



Research Area
Technology,
Innovation, Marketing,
Entrepreneurship

RWTHAACHEN
UNIVERSITY



A video introduction into this class is at
<http://tinyurl.com/y8zxanvy>

PRINCIPLES OF TECHNOLOGY & INNOVATION MANAGEMENT (PTIM): PEOPLE, CULTURE, AND CHANGE

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WITH PHARMA INDUSTRY EXECUTIVE DR. KLAUS LANGNER

COURSE OUTLINE AND READING LIST

RWTH Aachen University | School of Business and Economics
TIME Research Area | Institute for Technology & Innovation Management (TIM)
time.rwth-aachen.de | Kackertstraße 7, Aachen

Teaching assistant: Anja Leckel | leckel@time.rwth-aachen.de

WINTER TERM 2019/20

This class in a nutshell: You will learn about the people and culture aspects of managing technology and innovation in large companies, using (Harvard) case studies and corresponding academic papers. Interactive class format demanding 8-10 hours per week (class and preparation), homework (paper) instead of an exam.

1 COURSE OVERVIEW

Course Name: Principles of Technology and Innovation Management

Degree programs:

- **Master of Science** BWL, M.Sc. Wi.Ing., M.Sc. Wiwi.
- **Erasmus / exchange students** on the M.Sc. level
- **RWTH Students from other disciplines** (if space permits) only with pre-knowledge of management, strategy, and organizational theory

Lecturers: Prof. Frank Piller, Prof. Vera Blazevic

Contact: Teaching assistant for this class: Anja Leckel | leckel@time.rwth-aachen.de

Location and time: **Thursdays, 10:30 - 15:30** (incl. lunch break). **Room: R 220 (1080|220)**
Classes: **24.10, 31.10., 7.11., 21.11., 5.12., 19.12.** (1st half of semester)
Additional reserved dates for company visits: **28.11. and/or 12.12.**

Content description: Creating and managing new technological knowledge is a key success factor of most firms. The idea of the class is to provide an a deeper perspective into selected topics from both the perspective of a manager who has to make decisions about her firm's technology and innovation management processes and from the perspective of an academic researcher studying these decisions.

We will discuss some selected questions of managing innovation in a corporate context. **Our focus will be the people and culture perspective: How does the behavior of people and the incentives set in a firm to drive specific behaviors, plus its organizational structure, influence the performance of a firm's innovation system.**

The class is case-study based, but will also integrate short lecture modules, in-class exercises, and group work. In addition, each session will introduce important academic papers on the topics of the session.

Special industry focus: In the winter term 2019-2020, we will use the topical focus of the **pharmaceutical industry** to provide you an in-depth insight and analysis of one of the most dynamic, important, and R&D-intensive industry sectors of our economy. There, we get Pharma Industry Executive input by Dr. Klaus Langner.

Qualification objectives: **Upon completion of this course, you will be able to:**

- Differentiate various understandings of innovation and technology
- Acquire competences to analyze decisions in TIM from an organizational and culture perspective
- Know about tools and methods of innovation management
- Argue about future trends in innovation management
- Evaluate the challenge of making innovation happen within large companies

Literature: Reading material is given for each individual session. There is no dedicated textbook for this class.

Course Examination: The final grade will be composed as follows:
Colloquium (class participation) (55%, graded) and paper (45%, graded).
A maximum of 60 points can be obtained for each of the two elements. The final points and grade is the weighted average of the elements, and **you need 50 percent of all points to pass.**

Note for Master W-Ing students: In addition to the aspects above, all industrial engineers have to pass each of the examination elements individually (according to ÜPO §10 (8) and the program-specific regulations (fachspezifische PO for M.Sc. W.Ing.) §9 (2)).

Participation Requirements: Solid command of English and willingness to prepare each class session in advance (in average, **each class session demands 4-5 hours of preparation at home to read one case study and 2-3 academic papers**). You also have to prepare one presentation in a group of 3-5 students.

Note: While this class belongs to the "core classes" in our curriculum, **you profit more from this class if you already have some basic understanding of innovation management**. It builds on the class "Managing the Innovation Process" in the summer term. **For students who do not have any pre-knowledge in innovation mgmt, Session 0 provides some background knowledge via a focused video training.**

Group Size:	45 participants (max, including exchange students)
Workload:	28 hours of lecturing, 120 hours of individual and group preparation
Type of Teaching:	Classroom sessions are likely to comprise a mixture of interactive lectures, case/paper discussions, and student presentations.
Language:	Lectures, discussions, student presentations will be in English language.
Credits:	5

This course will be managed via the e-learning platform Moodle. All lecture slides, student presentations, and readings will be deposited here.

Please send a recent photo of you to leckel@time.rwth-aachen.de until October 17, using the Subject "PTIM class picture" in your email. *Please save the picture as a jpg and name the filename according to this pattern: yourlastname_yourfirstname.jpg*

Why do we need your picture? The list of students including their photos helps to keep track when evaluating oral participation after class. **Without the picture, it is hard for us to evaluate your class participation!** For privacy reasons, we do not save pictures, but need to ask for them for any single class.

2 COURSE ORGANISATION

The course comprises of an introductory video-lecture “bootcamp”, seven five-hour sessions. Sessions are organized in three parts: (1) an interactive lecture, (2) case study discussion and (3) discussion of academic studies. The order and duration of these elements might vary between sessions.

Only in WS 2019-2020: We will try to organize an optional student field trip (2-3 days excursion) to Paris in **Mid-January** to visit organizations and deepen the knowledge on the topics of this course in hands-on discussions.

Preliminary Schedule: Principles of Technology and Innovation Management (PTIM)

0	Before 24.10.*	Study at home*	Prof. Piller	Online Videos: TIM Bootcamp*
1	24.10.2019	10:30-15:30 R220 (1080 220)	Prof. Blazevic	Elements of a successful system for innovation
2	31.10.2019	10:30-15:30 R220 (1080 220)	Prof. Blazevic	Balancing innovation: Ambidexterity and the exploitation-exploration dilemma
3	07.11.2019	10:30-15:30 R220 (1080 220)	Prof. Blazevic	Creating a culture for innovation
4	21.11.2019	10:30-15:30 R220 (1080 220)	Prof. Piller Dr. Langner	Designing intra-organizational interfaces and cooperation Pharma Case: Myelin Repair Foundation
5	28.11.2019 / 12.12.2019	10:30-15:30 <i>TBD</i>	<i>Prof. Piller</i>	<i>Dates for visiting a pharma company</i>
6	05.12.2019	10:30-15:30 R220 (1080 220)	Prof. Piller Dr. Langner	Communicating for innovation Leadership for innovation & transformation Pharma Case: Leadership at Eli Lilly
7	19.12.2019	10:30-15:30 R220 (1080 220)	Prof. Piller Dr. Langner	Restructuring the enterprise to become more innovative Pharma Case: Digital Pharma / Transformation
8	30.01.2020	15:00	Email submission	Deadline to hand-in your paper assignment via e-mail ("letzte Prüfungsleistung")
	31.01.2020	12:00, TIM Office	Print submission	Deadline to hand-in your paper assignment as hard copy with your signature

* **Note:** If not done before, watch our [Mini-MOOC: The TIM Bootcamp](#). This series of short videos will introduce you into the topic and provides definitions and frameworks. We expect that you know the content of this video series before the first session. See **Session 0** below for more detail. <http://frankpiller.com/inno-class-videos>

3 GROUP ASSIGNMENTS

A key component of this course is the group assignment and the case discussions in class. Jointly, they will count for half of your final grade.

For the **group assignment**, each student will be assigned to a group typically consisting of three to five members. Each group will be asked to present and critically discuss one academic paper in class. Papers can be conceptual or empirical have been published in leading peer-reviewed journals such as the *Organization Science*, *Research Policy* or *Journal of Product Innovation Management*.

In class, your group will have 20 minutes for your joint presentation.

You should support your presentation with a **sufficient (not too many!) number of PowerPoint slides**. When preparing your slides, you can use a **PowerPoint template** that is available for download on L2P. The language for the presentation and the discussion with the audience is English. In addition, please **summarize the content of your paper on ONE A4 page using the template** provided in the L2P, highlighting the core points, content, and conclusions from the paper. This one pager will be distributed to all students during the class.

Your slides and the summary page need to be sent to the responsible lecturer for the session (blazevic@time.rwth-aachen.de or piller@time.rwth.aachen.de) by **noon on the day BEFORE the lecture** in both pptx and pdf format. You will also need to save both files on a memory stick and bring it with you to class along with one printout of your slides.

We would like to stress that **your presentation needs to go beyond simply summarizing the content of your assigned paper**. Rather you are asked to engage with it critically by discussing its strengths and weaknesses as well as its contributions to our understanding of key aspects of the paper. **Tell us what we learn from the paper!**

A sample structure of your presentation might look like this – **but you are free and encouraged to come up with your own structure!**

- (1) **Introduction:** *Tell us the motivation of the ideas presented in the paper and why this is an important (and open) question. How does this link to the topic of the session? Introduce us to the authors and the journal (if not done before).*
- (2) **Paper Description:** *Share the story of the paper. You don't need to follow 1:1 the structure of the paper, but try to provide us an introduction into the theory selection and conceptual development, and also in the research design and methods: Why are those adequate in researching the open questions?*
- (3) **Paper Discussion**
 - What are the contributions to research and practice?
 - What are the strengths and weaknesses of the paper; possible refinements and extensions?
 - What are implications for practice
- (4) **Conclusion** and discussion questions

Always **include questions for the other students**, think about how you can facilitate a discussion about the content of your paper.

4 INDIVIDUAL SESSIONS AND ASSIGNMENTS

A key component of this course is the **case discussions** in class. Together with the discussion of the **research papers**, they will count for **50 percent of your final grade**. It is essential for all course participants to **carefully study the case and the corresponding assignment questions at home** to be ready to contribute to the class discussions.

In addition, we will reflect the content of a number of **academic papers**. Also these **papers need to be read before the session**, and often reading the paper is also helpful in better understanding the case. **Core papers are being presented by student groups**. **Paper presentations** (20 min presentation + 10 min discussion) are part of the participation grade.

So: Please make sure to complete the pre-assignment (case study) before coming to every class. In addition, you have to read the research papers for each session.

Note: Apart from Session 0, there are no video lectures to watch for PTIM.

Session 0: Video Bootcamp and MIP Basics for all participants who had no class in innovation management before

While this class belongs to the "core classes" in our curriculum, you will be able to participate with larger success if you already have some basic understanding of innovation management. **PTIM builds directly on the class "Managing the Innovation Process (MIP)"** in the summer term. **However, we know that it is not possible for some of you to attend the MIP class first. In this case, there are two easy ways to catch up:**

(1) In any case, if not done before, watch our Mini-MOOC: The TIM Bootcamp. This series of short videos will introduce you into the topic and explains important definitions and concepts. We expect that you know the content of this video series before the first session – **the content is mandatory knowledge for the class discussions and paper presentations.**

You can either access this Bootcamp via <https://frankpiller.com/inno-class-videos> or just **follow the links in the Bootcamp syllabus** (via Moodle).

(2) Get an understanding of some core content from our core M.Sc. innovation class "Managing the Innovation Process (MIP)" to be on the same level as your peers who took this class in a previous semester:

- Structuring the innovation process: The Big Picture <https://youtu.be/V400eggrDXk>
- The Fronted of Innovation https://www.youtube.com/watch?v=kTK_njnRx0
- Concept Generation <https://youtu.be/kXP0zTUK4Ik>
- Creativity theory and techniques: Different Schools <https://www.youtube.com/watch?v=47Ba4Os90To>
- Development Stage: Technical Problem Solving <https://youtu.be/ZSAyscmIXAw>
- Evaluating and Screening: Innovation is Experimentation <https://www.youtube.com/watch?v=8agXUI01zSY>
- Launch and Nurture Stage: Introduction <https://www.youtube.com/watch?v=2XH6xXin0KU>
- Launch and Nurture Stage: Diffusion and Adoption <https://www.youtube.com/watch?v=bVq5axhen0M>

Slides for the videos: <https://www.dropbox.com/s/q3ebzp70iz05eh7/MIP%20online%20Slides.pdf?dl=0>

Session 1: Elements of a successful system for innovation

Case: MEDTRONIC – Improving product development performance

This "classic" case describes the principles, processes, and structures Medtronic, a maker of Cardiac Pacemakers, used to dramatically improve its product development performance. The case discussion will give us an opportunity to explore in-depth the elements of a comprehensive strategy for improving innovation within the context of an established firm. It covers important and fundamental management concepts that some of the best organizations are implementing and using today.

In other words, the case could be a "roadmap" for addressing common innovation challenges that you may face - as a manager, consultant or entrepreneur. We will use this case to discuss some of the core elements as outlined in the Medtronic case. In particular, we will look into managing project schedules and designing team structures for innovation.

Before the class, read the following case and papers:

Case: HBS "We've Got Rhythm! Medtronic Corp.'s Cardiac Pacemaker" (9-698-004)

- Review the history of Medtronic's competitive situation. Why did Medtronic lose market share in the early 1970s and 1980s?
- Which of the improvements in Medtronic's new product development process strike you as having been crucial to turning the company around?
- What do the concepts of product line architecture and train schedule mean in the pacemaker business? How has application of these concepts benefited Medtronic?
- Evaluate the nature of senior management involvement in Medtronic's implementation of its product development system. Which elements of the system require the most senior management attention?

Papers:

- Wheelwright, S. C. and Clark K. B. (1992). 'Creating project plans to focus product development'. *Harvard Business Review*, **70**, 2, 70-82. **(all)**
- Clark, K. B. and Wheelwright, S. C. (1992). 'Organizing and leading 'Heavyweight' development teams'. *California Management Review*, **34**, 3, 9-28. **(all)**

Session 2: Balancing innovation: Ambidexterity and the exploitation-exploration dilemma

Case: PITNEY BOWES – Business growth in an established organization

Why is creating new growth products so difficult for established firms? Most companies do not fail in generating ideas with high potential, but in implementing these ideas. This module shall help you to understand what types of changes established organizations are capable and incapable in handling.

For this theme, we will use the case of Pitney Bowes, the world's dominant maker of equipment used in generating and handling mail. The company is facing flattening growth in its core businesses and needs to create new growth products and businesses. The case describes how a group of employees use state-of-the-art techniques for understanding customers' needs to conceive and develop a postage meter for small businesses. We will then discuss the challenges the team faced in forging an appropriate disruptive channel to this market.

We will then extend the discussion of disruptive innovation by looking in research that can explain the challenges of established companies to manage this kind of discontinuous change.

Before the class, read the following case and papers:

Case: "HBS Pitney Bowes" (607034)

- What latent needs and preferences of their customers did the Pitney Bowes' researchers identify that certain small businesses and individuals have and that became the insight for their innovation?
- Visit briefly the web site www.stamps.com to review a competing offering by a start-up company. Did the founders of Stamps.com identify the same needs?
- What caused Pitney Bowes to lose the original focus of the project, and instead end up with a new postage meter?
- What would you recommend Euchner, Critelli, or Martin to do to enhance their company's ability to create new growth business?

Papers:

- **Everyone:** Do a quick literature research to get some ideas about the recent discussion of the term "disruptive innovation". While being one of the most popular terms in innovation management, its definition and understanding has been subject to quite some critique. Scan some recent papers, blogs, articles etc. to get your own idea what disruptive innovation is and how it can be managed.
- Marx, M., Gans, J. S., & Hsu, D. H. (2014). Dynamic commercialization strategies for disruptive technologies: evidence from the speech recognition industry. *Management Science*, 60(12), 3103-3123. (Group 1)
- Taylor, A. and C. E. Helfat. (2009). 'Organizational linkages for surviving technological change: Complementary assets, middle management, and ambidexterity'. *Organization Science*, 20(4), 718–739. (all please at least scan this paper)

Session 3: Creating a culture for innovation

Case: GENERAL MILLS CANADA

The president of General Mills Canada wants to build a culture of innovation in his firm. Prior to a senior management meeting in 2010 to review the company's plans for 2011 and beyond, he met with the vice-president of Human Resources and asked him to provide feedback and suggestions about what the organization could do to change its corporate culture.

A conservative organization with a collegial atmosphere where consensus and support were essential to moving projects ahead, General Mills Canada had developed an analysis-based, detail-oriented culture that was not necessarily conducive to innovation.

This case provides us an opportunity to engage in a discussion about the uncertainty faced by senior management in terms of specifically how to build a culture of innovation. While the senior leaders know they want to build a culture of innovation, the real question is how they should go about doing this.

Before the class, read the following case and papers:

Case: *General Mills Canada: Building a Culture of Innovation (Ivey Case W14003)*

- How would you consider the current culture of General Mills (at the time of the case)? How is this driven by the nature of this company (being in the FMCG (fast moving consumer goods) industry)?
- What should David Homer and Brad Taylor do to make innovation part of General Mills Canada's culture?
- What would the **innovation framework*** you have been assigned to suggest to create this culture?

* **Note:** With the case, you also find an **extra document** summarizing **innovation frameworks** taken from ten business bestsellers or popular papers about innovation & change. **"Your" innovation model is the one corresponding to your group number** (Example: if you are in Group 3, you should cover Framework 3). Try to incorporate these ideas into your answer.

Papers:

- Tellis, G. J., Prabhu, J. C., & Chandy, R. K. (2009). Radical innovation across nations: The preeminence of corporate culture. *Journal of Marketing*, 73(1), 3-23. **(Group 2)**
- Hogan, S. J., & Coote, L. V. (2014). Organizational culture, innovation, and performance: A test of Schein's model. *Journal of Business Research*, 67(8), 1609-1621. **(all please at least scan this paper)**
- Rao, J., & Weintraub, J. (2013). How Innovative Is Your Company's Culture? *MIT Sloan Management Review*, 54(3), 29-35. **(optional, but helpful for the case)**

Session 4: Designing intra-organizational interfaces & cooperation Case: Myelin Repair Foundation

This case provides an insight into drug development performed by Myelin Repair Foundation (MRF), a non-profit company. In the focus of the case is the MRF's accelerated research collaboration model for drug discovery, seeking a treatment for multiple sclerosis (MS) based on a novel scientific approach. It highlights the challenges of building a new collaborative research model involving multiple disciplines and institutions to create breakthroughs in drug discovery.

The case provides details on how norms of academic research and intellectual property had to be updated to enable collaboration. The current dilemma facing the CEO and COO of the MRF relates to setting strategic priorities for research so that a treatment for MS can be ready in the next ten years. The strategic choices need to account for the complexities of drug discovery, the uncertainty of commercial partners' interest in the therapeutic approach and the constrained donor-based fundraising environment.

Our class discussion will then extend the discussion of collaboration cooperation for innovation. We will cover both conventional models of cooperation, like alliances and contract research, and more open models as illustrated in the MRF case.

Before the class, read the following case and papers:

Case: "HBS Myelin Repair Foundation (2010-610074)"

- What failures in conventional life science research is the MRF trying to address? What are the causes of these failures?
- What explains the success factors behind MRF's ability identify 19 targets for MS treatment?
- What criteria would you develop to help the CEO and COO to make their decision about the strategic innovation options facing the MRF?

Papers: In addition, please read the following papers which are an integral part of our class discussion:

Papers:

- Schuhmacher, A., Gassmann, O., & Hinder, M. (2016). Changing R&D models in research-based pharmaceutical companies. *Journal of translational medicine*, 14(1), 105-110. ***This is a rather simple (but helpful) paper, so combine it with the following short paper to add one more interesting perspective:*** Oliveira, P., Zejnilovic, L., Canhão, H., & von Hippel, E. (2015). Innovation by patients with rare diseases and chronic needs. *Orphanet Journal of Rare Diseases*, 10(1), 41-45. **(Group 3)**
- Howard, M., Steensma, H. K., Lyles, M., & Dhanaraj, C. (2016). Learning to collaborate through collaboration: How allying with expert firms influences collaborative innovation within novice firms. *Strategic Management Journal*, 37(10), 2092-2103. **(Group 4)**

Session 5: Industry Insight and Top Management Guest Lecture

We will use this session to provide you the practical opportunity to learn and network with an experienced practitioner from the pharmaceutical industry to provide you more in-depth insights and access to management experience.

Stay tuned for further announcements.

Session 6: Leadership for innovation & transformation *Case: Transformation at Eli Lilly & Co*

Eli Lilly & Co., a major U.S. pharmaceutical company, is facing what it calls the “YZ crisis,” in which a handful of its most successful drugs will lose patent protection in the next coming years. Faced with the imminent loss of 40% of its revenues due to patent expirations, CEO John Lechleiter has come up with a plan to reorganize Lilly’s company structure, in an effort to revitalize its R&D process and replace some of the lost drugs. The case considers how Lilly restructured the organization into business areas to aid better decision making, faster innovation and clearer customer insight; the forward guidance and minimum performance guarantees that Lilly provided to the market during the transformation; the difficult HR adjustments that were required; and how the top leadership encountered and overcame market skepticism towards the innovation-focused plan.

This case will lead our discussion of managing transformation and change in an established organization in times of strong technological change. Our discussion will help us to explore the stages that a company must go through during a major transformation and to discuss the characteristics of good leadership when directing such a transformation.

Before the class, read the following case and papers:

Case: *Transformation at Eli Lilly & Co (HBS 817070)*

- What are the strongest and weakest actions that John Lechleiter and his senior executive team are taking to confront the YZ crisis?
- What does Lechleiter hope to gain with his organizational realignment? Do you anticipate that it will work as designed?
- What messages is Eli Lilly sending to the markets and the Indianapolis community? At what point would you fear they are not working?

Papers:

- Chen, Y., Tang, G., Jin, J., Xie, Q., & Li, J. (2014). CEO s’ Transformational Leadership and Innovation Performance: The Roles of Corporate Entrepreneurship and Technology Orientation. *Journal of Product Innovation Management*, 31(1), 2-17. **(Group 5)**
- Cummings, T., & Knott, A. M. (2018). Outside CEOs and innovation. *Strategic Management Journal*, 39(8), 2095-2119. **(Group 6)**
- Paulsen, N., Callan, V.J., Ayoko, O. and Saunders, D. (2013). Transformational leadership and innovation in an R&D organization experiencing major change. *Journal of Organizational Change Management*, 26(3): 595-610. **(all please at least scan this paper)**

Session 7: Digital Transformation and Innovation

Case: UCB: Data is the new drug

At the end of 2012, the chief information officer (CIO) at UCB, a global pharmaceutical company based in Brussels, started to implement analytics as a service. Between 2012 and 2016, he put this vision into practice, introducing agile sprints and proving the competence of analytics within the organization, and at the beginning of 2016, he felt the company was ready to upgrade its analytics capability. As he prepared to meet with UCB's chief executive officer in March 2016, the CIO considered how to advise the board as the organization worked to make an impact with analytics and big data against the backdrop of digital turbulence in its strategic environment. How could UCB balance empowerment and bottom-up experimentation with enterprise focus and control? What was the best location for analytics roles and responsibilities within the organization?

This case has been designed to discuss the disruption caused by digital technologies in the pharmaceutical industry. It illustrates how the availability and use of data and analytics can alter the notion of customer value in a specific industry. It takes the perspective of executive team in helping an organization become an analytical competitor.

Before the class, read the following case and papers:

Case: *UCB: Data is the new Drug (Ivey/Vlerick Case)*

When reading the case, reflect on the following questions:

1. What events in UCB's strategic context required the company to revisit its business strategy?
2. Identify two highly attractive opportunities for UCB to use data and analytics, and consider how data and analytics can be used to create value?
3. Which achievements should De Prins bring up in UCB's executive meeting in Shanghai in March 2016? Where did De Prins fall short?
4. What decision agenda and proposals should be put forward for the executive meeting in March 2016?

Papers:

- Cockburn, I. M., Henderson, R., & Stern, S. (2018). The impact of artificial intelligence on innovation. National Bureau of Economic Research, Working Paper w24449. ***This is a working paper. Use this paper as the core of your presentation, but include further literature of your choice to argue HOW (pharmaceutical) companies have to change to benefit from this trend. (Group 7)***
- Cozzolino, A., Verona, G., & Rothaermel, F. T. (2018). Unpacking the Disruption Process: New Technology, Business Models, and Incumbent Adaptation. *Journal of Management Studies*, 55(7), 1166-1202. **(Group 8)**
- Davenport, T.H. and Dyer, D.J. (2016). Designing and Developing Analytics-Based Data Products. *MIT Sloan Management Review*, 58(1): 83-87. *(optional)*

5 Review Paper (Post-Class Assignment)

As indicated at the beginning of the class, 45% of the grade is your individual review paper. Please follow the instructions below. The deadline to digitally hand-in your paper assignment is **January 30, 2020, 16:00h, via e-mail** (see table above). ***This is an individual assignment, no group work is allowed.***

Instructions

(1) **Select one of the two alternative papers** for your review – you only have to write a review about one of these papers.

#1 Ko, W. W., & Liu, G. (2019). How Information Technology Assimilation Promotes Exploratory and Exploitative Innovation in the Small-and Medium-Sized Firm Context: The Role of Contextual Ambidexterity and Knowledge Base. *Journal of Product Innovation Management*.

or

#2 Ben-Menahem, S. M., Von Krogh, G., Erden, Z., & Schneider, A. (2016). Coordinating knowledge creation in multidisciplinary teams: Evidence from early-stage drug discovery. *Academy of Management Journal*, 59(4), 1308-1338.

(2) **Read the paper carefully** and try to find relations to other papers in our class.

(3) Start writing your review paper, **using the structure indicated below**. The **word limit** for your review is **4500 words** (you can write less --- this is the maximum). References are **not** included in the word limit.

Add a title page with your name, program/field of study ("Studienfach") and the title of the paper you selected.

Write your paper in regular academic style, using citations and references etc. For the formatting and citation style, **follow Sections 4&5 of the [TIME guidelines](#)** for student papers and theses (Moodle).

(4) Hand-in your paper at or before **the deadlines stated above**,

(a) via e-mail (PDF or Word file) to Anja Leckel (leckel@time.rwth-aachen.de)

AND

(b) in printed form (1 hard copy), including the signed standard affirmation (see Section 7 of the TIME Guidelines for term papers).

(5) If you want to **withdraw your registration to this class and the exam**, **you have to do so until seven working days before the date listed above**. Please read the material on Moodle regarding exam registration and withdrawal. We strongly recommend that you do this as early as possible to avoid unfair group works.

Structure of your paper

You may structure your paper according to the following template. In all sections of your paper, **refer to any relevant discussion, cases, slides, and papers we covered in class. Remember:** These papers have been accepted to top journals already, so they are probably not bad. **However, your task is to discuss whether they are original, counterintuitive, and contributing to the topics covered in our class.**

(1) Introduction. Start with a short introduction: What is the paper's main idea, and how does the paper fit into a discussion/topic we had in our class? Summarize the main (academic) contributions of the paper: What is the overall value-add of the research documented in the paper? Why does it enhance our knowledge in innovation management?

(2) Review and Critique

Now, comment more in depth on the contributions of the paper, contrasting it with issues we discussed in one or more of the case studies and papers in the reading list of this year's class (you can also refer to further literature, if you find this useful).

The following points are some criteria that might help you structure your evaluation. Don't use the following points as a checklist, this are just ideas what to cover in your review! You can answer also other questions, and don't have to answer all of them!

Theory

- Why is the theoretical framework of the paper appropriate? Would there be any alternative framework?
- Are the core concepts of the paper clearly defined?
- Is the logic behind the hypotheses persuasive? Are those surprising or very intuitive? Why is it important to investigate these questions?
- Do the hypotheses or propositions logically flow from the theory?

Method and results

- Why did the authors pick this method? What could have been an alternative approach to study this question?
- Does the study have internal and external validity?
- Are the results reported in an understandable way?
- Are there alternative explanations for the results, and if so, are these adequately controlled for in the analyses? What else could the authors have studied?

Discussion, conclusions and outlook

- Why does the submission make a value-added contribution to existing research?
- Why would submission stimulate thought or debate?
- Do the authors discuss the implications of the work for the scientific community? What do you think about these conclusions? How do they enhance our knowledge in the field?
- Further research: What are the most interesting areas for further research? Are there any further areas not listed in the paper?

(3) Managerial insights

Consider whether the paper has any practical value, and comment on its implications for the practice community: what do we learn for the management of innovation? **Would one of the managers in the case studies have made a different decision, given that she/he would have been aware of the research in the paper?**

Remember: The word limit for your review is **4500 words** (but you can write less --- this is the maximum). References are not included in the word limit.