

Activity Report 2015/2016

Chair of Technology and Innovation Management www.whu.edu/tim

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Foreword



Dear Reader.

I welcome you to this year's edition of the Activity Report of the Chair of Technology and Innovation Management (TIM-Chair) at WHU – Otto Beisheim School of Management (WHU).

One of this year's highlights was the successful organization of the Singapore-Conference for the German Mittelstand co-hosted by the TIM-Chair and the Economic Development Board (EDB) Singapore. The conference brought together executive decision-makers across multiple industries to discuss strategies for entering and expanding business activities in Asia-Pacific. Senior and experienced speakers from a variety of backgrounds, e.g. Karl-Gernandt (Chairman Kühne + Nagel AG, Markus Hüllmann (Chief Operating Officer GEA AG), Clas Neumann (Senior Vice President, Head of Global SAP Labs Network), and Eddy Henning (Head Multinational Market Coverage Asia Pacific, Deutsche Bank Singapore) highlighted important trends in Asia-Pacific and illustrated what firms can do to benefit from these trends to grow their business in this region. Various case examples from firms such Stabilus GmbH, Basler AG, Zwick GmbH & Co. KG, TÜV Süd, and Plasmatreat GmbH served as real-life examples to highlight actionable best practices. The conference provided ample opportunities for participants to network and to create a community of Mittelstand firms that have a shared interest in Asia-Pacific. Given the great success of last year's conference, we are looking forward to host the next conference on October 6, 2016.

Another important event was a joint publication that originated from our long-term research collaboration with Prof. James G. Conley from the Kellogg School of Management at Northwestern University, Evanston, USA in the field of Intellectual Property Management. Our paper Professor Dr. Holger Ernst

'How to Create Commercial Value from Patents: The Role of Patent Management', jointly coauthored by James Conley, Nils Omland and myself, shows that the proficient management of patents matter for value creation and not the size of a firm's patent portfolio. For the first time, this research also shows that patent analytics, i.e. the use of information to be found in patent documents for multiple applications such as trend and competitor analysis. M&A. strategy formulation and licensing, enhances performance. The paper was published in R&D Management. Last but not least, Michael Baur completed his PhD last year. In his dissertation 'A Novel Perspective on Market-Oriented New Product Development – Results from a Multilevel Study', Michael Baur identified important antecedents of market orientation in new product development projects. Through his multi-level research design, Michael Baur was able to generate new insights and to highlight in particular the role marketing and sales play for achieving the desired level of market orientation depending on the new product's level of novelty. Congratulations, Dr. Baur!

I hope that you enjoy reading this report and I encourage you to contact us and to provide feedback. I would like to invite you to engage with us in joint projects. I am looking forward to hearing from you and to welcoming you on our campus in Vallendar or in Düsseldorf.

Yours Sincerely,

Chair of Technology and Innovation Management Activity Report 2015/2016

1. Team

1.1 Team Members



Professor Dr. Holger Ernst Chairholder

Tel. +49 261 6509 241 Holger.Ernst@whu.edu

Holger Ernst is full professor of business administration, esp. technology and innovation management at the WHU - Otto Beisheim School of Management, Vallendar, Germany. He studied business administration at the University of Kiel, Germany and the University of Illinois at Urbana-Champaign, USA. He received a degree in business administration (1992), his Ph.D. (1996) and the Habilitation (2001) from the University of Kiel, Germany.

Prof. Ernst is a regular visiting professor and a member of the Center for Research in Technology and Innovation (CRTI) at the Kellogg School of Management, Northwestern University, USA. He was appointed honorary professor and principal fellow within the Faculty of Business and Economics at the Melbourne Business School, The University of Melbourne, Australia.

Prof. Ernst's research interests lie in the fields of strategy, innovation, commercialization of technologies, new product development and intellectual property. He has published in leading international journals such as the Journal of Marketing, Journal of the Academy of Marketing Science, Journal of Product Innovation Management, Cailfornia Management Review, MIT Sloan Management, Research Policy, Small Business Economics and others.

Prof. Ernst has received multiple best dissertation, best paper and other research awards. He serves on the editorial boards of the Journal of Product Innovation Management and Creativity and Innovation Management.

Prof. Ernst has 20 years of experience in executive education. He has taught in multiple executive MBA programs, e.g. the Kellogg-WHU Executive MBA Program (since KW01), the Melbourne Business School Senior Executive MBA Program (since start in 2004), the Melbourne Business School Executive MBA Program and in various WHU and Kellogg Executive Customized Programs for companies such as 3M, Dt. Börse, Esai Pharmaceuticals, Merck, L'Oreal, Süd-Chemie, Sony, Nissan, DuPont, SITA and Sony-Ericsson and universities such as Carnegie Mellon University, Drexel University, Tsinghua University and CEIBS.

Prof. Ernst received Best Teacher Awards in the WHU Full-Time MBA Program in 2006, in the Bucerius-WHU Master of Law and Business Program in 2008 and in the WHU Part-Time MBA Program in 2012.

Prof. Ernst is co-founder of the firm Patentsight, located in Bonn, Germany, that specializes in the development and selling of software products and consulting services in the field of business intelligence based on patent data. Patentsight is a market leader in its field.

Prof. Ernst has developed and runs the InnovationSuccess Panel (IsP®), a comprehensive audit tool that benchmarks a firm's innovation management against innovation and market leaders across multiple industries.

Prof. Ernst advises and speaks to corporations worldwide. Clients so far include, e.g., Allianz, BASF, Biocon, Bosch and Siemens Hausgeräte, Constantia Hück, Cognis, DPDHL, Dt. Telekom, Elster Group, General Electric, Henkel, Johnson & Johnson, LTS, Novo Nordisk, Otto Bock, Randstad, Sabic, SAP, Sebapharma GmbH & Co., Siemens, Simon, Kucher & Partner, SITA, Styrolution, Swiss Re, Trox GmbH, Zühlke AG and others.

Prof. Ernst serves on the board of multiple startup firms.



Anke Siedenkamp Personal Assistant

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Anke Siedenkamp is the Personal Assistant of academic conferences. Add Prof. Dr. Holger Ernst. Anke joined the Chair of Technology and Innovation Management and WHU – Otto Beisheim School of Management in Management in Facilities in emerging markets. November 2005.

Business Administration from the Friedrich-Alexander-University in Erlangen-Nürnberg, Germany, and her PhD degree from WHU - Otto Beisheim School of Management in Vallendar, Germany. During her doctoral studies, she was a visiting researcher at the Carroll School of Management at Boston College, USA. Furthermore, she worked on consulting projects for the Corporate Technology Office of Siemens AG. Ass.-Prof. Dr. Dubiel's main research interests lie in the field of international innovation and R&D management. She has published in the Journal of Product Innovation Management and co-edited a book on the success factors of German and US-American industrial R&D centers in emerging markets. She also contributed to three edited

US-American industrial R&D centers in emerging markets. She also contributed to three edited volumes, with one of them being the "PDMA Handbook of New Product Development" (3rd edition, Eds. K. Kahn et al.). She has regularly presented her research at leading international academic conferences. Additionally, she has published two award-winning teaching cases on best practice examples of innovations and R&D facilities in emerging markets.



Ass.-Prof. Dr. Anna Dubiel Röchling Assistant Professor of International Innovation Management

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Anna Dubiel is Assistant Professor of International Innovation Management since January 2012. Her professorship is funded by the Röchling Foundation. She received her MSc degree in



Carsten Guderian Research Assistant

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Carsten Guderian studied Economics and Business Administration at the Christian-Albrechts-University of Kiel, Germany, specializing in entrepreneurship and innovation management. Carsten joined the TIM-Chair in April 2012 and supports lectures, theses, and seminars in various WHU programs, including Prepare! – The Entrepreneurs' Academy in the MSc-program. In 2015 and 2016, he co-organized the 4th and 5th Singapore-Conference for the Mittelstand in cooperation with the Singapore Economic Development Board. His dissertation focuses on the development of new patent indicators for strategic purposes, including patent valuation and predictive analytics. Since February 2015, Carsten is a Visiting Fellow at the Center for Research in Technology and Innovation at the Kellogg School of Management at Northwestern University in Evanston, USA.



Markus Kremmel Research Assistant

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Markus Kremmel studied International Business Administration at the Friedrich-Alexander-University in Erlangen-Nürnberg, Germany, and the University of Technology in Sydney, Australia. He specialized in strategic management, logistics and (corporate) entrepreneurship. Markus joined the TIM-Chair in May 2011 and supports the Innovation Management courses in the MSc- and MBA-programs. His dissertation focusses on co-creation, i.e. the involvement of customers in the new product development-process.



Daniela Peters
Research Assistant

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Daniela Peters studied International Business at the University of St Andrews in Scotland and specialized in Open Innovation, Entrepreneurship and Strategic Management. Daniela joined the TIM-Chair in January 2016 and co-organizes the 5th Singapore Conference for the Mittelstand in 2016 in cooperation with the Singapore Economic Development Board in Frankfurt, Germany. Her dissertation focuses on Open Innovation and Corporate Venture Capital, the investment of corporate funds in external startup companies.



Kolin Schunck Research Assistant

Tel. +49 261 6509 245 Kolin.Schunck@whu.edu

Kolin Schunck studied International Business Administration and International Law at the Bucerius Law School, Hamburg, Germany, and the WHU - Otto Beisheim School of Management, Vallendar, Germany. He specialized in strategic management, strategic intellectual property management and entrepreneurship. Kolin joined the TIM-Chair in April 2014. Kolin supports the Strategic Innovation Management and Innovation Management lectures in the MSc- and BSc-programs as well as supervising several final examination theses. His dissertation, in collaboration with the Airbus Group, refers to intellectual property management, specifically the development and measurement of intellectual property capabilities to build a best-in-class IP department.



Peter M. Bican External Doctoral Student



Sebastian Glöckner External Doctoral Student



Nils Omland External Doctoral Student



Michael Schramm External Doctoral Student



David Somhegyi External Doctoral Student

Florentine Genss Student Assistant

Anna Lina Gummersbach Student Assistant

Lucas Gummersbach Student Assistant

Jaqueline Koops Student Assistant

Gisela Raabe Student Assistant

Martin Siebrand Student Assistant

1.2 Visiting Faculty



Prof. James G. ConleyNorthwestern University
Kellogg School of Management

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Prof. Anthony Di Benedetto Temple University Fox School of Business and Management

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Prof. Mohan Subramaniam Boston College Carroll School of Management

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Prof. Gloria BarczakNortheastern University
D'Amore-McKim School of Business

g.barczak@northeastern.edu



Ass. Prof. Antonio Messeni Petruzzelli Politecnico di Bari Innovation Management Group

antonio.messenipetruzzelli@poliba.it

2. Teaching

2.1 Bachelor of Science Program

- Innovation Management, BSc Group A Lecturer Prof. Dr. Holger Ernst Fall Term 2015
- Innovation Management, BSc Group B Lecturer Prof. Dr. Holger Ernst Fall Term 2015
- Innovation Management, BSc Group C Lecturer Prof. Dr. Holger Ernst Fall Term 2015

2.2 Master of Science Program

- Heinz-Nixdorf-Lecture: Strategic Intellectual Capital Management Lecturer Prof. James G. Conley, Northwestern University, USA Fall Term 2015
- New Product Development Lecturer Ass.-Prof. Dr. Anna Dubiel Fall Term 2015
- Prepare! The Entrepreneurs' Academy Lecturer Prof. Dr. Holger Ernst Spring Term 2016
- Strategic Innovation Management Lecturer Ass.-Prof. Dr. Anna Dubiel Spring Term 2016

2.3 Full-Time MBA Program

 Innovation Management Lecturer Prof. Dr. Holger Ernst Spring Term 2016

2.4 Part-Time MBA Program

 Innovation Management Lecturer Prof. Dr. Holger Ernst Spring Term 2016

2.5 Executive MBA Program

 Strategic Innovation and Corporate Renewal Lecturer Prof. Dr. Holger Ernst Spring Term 2016

2.6 Other Programs

- Sun Yat Sen University Lecturer Prof. Dr. Holger Ernst Fall Term 2015
- Millikin University Lecturer Prof. Dr. Holger Ernst Spring Term 2016
- Xiamen University Lecturer Prof. Dr. Holger Ernst Spring Term 2016
- Melbourne Business School (Senior Executive MBA)
 Lecturer Prof. Dr. Holger Ernst
 Fall Term 2016

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3. Theses

3.1 Bachelor of Science **Program**

Prof. Dr. Holger Ernst, Ass.-Prof. Dr. Anna Dubiel, Peter Bican, Carsten Guderian, Markus Kremmel, Daniela Peters, and Kolin Schunck supervised the following students with their respective thesis:

- David Budde Emerging Technologies in the Music Publishing Industry
- Nicholas Dee Innovations in the Music Festival Industry – The Alexander Funck Use of Technological Innovations at Tomorrowland, TomorrowWorld, Sensation and Mystery-

 Florentine Genss land
- Tayyib Demiroglu Capturing Customer Segments for Future Market Disruptions: Managing Change at Daimler
- Philip Eilers Industry 4.0: Iterative Prototyping for the Definition of the Factory of the Future at Airbus Group
- Felix Lösch and Ben Staudt FinTech - A Disruptive (E)Revolution in Banking? The Case of Bitcoin and Blockchain
- Philipp Sander Team Dynamics: The Performance Contingencies in Football Teams
- René Schmider Digital Business Transformation – A Key Driver for Sustainable Success of Traditional Businesses?
- Martin Siebrand Patent Portfolio Evaluation - The Case of Canyon Bicycles GmbH
- Viktoria Simon Co-Creation and Intellectual Property (IP) Rights
- Philipp Stiller Intrapreneurship and Corporate Innovation: Methods to Foster and Maintain a Culture of Innovation at Airbus Group
- Tim Tegeder Business Model Innovation in the FinTech Industrv
- David Winkelmann Erfolgsfaktoren für den Aufbau eines Industrial

 Pacal Renten Incubators at Airbus

3.2 Master of Science Program

Prof. Dr. Holger Ernst, Ass.-Prof. Dr. Anna Dubiel, Peter Bican, Carsten Guderian, and Markus Kremmel supervised the following students with their respective thesis:

- Alexander Eisen "The Blue Agenda defines the Course of our Future." Linking Tradition and Innovation at Beiersdorf AG
- Born Globals: Expansion Best Practices
- Social Innovation at the Bottom of the Pyramid: A Social Entrepreneurial Perspective
- Sebastian Hillebrand How to successfully Launch Reverse Innovations in Developed Markets. A Consumer Perspective
- Mareike Hormann Literature Review: The Pharmaceutical Industry, Intellectual Property and Emerging Markets
- Jayesh lyer Exploring the Relationship between Tradition and Innovation in Large Corporations
- Christoph Ortlepp Start-Ups in Germany – How to get Money from Venture Capital Funds

3.3 Full-Time MBA Program

Prof. Dr. Holger Ernst supervised the following students with their respective thesis:

- Radu Balanescu and Sergio G. Chávez Case Studies Platform
- Zijun Chen The Open Innovation of the Electric Vehicle In-
- Elena Recher-Niederhofer Disruptive Startups in the Field of Digitilization in Silicon Valley
- How to identify Innovation in the Early Idea Stage?

3.4 Part-Time MBA Program

Prof. Dr. Holger Ernst supervised the following students with their respective thesis:

- Vjatscheslav Ponkrashkin Business Plan: Technical Consulting for Improving Efficiency of Machining Operations
- Deliang Tong The Innovation Trend in ICT and Company's Development

3.5 Executive MBA Program

Prof. Dr. Holger Ernst supervised the following students with their respective thesis:

- Angela Kerek Business Plan for Biotech Startup
- Christopher Nolan Business Plan to Establish a Solar Power Solutions Company for Residential and Commercial Customers
- Martin Rothfuchs Industry 4.0: Innovation Potential for GEA Group
- Binu Sadanandan A Patient-centric Health Platform for India

3.6 Doctoral Program

During the academic year 2015/2016, Prof. Dr. Holger Ernst supervised the following students with their respective thesis as the First Supervisor.

- Peter Bican Integration of Intellectual Property as Competitive Advantage
- Sebastian Glöckner Leveraging the Sales Force in New Product **Development Projects**
- Carsten Guderian Intellectual Property Management: Integrating Patent Data in Predictive Analytics and Strategy Formation

- Markus Kremmel **Customer Co-Creation:** Exploration of a New and Highly User-centric Approach to New Product Development
- Nils Omland The Value of Patented Technologies
- Daniela Peters
- Open Innovation and Corporate Venture Capital Michael Schramm
- The Service Component in New Product Development and its Influence on Performance
- Kolin Schunck The Best-In-Class Intellectual Property Department
- David Somhegyi Customer Integration in New Product Develop-

Moreover, Michael Baur, External Doctoral Student, successfully completed his dissertation project "A Novel Perspective on Market-Oriented New Product Development – Results from a Multilevel Study". He was awarded the Academic Title "Dr. rer. pol." following his disputation on March 18, 2016.

Congratulations, Dr. Baur!





4. Teaching Innovation

4.1 Guest Lectures

During the academic year 2015-2016, multiple guest lectures were held in the various courses offered. Amongst others, these included:



Speaker: Linus Cremer, Project Coordinator Strategy & Human Resources Company: Otto Bock HealthCare GmbH Topic: Innovation Management @ Otto Bock Course: Innovation Management, BSc



Speaker: Dr. Julian Deutz, Chief Financial Officer Company: Axel Springer SE Topic: Digitization @ Axel Springer Course: Innovation Management, BSc



Speaker: Dr. Dietmar Ley, Chief Executive Officer Company: Basler AG Topic: From Experience: Strategy, Corporate Renewal & Frugal Innovation Course: Strategic Innovation and Corporate Renewal, Executive MBA Program





Speakers: Dr. Patricie Merkert, Vice President Innovation & Corporate Strategy, and Martin Klein Company: Mann + Hummel GmbH Topic: Innovation Management @ Mann+Hummel Courses: Innovation Management, BSc, and Strategic Innovation and Corporate Renewal, Executive MBA Program



Speaker: Johannes Biermann, Head of Product Line New Business Green Car Company: Röchling Automotive SE & Co. KG Topic: Innovation and Business Development @ Course: New Product Development, MSc



Speakers: Dr. Sven Greulich, Partner, and Prof. Dr. Boris Hofmann, Director Business Development Companies: Orrick, Herrington & Sutcliffe LLP (Dr. Greulich) and Aesculap AG (Prof. Dr. Hofmann) Topic: Corporate Venture Capital – Legal Setup & Pitfalls

Course: Prepare! – The Entrepreneurs' Academy,



Speaker: Nils Omland, Co-Founder and Mana-

ging Partner

Company: PatentSight GmbH Topic: Field Report of an Entrepreneur

Course: Prepare! - The Entrepreneurs' Academy, MSc



Speaker: Sebastian Glöckner, Senior Vice-President Product & Technology

Company: Glossybox

Topic: Innovation Management @ Glossybox Course: Strategic Innovation Management, MSc



Speaker: Prof. Dr. Boris Hofmann, Director Business Development

Company: Aesculap AG

Topic: Aesculap - AB. Braun Divison and How-to-

Innovation in MedTech

Course: Strategic Innovation Management, MSc



Speaker: Antonio Messini Petruzzelli, Senior Lecturer in Innovation Management

Company: Politecnico di Bari

Topic: Leveraging Radical Acquired Technologies to Innovate: The Moderating Effect of Star Scientists and Upstream Strategic Alliances

Course: WHU Research Seminar in Entrepre-

neurship & Innovation



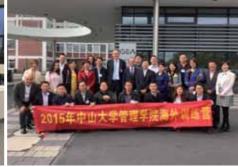
4.2 Sun Yat-Sen University Learn About Hidden Champions

In his lecture for Sun Yat-Sen University students on Hidden Champions, Prof. Ernst took the class on an excursion to the GEA Group in Oelde, Germany. Impressions of the class and the field trip are shown below:











4.3 Thesis Award granted to Tim-Chair Students

On November 18, 2015, the Higher Education Prize of the "Koblenz University Area Association for the Promotion of Business and Science" (Förderkreis Wirtschaft und Wissenschaft in der Hochschulregion Koblenz e.V.) was awarded in the historic City Hall of Koblenz. Nine graduates from diverse academic backgrounds received the award.

The prize winners from the WHU – Otto Beisheim School of Management were the bachelor students Michael Hinrichs and Eric Sachsenhausen. They received the "Higher Education Prize 2015" for their bachelor thesis titled "The Research and Development (R&D) Facilities of German and Japanese Multinationals (MNCs) in China and India: A Comparative Analysis". The thesis was supervised by Dr. Anna Dubiel, Röchling-Assistant Professor of International Innovation Management at the Chair of Technology and Innovation Management.

The BSc thesis of Mr. Sachsenhausen and Mr. Hinrichs provides valuable insights as to why and to which extend German and Japanese MNCs conduct R&D activities in China and India. It further points to significant differences between these countries. One major difference concerns the maturity of R&D activities of MNCs where China is approximately ten years ahead of India. Furthermore, the focus of local R&D sites in both countries is shifting more and more towards global reach. The thesis is based on hand collected data from publicly available sources. Altogether 25 German and 25 Japanese MNCs were examined which currently jointly operate about 275 R&D facilities in China and India.



4.4 Prepare! – The Entrepreneurs' Academy

On February 25, 2016, the jury and participants in the interdisciplinary course entitled "Prepare! – The Entrepreneurs' Academy" of the Chair of Technology and Innovation Management at WHU – Otto Beisheim School of Management selected the Winner of this year's Prepare!-Academy.

Prepare! – The Entrepreneurs' Academy is an interdisciplinary course offered by the Chair of Technology and Innovation Management (Prof. Dr. Holger Ernst) in cooperation with RWTH Aachen. In this course, entrepreneurs of start-ups in engineering and the natural sciences teamed

up with management students of WHU to further develop their existing entrepreneurial concepts. This also makes Prepare! an inter-university course. The teaching assistants are Carsten Guderian (WHU) and Daniela Werthes (RWTH).

The Academy was held in Aachen and Vallendar in January and February 2016. With more than 30 participants in six teams, course participants dealt with product concepts from fields such as software development, veterinary medicine, and sensor technology and focused on topics such as market and competitor analyses, financial planning and intellectual property.





The program was topped off with lectures by experienced founders, and with virtual and physical coaching. At the end of the course, on February 25, 2016, a panel of researchers and practitioners presented the best concepts and further developments with the Jury Cup. All of the students and founders involved in the course also selected the recipient of the Winner Award. For the first time in the history of Prepare!, both awards were handed to two different teams.

Congratulations to the winning teams, and many thanks to the participants! We wish all of you the best of luck with your entrepreneurial projects!



4.5 Xiamen University Excursion to Gea Group

On July 5, 2016, Prof. Dr. Ernst and 30 EMBA students of the Xiamen University, China, visited the headquarters of GEA Group in Düsseldorf, Germany. Together with Chief Operating Officer Steffen Bersch, they had a lively discussion about strategic aspects, innovation, and change management at GEA Group. The Chinese students took part in an Executive Education Program at WHU – Otto Beisheim School of Management in Düsseldorf, Germany.

5. Research

5.1 Publications in Refereed Journals

- Ernst, Holger, Conley, James G., and Omland, Nils, How to Create Commercial Value from Patents: The Role of Patent Management, R&D Management, 46(S2), 677-690.
- Dubiel, Anna, Durmusoglu, Serdar S., and Glöckner, Sebastian, Firm Characteristics and NPD Program Success: The Significant Influence of Global Discovery Management, Journal of Product Innovation Management, forthcoming.

5.2 Other Publications: Case Studies

 Guderian, Carsten C. and Bican, Peter M. (2016), Martin Bauer Group: Corporate Social Responsibility with EinDollarBrille, Ivey ID: 9B16M027, London, Canada: Ivey Publishing

5.3 Research Collaborations

The Chair of Technology and Innovation Management at WHU – Otto Beisheim School of Management engages in multiple research collaborations with national and international partners. Currently, our partners and partner institutions are:

Northwestern University (United States of America):

- Prof. Dr. Holger Ernst (WHU), Prof. James G. Conley (Center for Research in Technology and Innovation, Kellogg School of Management, Northwestern University, USA) and Peter M. Bican (WHU) empirically research how long-term strategic competitive advantages may be achieved through the integrative management of different IP regimes. The research project is funded by the WHU and the Kellogg Center for Research in Technology and Innovation. We would like to thank both institutions for their support.
- Prof. Dr. Holger Ernst, Prof. James G. Conley and Carsten Guderian (WHU) empirically research how patent data can be used for predictive analytics and other strategic applications. The research project is funded by the WHU and the Kellogg Center for Research in Technology and Innovation. We would like to thank both institutions for their support.

Oregon State University (United States of America):

Prof. Dr. Holger Ernst, Ass.-Prof. Jiyao Chen (College of Business, Oregon State University, USA), Ass.-Prof. Jiexun Li (College of Business, Oregon State University, USA) and Carsten Guderian empirically research the market valuation of disruptive technologies. The project is supported by PatentSight GmbH.

Politecnico di Bari (Italy):

Prof. Dr. Holger Ernst, Antonio Messeni Petruzzelli (Politecnico di Bari, Italy) and Lorenzo Ardito (Politecnico di Bari, Italy) jointly research the success factors of technology commercialization.

Nihon University College of Economics (Japan):

Prof. Nobuko Nishiwaki (Nihon University College of Economics, Japan) and Ass.-Prof. Dr. Anna Dubiel (WHU) conduct a comparative analysis of success factors of globalization of German and Japanese multinationals. Particularly, they are interested in how firms from both countries internationalize their research and development facilities and new product development activities aiming at so-called emerging markets.

University of Cambridge and London Business School (United Kingdom):

Prof. Jaideep Prabhu (Judge Business School, University of Cambridge, UK), Prof. Rajesh Chandy (London Business School, UK), Prof. Sourindra Banerjee (Warwick Business School, University of Warwick, UK), Ms. Jing Wang (Harbin Institute of Technology, China), and Ass.-Prof. Dr. Anna Dubiel investigate drivers of evolution of marketplaces. Particularly, they are interested in how the so-called "creative class" impacts such marketplaces' development. As their research setting they use a unique historical setting of economic transition (West vs. East Berlin) as a natural laboratory to test their hypotheses.

Copenhagen Business School (Denmark) and Northeastern University (United States of America):

Prof. Christoph Grimpe (Copenhagen Business School, Denmark), Prof. Gloria Barczak (D'Amore-McKim School of Business, Northeastern University, USA) and Ass.-Prof. Dr. Anna Dubiel (WHU) investigate the mediating role of domestic and international collaborations (e.g., customers, suppliers, service providers) on the R&D offshoring-innovation performance relationship. To test their hypotheses, they use data from the German Community Innovation Survey (CIS).

Airbus Group (Germany):

- Several research collaborations are currently conducted together with Airbus Group and its Corporate Innovation as well as Engineering, Research, Technology and Intellectual Property Management Division at the plant in Hamburg, Germany.
 - Airbus Corporate Innovation supports the Chair of Technology and Innovation Management by offering students (BSc and MSc) the opportunity to write their final examination theses at the Hamburg Airbus facility. All topics are highly relevant for the business to create an impact and benefit for Airbus.
 - Airbus Engineering, Research, Technology and Intellectual Property Management is supporting Kolin Schunck with his doctoral research project. Airbus is providing access to internal firm data as well as to the internal and external Airbus network and its relationships to other firms. Kolin Schunck and Airbus collaborate also on other projects dealing with various Intellectual Property Management topics, such as licensing, using patent data for strategic decision-making, inventor remuneration, IP strategy, etc.

5.4 Doctoral Colloquim



On July 11 and 12, 2016, an interuniversity Doctoral Colloquium was held at the Leonardo Campus in Münster, Germany. Participants came from the Chair of Innovation Management at the Zeppelin University in Friedrichshafen (Prof. Dr. Ellen Enkel), the Institute of Business Administration at the Department of Chemistry and Pharmacy at the University of Münster (Prof. Dr. Jens Leker) and the Chair of Technology and Innovation Management at the WHU – Otto Beisheim School of Management in Vallendar. An earlier meeting with participants from all three departments was held in Friedrichshafen, Germany, on January 18 and 19, 2016.

The participants debated current topics in research and teaching. From WHU – Otto Beisheim School of Management, Prof. Dr. Holger Ernst discussed the "Use and Potential of Strategic Patent Analyses in Innovation Management". Moreover, Carsten Guderian, research assistant at the Chair of Technology and Innovation Management, presented is dissertation project on "The Market Valuation of Destabilizing Technologies".

In Friedrichshafen, research assistants Peter Bican and Carsten Guderian presented their project "Intellectual Property: Tension on Open Innovation?". Moreover, research assistant Kolin Schunck presented his thesis topic "Intellectual Property as a Dynamic Capability".

We are looking forward to future meetings!

5.5 Conferences

- Ernst, H., 4. Singapur-Konferenz für den deutschen Mittelstand, Frankfurt, Germany October 27, 2015.
- Ernst, H., Doctoral Seminar, Zeppelin University Friedrichshafen, Friedrichshafen, Germany, January 18-19, 2016.
- Ernst, H., Doctoral Seminar, University of Münster, Münster, Germany, July 11-12, 2016.
- Dubiel, A. TIE-Tagung (VHB) Junior Faculty Consortium and Conference, Potsdam, Germany, October 14-16, 2015.
- Dubiel, A., 4. Singapur-Konferenz für den deutschen Mittelstand, Frankfurt, Germany October 27, 2015.
- Dubiel, A., Mini AlB Conference, Milan, Italy, October 30, 2015.
- Dubiel, A., Case Writing Workshop, HBS, Boston, USA, January 11-14, 2016.





- Dubiel, A., Drittmittel in der BWL: Wege und Herausforderungen", VHB-Arbeitstagung, Frankfurt, Germany, March 03, 2016.
- Dubiel, A., INFORMS Marketing Science Conference, Shanghai, China, June 16-18, 2016.
- Bican, P., 4. Singapur-Konferenz für den deutschen Mittelstand, Frankfurt, Germany October 27, 2015.
- Bican, P., Doctoral Seminar, Zeppelin University Friedrichshafen, Friedrichshafen, Germany, January 18-19, 2016.
- Bican, P., WHU Research Day, Düsseldorf, Germany, April 12, 2016.
- Bican, P., 12. Petersberger Industriedialog 2016, Bonn/Königswinter, Germany, June 23, 2016.
- Bican, P., Doctoral Seminar, University of Münster, Münster, Germany, July 11-12, 2016.

- Guderian, C., 4. Singapur-Konferenz für den Schunck, K., Airbus Intellectual Property Condeutschen Mittelstand, Frankfurt, Germany October 27, 2015.
- Guderian, C., Research Seminar and Guest Lecture, Mads Clausen Instituttet, Syddansk Universitet, Sønderborg, Denmark, December 08. 2015.
- versity Friedrichshafen, Friedrichshafen, Germany, January 18-19, 2016.
- Guderian, C., WHU Research Day, Düsseldorf, Germany, April 12, 2016.
- Guderian, C., WHU Entrepreneurship Roundtable - Corporate Innovation and Corporate Venture Capital, Düsseldorf, Germany, April 13. 2016.
- Guderian, C., WHU Introduction to Adobe In-Design and Photoshop, Vallendar, Germany, April 21, 2016.
- Guderian, C., 12. Petersberger Industriedialog 2016, Bonn/Königswinter, Germany, June 23, 2016.
- Guderian, C., Doctoral Seminar, University of Münster, Münster, Germany, July 11-12, 2016.
- Kremmel, M., WHU Introduction to Adobe In-Design and Photoshop, Vallendar, Germany, April 21, 2016.
- Kremmel, M., Doctoral Seminar, University of Münster, Münster, Germany, July 11-12, 2016.
- Peters, D., Doctoral Seminar, Zeppelin University Friedrichshafen, Friedrichshafen, Germany, January 18-19, 2016.
- Schunck, P., Doctoral Seminar, Zeppelin University Friedrichshafen, Friedrichshafen, Germany, January 18-19, 2016.
- Schunck, K., Global IP Exchange, Hamburg, Germany, March 07-08, 2016.
- Schunck, K., WHU Campus for Supply Chain Management, Vallendar, Germany, March 11-12, 2016.



- ference 2016. Madrid. Spain. June 20-24. 2016.
- Schunck, K., Doctoral Seminar, University of Münster, Münster, Germany, July 11-12, 2016.

In addition to conference attendances, members Guderian, C., Doctoral Seminar, Zeppelin Uni- of the Chair of Technology and Innovation Management conducted various visits to firms, institutions and individuals. For example, Peter Bican and Carsten Guderian visited Beiersdorf AG in Hamburg, Germany, for a thesis supervision and survey preparation from November 18-19, 2015.

> Moreover, Prof. Dr. Holger Ernst, Peter Bican and Carsten Guderian visited the Deutscher Fussball-Bund e.V. (German Football Association – DFB). particularly Ulf Schott, Director Youth, League Management, Coaches / International Cooperations, Talent Promotion, Education, for a project kick-off in Frankfurt, Germany, on January 28, 2016. Several other visits followed since. Additionally, the three met with Dietrich Weise, former Bundesliga Head Coach and Head/Initiator of DFB's Youth Development Program, in Heilbronn twice to discuss his view on football talent management.





5.4 Presentations

- Ernst, H., Managing Intellectual Property for Bican, P. M. and Guderian, C., Intellectual Competitive Advantage. Melbourne Business School, Melbourne, Australia, August 25, 2015.
- Ernst, H., Success Factors of Innovations -Lessons from Innovation Leaders. Styrolution, October 9, 2015.
- Ernst, H., Erfolgsfaktor Innovation. Was man von Innovationsführern lernen kann. Mehr Innovation im Unternehmensalltag. Ministerium für Wirtschaft, Klimaschutz, Energie und Landesgestaltung des Landes Rheinland-Pfalz. Wissenschaftliche Hochschule für Unternehmensführung, Vallendar, Germany, October
- Ernst, H., Frugal Innovations When Less is More! Mastering Growth. 3rd European Machine Vision Summit, VDMA, Frankfurt, Germany, October 30, 2015.
- Ernst, H., Erfolgsfaktor Innovation. Was man von Innovationsführern lernen kann. Mehr Innovation im Unternehmensalltag. Ministerium für Wirtschaft, Klimaschutz, Energie und Landesgestaltung des Landes Rheinland-Pfalz, Fraunhofer Institut für Techno- und Wirtschaftsmathematik ITWM. Kaiserslautern. Germanv. November 11, 2015.
- Ernst, H., Frugal Innovations When Less is More!. SMA Solar Technology AG, Niestetal, Germany, February 29, 2016.
- Ernst, H., Turning innovation into profit The role of the IP department. PatentSight User Meeting, Bonn, Germany, June 02, 2016.
- Ernst, H., Competing in a Digital World: How to Transform your Existing Business Model. Melbourne Business School, Melbourne, Australia. August 03. 2016.
- Dubiel, A., Grimpe, C., Barczak, G., R&D Offshoring and Innovation Performance: The Mediating Role of Domestic and International Collaborations. Mini AIB Conference. Milan, Italy. October 31, 2015.
- Dubiel, A., Banerjee, S., Prabhu, J., Chandy, R., Wang, J., Marketplace Resurgence after Economic Transitions. INFORMS Marketing Science Conference, Shanghai, China, June 17, 2016.

- Property: Tension on Open Innovation?, ZU Friedrichshafen Doctoral Seminar (with WHU - Otto Beisheim School of Management and University of Münster), Zeppelin University Friedrichshafen, Friedrichshafen, Germany, January 18, 2016.
- Guderian, C., Intellectual Property Management - Introduction to Intellectual Property (Part I) & Patent Information for Strategic Planning (Part II). MSc Class. Mads Clausen Instituttet, Syddansk Universiteit, Syddansk Universitet, Sønderborg, Denmark, December
- Guderian, C., Intellectual Property: Tension on Open Innovation?, Mads Clausen Instituttet (MCI) Research Seminar, Syddansk Universiteit, Syddansk Universitet, Sønderborg, Denmark, December 08, 2015.
- Guderian, C., The Market Valuation of Destabilizing Technologies, WWU Münster Doctoral Seminar (with WHU - Otto Beisheim School of Management and Zeppelin University Friedrichshafen), University of Münster, Münster, Germany, July 11, 2016.

5.7 Röchling Assistant Professorship Of International Innovation Management

■ The Assistant Professorship for International 2) Teaching Innovation Management was established at the Chair of Technology and Innovation Management in January 2012. The Professorship is funded by the Röchling Foundation, which is located in Mannheim. Germany. The current professorship holder, Assistant Professor Dr. Anna Dubiel, is interested in the interface of innovation and international management. She is devoting her activities mainly to the following three areas:

1) Research

- Papers in progress and research collaborations:
- Two papers resulting from her dissertation thesis together with Professor Dr. Holger Ernst, Professor Mohan Subramanian (Carroll School of Management, Boston College, USA), and Professor Sourindra Banerjee (University of Warwick, UK) one of them currently under review in International Marketing Review
- A research project on the evolution of marketplaces in transitional economies together with Professor Sourindra Banerjee (University of Warwick, UK), Professor Jaideep Prabhu (University of Cambridge, UK), Professor Rajesh Chandy (London Business School, UK), and Ms. Jing Wang (Harbin Institute of Technology, China)
- Regular reviews for journals and conferences and active participation in (international) research conferences



- Lecture "New Product Development" in the WHU - Otto Beisheim School of Management's MSc Program
- Lecture "Strategic Innovation Management" in the WHU - Otto Beisheim School of Management's MSc Program
- Supervision of several theses in the programs at WHU - Otto Beisheim School of Manage-



- 3) Community Outreach
- Speeches at practice-oriented conferences
- Managers invited for guest lectures on NPD practices in their companies
- Depiction of current management trends with the help of case studies written jointly with companies
- Ad-hoc member of the jury for the assessment of potential new students for the WHU - Otto Beisheim School of Management's BSc proaram

6. Executive Education and Corporate Connections

6.1 4th Singapore Conference for the German Mittelstand







The Economic Development Board (EDB) Singapore and the WHU - Otto Beisheim School of Management's Chair of Technology and Innovation Management hosted the 4th Singapore-Conference for the German Mittelstand on October 22. 2015 in Frankfurt. Germany. It was headed by Prof. Dr. Holger Ernst and co-organized by Peter Bican und Carsten Guderian. EDB is the lead government agency for planning and executing strategies to enhance Singapore's position as a global business center. WHU - Otto Beisheim School of Management is a privately funded business school based in Vallendar and Düsseldorf and is continuously ranked among the top business schools in Germany and Europe.





The conference targeted small- to medium-sized firms from German-speaking countries, particularly Austria, Germany, and Switzerland, that are already active in Asia-Pacific and plan to expand further and firms that think about shifting their business activity to this region for the first time. The focus of the conference was particularly on the future growth markets in the ASEAN region

with countries like Indonesia, Malaysia, Vietnam, or Singapore. The target audience consisted of firm founders and owners, top management representatives, senior executives and executives with functional responsibilities from diverse fields and industries.





Numerous experts, owners, and top management representatives shared their experiences in Asia with the conference participants, for example Karl-Gernandt (Chairman Kühne + Nagel AG, Markus Hüllmann (Chief Operating Officer GEA AG), Clas Neumann (Senior Vice President, Head of Global SAP Labs Network), and Eddy Henning (Head Multinational Market Coverage Asia Pacific, Deutsche Bank Singapore). Case studies on successful market entry and expansion strategies from firms such as Stabilus GmbH, Basler AG, Zwick GmbH & Co. KG, TÜV Süd, and Plasmatreat GmbH gave helpful and actionable



as entry strategies, location decisions, networkbuilding with local partners, Research & Development, product development, financing, M&A, production, logistics, talent management, and more. Local perspectives from Asian markets complemented the view from Europe on Asia: How do Asian companies conduct business in Southeast Asia? How could German companies profit from experiences and best practices of successful local companies and Asian competitors?

Time and ample opportunities for networking activities and experience sharing were widely provided

advices to participants on multiple aspects such during the conference. Beyond the conference, a key objective of EDB and WHU is to establish a community of German firms with a common interest and passion for Southeast Asia. Participants will profit from first hand experiences, the ongoing exchange with high-profiled experts, and from connecting with potential business partners.

> Given the great success of last year's conference, we are looking forward to host the next conference on October 6, 2016.



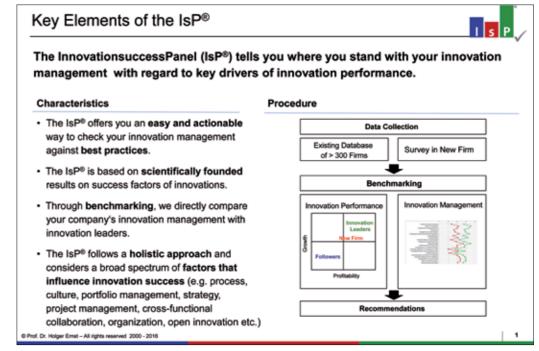


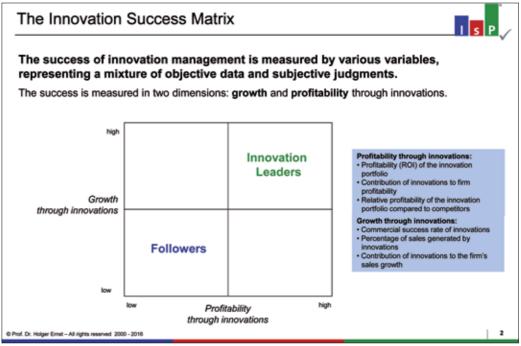


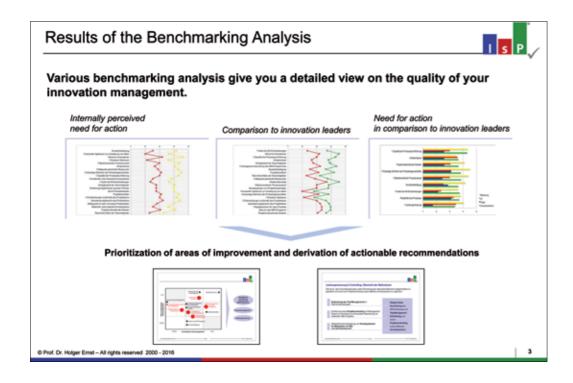
6.2 Business Engagement: **Innovation Success Panel**

The InnovationsuccessPanel®, developed and supervised by the Chair of Technology and Innovation Management at WHU - Otto Beisheim School of Management, provides the opportunity

for firms to validate their Innovation Management and find areas for improvement using a solid, data-based approach. For further information, please contact Professor Dr. Holger Ernst.







6.3 Business Engagement: Patentsight GmbH

ler and Dow Chemical have used the Patent Asset IndexTM in their annual reports to communicate innovation leadership to their stakeholders.

S PATENTSIGHT

PatentSight was founded in 2009 by Professor Dr. Holger Ernst and Nils Omland as a spin-off from WHU - Otto Beisheim School of Management. PatentSight's founders have over 20 years of scientific and practical experience in patent evaluation and analytics. PatentSight's mission is to offer smart patent analytics solutions that provide reliable, unique and relevant insights into the patent landscape.

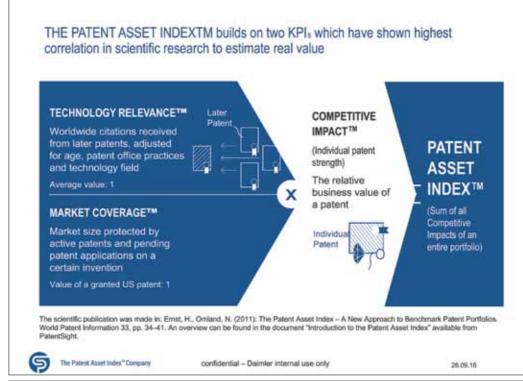
PatentSight's founders pioneered the Patent Asset Index (PAI)TM as a standard metric to assess the quality of patent portfolios (Ernst, H., Omland, N. 2011. The Patent Asset Index – A New Approach to Benchmark Patent Portfolios, World Patent Information, Vol. 33, pp. 34-41). The Patent Asset IndexTM is a key and unique feature that sets PatentSight's analytics solutions distinctively apart from other offerings (see figure 1). Without this differentiation, the noise in patent data is too high and makes the generation of meaningful insights impossible. Blue Chip companies such as the BASF, Evonik, Daim-

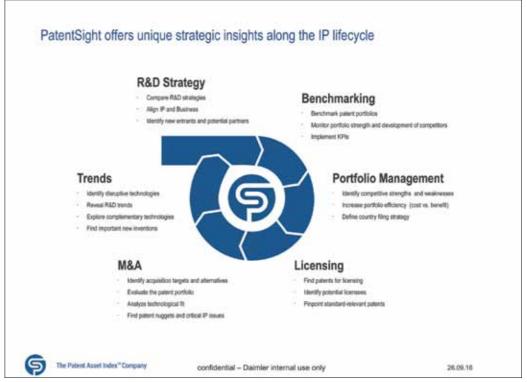
PatentSight's analytics software solution offers unique and relevant insights for users in multiple areas across the IP life cycle: (1) R&D Strategy, (2) Benchmarking, (3) Portfolio Management, (4) Licensing, (5) M&A and (6) Trends (see figure 2). Users benefit from PatentSight's patent analytics solutions in these fields in the following ways: better and faster decision making (e.g. on strategy, investments, M&A), increased licensing revenues, higher returns from investments in R&D and patents, improved patent strategy and stronger overall patent portfolio vis-à-vis competitors, better negotiation position, better pricing decisions

6 out of the 10 top global chemical firms and other blue chip clients from multiple industries (health care, automotive, consumer, telecommunication,

PatentSight's software.

logistics, software, engineering, electronics etc.) For further information, please contact Professor and regions (Europe, US, Asia and Africa) use Dr. Holger Ernst (holger.ernst@whu.edu) or PatentSight (http://www.patentsight.com).





7. Services Provided to the School

7.1 WHU Activites

Prof. Dr. Holger Ernst:

- Head of Biopharma Management Center at WHU
- Head of Third-Party-Funded Projects at WHU
- Academic Director of Melbourne Business School Program at WHU
- Academic Director of Monash University MBA Markus Kremmel: Programm at WHU
- Member of various Councils, Committees and Workgroups at WHU
- Co-Host of 4th Singapore-Conference for the German Mittelstand, WHU and EDB Singapore, Frankfurt, October 27, 2015
- Co-Host of 5th Singapore-Conference for the Mittelstand, WHU and EDB Singapore, Frankfurt. October 06, 2016
- Organization of WHU Research Colloquium of Entrepreneurship & Innovation Group at WHU
- Contact Person for Firms. Partner Universities. and Press
- Workshops, Presentations and Advisory for Firms
- Support of Student Initiative TEDEx@WHU
- WHU Marketing: Recruitement of Students
- Presentations at Scientific Conferences

Ass.-Prof. Dr. Anna Dubiel:

Presentations at Scientific Conferences

Anke Siedenkamp:

■ First Aid – Responsible for Z-Building of WHU

Peter Bican:

- Senior Project Manager for 4th Singapore-Conference for the German Mittelstand, WHU and EDB Singapore, Frankfurt, Germany, October 27, 2015
- Conference/Trade Fair Attendance and Company Visits

Carsten Guderian:

- Elected Doctoral Member of the Appointment Committee for Professorships and Assistant Professorships at WHU (2014-2016)
- Senior Project Manager for 4th Singapore-Conference for the German Mittelstand, WHU and EDB Singapore, Frankfurt, Germany, October 27, 2015
- Senior Project Manager for 5th Singapore-Conference for the Mittelstand, WHU and EDB Singapore, Frankfurt, Germany, October 06, 2016

- Guest Lectures and Research Seminar Presentations at International Universities
- Conference/Trade Fair Attendance and Com-
- First Aid Responsible for Z-Building of WHU

Conference/Trade Fair Attendance and Company Visits

Daniela Peters:

Senior Project Manager for 5th Singapore-Conference for the Mittelstand, WHU and EDB Singapore, Frankfurt, Germany, October 06,

Kolin Schunck:

Conference/Trade Fair Attendance and Company Visits

7 2 Other Scientific Activities

Advisor (Prof. Dr. Holger Ernst):

- Member of the Scientific Advisory Council for the Innovation Survey by the Centre for European Economic Research (Mannheim, Germany), funded by the German Federal Ministry of Education and Research
- Member of Advisory Council of Technology Center Koblenz

Editorships (Prof. Dr. Holger Ernst):

- Journal of Product Innovation Management: Member of the Editorial Board
- Schriftenreihe Betriebswirtschaftslehre für Technologie und Innovation, Deutscher Universitäts-Verlag: Editor
- Creativity and Innovation Management: Associate Editor
- Journal of Product Innovation Management, Special Issue "Innovation For and From Emerging Markets": Guest Editor (with Ass.-Prof. Dr. Anna Dubiel and Prof. Mohan Subramaniam), published in 2015.

Reviewer (Prof. Dr. Holger Ernst, Ass.-Prof. Dr. Anna Dubiel, Carsten Guderian):

- Business Research
- Creativity and Innovation Management
- Industry and Innovation

- Journal of Business Venturing
- Journal of International Consumer Marketing
- Journal of Marketing
- Journal of Product Innovation Management
- R&D Management
- Technological Forecasting and Social Change
- Technovation
- Zeitschrift für Betriebswirtschaft
- Academy of Management Annual Conference
- European Academy of Management Annual Conference

- TIE Division Conference of the German Academic Association for Business Research
- (Verband der Hochschullehrer für Betriebswirtschaftslehre e.V.)

Visiting Pre-Doctoral Fellows / Research Scholars (Peter M. Bican and Carsten Guderian):

Center for Research in Technology and Innovation, Kellogg School of Management, Northwestern University, United States of America

8. Community Outreach

8.1 Responsibility and Sustainability

With our research, teaching and business engagement, we strive to work towards stable and sustainable solutions concerning all aspects of technology and innovation management. Therein, we interpret sustainability in a twofold way; firstly, in a developmental sense, covering social as well as ethical aspects and, secondly, as a long-term orientation guiding our thoughts, actions and recommendations. The following depicts a selected overview of the incorporation of sustainability at the TIM-Chair:

Teaching

- Theses topics dealing with developmental, sustainable, social and BRIC issues, e.g. MSc theses by Florentine Genss (Social Innovation at the Bottom of the Pyramid), Sebastian Hillebrand (Launch of Reverse Innovations in Developed Markets), Mareike Hormann (Pharmaceutical Industry and Intellectual Property in Emerging Markets), and MBA theses by Angela Kerek (Business Plan for Biotech Startups) and Binu Sadanandan (Patient-Centric Health Platform for India).
- Long-term orientation of course content concerning student development in accordance with WHU Mission Statement and WHU Objectives in all programs, e.g. concerning personal

- development, leadership skills and strategic thinking, to highlight the role of innovation and change to achieve sustainable competitive advantage and create long-term value.
- Prepare! is an interdisciplinary course offered by the Chair of Technology and Innovation Management (Professor Holger Ernst, teaching assistant Carsten Guderian) in cooperation with RWTH Aachen. In this course, entrepreneurs of start-ups in engineering and the natural sciences team up with management students of WHU to further develop their existing entrepreneurial concepts. This also makes Prepare! an inter-university course.

Research & Business Engagement

 Research topics dealing with developmental issues, international markets or BRIC countries, e.g. research area of Ass.-Prof. Dr. Anna Dubiel (International/Emerging Markets), Further, in her dissertation, Hanna Nari Kahle researched different aspects of Base of the Pyramid (BoP) innovations in low-income economies. Moreover, Peter Bican and Carsten Guderian developed a case study together with Martin Bauer Group and EinDollarBrille e.V. to analyze motivations for German medium-sized family firms in promoting frugal innovations in Sudan.

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Recommendations for precise actions or methods to increase R&D, New Product Development and Innovation (Management) Impact as well as the identification of New Business Opportunities are long-term- and stakeholder-oriented, aiming at increasing firm's potentials and revenues and augmenting the impact of (technological) innovations, even under unfavorable conditions for innovation and change.







8.2 Chair Activities

The Chair of Technology and Innovation Management joined Elsa and Brian in Koblenz for a cooking event in Koblenz in November 2015. Thank you for a great South-African meal and fascinating evening!

8.3 Acknowledgements

We would like to thank the donors and sponsors of the Chair of Technology and Innovation Management at WHU – Otto Beisheim School of Management:

Heinz-Nixdorf-Stiftung

Prof. Otto Beisheim Stiftung

Röchling Stiftung



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