# LEAD USER PROJECT HANDBOOK:

*A practical guide for lead user project teams*

INDUSTRIAL
PRODUCTS AND SERVICES

CONSUMER
PRODUCTS AND SERVICES

PROFESSIONAL
PRODUCTS AND SERVICES

Joan Churchill • Eric von Hippel • Mary Sonnack

# PREFACE

When Joan Churchill, Mary Sonnack and I were doing lead user projects for our research in the 1990's, we needed some standardized training materials for lead user project teams. We therefore wrote this handbook, and progressively revised it based upon field experience. Our final revisions were made in 1998. Then, our manuscript just sat there, as we all went on to other work.

It is now 2009, and researchers and practitioners have learned a great deal more than we knew in 1998 about lead users, and how to run lead user projects. In a year or two, we expect that completely new handbooks will supersede this one. In particular, we are eagerly looking forward to one now being planned by Professors Christoph Hienerth and Marion Poetz of Copenhagen Business School.

Still, while we are waiting for newer materials, we think that lead user teams, consultants, and teachers may well find something of value in what we wrote 10 years ago. Accordingly we are posting this book on the Web under a Creative Commons license that permits free downloading. It can be used in conjunction with 6 short lead user project training videos developed by Joan Churchill. These are also available on the Web for free downloading from http://mit.edu/evhippel/www/index.html

The Creative Commons license we have chosen allows "derivative works." This means that anyone is welcome to take sections of our work, with attribution, and incorporate them into their own works or training materials. Please see the license itself for more information on what it is OK to do. We are sure that others will greatly improve what we have done, and we very much look forward to that.

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## About the Authors

**Eric von Hippel** is T Wilson Professor of Management at the Sloan School of Management, MIT. He studies and writes upon open and distributed innovation, and on the important role of users in the development of products and services.

**Mary Sonnack** was Division Scientist at 3M Company, and is now retired. Ms Sonnack specialized in introducing and diffusing new product development processes throughout 3M. During her career at 3M, she played major roles in forming new business areas, and was also instrumental in training R&D teams in lead user research methods. She spent the academic year of 1994-1995 as Visiting Scholar at MIT.

**Joan Churchill** is a psychologist and organizational consultant in Minneapolis, Minnesota. Dr. Churchill began working with Eric von Hippel and Mary Sonnack on Lead User Research in 1995. Since then she has served as consultant on Lead Use Research to numerous product development teams and was the co-developer of a 6-video training series on lead user research available for free download from http://mit.edu/evhippel/www/index.html

**Acknowledgements**

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We also wish to thank Barb Dell for her contribution to the creation of this book. We owe much to her very competent editing of preliminary manuscripts, and her assistance in coordinating the production of the book.

# CONTENTS

# PART ONE

## Overview of Lead User Research

The two chapters that make up Part One provide an overall picture of lead user research methods and how they can be useful in developing new products and services. In Chapter 1 we explain the underlying principles that guide lead user research and then in Chapter 2, we walk through a typical lead user study.

# 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.

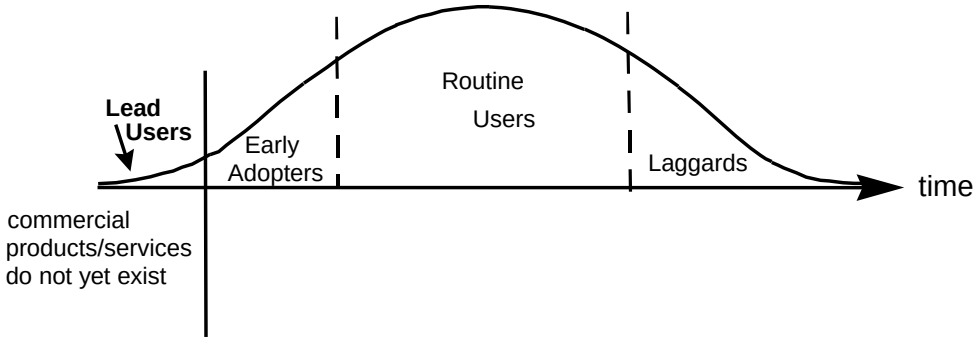
2. Lead users expect to benefit significantly by finding a solution to their needs. As a result, they often develop new products or services themselves because they can't or don't want to wait for them to become available commercially.

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).

**Lead users have product or service needs that are ahead of all other user groups in a given market.**



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:

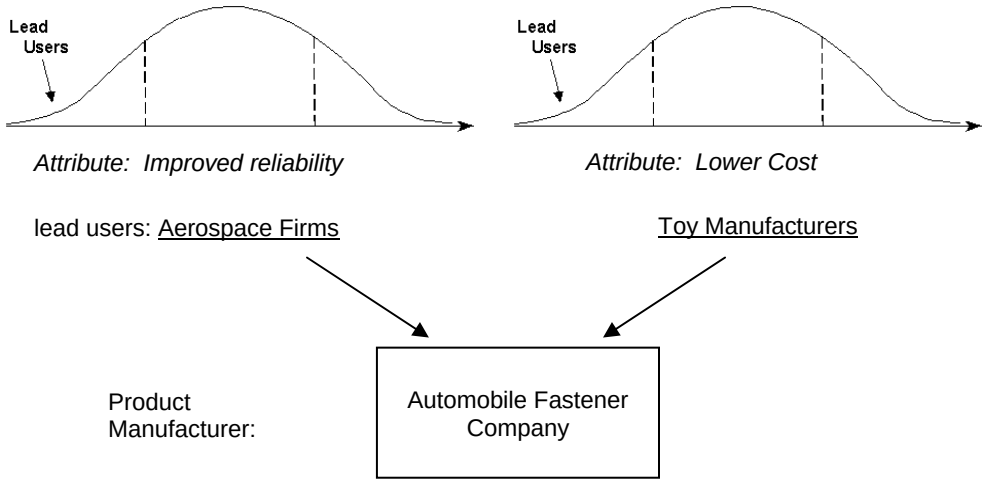
1) *Lead users in the target application and market* - These might be medical radiologists working on applications in medical imaging that are very demanding with respect to images of high resolution and pattern recognition.

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).

**EXAMPLE: Lead Users with respect to Attributes of Needs in the Targeted Markets**

Suppose that an automobile fastener manufacturer wants to develop fasteners that are more reliable and also cheaper. The manufacturer could look to aerospace firms for lead users with respect to the attribute of *reliability* - because clearly, highly reliable fastener systems are essential in areo-space hardware. To identify lead users with respect to the attribute of *low cost fasteners*, the auto fastener firm could look in fields having a major concern with keeping the cost of fasteners down, such as toy manufacturing.



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,” *Management Science*, 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**

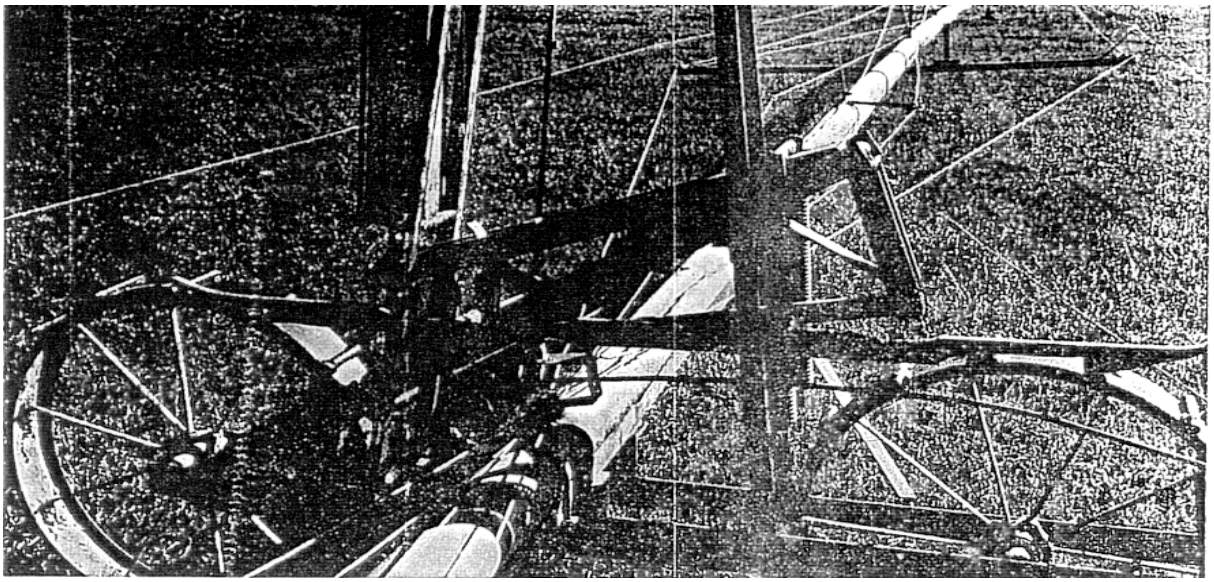
food and drink products such as:
- Granola
- Gatorade
- graham cracker crust

clothing products such as:
- sport bras
- "grunge" fashions

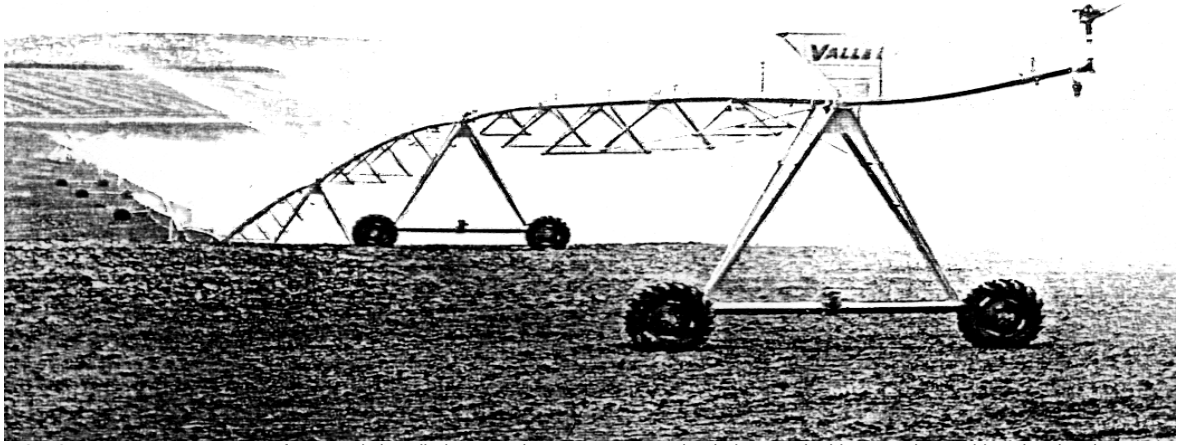
a variety of sport products such as:
- mountain bikes
- skateboards
- surfboards
- wind surfing products

**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

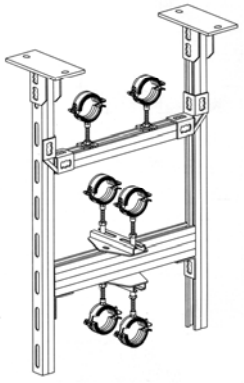
## Applications of the Lead User Methods

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 and6 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 the in 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 |

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

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

[3]Funded 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 Prcoess,” *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 your 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.

# Chapter 2

# Doing a Lead User Study

In this chapter we walk you through the four phases of a lead user study. A detailed explanation of the core activities in each phase comes later, in Part Two. Right now, we want to provide you with an overall picture of the research process in a typical lead user study.

### The Four Phases of a Lead User Study

A lead user study is organized around these four phases:

Phase 1: Preparing for Your Lead User Project
Phase 2: Identifying Trends and Key Customer Needs
Phase 3: Exploring Lead User Needs and Solutions
Phase 4: Improving Solution Concepts with
Lead Users and Experts

Each phase is defined by a core set of activities that are essential to carrying out a thorough study. However, we want readers to be aware that in actual practice, the phases are not sharply separated. Some activities in one phase may be repeated in the next one, with the emphasis of the work gradually shifting as the lead user study progresses.

In this chapter we describe the nature of the activities in each phase and illustrate how teams typically approach them. The chapter concludes with suggestions for managers on how to set up conditions that will enable a very productive lead user project.

## PHASE ONE: Preparing for Your Lead User Project

Phase One is essentially the “homework” phase of a lead user research project. A management group first spells out the focus and overriding

goals of the innovation initiative. Then the team that will implement the lead user study does practical planning for the intensive trend investigation that begins in Phase Two. Right now, we provide general guidelines for setting up a lead user project. In Chapter 3, we discuss this work in more detail.

## Defining the Focus and Overall Goals

*the 1st task - decide the product or service area of focus*

Management's first planning task is to define the new product or service area(s) and the overall objectives that will drive the lead user project. Specifically, these are the key questions to be answered:

- Which types of markets and which types of new products or services are of most interest for this project?
- What is the desired level of innovation? (Are you seeking "breakthrough" innovation? - or are you primarily interested in extending current product or service lines?)
- What are the key business goals and constraints?

We strongly encourage project planners to carefully think through their starting interests in the areas above. A well-defined project focus and objectives will go a long way toward ensuring that the lead user team concentrates its work in areas that really matter to the company.

Below is an example of how one planning group defined the goals and focus of its lead user project. It illustrates how to spell out these elements in a way that is "specific but not too specific."

**Project Focus and Goals - Office Products Project**

| | |
|---|---|
| *Product Category* | We are seeking a new type of office lighting system that enhances the productivity and health of office workers. Our vision is of a product (or several complementary products) that delivers *superior lighting quality* and one that is *flexibly adaptable* to the varied tasks and conditions faced by the office worker. The resulting product could take several different forms - e.g. It might be an ambient light, a task light or possibly a lighting system that utilizes natural light. |

*Customers of Interest*

The target end users are workers who spend a significant portion of their work time in an office setting. Other stakeholders that need to be considered are major office product retailers (e.g. Office Max).

*Business Goals & Constraints*

The primary objectives of the project are to:
- identify emerging market needs;
- generate at least 1 concept for a new lighting product that can be developed and brought to market within the next 2 years.

New product concepts resulting from the project should:
- have revenue potential of over $20 million;
- utilize our current technology capabilities;
- enable reliance on our current distributors.

Notice in this example that the team is given clear direction in terms of the general types of markets and new products that are of interest to management. At the same time, product forms are not specified in any detail. This leaves the team free to explore a range of new product possibilities.

## Selecting Project Team Members

Once the focus and goals have been decided, management selects the core team that will implement the lead user study. The success of the study relies heavily on putting together a very talented team. Accordingly, selection of members should be based on a careful assessment of the various types of capabilities needed on this team.

*Typical make-up of a lead user team*

A multi-functional project team of three to four people carries out a lead user study. Typically, the team consists of people from both the marketing and technical departments, with one member serving as project leader. The example below gives an idea of the various kinds of competencies that are desirable to have on the team.

*Team Composition: Medical Products Lead User Study*

A lead user study was implemented by a major manufacturer of medical products. The firm's core product offerings included various skin covering products used by surgeons and nurses - for example, gowns, skin covering and masks such as those shown on the right.

Surgical products of the firm

In this lead user project, the team's task was to develop concepts for a "family" of complementary new infection prevention products. The targeted customers were surgeons and nurses.

The medical products project team consisted of four people with the following kinds of expertise and professional expertise:

• *Team Leader* -The project leader was a PhD chemist. This person had led other high-impact product development projects and was highly respected by both the technical and marketing communities.

• *Technical Expert* - The team included a chemical engineer who was the youngest winner of a major corporate award for his technical contributions to the company, and regarded as an out-of-the-box thinker.

• *Manufacturing Expert* - A third member was a manufacturing process engineer. He was well-known as an innovator within the company, and had been involved in doing a major government research study related to the subject of the lead user project.

• *Marketing Expert* - The fourth member of the team was an MBA marketing specialist. Prior to her career in product development she had also been a nurse and so had rich, first-hand knowledge of hospital practices. She also had played important roles in earlier development projects.

Notice that members of the medical product lead user team brought varied experiences, skills and perspectives to the project. This is very important because the lead user team must integrate and apply information from many different fields during the course of the study.

**Time Requirements for a Lead User Project**

It generally takes about four months to do a lead user project. During these months, members devote approximately *thirty to fifty percent* of their work time to the project. Specifically, team members usually spend on the average of fifteen to twenty hours per week on lead user research activities.

There are two reasons why it is very beneficial for team members to give a substantial amount of their work time to a lead user project. One practical payoff for managers is that it will enable new products and

services to be developed and brought to the market more quickly. Second, we strongly believe that "immersion" in the project is essential to creating a team climate that fosters genuinely creative thinking. In our experience, teams have great difficulty sustaining momentum and richness of ideas when they are forced to drag out a lead user project because of too many other work demands.

There is other preparatory work that project planners must do before the lead user project can get underway. A budget must be set and resources allocated; team members and their supervisors need to be briefed on the project. We go over this planning work in Chapter 3.

## Planning Activities of the Project Team

During Phase One, lead user project teams do various "getting ready to begin" activities. The preparatory activities of the medical products team illustrates the nature of the work done by teams during this phase.

*Example: Preparatory Work of the Medical Products Team*

*A key task develop a plan for collecting trend & market data*

The medical products project team started out Phase One doing several activities to get "grounded" in the subject of the project. For example, members interviewed readily accessible industry experts such as major customers and suppliers to get a feel for current trends and market needs. They also talked with company managers to learn their perspectives on good market opportunities and reviewed market data the company had on-hand.

Once team members felt satisfied that they had a good general picture of market trends and issues related to the project, the team then developed a specific data collection plan. These were the team's planning steps:

- The team first developed a list of key trend and market questions it intended to research during the early phase of the project.

- Next the team generated a starting list of types of experts to seek out for interviews and identified specific topics it wanted to research in current trade literature.

The following page contains a sample of the starting trend and market questions developed by this team during Phase One.

**Medical Products Project - Examples of Types of Trends and Key Questions to be Researched**

*Key Targeted Customers:* physicians, nurses, other workers in surgical settings
*Other Key stakeholders:* patients, hospitals, insurance providers, HMO's

| **Starting assumptions about trends:** | **Questions to explore:** |
|---|---|
| Usage/Application Trends | |
| - increased industry interest in finding alternatives to use of antibiotics for all surgery patients (due to increase in antibiotic-resistant bacteria) | - What are global infection rate trends?<br>- What are forces behind these trends in various regions of the world? |
| Demographic Trends | |
| - Location of surgical procedures shifting from acute care hospital to other sites - (doctor's office, small surgical centers) | - What are key needs & problems faced by doctors and nurses in settings outside the hospital? |
| Economic Trends | |
| - Increased concern among health care providers with reducing cost of procedures | - What are major cost-saving needs from viewpoint of purchasing committees in hospitals? insurance companies? |
| Technology Trends | |
| - Movement toward procedures with smaller incision<br>- Increased use of non-surgical methods of medical treatment | - What are state of the art procedures?<br>- What are implications of these trends for infection control needs of health care workers? |

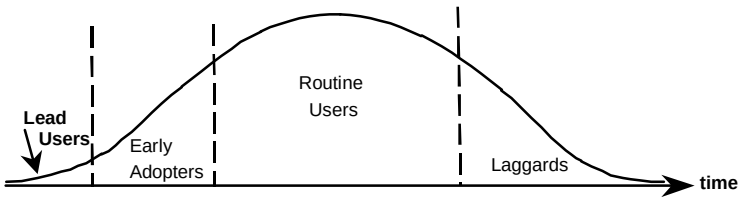
Notice that the medical products team decided to investigate *a variety of different trend categories.* This is important to do in the early phase of information gathering because future market demand is almost always the result of interacting trends in different fields.

## PHASE TWO: Identifying Trends and Key Customer Needs

In Phase Two the team officially launches its lead user study. In this phase the team does an in-depth investigation of trends and emerging market needs. The ultimate goal of Phase Two is to select a specific need-related trend(s) that will be the focus of the remainder of the study. Once the team is focused in on a specific trend or a few related trends, in Phase Three it will identify and interview lead users who have useful solution information to offer (see the box below).

***"Name that Trend!" - the Core Phase Two Task***

A key goal of Phase Two is to select the need-related trend(s) that will be the focus of concept development work in the phases that follow. This is necessary before a team can identify the lead users who are "at the leading edge of the trend."




*Need-related Trend: A growing consumer interest in nutritious foods*

Once a specific and important trend has been identified and "named" on the horizontal axis of the curve shown above, the team is in a position to identify lead users with respect to that trend who can aid in the concept generation work which begins in Phase Three.

### Information Gathering Methods in Phase Two

In brief, these are the main data gathering activities in Phase Two:

Teams start out the trend and market investigation with a comprehensive review of current trade literature related to

the focus of the project. The purpose of this review is to get an overall sense of "conventional wisdom" regarding important trends and market needs.

After the initial literature review, the focus of information gathering shifts to identifying and interviewing top trend and market experts. For the sake of efficiency, most interviewing is done by telephone. However, teams also do some in-person interviews with experts who have information that is especially important to the project.

We want to underscore that during Phase Two, the team focuses on identifying and interviewing a small group of "lead use" experts. Lead use experts aren't simply the recognized "opinion leaders" in a field. Rather, they are the very top authorities with respect to their knowledge of: 1) important market and technical trends and 2) leading edge *applications* of these trends. For example, a lead use expert could be an editor of a major industry trade journal aimed at marketing professionals - or it might be a technology expert in an academic setting who is very knowledgeable about state-of-the-art technologies being applied in the team's area of study.

### Team Trend Investigation Workshop

*Get off to fast start with a 4-day team workshop*

In our work with teams, we always start out Phase Two with a four-day team workshop. We have found that this is a very effective way to get teams quickly into the lead user project. The main activities that take place during the four days are described below:

• *Literature Scan* - The first two days, members browse through journals and other kinds of reading material that were selected by the team during its planning in Phase One. Every two or three hours, there are group discussions of what members are learning from their reading.

• *Interviewing* - The team spends most of the next two days of the workshop beginning the important task of interviewing experts. In a half-day session, the team creates a general interview guide that includes key questions to explore in the expert interviews. Then members spend another half-day doing in-person interviews with locally located experts. These are "warm up" interviews and are not really with top authorities. During the interviewing segment of the workshop, team members also begin to call experts identified from the literature scan.

## Identifying and Interviewing Lead Use Experts

*Quickly find experts through telephone networking*

Given that interviewing lead use experts is a core data gathering method in Phase Two, we want to give you a sense of how teams go about finding experts with appropriate kinds of information (see Chapter 4 for a detailed discussion of this subject). The basic process for finding experts involves first generating a list of potential authorities from scanning the literature and consulting with colleagues. From there, the team does telephone "networking" which involves calling people on the starting list until the right individuals are found. The example below shows how the networking process works.

*Example - Medical Products Team*

From scanning literature and consulting with associates, the medical products team created an initial list of over thirty potential experts. For example, members identified authors of major studies on infection in surgery. Some experts were researchers in academic settings. Others were prominent doctors and nurses at leading hospitals across the United States. The team also wanted to interview health care authorities in Asia and so they used electronic data bases to locate key contacts who worked at health ministries in those regions.

Using the list of names as a starting place, members began calling people until experts were found who met the team's criteria of "the best" in their fields. Members then did in-depth interviews with the identified experts. Most of these were conducted by telephone. Prior to starting to do interviewing, the team developed general questions to ask and then members tailored them to fit the particular specialties of each expert to be interviewed.

## Completing Phase Two - Framing the Customers' Need

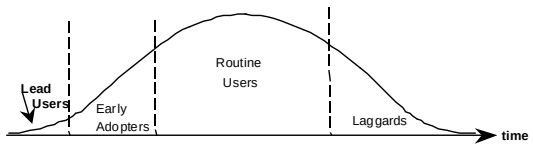
After about three or four weeks of interviewing experts, teams usually have achieved a very good understanding of major trends and are ready to begin the important task of "framing" the customer need. Framing the customer need basically involves selecting and clearly defining the

the specific need(s) that will be addressed with a new product or service.

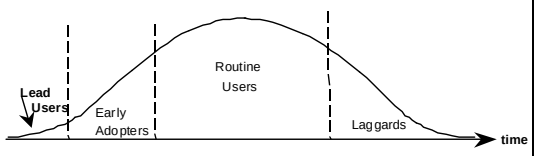
Need framing is done in a series of team meetings, which are usually spread over two weeks. At these meetings, the team goes through a process of evaluating, interpreting and combining the various pieces of information gathered from interviews and reading. The outcome of this work should be a need statement that will give the team a clear guide for the concept development work that begins in Phase Three.

*Framing the customer need - a core research activity*

Framing the customer need is a very important task in the lead user research process and is extensively discussed in Chapter 4. The Olympic Snack case reviewed in Chapter One provides an example. In that study, the team examined a number of trends, and finally elected to combine two important ones into a framing of the customer need that would be the focus of concept development work. The two trends selected and the team's framing of the customer need are shown below:




Trend 1: growing interest in good nutrition




Trend 2: increase in serious "week-end" athletes

*Statement of the Customer Need*. "a healthy snack product that will enhance athletic performance"

During Phase Two, teams usually experiment with several different ways of defining the needs that will be addressed in concept development. The first try at framing the need is usually done after about two weeks of interviewing experts and reading. Then teams typically take another two weeks or so to rework and refine their initial ideas in light of what they learn from further interviews and reading.

Arriving at a good need framing serves a critical purpose. Before the team has done this, it is dealing with many bits and pieces of information - and is unsure which of them will become the most relevant or important for its purpose. Once the team has framed the need area(s) to be worked on, collecting and organizing data becomes much more efficient. Now members know what information to seek, and know which directions of inquiry can be set aside as not applying to the project focus.

## PHASE THREE: Understanding the Needs and Solutions of Lead Users

*Key task of Phase 3 – generate preliminary concepts*

In Phase Three, the team acquires a more precise understanding of the needs it has selected as the area of focus. The team also begins to generate concepts during this phase. These concepts are only preliminary ones. They will be further developed and refined via the lead user workshop that takes place in Phase Four.

Another task in Phase Three is to collect verifying evidence that the identified needs and preliminary solution ideas do indeed represent a very good business opportunity. The team uses the verifying evidence gathered to create a preliminary business “case” which will be presented to management for review near the end of Phase Three.

In this phase, the focus of information gathering is on interviewing lead users. However, the team also continues to interview lead use experts who have technical knowledge that could be applied to generating concepts.

### Locating and Interviewing Lead Users

In Chapter 6, we explain how to go about the very challenging task of locating lead users who can provide useful and project-specific information. Right now we want to simply give you the flavor of how appropriate lead users are found.

Recall from Chapter 1 that finding lead users begins with identifying product or service users who: 1) “lead” the trend(s) identified by the team in terms of their need for new products or services, and 2) stand to gain a significant benefit from finding solutions to satisfy their leading edge needs. In particular, teams look for lead users who have relevant new product or service ideas or have experimented with actually developing prototypes. Clearly, users who are activity doing innovating will be in the

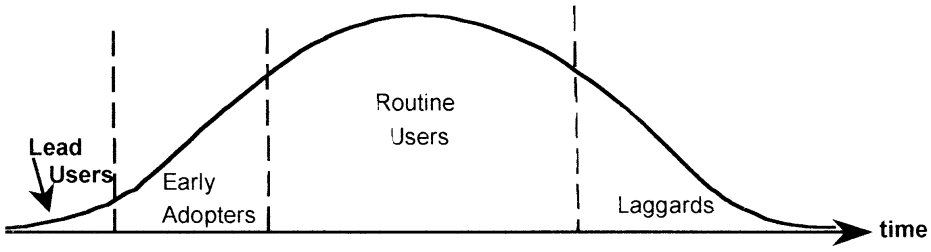
best position to have good insights into the specific product or service attributes that customers will be seeking in the future. The example below illustrates the basic lead user identification strategy.

*Lead User Identification - Hearing Health Project*

A lead user study was implemented by a hearing aid manufacturer to develop concepts for a breakthrough hearing aid that would address the special needs of people with only mild hearing impairment. This would be a new market for the company. At the time of the lead user study, its core products (see examples on the right) were targeted for people with severe hearing impairment.

hearing products of the firm

Based on the team's expert interviews and reading in Phase Two, one major need-related trend it decided to focus on was a growing consumer demand for *higher quality sound processing*. Therefore, the team task in Phase Three was to identify and interview lead users to gain a more precise understanding about the attributes of "quality hearing" that were likely to matter the most to potential customers (see examples below).




**Trend of Interest:** *Growing demand for higher quality* sound processing

**Lead Users Identified**

serious athletes in competitive team sports (team sports requiring good hearing of speech under noisy conditions)

executives who must hear well in many different settings - (e.g. restaurants, group meetings, the telephone)

expert audiologist-hearing aid users who also experienced hearing loss (and thus were likely to have a good understanding of existing products and their weaknesses)

### Completing Phase Three - Generating Preliminary Concepts

During Phase Three, a key task is to generate preliminary concepts that address the need that was framed in the previous phase. The concepts generated in this phase should answer these questions:

1) What specific product/service attributes and features will a new product or service ideally deliver?

2) What benefits and value should this product or service offer to our targeted customers?

3) What are our ideas regarding the forms this product or service could take (e.g. key design features)?

As mentioned earlier, before moving on to Phase Four, project teams do an informal assessment of the business potential for the type of products or services they have in mind. As part of this assessment, they collect data on the size and profitability of the targeted markets. Teams also analyze competitive offerings to make sure that their preliminary concepts offer unique benefits and value to target customers.

*Check in with management before moving on to Phase 4*

Toward the end of Phase Three, teams also meet with management to confirm that the identified needs and initial concepts are a good fit with important business interests. Attendees at this meeting include the key managers who will be involved in moving concepts forward after the lead user project is completed.

## PHASE FOUR: Improving Solution Concepts with Lead Users and Experts

In the fourth and final phase of the lead user project, the team further develops and evaluates its preliminary solutions, with the goal of arriving at a strong final product or service concept(s). By the end of this phase, teams typically have developed a written new product or service "proposal" that includes the following elements:

- design specifications for the new product(s) or service(s);
- data confirming the commercial potential of the concepts
- ideas for how the product or service will be developed and produced

## The Key Activity - A "Lead User" Workshop

The central activity of this phase is a lead user workshop. This is a two or three day event in which a group of lead users and lead use experts *jointly* do intensive design work with the project team and other company personnel. The overall purpose of the workshop is to improve and add to the preliminary concepts the team generated in Phase Three.

Right now we simply highlight the main features of the workshop. In Chapter 7 we go into the specifics of how to set up and conduct this very important activity.

*Who attends a typical workshop?*

The workshop composition usually consists of fifteen to eighteen people. About ten or twelve attendees are a mix of lead users and lead use experts. The rest of the roster is made up of the project team and other technical or market specialists from the sponsoring company.

From interviews in Phase Two, teams usually have identified lead users and lead use experts who are good workshop candidates, but this is not always the case. Sometimes teams must do a further search for people with appropriate expertise to offer. Decisions regarding in-firm attendees should be guided by an assessment of the knowledge and skills needed for the concept development work that will be done at the workshop.

The specific focus of the workshop will depend on the nature of the design work that remains to be done in Phase Four. Sometimes the workshop is aimed at filling in missing pieces in the preliminary concepts developed in Phase Three. In other cases, the focus is on developing additional new concepts, in order to ensure that the team has fully explored all the solution possibilities.

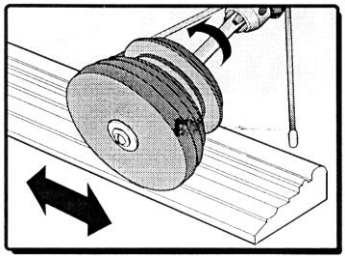
Below are two examples that will give you a sense of the concept work that is done and typical types of participants in the workshop.

*Example 1 - New Abrasive Products Project*

A manufacturer of various hardware products held a workshop to develop concepts for a family of abrasives products to smooth hard-to-sand contour surfaces such as chair legs, banisters and decorative molding. Lead user participants were selected who had especially demanding needs for sanding products of the type being considered

by the team. They included an internationally prominent wood sculptor, a specialist in preserving valuable historical buildings, a designer of early American furniture and a specialist in designing and refinishing guitars. Company participants consisted of two product development engineers, a marketing specialist, a manufacturing representative and the business director.

Attendees developed preliminary sketches for several different types of concepts that showed the working principles and the main design features of the potential products. One concept that was developed in this workshop is shown on the right.



*Example 2 - Consumer Banking Project*

A major banking establishment did a lead user study in collaboration with a telecommunications company. In this study, the goal was to develop concepts for breakthrough electronic home banking services. During the workshop, participants jointly created specifications for an electronic banking system that spelled out several different types of banking functions that customers could carry out at home. In the judgment of management, the workshop concepts showed significant novelty relative to current banking practices in the United States.

Lead user participants in the workshop were six bank customers who were using advanced electronic home banking and had done innovating via their personal computers. Company participants included two product development engineers and a marketing specialist.

## Key to Success - The Right Focus and Right Activities

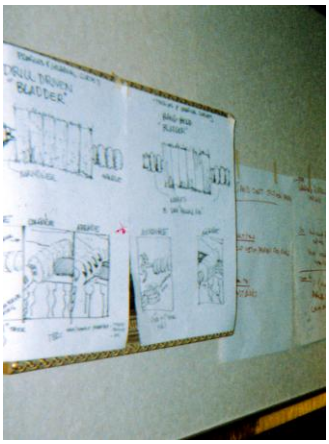
Teams put a great deal of thought into selecting the design problems to be worked on and planning the activities that will take place during the workshop. A well-orchestrated workshop is crucial to having a truly productive activity versus one that is simply a series of superficial discussions. The design of a typical workshop is outlined on the following page. (See Chapter 7 for a detailed discussion of how to develop appropriate workshop tasks.)

**Holding a Lead User Workshop**

This 1-2 day workshop is designed as a creative problem-solving activity in which company personnel, lead users and external technical experts jointly develop one or several concepts for new products.

*Defining the Task:* In the first session, people take turns explaining their interests and areas of expertise. Then the group is given background information on the task and the problem area is defined.

*Generating Solutions:* Subgroups are formed to work on independent parts of the problem. Groups present their ideas on possible solutions and work continues, the goal being to develop several alternative product concepts.



*Evaluating Concepts:* The whole group evaluates the concepts in terms of their technical feasibility, likely market appeal and the priorities set by management.

*Selecting Promising Concepts:* Consensus is reached on the most commercially promising concepts and the group recommends next steps to further refine them.

After the workshop the team prepares drawings of the concepts to present at the workshop review meeting with management.

## Completing the Project

After the workshop, teams go through a process of refining their preliminary product or service concepts in light of what was learned from lead users and experts at the workshop. The finalized concepts are then presented to management. At this meeting, all key people should be present who will be responsible for testing the concepts and moving them through the next commercialization steps.

### Presenting Final Concepts to Management

*Show how potential products or services will work*

Teams carefully orchestrate the meeting with management. The goal is to make the presentation compelling and concise. What managers usually want to understand is what the proposed products or services will do - the design principles behind them and why customers would be willing to pay for them. Teams also come prepared with solid evidence that the concepts offer unique benefits to consumers - ones that are truly different from those offered by competitors.

There are visual tools that teams use to help make the proposed concepts and the value of these concepts clear to managers. For example, one team videotaped the lead user workshop and presented a fifteen-minute segment at the management meeting. The video highlighted the concept development work of the group. This team also presented sketches of the concepts which clearly showed how they would address customer needs.

### After the Project - Testing the Concepts

Lead users are not the same as the routine users in a target market. Therefore, we strongly suggest testing concepts developed in the lead user project on ordinary consumers in the target market to validate their commercial potential. The nature of the validation required will vary from firm to firm, depending on the level of proof of commercial promise that is expected by concept evaluators.

Generally, the novel functions and benefits offered by "breakthrough" new products and services are difficult to evaluate by quantitative methods that are very useful for evaluating more routine concepts. For this reason, in many lead user projects, managers evaluate concepts using their own judgment, combined with testing the concepts with a small group of

users in the targeted markets. For example:

> In the Hilti lead user study described in Chapter 1, managers were so sure the concept was a “winner” that they didn’t want to lose secrecy and lead time by having it evaluated by a large sample of ordinary users. Instead, they decided to go ahead with formal development of the lead user project concepts after getting evaluations from only twelve typical users in firms with especially close ties to the company.

Most firms have procedures in place that govern the evaluation work that must be accomplished for a product or service concept to be approved and passed on to the formal development phase of a new product or service project. The point we want to underscore is that concepts coming out of the lead user project should be evaluated in a way that allows them to move quickly and smoothly into the next development and commercialization phases.

**Moving Concepts Forward -**
**Role of the Lead User Project Team**

If appropriate marketing research resources are available, lead user teams do not need to be directly involved in carrying out the market analyses required to validate their concepts. However, members of the team *should* provide input regarding the evaluation processes that will be used. This is why team input is important:

The integration of lead user concepts into a firm’s formal development processes may require “special handling” to get the full benefit of the work done by the project team. For example, concepts developed in lead user projects are often based on user-developed prototypes that have been tested in the field. In these instances, a standard product development procedure that starts formal product design "from scratch” will not allow the developers to take advantage of all the information the team already possesses.

Ideally, at least one team member will closely follow and shepherd the concepts through the next development phases - or better yet, one or more members will actually serve on the team responsible for the next commercialization activities. This is the best way to ensure that time isn’t wasted on design and prototype testing activities that may be inappropriate or unnecessary.

## MAXIMIZING THE LIKELIHOOD OF SUCCESS

Finally, we want to underscore the key elements that go into a successful lead user project. While there are a number of factors that determine the success of a study, we have found that in particular, the three conditions below need to be present for lead user research to live up to its full potential.

• *Supportive management:* As with any innovation effort, the active support of management is crucial to the success of the lead user project. Strong management backing is especially important when lead user research is first being introduced in a firm. If business leaders communicate they are only half-hearted in their support of lead user methods, this attitude will trickle down to those under them, including the project team members. On the other hand, if managers are explicit in expressing excitement and their full support, this will go a long way toward giving the project the credibility it needs to succeed.

• *Cross-discipline team of highly skilled people:* We strongly encourage managers to put together a lead user project team of the very best people - those who “have been around awhile,” and so have excellent knowledge of their firm, the innovation area and their industry. They also must be creative and have good team skills. And finally, it is very important that the team include both people with technical expertise, and those with market-related expertise.

• *Understanding of lead user research:* While a lead user study is guided by a clear set of principles and methods, it is a “hands on” form of research that will be unfamiliar to many teams. We recommend going through a first study with a consultant who has experience doing lead user research. The skills and many nuances involved in carrying out a successful lead user study are much more difficult to master without coaching from someone who knows the methodology.

### A Brief Review

In this chapter, our goal has been to introduce you to the main research steps and activities of a typical lead user study. In terms of specific practices, no two studies look exactly the same. By its very nature, innovation is an unpredictable, messy process and simply doesn’t lend itself to lockstep procedures. Still, all teams use the key methods and go through the basic process we have described. The main activities of a lead user study are summarized on the following page.

**Summary of the Research Process**

**Phase 1: Preparing for Your Lead User Project**

*Key Management Activities*
- Select the new product/service areas of interest
- Designate a cross-discipline research team of 3-4 people to implement the project

*Key Team Activities*
- Refine the focus through discussions with key stakeholders
- Develop a data collection plan

**Phase 2: Identifying Trends and Key Customer Needs**

*Key Team Activities*
- Broadly explore trends through interviews with lead use experts and reading in the trade literature
- Select the markets and core needs that will be the focus of concept development.

**Phase 3: Explore Lead User Needs and Solutions**

*Key Team Activities*
- Generate preliminary solution concepts by interviewing lead users and lead use experts
- Collect market data for the business case
- Present needs data and preliminary solutions to management

**Phase 4: Improve Solution Concepts with Lead Users and Experts**

*Key Team Activities*
- Hold a 2-3 day workshop to further develop concepts
- Finalize concepts and develop a written new product or service proposal
- Review the project output with management

*After the workshop*:
- Test appeal of the concept(s) on target market(s)
- Hand-off the concept(s) for commercialization

# PART TWO

## LEARNING THE RESEARCH PROCESS

## The Four Phases of a Lead User Study

In the five chapters that make up Part Two, we explain the primary research activities of each phase and illustrate these activities, using examples from actual lead user studies. Given that interviewing is the core information gathering method used in lead user research, Chapter 5 is devoted to discussing the interviewing process and techniques used by lead user project teams.

# Chapter 3

# PHASE ONE: Preparing for Your Lead User Project

This chapter explains the lead user project planning process - how to define the focus of your company's innovation effort and how to go about properly setting up a lead user study project so that it achieves the desired outcomes.

## Introduction

Phase One is the preparatory phase of the lead user project. In this phase management develops a master plan for the project and selects the team that will implement it. The master plan spells out the critical elements of the innovation initiative - the project focus, business objectives and resource requirements.

Once the lead user project team has been selected, this team does the remaining preparation required to begin the study. One major team activity in this phase involves taking a "first look" at the marketplace to acquire a basic understanding of the trends, needs and other issues that

will be important to explore during the project. During this phase the team also develops a specific plan for beginning to intensively explore the marketplace in Phase Two.

This chapter lays out the major preparatory activities of this phase. We begin by providing guidelines for creating a master project plan and selecting members who will serve on the lead user project team. From there, we discuss the preparation that lead user project teams typically do to get ready for the trend investigation in the next phase.

## Developing the Master Project Plan

The first task in Phase One is to develop the overriding project plan. The master plan defines the focus and goals of your lead user study. More specifically, it delineates the thrust of the study in these areas:

1) *new product and/or service areas of interest* - the general types of markets, products or services and applications that will be the focus of the innovation effort

2) *overall project objectives* - the key deliverables of the lead user study and the near-term and/or long-range business goals of the project

3) *resource requirements* - the people, time and money required to implement the lead user study

Setting up a lead user project can be simple and move quickly in the case of small firms. Project planners may manage the project as well as serve on the project team - and they may also have direct control over allocating the resources needed to carry out the lead user study.

In large and complex organizations, the planning work will be more complicated because the lead user project team is likely to include people from several different departments. Accordingly, it will be important for key managers from each participating department to have direct input into decisions regarding the focus, goals and resource allocations for the project. As discussed in Chapter 2, the full backing of managers is critical to ensuring the success of the lead user project.

This section describes the process of developing the master project plan as it is carried out in complex organizations. Readers in less complex

settings should understand the reasons for the planning activities we describe and then appropriately simplify each one to fit their own company circumstances.

## Who does the project planning?

In complex organizations, we recommend establishing two planning groups: a *management committee* and a *project planning team*.

*Role of the management committee*

The management committee makes final decisions about the focus and goals of the project and the resources that will be allocated to it. Ideally, committee membership will include managers from each department that will play a major role in implementing the lead user project.

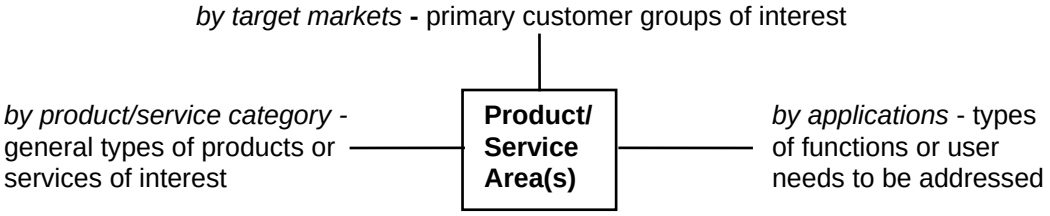
*Role of the planning team*

The project planning team does the "nuts and bolts" work of setting up the lead user project. The major task of the team involves putting together the master project plan, subject to the approval of the management committee. The planning team should include a key person from the marketing department and one from the relevant technical department because these functions must work closely together throughout the lead user study.

Note that the project planning team does not necessarily contain the people who will be members of the actual lead user research team. Final decisions regarding members of that team are made after management has determined the focus and goals of the project.

## Selecting the New Product or Service Area

Management committees typically define the target product (or service) area in terms of three dimensions, shown in the diagram below.




In defining the focus of the project, the guiding questions should be: "Which markets, product or service categories and applications are of interest to us? And which ones are "out of bounds" for this project?"

*Do a quick market analysis*

Sometimes an innovation area has already been defined before a firm undertakes a lead user project. More often, when a management committee begins Phase One, it is considering more than one target area. If this is the case, a preliminary market investigation may be done to get a sense of which area represents the best commercial opportunities. The market assessment in this phase usually involves quick and informal activities - for example, bringing together key company people for idea generation sessions and reviewing internal market data. Let's look at an example that is representative of how project planners go about deciding the focus of a lead user project.

Example: Hearing Health Lead User Project

A manufacturer of hearing products decided to do a lead user study to develop a concept for a new type of hearing aid. The planning group kicked off the project with a half-day idea generation meeting. About twenty people, representing each department, were in attendance. The outcome of this meeting was an initial list of markets and types of needs people considered important to address with new products.

Before deciding the focus of the lead user project, the management committee also brought together ten top level managers for two days of strategic planning. The purpose of this meeting was to define the company's high-priority near-term and long-range new product objectives.

Based on the information gathered from these activities, the project planning team identified two types of new product opportunities that were a good fit with the company's long-range business interests. One product area was for a "smart" hearing instrument that would make automatic adjustments in sound processing, based on user needs. The second was for a low cost, quality hearing instrument to address the needs of people in the early phase of hearing loss.

This second product area - a hearing aid targeted to people with moderate hearing impairment - was ultimately selected as the focus of the lead user study. The management committee saw this as a very strong untapped innovation opportunity because currently available hearing aids did not address the special needs of this market.

Below is the written description of the project focus that was developed by a member of the project planning team.

**Hearing Health Project Lead User Project**
**Definition of the New Product Area**

| | |
|---|---|
| Product Category | We are seeking to develop a concept or several different concepts for a hearing instrument to supplement or augment the hearing of individuals suffering hearing loss that normally occurs with aging (as opposed to loss caused by hearing disorders) |
| Target Markets | End Users - individuals with mild to moderate hearing loss<br>Other Key Customers - audiologists, primary care doctors<br>Possible New Markets - mass retailers - e.g. Sears, drug stores |
| Applications of Interest | We envision that this "personal hearing assistant" device would provide amplification in the frequencies where hearing loss typically occurs in the early phase of hearing loss. Based on our market analyses, we envision that potential products will address these key user needs:<br>• easy to use instrument - requires few or no sound or fitting adjustments by user or audiologist<br>• inexpensive - can be purchased at a substantially reduced cost, relative to current hearing aids (e.g. for under $200)<br>• significantly improved sound quality - acoustic feedback and background noise are no longer a problem |

This is a good illustration of how to define the target innovation area in a way that provides a starting focus and yet allows room for the team to explore different directions. On one hand, project planners have set general boundaries in terms of markets and applications of interest. This will enable the team to be focused in collecting data. At the same time, *product solutions* are not specified; nor are user needs spelled out in detail. Thus, the team is free to experiment with different product possibilities.

*How specific should the focus be?*

Sometimes management committees are reluctant to target a specific product or service area at the onset of the project. The concern is that it will inhibit the team's ability to explore different directions. However, specifying the innovation areas of interest serves two very useful

purposes. First of all, it enables the project team to concentrate its energy in the areas that really matter to the business. Second, it gives the team general guidelines for deciding which new product/service areas are in bounds and which ones are out of bounds. Of course, the focus selected at the beginning of the project is not a "once and for all" decision. Adjustments can be made if an exciting new market opportunity is discovered during the study.

## Defining the Project Objectives

*What would you consider a success story?*

In defining the objectives of the project, the goal is to provide the lead user research team with general opportunity screening criteria. This element of the project plan should spell out the specific "deliverables" of the lead user project and the key business interests that are driving the innovation effort. Below is an sample of how the business goals were defined by management in the hearing health project.

**Business Goals - Hearing Health Project**

| | |
|---|---|
| desired project outcomes | - identification of market/need areas that represent strong business opportunities in the long-run (3+ years down the road)<br>- generation of at least one novel concept for a hearing instrument that can be brought to market within the next 1-2 years |
| key business goals & constraints | - product should have profitability of 1-5 M, first full year on the market<br>- markets should show long-range profitability potential of over 20M<br>- product should utilize current company technologies<br>- product should enable continued reliance on current distributors |

As with defining the project focus, key decision-makers from each department involved in the project should have input into deciding the key deliverables of the lead user study. The common sense reason for doing this is to make sure that the project goals are a good fit with the concerns and agendas of managers from various departments.

## Assessing Resource Requirements

In the area of resources, the critical questions that need to be answered are: 1) How much team time will be allocated to the lead user study? and 2) What are the funding requirements of the project?

In this section we provide general guidelines for making these resource decisions.

*Allocation of Team Time*

*Innovation requires immersion in the process*

We recommend that at minimum, the core research team members devote approximately 30-50% of their work time to the lead user project. More specifically, we suggest that members plan to spend about 15-20 hours doing project related activities.

**Why 30-50% of team members' work time?**

Team members selected for lead user studies are typically very talented people who have many projects competing for their time. Therefore, we are often asked - why can't a team do a lead user project on a 10-15% time basis? There are two reasons:

- First, concept development projects that are not allocated much time tend to "drag on" - and that directly slows time to market.
- Second, team members need the information generated by the lead user project to be "at the front of their minds" in order to do effective creative thinking. Efficiency drops drastically when team members are only able to work on a project for a small portion of each week. Information the team has gathered loses its freshness and teams are forced to spend an increasing amount of their project time on "figuring out where we left off" and "getting back up to speed."

The flow of activities and our recommendations with respect to the team time that should be allocated to each phase of the project are shown on p. 56. Notice on the sample schedule that team members spend the most time on project related activities in Phases Two and Three. This is when the team has a heavy schedule of interviews and team meetings.

In looking over the time allocations for each phase, also keep in mind that they are only ballpark time estimates. As with any project, there are weeks in which the demands on the research team are more or less than the figures shown on the schedule. Still, this project schedule is realistic enough to use it as a guide for thinking through time requirements for your lead user project.

**Major Activities and Suggested Time Allocations for a Lead User Project**

| **Phase/Major Activities** | **Who** | **Time by Activity** |
|---|---|---|
| *Phase 1 - Project Planning* | | *4 wk. - total time* |
| • Develop master plan | project planners | 10+ hr. (over 1 mo.) |
| • Learn about the current marketplace | project team | 3-4 wk. |
| • Further refine the project focus | | |
| *Phase Two - Trend/Needs Identification* | | *4 wk. - total time* |
| • Conduct literature searches | individual members | 10+ hr. per wk. |
| • Interview top experts | | |
| • Interpret/analyze data/ select specific needs to focus on | whole project team | 1+ hr. (weekly mtg.) |
| *Phase 3 - Preliminary Concept Generation* | | *4-5 wk. - total time* |
| • Interview lead users and experts | individual members | 10+ hr. per wk. |
| • Gather data for business "case" | | |
| • Define new product or service requirements, generate concepts | whole project team | 1+ hr. (weekly mtg.) |
| *Phase 4 - Final Concept Development* | | *4-5 wk. - total time* |
| • Plan lead user workshop | whole project team | 10+ hr. (2-3 mtg.) |
| • Invite participants | individual members | 10+ hr. (over 2 wk.) |
| • Hold workshop - improve concepts with lead users/experts | | 2-3 days (typical length of workshop) |
| • Finalize concepts | | 2+ wk. |
| *Project wrap-up* | | |
| • Evaluate project outcomes | management/project team | 2-3 mtg. |
| • Plan next commercialization steps | (others involved in next steps) | |

**Approximate Length of Project: 4 months**

*Allocating Funds to the Lead User Project*

While each lead user project has unique funding requirements, we can provide some guidance in this area, based on our work with other teams. Below is a breakdown of major expense items for a typical project.

**Typical Lead User Project Expenses**

| | | |
|---|---|---|
| time cost: | budget the cost of member time to lead user project according to your company's accounting practices | |
| other project expenses | - Concept Development Workshop | $20,000 -25,000 |
| | - honoraria for expert/lead user interviews (Phases 2 & 3) | $ 2,000 - 4,000 |
| | - team user site visits | $ 5,000 - 8,000 |
| | - miscellaneous costs such as electronic searches, video taping | $ 3,000 - 6,000 |
| | Estimated Total Project Expense**:** $30,000 - 40,000 | |
| note on coaching cost | Teams that are doing first lead user research projects should seek training and coaching from internal or external consultants having expertise and experience using lead user methods. Although this may add substantial cost to a first-time project, managers find that it is well worth it in terms of enhancing the quality of the lead user study. | |

In creating your own project budget, keep in mind that the typical expenses listed above do not include extensive team travel to very distant customer and lead user sites. Nor do they include professional video taping of lead user site visits or any very large honoraria that may be associated with interviewing world renowned experts in their fields. If project planners anticipate that any unusual or special expenses will be incurred during their project, they should add appropriate categories and estimates to the sample budget shown.

## Finalizing the Project Plan

We strongly recommend developing a brief written project plan that spells out the types of markets, products (or services) and application areas that management considers important to investigate.

The plan should also include an estimated budget and time allocations. This document will ensure that everyone involved in the project is starting out with a good understanding of the core project components.

## Selecting the Lead User Research Team

When the master project plan is in place, the next planning task is to designate the core research team which will implement the lead user study. In this section we provide just a few general guidelines for putting together an effective team.

We think an ideal team size is three to four people. This is large enough to get different perspectives. At the same time, it isn't so large that it is difficult to make decisions and move together as a group. If there are other people whose input could be useful at various points, they can always be brought in as "auxiliary" team members. For example, the hearing health team periodically called on the expertise of one of the technical specialists in the company and frequently consulted with internal audiologists.

*Who are good team candidates?*

In our experience, the most effective research teams are those that have diverse skills, experiences and perspectives represented on the team. The richer the mix is in these areas, the more likely the chances of really creative ideas. It is also critical to put together a team of your very top people, with respect to their expertise relative to the innovation area.

In terms of specific skills, the combination of abilities needed include the following:

*expertise in the problem area* - Team members should have a knowledge base relative to the innovation area that is *deep*, as well as *broad*. The reason this is important is that lead user research requires team members to work effectively with ideas and information outside of their disciplines.

*ability to think creatively* - It is important to have one or two members who are creative thinkers. We have found that if someone on the team can provide leadership in this area, it gets the creative juices flowing of the whole group.

*openness to new approaches* - A high degree of receptivity to new ideas and multiple perspectives is required for a lead user project. Also, team

members must not feel that innovating is a solitary task or one that they would prefer to keep to themselves - a lead user study requires an open and joint process. More than anything, “openness” is an attitude and one that is important for *all* team members to have.

In considering which people will make good team members, a good starting point for managers is to ask these questions:

1. Which technical and marketing people are the most knowledgeable with respect to our innovation area?
2. Which people are good creative problem-solvers?
3. Which people are *open* to learning and sharing new ideas and approaches?

When we pose these three questions to managers, they usually know which of their personnel have these qualifications and can identify the best candidates for the lead user research team very rapidly.

## Orienting Personnel to the Project

The project planning committee’s final task involves briefing team members and others charged with implementing the project. This typically involves having one or more group orientation sessions. We strongly suggest that the planning group also have *individual* meetings with team members and their immediate supervisors to address personal concerns they may have. It is very important that people understand what is expected of them and their individual roles in the project.

*Facing the skeptics*

In introducing the project, planning teams need to be sensitive to the fact that for many people, lead user research will be very different, and therefore, possibly a suspect way of doing marketing research. Also team members may have anxiety about learning methods that could necessitate acquiring new skills.

Those who are enthusiastic about lead user research cannot realistically expect to convince every skeptic. We do, however, have suggestions to offer that may make the task easier of getting “doubters” behind the project.

• *Explain what lead user research is all about*. Have potential members of lead user project teams read this book and look at our brief video

which shows the actual experiences of lead user project teams at 3M Company.

• *Explain the important learning benefits that team members will gain.* Those who choose to become members of lead user project teams almost always find the experience both enjoyable and very valuable in terms of new, generally-applicable skills learned. Among these valuable skills are qualitative marketing research methods, interviewing techniques and field observation techniques.

• *Give potential team members a voice in choosing to serve on the team.* Recognize that some people will have deeply-held reasons for not wanting to join a lead user team. For example, some potential team members may strongly dislike working on interdisciplinary teams - and close, interdisciplinary work is a requirement of lead user projects. Others may already have major work commitments and thus, may rightfully feel they cannot put in the required time on the lead user project. Managers should not attempt to override those reasons. People who are pushed to join a team against their will are likely to end up unhappy and actively (or passively) impeding project work.

• *Secure a process champion.* Anyone who has introduced new methods into their organization knows that it is critical to have the active backing of a business leader with “political clout.” Our recommendation is that you actively seek out a good process champion. This should be someone with a high-level position in the organizational hierarchy and a person whose opinion is highly respected.

• *Provide the team with the training it needs*. A lead user study can be done by determined people without any expert guidance. But, like many things, lead user methods work much better in the hands of experts. Novice teams, especially, will have a much easier time if they are given access to internal or external coaching that can teach them some of the hard-won lessons for success learned by previous project teams.

We suggest that early in your project planning, you identify potential major “obstacles to success” and develop strategies for dealing with them. Once obstacles are identified, it is usually possible to think of ways to resolve them - and much better than last-minute struggles to deal with the unexpected.

After the core project team has been selected and briefed on the project, this team takes over and does the remaining preparatory work required before beginning intensive data collection in the next phase. The next section describes the “getting ready to begin” activities that are done by lead user project teams.

## Team Preparatory Activities

Teams are usually dealing with considerable ambiguity at the beginning of lead user projects. Although management has set a broadly framed focus, team members are likely to be starting out with important questions about the project - What specific outcomes is the team expected to deliver? Which aspects of the marketplace should be researched and where should we look to find high quality market information? Getting past this initial confusion is often a major undertaking for project teams - particularly if some or all members have not worked closely together before and are doing a first lead user study.

The preparatory work that lead user teams do in this phase consists of two major activities:

1) *Getting grounded in the project* - Team members do various kinds of “homework” activities such as reading in trade journals and talking with important project stakeholders to acquire a basic understanding of the current marketplace.

2) *Planning for data-collection* - During this phase the team develops a specific plan for the intensive data collection that begins in Phase Two.

This work takes most project teams about three or four weeks.

### Getting Grounded in the Project

An important task for team members in this phase is to become oriented to the focal topic of the project. At the start of lead user projects, some teams already have of good feel for the marketplace. More often, however, some or all members are exploring an innovation area that is new to them. As a result, they do not know some of the important basics of the project - for example, the current needs of concern to real world users, the industry experts that are doing leading edge work, the major trends and other factors that are driving current practices in their industry.

Let's look at homework lead user team members typically do to get oriented to the subject of the project.

## Consult with Major Project Stakeholders

One way for team members to quickly get a good overall understanding of the marketplace is to interview major in-firm and external stakeholders - for example, current customers, suppliers, sales people and others within your company. Discussions with stakeholders will sharpen the team's understanding of current trends and market issues that should be explored during the project. Also, stakeholders are often well-connected in the industry and may know top experts that would be useful to interview during the project.

*Identify 4 types of stakeholders*

In most projects, it will be useful to interview important project stakeholders who fall within the following four categories:

*Users* - The people who will actually use the new product or service. For example, the users of adhesive tape are the people who actually take tape off the dispenser and use it in their work or other activities. Obviously, users are always important stakeholders in a concept development project. After all, a new product or service will only succeed in the marketplace if the users like and want it!

*Distribution Chain* - The "chain" of people and firms who buy, sell and transfer a product or service in a series of transactions until it finally reaches the user. For example, the desk lamp used by an employee in the workplace will typically have been bought by an office supplies purchasing group, which in turn has bought the lamp from a distributor, who bought it from the manufacturer. Members of the distribution chain can be importantly affected by some aspects of new products and services - and in many projects, it will be critical for a new product to be compatible with their interests.

*In-firm Stakeholders* - The groups and individuals within your company that will have an important impact on the ultimate success of any new product or service that the team may propose. They may include the development groups that will be responsible for creating the final design, the groups

that will manufacture it, and that will sell it. Each in-firm stakeholder will have expressed *and* non-expressed reasons to support or withhold support from the concept(s) generated by the team. The team must learn about these reasons - and have a good sense of "how things really work around here." This is essential to developing a concept that will meet the concerns and agendas of all the important company groups and individuals.

*Other Stakeholders* - There are sometimes other important groups of people associated with the business who can have a major influence on the commercial success of a project. Examples of such "other stakeholders" are the federal regulatory groups and the industry associations that set product and service standards in many fields.

Note that teams typically modify their list of “important stakeholders to satisfy” as they move through lead user project. Additional stakeholders are often identified and interviewed; others may be taken off the list because obviously, not everyone can be satisfied with a single product.

Prior to conducting the interviews, the team will need at least one planning meeting to decide which types of stakeholders to seek out. The team should also develop general questions to explore in the interviews. (Team members should read Chapter 5 which describes in detail how to prepare for and conduct this type of interview.)

**Hold an Opportunity Search Workshop**

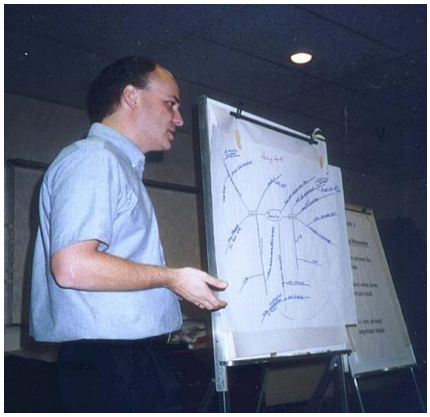
Another efficient way to get input from key stakeholders is to bring them together for an “opportunity search” workshop. This is usually a one day activity in which knowledgeable industry people from both within and outside the company join the project team for an in-depth discussion of major trends and their implications for future market needs.

The opportunity search workshop held by the hearing health project team will give you the flavor of how to set one up. Fifteen people attended this team’s workshop. External attendees included a mix of hearing aid users and local audiologists associated with the company. Participants from within the company included the project team, plus managers and staff from the marketing, R&D and sales departments. The major activities that took place at the hearing health workshop are outlined on the next page.

**Opportunity Search Workshop: Hearing Health Project**

The hearing health workshop brought together key company personnel and locally-located industry experts associated with the business to discuss current trends and market opportunities.

In the 1st session people worked in small groups to map out trends that are likely to shape the future of their industry.



Trend maps were presented to the whole group and people voted on trends they believed would drive industry practice over the next few years.

Facilitators prepared people to develop future scenarios by presenting their vision of the future in the hearing health industry.

Then working in small groups, people imagine how the industry will be different 10 years from now and present their future stories to the whole group.

### Other Suggested Homework Activities

There are several other things teams can do to “bone up” on the subject of the project. The following are a few ideas:

- Spend time browsing through recent trade journals. This will give you a good sense of the issues of concern to people in the industry and will give you ideas for leading edge experts to interview during data collection.

- Look over recent company market surveys and other in-house market data. The team should be aware of recent market studies done by your company so that time isn’t wasted exploring areas in which there is already good market information available.

- Have frequent team discussions. We suggest that teams meet weekly during this first phase of the project to discuss what people are learning from reading and talks with stakeholders. At these meetings it is also important to learn as much as possible about the knowledge possessed by individual members. Each person on the team has special expertise in some aspect of the project and can be a very good resource for others who may not have this same expertise.

## Developing a Data Collection Plan

Once team members feel they have a good basic understanding of marketplace, the next and final task in Phase One is to develop a specific plan for beginning to intensively investigate the marketplace in Phase Two. The following is the practical planning work that should be done:

- Agree on the high-priority trends, needs and other issues that should be investigated during the early phase of information gathering.

- Develop a starting list of good sources of information - types of experts to seek out for interviews, electronic data base searches that should be done and other trade literature that should be reviewed.

## The Team Planning Process

Let's look now at the major steps involved in developing a data collection plan. The planning approach used by the hearing health lead user research team illustrates the general planning process we recommend.

*The hearing health team's planning steps*

Recall from earlier in the chapter that the focus of the hearing health project was on developing a breakthrough hearing instrument to address the needs of people with only moderate hearing loss. The team spent two half-day meetings developing a plan for beginning to collect data. A member of the library staff also attended these meetings. The team wanted this person's help in selecting good electronic data bases to search.

The framework used for the planning discussions included three steps:

1) The team began its planning by generating a list of major trends and other factors that members felt could have implications the project, based on the information they had gathered thus far and the personal knowledge of team members. In this part of the discussion the team considered the impact of trends in several different fields - for example, technology, regulation, product usage, demographics. It is important to look at trends in a variety of arenas because in many projects, the most promising innovation opportunities are a result of interacting trends in several different fields.

2) Using the identified trends as a starting place, the team next developed a list of the key types of information it wanted to collect. The outcome of this discussion was a list of high priority trend and market questions that the team intended to explore through interviews with experts and reading.

3) Once key information needs were identified, the team developed a specific action plan for collecting data. This planning involved developing a starting list of types of top experts to locate and interview, and creating an action plan to do electronic literature searches.

The following page contains a sample of the starting trend and market questions developed by the hearing health team.

**Hearing Health Project**
**Starting Trend and Market Questions**

target users - people with mild/moderate hearing impairment

other external stakeholders - audiologists, primary care physicians, medical clinics, mass retailers, insurance companies, federal regulators

key internal stakeholders - the management operating committee, internal audiologists, sales force, marketing research department

global markets to explore - Great Britain, Western Europe, Canada

| **Our assumptions about important trends** | **What we need to learn** |
|---|---|
| Product Usage | |
| concern with the cosmetics of hearing aids - e.g. desire to appear "eternally young" | - What cosmetic features are important from the user perspective? |
| Demographics | |
| rapidly growing number of people over 50 yr. old with mild/moderate hearing loss | - How many of these people are actually purchasing hearing aids?<br>- What hearing aid features are aging baby boomers looking for? |
| Technology | |
| movement toward hearing aids requiring minimal mechanical adjustment by user and audiologist | - What new technologies in our own and other fields can be applied to develop "one size first all" hearing device? |
| Distribution | |
| audiologists have continued "stake" in being the sole distributor or hearing aids | - What are strategies for selling directly to the user - e.g. over the counter at a drug store? |
| Regulation | |
| increased governmental/industry regulation of hearing aid safety and advertising practices | - What are expert predictions regarding changes in regulation? |

## A Few Final Planning Tips

There are other practical planning details that the team should work out in preparation for Phase Two. We recommend setting an approximate target date for completing the project and a schedule of team meetings for the entire project. The sample schedule we have provided on p. 56 will be a good guide for this planning.

The team should also work out a few ground rules for working together. In our experience, an effectively performing team doesn't "just happen." The most productive project teams devote time to hammering out the specifics of working together - how to best utilize the individual talents of members, how to distribute jobs, make decisions and do problem-solving, etc.. They also establish a few concrete rules of behavior that members take seriously and really strive to follow.

The following are areas in which it is important to have explicit agreements regarding what will be expected of members.

- *Areas of mutual accountability - What* are expectations with respect to how much time per week each member should devote to the project? What are expectations regarding attendance at meetings and completing agreed upon tasks?

- *Climate to strive for in team discussions* - What climate needs to be present to have really productive team discussions? And what concrete ground rules will help to ensure that this climate is present in your meetings?

- *Role Expectations* - What should be the role of the team leader? Who will make important decisions and how will they be made? How are members personally viewing the special contributions they can make to the team?

Once key ground rules have been established, we suggest that the team decide on a method for periodically assessing the effectiveness of its process. For example, you could decide to take fifteen minutes of a team meeting every two or three weeks to consider what aspect of the team process is going well and what needs improving. Or you might decide to do this routinely at the end of each team meeting. Our point is to develop

some means for keeping track of how well the team is working together.

## A Brief Review

In this chapter our goal has been to lay out the preparatory work that should be done to set up your lead user project. If some of the planning activities we have discussed are not done they will not “make or break” the project. However, by doing the preparation we have suggested, you will greatly enhance the chances of a lead user project that delivers the desired results.

**Key points to remember:**

***Suggested Activities - Project Planners:***

• Begin Phase One by developing a written master project plan that delineates the following:

a. new product and/or service area of interest;
b. business goals of the project;
c. funds required for the project.

• Select a cross-discipline team consisting of:

a. at least 1 person with the relevant technical expertise;
b. at least 1 person with marketing expertise.

• Carefully brief team members and their immediate bosses on the project and make a firm agreement on the time that each member will allocate to lead user project activities.

***Suggested Activities - Lead User Project Team:***

• Get grounded in the project by interviewing major project stakeholders and reviewing in-house market data.

• Develop a plan for beginning the trend investigation in Phase Two that includes the following:

a. key market and trend questions to explore;
b. a list of good sources of market and trend information;
c. a project timetable and schedule of team meetings.

# Chapter 4

# PHASE TWO: Identifying Trends and Key Customer Needs

This chapter shows you how to identify "lead use" experts and how to learn from them about important trends and major customer needs. You need very good market information to select the customer needs that will be the focus of concept development work in your lead user study.

## Introduction

In Phase One, the lead user project team did a quick scan of the marketplace as part of developing its starting data collection plan. Now in Phase Two, the team does an in-depth investigation of major trends and emerging needs of customers in the targeted markets.


The trend and need investigation in Phase Two is a critical part of a lead user study. In order to identify the correct lead users to help in concept generation, the team must first arrive at a very clear statement of the customer need(s) that will be addressed with potential products or services.

By the conclusion of this phase, the team will have a preliminary picture of the functions and benefits that a new product

(or service) will ideally deliver. The team will have also verified that the need(s) chosen as the focus of the study represent a strong market opportunity.

*The primary activities in Phase Two*

The team's research process in this phase is organized around three major sets of research activities, briefly summarized below.

1) *Exploring major trends and emerging needs:* At the start of Phase Two, the team interviews top market experts and scans select trade literature, with the goal of identifying major trends that will impact future market demand.

2) *Framing an important customer need:* When significant progress has been made on the work of identifying critical trends and related needs, the team uses this information to select the specific need area(s) that will be addressed with a new product or service.

3) *Preliminary assessment of the business opportunity:* Before concluding the trend and need investigation, the team does an informal analysis of the target markets to confirm that the selected needs represent a very good commercial opportunity.

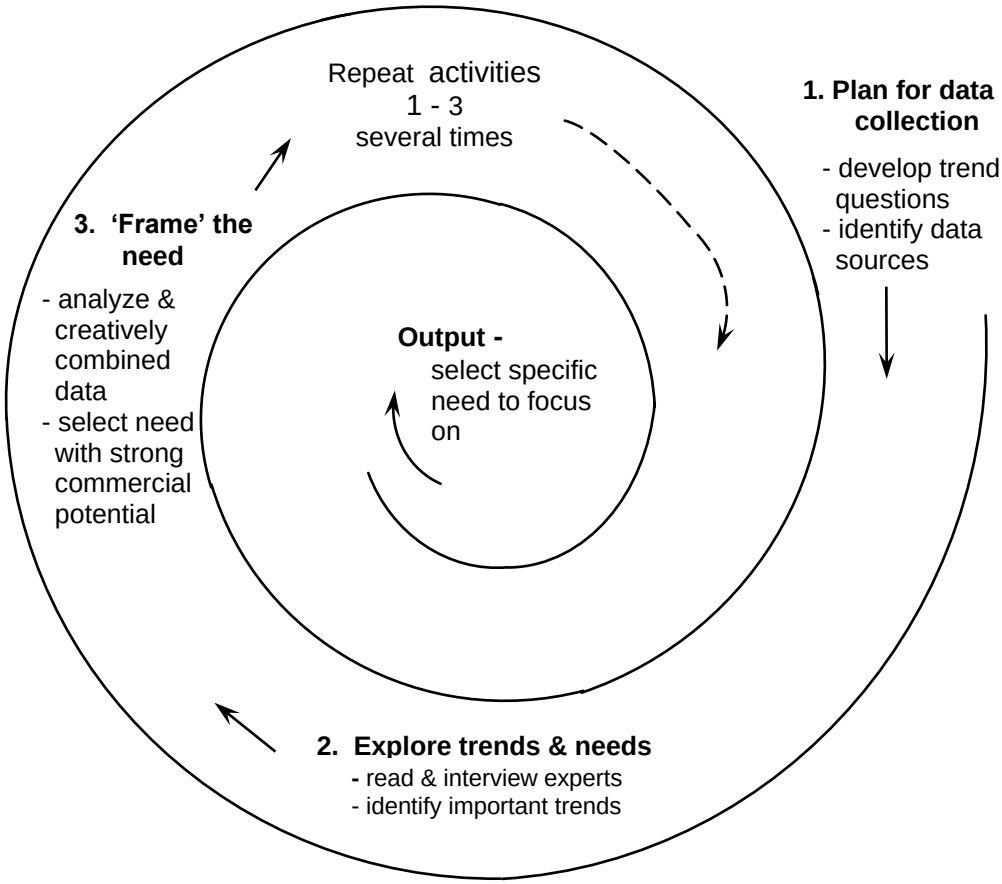
This sequential listing of activities accurately reflects the flow of Phase Two and the shifting emphasis as the team progresses through its work in this phase. However, it is important for teams to understand that these sets of activities are *not* carried out in a simple linear fashion during an actual project. Rather, the team cycles or "iterates" through them several times during Phase Two. For example, the team goes through several rounds of interviewing top experts, reviewing trade literature and then meeting to think together about how to best combine and interpret the information gathered in a novel way.

Lead user project teams typically devote about four weeks to the research activities of Phase Two. During this phase of the project, teams meet weekly to share and discuss what members are learning. They also log many hours doing individual work such as interviewing, reviewing trade literature and interpreting information gathered.

In this chapter we walk you through research process in Phase Two and provide examples of how actual lead user project teams have gone about the tasks of this phase.

## PHASE TWO:
## The Trend and Need Investigation Process

The spiral below shows the flow of research activities in Phase Two. The team goes through several "iterations" or cycles of the three sets of activities below, with each cycle resulting a more refined understanding of trends and related customer needs.



## The Initial Activities of Phase Two - Exploring Trends and Emerging Needs

*The focus of initial information gathering*

At the beginning of Phase Two, the lead user project team's focus should be on acquiring a thorough understanding of major trends and their likely impact on market needs for new products and services over the next several years. Without very good knowledge of trends, forecasting future market needs amounts to little more than guesswork.

A major challenge for the team is assessing which trends are truly *significant*. This requires a very good understanding of the dynamics behind the trend - Which events and conditions are driving it? Who is being impacted? What is the evidence that it will have a major effect on future product or service needs? Answering these kinds of questions is an important aspect of the team's work during the trend investigation.

During the early phase of information gathering, another emphasis is on getting grounded in the world of the target customers. What are the needs and problems from the point of view of real world users? What are the views of expert practitioners regarding emerging needs of customers in the targeted markets?

**A marketing research definition of "needs":**

The term "needs" has different meanings, depending on the context. In the field of psychology, the concept of needs commonly refers to basic human desires that motivate all people - a need for food, shelter, etc.. In every day usage, when people speak of a need, they are often referring to a desire for a particular product or service. For example, they might say, "I *need* an answering service for my telephone." Marketing researchers typically use the term "need" to refer to this more specific desire of customers.

Marketing researchers also refer to needs for *attributes* of a product or services. Lead user teams will find this to be a very useful refinement. Any product or service can be regarded as consisting of a list of attributes. For example, the attributes of a personal computer includes its size and weight; a CD drive is a feature sometimes included in a computer. Thus, users might express their computer needs in terms of these attributes: " I need a *lighter* computer *with a CD drive."* New product development must be guided by a very good understanding of the component attributes that really matter to customers.

During the initial phases of information gathering - and in fact, throughout Phase Two - we recommend that teams think about and express the market needs identified in terms of specific attributes that product and service users are seeking. This will aid in both identifying deciding design requirements for new products and services, as well as in deciding which types of lead users to seek out to aid in concept generation.

## The Information Gathering Process

The data collection process of lead user teams includes two primary research activities: Lead user teams begin Phase Two by doing a general review of relevant trade literature. Following this initial reading, the focus shifts to interviewing lead use experts. The reason for this shift is that the very latest and most specialized information on emerging trends and needs is seldom written down. Instead, it is held in the minds of "lead use" experts. The team accesses this rich information via interviews with a select group of these experts.

*Begin with a 4-day team trend investigation workshop*

In our work with teams, we always start out Phase Two with a team "trend investigation" workshop. We find that this is a very effective way to get team members quickly immersed in the project. For the four days of the workshop, members clear their schedules of all other work commitments so they can give their full attention to getting the study under way.

During the first two days of the workshop, the team reviews and discusses trade journals and other documents that contain up-to-date information in areas relevant to the project. The last two days, team members begin to identify and interview experts. (See the box on p. 76 for a description of activities that take place during the workshop.)

Following the workshop, teams continue with reading and interviewing activities for about three weeks. At that point, most teams have collected a satisfactory amount of market information and are ready to begin the process of selecting the specific needs which will be the focus of their work in the remaining phases of the lead user study.

Let's look now at the specifics of the trend identification process. We begin by discussing how teams typically approach the literature scan in the early phases of Phase Two. From there, we provide guidelines for the very critical task of identifying and interviewing lead use experts.

## The First Literature Scan - Which literature to select?

Careful thought should be given to selecting the trade literature that will be reviewed during the first round of information gathering. Otherwise, the team can get quickly swamped with information - and much of it may not be helpful to the team.

***Get off to a fast start with a team "trend investigation" workshop***

Kicking off the trend investigation with a four-day team workshop will accomplish several important things. First, in a short period of time, the team will be able to acquire a significant amount of market information. Second, via team discussions that occur during the workshop, members will have shared important related market information from their own industrial experiences. Third, and very importantly, team members will have made major strides toward becoming a strong and cohesive work group from having worked intensively together over a significant period of time.

These are the major activities that take place during the workshop:

*Literature Scan (2 days)*

The first 2 days of the workshop, team members read and discuss articles and professional journals that have been assembled during the Phase One planning. This activity is organized as follows:

- The first two days, members browse through journals and articles of interest to them for about 2-3 hours at a time. People sit together during the reading so that they can have "on-the-spot" informal chats about interesting ideas they come across.

- Team members have a group discussion of the reading every 2-3 hours. Discussions are fairly brief - perhaps 1 hour in length. Their purpose is to capture and think together about interesting and potentially useful information in the literature while it is still fresh in the minds of team members.

*Getting "warmed up" to interviewing experts (1-1/2 days)*

Following the literature scanning, over the next two days members begin to interview experts. This is what happens during the interviewing segment of the workshop:

- Team members do in-person interviews with local industry practitioners. These are done in two-person interview teams and usually take place at the site of the workshop. The people interviewed are not really top experts. The main purpose of these first interviews is to gain interviewing practice before taking on the "heavy hitters." About half a day is designated for the in-person interviews.

- Before the in-person interviews, the team devotes a half-day session to preparing for them. In this session, the team creates general interview questions and members actually role play doing interviews with hypothetical experts.

- The last day of the workshop, members begin to individually call experts identified in the reading. Generally, teams are able to obtain a few "on-the-spot" telephone interviews. However, the main purpose of the phone contacts is to set up interviews for the week after the workshop. This activity also enables members to get coaching from others on how to do effective telephone interviewing.

In a final half-day wrap-up session, the team pulls together what has been learned over the four days and plans the next steps in collecting data.

*Select journals aimed at practitioners*

During the initial literature scan, members should concentrate on reviewing the most recent months of trade journals aimed at practitioners in the fields important to the project. Note that trade journals are not the same as research journals. Trade literature is much more practical and usually contains good information on trends in the field, as well as the latest innovative applications. Below are a few specific ideas on types of literature that is usually useful to include in your literature scan.

- Review recent issues of trade journals aimed at practitioners in the target markets. Every industry has two or three top journals that are for practitioners that are in the "must read" category. Reviewing these will give the team a good sense of "conventional wisdom" regarding major trends and other important industry issues. For example:

  The hearing health team decided to scan the most recent six months of a major monthly industry newsletter, as well as two major journals targeted to marketing professionals. At the start of the project, team members knew very little about the target markets and trends that could impact future needs of customers. In the view of the team's marketing specialist, this trade literature would give members a good feel for trends and other major "happenings" in the hearing health industry.

- Review trade journals aimed at practitioners in *advanced analogue industries* (see p. 10 for definition). In many projects, there are other fields in which there are experts doing advanced work in areas relevant to the project. Scanning and discussing ideas in these journals is a great way for team members to start thinking "outside the box" of their usual areas of specialization. In addition, they will give the team ideas on potential lead users. By way of illustration:

  - A lead user team studying office lighting reviewed specialized trade journals on industrial lighting and medical operating room lighting during the literature scan. Team members knew that lighting applications in these markets were similar to but more advanced and demanding than the ones in their target market.

  - Another lead user team studying wood shaping methods selected a few trade journals on metal shaping for its literature scan. Team members knew from their industry experience that methods used to shape metals were generally ahead of those used to shape wood.

This suggested that metal shaping would be a useful related field to research during Phase Two.

- Review the most recent major marketing research studies and other documents that have the most up-to-date information on the target markets in such areas a demographics, market size and future need forecasts.

At this early point in the project, the team will not know with certainty which areas should be explored in the reading. However, during the Phase One planning, the team did collect some trend data. In addition, it does have access to the industry experience of team members. This information is generally good enough to enable the team to select useful trade literature to review.

## Identifying and Interviewing "Lead Use" Experts

*Who are lead use experts?*

We have coined the term "lead use" experts to refer to top authorities in their fields. Lead use experts could be researchers doing leading edge applied work in academic settings; they might be expert industry practitioners or trade journal editors.

The critical factor that distinguishes lead use experts from other industry practitioners is their extensive knowledge of leading edge *applications*. For example, consider the insight into the future of Internet applications that will be held by some top experts who have worked on a *range* of the most advanced applications in that field. Their knowledge of the "leading edge" enables them to understand trends and anticipate future market demand well before most others in the industry.

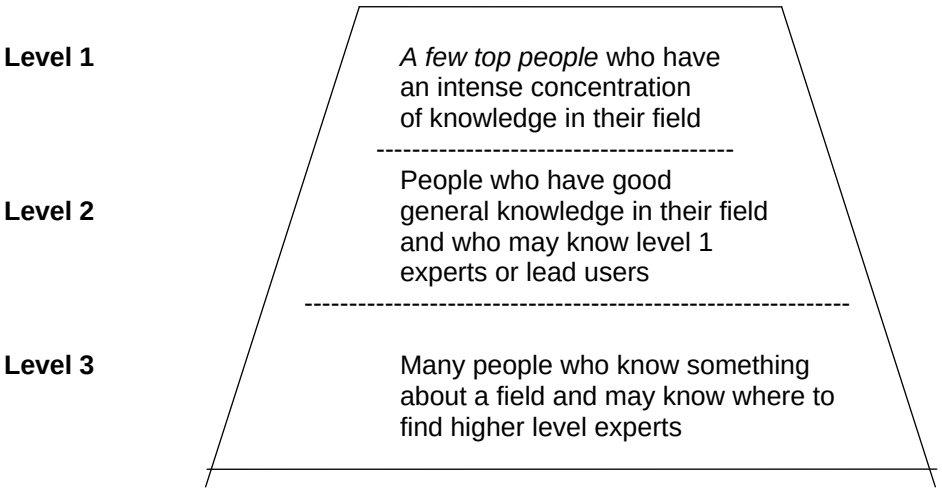
**Example of "Lead Use" Experts - the Olympic Snack Study**

In the "Olympic Snack" lead user study (described in Chapter 1), a Phase One analysis of market trends led the team to focus on developing a concept for a new type of snack food that would improve athletic performance. Therefore, in Phase Two the team sought out lead use experts to learn about how nutrition impacted level of performance.

The lead use experts interviewed were not simply "top experts in the field of nutrition." Instead, they were top nutrition scientists and coaches of elite athletes who worked to *apply* leading-edge nutrition research findings to the problem of improving athletic performance. For example, the team interviewed nutrition scientists working with Olympic athletes and with the Navy "Seals" - an elite US Naval combat group.

To identify the best experts for the purposes of the team's project, it will be useful to picture a "pyramid of expertise." As graphically shown below, there are many people at the base of the pyramid who know something about a field, but only a few who are "the best experts around." The goal is to seek out and interview people who are at the very top of the pyramid with respect to the particular knowledge and insights needed.

**Pyramid of Expertise**




*Locate top experts via telephone networking*

Teams use a networking process to identify lead use experts who are most appropriate for their purposes. Networking involves contacting someone at some point on the pyramid of expertise and asking them for the names of experts who know even more. This method usually works well because people who have an interest in a given subject tend to know others with similar interests. Also, people with significant expertise tend to be aware of others who know more than they do - simply because they are themselves interested in learning more.

Reviewing the trade literature is one good way to begin the networking process. The following are a few ideas on specific sources of experts who can serve as starting points for the networking:

- authors of articles that team members found relevant;
- experts named in articles of interest;
- editors of the trade journals that contained several useful articles.

There are also key word electronic literature searches that can be done to find the names of top people in their fields. For example, there are data bases on the Internet that will provide the names and biographical sketches of leading authorities in a wide variety of specific fields. (Check with your firm's library staff about which data bases are good ones to check out for names of top experts.)

*Begin networking anywhere on the pyramid*

Obviously, it is best to identify the most relevant individuals possible as the starting points for locating top experts. However, novices at telephone interviewing may wish to begin the expert identification process at lower levels of the pyramid. One benefit of doing this is that it will help interviewers get past anxiety they may have about the idea of talking to leading experts. Key industry people lower on the pyramid can also supply background information on top experts that will be useful in designing good interview questions.

Lead user teams carry out the networking process through telephone interviewing methods that will be discussed in Chapter 5. However, the following two examples will give the flavor of how the process works.

*Example 1: Office Lighting Lead User Team*

Recall from Chapter 3 that the task set for the office lighting team was to develop one or several concepts for a breakthrough office lighting product. The project team knew at the start of the project that one of the most important trends in the office lighting industry was a growing focus on developing higher "quality" lighting. Therefore, the team decided to seek out lead use experts to learn more about the attributes of high quality lighting.

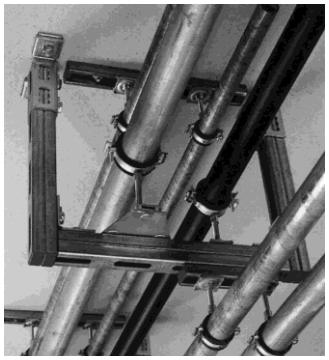
During the literature scan at the start of Phase Two, the team identified certain firms that had installed very high-quality lighting in their office facilities. Thus, members began the search for lead use experts by interviewing the facilities managers in these firms - and from these interviews learned the names of some top lighting designers known for creating high quality lighting in office environments.

Team members next contacted these top lighting designers and asked them: (a) who they viewed as lead use experts in office lighting, and

(b) which fields they judged to be most advanced with respect to high-quality lighting applications. The designers did identify top lead use experts for the team. Also, from these interviews the team learned that both the factory lighting and medical lighting fields were ahead of the office lighting industry with respect to high-quality lighting applications.

After these conversations, the team was well on its way to identifying lead use experts in both the target market and in other related fields as well.

*Example 2 - Hilti Lead User Team*



As discussed in Chapter One, Hilti is a leading European manufacturer of component parts and equipment used in the construction industry. Recall that in the Hilti lead user study, the team's assignment was to develop a novel type of pipe hanger system for use in commercial and industrial buildings.

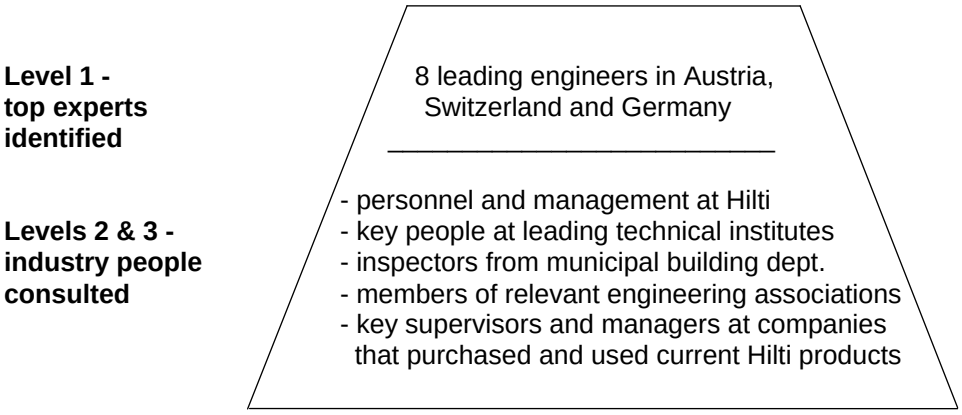
In the trend investigation phase of the lead user project, the team members sought out top authorities in their fields who had advanced knowledge regarding state of the art design and materials used in pipe-hanging. They also looked for experts who would have a good feel for the specific needs and concerns of tradesmen who were responsible for installing complex pipe hanging systems.

Three types of lead use experts turned out to have this specialized knowledge: 1) architect-engineers who specialized in planning and laying out the complex pipe networks in commercial and industrial buildings; 2) engineers from municipal buildings who had expertise in inspecting building plans and complex piping networks in buildings under construction; 3) experts in technical institutes who specialized in developing technical systems such as piping and wiring used in commercial and industrial buildings.

After a period of networking by telephone across Europe, eight leading experts were found who had the required knowledge. Members did intensive interviews with these experts to learn their views on important trends. The project leader, Dr. Herstatt, told us that the whole process of first finding and then interviewing the eight experts was completed very quickly, primarily because team members devoted large chunks of work time to telephone networking. Specifically, he said that members spent

a week doing a telephone networking “blitz” and succeeded in finding most of the experts during that week.

**Pyramid of Expertise - Hilti Study**




## Questions to Ask the Experts - A Brief Preview

*Explore “what do you know” & “who do you know” questions*

Lead user project teams usually spend at least a half-day getting ready to begin identifying and interviewing lead use experts. We will defer a detailed discussion of interview preparation and interviewing techniques until Chapter 5. At this point, we simply give a preview of the information that teams will want to obtain during networking calls and expert interviews.

During the interviews with experts, the team should focus the discussion on exploring two types of questions:

- *“what do you know”* questions aimed at understanding the substance of the expert’s information regarding important trends, and

- *“who do you know”* questions aimed at locating experts at the top level of the pyramid of expertise.

The “what do you know” questions should always be asked first because they enable the interviewer to assess the person’s level and type of knowledge.

At the beginning of the search for appropriate lead use experts, the "who do you know" questions are given the most emphasis. Once appropriate lead use experts have been found, "what do you know" questions should be the focus of the interviews. (See the box below for examples of each type of question.)

**Types of Questions to Ask the Experts**

*"what do you know" types of questions:*

1) What do you think are *the most important trends* that will shape the future of X product or service category?
2) *Why* do you think so? (Probe for concrete examples and the reasoning behind the interviewee's views.)
3) What *applications* are at the leading edge of the trends you have listed?

*"who do you know" types of questions:*

4) Which firms and/or which individuals do you think are doing the *most advanced work* in the application areas you have listed?
5) In your opinion, who are the *top experts* in the areas we have discussed?

### How many interviews to do?

Teams vary in terms of the number of interviews they do during the trend investigation phase of Phase Two. As a general rule of thumb, the team should plan on doing at least twelve to fifteen interviews with top lead use experts. Obviously, it may require a number of additional networking interviews to locate experts who have information that is of high-quality and most relevant to the team's purpose.

## The Next Task - Framing an Important Customer Need

When the team is satisfied that it has collected all the trend and market information needed, the next major team task is to "frame" the need area(s) that will be the focus of the remainder of the study. We discuss this very critical activity next.

"Framing" the need essentially involves selecting and clearly defining

*Need-framing is a core creative activity in Phase Two*

the specific customer needs that will be the focus of concept generation. To accomplish this, project teams go through process of assessing, creatively interpreting and combining the market information collected.

An initial need-framing is commonly done about two weeks into Phase Two. At this point, teams often frame two or three need areas and then do further data collection before ultimately seeking the specific need(s) that will be the focus of concept generation.

The outcome of the need framing process should be a clearly formulated description of these elements of the need area selected by the team:

- *target customer groups* - Precisely define the primary groups of people who will be served by the new product or service to be developed.

- *core need to be addressed* - Develop a clear need statement that captures the essence of the need(s) that the team has elected to focus on.

- *key attributes of the identified need* - List the specific attributes that the new product (or service) will ideally address, based on the data collected to date.

The need-framing that was created by the medical products team in Phase Two illustrates a clear and complete description of the need area:

target customer group: surgeons, doctors (both inside and outside the US

core need to be addressed: improved control of harmful bacteria during surgical procedures in a hospital setting

key attributes of the identified need:

- fast, accurate diagnosis of bacteria
- enhances fast recovery of patient
- major cost reduction relative to current products
- minimal/no side effects
- proven clinical effectiveness
- easy to use - requires minimal training of health care workers

**What is the value of need-framing?**

Before a good framing of the customer need is in place, the team has many bits and pieces of information that may or may not be vitally

important. As these accumulate, members may feel they are “drowning in information.” They can’t afford to let anything go because a key piece of the puzzle may be lost - but it is getting increasingly difficult to keep everything in mind.

Once the team has arrived at a clear statement of the customer need(s), further data collection can become much more focused and systematic. All the pieces of information can be understood as elements that do or do not fit into the emerging picture of the important customer need as the team has framed it. Now the team knows what it wants to learn more about and which data can be put aside as not applying to the project.

***Identify Needs - Not Solutions***

We want to underscore that before and during need-framing activities, the team’s attention should be squarely focused on identifying emerging needs and *not* on potential solutions to these needs. Some team members or entire teams - especially in highly technical organizations - can have a very difficult time doing this. Consider this example:

A lead user team was exploring customer needs in the field of office lighting. Specifically, members were trying to understand needs related to preventing glare and reflections on computer monitor screens.

At a need framing meeting, one member said he had learned that, “ Customers need motor-driven ceiling lighting fixtures with individual controls at each desk so users can adjust the angle of the lighting in their vicinity.” It was pointed out to him that this was a statement of a solution rather than a need. But he disagreed - “No, it is a need statement,” he said, because “ they *need* motor-driven lighting fixtures.” Of course, the ceiling fixture described by the team member may help solve a customer need for glare-free lighting. However, the unanswered question is - “*why* do users need a personally adjustable angles of lighting fixtures? What is the nature of the glare or other lighting problems your solution would address?”

For the team member’s contribution to be useful, other members must help in bringing out the hidden need information that *motivated* him to suggest this solution.

> Is the presenter viewing the proposed solution as a way to reduce glare and reflections on office workers’ computer monitor screens? If so a direct statement of the need would be: “Office workers *need a reduction in the glare and reflections* that affect their ability to easily view their computer monitor screens.”

Once the needs being addressed have been “pulled out” from the solution statement in this way, the team then can examine those needs directly and assess their importance.

## Important Need-Framing Activities

*Framing the need is a rapid & qualitative process*

The need-framing approach we use and suggest is a relatively fast process. For example, it is commonly completed in two half-day team meetings. There are important advantages to doing this work rapidly: When this is done, the detailed information that is kept “in the front” of members’ minds is much more accessible. After all, it is easier to remember the details of an interview held yesterday than it is to recall details of an interview conducted a month ago. Thus, data richness is maintained in need-framing activities when they are done rapidly because team members use their short-term memories and their interview notes - plus their rich industrial experience.

During need framing sessions, team members should also stay in a “qualitative mode" - the team should *not* use scoring and weighting methods or other techniques to summarize or pre-analyze the data before the session. Such coding methods are very costly to the process of creative need-framing. One can never know in advance of a need-framing discussion what subtle details from an interview will be key to making a novel and excellent “framing” of the customers' need. Yet the subtle details and observations that may make the critical difference are exactly what is lost when one applies such quantitative methods as scoring and weighting methods.

There are informal synthesizing and assessment procedures that may be helpful to use during need-framing meetings. For example, the team may want to list the various need-related trends identified in order of importance as an aid in evaluating which ones to focus on. This does not have to dilute the richness of data because team members still will have immediate recall of the detailed information that lies behind such listings.

*How should members prepare for need-framing sessions?*

Immediately before the each session, we recommend that each member do the following:

- Reread the interview notes, as well as any articles, etc. that you found to be potentially relevant.

- Give special emphasis to a review of the notes from your own interviews. This will refresh your recall of the additional detailed impressions that were not written down but may be useful in the need - framing session.

- Identify the pieces of information from the data that strike you as important. Doing this in advance of the team discussion will enable the need-framing work to proceed more efficiently.

*What should teams do during a need-framing session?*

The general steps that teams typically follow in a need-framing session include the following:

Step 1 At the start of each need-framing session, members should take turns presenting and discussing the trend and need information that stands out as important to them. Members should complete their individual presentations before moving on to a general team discussion.

Step 2 Next a team discussion should ensue in which members put forward possible ways to combine the information presented into a clear description of the core needs that may be important to address from the viewpoint of customers.

Step 3 The team then assesses the fit of the various need-framings with the business goals of the company and selects the one or two most promising need framings that were proposed.

Step 4 Before adjourning, the team should assess the additional information that is needed to determine if the selected need areas represent a good commercial opportunity.

After the need-framing session a member of the team should write up a clear description of the need-framings that came out of the session.

*Abrasives Project - Need Framing Process*

Let’s look now at a case study which illustrates the nature of a good need-framing process. Recall from Chapter 1 that a manufacturer of various hardware products for private consumers and construction contractors decided to do a lead user study for “breakthrough” abrasive products. Management was interested in creating a family of new products that would include power tool accessories and non-powered sanding tools. As a result of their interviewing and reading to this point in the study, team members came to their first need-framing session knowing a good

deal about important customer needs and industry trends. These were key pieces of information that came out during the session:

1) When users were asked what they wanted in a sanding product, they said they hated sanding; they wanted something to help them spend less time on sanding tasks.

2) Users also said they hated the sawdust "mess" created by sanding.

3) Experts said consumer interest in home “do-it-yourself” jobs involving sanding was rapidly increasing - more and more people were restoring their own homes and becoming interested in refinishing antique furniture, etc..

4) Experts said the competitive “battle” for do-it-yourself sanding products was primarily being fought over pricing; few really innovative products were appearing on the market. One expert noted that a rare exception was the recently introduced "detail sanders" which enabled users to get into nooks and corners with a powered sanding tool - these were really “jumping off the shelves."

5) The team knew from their industry experience that super hardware stores such as Home Depot were capturing a steadily larger share of the market in the area of sanding tools and supplies for home users and contractors. The team also knew that these stores liked to buy from only a few "full line suppliers.”

This information and much more was presented by team members at the start of the session. Then the discussion began. The team knew, for example, that people wanted sanding to be “easier” and “faster” - but what exactly did this mean? - *What* parts of sanding were the hardest for people? Which types of sanding tools and materials worked best for which kinds of jobs? Which specific product attributes mattered the most to experts and users? These were all areas that were discussed.

A key insight came for the team when one member shared information he had obtained from an interview with a top expert in the refinishing of antique furniture. What struck the team member was the expert’s remark that the hardest part of sanding was dealing with *curved surfaces* - rounded objects such as table legs, banister railings and moldings.

In fact, the expert said: “Your company will ‘own the market’ if it can develop a product that will make contour sanding easier and faster. Existing products serve that need very badly.” Suddenly a possible need-framing jumped into focus: Perhaps the key customer need to work on was the problem of *doing contour sanding quickly and well*.

Team members next began to evaluate this framing. First, they recalled their personal experiences with sanding projects. These did tend to support the idea that sanding curves and details was indeed the hardest part of such tasks. For example, one member recalled when she and her husband repainted the house, the “real killer” was sanding the molding. Another person remembered the “nightmare” of sanding the details of a Victorian chair he had refinished. The team next evaluated how well this framing of the customers need fit with other data it had and the business interests of the company. We can illustrate this “fitting” process by referring to the five items of team information listed earlier.

- If it was true that contour sanding was the hardest part of a sanding task, then working on contour sanding product concepts would certainly address item 1, users’ wish to spend less effort on sanding.

- It would *not* address item 2, users’ desire for a sanding process that would generate less of a mess.

- Item 3 suggested the market for home sanding products was expanding. This added to the commercial potential of the product area the team was studying, but said nothing about which sanding needs mattered the most to product users.

- Item 4 suggested that “detail sanders” were proving so popular with consumers because they were seeking tools for dealing with contour sanding jobs. This provided a bit of supporting evidence for the commercial potential of a product that would make sanding curved surfaces easier and faster. Detail sanders were not intended primarily for sanding curved surfaces and did not do that job very well - but perhaps they were better than what had been on the market previously.

- Item 5 suggested to the team that, since a successful innovation to do contour sanding would be novel, it might help to "pull" other less innovative sanding products

supplied by the firm into stores like Home Depot - because such retail chains tended to want to buy all of their products from only one or a few suppliers. Of course, this would also be true for any innovative sanding product concept the team developed.

Team members agreed that the initial evaluation of the proposed need-framing did show some promise, but more data collection was required to test it further. Still, members were very enthusiastic because the framing "felt" like a very promising one. They decided to do further investigation and then come together for other meetings.

Further investigation did show that "better contour sanding" was a very good fit to important user needs. For example, the team learned that fully 80% of the sanding effort on a typical home sanding job was devoted to laborious hand sanding of contours. In contrast, existing power tools were able to make short work of flat portions of sanding jobs such as table tops.

The team ultimately decided to focus on the customer need for improved contour sanding." It would *not* satisfy all of the identified needs - for example, users' desire to better manage the "mess" associated with sanding. However, the need-framing the team had created *did* address enough important elements to be the framing members wanted to focus on.

example of difficult and time consuming contour sanding jobs

Below is the need statement that the team ultimately created.

| | |
|---|---|
| *Target Markets*: | 1) "do-it-yourself" consumers, and 2) building contractors |
| *the need framed as*: | "sanding products for faster and easier smoothing of contour surfaces" |

The final description of the selected need area also included a listing of the key product attributes that had been identified as important to address with new contour sanding products. Although the team would be refining its understanding of these attributes, this preliminary list gave the team a good starting place for identifying appropriate lead users in the next phase.

Once a good framing of the customer need was in place, the abrasives product team was able to collect data with much greater efficiency. Now members *knew* what kind of information that was important to seek. Although the team refined this framing during Phase Three, it continued to be a very good fit with further trend and market information collected.

## The Final Phase Two Task - Assessing the Business Opportunity

Before concluding Phase Two, lead user project teams create a very preliminary "business case" in order to begin answering the question: Is there a profitable product or service opportunity for *our company* in the identified need area(s) and targeted markets? A more complete business case is created once the team has generated actual product or service concepts (see Chapter 6).

During Phase Two, lead user teams usually collect the following business case data:

- *market data that is readily accessible* (e.g. on-hand at the company). Here teams seek preliminary answers to the questions: What is the approximate "size" of the need in the targeted market(s)? and - Is the market growing and big enough to meet the business goals for this project?

- *data on major competitors.* In this area, a key question to be answered is: Will potential products (or services) give us a long-range and sustainable advantage over our competitors?

Project teams also meet with key managers before moving on to the next phase to check out if the selected need areas are consistent with their views on important market trends and needs.

At this point in the project, teams cannot do a thorough assessment of the business potential for products or services because they do not yet know

the forms they will take. However, an informal “reality check” is generally adequate to ensure that the team is on the right track with the needs it has selected**.**

In this next phase the team will interview lead users to gain a more exact understanding of the attributes associated with the focal needs that matter the most to targeted customers. In Phase Three, the team will also collect further data to validate the business potential of the needs identified in Phase Two.

## A Brief Review

In this chapter, our goal has been to provide a framework and guiding principles for the trend investigation. For the sake of clarifying the flow of research activities, we have organized our discussion of Phase Two around three primary tasks, summarized below.

**Key Points to Remember**

The core activities of Phase Two include:

***1. Exploring Market Trends and Needs***

- Do general reading to become oriented to the marketplace.
- Learn about major trends by interviewing top experts.
- Meet weekly to share and discuss information collected.

***2. Framing an Important Customer Need***

- Explore several possible customer need framings and assess their fit with need and trend information collected.
- Select one or two need-framings to be further explored during Phase Three.

***3. Assessing the Business Potential***

- Check in with key managers to make sure the team is headed in the right direction.
- Do a quick informal analysis of market size and growth potential.
- Do an informal analysis of competitive offerings.

# Chapter 5

# Interviewing Methods for Lead User Project Teams

Lead user project teams obtain most of their really novel information by conducting "semi-structured" interviews with lead use experts and lead users. This type of interviewing may be new to some or all project team members - it is very different from highly structured, questionnaire-based interviewing. In this chapter we show you how to conduct effective semi-structured interviews.

## Introduction

Interviewing of lead use experts and lead users is a fundamental part of the information gathering work of project teams. The type of information that a team needs is very advanced, as well as very specialized, and often won't be published anywhere. That kind of information exists only in the "minds" of experts and lead users - and thus, interviewing is required for the team to obtain it.


Lead user project teams do what is called "semi-structured" interviewing - which means that team members cannot rely on a script of completely "canned" questions. As a result, much depends on the ability of the interviewer to recognize and effectively pursue information opportunities that arise *during the discussions* with experts and lead users.

Productive interviews require thorough team planning, as well as very careful individual preparation. With this in mind, our focus in this chapter will be on how to prepare for your expert and lead user interviews. The chapter begins with an overview of the interviewing methods used by lead user project teams. From there, we walk through the team and individual planning required for successful interviews and then discuss a few key techniques team members should have in their interviewing tool kit.

## Semi-Structured Information Interviewing - Key Elements of our Interviewing Methods

The basic interviewing approach used by lead user project teams falls within the general category of “information” interviewing. Information interviews are similar to what journalists refer to as feature interviews with “elite” subjects. The label commonly used by anthropologists is “key informant” interviewing. Key informants are people who are very knowledgeable about and well-connected with a social or cultural group.

*Information versus survey interviews*

Information interviews are very different from questionnaire-based interviews in terms of the role of the interviewer and the nature of the information collected.

An ***information interview*** is flexible and contains questions that vary from interview to interview. A typical information interview starts with an open-ended question such as: "Tell me your views on topic X." The interviewer then carefully listens to the response for interesting points to pursue and follows up with additional, individualized questions developed on the spot. Good information interviews take on the form of an evolving, thoughtful discussion between interviewer and interviewee.

A ***survey interview*** is intended to collect responses from a number of people to a standard set of pre-determined questions. A typical survey conducted by telephone would have the interviewer read a series of scripted questions and record the answers on a standard form. For example, an interviewer might ask, "Which of the following set of trends affecting topic X do you think is most important?" Typical survey interviews consist of a series of short questions followed by short answers. A survey interviewer does *not* have the freedom to follow up interesting answers with additional, individualized discussion.

**Key differences between Information and Survey Interviews**

| Information Interviews | Survey Interviews |
|---|---|
| *Goal -* Explore interviewee's unique perspective and views | *Goal -* Obtain interviewee's response to standard questions |
| *Interviewer Role -* Ask individualized, probing questions that draw out each person's thinking | *Interviewer Role -* ask each interviewee the same, pre-set questions |
| *Type of Data Collected -* Stories rich in usable details, concrete examples | *Type of Data Collected -* Normative data with details omitted |
| *Interview Format -* Loosely structured around a few open-ended questions | *Interview Format -* Highly structured around a pre-set questionnaire |

*The goal - get novel insights about the marketplace*

As with all information interviewing, the focus of the interviews with experts and lead users is on capturing their *personal* views and *unique* perspectives on a particular subject. In these interviews, the purpose is *not* to test the project team's pre-existing ideas and hypotheses about the marketplace. Rather, the goal is to gain *new insights* that add to the team's knowledge in its area of study.

Specifically, experts and lead users can provide project teams with three very valuable types of information:

- *Insights into emerging needs* - Experts and lead users frequently have finely tuned intuitions about future market demand and a good feel for subtle innovation opportunities because of their rich knowledge base and personal experiences in the industry.

- *Design information and new product ideas* - Experts and

lead users are likely to know the most advanced technical work being done in their fields and often are engaged in doing leading edge work themselves.

- *ideas on how to locate other experts and lead users* - Experts and lead users tend to have broad personal connections with other technical and market experts and innovating companies.

Opportunities to obtain information in the above areas could come up at any time during interviews. The team should, therefore, be prepared to explore each of these areas.

### Should the team do telephone or in-person Interviews?

Do telephone interviews when time or convenience is a major concern

Teams commonly do both telephone and in-person interviews during a lead user project. However, many interviews are done by phone because they are much less costly and time-consuming. Moreover, very busy people may be more likely to grant a telephone interview than go through the hassle of setting up an in-person discussion.

Obviously, a limitation of telephone interviewing is that the interviewer must interpret responses without the aid of additional information provided by an interviewee's body language and the physical setting (for example, materials or prototypes relevant to the topic that may be at a lead user's place of work). It is also more challenging to establish and maintain rapport by phone. However, a capable interviewer can usually overcome these limitations.

We do recommend conducting in-person interviews *at the site where products of interest are used* when an important goal is to learn about the product use environment or the team wants to acquire detailed and specialized technical information - for example, the team may want to observe how a particular user-developed prototype works or directly observe lead user problems with current products. Project teams often do interviews at user sites when they are selecting lead users to invite to the concept development workshop in Phase Four.

The specific methods used to do user site visits that include observation

of the product or service use system is a major subject in its own right and beyond the scope of this chapter. However, many of the interviewing principles we discuss will apply to doing user site visits.

### Information Interview Format

Because information interviews are fairly unstructured, they require considerable skill and thinking on your feet. In advance of the interviews, team members do develop a small list of questions they want to explore. Designing questions in advance serves as a reminder on the important topics that should be covered and helps the interviewer to keep the discussion focused. However, the questions are used as an interview *guide only*, rather than as a set interview script. During the discussion, team members usually need to modify them - or sometimes must even put aside pre-determined questions and topics.

*Emphasis - draw out a rich story*

The type of interviewing done by television broadcast journalists conveys the flavor of the information interview process. When Barbara Walters or Dan Rather are doing a feature interview with someone, their goal is to draw out a compelling story - one that has a unique twist and is rich in details because this is what makes a story interesting. Although they have prepared a few questions, they must make on the spot decisions about how to guide the discussion *as it is taking place*. In spirit, this is the kind of interviewing that team members will be doing with experts and lead users.

### How many interviews should a team do?

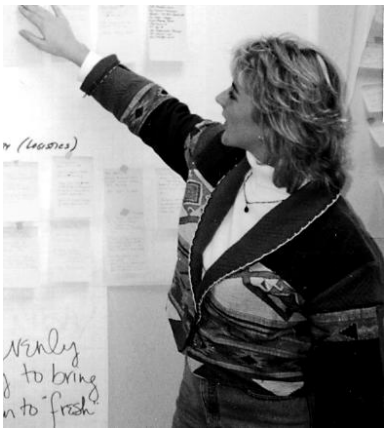
Teams commonly conduct a total of fifteen to twenty in-depth interviews with top lead use experts and lead users during Phases Two and Three. A number of additional networking calls are usually required to locate people with the appropriate information. Team members should also expect to have a few conversations with voice mails and secretaries before gaining access to prominent people.

*Aim for quality versus quantity of interviews*

In deciding how many interviews to do, keep in mind that the goal is *quality* rather than *quantity* of information. New and diverse insights are far more important than how many times the team hears the same ideas being repeated. It sometimes takes only a handful of phone calls with the right people to obtain the desired trend and market information. In the Hilti study, for example, the team gained a solid understanding of major trends and market demand after in-depth interviews with only eight top lead use experts.

## Team Preparation for the Interviews

Teams carefully prepare for the interviews with the experts and lead users. First, the team agrees on the general topics that should be explored in the interviews (See Chapter 3 for a discussion of this subject). The next task involves creating *a general interview guide.* Then, team members will create a more specific version of this guide - a *customized interview guide* - one that is tailored for each interview they plan to conduct.



team leader – refrigeration products project, 3M Company

In this section we provide guidelines for developing the team's general interview guide. From there, we explain the planning done by individual team members to develop their customized guides for each interview.

### Creating a General Interview Guide

*Design a few general questions & opening remarks*

Teams find it very useful to develop an interview guide that includes important points to cover at the start of each interview and a few general questions on the important topics that should be explored with various types of experts and lead users. We want to again underscore that this general guide is not intended as a "script" that should be rigidly followed in every interview. The purpose of the team guide is to provide members with a model for designing their own questions and opening remarks.

*Plan brief and concise opening remarks.*

The team should carefully think through the areas that should be covered at the beginning of interviews. The first few minutes set the tone of the whole discussion and may determine whether the person will agree to participate in a full interview. Specifically, the team should agree on the opening points that should be covered in these areas:

1) purpose of the interview
2) company affiliation
3) why this person was selected for an interview
4) amount of time being requested

*Plan a concise & brief opening to the interview*

All of these areas can and *should be* covered in a few remarks. For example:

> "I am with Y company and a member of a new product development team. We are interested in learning about important trends in the area of Y. Mr. X suggested that you would be a good person to talk to about this subject. I have in mind a 30 minute conversation with you, either now or some time in the near future."

Above all else, keep the opening as brief and concise as possible. When people are asked for an interview, they are likely to have two questions on their mind: What does this person want? - and beyond that - Is there a good reason why I should grant an interview? A lengthy explanation of the project is unnecessary and will be a turn-off to many people.

***Be prepared to offer interviewees some incentive to be interviewed.***

People generally expect to get a return benefit from agreeing to talk. A crucial incentive for top experts is that the interviewer comes to the conversation knowing something about their work and having some general knowledge about the topic under discussion.

Teams find that most experts are willing to be interviewed without being paid a fee if the conversation is interesting enough. However, there are many exceptions - notably among experts who make a living selling information such as private consultants. Our suggestion is to set up a fund for paying expert and lead user consultants and establish guidelines for deciding when to offer payment for an interview.

If interviewers anticipate an expert may expect to be paid for an in-depth interview - for example, they are contacting a private consultant - this issue should be covered in the beginning of the interview. One way to handle the subject is to simply tell the person that the team is prepared to offer a payment of X amount for the interview.

*Develop a few broad interview questions.*

We suggest developing one general question for each major topic the team wants to explore in the interviews. There is a knack to designing questions that effectively draw out the interviewee's thinking. We will be looking at how to frame good questions a little later in the chapter.

However, the examples below will give you an idea of the general questions that are developed by teams during their planning for expert and lead user interviews. These questions were developed by the medical products team in preparation for their interviews with lead use experts during Phase Two.

**Medical Products Project:**
**Interview Topics and Questions to Explore**

Market Trend/Need Questions

- What are key anti-infection control problems/needs faced by surgeons & nurses in the hospital setting?
- What are expert forecasts on needs of hospitals several years down the road?
- What are the unique problems/needs of surgeons outside the traditional hospital setting?

Trends in Technology

- What are leading bacteria prevention methods being developed?
- Which fields (and people) are doing the most advanced work in the area of developing more effective antimicrobial drugs?
- What are good alternatives to antibiotics that are being developed?

It will be helpful to develop general questions for two reasons. First, it will sharpen the team's thinking about the types of experts and lead users to seek out during the networking calls. Second, it will ensure that all members have the same understanding of what the team is trying to accomplish from the interviews.

## Individual Preparation - Creating a Customized Guide

Thus far our focus has been on team preparation for the interviews. As discussed earlier, members must also create a customized interview guide for *each interview*. These are the main planning activities that go into creating a customized guide:

- Do background research on the interviewee
- Design a few focusing questions
- Plan your opening remarks
- Develop your interview guide

Members should plan on spending one or even two hours getting ready for each interview with a top expert or lead user. Interviewers find that It takes at least that much time to construct good questions and do the “boning up” on the subject and the expert to be interviewed. This is especially true early in Phase Two when members are learning the knack of conducting a productive interview.

## Doing Background Research

From your team planning, you already have a good idea of the general types of information you want to get from various kinds of experts. Now you need to tailor your objectives to the particular person you are going to interview.

In deciding the areas you are going to explore, clearly, you need to take into account the expert’s area(s) of specialization. For example, you should familiarize yourself with the professional background of the expert - articles the person has written, special personal awards, etc.. Even though this is an obvious point, we find that interviewers often fail to do this basic homework.

**Background Research - a Key to a Productive Interview!**

People who are prominent in their fields will rightfully expect you to be familiar with their work. Further, this is critical to designing interview questions that are appropriate to the expert or lead user to be interviewed. The following are a few ideas on the types of homework that is useful to do:

- Check out the various “Who’s Who” books in the interviewee’s field for special honors, awards, etc. he or she may have received. Your library staff should be able to direct you to the reference materials that contain good biographical information on prominent people in various fields.

- Carefully review any articles or books written by the person and note key areas you want to refer to or discuss during the interview. This should be done shortly before interviews so the information is fresh in your mind.

- Get as much background information as possible on the expert or lead user to be interviewed during your networking calls - for example, ask the referring person if the expert or lead user has published any articles or if he/she is doing innovative work related to the subject of your project.

***Tip*** - Have any important articles written by the interviewee in front of you during the interview if you anticipate that the content of these articles will be discussed.

## Designing your Focusing Questions

We recommend designing a fairly broad, open-ended question for *each* of the areas in which you want information. By "open-ended" we mean questions phrased so that the person has a wide variety of response choices. For example:

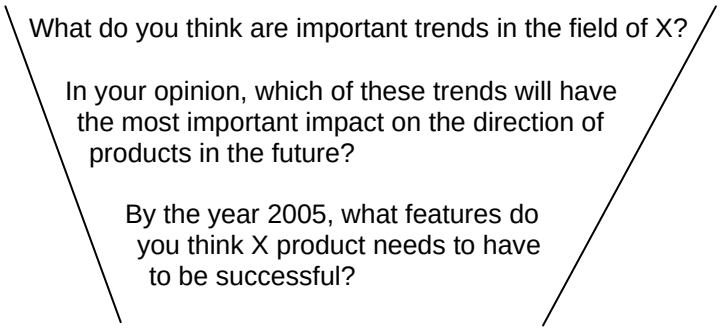
> "In your opinion, what are important product features users will be seeking three years from now?"

An open-ended question is often used as a lead into a main topic and to start out the interview. Usually interviewers also develop one or two follow-up questions that are more narrowly focused. The follow-up questions are used to amplify and clarify the person's thoughts and get at concrete applications of information being discussed.

*Consider the sequencing of questions*

The order in which you ask questions has an important influence over the direction of the interview and the kind of information you get from the interviewee. The most common organizational scheme is a "funnel" sequence. You start with general, open-ended-questions and work your way to more narrow ones.

**Funnel Sequence**




There are advantages to going from broad to specific questions – in particular, at the start of an interview or when you are introducing a new topic. By beginning with general questions, you have a chance to size up the person's knowledge base and frame of reference on a topic. Also, unexpected and valuable information may come out that you wouldn't get by beginning with narrow questions.

Under some circumstances, a "pyramid sequence" is the better method of ordering interview questions. That is, you start a topic with narrow, very focused questions and then ask for the interviewee's general opinions and conclusions. Narrowly focused questions are a faster way to get

information when the interviewee is highly knowledgeable or your primary interest is in specific applications of information.

Although it is useful to do advance thinking about the ordering of questions, you often will need to make an on the spot judgment call as to which is the most appropriate sequence to follow.

## Planning your Opening Remarks

Think of ways to establish your credibility

Earlier we discussed the importance of doing advance thinking about the background information to give about the purposes of the interview. In addition, think through ways to quickly establish your credibility. People at top levels in their fields tend to get numerous requests for interviews. Early in the interview, you want to communicate that you are more than "just another caller wanting something."

There are several ways to establish early credibility - mention ideas from articles written by the person, use the language or examples from the expert's field, refer to people you both know. Simply being concise and clear about the purpose of the interview is a way to convey that you are informed on the subject.

## How detailed should your customized guide be?

Interview guides vary in terms of how they are formatted and how detailed they are. Some interviewers use a guide that amounts to only a listing of topics to cover in the opening and notes on areas to cover during the discussion. Others work from one that contains the exact phrasing of questions and detailed reminders on follow-up questions.

Because your interviews will be fairly unstructured, we recommend a guide that is between these extremes. On one hand, you want it to be specific enough so that it will be a good memory jog for you during the interview. At the same time, you don't want to lock yourself into a "formula" guide - one that contains a pre-set listing of questions to be asked in a certain order. Generally speaking, the more inexperienced the interviewer, the more detailed the guide should be.

An example of a customized interview guide is shown on the next page. The questions are based on the guide developed by the Hilti team project leader. They were designed for an interview with a lead user who worked at a company that was doing leading edge work of importance to the project.

## Sample Interview Guide for a Lead User Interview

Below are sample questions we have developed for a lead user interview that are based on the interview guide developed by the project leader in the Hilti project (see Chapters 2 and 4 for a discussion of this project). The interviewer is interested in acquiring information regarding any novel pipe-hanging products the interviewee or his company may have developed.

**Opening Remarks**

Hello. My name is .... I am Manager at Hilti Manufacturing and in charge of ... project. (Right now we are working on creating a radically new pipe-hanging system.).You have been recommended to us as an expert in this area by Mr./Mrs.... I have some questions I would like to discuss with you. Would you have about 30 minutes now? (if not, ask for time within the next few days).

**Background Questions on the Interviewee**

*(Note: These questions are designed to provide the interviewer with a sense of the person's level of knowledge and areas of specialty.)*

- How long has your company been installing pipe-hanging systems?
- How long have you been personally involved in applications of this product?

**Questions about Potential Lead User Innovations**

1) What are key problems that you (or others at the company) have encountered in the field?
2) Have you (or others at your company) developed your own pipe-hanging elements or modified currently available products to address any of these problems?
3) *(If the current answer is "yes")* What is the nature of the innovations or modifications you have developed to address the problems you face?
4) How would you evaluate your solutions? (Probe for specifics regarding why the solutions have or have not successfully solved the problems.)

**Questions about Trends and Future Market Needs**

5) Do you think that the problems you are facing are becoming more general in the field?
6) What other problems do you find emerging in the field that will require future additional innovations?

**Wrap up Question**

7) Who else do you know that is an expert and who may be doing innovative work in the areas we have been discussing?

Although your interview guide will provide you with a general road map for the interview, you also need a few good interviewing techniques you can call on to get at the really "good stuff" - the unique insights and advanced information the interviewee may possess related to the project. In the next section we discuss a few specific techniques that are used by effective interviewers.

## Listening and Probing Techniques

*Two key interviewing skills*

There are two key skills that separate good and mediocre interviewers. Effective interviewers, first of all, know how to *listen well*. While they may have their own particular biases and views on a given topic, they are willing to set these aside and take on the perspective of the person they are interviewing. Secondly, good interviewers are skilled at using *"probing" techniques*. Probes are methods designed to amplify and clarify the content. Good information interviewers have virtually dozens of probing techniques they use.

Listening and probing skills work together. The interviewer must be an effective listener to spot opportunities to uncover an interesting idea and accurately size up when a topic is adequately covered or more information is needed. Simply listening, however, doesn't ensure that an interview will be productive. The interviewer must also be prepared to guide the interviewee to a deeper level of thinking. This is where probing becomes important. If probing methods are used appropriately, they help interviewees develop and expand on their ideas.

### Tips for Listening Effectively

A complete coverage of how to listen effectively is beyond the scope of this book. However, there are three common sense listening guidelines that will go a long way toward enhancing the quality of your interviews with experts and lead users.

• *Step into the world of the interviewee.*

It takes an exceptional interviewer to really carry out the spirit of what it mean to see the world through the interviewee's eyes. In terms of actual interviewer behavior, it means paying close attention to the interviewee's language, overall style of organizing information, etc. and adjusting one's own style accordingly. It also involves constantly looking below the surface of responses for the *meaning* that lies behind them - for example, the assumptions and thought process that led to opinions or conclusions put forward by the interviewee.

Effective listening is an *active* process that takes a great deal of mental energy and self-discipline. You can't expect the person being interviewed to supply the needed information by passively asking a set of questions. Nor can you half listen while planning the next question or comment. Above all else, effective listening hinges on the willingness of the interviewer to *work* at discovering how the *interviewee* is viewing a given subject.

• *Focus the discussion on only a few major topics.*

*Plan to cover 3 or 4 major topics*

Obviously, you are eager to get as much information as possible from each interviewee. Beware, however, of attempting to cover too many subjects so that there is no time to expand on a given topic. Professional interviews aim to explore *no more than 3-4 major subjects* in a 30-45 minute interview. Of course, some of the topics you have planned to discuss may turn out to be dead ends with particular experts or lead users. So it is wise to go into interviews with a few extra back-up topics in mind.

• *Paraphrase important points made by the interviewee.*

The technique of paraphrasing involves restating in one's own words what has been said. Paraphrasing ensures that the interviewer is accurately understanding the interviewee. If it is done well, it often serves to move the discussion to a deeper level. The following is an example of paraphrasing:

*Interviewee:* "We are looking for a home run product."

*Interviewer paraphrase:* "You mean, you're goal is a radical new product that will give your firm a long-range competitive advantage in your industry?"

Note that in this example, the interviewer has attempted to get at the underlying *meaning* of "home run" to the interviewee. It doesn't matter if the paraphrase is inaccurate. The value of the restatement is that it invites the person to clarify and expand on the meaning of the remark.

## Common Probing Techniques

Probing for more information needs to be done in a way that does not offend interviewees or interfere with their thinking. For example, your tone of voice and manner should convey that you are genuinely interested in knowing more about a subject. In particular, avoid probing remarks which suggest the interviewee's ideas are being challenged.

• *Silence and Minimal Encouragement Probes*

*Allow periods of silence – people need "think time"*

One of the best ways to encourage elaboration is to allow a good question to "hang in the air." In other words, *stop talking* so that interviewees have a little time to reflect and gather their thoughts. A few seconds of silence can communicate, "I'm listening - go on." Excessive talking is a common mistake of inexperienced or nervous interviewers. Typically out of anxiety, they feel the need to fill every silent space with a remark or a question.

Of course, too long a silence can have a negative effect. The interviewee could interpret it as confusion or lack of knowledge on your part. That's why "minimal encouragement" phrases are often a good alternative to total silence. Examples of this kind of probe are short remarks - for example, " Tell me more," "That's interesting," "really," "um-humm". Brief phrases of encouragement keep the interviewee talking with a minimum of directing from the interviewer.

• *Direct Probes*

There are a number of straightforward ways to encourage interviewees to amplify and clarify their ideas without interfering with their thought processes. The following are a few of many simple, direct probing methods:

> "Could you give me a concrete example of what you mean?"
> " Explain more about that point."
> " It would help me if you could spell that out more."
> " Could you tell me how you got to the conclusion that...."

"Why" questions are another typical way to get interviewees to elaborate on their thinking. The main problem with too many "whys" is that people can feel under interrogation and become defensive. Still, an occasional well-placed "why" sentence is a good way to get more information as long as the tone of the question communicates genuine interest, rather than a challenge. Whatever method you choose, the important point is to probe in a way that makes it as easy as possible for people to convey their ideas on a given topic.

Effective interviewing comes down to basic communication skills most people use automatically when they are really interested in what someone else has to say. Suppose that a colleague has a juicy bit of gossip to tell about a major happening in the company. You don't

have to stop and coach yourself on how to listen or how to probe for details. These are things you naturally do, because you are *highly motivated* to learn something. This is a good example to carry with you into your interviews. Assuming both you and the interviewee have a common interest in the subject (and you are well-prepared), chances are high for a productive conversation.

## Recording Interview Information

In this final section, we provide a few important pointers on the subject of taking individual notes during interviews and summarizing them for distribution to the rest of the team. It is critical for interview data to be complete and accurate, given that the team relies heavily on this information (see p. 110 for an example of a good interview summary).

### Tips for Taking Interview Notes

In your note-taking during the interviews, you want to capture as accurately as possible the full richness of the person's ideas, experiences and perspective on the topic areas. More specifically,

• *Get verbatim remarks.* Jot down key phrases, expressions that convey the essence of comments - e.g. reveal the person's opinion, attitude or point of view on the topic.

• *Note the details of who, what, how and why.* For example, jot down specific information about such things as the processes described and the reasoning behind opinions and conclusions.

• *Keep your personal opinions separate from the remarks of the interviewee.* For example, use parentheses or some other method to indicate your opinions or judgment about a remark.

• *Fill in details of your notes - or better yet - write up your interview summary immediately after the interview.* It is very important to write up your notes soon after the interview. In fact, writing up your interview summary right after the interview is by far the best practice to follow. The mind quickly forgets the details of information - and yet the details

are what is needed if the summaries are to be useful to the team.

Below is an example of a general note-taking format that has worked well for other teams.

**Lead User Research Interview Record**

**Interviewer Name** **Date of Interview**

**Interviewee Name** **Address** **Tel.**

**Background Information:** (Information about the interviewee that will help readers assess the quality of information collected - professional specialty, level of knowledge/experience relative to the subject, etc. )

**Important Data:** (Note important content from the interview. In particular, jot down key verbatim remarks, details and concrete examples. )

**Personal Insights:** (Note personal interpretations, opinions that will help readers evaluate the information - use some method of separating personal views from those of the interviewee.)

**Other People Referred**: (Note names of other experts, etc. that you or others should contact.)

**Action Items**: (Note follow-up activities you or others should take - e.g. send a gift pact to the interviewee, call back in a month, etc.)

*Distribute copies of notes to other members*

Team members should single out the important interviews and write up summaries of their notes from these to distribute to the rest of the team. Obviously, the interview summaries should be written in a clear manner so that other readers can easily and quickly follow the important points covered. Teams also find it useful to keep the summaries from key interviews in a master notebook.

In writing up interview notes, it is very important to explain major points in enough detail so that the information is really usable by the team. The sample interview summary shown on the next page illustrates the type and level of detailed information that is helpful to include in your summaries. It should be noted that this is only an excerpt from the summary written by this particular team member. The complete summary was about two pages in length.

**Sample Interview Summary - Lighting Lead User Project**

Interviewee: Dr. ----- Member of University X Lighting Research Laboratories, X street, Y City, USA. Phone: xxx-xxx-xxxx.

**Background Information:**

Dr. --- is an academic/consultant. He wrote a book entitled _____which the team has skimmed. He is very knowledgeable and helpful - gave richer, more extended answers than did interviewee X. He will consult for the team for a fee of $100 per hour. (Action Item - Send gift pack)

**Information Obtained from Interview**

*Interviewer's first question: "What do you think are important trends in the field of office lighting?" Dr. ---'s response contained the following major points. Comments made by the interviewer when writing up the interview notes are shown in parentheses.*

(1) Dr. --- divides the market into the "cheap and simple end" vs. the "more sophisticated end." On the cheap and simple end, there has been a trend to obtain lighting energy economy by concentrating light directly on the horizontal plane (work surface - tends to make offices look gloomy - not much light on walls and ceilings and tends to be uncomfortable for workers stationed right under a light (Interviewer comment: Specific source of problem is not clear to me - is it glare?) Dr. --- 's response - The more sophisticated end of the market has invested in more expensive fixtures which send some light up to illuminate ceilings as well as some light downward to illuminate work stations.

Dr.--- thinks there will be a rebellion against the "cheap solution" because it is uncomfortable, and that a trend will emerge to apply the solutions now used at the sophisticated end of the market to the cheap end. (A problem, however, is that you need at a ceiling height of at least 10 feet to apply the up-down type of lighting fixtures he mentioned.)

*Interviewer's follow-up question on this point: "Are you aware of any users of office lighting who are possible Lead Users at the sophisticated end of the market?"*

Dr.--- responded that good likely prospects would be large companies with advanced lighting needs that build their own buildings. For example, Company Y is building a compact disk plant and is very concerned about high quality lighting (in fact, Dr.--- is consulting for them); Company Z is another that he heard is very interested in quality lighting and may be doing experiments.

(2) Regarding the problem of proper lighting for computer monitors in the office: Lighting is getting to be less of an issue here because screen technologies are much better today (display brightness and surface treatments to reduce glare were mentioned).

(3) Several years ago the standard illumination level in offices was 1000 watts. It has dropped to 500 watts and no one seems to have noticed. Will trend continue or reverse? Not sure.

(4) Regarding task lighting: Technology is moving to allow individuals to control their own lighting in big offices through electronic fixtures such as an electronic ballast that allows a worker to dim fluorescent lights. Company X may be developing electronic controls for light fixtures in office buildings.

### Should team members tape record interviews?

Teams sometimes tape record their interviews with top experts and lead users. There are good arguments in favor of doing this. Obviously, this will provide a richer and more accurate record of the information collected and taping will free interviewers to fully concentrate on the discussion. If taping is done team members should get permission from the interviewees *before* any content of substance is discussed. This is required by law in many states.

The one major disadvantage of tape recording is that it could inhibit some interviewees. Even if people agree to be taped, there is a risk they will censure certain remarks or omit information they don't want "on the record." As a general rule to follow, do not tape interviews if people show *any* sign that this will inhibit what they are willing to discuss.

### Fine Tuning your Interview Approach

We have a final interviewing tip to offer teams. Members will find It is very useful to devote a team session to doing a "dress rehearsal" of the interview process before beginning to interview top experts and lead users. The team will get the most out of a practice session if members actually role play doing a hypothetical interview with various types of experts.

**Key Points to Remember:**

1) *Develop a general team interview guide that includes:* a) a few general questions and b) major points to cover at the beginning of each interview.

2) *Do the following individual preparation for each interview*: a) collect background information on the interviewee and the subjects to be discussed, and then b) develop a customized guide for the interview.

3) *During the interview*: a) Cover thoroughly no more than 3-4 major topics in a 45-60 min., b) probe for specifics and examples that clarify and expand on important points, and c) set aside your own biases and opinions.

# Chapter Six

# PHASE THREE: Exploring Lead User Needs and Solutions

The emphasis in Phase Three is on learning about the leading edge needs and solution ideas of lead users. In this chapter we show you how to locate lead users who have the right kinds of information for the purpose of your project.

## Introduction

By Phase Three, significant progress has been made on the lead user project. Teams have selected a specific customer need to focus on and have identified important attributes of this need as well. Now in this phase, the core task is to acquire a more exact understanding of the functions, features and benefits that a new product or service should deliver. Teams also begin to construct concepts during this phase.


Teams acquire solution ideas, as well as further needs data, primarily through interviewing lead users. They also continue to interview lead use experts who have advanced technical information of relevance to the project.

By the conclusion of Phase Three, teams have usually generated several alternative concepts to address the customer need that was framed in Phase Two. These concepts are preliminary ones only. They are further developed and sometimes new ones are generated during the lead user workshop, which takes place during Phase Four.

During this phase, teams also do an informal market analysis to make sure that the types of new products or services being considered do, in fact, represent a strong business opportunity. From the data collected, teams construct a preliminary business “case” which is presented to management before the team moves on to Phase Four.

Phase Three consists of four major sets of activities:

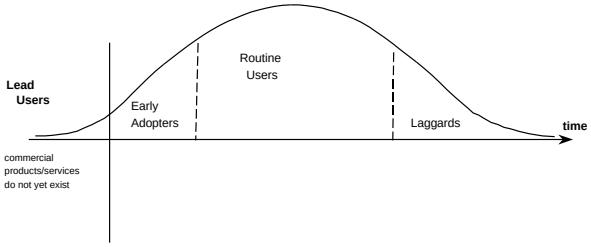
1) Gathering needs and solution information from lead users and lead use experts
2) Generating preliminary concepts
3) Collecting data for the business “case”
4) Updating management on the lead user project

In this chapter, we explain and illustrate how lead user project teams approach each of these activities.

## A Review - Identifying Lead Users

In Phase Three, the major challenge for the team is locating lead users with the right kinds of information. With this in mind, we begin our discussion of this phase with a quick review of how to go about the critical task of identifying appropriate lead users.

Recall from Chapter 1 that the search for lead users begins with identifying individual product users or user firms that: 1) are ahead of the bulk of the market with respect to their new product or service needs, and 2) stand to gain significant benefit from finding solutions to their leading edge needs.



*Lead users provide a rich needs & solution forecasting laboratory for teams*

Lead users can help project teams in two important ways. First of all, they are likely to have very good insight into the product or service attributes that will matter to customers in the future because they have real-world experience with needs that most others in the targeted markets have not yet confronted. Second, lead users can be a rich source of new product or service ideas. As demonstrated by von Hippel and other researchers, lead users often will modify existing products or services in an effort to satisfy their personal needs – and sometimes, they have developed and actually field tested prototypes that will be commercially attractive.

Also, recall from Chapter 1 that there are three different types of lead users that can provide valuable information to project teams:

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 specific and important product or service *attributes* desired by customers in the target markets.

The three different types of lead users can be illustrated by means of the medical products project. As discussed in previous chapters, in that study the team's task was to develop a concept for a new type of medical product to reduce the incidence of harmful bacteria during surgical procedures.

*Example: Lead Users of Infection Control Products*

Based on Phase Two interviews and reading, the medical products team decided to focus on the following set of major need-related trends:

- a growing need for effective bacteria prevention methods that were more flexibly adaptable to a variety of surgical conditions;

- a growing need for bacteria control methods that were dramatically more cost effective;

- a growing need for bacteria prevention methods that were very easy to apply.

During Phase Three, team members identified and learned from the three types of lead users as follows:

*Lead users in the target application and market* - Lead users the team found in this category included top surgeons in hospitals that were forced to operate on a very low budget and thus, had a high need for effective bacteria control methods that were cost-effective, as well as easy to apply with minimal employee training.

*Lead users of similar applications within advanced "analog" markets* - Lead users the team sought out of this type were practitioners who had to perform surgical procedures under varied and demanding conditions. Lead users identified in this category included surgeons associated with military MASH units.

*Lead users of important product attributes desired by the target customers* - The team wanted to learn more about how to design an infection control product that would address the attribute of being *flexibly and easily adaptable* to body contours and varied body shapes. With respect to this attribute, one lead user the team located was a renowned make up artist who had designed masks for major Broadway plays. This person actually attended the team's lead user workshop in Phase Four and provided very useful information regarding low cost skin covering methods that worked well on body contours.

*Start with interviewing lead users in the target market*

During the course of Phase Three, the team systematically sought out and interviewed a lead user in each of the three categories. Members began by interviewing users in the target application and market. Several of the individuals interviewed were able to give the team good direction regarding other fields in which advanced work was being done that was relevant to the project.

The history of how power screwdrivers were developed provides another illustration of the three types of lead users and the different kinds of information they can offer. The role played by lead users in developing this product is described in the box on the following page.

***Mini History - Lead Users of Power Screwdrivers***

Power screwdrivers were initially developed by lead user-manufacturing firms that had a strong need for such a product in their assembly plants. Plant operators assembled products by using screws. Often, they had to install a huge number of screws per day using manual screwdrivers - a physically very demanding task that often resulted in limited output and poor quality. Engineers who developed equipment for their firm's assembly process responded to this problem by developing power screwdrivers to ease and speed the operators' task.

Contractors in construction fields next took up the innovation of power screwdrivers. Some construction tasks also required workers to install hundreds of screws per day, giving them a powerful motivation to develop a fast and easy way to do this. Initially, crafts people adapted their portable electric drills to the task of driving screws by replacing drill bits with screwdriver bits. However, these adaptations lacked important features of purpose-built power screwdrivers such as torque limiters. Eventually, a power screwdriver for contractors was introduced commercially.

After commercial power screwdrivers were introduced for the contractor market, many home do-it-yourselfers also began to buy them. Tool suppliers responded by introducing power screwdrivers specifically designed for the home market. These tools were less capable and durable than those designed for contractors - but they were also much more cost-effective for occasional users.

***Hypothetical Example - Systematically Identifying Lead Users***

Now, suppose that, *before* the development of power screwdrivers for home use, a lead user team had been given the task of developing such a power tool for the home market. In this example, the team could learn from three types of lead users as follows:

• *lead users in the target market* - The team would start out its study by interviewing do-it-yourself consumers with home projects involving a lot of fastening work. From these users, the team could gain insight into the problems and needs faced by leading edge users in the home market. However, this inquiry would probably not turn up power screwdriver innovations.

• *lead users in advanced "analogue" markets* - The team could next seek out lead users in markets where similar tasks are performed but the *potential benefits from innovation* are higher. Specifically, the team would find power screwdriver prototypes by investigating how the screw driving function was being performed in factories and construction fields. User needs would not be precisely the same as those in the target market, and the team must make appropriate adjustments. Still, very useful design information could be acquired. The team could learn, for example, about the proper ergonomics for power screwdrivers from the rich experience of operators who used them daily and could learn about desirable features in such a tool.

• *lead users of important product attributes* - The team might acquire additional solution ideas by seeking out lead users with respect to certain *attributes* of the cordless screwdriver. Suppose that the team wanted to learn more about how to develop an appropriate *portable power supply*. In that case, it might look for lead users in other fields where the attribute of portable power would be very beneficial. For example, lead users might be found among engineers who were involved in developing battery packs for power military equipment or engineers with NASA who were given the task of developing "cost-is-no-object" hand tools for astronauts.

## Acquiring Needs and Solution Information from Lead Users and Lead Use Experts

We next explain the specifics of the information gathering process in Phase Three. From there, we discuss practical means for identifying lead users and lead user experts with the right kinds of information for the team's purposes.

### Information Gathering Activities

As discussed in the beginning of the chapter, in Phase Three the focus of data gathering is on interviewing lead users and lead experts who have leading edge solution information to offer. As in Phase Two, many of the interviews are done by telephone for the sake of efficiency.

The interviewing process in this phase is essentially the same as the one followed in the Phase Two interviews. That is, the team develops a general interview guide that spells out the key areas that should be explored with lead users and experts. Then team members develop a customized guide for each person to be interviewed. As in Phase Two, it is also very important that teams take detailed notes on important interviews and distributes these to all team members.

The Phase Three interviews are different from those done during Phase Two in one important respect. In Phase Two, the major emphasis of interviews was on broadly exploring experts' views regarding important trends and emerging market needs. In contrast, the focus of the Phase Three interviews should be on obtaining specific kinds of solution and needs information that can be applied to the task of developing product or service concepts.

*Visit the sites of select lead users*

Teams also visit the sites of lead users when initial telephone interviews have revealed interesting user-developed innovations. These visits can provide a great deal of information that will not be obtained by telephone interviewing alone. For example, during site visits, teams often observe behavior that lead users are unaware of - perhaps because it is "just part of business as usual" from their point of view. Site visits will also provide valuable contextual information that a lead user might find hard to explain in a telephone interview - for example, "At this point in the procedure I turn the video probe like *this* ... but only when the image looks like *that."*

The whole team typically participates in important site visits. The type of site visit done by lead user teams is similar to what anthropologists call the "contextual inquiry" method (see the box below). During a typical visit this is what happens: The team first spends some time observing behavior - for example, how equipment is being used, the steps followed to perform particular processes. After an observation period, the team interviews key people to clarify and further understand behaviors, etc. that have been observed. A visit usually takes at least half a day.

***Benefits from Lead User Site Visits***

Holtzblatt and Jones (1990, p. iii) explain the benefits of site visits (included in their "contextual Inquiry" methods) as follows:

"The contextual inquiry approach is based on field research techniques, and focuses on interviewing users in their own context as they do actual work.... If we just ask customers what they need, they are unable to tell us....Similarly, if we only observe customers' actions, we might misinterpret the meaning of their actions....Whenever we design, we have assumptions about the nature of the customers' work....These assumptions can be blind spots that keep us from seeing information that challenges our assumptions. Contextual inquiry provides a way to align our understanding with customers' understanding. We expand our entering understanding by probing things we do not understand, behavior that surprises us, and problems behind (customer) solutions."

Source: "Contextual Inquiry: Principles and Practice," *Digital Equipment Corporation Working Paper*, October, 1190 Digital Equipment Corporation, Maynard, MA.

## Planning for the Phase Three Interviews

At the beginning of Phase Three, project teams go through a planning process that is similar to the one carried out in Phase Two. First, teams carefully think through the specific kinds of information they want to

gather. Next, they generate a starting list of types of lead users and lead use experts who are likely to have the desired information. The final planning step involves creating a specific action plan for collecting data which spells out who will be responsible for locating and interviewing which types of lead users and experts. This plan should also include an approximate timetable for completing Phase Three.

The information gathering plan developed by the project team in the medical products study illustrates the nature of the preparation that should be done before beginning the interviewing process.

*Example: Planning of the Medical Products Team*

*Start by precisely spelling out what you want to learn*

The medical products team started out Phase Three with two meetings - each one several hours in length - in which it developed a plan for locating and interviewing lead users and experts. The team began its planning by addressing these questions:

1) What do we know about the core attributes required of infection control products, based on data gathered to date?
2) Which attributes do we want to learn more about?
3) What specific types of solution information do we need?

Next the team generated a list of types of lead users and experts who were likely to have the information of interest. The following two examples give the flavor of the thought process the team went through to create this starting list:

> The team decided it wanted to learn more about how to develop very easy to use infection control procedures that would work well under a variety of demanding surgical conditions. Potential lead users and experts that members thought of included surgery practitioners who had to work under conditions that were very hard to control. For example, the team decided to seek out veterinarians associated with zoos because they would often be forced to perform surgery under very dirty conditions and would have a high need for infection prevention methods that could be applied quickly and easily.
>
> The team also wanted to learn more about state-of-the-art and cost-effective methods for quickly killing water bacteria. People the team decided to seek out in this area included specialists in skin disinfectants and public health practitioners

who specialized in diagnosing and cleaning up water contamination after flood disasters.

Below is a more detailed list of the product attributes the team wanted to better understand and possible lead users and experts with respect to these attributes.

**Medical Products Project**
**Potential Lead Users and Experts**

*Core Need: More effective control of harmful bacteria during surgery*

| Important Attributes of the Need | Potential Lead Users/Lead Use Experts |
|---|---|
| - kills broad spectra of bacteria | - public health practitioners specializing in preventing water contamination |
| - no harmful side effects | - experts in latest skin disinfectants |
| - no contamination of surgical site | - medical practitioners who worked with immune resistant patients |

*Core Need: Anti-microbial methods that are flexibly adaptable to varied surgical procedures and surgery conditions*

| Important Attributes of the Need | Potential Lead Users/Lead Use Experts |
|---|---|
| - requires minimal skill/training | - surgeons in developing countries & surgeons/nurses with the military |
| - works well under “dirty conditions” | - veterinarians who worked at race tracks |
| - very cost-effective | |

*Core Need: More durable and easy to use methods for killing skin bacteria*

| Important Attributes of the Need | Potential Lead Users/Lead Use Experts |
|---|---|
| - works well on varied skin types | - designers of masks - movie industry |
| - covers body contours well | - major paint suppliers/manufacturers |
| | - scientists who know most advanced skin disinfectants being applied in surgery |

Notice that the medical products team was very specific in listing the product attributes it wanted to better understand. This is a critical to finding lead users and experts who have the right kinds of information.

## Networking to Find the “Right” Lead Users and Experts

Clearly, it is important for the team to locate appropriate lead users and lead use experts as quickly as possible. We now look at practical ways

to accomplish this.

In Phase Three, lead users and experts are found by using the telephone networking approach that has been discussed previously (see Chapter 4 for a review of the networking method). The following example shows how the networking process works in this phase.

*Example - Hearing Health Lead User Project*

Recall that in the hearing health lead user project, the team task was to develop a breakthrough hearing device that would address the special needs of individuals with only moderate hearing impairment. In Phase Two the team arrived at this framing of the core customer need:

| | |
|---|---|
| *Framed Need* | A hearing aid product with an *improved sound processing* system that is *easily and flexibly adaptable* to varied hearing environments. |

The team began its search for lead users and experts in the target market and application by contacting leading audiologists (prescribers and fitters of hearing aids). One set of audiologists interviewed were those who dealt with a large number of moderately impaired hearing aid users and so had expertise regarding their needs. Members also sought out audiologists and leading scientists who specialized in diagnosing and preventing hearing loss of employees in large “heavy noise” factories. The team decided that these specialists would have a good feel for the needs and problems of people in the early stages of hearing loss.

After about two weeks of interviewing, the team discussed what had been learned from this first round of interviews and came up with four important conclusions with respect to further needs and solution information it wanted to gather:

1. Acceptance of hearing aids by consumers with moderate hearing loss would require hearing aids that were much more cosmetically appealing than existing ones. The team decided that it needed to learn more about what qualified as “cosmetically acceptable” to consumers.

2. The team knew that to create a commercially successful product, it would need to develop a sound system that

solved the problem of amplifying unwanted background noise. This was the number one sound quality problem of current hearing devices that was cited by expert audiologists.

3. The team envisioned creating an inexpensive, "one size fits all" hearing aid. The major technical problem to be solved in this area was how to create very inexpensive tubing that could be easily custom shaped to fit any ear.

4. It was clear to the team that to achieve access to the rapidly growing market of first time hearing aid users, it would need to acquire strategies for distributing hearing aids through mass retailers, rather than going through licensed dispensers as was currently required by law.

The team generated a new list of lead users and experts to seek out who could provide information in these four areas and then did a next round of networking calls and interviews. A sample of the types of lead users and experts the team decided to seek out for interviews are listed below:

**Hearing Health Project - Lead Users and Experts Sought Out for Interviews**

| **Attributes to Explore** | **Lead Users/Experts to Seek Out** |
|---|---|
| more cosmetically appealing design (inconspicuous/visually attractive) jewelry | • cosmetic dentistry specialists<br>• manufacturers of pricey costume |
| lower cost tubing that can be custom shaped (disposable tubing - e.g. different tubes for different occasions) | • medical tubing suppliers<br>• manufacturers/suppliers of amplifiers for professional football teams |
| no acoustical feedback/minimal amplification of unwanted sounds | • specialists in tiny circuitry and digital technology applications in the video and music industries |
| very easy for user to purchase (without ear exam, special fittings) | • opticians who had pioneered the sale of contact lenses through mass retailers<br>• major retailers who sold glasses and offered on-site eye exams, e.g. Sears |

## Additional Networking Tips

Before leaving the subject of networking methods, we have two additional tips for shortening the time required to find lead users and lead use experts.

• *Search electronic data bases.* Some teams have found it useful to do an electronic search for lead users and experts. For example, members of the medical products team found several lead users and lead use experts by exploring select data bases on Internet. The team had to do some additional telephone networking to locate individuals who had the right kinds of information. However, the electronic search did put the team on the trail of four lead users who ended up participating in its concept development workshop.

*look for people who are innovating*

• *Ask questions aimed at uncovering innovators.* In the networking interviews, the emphasis should be on asking questions aimed at identifying lead users and experts who are actually doing innovating in areas relevant to the project. Innovators are likely to have the richest solution information because they are actively engaged in problem-solving. The box below contains examples of the types of questions that are likely to uncover individuals doing innovative work.

***Questions to Explore in the Networking Interviews***

1. Start with "what do you know" questions to assess the interviewee's level of expertise.

   *Examples* - In your opinion, what are major problems and shortcomings with currently available products?
   - What are key features X product will need to deliver to be a success down the road 3-5 years?

2. Next, explore the interviewee's ideas regarding innovative product or service ideas.

   *Examples* - What are your ideas regarding innovative solutions to the problems with existing products?
   - Have you actually developed or modified existing products to meet your personal needs?

3. Before concluding the interview, always ask about innovators they know.

   *Examples* - Who do you know that is doing innovating in the areas discussed?
   - Which fields are doing the most advanced work in X area?

## Exploring Preliminary Concepts

As previously mentioned, an important task in Phase Three is to arrive at preliminary product or service concepts. Although team members are acquiring novel solution ideas from lead users and lead use experts throughout this phase, concept exploration usually begins in earnest after members have done about ten to fifteen lead user/expert interviews. During the concept exploration process, these are the key questions to be answered:

*Define key product or service requirements*

1) What are the core functions, features and benefits that new products or services should deliver?

2) What are the best and most interesting ideas regarding possible product or service forms that we have identified to this point? (For example, what are desirable design features? What technologies could be employed?)

We want to underscore the *preliminary nature* of the concepts that lead user project teams explore during Phase Three. On one hand, before concluding this phase, team members should agree on which of the various concepts generated are in the "most promising" category. This is necessary in order to decide the design work that will be the focus of the lead user workshop that takes place in Phase Four. At the same time, the team should leave the door open to explore additional new product or service possibilities during the lead user workshop.

## Concept Exploration Sessions

We recommend that teams have several concept exploration sessions during Phase Three. One emphasis of these sessions should be on defining the attributes and features that a new product or service should deliver. The team should also designate time during each meeting to "try on" a variety of solution ideas.

We also recommend that team members do individual problem-solving prior to concept exploration sessions. This work will enable a much richer team discussion. For example, members of the medical products team logged many individual hours thinking about

how to best apply the various solution ideas acquired from lead user and expert interviews. They also generated related solution concepts of their own. In the team leader's judgment, the individual problem-solving work done by members resulted in more diverse and novel solution ideas than would have been identified with only group discussions.

The general activities that should take place before and during concept exploration sessions are outlined below.

**Concept Exploration Sessions -**
**Suggested Activities and Format**

*Individual preparation for the meeting:*

- Identify the needs and solution ideas obtained from lead users and lead user experts that strikes you as important to the project from your personal interview notes and the interview summaries of others.

- Outline (or sketch) your ideas about promising solutions - e.g. types of possible new product/service forms, the needs might address, etc..

*Activities during the meeting:*

1. Begin the session with members taking turns presenting key needs and solution ideas they have identified from interviews.

2. Once everyone's individual ideas have been put forward, think together about ways to creatively combine and build on interesting solution concepts that have been presented. Here the goal is to generate a variety of different solution possibilities.

3. Using agreed upon criteria, select the most promising solution ideas.

4. Before adjourning the meeting, determine additional information that should be collected and decides who will follow-up on the next tasks.

During the idea exploration part of meetings (see activity #2 above), there are several good creative thinking tools that can be used to stretch the team's thinking about "out of the box" new product or service ideas. The following page describes two such tools that lead user teams have found very useful.

**Tools for Solution Exploration**

Below are two idea exploration activities that teams have found useful as vehicles for enhancing their thinking about creative solution possibilities.

## Look for Metaphors in Other Fields

Searching for applicable analogies in other fields can be a powerful tool for sharpening your understanding of an issue or finding a novel way to solve a problem. For example, the Canon manufacturing design team came up with a breakthrough way to design a low cost cartridge for a desk-top copy machine by studying the design principles of the aluminum beer can. This is how you set up a team session to do a "metaphor search" session:

1) The team should first select a specific problem in which novel solution ideas are needed. The focus problem might be a particular technical dilemma - or a particular need in which your solutions thus far are just "ho-hum."

2) Team members next take about 15 minutes to individually identify fields that are facing a similar problem and have already solved it (this step could also be done in pairs).

3) Then as a team, brainstorm ideas on how the solution ideas from other fields might be applied to your problem area.

## Have a "Break the Rules" Session

People and companies who have dared to break the rules regarding "how things are usually done" in the industry have developed a number of very successful products. Ted Turner of CNN broke the rules when he decided that people didn't need superstar news reporters. Southwest Airlines has changed the entire airline industry by deciding that people didn't need fancy meals and other costly flight services. Here's how you set up a "break the rules" session.

1) Start by identifying a widely held assumption about the best way to meet an important consumer need related to the focus of your project.

2) If you're a rebel by nature, this is when the fun starts. Take time individually to first think about how lead user/expert solutions may be contrary to "conventional wisdom" in the industry. Next identify at least one related solution idea of your own that could be an interesting and important industry "rule breaker".

3) As a team, discuss how the ideas generated in Step 2 could be applied to expanding on or improving solutions identified thus far.

Note: Readers who are interested in learning about other team creative thinking activities will find the following book useful: Roger von Oech, *A Whack on the Side of the Head,* New York, NY, Warner Books, 1990.

## Collecting Data for the Business "Case"

Before concluding Phase Three, teams do an analysis of the targeted markets and competitive products to verify that the identified needs and solutions under consideration represent a strong business opportunity.

We start our discussion of this work by outlining the components of an appropriate preliminary business case and then look at the kind of market data that is usually gathered in Phase Three.

### Elements of the Preliminary Business Case

The preliminary business case constructed in Phase Three attempts to answer the following five questions:

1) Approximately how many potential customers exist for products and services that address the need(s) we have identified?

2) What do we estimate the potential market size will be in the near term (e.g. the next 1-3 years)?

3) Are new product or service solutions under consideration a good fit with our firm's business interests?

4) Can we deliver unique customer benefits and value not offered by competitive products or services?

5) Is it technically and economically feasible to develop a product or service that will satisfy the customer need at an acceptable price?

Generally, the preliminary business case is created quite rapidly. Teams typically draw on data the company has on hand or can be readily accessed through electronic data bases. As venture capitalists and entrepreneurs know, an informal analysis can provide a reliable basis for going ahead when an innovation opportunity is either well above or well below the firm's "go-no-go" threshold." For example:

> Suppose that a firm expects that a new product opportunity must have potential sales of at least 1,000 units and a profit margin of

> X by the second year on the market, to be worth pursuing. If available data allows the team to estimate that the opportunity being considered has a potential for sales of at least 10,000 units in the second year with a profit margin of 3X, this will generally be good enough data for the decision that has to be made at this point in the project.

We recognize that each company has different guidelines for evaluating the commercial potential of various innovation opportunities. It is critical for the team to know what these guidelines are so that it will be able to do an opportunity analysis that conforms to management's expectations. If the team does not have a good sense of the "case" it must build in support of solution ideas that have generated, key managers should be interviewed during Phase Three to learn their expectations in this matter.

**Sample Outline of a Preliminary Business Case**

The Phase Three opportunity assessment carried out by the hearing health team illustrates the nature of the business case work that is typically done at this point in the project. Recall that in this study the target customers were people with only moderate hearing loss. Below we outline how this team went about finding answers to the five business case questions that we posed earlier.

*1) How many potential customers are there for products that address the needs of individuals with moderate hearing loss?* From health surveys found in Phase Two, the team had reliable data on the frequency of moderate hearing loss in the United States and Europe. These reports showed that tens of millions of people in both these markets were currently in the early phases of hearing impairment - and these numbers were expected to grow at a very rapid rate over the next 10 years (the reason - baby boomers were reaching the age when hearing begins to deteriorate).

*2) How big is the near-term market?* One of the defining characteristics of "moderate hearing loss" is difficulty hearing or comprehending speech under noisy conditions such as those that occur at a crowded social event or restaurant. All of the audiologists and lead use experts interviewed by team members agreed that there was a huge unmet market need for hearing aids that would enhance the ability to hear and understand speech. They also agreed that hearing aids would need to be

significantly less expensive than current products in order to attract the mass market. This information rang true with the team's intuitions and knowledge of the marketplace.

*3) What are the competing solutions and products?* During Phase Three the team did a thorough analysis of competitive offerings. This involved such activities as consulting with the company's network of industry contacts and having the library staff assemble data about competitors. The team found that there were *no existing products* targeted towards customers with only moderate hearing loss. Further, they could not find any hearing aid manufacturers that were developing a product for these markets.

*4) Will potential products be a good fit with our firm's interests?* The team knew that the identified needs and preliminary solution ideas would be a good match with the company's long range innovation objectives. However, a major challenge facing the team was developing a way to distribute hearing aids through mass-market retailers such as Sears. In the judgement of the team, this would be a requirement for the commercial success of the type of product it had in mind.

To find a good model for distributing hearing aids through mass merchandisers, the team consulted with experts in the vision industry because this industry had successfully dealt with problems associated with distributing non-prescription eye wear via mass-market chains. The team also consulted with a leading legal expert in the hearing health industry to acquire ideas on how to get past the current FDA requirement that hearing aids be sold through licensed audiologists. By the conclusion of Phase Three, the team did have the outline of a feasible new distribution strategy.

*5) Is it technically and economically feasible to develop a product that will meet the market need?* The team knew that the company had much of the technical know-how and the manufacturing capabilities to develop a low-cost, high performing hearing aid for its targeted markets. During Phase Three, the team also identified new technologies that could be easily acquired to deal with certain technical problems.

## Updating Management on the Project

The team's last major task in Phase Three is to present its preliminary concepts and supporting market data to management. The main

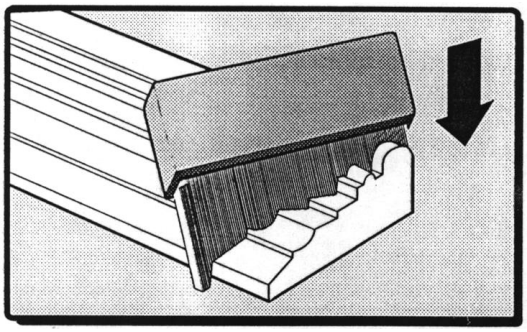
purpose of the meeting is to confirm that the team is headed in the right direction. A second goal is to get the committee's views about important business criteria the team should take into account in further developing concepts. The management meeting in the abrasives project will give you an idea of a typical agenda.

*Management Update - The Abrasives Study*

Recall that in the abrasives study the team elected to focus on the trend toward "faster and easier" sanding of contour surfaces. Once the team had formulated its preliminary concepts and collected verifying data of commercial potential, it met with managers overseeing the lead user project to be sure it was going in a direction that fit with their interests and expectations.

The team leader began the meeting by presenting the core need it had selected and the confirming market evidence that this was a strong commercial opportunity. Management agreed that the trends identified and the need area selected by the team did fit with their own intuitions and observations of the marketplace.

Next members presented drawings of five preliminary product concepts. The purpose was to give managers something concrete to react to in order to elicit good feedback from them. These concepts were not fully developed, but simply were the team's vision of what potential products would do, based on what it had learned to date. One of the concepts presented at the meeting is shown on the right.



preliminary concept sketch for
a contoured sanding block

The concept sketches did serve to evoke from managers several crucial criteria about what successful product concepts would look like - some of which had not come out in previous meetings. For example, one team learning was that concepts should very easy to use and also *appear* to be easy to use. Based on the experience of the marketing manager, most consumers expected to use a product "right out of the box" and get

successful results. This was a crucial point for the team to take into account during further concept generation work.

The team came away from the meeting feeling satisfied that its goals had been successfully accomplished. Managers had a clear understanding of where the team was headed and were enthusiastic about the concepts generated thus far. Also, the team now had a good picture of the types of products and attributes that mattered the most to management and was ready to move forward with further developing the preliminary concepts in Phase Four.

*Make the presentation concise & visually interesting*

We have a few final tips to offer for setting up a productive meeting. In our experience, the most successful management presentations are those that are brief and rely on visual tools such as sketches that depict what a product might do. Managers typically aren't interested in knowing all the details of the team's journey. They want the bottom lines - the needs and trends that have been identified, evidence that they are commercially good opportunities and a concrete picture of what a product will offer that is really different from existing products.

**A Review - Key Activities in Phase Three**

1) *Learning from lead users and lead use experts* - The team refines its understanding of future customer needs and identifies solution ideas by interviewing lead users and lead use experts.

2) *Exploring preliminary concepts* - About midway into Phase Three, the team begins the task of constructing preliminary concepts, based on information gathered from lead users and lead use experts. The resulting concepts in this phase should spell out: a) key product or service requirements and b) possible new product or service forms such as design principles and features.

3) *Collecting data for the business case* - Before the end of Phase Three, the team does a quick, informal analysis of the targeted markets and offerings by competitors to verify that the needs and solutions identified represent a strong commercial opportunity for the company.

4) *Updating management on the project* - Once team members have agreed on preliminary concepts, the team meets with management to ensure that they are a good fit with the company's business interests and goals.

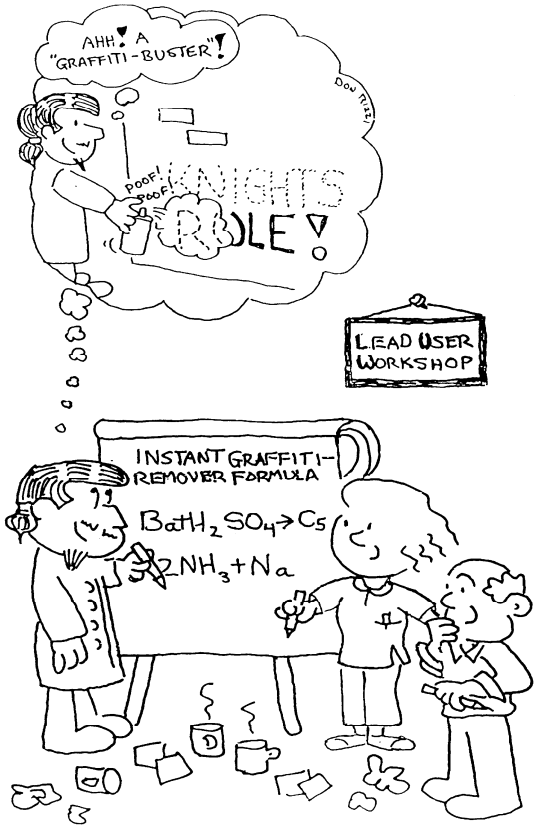
# Chapter 7

# PHASE FOUR: Improving Solution Concepts with Lead Users and Experts

In Phase Four the team holds a lead user workshop to further improve and perhaps add to the preliminary concepts that were generated in the previous phase. This chapter explains how to plan for and conduct the lead user workshop. It also lays out the wrap-up work that must be done to complete the lead user project.

## Introduction

The work in this concluding phase of lead user projects is especially exciting and rewarding for teams - this is where it "all comes together." During Phase Three, the project team established core product or service requirements and identified some solutions to address them. Now in Phase Four, the team further improves and evaluates various solutions, with the goal of arriving at a strong final product of service concept(s).




An important activity of this phase is the lead user workshop. This is a two or three day event in which a select group of lead users and lead use experts join the project team to do intensive design and problem-solving work together. The overall purpose of the workshop is to improve and add to the solution

concepts identified through interviews and other concept generation activities in Phase Three. After the workshop, the team finalizes the concept(s) that came out of the lead user project. The last major task of Phase Four involves developing and presenting a written new product or service proposal to management for its review.

The majority of this chapter is devoted to explaining how to plan for and conduct the lead user workshop. We first explain the nature of the work done in a typical workshop and why it is a valuable activity. Next, we explain how to design the workshop activities. The chapter concludes with guidelines for doing the post-workshop work required to wrap up the lead user project.

## The Purposes and Value of the Workshop

It can cost thousands of dollars to bring in lead users and top experts to work with the team for two to three days. Even more important, it will add four to six weeks to the duration of the project to plan, schedule and run the workshop. It is, therefore, important to consider what added solution information can be acquired via the workshop and the *value* that it can add to a lead user project.

### Learning from a Lead User Workshop

*Strengthen and add to preliminary solutions*

Teams have found the workshop to be an efficient way of improving the solution concepts that were generated in Phase Three. In most projects, the solutions that teams have developed thus far are strong in some areas and need to be improved in others. The basic purpose of the workshop is to fill in the missing pieces in the team's solutions. The following are three examples of how workshops are often used:

- By the conclusion of Phase Three, teams frequently are not satisfied that they have exhaustively explored all the new product or service possibilities, even though they have preliminary solution concepts. Thus, the workshop is often used to develop additional product or service concepts, in order to ensure that the team's final concept(s) is truly "breakthrough".

- The workshop can be used to solve specific design problems, as opposed to developing entire product or service concepts. For example, in the case of one project, the team felt confident by the end of Phase Three that the preliminary concepts did a

good job of addressing product requirements in most ways. However, there was one area in which critical design problems had not been satisfactorily solved. Thus, the team decided to use the workshop to develop solutions to these problems.

- The workshop can also be used to develop solutions to problems related to implementing the team's overall new product or service strategy. For example, the team might choose to focus the workshop on developing specifications for a novel marketing or distribution method - or it could be aimed at designing a novel manufacturing process that may be required to produce the new product.

For a productive workshop, much depends on giving careful thought to what the team wants to accomplish from this activity. In a later section, we look in detail at how to best approach this task.

### What value will the workshop add to the project?

*The Value = doing "right now" problem - solving with lead users & lead use experts*

The value of the workshop lies in the project team, innovative product users and top lead use experts doing *interactive* design and problem-solving work together. In brief, this is what happens during lead user workshops: Over a two or three day period, participants go through a carefully constructed process in which they do joint design and problem- solving activities as an entire group and in small breakout groups. Through doing this coordinated work together, the diverse mix of highly qualified people enables the group to develop high quality solutions - and in a short period of time.

To get a better sense of why the workshop is valuable, let's look in more detail at the nature of the participants and activities in a typical workshop.

### Example: Medical Products Lead User Project

The workshop held in the medical products project gives the flavor of the group composition and work that is done in workshops. In this project, the focus of the workshop was on developing concepts for a *system* of several complementary new products to reduce the incidence of bacteria during surgical operations. Although the team had generated promising product concepts from work done during previous phases, members viewed the

Members of the medical products project team

workshop as an efficient way to find out if there were more revolutionary solutions they had not yet uncovered.

The workshop was spread over three days. It began on a Friday afternoon and was wrapped up on Sunday afternoon. Attendees included six lead users and six lead use experts, plus the project team and four other company people. The project leader served as the workshop facilitator.

*Selection of Lead Users and Lead Use Experts*

The lead users who participated in the workshop included top surgeons and practitioners in related health care fields. All of them were selected because they had innovative ideas to offer in areas relevant to the project. One attendee, for example, was a surgeon who was very experienced in the area of leading edge bacteria control methods used with extremely sick patients. Another was a veterinarian who had received the 1996 Practitioner of the Year award for his implant design innovations. Two other attending practitioners had extensive knowledge about state-of-the-art methods for preventing skin bacteria during surgery.

The lead use experts included in the workshop were selected because they were knowledgeable about the critical technical problems related to developing effective antimicrobial products and knew the most advanced bacteria prevention methods being applied in the health care field. One expert was a microbiologist who held over fifty patents in this area. Another was a specialist in pharmacology who was a former chair of the FDA Antimicrobial Committee. A third expert was a biochemical engineer at a major university who had done advanced research in the area of sterilization methods. All of the technical experts had done innovative work in their fields.

*Design of the Medical Products Workshop*

The project team put a great deal of careful thought into designing and ordering activities in a manner that would enable the group to do

coordinated design work together. The resulting sequence of activities that took place during the workshop is summarized below.

**Sequence of Activities - Medical Products Workshop**

- *Setting a common context for the work* - The facilitator started out the workshop by briefing the attendees on the nature of the work they would be doing together. Then participants introduced themselves and presented any innovations they had developed that related to the subject of the workshop. This introductory segment of the workshop also included an activity in which the group shared their views on important technology trends and market needs that had implications for the concept development work they would be doing.

- *Generating and Building on Ideas* - Next, in a series of problem-solving sessions, the group went through an iterative process of generating solution ideas in small subgroups, improving on solutions as a whole group and then further developing them in subgroups.

- *Combining and Selecting Concepts* - In the final series of sessions, subgroups first worked to develop a strong solution concept that integrated the best ideas generated in previous sessions. Then the entire group evaluated the various concepts developed in subgroups and selected the strongest ones, based on these three criteria: 1) the fit with needs of the targeted markets, 2) the extent to which they met the company's technical and economic feasibility requirements and 3) the extent to which they were genuinely "revolutionary".

*Learning from the Workshop*

*"The diversity of viewpoints was striking and very useful!"*

Shortly after the workshop, we asked Rita Shor, the project team leader and workshop facilitator, to comment on the usefulness of the workshop. In this discussion, Ms. Shor indicated that the major value of the workshop stemmed from a combination of two factors: the diverse mix of top professionals who were assembled and doing "on the spot" problem-solving with innovative health care practitioners and technical experts. Specifically, this is what she had to say:

Comment of attending practitioner

> "As concepts were being developed, it was especially useful for the team - and indeed the whole workshop group - to get immediate feedback from the surgeons on the product attributes needed and which solutions were most helpful. Also, the microbiologists and skin bacteria specialists supplied critical technical information that expanded the group's thinking about possible solutions. In short, because of the high level of expertise and actual field experience

*"The goal was met. I am proud and fortunate to have taken part!"*

comment of technical expert

that external attendees brought to the workshop, the group was able to generate ideas faster and explore them more deeply than would have been possible to do in one-to-one interviews with the experts and practitioners who attended the workshop."

Ms. Shor's overall assessment of the workshop was that it had produced a number of new solution pieces that would strengthen the team's final product concepts. She said further that during the problem-solving discussions, several exciting ideas emerged for other future products.

Having given the flavor of the work that is done and the potential value of the workshop, we next explain in detail how to design and organize this event so that it is a very worthwhile learning experience for the team.

It usually takes teams about four weeks to plan and schedule the workshop. These are the major planning activities:

1) Decide the workshop focus and purposes
2) Design the workshop activities
3) Select and invite participants
4) Work out logistics and other planning details

In the sections that follow we explain in detail how to do each of these activities in turn.

## Deciding the Workshop Focus and Purposes

Deciding the focus and overall information goals of the workshop is the most critical planning work because this decision will drive the selection of participants. The specific questions to be answered are: 1) Which design problems will be worked on during the workshop and 2) What do we want the specific results of the workshop to be?

The workshop focus and purposes should be based on a careful assessment of the strengths and weaknesses of the team's preliminary solutions. One good way to begin this task is to create the following two-column chart:

*Identify the missing pieces in your solutions*

- First list the core product and service requirements that were established in the previous phase. These should be expressed in terms of the functions and features the team intends to deliver with the new product(s) or service(s).

- Next identify and list the critical areas in which the solutions generated thus far do not satisfactorily address these requirements. Here, it is especially important to consider these questions: 1) In which areas are our solutions “just okay” but not really revolutionary? and 2) In which areas are we missing essential design details or facing design problems that we have not been able to satisfactorily solve?

Once the missing pieces of solution information have been determined, the next step is to select the specific design problems to be worked on and the goals of the workshop. In making this decision, the following are two important factors to take into account:

*Set goals that can realistically be achieved within the time constraints*

- *What can realistically be accomplished in a 2-3 day period?* Teams commonly make the mistake of setting goals that are too ambitious, given the time constraints of the workshop. As a general rule, plan to work on no more than one or a few *related* design problems. Another workshop can always be held if there are several different areas in which solution ideas are needed.

- *Which design problems are a good fit with the capabilities of likely participants?* This is one of the most important factors to consider in selecting the problem areas that will be the focus of the workshop. Although the team does not have a finalized workshop roster at this point in the planning, members will have a good sense the types of solution ideas that lead users and lead use experts can offer from interviews in previous phases.

The point we want to underscore is to select a focal task that can realistically be done - and done in a high quality manner - within the time period set for the workshop.

## Designing the Workshop

Once the focus and goals are set, the next planning work involves designing the major activities that will take place in the workshop. Specifically, the team should map out an agenda that describes the sequence of large and small group activities that will take place, how they will be structured and a time estimate for each one. Teams usually go through two rounds of this planning. At the beginning of Phase Four they do a rough draft of the agenda and then

refine it once the workshop roster is set.

To provide a model for designing activities, in this section we describe the major activities that take place at typical workshops.

## Major Workshop Activities

Lead user workshops usually begin in the afternoon and are spread over three days. The actual total amount of group work time is about two and one-half days. The workshop is designed to move from creating a common understanding of the overall task to systematic and efficient problem solving. The major problem-solving segments in a typical workshop include the following:

1) establishing a common context for the work
2) decomposing the overall task into subproblems
3) generating solutions to subproblems
4) improving and evaluating solutions
5) combining and finalizing solutions

Let's look now at the various types of activities take place in each of these segments.

### *1) Establishing a Common Context for the Work*

Workshops start out with a series of activities designed to orient participants to the task and "get them into it" *as quickly* as possible. These are the major activities that that take place in this introductory segment:

*Get people into the "hands-on" work quickly*

The facilitator starts out by briefly explaining the overall task - for example, the problems that will be worked on how the group will work together and what the output of the group's work should be. Aim for an introductory presentation that is not more than thirty minutes in length because people will be eager to get to work.

Next participants take turns introducing the group to their areas of expertise as it relates to the workshop task. During these introductions, attendees briefly describe novel approaches they may have taken that are relevant to the solution work that will be done. Each presentation is about 15-20 minutes.

Although it may require about two hours to get through the attendee introductions, it is time well spent for several reasons. First, it is a way for the group to learn "where individual participants are coming from" in terms of their professional or personal experiences as they relate to the workshop task. Second, it enables participants to learn the skills and knowledge each person brings to the work they will be doing together. Third, learning about the innovations of attendees will start people thinking about possible solution ideas.

*Set the stage with a trend discussion*

Often, the introductory segment includes an activity in which participants share their views on major technology trends and leading edge methods that could be applied to the task at hand. This discussion is a very good vehicle for stimulating the thinking of participants regarding the technical challenges and possible solutions related to the focal problem area. Below is an illustration of how to structure this type of activity.

**Trend Activity - Medical Products Workshop**

The medical products workshop began at 1:00 on a Friday. In an evening session on this first day, there was a 2-hour activity in which participants shared their views on major technology trends and leading edge bacteria control methods being applied in the health care field. This is how the facilitator structured this activity:

1) Attendees were asked to take 10 minutes to privately think of: a) the advanced bacteria control methods *in use today* that were most exciting to them or b) ones they knew of that were *being developed* which could be applied to improve surgical outcomes. They were told to also consider innovative approaches to controlling bacteria they had personally thought of, based on their everyday experiences and expertise.

2) Next people took turns presenting their ideas. After each presentation was completed, there was a general group discussion in which other attendees shared related ideas they had or ones that came to mind as a result of hearing the presenter's views.

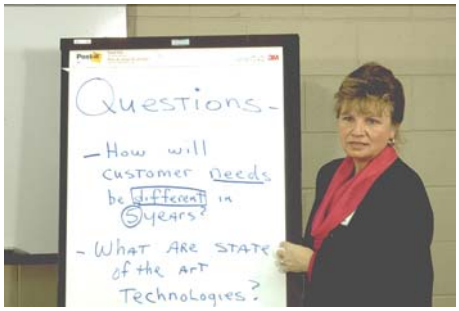
The project leader told us that this activity had been a very effective way of developing a common knowledge base regarding major market trends and advanced infection control methods that had relevance for the workshop task.

### *2) Decomposing the overall task into subproblems*

*Make the task easier by dividing it up into subtasks*

Once the workshop group has a good understanding of the critical technical problems that need to be solved, the next major activity involves breaking down the overall task into more manageable subtasks. Decomposing the problem will make it easier for participants to do detailed solution work. Also, it enables breakout groups to work in parallel on different elements of the overall task.

The whole group should think together about how to divide the problem area into sub-elements because everyone will benefit from a discussion of how to best do this. Subdividing the problem is usually done the morning of the second day.




medical product workshop facilitator

One good way to approach this work is to first have the group think of the various design problems that will need to be solved during the workshop. Then prioritize them in order of importance to attendees. It will also be useful for the group to think about advanced technologies that could be applied to solutions during the workshop.

There are two common ways that workshop groups divide up the overall problem to be worked on:

For many types of design problems, it works well to subdivide the task according to *different functions* that must be performed by the new product or service. This was the scheme used in the workshop held in conjunction with a lead user study carried out by a banking firm. In this case, the workshop goal was to develop specifications for a system of novel home electronic banking services. After a discussion of alternative ways to approach the task, the workshop group decided to subdivide it into the following two different functional elements: 1) electronic services for *paying bills* and 2) electronic services for *home budgeting*.

Another common way to break down the problem area is by different *types of design problems* to be solved. This approach was the one used in the workshop held in conjunction with the Hilti lead user

study (see Chapter 1 for a review of this study). Recall that in the Hilti workshop, the overall goal was to develop specifications for a breakthrough pipe hanging system. The workshop group decomposed the task into these four subelements: 1) attaching pipe hangers to the ceiling or wall, 2) fastening pipe-hangers to each other, 3) attaching elements to a supporting structure and 4) attaching elements to each other.

The key criterion for a good problem breakdown is "problem-solving independence." That is, the boundaries between subproblems should be defined in such a way that the work of solving one subproblem is independent of - does not affect - the work of solving the others. When this is done, workshop breakout groups can work on subproblems *independently,* without concern that the work of other groups will affect or destroy the value of the solution they create.

### *3) Generating Ideas for Solutions to Subproblems*

*Work on subproblems in small breakout groups*

After the problem has been subdivided, subgroups are formed to begin work on various subelements. The detailed design work and problem- solving is done during this portion of the workshop and usually takes at least a half-day (and sometimes longer).

Each subgroup contains a mix of lead users, external expert attendees and at least one company representative. In general, external attendees should self-select their subgroups because they know which group is working on an area that is a good fit with their skills. If this causes imbalances, the facilitator can always make suggestions for rearranging the groups.

The project team members and other company people should be assigned to subgroups according to their areas of expertise. An important role of the company representatives is to provide assistance to the subgroup regarding business interests and solution constraints. Although company people are participating group members, they should avoid dominating the discussion. After all, the point of the workshop is capture the leading-edge information of lead users and lead use experts.

Hopefully, the output of the subgroup will be several different solution ideas.

These should be represented visually by each subgroup so that the entire group can clearly picture the solutions developed. For example, if the task of the workshop is to develop solutions related to a physical product, the group may decide to draw a sketch or create a simple prototype out of pieces of foam. If solution work has to do with developing specifications for a novel service, these could be represented by a diagram that shows the steps or various components in the process of delivering the service.

workshop held by the Nestle FoodService lead user project team

*4) Refining and Evaluating Solutions*

After 2-3 hours of work, the whole group reassembles to build on and improve the solutions developed by subgroups. This activity starts with subgroups presenting their most promising ideas and unsolved problems. The entire group then works together to further develop and evaluate various solution ideas. At the start of the discussion, the facilitator team should provide the group with some criteria by which to evaluate the solutions for suitability.

This session will give everyone fresh energy and new ideas. The new ideas may involve changing the way the subproblems are subdivided, adding new approaches, or other matters. The subgroups then take the new information and have another session of further improving solutions.

In the solution refinement segment of the workshop, the group may go through several iterations of improving and evaluating solutions as a whole group and then doing more detailed refining of them in breakout groups. During this process, it is often wise to periodically vary the membership of subgroups somewhat to avoid locked-in positions as to what the "right" solutions should be.

*5) Combining and Finalizing Solutions*

The goal in this final segment is to arrive at one integrated solution or several solutions. First the entire group evaluates solutions that were developed during the previous refinement activities, based on agreed upon criteria.
The strongest features of various solutions are then combined into a

final “best” solution or several alternative solutions. This final segment may also involve several iterations of combining and evaluating solutions as an entire group and then refining the solutions again in subgroups.

The finalized concepts should pass this test: 1) they are leading edge approaches to the design problems worked on and 2) they fit within the economic and technical constraints that were presented to the group.

Before the conclusion of the workshop, the facilitator should make sure that the best concepts are clearly portrayed in words and sketches or diagrams. The group’s evaluation of the finalized concepts should also be well-documented on flip charts or in the notes of team members.

abrasive products lead user workshop

Below is a summary of the major activities that usually take place within the five major segments and a time estimate for each segment.

**Workshop Segments and Time Estimate**

| | |
|---|---|
| *1) Establishing a common context:* | *1/2 day* |
| - *Briefly* orient people to the nature of the task | |
| - Have attendees present their innovative work | |
| - Develop a common understanding of major trends | |
| *2) Decomposing the overall task into subproblems:* | *1 day* |
| - Decide as a group how to best break down the task | |
| - Suggest alternative subdivisions to help the group start | |
| 3) *Generating solutions to subproblems:* | |
| - Develop solutions to subproblems in breakout groups | |
| - Build on and generate further ideas as an entire group | |
| *4) Improving and evaluating solutions:* | *1 day* |
| - Evaluate and improve solutions as an entire group | |
| - Make more detailed refinements in subgroups | |
| *5) Combining and finalizing the solutions:* | |
| - Combine best ideas into integrated solution concepts | |
| - Evaluate solutions using agreed upon criteria | |

## Selecting Workshop Participants

Once the team has an approximate idea of the major workshop activities, members begin the process of selecting and inviting participants. In this section, we first provide an overview of who attends a workshop and how teams select participants. Then we go into the specifics of the selection process.

### Who attends a typical workshop?

*Consider what size will make an efficient problem-solving group*

Typically, fifteen to eighteen people participate in a lead user workshop. About eight or ten of these are lead users and lead use experts. The rest of the participants include the project team members and other technical or market specialists from within the sponsoring company.

In our experience, fifteen or sixteen people is the right *total size* for a very productive workshop. The group is large and diverse enough to have a good range of the various kinds of expertise and experiences needed for the task at hand. Yet it is still small enough to enable effective and efficient group problem-solving activities. However, it should be noted that very good work has also been done in workshops with fewer than fourteen and more than sixteen people.

### What is the selection process?

The process of recruiting workshop participants involves these activities:

- In a series of planning meetings, the team assesses the mix of capabilities that must be represented in the workshop group to do high quality solution work and then establishes criteria for recruiting appropriate people.

- Next members identify lead users and lead use experts who are a good fit with the selection criteria. Usually, some appropriate candidates have already been identified from those interviewed in previous phases. However, teams typically must do further searching to fill out the workshop roster. This is done, using the networking process that has been described in earlier chapters.

- Before making final workshop selections, team members interview each candidate to make a final assessment as to

whether each person is an appropriate choice. During these interviews team members should explain what will happen at the workshop and go over the contractual agreements required of participate.

Teams usually have several planning meetings to prepare for recruiting participants. In these meetings, the following major decisions must be made.

1) What criteria should be applied in selecting lead users and experts?
2) Who will be the company participants?
3) What contractual agreements should be made in the areas of compensating participants, confidentiality and assigning intellectual property rights?

This work can typically be accomplished in roughly a half-day meeting. We next walk through the selection process and provide guidelines for doing this work.

**Selecting the "Right" Lead Users and Lead Use Experts**

Clearly, the success of the workshop depends on assembling a group of people with the various skills and knowledge required for the workshop task. It is, therefore, critical for the team to carefully assess the capabilities to seek out in lead users and lead use experts, as well as company specialists. A framework and suggestions for making this assessment are provided below.

• *Decide the types of expertise that should be represented in the workshop group.* One simple way to tackle this work is to first make a list of the various types of technical and market expertise that will be required for the design work that will be done at the workshop. Then list the types of specialists who have the required capabilities (or the names of people already identified who have this expertise). The goal of this step is to create a master list of all the various different types of specialists that the group intends to recruit for the workshop (see p. 151 for an example).

• *Decide the other capabilities that lead users and lead use experts must have to make important contributions to the group's work.* Next the team should agree on other characteristics to seek out in lead users and lead

*Which people are innovative thinkers?*

use experts. In this area, one major criterion for selecting participants should be: Which people have innovative and important ideas to offer? Ideally, team members will be able to find lead users and experts who have done innovating or are involved in developing major innovations that are relevant to the project. If actual innovators can't be located, at minimum, the team should seek out people who have thought of novel approaches that can be applied to the workshop task.

It is also important for the team to consider the *personal qualities* that participants must possess to effectively do collaborative design work in a group setting. In this area, we have two common sense tips to offer. First of all, people who participate in the workshop must be willing to fully share their ideas with the group. In addition, participants must be flexible in their thinking. Clearly, someone with an attitude of "my way is the only and best way" is not the kind of person one wants in the workshop group. Of course, there is no way to be certain that all participants will have the qualities required to be an effective group member. However, during the selection interviews, team members usually will be able to spot those people who would have great difficulty working well with other participants.

*Which people will be open to diverse viewpoints?*

### Selecting Company Attendees

As with selecting the external attendees, the team should give careful thought to considering which company people should be included in the workshop. These selections should be guided by two questions:

1) What kinds of company expertise must be represented for the group to do productive solution work, and
2) Who are the most knowledgeable people with respect to the expertise needed?

Obviously, it is also important to select company people who have the personal qualities required to collaboratively work with others at the workshop. In particular, they should not suffer from the attitude that "If it's not invented here, I'm not interested."

Usually, about six or eight company people, *including* the project team, are fully participating workshop participants. Sometimes, one or two others from the firm also attend as listeners. The project leader or another team member typically serves as the group facilitator. We discourage teams from using an outside facilitator because of the project-specific knowledge required to effectively lead group discussions.

All team members should be in attendance because it will be the team's job to incorporate ideas generated at the workshop into final concepts. Further, the group will rely on team members to provide direction about the targeted markets and the nature of the solutions the team is seeking.

The other company people who attend the workshop should be people who have needed technical or marketing expertise that is not present within the project team. For example, sometimes it may be important to include an in-house specialist in manufacturing processes or a person from the sales department. The following are two additional factors to consider in making in selecting company participants:

*Include people who will implement the project output*

*Which people will be responsible for carrying forward the output of the lead user project*? It is almost always a good policy to include key people from the company who will actually play a major role in implementing the output of the lead user project.

*Can the company people attend all workshop sessions?* Workshop participants should only be selected from those who can firmly commit the time to participate in every session. Because the workshop is designed as a series of sequential problem-solving activities, it will be disruptive to the work of the group if people are unable to attend the entire workshop.

Teams usually know which company people have the expertise needed at the workshop and can quickly agree on which ones to invite.

## Contractual Agreements with External Participants

Lead users and lead use experts should be offered an honorarium for their participation in the workshop. They also should be required to sign an intellectual property rights agreement which gives the company ownership of concepts developed during the workshop. This is usually done on forms acceptable to company attorneys who are responsible for intellectual property rights matters.

In general, potential invitees who are not willing to sign over intellectual property rights to the company should not be invited - there are almost always other workshop candidates with equivalent information who are willing to participate on company terms for good reasons of their own (see the box on p. 150).

*Why are workshop invitees willing to sign away intellectual property rights?*

In our experience, lead users and lead use experts are generally quite willing to sign away property rights to innovations and concepts that might be developed during the workshop. And, more importantly, they don't feel exploited when they do this - because they expect to gain *personal benefits* from being a participant. Specifically, lead users and experts invited to the workshop are willing to give up their rights for a combination of these reasons:

- They expect that they will learn from the experience and enjoy playing a role in the company's product development process.
- They know they are unlikely to develop the particular innovations that may be created in the workshop without the stimulus of workshop participation.
- They have a very high interest in seeing new products developed and thus, are very eager to contribute innovative ideas they may have developed.

The project team members should carefully discuss intellectual property rights matters with potential invitees to the lead user workshop. They should only issue an invitation if the potential attendees think the written agreement required of them is a *fair* one. Any other course of action will, of course, lead to trouble sooner or later - and usually sooner!

To give a better sense of how teams prepare for recruiting participants, we next describe the process the medical products team went through to select people for its lead user workshop.

*Selecting Participants - Medical Products Project*

Earlier in the chapter we discussed the lead user workshop held by the medical products project team. Recall that the task set for participants was to develop at least one concept for a revolutionary *system* of complementary bacteria control products for use in the surgical setting. To prepare for locating appropriate workshop candidates, the team went through the basic planning process we have just described. That is, the team first analyzed the various kinds of capabilities that would have to be represented for the workshop group to generate breakthrough solution concepts. After that members generated a list of types of lead users and technical experts to seek out for the workshop.

The team decided that the workshop roster should include practitioners

and top technical specialists in the four areas listed below. It should be noted that the items included in the box have been edited and some details omitted to disguise the exact nature of the product concept being developed in the medical products lead user project.

**Medical Products Workshop -**
**Sample list of Types of Expertise Required**

**Types of Expertise Required:**

1) advanced methods for control of skin bacteria

*Workshop Candidates:*
- surgeon working with high risk patients
- expert in new "fast kill" antimicrobial agents (microbiologist and pharmacologist)

2) easy to use, low cost skin protection

*Workshop Candidates*:
- surgeon associated with the military
- veterinary surgeon
- expert in make up or mask design

3) methods for "fast track" to market

*Workshop Candidates:*
- pharmacologist associated with FDA Antimicrobial Committee,
- expert in designing clinical studies

4) advanced agents to kill bacteria

*Workshop Candidates:*
- epidemiologist - specialist in new water purification agents
- public health practitioner

**Note:** In some of the categories listed above the team had already identified appropriate specialists for the workshop. In others, the team had to recruit additional people.

After the team decided the various types of expertise required for the workshop, it made a list of the personal qualities that members should look for in the screening interviews with lead users and experts. These were the general selection criteria used in the interviews:

• *They should be "innovative thinkers"* - Here the team sought out practitioners and technical experts who either had done innovating in areas related to the project or who had thought of novel approaches that were relevant to the project.

• *They should be knowledgeable about major trends* - Team members felt it was very important for all participants to be familiar with current bacteria control technologies being applied in the health care field and have a sense of the market trends and needs that will impact the health care field over the next 10 years. The reason was that if participants did not have a good knowledge base in these areas, they would not be able to keep pace with the rest of the group.

• *They should be willing to share their innovative ideas* – The team wanted people who would be willing to fully discuss solution ideas they had which were relevant to the subject of the workshop.

It took the team about two weeks to select people for the workshop. As discussed earlier in the chapter, a total of twelve top health care practitioners and technical experts were included in the workshop (see p. 136 for a description of these people). The project team plus five other company people also were attendees. The five additional company participants included two managers and three technical specialists. All of these people would play a role in moving forward the concepts that came out of the lead user project.

### Tips for Making Final Selections

Before leaving the subject of selecting participants, the following are a few suggestions about what to cover in the final screening interviews.

*Agree on screening criteria*

• *Have at least one in-depth screening interview with each workshop candidate before making final selections.* This is usually a good policy, even if the team is certain particular people under consideration are good choices, based on earlier interviews with them in previous phases. Given that team members are experienced interviewers at this point in the project, it may be unnecessary to make up a formal interview guide. It is important however, that all team members have a good understanding of the screening criteria that should be applied.

• *Brief candidates on what will be expected of them.* In the screening interviews, it is very important to go over the nature of the work that will be done at the workshop and the reasons they have been selected as participants. Teams should brief participants first in the screening interview and then follow this up with a formal written invitation which provides an overview of the workshop focus and purposes. (Important areas that should be covered in a one-to-one screening interview are listed on the following page.)

**Important Areas to Cover with Participants**

- **Focus and purposes of the workshop** - Briefly explain the nature of the work that will be done and *why* the team is holding a workshop.
- **Why they were selected & other types of attendees** - Describe the areas of specialty that will be represented and why their expertise is needed.
- **How the group will work together -** Underscore that people will be doing *joint design and problem-solving* activities. (People who attend many professional conferences often expect that they will be simply "brainstorming" ideas, as opposed to coming up with concrete solutions.)
- **Benefits they can expect from attending** - Emphasize that the workshop will provide an opportunity for them to exchange ideas with other "innovative thinkers" who have product/service interests in common with them. (Avoid doing a "hard sell" - If a candidate doesn't see the personal benefit, you will find others who do.)

## Working out the Planning Details

A great deal of practical planning must be done to set up the workshop - a meeting facility must be selected and scheduled, food menus planned, lodging arranged for guests, workshop materials prepared. Many of these organizational details can be delegated to support staff. However, the team should take the lead in selecting an appropriate workshop facility. In this area we have a few tips to offer.

*Create conditions that will make people feel good*

It is important to select a facility that will provide a *pleasant work environment* and one *without distractions.* We favor having the workshop at an off-site facility so company people can isolate from their work. Ideally, participants will also be able to stay at the facility. This provides opportunities for team building and a cohesive group forms more quickly. These are other features to seek in the workshop site:

- areas for recreational breaks - e.g. places to take a walk that are on the grounds or close by
- meeting rooms with comfortable chairs and windows
- one or two breakout rooms for small group work
- plenty of wall space for displaying drawings, etc.

Our point is to create an environment that will make people feel good - this type of workshop is mentally very strenuous and tiring for people.

At this point we have laid out all the critical ingredients required for the team to have a very productive workshop. Now in the next and final section, we discuss the important post-workshop work that must be done to complete the project.

## Completing the Lead User Project

After the lead user workshop, teams usually have three or four weeks of "wrap-up" work to do to prepare their project findings for follow-on decisions and actions by management.

1) Integrate the solution information acquired at the workshop into final concepts.

2) Prepare a written new product or service proposal and present this proposal to management.

3) Assist in moving the concepts into the "mainstream" of the company's development process.

In this section we discuss the nature of the work that should be done in these three areas.

### Finalizing Concepts

*Adjust concepts to fit target markets*

After the workshop, project teams go through a process of adding to and refining their preliminary product or service concepts based on the solutions that were developed with lead users and lead use experts. If alternative approaches to the focal design problem were generated during the workshop, then these must be evaluated to select the one that team members agree is most promising.

The team should expect that some adjustments will have to be made in the solution concepts developed at the workshop to create a better fit with the requirements of the project. Adjustments are usually necessary due to the fact that lead users and lead user experts have observed future product or service needs that routine users have not yet experienced. As a result, the team's target customers may not see the *value* in some attributes that lead users and lead use experts at the workshop judged as important - even though the target customers may want these attributes in the future.

The adjustments that are required to fit the project requirements will often fall in one or both of the two categories that are illustrated in the two lead user projects described below.

*1) The target customers may differ from lead users and lead use experts in their preferences for particular product or service attributes.*

*"Olympic Snack" Innovation*

*Target users may value different attributes than lead users & lead use experts*

Recall from Chapter 1 that in the "Olympic Snack" study, the task set for workshop participants was to develop a concept for a performance-enhancing snack for the amateur athlete market. Lead users assembled for the workshop included elite athletes and coaches who were actively experimenting with nutritious snacks to better athletic performances. Lead use expert-attendees included nutrition scientists who had studied the impact of nutrition on performance during strenuous physical activities.

The workshop outcome was a concept for a performance enhancing snack that was based on the actual field experience of the participants. The concept specified the ingredients the snack should contain, as well as how it should be formulated and packaged for easy consumption during athletic activities. Thus, the concept was complete from the point of view of lead users and the expert nutritionists - but the project team knew the concept would need to be adjusted to fit the needs of ordinary weekend athletes who were the intended target market.

The major difference between the two user groups was that the lead user workshop participants did not care how the "athletic food" *tasted.* However, the project team knew that the targeted markets - ordinary weekend athletes - *would care* about the taste of the new product. This did not represent a problem for the company. Company specialists had done many studies of taste preferences in snack foods, and were able to *add* this attribute to the workshop concept before it was tested with target consumers.

*2) The target customers may differ from lead users in terms of their product/service use experiences*. (e.g. Lead users tend to have more and better equipment required for product or service-related tasks; they also tend to be more skilled at using products and services.)

Electronic Home Banking Innovation

In the Electronic Home Banking lead user study, also briefly reviewed in Chapter 1, the task of the group assembled for the lead user workshop was

to develop concepts for novel “electronic home banking” services – that is, information services which a customer could access using an ordinary telephone line. The lead users who participated in the workshop had all devised innovative home banking systems, via their personal computers. Technical specialists included in the workshop were from within the company.

The output of the banking workshop included a number of new service concepts that were based on the novel home banking systems that lead users had prototyped on their personal computers. The effect of the lead user innovations was to provide more complex banking services *and* make them easy to use.

*Modify concepts to fit the experience constraints of the target users*

The project team recognized that the targeted routine banking customers would find the lead user-developed service concepts valuable. However, they would need adjustments to fit the constraints of the project. The issue was that the lead user concepts were PC based. The team knew that the target consumers didn’t own personal computers; nor were they likely to own them in the near future. Thus, the team decided to adopt the home banking service *functions* developed by lead users - but change the way the services were *delivered* to fit the capabilities of routine banking customers. Specifically, the team redesigned the lead concept so that the computing required for bank computers would supply the new banking services. With this arrangement, routine users could access the services via the keypad of an ordinary telephone.

The project team should be *conservative* about making adjustments to the concepts developed in lead user workshops. Some or all team members may have devoted years to studying their target market. It is, therefore, possible to lose some of the benefits from the insights of lead users and lead use experts, if the team is too energetic about “improving” the workshop concept until it fits members’ own views of what targeted customers want.

## Preparing a Strong Business “Case”

Once the concepts have been finalized, lead user project teams typically put together a new product or service proposal which is presented to the management group overseeing the project. Every company has its own unique requirements regarding the nature of the content that should be included in new product or service proposals. Therefore, we will not attempt to provide specific advice to teams on this matter. However, we

do want to underscore key questions that the team should answer in its proposal in order to make the most compelling case possible for the project concepts (also see pp. 128-130 for guidelines on developing a business case).

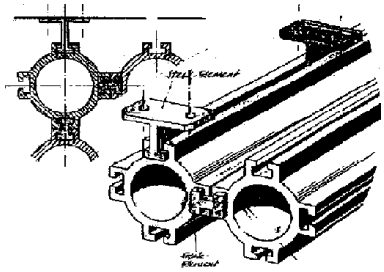
• *How important is the need?*

*Present a strong case for the value added to users' lives*

It is very important to provide management with strong data showing that the target markets and the needs to be addressed are significant and commercially attractive long-range opportunities. Also, the team should put together a convincing argument that the proposed product or service will add unique *value* to the lives of customers. Clearly, a bottom line question for management is: Will customers want this product or service enough to buy it – and buy it from *our firm* rather than a competitor?

• *How will the proposed product or service meet the need?*

The team should prepare a clear, concise description of what the proposed product or service will do such as key design features and the benefits that will be delivered. The proposal should also include attractive drawings of physical products so that management can easily picture how they will work.



concept drawing from the Hilti lead user workshop

• *What will be required of the company to exploit this opportunity?*

We suggest including a section in the proposal that outlines significant changes in current company practices that might be required to develop, produce and sell the proposed product or service. This section might include, for example, the team's ideas on new manufacturing capabilities that would be needed to produce the product - or a new distribution approach that might be required. Usually, management does not expect lead user project teams to provide a detailed plan for implementing the project results. Still, it is in the best interest of the team to provide guidance regarding any change in business practices that would be required for market success. After all, the team wants the reward of seeing that all its hard work results in a product or service that is a "winner" in the marketplace!

## Final Thoughts – The Next Development Steps

Lead user concepts often face a difficult transition from the “hothouse” of the project team to the more ordinary world of routine product and service development. Thus, after the team has disbanded, we strongly suggest leaving in place a member and an influential concept "champion" to shepherd the concept through this often bumpy transition. We can illustrate why this is important by means of two examples.

*Assist in designing appropriate concept testing methods*

The concepts that emerge from lead user projects are often based on prototypes that have been developed and field tested by lead users. It therefore, may be a waste of time to simply plug the concept into the firm's usual development process. For example, in one lead user project, the firm had the standard practice of sending an approved concept to the lab for development of a prototype to prove that the concept could be converted into a workable product. In this case, the project team had already uncovered lead user prototypes that could meet this "proof of concept" function. But until a member of the team intervened, the lab receiving the concept intended to develop a prototype from scratch without drawing on the solutions and experiences of lead users.

Lead user project concepts are often “breakthrough” and routine market testing methods may not be appropriate. In the case of the Olympic Snack study, standard market research practice was to test snack food concepts with mothers who did the supermarket shopping for families. But performance-enhancing snacks are often bought in health food stores - and may not be bought by mothers or during the course of weekly family food shopping. It took the intervention of the lead user concept champion to make these differences from “business as usual” clear to those people who would be market testing the snack food.

There is a common sense reason for at least one team member to remain actively involved shepherding the lead user concepts into the next phase of commercialization. This is clearly the best way to ensure that all of the rich information gathered during the project is available to those charged with testing and developing the concepts. Thus, time and money won’t be wasted with inappropriate concept testing or going over ground that has already been covered by the project team.

**Important Points to Remember**

*1) Holding the Lead User Workshop – 2 Keys to Success:*

- Go through a careful selection process to ensure that the group of lead users, experts and company people assembled for the workshop includes the mix of capabilities needed to develop truly "breakthrough" solution concepts.

- Select a focal design problem(s) based on a thorough analysis of the additional information required to develop the strongest possible final concept(s).

*2) Finalizing Your Concepts*

- Adjust the concepts from the workshop to fit the requirements of your target markets.

- However, *avoid* changing the concepts to fit the team's pre-conceptions of what target customers want.

*3) Developing and Presenting your New Product or Service Proposal*

- Present strong documentation that the target markets and needs to be addressed represent an important and strong commercial opportunity for *your* firm.

- Put together a compelling case for the customer benefits and unique value offered by the proposed product or service.

- Outline any major changes in current company practices that will be required for commercial success.

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