

Innovation in sourcing competencies

Research dissemination report

Edited by Riika-Leena Juntunen, Minna
Takala, Pia Tamminen, Mervi Vuori

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**Edited by Riika-Leena Juntunen, Minna Takala,
Pia Tamminen, Mervi Vuori**

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Preface

The research was organized into six work packages: 1) collaborative practices with suppliers in early life cycle phases; 2) management of innovation-focused sourcing relationships; 3) use of demonstrations, prototypes, and pilots; 4) practices for indirect sourcing; 5) approaches with developer communities, living labs, and practices for early customer involvement; 6) approaches for crowdsourcing. Research methods comprised case studies, interviews, participatory workshops, development projects, and the identification and benchmarking of new practices.


In this report, the authors have chosen to present selected findings in three layers with overlapping sectors:

- The inner layer addresses important themes within the focal company perspective.
- The middle layer raises themes that are essential to supplier collaboration, which includes immediate partners and stakeholders in innovation activities.
- The outer layer introduces potential new stakeholders and new practices, or the crowd, which can be used to promote innovation.
- The overlapping sectors are employed to introduce special themes that address emerging issues and which cross all layers.

More detailed information and references are presented in the original articles and working papers.

Furnace Model based on:

Eloranta E., Ranta J., Salmi P. and Ylä-Anttila P. (2010), Industrial Finland. Teollinen Suomi, in Finnish, Edita.



EXTENDED NETWORK

IMMEDIATE STAKEHOLDERS

THE FOCAL COMPANY

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1

The focal company

Although the current trend is to utilize external networks, the focal company is still the traditional origin from which new concepts have emerged; the key to successful business lies within internal resources. Many businesses, such as 3M, Sony, or Google have benefitted from the encouragement of an entrepreneurial climate inside the company. Intrapreneurship supposes that, under the proper conditions, employees with a natural talent for entrepreneurial behaviour can significantly contribute to innovation and company growth. Yet, while there are many ways companies can incorporate innovation from internal resources, there is also room for improvement inside the more traditional modes of operation, including indirect sourcing and procurement, where the level of centralization can greatly affect the company spend. In both cases, the important key to successful change is an organizational culture that promotes and fosters innovation and cooperation with different stakeholders. Similarly, the growing relevance of external networks depends on management support. One of the hot topics in the field is the integration of sourcing and product development; an example of which is the Supplier Day – an event launched by Konecranes to boost innovation with their suppliers. As the following summaries show, the new path to innovation relies on collaboration, and equal and open relationships on both sides of the company boundaries.

New approaches to innovation

Although there is consensus regarding the importance of innovation, no commonly accepted definition appears to exist. In most organizations, innovation is generally associated with competitiveness and change. It is agreed that innovations are important for technological progress, and overall economic and business growth. Innovations also extend technological capabilities, improve productivity, and contribute to society's wealth and heightened standards of living. In a company context, innovations increase market share, and contribute to the comparative and absolute advantages of a firm. Commercial success with the proper management of commercialization is required for a new product to become a product innovation. However, the innovation process does not stop at product launch, but continues over the whole product lifecycle. The focus on innovation is also expanding to service and business models. Initiating and nurturing innovation is a formidable challenge, even in highly adaptable organizations.

Today's operating environment can be characterized by the growing importance of knowledge, increasing technological complexity, and globalized competition. It is not economically feasible for companies to try to manage all value activities within the company boundaries, meaning that they are increasingly outsourcing non core activities to their business partners. At the same time, companies are becoming aware of the fact that they cannot possess all relevant information themselves and that there is a large amount of valuable knowledge residing outside company boundaries. As a result, companies are creating complex networks of knowledge and technological bonds that are drawn upon for the purpose of innovation. As a term, innovation refers to the development of new ideas; the creation of new knowledge has an essential role in innovation. However, it is not enough to merely generate new ideas and knowledge as companies have to consider their application to the actual production of new and improved products and processes. Companies that are able to incorporate open innovation from both internal and external sources into their new product design, production, and operations will better respond to changing customer needs.

Text based on:

Vuori, Mervi: "Sourcing for New Technology and Innovation". In Sourcing for Business-to-Business Services (Ed. by Jussi Heikkilä). Teknologiateollisuus Oy (forthcoming).

Simula, Henri: Management of Commercialization. Case Studies of Industrial, Business-to-Business Product Innovations. Doctoral dissertation, 2012.

Emerging institutions for innovation – new practices for collaboration and sourcing

How innovation is perceived is of elementary importance, as it provides the foundation and focus for innovation management and sets the context for innovation operations. If innovation is mainly perceived to stem from new technologies or to be implemented in new products, other areas such as services might be unintentionally neglected. Innovation as the exploitation of new ideas is relevant to all dimensions, whether product, service, process, or business. For companies, innovation should also comprise both internal and external activities. These dimensions form an important part of a company's innovation system, but are currently being challenged by new and interactive communication practices that give an active voice to a variety of stakeholders such as global talent, end users, satisfied or dissatisfied customers, and non-governmental organizations.

For decades external relationships have been identified as essential sources for innovation. Companies actively scout global audiences for new ideas and solutions. Along with open innovation principles it has been accepted that ideas and innovation can be created by anybody, anywhere. Active suggestion schemes and idea campaigns are organized for both employees and external networks. Ethnographic studies are conducted to enhance understanding of societal changes and cultural differences. The aim is to co-create new innovative products and services that are meaningful and valuable for users in their own context. The open innovation approach challenges companies to collaborate both internally across functions and externally with stakeholders who could offer valuable insights.

The importance of research collaboration is growing, and networking with selected external stakeholders is interlinked with internal development. In product development, innovation is sought from suppliers with early supplier involvement programs. These comprise strategic alliances with customers, joint ventures and licensing agreements with competitors, collaboration in standardization initiatives, and common process development for recycling systems. Companies are actively seeking new efficient methods of operation and establishing relationships with stakeholders who have meaningful ideas for development.

Corporate venturing provides an opportunity for renewal and redirection. It is one way to explore innovations that are further away from mainstream business. Venturing involves multiple forms and can be a response to changing conditions. It can be examined in the context of how a firm adapts to its environment and seeks

Table 1.

Innovation lessons (Applied from Rosabeth Moss Kanter, 2006)

Strategy Lessons	<p>Small or incremental innovations can lead to big profits and major changes.</p> <p>Do not focus just on new product development; innovations occur also in marketing, production, finance, sourcing, and distribution.</p> <p>Application of the “innovation pyramid”. Selected portfolio, top initiatives, most of the funding, ideas, and influence can flow up and down the pyramid.</p>
Process Lessons	<p>Tight control strangles innovation. The planning, budgeting, and reviews applied to existing businesses can stifle innovation effort.</p> <p>Reward practices – emergent rewarding practices are required to enhance innovation.</p>
Structure Lessons	<p>Importance of interpersonal connections between innovation efforts and business.</p> <p>New combinations for innovations; e.g., cross channel, cross unit.</p> <p>Create innovation friendly culture for all employees; for suppliers and stakeholders and not only for selected “ivory tower innovators”.</p>
Skills Lessons	<p>Technological innovations supported by great relationship and communication skills. Sustainable innovation teams for ideas.</p> <p>Innovation connectors; people who know how to find partners internally and externally to be supported by cultures that encourage collaboration.</p>

sustainable competitive advantage. Corporate ventures need to be protected from short term pressure with different target setting and measures. They cannot be expected to deliver the same results as the core business. The portfolio mindset and managing ventures in stages enables early decision making, value added redirection, and exits. Corporate venturing provides a pathway for selecting, managing, and executing strategic initiatives. More related to this theme is introduced in the chapter on Intrapreneurship.

CHALLENGES AND NEW OPPORTUNITIES

Rosabeth Moss Kanter (2006) reminded business people not to fall into the same innovation trap that was identified decades ago. Even though many aspects of the innovation arena are changing and the concept of innovation is expanding, some things remain the same. Kanter collected a list of innovation lessons that relate to strategies, processes, structures, and skills (see Table 1).

The expansion of innovation brings new challenges to innovation management; innovation lessons are highly important when operating with external stakeholders in innovation creation and implementation.

THE NEW NATURE OF INNOVATION

It is evident that a new nature of innovation is emerging. Although technology plays an important role as an enabler of innovation, innovation is in itself no longer merely concerned with science and technology. In addition, organizations, companies, and communities are innovating, and co-creation user and supplier involvement, as well as environmental and societal challenges, increasingly drive innovation. Global, collaborative networking and public-private partnerships are becoming essential elements in innovation practices, and for global and national innovation systems.

Text based on:

Minna Takala, Mervi Vuori, Kristiina Lähde, David Hawk:
"Emerging Institutions for Innovation, New Practises for
Collaboration and Sourcing". Conference paper: ISSS 2011.

A study by innovation experts funded by Denmark and Finland in 2009 identified four drivers for innovation:

1. Co-creating value with customers and getting knowledge from the user.
2. Global knowledge sourcing and collaboration networks.
3. Global challenges as a driver of innovation.
4. Public sector challenges as a driver for innovation.

Intrapreneurship

“In broad terms, intrapreneurship is entrepreneurship within an existing organization. It can be seen as a process by which individuals inside organizations pursue opportunities without regard to the resources they currently control; as doing new things and departing from the customary to pursue opportunities; as emergent behavioral intentions or behaviors deviating from the customary way of doing business; or simply as a spirit of entrepreneurship within the existing organization.”

Bostjan Antoncic, 2007

A growing number of companies are looking for new methods to encourage their employees to be more creative and contribute to innovation activities within the organization. Installing an entrepreneurial climate within a firm can be termed intrapreneurship. Many successful examples such as Post-it Notes by 3M, the Sony Play Station, Sun Microsystems’s Java and Gmail by Google illustrate how entrepreneurial behaviour within a large company can induce significant change and lead to breakthrough innovation. Yet there are also other positive impacts such as learning benefits, employee retention, strategic renewal, and capability building. For this, the external environment has to be dynamic and in search of renewal with sufficient support and protection from the organizational context, and the intrapreneur has to be facilitated by a transparent and fair process. If these conditions are in place, then those individuals that have natural traits for entrepreneurial behaviour can provide significant contributions to company innovation and growth. The main characteristics of intrapreneurial organizations focus on four factors: an appropriate environment and organization, supportive management and, most importantly, the right type of individuals.

Intrapreneurship can create value inside organization through:

- Improved financial performance
- Stronger learning processes
- Improved employee retention
- Capability building
- Corporate renewal and organizational change

ENVIRONMENTAL FACTORS AND SUPPORTIVE CORPORATE CULTURE

Intrapreneurship best thrives in rapidly evolving environments. A study by John Stopford and Charles Baden-Fuller from 1994 indicates that also troubled firms are sometimes capable of shedding past behaviours and adopting policies that foster intrapreneurship to the extent of changing the industry ‘rules’.

At the organizational level the possible benefits are tied to a supportive corporate culture. First, employees with good ideas

Case 3M

3M has a good track record in encouraging its intrapreneurs. An important support mechanism for innovation has been signalled by 3M's 15% rule, which states that employees can spend 15% of their time working on their own innovative ideas. Hundreds of successful products have been born out of the 15% rule, including Post-it Notes. The method has been further enhanced by technology fairs that

promote networking. The Post-it Note has encouraged others at 3M to grasp the opportunity and become product champions.

3M has been dealing with the question regarding the extent to which intrapreneurship affects financial performance. Intrapreneurship was strongly advocated in particular at the end of the 1990s when 3M consistently maintained a ratio of almost one new product per employee, and

could trace most of its important products and technologies to self-initiated work by employees. However, 3M has had to adjust its policy, which seems to verify that there is a need to balance intrapreneurship with a focus on cost efficiency. The recent results from 3M indicate that, under Sir George Buckley, its renewed emphasis on innovation has been paying off in terms of resilient performance during recessionary times.

Case Sun and Sony

Both Sun Microsystems and Sony demonstrate how companies have been able to retain employees who have proven to be extremely valuable to the company due to intrapreneurship initiatives.

In the early 1990s one of Sun's programmers, Patrick Naughton, was given carte blanche to pursue his interests within the programming field. Together with a few colleagues he moved to an offsite location and initiated the project with a million dollars seed capital for the first year. The result was Java. After Java's

completion much emphasis was placed on its success. Sun's co-founder, Billy Joy, saw the project's potential as a programming language that could be utilized across diverse platforms including mobile devices. With the support of Joy, Java was published on the Internet offering universal access and, by the end of the decade, Java had become one of Sun's key products.

In 1984, Ken Kutaragi approached Sony's managers with his idea of Sony moving into the digital video console business. He was rejected. However, Norio

Ohga, Sony's president and later CEO, was impressed by Kutaragi's dedication and innovativeness. With Ohga's assistance PlayStation was released in 1994 and became a massive success. From an organizational perspective, the whole process of Sony PlayStation had the potential to be a series of repetitive disasters. Nonetheless, a powerful desire to fulfil his vision with the help of his superiors has made Kutaragi one of the most successful intrapreneurs to date. In 1998, PlayStation alone produced 40% of Sony's operating profits.

Case Gmail

One of Google's most successful products, Gmail, was born through intrapreneurial actions by former Google developer Paul Buchheit. At that time, Google employees were able to spend 20% of their time working on special projects not related to their regular work. In 2001, Paul

Buchheit started a project during his 20% time. It first led to an internal web based email application for Google's employees. In 2004, after a few years of development, a free beta version was launched publicly. Now, Gmail is a free online mail tool with 350 million users.

should be presented with an ongoing opportunity to approach management. Second, there should be organizational identification, which refers to the perception of oneness with the organization. Third, employees should have resources and opportunities to implement their ideas.

Trust and reciprocity, emotional and value commitment, and overall employee satisfaction engender intrapreneurship. Furthermore, intrapreneurship can be viewed as a curious, constantly searching activity that occurs at the frontier, not at the core. This implies that intrapreneurial units should be given space and protected from close scrutiny and control. To enable and stimulate intrapreneurship, organizations should also endeavour to lessen the negative consequences of failure.

MANAGEMENT SUPPORT

Managers play a vital role in encouraging intrapreneurial behaviour, which is critically dependent on the characteristics, values, beliefs, and visions of strategic leaders. Corporate level managers and business managers have a shared responsibility for intrapreneurial success. They can create competitive advantage through facilitating and encouraging entrepreneurship within their organizations, and are most effective when they share a sense of mission, provide mentoring or coaching, stimulate employees to think in new ways, and gain their employees' trust and confidence.

INDIVIDUAL ATTITUDE

Ultimately, intrapreneurship relies on individuals, and is critically dependent on attitudes below the top level of management. Intrapreneurs are generally characterized by being innovative and motivated to succeed, enjoying overcoming challenges, and having a philosophy of continuous learning.

Other psychological characteristics include creativity, daring, and aggressiveness. It has been concluded that initiative is the primary manifestation of intrapreneurship; the initiative process is triggered by the identification of an opportunity. If employees have the freedom, passion, and facilitation to develop ideas, an organization will gain a competitive intrapreneurial advantage.

IMPLEMENTATION

Based on the results of this study and the empirical findings, the authors suggest a four step model to initiate and encourage intrapreneurial activity as a means to strengthen capability building within a firm, and within the larger network where the firm is operating.

- Ensure that the overall environmental factors are conducive for intrapreneurship to become successful (e.g., a dynamic industry; growth potential; need for renewal).
- Instil organizational contexts that will provide the necessary support and protection for intrapreneurs (e.g., separate teams; access to people and resources; consider offsite locations).
- Create transparent and fair processes for the treatment of ideas that are presented, and have a formalized process of communication with intrapreneurs, even if the manner in which the projects and initiatives are managed cannot be strictly defined.
- Develop success criteria in addition to immediate financial performance, and place particular emphasis on the learning and capability building results that emanate from intrapreneurial activities.

Text based on:

Lauri Lankinen, Elli Taimela, Tiina Toskovic, Ghita Wallin: Intrapreneurship – Act Different. Studio-3 Course. Student paper 2012.
www.intrapreneurship.fi

Indirect sourcing and procurement

In general, classifications distinguishing indirect from direct activities vary from field to field, and it is a challenge to draw a clear line between the two types of cost. Indirect sourcing and procurement refers to activities that control the input of materials and services that are critical for the business to operate, but not reflected in the final products. For instance, the direct sourcing of a car manufacturer would comprise dealing with purchases of car components or paint, to be assembled and utilized in the end product, while indirect sourcing would encompass the purchase of office equipment, IT, or marketing services that support the smooth operation of the whole business.

Sourcing and procurement (S&P) is a critical function that supports the daily operations of manufacturing companies. It deals with issues that range from acquiring raw materials and components to negotiating service contracts with service providers. In academia, S&P has also gained considerable emphasis on various research perspectives.

As one of the fields gaining increased attention, the research on indirect sourcing and procurement mainly investigates the activities of acquiring indirect materials and services. This study focused on two issues. The first mainly considers the question of whether indirect sourcing and procurement should be centrally managed similar to direct sourcing; if so, at what level should indirect spend be centralized and, if not, what are the reasons for not treating indirect spend as a separate category? The second key question investigates the relationships between the indirect sourcing department and other departments in an organization; the reason being that indirect spend commonly has a fragmented nature, which deals with the purchasing of various types of resource that provide 'service' to various departments.

It is commonly understood that indirect sourcing and procurement manages non core products or services that have various alternative suppliers with

similar products; the goal being to ensure the successful sourcing and procurement of continuous supplies with better price, quality, or convenience. However, the indirect category can also include purchases of large and complex projects, such as consultancy services or large IT projects. In general, the proportion of indirect spend to total spend is usually greater than expected. Company executives are often surprised with the total indirect sourcing and procurement spend, which according to previous studies can easily comprise 50% of the total expense.

However, indirect sourcing and procurement is a field that has not been emphasized greatly in the past, the main reasons being that indirect related purchases are commonly ranked as low in criticality and are complex to manage. In recent years, an increasing number of company executives have begun to pay attention to indirect spend as a means to facilitate cost reduction and improved sourcing activities.

One perspective on indirect sourcing and procurement considers the total cost required to deliver end products to customers, and includes both direct and indirect costs. By analyzing the proportion of indirect spend to the total cost, it is possible to identify the extent of sourcing and procurement activities that relate to supportive materials and services. Improvement action plans can be designed according to the proportions of different cost activities reflected in the total cost of ownership (TCO) results.

Initially, there were two separate interviews arranged with the current and past indirect sourcing directors of one Finnish industrial company. Both interviewees had more than ten years experience in the sourcing field and could demonstrate the current and past indirect sourcing and procurement situations. In general, the management of indirect spend has changed greatly during the past five to six years. While they began by establishing a separate department to manage indirect sourcing as an independent function, the company's top man-

agement team, for various reasons, recently decided to again merge indirect sourcing and procurement with other functions.

Both interviewees referred in their interviews to other departments as 'internal stakeholders', meaning that the indirect sourcing and procurement department had the cooperation of and performed a servicing role for other departments. A difficult aspect of this internal service provider's role was to implement change in the organization, as challenging the internal stakeholders by changing/improving their traditional working practices could encounter many obstacles.

Prior to the establishment of the INS department (Indirect Sourcing Department), the indirect costs were managed by a company executive, who was responsible for overall sourcing spend. In the total spend of €1.9 billion, €400-500 million was on indirect purchases that equates to approximately 20-25% of the total spend. Prior to the merger of indirect and direct sourcing, indirect spend was reduced to €180 million, or about one third of the previous spend. Even though the number of employees had reduced from 11,000 to 6,000, the amount of cost reduction was still considerable.

In addition to this company, there are many other leading Finnish industrial players which emphasize management of the indirect spend category. According to the authors' initial investigation, one of the case companies has been managing indirect spend as a separate category and has achieved good results with this management method. Another company has initiated a project aimed at designing a system that centrally manages all purchases of indirect sourcing and procurement related spend. A further Finnish company has already built an indirect sourcing and procurement system that operates on an IT platform.

It can be observed that different companies have different management methods for indirect spend. The level of centralization also differs greatly according to the emphasis placed on managing the category. In general, there are various benefits derived from central management of indirect spend. For example, leverage from bundled low cost supplies eases the additional sourcing and procurement work of other departments, and creates a centrally managed organization. However, there are also challenges relating to centrally managed indirect spend. For instance, management of the indirect spend category as an independent function requires a different level of time and financial investment. Indirect sourcing and procurement might also meet challenges from internal stakeholders, as not every department is willing to cooperate and relinquish their authority to another department. Finally, indirect sourcing and procurement specialists might not have sufficient knowledge when sourcing, for example, highly technical products or large consulting services. Ultimately, whether indirect spend is managed independently critically depends on top management support.

Text based on:
Fan Zhongbo: Diploma
Thesis. Work in progress.

The integration between sourcing and product development

The ability to produce innovations has become an increasingly important component of competitive advantage for companies. In addition, more than previously, companies form and rely on external networks. A number of companies have also understood the potential benefits of developing their sourcing processes. Together these factors together constitute the basis for the integration of the sourcing and product development functions, which aims to efficiently employ suppliers' knowledge in product development.

Within the research field, the integration of sourcing and product development has been identified as a potential development benefit for companies. The product development literature has acknowledged the potential of a company's sourcing function to contribute to the management of the supplier interface. Similarly, the sourcing literature has acknowledged the potential for suppliers to contribute to product development. Thus, integration of sourcing and product development could facilitate the employment of suppliers' knowledge in the company's product development, which is the primary motivation for this study.

Based on the literature, the second goal of this research is to create a model for the integration of sourcing and product development that categorizes noteworthy issues concerning the integration, and offers tools for its implementation. Combining the literature of both fields of study, a framework was created to divide the premise of the integration into four categories. At the strategic level, both functions should link their strategies. At the structural level, there is a need to establish sourcing units which serve both the innovation and operational requirements of product development. At the process level, different areas of cooperation should be identified to implement and evaluate the integration as easily as possible. At the cultural level, the organization's executives should promote an environment that fosters innovation and cooperation.

The contents of the model created in this research are not radically different from other development projects that companies implement in other contexts. The integration can be implemented in a majority of companies that already structure their sourcing and product development functions to match their changing requirements. However, the relevance of the integration depends especially on the nature of the supplier relationship that a particular company seeks. For example, if the supplier contacts required for product development are brief and vary by nature, the benefits that the sourcing function can generate for product development are reduced.

Text based on:

Teemu Hännikäinen. Hankintatoimen hyödyntäminen yrityksen tuotekehityksessä. Bachelor Thesis 2012. <http://bit.ly/10JrOMb>



Case Konecranes — the Supplier Day

To boost innovation with suppliers, Konecranes has launched a recurrent event termed 'the Supplier Day'. This is a joint brainstorming event for a selected group of suppliers representing the main sourcing categories. The principal idea of the Supplier Day is to invite various suppliers to participate in an event where they are asked to provide innovative ideas, after which Konecranes assesses and rewards the best ideas, and ensures that the most prominent ideas are co-developed. The programme and discussions during the Supplier Day are flexible in content and lead in any direction that the delegates feel appropriate. The main goal is to ensure that suppliers and Konecranes representatives work together in the same room and discuss achievable improvements.

Konecranes recognizes that the combination of supplier knowledge and competence with in-house innovation is an important activity that has established many initiatives. There is a strong belief in Konecranes that innovation occurs among suppliers and within daily activities, instead of through R&D activities alone. The company approaches innovation in a structured manner by which the development of ideas and their implementation into action are carefully managed. The annual Supplier Day was initiated in 2010 and provides an opportunity for suppliers to convey their innovative ideas to Konecranes, and to discuss them in an inspiring environment. After the ideation stage, the ideas are developed further with emphasis on idea feasibility, next steps, and actions. The best ideas are rewarded. The basic structure of the Supplier Day process is demonstrated in Table 2.

The main feature of the Supplier Day is to establish true collaboration and discussion between suppliers and company participants. The purpose is to collaborate in the generation of ideas as well as to discuss, in practical terms, areas where the company can implement improvements. All major sourcing categories of Konecranes are represented at the Supplier Day. 72 key suppliers were invited to the first one day event in the 2010, with the amount of spend, level of long term cooperation, and future collaboration potential being considered important criteria in their selection. CEO level representatives were the main target group in the supplier companies. The CEO and top management group were invited to participate from the buyer's side.

During the Supplier Day, each supplier has an assigned host with the responsibility to guide the supplier and document the ideas presented. The day commences with an inspirational presentation by Konecranes, which provides a deeper insight on the company's vision and strategy. Subsequent presentations on regional strategy, the market, and the business situation are given to provide suppliers with an improved understanding of Konecranes's business and to stimulate potential contribution

**Konecranes management team
morning presentation**

Market, strategy, vision
To guide the suppliers in the
process

12 x 6 = 72 suppliers

Brainstorming

Draft down ideas during the day

85 ideas altogether, 50 of them has
been taken to use

Co-Developing the idea

Basic instruction is to 1. describe the
idea, 2. check feasibility, 3. plan next
steps & action points

Developing both major innovations
and minor improvements

Possible challenge is that the host is
not the expert for the innovation field

Three best ideas awarded

Fresh out of box thinking

Best total cost concept

Large quantity: over 40 ideas

No skeleton data for idea
evaluation

A dance instead of a long PPT

Winner presents ideas for 1-2min

Hosts present findings

Design next year Supplier day

New groups

Previous award winners give a
speech

Highlight importance of suppliers

Table 2. Konecranes Supplier Day

in terms of new ideas. Time is allocated after the presentations for discussion to further define and refine potential ideas. Following the Supplier Day, cross-functional meetings are arranged at which Konecranes hosts gather representatives from suppliers to further develop the generated ideas. Ideas can originate from long term partners or completely new suppliers alike; all are considered equally important in terms of implementation. Out of the total of 85 ideas that were generated during the Supplier Day, 50 were selected for the development process. In subsequent meetings, Konecranes asked suppliers to further challenge the current method of working, processes, and products. Each idea was then assigned to an individual who took ownership of it. The owner is the key person to engage others within the innovation process that, ideally, should be embedded in everyday working practices.

Along the process, an atmosphere of openness and a willingness to learn are considered critical factors to enable successful idea generation and further collaboration. In general, Konecranes found that suppliers were willing to share information concerning their future business plans, opportunities, and challenges. After an initial exchange of knowledge, Konecranes and suppliers were able to brainstorm at a more detailed level, for example, concerning how the suppliers' current or developing technologies could be applied to Konecranes's business. Early knowledge exchange in this respect was deemed important as, at this stage, the buyer can still contribute to the realization of the technology in question.

Subsequent to the selection and preparation stages, selected ideas can be put into practice. At this stage the assignment of an owner of the process, with the responsibility to drive the implementation, becomes a central feature. All ideas that can be implemented are considered worthy of development. In 2011, Konecranes visualized some ideas with real models; for instance, a group of students built a miniature crane, which could be controlled by a touch screen controller resembling an iPad. However,

the Supplier Day is not meant to be a marketing or sales event to which suppliers bring their products and services as there are separate forums and meetings for this purpose.

A year after the initial Supplier Day, Konecranes held a second event, where the top three ideas were given awards. There was no standardized process behind the awards, no metrics to measure the success of the ideas. The three winners were selected mostly through intuition by a jury that was led by the VP, Head of strategic sourcing.

The first award was given for very fresh out-of-the-box thinking; the second award went to best total cost concept; the third was for the quantity of ideas, with the supplier receiving the award having generated over 40 different ideas. The suppliers which received awards were invited to present their winning ideas during the following year's Supplier Day. However, the winning criteria were not disclosed to participating suppliers in new sessions. The judges are also anonymous.

Overall, the Supplier Day provides an opportunity for suppliers to identify and co-develop innovative ideas with the buyer company. Inevitably, it is the suppliers that have a closer and deeper insight on their respective knowledge domains, businesses, and technologies. The Supplier Day is based on the idea that innovation is not a one way street or a process controlled by the buyer company. Instead, a more collaborative and equal relationship in innovation is pursued. In the longer term, the aim is to create favourable partnerships that benefit the businesses of both the buyer and the supplier. The Supplier Day enables participants to concentrate solely on brainstorming as the best ideas often originate outside routine daily activities. A key issue in implementation is the assignment of ownership of the projects. In this, additional to the role sourcing has to play, R&D and finance are also important stakeholders. The supplier awards are presented by Konecranes as a means to emphasize the importance of supplier involvement in the creation and implementation of new ideas, as well as encouraging further participation in idea generation.

Text based on:

Konecranes interviews by Minna Takala and Fan Zhongbo
Fan Zhongbo: Diploma Thesis. Work in progress.

3D printing is here, are you prepared?

The INSCO project arranged two workshops concerning 3D printing in 2012. The main observation during the events was that 3D printing affects many areas as it becomes more prevalent and is employed for different purposes. There is an opportunity for customer involvement at every stage of the process, from the ideation phase to the physical print out of an object. Digital logistics and global distribution of data with local manufacturing possibilities change traditional business methods.

ABOUT 3D PRINTING

3D printing, also referred to as additive manufacturing or rapid prototyping technologies, has gained popularity during recent years due to rapid technical development in the area. The first 3D printers were developed in the late 1980s, mostly to create prototypes with which to speed up product development; at that time, the technology was referred to as rapid prototyping. Subsequently, technical development has progressed rapidly, and both companies and the general public are beginning to understand the potential of 3D printing. As the technology developed further and more applications became available, the name of the technology changed to additive manufacturing. The technology is now known as 3D printing by the general public.

Nowadays, 3D printing is mostly employed in three areas: medical, aero-

space, and automotive industries. However, it has also been adopted in other fields such as fashion, food, and metal manufacturing. There is also a global 3D printing open community with active users and hobbyist who rapidly develop the technology, and related applications and services. New business models are emerging around the world due to the availability of 3D software, 3D scanners, 3D printers, and information relating to the development and application of the technology. Production does not require huge amounts of initial investment. There are active individuals and companies creating software applications and services, designing 3D models, and printing out physical objects. Intellectual property rights and standardization are endeavouring to keep up with these developments.

3D PRINTING PROCESS

3D printing starts with a virtual 3D model of an object, for example, a blueprint. Blueprints can be created with a computer aided design (CAD) program or a physical object can be scanned with a 3D scanner to create a digital file. Digital designs can be edited by a designer or anyone who understands the technology, and the digital design files can be widely distributed as with any other computer file. A 3D printer creates a physical object of a three dimensional data file that is first converted into

a format suitable for the 3D printer. The printer builds an object from raw material, layer by layer. One of the benefits of the technology is that the printer can create internal movable parts without the need to assemble those parts afterwards. The amount of suitable raw material is constantly increasing as research and development progress, and comprises, for the majority of 3D printed objects, various polymers, waxes, aluminium, and brass or steel alloys; raw material can be in the form of powder, pellet, or string. Each 3D printer recommends suitable materials, printing temperatures, and printing pace. It is still a challenge to print out an object comprising several materials.

POTENTIAL BUSINESS MODELS

Despite all the changes 3D printing creates in different industries and markets, it is not seen as a threat to conventional manufacturing. It complements the current manufacturing technologies by making product development and manufacturing faster, easier, and more cost efficient. It is as easy to print out a simple block as a block with complex features. Due to the digitalized logistics of 3D printing, the digital files containing data of 3D models can be sent anywhere in the world, which enables local manufacturing. For example, the US army employs 3D printing technology in remote areas where spare parts are not available.

3D printers can be operated privately for one's own needs, or users can earn their living utilizing the technology due to the wide variety of 3D printers, supporting software and, most importantly, their creativity.

There are companies which sell physical items such as 3D printers and scanners, raw materials, and 3D printing objects, and there are companies which sell software such as systems supporting global distribution of data and programs enabling 3D modelling. There are also service companies which enable customers to create their own 3D design for an object. When the design is ready, companies print it out with the requested features and deliver it to the customer with a short delivery time. 3D printing technology enables the collaboration of several companies, each specializing in its own niche area.

GREENER TECHNOLOGY

As a general rule, components produced by 3D printing technologies are 60% cheaper and 30% lighter than those produced by traditional manufacturing technologies. In addition, 3D printing enables more efficient consumption of raw materials, as the amount of waste can be reduced in comparison with traditional production lines. Rationalizing their supply chain and distribution network creates savings for companies with cost structures that are dominated by transportation

costs. A reduction in transportation also decreases the carbon footprint of companies, and facilitates more sustainable products. Another source of savings comes from optimized components employing lighter structures and less material, which is the main reason for the aerospace industry to utilize 3D printing technology. Conversely, 3D printing technology requires approximately ten times more energy per kilogram of a component than traditional manufacturing. The recycling of 3D printing materials is still in the early development phase.

SOURCING PERSPECTIVE ON THE DEVELOPMENT OF 3D PRINTING

3D printing has brought new players into the market, and the value of knowledge is precious in the area. The potential for global distribution of data and local manufacturing of goods is different compared to systems employed by conventional manufacturing. Goods can be transported over shorter distances and faster, and it is easier to cross country borders due to digital logistics. The debate concerning IPR (intellectual property rights), safety, and liabilities is ongoing. However, the general rule is that physical objects can be printed out for private use but that copyrights, trademarks, and patents have to be taken into account when the objects are sold. Security of 3D printed objects is of

the utmost important, for example, in the transportation of vehicles and equipment, and the standardization of testing and regulations is required. Questions are relevant regarding liability and who should pay, for example, when a 3D printed item breaks apart.

The price of 3D printed objects depends on the necessary investment for the manufacturing technology, the operating costs, and the uniqueness of the 3D printed item. Companies employing 3D printing technology in their product development usually save money due to shorter product development time, prototypes (“fail fast, fail cheap”), and early customer involvement.

Relevant web links:

FIRPA - Finnish Rapid Prototyping Association:
www.firpa.fi/

GARPA - Global Alliance of Rapid Prototyping Associations: www.garpa.org/



Case The Switch

The Switch is Finnish company which began its operations in 2006 and is a pioneer of wind and solar energy production. The company's headquarter are in Vantaa, Finland and it has production sites in Finland, China, and the US, and offices in India, Germany, South Korea, Denmark, and Spain.

The Switch has consistently had a positive cash flow. The company achieved net sales of €134.6 million in 2010, and €93.8 million in 2011. The company has 4,996,344 shares with a nominal value of €1 each, and its employees hold 25% of them. The Switch had 226 employees at the end of 2011.

As The Switch places an emphasis on the timely delivery of high quality raw materials within a healthy and safe environment for its employees, suppliers are checked at regular intervals to safeguard the quality of supplied resources, and their production facilities are audited by The Switch and their customers to ensure that required standards are maintained.

Employees help to conceive and capture new ideas and ways to improve work techniques, methods, and methodologies. Employees are motivated by incentive plans which are manifest in a group based pay system. There is also a management team bonus if annual targets are achieved.

The company's services are divided into three phases: the design switch, the production switch, and the proactive switch.

THE DESIGN SWITCH

Design Switch is responsible for all innovations. The company designs its products with the involvement of customers, which helps in the development of unique products and creates greater customer satisfaction. There is also a healthy transfer of knowledge that benefits both the company and its customers. The model factories in Lappeenranta and Vaasa, in Finland, and Hudson in the US are responsible for the innovation and creation of new

product lines. All processes in the model factories including, for example, R&D and supply chain management utilize real time monitoring.

The model factory concept assists with dedicating internal resources more to creating and developing new ideas and concepts which help with the faster growth of the organization in a rapidly changing technological market.

THE PRODUCTION SWITCH

Production Switch is based on the implementation of the model factory concept. The new product lines developed in the model factories are subsequently manufactured in large volumes at other locations in cooperation with the company's partners. This ensures faster, high quality product development.

The partner business model facilitates maintenance of lower inventory levels and low manufacturing costs, and also employs subcontractors in the manufacturing processes.

THE PROACTIVE SWITCH

Proactive Switch has the responsibility of ensuring that customers get the best from Switch services by providing post delivery support. This responsibility includes training the customers' workforce for efficient operation of supplied equipment, providing onsite maintenance services, monitoring the installed equipment, and generating performance reports for the customer.

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Lessons learned — The focal company

New approaches are needed for innovation sourcing

Traditional industries and supply chains with current suppliers will not adequately address the challenges of changing global markets. Innovation ecosystems are in a state of flux and there are new arenas and practices for innovation. For example, emerging opportunities provided by 3D printing have the potential to radically change practices that relate to R&D, manufacturing, and transportation in many industries over the coming decades. This will also impact sourcing. How and by whom 3D printing services are created will change global supply chains.

Intrapreneurship can enhance innovative culture and attitudes among employees

Intrapreneurship can enhance the innovation culture in companies and support innovative attitudes among employees. Encouragement by management is needed to find new materials, parts, technologies, practices, and methods of operation, especially if previous attitudes have been very traditional.

Potential benefit of increased focus on indirect sourcing

Substantial savings can be made by focusing on indirect sourcing practices. This area has often attracted less attention in companies than direct sourcing practices. However, it is essential to focus on the special sourcing needs that relate to research and development.

Open innovation can help a company to adjust to changing conditions

When global markets and innovation practices are changing, new approaches are required for innovation sourcing. Companies with the capability to incorporate open innovation from both internal and external sources into their new product and service design, production, and operations will respond better to changing market conditions, new technologies and customer needs.



2

Immediate stakeholders

The growing importance of knowledge has put pressure on the management of external networks. It has lead companies to collaborate and develop open innovation practices with various stakeholders. The challenge is, how to engage different parties or influential customer into dialogue and knowledge sharing. In this chapter the focus is on supplier and buyer relationships, communication, and attractiveness.

Engaging suppliers in the innovation process

It is increasingly important for companies to engage in various inter-organizational links and deploy different types of relationships to create new knowledge and develop new competences. In other words, the management of external resources in the context of innovation has become a key issue for many companies. The role of customers in innovation has been widely acknowledged in this respect. However, similar to customers, suppliers can be regarded as important sources of knowledge and competence, even if customers receive more attention in the context of feedback and continuous effort to improve existing and forthcoming products and services. The increasing adoption of open innovation practices has led a growing number of companies to open their innovation process to both upstream and downstream supply networks. In the upstream context however, not all suppliers can or should be involved in new product and service development activities. Traditionally, R&D collaboration is usually conducted with strategic and long term partners with which the focal company shares a trusting and close relationship. Nevertheless, in the quest for new knowledge and competences, companies should also take into account the potential within the wider value network. For companies, this is an issue of balancing exploitation (current knowledge and opportunities) with exploration (new knowledge and opportunities).

Collaboration with suppliers in the early stages of the new product development process (i.e., early supplier involvement, or ESI) has been found to be useful in incorporating supplier expertise and know-how into the focal company. The rationale behind involving suppliers in the innovation process relates to the consideration that the entire innovation process can become more efficient if suppliers are integrated into it early. Lower costs, higher quality, and improved design have often been mentioned as additional benefits of ESI. Supplier involvement in R&D can occur in different phases, ranging from idea generation to prototype building and testing. The level of involvement can also vary from short term collaboration with a narrow focus to long term and strategic projects that are outsourced to suppliers, which then assume total responsibility for the given project. For the focal company, issues in ESI relate to choosing the right suppliers with which to collaborate, as well as aligning goals and measures to build common agenda for successful product development.

ESI in new product development requires tight coupling and strong ties between the business partners, advocating trust and reciprocity. Social exchange and shared norms based on a common history play a significant role. Strong ties usually involve sharing tacit and strategic knowledge, which emphasizes efficient knowledge transfer as a key requirement for successful collaboration. In terms of social exchange, the issue of attractiveness plays a significant role in establishing and securing a close relationship with suppliers. In the following chapters, the issue of collaborative product development is analyzed from both knowledge transfer and attractiveness perspectives.

Text based on:

Vuori, Mervi, Henri Simula, Aki Laiho: "Network of innovation suppliers; Towards research agenda". Conference Paper: Innovation in Business Networks. Kolding, Denmark, 2012.

Knowledge transfer in collaborative product development

CHALLENGES IN COLLABORATIVE PRODUCT DEVELOPMENT

Developing new products is a challenging task. For successful new product development, a company needs knowledge, experience, and expertise in various domains. As these elements cannot be found in any one single person or company, collaboration with various stakeholders is necessary. However, collaborative product development (CPD) is challenging as firms have different structures, cultures, knowledge, and expertise. Moreover, firms must be able to manage a variety of internal and external technologies. The challenges of CPD are widely discussed in the extant literature and include the management of information flow between partners, trust, rapid pace of technological change, technological uncertainty, technical capabilities of suppliers, communication, commitment, and ongoing globalization.

According to research results, challenges of CPD in high-tech companies arise especially when the supplier and buyer are not based in the same geographic location. The challenges were grouped into seven categories: contract management, information management, collaboration management, resource management, new product development (NPD) management, technology management, and globalization management (Table 3).

Most of the challenges involve cooperation and knowledge transfer between players as CPD requires collaboration between individuals possessing different backgrounds and working habits, in addition to differences relating to language, culture, and knowledge background. The most important element for successful collaboration is trustworthiness, which can induce efficient teamwork and the related transfer of knowledge and skills.

Table 3. Challenges of CPD (Distanont et al., 2012)

Contract management	
1	Negotiation strategies
2	Managing the win-win situation(combination of competition and collaboration)
3	Degree of supplier integration
Information management	
4	Understanding the dynamics of information between network partners
5	Managing transferred and shared information between network partners
6	Managing communication between partners
Collaboration management	
7	Mutual trust
8	Mutual goal
9	Lack of commitment
10	Understanding the role of competence flow between supplier and buyer
11	Increased communication and coordination costs
12	Managing the cross-functional interface
Resource management	
13	Pressures of continuous quality improvement and cost reduction
NPD management	
14	Generating new ideas
15	Rapid pace of new product introduction
16	Sourcing a superior product
17	Sourcing the best R&D partner
18	Increased expectations of quality and reliability
Technology management	
19	The features of technology (e.g., technological change; complexity; uncertainty)
20	Increasing special technological know-how
21	Determining the best technological solution
Globalization management	
22	Need to understand diverse cultures
23	Increased competitive forces

KNOWLEDGE TRANSFER IN COLLABORATIVE PRODUCT DEVELOPMENT

A key success factor within product development is the transfer of knowledge and collaboration between supplier and buyer. One of the main purposes of inter-firm cooperation is to acquire knowledge from partner firms as they are important sources of external knowledge and resources. Collaboration is therefore a form of knowledge transfer that produces new knowledge by sharing and transferring existing knowledge. Companies that collaborate tend to be more successful in developing new products than those undertaking the process alone.

The authors' research investigated knowledge transfer patterns between buyers and suppliers involved in CPD. The results show that the pattern in knowledge transfer between supplier and buyer comprises three elements: type of transferred knowledge; transfer methods; transfer frequency. Additionally, four types of transferred knowledge are found in CPD: explicit managerial knowledge; explicit engineering knowledge; tacit managerial knowledge; tacit engineering knowledge. These four types of knowledge are transferred through eleven channels:

1. Shared documentation, data, and/or instructions
2. Social media
3. Expert interviews
4. Visit to supplier location
5. Constant electronic communication by telephone/e-mail
6. Informal communication (face to face communication)
7. Joint meetings
8. Contact persons
9. Design review meetings
10. Staff exchanges
11. Teleconference

The transfer of explicit knowledge is frequently found in the initial stage of product development; tacit knowledge plays a more significant role in the concept development and product design phases.

Moreover, the authors found that the channel employed to transfer tacit knowledge is more flexible than that relating to explicit knowledge, as tacit knowledge can be transferred freely without limitations of location or time. However, tacit knowledge

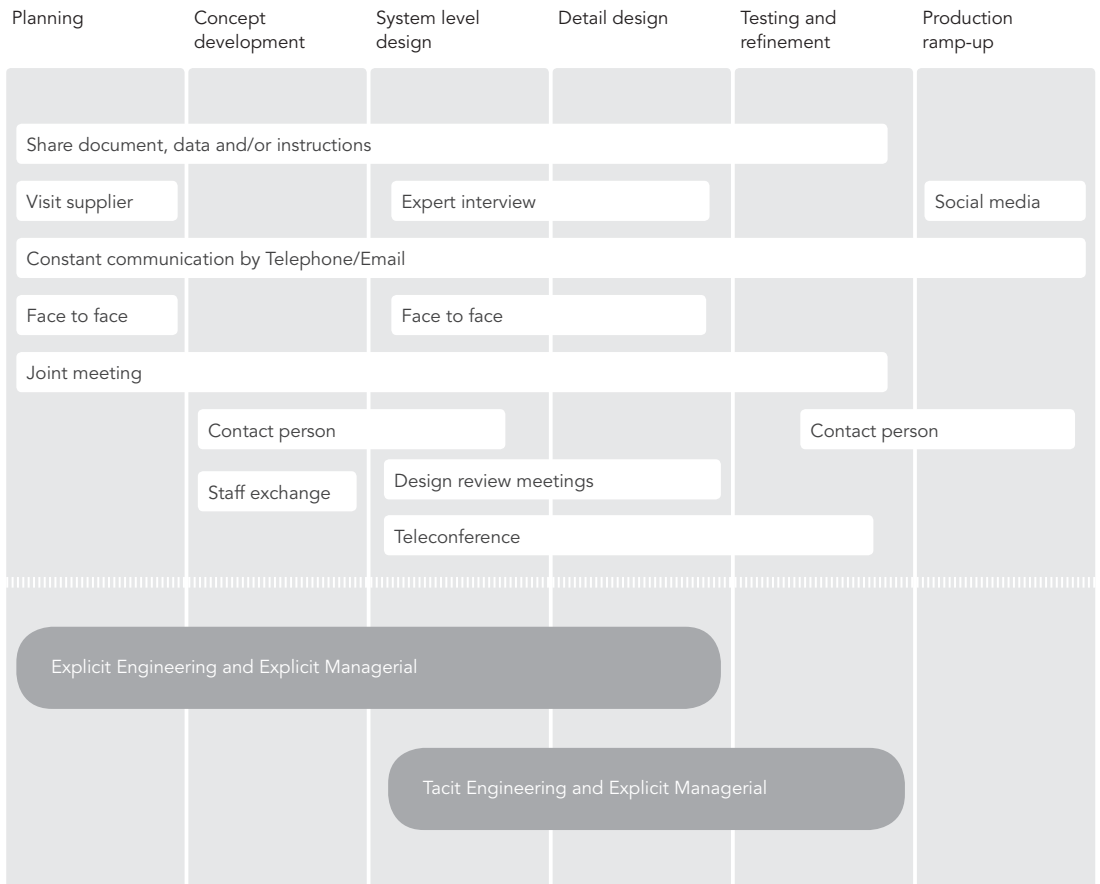


Table 4. Knowledge transfer pattern (Distanont et al., 2012b)

itself is more difficult to transfer because it is based on personal experience and expertise, and hence difficult to express verbally. In addition, channels employed to transfer knowledge possess different levels of efficiency. Therefore, the appropriate channel needs to be selected to transfer knowledge most efficiently.

Analysis of interaction between supplier and buyer during knowledge transfer through social

network analysis (SNA) was also conducted. SNA is the tool employed to examine communication between players during the transfer period. The results show that the interaction between supplier and buyer in transferring tacit and explicit knowledge is different; the interaction in transferring tacit knowledge is lower as it is based on experience, expertise, and personal ideas, making it more difficult to be transferred or described. In addition, it

was found that during CPD the knowledge and expertise of the supplier and buyer might not be fully transferred and applied due to a lack of trust on the part of each party. To create efficient collaboration practices, companies need to establish trust and motivation and build working, interpersonal relationships. Additionally, companies should assign a key person to facilitate interaction between supplier and buyer. The key persons must be able to contact others as required and perform this role regardless of their position.

KNOWLEDGE TRANSFER IN THE EARLY PHASES OF COLLABORATIVE PRODUCT DEVELOPMENT

Knowledge transfer is the most important factor leading to the success or failure of product development. The reason is that knowledge transfer occurs continuously and regularly from the early phases of product development through to completion of the whole process. In particular, over the requirements engineering process (RE), which takes place during the early phase of product development, everyone involved has to communicate and transfer significant knowledge. RE is the state of collecting all information with regard to the needs of the product and all relevant components. RE involves communication among various groups of stakeholder relevant to the given product for the requirements to be specified correctly. Requirements are considered an output of the early stage of product development and, at the same time, they comprise the input of the developmental stage for the production of the product. Over the requirements process, many problems and challenges arise as stakeholders have different perspectives, visions, and ideas, requiring them and the developers to work collaboratively, and exchange potential information and knowledge in an effective manner.

Nevertheless, knowledge transfer is not easy as knowledge related requirements encompass tacit knowledge, which is highly personal and difficult to communicate to others, along with explicit

knowledge, which is formal, systematic, and easy to communicate and share. Furthermore, the requirements themselves are not directly tangible and knowledge concerning them is mostly tacit. Therefore, transferring requirements to others is very challenging. The extant literature reports on several challenges that can occur during knowledge transfer in RE. The classification of these challenges is based on the nature of knowledge transfer (Table 5).

According to the results, issues in the communication and knowledge transfer between the supplier and buyer, create misunderstandings. This easily leads to a misinterpretation of the whole process, which can result in the final product not meeting its real needs and thus requiring subsequent alterations. Therefore, the project will be delayed and incur increased costs.

Based on the literature review, there are several solutions that focus mainly on issues originating from communication, relationships, and human skills. Some solutions aim to solve problems that stem from the work process while others aim to manage and support the processes during product development, as well as creating a suitable environment for collaboration between organizational interfaces.

Based on the empirical analysis, interviews were conducted in a high-tech company, which is located in Oulu, Finland. A list of challenges to requirements knowledge transfer in CPD (Table 6) was presented to the informants who were asked to propose solutions from their own perspectives. The results from the theoretical and empirical studies were analyzed, challenges were classified into four categories, and solutions were listed under each category: communication, transfer process, working process, and management. (Table 7).

With regard to communication, the focus should be on establishing and supporting face to face communication so that it becomes faster, smoother, and clearer. In the area of transfer process, the emphasis should be on the improvement of knowledge transfer and the development of a system that enables the transfer to take place systematically, quickly, and effectively. With regard to working process, the focus should be on improving agreement and providing clearer directions for all companies involved.

Table 5.
Classifications of challenges (Distanont et al., forthcoming)

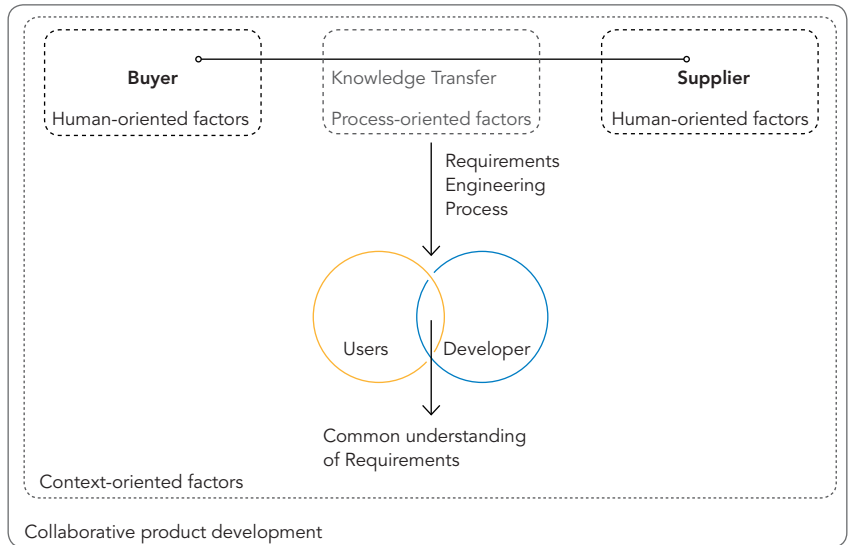


Table 6.
Knowledge transfer pattern (Distanont et al., 2012b)

Classification	Challenges of requirements knowledge transfer
Human oriented factors	<ol style="list-style-type: none"> 1. Skill to define requests/ requirements 2. Skill to understand and translate requests/requirements 3. Articulating needs/requirements of potential stakeholders 4. Absorptive capacity of recipient 5. Motivation 6. User-developer interpersonal communications 7. User involvement 8. Trust 9. Experience of management
Process oriented factors	<ol style="list-style-type: none"> 1. Nature of knowledge to be transferred 2. Transfer channel 3. Transferring requirements information/ knowledge 4. Ambiguous requirements 5. Lack of well defined or standard processes 6. Implementation of processes 7. Time constraints 8. Company's internal processes
Context oriented factors	<ol style="list-style-type: none"> 1. Executive support/ commitment 2. Experience of organization

Management

- Create a collaborative environment
- Provide a range of tools and resources for facilitation
- Understand RE processes and provide the proper support
- Improve and provide training

Working Process

- Define an actual way of working
- Improve and implement the RE process
- Improve the internal process
- Provide training



Communication

- Support face to face communication
- Provide communication technology and training
- Build and maintain personal relationships
- Develop the communication skill of people

Transfer Process

- Create a database for managing requirements
- Use the appropriate transfer method
- Provide guidance and standardized way of transferring
- Link the transfer process

Table 7. Solutions to overcome challenges (Distanont et al., forthcoming (d))

CONCLUSION AND SUMMARY

According to the results of this study, CPD is crucial and knowledge transfer is the main process that facilitates management of corporate knowledge in this context. However, it appears that there are several challenges relating to collaborative work and knowledge transfer along the product development process. Knowledge transfer and collaboration across boundaries is an unnatural practice. Technology or IT systems will not help if players are not interested in the knowledge and information generated. Knowledge cannot be transferred if individuals are not willing to share what they know. Rather than focusing on IT or systems, companies must encourage employees to create, understand, transfer, and exploit information and knowledge. Moreover, interaction across organizational boundaries still faces several challenges. For example, there might be no individual with a central role in the transfer of information and knowledge, and no standard processes facilitating transfer and interaction during CPD. Therefore, to manage CPD and knowledge transfer effectively, it is necessary to establish specific processes for knowledge transfer and collaboration over the product development process; for example, by giving guidance with regard to the type of knowledge that should be shared, and with whom. In addition, companies must also strive to remove challenges that hinder collaborative work and related knowledge transfer.

Text based on:

Anyanitha Distanont, Harri Haapasalo, H., Rassamethes, B. and Lin, B. (2011a) "Developing Product Through Collaboration in High-Tech Enterprises", *International Journal of Management and Enterprise Development*, Vol 10, No.1, pp. 51-71.

Anyanitha Distanont, Harri Haapasalo, Rassamethes, B. and Lin, B. (2012b) "Knowledge Transfer Pattern in Collaborative Product Development (CPD)", *International Journal of Intercultural Information Management*, Vol. 3, No. 1, pp. 59-81.

Anyanitha Distanont, Harri Haapasalo, Mirja Vaananen, and Lehto, J. (c) "The Engagement Between Knowledge Transfer and Requirements Engineering". (forthcoming)

Anyanitha Distanont, Harri Haapasalo, Mirja Vaananen. (d) "Organising Knowledge Transfer in Requirements Engineering over Organisational Interfaces". (forthcoming).

Buyer attractiveness and relational effort in buyer–supplier relationships

In today's technology markets there is a large number of companies competing for the same suppliers' innovative technologies while trying to differentiate themselves from their rivals. One area of technology markets comprises mobile device markets in which mobile hardware has tended to remain specialized. Due to this fact, the supplier ecosystem has continued to play a significant role in creating a unique final product. Products and supply chains are increasingly complex, and therefore buyer companies focus increasingly on their core competences, such as product design. It is vital for an original equipment manufacturer to attract external supplier innovations to compete against its rivals, and this innovation cooperation is dependent on successful long term relationships.

Attraction is linked to close buyer-supplier relationships that create value for both the buyer and the supplier. The perceived value can originate from economical and strategic resource based reasons or from technological and soft social interpersonal reasons. It is proposed that buyer attractiveness increases supplier satisfaction. As a result, the supplier can make a relational effort, or voluntary effort not based on a contract, and give preferred customer status to the buyer. Thus, the relational effort increases the value of the supplier to the buyer and, if the buyer responds to this relational effort, it can increase buyer attractiveness.

This prompts a question regarding the type of relational effort the buyer should employ to become more attractive, to gain external innovative resources, and encourage the supplier to make a substantial relational effort that could help develop a successful relationship. Additionally, is it possible for the buyer to increase its attractiveness by its own actions?

BUSINESS RELATIONSHIP MANAGEMENT

There are three aspects affecting buyer attractiveness that are relevant in innovation cooperation. The economic aspect is the key issue relating to attractiveness, but strategic resource based and technological aspects can also be significant. Furthermore, the soft social interpersonal aspect is among those that facilitate easier cooperation. When the economic aspect in buyer attractiveness decreases due, for example, to changes in the market situation or decreased supplier satisfaction, it can be maintained at a satisfactory level by strategic resource based or soft social interpersonal aspects. Nevertheless, the buyer can be a preferred customer of a supplier even when the supplier is not completely satisfied with the relationship. If the supplier regards the future with the buyer as potentially profitable, the supplier can reward the buyer with preferential status. The circle of business relationship management is illustrated in Table 8.

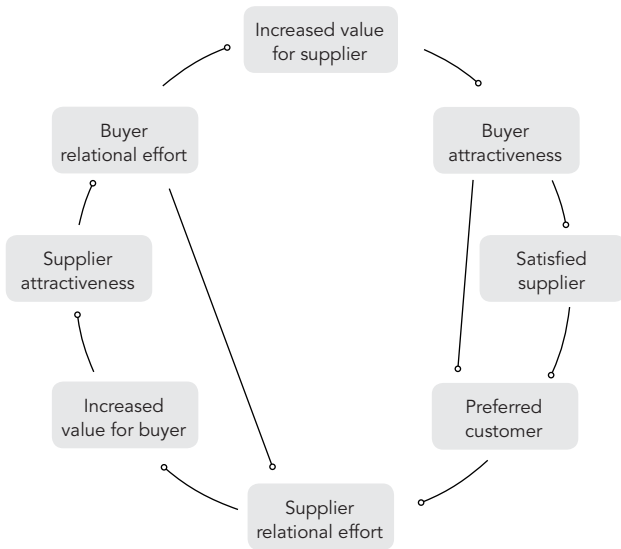


Table 8. Circle of business relationship management.

The results suggest that both buyer and supplier relational effort are interlinked. Benefits from the supplier relational effort enable actors from both sides to become acquainted, which leads to easier collaboration and familiarity with each others' processes. Buyer relational effort can benefit the supplier, as the buyer can share valuable know-how and challenge the supplier to provide higher quality products and services. Ideally the supplier will also be willing to develop to meet the buyer's requirements. An attractive supplier can achieve more projects that result in further business and stronger relationships, and a challenging and developing buyer can be attractive to the supplier, thus making the current relationship an important platform for cooperation in innovation.

The length of a relationship and degree of trust define the amount of buyer relational effort. In longer relationships there are more relationship building activities and joint development, which is affected by the level of trust. Buyer relational effort also differs between buyer company levels. At the implementation level, relational effort is concentrated on project work and on current time exchange. At the management level, relational effort is primarily future oriented including future planning and sharing relevant information regarding future actions. Thus, there are more relationship building activities at the management level than at the implementation level.

It is suggested that supplier and buyer relational effort are interrelated. When a buyer performs relational effort it increases buyer attractiveness and adds value for the supplier. When the supplier performs relational effort, it affects supplier attractiveness and increases value for the buyer. There is a virtuous circle in relational effort, yet the circle can be also negative. If the buyer decreases its relational effort, it has a negative influence on buyer attractiveness. This again decreases the amount of supplier relational effort and supplier attractiveness diminishes. This affects the buyer relational effort negatively and thus, there is a negative circle. Due to this, it is important to maintain the level of relational effort or to stop the negative circle by increasing the amount of relational effort.

In sum, the buyer can influence its attractiveness and a supplier's relational effort with its own actions. This attractiveness is achieved with economic and strategic resource based or technological aspects and can be maintained with social interpersonal aspects. By being proactive, the buyer can achieve major benefits from its supplier, for example, by maintaining its preferential status in the relationship. Furthermore, buyer relational effort increases value for the supplier, thereby offering mutual benefits.

Text based on:

Miia Puranen. Buyer Attractiveness and Relational Effort in Buyer-Supplier Relationships. Master of Science Thesis 2012.

Widening the perspective on innovation collaboration: looking beyond the immediate stakeholders

Since both exploitation and exploration are necessary to create new competitive advantages, a company needs to pursue innovation activities to leverage existing and create new knowledge. Collaboration with existing suppliers in the context of early supplier involvement does not necessarily lead to novel innovations, as suppliers can be overly concerned with preserving the status quo to avoid risks. A similar phenomenon has been observed with regard to customers, when influential customers can be too close to the focal company to introduce truly novel knowledge. Collaboration in innovation between existing suppliers and customers can thus be characterized as “exploitation oriented collaboration”, which refers to developing complementary technologies and products based on the existing and homogeneous knowledge that often resides in the immediate stakeholder network of the focal company. However, to be truly innovative, companies need to complement exploitation oriented collaboration with exploration that examines the development of novel technologies, products, and services based on new, heterogeneous knowledge, which often emanates from relationships beyond those in the immediate stakeholder network.

To ensure the creation of new knowledge and related opportunities, in the context of exploration for novel solutions, a company should thus be receptive to various external sources, and tap into new knowledge that resides within its external operating environment and the wider supply network. This can indicate a need to complement traditional ESI activities, conducted between the focal company and its supply base through collaborative exploitation, and by exploration focused collaboration with a wider set of external resources residing in the supply network. In practice, this can indicate a need to understand and utilize the resources of suppliers’ suppliers and customers’ customers.

ENGAGING THE GENERAL PUBLIC IN INNOVATION

Open forms of innovation are based on the idea of firms better utilizing external ideas and technologies in their own business while leaving unused ideas to be exploited by other firms. Different network settings contribute to exploitation and exploration. A closed network based on tight coupling and strong ties advocates trust and reciprocity, which is built on social exchange

and shared norms. Strong ties based on trust and reciprocity are associated with the transfer of tacit and strategic knowledge. In contrast, an open network is based on weak ties and loosely coupled relations, and is better suited to the transfer of explicit and new forms of knowledge, as the creation of novel ideas is more often associated with weak ties. In particular, idea generation is relevant over the early stages of the innovation process when new knowledge and diverse input for novelty is required. However, as the innovation process matures, there can be a need for deeper and specialized knowledge when strong ties in a more closed context can become more relevant. This would indicate that for the purpose of exploration, which is especially relevant during the early stages of innovation, an open network can facilitate flows of explicit and new knowledge between the focal company and external resources residing in the wider supply and customer network. In contrast, for the purpose of exploitation, a more limited network might be required to facilitate flows of tacit and more strategic knowledge between the focal company and its external resources.

Companies which tap into their external resources, and knowledge exchange between companies and their external stakeholders have been greatly influenced by the recent surge in digital technologies that facilitate collaboration in the online environment. Idea crowdsourcing is enabled by a digital platform that facilitates the capture, management, and refining of idea generation with external stakeholders, including customers, partners, and suppliers situated outside the boundaries of a company in the online environment. Crowdsourcing can be regarded as an act of open innovation that broadens the knowledge base from which ideas are sought and can thus support the need to manage the innovation process within networks where knowledge is increasingly distributed. As a phenomenon, crowdsourcing is heterogeneous in nature; the crowdsourcing task can vary from simple to complex and even creative, requiring various types of skill and expertise from contributors. For a company, one approach to utilizing crowdsourcing for innovation is to arrange idea contests or challenges, in which anyone can participate.

Crowdsourcing however is not solely limited to external resources, it can also be utilized as a tool to tap into a company's internal knowledge. In the following chapter, crowdsourcing is discussed in the context of different stakeholder groups, and related opportunities and challenges are analyzed.

Text based on:

Vuori, Mervi, Henri Simula, Aki Laiho: "Network of innovation suppliers; Towards research agenda". Conference Paper: Innovation in Business Networks. Kolding, Denmark, 2012.

Using crowdsourcing in B-to-B companies: addressing different stakeholder groups

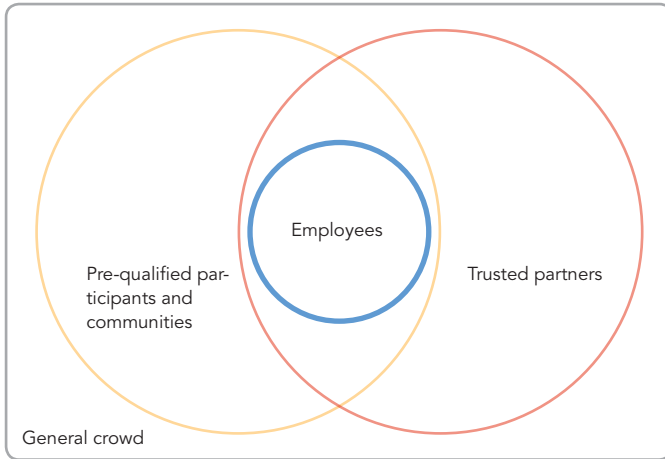


Table 9. A layered model for approaching crowdsourcing in the b-to-b context.

Crowdsourcing can be examined from the perspectives of different stakeholder groups. The inner layer comprises employees of the focal firm. The outer layers comprise parties external to the firm. The external layers next to the inner core comprise both trusted partners and pre-qualified participants and communities. The latter group can be referred to as value chain partners. The former comprise a specific crowd, including individuals with specific skills, knowledge, expertise, or other pre-qualifications; it can also refer to a community of like minded individuals. The outer layer represents the crowd in general and, in addition to the inner layers, extends the range of potential participants to include anyone, including competitors.

INTERNAL CROWDSOURCING: ENGAGING EMPLOYEES

Firms typically target internal idea competitions at all employees, without pre-qualifications that need to be fulfilled to enable participation; this increases serendipity, which can be seen as a positive outcome. The best solutions are likely to

emerge from groups that are regarded as the least likely to solve a problem. Companies such as SAP, Infosys, Siemens, McKinsey & Co., and Eli Lilly have demonstrated the value of harnessing employees' knowledge to support problem solving and idea generation throughout an organization.

CROWDSOURCING WITH TRUSTED PARTNERS

Many consumer driven crowdsourcing initiatives are essentially marketing campaigns such as Doritos's contest to acquire user generated advertisements for the Super Bowl. In a b-to-b environment, partnerships are typically deeper and supply chain collaboration provides a natural platform for collaborative idea generation. Usually, trusted partners have a formal affiliation with the focal firm such as, for example, suppliers, business partners, or service and material providers, with whom the focal company has a contract and an existing relationship.

Case firm Beta (a pseudonym) has organized an annual supplier innovation contest to receive new ideas and suggestions to improve products and

processes. Through this initiative, Beta found that, in addition to monetary rewards, praise is important to motivate participants. Beta also acknowledged that ideation sessions with key partners typically result in better ideas than general ideation sessions. An issue here that can slow down the adoption of the crowdsourcing method is that customers, for example, are faced with very different types of challenge, even if the basic product is the same. Moreover, a global idea competition can potentially provide far too many ideas with which the focal company might not be able to cope due to inadequate resources for the process.

CROWDSOURCING WITH PRE-QUALIFIED PARTICIPANTS OR WITH A COMMUNITY

The extant research suggests that crowdsourcing can only be targeted at a specific stakeholder group, and elaborates on the pre-selection process from the perspective of restrictions or a required skill set. According to some views, crowdsourcing is either open to everyone or participation is only possible for those fulfilling specific criteria, meaning that the participant has to meet particular qualifications (i.e., possess enough skills or knowledge), or context specific determinants, or have a combination of both. In fact, this is the essence of crowdsourcing from the perspective on an expert crowd. While this type of crowdsourcing rejects the original idea of serendipity or having as heterogeneous a crowd as possible, it provides other benefits.

CROWDSOURCING WITH THE GENERAL PUBLIC

Case company Alpha has been active with crowds in general for the purpose of idea generation. This is probably linked to the fact that Alpha has a strong consumer focus and is thus not a “pure” b-to-b

firm. Alpha’s Ideation Tool taps into the company’s external knowledge that resides with consumers, hobbyists, and developers within the company ecosystem. Alpha recognizes that ideas from everyday life can provide inspiration for new products and services. Alpha has created a disciplined process to harvest knowledge from the crowdsourcing data. The company does not collect ideas at random, instead it does so through targeted idea challenges relating to specific application categories.

A contrary approach was revealed by case company Epsilon (a pseudonym). As a pure b-to-b firm, Epsilon regards their closest ties, for instance, major suppliers and key customers, as the most relevant collaborative sources for new ideas and joint development initiatives. As a b-to-b service provider, Epsilon’s primary objective is to fulfil its service promise to key customers with who, in addition to suppliers, Epsilon has close relationships; they exchange information and discuss joint issues and development projects in regular face to face meetings. The customers of Epsilon’s key customers, or consumers (the general crowd), are regarded by Epsilon as a non relevant target group with no role in their business or value proposition. However, consumers can possess valuable insight, which Epsilon recognizes as useful to their key customers in developing their offering. Epsilon acknowledges the opportunities for idea crowdsourcing in the b-to-c context but feel that they have no need for the method as they primarily focus on the key service processes that target their customers.

Beta regards input from end customers as important. However, the data suggest that knowledge can become distorted as it is transferred through the organization. Direct input via crowdsourcing could keep original ideas and information intact and prevent this type of information distortion. Currently, Beta considers external ideas as “raw material” for trends and visions, which could be presented as “food for thought” in workshops and face to face meetings.

SUMMARY OF FINDINGS

Based on the case interviews, several opportunities that relate to crowdsourcing in the b-to-b context were identified. However, the data also revealed several challenges that might slow down the adoption of crowdsourcing in b-to-b firms. Table 10 summarizes the findings.

Text based on:

Simula Henri and Vuori, Mervi: "Benefits and Barriers of Crowdsourcing in B2B Firms: Generating Ideas with Internal and External Crowds". *International Journal of Innovation Management (ijim)*, 2012, vol. 16, issue 06, pp. 1-19.

Table 10.

Opportunities and challenges of crowdsourcing:
Case findings and insights from the literature

Crowdsourcing target group	Opportunities	Challenges
Internal/employees	<ul style="list-style-type: none"> • Increased innovativeness and a business culture where ideas are shared • Increased reach of employees located in different parts of the world • No IPR issues involved Fewer issues that involve business secrets 	<ul style="list-style-type: none"> • Communication of challenges in clear terms so that they can be understood in the correct way • Crowdsourcing, if only targeted internally, reduces the non obvious ideas and unlikely sources from which a solution might emerge • Taking time from other tasks that are perceived as more critical, i.e., the risk of crowdsourcing being labelled as an extra activity
Trusted partners	<ul style="list-style-type: none"> • Can enhance collaboration • Partners are motivated to maintain the partnership, and thus are willing to contribute • A new method of working and exchanging information 	<ul style="list-style-type: none"> • Serendipity decreased with a limited respondent base • Partners will consider the value added as unilateral, to the benefit of the focal firm • Partners might not be willing to learn and utilize different systems

Crowdsourcing target group	Opportunities	Challenges
Pre-qualified participants and communities	<ul style="list-style-type: none"> • The community can provide services, e.g., monitoring and evaluating ideas • Particular problems are too difficult for a general crowd and, thus, it is easier to manage a restricted audience that can focus on relevant topics • A new approach to reaching and engaging stakeholders in the manner of an “extended enterprise” 	<ul style="list-style-type: none"> • Administration for qualifications requires effort • Serendipity decreased with a limited respondent base • It can be difficult to create a community among b-to-b firms • The difficulty of sustaining interest and “momentum” • A careful process and feedback mechanism is required from the focal company to enable it to work
Trusted partners	<ul style="list-style-type: none"> • Plenty of opportunities for serendipity • Many possibilities for unlikely solution providers • Additional benefits, such as brand goodwill (which can benefit marketing and recruitment) • Can be a method to introduce truly new and innovative ideas into the company, facilitating “out-of-the-box” thinking • A novel method to engage the general public 	<ul style="list-style-type: none"> • A careful process and feedback mechanism is required from the focal company to enable the system to work • Can external ideas receive the same status as internal ones or are external ideas considered less viable? • How are existing initiatives and ideas reconciled within the company? • A possible dilemma involves a focal firm receiving too many ideas and trying to cope with them professionally while at the same time responding to participants • How to interest a crowd in a b-to-b firm?



Examples of internal idea generation

Case company Gamma's (a pseudonym) "Idea Factory" is an online idea generation service, targeted at company employees, that has been utilized by the company for three years. The purpose of implementing the tool was to gain better access to the ideas of those working for the company. Idea Factory enables all employees to present their ideas and discuss them online. The tool promotes interactivity between the company's employees who are situated all around the world; additionally, the tool enables idea generation to be more visible to all employees who have access to the service via the company intranet. The tool shows the status of an idea and can also store ideas for later consideration.

Idea Factory represents a new method of communicating and expressing opinions in an online environment, which can be easier for some parties than for others. Gamma regards Idea Factory as a bilateral tool. First, it is a channel for personnel to actively come forward and suggest improvements to existing products and processes. Second, the company can utilize the service in a focused manner by launching specific idea challenges that engage personnel in particular topics. Major benefits of the service are its capability to transfer internal knowledge and promote learning between various functions and departments. The ideas can range from tangible products or services to improvements in process and operating methods. Explicit rewards have not been considered in relation to Idea Factory; the motivation for participation primarily relates to gaining recognition within the online community.

Case company Delta (a pseudonym) has been employing a wiki-tool for internal knowledge management, but the company has also created a special "Ask the Doers Discussion Board", which enables employees to distribute information among their peers. This initiative can be regarded as a type of internal crowdsourcing tool as, for example, experts in a particular field can provide information to those requiring it, and it can identify solutions to minor problems. In addition, Delta has a "MyIdea" tool for new ideas and innovations. Delta has also piloted a community work group for various topics and mobilized employees to participate in discussions and share best practices at a global level.

According to Delta, a company culture that encourages sharing is the key aim; technically, there are plenty of methods to create various platforms and tools to support a sharing culture. In the future, Delta wants to increase the vertical information flow within the organization and facilitate easy sharing of ideas by employees. Overall, the Gamma and Delta cases indicate that company culture can be regarded as an issue encouraging or impeding innovative thinking. One of the most important issues in motivating participants to submit their ideas is to provide

them with a sense that their ideas are valued by the general management.

Internal crowdsourcing also faces challenges. According to case company Alpha (a pseudonym), a major issue concerns the design of idea challenges to be unambiguously understood by the crowd; to engage people in crowdsourcing and elicit their contribution they need to understand the context of the idea and have the right mindset. There is also the risk that they might want to develop their ideas themselves, and are either not ready to share or think that their idea is not good enough to post publicly. Another challenge to engaging users is the importance of providing feedback, as not receiving feedback can have a negative impact on the future participation of the contributor. Similarly, the Gamma case suggests that there might be less interest in participation if employees consider the internal idea generation tool to be intended only for those working in R&D.

The Delta case suggests that challenges to these types of new tool are the attraction of early adopters and convincing others of the fact that the new tools and platforms are useful. The typical dilemma is that only a few participants create content; some just comment on it and the majority simply watch but contribute nothing. The main reason for this stems from the fact that people feel that they lack time; however, often the sharing of ideas can release resources by preventing the wheel from being reinvented. An additional challenge that slows down the adoption of idea exchange tools pertains to business culture, which might not change as quickly as required by new technological possibilities. In addition, cross-cultural and cross-generational challenges can slow down the adoption of new tools.

New intellectual property rights practices

The development of technology in recent years exerts pressure on new intellectual property rights (IPR) practices to follow the rapid change in many industries. Advances in printing and publishing have resulted in minimal copying and reproduction costs, urging protection for IPR holders. However, there is also demand for less constraint regarding practices in sharing content and production, and advocates of open source philosophy promote the benefits of free access and application of intellectual property. This section briefly introduces the main characteristics of copyright and patent, describes some new innovations in the IPR regime, and concludes with two case examples of open source software.

ROLE OF IPR AND INNOVATIONS IN IPR

The debate regarding (de)regulating IPR and its pros and cons has been intense in recent years. Supporters argue that patents and copyright are a necessary evil to incentivize R&D. Another argument refers to the protection of smaller players who are likely to be overrun by large corporations if their innovations are not sufficiently protected. Conversely, those supporting the relaxation of IPR argue that it can otherwise cause inefficiencies in the market by restricting possibilities to improve particular technologies and force other players to abandon the “invention game”.

OPEN SOURCE SOFTWARE

The philosophy of open source, in general, refers to having access to the output's design and structure, and the promotion of free redistribution. Open source software (OSS) provides a source code that can be freely studied, changed, and improved. OSS is often developed in collaboration with other developers and harnesses the power of distributed peer review and the transparency of the process.

Additional Information from:

Visa Virintie (visa-veikko.virintie@aalto.fi)

“Copyright is a legal concept, enacted by most governments, giving the creator of an original work exclusive rights to it, usually for a limited time. Generally, it is “the right to copy”, but also gives the copyright holder the right to be credited for the work, to determine who may adapt the work to other forms, who may perform the work, who may financially benefit from it, and other related rights. It is a form of intellectual property (like the patent, the trademark, and the trade secret) applicable to any expressible form of an idea or information that is substantive and discrete.”

— The World Intellectual Property Organization (WIPO)

“Patent... an exclusive right granted for an invention, which is a product or a process that provides, in general, a new way of doing something, or offers a new technical solution to a problem...A patent provides protection for the invention to the owner of the patent. The protection is granted for a limited period, generally 20 years...Patent protection means that the invention cannot be commercially made, used, distributed, or sold without the patent owner's consent.”

— The World Intellectual Property Organization (WIPO)

Table 11. Solutions to the relaxation of particular IPR aspects

MIT Licence

- Free software created at the Massachusetts Institute of Technology (MIT)
- Grants permission to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the software
- Proprietary software clause: Obtainer of a copy of the software and associated documentation files must include the MIT Licence copyright notice and permission notice in all copies or substantial portions of the software

Creative Commons

- Non-profit organization providing free, simple and standardized copyright licences
- Providing alternatives to “all rights reserved” by restricting the copyright terms to “some rights reserved”
- The licence operates alongside copyright by allowing the copyright holder to modify the usage terms of the copyrighted work to some extent and for specified purposes, e.g. relaxing all constraints but the non commercial use

Table 12. Two ambassadors in the field of open source software.

Open source initiative

- Non-profit organization promoting benefits and importance of open source since 1988
- Provider of open source licenses that comply with their open source definition criteria:
 1. Free redistribution of the software and source code
 2. Must allow modifications and derived work
 3. Licence must not discriminate against any person, group, or field of endeavor
 4. Licence must not be specific to a product
 5. Licence must not restrict other software
 6. Licence must be technology neutral

Linux

- Operating systems (OS) evolved from a concept created by Linus Torvalds
- Linux was a response to demand for an OS that takes user feedback into account
- After finding suitable programs for his idea, Linus Torvalds requested help through the internet to improve the OS, and to respond to user needs and preferences
- Prime example of free and open source software collaboration in development
- The underlying source code can be used, modified, and redistributed
- Can be distributed commercially or non-commercially under particular licences
- Smart phones by Jolla Mobile run the MeeGo software which has a Linux based OS

Low cost country sourcing: organizing and governance perspectives

Low cost country sourcing (LCCS) has become a salient issue for Western companies in search of a cost efficient supply base. In general, LCCS involves decisions on what to source from a low cost country (LCC) supplier market, how to effectively organize sourcing operations, and the responsibilities to give to an LCC organization. In addition, companies need to consider how to ensure required quality, which is a major challenge for LCCS.

Organizational and governance aspects of nine Finnish manufacturing companies active in LCCS were studied by the authors. Additionally, nine Western companies located in Shanghai, Hong Kong, and Shenzhen were interviewed. Research results show that access to low cost resources, including raw materials and labour, are major drivers for LCCS. Innovations, R&D, and access to new technologies were less emphasized. Findings that relate to the organization reveal that strategic sourcing decisions are conducted by company headquarters, whereas local purchasing offices have an operative role. An important factor was also the enhancement of communication with the local supply base. With regard to quality issues, the findings indicate that the main responsibility for quality development rests with the buyer company. For successful LCCS, it is important to have a local quality control system with a complementary verification mechanism.

LOCAL AND CORPORATE PERSPECTIVES

The case companies had experienced quality fade; either the supplier changed the raw materials or a component without informing the buyer, or goods were manufactured with different materials to those in the original sample. The data show that Chinese suppliers have lower commitment to quality issues than Western companies. The buyer company has the responsibility of conducting quality control and implementing appropriate quality control mechanisms. The main benefit of LCCS is in sourcing relatively routine commodities with less emphasis on technology and innovation.

The case companies identified that manufacturing and supplier selection were conducted primarily in local LCCS units; given the advantage of local purchasing offices' geographical proximity to suppliers, this is understandable. The monitoring of suppliers was also clearly conducted locally by LCC organizations. Conversely, the companies retained more strategic activities, defined sourcing specifications, and designed sourcing policies including LCCS at their company headquarters. The main tasks of the international purchasing offices included local quality control to maintain a suitable and uniform quality level, and the search for new suppliers.

UNCERTAINTIES IN LCC SUPPLIER RELATIONSHIPS

From the research data, the following sources of uncertainty could be identified in LCC supplier relationships relating to contracting, controlling, and communication (see Figure 18).

With regard to contracting, ambiguity and the impossibility of addressing all possible instances where quality can be impacted were highlighted. Another source of uncertainty concerned controlling; the main factors were visibility in the supply chain, correct control elements, and dedicated resources. The third source of uncertainty was communication, especially the transfer of knowledge and information from the buyer to the supplier, and transparency.

Governance of supplier relationships in an LCC changed after quality fade was experienced as companies implemented additional measures that emphasized explicit forms of information and improved control. Companies also conducted transaction specific investments to acquire testing equipment and hire resources for additional quality control.

ORGANIZATIONAL ARRANGEMENT BETWEEN LOCAL AND GLOBAL SOURCING AND PROCUREMENT ACTIVITIES

From a corporate perspective, raw materials and components were among the most common categories in the LCCS context. LCCS involved a relatively high number of suppliers and components, which were not necessarily reflected in the LCC share of total purchasing spend. At the same time, large scale sourcing of innovations or technologies from the LCC did not exist. This can also reflect neglected potential as, with low cost countries rapidly advancing their technology and engineering capabilities, sole focus on low costs might leave substantial innovation and R&D capabilities unutilized.

The organizational arrangements of the case companies reflected the specific requirements of LCCS; their sourcing strategies were mostly developed at the sourcing company's headquarters, leaving the LCC unit primarily in charge of implementing the strategy. LCC offices were mainly responsible for supplier relationship management and operational management of the supplier base. The emphasis on activities in the LCC was focused on operational relationship management between the buyer and the supplier, for example, regarding quality control and supplier monitoring. The tasks of an

LCC unit focused on implementation and follow up of contractual aspects and control of supplier performance, while there was less emphasis on strategic supply base development or the search for innovations, technologies, and new knowledge.

CONCLUSIONS

Due to uncertainties in LCC supplier relationships, Western companies need to establish a local sourcing organization with the capability to manage and develop quality control. Innovations and technology transfer play a minor role at best, despite the arguments emphasizing the importance of supplier innovation and involvement in the early stages of R&D. For effective governance of buyer-supplier relationships in an LCCS context, Western companies need to establish a capability for intensive transactional governance. Quality fade can be mitigated mainly through buyer's actions to ensure adequate quality control by introducing transactional governance mechanisms.

Text based on:

Vuori, Mervi, Aki Laiho, Zhongbo Fan. "Sourcing from Low Cost Countries: Organizing and Governance Perspectives". Conference paper: IPSERA (International Purchasing and Supply Education and Research Association). Naples, Italy, 2012.

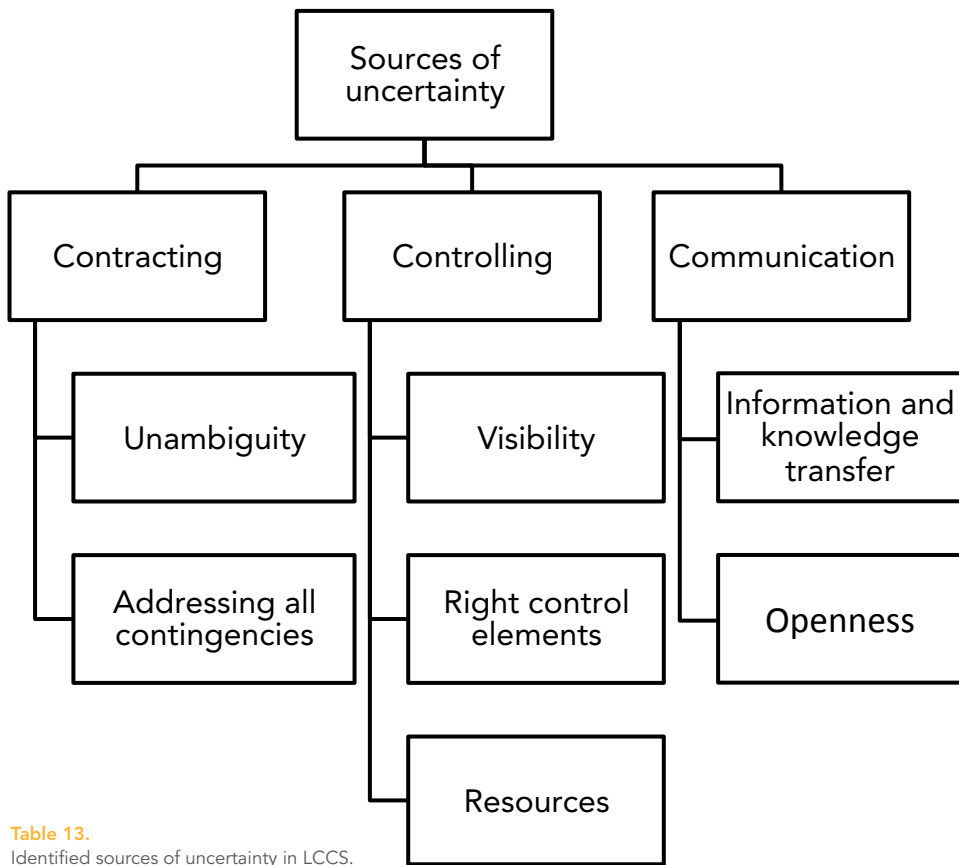


Table 13.
Identified sources of uncertainty in LCCS.

Lessons learned — Immediate stakeholders

Innovation with suppliers

To a large extent, the competitive advantage of a company relates to its ability to innovate. As a result of new open innovation practices and the notion that competences can increasingly be found across company boundaries, innovation has become more dependent on companies' external resources. Traditionally, companies collaborate with their existing strategic suppliers in new product development, which entails the transfer of tacit and strategic knowledge during joint R&D projects. However, to create truly meaningful new knowledge, companies need to look beyond their current business networks as innovation and novel knowledge often reside outside their existing relationships and partners.

Knowledge transfer

Employing technology or IT systems will not help with the transfer of knowledge during collaborative product development if the partners are not interested in the knowledge and information generated. In addition, knowledge cannot be transferred if individuals are unwilling to share what they know. Interaction across organizational boundaries faces several challenges. Thus, to facilitate knowledge transfer and collaboration over the product development process, a company should provide guidance on the type of knowledge to be shared and with whom. Companies must also strive to remove challenges that hinder collaborative work and related knowledge transfer.

Attractiveness

The issue of attractiveness plays a significant role in establishing and securing close relationships with suppliers. A buyer can influence its attractiveness and a supplier's relational effort (i.e. extra effort that is not defined in a contract) by its own actions. Attractiveness is achieved with economic and strategic resource-based or technological aspects and can be maintained with social interpersonal effort. A proactive buyer can realize major benefits from a supplier; for example, by maintaining their preferred customer status in the relationship. Furthermore, buyer relational effort increases value for the supplier, which delivers mutual benefits.



3

Extended network

A key to further development can be found in identifying relevant groups from the external operating environment and engaging them in innovation activities. Along with customers, suppliers, users, and government and research organizations there is a number of new institutions for innovation, such as living labs or hubs, which are not yet fully utilized in company strategies. Social media and crowdsourcing offer opportunities as well as challenges related to company culture and intellectual property rights. Nevertheless the key is to engage both traditional and emerging institutions within the innovation strategy and process.

The expanding scope of innovation — stakeholder view

Innovation is an inherently cross-functional and multidisciplinary activity where societal development and cultural differences play their role. Thus innovation requires cooperation from different and diverse groups of stakeholders who need to be taken into consideration and who may provide a valuable contribution over the innovation process. The traditional source of competitiveness has been in company specific and company internal aspects. For several decades traditional management practices were applied to innovation activities, which were considered to be highly secretive and operated in closed systems mainly within organizations. Conversely, current theories address cross company collaboration both with internal stakeholders across different functions and external stakeholders such as suppliers and customers. Companies have been opening their innovation activities to both directions of the supply chain: downstream to customers and end users and upstream to suppliers. As a result, companies are dealing with many external parties including suppliers, customers, end users, governmental organizations, and research organizations for the pursuit of new knowledge. In addition, some completely new institutions for innovation are emerging globally, offering a potential set of new stakeholders for innovation activities.

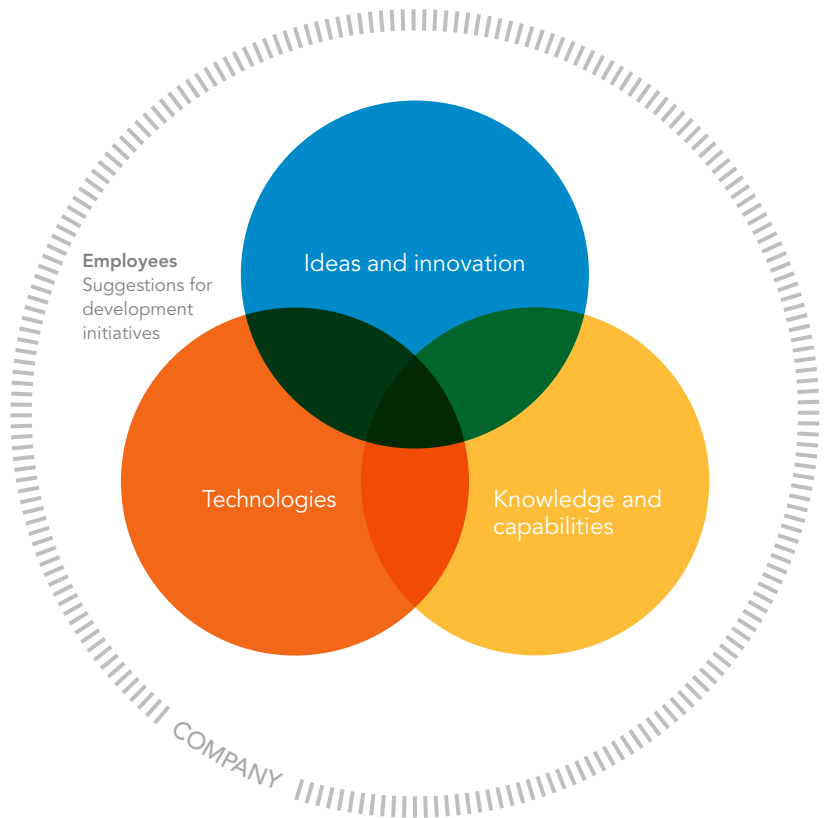
With digital information technologies, which include social computing such as Web 2.0, social media, and crowdsourcing, it has become easier for organizations to engage these external stakeholders in innovation activities. However, whilst these parties can be regarded as potentially valuable providers of novel knowledge, it may prove challenging for an organi-

zation to manage all of these inter-organizational relationships, as they may differ in relationship focus and methods of collaboration. Accordingly, organizations are faced with the challenge of managing and structuring their innovation activities in a dispersed environment. The first challenge for an organization is to identify relevant stakeholder groups in the external operating environment and developing ways to engage them in innovation activities.

STAKEHOLDERS FOR INNOVATION

Stakeholder theory by Edward Freeman (1984) argues that there are many parties involved in corporate management and related business, including governmental bodies, political groups, trade associations, trade unions, communities, financiers, suppliers, employees, and customers. Sometimes competitors are also listed among stakeholders, their status being derived from their capacity to impact on the company and its other stakeholders. Originally the stakeholder perspective on the firm was to address business ethics, morals, and values. Later it has been applied in other areas of management. New technologies, knowledge, and capabilities enhance the development of new ideas and innovation. Many different types of stakeholder can be involved in innovation activities, see Table 11.

In innovation activities, suppliers can be engaged with early supplier involvement and participate in the creation of new products and services. Customers can be invited to participate in the joint development of the delivery process and new



Employees
Suggestions for development initiatives

Ideas and innovation

Technologies

Knowledge and capabilities

COMPANY

Table 14. Stakeholder view to collaborative innovation and examples of interactive relationships (Takala, 2012)

New players
Crowds, demo/proto labs, 3D printing service providers, idea factories, living labs ...

End Users & Non Users
Ethnographic studies, user testing, co-creation

Government and Regulators
Joint development of long term research & education programs

Competitors
Co-operation in standardization or recycling practices

Partners
In new service processes, benchmarking

Non-Gov. Organizations
Environmental development

Customers
Joint development for delivery process and new product creation

Suppliers
Early supplier involvement & co-creation

Research Institutions
Joint research programs

product and service creation, while end users and non-users are very valuable stakeholders for user testing. Also co-creation with lead users can provide novel insights on new product and service creation. With collaborative ethnographic user studies, products and services can be developed to better serve the needs of users.

Different partners are essential for new service processes and benchmarking. With research institutions, such as universities, joint research programs can bring fresh ideas and technologies to new products, services, and operational development. Employees can be encouraged to participate via idea competitions and suggestions for development initiatives, which can also be conducted with ex-employees, retirees, and alumni.

Government and regulators are important stakeholders for joint development in long term research and educational programs. Companies are increasingly working with non-governmental organizations, for example, in joint environmental and societal development programs as well as local development initiatives. Competitor collaboration has become more common, for example, via cooperation in standardization bodies. In some industries competitor collaboration is used, for example, in developing recycling practices.

Companies combine various strategies in their innovation activities. Even though there are common elements for managing innovation in each of these areas, there is a challenge created by the number of different stakeholders and interactive relationships, as well as by different aspirations and goals. This is reflected on measures for innovation and innovativeness.

Interactive social media, Web 2.0, is currently changing global working practices. It enables faster and better interactive communication and co-creative relationships as well as enhanced possibilities for active scouting, listening, and observation. The power of the voice within firms, and appreciation of the external wisdom of the crowd and the voice of an individual is growing. Word of mouth and reputation have now become even more significant. This emergent phenomenon is enabling new possibilities for meaningful interactive relationships with stakeholders.

The current working environment is changing and companies need to create special environments for innovation to accelerate their innovation processes. There are also more mobile workers, whose working conditions and environments are constantly changing. The challenge is to channel ideas from the global and mobile workforce for further developments. A solution might be found by virtual environments providing opportunities for idea generation and collection.

Text based on:

Minna Takala. Expanding Scope of Innovation, Stakeholder View and Measurement. Conference paper: Kolding, Denmark, 2012.

Case IBM — Innovation Jam Session

In May 2006 IBM organized the Innovation Jam session for their employees, their family members, selected customers, and business partners; people from governmental organizations and universities were also invited to participate. Over 76,000 people from 67 organizations and 75 countries participated in a 72 hour session to concentrate on selected topics. People were invited to sign in to the dedicated site prior to the event. Areas for discussions, thematic experts, and facilitators for each area were selected beforehand. Facilitators hosted the event and linked the ongoing conversations.

Later they helped in analyzing the content and further developing the ideas. According to the open innovation principle, all reports were available online for all interested parties. In one session the participants produced over 37,000 ideas. Ideas were further developed with 2.8 million comments. Finally, a sum of \$100 million was invested in the ten major themes. Innovation Jam is an example of how to enable multiple stakeholders to participate in the generation of ideas.

IBM Jams are not restricted to business use. Methods, tools, and technology employed in jamming sessions can address social issues.

IBM has hosted Jam sessions in many areas comprising services, the smarter planet, the future of education, and the emergence of the eco-efficient economy. In 2005, Habitat jam was hosted by the Government of Canada, UN-HABITAT, and IBM. The main theme, urban sustainability, was discussed by tens of thousands of participants around the world. People from 158 countries registered for the jam and shared their ideas for actions to improve the environment, health, safety, and quality of life. These ideas were then employed to shape the agenda for the UN World Urban Forum held in June 2006.

Case InnoCentive

InnoCentive provides an example of the new method of networking for complex problem solving. It is an open innovation community, which utilizes methods such as crowdsourcing, open innovation, and various competitions offering prizes to gather innovative ideas and solutions for practical problems presented by some of the world's leading organizations. In an online

community "solution seekers" post descriptions of technical problems they need to solve for "problem solvers", who compete for a reward associated to the particular problem. Over \$37 million in potential rewards have been listed on the InnoCentive website. The website is used by over 270,000 problem solvers. (<http://www.innocentive.com/about-innocentive/facts-stats>)

Collaborative relationship practices for Living Labs, universities and business

Collaboration practices between business and academia, and industry and applied universities have often been described as key elements in the formation of national innovation systems. It has been claimed that these relationships are fundamentally important both for the development of international business and the development of society. Living Labs are relatively new additions to national innovation systems and their activities can be utilized to significantly enhance the innovativeness of the surrounding society. To achieve the expected benefits, Living Labs need to be active participants in the national innovation system. This in turn can be achieved through active and successful collaboration with companies and universities.

Living Labs have been described as operating as a system, an arena, environment, and/or a systemic innovation approach, which usually apply a user-centric research methodology for sensing, prototyping, validating, and refining complex solutions in multiple and real life contexts. Living Labs practices have been described in various Living Labs methods and tools descriptions and guidebooks. These usually emphasize user-centric methods and practices.

Collaborative relationships with companies and with universities are fundamentally important to Living Labs. This paper will describe selected collaborative practices to demonstrate how Living Labs are working together with universities and companies, and how these relationships could be developed even further for common benefits. The authors will introduce a relationship alignment portfolio model that was originally created for realizing value in business and societal contexts, and apply it to describe and analyse collaborative activities in RLABS in South Africa and in Design Factory in Aalto University.

The objective is to enhance understanding on university and company collaboration with Living Labs. All of these institutions have their own practices and methods of operation, which can sometimes be contradictory. The aim is to share examples of successful practices in relationship management and collaboration for parties working for Living Labs or cooperating with them.

LIVING LABS

Living Labs are operating at the front end of innovation activities, in the early stages of research and development. Living Labs can help in enhancing usability and user experience of new products and services via idea creation and testing in the real life context. Living Labs occasionally work with companies as a collaborative research and development partner.

According to recent research relating to company collaboration with Living Labs, companies recognize a clear need for organized user communities. This can be achieved at the early stages of innovation processes by creating new ideas and concepts based on user needs. Collaboration can also occur at the later stages of development when the role of users is to validate and test the functionality of products and services. Living Labs' employees can also participate in the development stage of products and services. For companies, transition from the old model of closed or even secretive product development activity to more open practices can be challenging, with concerns both regarding company knowledge and information being leaked to their competitors, and intellectual property rights.

RELATIONSHIP PORTFOLIO MODEL

The relationship portfolio model was originally created by IBM to enable better relationship management practices in complex outsourcing relationships. This model introduces four types of relationship for value exchange between different stakeholders:

1. Transactional relationships
2. Value added relationships
3. Special relationships
4. Unique relationships

Transactional and value added relationships are traditional commodity based value exchanges; both involve an exchange of products or services for money, usually over a short or specified time frame. Conversely, specialized and unique relationships aim at innovation based value exchanges, which can be more fuzzy and uncertain. They provide interesting possibilities for collaborative relationships between Living Labs, universities, and companies. Although transactional and value added relationships might exist in this context, the innovation aspect provides a more meaningful basis for relationship practices. As different types of relationship coexist, organizations can have several simultaneous value exchanges ongoing with different organizations. A commonly shared understanding of different types of relationship can help to create successful and mutually beneficial collaboration practices. The expected outcomes and other key elements, described in Table 12, of these relationships vary. To highlight the differences between different types of relationship, also transactional and value added relationship elements are included.

With innovation based relationships, the focus is mainly on co-creation and co-production, either via

customized or unique offerings. This applies well to collaborative relationships in the Living Labs context. Collaboration is based on complementary competencies and required capabilities, which focus on special expertise and skills. Living Labs actively employ user-centric methods and tools, and they actively share these practices, for example, via European Living Lab Knowledge Center and Living Labs in Southern Africa (LLISA).

The planning horizons of the activities vary. They can be based on both short term projects for user testing and long term research collaboration focus. The nature of trust, as well as risks, is based on confidence, and mutual and shared benefits. The open approach to operational values and practices with open communication can help to build trusted relationships. Jointly agreed metrics can be employed to capture the relationship performance and the realization of expected outcomes. Relationships concerning functional silos, scientific disciplines, and the mutual learning of all stakeholders are essential. The initiation of activities is rather in research and development units than in purchasing departments. Activities are interwoven and there is a real need for collaborative operating practices and the exchange of information. Working methods are jointly agreed and can evolve over the time. Technology enablers for integrated workflow are essential, as is frame breaking and the introduction of new practices and operating methods supported by emerging technologies.

The relationship portfolio model appears to be applicable in collaborative relationships between Living Labs, academia, and companies. Specialized relationship practices can be utilized when conducting user validation testing in the later stages of product and service development. The unique relationship model can be applied when the focus is more on exploratory activities. It is important that

Table 15. Key Attributes on Relationship Portfolios Applied from Kosits, Hawk, and Ing 1999.

	Transactional	Value added	Specialized	Unique
Relationship Focus	Product or service viewed as a commodity. Value emphasized in low price.	Predominantly operational efficiency. Value emphasized is expertise in learning economies of scale.	Process integration to enable joint focus on a business outcome. Value emphasized is integration of expertise to create and customize solutions.	Unique product(s) and/or service(s). Value emphasized is the co-creation of strategic advantage in the marketplace.
Capability Leverage	Ability to have specific product or service requirements fulfilled.	Ability to have specific competencies identified and deployed.	Ability to jointly complement competencies with specifically allocated expertise and skills.	Ability to leverage strategic intelligence and resources for mutual gain.
Planning Horizon	The immediate deal. One agreement at a time.	An ongoing exchange, including the search for creation additional value. Operational planning in the near term.	Expectation of continuing joint contribution. Planning for strategic positioning for differentiation.	Agreement of continuing joint ownership. Interlocking strategies to co-create market differentiation.
Nature of Trust	Confidence that the agreement for specified products and/or services can be competently fulfilled.	Confidence that the expectation of performance can be executed, with expertise applied to accommodate details.	Confidence that each party makes decisions benefiting the overall relationship, based on merit rather than partisan gain.	Confidence that both/all parties share the benefits and risk associated with the relationship goals.
Metrics Focus	Tracking compliance to terms and conditions.	Benchmarking of service levels to "best of breed".	Effectiveness of relationship processes.	Business performance, shared incentives.

	Transactional	Value added	Specialized	Unique
Relationship Mode of Operation	Invitation for competitive bids.	Incumbency flavoured with satisfactory performance.	Cross -organizational coordination of functions and processes.	Strategic investments, mutual learning.
Relationship Perpetuation Channel	Procurement or purchasing department contracts.	Assigned provider representative and account manager interface.	Relationship managers coordinate joint programs.	Senior managers jointly prioritize initiatives and investment patterns.
Process Linkage	Independent processes utilizing standard interfaces.	Linkages are adapted or augmented at interface points.	Interdependent, interwoven activities and processes.	Reconfigured joint strategic processes and decision making.
Information Attributes	Data on price, product and service attributes.	Information useful for planning and near term adjustments.	Intelligence about business performance and methods of joint improvement.	Knowledge of proprietary methods, strategic direction.
Technology Enablers– Information Mechanisms	Monitors efficiency.	Roll up / drill down reporting, outlooks and commentary.	Integrated workflow, customized applications.	Frame breaking collaboration, innovative technology deployment.

Case Design Factory

Design Factory was established in the summer of 2008 on Aalto University premises. It is a multidisciplinary research and development centre that combines experience and expertise from the University of Industrial Art and Design, the Helsinki Business School, and the Helsinki University of Technology. There is a long tradition for collaborative development projects with industry; however, the Design Factory aim was to lift this collaboration and co-creations to the next level. Its mission is to develop a passion based co-creation platform. The approach is student-centric and focused on problem based learning philosophy and hands on activities with real company projects that support theoretical studies.

Design Factory emphasizes personal development, offering various forms of coaching and support for students. The operating values comprise passion, learning, fun, and hard work. Emotional aspects are considered essential for creativity and motivation; these also include the

more challenging aspect of emotions relating to fears, frustrations, and sorrow, which are openly discussed. With new ideas, concepts, products, and services, the uncertainty of the fuzzy perspective on innovation can be addressed. Supporting all forms of creativity is one of the key elements, which is also cultivated by interdisciplinary activities. Students and researchers are encouraged to challenge themselves and to “let ideas fly” beyond common knowledge, while the reality aspect is embedded in prototypical activities, experiential learning, and user-centric development methods. The majority of activities at Design Factory are performed according to open innovation principles.

Cooperation with companies is an essential element of Design Factory. The novel type of environment brings together students, researchers, and business people, who scout, find, incubate, realize, and commercialize new ideas. Companies gain the opportunity to interact with stu-

dents, and gain new perspectives on their businesses and operating methods. In 2009 Venture Garage was opened adjacent to Design Factory; it was created from a students’ initiative with the aim to catalyze the creation of startups. Design Factory also offers incubation space for selected startups, prototyping labs, usability labs, and premises for collaborative work. The operational concept of Design Factory is also spreading to other countries. Aalto-Tongji Design Factory was opened in China in May 2010, and there are Design Factories also in Australia, India, and Chile with new requests awaiting attention.

Inside Design Factory collaboration practices with companies comprise all relationship types from transactional to unique. Companies can rent meeting rooms, and attend special events and seminars. Companies participate in traineeship programs for students. There are also collaborative long term agreements, joint development activities, and research projects.

all stakeholders understand innovation based focus and do not shift to more traditional and commonly employed transactional relationship practices.

Both examples in Table 13 have extensive collaboration practices with companies, which have been essentially important to their main activities. Both have been in operation for a little over four years and are at the very active development stage of forming new activities, creating new partnerships and startup companies, and expanding their global reach. Both cases are also very dynamic in creating and testing new practices for their own operations. Novel operating methods are constantly emerging

with new enabling technologies. To date the results have been very promising. Nevertheless, it is too early to predict how successful they will be in the long term.

Text based on:

Minna Takala and Kristiina Lähde: “Collaborative Relationship Practices for Living Labs, Universities and Business”. Conference paper: IST Africa 2012

Case Reconstructed Living Lab

Reconstructed Living Lab (RLABS) began its activities in 2008 in Cape Town, South Africa. Since then it has moved to a new location with space for events, classes, and office space for startup companies. By autumn 2012 it had created an extensive collaboration network with operations in 15 countries. All activities are designed to benefit both individuals and the local social community. RLABS is described as being a community of change with a strong emphasis on personal development, learning, sharing, and helping others. Work is based on societal values related to hope, change, creativity, innovation, and learning. Emotional support is considered essential in all activities; everyone is treated with respect and encouraged to share their personal stories. Creativity is encouraged, and new ideas for innovative services and startups are created based on the needs

of the local community. Uncertainty is always connected to innovation, but in RLABS uncertainty also stems from the challenging local conditions with nearly 70% unemployment and where social problems relating to HIV, drug abuse, and gang activities are common. New ideas and services are created with and for the community members in the real life context, including services for HIV counselling (Jamiix) and mobile services for the unemployed (Uusi). RLABS team members also have some long term collaboration with local and international companies, NGOs, and universities, including Aalto University, as well as transactional and value added relationships and short term projects with local businesses. Some activities can be categorized as specialized and unique relationships that comprise joint development projects and research activities. For its global network, RLABS

has several clearly defined options, which help to start activities in new countries.

From the outset, RLABS has been open with its communication practices, and utilized social media channels extensively in their operations and in collaboration with their local and international stakeholders. They have adopted an open, agile, and expeditious style in communication and for sharing good practices. The needs of community members have provided the inspiration to create new services such as software, spin-off companies, and the new initiatives Jamiix and Uusi. RLABS services have reached over two million people in 39 countries. Collaborative practices with universities comprise educational activities by RLABS participants, attending university classes for RLABS members, joint development projects, and research activities.

	RLABS	Design Factory
Transactional relationships	Renting meeting facilities	Renting meeting facilities
Value added relationships	Courses	Training Programs & Courses
Specialized relationships	Special courses and projects with companies; Events	Development projects with companies; Events
Unique relationships	Special projects with companies & universities; Long term collaboration agreements with selected universities	Special projects with companies; Long term collaboration agreements with selected companies

Table 16. Living Labs Relationship Alignment Portfolio.

Emerging new institutions for innovation: living labs and development labs

Currently there appears to be a number of new institutions and practices emerging that support product, service, and process innovation, and the adaptive means for their further development. As these institutions appear to be operating differently they attract organizations seeking fresh sources of innovation, which face a serious challenge to their own practices due to collaboration with these endeavours. This is apparent in their operating strategies, processes and practices, and relationships with stakeholders, as well as in their general mission statements. New approaches are required for the creation of an environment where mutual value adding can occur via respectful collaboration between contemporary firms, which define the present, and emerging socio-organizations which will define the future.

The authors' objective is to enhance understanding regarding the early stages of new emergent institutions for innovation as these can complement current national innovation systems. The aim is to provide examples of the startup stages and descriptive models that can help in the creation and management of new institutions as dynamic collaborators in national innovation systems.

BOULDING'S FRAMEWORK — IMAGES OF CHANGE

Kenneth Boulding asserted that behaviour in society is predicated on images that underpin the actions of individuals, organizations, and societies. As our perspective on the surrounding world affects our behaviour, the recognition of different images and basic assumptions related thereto is a significant factor in societal development. We need to revisit our beliefs about existing organizations, practices, and methods of operation to understand the changes occurring in the global society. Boulding classified ten different aspects of images of change in organizations and society as follows:

1. Spatial image — The picture of the individual's location in the space surrounding him. This dimension addresses changes in the physical environment as well as in ICT supported virtual environments. Special spaces can support innovation activities.
2. Temporal image — An individual's picture of the stream of time and his place in it. This dimension considers changes in time based practices; for example, short term and long term connections, and synchronous and asynchronous connections, pace of innovation development, and implementation.
3. Relational image — The picture of the universe as a system of regularities. This dimension focuses on relations between organizations, and relationships among stakeholders. Meaningful stakeholder relations can enhance innovativeness.
4. Personal image — The picture of an individual in the midst of the universe of people, roles, and organizations surrounding him. This dimension focuses on personal aspects and changing roles in innovation systems.
5. Value image — The ordering on a scale of better and worse of the various components of the whole image. This dimension invites us to investigate and identify the value systems employed, how much we appreciate wealth, health, beauty, and truth in our activities. Innovation should always add value, and thus it is essential to understand what is valued and valuable for different stakeholders.
6. Emotional image — Various items in the remainder of the image are imbued with feeling or affect. This dimension addresses human behaviours based on emotions; for example, the passion for innovation and the fear of failure or success.
7. Conscious, unconscious, & subconscious image — An individual is capable of being conscious of all parts of the image with the same degree of intensity; the ability to perceive varies; a very small part of an image is exposed to our internal

perspective at the same time. This dimension looks into sources of creativity and imagination beyond rational thinking, which is important for the creation of new ideas.

8. Certain / uncertain, clear / vague image — Every aspect of an image is tinged to some degree of certainty and uncertainty. This dimension relates to the vagueness of the fuzzy front end in the innovation process. Risks are always evident in innovative activities.
9. Real / unreal image — An image of the correspondence of the image “itself” with some “outside” reality. This dimension challenges us to investigate deeper levels, and hopefully supports implementation in real contexts.
10. Public / private image — Whether the image is shared by others or to the individual in particular. This dimension provides an opportunity to address the themes of openness, transparency, and open innovation.

The dimensions above provide a framework for description of complex phenomena. Boulding emphasized that the image is a property of the individual person, which is why he described different images at the individual level. However, he also noted that different dimensions of the image can be used as a metaphor or an analogy for organizations and societies. These can also be applied to new institutions for innovation.

Change can be perceived as a mutation of the image created by society's true entrepreneurs and is occurring via emergent activities arising from people's own initiatives. Without this mutation of the image, societies would rapidly settle into a stagnant equilibrium. Unfortunately this has occurred in many societies; as the world evolves, the image does not. In the INSCO project, an image framework is employed to describe the difference between traditional and emerging new institutions for innovation. The new images can be seen as extensions and modifications of the old.

EXAMPLES OF NEW INSTITUTIONS

The INSCO project selected four representative new institutions for further investigation. Along with Aalto Design Factory and Reconstructed Living Lab from Cape Town, South Africa the project concentrates on two other recently established institutions. TANZICT Innovation Space was opened in November 2011 in Dar Es Salaam, Tanzania, while Konseptori activities have gradually commenced during autumn 2011 in Hämeenlinna, Finland. There are revolutionary aspects in their operations. Design Factory and Venture Garage have reformed entrepreneurial development practices in Finland. RLABS is driving the global social revolution. Visionary leadership is driving the changes, while constant inductive learning develops the practices further.

practice. The following are selected recommendations for the startup phase of new institutions based on early research findings from the authors' study:

- Appreciative approach to all stakeholders: students; local community; entrepreneurs.
- Collaboration and open approach with stakeholders.
- Flexible organizational structures and practices to address constant change.
- Utilize new technology and social media for open communication.
- Collaborative, flexible, and open approach in communication, to be ready for unexpected outcomes and unintended consequences.

CONCLUSIONS

New institutions for innovation are emerging and they are enhancing cultural change in the entrepreneurial context. This global shift to new modes of operation has been enabled by technology. The open source development mode has shifted to new incubation models. To date, the results from the Design Factory and RLABS have been very promising; however it is too early to evaluate their success in the long term. Both appear to be motivated to make transformational changes on a global scale. Although TANZICT Innovation Space and Konseptori are at the early stages of development, both aim to accelerate innovation practices in their own context.

The strength of the Living Labs approach is its regard for users and user communities as equal partners in a development, instead of objects or test tools; the approach encourages and invites them to participate in development activities. Although this perspective can be utilized in development labs, unfortunately user involvement is not yet a common

Text based on:

Minna Takala and Kristiina Lähde:
"Emerging New Institutions for Innovation,
Living Labs and Development Labs".
Conference papers IST Africa 2012
(Lähde&Takala) / ISSS 2012 (Takala).

Case TANZICT — Project and Innovation Space

TANZICT is a bilateral project between the Tanzanian and Finnish governments run during 2011-2014. The project began on 1st August 2011 and Innovation Space was formally launched on 31st October 2011 in COSTECH, the Tanzania Commission for Science and Technology. The TANZICT project aims to strengthen the Tanzanian innovation system and foster ICT enabled entrepreneurship. For this, Innovation Space has been established to provide a physical platform for various activities, such as pre-incubation, training, and community events. The

TANZICT project aims to experiment and use new institutions in the Tanzanian context to support entrepreneurship and entrepreneurial thinking in universities and other stakeholder organizations in Tanzania.

In the first month, Innovation Space hosted a Mobile Monday event, an Apps4Africa event, visiting entrepreneur speakers from South Africa, a pitch night, and several meetings. Innovation Space is also a platform to experiment with different methods of operation. TANZICT will investigate and replicate different co-creation and open

innovation processes to evaluate how they operate in a Tanzanian context. The long term goal for Innovation Space is to become a self sustainable, community driven initiative, probably outside the current host organization COSTECH, and operate according to the international hub concept. TANZICT will also collaborate with African Living Labs, for example RLABS, and Aalto University's Design Factory. It will utilize some of these practices to enhance university-industry collaboration and user focused development practices in Tanzania.

Case Linz

The city of Linz has taken an active role in the support of regional innovation and created the Ars Electronica Center (AEC) that houses various exhibitions and labs, which also include interactive exhibition spaces. One of the labs is a Fab Lab that provides access to new 3D modelling and printing technology to anyone interested in learning and experi-

menting with new technology, thus enabling a modern means for invention and technological empowerment.

The aim of AEC is to offer an open and easy method to provide every visitor with access to a design and fabrication space that focuses on creative prototyping and shared creativity within a realized integrative system.

In addition, local companies, including SMEs, use AEC's facilities for networking meetings. Fab Lab also operates as a demonstration space to showcase the latest 3D technologies to entrepreneurs and thereby inspire ideas for new products, services, and practices.

New institutions for innovation

INTRODUCTION

The future role of users in product development is changing to what Von Hippel (2005) terms the “democratization of innovation”. Users are developing new abilities that enable them to act as producers of their own products. Some manufacturing companies might see a danger in this for the development of their business. Others consider the democratization of innovation a good opportunity to deepen end user involvement in all phases of the new product or service development system; the latest scientific studies suggest that user involvement is indeed important to successful system development in the innovation process.

Contemporary innovation and new product development systems are increasingly focused on users as a source of innovation, parcels of knowledge found all around the world and distributed in ever broader and more complex networks. Neither SMEs nor large companies have the internal capabilities to control all potential innovations implicit in these conditions, and the whole process is often slow and continuously prolonged.

So, how can companies adapt to this new context and gain a competitive advantage? What tools can they use to reach the wider range of sources for innovation? How can companies maximize the benefit of involving end users in the innovation process? One suggested solution is collaboration with “New Institutions for Innovation”. These platforms mediate actors such as companies or public organizations, universities, and end users, facilitating a common space and supporting direct contact between the different parties involved in the innovation ecosystem.

USER INVOLVEMENT

End users are widely spread and engaging them in the innovation process is not an easy task for companies. One highly important determinant for user involvement is their motivation to participate in the process. The best known customer role concerning innovation is that of the lead user. They are distinguished among the other users because of two singular characteristics: First, they are at the leading edge of an important market and are able to identify a need before others. Second, they are motivated to innovate as they can anticipate benefits from obtaining a solution to their needs. At the same time, informal user to user cooperation is a very common practice in establishing innovation communities. The members of the communities interact in common spaces equipped with the tools and infrastructures they need to develop their ideas. These communities can increase the speed and efficiency of users when developing, testing, and diffusing their innovations.

Different field studies recommend the involvement of users in all phases of the innovation process, from the ideation phase to the product or service support phase. Depending on the phase, users play different roles that can fall on the continuum from informative to participative roles.

However, interaction with users over the innovation process raises operational questions: How do companies collect the users’ ideas? How do they interact? Which are the channels developers employ to be in contact with user ideas and needs? Traditionally there were two types of interaction: indirect and direct. Direct contact between developers and users is highly important in user

involvement, providing users with an active role in the innovation process. Two alternatives enable direct interaction: direct user participation in the product development process and taking product developers to the users. Both alternatives require a common space where the involved parties can meet. Despite the importance of direct contact with users, indirect interaction by mail, e-mail, or telephone still prevails and results in a passive role for users as information providers. This passive role is currently changing due to new technologies that better enable interaction and support co-creation.

New ICT solutions and social media increase channels of interaction that enable online involvement of users and online communities. The involvement of online communities is blurring the line between direct and indirect interaction, and the boundaries between communities and firms. Especially employing social media, consumers can make more informed decisions, possess a global view of matters, and network with others.

In future, companies will face many new challenges. The main challenges emanate from the development of more systemic innovation, and collaboration between designers and users. A possible solution might be to employ innovation intermediaries. However, some authors argue that it is an undesirable option to employ experts to gather information from users due to information filtering and distortion. Conversely, others authors highlight the importance of new intermediaries in the context of the user-designer relationship and the supply-demand interaction approach in innovation studies. Innovation intermediaries might bridge gaps in nascent networks, facilitate contacts and experi-

mentation by sharing knowledge, be a store for collective memory, and shape technologies, vision, knowledge, and relationships.

INNOVATION INTERMEDIARIES

Howells (2006) suggests the following definition of innovation intermediaries:

“An organization or body that acts as an agent or broker in any aspect of the innovation process between two or more parties. Such intermediary activities include: helping to provide information about potential collaborators; brokering a transaction between two or more parties; acting as a mediator, or go-between, bodies or organizations that are already collaborating; and helping find advice, funding and support for the innovation outcomes of such collaborations.”

It is commonly assumed that innovation intermediaries operate in a simple triadic one-to-one basis between two different actors in a vertical relationship. Nevertheless, they can be involved in more complex relationships such as many-to-one-to-one, one-to-one-to-many, many-to-one-to-many, or even many-to-many-to-many collaborations, developing both vertical and horizontal relationships. In addition, innovation intermediaries are not only involved in linking their clients with other organizations, but also in the delivery of services direct to their clients on a one-to-one basis.

Within the innovation ecosystem, innovation intermediaries develop various functions such as analysis of markets, research with suppliers, sourcing new products, crisis management, conflict mediation, advice on rate of progress, capacity planning, testing new products, quality control of production, and management of claims. More specifically, in the end user innovation context, innovation intermediaries play three key roles that comprise configuring, facilitating, and brokering new technology.

Some authors suggest innovation intermediaries as a solution for increasing the agility in product development to all those firms with inflexible supply chains. Secondly, intermediaries might facilitate the capture of valuable novel knowledge by co-producing new products and cooperating with customers in the innovation process.

All these themes are highly relevant for emerging methods such as Living Labs and other new experiments in co-creation (e.g., hackerspaces, makerspaces, fablabs). These methods are new types of user involvement that intermediaries enable with the development of ICT technologies and standard platforms.

LIVING LABS

The living lab approach embodies many characteristics that facilitate solutions to the new era of change described above. However, living lab activities are relatively new in the academic domain. Hence, there is limited information regarding a consistent set of living lab methodologies, and even less on the results of applying such methodologies to empirical testing.

The first living lab practices recognized were carried out in Boston (USA) by Professor William Mitchell, in MediaLab and the School of Architecture and City Planning at MIT University in the 1990s. Since then, scholars and organizations had proposed many definitions. Fundamentally, the term Living Lab can be defined as “a user-centric research methodology for sensing, prototyping, validating, and refining complex solutions in multiple and evolving real life contexts”.

Living Lab can be described as an innovation intermediary or a system of innovation depending on its role in the innovation process. As an innovation intermediary, Living Labs are brokers between companies, research centres, and users. Living Labs continuously organize user involvement, maintain groups, set up a variety of projects, and create societal involvement. Researchers contribute to the innovation process with new knowledge, and relevant technology and methodology. In exchange, researchers obtain new information emanating from the collaboration process. End users are consumers, citizens, workplace teams, or whole organizations which contribute to other actors by expressing their needs, and deploying experience and situation expertise as primary users of the product and services developed by the innovation system. During this collaboration they seek better solutions that fulfil their needs and new knowledge that enhances their situation. Finally, developers are firms or organizations, private or public, which aim to develop new products and services to fulfil the need of customers. Also, they search for new market and business opportunities.

Living Labs are also systems of innovation with activities that comprise the provision of R&D,

competence building, formation of new product markets, articulation of quality requirements, improvement of entrepreneurship, provision of networks, creation and change of institutions, and support to innovating firms such as incubating activities, financing, and consulting.

Despite of the novelty of this approach, authors claim that Living Labs can provide many benefits to the innovation system. There are three areas where Living Labs might be a favourable approach as an innovation process. First, they provide an advantage in the customization, localization, and validation of existing products or services. Second, Living Labs can be beneficial for innovators with problems in large solution space. Third, interdisciplinary projects with multiple alternatives and business models facilitate the Living Lab approach.

CO-CREATION WITH COMMUNITIES: MAKERSPACES, FABLABS, AND ENTREPRENEURIAL HUBS.

A novel practice for innovation employing users is the co-innovation between firms and innovation communities such as makerspaces, fablabs or entrepreneurial hubs. These communities contribute mostly to the development of information products such as software, but also they have the ability to develop physical products. Their activities range from developing exchange information sites to the development of their own space equipped with personalized infrastructures and tools.

These innovation communities usually specialize in narrow themes in which their members have special interest, and in which they continuously look for effi-

cient solutions to their needs. Community members, users, and/or manufacturers, tend to behave in a collaborative manner. These communities are based on open information and mutual support among their members, who not only distribute and evaluate their innovations but also assist one another in developing and applying innovations.

COLLABORATION BETWEEN NEW INSTITUTIONS FOR INNOVATION AND LARGE COMPANIES.

It appears that new institutions for innovation can provide highly relevant information to both SMEs and large companies regarding the needs of end users concerning products or services. Unlike SMEs, large companies have plenty of sources for innovation while simultaneously lacking flexible innovation systems. New institutions for innovation may act as a catalyst to innovation and a source of new ideas to develop.

The contemporary relationships are based more on trust between the parties than on formal contracts. The absence of contracts may be a reason why these new institutions can expedite the innovation process and avoid slow and rigid bureaucracies. Users and designers collaborate on various projects, and the spaces built for new institutions' members facilitate direct contact between users and designers along the whole process, increasing communication efficiency and the relational effort contributed by all involved actors.

Text based on:

Adolfo Gonzalez Vallejo: Diploma Thesis. Work in progress.

Using crowdsourcing for idea generation — the promise and the challenges

Crowdsourcing is a recent phenomenon that has attracted attention in practitioner and academic communities alike, and a way in which companies can outsource a task to the general public, in other words tap into external resources residing outside company boundaries. External resources can through Internet technologies be engaged for example in problem solving, idea generation, and task execution. Especially in the new product development domain, crowdsourcing can be seen as a potential method to tap into user insights. There are many examples around the world of companies employing crowdsourcing to generate ideas; some Finnish companies are executing idea crowdsourcing in practice. Before a company can make the most of this new way to engage with external resources, it needs to address issues surrounding IPR, feedback mechanisms and internal processes vis-à-vis integrating external knowledge into company R&D activities.

By employing digital information technologies including Web 2.0 and social media, it is relatively straightforward for companies to engage their external stakeholders comprising users, potential customers, and existing and potential suppliers, in value chain activities ranging from innovation to the creation of brand awareness. When a company issues an open call to its external stakeholders in the search for new knowledge, it engages in idea crowdsourcing.

The term crowdsourcing was originally introduced by journalist Jeff Howe in 2006 and describes outsourcing an activity to the crowd. Various types of classification have been undertaken to clarify the nature of the crowdsourcing phenomenon. Originally, Howe divided crowdsourcing activities into four primary types:

1. Crowd wisdom
2. Crowd creation
3. Crowd voting
4. Crowd funding

Crowd wisdom relates to scientific and professional problem solving (e.g., InnoCentive since 2001), collecting geographic content, aggregating location based data and information (e.g., Open Street Map since 2004), and collecting health and medical data (e.g., Patients Like Me since 2004). Crowd creation relates to distributed work (e.g., Mechanical Turk since 2005, Freelances since 2004) and crowdsourcing platforms for design and art (e.g., 99design since 2008; Express in Music since 2009). Crowd voting is an often embedded element in idea crowdsourcing platforms, as for example in Threadless.com where site visitors can share, score, and comment on T-shirt designs. Most popular designs are awarded. Crowd funding relates to funding small businesses and investing in new product and service development (e.g., Kiva since 2004; Kickstarter since 2009) for example in the area

of music and art (e.g., ArtistShare since 2003). A similar type of categorization for crowdsourcing activities distinguishes between five main application domains: cloud labour, crowd funding, crowd creativity, distributed knowledge, and open innovation (see www.crowdsourcing.org).

There are various methods for companies to approach and employ crowdsourcing, typically comprising idea competitions, problem solving, or assigning tasks (such as text transcribing or editing) to masses; the latter is an example of microtasking. There are many examples of crowdsourcing around the world. A prime example is Wikipedia, to which anyone can contribute information on specific topics and thus participate in the creation of the world's biggest online encyclopaedia that, to date, carries over six million articles in more than 250 languages. Lego's Lego Factory invites fans and enthusiasts to their website to share and create their own designs and to network with other fans. Starbucks runs the MyStarbucksIdea.com initiative; it has been reported that since March 2008, over 70,000 ideas have been submitted through the site. In Finland, an interesting recent initiative is "Opera by You" in which all interested people can participate in creating an opera, writing the script, and composing online. The result of this collective initiative was the opening performance at the Savonlinna Opera Festival in July 2012.

Crowdsourcing refers to connecting and collaborating with external stakeholders by

employing an Internet platform or service. Crowdsourcing relates to the concept of open innovation, which means that companies should both employ ideas from internal and external sources in their innovation process, and engage both internal and external aspects in innovation commercialization. Crowdsourcing can be considered a method to facilitate open innovation and co-creation. As crowdsourcing is a means to generate new ideas and hands on experience of potential new markets through consumers, hobbyists, enthusiasts, and other interested stakeholders, it enables firms to engage with talented parties outside their own organization. Working with an online crowd has spread to various areas and crowdsourcing has been employed by companies, governments, and non-governmental organizations. In the business context crowdsourcing has been applied in many areas from product development to marketing, from sales to customer service, and in production, finance, and management.

Given that software developers have been working in an open innovation mode since the 1980s via Linux and Mozilla Firefox, what is new regarding crowdsourcing? Professor and philosopher Pekka Himanen describes seven values that are shared by open source software developers comprising passion, freedom, social worth, openness, activity, caring, and creativity. In general, it appears that idea crowdsourcing encompasses and taps into

these values, and enables participation of software developers and anybody willing to collaborate in innovation activities.

Aided by new technologies, companies can now engage with their stakeholders in profoundly new ways and engage in true interaction with people outside company boundaries. However, crowdsourcing initiatives require careful planning by the initiating company. It is said that “you can make the first impression only once” and this is particularly true in an online environment. To realize the benefits of online interaction with the crowd for innovation purposes, a company requires a robust process for idea evaluation and harvesting due to the immense volume of ideas that might be generated. An issue to consider is the integration of selected ideas (i.e., the external knowledge) into the company’s R&D activities. Timely feedback to an online crowd is another issue that should not be taken lightly. Companies should also consider whether they want to provide monetary rewards to engage the crowd. In addition, a company might encounter IPR issues surrounding idea ownership and related rights when adopting an idea posted on its website.

There are numerous topics for companies to consider before commencing interaction in an online environment: the back office process needs to operate efficiently to avoid problems; adequate resources are required by the company to operate the process and ensure successful implementation; change management might be required to prepare company employees for the adoption of crowdsourced ideas. Is it possible for external people, who are not working for the company, to know better than the company’s employees? In a recent

study, it was found that ideas received from parties outside the company via the crowdsourcing process scored higher in terms of novelty and customer benefit than ideas generated by the company’s employees.

For a company pursuing innovations in products, processes, or solutions, crowdsourcing appears to be a more contemporary than future topic and applicable to experiential learning. At best, truly innovative ideas in companies’ external environments might be waiting for adoption by the correct company. Crowdsourcing can thus both complement and enrich the company innovation process.

Text based on:

Takala, Minna, Mervi Vuori, Henri Simula: “Crowdsourcing – Ideas for Development”. Conference Paper IST-Africa, Tanzania, 2012.
Vuori, Mervi: “Using Crowdsourcing for Idea Generation: The Promise and the Challenges”. The Finnish Production Control Society Magazine. Issue 3, 2012. 13-15.

Case Dell — Ideastorm

Dell's IdeaStorm was launched in 2007, when Dell created a permanent virtual collaboration environment to invite their consumers to participate in creating new business ideas and improvements to their products and services. Dell Idea Partners are introduced on the site and they operate as facilitators with a role to comment, provide information, and clarify misconceptions. They can also end conversations, propose new solutions, and cooperate with active users online. Storm Sessions are organized on specific themes and

participants can post their ideas or vote and comment on any topic while the session remains active. Subsequently, Dell reviews the shared ideas. Ideas presented by the community are selected for further development. During three years from 2007 to 2010 there were more than 15,000 ideas shared on the site, over 90,000 comments, and over 700,000 votes registered. The majority of ideas related to typical customer feedback on products and services rather than genuine new business ideas. The Storm Session leader later

shares information on how and when ideas will be implemented. Other than this, Dell shares information regarding the process stage of the ideas only after they have been implemented, with no information shared during development. According to Dell IdeaStorm's Terms of Services, posting an idea to IdeaStorm will grant Dell royalty free license to employ and implement ideas without any compensation to the originator. All participants should be aware of this IPR policy before posting their ideas.

Case IDEO — OpenIDEO

IDEO created their open innovation platform OpenIDEO in 2010 with the first challenge running from 16th June to 13th July inside the company. OpenIDEO employs a structured and scheduled process for ideation. First, ideas are collected from the participants. During the second stage, concepts are created. At the refinement stage, selected concepts are further developed. Next, all refined concepts are evaluated and at the last stage winners are announced.

Over two years the OpenIDEO site hosted more than ten challenges attracting over 22,000 users and creating in excess of 2,000 concepts. Many of the challenges were created with other organizations, typically NGOs.

The themes of the challenges often related to social concerns or current issues in the world. Any individual or organization can propose a challenge that focuses on improving social issues. OpenIDEO community members can contribute in various ways, ranging from inspirational observations, and photos and sketches of ideas to business models and snippets of code.

OpenIDEO is based on the following principles:

1. Inclusion – open to all interested people.
2. Community-centricity – the aim is to foster a lively community that thrives on inspiration.

3. Collaboration – giving support to teamwork and different roles during the design process.
4. Optimism – seeking solutions from wild ideas.
5. Beta mode – continuously developing OpenIDEO site features.

OpenIDEO supports participants to operate as facilitators who offer help to ensure the process operates as smoothly as possible. The site has been designed for easy user participation and collaboration. For example, a visualized collaboration map enables people to navigate across ideas and concepts making it easier to gain an overview on the challenge.



Case Nokia — IdeasProject

Nokia launched its idea crowdsourcing initiative early 2011 to engage customers, hobbyists, enthusiasts, and developers in idea challenges through their crowdsourcing website called IdeasProject.com. During nine months (March-November 2011) the site had gathered over 7,500 ideas, engaged 14,000 community members with 6,000 comments and over 37 million page views. All that is required to participate is an innovation oriented mindset and willingness to share ideas openly in the online platform. After posting, other members can comment and vote on the idea and thus help to develop it further. In 2012, IdeasProject community has reached over 20,000 contributors.

Nokia conducts crowdsourcing both with their internal stakeholders as well as with external audiences. Internally, the company's ideation platform enables company personnel to communicate with each other, cast ideas, vote, and comment on other's ideas. IdeasProject.com is targeted at company external audiences and regarded as a way to execute co-creation based open innovation in product, service, and application development. The company has even used both external and internal crowdsourcing simultaneously to discover new ideas relating to mobile power and battery problems.

There is a disciplined process behind harvesting the intellect within crowdsourced knowledge. First, ideas are not randomly generated or collected by the company, but through targeted idea challenges relating to specific application categories. Idea challenges are promoted through marketing efforts and by partnering with relevant organizations. Second, the actual harvesting process is rigorously implemented. The jury plays an important role in evaluating and selecting best quality ideas that are fed back to the online community for evaluation of "pros and cons". As noted by the company, it is not adequate to rely simply on the "crowd" to select the best ideas; the best option is to combine the wisdom of the crowd with the knowledge of the jury. The most applicable process thus is where the jury considers all ideas and the community subsequently evaluates those initially selected. Thus the role of the crowdsourcing community is both in the collection of mass idea and in expressing preferences and creating "rank". The role of the jury is to make the final selection in terms of progressing ideas to innovation roadmaps and implementation. The IdeasProject community pays close attention to the evaluation process in terms of fairness and openness. From the company perspective giving feedback to the crowd is regarded as an important issue, and a phase that is even demanded by the contributors.

To reduce the number of ideas, those with similar characteristics are grouped and clustered by company. To further analyse and make sense out of the crowdsourced data, Nokia employs

advanced text mining combined with clustering and regression analysis. Analysis has also been conducted based on neural networks. Data visualization enables insight on aggregated ideas as they are grouped adjacently, forming themes. The purpose here is to deliver insight especially in terms of geographical data, which can potentially feed into the process of application development. Potentially, the processed “crowd intelligence” can be used for business development, strategy, and R&D, or to identify weak signals or megatrends.

Prior to launching IdeasProject.com, the company executed a study where motivation factors, possible roles, and features relating to the potential idea marketplace were investigated. The study sought answers to questions on how to attract organizations’ employees, customers and other stakeholders to employ the new idea marketplace? What motivated people to contribute and what types of role did the users have? (Harjanne, 2010). The study showed how in terms of the potential motivation factors there was a difference between lead users and normal users. (See Table 14).

	Lead users	Normal Users
1.	Intellectual stimulations	Chance of getting a new mobile phone or other technical device
2.	Personal learning	Making better products and services
3.	Seeing own ideas come true	Chance of getting a lot of money if my idea wins
4.	Enjoyment and fun	Seeing own ideas come true
5.	Chance of getting a lot of money if my idea wins	Knowledge exchange

Table 17. Comparing Top Five Motivations of Lead Users and Normal Users (Harjanne, 2010).

Despite the original insight into the motivational impact of, for example, intellectual stimulations and learning, the company has experienced that winning tangible rewards has been a strong motivational factor both among lead users and normal users.

The challenge of crowdsourcing, as experienced by the company, relates to designing an idea challenge that can be “correctly understood” by the crowd. In order to engage people in crowdsourcing and to make them contribute, they need to understand the context for the idea and have the right frame of mind. Thus, the idea challenge needs to be carefully defined and articulated to ensure the right types of input. There is also the risk that people may want to develop ideas by themselves and are not ready to share. They may even have fear that their idea is not good enough to post. One challenge relating to users is the importance of feedback; not receiving feedback may have a discouraging impact on future participation. For the company, the main challenges lie in implementation.

There are two types of external crowdsourcing aimed at idea generation and enhancing innovativeness by networking and tapping into the company external knowledge. First, the company is engaging the crowd in an open network setting through the public ideation service, IdeasProject. Second, the company is engaging business partners in idea generation in a closed network setting. The latter is an example of implementing previously open collaboration practices facilitated by Web 2.0 technologies in a closed network setting with a set of pre-defined business partners. Here, the case company aims to use idea crowdsourcing as an initial step leading to a b-to-b community, fuelled by technology enabled forms of collabora-

tion. It should be noted that while the purpose of employing the technology is the same - idea generation, knowledge sharing, and diffusion to enhance innovativeness – the context of application is different. The b-to-b environment is based on existing relationships, which are usually governed by contracts. In public crowdsourcing, these elements are not present. Different network contexts may have an impact on the quality and perceived usefulness of the crowdsourced ideas for innovation, as it has been claimed that strong ties based on trust and reciprocity are associated with tacit knowledge, whereas weak ties are more associated with explicit knowledge. The case company makes an effort to refine externally crowdsourced ideas (i.e., explicit knowledge) into intelligence through data visualization, which can be seen as an effort to capture the “implicit in the explicit”.

As an identified application of social media in the case company, crowdsourcing can be described as the major new innovative practice, enabling a new way to collect knowledge, both internally and externally, based on interaction and collaboration. IdeasProject represents an ideation technology in practice, facilitated by Web 2.0 technology, and in the case company external idea crowdsourcing is a new organizational practice for idea generation and collection enacted through Web 2.0 technology. From the case data, factors that contribute to and shape the enactment of ideation in practice can be identified. Recognizing the power of collective intelligence in the external knowledge residing in developer and consumer communities, and fostering a strategy of open innovation and an innovation oriented organizational culture can be regarded as the main organizational aspects. The

practice is also shaped by technology features based on interactivity in the form of online commenting, voting, and expressing likes and dislikes; writing and sharing text and pictures; storing ideas for later development; and in general the ability to add content and build on content added by other users. The ideation practices are also shaped by norms relating to sharing knowledge and the creation of ideas across organizational boundaries. Interpretive schemes also enable the enactment of the ideation technology, including an understanding of the power of Web 2.0 technology as an interactive service to engage external stakeholders in generating ideas, building communities, and in interfacing with other online ideation platforms.

There might be differences between the planned and actual applications of technology. Thus, for a successful enactment of ideation technology in practice, the planned use should align with the enacted use. In crowdsourcing, this means that there should be a critical mass of contributors participating in idea generation and that the ideas generated are deemed useful. Furthermore, Nokia encourages the online community to take ideas and develop them further. This collaboration possibility is embedded in the service; however, it is for the participants to decide whether they act on this opportunity or not.

Text based on:

Takala, Minna, Mervi Vuori, Henri Simula: "Crowdsourcing – ideas for development". Conference paper: IST-Africa Conference, Tanzania, 2012.

Harjanne, Karoliina: Developing a New Global Idea Creation Platform – Case Idea Marketplace. Master's thesis 2011.

Vuori, Mervi: "Exploring uses of social media in global corporation". *Journal of Systems and Information Technology*. Vol. 14, Issue 2, 2012. 155-170.



Case Nokia — Crowdsourcing-based ideation platform

In the Aalto University Studio 3 course our group conducted a literature review and empirical research seeking to devise improvement suggestions to the Nokia IdeasProject site. Our development task concerned the IdeasProject website and especially the part considering the development of the ideas. The goal was to improve the site's ability to produce and highlight good ideas, prompting three questions:

- How to improve the quality and the quantity of the ideas?
- How to improve the evaluation of the ideas?
- How to pinpoint the best ideas?

The objective was to create a concept that upgrades the quality of ideas and helps the crowd sort, analyse, and cluster ideas. It should also enhance cooperation and idea evaluation and improve the attractiveness, functionality, and usability of the website. The purpose of the concept is to provide new material for artificial intelligence based analysis.

A large volume of theoretical research on multiple fields of science was undertaken to answer the research questions as well as possible. Four different areas of improvement were mapped and categorized: the ideation process, idea evaluation, user interface, and community. Each area was studied carefully to understand the subject profoundly and to find new perspectives on the development task.

The purpose of this study was to improve and ease the idea analysis process. Generally, we approached this from two different angles: the ideation process and evaluation performed by the crowd and the post-analysis of material received. Based on our study we have presented some improvement ideas for IdeaProject, which will eventually assist in identifying the best ideas more efficiently and scientifically than before.

The first approach was to improve the ideation process. The question to be answered was how to improve the quality of incoming ideas and encourage users to evaluate and participate in each other's ideas. This would enable IdeasProject to reduce

the number of similar ideas and to develop those received even further by making them more appealing and amenable to implementation. We introduced some ideas relating to the forced comparing of ideas, idea evaluation techniques, navigation on the site, and motivational factors, all of which focus on more versatile use of the wisdom of the crowd.

The second approach employs the information received from the ideation process to improve idea analysis. Once implemented, our suggestions provide novel material for the artificial intelligence or experts to analyse. For example, user paths, related content section, and scale ranks provide relevant and precise material. These can be employed in visualizing the ideas as networks and giving the more respected ideas a greater value. Too similar ideas can also be identified with the assistance of forced comparing of ideas and forced choice tasks, making it easier to combine these two ideas in a network. We feel that this approach could be developed further to make analysis more concrete. This approach is also more difficult to form, as there are no general guidelines regarding the perfect idea being sought: we can only provide some tools to support the analysis, but are unable to provide the exact algorithm to identify the absolutely best idea.

The final outcome of our ideas is impossible to predict. The results obtained based on our ideas depend largely on the success of the implementation and the community's response to the new features. However, we believe that due to the technical and innovative nature of IdeasProject and the activity of community members the new features will be welcomed. The active users interviewed in our research found these new features appealing and thought they would improve the site's usability.

Text based on:

Lotta Ahonen, Otto Ebeling, Tiina Korvenoja, Marianna Mattila: Nokia Crowdsourcing-based Ideation Platform. Studio3 Course Student work 2012.

New methods of funding

CROWDFUNDING

In recent years micro funding and micro investments have altered small scale innovative project funding. The term coined for these new alternatives is crowdfunding. It is usually defined as the collective effort of individuals to network and pool their resources to support a creative idea. The fundamental idea is for an entrepreneur to raise external finance from the crowd by a large number of very small amounts, instead of soliciting a small group of investors. Crowdfunding is heavily dependent on the Internet and social media, which enable communication between the entrepreneur and the crowd. With the social aspect reciprocity and enthusiasm are important in crowdfunding. In addition, crowdfunding can refer to the funding of a company by selling small amounts of equity to many investors. However, crowdfunding is mostly associated with non profit seeking investment, and research has found that not for profit organizations are more successful in fund raising than their counterparts.

CROWDFUNDING PLATFORMS

Crowdfunding enables companies to promote and create awareness of their products. Through crowdfunding, entrepreneurs can also seek validation of their products prior to the launch of large scale marketing campaigns, and reach beyond the prevailing geographic proximity in early stage investment. In sum, social media facilitates information sharing and addresses traditional economic friction in early stage investment. It has also been demonstrated that the more investment an entrepreneur accumulates, the more investment propensity increases. This could be due to path dependency based on higher levels of investment increasing validation among the community, with decisions being affected by others' previous decisions.

In Finland crowdfunding has been a topic of discussion in the domestic media. The Finnish-German movie *Iron Sky* ran in cinemas during the first half of 2012, and the attention given to *Fröken Senja* was also newsworthy. *Iron Sky* employed a revolutionary working method to produce the movie, while *Fröken Senja* raised capital through a platform named Kickstarter but became embroiled with legal issues.

Case Iron Sky — Producing with the Audience

The movie Iron Sky took an unorthodox and revolutionary approach to film making. The vision was to build a community that would overcome obstacles by discussion and provide reference material. Unlike the traditional method, employing selected producers and investors, the making of Iron Sky truly incorporated the crowd. “Producing with the Audience” describes the utilization of the masses in crowdsourcing, crowdfunding and crowdinvesting.

With the growing number of community members crowd-

sourcing becomes more effective. Instead of a predetermined team seeking solutions, with this approach the number of problem solvers is basically unlimited. This accelerates idea development, shortens production time, and facilitates lower cost production. In the case of Iron Sky one further benefit identified by the producers was community members’ willingness to participate in mass scenes; as they put it, Iron Sky is a hobby.

In addition to crowdsourcing, crowdfunding complements the

idea of an Iron Sky lifestyle. In return for crowdfunding, the supporters received, for example, merchandise and an opportunity to pre-order the DVD. Instead of a more integral financing method utilizing crowdinvesting, by which small amounts of money is raised from numerous EU citizens in exchange for future profits, the bottom line of Iron Sky’s approach is to engage people in the production and maximize audience input.

Table 18. Examples Iron Sky and Fröken Senja

Iron Sky

- “Producing with the audience”
- Exploitation of crowdsourcing to develop ideas faster, to tackle obstacles more efficiently, and to persuade community members to participate in mass scenes
- Utilization of crowdinvesting and crowdfunding to enhance affinity; crowdfunders received merchandise and updates
- Including the audience creates automatic web attention and word of mouth promotion
- Iron Sky more than just the movie; the game Iron Sky: Invasion was published in November 2012
- Iron Sky is a hobby

Fröken Senja

- Senja Larsen, who became known as Fröken Senja, has a Facebook page through which she teaches Swedish
- Decided to publish a book named “Senja teaches you Swedish” which is based on what had been taught on her Facebook page and sought funding via Kickstarter
- Successfully raised €11,500 and 4,000 copies were printed
- The Finnish police administration intervened as this sort of fund raising by an individual contravenes with the Finnish fund raising legislation
- Ultimately, the funds were returned and the books distributed as gifts to who had placed orders
- Last October, two months after the rejection, she decided to re-launch the project on Kickstarter and prove crowdfunding can be achieved within current legislation

Case Kickstarter

Kickstarter promotes itself as the world's largest platform for creative projects. With over \$250 million pledged in projects, over two million backers in the community, and over 24,000 successfully funded projects, Kickstarter is arguably one of the best known and widely reported funding platforms globally.

Kickstarter offers entrepreneurs a solution to attract capital, and enables funders to support interesting and personally engaging projects. To avoid contravening current legislation in the US, funders are not permitted to receive any equity for their monetary investment. Instead, funders receive rewards dependent on the size of their dollar investment; small contributors typically receive regular project updates with larger

investors possibly receiving prototypes, for example, of a game.

The crowdfunding process is launched by the entrepreneur when the project is introduced on a crowdfunder's website. The entrepreneur sets a funding deadline, a funding goal, and determines the rewards for each dollar amount. Should the project meet or exceed the funding goal by the end of the investment span, funders' credit cards are charged and funds transferred to the entrepreneur. Kickstarter collects 5% of raised capital only from successfully funded projects. However, Kickstarter does not only facilitate the raising of capital as the reciprocal entrepreneurial community provides opportunities to receive feedback, and to collaborate and connect with like minded indi-

viduals. These features might prove to be much more valuable to an entrepreneur than the monetary aspect.

However, even crowdfunding cannot escape the universal laws that determine the allocation of capital. It appears that the quality of the project and its visibility play a major role in crowdfunding. Although supporting a Kickstarter project might stem from pure altruism, quality projects are more likely to succeed; further, evidence exists that projects which are featured on Kickstarter's front page attract more supporters than those that are not. As crowdfunding is a social concept, the breadth of entrepreneurs' networks appears to impact on the success rate of projects.

Case Kiva

Unlike Kickstarter and Grow VC, Kiva is a lending platform and a not for profit service with a humanitarian aspect. Kiva enables micro funding primarily from developed countries to entrepreneurs in developing countries. Since its launch in 2004, more than \$340 million has been invested through Kiva to almost 850,000 entrepreneurs.

Field partners publish entrepreneurs' profiles, and seek enthusiastic entrepreneurs who require

funding in their area of expertise. The field partner negotiates an agreement with the entrepreneur, disburses funds to the entrepreneur prior to collecting copy and photos, and creating and posting the entrepreneur's profile on kiva.org. Loans received via Kiva subsequently replenish the field partner's account.

Repayments of principal are allocated back to lenders and interest paid to the field partner to

cover operating costs. Kiva does not collect any fees and lenders do not receive any monetary return from their investment. Principal payments are not adjusted for inflation, emphasizing the utilitarian and humanitarian aspect of this service.

The repayment rate for loans received via Kiva is almost 99%. The repaid principal can be withdrawn; however, lenders usually either reinvest or donate it to Kiva.

Case Grow VC

Cited as “the most ambitious platform to build a startup from the ground” by a TechCrunch blogger, Grow VC aims to summon entrepreneurs, experts, and funders to provide seed capital at the start of a venture and create the next breakthrough tech firm. To date, the platform has introduced over 4,000 ventures, collected over \$34 million from community members, and gained more than 12,000 users from over 200 countries.

Entrepreneurs mainly seek capital investments, but Grow VC both enables entrepreneurs to request expert services and experts to offer their services to entrepreneurs. The terms of these investments are not standardized which enables negotiation regarding sweat equity or

fee based compensation. Indeed, the process begins with an entrepreneur presenting an idea, followed by a period in which other community members can indicate their interest in making monetary or sweat equity investments. Once there are sufficient confirmed backers for the project, due diligence is conducted by Grow VC and, if no barriers exist, the project is launched and investment funds are transferred to the entrepreneur.

Grow VC offers different approaches to investing, by either subscribing to a network fund or via direct investments. Subscription based investment, such as micro investment, works by Grow VC pooling monthly subscription fees into a large fund with subscribers

allocating their share of the fund to promising projects; those who identify prominent projects will receive the highest rewards. Direct investments are larger in monetary terms and made directly from the investor to the startup venture, and, unlike micro investments, might not be visible to other investors.

Grow VC receives 2.5% of the raised capital from each project that reaches its funding goal. The fee is collected only from micro investments, which enables investors to make feeless direct investments. Grow VC is also operating a pilot program for its Networks Feature that enables subscribers to form their own networks and create rules for their operation.

Case Invesdor

Invesdor is a Finland based crowdfunding service that helps introduce entrepreneurs and investors in the Nordic countries. Currently, in October 2012, after being in operation for only two months, there are seven companies listed on the website.

Invesdor offers equity stakes for capital investments. It does

not collect subscription fees and acts only as a service provider and intermediary. Invesdor's business model is based on fees collected from entrepreneurs and investors. Invesdor collects 3% from every investment, to a maximum of €300, regardless of a project's success. Therefore, capital invested into a project that does not meet its funding

minimum is returned to investors minus Invesdor's 3% fee.

Invesdor also collects 5% of raised capital from successful projects. Currently there are no other fees payable by entrepreneurs, but there are limitations on who can raise money through the service. Entrepreneurs must have a registered limited company, or Oy in Finland.

Case Mesenaatti

Mesenaatti.me is a new crowdfunding platform in Finland that was launched in November 2012. The first pilot project successfully crowdsourced funding for a Finnish musician – Jussu Pyöhönen and his band, BelVel.

Mesenaatti.me enables people to participate in the funding of

various projects. It also provides an opportunity for individuals, communities, NGOs and companies to raise funding for the development of new products and services.

Mesenaatti:
<http://www.mesenaatti.me/>
Crowdfunding in Europe:
http://www.europecrowdfunding.org/european_crowdfunding_framework

Table 19. Identified sources of uncertainty in LCCS.

Kickstarter

- World's largest platform for creative projects with over \$350M pledged in projects
- 2.5 million backers and over 30 000 successfully funded projects (October 2012)
- Offers entrepreneurs an opportunity to receive funding and feedback, and to connect and collaborate with entrepreneurial community members
- Community members invest in projects of their choice and receive rewards based on the amount invested
- Funds will be returned to investors if the minimum threshold is not met or exceeded
- Investors do not receive any capital or shares in return for their investments

Grow VC

- Platform to bring together entrepreneurs, experts, and funders
- 4500 ventures funded, c. \$34M invested by 12,000 community members in 190 countries
- In addition to capital investments, experts are able to offer "sweat equity"
- Grow VC conducts due diligence once the funding goal is reached
- Works like a book building process as investors indicate their interest during the fund raising period and only need to confirm participation once the goal has been reached

Invesdor

- Less than six months old, Finland based crowd funding platform
- 10 companies listed that seek c. €1.4M in capital
- Targeted at entrepreneurs in the Nordic countries
- Offers investors an opportunity to invest in small Nordic ventures
- Seed rounds of maximum of €100,000 with a minimum investment of €20

Kiva

- Not-for-profit lending platform with a humanitarian aspect c. \$370M given out in loans by over 840,000 lenders from 66 different countries
- 98.97% repayment rate
- Field partners in developing countries seek promising entrepreneurs in need of funding, and publish their profiles on the Kiva webpage
- Lenders make non-interest-bearing loans to interesting entrepreneurs
- Interest is paid only to field partners to cover their operating costs
- The great majority of repaid principal capital are reinvested

Mesenaatti

- A new crowdfunding platform in Finland. Launched in November 2012.
- Provides an opportunity for individuals, communities, NGOs, and companies to raise funding for the development of new products and services.
- Pilot project successfully crowdsourced funding for a Finnish musician – Jussu Pyöhönen and his band, BelVe

THE INNOVATION VS. RISK AVERSION DEBATE, CASE JOBS ACT

The Jumpstart Our Business Startups (JOBS) Act was signed by Barack Obama on the 5th of April 2012 and will be enacted on the 1st of January 2013. To boost employment and growth, the bill relaxes financing and financial disclosure requirements on emerging companies with annual revenue of less than \$1 billion. From the beginning of 2013, the bill permits, for example, equity micro funding practices prohibited under the Sarbanes-Oxley (SOX) Act and prior legislation. SOX was enacted due to scandalous corporate and accounting frauds practiced, for example, by Enron, and significantly tightened disclosure requirements.

To halt the continuous decline of IPOs (initial public offerings), new legislation provides emerging growth companies with up to five years to comply with SOX legislation after public floatation, which should reduce the costs involved and, it is hoped, stimulate IPO activity. The JOBS Act also permits emerging companies to connect with investors through social media.

The JOBS Act authorizes startups to raise up to \$1 million over a 12 month period from an unlimited number of small investors online. Under SOX, crowdfunding sites are permitted to sell stock only to "accredited" investors – those possessing a net worth in excess of \$1 million or with an annual income exceeding \$200,000. To protect non professional investors, all investors are annually limited to \$2,000 cumulative investments if their annual earnings are below \$40,000 or, limited to a maximum of \$10,000, 10%

of annual earnings above the \$40,000 threshold.

Companies seeking \$100,000 or less need provide only tax returns and unaudited financial statements signed by a company principal. Over that threshold and up to \$500,000, companies must provide financial statements signed by a certified public accountant. Companies that endeavour to raise between \$500,000 and \$1 million are required to provide audited financial statements.

The objective of the JOBS Act is purely economic. However, in addition to seeking returns on investment there is the social aspect to crowdfunding that enables entrepreneurs to attract large numbers of people to donate capital, lend without interest, and give advice. Reciprocity and enthusiasm are the bottom line in crowdfunding as has also been demonstrated by Kickstarter and Kiva, which do not generate returns in monetary terms.

In US intense debate has surrounded the JOBS Act, which relaxes the financial requirements for small firms and entrepreneurial ventures, and enables small amounts of capital to be raised via the Internet. Sceptics fear that relaxation of financial disclosure requirements will facilitate fraud targeted at unsophisticated investors. Some argue that crowdfunding will make little sense to unsophisticated investors, who lack the ability or resources to thoroughly analyse risk, and thus not appreciate the risks attached to investing in companies which might not have attracted more experienced VCs or angel investors. Some even argue that crowdfunding is

harmful for entrepreneurs seeking capital at the later stages of their venture as VCs and angel investors might not wish to invest in a venture funded by a vast number of minority shareholders.

Sceptics also fear that relaxation regarding the role of auditing is likely to result in less attention being focused on the safeguard. Although social media's expansion to almost every home increases the number of potential "investigators" who might assist the identification of fraud, some American researchers argue that entrepreneurs might be less willing to disclose information to crowdfunders as they fear that the resultant wide exposure of their ideas increases the risk of intellectual property theft.

The supporters of JOBS argue that social media's expansion to almost every home increases the number of "investigators" who might facilitate the identification of fraud. Further, instead of relying on family, friends, and bootstrapping (cost minimization) techniques, crowdfunding enables risk sharing and is a natural mechanism for information exchange.

Also, the potential of crowdfunding is undoubtedly huge as it provides an alternative to traditional funding, for example, through banks, business angels, and VCs (venture capitalists). Angel investors and VCs usually invest large amounts and wish to have controlling power, which might not suit entrepreneurs who only require a small amount of capital and want to retain control of their ventures.

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Case Procter & Gamble — on Innovation and Sourcing

Procter & Gamble (P&G) is an American consumer goods multinational company, established in 1837, with its headquarters based in Downtown Cincinnati, Ohio, USA. It is a Fortune 500 company with operations in approximately 80 countries and its brands are sold in 180 countries. P&G is ranked 27 among the world's most innovative companies by Forbes magazine. 24 brands out of its well known 50 brands generate revenues totalling more than one billion US dollars annually. P&G provided employment to approximately 126,000 people around the world in 2012. P&G's annual revenue in 2010 was \$82.6 billion and \$83.680 billion in 2011.

P&G conducts approximately 20,000 research studies every year to gain a better understanding of its customers; in 2011 the company spent \$2 billion on R&D activities. P&G is one of the world's topmost advertisers with an advertising spend of approximately \$8 billion in 2010.

Currently, more than 50% of P&G's products come from open innovation sources compared to amount of 15% in 2000, and even more innovations are in the development phase. P&G employs this mode of innovation immensely as it realizes that, by expanding the range of participants in the innovation phase of product development, it can create better solutions and, to a large extent, reduce costs.

CONNECT AND DEVELOP

Procter & Gamble realized the need for collaboration with external innovators in 2001, when the company began to decline in terms of growth,

and started an open innovation program called Connect + Develop (C+D), which deals with both inbound and outbound innovations.

P&G seeks collaboration in several areas ranging from research to the packaging of the products. The motive behind collaboration with scientists, small entrepreneurs, and even with competitors is to develop win-win product offerings for its customers. C+D has already resulted in over 1,000 innovations and is continually getting more ideas from around the world. Through its C+D website, P&G shares its business needs and invites ideas from budding entrepreneurs and innovators. The ideas are then refined by the P&G team to arrive at the most feasible solution, and the team collaborates with the source of the ideas to determine better products with which to fulfil customers' needs.

"Technology entrepreneurs" is a network of experienced entrepreneurs. The group was created by P&G, has approximately 70 members worldwide, and has helped P&G to conceive approximately 10,000 new ideas, products, and technologies.

YourEncore, an open network group founded by P&G and Lilly in 2003, includes retired employees from over 350 companies who contribute their ideas to the community, and help in finding valuable suggestions from over 7,500 retired scientists and engineers from well known organizations. This experienced group provides comments and feedback concerning ideas in development and assists with further improvements to the products. YourEncore serves over 70 innovation focused organizations from around the world with their practical expertise in several important matters. To date, YourEncore has completed over 3,000 projects for these companies.

Yet2.com is a global technology marketplace which is based on the idea of open innovation and provides organizations with the opportunity to collaborate with experts, for example, on consortium, patents, target search, business development, and technology to market out licensing. Venture Capital is also an area where yet2.com is employed. Yet2.com was founded by Proctor and Gamble, DuPont, Caterpillar, Honeywell, and a few other companies to encourage entrepreneurs and experts from all over the world to find new technologies.

NineSigma is employed to find new technologies and products. NineSigma connects companies that have specific technology problems with, for example, other companies, universities, laboratories, and consultants which help them to find the best solutions. NineSigma distributes the technology brief provided by the companies to the appropriate stakeholders. The most feasible solutions are selected, discussions are held with the relevant parties, and a product or technology is developed accordingly.

Suppliers are a major source of innovative ideas for P&G. Ideation is facilitated through a secure IT platform where technology briefs are shared with the suppliers. Ideas are invited, but not shared with their counterparts. P&G works closely with the suppliers at different levels of product development depending on the projects requirements.

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Using crowdsourcing in B-to-B companies: potential benefits and barriers

The empirical data for this paper were collected from two INSCO workshops on crowdsourcing that were organized during spring 2012 and lasted for three hours. Our data suggest that the main benefits of crowdsourcing relate to ideas and innovations, collaborative spirit, faster development, marketing and branding, user experience, cost reduction, and recruitment, as illustrated in the Table 16 below. New ideas and perspectives were considered a natural outcome of crowdsourcing initiatives. However, in addition to providing solutions and ideas, crowdsourcing was regarded as an applicable tool for collaborative activities. According to our data, crowdsourcing can increase the speed of the development process, and provide new perspectives and a way to reach out to users and thus increase market intimacy. Positive aspects of crowdsourcing were found to relate to increased collaborative working spirit and even entrepreneurship. Similarly, tapping into user experience via co-creation was considered valuable and can also be used to enhance marketing, branding, and sales. In addition, cost reductions and outsourcing some tasks were indicated as potential benefits. The participants also indicated recruitment potential as a potential benefit of crowdsourcing.

In general our data revealed that b-to-b firms have not employed crowdsourcing widely. We discovered through the workshop discussions that traditional methods of partnering with suppliers and customers remain in place and are regarded as the most important method of sharing knowledge. Our data suggest that the main barriers to adopting crowdsourcing relate to motivational aspects,

company culture, and intellectual property rights. Traditional methods of thinking and operating in a closed innovation setting where ideas are not shared seemed to be an issue. If employees feel that there is no time to participate in idea creation, and crowdsourcing is seen as extra work, crowdsourcing might not be feasible. IPR issues can be problematic, and if there are no clear policies in place this might create difficult situations. We find that roles and responsibilities require clarification for crowdsourcing to provide benefits. Interestingly, having too many ideas can also create problems; this issue was related to resources. Received ideas need to be evaluated and feedback given to contributors to keep them motivated. Finally, the issue of actually having to define and communicate an idea challenge to external stakeholders was also introduced by our workshop participants. The list of potential barriers to crowdsourcing in the b-to-b context is illustrated in the table 17.

We find that the employment of crowdsourcing is still in its infancy in many industrial b-to-b firms. Our empirical results suggest that firms are still uncertain of how to apply crowdsourcing in their organization. Nevertheless, they were able to address several potential benefits relating to crowdsourcing that were typically associated with brand creation, new ideas, and cost reduction. Participants also identified opportunities related to using crowdsourcing in the recruitment process and enhancing customer experience, which are only briefly discussed in the extant crowdsourcing literature. Our data suggest that using crowdsourcing to boost collaborative spirit and entrepreneurship within an organization might be a novel domain

Collaborative spirit

- It can create positive working spirit
- Chances to influence and learn
- A tool to induce participation (the actual end result may not be the only goal)
- It can boost entrepreneurship
- Innovation contest can be used to engage supplier. Rewards can be other than money i.e., Kudos can be important

Marketing and branding

- Can help building the brand image (both internally and externally)
- Collective brain power can support sales via new leads
- Can help to make customers more committed
- Can increase sales through better visibility
- Help to share ideas with larger audience across different companies
- Pre-marketing vehicle, which works better than push marketing
- New business models and marketing programs

Faster development

- Faster product, service, and innovation development
- New resources in the network who can help implementation (microtasking and -production)
- Feedback from customer's customers
- Better customer understanding in general
- New vendors can be found
- Can help to predict the future

Ideas and innovations

- Provides new ideas, and also lots of data
- Provides outside in perspective
- Creates possibilities to find new competences and new businesses
- An access to larger audience and thus better competences can provide new innovation
- Provides a mix of ideas that can bring innovations
- A way to reach enthusiastic amateurs
- Implementation of non-strategic ideas

User experience

- Can provide new user experiences
- Enables product and service co-creation with customers
- Opportunity to foster ecosystem thinking

Cost reduction

- Provides possibilities for cost reduction (i.e., less head count)
- Provides way to outsource certain tasks outside the company
- May enable starting projects earlier (i.e., increase process efficiency)

Recruitment potential

- Access to better competences
- New potential for recruitment
- Can be used to create positive employer image

Table 20.

Potential benefits of crowdsourcing for b-to-b companies

for companies to consider. Naturally, the barriers to crowdsourcing need to be addressed and it should be noted that these barriers are multidimensional. It is however evident that crowdsourcing is not “a silver bullet”, but a tool for specific domains where potential benefits and barriers need to be carefully evaluated.

Text based on:

Henri Simula, Mervi Vuori and Hossain Mokter: “ The Potential and Challenge of Crowdsourcing - Views from Finnish Companies “. Working paper.

Table 21.

Potential barriers to crowdsourcing for b-to-b companies

Motivational aspects

- “I do not want to share” behaviour
- Motivation to participate can be more difficult to create in b-to-b than in b-to-c
- Fear of negative public data toward proposed ideas
- Mindset of people (i.e., daily work vs. extra work)
- Lack of time to participate
- How to motivate people (both internally and externally) to share their ideas

Roles and Responsibilities

- Responsibilities and roles are not clear
- Who are actually in charge of evaluating ideas and how
- Processes for crowdsourcing are not defined

Platform

- Who provides a platform for collaboration
- How to provide feedback for ideas in practice

How to define and communicate the challenge

- How to collect data for certain questions

Company culture

- Traditional way of thinking – (for crowdsourcing to work a different mindset is needed)
- How to connect new possibilities with existing needs, i.e., how to make new ideas positive and not disturbing
- Management mindset - there is a need to tolerate a wider range of ideas
- How to provide feedback if an idea is not proceeding
- There is a need to provide a company culture that supports ideation

Intellectual Property Rights

- What can you share with other companies
- How to create trust and how to deal with IPRs
- Fear of leakage of ideas and information to competitors
- Employees right to innovations
- Non Discloser Agreement (NDA) misunderstanding when implementing ideas

Resources

- Lack of resources in general
- There can be too many ideas; how to handle those

Lessons learned — Extended network

Expanding the scope of stakeholders in the innovation ecosystem

Expanding the scope of innovation stakeholders brings new players and new institutions into the innovation process. New institutions that focus on innovation are emerging to address challenges in the innovation ecosystem and the needs of a changing society. Demo Labs focus on the creation of prototypes and pilots, often with multi-disciplinary teams. Living Labs are enabling user focused design and community involvement across innovation activities, while entrepreneurial hubs create operational space for new start-up companies with new business models.

New institutions for innovation

Crowdsourcing provides many potential areas for sourcing. Crowdsourcing methods can be employed with open crowds and also with selected groups of stakeholders; for example, suppliers and customers. Crowdsourcing can be employed for the collection of ideas, problem solving competitions, assigning small tasks to crowds (micro tasking), data collection, and, increasingly in the future, for micro investments and micro funding. New practices and services are constantly emerging that also provide new opportunities for sourcing.

Crowdsourcing – many potential applications for sourcing

Crowdsourcing practices deliver several potential benefits for companies, enabling them to access new ideas and support for innovation activities, enhance collaborative spirit, enable faster development, and provide opportunities for marketing and branding. Crowdsourcing can also provide opportunities for cost saving and the recruitment of new personnel.

Potential benefits & barriers

However, there are some potential barriers that need to be addressed in applying crowdsourcing practices: the motivational aspects of both employees and participants; that a company culture which is not supportive of new initiatives might hinder activities; that Intellectual Property Rights require careful consideration; and roles and responsibilities need to be defined. New practices need to be communicated clearly to all stakeholders.

The future of sourcing — summary and conclusions

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