Customers as Part of Value Webs:

Towards a Framework for Webbed Customer Innovation Tools

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Abstract

As the classical corporate boundaries are beginning to blur internally as well as externally traditional value chains loose their chain attributes, and are replaced by a web of fluid and flexible relations - the value web. This paper will extend the common view of value webs by defining customers as an important part of value creation. Customer integration into innovation processes taking place within a value web (a process that will be coined “webbed customer innovation” in this paper) is discussed as a beneficial method to overcome some of the flaws and challenges of new product and technology development. The role of the customer is changing from a pure consumer of products or services to a coequal partner in a process of adding value - consumers are becoming co-producers and co-designers. We offer in this paper a framework for webbed customer innovation tools by introducing the concept of the customer-integration-cube (CIC). The CIC renders a systematisation of webbed customer innovation tools on the basis of specific dimensions, which were identified as most important, and serves as an originator to reveal possible lacks of webbed customer innovation attempts.

1. Webbed customer innovation

“The classical corporate boundaries are beginning to blur, to change internally as well as externally, and in some cases, even dissolve” [28]. This statement directly addresses the great shifts in today’s economy, such as the changes in the competitive situation of firms, the transition from vendor to buyer markets and the arising of innovative Information and Communication Technologies (ICT) accompanied by significantly lower procurement, processing, and information costs. Radical changes are spurred in the way companies operate internally as well as externally and cause the de-integration of industrial market structures. The results are smaller firms, virtual organizations and complex inter-organizational structures. A new business model is emerging: electronic networks and markets allow the break-up of what previously thought to be firmly controlled value chains or systems. The value chain looses its chain attributes, and is replaced by a web of fluid and flexible relations - the value web [28].

Another important shift of focus is the rediscovery of innovation [14]. This paper focuses on product innovations in B2C industries, in terms of a “new product, which was not yet enclosed in the company’s current program” [21]. This definition embraces radical innovations [6] as well as modifications with only a marginal degree of innovation [18]. Additionally, products are defined as bundles of properties, which support the corporate objective to satisfy the expected customer’s needs [25]. Although innovations are considered as key factors for corporate wealth since the beginning of business research [35], a change in the strategic orientation of companies can be observed: Most often innovations cause enormous investments, hence a failure in terms of accumulated flops could easily jeopardize the continuity of the whole company [6]. “Today no one needs to be convinced that innovation is important – intense competition, along with fast changing markets and technologies, has made sure of that. How to innovate is the key question” [9]. Taking the rapid and progressive development of value webs and the increasing importance of innovations into account, customer integration into innovation processes is presented very often as the only loophole [22] [42] [46] [45].

Within customer integration, “consumers take part in activities and processes, which used to be seen as the
domain of the companies” [49]. Customer integration (especially in B2C markets) is considered as a continuous development of the framework of value webs, which is reported in most of the literature as integrated value systems consisting of cooperating companies serving either other companies or private consumers. However, private consumers are generally not mentioned as part of a value web. Atkins et al. [1] discuss the change of firms from a mode of “pre-partnership” to a mode coined “customer performance partnership”. While in the first mode process improvement, root-cause problem solution, stakeholder orientation and cross-functional, customer oriented teams are important abilities, competencies of the latter mode are process integration, stakeholder involvement, and customer-supplier team-based activities. While customers can perform activities at all levels of a value web, participation and integration in the innovation process is seen of predominant importance. We will coin the process of integrating customers (and users) into a value web within the innovation function as “webbed customer innovation” in the following. Webbed customer innovation refers to the systematical collection and preparation of information from customers and users to generate innovations, modifications or service specifications within a value web, which totally meet the customer’s requirements. With the help of modern ICT, customers are interacting with the suppliers within a value web by expressing, specifying and configuring their requirements for innovations. The role of the customer is changing from a pure consumer of products or services to a coequal partner in a process of adding value - consumers become pro-sumers and co-designers [45] [32]. Nevertheless not only the practical application of webbed customer innovation seems to show a great lack of systematisation, but also theoretical research, where often mere descriptions and enumerations of different kinds of webbed customer innovation tools and methods can be found [6]. Thus, the objective of this paper is to develop a framework for webbed customer innovation tools, the customer innovation cube (CIC). This framework shall serve as point of origin to reveal possible lacks of webbed customer innovation attempts. We will apply the concept in a case study with a large international sports good manufacturer (referred as “SpoCo” in the following, due to reasons of disclosure).

2. Research approach

This paper presents and discusses learnings from an ongoing explorative research project on B2C-webbed customer innovations. It builds on a long-term cooperation with SpoCo, a leading international sports enterprise. Our research methodology evolved as follows (see also Figure 1): Based on a conceptual pre-understanding of webbed customer innovations in the early beginning, we focused in the first step on intensive desk research in terms of studying in depth the available literature about webbed customer innovations (see Part 3 of this paper). Additionally, we explored the practical potential of webbed customer innovations by analysing successful practical applications in business to consumer industries (Part 4). Building on this early theoretical and practical in-depth studies, our research team was able to develop a framework for a systematisation of webbed customer innovation tools. The concept of the customer-integration-cube (CIC) will be introduced (Part 5). It renders a systematisation of instruments on the basis of specific dimensions, which were identified as most important for webbed customer innovation and serves as an originator to reveal possible lacks of webbed customer innovation attempts. In a second step the concept of the CIC was applied to SpoCo (Part 6). We are currently in the process of developing and implementing a webbed customer innovation tool, which will be piloted at the company in Quarter 3 and 4, 2003 (Part 7).

3. Literature Review

Franke and von Hippel [11] put a strong focus on the instrumental aspect of webbed customer innovation. In their study about Apache, an open source server software, they examined the question, if “toolkits for user innovation” benefit users. Toolkits as instruments
for webbed customer innovation facilitate new product development by allowing producers to outsource certain design tasks to customers. They are able to attenuate classic innovation conflicts between time-to-market, product quality, and development costs to increase the likelihood of innovation success. A supplier provides customers with a toolkit so that they can design and develop application-specific parts of a product on their own by creating a preliminary design, simulate and prototype it, evaluate its function, and then iteratively improve it until they are satisfied [38]. In this way, products are expected to be developed more quickly and at lower costs. Customers, in turn, most likely get exactly what they want – a custom product that suits their individual needs precisely [12]. Von Hippel and Franke conducted a survey with 138 participants and evaluated it using a cluster analysis. As a result they found that users, who created their own product were significantly more satisfied than users who only bought the standard products. In addition to toolkit-explorations Eric von Hippel is well established in lead user research focussing on the characteristics of customers. In the 80’s Hippel hypothesized, that lead user can contribute not only personal data but also ready-made product-concepts and designs [46]. This is because of two characteristics:

1. “Lead users face needs that will be general in marketplace - but face them months or years before the bulk of that marketplace encounters them, and

2. Lead users are positioned to benefit significantly by obtaining a solution to those needs.”

The first characteristic shows that lead users hold the necessary “real world experience” for future needs. Moreover von Hippel states, that those users “… who have experience with a need are more able to give accurate information regarding it than those without such experience” [42]. The second characteristic aims at the fact, that lead users benefit the most from the new product and – what is more - are able to build prototypes on their own.

Herstatt [18] focuses on the usability of the lead user concept at the different phases of an innovation. With the help of qualitative research methods, such as action research, case study and expert interviews he analyses the webbed customer innovation into the development of new anchorage system at Hilti, a machinery company based in Liechtenstein. Herstatt finds that the lead user concept could not be applied in all phases, moreover the idealized “von Hippel-concept” has to be adapted in every phase. Additionally he mentions that there are several circumstances in new product development, where the lead user approach fails completely, e.g. complex products in the chemical industry.

The study of Gruner and Homburg [14] analyses the critical success factors of new product development. Thus, two aspects are focussed:

- the degree of consumer interaction in different phases of new product development
- the characteristics of the involved customers

The results of a survey among 310 managers of the German machinery industry were analysed with the help of confirmatory factor analysis (for measure validation) as well as cluster and discriminant analysis. It was found that the degree of customer interaction in early and late stages of a new product development process (not in the middle stages) increases success.

Similarly Brockhoff [4] focuses on the characteristics of customers and on the phases of innovation. He introduces 5 different types of customers:

1. Customer as source for demand
2. Customer being actively involved in the development process
3. Customers as innovators
4. Customer as source for application knowledge
5. Customers helping to overcome intra-organisational resistances

Brockoff states that a strong integration of pilot-customers correspond to a “demand-pull-development”, which holds the risk of missing radical innovations. Moreover he finds that different types of customers become relevant in different phases of the innovation process. For example lead users are considered to be integrated best into the concept phase. Finally, Brockhoff concludes that not every customer is equally suited for integration; in addition the contributions given by different customers differ enormously.

Likewise, the character of the customer’s contribution in the innovation process is focused by Engelhardt [10]. Based on the statement that “…successful new services rarely emerge by mere happenstance” [34] research is done in the field of service engineering. Engelhardt states that webbed customer innovation into the development of new services help specifying the requirements initiate and determine the innovation process, and support decisions and evaluations during the design phase. Thus, the contribution of the
customer can be providing information as well as making decisions and evaluations.

In summary we found that literature on webbed customer innovation tools is often unsystematically in terms of containing either mere descriptions and enumerations of webbed customer innovation tools or highlighting one specific success factor of webbed customer innovation (e.g., the contribution of the customer) without any assignment to other variables.

4. Case study research on webbed customer innovation

In order to obtain exploratory insights into applications of webbed customer innovation and to explore its potential we conducted a large-scale analysis of practical examples in business-to-consumer industries. In such an environment, in-depth case studies are seen sufficient to provide exploratory insight into business mechanisms, value drivers, and success factors [2] [24]. Starting point of our research is a database of roughly 220 qualitative case studies in the field of customer integration, (mass) customization and relationship marketing. The cases were collected and documented by our research institute since 1995. Data was gathered by secondary sources such as reports, databases as well as internet publications and - when secondary data was not sufficient - by primary sources such as semi structured interviews with managers, academics and consultants [30]. From this database, we selected companies for the research presented here according to the following structure: First, we selected companies, which integrate customers explicitly into their innovation processes. Secondly, we reduced this field to companies operating in business-to-consumer markets and, thus, integrating private end-consumers. Thirdly, we tried to identify firms reported to exhibit promising practice within their industry or companies, which are often quoted as a leading example in the literature. This selection step is rather subjective. In order to increase reliability, this evaluation was based on a process of group discussions within the research team [15]. As a result, we could identify roughly fifteen firms using different tools and methods for webbed customer innovation quoted often in the literature [30] [32] [38] [45] [47]. Analyzing the case studies, we state the following assumptions:

a) Successful examples show that the concept of webbed customer innovation could work for all stages of the innovation process (see discussion below). Webbed customer innovation may not work only in the early and late stages (idea generation and concept proofing, respectively), but could be also a feasibly concept within the middle stages of the innovation process (prototyping).

b) Not only lead users or advanced customers seem to be able to deliver high quality input for new product development. Also “ordinary customers” can have the competence and ability of being innovative.

c) Successful webbed customer innovation in business-to-consumer industries is not straitened to specific branches or product characteristics. User driven innovation tools could be used for jewelry as well as computer games.

d) Customers are often highly motivated for being integrated in the innovation process of companies even without financial rewards.

e) Companies are using dedicated tools (often internet based systems) to perform webbed customer innovation. These tool-kits enable customers to both express their input and to find creative ideas for a desire or need. The success of an initiative to perform webbed customer innovation is depended from the performance of these tools.

5. Towards a framework for webbed customer innovation

As both the literature review and the case study research have shown, several varying research directions and understandings concerning successful webbed customer innovation can be found. Nevertheless, webbed customer innovation seems to show a lack of systematisation. Often, mere descriptions and enumerations of different kinds of user-driven innovation tools can be observed. Another aspect of lacking systematization is the role of the innovating customer. While some authors highlight, for example, the contribution of the customer as the most critical success factor of webbed customer innovation [7] [10], others identified the customer characteristics to be most important [4]. While research often focuses on just one success variable, assignments to other critical success factors are neglected. Given the lack of systematization in the literature, we will develop a framework for webbed customer innovation. Our objective is to classify various webbed customer innovation tools in a more systematic way.
Using the findings of literature review and case study explorations, we have identified three important dimensions, which will be discussed in larger detail in the following:

- (the use of the tool) in a particular phase of the innovation process,
- the nature of the customers’ contributions, and
- the characteristics of the integrated customers.

5.1. Phase of innovation

“The innovation process can be divided into temporal segments, whereas the procedure of problem solving noticeably differs in each phase” [16]. On the one hand this statement postulates a clear differentiation between the actions in each phase, on the other hand an exceeding distinction should be avoided [14]. Within innovation research, a huge amount of different (mostly linear) models can be found. The number of phases differs from three [37] up to 67 [13] [33]. Most models can be easily transferred one in another. We will use in the following a phase model based on the findings of Crawford [8], Holt [19], Myers/Marquis [27], Trommsdorf/Schneider [41] and Lüthje [26]. Also, Biemans’ [3] claim that each phase contains construction as well as test, evaluation and decision was taken into account. As a result, we divided the innovation process into four phases: idea, concept, prototype and market.

Idea: In this first stage of the innovation process, companies expand their knowledge base and access information in order to increase the number of new product and new process ideas. A variety of ways exists of doing this, ranging from mining research labs to soliciting creative inputs from manufacturing, marketing, customers and suppliers. After generating a bundle of alternative ideas for new products the second challenge is to screen them to focus resources on the most attractive opportunities. This process is based on a set of screening criteria that fit the company’s technological opportunities while making effective use of its development resources in meeting strategic and financial needs [48].

Concept: At the concept phase of the product development process potential ideas are transformed and conceptualized within a product concept review in terms of bundling all current technical, organisational and economic pieces of information. Based on this, feasibility studies are carried out and chances and risks of the new product development are balanced. Early screens tend to be primary technical in nature, focusing on technical feasibility and proof of concept. Later screens then shift to emphasize manufacturing feasibility and fundamental economics [48].

Prototype: Potential new products, which meet the requirements of the concept review are prototyped in this stage of the product development process. A real functional mock-up model is built prototypically. The prototype should meet the requirements of comprehending all specifications of the concept-phase, working exactly under real world conditions and being producible with given budget [20]. As commercial production draws near, screens include added consideration of specific customer preferences, distribution channel concerns and financial return expectations.

Market: In a last step, successful prototypes are transferred into the mass production process. Test – and pre-test markets are used to reduce uncertainty about entrance, sales-forecast and additional marketing objectives. After the market introduction companies focus e.g. on improving the quality and/or lowering the production costs of existing products to stay competitive. Further, new ideas for product modifications or fine tunings are generated.

5.2. Contribution of the customer

As stated above, tools for webbed customer innovation include customers within numerous activities of contribution. Nevertheless the actual contribution of the customer is specified only by a few authors [10], [14]. We have identified three different kinds of customer contributions: decision, information and creation.

Within decision activities, customers are only able to decide or evaluate given facts. Besides dichotome decisions (e.g. yes/no), customers are able to assess the potential of a product idea, concept or prototype on the basis of e.g. nominal scaling. Additionally, given products can be ranked corresponding to the customers’ preferences. Closed-questionnaire surveys or standardized voting present examples of decision based customer contributions.

Information refers to the possibility that customers are able to articulate preferences or solutions regarding a specific challenge of the product development process. In doing so customers are not restricted to pure decision-makings. Giving information allows customers to express their personalities, needs, preferences or solutions to a specific problem. Giving information offers customers are much higher degree of freedom in terms of the possible solution space. Focus groups, idea competitions or feedback hotlines
are examples of information based customer contributions.

Creation implies that customers are able to be creative on their own in the way that instead of giving information or deciding of how to solve a specific innovative challenge, customers come up with own creations as a solution. In doing so, customers become real co-designers. First prototypes, which are, build by customers or toolkits for the configuration of products are examples of creation based customer contribution.

5.3. Customer characteristics

Customer characteristics refer to specific attributes, which qualify customers for being successful contributors in terms of an integration in the innovation process. Following the approach of [26], application and object knowledge of customers are the two dominant customer characteristics. Application knowledge refers to practical experience with a product through intensive usage. Professional runners for instance have a high application knowledge in using (and possibly co-designing) running shoes. Object knowledge focuses not on practical experiences with a product, but on knowledge concerning e.g. the technology, procedure or material of a product (physical conditions of the product and how single components work together coactively). Remaining with running, customers with high object knowledge know about the complexity of designing the shoe (e.g. materials and technology). While Lüthje [26] argues that only advanced customers with high application and object knowledge qualify for webbed customer innovation, our exploration showed that it is not just the advanced customer, who is able to deliver high quality input for innovations. Thus, using the attributes of object and application knowledge, we are able to identify four different customers, which will be classified according to Figure 2 as freshman, nerd, intuitive and pro.

Taking the example of innovation for running shoes, freshmen are customers with low application and object knowledge. These customers wear running shoes for fashion purposes. Further a freshman knows little about the complexity of building a shoe and the technology behind it. A nerd (high object knowledge, little application knowledge) seldom wears running shoes for sporting, but due to e.g. special studies the nerd knows about the complexity of special running materials and technologies. Intuitives (high application knowledge, little object knowledge) are passionate runners, nevertheless with little knowledge about technology and materials. Finally, pros (high application knowledge, high object knowledge) are also passionate runners but, differing from intuitives, they possess a strong technological background.

Figure 2. Customer characteristics

5.4. The Customer Innovation Cube (CIC)

With the objective of providing an integrated approach of customer integration – a framework, which renders a systematisation of webbed customer innovation tools – we are now able to pool the three dimensions of webbed customer innovation (phase of innovation, contribution of the customer, customer characteristics) together to a three dimensional matrix, which we coined the “Customer Integration Cube (CIC)” (Figure 3). As the CIC unites all three dimensions, which were identified as being important, when talking about webbed customer innovation, all kinds of webbed customer innovation tools can be classified on a consistent basis. Using the CIC, one has to answer the following questions:

1. Which input of the customer has been identified to be crucial for the innovation success of a company (e.g. ideas for new products)?

2. Which stages of the innovation process (idea, concept, prototype and market) are affected?

3. Which customers possess the critical knowledge identified in step one in terms of freshman, nerd, intuitive and pro?

4. How could the identified customers first-best deliver their knowledge regarding the different customer contributions of decision, information and creation?

Using the CIC as a classification tool and evaluating the position of a particular case within this framework demands a high degree of discussion and dialogue within either a firm or a research team helping to see the challenge of webbed customer innovation in a more
structured way. The following chapters will explore the potential of the CIC through applying this concept to SpoCo, a large manufacturer of sporting products.

![Customer Integration Cube (CIC)](image)

**Figure 3. Customer Integration Cube (CIC)**

### 6. Exploration of the CIC at SpoCo

To explore the potentials and possible drawbacks of the systematization approach presented above, the CIC is applied to SpoCo, one of the largest manufacturers of sporting products (shoes, textiles, equipment). SpoCo is deeply woven into a value web consisting of a huge amount of retailers, subsidiaries, suppliers, key-account partners, research institutes and customers.

The exploration at SpoCo was conducted with the help of semi-structured expert interviews. The experts were selected from different departments of SpoCo, which were identified as most important for webbed customer innovations in a moderated all-day workshop with the head of marketing and the research group members.

The dimensions of the CIC were applied as guidelines for the interviews to get to know the innovation process within the value web and to elicit the state of practice at SpoCo’s attempts of webbed customer innovation. In the following, the central statements are listed not naming the particular subjects for anonymity reasons. SpoCo is dealing in a highly competitive market, which developed far above average over the last years. Competition and ever shortening product lifecycles force SpoCo to innovate continuously new products or modify existing ones. Referring to the innovation phases it was stated:

“You are looking at a so much mature industry. Running shoes for example have been in huge mass production for almost 30 years. We are forced by steadily shortening product life cycles. About six years ago the average product life cycle was lasting three seasons. Today our products degenerate at least after one season and this is not the end of the story.”

Thus, for SpoCo innovation appears to be the most critical success factor in business:

“Innovation at SpoCo can be a new technology or a new construction. Further it can also just be a completely different idea like geometry or a really new application. There are different levels: technical innovations, innovations for lower price points due to added consumer relevant details.”

Asked for the customer characteristics dimension of the CIC executives at SpoCo stated:

“We deal with different kinds of people buying shoes. There are real sports people, kind of daily sports people, fashionable and casual sports people. Each person can have a slightly different innovation with different levels what they expect. Further it is not always an innovation, it is sometimes like an evolution or fine-tuning. In the short term we focus on improving existing innovations while radical innovations are based on a new technology - for example a new material.”

Differing slightly from the CIC’s generic innovation phases, the process at SpoCo follows the stages of idea generation and evaluation, concept, prototyping, production and market introduction:

“Idea generation and evaluation starts with a brand strategy meeting, coming up with ideas and requirements. Those ideas can come from different places. Usually we just do an evolution of the last stuff we have done. So 2004 we do an evolution of the stuff we have done 2003. The biggest input comes from our subsidiaries. Their input comes from the retailer, trend magazines, competition and their own analysis of what the consumer is buying. The next biggest factor is we. Our info comes from the same people. The last big input is from senior management. The second kind of products we do are new products and those are based on a number of different factors, sometimes on an entirely new technology.”

Those technologies are developed by the SpoCo innovation team (SIT), a technology spin off outside the “inline” commercialization cycle of SpoCo. The SIT is not “inline” process orientated, but with a maximum degree of freedom:

“If we come up with an innovation, this innovation is always performance or technical orientated. We are not bound to the calendar of the inline product development process. Our work is long run orientated. We develop concepts and things sometimes years before commercialization.”

In a next step the generated ideas are transformed into a product concept, at which financial details, brand information and product strategies are taken into account. The conceptualization ends with a senior management presentation, where decisions according to the assortment are made. In the following prototype phase chosen concepts are produced in Asia as real mock-ups. Asked for webbed customer innovation
tools and the customer contribution dimension of the CIC, it was stated:

“We work with athletes, who are used to prototypes. We take a lot of prototypes out and we show them. The level of those users is quite good. Getting is pretty good. Further we do focus groups. For example we picked six coolest kids from six schools in New York. We showed them our stuff, explain the technology and ask for feedback.”

Although webbed customer innovations are seen as a promising way at SpoCo, the analysis with the help of the CIC has revealed that the company has undertaken little effort to implement webbed customer innovation tools so far. Finally it was conceded, that consumers with innovative ideas have:

“... no open line !”

In consequence the application of the CIC has uncovered several lacks at SpoCo’s innovation attempts and following conclusions can be drawn:

- Customer integration at SpoCo takes only place at a single stage of the innovation process (prototype phase), using focus groups and prototype tests.
- At this, SpoCo is relying only on specific customers. Attendants of prototype testing are professional athletes (pros) while participants of focus groups (e.g. six coolest kids) are style leaders and opinion formers (intuitives).
- The contribution of those customers within the innovation process of SpoCo is reduced on evaluating given facts (decision) or articulating preferences or solutions regarding a specific challenge of the product development process (information). So far, SpoCo offers the participants no possibility of being creative themselves.
- This lack is accompanied by the fact, that SpoCo does not exploit the potential of innovative Information and Communication Technology sufficiently, since web-based customer integration tools, which enable customers for being creative, are not applied at all.

Based on these results the research team has conducted a moderated workshop with all interview partners. The questions we have derived from the CIC (see 5.4.) were used as guidelines for fruitful dialogues and discussions. The central findings can be summarized as follows:

1. [Input of the customers]

Suggestions for new products and designs as well as input for product and design improvement have been identified as most important for webbed customer innovations.

2. [Stages of the innovation process]

Suggestions for new products and designs address the idea and concept phases whereas product and design improvements affect the prototype- and market stages of the product development process.

3. [Customers characteristics]

All types of customers at SpoCo (freshman, intuitive, pro, nerd) are considered to possess individual, critical knowledge for new products and designs as well as for product and design improvements.

4. [Deliver knowledge]

Different customers (freshman, nerd, intuitive and pro) have different abilities to deliver innovative input. For this reason SpoCo should not rely on a tool offering just a single possibility of customer contribution. Customers are considered not only to give information or make decisions concerning new or improved products and designs, but also have the possibility to be creative in order to exploit the varying capabilities of different customers.

7. Further Research Direction

Based on the findings of our exploration we are currently in the process of developing and implementing a webbed customer innovation tool for SpoCo, which will be piloted at the company in Quarter 3 and 4, 2003. The tool should enable SpoCo to tap into the knowledge of its customers in order to receive high quality input for new products and designs as well as for the improvement of existing products and designs. The webbed customer innovation tool is considered to fulfil the requirements of being accessible to all customers of SpoCo, offering them decision-, information- and creation-possibilities to express their innovative solutions, covering every stage of the innovation process. In doing so we aim to verify the assumptions, that customer integration works for all stages of the innovation process of a company (idea, concept, prototype, market) and that all kinds of customers (freshman, nerd, intuitive, pro) possess critical knowledge for innovations, which can be contributed not only by giving information or by
making decision, but by being creative. Early results from this piloting phase are expected to be delivered in early 2004.

8. References


