

Management for Professionals

Tobias Redlich
Manuel Moritz
Jens P. Wulfsberg *Editors*



Co-Creation

Reshaping Business and Society in
the Era of Bottom-up Economics



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Editors

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in the Era of Bottom-up Economics

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Testimonials

“A must-read for decision-makers looking to innovate their companies’ business models—from ideation to marketing.”

—Dr.-Ing. Michaela Colla, *K-GXI Leader—Industry 4.0 at Volkswagen*

“Simply put, co-creation is the future of work. With technology morphing the way we work and young people wanting to tackle problems that matter, co-creation is the sandbox where the world can come together to solve big challenges. Plus, co-creation rapidly delivers products with built-in market fit.”

—Megan Brewster, *Vice President of Advanced Manufacturing at Launch Forth*

“Successful leaders will co-create the future. This book is an excellent starting point.”

—Jürgen Bilo, *Managing Director co-pace GmbH, The Startup Organisation of Continental AG*

“Richly illustrated with real examples of co-creation as it happens, it challenges traditional in-house R&D.”

—Johannes Rath, *CDO (Chief Digital Officer), SIGNAL IDUNA Gruppe, Germany*

“This is a very timely contribution by the leaders in this discipline from Germany. Co-creation is changing the way we live and do business. This book explores how this change happens and what is needed for a successful integration of this change. A must-read by decision-makers, business and engineering graduate school students and researchers.”

—Tugrul U. Daim, *Ph.D. and PICMET Fellow Professor and Director of Technology Management Doctoral Program, Editor in Chief, IEEE Transactions on Engineering Management, Department of Engineering and Technology Management at Portland State University*

Preface

In 2016, we initiated a new format called “Interdisciplinary Conference on the Future of Value Creation” as we had identified an increasing need for multiple scientific perspectives on this matter. We were astonished by the insights from experts of very different disciplines ranging from engineering and economics to social sciences and law and immediately felt supported and encouraged that this is the right way to go.

However, one question was left unanswered: how to spread the word not only to the scientific community but also to the practitioners’ world and invite decision-makers to discuss our issues? This book is one answer to that question.

We invited distinguished scholars and experts from various disciplines to share their thoughts and give very practical implications on value co-creation as we think that this concept lies at the very heart of recent developments in economy and society as a whole. We would like to thank all authors who contributed to this edited volume.

At the same time, we would like to encourage our readers to join and enrich the discussion on the future of value creation, thus raising it from an interdisciplinary to a transdisciplinary level beyond the scientific domain.

Hamburg, Germany

Tobias Redlich
Manuel Moritz
Jens P. Wulfsberg

Contents

Introduction: Co-creation in the Era of Bottom-Up Economics	1
Tobias Redlich, Manuel Moritz, and Jens P. Wulfsberg	

Part I Collaborative Value Creation

How to Co-create Value with Users: A Case Study on <i>Local Motors'</i> Contest Community	9
Manuel Moritz and Tobias Redlich	

Using Open Production Sites for Supporting New Ways of Corporate Innovation	21
Jan-Hauke Branding, Sissy-Ve Basmer-Birkenfeld, and Tobias Redlich	

Distributed Manufacturing: Make Things Where You Need Them	37
Anna Sera Lowe	

Co-creation of Value Proposition: Stakeholders Co-creating Value Propositions of Goods and Services	51
Stefan Vorbach, Christiana Müller, and Elisabeth Poandl	

Blockchain-Enabled Open Business Models: New Means to Shared Value Capturing?	63
Robin P. G. Tech, Jonas Kahlert, and Jessica Schmeiss	

How to Take Advantage of Online Platforms Like the Sharing Economy Does	77
Anja Herrmann-Fankhaenel	

The F.A.I.R. Model of Cooperation: How Managers Can Co-create Value Within Innovation Networks	89
Jules Thoma	

Part II Open Source Ecosystems

Coordination, Loyalty and Competitive Advantage: What We Can Learn from Open Source	105
Benno Luthiger	

Understanding Open Source Software Communities	117
Jan-Felix Schrape	
Harnessing the Synergy Potential of Open Source Hardware Communities	129
Robert Mies, J��r��my Bonvoisin, and Roland Jochem	
Open Source Medical Devices for Innovation, Education and Global Health: Case Study of Open Source Magnetic Resonance Imaging	147
Lukas Winter, Ruben Pellicer-Guridi, Lionel Broche, Simone A. Winkler, Henning M. Reimann, Haopeng Han, Felix Arndt, Russ Hodge, S��leyman G��nyar, Manuel Moritz, Kate Michi Ettinger, Olivier de Fresnoye, Thoralf Niendorf, and Mehdi Benchoufi	
Part III Legal Challenges of Co-creation	
Patent Law in the Era of 3D Printing: The Practitioner’s Perspective . . .	167
Constantin Blanke-Roeser	
Navigating Patents in an Open Hardware Environment	177
Dana Beldiman and Fabian Fluechter	
Managing Content in a Platform Economy: Copyright-Based Approaches to User-Generated-Content	189
Clemens Appl and Philipp Homar	
Overcoming Concerns in Collaborative Transactions	201
Rosalie Koolhoven	
Index	215



Introduction: Co-creation in the Era of Bottom-Up Economics

Tobias Redlich, Manuel Moritz, and Jens P. Wulfsberg

1 Why Co-creation Matters

We are living through a very exciting time these days both in business and society as a whole. The *Forth Industrial Revolution* is about to transform every aspect of how we live and work at an enormous pace (Schwab, 2017). It also changes the way we produce and consume leading to a disruption of traditional industries and business models. Technology is at the very heart of this development: advancement in production engineering (e.g. 3D printing), materials science (e.g. nanotechnology) and computer engineering (e.g. artificial intelligence) in combination with information and communication technologies that globally connect people and devices enable new products and services and, thus, create new markets (e.g. Schwab, 2017).

Value chains and propositions will be rearranged, and new players enter the scene putting pressure on incumbents. In addition, socio-economic drivers (e.g. ecological footprint, sustainable production, (Post-)Millennials workforce) call for rethinking business as usual. Constantly, rapidly and agilely adapting and innovating, thus, is crucial for companies. The demand side has been changing, too. Raising consumer expectations such as personalization or user experience are fueling competition and consumers, globally interconnected and with ubiquitous access to data and information, are empowered turning from passive recipients of goods and services to highly active and demanding prosumers (e.g. Schwab, 2017).

At the same time, we are witnessing the democratization of value creation: evermore, people from all over the world are able and willing to participate and collaborate in value creation with or without corporate actors in online, offline or social communities and platforms, crowdsourcing initiatives and makerspaces. Basically, anyone who is interested can join and create ideas, solve problems, give

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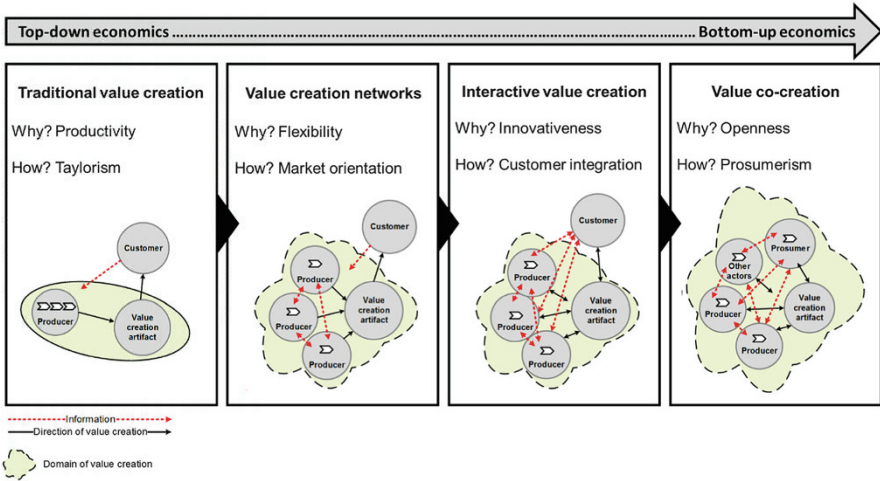


Fig. 1 Development from top-down to bottom-up economics (authors' own illustration)

feedback, provide services, buy/sell or rent/lent things, design products and even produce physical objects with access to cheap and easy-to-use means of digital fabrication (e.g. Rifkin, 2014; von Hippel, 2016).

Traditional producer-centric economic notions and management approaches fall short of providing suitable tools and strategies for companies in this turbulent environment and, thus, have to be reconsidered. Rather, different concepts like sharing economy, peer-2-peer production, open innovation, open production, crowdsourcing, user innovation, co-creation, open source innovation among others have evolved. These can be summed up under the theoretical framework of **bottom-up economics** (see also Fig. 1). It is characterized by a fusion of production and consumption, by open, distributed and networked structures and processes as well as participation and collaboration as the most intensive form of interaction between actors. (Redlich & Moritz, 2016).

2 How to Approach Co-creation

In this setting, the comprehensive notion of **(value) co-creation** represents a promising strategic approach for management and leadership. Originally introduced in the context of marketing by Prahalad and Ramaswamy (2004) and service science by Vargo, Maglio, and Akaka (2008), co-creation has been rapidly disseminating to other fields such as innovation, branding, retailing, production among others within the last 10 years (Leclercq, Hammedi, & Poncin, 2016).

In essence, co-creation can be defined as “joint, collaborative, concurrent, peer-like process of producing new value, both materially and symbolically” (Galvagno & Dalli, 2014). It can be applied to any stage of traditional value chains from ideation

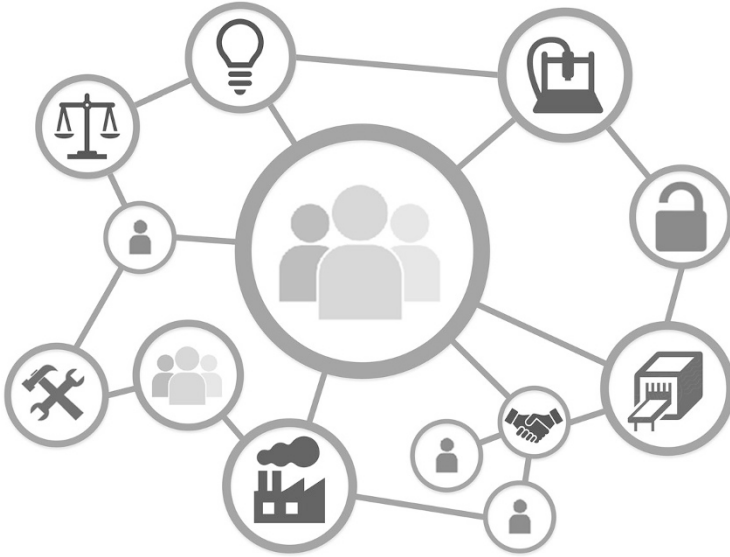


Fig. 2 Co-creation as comprehensive and interdisciplinary concept (authors' own illustration)

and design to production, sales and aftersales. Depending on the context, one can imagine a variety of forms of co-creation with different actors being involved/integrated (companies, customers, users, prosumers, communities etc.) in many ways (offline/online/both, long-term/onetime etc.). Hence, multiple perspectives are required to address arising issues regarding management approaches, business models, innovation processes and legal aspects among others (see also Fig. 2).

The goal of this book is to offer valuable insights into the world of co-creation of very different contexts and perspectives based on the latest results from interdisciplinary research ranging from social sciences to economics, engineering and law. We provide practical implications and best practices derived from case studies and examples from the corporate sphere and beyond. By doing so, we want to inspire managers and decision makers to rethink business and management practices for viable success in the era of bottom-up economics.

3 What You Need to Know About Co-creation

This edited volume covers three major areas to describe and grasp the concept of co-creation in its many facets. **Part I** focuses on various forms of **collaborative value creation** between different actors beyond or outside the corporate sphere. It elaborates on the theoretical concept of co-creation, but also provides a framework for implementation, e.g. through innovation contests. On the corporate level, innovation networks represent an effective means for collaboration between companies and, thus, should be included. Beyond online collaboration via platforms and communities, we also address

distributive manufacturing and the social side of co-creation via Makerspaces and FabLabs as a global phenomenon and a very promising approach to open production. Anyone is granted access to means of production to transform ideas into prototypes and products. It is the perfect place for co-creation between individuals, start-ups and corporate actors. Lastly, sharing economy and open business models via blockchain can be considered a form of co-creation too as individuals may easily enter the commercial sphere and corporate actors may adapt their business model.

In **part II**, we shed light on **open source ecosystems** as very intense forms of co-creation both in hardware and software. In fact, these are collaborative by nature. Especially in software, communities of self-organized and voluntary users from all over the world had and still have a huge impact on information and communication technologies. We talk about ecosystems rather than communities as corporate actors can be found in this domain, too. With advances in virtual/digital product development and production technologies, we observe a spillover of open source principles to the world of atoms (open hardware). Engineers, designers, students etc. that gather in online communities jointly work on products and projects that might one day put industries under pressure as in the case of software. With this development, new business models evolve that need to build up value propositions beyond secrecy and intellectual property (IP).

Finally, **part III** addresses **legal challenges of co-creation** that emerge by collaborating beyond corporate spheres and by using modern digital (production) technologies such as 3D printing. Organizations that want to make use of co-creation, thus, need to open up and share information with users. This generates a lot of tensions with traditional legal approaches, e.g. in the areas of IP or contract law that call for new strategies.

3.1 Part I: Collaborative Value Creation

Co-creating value with users in online communities is a promising path for idea generation and product development to follow, as *Moritz et al.* show. However, companies have to carefully manage people that they don't employ and, thus, a new management approach to the mutual benefit is required. *Branding et al.* look at open production sites (OPS) as a new and powerful means to corporate innovation by integrating external actors such as startups and tinkerers. *Lowe* argues the case for enabled by new digital means of production and product development that bear enormous potential for innovation, sustainability and democratized as well as local value creation. *Vorbach et al.* describe how co-creation can be applied by companies to generate a unique value proposition. Blockchain is another powerful technology that will have a huge impact on value creation practices and business models, *Tech et al.* claim. They present different concepts of open business models (OBM) based on smart contracts. The Sharing Economy can also be interpreted as a form of co-creation between companies and users, *Fankhaenel* finds; however, one has to distinguish between different approaches and carefully select the right business model. When it comes to cooperation in innovation networks with different

stakeholders being involved, a new set of management tools and skills is required, *Thoma* argues; he proposes the F.A.I.R. process model for successful cooperation.

3.2 Part II: Open Source Ecosystems

Luthiger had a close look into open source software (OSS) communities with its developers and found that we can learn a lot about employee loyalty. Subsequently, he argues that companies have to provide an interesting work environment with project visions and challenges to find and keep motivated and skilled people within the digital economy. *Schrape* analyzed different open source software communities from an organizational perspective and finds that corporate actors play a major role in these communities. Thus, we can learn about different modes and levels of involvement of companies within the open source ecosystem. The open source movement has also arrived in the world of physical artifacts, also known as open source hardware (OSH). As in software, this phenomenon has a huge potential for collaborative innovation and product design and, thus, disrupts traditional approaches, *Mies et al.* find. *Winter et al.* present a fascinating case study of an open source resonance imaging device that was collaboratively developed by people from all over the world and that might revolutionize medical practice in both, industrialized and developing countries.

3.3 Part III: Legal Challenges of Co-creation

First, *Blanke-Roeser* addresses legal implications of 3D printing for patent law and patents, in general. He states that patenting entities and patent holders might face challenges in this matter and proposes potential solutions. *Beldiman & Fluechter* take an alternative perspective by providing a framework for companies that want to engage in an open hardware environment despite the need to protect innovations with patents. User-generated (and copyrighted) content created and adapted by users on online platforms and social networks like *YouTube* and *Twitter* is another critical issue for traditional business models and value chains in the media industry. *Appl & Homar* provide practical guidance for rightsholders under the current legislation. Last, *Koolhoven* focuses on platforms like we find the many in the sharing economy and elaborates on contractual situations between different parties being involved in the exchange of goods and services. She argues for a positive platform policy instead of overregulation by legislators.

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Part I

Collaborative Value Creation



How to Co-create Value with Users: A Case Study on *Local Motors*' Contest Community

Manuel Moritz and Tobias Redlich

1 The Era of Openness

Industry is facing the era of openness. Enabled by advanced and widely disseminated information and communication technologies value creation is becoming more open and collaborative and is, thus, challenging traditional economic approaches based on appropriation of knowledge and secrecy (e.g. Chesbrough, 2006; Rifkin, 2014; von Hippel, 2005). Hence, we find new patterns of value creation that are based on a certain degree of structural openness to integrate external knowledge and enable collaboration with external actors.

Let's look at the US-based tech company *Local Motors*, a compelling case of co-creation: By applying open source principles to car design and by means of a collaborative internet platform, they brought a new car on the street within two years and at a fraction of cost. Major components of the car (e.g. exterior, chassis) resulted from online collaboration of 2000 people from all over the world committed to car design and engineering. The car was sold then as a kit car with individually designed skins and customers (sometimes people who helped designing it) were invited to assemble the car themselves at one of *Local Motors*' micro factories allocated across the US. Today, the number of users on its platform climbed to more than 30,000 who can participate in different projects ranging from urban mobility to 3D-printed cars.

What we see here is that people from all over the world (customers, students, experts, tinkerers etc.) are willing and capable of co-creating value with a firm by means of online collaboration. This paradigm shift towards openness gave rise to the notion of **bottom-up economics**. It comprises concepts that require at least some degree of openness to allow for the exchange of knowledge beyond the organizational

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domain and enable collaboration with external actors (e.g. open innovation, open production, co-creation, crowdsourcing, user innovation) (Redlich & Moritz, 2016).

By co-creating value with users along their value chain from marketing to R&D and sales, firms can increase their innovativeness, product quality and efficiency and, thus, outperform closed approaches (e.g. Winsor, 2005). However, users may benefit from interacting and collaborating with firms as well: They participate to be part of industrial value creation, to interact with their favorite brand or firm, to acquire new skills and learn, to have fun, to exchange ideas, to solve problems, but also to signal for jobs and earn money (Füller, 2004; Lakhani & Wolf, 2005).

Generally, two forms of web-based co-creation between firms and users stood out: co-creation with online communities or by means of (crowdsourcing) contests mostly hosted by intermediaries (Lakhani, 2016). These days, however, we also find hybrid forms, namely **contest communities** (Füller et al., 2014). Interestingly, the latter combines the best of both worlds: **competition** in contest settings to spur innovation and **collaboration** to serve social needs of users. Obviously, managing large-scale collaboration with people that are not being paid by a firm requires a different mindset and new management tools.

This part of the book introduces the concept of co-creation and contest communities as a new form of it. In particular, we shed light on the users that we can find in a contest community based on the results of a case study on *Local Motors*. Subsequently, we derive managerial implications and suggestions on how to get started with co-creation.

2 The Basics of Co-creation

2.1 Getting Clear About Co-creation, Open Innovation and Crowdsourcing

The concept of **co-creation** focuses on in-depth, long-term oriented collaboration between firms and external actors, e.g. intrinsically and extrinsically motivated people from all over the world who are committed to certain technologies, products or brands, with skills, experiences and knowledge that enable them to provide valuable input to a firm's value creation. It is about sharing of knowledge and exchanging ideas beyond firms' domains based on the presumption that being open to new ideas from outside enlarges a firm's knowledge base. Co-creation can be interpreted in many ways ranging from customer integration as a weak notion to collaborative product development with users as a strong notion (e.g. Prahalad & Ramaswamy, 2004; Roser et al., 2009).

Like **open innovation**, co-creation promotes inbound and outbound innovation processes that reach beyond firms' borders. However, co-creation is broader in the sense that it may be extended to other value creation activities beyond innovation. It also covers online communities (open source software/hardware, user innovation) where users jointly create value with or without firms being involved. Firm-user

interaction plays a significant role in co-creation while open innovation has a strong focus on B2B collaboration.

Crowdsourcing is another term that we hear a lot about these days. It can be understood as a weak form or a means of co-creation, namely “company-to-one co-creation” (Tekic & Willoughby, 2016). The goal is to tap new sources of knowledge from a heterogenous group of so-called “solvers” who anonymously and with little interaction submit solutions to a task or problem posted by the “seeking” firm in a contest setting (Howe, 2006). In most cases, neutral intermediary web platforms host and manage these (innovation, design, idea) contests and take care of the communication and transaction process between “seekers” and “solvers” (e.g. *InnoCentive*, *NineSigma*, *OpenIDEO*). Usually the best idea is awarded with a monetary prize. Crowdsourcing offers great potentials to gather many unconventional solutions in a short period of time at relatively low cost (Boudreau & Lakhani, 2013). Collaboration and communication between seeker and solver and among solvers, however, are very poor. From a firm’s perspective, the goal is to solve an urgent problem and not to build up a relationship with the solvers. Thus, it is a rather short-term oriented co-creation approach.

Example

Netflix wanted to improve its collaborative filtering algorithm and offered 1 million dollars for the best solution from the crowd that would beat the firm’s solution. More than 2000 teams submitted solutions with the best one exceeding *Netflix*’ algorithm by 10%.

“Company-to-many co-creation” (Tekic & Willoughby, 2016) represents a more intense form of co-creation where organizations continuously interact with an online community of people that share a common interest in a product, brand or technology (e.g. *Lego*, *Linux*, *Dell*). In this case, the community is a valuable resource for a firm and users strongly influence the innovative output through idea generation, testing and feedback (Jeppesen & Frederiksen, 2006). Contrary to the principal-agent-relationship in crowdsourcing, the firm-user relationship is rather long-term oriented and based on cooperation of equal partners. Value is being co-created in the true sense of the word. In addition, these communities are more like social networks where users spend their free time to talk to each other, discuss ideas, share knowledge.

Example

More than 100,000 users gather on *Lego*’s Ideas platform. Anyone may suggest new ideas for *Lego* sets and, if an idea finds the support of more than 10,000 users, *Lego* will review and possibly market the product. In this case, the initial idea creator receives 1% of the revenues generated.

The lines between these concepts are blurry. Figure 1 highlights the differences between the concepts. Open innovation focuses on firms’ R&D strategy that should be re-organized, crowdsourcing contests may help organizations to find solutions to

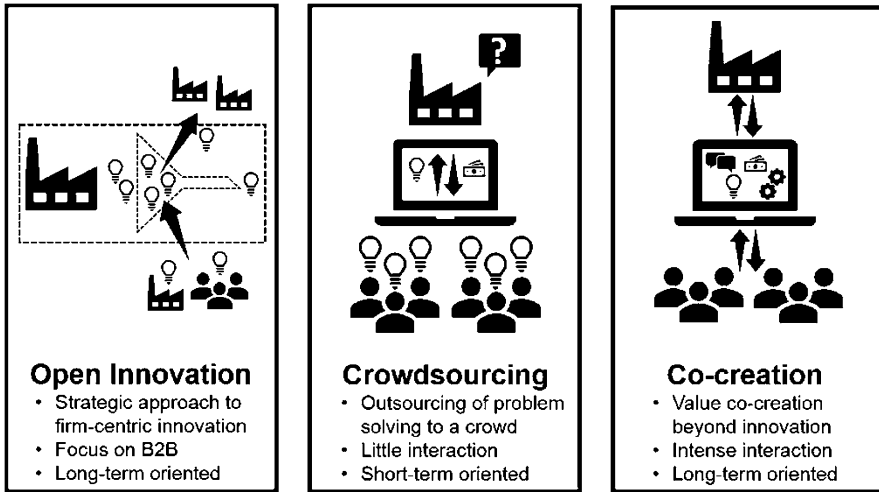


Fig. 1 Differentiation between concepts of the open paradigm (authors' own illustration)

a specific problem. Co-creation represents a more holistic concept that considers a firm as part of a value creation network. Beyond firm perspective, it also covers collaborative value creation in online communities without corporate involvement (e.g. *Wikipedia*, *Linux*).

2.2 Merging Contests and Communities

We focus on co-creation between firms and communities and, in particular, we are looking at so-called **contest communities** (Fig. 2). That means recurring and time-bound idea contests (similar to crowdsourcing) that are held within an existing community as this is a very promising direction to make use of both mechanisms: competition and collaboration (Bullinger et al., 2010; Hutter et al., 2011). It should be noted here that these contests can be sponsored by a firm different from the one hosting the community.

From a firm's perspective, it was shown that engaging with users via contests can be a powerful tool to improve innovativeness and lead to superior outcomes compared to traditional means. However, proper design of a contest (compelling task, duration, task specificity, prizes, attraction, facilitation, evaluation) is required to exploit its full potential (Adamczyk, Bullinger, & Möslin, 2012). Communication, motivation and trust were found to be very important success factors that call for careful attention (Ebner, Leimeister, & Krcmar, 2009).

From the participating users' perspective, we know that people participate in online communities and contests for many reasons, both intrinsically (e.g. curiosity, social interaction, learning) and extrinsically motivated (e.g. money, recognition,

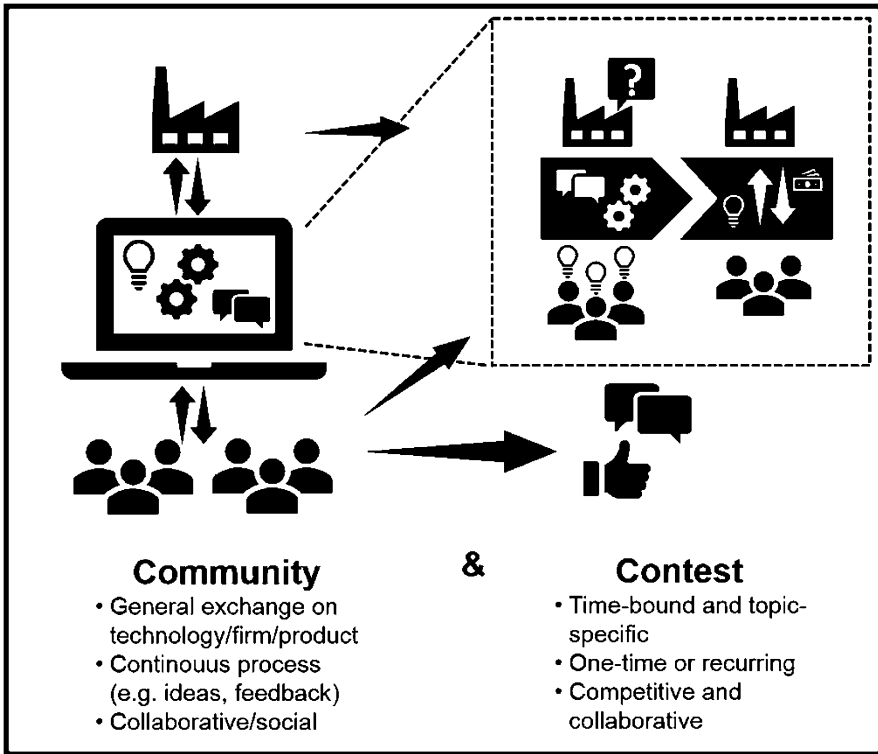


Fig. 2 Exemplary setting of a contest community (authors' own illustration)

reputation, job signaling) (Brabham, 2010; Franke & Shah, 2003; Füller, 2006). Thus, reward and compensation mechanisms need to be adapted accordingly depending on the goal and the scope of the contest and/or purpose of a community. Having a compelling co-creation platform is another crucial factor when it comes to user attractiveness.

Collaborative behavior in online communities (free revealing of ideas, sharing knowledge, commenting on other ideas) is very common (e.g. *Linux*, *RepRap*, *Threadless*) and can be found even in competitive environments like a contest (Bullinger et al., 2010; Hutter et al., 2011). However, within pure crowdsourcing contests where submissions will not be publicly revealed, but privately transferred to the sponsoring principal, collaboration between users is merely possible.

Innovation contest communities that combine both competitive and collaborative elements represent a new and promising contest mode with respect to attraction, motivation and outcome. Little research focusing on this specific configuration and the users that we find in these communities has been conducted so far. Hence, we present new insights from a case study to learn more about users that spend their time in contest communities.