

# Managing Open Innovation in SMEs: A Good Practice Example of a German Software Firm

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## Abstract

*In recent years the open innovation paradigm has gained great attention in research on innovation and strategic management. Current research indicates that firms are opening up their innovation processes and adapt their business models to benefit not only from internal but also from external ideas and knowledge. So far, most of the research on open innovation has been focused on open innovation practices in large firms and has not considered open innovation in SMEs adequately. For this reason, our paper investigates organizational capabilities for managing open innovation in SMEs. Based on a case study analysis of the company CAS Software AG the researchers argue that SMEs have to build up new managerial capabilities within six dimensions of an integrated managerial system for open innovation. In addition the paper reveals the prosperous transformation process of the CAS Software AG towards an open innovator highlighting its characteristic of a guided evolution by means of a maturity model.*

**Key words:** Management Systems for Innovation, Open Innovation, SME, Organizational Capabilities, Organizational Change

## 1. INTRODUCTION

Over the last decades a changing innovation landscape has undermined the traditional view of innovation at the firm level. Traditionally most firms pursued relatively "closed" innovation strategies, limiting interactions with actors outside their organizational boundaries and emphasizing hierarchical control of all innovation activities within the firm. Nowadays the burgeoning literature on "open innovation" highlights that firms have vitalized their interest to purposively open their innovation processes and to interact extensively with their innovation environment [1]. Indeed, the concept of open innovation lies at the heart of research on innovation and strategy and receives high attention in recent management literature [2; 3]. Recent work provides first empirical evidence that opening up the innovation process may positively has impact on a firm's innovation performance [4; 5; 6]. Further, case studies and exploratory research on large firms depict in a very detailed manner how large multinational firms organize themselves for open innovation and modify their management practices to ease the implementation of the new management paradigm [4]. This exploratory work indicates that there are several challenges in shifting towards open innovation [7], and managing open innovation internally [8].

In spite of the increasing interest in open innovation and extension of the analysis of open innovation to various topics, most of existing work concentrates on large firms. Small and medium-sized firms (SMEs) have been excluded from the mainstream discussion in open innovation research, and only recently, some researchers explore the role of openness in the SME sector [9; 10]. However, we lack a significant understanding of how SMEs successfully shift towards open innovation and adapt their organizational system for innovation to the open innovation paradigm.

As SMEs are important actors in innovation [11] this paper seeks to place the concept of open innovation in the context of SMEs and studies the organizational innovation systems for managing open innovation in SMEs. It reports on a single case study of a highly successful German SME discussing the managerial dimensions of open innovation and depicting the transformation process from a closed innovator towards an open innovator.

The paper is organized as following: In section 2, we briefly introduce the open innovation concept and the peculiarities of open innovation in SMEs. Afterwards, we discuss the role of internal managerial capabilities for innovation and introduce our research framework. Section 4 presents the case of CAS Software AG and our research design. Section 5 discusses the different

managerial dimensions of open innovation. In section 6 we describe the transformation process of CAS towards an open innovator. Finally, we conclude and discuss contributions of our research.

## **2. OPEN INNOVATION IN SMEs**

### **2.1 The open innovation paradigm**

Traditionally, large established firms relied on their own R&D departments and favoured a closed innovation model where all innovations are under the firm's control. This "closed innovation model" is contrasted with the open innovation paradigm that describes a new cognitive framework for a firm's strategy to profit from innovation. The open innovation paradigm describes a new cognitive framework for a firm's strategy to profit from innovation. In contrast to the closed innovation paradigm it supports firms to purposively use inflows and outflows of knowledge to accelerate internal innovation, and to expand markets for external use of innovation, respectively [12]. Open innovation is a firm-level concept taking the firm level as the unit of analysis.

Most research on open innovation differentiates between two concepts of open innovation: "inbound" where new ideas flow into an organization and "outbound" where internally developed technologies and ideas can be acquired by external organizations with business models that are better suited to commercialize a given technology or idea. Furthermore "coupled processes" are discussed in research from an inter-company or rather network-level perspective. By taking a firm-level approach they are not in the focus of our research paper. Keeping in mind coupled processes as an important source of innovation we analyse managerial capabilities on the firm-level that allow companies to benefit from coupled innovation processes. Depending on the financial flows involved, the inbound and outbound concept can be either pecuniary or non-pecuniary in nature [2]. For example, in-licensing and acquiring of external technologies represent pecuniary inbound practices whereas crowdsourcing and informal networking are rather non-pecuniary inbound open innovation modes. Free revealing of knowledge and donations (e.g. to creative commons) represent non-pecuniary outbound activities.

Open innovation is already being adopted by firms from high-tech as well as low-tech industries [13]. They experiment with a variety of different practices to engage both in inbound and outbound innovation and choose different governance modes along the innovation process [14]. Recent literature depicts that large firms introduce both dimensions - inbound versus outbound - separately in their journey towards open innovation rather than jointly [8].

### **2.2 Peculiarities of open innovation and SMEs**

Literature on SMEs reveals that small and medium-sized firms are relevant sources of innovation within regional, national and international systems. They do have the capacity for radical, new-to-the-world innovation - not just large firms [11]. However, their

innovation models and activities differ from those of large firms. While they are usually more flexible, less formalized and fast decision makers, their financial resources for internal R&D are limited [9], especially if they are young and small [15; 16]. In addition, they cannot cover all innovation activities required to successfully realize an innovation. Thus, open innovation is an important innovation strategy for SMEs. Indeed, young and small firms regularly rely upon external partnerships and networks to remain competitive [17]. Further, prior work on the market for ideas indicates that young technology start-ups are an important source for open innovation as they license their technologies to large firms rather than developing them into tangible artefacts [18]. While prior research on SMEs and networks indicates that open innovation – or at least some open innovation practices – seem to be of relevance to SMEs, only recently researchers perform studies specifically focusing on open innovation in SMEs. First empirical studies on open innovation in SMEs indicate that both inbound and outbound open innovation practices are adopted in the SME sector. In a descriptive survey among Dutch SMEs, non-pecuniary inbound activities such as cooperation with customers and suppliers were identified as the open innovation activities adopted most often, while outbound activities such as licensing and venturing are adopted by a small share of SMEs in the Dutch sample only [10]. Indeed, inbound open innovation seems to be a widely adopted mode in SMEs from various sectors. A European study with more than 1500 SMEs indicates that SMEs engage with a variety of different external innovation sources including customers, suppliers, universities, and long-term complementary partners, to access new ideas and technologies [19; 20]. Further, Lee et al. argue that SMEs need to open up their innovation processes in the later stages, namely in the commercialization phases, rather than only in the early stage of the open innovation funnel [9]. Case studies on value constellations depict that SMEs form new value creation relationships in the commercialization phase to exploit their internal ideas, rather than entering the market for ideas [21].

### **2.3 Performance impact of open innovation for SMEs**

A central question in managing innovation is whether open innovation can influence a firm's ability to innovate and to appropriate the benefits from it. Case studies on large technology-oriented firms such as Procter & Gamble suggest that open innovation may improve a firm's innovation performance (according to Procter & Gamble its open innovation strategy "Connect & Develop" has contributed to an increase of the firm's R&D productivity by nearly 60 %) [22]. In their influential article Laursen and Salter provide a more reliable empirical evidence of the performance impact of open innovation. Based on a large quantitative study of manufacturing UK firms, they statistically explain the impact of openness, measured as breadth of external innovation sources, on a firm's income from innovation [5].

Following recent research results, open innovation may also impact the performance of SMEs [6; 20]. A recent large scale quantitative study on European SMEs indicates that SMEs engage in boundary spanning innovation activities going beyond transactional relationships in inter-organizational networks that improve their innovation performance when doing so. SMEs that engage with a variety of different external partners can achieve a higher innovation performance than those that remain closed and wall off their innovation activities.

However, it matters with whom SMEs are interacting in their innovation activities. The study shows that the combination of different innovation sources rather than the total number of sources define how SMEs engage in external idea sourcing and benefit from it. Some SMEs engage in inventive sourcing and R&D collaborations to get access to new technological knowledge. Others work closely with partners along their value chain and combine input from suppliers and customers. Recent research indicates that there are SMEs that engage in eco-system wide open innovation activities and involve complementary partners in addition to R&D partners and supply-chain partners [19].

Overall complementary network partners and established co-development relationships are an important external source for non-pecuniary inbound activities and also outbound activities. They offer well-functioning interaction channels that are crucial to combine and transform inputs from different knowledge domains. They also offer access to complementary assets that are critical to create value from an idea [23]. Some external partners may actually represent a risk. For example, the interaction with universities is somewhat risky for SMEs. If SMEs search in highly pre-commercial domains, they may get locked in and may struggle with turning ideas into value [20].

### **3. INTERNAL ORGANIZATIONAL CAPABILITIES FOR MANAGING OPEN INNOVATION**

In connection with a greater engagement in boundary spanning innovation activities openness and inter-organizational interactions pose new managerial challenges. Despite its growing importance, many firms experience several challenges to actively manage the processes of open innovation [3]. Research on large firms highlights that open innovation requires internal organizational complements that facilitate the absorption of external ideas and knowledge and to capture the value from it [5].

As already pointed out in the seminal work of Cohen and Levinthal, internal organizational practices and resources for innovation are important antecedents of a firm's ability to benefit from external knowledge [24]. Internal activities are critical because open innovation usually does not result in a complete outsourcing of innovation activities [3]. For this reason internal investments in R&D and open innovation are complements rather than substitutes [2].

Further, established managerial practices for innovation are important antecedents of its absorptive capacity and

may act as facilitators of open innovation. Results confirm the notion that both formal and informal managerial practices are important to capture the value from openness in SMEs: investment into innovation potential, innovation strategy and planning, innovation development processes, innovation control, and culture for innovation represent organizational antecedents of a firm's ability to successfully search, transform and exploit external innovation inputs. In addition, formal operational routines for measuring the performance of innovation activities from the inception of the idea to the commercialization phase are essential. Indeed, SMEs need to have discipline throughout the innovation value chain to integrate external and internal innovation. However, to create value from openness operational proficiency in managing innovation internally is not sufficient. Strategic coordination, financial dedication towards innovation, and a culture for innovation should be successfully in place [20].

The shift towards open innovation requires firms - both large and small firms - to implement new managerial practices and structures, in terms of "how to do open innovation" [25]. First anecdotal case studies on firms that evolve from a closed towards an open innovator indicate that these firms implement new managerial capabilities for open innovation at different managerial levels [8].

Finally, to establish these new capabilities firms need to go through an organizational change process with different stages [25]. However, the transformation process of SMEs - from closed to open innovation - is little understood [25]. Thus, the following case study will provide new insights into the managerial dimensions of open innovation and the transformation process towards open innovation in SMEs.

## **4. THE CAS SOFTWARE AG CASE STUDY**

### **4.1 Case study research method**

As discussed above, there is a lack of understanding of how SMEs successfully manage open innovation [28]. Thus, our research aims to investigate the managerial systems for open innovation in SMEs in detail and to understand the organizational change processes required to shift from a closed to an open innovator. As our research aim is exploratory in nature, we have chosen an explorative case study approach [29, 30]. A case study approach is an appropriate methodology for a holistic, in-depth investigation [31]. It facilitates researchers to get direct insights in and reflections of innovation practice as well as of the design of an appropriate managerial system for open innovation.

According to recommendation of Yin the researchers followed a methodology including four stages [29]: (1) design the case study, (2) conduct the case study, (3) analyze the case study evidence, (4) and develop the conclusions, recommendations and implications. The underlying case study of CAS Software AG (CAS) relies on multiple data sources including expert interviews with key informants at CAS, secondary data on internal organizational structures and processes (e.g. process blueprints), and company reports. Data were collected

in the time period 2009 - 2011. Within the design stage the researcher developed an interview guideline based on state-of-the-art literature on open innovation and determined the required skills and professional positions of the interview partners at CAS. To conduct the case study the research team worked in close collaboration with the representatives of CAS. An interview with the head of strategy, innovation and business design provided essential data to the following in-depth case analysis. Semi-structured interviews were conducted face-to-face. The analysis of the comprehensive interview protocol was carried out according to the method of qualitative content analysis. On the basis of the structured data the researchers developed conclusions, recommendations and implications for innovation management in practice.

#### **4.2 The Case of CAS Software AG**

CAS is market-leader in the field of customer relations management (CRM) software for SMEs in Germany. The company was founded in 1986 and employs approximately 430 people today. Nowadays more than 200,000 people, in more than 7,500 companies and organizations, are using software solutions from CAS. In recent years the company has won numerous innovation awards and is one of the most successful innovators in small and medium-sized businesses in Germany today. In 2006 and 2011 CAS was the overall winner of the "Innovator of the year" award in the prestigious German TOP 100 innovation competition [26]. In this competition CAS defeated its competitors within five categories: innovation-friendly senior management, climate of innovation, innovative processes and organization, innovations marketing and successful innovations. Altogether these categories give a valuable overview of the general innovation ability of CAS.

In terms of innovation performance and business growth the company has shown outstanding performance in recent years. The success rate of innovation projects which aim at "innovations in small steps" is about 90%. Five out of eight "radical innovation projects" initiated by CAS, had been realized successfully in the past years. At corporate level CAS is characterized by a steady double-digit growth rate of employees. In respect of sales, CAS has shown similar positive results. Regarding its product business, CAS reported constant growth rates of up to 30% in recent years. Keeping in mind long term shareholder value as main objective, CAS invests to a great extent in future innovations and product development.

CAS has recognized that the successful commercialization of new idea requires an appropriate business model. For this reason the company has designed its business model based on the principles of modularity. CAS has developed an integrated software system embedding different in-house as well as external software applications. CAS holds necessary basic technologies to integrate these applications via interfaces to a total system. On the basis of its technologies, product portfolio and partner network CAS is able to combine existing and innovative

solutions to a customer oriented bundle of products and services. By doing so, CAS can act as an innovator in the market for CRM software by itself. For its software product CAS genesisWorld CAS offers a variety of more than 100 applications and services in collaboration with over 200 partners in more than 24 countries [32].

To achieve its challenging goal of expanding its market leadership from Germany to all over Europe CAS invests heavily in new product development and innovation management. Annually the company spends about 30% of its revenues in research and development. Investments in further education of employees and costs for relationships management (e.g. in respect of research institutes and universities) are not considered in that spending. Equity holdings secure access to strategic key technologies. Overall CAS aims a high degree of innovation. Following a "first-mover"-strategy, CAS sees itself as a "product and business model innovator". As a business model innovator, CAS dares new ways of commercialisation - both independent and in cooperation with partners.

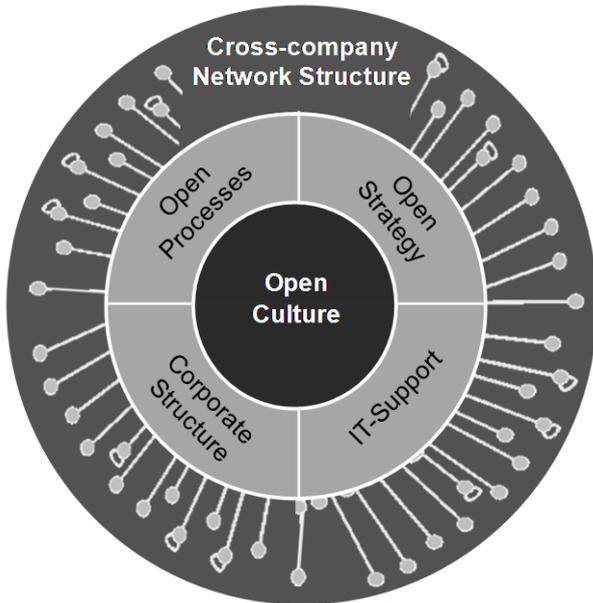
CAS defines itself as a networked enterprise and as an open innovator according to the above specified open innovation paradigm (see chapter 2). CAS is aware of its customers, suppliers, complementors, competitors, intermediaries [27] and uses its network both for commercialisation of products (i.e. operations) and for innovation management. Despite the fact that CAS innovates in a turbulent environment (i.e. shortening innovation life cycles, complex technologies, a high degree of competition in the ICT-sector) CAS perceives itself in a good position to cope with business challenges in future. In an open and networked innovation landscape [27] its innovation system provides CAS necessary benefits and serves as barriers to failure. Against this background the researchers of this research paper analyse the innovation system of CAS that facilitates open innovation in a highly successful way. The second objective of the research paper is the investigation of the prosperous transformation process of CAS from "closed" towards an "open innovator".

#### **5. MANAGERIAL SYSTEM FOR OPEN INNOVATION OF CAS SOFTWARE AG**

The innovation system of CAS facilitates collaborative innovations and new product development in a systematic and profitable way. It fosters absorption of value-adding contributions from different external actors throughout the whole innovation process. Information, knowledge exchange and collaboration with universities, research facilities and partner companies increase CAS's innovation potential. Without having the market power of global players like IBM or SAP, CAS also builds up downstream partnerships to increase sales potential. The reduction of innovation risk and innovation costs is not a main objective of CAS for collaboration in innovation management.

The analysis of the innovation system of CAS within the research project was based on an explorative

framework that differentiates six dimensions: strategy, process, corporate structure, cross-company network structure, IT-support, and culture (Fig. 1). Based on this rough framework the researchers identified different requirements for the design of a successful open innovation system.



**Figure 1.** Managerial System for Open Innovation

**Strategy:** In order to successfully accomplish open innovation in practice, the concepts of inbound and outbound innovation (see chapter 2) have to be established in innovation and corporate strategy. Only on the basis of a vision, strategic plans and concrete objectives open innovation processes can be established. In summary, the following implications for the design of an open innovation system could be identified:

- Consideration of open innovation within innovation and corporate strategy
- Alignment of open innovation strategy and company-specific product and service life cycles
- Balance between innovation “in small steps” and “radical” innovations within innovation networks (ambidexterity)
- Flexible innovation strategy: Adaptable innovation objectives for taking advantage of current (i.e. „quick-wins“) and future (i.e. long-term) opportunities

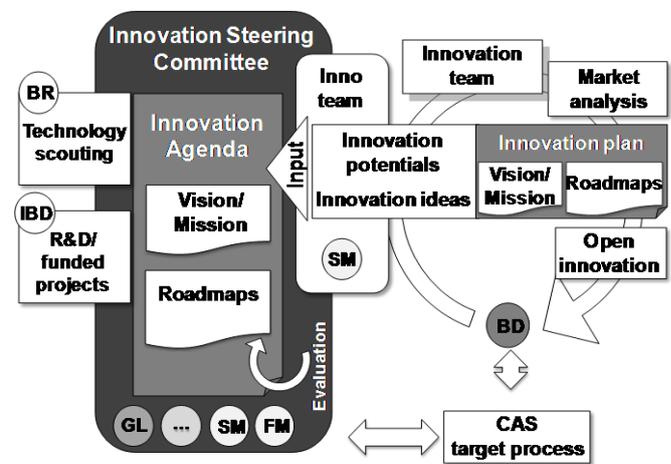
**Process:** A systematic and structured process model is a further basic requirement for efficient open innovation management in practice. Based on a standard process model for example benchmarks, technology-scouting, customer and competitor analysis, feasibility studies and market analysis can be conducted. The following implications for the design of an open innovation process could be derived:

- Generation of a structured process model and systematic involvement of actors within as well as across companies
- Overview of ongoing innovation projects and establishment of a professional multi-project

management with clear objectives and responsibilities based on a shared “innovation agenda”

- Transparency in innovation processes (e.g. in respect to technology, market and business strategy)
- Establishment and systematic use of a backlog for (partial) results, concepts and ideas in innovation management
- Building up routines for inter-company collaboration, project work and networked innovation management

Figure 2 depicts the strategic innovation processes of CAS embedding openness in strategic making. Within a continuous management process the innovation team and the business divisions of CAS set up an innovation plan under consideration of different external partners and gives further inputs to the innovation steering committee that aligns a corporate innovation agenda.



BD Business divisions BR Board of research  
 FM Research management GL Executive board  
 SM Strategic management IBD Innovation & business development

**Figure 2.** Strategic innovation process of CAS

The innovation steering committee includes members of the board of directors (i.e. chief executive officer, chief technology officer) as well as members of the executive board. Additionally the steering committee consults external partners and specific experts for discussions and for the evaluation of ideas and concrete innovation projects within the agenda.

**Corporate structure:** The dimension of corporate structure focuses on actors in respect of task and people coordination within innovation processes. Different implications could be specified for the design of an open innovation system:

- Implementation of a relationship promoter (i.e. in addition to champions, power promoter) to facilitate cross-company innovation within networks
- Establishment of a steering committee as an organizational tool to promote openness, the development of strategic plans and for coordination of innovation projects in a multi-project landscape (Fig. 2)
- Setting up customer-focused and flexible business units with flat hierarchies

The establishment of customer-focused and flexible business units is part of the innovative company structure of CAS which has been implemented in 2011. This efficient network organization is based on a biological role model (i.e. “organizations as organisms”) and is called SmartEnterprise (Fig. 3).

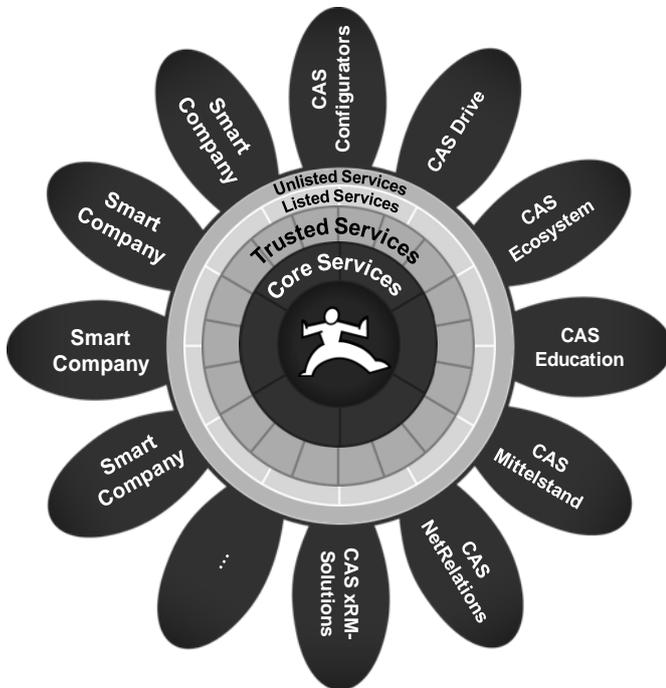


Figure 3. CAS SmartEnterprise

Small, specialized company units make CAS more flexible, agile and enable the company to make the most of innovation opportunities. It consists of different specialized units (so-called “SmartUnits”). These units allow CAS to react quickly and remain adaptable to market and sectoral requirements.

So-called “SmartCompanies” focus on specific customer segments and pursue the goal of becoming the innovation and market leader for those segments. Within the CAS SmartEnterprise only SmartCompanies deal with the external customers. Other company units support SmartCompanies in handling the day-to-day operations by offering different kinds of services (i.e. core, trusted, listed and unlisted services). One objective of CAS is that new SmartCompanies should be set-up and equipped with the necessary resources for business (e.g. own company management, own vision and market presence, own product and customer management) within a matter of days only. The CAS Software Board of Directors is involved in the coordination of the optimal distribution of available resources among the company units. Furthermore, agreements on obligations govern the overall activities of the company units within CAS SmartEnterprise.

Cross-company network structure: Beside these intra-network structures within the CAS SmartEnterprise a further requirement for the design of an open innovation system is the establishment of an adequate cross-company network structure. It is crucial to maintain

strong partnerships and close business relationships as well as informal contacts and loose relationships with different actors in innovation networks [27]. So CAS gains different innovation contributions from different network nodes and different external innovation networks. While strong ties (e.g. to “exclusive” partners, lead customers and complementors) foster knowledge transfer, transactions, and joint innovations, weak ties facilitate the identification of new trends, innovation potentials and opportunities for future businesses. The following recommendations for the design of cross-company network structure could be pointed out:

- Setup a network of informal connections (“linking”) and close interactions (“fitting”) to take advantage of various forms of relationships [27]
- Creation of diversity within innovation networks to facilitate the potential of new ideas, concepts, innovations and new businesses

IT-infrastructures: Complex and distributed innovation processes with a multitude of actors call for modern information and communication technologies as facilitators for virtualization and collaborative innovation management [35]. The following enabling factors for open innovation had been identified within the case study of CAS:

- Use of professional software tools for relationship management (“CRM becomes xRM”)
- Open and semi open wiki platforms for communication and knowledge management with customers and partners
- Weblogs for collaborative product development and problem solving in innovation processes

Culture: The overcoming of the not-invented-here syndrome [33] and an “open culture” are key requirements for successful open innovation management in practice [34]. Only if employees are willing to consider external ideas and knowledge and apply external technologies in internal processes success in open innovation management can be achieved. Same applies to the willingness of outbound activities (e.g. external commercialization, licensing, franchising of internal ideas, inventions and concepts). Overall, the following implications had been identified in respect of an open innovation culture:

- Recruitment of open-minded and “sociable” staff with individual social (business) networks (e.g. in the field of research)
- Creation of a role model for openness and collaboration in innovation management (i.e. strong commitment of top management to openness)
- Strengthening entrepreneurship in SMEs (i.e. participation of employees in innovation and company success)
- Counteract harmful fear of failure and wrong decisions in terms of openness in the innovation processes
- Trust as a main requirement for cross-company interactions in innovation management

## 6. ORGANIZATIONAL TRANSFORMATION: MATURITY LEVELS OF OPEN INNOVATION AT CAS SOFTWARE AG

In order to successfully open up their innovation processes for collaboration with external partners within networks SMEs have to build up internal capabilities and routines for open innovation management. In doing so, SMEs in general undergo fundamental changes. By means of a maturity model the development of such capabilities and routines and respectively the transformation of CAS towards open innovation can be illustrated.

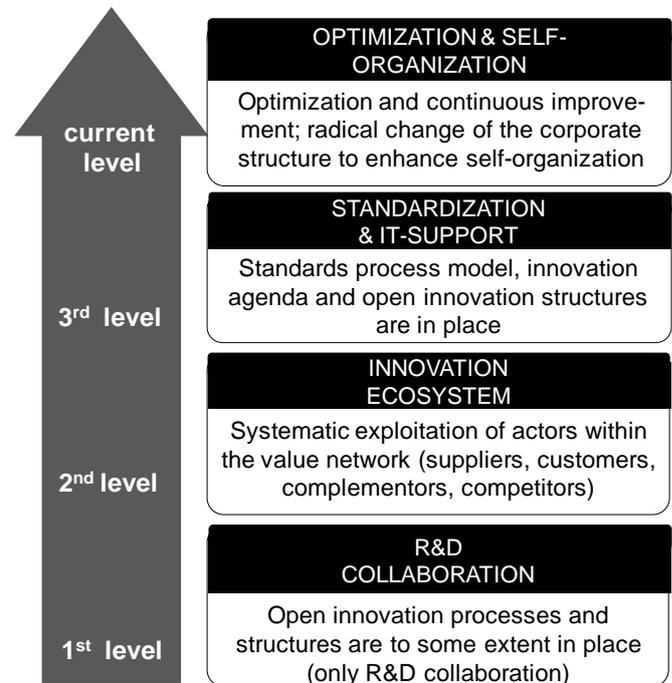
Figure 4 shows the specific maturity levels of CAS from a closed innovator to a successful open innovator, based on highly self organizing company units (i.e. "smart units" - see section 5).

More than fifteen years ago CAS had started to selectively build up research partnerships with universities and research institutions. Objectives of this first level of open innovation had been the acquisition of research results, technology scouting and learning. Here a distinctive entrepreneurial spirit of the co-founders and managing directors as well as individual contacts to miscellaneous academic and industrial research partners could be identified as facilitators for openness in innovation management. Till now CAS is highly interested in knowledge exchange and stimuli in the way of a "technology push" by external partners. Finally the relationships to research institutions play an important role for the recruitment of highly skilled employees.

In a second level of maturity CAS intensified collaboration with various partners and customers. CAS started interacting more closely with its complementors, which offer complementary products and services to customers [36], and also with its competitors [37]. Driving forces for collaboration with sales partners, customers and complementors for example had been expectation of a wider market access as well as access to relevant information about customer needs ("market push"). Also opportunities in respect of a higher innovation potential and flexibility had been mentioned as driving forces for collaboration in innovation management.

Starting point for openness in the first and second maturity level always had been single success stories of CAS in form of joint projects, developments or collaborative marketing measures. Trust building and collective experiences seem to be most important factors for implementing openness in innovation management. For example the collaboration with universities and research institutions had been gradually intensified. At the initial phase universities only were consulted in order to obtain information in respect of specific technical issues. Within an ongoing relationship universities gained an increasingly important position within the innovation ecosystem of CAS. Meanwhile, CAS receives a broad spectrum of innovative contributions from universities. Thereby, also free revealing of knowledge in respect of long-term partners plays an important role for future

developments. At the same time that CAS increased openness towards customers, research institutions and partners new challenges appeared - particularly in the need for coordination of various innovation initiatives and projects and the handling of complexity in innovation management (e.g. in respect of innovation objectives, tasks, and resource allocation).



**Figure 4.** Maturity levels of Open Innovation of CAS

The third maturity level of open innovation at CAS therefore comprises standardisation and IT-support. It includes for example the implementation of a standard innovation process model for efficient collaboration (i.e. innovation agenda, backlogs, standardized innovation roadmaps), the establishment of structures for cross-company processes (e.g. steering committees, innovation teams) as well as the development of adequate software applications for networked innovation (i.e. xRM as a further development of CRM software). To facilitate coordination of different innovation tasks and actors in innovation processes CAS invested in the implementation of technocratic, structural and informational infrastructures for innovation management.

At the current maturity level CAS aims for optimisation and continuous improvement of existing innovation structures and processes. For example CAS has institutionalized its business design for a more efficient lead to market. Simultaneously CAS strengthened both its top-down and bottom-up approach in innovation management. The overall objective of CAS is the establishment of a highly self-organized business and innovation system. By restructuring the organization towards a SmartEnterprise (i.e. a highly flexible network structure with business and service units – see chapter 5) CAS has already made the next key step to achieve its challenging objective.

## 7. CONCLUSIONS AND IMPLICATIONS

This paper presents a good practice example of open innovation in SMEs. The case study of CAS provides rich information on organizational capabilities for open innovation and on the change process of SMEs towards openness. Our paper contributes to the ongoing research on open innovation in two dimensions. Firstly, we make a contribution to existing literature on internal managerial capabilities for open innovation. Prior research has indicated that internal organizational processes and systems represent important antecedents of a firm's ability to "absorb" external knowledge [19, 20, 24]. However, in respect of open innovation firms need additional capabilities that go beyond absorptive capacity and systems supporting it. Open innovation implies interactions between internal and external actors for information and knowledge sharing, and thus, firms need new capabilities such as a "connective capacity" to retain external knowledge and manage knowledge within partnerships and alliances [7]. Our case study highlights that managing open innovation in SMEs implies the design of an integrated managerial system in order to support both inbound and outbound innovation.

Secondly, our analysis indicates that transformation towards open innovation management requires fundamental changes of SMEs to move from closed to open innovation. The paper highlights key factors shaping a successful transformation process (e.g. trust, common experiences, and step-by-step procedures). On the one hand successful change management calls for holistic thinking and rational problem solving. On the other hand people management (trust, willingness, and individual capabilities) is a key element for successful change management processes. Against the background of people management, communication and motivation activities should emphasize the advantages of open innovation management in order to reduce change resistance.

Based on our in-depth analysis and interpretation of the CAS single case study we suggest that the transformation process related to the concept of open innovation implies a balanced management approach that follows a rational design paradigm (plans, rules, norms, procedures like unfreezing-move-freezing) as well as a realistic comprehension (e.g. learning from good practices and learning from failure). Change management interventions should follow a paradigm of a guided evolution (i.e. combination of a strict transformational and an evolutionary approach) that corresponds to the idea of cultivating change [38].

Our analysis also provides first insights on the peculiarities of change towards open innovation in SMEs: In generally, innovation management in SMEs is less formalized and standardized than in large firms. The body of knowledge in innovation management is more likely tacit (i.e. people-bounded) than explicit (i.e. information in innovation handbooks and data basis). For this reason, SMEs need to establish fundamental managerial capabilities first before moving into open innovation. In contrast to large firms SMEs usually do

not have specific internal company units to support change initiatives (e.g. change management offices, department for business development) and sophisticated centralized units that offer necessary change-services during transformation processes: HR-services (e.g. recruiting, training, workshops), IP-services (e.g. consulting, patenting), IT-services (e.g. implementation of new software tools) [39]. Therefore, SMEs have to build up cross-company relationships to external partners in transformation processes more likely than large firms. In general this is accompanied by specific challenges for SMEs and may come along with higher transaction costs (i.e. for searching, initiation, negotiation, execution, adaptation and controlling).

This case study opens up a range of new research questions related to open innovation in SMEs and organizational change. Additional research is required to provide more in-depth insights into the journey of SME from a closed to open innovator.

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## Upravljanje otvorenim inovacijama u malim i srednjim preduzećima: Primer dobre prakse nemačke softverske firme

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### Rezime:

*Protoklih godina paradigma otvorenih inovacija zadobila je veliku pažnju u istraživanju fokusiranom na inovacije i strateški menadžment. Trenutno istraživanje ukazuje da firme otvaraju svoje inovacione procese i adaptiraju svoje poslovne modele kako bi ostvarili benefite ne samo od internih već i od eksternih ideja i znanja. Do sada, veći deo istraživanja koji se odnosi na otvorene inovacije fokusira se na prakse otvorenih inovacija u velikim firmama i ne razmatra otvorene inovacije u malim srednjim preduzećima na odgovarajući način. Iz ovog razloga, naš rad istražuje organizacione sposobnosti za upravljanje otvorenim inovacijama u malim i srednjim preduzećima. Bazirajući se na analizi studije slučaja kompanije CAS Software AG, istraživači smatraju da mala i srednja preduzeća treba da izgrade nove upravljačke sposobnosti u okviru šest dimenzija integrisanog sistema upravljanja za otvorene inovacije. Osim toga, rad otkriva prosperitetan proces transformacije firme CAS Software AG ka otvorenom inovatoru, naglašavajući njegovu karakteristiku upravljane evolucije pomoću modela zrelosti.*

**Ključne reči:** *Sistemi upravljanja za inovacije, Otvorena inovacija, Mala i srednja preduzeća, Organizacione sposobnosti, Organizacione promene*