



Bern University
of Applied Sciences

Research Group Management Science, Innovation, Sustainability and Entrepreneurship (MISE)

Competences

The research group «Management Science, Innovation, Sustainability and Entrepreneurship» (MISE) focuses on the development of management methods and tools for the analysis, modelling, simulation and validation of corporate ecosystems.

The main focus is on practical projects and publications on topics such as innovation diffusion, instruments for the development of digital strategies and innovation management, as well as the application of simulation methods.

Selected Projects

- ProsumerLab (https://www.ti.bfh.ch/service/news/news_details/article/prosumer-lab-an-der-bfh-ti.html)
- Use-it-wisely (www.use-it-wisely.eu), EU-FP7-Projekt
- BusinessLab: Development of a validation methodology for business models
- Medicine Shortages (http://www.cost.eu/COST_Actions/ca/CA15105)

Selected Publications

- Groesser S. N., Reyes-Lecuona A. and Granholm G. Dynamics of Long-Life Assets, Springer-Verlag, 2017 (<http://www.springer.com/de/book/9783319454375>).
- Huber D.; Kaufmann H.; Steinmann M. Bridging the Innovation Gap – Bauplan des innovativen Unternehmens. Springer-Verlag, 2015.
- Groesser S. N., Jovy N. Business model analysis using computational modeling: a strategy tool for exploration and decision-making. Journal of Management Control 2016; 21 (1): 61-88.
- Groesser, S. N. and Zeier R. Systemic Management for Intelligent Organizations: Concepts, Model-Based Approaches, and Applications. Springer-Verlag, 2012.

Collaboration

- University of St. Gallen
- University of Bergen
- Swisscom
- Verein Smart Grid Schweiz
- Industrie 2025
- PostFinance
- SBB

Staff Members

- Prof. Dr. Stefan N. Grösser
- Yacine Bouazdia
- Prof. Dr. Ina Goller
- Prof. Dr. Jörg Grimm
- Prof. Bramwell Kaltenrieder
- Patrik Marti
- Dr. Maria Franco Mosquera

Contact

Prof. Dr. oec. HSG Stefan N. Grösser
Professor for Business Analytics and Strategic Management
+41 32 321 62 75
stefan.groesser@bfh.ch

Bern University of Applied Sciences
Institute for Data Applications and Security IDAS
Management Science, Innovation, Sustainability and
Entrepreneurship (MISE)
Höheweg 80
CH-2501 Biel/Bienne
Switzerland



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Medicine Shortages – Reframing and negotiations of agreement between key stakeholders

Project Description

Medicine shortages have become a global phenomenon and are recognized to affect all health systems. It is a problem that has grown to become a crisis in terms of delivering patient care. Medicine affected by shortages includes those used to treat cancer, infections, emergencies, cardiovascular conditions, anaesthetic products, neurology and many more. The major challenge is that the economic incentive system in place is aligned in such a way that participating stakeholders are motivated to maneuver themselves into a deadlock situation. A critical issue today is that the key players do not collaborate sufficiently to guarantee a security of supply of essential medicines. What is needed is a systems perspective to understand and loosen this deadlock situation as well as to create innovative incentives on a legal and regulatory level.

Relevance of the challenge

Shortages result in the suffering of individuals and negative consequences for an economy. An option to overcome shortage situations is to use a different medicine as a substitute. However, alternatives are not always feasible and available. When shortages arise, risk increases through substitution from other excipients, other concentrations, foreign language vials, or untranslated package leaflets. Such risks have not yet been quantified in a scientifically credible way.

Project objectives

This project intends to contribute to how medicine shortage problems can be detected, reduced, or avoided respectively by employing a systemic ecosystems perspective. Several steps will need to be developed to fulfill the set objectives. First, the list of factors and causes for medicine and nutraceutical shortages need to be updated. Second, this research is to be shared with relevant actors. And third, a collaborative community of relevant stakeholders is to be established to overcome these causes.

Methodology

The general approach in this project is a multimethod research design. It follows the participatory action research principles with relevant system actors.

Results

This project intends to contribute to how medicine shortage problems can be detected, reduced, or avoided respectively by employing a systemic ecosystems perspective. All key players along the supply chain should have an up-to-date, written policy for managing shortages. That policy should include the need for risk assessment which will cover the impact of the shortage and the actions that should be taken to limit those effects. These key players assume their responsibility in cooperating with any internationally and nationally agreed scheme to reduce the effect of such shortages.



Project Team at ICTM

Project period: 2017 – 2019
Project leader: (TI) Prof. Dr. Stefan Grösser
Project members: Helena Jenzer, Patrick Maag

Contact

Prof. Dr. Stefan N. Grösser
+41 32 321 62 75
stefan.groesser@bfh.ch

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Research Group Management Science, Innovation, Sustainability and Entrepreneurship (MISE) Use it Wisely (UIW)

Initial situation

The current total of European Exports amounts to 1.5 Billion Euros a year of which machinery and transport equipment exports amount to 650 Million. The export industry employs 7.4 million people in 872'000 companies producing 5.5% of the GDP of the EU. The industries face major challenges such as global offshoring, rapid business environment changes, shrinking investment budgets and environmental pressures. The UIW project unites actors from research and practice from six different sectors (mining, shipping, spacecraft, trains, trucks, and office furniture). The product life cycle ranges from 9 to 30 years which results in different challenges in upgrading products and services.

Project objectives

The project aims to provide a platform for the partners to improve the upgrading cycles in their industries. The resulting case studies provides input for web platform to distribute tools and methods to shorten upgrading cycles in capital intensive assets. By tackling this challenge the resulting products and services generate a lower environmental impact, increase employment in knowledge work in the European Union, and provide customers with resource savings. Longer lasting products and services enhance furthermore the use of resources and increase the competitiveness of the industries.

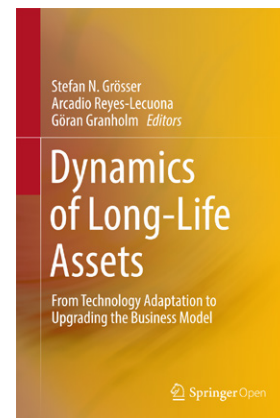
Methodology

Developing a dynamic model consists of developing first a causal loop diagram to document the causal relationships of the system in question. This is then used as an input to develop quantitative simulation models. Then, the behavior and structure of the models are discussed with the companies. This adds validity to the models. This step is then repeated multiple times until the structure and behavior are reasonable with available data and expert judgments. Finally, the model is populated with measured data and calibrated to the data entered. The calibrated model can then be used for scenario and policy analysis to foster decision support.

Results

The BFH provides modeling workshops for our partners. The modeling workshops allow partners to use the system dynamics methodology to structure and increase their understanding of their industry system they are operating in. The results of the modeling workshops are qualitative or quantitative simulation models. The BFH supports partners in the development of scenarios and policies and their respective interpretation. The models are mostly about organizations and industries. System dynamics models can be used

to determine the effects of scenarios and policies but also to test a manager's decision-making and are used in a variety of sectors such as strategic management, corporate development, and public policy.



Some results are accessible in this Springer publication:
<http://www.springer.com/de/book/9783319454375>

More information

Project period: 2013 – 2016

Project leader

Prof. Dr. Stefan Grösser

Project members

- Stefan Katz
- Adrian Stettler

Partner

European Union

Website: www.use-it-wisely.eu

Contact

Prof. Dr. Stefan N. Grösser

+41 32 321 62 75, stefan.groesser@bfh.ch

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Circular business models for the solar power industry: EU-H2020 Project CIRCUSOL

Project Description

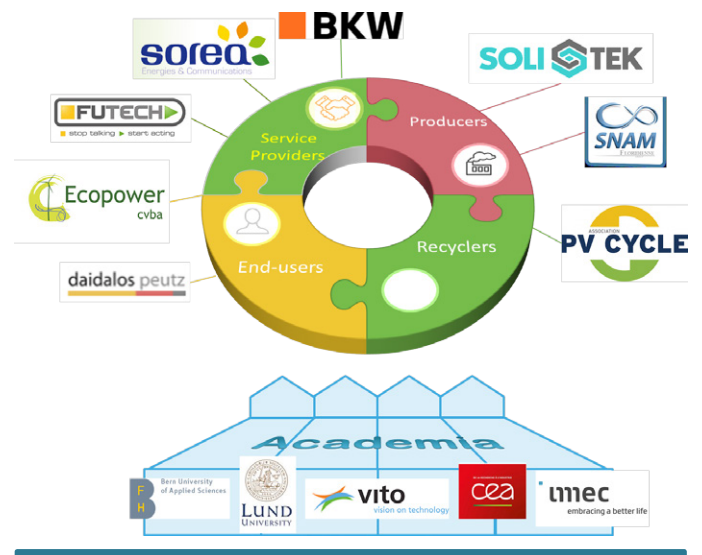
Solar power is a rapidly growing industry. The main objective of the EU-H2020 research project CIRCUSOL is to provide systemic circular business solutions to the solar power industry. The solar power sector is well suited for such business models. They have the potential to deliver double benefits on resource efficiency and low carbon emission.

Project Objectives

- **Demonstrate real benefits of product-service business models for resource efficiency in the solar power sector** by installing second-life PV-modules and batteries in three large-scale demonstrators under contracts in the project; and by simulating the long-term impact on circular economy indicators with the diffusion of designed business models.
- **Demonstrate market potential and business viability of solar power business models by implementing solar power business models** in five large-scale real-life demonstrators covering three major end-user segments (residential, commercial and utility) in three European countries (France, Belgium, Switzerland). Early market adoption at regional level will be tested in two of the demonstrators.
- **Pave way for high supply quality and market confidence in second-life PV panels and batteries** by developing cost-effective labelling and certification protocols, which will be delivered to standardization committees and EU Ecolabelling initiatives before the end of the project.
- **Underpin economic viability of remanufactured electric vehicle (EV) battery for stationary renewable applications**, by developing an in-depth cost and application analysis for remanufactured EV batteries, and by deploying the remanufactured batteries at two demonstrator sites under commercial contracts.

Project Partner

The CIRCUSOL consortium has 10 industrial partners, representing the full supply chain: manufacturer, energy service provider, remanufacturer, recycler, and producer responsibility organization. Civil society participation is strong. End-user perspective is represented. Adjacent actors, such as the financing sector and public authorities, are engaged through the project stakeholder network.



Project Team at Business Ecosystem Management

Prof. Dr. Stefan Grösser
Adrian Stettler
Davood Qorbani
Patrick Maag

Contact

Prof Dr. Stefan Grösser
Professor for Strategic Management and Organization
+ 41 32 321 62 75
stefan.grosser@bfh.ch

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