

Interactive value creation with users and customers

Professor Frank Piller holds a chair of management at the Technology & Innovation Management Group of RWTH Aachen University, Germany, one of Europe's leading institutes of technology. He is also a founding faculty member of the MIT Smart Customization Group at the Massachusetts Institute of Technology, USA.

Author of numerous books and articles, he is quoted in The New York Times, Financial Times, The Economist, Business Week, and other publications as a leading expert in the fields of mass customization and customer centric value creation. His recent analysis of "Threadless" (with Susumu Ogawa) and its innovative crowdsourcing business model in the fashion industry is summarized below. It was recently elected one of the Top 20 articles in MIT Sloan Management Review.



Professor Frank Piller

In his talk with the Peter Pribilla Network, Professor Piller emphasizes that companies can actively involve users, often at relatively low cost, in the innovation process. Threadless is a particularly bold example: a company that has successfully outsourced the entire innovation process to users/customers – from idea generation to selection among prototypes for mass production. At the end of the talk, Piller suggests that government support can facilitate user innovation on a national level and thus create competitive advantage for German companies.

Professor Piller, can you start by summarizing the need for external sources of innovation?

I agree with John Bessant that a globalizing economy demands so many new products and processes that companies can benefit enormously from opening the innovation process to external sources. At the same time, the factors John mentions, including new technology and more sophisticated users, actually facilitate search and other innovation activities – which is the subject of my research.

Henry Chesbrough introduced the term 'open innovation' in 2003 to describe the systematic integration of external inputs in some (or even all) stages of the innovation process. One of his principles is that companies that adopt an open innovative approach have to recognize that "not all the smart people work for my company." One of my favorite examples of this statement's power is InnoCentive.

It was launched in June 2001 by Eli Lilly, the pharmaceutical company, as a research venture. Today InnoCentive is an independent enterprise that describes itself as the result of a new model of distributed research and development that is similar to the idea of distributed computing.

Distributed computing allows individuals to contribute idle CPU resources to collaborative projects, enabling cost-efficient access to massive processing power without fixed infrastructure investments. Similarly, InnoCentive provides a way to search for solutions to technological problems among existing resources outside of the conventional internal research and development structures of a firm. InnoCentive posts its clients' (called "seekers") problems on its web site, without any hint of the seeker company's identity, together with a financial reward for the best solution delivered within a given timeframe.

Seeker companies are mostly large R&D operations like Procter&Gamble, Dow, Eli Lilly, BASF, and others. They use InnoCentive when they are looking for brand new approaches and new ideas, especially when they are stumped in a particular research area. InnoCentive provides access to a global network of more than 100,000 scientists who offer solutions in the hope of winning the offered reward.

The company facilitates problem formulation and posting, solution screening, confidentiality, intellectual property agreements, and award payment. Using this approach of distributed or open innovation, seeker companies get access to the specialized talents of tens of thousands of scientists without adding to their fixed costs.

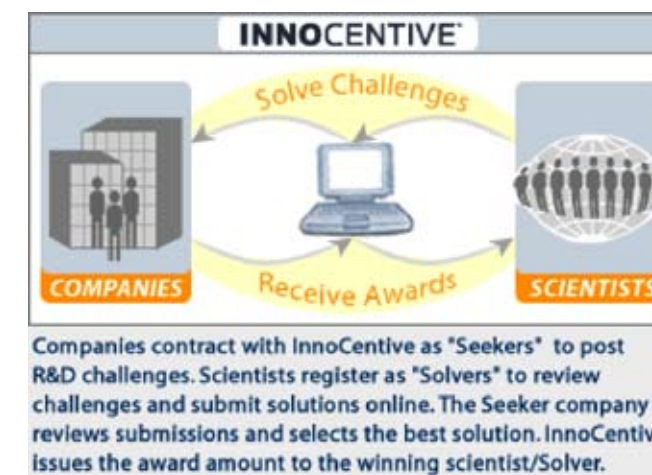


Figure 1: How InnoCentive works (Source: Innocentive.com)

Recent research by Karim Lakhani for his dissertation at MIT shows that the InnoCentive model is not just different, but also highly efficient. He studied 166 problems that had been posted on InnoCentive.com by large corporations from the chemical and pharmaceutical industry. The corporations previously had spent between six months to two years trying to solve the problems internally, without success. Offering on average \$30,000 for a successful problem solution, these problems were posted on InnoCentive. In general, solutions had to be submitted within six months of initial posting.

Of the 166 problems Lakhani studied, 49 (29.5%) were solved by the InnoCentive community. This is an impressive percent, given that individual solvers were competing with organized corporate research labs. But even more impressive is Lakhani's finding that on average a winning solver spent just 74 hours to solve the problem -- compared to 6 to 24 unsuccessful months by the big corporations.

The reason for this almost unbelievable result is rather simple: winning solvers already knew the solution! InnoCentive helps seekers by leveraging preexisting knowledge distributed in their broad community of 100,000 scientists. In 72.5% of all cases, the winner just reused an existing solution from a previous task he or she had solved in a different context. In most cases, the solution was outside of the seeker's field of expertise, which means that the seekers would have been very unlikely to find the solutions on their own.

I believe that the companies using InnoCentive are pioneering an important new approach to the innovation process. It is based on problem broadcasting, not solution seeking. The new model (which is a significant innovation in itself) suggests that companies can benefit from making a severe break from the expectation that R&D should be closed and private. Useful sources for innovative ideas and solutions lie beyond their external borders and a problem broadcasting model may be much more efficient than trial-and-error. As an aside, this model is not only of interest for profit-seeking companies; one of InnoCentive's major clients is the Rockefeller Foundation, which offers rewards for solutions like the eradication of malaria.

Problem broadcasting instead of solution seeking is a new alternative to local search.

You may suspect that the efficiency of problem broadcasting is only realized for the toughest problems, but the efficiencies of open innovation apply to a much broader class of products and processes, and concern not only inputs from specialists, but solutions from innovative users, and even ordinary customers.

What are your ideas about involving innovative users as a source of new solutions for companies?

InnoCentive connects seekers with scientific experts in many different disciplines and countries. I have been particularly interested in experts closer to home – the individual innovators of products and processes that can ultimately be produced by companies for a much larger market, as shown in Figure 2.

Work by Professor Eric von Hippel and his associates has shown the importance of making this connection. His book ***Democratizing Innovation*** summarizes several decades of research about user innovation. A description of a videoed lecture based on the book provides a good overview:

If you have ever come up with a work-around or improvement for a balky product only to find that it performs better than the original, you are not alone. Eric von Hippel proffers multiple examples where an ordinary user, frustrated or even desperate, solves a problem through innovation. His research found innovative users playing with all manner of product: mountain bikes, library IT systems, agricultural irrigation, and scientific instruments. Often, manufacturers keep at arm's length from these inventions. He describes the Lego company "standing like a deer in headlights" when technologically adept adults discovered they could design their own sophisticated Lego robots. User communities arise, freely communicate with each other, advance ideas and sometimes even "drive the manufacturer out of product design," according to von Hippel. This widely distributed

inventing bug is a good trend, believes von Hippel, because users "tend to make things that are functionally novel." Not only is it "freeing for individuals" but it also creates a "free commons" of product ideas, parallel to the more restrictive world of intellectual property governed by less creative manufacturers.

The conventional approach to connecting with innovating customers follows the "lead user" concept von Hippel developed. Firms screen innovative solutions developed autonomously by leading-edge users facing a specific, un-solved problem. These users are potential customers who face a need that will become central to a more general market, well ahead of the majority of users. They solve problems because they expect to personally realize a high benefit.

Using different screening mechanisms to identify these users and a workshop methodology to interact with them, lead users can be integrated into the firm's innovation process.

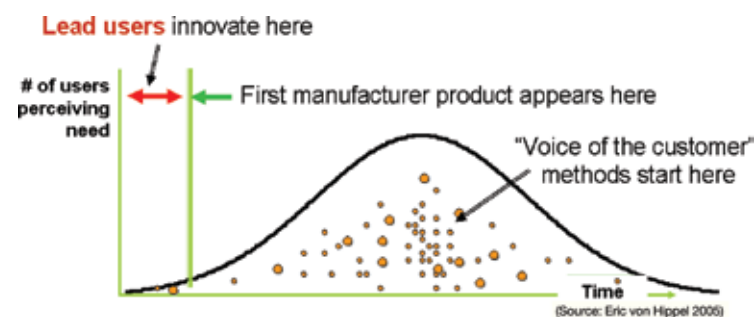


Figure 2: Distinction between lead user innovation and innovative ideas from customers

Can firms facilitate user innovation?

The existing literature on user innovation, as I've just described, looks for users motivated by their own needs. They perform their problem solving activities autonomously and without the involvement of a manufacturer. It is then the manufacturer's task to capture these ideas and transfer them into its domain. Firms that want to benefit from co-creating with their users have to go further. They must build new capabilities and infrastructures. This is an unfamiliar task for many firms, connected with non-trivial investments in terms of money, staff hours and managerial attention.

Nonetheless, manufacturers can assist and organize the process of user innovation, as John Bessant

has already mentioned. Interactions between a manufacturer and its users take advantage of a technological milieu (foremost the internet) to create an arena where user innovations evolve. This kind of co-creation also tends to demand a continuous interaction between the employees of the manufacturer and the innovating users.

I have been involved with efforts to systematically use the innovation potential of customers by helping manufacturers apply techniques such as design competitions, toolkits, and customer forums. These techniques are intended to stimulate a broader range of innovative ideas from the user domain. But there is an important question: How can the firm and co-creating users coordinate the joint value creating process? The coordination of user involvement in innovation activities cannot be described by conventional models of hierarchies or markets. Integrated users are neither paid to participate nor are they employed by the firm. In a joint book with Ralf Reichwald, we called this collaborative way of value creation "interactive value creation" – firms and users (or other external actors) jointly create value in a process of continuous interaction around a common goal.

When we developed our concept of interactive value creation, we built on earlier work by Yoachi Benkler, a professor at the Yale Law School. He studied how open source software works and found that there was a need for an alternative economic foundation to explain the nature of co-creation activities that are taking place in the open source developer communities. He summarized his ideas in a concept called "common-based peer production" to explain the coordination and motivation mechanisms behind the creation of open source software, namely the Linux operation system. Value creation in these user developer communities seems not to be based on a discrete allocation of property rights and formal contracts, but is dominated by self-selection and self-motivation toward tasks by participants. A core characteristic of peer-production in those communities is the joint value creation of a large, open network of participants. In these networks, tasks are broadcasted by individual users or a focal coordinating body, and participants self-select whether or not they will contribute to a task, to what extent and with what resources. Those who react on an open call for contributions are motivated by various incentives, but not by (market) prices, salaries, or hierarchical commands. We developed our ideas about interactive value

creation by expanding this thinking beyond software to an open co-creation process that should work in many industries. With a similar idea, but a much more catchy word, WIRED's Jeff Howe later called this "Crowdsourcing".

Definition of interactive value creation or "crowdsourcing":

"An act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call. This can take the form of peer-production (when the job is performed collaboratively), but is also often undertaken by sole individuals." (Howe)

Please tell us more about peer-production in practice.

Interactive value creation means that users are involved in the full range of activities that bring a product to market. In many consumer goods markets today, manufacturers are forced to create product assortments for increasingly small market niches, as these markets are the only source of growth that escapes heavy price competition. In this situation, new product development projects often require enormous investments and are highly risky. While new products or product variants have to be developed and introduced at a rapid pace, forecasting their exact specification and potential sales volumes is becoming more difficult than ever, as other producers are also creating niche products.

Newly launched products have shown notoriously high failure rates over the years, often reaching fifty percent or more. The primary reason for these flops has been found to be inaccurate understanding of user needs. In other words, many new product development projects are unsuccessful because of poor commercial prospects rather than technical problems. Researchers have found that timely and reliable information on customer preferences and requirements is the most critical information for successful product development.

Conventionally, heavy investments in market research are seen as the only way to access this information. But Threadless, a young Chicago-based fashion company, follows an innovative business model that allows it to create a high variety of products without risk and without heavy investments in market research. The company does not have sophisticated forecasting capabilities or a complicated flexible manufacturing system. Yet, it accesses customer preferences before production begins.

Examples of Threadless products appear on their website and also give a good idea of community enthusiasm.



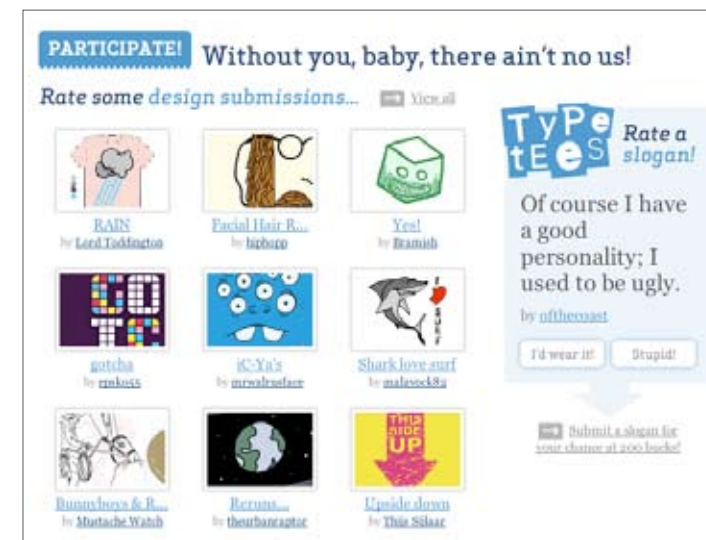
Started in 2000 by designers Jake Nickell and Jacob DeHart, Threadless focuses on a hot fashion item: t-shirts with colorful graphics. This is a typical hit-or-miss product. Its success is defined by fast changing trends, peer recognition, and finding the right distribution outlets for specific designs. Despite these challenges, none of the company's many product variants has ever flopped.

Success is due to the fact that all products sold by Threadless are inspected and approved by user consensus before investment is made into a new product. The garment is produced only after a sufficient number of customers have expressed their explicit willingness to buy the design. If commitment is missing, a potential design concept is dismissed. But if enough customers pledge to purchase the product, the design is finalized and goes into production. In this way relatively small market research expenditures are turned into early sales. New designs regularly sell out fast, and are reproduced only if a large enough number of additional customers commit to purchase a reprint.

Some customers are integrated more deeply into the new product development process. All new designs are submitted from a community that includes hobbyists, but also professional graphic designers. The company exploits a large pool of talent and ideas to get a much larger set of designs than it could afford if the design process were internalized. Creators of submissions that are selected by other users get a \$2000 reward, and their name is printed on the particular t-shirt's label. Since their opening, over 1000 winning designs have been chosen for print from more than 80,000 submissions. The Threadless community is thriving with over 200,000 votes submitted each day to evaluate.

The Threadless business model exploits the commitment of users to screen, evaluate and score new designs as a powerful mechanism to reduce new product failures. The method breaks with the known practices of new product development by utilizing the capabilities of customers and users to carry out the innovation process. Users can evaluate each week between 400 and 600 new designs on a scale from zero ("I don't like this design") to five ("I love this design"). On average, each design is scored by 1500 people. A good score corresponds to a value above 3.0. But in addition, customers not only express their marked preference for specific designs, they can also opt-in to purchase the design

if it is chosen by the collective. For this, they check a box "I'd buy it" next to the scale. From the designs receiving the top votes and largest commitment of users to purchase, Threadless is producing today between four to six new products each week.



To keep the competition interesting and encourage users to participate continuously, the number of designs at a given time has to be limited so that users don't get confused. Usually, each design gets seven days to be scored. But if a new design receives a low score within the first 24 hours of its posting (as identified by multiple variables, including the number of "I'd buy it" checks and the design's average score), it will be dropped from the running. This happens to about one third of the submissions. The early user feedback has proven to be a very strong indicator of the success of a design in the competition and enables the company to increase the usability and experience for users who vote.

The Threadless business model uses the capabilities of customers and users to carry out all aspects of the innovation process, from design to evaluation and selection of products for sale.

Motivated by its success in the fashion market, Threadless' founders have recently extended their categories to formal wear like ties or polo shirts (NakedandAngry.com) and music (15MegsofFame.com).

In a joint paper with Susumu Ogawa, we called the process of getting the exact feedback of customers before a firm starts production

"Collective Customer Commitment." The process starts when an idea for a product is posted by an external designer who responds to an open call for participation. Second, reactions and evaluations of other consumers towards the posted idea are encouraged in internet forums and opinion polls. Based on the results of this process, the manufacturer investigates the possibility of commercialization of the most popular designs. If this evaluation is positive, the company decides on the minimum number of purchasers necessary to produce the item for a given sales price, covering its initial development and manufacturing costs (and the desired margin). The new product idea is then presented to the customer community, and interested customers are invited to express their commitment to the idea by voting for the design or even placing an order. Accordingly, only if the number of interested purchasers exceeds the minimum necessary lot size are investments in final product development made and sales commence.

It seems to be an impressive model. Are there other benefits of interactive value creation and collective customer commitment for a firm?

Studies comparing the broadcasting and self-selection approach with conventional methods of organizing the division of labor show that in many instances the peer-production system is more efficient. Consider Threadless: This small company is able to generate thousands of new designs with almost no staff. But there is more than just outsourcing work involved. Often, the input from an open call to a community to solve a given problem also results in better quality when compared to problems solved internally.

The economic benefits to contributors come from two things: Either they have lower costs in solving the task (for example, solvers already know the solution or have specific knowledge required to solve it) or they have higher motivation (involvement, challenge, joy) to work on the task.

To be more explicit:

- Interactive value creation is based on self-selection of a problem by potential contributors. That means no cost for

- screening, identifying and allocating tasks to actors is borne by the organization.
- Self-selecting actors are motivated either by their knowledge that solving the problem demands little effort or by regarding the task as challenging and worth solving.
- The open call for participation is not restricted. A broad network overcomes “local search bias” and taps into knowledge sources not known to the task’s originator.
- The open interaction also fulfills desires for social interaction.

An important prerequisite for peer-production to work as described for Threadless is that tasks can easily be distributed across a network of actors. For example, peer-production demands that a complex problem can be separated into smaller modules that can be solved independently and hence can be allocated easily to different actors (something called “granularity” in the academic literature). Also, the larger the number of peers (participants) in the network, and the more heterogeneous their individual knowledge stocks, the higher the probability that a task will be selected and then solved efficiently. Finally, the easier it is to re-use existing knowledge and the easier it is for others to use solved problems, the better and more efficient the production system.

A different kind of facilitator is the use of licenses for property rights that do not restrict sharing and using solutions within a network. Commons-based problem solving especially flourishes with efficient documentation of existing knowledge stocks in open repositories.

These conditions are met perfectly in open source software development where the model was initially developed. Experience to date has shown that an innovation system using elements of commons-based peer-production will work even in a corporate context.

Is it difficult to involve users and customers in innovation processes?

Motivating individual actors to make an appropriate contribution is an important management task, but often it is not difficult at all.

The significant problems of innovation are solved only if all participants realize a sufficient value from their participation. Manufacturers thus must incentivize customers and other users to transfer their innovative ideas. Some companies promise cash rewards or licensing contracts for innovative ideas (like Procter&Gamble’s YET2.com platform). Others build on peer recognition (like LEGO’s mail-order catalogues which name customers whose creations are being produced as standard products). Obviously, these rewards or recognitions are not given to everyone submitting an idea, but only for the best of these submissions.

This leads to the idea of using a competitive mechanism as an explicit measure to foster and encourage user innovation. The idea of a customer idea contest (CIC) is to ask users to submit solutions to a given task within a given timeframe, as Dominik Walcher and I describe in a paper on the design of CIC. The nature of the competition should encourage more or better users to participate, to inspire their creativity and to increase the quality of the submissions. Submissions typically are evaluated by a panel of members from the solution seeker, and ranked accordingly to a set of evaluation criteria. Solvers whose submissions score highest receive an award from the seeker, which is often granted in exchange for the right to exploit the solution in the domain of the seeker.

The significant problems of innovation are solved only if all participants realize some reward from their participation.

In addition to generating a wide range of ideas, a CIC may also transfer ideas into concepts (solutions) with supporting documentation. This is important. In many organizations, ideas are not in short supply, but the selection of promising ideas and their conversion into useful concepts is problematic and expensive. A well constructed contest can support these steps, if the rules of the contest demand not only an idea, but ask submitters also for a first proof of feasibility, an evaluation of solution technologies enabling the idea, or even a corresponding manufacturing concept.

For example, P&G’s idea contests on YET2.com ask for ideas about very open problems, but demand that the idea is supported by a solution concept that is highly elaborated and proven by a working prototype. Submissions to Threadless are

similarly elaborated when designers use specific software that allows for an easy transfer of the chosen designs to manufacturing. The website also increases the specificity and transferability of design ideas by using the input and evaluations of other users to select between all ideas submitted. The product management of Threadless thus receives at the end of each contest not only a large number of design ideas, but also a short-list of promising design concepts selected by the customer target group, along with numerous comments and ideas about how to transfer the submitted designs into even better product concepts.

This all sounds very promising. Are governments supporting user innovation in order to enhance the competitiveness of their economies?

When academics and companies were first developing the ideas of open innovation, it was not yet a policy based initiative. Recently, however, the Danish government has lead the way, followed by the Australian government, and an initiative by the Nordic Council. In response to John’s presentation, I’m happy to say that the UK appears to be next in this lineup. But, today I will focus primarily on the first initiative by the Danish government.

The Danish Government made support of “user driven innovation” a national priority in February, 2005. Substantial seed funding was taken up by several universities. To date, five dedicated professorships for user innovation have been established in three Danish public universities. In 2007, the Danish government committed to an investment of approximately 160M Danish Kroner per year for the next three years for programs to support user-centered innovation. In other words, in the short space of two years a significant change in government service to support innovation was signaled by 85M Euro.

The project is so significant that it was listed in the Harvard Business Review’s list of Breakthrough ideas for 2007. The report said:

Denmark is the first country to bring government innovation policies into line with modern understandings of how innovation really works. If this paradigm shift is

successful, many other nations will certainly follow.

An important part of the effort is the Danish User-Centered Innovation Lab at Copenhagen Business School. Dedicated to helping make Denmark “a world leader,” the lab does three things according to their website::

- (1) It brings together academic researchers and leading edge Danish companies in projects to develop, test and assess new methods and tools for user-centered innovation.
- (2) It organizes periodic face-to-face exchanges of information and experience between world experts specializing in new user-centered innovation methods.
- (3) It supports development of materials for widespread diffusion of “best practice” user-centered innovation methods to Danish managers in large and SMEs, MBA students, consultants and start-up firm personnel.

Six major Danish companies are involved. Bang & Olufsen and Lego are members, as well as the Ministry of Economic and Business Affairs and the National Agency for Enterprise and Construction.

I am waiting to see when Germany follows the lead of our European neighbors and creates a national policy of user innovation. The huge resource found among our customers is not yet systematically utilized by our local businesses. Yet, we know quite a bit about what might be done, as von Hippel summarizes in Figure 3.

How to start your own national user-centered innovation program

- Staff some professorships in top institutes to make leading specialists in user-centered innovation available.
- Set up a program to fund research and diffusion efforts in user-centered innovation.
- Professors and firms should set up a collaborative academics/industry Lab that develops, tests and diffuses best practices in user-centered innovation.
- Adapt government innovation policies to support user-centered innovation:
 - Support development of collaborative innovation tools and standard setting.
 - Support users’ rights to modify standard products.

Figure 3: Eric von Hippel’s recommendations to governments for starting a national user-centered innovation program (Source: Eric von Hippel 2007)



Learning Resources

- <http://userinnovation.mit.edu/>: A collection of working papers and additional resources
- <http://duci.dk/index.php>: Website for the Danish User-Centered Innovation Lab co-sponsored the Copenhagen School of Business, Aarhus School of Business and MIT.
- www.open-innovation.de: German website accompanying Ralf Reichwald & Frank Piller's book *Interactive Value Creation* with additional case studies and the possibility to download the book under a creative commons license.
- www.open-innovation.com: Frank Piller's website in English with additional information on topics discussed in this talk..

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Implications for Practice: How to identify and work with lead users

1. Create and prepare your lead user search team
2. Identify trends and needs
3. Search for lead users
4. Host lead user workshop

- Invite identified lead users and experts from analogous markets to workshop with internal experts
- Jointly develop innovative ideas and solutions
- Evaluate results
- Agree about Intellectual Property Rights and exploitation rights.



Key Research Issue: Overcoming NIH – the 'Not Invented Here' Syndrome

An important challenge of applying the peer-production principle and other ideas from open innovation involves the difficulties of integrating ideas and solutions created at the firm's periphery into the corporate context. Internal (proprietary) knowledge has to be connected with external generated knowledge. This process appears to one of the most challenging tasks for firms that want to utilize gains from open innovation.

Even as companies manage to search for and extract innovative inputs, perhaps investing in the installation of appropriate innovation-focused online platforms that collect customer ideas, the transfer frequently fails due to the "Not Invented Here" (NIH) problem. Katz and Allen defined the NIH syndrome some time ago as "... the tendency of a project group of stable composition to believe that it possesses a monopoly of knowledge in its field, which leads it to reject new ideas from outsiders to the detriment of its performance."

The NIH phenomenon has been shown to be an important barrier in many settings, and is proven to exist even between different domains within one enterprise (e.g., resistance on the part of R&D engineers to consider innovations suggested by the marketing department). Resistance to external knowledge is often even greater than resistance to colleagues' knowledge. The important warning: if the transfer of input from peripheral sources fails, investments in customer innovation platforms turn into additional costs.



Professor John Bessant

Unique Aspects of Service

Professor Bessant has been actively involved in many initiatives funded by the UK government. In this presentation he draws on research about legal services and experience in a wide range of other profession to discusses a new effort around service innovation.

Professor Bessant, do you think the problems of service innovation are unique?

Yes, I do, though there is much that can be transferred from experience with production. After ten years of government funding to understand service innovation, you in Germany seem to be ahead of other countries, including the United Kingdom, in understanding these issues. However, I've been helping one of the UK's research councils design a program targeted on innovation in services by giving presentations about the nature of services and what the agenda for research might be. I'd like to summarize some of our observations about the unique aspects of service.

Company executives know they face a very real innovation challenge. The chief executive of a company in our network speaks for many when he says "we are on the brink of change that is unprecedented, change of exponential magnitude. We must be willing and able to discard old paradigms and embrace change."

The required changes include implementing new customer centric processes and products, cutting costs, improving service through the application of IT and business process reengineering, then putting in place systems and a culture for sustainable innovation. Pretty grand stuff, pretty dramatic, but many in this audience might expect the CEO of a big company to be talking this way.

With a group of colleagues we are also looking at smaller UK companies and many of them are concerned about innovation. Again the strong need for innovation, but the key here is that often they haven't got the culture. They don't have a strategy to focus their efforts on innovation. They often are even more conflicted than larger firms between the

things they might do to create something new and the things they do to earn money. Work on service innovation is not always valued as a result of that.

It is a problem around the world. A survey in Germany conducted with 500 people showed that 78% of executives felt innovation was really important, but 57% thought they did not have a well defined strategy. Even worse, fully 80 % said they had no management system for innovation, 66% had no systematic measurement of innovation performance, 47% did not feel they were competent with innovation, and 12% believed that their culture did not support innovation.

The point about all of these probes is that you would expect to see them in stories about manufacturing, but these data come from service organisations. The executive who said "we must be willing and able to discard old paradigms and embrace change" is the chairman of the U.S. Bar Association, taking about the legal profession.

Service organizations are facing familiar problems of innovation, including the need to develop new customer centric processes and products, cut costs, improve service through the application of IT, reengineer business processes, and put in place systems and a culture for sustainable innovation.

The second survey was one that we did of UK law firms, organizations that are facing a real crisis. As a result of a prestigious national review it is only one year until the industry will be deregulated. At that point customers will be able to go to their supermarket, say Tesco in the UK, to get a divorce.