



University of St.Gallen

Institute of Technology Management



Institute of Technology Management, University of St. Gallen

Annual report 2022



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1 / Highlights of 2022

2022 has been challenging for our society: The war in Ukraine, the resulting energy crisis, a looming recession, dismissals of thousands of employees in the high tech industry, inflation, a historically strong Swiss franc with associated challenges for Swiss export-oriented manufacturers, and the ongoing climate crisis are all impacting us simultaneously and putting our world under pressure. Demand for new solutions is bigger than ever. At the same time many new opportunities arise due to technological and entrepreneurial activities.

The Institute of Technology Management at the University of St. Gallen is a strong believer in our University's mission statement «From Insight to Impact». In a world where fake news spread, the search for truth and our work for combining rigorous research with real world impact becomes more important than ever. Our aspirations in research, transfer, and teaching aim to create and secure jobs, promoting personal responsibility in thought and action, and aspiring to harmony with nature.

Research

Research is driven by our labs and highly engaged researchers. Our partners support our labs and enable us to live our university's mission «From Insight to Impact». This year we conducted large cooperation projects with Bosch, CSS, Siemens, Pfizer, BBraun, PMI, Nestlé, Unilever, the United States' NIH, and Singapore's NRF. Once again the U.S. FDA awarded us a research project on quality risk in pharma production with Columbia University as a partner. We are leading the «Future of Universities» project which provides the basis for our university's 125-year anniversary and its bright future. We significantly contributed to the Swiss Federal Council decision in favor of an agnostic Swiss Innovation Fund. Until 2024, the project group is supposed to support the Swiss State Secretariat for Economic Affairs SECO in defining the concrete design parameters of the fund.

Research output regarding publications has been exceptional: Papers were accepted in leading journals like

Drug Discovery Today, Journal of Management, Journal of Business Research, R&D Management, Information Systems Research, Journal of Medical Internet Research, Energy Policy, MISQE, Business Horizons, Industry & Innovation, to name a few prominent ones.

Teaching

Teaching took place mostly in person again – much appreciated by students and faculty alike. Several lectures, like the Bachelor lecture «Operations Management» (digital flagship lecture), «Advanced Entrepreneurship» (with a pitch summit of sustainable tech scale-ups) or the master lecture «Business Innovation I» (32 student teams working on real company challenges) could only be conducted because of the large financial and personal support from our institute. We gave lectures everywhere from Tokyo to Odessa, at all levels from Bachelor, Master, PhD to Executive Programs. Due to our HSG Highlights program our university's ranking in open seminar has further improved.

People

Finally, Prof. Tobias Kowatsch accepted a full professorship for digital health interventions at the Institute for Implementation Science in Health Care at University of Zürich (UZH) and was named a director of the School of Medicine at University of St. Gallen. Prof. Ramon Casadesus-Masanell, full professor for strategy at Harvard Business School, completed a yearlong research visit on the topic of business model innovation at our institute. Prof. Felix Wortmann was promoted to Vice Director of our institute per January 2023, congratulations!

Thanks

We are grateful to have the privilege of researching and lecturing, especially in these difficult times. We thank our teams for their extraordinary commitment and enthusiasm for driving our topics. With head, hands, and heart we strive to make a difference.

The Management Team, 31 December 2022



Prof. Dr. Thomas Friedli

Prof. Dr. Elgar Fleisch

Prof. Dr. Oliver Gassmann
(Chairman)

Prof. Dr. Dietmar Grichnik

Overview

Directors

Prof. Dr. Elgar Fleisch	Prof. Dr. Thomas Friedli	Chairman Prof. Dr. Oliver Gassmann	Prof. Dr. Dietmar Grichnik
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Shared Services

Human Resources Sonja Baumgartner	Accounting Susanne Hefti (from 01.09.22) Jörg Klaus (till 31.12.22)
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Divisions (Chairs)

Operations Management Prof. Dr. Elgar Fleisch	Production Management Prof. Dr. Thomas Friedli	Innovation Management Prof. Dr. Oliver Gassmann	Entrepreneurship Prof. Dr. Dietmar Grichnik
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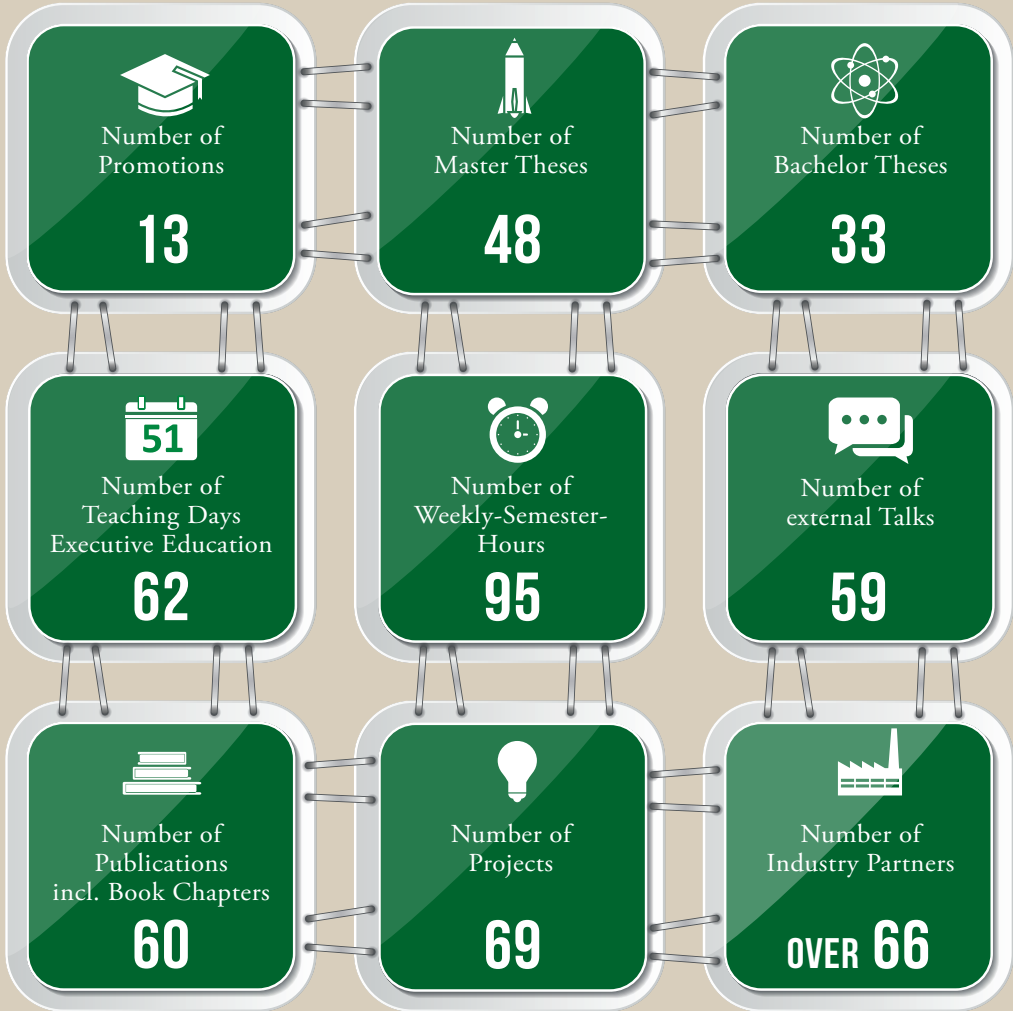
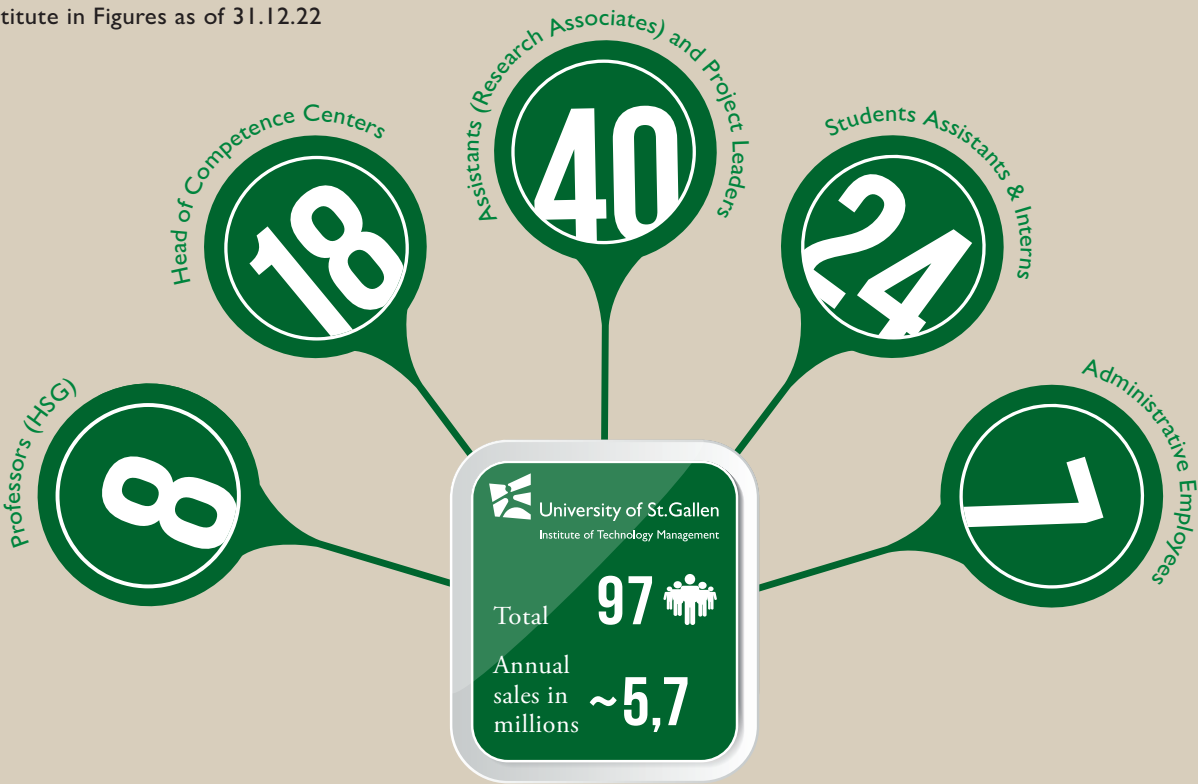
Competence Centers

Bits-to-Energy Lab Prof. Dr. V. Tiefenbeck Prof. Dr. T. Staake	Deputy Division Head Dr. L. Budde	Sustainability Innovation Lab Prof. Dr. M. Palmié	Startup Navigator Lab Asst.-Prof. Dr. M. Hess
Health-IS / CSS Lab Prof. Dr. T. Kowatsch Prof. Dr. F. Wortmann Dr. F. Barata	Global Production J. Kaiser	Emerging Technologies & BMI Lab Asst.-Prof. Dr. N. Häfner	Startup@HSG Lab D. Probst
	OPEX Pharma M. Grothkopp	Bosch IoT Lab Prof. Dr. F. Wortmann	Decision Making Research Lab R. Schreiber
	Smart Manufacturing & Services C. Tienken	Global Center for Entrepreneurship & Innovation Prof. Dr. Oliver Gassmann, Prof. Dr. Dietmar Grichnik, Prof. Dr. Isabella Hatak, Prof. Dr. Vivianna Fang He, Prof. Dr. Charlotta Sirén, Prof. Dr. Vangelis Souitaris, Prof. Dr. Silvia Stroé, Prof. Dr. Joakim Wincent, Prof. Dr. Thomas Zellweger	
	INOS Dr. L. Budde		
	TECTEM Prof. Dr. T. Friedli		



Extended Management Team (f.l.t.r.): Prof. Dr. Thomas Friedli, Prof. Dr. Elgar Fleisch, Prof. Dr. Oliver Gassmann, Prof. Dr. Maximilian Palmié, Prof. Dr. Dietmar Grichnik, Prof. Dr. Manuel Hess, Prof. Dr. Felix Wortmann, Dr. Lukas Budde.

The Institute in Figures as of 31.12.22





2.1 / OPERATIONS MANAGEMENT

*Team members of the division Operations Management from the left to the right:
Prof. Dr. Elgar Fleisch, Prof. Dr. Felix Wortmann, Dr. George Boateng, Yanick Lukic, Prabhakaran Santhanam,
Markus Kreft, Eva van Weenen, Martin Maritsch, Fan Wu, Sophie van de Vorst, Elisabeth Vetsch, Patrick Langer, Simon Föll,
Tobias Bruder Müller, Jinjoo Shim, Wasu Mekniran, Kevin O'Sullivan, Gisbert Teepe, Fabian Schneider, Robin Deuber.*

Dr. Filipe Barata, Catarina Bérubé, Robert Jakob, Monica Heinz, Olivia Clare Keller are missing on the picture.

2.1 / Operations Management

// Prof. Dr. Elgar Fleisch

Introduction

The teams around Professors Elgar Fleisch, Tobias Kowatsch and Felix Wortmann work across universities at ETH and HSG, as they have for almost 20 years. The projects are interdisciplinary in nature. In the research at the Center for Digital Health Interventions, the fields of medicine, machine learning, computer science, psychology and economics meet. In the Bits to Energy-Lab we combine machine learning, computer

In the year under review, we pushed ahead with several projects of this nature in both Labs, as well as launching a number of new projects.

Bits to Energy Lab

The Bits to Energy (B2E) Lab was founded 12 years ago and has since developed an extensive portfolio of scientific contributions, service concepts and products in the field of



▶ Skiing day 2022.

science, psychology, and economics to foster sustainable behaviour. Because the team is interested in the technical solution and the impact in the real world, it typically uses a «full-stack» approach, which at the highest stage includes work on theoretical foundations, prototype construction, laboratory and field experiments, data analysis and business modelling. In individual cases, it also does not shy away from spin-offs in order to carry an idea from research into society.

energy efficiency and sustainability. Last year, demand for the research group's topics was particularly high and numerous contributions were taken up by politics, companies, and the research community. In addition, new projects started in 2022, including KIWO (Artificial Intelligence for Heat Pump Optimization), which deals with the development and validation of algorithms that automatically detect inefficient heat pumps in households by analyzing data from smart meters. A first related publication appeared in the journal Energy Policy. In the project Ortsnetz, the B2E Lab



▶ Research Seminar November 2022, Bamberg.

has begun collaborating with the ETH Power Systems Lab and the utility EKZ to test and develop digital agents and behavioral interventions that promote grid-friendly electricity use by reducing peak demand and rewarding local consumption of electricity from photovoltaics. Both projects include extensive field trials that will run over the next two years. For more information, please check out www.bitstoenergy.ch.

Center for Digital Health Interventions

The group at Center for Digital Health Interventions (CDHI) designs scalable digital health interventions to address the health and economic burden of non-communicable diseases. In August 2022, the Scientific Director of the CDHI, Prof. Dr. Tobias Kowatsch started a new position as Associate Professor for Digital Health Interventions at the University of Zurich (UZH). Besides, Tobias has joined the board of directors of the School of Medicine at the University of St. Gallen. This will bring the CDHI closer to medical research and to medical doctors interested in the topic of digital health. The CDHI continues to be involved in teaching Joint Medical Master (JMM) students at HSG and added further teaching in the autumn term of 2022, including a new lecture at ETH Zurich titled «Developing Digital Biomarkers», a new lecture at the University of St.Gallen titled «Emerging Business Models in Digital Health», and the new lecture «Digital Health in Practice» at the University of Zurich. The CDHI is passionate about training up business executives in digital health methods and developed a CAS in Digital Health which started in February 2022. The program has been well received, and the center is currently recruiting participants for a second cohort.

In Singapore, an innovative app titled LvL Up was developed to research a holistic preventive care intervention. The feasibility study is set to begin shortly. Outstanding

achievements of 2022 include an ACM IMWUT Distinguished Paper Award for the paper «Detecting Receptivity for mHealth Interventions in the Natural Environment».



▶ St.Gallen Symposium 2022.

As in previous years, the CDHI published a high number of scientific articles, many of which were published in high-outreach journals, e.g., the Journal of Medical Internet Research (JMIR), Computers in Human Behavior or JMIR Serious Games. The CDHI was also involved in a major textbook published by Elsevier, and co-edited by Prof. Dr. Kowatsch, titled «Digital Therapeutics for Mental Health and Addiction». For more information, please see www.c4dhi.org.



2.2 / PRODUCTION MANAGEMENT

*Team members of the division Production Management from the left to the right:
Prof. Dr. Thomas Friedli, Jean Paul Potthoff, Karl Gerhard Schalm, Daniel Wörner, Gian-Andri Steiger, Mark Grothkopp,
Christoph Tienken, Jonathan Rösler, Benedikt Saretz, Ferdinand Deitermann, Jens Kaiser, Dr. Lukas Budde, Fabian Klinkner,
Matteo Bernasconi, Michael Vejmla, Fabian Specht, Lorenzo Pirrone.*

2.2 / Production Management

// Prof. Dr. Thomas Friedli

“The battlefield is a scene of constant chaos. The winner will be the one who controls that chaos, both his own and the enemies.” [Napoleon Bonaparte]

The management of global production networks remained a key topic for companies in this year. After the pandemic was before the war in the Ukraine and in general the geo-political uncertainties further increased what directly lead to a need for conceptual models and data- and science-based support in the review of existing and the design of modified networks. Based on this we complemented our offerings in this field with risk-based frameworks to better analyze potential vulnerabilities and could apply them in two challenging projects. Data-based was also our US FDA

financed project dealing with predictive quality. Besides of our St.Gallen Operational Excellence in Pharma database we used data directly obtained from the FDA as well as external signals (we scraped e.g. Glass Door Employer Ratings) for the prediction. The proof of concept was successful and we could achieve the financing of a second project year by the FDA. In the field of Smart Manufacturing and Services we finalized our largest InnoSuisse Project ever helping to professionalize the development of business models based on smart products.

Coming back to the introductory quote above: we see it as our responsibility to help companies to understand their specific environment and derive the right conclusions for their internal organization. We support this based on data and facts and therefore help to get better prepared for what might come.

Below are a number of highlights from our three dedicated research groups *Global Production*, *Operational Excellence*, and *Smart Manufacturing and Services*.

Global Production

In light of the Corona pandemic and the Russia-Ukraine conflict, multinational companies are fundamentally questioning their global production footprint. Having tailored their footprint primarily to global efficiencies in recent years, risk mitigation and delivery reliability are playing an increasingly important role.

In our individual collaboration projects, we continued our partnership with an American-headquartered MedTec company and supported six multinationals headquartered in German-speaking countries in their footprint optimization efforts. As a support tool, we developed a data-based plant-risk matrix that tracks the importance of plants versus their county risk. We also developed several company-specific plant role models to help break down the abstract manufacturing strategy into plant-individual actions. Besides the individual projects, we finished a benchmarking project «Global Production Strategies» and started another one, AI (Artificial Intelligence) in Operations together with our research partners from RWTH Aachen.



St.Gallen Production Management Conference 2022.

Additionally, we continued our Innosuisse project titled «Triple-R: Resilience, Responsiveness, and Robustness in Global Production Networks» and worked on two proposals for the upcoming years. In the first one, we aim to further deepen the topic of risk mitigation by developing a dashboard for external risks as well as a what-if scenario tool to evaluate the impact of relevant risks on the production footprint. The second one was submitted to the SNF (Swiss National Fond) together with our research partners from ETH Zürich. It deals with the competitiveness of the Swiss industry (The DNA of Swiss Manufacturing). Besides, we had the honor to welcome one of the most influential global operations researchers, Prof. Kasra Ferdows, at our institute in autumn.

Now in the 6th year, we have again conducted the Swiss Manufacturing Survey to capture the pulse of the Swiss industry. Congratulations go to Körber Pharma Packaging AG (former Dividella AG) and its CEO Christoph Hammer for winning the 2022 Swiss Manufacturing Award.

Besides our annual St.Gallen Production Management conference, we conducted for the third time the leading conference on global production together with our colleagues from RWTH Aachen and KIT Karlsruhe in Frankfurt. The exciting keynotes and controversial discussions between Prof. Friedli, Prof. Lanza (KIT Karlsruhe), and Prof. Schuh (RWTH Aachen) will remain in special memory.

Operational Excellence

At the end of 2021 we started our new project «RiskSurve» funded by the U.S. Food and Drug Administration in collaboration with the Columbia University. We were able to leverage state of the art data analytics based on our St.Gallen OPEX benchmarking database to derive implications for the FDA and the entire pharma industry. Our deliberate work, delivering on tight deadlines, and insightful results paved the way to a second-year extension of this initially one-year project. The kick-off for the second year in October was a good start – we are looking forward to the future and what this holds for us.



REHAU Award 2022 Ceremony in St.Gallen.



Global Production Academy at CLAAS.



Global Production Academy at Herrenknecht.



▶ Benchmarking Global Production Strategies at KUKA.



▶ Benchmarking Global Production Strategies at Dätwyler.



▶ Towards Sustainable Business Models Conference Zurich.



▶ OPEX Research Group Newark DE.



▶ QC Exchange Group Visp.

Beginning of this year, we decided to extend our benchmarking portfolio with another excellence benchmarking, aiming at supporting pharma companies on their operational excellence journeys. Our new quality assurance (QA) benchmarking will provide a one-of-its-kind opportunity for companies to improve their QA functions and quality system in both effectiveness and efficiency. We jointly develop this unique benchmarking model with practitioners and have rarely seen such a high demand from companies, proving once again that we base our research on current industry challenges.

Echoing this success, many of our other activities show similar resonances. Our St.Gallen Operational Excellence Research Group has hit a record with ten participating companies this year – big Pharma among them. The same holds for our QC Exchange Group, dedicated to quality control lab related topics, with now total 14 mayor pharmaceutical companies. Bringing together OPEX practitioners at impressive locations, such as the Lean Academy of one of the largest pharmaceutical companies in the US, is one of our highlights. Additionally, we looked into the «Future of Production Systems» with our cross-industry benchmarking study with more than 100 respondents and exciting site visits

at the most successful companies. Moreover, we helped several companies with our holistic and data-driven approach to derive the right decisions and to drive continuous improvement.

In addition, our team has attended conferences in Europe and North America, sharing the results from our research. With our publications in the International Journal of Operations and Production Management and in the American Association of Pharmaceutical Scientists Journal we were able to contribute with our work to the scientific community.

Smart Manufacturing and Services

In our lighthouse research project, the Innosuisse project «Designing Business Models for the Internet of Things», we worked together with eight Swiss-based companies to develop and implement «Equipment-as-a-Service» models. Furthermore, we were able to complete our consortium project «Pricing digital products», in which we developed a comprehensive guideline for 11 participating companies on how to successfully commercialize digital offerings. We also continued with this topic to shed more light on how to succeed in mastering the sales force transformation required

to sell digital solutions, and therefore started our new Focus Group «Successful Commercialization of Smart Services» in May. Another important research stream in our group relates to the interplay between sustainability, digitalization, and service business models. In this context, we collaborated with ABB to explore the topic of «energy efficiency» and how it can be fostered through innovative business models. The findings from this project will lay the foundation for our future activities in this field, where we seek to dig deeper into the topic of lifecycle management. The first project in this topic area is the Innosuisse project «Reinvent», which we joined to set up a new recycling platform for Switzerland. Importantly, we further strengthened our regional footprint through our continuous support of INOS (Innovation Network Eastern Switzerland). Additionally, we teamed up together with OST (Ostschweizer Fachhochschule) in the Innosuisse project «ISENSE» to develop a new business model for a medium-sized Swiss machinery company and their precision guiding systems. In addition to our projects, we organized several events with leading industrial firms from Europe this year. Our conference «Toward sustainable business models» in Zurich with over 60 participants joining physically represented an extraordinary exchange platform for managers

Outlook

Our goal is and remains to play a leading role in production management research and to have a real and visible impact on industry practice. Behind our success is always a team of colleagues who stand up for each other, who thrive for impact irrespective of the challenges faced. We have formed a team that has set its ambition to have an impact and has kept its focus despite numerous distractions along the way. Every single success story, as small as it may be, is the merit of the team as a whole.

We will continue to shape our activities globally while living up to our regional responsibility. We are always looking for solutions instead of complaining about the circumstances.



2.3 / INNOVATION MANAGEMENT

*Team members of the division Innovation Management from the left to the right:
Prof. Dr. Felix Wortmann, Sven Jung, Dr. Wolfgang Bronner, Jörg Klaus, Anna Mader, Susanne Hefti, Sonja Baumgartner,
Johanna Knapp, Asst.-Prof. Dr. Naomi Häfner, Manuel Wlcek, David Wagner, Fabian Schäfer, Prof. Dr. Oliver Gassmann.*

*Barbara Bencsik, Ursula Elsässer, Prof. Dr. Maximilian Palmié, Aristeia Saputo, Dr. Alexander Schumacher are missing
on the picture.*

2.3 / Innovation Management

// Prof. Dr. Oliver Gassmann

While 2022 still posed some special challenges due to the «new normal», the team at Prof. Dr. Oliver Gassmann's Chair for Innovation Management produced excellent work. The labs pursued their goal of combining rigor with relevance successfully.

Bosch IoT Lab

Headed by Dr. Wolfgang Bronner (Executive Director Bosch) and Prof. Dr. Felix Wortmann (Scientific Director), the Bosch IoT Lab investigates business model innovation in the



Prof. Felix Wortmann at Bosch ConnectedWorld (BCW) 2022.

Internet of Things (IoT). In addition, the Bosch IoT Lab explores disruptive IoT products and services. In 2022 the lab developed the Platform Navigator that helps companies to design, implement and scale platform business models. In addition, core activities were centered around how to scale product-as-a-service business models that facilitate recurring revenue. Finally, the work was geared towards digital trust and how to establish a fundamental basis for digital business. Within its IoT technology exploitation domain, the lab investigates new opportunities in the realm of caring car (in-vehicle hypoglycemia and drunk driving detection) as well as sustainable energy (heat pump optimization). Research results were published in renowned journals like MIS Quarterly Executive and Information Systems Research.

Sustainability Innovation Lab (formerly, Energy Innovation Lab)

In 2022, our Energy Innovation Lab became the Sustainability Innovation Lab to better reflect our growing focus on sustainability topics beyond «pure» energy issues. While its name has changed, the Lab, headed by Prof. Dr. Maximilian Palmié, maintained its focus on the questions of how organizations can progress towards social, environmental, and economic sustainability, how they can utilize digital technologies to do so, and how can they scale sustainable technologies. After our EU-Horizon 2020 project Smarter Together finally ended in late 2021, we continued our work on the remaining projects, notably the NRP 77 one on the replication and upscaling of Smart City solutions funded by the Swiss National Science Foundation and the one on sustainable, multi-modal mobility in rural areas funded by the Swiss Federal Office of Energy. Moreover, we devoted significant effort to the acquisition of a follow-up project to Smarter Together. Fortunately, a Horizon Europe proposal on positive energy districts was approved and will commence in early 2023. Last but not least, we were again able to publish insights from our efforts in several leading academic journals, for instance in the «Financial Times 50» outlet *Organization Studies*.



Master Business Innovation-the OrgaTeam behind the learning performance
32 student teams with real business model challenges

SCCER CREST's work package «Energy, Innovation, Management» in the final years, the end of both projects certainly represents a major caesura for us. Fortunately, we were able to acquire new projects such as a 36-months We also continued our work on the replication and upscaling of Smart City (SC) solutions in the NRP 77 arrangement Scaling Smart City Projects - from Individual pilots towards a Common strategy of industry Emergence, which is funded by the Swiss National Science Foundation. Over the year, insights of our various activities were published in several leading journals, received prestigious accolades from the *Academy of Management and the Strategic Entrepreneurship Journal*, and were selected into its «top stories» by the University of St. Gallen.

Emerging Technologies Lab

The Emerging Technologies Lab is headed by Asst. Prof. Dr. Naomi Haefner and conducts research on the impact of next-generation technologies on innovation and entrepreneurship. The lab focuses on technologies such as artificial intelligence and machine learning as well as distributed ledger technologies, examining how they influence firm value creation, capture, and delivery processes. Our research projects study the effect of artificial intelligence on managerial decision-making and innovation as well as the broader competitive implications and appropriability issues faced by firms pursuing artificial intelligence-based strategies. Further, we also examine the impact of emerging technologies on the future of learning and work. In this area we are actively involved in a research project on the future of the University of St. Gallen itself.

We are delighted that we were able to present our research at leading conferences such as the annual conference held by the Strategic Management Society. Additionally, our

research has appeared in high-impact journals such as *Drug Discovery Today*. New projects with Siemens (NFTs) and Nestlé (AI strategies) are in the pipeline.



Prof. Gassmann with Gen CEO Group HSG Highlights 2022.

Teaching

Prof. Gassmann taught multiple modules on technology and innovation, as well as business model innovation, in the Executive MBA and MBA programs. The master course «Business Innovation I» in the master program was again a highlight: 12 companies including Bosch, Hansgrohe, Moneypark, Siemens, Swisscom, as well as non-profit

organizations like WWF submitted challenges on business model innovations. This coaching-intensive course was a true teaching innovation: The MBI students learned the entire content before the course and focused during the whole course in teams on problem-solving real challenges. The final presentation day has been a great event with 230 students and practitioners in the Atrium of the SQUARE.



Chair Prof. Gassmann with Prof. Chris Tucci at Seelapsee.



Prof. Gassmann's speech with Business Leaders in Singapore.

With Sportradar, a worldwide leading sport data company, we conducted a CAS on Business Innovation with participants from Europe, US, Singapore, and Australia and active involvement of the CEO and founder Carsten Koerl. The university's flagship seminar «HSG Highlights 2022», which Prof. Gassmann developed and led for the Executive School and the HSG Alumni, was again very successful.

As the years before, Prof. Gassmann taught on business models: e.g. the Youngpreneurs – entrepreneurial school classes from Bern, Biel, Interlaken and Thun, students from Ukraine Odessa, or managers in Tokyo. Our guest researchers have been Prof. Ramon Casadessus-Masanell (Harvard Business School) and Prof. Chris Tucci (Imperial College), thanks for your contributions.



CAS Business Innovation with Sportradar Academy.



2.4 / ENTREPRENEURSHIP

*Team members of the division Entrepreneurship from the left to the right:
Maria Luisa Fuchs, Sarah Nordt, Prof. Dr. Joakim Wincent, Michael Greger, Stefan Gahrens
Corinne Metzger, Barbara Schmidt, Bernd Schneider, Asst. Prof. Dr. Manuel Hess, Robert Schreiber
Prof. Dr. Dietmar Grichnik, Besart Kajdomqaj, Carolin Kaufmann, Janine Crivelli, Diego Probst.*

Tatjana Christen, Mike Hudecheck, Sophie Romeiss are missing on the picture.

2.4 / Entrepreneurship

// Prof. Dr. Dietmar Grichnik



Start Summit Panel.



Start Summit Founder of the year.

Following the HSG motto from insight to impact in 2022, our team at the Chair for Entrepreneurship and Technology Management has conducted evidence-based research projects for governmental institutions and developed best practice applications for startups, scale-ups, venture capital and corporate venturing.

project group is supposed to support the SECO in defining the concrete design parameters of the fund. Our chair (Prof. Dr. Dietmar Grichnik & Sarah Maria Nordt) has also been commissioned by the Swiss Entrepreneurs & Startup Association SWESA, which is a parliamentary task force at the federal level representing the interests of newly founded ventures and innovation-driven institutions, to conduct a study in cooperation with the Chair of Private International Law, University of St. Gallen (Prof. Markus Müller-Chen



Entrepreneurial Champions 2022 in Israel.

The topic of startups and scale-ups is becoming increasingly relevant at the political level. The Swiss State Secretariat for Economic Affairs (SECO) has extended its project with our chair (Prof. Dr. Dietmar Grichnik & Michael Greger) and the Zurich-based agency Swiss Economics until 2024, after the Swiss Federal Council made a decision in favor of an agnostic Swiss Innovation Fund. This decision was seen as a success of the project group, which significantly contributed to the decision through its study «Grundlagen zur Einführung eines Schweizer Innovationsfonds». Until 2024, the

and team) on the regular framework conditions for startups in Switzerland. The aim of the study is to analyze the current situation for founding and scaling startups in Switzerland and, based on this, to develop concrete recommendations for action and legislative proposals in order to develop the country towards a «Unicorn Nation Switzerland» in the long term. On the cantonal level the Department of Economic Development commissioned our Center for Entrepreneurship (CfE-HSG) to develop a strategy for startup support and promotion in the Canton of St.Gallen. In addition, concrete fields of action and recommendations are to be developed to establish the canton of St.Gallen as a «Startup Canton». At the Startup Navigator Lab under the project lead of Asst.

Prof. Dr. Manuel Hess, we extended our research activities into the corporate venture capital scene and finalized a PhD Project (Jana Reuther) on corporate venturing. On the intersection from insight to impact, the PhD project cumulates in the Corporate Venturing Navigator framework including several high profile cases such as Axa, Shell and Philip Morris International, which will be published as a book in 2023. Another research project on value-based pricing on digital platforms (PhD candidate Tatjana Christen) has successfully

from neuroscience. After a pharmaceutical study manipulating chemical mechanisms in the brain at the Laboratory for Social and Neural Systems Research (SNS-Lab), a larger experimental study with over 110 experienced venture capital and business angel investors was conducted to evaluate the relevance of hormones in decision-making. After a successful start, the team plans to trigger a series of longevity research projects in collaboration with various academic institutions and companies to explore



Teamevent August 2022.

been published in the Journal of Business Research. Concerning our SNSF project on gender diversity in new venture boards, a first paper has been presented at the Academy of Management Conference 2022 in Seattle, while the project will continue until 2024 (new PhD candidate Carolin Kaufmann).

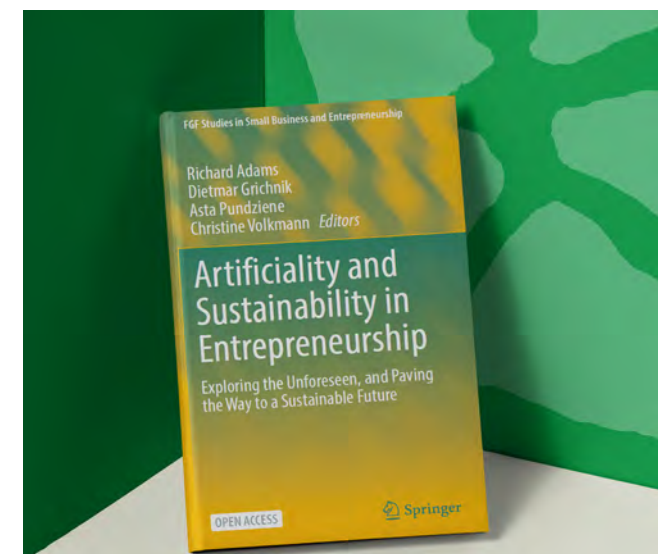
The Research Lab under the lead of Robert Schreiber expanded its field of interest by integrating methodological approaches

how digital and physiological bio markers can improve the health and performance of entrepreneurs. We have concluded our Horizon 2020 project under the project lead of Barbara Schmidt to create a Knowledge-Empowered Entrepreneurship Network (KEEN) with the completion of an edited volume on «Artificiality and Sustainability in Entrepreneurship - Exploring the Unforeseen, and Paving the Way to a Sustainable Future». The open-access book is part of Springer's FGF Studies in Small Business and Entrepreneurship and aims to contextualize the impact of artificiality on the sustainable development of the



EMBA 61 at SQUARE, HSG Learning Center.

entrepreneurial ecosystem. The meta-analysis «Nothing ventured, nothing gained: A meta-analysis of CEO overconfidence, strategic risk taking, and performance», co-authored by Prof. Grichnik has been published in the FT50-Journal of Management.



Artificiality and Sustainability in Entrepreneurship.

Startup@HSG receives more and more visibility in the HSG startup ecosystem and beyond. We are excited to welcome two new coaches and PhD students this year: Besart Kajdomqaj and Stefan Gahrens will support Startup@HSG operationally. The new website reflects the increasing traffic around our activities. During the «START Summit» in March 2022, Raffael Wohlgensinger has been awarded «HSG Founder of the Year 2022» on behalf of the company Formo. Since the

previously available cheese substitutes based on soy or nuts did not satisfy the founder, he sought a way to «recreate» the product in the lab himself. Last year, the Berlin-based startup Formo received USD 50 million in funding, the largest Series A financing for a Foodtech in Europe to date. The HSG Spin-Off Label is becoming increasingly popular. As of November 2022, over 160 companies have been awarded the label. In the course of a reorientation, we have adapted its conclusion criteria and will only award the label to entrepreneurs who pursue sustainability. This year, the «Entrepreneurial Champions Program» re-started again after three-years on hold during the Pandemic. Nine startups from the University of St.Gallen – our best talents from our incubator program – have been sent to Tel Aviv for one week to get to know the Israeli startup ecosystem and develop valuable business contacts. The startups accompanied by our startup captains Diego Probst and Maria Luisa Fuchs were able to bring back many insights and valuable contacts to Switzerland. An experience that none of the participants will ever forget!

In teaching, the Professors Dietmar Grichnik and Manuel Hess successfully closed the first cohort of the new Certificate of Advanced Studies (CAS) program on Entrepreneurial Excellence and various executive modules on entrepreneurship in the EMBA programs. Professor Dietmar Grichnik organized a new course «Advanced Entrepreneurship: Tackling Grand Challenges with New Technologies» as part of the newly designed Master in General Management. The course took place in the new SQUARE building which offered the perfect environment to experiment with a completely new course structure focusing on the sustainable development goals of the United Nation. Besides having various outstanding guest speakers in the fields of sustainable FinTech, AgeTech, HealthTech, FoodTech, InsurTech, and LegalTech, it was a pleasure to see that HSG students strive to become founders with a stronger focus on sustainability.

2.5 / Global Center for Entrepreneurship & Innovation

// Prof. Dr. Charlotta Sirén, Prof. Dr. Joakim Wincent

In 2022, the GCEI has continued to grow into an important powerhouse for entrepreneurship and innovation research, teaching, and practice. This year, we proudly welcomed Associate Professor Vivianna Fang He and Assistant Professor Silvia Stroe to our growing team of excellent scholars.

In terms of research, 2022 was an outstanding year for the GCEI. Our scholars published several articles in the Journal of Management, an A+ and FT-50 ranked management journal. These are «Organizing the exploitation of vulnerable

entitled «Specialists, generalists, or both? Founders' multi-dimensional breadth of experience and entrepreneurial ventures' fundraising at IPO». We are also delighted that a very impactful study by Prof. Isabella Hatak, «Happy entrepreneurs? Everywhere? A meta-analysis of entrepreneurship and wellbeing» was published in Entrepreneurship Theory and Practice, also an FT-50 ranked journal. Prof. Gassmann and co-authors published a study in the flagship journal for drug discovery – Nature Reviews Drug Discovery. The list continues with other high-level journal outlets where the

people: A qualitative assessment of human trafficking» co-authored by Prof. Wincent, «Nothing ventured, nothing gained: A meta-analysis of CEO overconfidence, strategic risk taking, and performance» co-authored by Prof. Grichnik and Prof. Sirén, and «On the edge of destruction: An impaired-regulation model of destructive entrepreneurial action» co-authored by Prof. Souitaris. Prof. Souitaris and his co-authors also published a study at Organization Science,

GCEI scholars published in 2022, such as Journal of Business Venturing, Journal of Business Ethics, Organization Studies, MIS Quarterly Executive, and Journal of Business Research. In addition to journal publications, the GCEI team published two new books: Artificiality and Sustainability in Entrepreneurship by Prof. Grichnik and co-authors and Entrepreneurial Responses to Chronic Adversity by Prof. Wincent and co-authors.



Global Center for Entrepreneurship and Innovation 2022.

The GCEI team continued to be strongly represented in editorial roles at leading entrepreneurship and management journals. We are also very active in hosting several research talks with internationally renowned speakers and we continued our professional development series «On Common Grounds» together with ETH Zürich and EPFL, with whom we collaborate closely. The GCEI was also awarded several competitive funding grants. Prof. Sirén and her team were awarded two Swiss National Science Foundation (SNSF) grants to use satellite data to explore informal entrepreneurship in Indian slums.

As regards teaching, the GCEI team continues to offer entrepreneurship and innovation courses and thesis supervision of the highest quality at all study levels. The quality of our teaching is evident in both our high ratings and awards such as that for best Master's thesis in general management received by Miss. Blöchliger, supervised by Prof. Hatak and PhD Candidate Andric. Furthermore, Prof. Grichnik and his team took the lead in a diploma supplement in entrepreneurship as a new profile area in the biggest bachelor program, Major in Business Administration (BWL), at HSG. As an example of the impact of our teaching, in Prof. Gassmann's master course 32 student teams worked on 13 real business model challenges together with companies. The courses taught by the GCEI team enjoy high interest from the business world and we are very engaged in teaching executives. Several GCEI professors have greatly contributed to the EMBA programs, teaching business model, entrepreneurship, and innovation modules.

As regards practice, the GCEI team continues close collaborations with industry and policy makers. For example, Prof. Grichnik is the scientific lead in the design of the Swiss Innovation Fund for the Federal Government. The policy implications were widely recognized among politicians and the general public and reported in major Swiss newspapers.

The future of the GCEI looks promising. GCEI scholars plan to continue delivering high-impact research, teaching, and practitioner-oriented projects with dedication and rigor. GCEI scholars also expect to maintain high-impact collaborations with highly ranked universities in and outside of Switzerland. In 2023, we are excited to continue to work



towards expanding the boundaries of knowledge, teaching, and collaboration in the fields of entrepreneurship and innovation.

3.1 / Institute Structure

Directors	
Prof. Dr. Oliver Gassmann	Chairman
Prof. Dr. Elgar Fleisch	Director
Prof. Dr. Thomas Friedli	Director
Prof. Dr. Dietmar Grichnik	Director

Executive Committee	
Prof. Dr. Torsten Tomczak	President
Franziska Tschudi Sauber	Vice-President
Prof. Dr. Johannes Rüegg-Stürm	
Prof. Dr. Thomas Zellweger	



«Stiftung zur Förderung von Technologiemanagement, Technologiepolitik und Technologietransfer» – Advisory Council of the ITEM-HSG

Board	
Franziska Tschudi Sauber / Weidmann Holding AG / CEO	President
Prof. Dr. Dr. Torsten Tomczak, IMC-HSG / Director	
Prof. Dr. Johannes Rüegg-Stürm, IMP-HSG / Director	Quaestor
Prof. Dr. Thomas Zellweger, KMU-HSG / Director	
Prof. Dr. Oliver Gassmann, ITEM-HSG / Director	Secretary

Honorary Member	
Peter J. Hauser	Honorary Member

Members	
Frank Bellemans	SCHOTT Schweiz AG / Managing Director
Martin Blum	Julius Blum GmbH / Geschäftsführer
Prof. em. Dr. Roman Boutellier	ETH Zürich / Universität St. Gallen
Reinhard Braun	Pantec Biosolutions AG / CEO
Jens Breu	SFS Group AG / CEO
Dr. Bruno Damann	Kanton SG Gesundheitsdepartement / Regierungsrat
Prof. em. Dr. Walter Eversheim	WZL RWTH Aachen
Prof. em. Dr. Fritz Fahrni	ETH Zürich / Universität St. Gallen
Dr. Christof Germann	Illwerke VKW AG Bregenz / Vorstandsmitglied / Direktor
Peter Gerner	Hoval Gruppe Vaduz / co-CEO
Dr. Philipp Gmür	Helvetia Gruppe / CEO
Urs Kaufmann	HUBER+SUHNER AG / VR-Präsident
Günther Lehner	ALPLA Werke Alwin Lehner GmbH & Co. KG / CEO
Dr. Christoph Loos	Hilti AG / Vorsitzender der Konzernleitung
Christian Mehling	Lista Office LO AG / CEO
Tommaso Ramundo	Ferag AG / CEO
Daniel Risch	Regierung Fürstentum Liechtenstein
Thomas H. Rüegg	Baumann Group AG / CEO
Urs Ryffel	HUBER+SUHNER AG / CEO
Dr. Frank Schaum	Gallus Ferd. Rüesch AG / CEO
Stefan Scheiber	Bühler Group / CEO
Peter Schönenberger	Altregierungsrat St. Gallen
Prof. Dr. Günther Schuh	Lehrstuhl für Produktionssystematik, WZL RWTH Aachen
Dr. Pepe Sonderegger	ks treuhandexperten ag / Universitätsrat
Beat Tinner	Kanton SG Volkswirtschaftsdepartement / Regierungsrat
Thomas Trachsler	Die Mobiliar / Mitglied der Geschäftsleitung
Dr. Daniel Tschudi	Weidmann Holding AG / Executive Vice President
Alexander von Witzleben	Arbonia Management AG / CEO
Jürg Zumtobel	Zumtobel Group AG

3.2 / Education

Prof. Dr. Martin Bader

- » RPV: Intellectual Property Management (7. Sem., Master)

Prof. Dr. E. Fleisch

- » Introduction to Operations Management - German, Bachelor Level (4./6. Sem.)
- » Research Seminar: Operations and Information Management
- » Research Seminar: Current research topics in technology and information management
- » HSG-Diplomprogramm Insurance Management
- » EMBA ETH HSG (emba X), Module: Product & Services Technologies

Lectures at ETH Zurich

- » Mastering Digital Business Models, Masterstufe D-MTEC
- » CAS ETH in Digital Health

Prof. Dr. Thomas Friedli

- » Business Excellence (4. Sem., Bachelor)
- » Doktorandenseminar: Kolloquium zur Forschung im Produktionsmanagement
- » Produktionsmanagement (7. Sem., Master)
- » Operative Exzellenz (OPEX) (7. Sem., Master)
- » Doktorandenseminar: Methoden des Technologiemanagements
- » Management of Industrial Companies (4. Sem., Bachelor)
- » Industrie 4.0 - Smart Production und Services (7. Sem., Master)

Lectures held at other Universities:

- » IIMT, Universität Fribourg, Process & Excellence Management
- » SMBS, University of Salzburg Business School, Executive MBA, Qualitäts- und Prozessmanagement

Prof. Dr. Oliver Gassmann

- » Innovationsmanagement (6. Sem., Bachelor)
- » Business Innovation I (7. Sem., Master)
- » Platform Economy (8. Sem., Master)
- » Business Model Design (8. Sem., Master)
- » Theories in Business Innovation (PhD)
- » Publishing in Management, Technology, and Innovation (PhD with ETH und EPFL)
- » EMBA 62 und 63 Technology- and Innovation Management
- » CAS HSG Transformation, Innovation Management
- » EMBA X
- » MBA-HSG, Business Model Innovation
- » Academic Director of «HSG-Highlights 2022»
- » CAS Business Innovation, Sportradar AG
- » HSG Collegium, convenor

Prof. Dr. D. Grichnik

- » Entrepreneurship (Bachelor)
- » Start Fellowship (Bachelor)
- » Start Global (Bachelor BWL)
- » Technologie Entrepreneurship (Master Business Innovation)
- » Entrepreneurship und Performance Management (Master in Computer Science)
- » Advanced Entrepreneurship (Master General Management)
- » PhD Colloquium Entrepreneurship I + II
- » Entrepreneurship (EMBA 59 Program: Main Lecturer)
- » Entrepreneurship (EMBA 60 Program: Main Lecturer)
- » Entrepreneurship (EMBA 61 Program: Main Lecturer)
- » Entrepreneurial Leadership (EMBA-X Program: Main Lecturer)
- » CAS Entrepreneurial Excellence (Main Lecturer)
- » CAS-HSG EVU-Manager (Guest Lecturer)
- » CAS Sportmanagement (Guest Lecturer)
- » Advanced COOP Management Programm (Guest Lecturer)
- » HSG Diplomprogramm Insurance Management (Guest Lecturer)

Asst. Prof. Dr. Naomi Häfner

- » Innovation Management (5. Sem., Bachelor)
- » Innovationsmanagement (6. Sem, Bachelor)
- » RPV: Developing an AI Strategy (9. Sem., Master)

Dr. Manuel Hess

- » Methods: Venture Growth Hacking (Master Business Innovation)
- » Entrepreneurial Finance (Master Business Innovation)
- » CAS Entrepreneurial Excellence (Co-Lecturer)

Prof. Dr. T. Kowatsch (till 31.07.2022)

- » Digital Health, English, Joint Medical Master, School of Medicine
- » Digital Health Project, English, Joint Medical Master, School of Medicine
- » Einführung in das Operations-Management – Digital, German, Bachelor Level (4./6. Sem.)

Lectures at ETH Zurich

- » Digital Health, English, Master level, D-MTEC
- » Assessing Digital Health Interventions Project, English, Master level, D-MTEC
- » CAS ETH in Digital Health

Prof. Dr. Maximilian Palmié

- » Capstone Project: Operations and Innovation Management (5. Sem., Bachelor)
- » R & D Management (7. Sem., Master)
- » Innovation und Führung (8. Sem., Master)
- » Managing Global Innovation (8. Sem., Master)
- » FPV: Innovationsmanagement in Smart Cities (8. Sem., Master)
- » Theories in Organization & Information Systems (PhD)

Prof. Dr. Christoph Wecht

- » Kreativitätstechniken für Innovationsteams (3. Sem., Bachelor)
- » Forschungs-, Praxis-, Ventureprojekt (7. Sem., Master)

Prof. Dr. Joakim Wincent

- » Paper clinic in general management (PhD)
- » Entrepreneurship (Bachelor)
- » International Entrepreneurship (Master)
- » Essence of Entrepreneurship at Hanken School of Economics (Master)
- » Entrepreneurship for PhD candidates in Finland (PhD)
- » Business experience at Hanken School of Economics (Master)
- » International business experience at Hanken School of Economics (Master)

Prof. Dr. F. Wortmann

- » Einführung in das Operations-Management – Digital, German, Bachelor Level (4./6. Sem.)
- » Introduction to Operations Management – Digital, Englisch, Bachelor Level (4./ 6. Sem.)
- » Designing Digital Business Models, Blockseminar, Bachelor Level
- » Platform Economy, Masterstufe SoM
- » EMBA ETH HSG (emba X), Modul: Product & Services Technologies
- » EMBA-HSG 62, Technologie- und Innovationsmanagement: Business Model Innovation in the Internet of Things
- » EMBA-HSG 63, Technologie- und Innovationsmanagement: Business Model Innovation in the Internet of Things
- » EMBA-HSG Highlights 2022, Digitale Plattformen
- » EMBA-HSG in Business Engineering 2022/23, Digitale Transformation: «Geschäftsmodelle im Internet der Dinge»
- » EMBA-HSG Alumni – Refresher, Digitale Transformation
- » HBM Unternehmerschule (ES-HSG), Leadership Development Program
- » Senior Management Program CAS HSG 2022, Geschäftsmodelle und digitale Transformation
- » CAS HSG Innovation durch IT 2022/23, Modul 1, «Digitale Transformation»

Lectures at ETH Zurich

- » CAS ETH in Digital Health

Prof. Dr. Maximilian von Zedtwitz

- » Managing Innovation in China (4. Sem., Bachelor)



3.3 / Publications (Selection)

(for full publication list see: www.alexandria.unisg.ch)

Edited Volumes

Adams, R., Grichnik, D., Pundziene, A., Volkmann, Ch., (Eds.) (2022): Artificiality and Sustainability in Entrepreneurship. Springer Verlag, Berlin Heidelberg.

Monographs

Grichnik, D., Hess, M., Reuther, J., Stöckel, A., (2022): Corporate Venturing Navigator: Conceptual development, Working Paper.

Book Chapters

Bérubé, C., Fleisch, E. (2022): Voice-based Conversational Agents for Sensing and Support: Examples from Academia and Industry. In N. Jacobson, T. Kowatsch, & L. A. Marsch (eds.), Digital Therapeutics for Mental Health and Addiction: The State of the Science and Vision for the Future (1st ed.), Elsevier, Academic Press: Cambridge, MA, USA, 978-0-323-90045-4.

Pundziene, A., Adams, R., Grichnik, D., Volkmann, Ch. (2022): Artificiality and Sustainability in Entrepreneurship. Exploring the Unforeseen and Paving the Way to a Sustainable Future [Editorial]. In: Adams, R., Grichnik, D., Pundziene, A., Volkmann, Ch. (Eds.), Artificiality and Sustainability in Entrepreneurship. Springer Verlag, Berlin Heidelberg, pp. 3-16.

Refereed journals

Budde, L., Benninghaus, C., Hänggi, R., & Friedli, T. (2022). Managerial Practices for the Digital Transformation of Manufacturers. Digital, 2(4), Art. 4. <https://doi.org/10.3390/digital2040025>

Budde, L., Liao, S., Haengggi, R., & Friedli, T. (2022). Use of DES to develop a decision support system for lot size decision-making in manufacturing companies. Production & Manufacturing Research, 10(1), 494–518. <https://doi.org/10.1080/21693277.2022.2092564>

Burkhard, B., Sirén, C., van Essen, M., Grichnik, D., Shepherd, D. (2022): Nothing ventured, nothing gained: A meta-analysis of CEO overconfidence, strategic risk taking, and performance. In: Journal of Management (JOM), doi: 10.1177/01492063221110203.

Christen, T., Hess, M., Grichnik, D., Wincent, J. (2022): Value-based pricing in digital platforms: A machine learning approach to signaling beyond core product attributes in cross-platform settings. In: Journal of Business Research (JOBR), JOBR-D-21-03876R3.

Fellows, M., Friedli, T., Li, Y., Maguire, J., Rakala, N., Ritz, M., Bernasconi, M., Seiss, M., Stiber, N., Swatek, M., & Viehmann, A. (2022): Benchmarking the Quality Practices of Global Pharmaceutical Manufacturing to Advance Supply Chain Resilience. AAPS Journal, 24(6), Art. 6. <https://rdcu.be/cXY2A>

Hodapp, D., Hawlitschek, F., Wortmann, F., Lang, M., Gassmann, O. (2022): Key Lessons from Bosch for Incumbent Firms Entering the Platform Economy. MIS Quarterly Executive: Vol. 21: Iss. 2, Article 3. Available at: <https://aisel.aisnet.org/misqe/vol21/iss2/3>

Jakob, R., Harperink, S., Rudolf, A., Fleisch, E., Haug, S., Mair, J., Salamanca-Sanabria, A., Kowatsch, T. (2022): Factors influencing adherence to mhealth apps for prevention or management of noncommunicable diseases: Systematic review, 2022-05-25.

Januszek, S., Macuvel, J., Friedli, T., & Netland, T. H. (2022): The role of management in lean implementation: Evidence from the pharmaceutical industry. International Journal of Operations & Production Management, ahead-of-print(ahead-of-print). <https://doi.org/10.1108/IJOPM-02-2022-0129>

Jokic, S., Cleres, D., Rassouli, F., Steurer-Stey, C., Puhan, M., Brutsche, M., Fleisch, E., Barata, F. (2022): Tripletcough: Cougher identification and verification from contact-free smartphone-based audio recordings using metric learning. IEEE Journal of Biomedical and Health Informatics, 26(6):2746-2757, 2022-06.

Lamprecht, C., Gebauer, H., Fleisch, E., Wortmann, F. (2022): A KPI Set for Steering the IoT Business in Product Companies. Research-Technology Management, 65(2):53-63, 2022.

Lingens, B.; Seeholzer, V. & Gassmann, O. (2022): The architecture of innovation: how firms configure different types of complementarities in emerging ecosystems, Industry and Innovation, DOI: 10.1080/13662716.2022.2123307.

Liu, S., Koch, K., Zhou, Z., Maritsch, M., He, X., Fleisch, E., Wortmann, F. (2022): Towards non-intrusive camera-based heart rate variability estimation in the car under naturalistic condition. IEEE Internet of Things Journal, 9(14):11699-11711, 2022-07-15.

Lukic, Y., Teepe, G., Fleisch, E., Kowatsch, T. (2022): Breathing as an input modality in a gameful breathing training app (breeze 2): Development and evaluation study. JMIR Serious Games, 10(3):e39186, 2022.

Palmié, M.; Miehé, L.; Oghazi, P.; Parida, V. & Wincent, J. (2022): The evolution of the digital service ecosystem and digital business model innovation in retail: The emergence of meta-ecosystems and the value of physical interactions, Technological Forecasting and Social Change 177, 121496.

Palmié, M., Rüegger, S., & Parida, V. (2023): Microfoundations in the strategic management of technology and innovation: Definitions, systematic literature review, integrative framework, and research agenda. Journal of Business Research, 154, 113351.

Rad, F. F., Oghazi, P., Palmié, M., Chirumalla, K., Pashkevich, N., Patel, P. C., & Sattari, S. (2022): Industry 4.0 and supply chain performance: A systematic literature review of the benefits, challenges, and critical success factors of 11 core technologies. *Industrial Marketing Management*, 105, 268-293.

Salamanca-Sanabria, A., Castro, O., Alattas, A., Teepe, G., Leidenberger, K., Fleisch, E., Tudor Car, L., Müller-Riemen-schneider, F., Kowatsch, T. (2022): Top-Funded Companies Offering Digital Health Interventions for the Prevention and Treatment of Depression: A Systematic Market Analysis. *Journal of Medical Internet Research Preprints* 04/07/2022:40754 preprints.jmir.org/preprint/40754

Schäfer, F., Gebauer, H., Gröger, C., Gassmann, O., Wortmann, F. (2022): Data-driven business and data privacy: Challenges and measures for product companies. *Business Horizons*, in press.

Schuhmacher, A.; Gassmann, O.; Bieniok, D.; Hinder, M. & Hartl, D. (2022): Open innovation: A paradigm shift in pharma R&D?, *Drug Discovery Today*, Volume 27, Issue 9, September 2022, 2395–2405 <https://doi.org/10.1016/j.drudis.2022.05.018>.

Schweitzer, F.; Palmié, M.; Gassmann, O.; Kahlert, J. & Roeth, T. (2022): Open innovation for institutional entrepreneurship: how incumbents induce institutional change to advance autonomous driving, *R&D Management* 52, 3, 2022, 466-483.

Wörner, A., Tiefenbeck, V., Wortmann, F., Meeuw, A., Ableitner, L., Fleisch, E., Azevedo, I. (2022): Bidding on a peer-to-peer energy market - an exploratory field study. *Information Systems Research*, 33(3):794-808, 2022-09.

Conference Contributions

Grothkopp, M., Bernasconi, M., & Friedli, T. (2022): A Holistic View On Production Systems Management. 3rd Conference on Production Systems and Logistics, 672–681.

Hudecheck, M., Siren, C., Grichnik, D., & George, G. (2022): Investigating Entrepreneurial Venture Resource Acquisition through the Lens of Media Dynamics. In: 82nd Annual Meeting of the Academy of Management (AOM), 5. August - 9. August 2022.

Kaiser, J., Saretz, B., & Friedli, T. (2022): Strategic site reasons re-visited, digging deeper in the rationale of global manufacturing networks: An empirical study from a headquarters perspective. *Proceedings of the 6th World Conference on Production and Operations Management - P&OM 2022 -*, 364-373. <https://www.alexandria.unisg.ch/267528/>

Lehmann, V., Zueger, T., Maritsch, M., Notter, M., Schallmoser, S., Bérubé, C., Albrecht, C., Kraus, M., Feuerriegel, S., Fleisch, E., Kowatsch, T., Lagger, S., Laimer, M., Wortmann, F., Stettler, C. (2022): Noninvasive hypoglycemia detection during real car driving using in-vehicle data. volume 71, pages 234–OR, Alexandria, VA, 2022-06. American Diabetes Association. 82nd Scientific Sessions of the American Diabetes Association (ADA 2022); Conference Location: New Orleans, LA, USA; Conference Date: June 3-7, 2022.

Leuenberger, A., Hess, M., Wincent, J., & Grichnik, D. (2022): How Women Use Network Strategies to Break Male Elite Cliques and to be Elected on Venture Boards. In: 82nd Annual Meeting of the Academy of Management (AOM), 5. – 9. August 2022.

Rösler, J., Tienken, C., Friedli, T. (2022): Digital servitization in globalized markets: Studying the role of external factors. *Proceedings der 7. Jahrestagung der Wissenschaftlichen Kommission Dienstleistungsmanagement des Verbands der Hochschullehrerinnen und Hochschullehrer für Betriebswirtschaft e.V.*, 14.

Rösler, J., Gebauer, H., Friedli, T. (2022): Digital servitization in healthcare: A paradox perspective on provider-customer-tensions. *Proceedings of the 9th International Conference on Business Servitization (ICBS 2022)*, 57-62.

White papers

Gassmann, O.; Häfner, N.; Wagner, D. & Rüdiger, F. (2022): Rethinking the Role of Universities in the Future of Work and Learning. 2022. - HSG/St. Gallen Symposium. - St. Gallen. White Paper.

Wortmann, F.; Jung, S.; Bronner, W. & Gassmann, O. (2022): The Platform Navigator: 88 Patterns to Design and Implement Platform Business Models. White Paper.

Contributions in practical journals

Bernasconi, M., Steiger, G.-A., Ritz, M., & Friedli, T. (2022). Learn from your Metrics—Using Operational Data to Improve Operations in Pharmaceutical Manufacturing and QC Labs. *Pharma Focus Asia*, 48, 52–55.

Gassmann, Oliver (2022): Ecosystems-Entlang der Customer Journey zu Ecosystems. In: *Forschungsreihe GfM* (2022), 4/22.

Grichnik, D., Greger, M., Mattmann, M., Trinkner, U., (2022): Ein öffentlicher Innovationsfonds für die Schweiz, *Die Volkswirtschaft*, Bern, online 23.06.2022.

Grichnik, D., Greger, M., Trinkner, U., Mattmann, M., (2022), Grundlagen zur Einführung eines Schweizer Innovationsfonds, Staatssekretariat für Wirtschaft SECO, Direktion für Standortförderung, Ressort KMU-Politik, Bern.

Grichnik, D., Gössi, P., (2022), Mit einem staatlichen Innovationsfonds anschlussfähig bleiben. In: *Neue Zürcher Zeitung (NZZ)*, 20.06.2022

Steiger, G.-A., Pirrone, L., Ritz, M., & Friedli, T. (2022): Benchmarking Pharmaceutical Quality Control Labs—Holistic assessment of operational excellence in pharmaceutical companies. *Pharma Focus Asia*, 47.

3.4 / Talks (Selection)

Prof. Dr. E. Fleisch

The Digital Pill: What Everyone Should Know about the Future of Our Healthcare System. Keynote at CAS ETH in Digital Health Cohort 1, Module 1, online, 07.02.2022

«Collaborative Advantage? Lehren aus der globalen Lieferkettenkrise». St. Gallen Symposium, Hidden Champions Roundtable, 05.05.2022

Where are digital biomarkers and digital health interventions taking us? Dartmouth College, CTBH, Hanover NH, USA, 11.05.2022

Where are digital biomarkers and digital health interventions taking us? MIT, AgeLab, Cambridge, MA, USA, 12.05.2022

Trends & Opportunities Digital Health. CSS Health Lab Workshop, Luzern, 30.06.2022

Warum Technik und Management Schlüssel zur «Healthy Longevity» sind. Foundation Board Meeting ITEM-HSG, St. Gallen, Talk, 16.11.2022

Prof. Dr. Th. Friedli

Opening Speech Consortial Benchmarking Artificial Intelligence in Operations (online), 08.02.2022

Managing Performance of Dynamic Production Networks, 4. Expertenforum Globale Produktion, Frankfurt am Main, 12.05.2022

The Future of Production Systems, Conference on Production Systems and Logistics (CPSL), Vancouver, Canada, 19.05.2022

Shaping the Future of Manufacturing Quality in the Pharmaceutical Industry – From Quality Metrics to Quality Management Maturity and Beyond, UL ComplianceWire Knowledge Summit, Princeton NJ, USA (online), 15.06.2022

Produktionsmanagement und Pharma, St. Galler Gesundheitsforum, St. Gallen, 21.09.2022

From Quality Metrics to Quality Management Maturity and beyond – Insights from St.Gallen’s work for the USA FDA and conclusions for the IAQ, Osaka, Japan (online), 28.09.2022

Global Production Strategies, Referat Projekt-Abschlussmeeting, St. Gallen, 28.09.2022

Shaping the Future of Manufacturing Quality – From Quality Metrics to Quality Management Maturity and beyond. Quality & Regulations Conference, Parenteral Drug Association (PDA), Amsterdam, Niederlande, 05.10.2022

Operational Excellence in the Pharmaceutical Industry – and beyond, Pfizer International Manufacturing Excellence Meeting, Peapack NJ, USA, 12.10.2022

Robustheit, Resilienz & Reaktionsfähigkeit: Schlüssel zur Sicherung und Stärkung der Wettbewerbsfähigkeit, St. Galler Produktionsmanagement-Tagung, St. Gallen, 18.10.2022

Shaping the Future of Quality in Manufacturing – Learnings from our FDA Research. Insights from St.Gallen’s work for the USA FDA and generalized conclusions for Quality Management, St. Galler Produktionsmanagement-Tagung, St. Gallen, 19.10.2022

Global Production 2022+ – Analyze now to be ready tomorrow, 5. China Wirtschaftsforum, Frankfurt am Main, 20.10.2022

Strategisches Management globaler Produktionsnetzwerke, wbk Institut für Produktionstechnik am Karlsruher Institut für Technologie (online), 31.10.2022

Operational Excellence & Global Production Networks, Advanced Management Program IIM Bangalore und FIM-HSG, St. Gallen, 02.11.2022

Digitalisierung 2022 – Von Prozessen zu Geschäftsmodellen, Speech Salzburg AG, Salzburg, 09.11.2022

Modelle und Ansätze zum Komplexitätsmanagement in Zeiten der Nachhaltigkeitswende, 8. Complexity Management Congress, Aachen, 15.11.2022

From Quality Metrics to Quality Management Maturity and beyond, Stiftung zur Förderung von Technologiemanagement, Technologiepolitik und Technologietransfer, St. Gallen, 17.11.2022

Decoding the DNA of Swiss Manufacturing – A taxonomy of competitive capabilities at the example of the Swiss watchmaking industry. 53rd Annual Conference of the Decision Sciences Institute, Houston TX, 19.11.2022

Future of Production Systems, Speech Consortial Benchmarking, St. Gallen, 07.12.2022

Prof. Dr. O. Gassmann

Future of Universities, Rektoratsklausur, 17.01.2022

Connected Business: Werte schaffen, Universal Home Gira, Radevormwald, 16.02.2022

Future of Ecosystems, Zühlke, Schlieren, 09.03.2022

Driving Value in the Platform Economy, BMI-Think Tank, Zürich, 07.04.2022

Connected Business, St. Gallen Symposium, St. Gallen, 05.05.2022

The Future of Work and Learning, St. Gallen Symposium, St. Gallen, 06.05.2022

Emerging Strategy and Execution, IPSEN workshop, Paris, 11.-12.7.2022

Business Model Innovation: Lessons learned from pitfalls and best practices, BMI Study Trip Japan, Tokyo, 26.08.-01.09.2022

Connected Business – Wie Wert in einer vernetzten Wirtschaft kreiert wird, GfM Platin Event, Bad Ragaz, 02.09.2022

Boosting Creativity with Innovation, Sonceboz, 12.09.2022

Wertschöpfungsweltmeister – aber wie?, HSG Highlights, 13.09.2022

Geschäftsmodelle entwickeln, Fraunhofer-Forschungsmanagement, 22.-23.09.2022

Zukunft der Universitäten?, Senatsklausur, 23.09.2022

Business Model Innovation in the Age of Data, Digital Insurance Agenda, 01.11.2022

Business Model Innovation: Wie kann ich Industrien revolutionieren? Youngpreneurs, 22.11.2022

Smart City - Von der Utopie zur Realität, CAS Smart Mobility Management, St.Gallen, 23.11.2022

Connected Ecosystems for Innovation, Zühlke Singapore, 8.12.2022

Towards Business Model Innovation – ways to create and capture value for the Ukraine, University of Odessa, 13.12.2022

Prof. Dr. D. Grichnik

Startup Navigator: Guiding your entrepreneurial journey; SIMcubator Bootcamp, Bangladesh, Online-Discussion, Feb. 2022

Mystery and Challenges of Corporate Venture Capital; START Summit, St. Gallen, Panel Discussion, March 2022

HSG Founder of the Year, Raffael Wohlgensinger; START Summit, St. Gallen, Laudatio, March 2022

HSG Entrepreneurs Fund, The Future of Startups «made@HSG», UNI-Rektoratssitzung, St. Gallen, Talk, April 2022

Schweizer Innovationsfonds, Unicorn Nation #1 CH, HSG Gründungsfonds; Stiftungsratssitzung ITEM-HSG, Herisau, Talk, May 2022

Wirksame Führung und Aufsicht von Ventures; «Der Startup-Navigator auf VR-Ebene»; Swiss Board School, St. Gallen, Talk, May 2022

Entrepreneure, die Rockstars in Krisenzeiten oder doch mehr als reine Popkultur?; HSG Mentoring Programm, St. Gallen, Talk June 2022

Kantonale, nationale und internationale Startup-Förderung, Kantonsrat Kanton St. Gallen, St. Gallen, Talk, August 2022

Kantonale Startup-Strategie 2030, Bildungsdepartement des Kantons St. Gallen, Talk, December 2022

Prof. Dr. Manuel Hess

How Women Use Network Strategies to Break Male Elite Cliques and to be Elected on Venture Boards; 82nd Annual Meeting of the Academy of Management (AOM), Seattle (Washington), Talk, August 2022

Falling into your own traps: entrepreneurs, startup culture, and unethical behavior; Rencontres de St-Gall, Talk, August 2022

Prof. Dr. J. Wincent

Gender equality. JÄMY. 12.02.2022

Top level entrepreneurship research. Finish Academy. 10.11.2022

3.5 / Permanent Tasks

Prof. Dr. E. Fleisch

- » Co-Chair Bits to Energy Lab
- » Co-Chair of the Center for Digital Health Interventions
- » Member of the steering committee of the CSS Health Lab
- » Permanent guest on the steering committee (without voting rights) of the Bosch IoT Lab
- » Permanent guest on the steering committee (without voting rights) of the Mobiliar Analytics Lab
- » Member of Senate and Department SoM HSG
- » Member of the Habilitation Committee of the HSG
- » Member of the Executive Committee of the Research Centre for Retail Management IRM-HSG
- » Member of the Executive Committee of the Institute for Computer Science ICS-HSG
- » Member of the HSG SQUARE Project Management Board
- » Member of various academic associations

Prof. Dr. Th. Friedli

- » Associate Member of the International Academy for Quality
- » Lecturer EMBA Program “Process & Excellence Management” and Scientific Council Member at iimt, University of Fribourg
- » Lecturer EMBA at the University of Salzburg, Process- and Quality Management
- » Advisory Board Member at SQS – Schweizerische Vereinigung für Qualitäts- und Managementsysteme

- » Responsible for the Military Liaison Office at the University of St. Gallen
- » President of the jury, REHAU-Wirtschaftspreis
- » Member of the Research Advisory Board at the Complexity Management Academy, Aachen
- » Member of the expert committee for the degree program industrial engineering at the university of applied sciences «OST»
- » Member of the Innovation Board for the NTN Photonics

Prof. Dr. O. Gassmann

- » Co-founder and Director of the Global Center for Entrepreneurship and Innovation (GCEI-HSG)
- » Co-founder and Director of Center for Innovation (CfI-HSG)
- » Chairman of Recruiting Committee for the President of the University of St. Gallen
- » Faculty Member of Senate and School of Management HSG
- » Member of Executive Education Committee HSG (WBK)
- » Member of the Tenure and Promotion Committee
- » Member of the board of directors at Institute for Marketing and Customer Insight (IMC-HSG)
- » Member of the board of directors at Institute for Mobility (IMO-HSG)
- » Member of the board of directors at Center for Mobility (CFM-HSG)
- » Steering Committee Bosch IoT Lab (HSG/ETH)

» GLORAD-Research Center, Shanghai-St. Gallen

» Member of the board of the Swiss Federal Institute of Intellectual Property

» Member of International Advisory Board, Alexander von Humboldt Institute (Berlin)

» Member of the board (Hoffmann Neopac, Weidmann, Zühlke)

» International Advisory Board of California Management Review

» Editorial Board of R&D Management; Creativity and Innovation Management; IJEIM

Prof. Dr. D. Grichnik

» Co-Founder and Co-Director Global Center for Entrepreneurship and Innovation, University of St.Gallen (GCEI - HSG)

» Director of the Center for Entrepreneurship, University of St.Gallen (CfE-HSG),

» Member of the School of Management, University of St.Gallen (SoM)

» Member of the Senate and Representative of the School of Management in the Senate Committee

» President of the Executive Committee, Institute for Media and Communications Management, University of St.Gallen (MCM-HSG)

» Member of the Executive Committee, Institute of Business Education and Educational Management, University of St.Gallen (IWP-HSG)

» Member of the Executive Committee, Institute of Behavioral Science and Technology (IBT-HSG)

» Member of the Executive Committee, Institute of Computer Science, University of St.Gallen (ICS-HSG)

» Member of the Advisory Board, Swiss Venture Group

» Member of the Editorial Board of the JBV – Journal of Business Venturing, Entrepreneurship Theory and Practice

» Member of the Research Committee University of St.Gallen

» Board Member Steering Committee Talent Kick Program

» President of the Jury «HSG Founder of the Year»

» Member of the Committee HSG Spin-off Label

» Member of the Jury «Startfeld Diamand», St.Galler Kantonalbank

» Member of the Foundation «Switzerland Innovation»

» Expert at various Research Institutes, Funding Institutions and Universities

Prof. Dr. J. Wincent

» Professor of Entrepreneurship and Management, Hanken School of Economics, Finland

» Regular reviewer for management journals such as the Academy of Management Journal, Journal of Management Studies

» Current member of editorial review board of Journal of Business Venturing

» Action Editor of the academic journal Entrepreneurship: Theory and Practice

3.6 / Doctoral Theses

Spring 2022

Dr. Christoph Blum

Designing Industrial Companies’ Procedural Backbone to Master Digital Service Innovation - A Dynamic Capabilities Perspective
Prof. Dr. Thomas Friedli, Prof. Dr. Sabine Seufert

Dr. Moritz Classen

Toward Digital Service-Sales Ambidexterity in Industrial Firms
Prof. Dr. Thomas Friedli, Prof. Dr. Christian Hildebrand

Dr. Steffen Eich

Using data science to find predictors of adverse regulatory inspections – Enhancing quality risk management in the pharmaceutical industry
Prof. Dr. Thomas Friedli, Prof. Dr. Dietmar Grichnik

Dr. Claudio Lamprecht

How companies turn connected products into product-service systems – Insights from the discrete manufacturing industry
Prof. Dr. Elgar Fleisch, Prof. Dr. Oliver Gassmann, Prof. Dr. Felix Wortmann

Dr. Shu Liu

The Empathetic Car: Detecting Emotion and Well-being of Drivers under Naturalistic Condition
Prof. Dr. Elgar Fleisch, Prof. Dr. Felix Wortmann, Prof. Dr. Zimu Zhou

Dr. Dominik Remling

Performance Management in International Manufacturing Networks – an Agency Perspective
Prof. Dr. Thomas Friedli, Prof. Dr. Klaus Möller

Dr. Marten Ritz

Operational Excellence across Manufacturing and Quality Control – A Guideline to Avoid Optimizing Silos in Pharmaceutical Production
Prof. Dr. Thomas Friedli, Prof. Dr. Torsten Tomczak

Dr. Kilian Schmück

Dezentralized Platform Ecosystems – Context, Design, and Implications
Prof. Dr. Oliver Gassmann, Prof. Dr. Elgar Fleisch

Dr. Veronika Seeholzer

Development of Value Propositions for Ecosystem Initiatives: A Qualitative Analysis
Prof. Dr. Oliver Gassmann, Prof. Dr. Marcus Schögel

Dr. Yaro Wolff

Investment Decision-Making and Venture Performance Indicators in the Venture Capital Industry
Prof. Dr. Dietmar Grichnik, Prof. Dr. Klaus Möller

Autumn 2022

Dr. George Gyarteh Boateng

Multimodal Emotion Recognition Among Couples from Lab Settings to Daily Life Using Smartwatches
Prof. Dr. Elgar Fleisch, Prof. Dr. David Frederick Kotz, Prof. Dr. Tobias Kowatsch

Dr. Julian Macuvele

Impacting Shop Floor Behaviour in the Context of Pharmaceutical Operational Excellence Programs – A Management Control Perspective
Prof. Dr. Thomas Friedli, Prof. Dr. Johannes Rüegg-Stürm

Dr. Nicolas Ponce

Operationalisierung von Produktionssystemen – Steigerung der Leistungsfähigkeit produzierender Unternehmen durch dateninformierte Entscheidungen am Beispiel der Pharmaindustrie
Prof. Dr. Thomas Friedli, Prof. Dr. Wolfgang Stölzle



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