

IT-ENABLED ADAPTIVE OPEN INNOVATION

Complete Research

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Abstract

Lacking efficiency and transparency regarding cross-company collaboration in the field of innovation management often leads to cost intensive and unsuccessful products and services. This is due to the fact that traditional Innovation Management approaches fail in terms of coping with emerging requirements in Open Innovation projects, e.g. the vertical and horizontal integration of strategic partners within and across the company's value network. However, companies are forced to maintain their competitive advantage through a constant and sustainable development of their product and service portfolio. In this context, knowledge workers play an important role in the collaborative advancement of innovative product and service ideas. For that reason, knowledge workers need systematic support regarding both methodological and operational challenges in the field of Open Innovation. The concept of Adaptive Case Management emerged from the necessity to support knowledge workers in unpredictable working environments. Therefore, this contribution shows, both from a conceptual and technological point of view, how knowledge workers can be supported in cross-border innovation projects. The approach is evaluated using an Adaptive Case Management software prototype and the findings on concept acceptance and software usability are presented.

Keywords: Adaptive Case Management; Business Process Management; Innovation Management; Open Innovation.

1 Motivation

Companies nowadays face increasing challenges of international competition, globalization of markets, and accelerated technological change (Camphausen 2007). To develop and maintain a competitive advantage, these factors need to be taken into account. Companies require to quickly adapt and renew their product and service portfolio to cope with these rising challenges (Hauschildt and Salomo 2011). Therefore, not only traditional innovation management techniques incorporating company internal capacities into the innovation process need to be applied, but also customers, suppliers, and partners must collaborate to introduce successful solutions in the market (Ylimäki 2014). In this context, knowledge workers as main carriers of (cross-company) entrepreneurial know-how play an important role in the field of product and service development (Muscalu and Stanit 2013).

Over time, the complexity of products and services increased significantly. More often, they are not designed or created by individuals, but rather in cross-company teams, whose management presents new challenges to companies. In many cases, it is crucial to capture, connect, and exploit the ideas generated by those interdisciplinary teams (Howaldt, Kopp and Beerheide 2011). In particular the reconciliation of early stages of Open Innovation (OI) activities incorporate creative activities (e.g., the idea generation), and are characterized with high knowledge-intensity and unpredictability. Additionally, in these stages it is hard to plan upfront which inside-out and outside-in processes of knowledge transfer are necessary for the participating partners (Salter, Criscuolo, and Wal 2014). Due to those

reasons, its processes cannot be completely planned in advance (Herstatt 2007; Man, Prasad, and van Donge 2010) which is contrary to the traditional business process lifecycle model.

The knowledge-intensive attributes of OI and its complex requirements for coordinating the communication and collaboration between the actors (West and Bogers 2014) are in line with the rising trend towards an intertwined, knowledge-based society and knowledge-intensive professions (Hall 2007; Schmitt 2009). Drucker (2007), Bianchi et al. (2010) and Arthur, Defillippi, and Lindsay (2008) note that the effective management of the cultural change towards a more and more interrelated corporate knowledge landscape is a critical success factor for companies. Knowledge work itself is non-repeated, unpredictable, and emergent (Swenson 2010). It can be rarely repeated the same way, because the detailed steps of the execution vary each time. For example, the creative processes during the idea generation can be defined as an activity, but the detailed steps how and when to exactly come up with a new valuable business idea cannot be predicted in advance (Beerheide and Katenkamp 2011). Thus, it emerges over time, rather than being planned upfront.

Following this, OI, and especially its early phases, can be described as knowledge work (Man, Prasad and van Donge 2010; Arthur, Defillippi, and Lindsay 2008; Beerheide and Katenkamp 2011). Under these propositions, it is observed that prevailing OI approaches followed by knowledge workers are not capable to create valuable and marketable new products or services (Howaldt, Kopp, and Beerheide 2011; Salter, Criscuolo, and Wal 2014). Thus, new concepts to integrate knowledge workers as key assets for successful innovations into the OI process are required.

A new approach for managing knowledge-intensive and weakly-structured work, called Adaptive Case Management (ACM), is proposed by Swenson (2010b) and related authors of their associated edited volume. It explicitly addresses the characteristics of knowledge work and allows the emergence of the proceeding, rather than requiring its upfront definition. Hereby, it makes use of an iterative and incremental process model, as well as extensive IT support (Matthias 2010; Kurz and Herrmann 2011). The authors clearly separate ACM from existing traditional approaches towards managing business processes and suggest applying it to the challenges of knowledge work.

Based on the knowledge intensiveness and the collaborative nature of OI and the proposed solutions by ACM, the objective of this paper is to examine how both concepts can be harmonized into a valuable approach. By means of a comprehensive IT-prototype that operationalizes the presented approach, this contribution shows how to support knowledge workers in planning, coordinating and structuring their open innovation efforts.

2 Research Methodology

To develop the concept of Adaptive Open Innovation (AOI), this contribution relies on the dynamic capabilities perspective as an augmentation of the resource based view (RBV) of companies (Blome, Schoenherr, and Rexhausen 2013). Basic RBV research emphasizes on the heterogeneity of existing resources and their optimal configuration (Teece 2007). The dynamic capabilities perspective enhances this view focusing “the firms ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments” (Teece, Pisano and Shuen 1997, 516). Thus, dynamic capabilities stress the firm’s ability to constantly develop its resource base to contribute to a company’s competitive advantage (Blome, Schoenherr, and Rexhausen 2013). In the context of OI, a company’s ability to perform on a superior performance level lies in its ability to collaboratively create new processes and services within cross-company value networks that are successful on the respective markets (Teece 2007). Knowledge-intensive tasks exhibit highly dynamic characteristics and experience-based knowledge as an essential company resource constantly grows in relation to its application. Thus, this contribution stresses a dynamic capabilities perspective to address knowledge as a dynamic resource of a company (inspired by Krzakiewicz 2013 and Salge et al. 2012).

To investigate experience-based knowledge from the viewpoint of knowledge as a key corporate resource (Krzakiewicz 2013), in section 3 attributes and requirements of the OI paradigm are displayed based on a comprehensive literature analysis. Typical areas of potential collaboration bottlenecks and points of potential failure regarding collaborative aspects are identified. Subsequently, characteristics of ACM are depicted and strength as well as weaknesses and limitations of the concept are shown. For this, mostly the basic work of Swenson (2010b) and corresponding publications are used. Grounding on this theoretical underpinning, section 4 comprises the concept of ACM that is merged with the requirements of the OI paradigm applying an iterative-incremental model and the resulting concept of Adaptive Open Innovation is described. Based on the findings, a software prototype is developed that implies the core functionalities of an ACM software and concurrently addresses specific OI requirements such as cross-border collaboration and transparent task allocation and monitoring.

Finally, a case study based evaluation using real-world scenarios in the fashion industry is conducted to prove the generic virtue of both the concept as well as the software prototype.

3 Related Work

3.1 Open Innovation

A literature research on prevailing process models for Innovation Management (IM) shows a very heterogeneous landscape. For the reason of simplicity, a further distinction between the different types of innovation (e.g., new products and service innovation) will not be made (Vahs and Burmester 2005). Furthermore, traditional IM and OI are not to be seen separately but interrelated and need to be considered collectively, since IM provides the basic moderating framework for open innovation efforts (e.g., Breunig et al. 2014; Igartua et al. 2010; Salge et al. 2012). In this context, IM activities enable a company's ability to identify, integrate and apply knowledge from external sources in the course of OI (Salge et al. 2012).

The covered scope varies with each model. For example, Crawford (1994) and Garriga, von Krogh and Spaeth (2010) include strategic planning as a preliminary activity in IM and OI. Other authors, such as Thom (1992) and Witt (1996), state that the first activity is the determination of a search field. Most of the authors include commercialization (also referred to market launch) in their model, whereas Hughes and Chafin (1996) do not include this stage, as the last activity in their model is the manufacturing phase.

Even though those models vary both in the number of activities and granularity, three major stages can be distinguished from the prevailing models of IM and OI (West and Bogers 2014; Folkerts and Hauschildt 2002; Gerpott 2005; Kotsemir and Meissner 2013):

- **Idea Generation:** The first stage comprises all activities from the early start to the finalized conception of an idea in cross-company teams. This might include the activities of strategic planning, search field determination, preliminary investigations, idea generation, drafting, and conceptualization across company boundaries. This stage also is referred to as the fuzzy front-end (FFE) of innovation. Garriga et al. (2010) describe this stage as often chaotic, unpredictable, and unstructured in contrast to the subsequent development of the idea. These attributes are in line with the basic characteristics of knowledge work. Therefore, it is claimed that the idea generation stage is highly knowledge-intensive and determines the success of a project in the most part (Man, Prasad and van Donge 2010; Beerheide and Katenkamp 2011).
- **Idea Development:** The elaboration (or realization) of the idea is executed in the idea development phase. In the corresponding models, this stage is also named as implementation, technical implementation, technical development, production, and manufacturing, dependent of the type and subject of the idea.

- **Idea Commercialization:** After the successful elaboration of the idea, it is commercialized and marketed to create benefit for the integrated partners both upstream and downstream the value chain (Yilmäki 2014; West and Bogers 2014). This can include the marketing concept, market testing, market launch, and acceptance reviews. Depending on the model, this stage is included to a greater or lesser extent. Hughes and Chafin (1996) for example fully neglect this stage in their proposed model.

The interfaces and transitions from one stage to another are not clearly defined (Folkerts and Hauschildt 2002; Gerpott 2005; Kotsemir and Meissner 2013). However, these three major stages can be spanned over the selected models of IM and OI. Therefore, they are used as a reference.

In addition to the challenges of conventional IM, the paradigm of Open Innovation is extended by the need for cross-company collaboration and communication (Garriga, von Krogh and Spaeth 2010). Especially reasonable ways to systematically manage and optimize knowledge transfer from external sources into the company (inbound open innovation) and to regulate the knowledge transfer from inside the company to external players (outbound open innovation) are challenging for companies (Salter, Criscuolo and Wal 2014). The executing knowledge workers are lacking systematic support for the tasks that rise alongside those challenges (Salter, Criscuolo and Wal 2014). While returns from open innovation are maximized when companies foster strong cross-functional and cross-company collaboration (Salge et al. 2012), existing working routines are seen as incompatible with the requirements for OI (Salter, Criscuolo and Wal 2014).

3.2 Adaptive Case Management

The term “Adaptive Case Management” was developed during an expert meeting in 2009, which resulted in the first and most prominent publication on ACM: “Mastering the Unpredictable” (Swenson 2010b). In this collective volume, the authors describe a variety of individual ideas on how to realize and implement the new paradigm. The specifics for the implementation are still highly disputed. For example, Pucher (2010) suggests a very comprehensive, domain-independent approach, whereas Matthias (2010) supports a “slim” and specialized system that is tailored to the respective environment. Similarly, Hollingsworth (2010) derives the ACM concept from a healthcare background, while Kraft (2010) relies on customer management, and Man, Prasad and van Donge (2010) focus on their individual understanding of IM. Nonetheless, all authors largely agree on main characteristics and define “cases” as the central entity that encapsulates the knowledge-intensive process in ACM. Huber et al. (2013) and Huber (2014) consolidate and describe the fundamental principles.

Collaboration is one of the major principles of ACM. Cases, i.e., process instances, are driven by human decision-making with a high degree of freedom and oftentimes by collective work on the process output. The interdisciplinary collaboration and co-work is characterized by a growing knowledge base over the execution time. At the same time corrective actions and adjustments of the process are allowed for the parties involved in order to respond to external factors or unforeseen disturbances. One major characteristic of a case is that the way to achieve the desired output is not predictable.

In order to follow this concept of guided flexibility, which is also widely recognized in business practice for knowledge-intensive business processes, a paradigm shift can be observed (cf. Figure 1). So far, the planning of traditional (open) innovation and project management approaches is predominantly top-down oriented (Reichwald and Piller 2009). This means, initially the organizational and process-oriented structure of cross-corporate innovation activities is defined and deployed. Subsequently, the innovation projects follow a given well-documented plan, knowledge transfers both inside-out and outside-in are strictly predefined and their execution is usually closely monitored. In contrast, cases (as described in Huber 2013 and Huber 2014) focus on interdisciplinary cooperation following a bottom-up approach and the work is done across formal organizational boundaries. Cases may use existing

templates and best practices, derived from similar successfully accomplished cases. The case execution is simultaneously dynamic and emergent. The classical planning and execution phases merge.

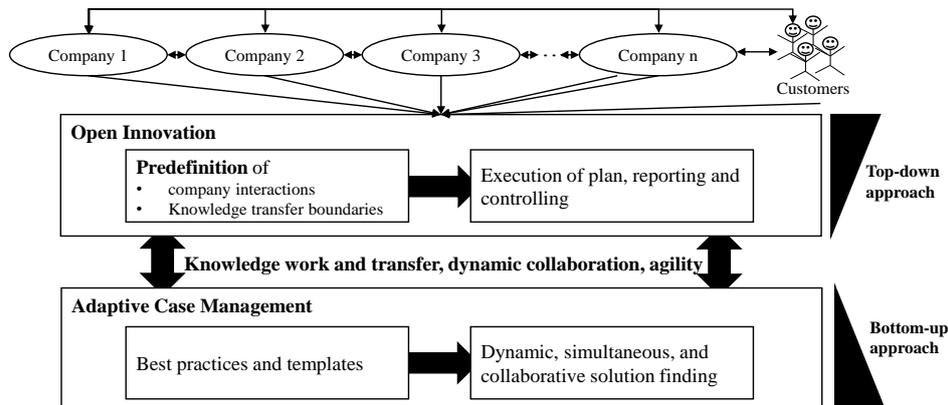


Figure 1: Paradigm-shift in Open Innovation

4 Adaptive Open Innovation

4.1 Concept

To link the concepts of ACM to the domain of OI, the developed framework follows three major stages: exploitation (which includes the FFE), development, and commercialization, based on the suggestions of Folkerts and Hauschildt (2002), Gerpott (2005), and Kotsemir and Meissner (2013). It thus comprises the lowest common ground of the examined models for IM and OI. Here, the focus is set on exploitation stage, since this stage to a great part determines the overall success of an OI project (Kotsemir and Meissner 2013). The development phase and corresponding relevant aspects of the AOI approach in this stage are part of Huber, Schott and Lederer (2015). The commercialization stage will not be considered as it mostly is seen as a supplementary step of the core concepts of IM and OI and can be treated as a separate element (Gerpott 2005). In contrast to the exploitation and further development of an idea, the commercialization of it follows standard approaches for products and services, and therefore is more related to the research field of marketing and sales.

The exploitation stage is also referred to as the fuzzy front-end of innovation processes. Its goal is to exploit an idea into a sound concept (West and Bogers 2014; Folkerts and Hauschildt 2002; Gerpott 2005; Kotsemir and Meissner 2013). In literature, a broad variety of activities in the FFE can be identified, whereas a common definition cannot be found (Hüsig and Kohn 2003). Additionally, they describe this stage often chaotic, unpredictable, and unstructured. These attributes are comparable with the basic characteristics of knowledge work and the ACM approach. Thus, the exploitation stage is stated to be highly knowledge-intensive (Man, Prasad and van Donge 2010; Beerheide and Katenkamp 2011). Furthermore, it encompasses great need for cooperation and collaboration among the participating players (West and Bogers 2014). Since especially in this stage the particular demands in the constellation and configuration of collaboration across company boundaries are highly dynamic (Yilmäki 2014), predefined collaboration approaches fail to achieve their required level of performance (Kolfshoten and de Vreede 2009). This insufficient level of performance mainly expresses in an unfair distribution of knowledge transfers and knowledge streams among the participating project partners. Furthermore, resentments with regards to strong self-interests of partners from different companies result in insufficiently transparent and selective knowledge sharing under strategic and tactical considerations.

Huber (2014) describes an iterative-incremental model for ACM while Man, Prasad and van Donge (2010) propose the iterative-incremental SCRUM model for IM. Based on those two findings, the derived model for OI is comprised of an iterative-incremental model, here described in greater detail for the exploitation stage of OI. Hereby, the entire ACM cycle including initialization, execution, and case-specific adaption, as well as reflection and case-spanning adaption, is progressed as one case. The resulting procedure model is depicted in Figure 2.

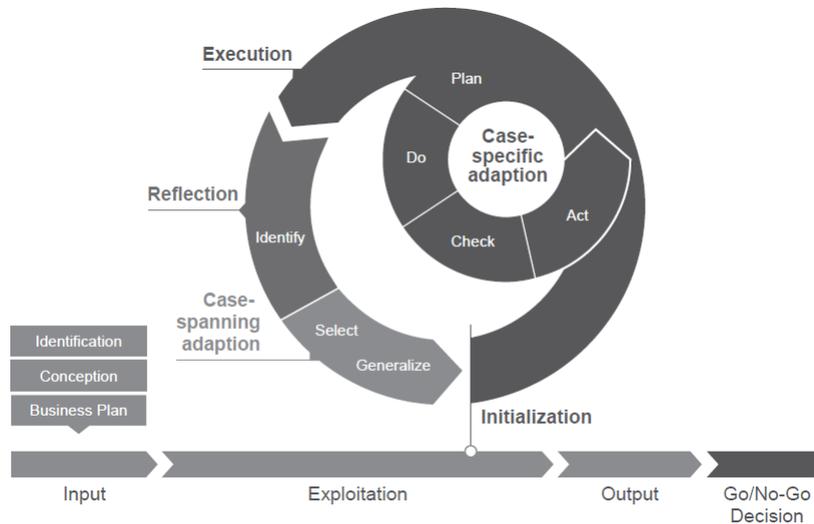


Figure 2. Procedure Model for Adaptive Open Innovation

The initialization phase at the beginning of the cycle is inserted in addition to the model of Huber (2014). It is the starting point of a stage, which in terms of ACM means the initialization of a new case. This can be done either by creating a new and blank case or by instantiating a new case from an existing case template (Khoyi and Swenson 2010; Burns 2011). After the case is set-up, the actual progression on the case starts with the execution phase. During the case-specific adaption phase, the case itself is being adapted by the knowledge workers. For example, tasks can be added or edited, and the data base can be modified. It is incrementally adapted to its individual circumstances and thus emerges over time (McCauley 2010; Kurz and Herrmann 2011). It follows the four-step Plan-Do-Check-Act (PDCA) cycle of Deming (1988). According to this, the case-specific adaptations are planned first and are then executed. Afterwards, the achieved results are checked with the expected results from the planning. Differences then are analyzed and corrected during the act activity and, if necessary, improvements for upcoming iterations of the PDCA-cycle are made. This progression is iterated until all goals of the exploitation stage are reached. Subsequently, the case enters the reflection phase, in which the achievements of goals and its efficiency are evaluated. New insights gained from this evaluation can be generalized and made available for further exploitation cases, for example by adapting existing templates or creating a new one (Huber 2014).

Once this case for the exploitation stage is finished, a go or no-go decision for the further development of the idea is made to ensure a clearly defined transition. If the decision is positive, a second ACM cycle is progressed for the development stage (Huber, Schott and Lederer 2015).

Inherently, this model also fulfills the requirements of archetypical characteristics of ACM, especially regarding the unstructuredness, adaptivity, and emergence. The presented stage provides a comprehensive framework for the core activities of OI during idea exploitation without specifying its exact progression. The actual pathway thus emerges with its progress. Based on this overall approach, the following chapter introduces the architecture and basic functionalities of a suggested IT platform for AOI.

4.2 Tool Support

In order to evaluate the solution approach proposed, an initial prototype has been designed and implemented. Even though additional building blocks are part of this release, the subsequent presentation will focus on approaches that are backed by positive user feedback and evaluation data (Huber, Lederer and Bodendorf 2014). The tentative design of the prototype is based on Jablonski's systematic approach (Jablonski 2004) which separates the complexity of the architectural concept into platform and application layers which are linked by technologies and standards.

The platform's architecture is represented by a web-architecture according to Jablonski (2004) and can therefore be divided into four separate layers: back-end, application server, web portal and client. The system is based on the Linux Ubuntu operating system and a database instance of Oracle's MySQL service. This first layer provides the runtime environment and required data storage facilities. The application server is based on the GlassFish community server, which offers a framework for the development of JavaEE based applications and connects the prototype with the underlying infrastructure. In order to operate the actual application, clients merely require a traditional web browser. To further enhance the usability, the user interface relies on JavaScript and AJAX technologies, which provide a "desktop-like" look-and-feel for the final application.

The application architecture is organized according to functional criteria. Therefore, the prototype distinguishes the layers data management, business logic, and presentation (Jablonski 2004). This structure comprises the actual navigation tree of the entire system and provides a comprehensive overview of the available items and their respective position within the system.

The following components are available across all case instances to provide the basic functionality of a platform for AOI:

- **Activities:** This section manages all (individual and common) activities on the platform and visualizes them in different views. They can be searched, filtered, and commented. Moreover, discussions within the activity streams are also possible. This enables cross-company collaboration and close cooperation within the frame of a distinct OI project.
- **Dashboard:** The dashboard gives an overview for the knowledge-worker of all relevant business objects he is involved in. By using state-of-the art visualization techniques this information helps to improve the detection of cause-effect relationships and action needs. Fostering the transparency both of individual's and group's workloads, this component specifically supports the joint completion of the exploitation stage of OI projects.
- **Cases:** The core of the platform is the case management system. This section shows all relevant cases, the user can work, edit, and proceed in different views. The actual collaboration in those cases that enables the accomplishment of OI projects during the exploitation phase is depicted later in this section.
- **Templates:** This component manages the different patterns for cases. Templates contain best practices for task execution and collaboration and are to be derived from previous case instances. They can be instantiated for new cases that need to be solved. The collaborative work in individual cases may also serve as a basis for the development of a common knowledge base by archiving those cases. The repository also provides the possibility to manage business services, orchestrated processes and technical services in a SOA-like approach. In addition, the templates can be shared with other participants and communities. Like this, the prototype provides predefined yet highly flexible working frames for cross-company OI projects.
- **Organizations:** Since OI projects may focus on cross-company collaboration, this essential feature extends the administration function on a personal level (e.g., own profile, notification settings, tags, and embedded external applications) by adding functions to configure the visi-

bility settings for templates and available functionalities (case extensions) for user groups, e.g. from different firms. In that way the system is multi-client capable and suitable for the deployment in company spanning development projects (e.g., Joint Ventures) or cloud computing environments.

The following functions are available within each case:

- **Case Dashboard:** The dashboard is designed to implement the core principles of goal orientation and transparency. This component provides all the necessary features to define and control common case goals, according to the management-by-objectives approach. Different views (e.g., earned value charts and motion charts) provide adequate information retrieval and processing techniques (e.g., visualization of the entire history of a case) for each case member. This allows for a joint process of collaboration with shared visions, guidelines and goals during the exploitation of ideas as well as the development of concrete product or service innovations.
- **Case Members:** This component implements an integrated roles concept and manages the assignment of user rights. The prototype offers pure reading access (e.g., for external partners), as well as active membership in a case to collaboratively work on tasks, both for internal and external case members. The case ownership role enables users to make fundamental changes in the case structure and would be applicable for the coordinating role (or company) within an OI project.
- **Case Extensions:** This functionality provides the possibility to enrich the collaborative work with comprehensive case extensions (e.g., task list, decision support system, and document libraries) which can be added or removed during runtime. The default setting of extension is focused on fundamental components, required for task execution.

The key idea of case extensions is to provide a modular suite of collaboration functionalities that can be flexibly added during case execution. In that way the collaboration platform initially shows fundamental components that are required for small projects. As a case grows over time new functions may be necessary and can be attached easily. Thus, the extensions enable the dynamic adaption of knowledge transfer between the participating partners.

Another important aspect is the collaboration on different business objects, like tasks, documents, and decisions across company borders. In typical software solutions these objects are treated in separate navigational views and functions respectively and are strictly limited to a company internal scope. The option to create relationships between those business objects and between different organizations is not provided. An innovative approach in that regard, which directly supports collaboration, is the case workspace. In Figure 3 an example of a task board is depicted that is used in agile software development (SCRUM).

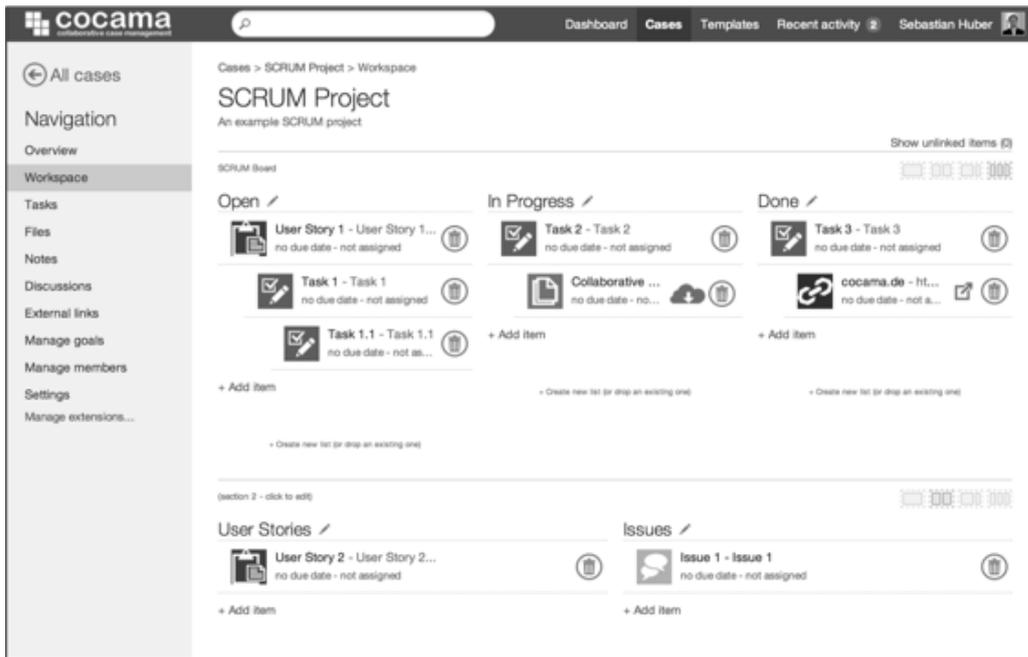


Figure 3. Case Workspace Evaluation

With an intuitive “drag and drop” behavior it is possible to create different lists and freely arrange all objects used in the case. By doing so, hierarchical relationships between tasks (e.g., milestones, sub-tasks) or the assignment of documents to discussions, etc. can be realized. Another application scenario of the presented workspace could be a typical scheduling decision. Therefore, two lists are required: One for the different decision options (e.g., alternatives 1 and 2) and one for the participants. Now a case member can assign himself/herself via drag-and-drop to the alternative preferred. The workspace serves as a flexible integrator for business objects used in the different case extensions and is an innovative view to collaborate on them and to create semantic relationships between those objects.

A second example for the IT support during the idea exploitation phase could be the evaluation of the overall idea in a cross-company team by applying a multi-criteria evaluation schema as shown in Figure 4. For the example presented below, the involved team members can assess five evaluation criteria (priority, risk, practicability, degree of innovation and relevance). A spider chart visualizes the estimated values. Building the arithmetic mean of all available assessments, the system calculates and displays the overall idea evaluation.

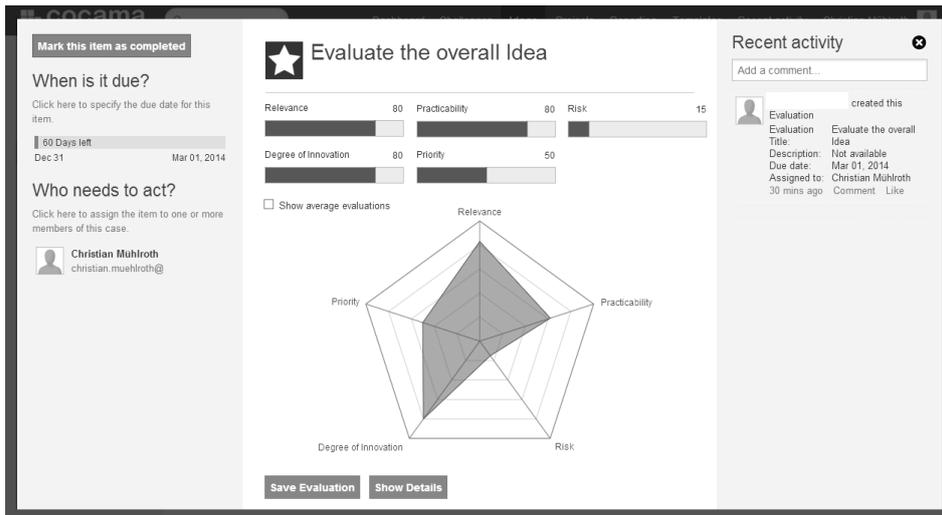


Figure 4: Idea evaluation

In addition to the examples given above, the IT tool allows a comprehensive reporting and controlling of OI projects within and across companies. Figure 5 exemplarily shows a dashboard comprising a brief overview of the existing cases in the system and contains information about current challenges, ideas, and projects. The pie chart visualizes the currently pursued ideas grouped by challenge. Additionally, the dashboard shows the number of new ideas per calendar week to potentially enable KPI controlling.

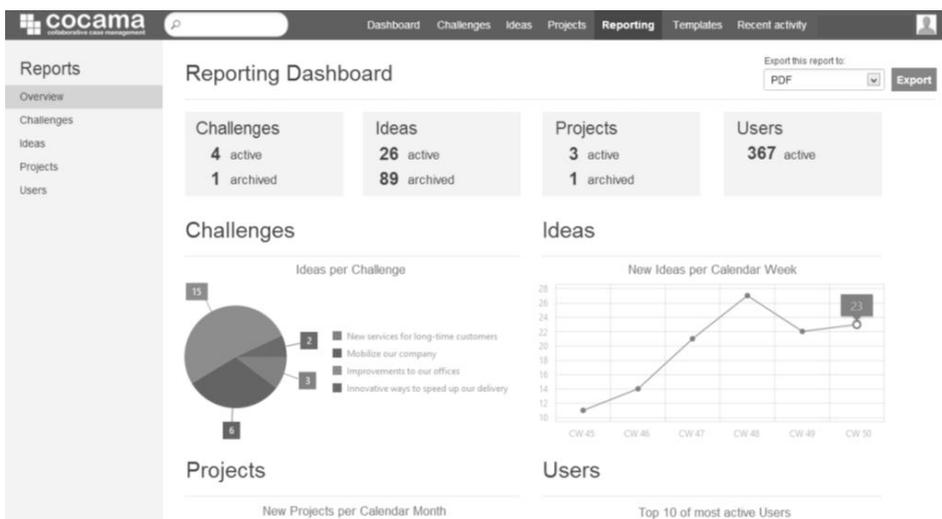


Figure 5: Reporting dashboard

To test the implemented prototype, the collaborative nature of OI during exploitation stage has been simulated as part of a student case study (n=63). The OI scenario is based on real-world projects of a fashion manufacturer, which has to coordinate a large number of suppliers in order to design and manufacture an innovative fashion product. With new suppliers being integrated and existing suppliers being replaced, this process is knowledge-intensive, difficult to plan ex-ante, and collaborative. As the supplier is responsible for coordinating the entire project, the case study comprises two major roles:

- Managing role (case owners): This role is responsible for the entire management of the different tasks and has to consolidate them as a final result. He/She is comparable to the innovation

project manager who coordinates an open innovation project across company boundaries and is the integrating role for all affected stakeholders.

- Operational role (case members): This role contributes to the tasks in different cases. It is controlled by the case-spanning managerial role. Case members are comparable to innovation team members from different companies who collaborate to foster open innovation.

During the case study each group (12 groups in total) fulfilled both roles and worked on five different tasks. For each task they had two weeks to coordinate and deliver the results. Table I summarizes the data that has been collected during the case execution.

<i>Activity</i>	<i>Amount</i>	<i>Activity</i>	<i>Amount</i>
Invited users	63	Tasks created	883
Created user groups	12	Messages sent	911
Collected events (clicks, etc.)	4.505.607	Activity Stream Events	2.608
Discussions started	96	Documents uploaded	119
Cases created	74		

Table 1. Collected Case Study Data

With more than 2.600 activity stream events, the prototype is intensively used for collaboration. One major challenge is to consolidate those events to prevent information overflow for the user. For example when a document has been changed several times in the last few minutes those events are grouped together into one single activity without losing relevant information. Aside from the technical data collection, the case study participants were also asked to rate the actual implementation based on the statements depicted in Figure 6.

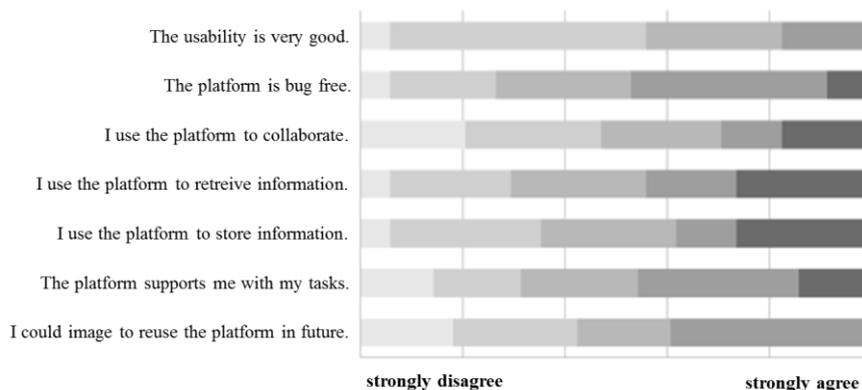


Figure 6. Assessment of the AOM platform

The first results are promising, as the AOI approach proves to enable the user to fulfill the complex collaborative case scenario. In addition, the participants gave feedback about the importance of certain features an AOI solution should provide. Figure 7 shows the importance of those key functions, which also indicates that the proposed IT-enabled solutions offers fundamental support for collaborative tasks (e.g., mail synchronization, decision support, chat, etc.).

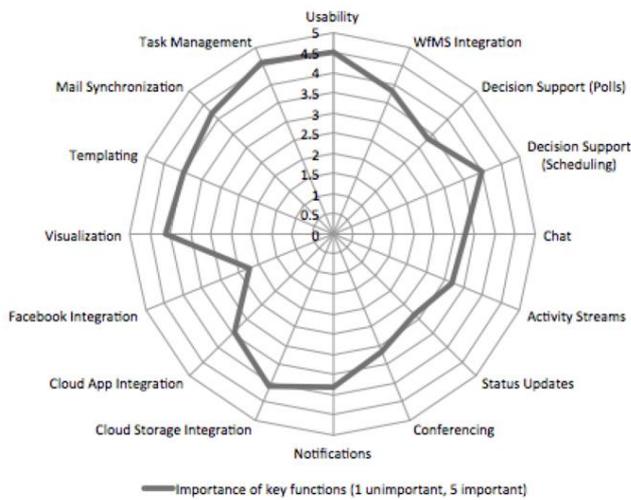


Figure 7. Evaluation of selected functions

5 Conclusion

Adopting the position of the dynamic capabilities perspective, this paper outlines and discusses how the recent trend of ACM sets out to revolutionize the way OI can be supported with IT. First, the general concepts and principles behind the new paradigm are introduced and put into the broader context of OI as a whole. Subsequently, the implied role and challenge of collaboration between knowledge workers is investigated, in order to illustrate the fundamental differences of an AOI implementation compared to other traditional IT systems for IM.

By following the core principles of ACM, this approach promises to master the emergent, transgressive, interdisciplinary and unpredictable nature of OI, which is often highly collaborative. As the new approach breaks with the traditional separation of planning and execution (and in fact merges both phases into one), workers are provided with a framework that supports the required flexibility and enables an agile and dynamic environment for teamwork across company boundaries. A new collaborative AOI approach is described, which has the potential to connect the traditional top-down procedure of process planning to the bottom-up execution based on cases. The resulting prototype provides a number of effective solutions to some of the outlined challenges of collaborative OI. However, especially from the dynamic capabilities point of view some limitations regarding the presented approach need to be mentioned. It is assumed that chosen innovation ideas and their development lead to market success and thus creates new and valuable resources, both in process and product. Consequences that arise with unsuccessful OI projects or disharmonies between the participating OI partners are not considered in this paper and necessitate further investigations. Furthermore, as the technical implementation does not encompass all suggestions of the new approach, additional research and software development challenges still have to be coped with.

Above all, the contribution shows that a comprehensive portfolio of collaboration features and their interrelations provide a solid base for OI. The concept is tested in a case study scenario with students. As they do not represent typical innovation managers in the IT industry, more applications in “real life” business scenarios will be used to enrich the solution approach as well as to improve the prototype. Nonetheless, AOI has emerged as a compelling paradigm to manage the unpredictable. As the development of the technology is still at a very early stage, further research efforts will be done to mature the concept. Understanding the specific design challenges however, will pave the way for AOI to realize its full potential.

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