

Chapter 1

Understanding Lead User Research Principles

In this chapter we lay out the basic principles and methods of lead user research and review actual studies that show how lead user methods can be beneficial to companies seeking to develop new products and services.

Key Elements of Lead User Research

We begin the chapter with an overview of lead user research and explain the key features that distinguish it from other approaches to developing new product and service concepts. From there, we explain how to identify lead users and discuss the critical role they play in lead user studies. The chapter concludes with suggestions for how to overcome obstacles that innovation managers sometimes encounter when they first introduce lead user methods to marketing research and product personnel in their organizations.

Research Goals and Process

Lead user research is done in the initial phases of an innovation project for the purposes of identifying strong market opportunities and developing concepts for new products or services. Concepts are developed with direct input from "lead users." Lead users are individuals - or they may be firms - that are experiencing needs that are *ahead* of the targeted market(s). Often, they develop product or service prototypes to satisfy their leading edge needs that will be commercially attractive to firms.

We want to underscore that the focus of lead user research is on opportunity discovery and concept *generation*. It is, therefore, not a substitute for present-day marketing research methods such as multi-attribute analysis and conjoint analysis. These are intended for concept

evaluation and refinement rather than concept generation. Lead user methods fit into the innovation process *ahead* of such marketing research methods.

A core project team of both technical and marketing staff carries out a lead user study with support from a number of other personnel - in particular, personnel from the technical and marketing departments. The research process is divided into four phases, with each phase defined by the central activities summarized below.

Overview of Research Activities

1. *Selection of the Project Focus and Scope:* This is the preparatory phase of a lead user project. A management group first decides the new product or service area that will be the focus of the innovation initiative and selects the core team that will implement the lead user study. This project team then does the practical work required before launching the actual lead user study in the next phase.
2. *Identification of Trends and Needs:* The core project team begins the lead user study by doing an in-depth investigation of trends and emerging market needs. By the conclusion of this phase, the team will have selected the specific need-related trend(s) that will drive concept generation in the next phases.
3. *Collection of Needs and Solution Information from Lead Users:* This phase begins the concept generation phase of the project. The project team interviews lead users to gain deeper insight into emerging needs and to acquire new product and service ideas. By the end of Phase Three, the team will have generated preliminary concepts.
4. *Concept Development with Lead Users:* A select group of lead users and technical experts join the project team and other company personnel for a workshop to do intensive product or service concept development work, usually over a 2 or 3 day period. The outcome of this workshop is typically a new product or service concept - or sometimes, several of them. The project team then refines these concepts and develops a business "case" which is presented to management for its review.

It typically takes teams four months to carry out a lead user project. However, in some instances studies have been done in less time. In large part, the length will depend on how much is known about emerging needs in the target markets at the start of the project.

A Different Approach to Concept Development

The lead user approach to concept development differs from conventional methods in three very important ways:

1. Lead user research captures the rich need information possessed by leading edge users.

Use the experiences of lead users as a needs forecasting laboratory

Conventional marketing research asks typical customers what they *think* they need tomorrow in the way of new products and services. Unfortunately, research has shown that average users usually cannot say with any accuracy what they will want in the future. They often can only speculate about their future needs - or ask for improvements in existing products and services in terms that are very general and already obvious to both users and manufacturers. They may ask, for example, for existing products to be made “cheaper” or “faster” or “easier” to use.

Lead user research focuses on inquiring into the product and service needs of “lead users” (von Hippel, 1988). Lead users are sophisticated product/service consumers who are facing and dealing with needs that are ahead of the bulk of the marketplace. These leading edge users have proven to be a much richer and more accurate source of information on future market needs than “routine” users because they are actively grappling with the inadequacies of existing products and services. By focusing data collection on lead users, the result is *higher quality information* on emerging market needs - and thus, *better product and service concepts*.

2. Lead user research captures prototypes and ideas for new products and services that are developed by lead users and lead use experts

Enrich concept generation by working directly with lead users

It is conventional for marketing research specialists to focus only on the collection of customer needs data. The creation of new products and services that can satisfy those needs is considered to be the province of internally based research and development staff.

Studies by von Hippel and others (von Hippel, 1988; Urban and von Hippel, 1988) have shown that lead users often both experience emerging needs *and* may develop prototype products and services that can satisfy these needs. Lead user prototypes can then become the basis for commercially attractive new products and services that

will be appealing to routine users in the general marketplace. Lead user research exploits this fact by bringing lead users directly into the company's concept development process. Thus, the project team can benefit from both the solution data and the need information that is held by lead users.

Lead user research also directly brings "lead use" experts into the work of concept development. Lead use experts are top authorities in their fields who are doing leading edge work related to the team's project. Some firms, especially in high-technology fields, utilize experts as advisors. What is "different from usual" about our model is that the range of experts drawn upon is wider and the experts, as well as lead users, actually *collaborate* with internal personnel in concept development.

There are two major benefits of involving both lead users and lead use experts in the development of new products and services. First of all, they can provide extremely valuable design data. In addition, their input cuts down the work required of development engineers (Urban and von Hippel, 1988; Herstatt and von Hippel, 1992).

3. Lead user research accelerates concept development.

*Get new
products
& services
to market
faster*

Lead user research has proven to be a much faster concept development process than conventional approaches used by many firms. For example, managers have compared lead user methods to traditional ones and estimate that they can complete concept development twice as fast by doing a lead user study. (Herstatt and von Hippel, 1992). The process is faster, in large part, because technical and marketing departments are working collaboratively throughout a study. Thus, they are able to more fully share information and fully coordinate their efforts. Also, the new concepts that come out of a study typically require less development work because technical staff has direct access to the rich information lead users have acquired by experimenting with prototype solutions under actual field conditions.

The Lead User Concept

The concept of "lead users" plays a central role in lead user research. Thus, a more detailed explanation of who they are is in order. Von Hippel

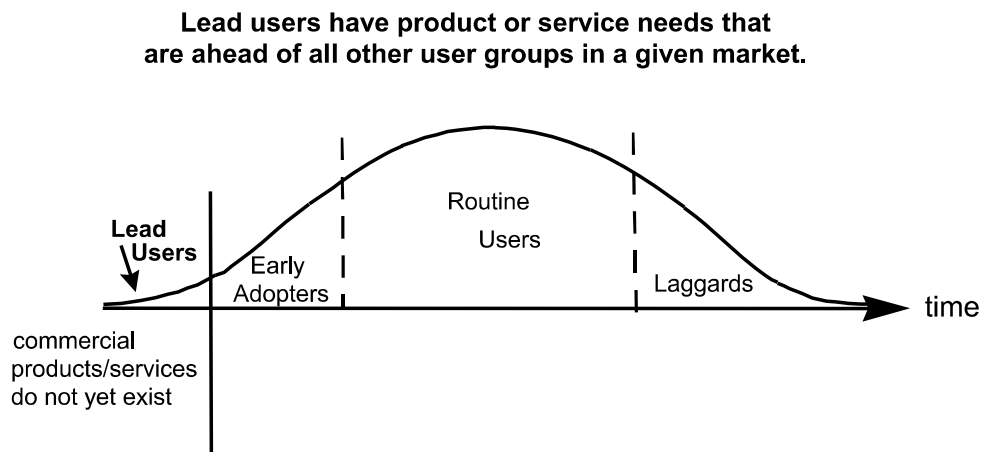
defines lead users as individuals or firms who display *both* of the two following two characteristics (1988):

1. Lead users have new product or service needs that will be general in a marketplace, but they face them months or years before the bulk of the market encounters them.
2. Lead users expect to benefit significantly by finding a solution to their needs. As a result, they often develop new products or services themselves because they can't or don't want to wait for them to become available commercially.

Thus, firms who today could obtain significant benefit from a type of office automation that the general market will want down the road are lead users of that type of office automation. Similarly, a producer of semi-conductors with a current strong need for a process innovation that many semiconductor producers will need in two years is a lead user with respect to that process.

Lead users are different from "early adopters"

Note that lead users are not the same as "early adopters" - users who are among the first people to purchase an existing product or service. Lead users are facing needs for products and services that *don't yet exist* on the market. The figure below shows the leading edge position of lead users, relative to other categories of users typically included in diffusion studies (Rogers, 1993, 4th edition).



Research has shown that each of the two characteristics of lead users makes a valuable and independent contribution to the type of new product need and solution information that they possess.

"The Value of Living in the Future"

*Lead users
have real-
world
experience
with future
market
"conditions"*

"Living in the future" relative to others in the target market is an important attribute of lead users. As research into problem-solving has shown, any individual's insights into matters such as new product needs and potential solutions is strongly restricted by his or her own actual experiences. One reason is that individuals who use a product in a familiar way are strongly blocked from seeing how it could be used in a novel way - an effect called "functional fixedness." Also, it is difficult for typical users of existing products to imagine what they might want in the future "when things are different," because product usage patterns are often very complicated.

*"Imagining" the future is difficult -
Understanding it by living there is easy*

To appreciate the difficulty of accurately imagining the future without having actually lived in it, think about how difficult it would be for a user who had never experienced microwave cooking to imagine how this new means of food preparation might prove useful. Effective microwave cooking involves different food recipes and different kitchen practices than conventional cooking - none of which would be familiar to the inexperienced user. Also, the microwave makes major changes in family meal patterns possible - for example, even children can safely prepare their favorite foods whenever they want them. It would be very difficult for an inexperienced user to accurately imagine all these interconnected effects and uses. On the other hand, a "lead user" of family microwave cooking would have developed, experienced and evaluated many of these novel possibilities via an extended period of trial and error. For example, many lead users created their own microwave snacks for their children - and then noticed that their children could, in fact, safely be allowed to re-heat these on their own. Eventually, manufacturers noticed the snack innovations of inventive microwave users and responded by offering "microwaveable snacks" commercially.

"The Value of Having a Very Strong Need"

The second characteristic of lead users is that they expect to benefit in a major way by finding or creating a solution for the needs they have encountered under the "future conditions" in which they live. This

characteristic is valuable to those who wish to learn about future needs and solution approaches for a common sense reason. As shown by studies of industrial product and process innovations, the greater the benefit a user expects to obtain from a needed novel product or process, the greater will be the investment in obtaining a solution.

This truth is reflected in folk wisdom, and probably in your own experience as well. Consider, the saying, "necessity is the mother of invention." Also reflect: Can you think of cases when you developed a novel solution to a problem because "you just *had* to do it" under the circumstances? As an additional example, consider two manufacturing firms - both needing the same new type of process control software that is not yet available on the market. The first firm thinks that it could save \$10 thousand per year by using the new software and the second firm thinks it could save \$10 million per year. The second firm will typically invest more than the first - perhaps millions - to develop an "ahead of the market" solution to that problem.

Three Different Types of Lead Users

We have learned that it is useful to think about three different categories of lead users that can provide important information to lead user project teams. During a lead user study, team members systematically contact each type in order to get the best possible information for their project.

The three types of lead users are:

Seek out lead users both inside and outside your industry

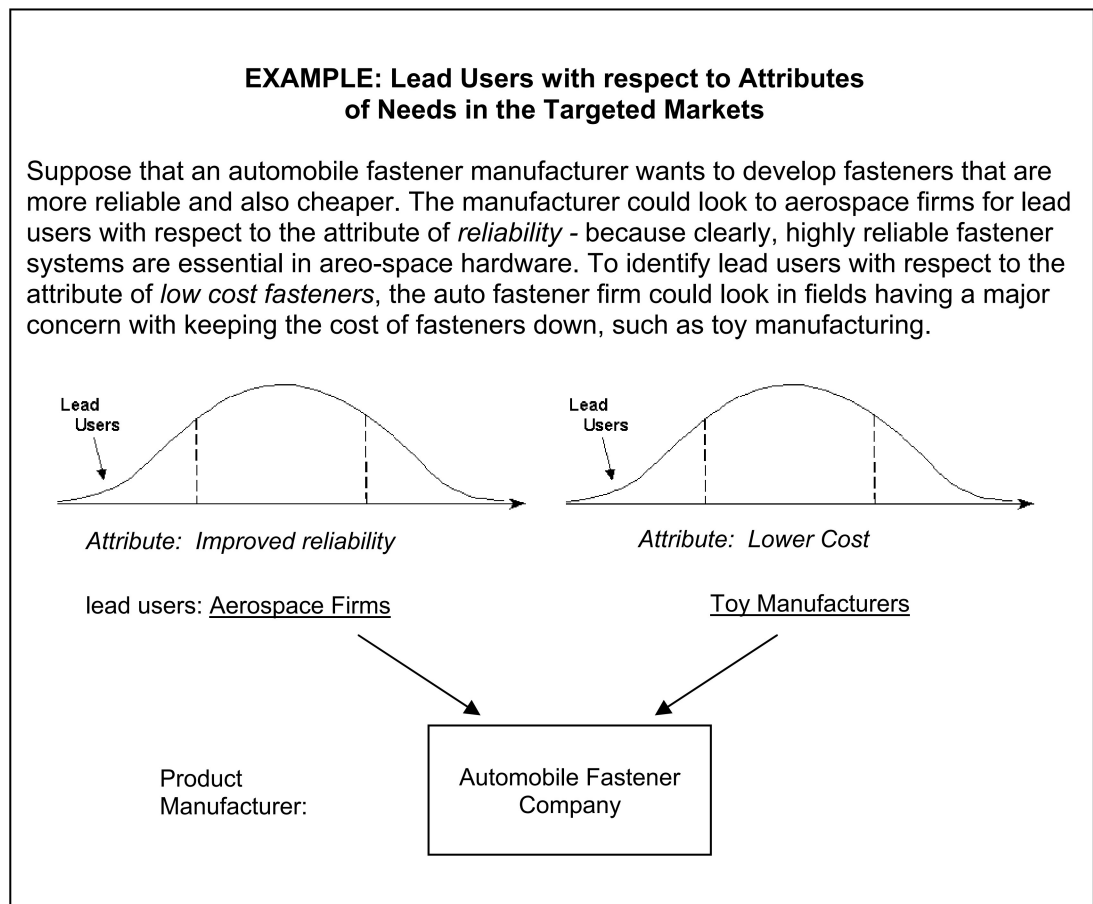
- 1) lead users in the *target* application and market;
- 2) lead users of similar applications in advanced "*analog*" markets;
- 3) lead users with respect to important *attributes* of problems faced by users in the target market.

To illustrate these three types of lead users: Suppose that a manufacturer of medical X-ray systems decides to form a lead user project team to identify concepts for new products in that field. The team researches the target market and finds two important trends. One trend is towards images with higher resolution; another was towards better methods for recognizing subtle patterns in images that are medically important - for example, patterns that indicate possible early-stage tumors.

In this example, the team might go on to identify and learn from the three

types of lead users as follows:

- 1) *Lead users in the target application and market* - These might be medical radiologists working on applications in medical imaging that are very demanding with respect to images of high resolution and pattern recognition.
- 2) *Lead users of similar applications in advanced “analog” markets* - These could be users in more demanding but related markets such as engineers who create images of microscopic patterns developed on semiconductor chips.
- 3) *Lead users with respect to important attributes of needs faced by users in the target application* - These could include pattern recognition specialists in fields other than imaging such as pattern recognition in sound or mathematics (see the box below for a second example).



As our examples show, searches for lead users are not limited to the leading-edge customers in the targeted markets. They may be found in other related markets or totally *outside* of a firm's industry.

Locating appropriate lead users takes some resourcefulness and detective work. However, project teams have been very successful at efficiently identifying lead users by following the process we will be explaining in Chapter 6.

Evidence Supporting the Lead User Concept

Let's look now at the evidence in support of the fact that lead users have advanced needs and solution data to provide. The concept of lead users has its roots in years of research by von Hippel and many others into the role played by users in product innovation. This research specifically explored the question of who actually develops commercially successful products. As commonly assumed, are manufacturers usually the developers? Or are non-manufacturers more often the innovators under certain conditions.

Industrial Innovations by Lead Users

Lead users are the actual inventors of many commercially successful products

Von Hippel found that users are often the developers of industrial products and equipment processes that become commercially successful (1988). Two of his studies showed an especially high proportion of user-developed products. In one of them, he focused on four important categories of scientific instrument used by scientists and others to collect and analyze data. In the second, his focus was on two classes of process equipment used in the electronics industry. His research findings showed that users were the developers seventy-seven percent of the ninety two major scientific instrument innovations studied, and the developers of sixty-seven percent of the process machinery innovations studied.

Studies done by numerous other researchers have found users to be the developers of many or the majority of commercially successful industrial innovations in a range of fields. Some of the major user-innovations that have been discovered by authors of these studies are summarized in the box on p. 12. Notice that the user-innovations listed are in both low and high technology fields - and in many of these fields, users were responsible for developing over half of the products that eventually became commercially successful.

Summary of Data from Studies on the Role of Users in Product Development					
Study Author	Nature of Innovations	n	Innovation Product developed by:		
			User	Mfg.	Other
Knight	Computer innovations, 1944-62: - systems reaching new performance high	143	25%	75%	
	- systems with radical structural innovations	18	33%	67%	
Enos	Major petroleum processing innovations	7	43%	14%	43%
Freeman	Chemical processes and process equipment available for license, 1967	810	70%	0%	
Lionetta	All pultrusion processing machinery innovations first introduced commercially, 1940 - 1976 which offered users a major increment in functional utility	13	85%	15%	
von Hippel	Scientific instrument innovations - first of type	4	100%	0	
	- major functional improvements	44	82%	18%	
	- minor functional improvements	63	70%	70%	
von Hippel	Semiconductor and electronic assembly manufacturing equipment: - first of type used in commercial production	7	100%	0	
	- major functional improvements	22	63%	21%	16%
	- minor functional improvements	20	59%	29%	12%
VanderWerf	Wire stripping and connector attachment equipment	20	11%	33%	56%
Source: von Hippel, "LEAD USERS: A Source of Novel Product Concepts," <i>Management Science</i> , 1986 (Table 2, p. 801).					

*Lead users
can provide
firms with
field-tested
prototypes*

User-developed product innovations such as those found by von Hippel and others, offer a great deal of valuable information to manufacturers interested in commercially developing products with similar functions. For example, consider an agricultural product - the center-pivot irrigation system - invented by a farmer and shown on p. 14. The farmer's product prototype is useful to developers because it reveals lead user need and important design principles. Moreover, the value of the prototype product to the user has been established via actual results in field use. This is important because the user inventions of interest to firms are obviously those that have shown they can be turned into commercially attractive products.

Consumer Products Developed by Lead Users

User-developed innovations in the area of consumer products and services have not been subjected to the same formal study as have the industrial products listed on p. 12. Still, there are many examples of important consumer products that have been developed by inventive, leading edge users. The prototype for protein-based hair conditioners, for instance, actually came from inventive women in the early 50's who rinsed their hair with home-made conditioners containing eggs or beer to give their hair more body and shine. There are also numerous commercially successful food products that are based on consumer prototypes. Pillsbury, for instance, derived one of its four cake mix lines directly from the recipes of Bake-Off winners.

Examples of other commercially important user-developed consumer products in a few product categories are shown below.

A Sampling of Important Consumer Product Innovations Based on User Ideas and Prototypes

food and drink products such as:

Granola
Gatorade
graham cracker crust

clothing products such as:

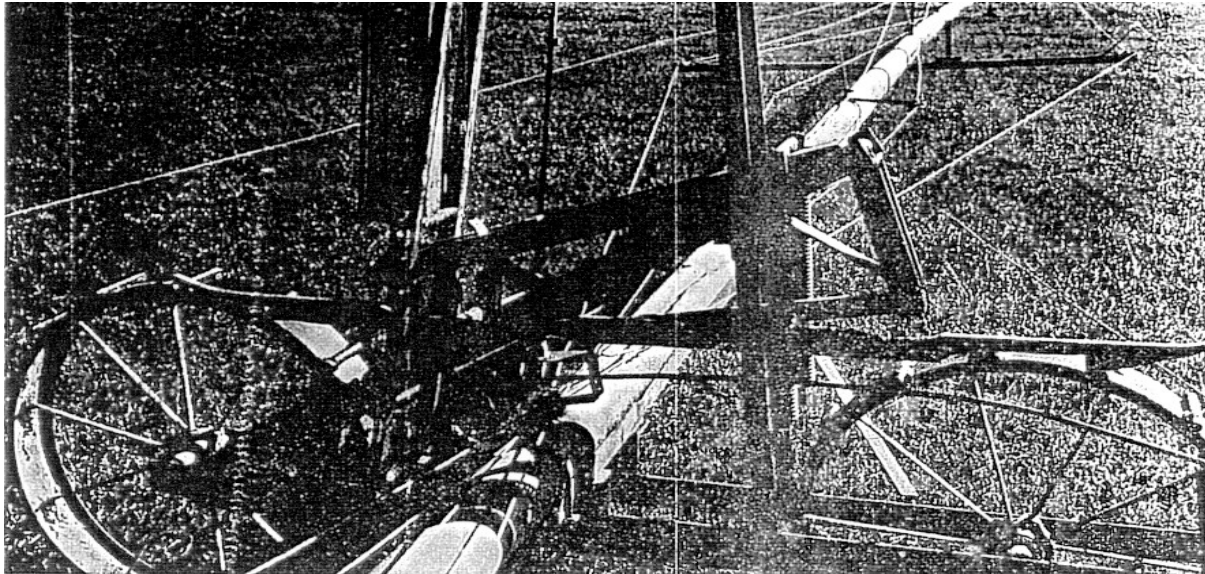
sport bras
"grunge" fashions

a variety of sport products such as:

mountain bikes
skateboards
surfboards
wind surfing products

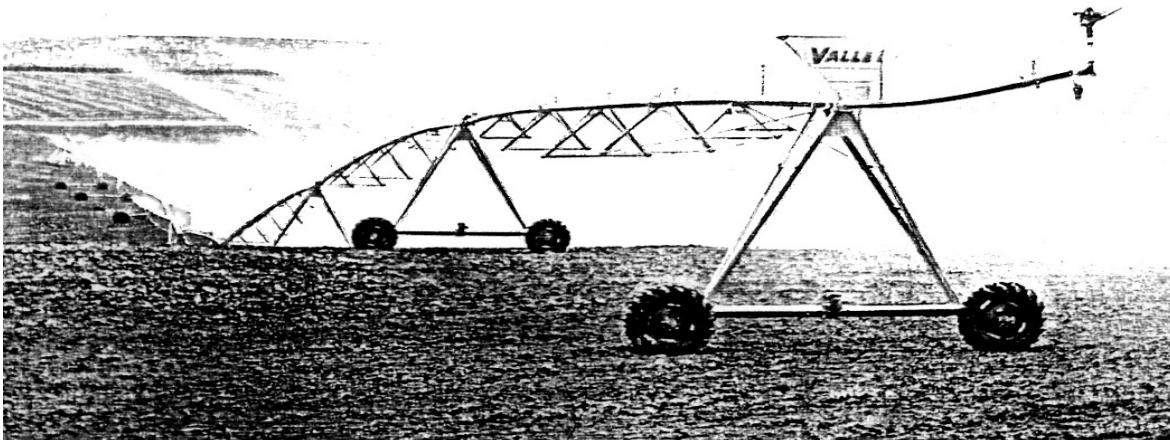
Irrigation System Prototype Developed by Lead User-Farmer

A Midwestern farmer was the actual developer of the modern center-pivot irrigation system shown in the 2nd picture. The farmer's invention has clearly been made from materials he had on hand. The piping is standard irrigation pipe; tower wheels appear to have been taken from worn out agricultural machinery.



CLOSE-UP of one of the mobile towers of the original center-pivot machine shows the parts of the system with greater clarity. Water taken under pressure from the supply line-powers a piston, which

ratchets the tower ahead by means of a mechanical device called a Trojan bar that engages lugs on both support wheels. The rate of advance is set by the flow of water into the piston at outermost tower.



GROUND LEVEL VIEW of a recently installed center-pivot system demonstrates its ability to accommodate to rolling terrain. The

wheeled towers in this example are driven by electric power. The photograph was supplied by Valmont Industries, Inc. of Valley, Ne

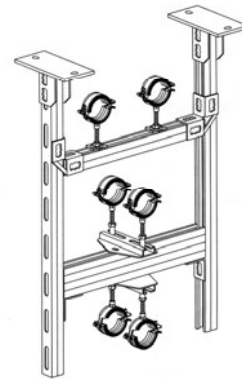
Applications of the Lead User Methods

We have now defined the characteristics of lead users and looked at ways that the needs and solution information they possess can be useful to manufacturers. Next we show how the elements we have discussed are incorporated into real-world lead user research by looking at actual lead user case studies.

Since the first lead user case study by Urban and von Hippel in 1988, firms in a variety of industries have done successful lead user studies in both the United States and Europe. We briefly review two typical studies.

Hilti Study: A New “Pipe-hanger” System

Hilti is a leading European manufacturer of components, equipment and materials used in the construction industry. The focus of the Hilti lead user study was on developing a concept for a novel “pipe-hanger” system. As shown to the right, this is a type of fastening system used to attach or hang pipes such as plumbing and heating pipes onto the walls or ceilings of commercial and industrial buildings.



conventional system for
attaching pipes to the ceiling

In collaboration with lead users, Hilti personnel developed a concept for a very novel pipe-hanger system that has been extremely successful commercially and won them an industry achievement award for their product concept development work. The Hilti lead user study was designed and coordinated by Dr. Cornelius Herstatt. (At the time of the study, Dr. Herstatt was a doctoral student interested in exploring and improving lead user research methods.)

Under Herstatt's direction, the Hilti project team began its lead user study by first identifying a few important need-related trends. This was done by conducting telephone interviews with experts in the field of study.

Based on the trend analysis, the team chose to focus the study on three important market trends and related emerging market needs:

1. Pipe hangers that are very easy to assemble (The reason - education levels among installers were going down.)
2. A more secure system of connecting hanger elements and attaching them to walls and ceilings (The reason - safety requirements affecting pipe-hangers were becoming more stringent over time.)
3. Lighter, more corrosion-resistant pipe-hangers (The reasons - first, existing and heavy pipe-hangers were difficult for workers to install safely; second, many more pipe-hangers were being installed in corrosive environments such as chemical plants.)

Next the Hilti team identified twenty-two expert users by surveying cooperating firms throughout Europe. The users were all tradesmen who had actually built and then installed hangers, incorporating modifications of their own design when they felt that commercially available hangers were not suitable for the job they were working on. The list was pared down to twelve lead users who had the richest information to offer.

The twelve lead users joined Dr. Herstatt, the Hilti engineers and a marketing manager for a 3-day concept development workshop. Participants jointly developed specifications for a new type of pipe-hanging system that included several products and incorporated features identified in the trend analyses.

The final step in the Hilti lead user study was to ask a small sample of “routine” users to evaluate the concept that came out of the workshop. The majority of those who were surveyed preferred the new concept and indicated they would be willing to pay a 20% higher price for it, relative to existing systems. Based on lead user concepts, Hilti developed a line of products that have proven to be commercially very successful.



commercial product resulting
from the Hilti lead user study

“Olympic Snack” Study: A Performance-enhancing Food Product

Lee Meadows, principal of the consulting firm Business Genetics, and Eric von Hippel carried out a lead user study for a major manufacturer of food products. The company was seeking a new kind of snack food. In this study, lead users, nutrition experts and internal scientists developed a concept for a performance-enhancing snack designed to appeal to the amateur athlete market.

Prior to the study, the client company’s market research group had identified several trends that suggested opportunities for new snack foods. One was a growing public interest in healthy foods. Another was an increasing interest in workout activities and sports by “weekend athletes.” Based on the interests expressed in discussions with management, Meadows and von Hippel decided to focus their lead user study on developing new product concepts related to a combination of these trends - snack foods that would be healthy and at the same time contribute in some way towards improved athletic performance.

At the start of the study, Meadows and von Hippel knew that nutrition was obviously connected in a general way to athletic performance, but they did not know whether nutrition in the form of “snacking” could actually help performance. Thus, they began their work by scanning a range of sport magazines aimed at serious amateur athletes such as runners and weight lifters. They also read research articles in the field of “sport nutrition” to see if experts in that field had evidence for a significant link between certain forms of snacking and improved athletic performance. In their reading, they found there was, in fact, solid evidence for the performance-enhancing value of eating some kinds of snacks before, during and after athletic activities (e.g. eating certain nutrients after athletic performances could speed recovery of muscles).

The next step in the lead user study involved conducting telephone interviews with a number of elite athletes, prominent coaches and nutrition scientists. The goal was to identify a small group of innovative lead users and experts to collaborate with product developers at the client firm in developing novel concepts for a performance-enhancing snack. Some of those interviewed were Olympic athletes, their coaches and the scientists associated with training the athletes. The lead user/expert group they assembled included a nutrition scientist who studied the impact of nutrition on navy “Seals” - an elite navy combat group. Others included a competitive bike racer and a winner of national events in weight lifting.

During the course of the interviews, Meadows and von Hippel found that knowledge about performance-enhancing snack foods was segmented between the nutrition scientists and athletes. The scientists had identified the ingredients that snacks should contain and understood how snacking should be timed to achieve enhanced athletic performance. The athletes knew how the cookie should be formulated for easy consumption in the midst of an athletic event. To be able to clearly focus on first one and then the other type of information, the study designers decided to run two concept development workshops. One was composed mainly of nutrition scientists; the other was made up primarily of elite athletes and coaches with a special interest in nutrition.

Participants in the workshop succeeded in developing an advanced concept for an “Olympic snack” which specified what the snack food should contain, as well as how it should be formulated and packaged. Of course, lead users and the nutrition scientists could only comment on what they knew about - and they did not care much how their “athletic food” tasted. On the other hand, the targeted weekend athletes *would* care about taste. Therefore, after the workshop, the company’s product development experts added consumer taste preferences to the lead user concept before testing it in the targeted markets. Management of the company was very pleased with the concept that came out of this lead user project and planned to introduce the resulting new snack food product in a line of “healthy snacks.”

We want to underscore that concepts developed in lead users studies are developed *jointly* by the in-firm product developers and lead users - and both sides make significant contributions. In Chapter 7, we further discuss this important point.

The lead user roots of the Olympic snack are similar to those of Gatorade that was initially developed by University of Florida scientists for the university’s football team. The difference is that in the case of the Olympic snack product, the project team *systematically* developed a novel concept via lead user research methods, whereas Gatorade was the result of a “lucky strike” for product developers.

Other companies in both high and low technology industries also have success stories to report from their lead user studies. For example, a manufacturer of lighting products recently developed a new concept for office task lighting with the help of lead users. In another recent study, a hardware products manufacturer developed a “family” of novel abrasive product concepts for the consumer and building contractor markets.

A dental care company, a banking firm and a major telecommunication equipment supplier are other examples of firms that have developed new products or services as a result of their lead user studies.

Commercial success of lead user projects

Several research studies have now tested the commercial effectiveness of product development projects that identify lead user innovations. All find the lead user method to be superior to the marketing research and product development methods conventionally used by new product development departments. (See the reference section at the end of this handbook.)

As the table below shows, the most rigorous study, focused on projects carried out at 3M, found that the lead user project method we describe in this handbook resulted in product concepts with average projected annual sales *8 times higher* than projects using methods conventionally used by 3M - \$146 million per year vs. \$18 million per year projected sales 5 years after product introduction.

Table 1 LU vs. Non-LU Funded Ideas (Census)			
	LU ideas (n = 5)²	Non-LU ideas (n = 42)³	Sig.
Factors related to value of idea			
Novelty compared with competition ¹	9.6	6.8	0.01
Originality/newness of customer needs addressed ¹	8.3	5.3	0.09
% market share in Year 5	68%	33%	0.01
Estimated sales in Year 5 (deflated for forecast error)	\$146m	\$18m	0.00
Potential for entire product family ¹	10.0	7.5	0.03
Operating profit	22%	24.0%	0.70
Probability of success	80%	66%	0.24
Strategic importance ¹	9.6	7.3	0.08
Intellectual property protection ¹	7.1	6.7	0.80
Factors related to organizational fit of idea			
Fit with existing distribution channels ¹	8.8	8.0	0.61
Fit with existing manufacturing capabilities ¹	7.8	6.7	0.92
Fit with existing Strategic Plan ¹	9.8	8.4	0.24

¹These items were measured using a 10-point rating scale, where 10 = high, 1 = low.

²Funded LU ideas: all are for major product lines.

³Funded non-LU ideas: one is for a major product line, 41 are incremental ideas.

Source: Lilien, Gary, Pamela D. Morrison, Kathleen Searls, et al. "Performance Assessment of the Lead User Idea-Generation Process," *Management Science*, (2002) Vol. 48, No. 8 p. 1051

Barriers to Implementing Lead User Studies

*Lead users
can be
found in
almost
any field*

Whenever conditions affecting a product or service category are shifting, lead users will always exist - simply because some individuals or groups will inevitably be "ahead of the trend" relative to others, and some users will always expect more benefit than others from solving an emerging need. Often, people contemplating a lead user study will immediately and intuitively *know* that it will provide useful information. For example, makers of Internet software *know* that lead users are always doing new things which might form useful parts of commercial software products.

On the other hand, sometimes managers will question what lead users can teach them that their product developers don't already know. For example, the makers of computer memory chips might well say, "We already *know* that users want faster and cheaper chips. We also know that we lead the industry with respect to memory chip design and manufacturing technologies. Given this, what further could we possibly learn from lead users?"

Our answer to the computer memory manufacturer would be this: "You are no doubt right about your estimate of the very good information you already have. So, if you stick to your current definition of the problem, you may well not gain much from a lead user study. But if, on the other hand, you are interested in seeing your field from a broader perspective, you do have something to gain. Are you really sure, for example, that the way you currently define trends and emerging needs is the best way to understand these matters?"

To this manufacturer we would pose two further questions: Is it possible that lead users are developing approaches to some computing problems that may reduce the need for faster and cheaper memory chips? Or even more importantly, is it possible that new computer architectures are being developed by lead users that are challenging the very idea of a separate computer memory chip? Clearly, a computer memory manufacturer would want to know about such a potentially paradigm-shifting change.

If managers broaden the kinds of questions they ask to allow "out of the box" innovation possibilities to be identified and considered, then they will almost always find a lead user study to be of value.

A Change in Perspective Required

*A different
view of
marketing
research*

When managers and teams are first introduced to lead user methods, the main difficulty they may initially have is one of *mind set* about how marketing research “should” be done and its proper role in product development. Specifically, there are two aspects of lead user research that may be counter-intuitive for many personnel. One is the idea that sophisticated users can be a source of design data and product ideas, as well as needs information. Many personnel also may have difficulty with the idea that R&D and marketing people should work side-by-side throughout a lead user project - and that they should include lead users as active participants as well.

Deciding to adopt lead user research methods also requires some managers to make a shift in attitude regarding resource allocation for concept development activities. We find that often managers are skeptical of the value of in-depth market research at the front-end of an innovation project. Thus, when business leaders hear that a major commitment of people-hours is required to do a lead user study, a typical first reaction is “we can’t afford to tie up our best people for this.” Many become further dismayed when they hear that a lead user study will require budgeting more money for early-phase concept development than they are accustomed to doing.

*A new mind
set for
innovation
managers*

Our experience is consistent with Robert Cooper’s finding in his study of new product development practices in major US companies (1994). His findings indicate that management only commits a small portion of the total innovation budget to early market research and concept development. Cooper concludes that managers typically still see the “real and important” work as starting with formal product development. Cooper argues - and we strongly agree - that in-depth exploratory market research early in an innovation project is one of the keys to its success.

Tips for Overcoming Barriers in Attitude

Ultimately, the doubts personnel may have about the usefulness of lead user research can only be overcome by conducting a successful lead user project in one’s company. However, in some industries, initial reservations can be lessened by reminding people that “everyone knows users innovate in our field.” For example, software firm personnel often know from personal experience that users sometimes develop program modifications and new applications, which can have commercial value.

*Uncover
“accidental”
discoveries
of lead user
innovations*

In still other cases, one can ease concerns that "lead user methods won't work here" by uncovering examples of valuable product concepts that your firm may have obtained "by accident" via informal contacts with lead users. For example, Roger Lacey, Vice President of 3M Company's Telecom Division, asked people who had been in the division for years how some of its early products had been developed. From these inquiries, he learned that some of the company's best products - for example, "insulation displacement" systems for simultaneously splicing multiple telephone circuits - had in fact, been based on prototype products developed by technicians working for telephone operating companies. (See the box below for accidental discoveries of lead users by Bose Corporation.)

***Finding Valuable Lead Users
by Accident: The Bose Experience***

Jim Sanchez, Manager of Bose Professional Products Group, shared with us two stories of accidentally-discovered lead user innovations. These innovations proved to be key to the founding of his business group - now a major part of Bose Corporation.

The First Bose Story - Musicians were found using Bose Speakers “backwards”

"The musician story is the one that actually started our business," Jim began. "Prior to the establishment of the Professional Products Group, Bose focused on making high fidelity speakers for the home consumer. One of the best loudspeakers we make for the home market is called the 901. It turned out that while we were having great success selling this product to consumers for home use, Lead User-musicians in night clubs were using it in a way that we had never intended."

"To help you understand this story, let me give you some background on a key aspect of high fidelity speaker design. Bose has discovered that what makes a live musical performance interesting is the ratio of direct sound from the musicians and reflected sound that comes to your ears off the walls. In the best listening environments, such as Boston's Symphony Hall, the relationship is approximately 90% reflected sound energy and 10% direct sound. To create this ratio for the home user, the Bose model 901 speaker contains nine speakers. Eight of the speakers point at the wall and one of them points directly into the listening environment."

"Back to the story: A few years ago, some of our engineers who enjoy listening to music in clubs began to notice that some top professional musicians were using Bose 901 speakers on stage - but were facing them backwards! Basically, what they had done is disconnect the single speaker intended to provide 10% direct sound, and then turned the speaker system around so that the eight speakers designed to reflect 90% of the sound energy off the wall were instead pointing directly at the audience."

"Of course, our engineers talked to these musicians and said, 'You know, you've got it backwards!' And the musicians said, 'Yeah, we know, but it sounds much better

that way.' The engineers agreed and took measurements of the sound created by the backwards speakers. They found that when the 901 was used backwards in a public setting like a club, it in fact did create the desired ratio between direct and reflected sound for the audience. So the Bose engineers built prototype speakers for auditorium use that were designed to function like the 'backwards' model 901. They were tested by some very famous musicians during public performances and found to be excellent."

"Well, to make a long story short, it turned out that we literally created a major new business by the chance discovery of these Lead User-musicians....We couldn't build the product fast enough because there was so much pent-up demand in the musician world. Since then, we've gone through a couple of next generations of speakers, and have come up with a series of accessories - all in all, a big business for us."

The Second Bose Story - Lead User Retailers Make Background Music Better

Jim Sanchez then went on to tell us the second story of accidentally-discovered lead user innovations. Again these turned into a product success story for Bose.

"About 8 years ago I was made product manager and given the responsibility for inventing markets and new products. One thing I realized immediately was that background music is everywhere - in many restaurants and retail environments, for example. I also knew that the fidelity of that background music was typically terrible."

"Bose had no products for the background music market at the time, so I decided to go out and see what users were doing. I found that most background music was poor - but occasionally I walked into retail stores or restaurants and was surprised by hearing great sound. When I investigated, I invariably found a high-quality home high fidelity speaker that had been adapted by the owner to the commercial environment."

"For example, there is a CD store chain in the Boston area called Strawberries. Whenever they'd put up a new store, the local manager would buy 6 or 8 Bose speakers designed for home use and ask an electrician to install them 'somehow.' At that time none of our speakers - or those of our competitors in the high fidelity market - were designed to be mounted on ceilings or walls. I found that in some cases, the electrician would wrap metal straps around the boxes and suspend them in the air right over peoples' heads. In other cases, a carpenter would build a wooden shelf on a wall and then tack the loudspeaker onto the shelf. Often the arrangements were not very safe - but the store owners' demand for good background music was so high that they just went ahead and improvised."

"I went back to Bose with Polaroid pictures of some of these improvised installations, and quickly built some prototypes with a small team of engineers. We took these back to users like Strawberries, did prototype installations and confirmed that we could give the customer some increased benefits. Thanks to our observations of Lead User activities, Bose has been first to offer high fidelity speakers for the background music market. We now have an extensive line of products for that application - and I'm happy to say that we're having a lot of success."

Accidental discoveries of lead user-innovations typically occur when lead users have modified existing products of the firm in ways that are of commercial interest, and this somehow comes to the firm's attention. These generally are not the "breakthrough" innovations that one hopes to find through a systematic lead user search. Still they can be valuable and can help prove to skeptical managers that "lead users can be helpful to our company too!"

Other Applications of Lead User Research

Finally, we want readers to be aware that lead user research methods can be used for much more than the development of new products and services. They also can be applied to topics ranging from product and process improvement, to the development of novel corporate strategies, to the development of novel government policies. Basically, the lead user methods described in this handbook can be applied in any area where some users are ahead of others. The goal is always the same: to identify and learn from innovations developed by lead users.

A Brief Review

We are suggesting that lead user research will be useful to innovating companies in several ways. First of all, it will enable firms to gain a richer and more accurate understanding of future market needs than is possible to obtain using conventional market research methods. Moreover, compared to conventional marketing research, lead user research results in higher quality product and service concepts because development work is guided by higher quality data. And finally, it has proven to be a much faster way to develop novel product and service concepts (Herstatt and Von Hippel, 1992).

In this chapter we gave you the flavor of a real-world lead user study by reviewing several case studies. Now in the next chapter, we explain and illustrate the main activities in each phase of a typical lead user project.

***A special note to those readers who plan to
“read the book only if all else fails!”***

Many of our readers have had a great deal of experience with current marketing research techniques. This is an asset - but it can also lead to some mistakes if one decides to do a lead user study after having read only the first chapter of this book. (Yes, it happens!) We, therefore, urge readers with this inclination to recall and note that:

- Lead users are not just a different name for “early adopters” in your marketplace. Lead users confront emerging needs *before* commercial products or services have been created that can adequately address their needs (this is why lead users sometimes are driven to create new product or service prototypes on their own). Therefore, lead users are different from and ahead of early adopters, as well as all other “adopters” in a given market.
- Lead users with the most valuable information regarding “breakthrough” new products and services are *not* found only among leading-edge users in your target markets. As we noted in this chapter, lead users with very valuable information are often found in advanced *analog* industries or in totally different fields.
- A screening questionnaire approach is *not* a good way to identify lead users, even if one is restricting a search to lead users in a target marketplace. The best lead users are usually too rare to be efficiently found through questionnaire screening. In later chapters we describe a better telephone “networking” approach that we use and recommend.