Web 2.0 Learning - A Case Study on Organizational Competences in Open Content Innovation

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Abstract. In this paper, a process-based view on shifting from proprietary towards Open Content Innovation in the LMS[1] market is described based on in-depth research within KOPIWA[2] – a pre-competitive joint research project on "Competences Monitoring for Open Innovation in the Digital Economy" in Germany.

A longitudinal case study approach in shifting to a new Web 2.0 compatible business model is presented. The model focuses on providing process-facilitation, as opposed to the marketing of traditional Learning Management and Content Creation-Software. It serves as a basis for empirical insights into the management challenges and organizational competences that must be addressed to cope with Open Innovation.

The results clearly point out that to master the challenges of Open innovation there can be no simple 'switch of a button', such as adopting the newest fashionable management tool. Instead, a far-reaching management paradigm shift is necessary to successfully accomplish Open Innovation. Among those behavioral patterns that need to be changed are (1) breaking rules and conventional management routines, (2) becoming accustomed to upside-down thinking to amplify organizational boundaries, (3) process facilitation instead of micro-management, (4) developing sophisticated networking evolution skills, (5) establishing an effective stakeholder management system, (6) managing by clear outside-in and inside-out principles.

Keywords: Open Innovation; Open Source Innovation; Open Content Innovation; Outside-in Management; Inside-Out Management; Organizational Competences; Individual Competences; New Business Development

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[1] LMS = Learning Management Systems
[2] KOPIWA = Kompetenzentwicklung und Prozessunterstützung in Open-Innovation Netzwerken der IT-Branche durch Wissensmodellierung und Analyse, funded by the German Ministry for Education and Research (BMBF) and EU, Förderkennzeichen 01FM0770

1   INTRODUCTION

In this paper we present empirical findings of an ongoing Open Innovation project called 'Web 2.0 Academy'. The project is managed by reflact AG, a small Digital Economy service provider which has 40 employees. The company is a supplier of web-based organizational development software, with a portfolio of products and services around e-learning, 360° feedback, authoring software and virtual collaboration systems etc.

The cognitive interest in this case study is twofold:
(1) to disclose management requirements in setting up an Open Innovation project in the Digital Economy,
(2) to discuss organizational premises and backlashes as the result of stepping into Open Innovation processes. Thus, we are discussing interleaved, entangled, learning loops between an open business case and its organizational consequences.

This paper is organized as follows: first we will give a short overview on product related issues of this Open Innovation project case study report. Then we will describe the organizational development process within reflact AG as the focal innovator leading to the envisaged service innovation using Lewin's organizational development phases of "unfreezing – moving – freezing" [4] [3]. Finally we will discuss some lessons learned and selected implications for further research.

2   Product-Service related issues of the Case Study

The aim of the Open Innovation project is to establish a Web 2.0 based competences development system for the Digital Economy, relying on user generated "learning objects"[4] arising from mutual exchange of needs and knowledge incorporated in different innovation actors. This new competence development and monitoring concept is expected to serve in direct response to the fast changing requirements of the Digital Economy and help to overcome deficiencies of the present further education and training system in this sector.

The idea is to set up an enabling platform where experts and professionals from the Digital Economy, as well as suppliers of further training schemes, may develop appropriate knowledge modules based on open and in some basic components even freely available collaborative exchange, authoring and learning management infrastructures, which fit best to upcoming trends in this industrial sector. Thus, the

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[3] Since this paper is more or less a snapshot from an ongoing research, please note that the refreezing phase still has not been implemented.

[4] We define "learning snippets" as modularized smallest knowledge elements in response to a distinctive need for training requirements, in whatever media format (text, image, audio, video, slides etc.) which may be used as Scorm compatible learning element in a learning platform.

activities described in this case study are focused on an "Open Content Innovation". This is a combination of providing recent technology infrastructure with an adopted and refined process facilitation approach. Concerning management, the main goal is to balance the chances of a crowd sourcing approach with handling the specific risks.

All the parties involved in the project are confident that by building and sharing a widely accepted (mainly participativly developed) grid of knowledge-objects dealing with key aspect of the industry, they will accelerate the innovation capability of the overall network. As a result the new style of learning will transform the interorganizational capability to innovate and cope with dynamic environments.

The Open Innovation project is predominantly participative and "bottom-up" oriented since the decision on which contents are important, as well as the content development, strongly relies on the participation of professionals from the Digital Economy. However, there is a decisive coaching or moderating impetus to navigate the entire system in certain directions, since the project activity is, in the long-run, embedded in a new collaborative business model between the key stakeholders involved. Thus the governance layer of the Web 2.0 Academy contains different steering and incentive elements to stimulate user participation. It also strengthens and intensifies content development and exploitation where needed, so as to insert new points of orientation for innovation actors and further training suppliers reflecting, for example, fast technology change or upcoming training needs of certain industrial sub-sectors. Since the innovation actors in this case study are not naïve in drawing on the latest wisdom in "governing innovation", the steering purpose is – to use an allegory – to be understood as a 'cockpit function': the pilot, hopefully, knows the destination but is open to changes in speed, direction, altitude, is willing to take other passengers on board, knows when to alter velocity when facing headwinds, knows what to do when the catering is poisoned and the entire aircrew becomes sick. So the pilot of the Web 2.0 Academy and his or her crew need a dashboard with different instruments to analyze key properties of the underlying Web 2.0 community for continuous adjustments to increase desired outcomes.[5]

Thus, the Web 2.0 Academy platform is based on the constitutive idea of self-organizing **cybernetic cycles**, where the initial need for action originates from an internal or external event, trend or incident reaching a peak high enough to be recognized by the community of innovation actors (i.e. going beyond the perception threshold).[6] In the cybernetic cycle (see Figure 1), this kick-off point is located at 1:00 (**Identification of trends**), where specific methodologies of trend-spotting via Social

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[5] For a more detailed description of support tools see Scholl et.al.: "The Open Learning Loop – An Integrated Approach for rapid development and timely supply of Learning Courses" in this book.

[6] To illustrate this we may refer to the ongoing trend to merge social software with mobile applications or interactive games with e-learning (serious gaming), where new hybrid competences and complementary skills may arise that are needed on the level of project management, product and service development, etc.

Network Analyses, continuous online-surveys, research on technological trajectories etc. are applied. Since the proposed Web 2.0 Academy is strongly dependent on the overall Digital Economy Community via interlinks to the central professional association BVDW[7], all parties involved have a strong interest in maintaining appropriate ideas, knowledge, contextual information, submissions for solutions within the community etc. with respect to the trends identified (Discourse at 3:00)
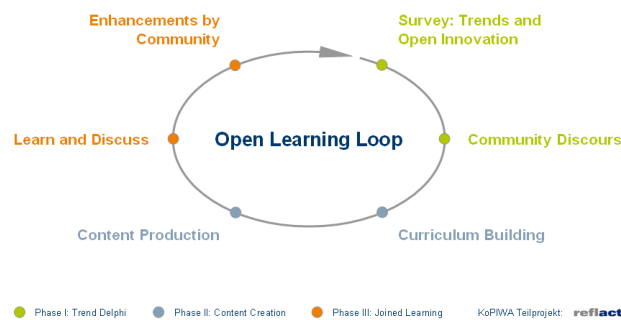

Figure **1: Cybernetic cycle of generating learning snippets**

For this reason, specific tools are implemented on the Web 2.0 Academy platform to enable discussions around upcoming trends etc., and to stimulate experts and professionals to develop contributions with incorporated "knowledge" in response to articulated needs for training and education. Since the underlying cognitive aggregation to **transform trends into curricula for education** (5:00) is a very complex social process, specific incentive systems are implemented to stimulate an intensive stakeholder and user participation, e.g. a fame-mirror system[8] that is supposed to amplify intrinsic motives to deliver user generated content.

Content generation and provision (7:00) then is expected to follow a self-purification and selection mechanism along the discussion groups, fora, blogs etc. on the Web 2.0 Academy platform. Some issues are expected to be "knowledge hot spots", while others will decline according to low intensity of discussion or low prospected need for action. Finally, there will also be upcoming interests articulated by further education suppliers in the sector.
If these "learning Snippets" are then available for learners and companies, they will be **used and evaluated** (9:00.), in direct interaction with the target groups of the Web 2.0 Academy. In the Open Innovation process, this stage will be a decisive moment: the pilot has to recognize if user participation is still high enough, knowledge hot spots are still well discussed, certain learning snippets or even broader learning units

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[7] BVDW = Bundesverband Digitale Wirtschaft

[8] See Scholl et al.: "The Open Learning Loop – An Integrated Approach for rapid development and timely supply of Learning Courses" in this book.

are in high demand, while others are not, etc. (**discussion process** at 11:00.). Since the underlying innovation drivers in Figure 1 will evolve dynamically over time, the Web 2.0 Academy platform has to assure that further discussions of experts on the platform, as well as new initial trends coming from the outside world, are incorporated properly into the platform. This incorporation will be **supported by appropriate tools**.

Nevertheless, we will not go here into detail about the technical realization of the Web 2.0 Academy, but will instead place our emphasis on the organizational development process within the focal service provider of the Web 2.0 Academy and the attached network of innovation actors and stakeholders promoting the Open Innovation project.

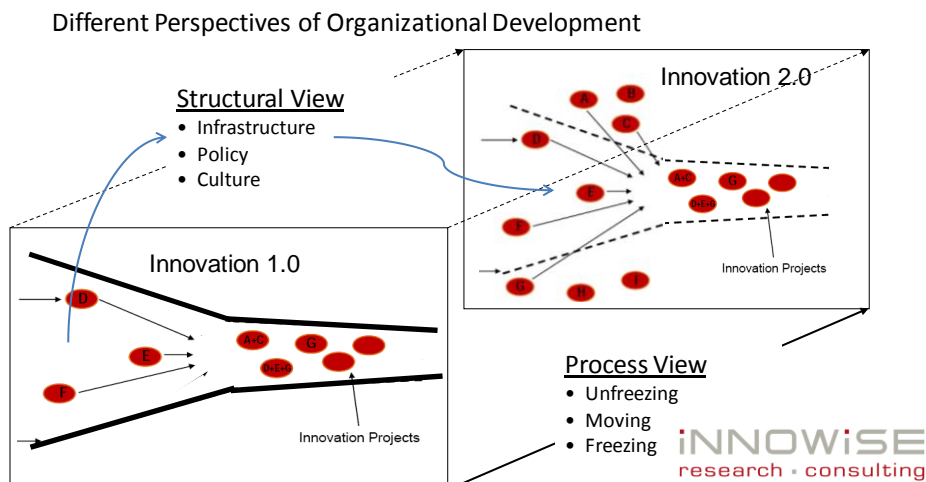Figure 2 depicts our central questions along the organizational development process:

Figure 2: Different Perspectives of Organizational Development

To step from "Innovation 1.0" as the archetype of a closed innovation model towards "Innovation 2.0" as the new Open Innovation model, a paradigm shift in certain constitutive elements of the organization is needed Structural View). We will describe the most important changes in the following chapters using the well known process view [4] of *unfreezing* existing infrastructure-, policy- and culture elements of the organization. This unfreezing process will enable previously encrusted organizational structures and processes, to *move* to new institutional arrangements, by, for example, configurating trials, working in a new way, gaining trust and commitment. Subsequently, it will be possible to *refreeze* them so as to enable new organizational competences and stability to emerge in the next stages of Organizational Development.

3   Point of Departure: unfreezing – initiation

The starting point for reflact AG (subsequently named the "**focal open innovator**") was marked by the company's CEO's desire to experiment with a joint research and development project on competences development in Open Innovation. The decision to step into the project was more or less based on process-based trust, as the CEO had good experiences from frequently collaborating with the R&D project initiator. The focal open innovator had previously developed products and services mainly "on-demand" based on proprietary software development, and intensive customer interaction. These were based on a sound intuition of evolving needs in computer aided learning, learning management systems (LMS) and organizational development (OD) tools. Indeed, in the first phase of implementing the R&D project, it was more or less an experiment to learn about open innovation and to evaluate strengths, weaknesses, opportunities and threats of the new approach.

One of the OD challenges was to move the company from a "closed" to a more "open innovation model", which involved a cognitive shift from closed and individualized customized content development towards open content innovation.

Breaking rules and conventional project management routines

The first aspect for OD tackled questions such as: does the new approach in terms of the Web 2.0 Academy "open content" platform have a considerable impact on organizational structures and project planning procedures? If yes, what do requirements look like, and in what direction do we need to change the mind-set of people from the organization and in the network?

Challenges in the perception of opportunities and threats in Open Innovation processes are obviously correlated with the proliferation of prospects arising from broad user participation. This "B2C bottom-up force" as the result of decentralized opinion-building and decision-making puts totally different challenges in place as the company was previously used to in B2B innovation processes. The previous project organization followed well-rehearsed routines of project management, with one-face-to-the-customer, functional or matrix organization with software programmers, educationists, psychologists, trainers, and consultants being assembled on a case-by-case basis for a specific B2B customer-focused development task. Based on these organizational routines, an organizational culture of individual responsibility with well-practiced individual functional roles has emerged in the past 10 years. This turned out to be the key success factor for the company in the past.

Now the transition from customized product innovation to network based system innovation enhances exponentially the complexity of project organization of the focal open innovator. Since the service provision in the proposed Web 2.0 Academy platform depends on (complementary) action, i.e. professionally and/or user generated content from distributed and decentralized stakeholders (the Digital Economy Professional Association, corporate actors, skilled employees, learners, training

providers), the product and service design itself as the central element of the new open business modeling in competences monitoring has to execute a paradigm shift from "1:1 customization" to "many:many service delivery". Thus it has to be in line with the business expectations of all the parties involved.

4 Transition phase: oscillating between incremental unfreezing and freezing

Upside-down thinking: how to amplify open organizational boundaries

The idea of making significant components of the central proprietary products of the focal open innovator freely accessible to a large community of users, was previously unimaginable because of the existing investment costs and future opportunity costs of third party free-riding. But, based on market evaluation, and taking into consideration the view that future competitive advantages in the sector of LMS providers will not be predominantly based on technical product performance but on service adaptability towards organizational challenges (of clients; of the speed of delivery of appropriate service provision; on delineating contents, etc)., the focal innovator decided to **open up its technological platform** to enable the competences monitoring process depicted in the Cybernetic Cycle (Figure 1). Since the service design now turned out to become a collaborative engineering process which required a change in design ethics from 1:1 customization to mass-customization, a multi-layer trial and error process was started involving lead-users from corporate actors (other companies from the Digital Economy sector participating in the KOPIWA joint research project), professional consultants from the central Digital Economy Association, selected learners and further education institutions, and last, but not least, the KOPIWA research team.

In collaborative working sessions ("**enabling space**") the group developed, operationalised, investigated, evaluated etc. the cybernetic cycle again and again, and moved -- via incremental steps of learning, evaluating, unfreezing, transition, freezing and feed-back loops – from a rough concept to a more sophisticated detailed framework as the baseline for the new open content business model. Specific characteristics of the underlying organizational development process within the focal innovator's organization have to date been **parallel and ongoing discussions** about the "raison d'être", with second line division managers, and by installing ad-hoc teams assembled with the experts needed to evaluate project objectives and intermediate results.

In addition, a more open **permeability in the organization** was implemented allowing for more **direct communication processes** between programmers, project consultants and the outside world. These accompanying measures strongly contributed to the development of **institutionally- and identification-based trust** in the organization of the focal innovator, since the members of the organization fully incorporated openness as a new organizational culture supported by the management.

Process Facilitation instead of micro-management

The next issue in Open Innovation projects as a core result of our case study which required upside-down thinking, is the intuition that Open Innovation management may not be implemented in the sense of "micro-management", where a manager – following a command and control approach - closely observes or controls the work of his or her subordinates or employees. In contrast, Open Innovation management needs a **cultural mindset of "process facilitation"** where the management is not setting the daily tasks, but is enabling the team (or even the network) towards self-organization and learning. Here there awareness by senior management is needed that you cannot just put your staff into a big room and hope that they will act on instinct. In this sense Open Innovation management requires the **ability to manage the timing to move slack resources into enabling spaces** in order to give process members certain degrees of freedom to act, and vice versa, and reduce, when needed, the slack resources. To use another allegory: as a gardener you may be happy with a proliferation of plants in your backyard, but - when the right moment comes – you need to return them to your greenhouse. Thus, to manage Open Innovation projects, one has to alter the organization's knowledge-base firm-specific competences and routines. In short, it's a matter of deutero-learning, i.e. learning to learn, which is the equivalent of the ability to open and close enabling spaces adjusted to the actual need for action in the innovation process.

Networking evolution skills and stakeholder management

BUT: In Open Innovation projects this process of change which results from the **opening up and narrowing of the enabling spaces** may be initiated by different actors in your innovation network, i.e. the process is not synchronized across your network, but is influenced by the mind sets of each of the collaborating partners. So it may occur that selected parts of a collaborative opinion-building task is only superficially open while working in network sessions, but is managed in a hierarchical manner in the network-partner's organization.

To argue with the concept of institutional economics [1, 5, 6]: Open Innovation management needs the **capability to find the balance between markets (as a self-organizing system) and hierarchy (as the steering element)** in the different steps of your innovation process. You must be aware that there might be a punctual equilibrium at one stage, a tilt in another stage where you need more hierarchy or more market transaction, respectively. **Synchronizing learning across the network** needs 'instinctive sensitivity', that is to say a social competence of balancing interactions in larger groups of people. This will enable you to calibrate learning and decision-making in your decentralized network partners organization; to match perspectives and intuition with respect to the timing of the collaborative innovation process; to decide when to open the process (e.g. to take new partners on board) or when to narrow it (to give the network time to respire), and so on.

In this context, our case study serves as an example straight out of a textbook. In its final operating stage, the new Web 2.0 Academy will change the business rules of

conventional further education and training providers, since their mechanisms of need recognition, training schemes development, ways and formats to offer it, invoicing processes, in short the entire conventional business model will become superfluous. On the other hand, all the stakeholders involved are aware of the fact that a new Web 2.0 Academy on competences development and monitoring will also need professional training providers with their pedagogical backgrounds and experiences to run a successful platform. Thus, the question of timing to take them on board was a central discussion point in 'setting the scene', as was examining the 'bomb-throwing scenario', i.e. pushing on the process to deliver the Web 2.0 platform without involvement of this specific group of stakeholders, knowing that the resistance to it will occur later.

This throws a light on a central issue of Open Innovation management: **stakeholder management** in changing innovation systems. When we talk about Open Innovation, we also mean "changing the innovation system" in the sense of a "system-innovation" [2]. We are altering the structure and the processes of the innovation system, the baseline business models, the configuration of innovation actors and stakeholders etc. Thus there is an obvious need in Open Innovation to develop sophisticated abilities for the handling of long-established versus new stakeholders stepping into the innovation system (which we already described as an ongoing running parallel to the Digital Economy innovation system). Think if Google had involved all relevant stakeholders (newspapers, advertisers, etc.) from it's very first day and asked them what the business model do you like most? In this sense, stakeholder management has to be balanced with the ongoing design of the core network's business model, pushing it forward to a stage of maturity where the core team feels comfortable, and where there is no longer a 'killer' argument to turn ideas back to a former stage. In other words, the core network establishing the core innovation has to be in control over the process dynamics. Decisions have to be taken as to when to alter the stakeholder participation and (we refer again to our pilot) when to change altitude, speed, etc. .With this background, Open Innovation management seems to **oscillate between structuring/opening and dramaturgy/improvisation,** and one must be aware of the fact that it will be dangerous to assume that all partners in the network are equally comfortable in operating with and in new media that will be unfamiliar to all of them.

Indicators for successful process facilitation: prioritization and social interaction tools

Obviously Open Innovation management – as far as process facilitation is concerned – needs different archetypes or elements of organizational culture that helps to embed processes of structuring and opening, dramaturgy and improvisation, straight-line and free thinking, etc. We will call this the **ability to set priorities**, meaning that there should be a mutual understanding in the innovation network to reach consensus about almost every incremental innovatory step. Openness is thus not a goal in itself, but a calculus.

In this context **support via tools** is again of the utmost importance. Organizational adjustments must embrace the definition of new organizational roles, reactive and

pro-active measures in response or prior to changing environments, and there is a need for sensors as prospective 'receptors' to the environment. Lessons learned from our case study clearly point to the issue that even in Open Innovation there is a need for controlling the process dynamics, and not leaving things to chance. Even if this sounds a contradiction in terms, the support of prioritization measures may not be based on random choice, gaming, muddling-through but should be based on facts, even if they are fuzzy.

When mirroring the substantial "open design process" to develop the Web 2.0 business model with the "open organizational change process" we need links to serve as **pulse generators to keep the organization in a constant learning process**. These sensors have been defined in-depth at the technical level as well as at the personal level by, for example, establishing new communication paths for all the innovation actors involved heterarchically across the network. What is the difference between closed and Open Innovation? In closed innovation systems project progress monitoring more or less relies on "technical-economical" indicators as well known tools for decision-making. If a project is running out of time or budget elementary and routine-based adjustments may help if expectations of B2B clients and performance of the product/service innovator diverge. In Open Innovation, new **tools to support and stimulate social interaction in the community** are in demand when facing B2C innovation processes with *prosumer* involvement and huge networks of stakeholders. These forces the initial network into a wider network of communication channels across all levels of stakeholders, from an individual draft response up to network and group communication procedures. An indicator for successful process facilitation is the common prioritization and consensus about the respective next loop in network learning. This demands specific instruments to scan thematic emerging and social interaction matters (Such as,what are the 'hot' topics in the community? Who is pushing issues? Is one looking at a thematically narrow but in-depth issue or a broad issue with sector wide impacts?, How do people involved in an issue communicate? What are their responses? etc.).

Outside-in and inside-out

Above we characterized **Open Innovation as a calculus**. As such, it is far distant from an idealistic approach to democratic innovation in which anyone can express his or her opinion about implementing novel ideas. Instead, we are talking about a business model innovation. What we learned from our case study in this respect is that it is an important task within Open Innovation management to always **decide on what should be made visible and what should be hidden, at least temporarily,** in order to be able to push forward a new network business model. In Open Source Software Innovation the outside-in and inside-out flows are more or less settled due to the fact that without total openness inside-out there will be no fruitful outside-in. In Open Innovation, beyond software programming, there are more fuzzy boundaries, since the value creation goes beyond programming code lines. If it comes to Open Content Innovation, much of the success of related business models relies on user participation. Smart crowd-sourcing in this sense is like moving around with a

vacuum cleaner to suck up promising ideas from our proliferated backyard and then pushing them forward internally (moving them to the greenhouse) to check how we can make the most of them. Again, this notion may be applicable when we talk about an Open Design project where we find a common development goal and project context, and in which a free flow of ideas may help to find the best solutions.

In an Open Content application project, the situation is different depending on the basic business model behind it; if a Web 2.0 based business model lives from just having as much traffic on the platform as possible to raise click rates on context sensitive advertisements, there is no need to rack one's brain on balancing knowledge flows outside-in and inside-out. If the business model is based on pay-per transaction for up-to-date dynamic knowledge and learning snippets, then quality assurance, reliable standards, etc. are in demand. Experts in the target community will act under the umbrella of the inducements-contribution scheme (Simon/Barnard) and will be coalition members of the focal innovator's organization for at least a certain time span (Cyert/March). The management of outside-in and inside-out thus has to follow the concept of establishing as many inside-out inducements as outside-in contributions to realize a platform that attracts more attention. Finally, it is a question of resources and knowledge to externalize as an antecedent to expect internalization of external know-how. And again, this calls for totally different incentive instruments compared to conventional closed innovation mechanisms.[9]

5 Re-freezing

Re-freezing, according to Kurt Lewin [4], continues to be of importance in determining the stability of an organization. We cannot at this moment, report re-freezing results from our on-going project. However, we already discussed how unfreezing and re-freezing are substantial parts of the Open Innovation project development process with respect to different aspects of organizational structures and processes.

6 Lessons learned

Open Innovation needs a co-evolution of new business model development, external network management and internal organizational change. It is a big challenge to balance this triad in a way that the outcome of the Open Innovation process is successful. To sum up the lessons learned:
(1) it is necessary to be aware that Open Innovation needs to break rules and conventional management routines as there are usually much more parties involved in

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[9] Here we cannot go into detail, since our case study report is a snapshot from an ongoing process.

project-definition, project-design, project-development in the future business model than in traditional B2B product innovation.

(2) upside-down thinking and amplifying open organizational boundaries are essential means to strengthen self-reflection and learning in feed-back loops with the outside world.

(3) concerning process facilitation versus micro-management, we illustrated the fact that Open Innovation is, by its very nature, not controllable in the usual sense. Hence the most important management pattern seems to be the ability to manage the timing to add a dose of slack resources into enabling spaces in order to provide certain degrees of freedom so that an Open Innovation group can join forces and work together.

(4) as to sophisticated networking evolution skills, Open Innovation processes for the focal innovator are not only about individual or organizational learning, but also about complex network learning. The latter requires more and more elaborated skills and experiences in the area of social competences than in closed innovation management systems

(5) concerning stakeholder management, new competences are needed to oscillate between structuring and opening, dramaturgy and improvisation, depending on how, and to what extent, stakeholders relevant to the future business model have to be involved into the innovation process.

(6) finally a clear outside-in and inside-out management system is necessary since we consider that Open Innovation is a calculus and not an idealized system of democratizing innovation.

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