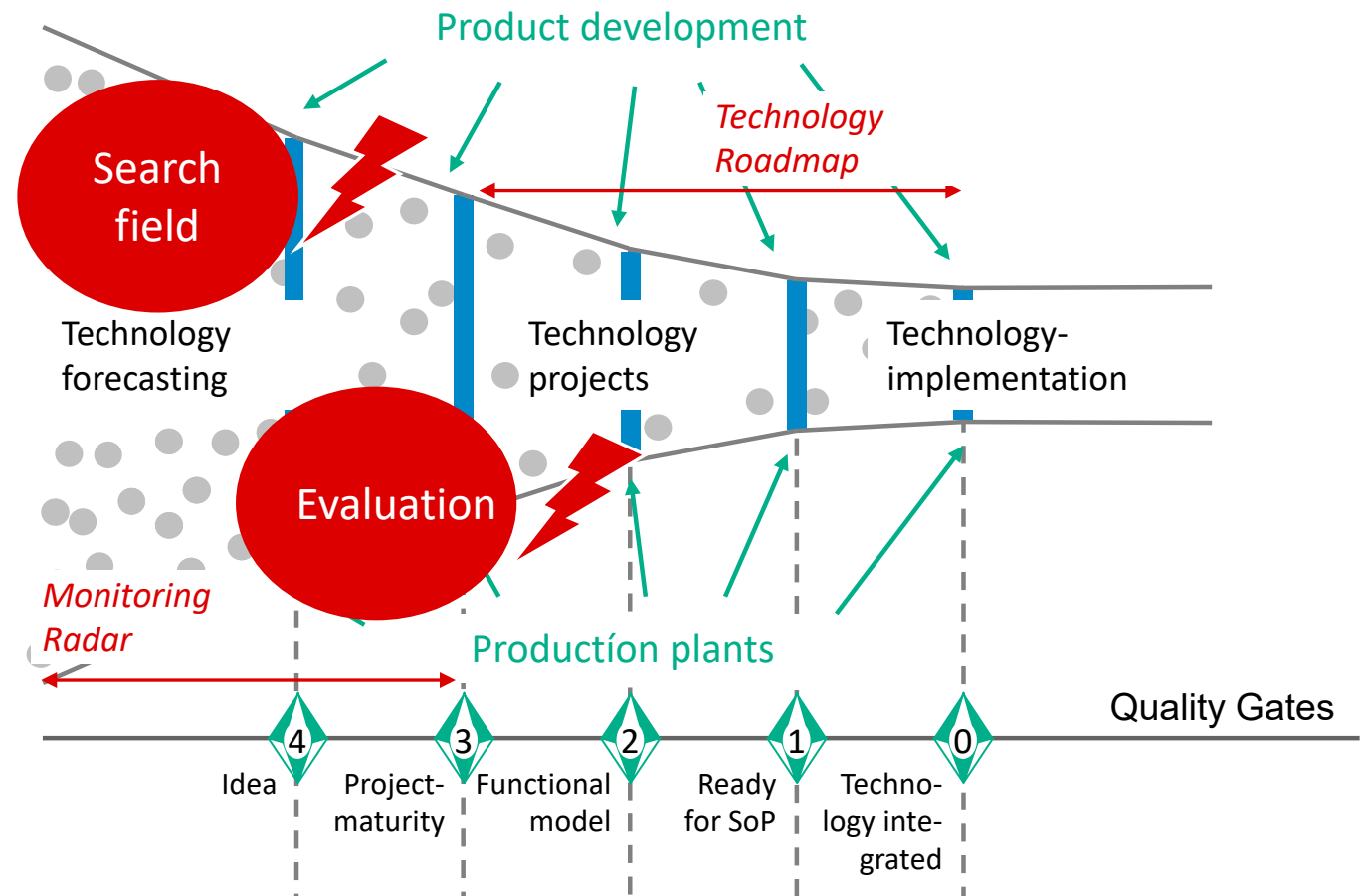
When is a competency a core competency?

Is the competence valuable?	Is the competence rare?	Is the competence difficult to imitate?	Is the competence not substitutable?	competitiveness
no				Disadvantage
yes	no			Parity
yes	yes	no		Temporary Advantage
yes	yes	yes	no	Incremental Advantage
yes	yes	yes	yes	sustainable advantage

Quelle: Müller-Stevens

There are two main challenges in technology forecasting

- Search for new technological potentials
 - Define appropriate search fields
 - Select correct time perspective
- Assessment of technological potentials
 - Orientation for assessing
 - Select suitable experts
 - Right balance between present and future

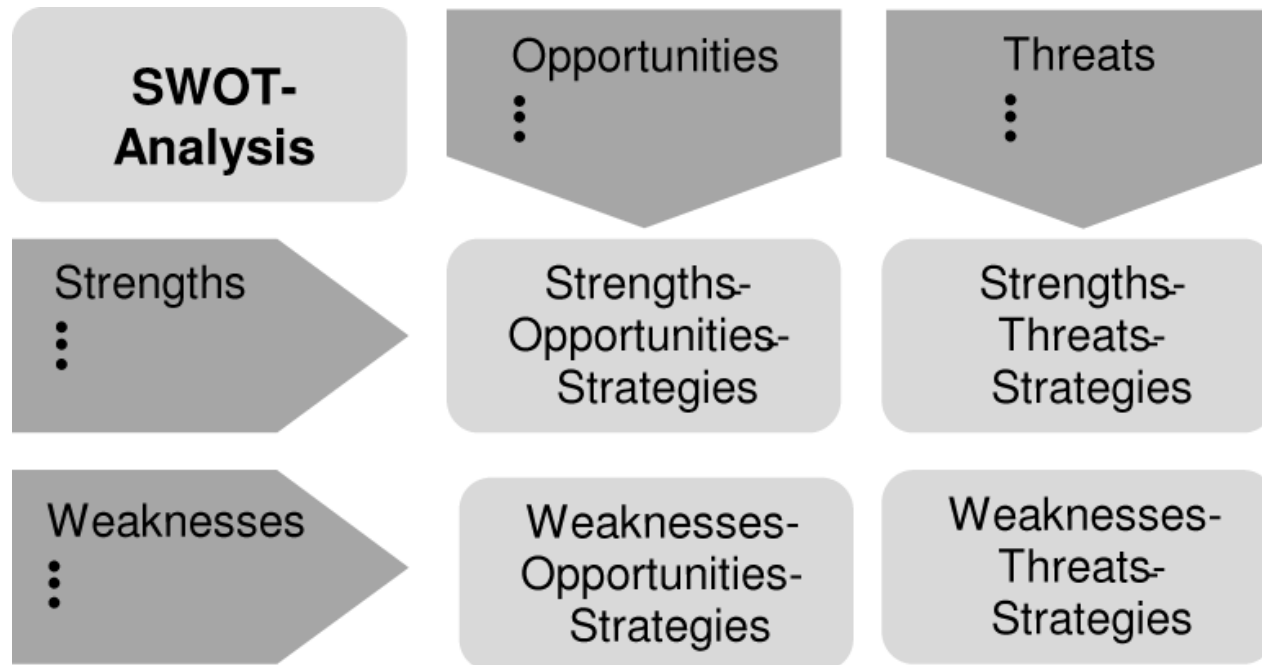


Basic activities of a strategic forecasting: the focus is a directed, formal search

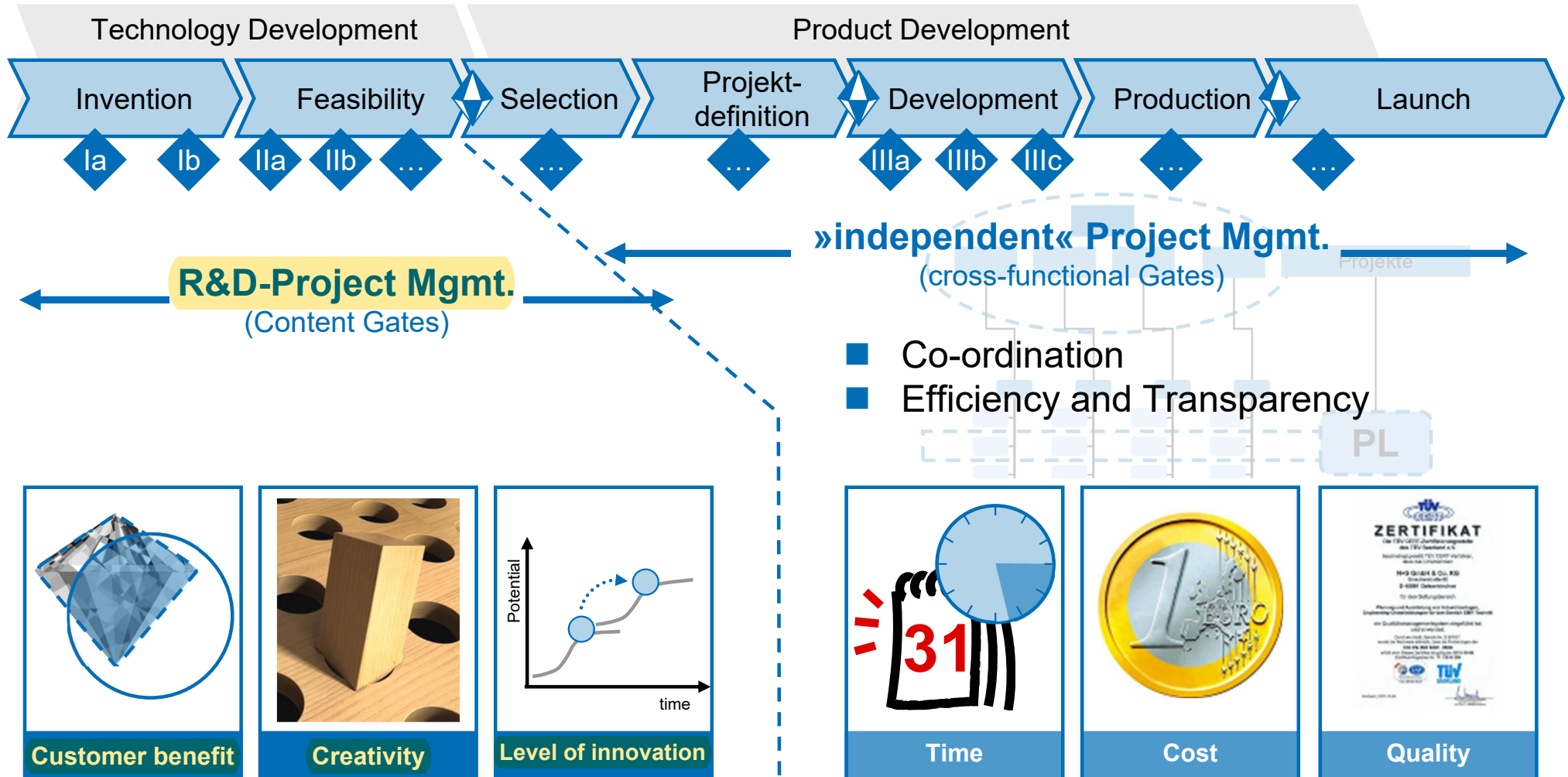
	Outside of the domain	Inside of the domain	
Scanning	Scan signals <i>without</i> fixed subjects	Scan signals <i>without</i> fixed subjects	<i>informal</i>
	Scan signals <i>with</i> specific subjects	Scan signals <i>with</i> specific subjects	<i>formal</i>
Monitoring	Observation and in-depth search of information <i>with</i> special focus on a previously identified signal	Observation and in-depth search of information <i>with</i> special focus on a previously identified signal	
Scouting	Assigned procurement of detailed information on specific technologies	Assigned procurement of detailed information on specific technologies	

Schuh, G.: Der Ordnungsrahmen Produktion und Management. in: Schuh, G.; Klappert, S.: Handbuch Produktion und Management 2 – Technologiemanagement. Springer, 2011

Data Linking – SWOT analysis

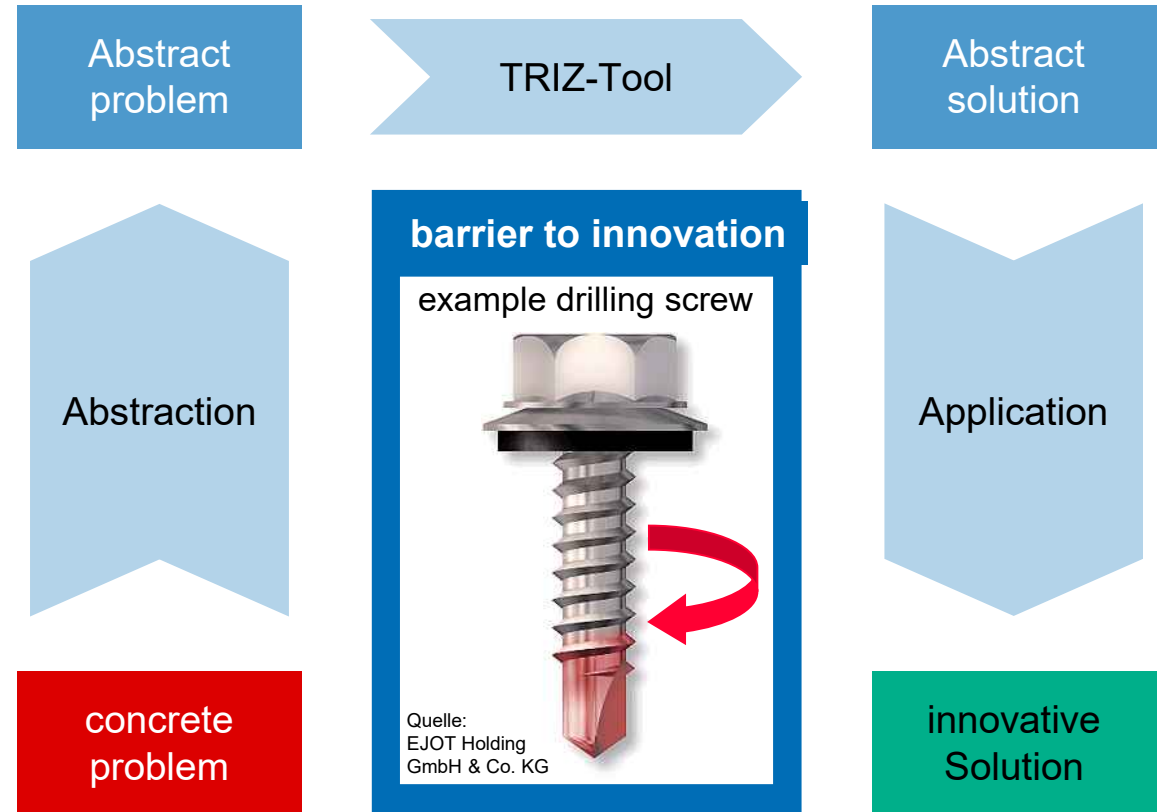


Consistent separation of Technology and Product development



The three pillars of TRIZ

- The systematic analysis of a problem often leads to solutions already.
- Many problems have been solved in other areas and industries under a different name, but basically comparable.
- Contradiction is the key element of technical problems that provokes innovations.
- The development of technical systems follows certain (evolutionary) laws.



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