



Research Area  
Technology,  
Innovation, Marketing,  
Entrepreneurship

**RWTH**AACHEN  
UNIVERSITY

# ERFOLGSFAKTOREN UND PRAXIS DES INNOVATIONS- UND TECHNOLOGIE- MANAGEMENTS (EPITM)

SUCCESS FACTORS AND PRACTICE OF INNOVATION AND TECHNOLOGY MANAGEMENT

## COURSE OUTLINE AND READING LIST

**DR. ROLF-CHRISTIAN WENTZ**

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WINTER TERM 2019/20

**This class in a nutshell: A systemic, strategic view on managing technology and innovation taught by a lecturer with much experience in management practice and many guest lectures. Traditional class format of lectures and exam.**

## Course description: SUCCESS FACTORS AND PRACTICE OF INNOVATION AND TECHNOLOGY MANAGEMENT

This course is based both on practice (multiple case studies, various guest lectures by practitioners) and theory. Its two core objectives are:

To lay out the fundamental success factors of innovation management and to introduce the concept of a comprehensive innovation management system that can address all innovation management issues from multiple perspectives within a common framework.

To illustrate the individual components (vision and objectives, strategy, culture, process, structure etc.) of such an innovation management system in depth, and to explain critical decisions that ensure the success of the company as an innovator.

A special feature of this class are frequent guest lectures by experienced managers from industry who will share their hands-on experiences and stories of managing innovation and technology successfully in diverse corporate settings.

### Course organization

Degree Programmes:	Master BWL, Master WiWi, Master Wirt.-Ing. aller Fachrichtungen Nebenfachstudenten und Austauschstudenten auf Anfrage
Location and Time:	1132   303 (HKW 2), Wüllnerstraße 1, 52062 Aachen Thursdays, 13:30 - 15:45
Course Examination:	Written exam of 60 minutes (100 percent) <b>in German</b>
Requirements:	Solid command of English for literature and videos
Group Size:	No limitation
Type of Teaching:	Case example based interactive lecture, guest lectures
Language:	<b>Course and exam in German</b>
Credits:	5

### Timetable: EPITM Thursday, 13:30 – 15:45

	Module	Room
<b>Ramp-Up:</b>	TIM-Bootcamp (Video Lectures, self-study)	
<b>10.10.2019</b>	Module 1: Introduction in Innovation Management Dr. Wentz	1132 303 (HKW 2)
<b>17.10.2019</b>	Module 2: Vision, Objectives, Strategy, Innovation Arena Strategy Dr. Wentz	1132 303 (HKW 2)
<b>24.10.2019</b>	Module 3: Innovation Portfolio Strategy, Market Entry and Timing Strategy Dr. Wentz	1132 303 (HKW 2)
<b>31.10.2019</b>	No lecture!	
<b>07.11.2019</b>	Module 4: Innovation Culture Dr. Wentz + Guest Speaker Mr. Daniel Attallah, CEO Pixum / Dignet GmbH & Co. KG, Köln: "Innovationskultur bei Pixum"	1132 303 (HKW 2)
<b>14.11.2019</b>	Module 5: Innovation Process I Dr. Wentz	1132 303 (HKW 2)
<b>21.11.2019</b>	Module 6: Innovation Process II + Innovation Portfolio Management Dr. Wentz	1132 303 (HKW 2)
<b>28.11.2019</b>	Module 7: Innovation Competencies Dr. Wentz + Guest Speaker Mr. Gisbert Rühl, CEO of Klöckner & Co SE, Duisburg: „Digitalisierung und Innovationsmanagement bei Klöckner“	1132 303 (HKW 2)
<b>05.12.2019</b>	Module 8: Product Architecture and Platform Strategy I Dr. Wentz	1132 303 (HKW 2)
<b>12.12.2019</b>	Module 9: Product Architecture and Platform Strategy II Dr. Wentz + Guest Speaker Mr. Christoph Michel, Manufacturing Technology Manager – 3M, Neuss: "Technologiemanagement bei 3M"	1132 303 (HKW 2)
<b>19.12.2019</b>	Module 10: Product Architecture and Platform Strategy III Dr. Wentz	1132 303 (HKW 2)

<b>09.01.2020</b>	Module 11: Intellectual Property + Technology Management Dr. Wentz + Guest Speaker Mr. Matthias Piesche, Manager Patents Manufacturing – Daimler Brand & IP Management GmbH, Stuttgart: "Automotive IP – the world is changing"	1132   303 (HKW 2)
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	Module	Room
<b>16.01.2020</b>	Module 12: Innovation Structure + Systems I Dr. Wentz + Guest Speaker Dr. Ulrich Küsthardt, Chief Innovation Officer – Evonik Industries AG, Essen: "Leading Innovation at Evonik"	1132   303 (HKW 2)
<b>23.01.2020</b>	Module 13: Innovation Structure + Systems II Dr. Wentz	1132   303 (HKW 2)
<b>30.01.2020</b>	Module 14: Course Wrap-Up & Questions Dr. Wentz	1132   303 (HKW 2)

### Additional Dates

	Content	Room
<b>30.01.2020</b> <b>16:00 – 17:30</b>	Exam Preparation session Lukas Moschko	1132   303 (HKW 2)
<b>21.02.2020</b> <b>08:30 – 09:30</b>	Written Exam (First Date)	TBD
<b>27.03.2020</b> <b>08:30 – 09:30</b>	Written Exam (Second Date)	TBD

### Literature

The **literature marked as "required readings"** as well as the videos of the TIM-Bootcamp are essential for the understanding of the class and are **required for the exam**. The literature will be accessible via the course online learning environment (moodle).

Students are encouraged to read supplemental readings, watch supplemental videos and conduct own research in the literature widely available as the exam questions will not be solely restricted to the required readings and videos.

Text books to prepare for the exam:

- Wentz, R.-C. (2008). *Die Innovationsmaschine. Wie die weltbesten Unternehmen Innovationen managen*. Springer. Berlin, Heidelberg.
- Wentz, R.-C. (2012). *The Innovation Machine: How the world's best companies manage innovation*. Charleston, S.C.: CreateSpace Independent Publishing Platform.
- Hauschildt, J., Salomo, S., Schultz, C., Kock, A. (2016). *Innovationsmanagement*. Vahlen. München.
- Piller F. (2008). *Principles and Practices of Technology and Innovation Management: A Reader*. New York/London: McGraw-Hill Primis.

## Contact

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***A personal consultation with Dr. Wentz or Lukas Moschko is always possible. Please write an e-mail to schedule a telephone call or a meeting!***

## Module 1: Introduction in Innovation Management

10.10.2019

Dr. Wentz

### Introduction

Following the discussion of organizational issues concerning this lecture, the introductory session will define some basic terms and concepts in technology and innovation management. The focus of the module is to develop an understanding why managing innovation successfully is such a challenge in many companies, and hence such a priority on the top management agenda, and how these challenges should be addressed.

### Learning Objectives: Understand...

- What is innovation? What is technology?
- The need for innovation and for serial innovation
- How does innovation differ from invention?
- The difference between exploration and exploitation
- What is innovation management?
- Which are the key challenges of managing innovation in organizations?
- The fundamental success factors: soft factors vs. hard factors
- the innovation management system and the interdependence of its components

### Required Readings

Before the class, read the following papers and get a basic understanding of their core ideas and findings. When reading the papers, be critical! Do you follow the author(s) in their arguments? What is the foundation of their findings?

- **Wentz (2012)** The Innovation Machine, CreateSpace, pp. 9-14, 21-38.  
or **Wentz (2008)** Die Innovationsmaschine, Springer, Berlin-Heidelberg, pp. 1-25.
- **Hauschildt, Salomo, Schultz, Kock (2016)** *Innovationsmanagement. Vahlen*, pp. 12-20, 27-62.

### Supplemental Readings

- **Andrew, Manget, Michael, Taylor, Zablit (2010)** Innovation 2010, Boston Consulting Group Senior Executive Innovation Survey.
- **Hamel (1999)** Bringing Silicon Valley Inside, Harvard Business Review, 77(5), pp. 71-84.

### Supplemental Videos

**Hamel: "Management Innovation"**

<http://www.youtube.com/watch?v=IFkJw6T7ZKw>

## Module 2: Vision, Objectives, Strategy, Innovation Arena Strategy

17.10.2019

Dr. Wentz

### Learning Objectives: Understand...

- Why organizations need a vision and what role it plays in directing the innovation effort
- What an inspiring vision looks like
- Why organizations need objectives
- The difference between innovation embedment objectives and project objectives
- The three types of innovation project objectives and their relevance
- What is strategy, and how it should be communicated
- What is an innovation arena strategy and what criteria should guide the decision

### Required Readings

- **Wentz (2012)** The Innovation Machine, CreateSpace, pp. 69-86. or **Wentz (2008)**. Die Innovationsmaschine, Springer, Berlin-Heidelberg, pp. 31-34, 54-57.
- **Reader**: Principles and Practices of Technology and Innovation Management. Piller (Ed.), New York: McGraw-Hill 2008:
  - pp. 73-80. Appendix B: Business Strategy and Industry Analysis, in: Schilling (2008). Strategic Management of Technological Innovation. New York: McGraw-Hill.
  - pp. 119-139. Technology Strategy, in: Smith (2006). Exploring Innovation. McGraw-Hill: New York.

### Supplemental Readings

- **Cooper (2005)** Product Leadership. Pathways to Profitable Innovation. 2nd ed. Basic Books, New York, pp. 66-80.
- **Kotter (1996)** Leading Change, Harvard Business School Press, Boston, pp. 67-83.
- **Porter (1996)** What is Strategy? Harvard Business Review, November-December.
- **Lafley / Martin (2013)** Playing To Win. How Strategy Really Works, Harvard Business School Press, pp. 7-34.
- **Van Alstyne/Parker/Choudary (2016)** Pipelines, Platforms, and the New Rules of Strategy, Harvard Business Review, April 2016, pp. 54-62.
- **Zook (2004)** Beyond the Core. Expand the Market Without Abandoning Your Roots, Harvard Business School Press, Boston, pp. 1-8, 28-30.

### Supplemental Videos

**Kotter**: "Communication a Vision for Change"

<http://www.youtube.com/watch?v=bGVe3wRKmH0>

**Porter**: "The Five Competitive Forces that Shape Strategy"

[http://www.youtube.com/watch?v=mYF2\\_FBCvXw&feature=relmfu](http://www.youtube.com/watch?v=mYF2_FBCvXw&feature=relmfu)

## Module 3: Innovation Portfolio Strategy, Market Entry and Timing Strategy

24.10.2019

Dr. Wentz

### Learning Objectives: Understand...

- What constitutes a basic **innovation portfolio strategy**
- The different types of innovation (product vs. business model innovation; incremental vs. radical vs. disruptive innovation)
- The interdependence of innovation type and innovation management system
- What is a **market entry and timing strategy** and which are the deciding factors

### Required Readings

- **Wentz (2012)** The Innovation Machine, CreateSpace, pp. 43-66, 86-91, 95-99, 103-126.
- **Hauschildt, Salomo, Schultz, Kock (2016)** Innovationsmanagement. Vahlen, pp. 81-85.
- **Reader:** Principles and Practices of Technology and Innovation Management. Piller (Ed.), New York: McGraw-Hill 2008.
  - **pp. 441-455.** Timing of Entry, in: Schilling (2008). Strategic Management of Technological Innovation. McGraw-Hill.

### Supplemental Readings

- **Bower/ Christensen (1995)** Disruptive Technologies. Catching the wave. Harvard Business Review, January-February.
- **Anthony/ Johnson / Sinfield / Altman (2008)** The Innovator's Guide to Growth, Harvard Business Press, Boston, pp. 17-18, 45-64.
- **Johnson (2010)** Seizing the White Space, Harvard Business Press, Boston, pp. 6-8, 21-46.
- **Kim/ Mauborge (2005)** Blue Ocean Strategy, How to Create Uncontested Market Space and Make the Competition Irrelevant. Harvard Business School Press, Boston. pp. 3-7, 23- 35.
- **Leifer/ McDermott/ O'Connor/ Peters/ Rice/ Veryzer (2000)** Radical Innovation. Harvard Business School Press, Boston, pp. 1-24.

### Supplemental Videos

**Christensen:** "Disruptive Innovation Explained"

<http://www.youtube.com/watch?v=qDrMAzCHFJU>

**Anthony:** "What is disruptive innovation?"

<http://www.youtube.com/watch?v=9L66OH-x7a4>



## Module 4: Innovation Culture

07.11.2019

Dr. Wentz

+ Guest Speaker Mr. Daniel Attallah, CEO Pixum / Dignet GmbH & Co. KG, Köln: "Innovationskultur bei Pixum"

### Learning Objectives: Understand...

- What is culture and innovation culture
- How the difference between routine operations and innovation may provoke a culture clash
- The importance of fundamental beliefs and what are innovation-conducive values and behavioral norms
- The importance of the leaders to live the values ("walk the talk")
- The need to balance structure vs. chaos

### Required Readings

- **Wentz (2012)** *The Innovation Machine*, CreateSpace, pp. 103-126.  
or **Wentz (2008)** *Die Innovationsmaschine*, Springer, Berlin-Heidelberg, pp. 215-231.
- **Hauschildt, Salomo, Schultz, Kock (2016)** *Innovationsmanagement*. Vahlen, pp. 95-112.

### Supplemental Readings

- **Bock (2015)** *Work Rules! Insights from Inside Google*, Twelve, pp. 29-53.
- **Sutton (2002)** *Weird Ideas that Work*, The Free Press, pp. 94-103.
- **Schein (2010)** *Organizational Culture and Leadership*, pp. 23-54.
- **Schmidt & Rosenberg (2014)** *How Google Works*, Grand Central Publishing, pp. 27-65.
- **Doshi & McGregor (2015)** *Primed to Perform*, HarperCollins Publishers, pp. 3-30.

### Supplemental Videos

**Hamel:** "Are you really serious about innovation?"

<https://www.managementexchange.com/video/gary-hamel-are-you-really-serious-about-innovation>

**Bock/Seidenberg:** "How Google Thinks About Hiring, Management and Culture"

<https://www.youtube.com/watch?v=R2o-Xm3UVjs>

**Spotify:** "Spotify Engineering Culture"

<https://www.youtube.com/watch?v=R2o-Xm3UVjs>

## Module 5: Innovation Process I

14.11.2019

Dr. Wentz

### Learning Objectives: Understand...

- What are the objectives of an innovation process
- The basic stage-gate process and key decisions being taken in it
- How the basic stage-gate process is amended in order to improve its effectiveness
- The differences between the innovation process for incremental innovations (stage-gate process) and the innovation process for radical innovations (milestone process)
- Why assumptions and learnings are the key elements of the milestone process
- How do agile innovation processes look like and when do they help
- What is a minimum viable product (MVP)
- The importance of learning from failure

### Required Readings

- **Wentz (2012)** *The Innovation Machine*, CreateSpace, pp. 129-162, 175-182, 227-244. or **Wentz (2008)** *Die Innovationsmaschine*, Springer, Berlin-Heidelberg, pp. 83-105.
- **Hauschildt, Salomo, Schultz, Kock (2016)** *Innovationsmanagement. Vahlen*, pp. 372-381.
- **Ries (2011)** *The Lean Startup*, Crown Business, New York, pp. 56-83.
- **Rigby/ Sutherland/ Takeuchi (2016)** *Embracing Agile*, Harvard Business Review, May 2016, pp. 41- 50.

### Supplemental Readings

- **Rigby/ Sutherland/ Takeuchi (2016)** *Embracing Agile*, Harvard Business Review, May 2016, pp. 41- 50.
- **Cooper/ Sommer (2016)** *From Experience: The Agile-Stage-Gate Hybrid Model: A Promising New Approach and a New Research Opportunity*, Journal of Product Innovation Management, Feb. 25, 2016, pp. 513-526.
- **Cooper (2005)** *Product Leadership. Pathways to Profitable Innovation*. 2<sup>nd</sup> ed. Basic Books, New York, pp. 200-225.
- **Tomke (2003)** *Experimentation Matters*, Harvard Business School Press, Boston, pp. 161-197.
- **McGrawth/ MacMillan (2009)** *Discovery-Driven Growth*, Harvard Business School Press, Boston, pp. 75-90, 121-148.
- **Sutherland (2015)** *SCRUM – The Art of Doing Twice the Work in Half the Time*, Random House Business Books, pp. 1-39.
- **Knapp / Zeratsky / Kowitz (2016)** *Sprint – How to Solve Big Problems and Test New Ideas in Just Five Days*, Simon & Schuster, pp. 7-17
- **Hoffman / Yeh (2018)** *Blitzscaling*, Currency, New York, pp. 23-48

## Module 5: Innovation Process I

14.11.2019

Dr. Wentz

### Supplemental Videos

**Uzility:** *“Introduction to Scrum”*

<https://www.youtube.com/watch?v=9TycLR0TqFA>

**Sutherland:** *“Scrum: Jeff Sutherland Breaks Down the Structure of Scrum”*

<https://www.youtube.com/watch?v=O7cA1q0XwhE>

## Module 6: Innovation Process II + Innovation Portfolio Management

21.11.2019

Dr. Wentz

### Learning Objectives: Understand...

- The objectives of innovation portfolio management
- The different kinds of portfolios
- The valuation of portfolio projects
- The tools of portfolio management
- The purpose and process of portfolio reviews

### Required Readings

- **Wentz** (2012). The Innovation Machine, CreateSpace, pp. 247-260.

### Supplemental Readings

- **Cooper/ Edgett/ Kleinschmidt (2001)** Portfolio Management for New Products, 2<sup>nd</sup> edn., Perseus Publishing, New York, pp. 26-28, 73-79.
- **Christensen (2008)** Innovation Killers. How Financial Tools Destroy Your Capacity to Do New Things. Harvard Business Review, January.

## Module 7: Innovation Competencies

28.11.2019

Dr. Wentz

+ Guest Speaker Mr. Gisbert Rühl, CEO of Klöckner & Co SE,  
Duisburg: „Digitalisierung und Innovationsmanagement bei  
Klöckner“

### Learning Objectives: Understand...

- That innovation competencies can either be built internally, or they can be acquired externally
- The difference between explicit and tacit knowledge
- The innovation competency model, i.e. on one side, we need to differentiate between knowledge, skills, judgment, and behaviours, and that, on the other side, when it comes to innovation competencies, we need to distinguish technology, market, process, social and leadership competencies
- That technologies can be sourced either internally or externally (“make or buy”), and which criteria determine what is the better approach
- The different forms of external technology sourcing
- The rationale for open innovation

### Required Readings

- **Wentz (2012)** The Innovation Machine, CreateSpace, pp. 299-321.
- **Reader:** Principles and Practices of Technology and Innovation Management. Piller, Frank T. (Ed.), New York: McGraw-Hill.
  - o **pp. 119-139.** Technology Strategy, in: Smith (2006). Exploring Innovation. McGraw-Hill: New York.
  - o **pp. 211-228.** Chesbrough/ Appleyard (2007). Open Innovation and Strategy. California Management Review, 50, 7.

### Supplemental Readings

- **Huston/ Sakkab (2006)** Connect and Develop. Inside Procter & Gamble’s New Model for Innovation, Harvard Business Review, March.
- **Schilling (2008)** Strategic Management of Technological Innovation. New York: McGraw-Hill. Chapter 8: Collaboration Strategies, pp. 153-175.

### Supplemental Videos

**Chesbrough:** “Open Innovation”

<http://www.youtube.com/watch?v=2UDBaDtwXfl&feature=related>

**Lafley:** “P&G discussing open innovation”

<http://www.youtube.com/watch?v=7mMTorlAxs>

## Modules 8, 9 + 10: Product Architecture and Platform Strategy I, II and III

05.12.2019	Dr. Wentz
+ 12.12.2019	Dr. Wentz + Guest Speaker (to be confirmed)
+ 19.12.2019	Dr. Wentz

### Learning Objectives: Understand...

- What is to be considered for the product architecture and platform strategy, in particular
- What is a modular vs. an integral architecture
- What is a standard or dominant design
- The factors which determine which design will become dominant
- The relative advantages of an open vs. a closed eco system

### Required Readings

- **Wentz (2012)** The Innovation Machine, CreateSpace, pp. 91-95.
- **Reader:** Principles and Practices of Technology and Innovation Management. Piller (Ed.), New York: McGraw-Hill 2008.
  - **pp. 297-318.** Product Architecture, in: Ulrich/ Eppinger (2007). Product Design and Development. McGraw-Hill.
  - **pp. 422-440.** Standard Battles and Design Dominance, in: Schilling (2008). Strategic Management of Technological Innovation. McGraw-Hill 2008.

### Supplemental Readings

- **Baldwin/ Clark (1997)** Managing in the age of modularity. Harvard Business Review, September-October.
- **Robertson/ Ulrich (1998)** Planning for Product Platforms. Sloan Management Review, 39, 4.

## Module 11: Intellectual Property + Technology Management

09.01.2020

Dr. Wentz

+ Guest Speaker Mr. Matthias Piesche, Manager Patents Manufacturing, Daimler Brand and IP Management GmbH, Stuttgart: "Automotive IP – the world is changing"

### Learning Objectives: Understand...

- what is an intellectual property strategy, in particular
- the different types of intellectual property (IP)
- that the intellectual property of a company represents a value which needs to be managed for profit
- the patent application process
- advantages and drawbacks of patents
- alternative patent strategies for innovations
- exclusivity and freedom-to-operate as the two motivations for patents
- advantages and drawbacks of licenses

### Required Readings

- **Wentz (2012)** The Innovation Machine, CreateSpace, pp. 306-313.

### Supplemental Readings

- **Reitzig (2004)** Strategic Management of Intellectual Property. Sloan Management Review, 45, 3.
- **Harhoff (2005)** Strategisches Patentmanagement, in: Albers/ Gassmann (Ed.): Handbuch Technologie- und Innovationsmanagement. Wiesbaden: Gabler, pp. 175-192.
- **Ullrich/ Eppinger (2007)** Patents and Intellectual Property, in: Ullrich/ Eppinger: Product Design and Development, McGraw-Hill.

## Modules Innovation Structure + Systems

### 12 + 13:

16.01.2020

Dr. Wentz

+ Guest Speaker Dr. Ulrich Küsthardt, Chief Innovation Officer – Evonik Industries AG, Essen: “Leading Innovation at Evonik”

23.01.2020

Dr. Wentz

### Learning Objectives: Understand...

- The importance of the formal structure as a success factor
- The factors making innovation teams successful
- That we understand by an ambidextrous organization
- The different linkage to the core business for incremental vs. radical innovations
- Critical resource allocation decisions
- The importance of motivation, rewards and supporting systems
- The impact of spatial architecture and layout planning on communication and innovation

### Required Readings

- **Wentz (2012)** The Innovation Machine, CreateSpace, pp. 261-293.
- **Hauschildt, Salomo, Schultz, Kock (2016)** Innovationsmanagement. Vahlen, pp. 183-209, 211-235.

### Supplemental Reading

- **Haas/Mortensen (2016)** The Secrets of Great Teamwork, Harvard Business Review, June 2016, pp. 71- 76.
- **Katzenbach/ Smith (2003)** The Wisdom of Teams, HarperCollins, New York, pp. 43-67, 84-95, 130-148.
- **O’Reilly III / Tushman (2016)** Lead and Disrupt. How to Solve the Innovator’s Dilemma, Stanford University Press, pp. 25-52, 137-141.
- **Deschamps/ Nelson (2014)** Innovation Governance. How Top Management Organizes and Mobilizes for Innovation, Jossey-Bass, San Francisco, pp. 87-101, 111-131, 135-147, 299-319.
- **Allen/ Henn (2006)** The Organization and Architecture of Innovation. Managing the Flow of Technology, Butterworth Heinemann, Burlington and Oxford, pp. 51-83.

### Supplemental Video

**Duhigg:** “How Google builds the perfect team”

<https://www.youtube.com/watch?v=v2PaZ8NI2T4>

## Module 14: Course Wrap-Up / Questions & Answer

30.01.2020

Dr. Wentz

- Class summary
- Students’ questions regarding exam