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Phase Zero: Introducing New Services at IDEO

Douglas Dayton, design engineer and head of IDEO's Boston office, paused at the top of an elevated curved walkway known as the "island" and looked out across the space where designers, engineers, human factors experts, and other specialists worked together in teams to meet the demanding and diverse needs of corporate clients. IDEO was a design and innovation firm known for the extraordinary range of products it had designed and for its innovative approach to the design process.

Large windows to his left provided a view of the prototyping lab. The lab, one of the few closed-off rooms in the office, was unusually silent. Glancing in that direction, Dayton reflected that it was not easy to evaluate the recent project carried out for mattress manufacturer Simmons. In this project, IDEO had embarked on a service that was not intended to result in a tangible product, at least not right away. Whereas a typical design and development project progressed through four phases designed to "do the thing right," this service, known as "Phase 0," was intended to help a client "do the right thing." Rather than design a new product based on pre-specified needs, Simmons had asked IDEO to help it "look for unmet needs that exist for mattress consumers to identify new product opportunities."¹ The project proposal, entitled, "Understand and innovate," described Phase 0 services as helping clients *understand* the world in a new way and *innovate* accordingly.

Mattresses. At first glance, this was not exciting territory for the firm that had designed the Palm V and interactive dressing rooms for Prada. As one designer quipped, "This is an industry that's been putting people to sleep for years." Unexpectedly, as the team members researched mattress consumers—conducting literature reviews, site visits, and interviews with customers and salespersons—they grew intrigued. One later recalled, "The more we looked the more we found."

Two months after their final presentation to Simmons executives in Atlanta, Georgia in May 2002, the team was still buzzing from the client's enthusiastic response to the *Phase 0* project's identification of a new market, embodied in young singles. Dayton, however, had had no contact with the client since that time and he wondered whether the team's work would have a lasting and tangible effect at Simmons. Although all IDEO projects had some element of exploratory Phase 0 type work, the Simmons' project with its heavy emphasis on exploration stood out in the Boston office, known for product-based projects with a particular expertise in production design and engineering. Dayton wondered what lessons Boston should absorb from the experience and whether and how these might influence future projects.

¹ Project Bindle, p. 8. The Project Bindle was a spiral-bound book documenting the research process and findings that accompanied the final presentation to Simmons.

Company Background

IDEO had designed a remarkable range of household, commercial, and industrial products, services, and environments. Some of the most widespread tangible outcomes of its services were the computer mouse (the firm developed the first mouse for Apple), Crest's Neat Squeeze stand-up toothpaste tube, Polaroid's I-Zone instant camera, the thumbs up/thumbs down interaction for TiVo's personal video recorder, and a disposable pre-filled insulin injector for Lilly. (Exhibit 1 describes other projects.) Success of these products was in large part due to IDEO's ability to learn about, empathize with, and design products and services to meet the needs of the end-user.

A 1991 merger of industrial design companies ID Two, Matrix, and Moggridge Associates with an engineering firm, David Kelley Design (DKD) gave rise to IDEO as a new, integrated service firm. Kelley, an electrical engineer and graduate from (and later professor in) Stanford's product design program, became CEO of IDEO.² In 2000, Kelley became chairman and designer Tim Brown (originally from ID Two) became CEO and president of the company. IDEO, with roughly \$60 million in annual revenues, was privately held by Kelley and Steelcase, Inc.³ Steelcase, a client of DKD since 1987, became its majority investor in 1996.

IDEO's capabilities included mechanical, electrical, and software engineering; industrial and interaction design, prototype machining, human factors research, interior architecture and more. Kelley imagined this mix as a fleet of boats anchored together. Occasionally one would leave and explore new areas but would return and share new ideas and competencies. Employees came from all of these disciplines and were valued as much for their technical expertise as for their ability to think outside the box. Brown commented, "The overriding spirit has been one of go get on with it, figure it out, do well! We're here to support you but we believe you can figure it out."

With eight locations across the world (Palo Alto, San Francisco, Boulder, Chicago, Boston, London, Munich, and Tokyo), IDEO employed 350 people. Its offices supported global clients as well as sought local relationships with regional companies. IDEO had major strategic relationships with clients such as Procter and Gamble, Pepsi, and Eli Lilly and also worked with well-funded start-ups and other small firms. Brown elaborated, "The only constraint on we might get engaged in is this, 'If you can't use design thinking to tackle a problem you shouldn't be tackling the problem.' ... To me this is a very important framework ... Design thinking means that in the end you provide something for people, either services, products, or spaces."

IDEO's skilled staff, ability to understand end-user needs, and its enabling attitude towards its employees earned the company eight of the 2003 Industrial Design Excellence Awards (IDEA), in categories ranging from medical and scientific equipment, digital media and interfaces, to consumer products. Boston's most recent award was a 2001 silver medal for a contractor's table saw designed for DeWalt (shown in Exhibit 2). From 1999 to 2003 IDEO won 49 IDEA awards, twice that of the second highest winner.⁴

² IDEO is the combining form of the word *idea*, and forms the stem of words such as ideology and ideogram.

³ Tom Vanderbilt, "IDEO: The most famous design company mixes it up with everyone from Pepsi to Polaroid to hit on the next big idea," *Onemedia.com*, 2001.

⁴ IDEA Award Track Records, <www.businessweek.com/magazine/content/03_27/b3840017_mz046.htm> (accessed June 27, 2003).

Industry Context and Competitive Landscape

Toward the end of the twentieth century product development in businesses around the world had become increasingly interdisciplinary. Rather than the traditional smokestack separation between marketing, design, and production, and even among engineering specialties (mechanical, electrical, chemical, software), product development organizations in most companies were working in cross-functional teams to streamline product development. Rather than waiting for designs to emerge from technical specialists in research and development that marketing would figure out how to sell, companies began to integrate end-user specifications in the earliest phases of the design process. These changes brought a need for expertise in interdisciplinary integration and design, and a new industry of design consultancies was born.

DKD, the predecessor to IDEO, led the product design industry in the late 1980s by pairing designers and engineers, followed by human factors, and then layering on other types of design and engineering. IDEO became a powerhouse of successful design work largely because of the integrated full design services they provided.

IDEO's Boston business was about evenly split between IDEO's global client roster and regional clients based in the Northeast. Competitors in the region included product development firms Design Continuum, Product Genesis, Herbst LaZar Bell, Inc. and Fitch, Inc. All relied on multidisciplinary design processes. Boston, a leading center for medical innovation, offered many opportunities in the area of medical device design, and IDEO's reputation for technical excellence made it highly competitive in this particular industry.

As innovation became increasingly relevant for clients' competitive success, product development firms had begun to offer strategic design consulting.⁵ Although distinct from management or strategy consulting, design consultancy services in some larger firms began to blur the line between design and strategy offerings. In 2002, the technology and innovations unit of hundred-year-old Boston-based consulting firm Arthur D. Little, long a leader in the technology consulting arena, was purchased by TIAX, allowing the younger firm to boast, "We've helped clients accelerate their innovation since 1886."⁶ TIAX offered a technology and innovation practice that worked closely with client organizations to improve their product development capabilities and distinguished them from outsourcing design services. Design Continuum, by offering similar research and development services, had increased their revenues by 20% since April of 2002 to \$19.6 million.⁷

IDEO, and by extension IDEO Boston, was a clear leader in product development business, but following the economic downturn of 2001 IDEO Boston found itself competing for fewer and smaller contracts. Price was becoming a primary factor in the ones that were awarded. Some IDEO staff were concerned that medical products firms were still willing to pay for IDEO quality, but other potential clients were being drawn to lower priced competitors.

⁵ T. Kelley, "Designing for Business, Consulting for Innovation," *Design Management Journal* Summer 1999: pp. 30-34.

⁶ <www.tiax.biz/aboutus/index.php> (accessed July 16, 2003).

⁷ Business Wire, "Five Companies plan for the future by engaging Design Continuum for Research and Development projects," April 2, 2003. "Design Continuum, Inc., Company Profile," April 2, 2003, available from OneSource Information Services, <www.onesource.com> (accessed July 23, 2003).

IDEO's Contract Design Services

A blend of product development expertise and the experience gained from thousands of projects provided the foundation for IDEO's unique work process. In 1999 the firm was featured on ABC News' Nightline in a program titled "The Deep Dive: One company's secret weapon for innovation." Over a period of four days a multi-disciplinary team responded to ABC's proposition to "see innovation happen" by redesigning the traditional shopping cart so that it was more functional and attractive to shoppers but less attractive to those who steal carts from store parking lots—apparently a substantial cost for many retailers.⁸ The project involved careful examination of human factors – "variables that can improve or diminish the way a person interacts with a product" such as materials, safety, mobility, and ease of use.⁹

The Nightline segment generated wide interest in IDEO's "culture and process for routinely coming up with great ideas."¹⁰ IDEO's methodology was divided into distinct phases that would take a concept through broader consideration of business, technical, and human factors issues to design and detailed engineering to manufacturing. Brainstorming occurred at every stage, encouraging a flurry of ideas and rapid prototypes. IDEO's brainstorming rules were stenciled on the walls of all conference rooms: "Be visual. Defer judgment. Encourage wild ideas. Build on the ideas of others. Go for quantity. One conversation at a time. Stay focused on the topic." Clients attended roughly 20% of brainstorming sessions.¹¹

The Work Process

The duration and definition of the phases varied by project type—e.g., products, services, and environments, and interactive experiences. The following process described a typical engineering-intensive product or service.

Phase I: Concept Generation Phase I involved visualizing a large number of design solutions before selecting a single product direction. It addressed such questions as What is the product? What problem does it solve? What will it cost? Utilizing findings from user observations, feasibility reports, and client research, the activities included concept generation, user evaluation, design selection, and refinement. These activities could reveal many successful design solutions and unanticipated problems before investing in subsequent work. Phase I deliverables included storyboard scenarios, human factors guidelines, manufacturing strategy, and, most importantly, a well-defined concept for the next project phase.

Phase II: Concept Development The purpose of Phase II was twofold: to identify and resolve technical and user problems and to validate the feasibility of the product by developing functional prototypes. Questions addressed in this phase included how will this product work, how will we make it, and how will we test it? Activities in this phase supported fleshing out a concept in all its key dimensions. A team identified areas of risk, defined critical functional requirements, refined the industrial design (appearance and ergonomics incorporating function), established a manufacturing direction, and discovered key sources of technology. Potential deliverables included

⁸ Tom Kelley, *The Art of Innovation*, (New York: Doubleday, 2001), p. 8.

⁹ Vanderbilt, Onemedia.com, 2001.

¹⁰ "Deep Dive," ABC Nightline, 1999.

¹¹ R. Sutton and T. Kelley, "Creativity doesn't require isolation: why product designers bring visitors 'backstage,'" *California Management Review*, 40:1 Fall 1997, p. 81.

proof-of-concept models, works-like-doesn't-look-like models, mechanical and electrical breadboards, an appearance model, final specifications, a detailed bill of materials, and an updated work plan.

Phase III: Detailed Engineering In Phase III team members defined the product details, and built and tested prototypes. These activities used of models and data from the earlier phases to create engineering details prototypes, test plans, and create critical-to-function drawings. Finally, they would release the designs to tooling. Phase III output could include a working design, reports and evaluations, a costed bill-of-materials, technical documentation, potential manufacturing vendors, and an updated work plan.

Phase IV: Manufacturing Liaison In this last phase, IDEO staff prepared the product and supporting documentation for a seamless hand-off to volume manufacturing partners. Team members performed tooling supervision, manufacturing readiness evaluations, "first-article" evaluations, testing and approval, and supported the pilot release. Deliverables from this phase included production prototypes (or "check models"), confirmation that the product met its design specifications, and release of the production tooling.

Resource Management in Project Teams

A project manager could predict fairly accurately the staff resources required at the different phases of the process described above. For example, human factors specialists were heavily involved in the first phase, "concept generation," and less so once the product was being tested for technical capability in Phase III, when mechanical engineering skills were at a premium. The structure of the relative contributions of the different disciplines meant that most individuals were not assigned to projects full time. Projects, which ran anywhere from a few months to a few years, were staffed by teams ranging from four to 40.

Integrating Business and Design

Dayton reflected that for the first few years after opening IDEO Boston in 1990, "the typical project was initiated when a client came in with a three to ten page specification to describe the product they needed. They would go through the spec with us in detail and then say 'ok, go design this.'" By the mid 1990s, IDEO's clients had begun to ask questions that went beyond designing a specific product, and, according to Dayton, clients "started involving us earlier in their process, having us help create the context for the product." Dayton attributed this shift in part to the Internet boom, when "the range of companies became more diverse and the type of products these new firms were developing demonstrated a shift from just a couple of years earlier. Almost no one walked in the door seeking the development of a physical product that was not connected to the Internet—information appliances, and various permutations on that theme." He continued,

That shift moved us away from our mainstay business of the early 1990s. Products were no longer a simple, physical thing, because they all had to be networked or connected and you had to take into account all the user issues at that more complex, system level. We needed to think about the extended user population, the network, the hierarchy of interactions as opposed to the single user's direct interaction with the product. Our whole company started thinking at this different level.

Then, with the big bust, companies became much more critically aware of charting their path. We were able to leverage our growing ability to understand complex user issues to look

for opportunities to innovate in our clients markets. What do you do with a product across *this* range of users? By necessity you needed to pull business issues into that discussion because you were much more forefront into the process. Innovation strategy became key.

At the same time the client mix was changing. When leading IDEO San Francisco from 1990 to 1995, Brown had worked with leading technology manufacturers to develop emerging technologies such as mobile computing. When he moved to head IDEO London in 1995, Brown found that the client base in Europe was dominated more by service firms than the technology companies that typified clients on the west coast. Despite these firms having different needs, Brown applied the same tools—namely, design thinking and user-center insights—to address the questions posed by this type of client. He explained,

Design thinking applied to this very interesting domain of service brands that are affected by technology. Service firms don't always understand what their service is going to be in the future. Sometimes projects had something to do with technology; many times they did not—such as British Airways' new strategy for business class. This was not a technology thing, but instead how to get people to sleep on airplanes.

Prior to the mid 1990s, most innovation strategy projects relied on human factors research as the critical inputs to shaping project direction. Technical factors—an exploration of the present and future states of relevant technologies, materials, and manufacturing—were increasingly integrated in the 1990s. In 1999 Laura Weiss, an architect and MBA, was hired at the Palo Alto office to head a new discipline known as *business factors* that would offer product strategy services and consider issues such as branding, competitive positioning, channels, and operating strengths and weaknesses. The new discipline established itself over the next few years as other MBAs were hired across various locations as part of project teams. Brown lauded the contributions of MBAs and other persons joining IDEO with business backgrounds for their high levels of empathy for client organizations. Weiss commented that the capability for business factors type work didn't reside only in MBAs, but drew on the diverse experience of designers and engineers as well.

Whitney Mortimer, Harvard Business School MBA 1988, head of marketing, distinguished IDEO's innovation strategy services from those offered by management consultants:

We're not trying to add a management consulting offering like a boxcar to a train. We take on challenges similar to management consultants such as describing a possible future for a company, but we're going to come at it completely differently. ... While [our approach has] certain advantages in that it is very stimulating for an organization, easily communicated and quite galvanizing, our approach is not going to address the pricing of those new services or supply chain issues, areas where the management consultants will be strong. Our offering is complementary to the linear, left-brained approach of the management consultant. Our deliverable will be visual and even tangible.

Phase 0

By 2002, innovation strategy services accounted for more than 40% of IDEO's business. Innovation strategy services comprised two phases of activity. The first, Phase 0, was concerned with setting the context for the design initiative. Phase I then involved ideation and early stages of concept definition. Defining Phase 0 as a separate service allowed IDEO to set expectations, define output, and estimate budget and staff appropriately. Identification of Phase 0 projects began in the business development phase with IDEO staff from a range of disciplines presenting to the potential client and discussing the client's needs. If, in these discussions, the client could not articulate what they wanted to do, or if

what the client suggested didn't appear reasonable to the IDEO representatives, the project was termed Phase 0. Weiss commented that an ideal Phase 0 client saw "innovation as an advantage, not a risk." IDEO would then assemble a project team to explore opportunities for the client.

The team's first task was to get to know the client organization. Brown explained, "Being able to be empathic, not only to the end user, but to the organization you're working with is critical to this kind of work. The thing that kills most ideas is not that they're not good ideas, it's that they are not good ideas organizationally or culturally." Jane Fulton Suri, head of the human factors discipline, commented, "We have to think about how we do this type of collaboration without damaging vulnerable aspects of how our employees do their best work. It's 'do the best for the clients' through sharing process as openly as possible but also 'do what's best for the work for the clients.'"

Phase 0 typically generated observation-based research, strategic frameworks, opportunity maps, and concept scenarios for the client. Output was preferably presented in a visible, tangible format such as sketches, animations, or video prototypes. (Exhibit 3 describes several recent Phase 0 projects.) Brown explained,

Phase 0 has potential to be strategic and create leverage from the project's outcome. A lot of what designers do when they are designing individual products is valuable but tactical—in the sense that there is a one-to-one relationship. You design one product and business results from that product, or even a family of products. But when it is strategic, it has the ability to create leverage. You could create a platform that somebody can leverage in many ways, maybe a framework or construct that can be applied across lots of different products or services. You could deliver insights that can be used to develop lots of different products and services. Or you could give somebody a whole map of things they might develop in the future.

IDEO's Culture

Employees came to IDEO for the strength of its expertise and for its inclusive, collaborative culture. Brown stated, "We're a culture made up of non-conventional designers. A lot of people here don't come from a very traditional design background. They are human factors, architects, or interaction designers, people who come from worlds that are naturally more collaborative than industrial design has been in the past." For example, Simmons project team member Kate Schreiber, who began her career in design, previously worked for E-Lab, a research firm in Chicago, where she learned methodology and research skills. Her interest in IDEO was based on the desire to connect research to design. She recalled, "There are very few consultancies where you can see an idea move from exploratory research all the way through to production."

Work at IDEO was intensively hands-on and collaborative. Beginning with field research into the user's environment and needs and continuing with conversation and brainstorming in the office, teams experimented with ideas that quickly led to building prototypes. Schreiber compared the development process to making sausage: "People like sausage, but not everyone wants to see how it gets made." To Kelley, the process was "focused chaos."¹² In-studio work, not directly visible to clients, had employees dressed in blue jeans, laughing and sharing stories. They would act on their ideas with little concern about what others, including bosses, might say. As Kelley put it, "Trying

¹² "Deep Dive," ABC Nightline, 1999.

stuff and asking for forgiveness instead of asking for permission is the way people come up with ideas.”¹³

One tool supporting the hands-on work was the Tech Box, the creation of engineer and studio leader Dennis Boyle, one of Kelley’s original hires. The Tech Box, a five-drawer flat-file metal cabinet, containing over 200 functional, playful, and elegant materials and technologies indexed on an internal company website, was found at each IDEO location. The contents—ranging from strips of the bulletproof material Kevlar, to rubber balls that didn’t bounce, to minuscule batteries, and puzzling clasps and hinges—offered designers a chance to “touch and feel and see” items that might jumpstart their thinking.¹⁴ Each location had a curator who screened potential additions to the Tech Box.

Employees were free to personalize their workspaces and all were decorated with prototypes from past projects and other gadgets. Kelley pointed out, “[The studio] is where the crazies live. It’s where we do our work. It’s different.”¹⁵ While all of IDEO’s eight locations were decorated with eclectic items (a DC-3 wing was suspended from the ceiling of one Palo Alto office), unique to Boston were 800 gray 15-inch high foam cubes. Originally used by Dayton to hang above his workspace in a sound-muffling cloud, they were quickly adopted by others for an alternate use—flexible building materials. The cubes were used to define individuals’ work space and create project “enclaves”—protected space for the sketches, white boards, prototypes, and materials collected in projects—that could be easily disassembled or expanded as necessary.

The studio environment was a source of great interest to outsiders, including academics, who had studied the firm at length,¹⁶ and members of the business community, many of whom tried to emulate IDEO’s culture. Kelley acknowledged, “We’re weird and we’re proud of it.”¹⁷ Visitors to the studio were struck by the resources IDEO provided its employees, from food (the café was stocked with soda, coffee, and snacks) to supplies and the many spaces designed for congregation and group work. One journalist dubbed the environment “more progressive schoolhouse than high-line design firm.”¹⁸ Clients and other visitors were duly impressed with the time devoted to sharing—stories, gadgets, ideas—and the energy it promoted within the studio. IDEO management viewed these regularly scheduled sessions (e.g., Monday morning show-and-tell meetings) as opportunities for cross-fertilization and informal knowledge transfer across disciplines.

The Simmons Project

The Simmons Phase 0 project began in March of 2000 when Kurt Ling, vice president and general manager of Simmons’ *Beautyrest* line, approached IDEO’s corporate headquarters and asked the firm to “find new opportunities for a mattress company.” A project team member said, “That was as specific as he was at the outset. We responded, ‘Sure, we can do that!’ It’s an old industry, there must be plenty of space for new ideas.”

¹³ Ibid.

¹⁴ Kelley, *The Art of Innovation*, p. 144.

¹⁵ “Deep Dive,” ABC Nightline, 1999.

¹⁶ A. Hargadon, and R. Sutton (1997). “Technology brokering and innovation in a product development firm.” *Administrative Science Quarterly* 42: pp. 716-749; R. Sutton and T. Kelley, “Creativity doesn’t require isolation: Why product designers bring visitors ‘backstage,’” *California Management Review*, 40:1 Fall 1997, p. 81.

¹⁷ “Deep Dive,” ABC Nightline, 1999.

¹⁸ Vanderbilt, Onemedia.com, 2001.

Project Background

Ling, who had recently joined Simmons from Maytag, characterized Simmons' mindset as "a manufacturing oriented company, not a consumer marketing company." Since Ling joined Simmons, the firm had introduced the no-flip mattress, a major innovation in the industry, and, according to Ling, "Things couldn't have been better for us. We had increased our sales \$130 million, which was probably the largest single explosion of growth ever in the industry." At the same time, a growing awareness within Simmons suggested that new product opportunities might be obscured by success in the old way of doing things. Despite his company's reputation as an innovator in the industry, Ling reported, "We don't think much in terms of new, new, new. We do better with new on old."

In the spring of 2000 Ling attended an executive education course on product innovation in which he watched the "Deep Dive" video about IDEO redesigning the shopping cart. He commented, "With that short movie clip I thought these people are worth taking a look at." With the support of Simmons' CEO, Ling contacted IDEO Palo Alto.

In an initial presentation to Ling in Atlanta, David Haygood, head of IDEO's business development, and Michael Meyer, from the business factors discipline at the Boston office, outlined the Phase 0 service. Given the broad scope of the research question, the project plan budgeted three months with a fully dedicated three-person team. (See **Exhibit 4** for more detail.)

Product Strategy Development Process

IDEO's project proposal, submitted in November of 2000, outlined three sub-phases to the product strategy development process. Phase 0a entailed targeted multidisciplinary research, Phase 0b system map ideation, and Phase 0c concept integration and product specification. The project team, headed by Meyer, included Schreiber, a human factors specialist, and Bill Stewart, an industrial designer. They were to work together on all three sub-phases. (See **Exhibit 5** for a project timeline.)

Phase 0a Phase 0a began with a kickoff meeting in Boston attended by Ling, others from Simmons' marketing group, and a representative from Simmons' product development organization. Schreiber, then based at IDEO Chicago, traveled to Boston for the meeting. The launch workshop was intended to "efficiently leverage the depth of understanding that exists within Simmons and build confidence in the final results" and finally, to define a framework to guide the project.¹⁹ The IDEO team was conscientious about listening carefully to the desires expressed by Simmons.

The IDEO team then began "field research," studying mattress users, their environments, behaviors and needs. Employing Schreiber's training in ethnography and human factors, the team conducted interviews in urban, suburban, and rural homes across the country, with people ranging in age from 6 to 60 years old. These interviews lasted up to two hours. The team created video diaries to document their findings, by providing interviewees with camcorders and asking them to turn on the video camera whenever they entered rooms in which they rested, relaxed, or slept. To understand the entire product lifecycle, the team spent time in one of Simmons' factories, did in-store observation of the purchasing experience and shadowed mattress delivery people. They also did customer role-plays. The team was fascinated by the factory, where each mattress was built, largely by hand in a low-tech process.

Stewart's design and architecture background led him to secondary literature on the history of furniture. As part of this stream of research, Stewart visited a seventeenth century historical home

¹⁹ Project Proposal, p. 6.

north of Boston, where all life activities were conducted in one room. He noted, "There was a corner used as the kitchen, a corner for sleeping. Not too far off from today's studio apartments." Despite Stewart's continued goading of the rest of the team for not accompanying him on that trip, Schreiber raved, "Bill is a wonderful designer. He always suggests new ways to look at things ... it was a nice learning experience working with him."

At the end of the six weeks of Phase 0a research, Ling traveled to Boston to review the team's progress, summarized in a document entitled, "Users, beds, environments: A discussion of phase 0a findings." This document was an early presentation of the team's findings so far. Schreiber recalled, "Luckily, Kurt is flexible, so we didn't have to lose time in our analysis in order to spend time making early insights look neat and pretty for the presentation."

Phase 0b Next, the IDEO team had explored how the bed and its associated space, furniture and objects acted as a system to support the user in different stages of need (i.e., at different points in their lives). The team generated usage scenarios, or stories of archetypal individuals, to highlight the fit or misfit of bedding product and lifestyle, as well as potential solutions to their problems. The endpoint of this phase was opportunity areas.

The IDEO team lined the walls of a project room with 4- by 8-foot foam core boards and arranged their research ideas (described on index cards) in several cycles of visual data representation and analysis. One team member commented, "One thing we did well was to let ourselves generate lots of ideas, be descriptive about users, about all different kinds of situations they could find themselves in, so we would design a solution to each situation."

The team identified several segments of the population underserved by available mattress products. Foremost among these was what they dubbed the "nomad," or hyper-mobile single 18- to 30-year-olds in the period between their parents' home and first stable home, perhaps encompassing numerous moves. The IDEO team documented images of young adults who slept on futons, air mattresses, second or third-hand mattresses, all because the available bedding products were too unwieldy and expensive for their mobile lifestyles. The team also noted that this group, often living in constrained and shared spaces, used bedrooms for entertaining and studying, not just sleeping.

Stewart commented, "What we concluded was that there was a misfit between lifestyle and furniture." Schreiber added, "This user group needs to be able to pack all of their belongings in a short period of time and have them fit into a compact car. They leave furniture behind, sometimes on the street, because the cost of moving it is greater than its value."

Other groups with unmet bedding needs included empty nesters that wanted to reclaim a child's bedroom once he or she moved out. Empty nesters needed to retain some sort of bedding for the child and other visitors but wanted to use the space as an office, craft room, or for workout machines. Another potential opportunity was children's bedding, in which the bed could function as a part of the child's play space.

Phase 0c Lastly, the team expanded upon the singles opportunity area by turning the ideas into nascent product concepts (these required more design and research to be considered equivalent to Phase I output) that connected to value propositions and described the product's fit to the user's life.

One team member described the opportunity: "Right now Simmons sells a mattress for one price and an even bigger mattress for more. You need a stool to get into bed. People who think that think mobility is good, leanness is good, who like minimalism—they might enjoy something that is actually high quality and not so much bulk." To that end, the products designed to meet the needs of the singles market were movable, livable, durable, and affordable. One product line was a self-contained

integrated mattress and frame that the team referred to as a “bed in a box.” They envisioned singles might someday purchase such a unit at a department store such as Target. A second product concept focused on “horizontal modularity,” a mattress built of visually distinct and easily compacted layers, which could easily be customized, while simplifying the job of moving the product.

The 11 solution categories were divided into two groups: above and below the line. (See Exhibit 6). Solutions found ‘above the line’ represented new product lines that would require entirely new manufacturing processes and distribution channels. Those below the line were add-ons to Simmons’ existing lines. The horizontal axis suggested the time it would take to develop the product given the company’s current capabilities.

Final Presentation to Simmons

The final presentation of IDEO’s research findings was scheduled at Simmons for the week of September 11, 2001. However, following the terrorist attacks in New York City and Washington, D.C., travel was neither desirable nor feasible, and communication with Simmons languished. New projects slowed down temporarily as well. Using some of this down time, several designers engaged in an in-depth exploration of the self-contained bed idea developed in Phase 0c. The participants designed seven versions of it in an exercise representing a typical Phase I round. Schreiber noted, “Other IDEO designers [not on the project team] started peeking over the wall and got excited about the designs coming out of the work.” While the result, bound in a book titled “Soft Inside,” was intended for Simmons, the team invested extra effort to create an especially beautiful and compelling deliverable based on their enthusiasm for the project as well as the desire to sustain momentum. Ling enthusiastically received a copy at a November 2001 preview meeting for the rescheduled final presentation.

The final presentation to Simmons executive leadership—the CEO, CFO, COO, and marketing department—took place on May 16, 2002. At Ling’s request, Dayton, as head of the Boston studio, joined in the presentation. The IDEO team traveled to Atlanta and met Ling, whom they had not seen for several months, for a working dinner to prepare for the next day’s two-hour presentation. Ling was pleased with the opportunities the team planned to present but knew that the rest of Simmons’ executive leadership was not prepared to hear market research. He explained,

We don’t get up in front of the management team until ideas are packaged for show and tell. If we sat down in front of them and said ‘This is our target market,’ they would say, ‘Ok.’ If we say, ‘This is our strategy,’ they would say, ‘Ok, we trust you,’ because they are focused on sales and manufacturing for the mass consumer in the present day. When we have something to show them they are excited. Otherwise they don’t feel a need to be included.

The group decided to dedicate the first half of the presentation to a conversation based on the following three questions: How many places did you live from the time you graduated school until five years later? What did those living spaces look like? How did you move from one to the next?

Ling reminisced:

Everybody around the table including our chairman said, ‘You know I had an air mattress and a u-haul trailer and I moved six times.’ We identified that none of us went out and bought a new bed when we were that age doing our thing, but today we think that everyone goes to a bed store to buy a bed the minute they get a house or an apartment.

It was entertaining, but most important, if you have a bunch of people who don’t have extensive experience with target marketing, it allowed them to be the target customer and

experience that mindset. The meeting was very instrumental in helping them understand what this was all about.

Schreiber agreed, "Once the executives were on board, the concept and design work began." The balance of the presentation was spent on the two solution categories. Dayton then spoke about the implications of IDEO's ideas in terms of the organizational change required to implement the ideas. Ling emphasized how much Simmons valued the terrific relationship they had built with IDEO.

Back in Boston

Once the team returned to Boston they spent some time reflecting on their presentation and the project as a whole. They felt satisfied with the skills in the team, the time allotted to the project, and the ideas. Designer Florian Altmann, a relative newcomer to IDEO, commented, "Simmons is in an established business and looks for inspiration within its own realms. Then we come in and we don't know much about mattresses, when we start a project like this, but as we look around, we look not only at one single business. We find immediately things that they would have never thought about, and then the more we look the more we find." However, Dayton speculated they had spent a lot of time building models and perhaps not enough time with the client. He stated, "We are very strong at process and product. But it's becoming clear that the success of this kind of work will require us to become just as strong when it comes to building and sustaining relationships."

Going Forward

Dayton pondered how to evaluate the Simmons project. He admitted, "Everybody here wants to get the cool ideas out in the world. We're all wired to do that. When you come up cool concepts and nothing happens and the client sort of takes it away and it disappears in a black hole, there's a real sense of disappointment or frustration that you didn't get to do the whole thing, do it all the way."

In July, two months after the final presentation to Simmons, Dayton placed a second phone call to Ling. He had received little feedback from Ling and wondered if and how Simmons was using their ideas. Were they interested in a follow-up project to develop one of the concepts they had identified? What could the team have done differently? Should they have involved the client more? He was particularly puzzled on the matter of client involvement—from IDEO's perspective the relationship was terrific. Were IDEO's ideas too radical for the company? He acknowledged, "IDEO teams move fast—really fast. Much faster than our clients."

Exhibit 1 Selected IDEO projects

Year	Project/ Client	Awards
1982	Compass for GRiD Systems Notebook computer	1982 ID Magazine Design Distinction
1983	Apple mouse First mouse for Apple (for Lisa and MacIntosh)	
1987	Microsoft Mouse for Microsoft First ergonomically designed computer mouse	1988 ID Magazine Design Distinction
1989	Audio system for Ford Car stereo	1989 IDEA award
1991	PalmPad for GRiD Systems Rugged pen-based computer	1992 IDEA Bronze 1992 ID Magazine Honorable Mention
1991	Novacor Left Ventricular Assist System for Baxter Wearable heart-assist device	1991 IDEA Bronze
1993	ATM Surround for Wells Fargo Wall surround for automatic teller machine	1994 IDEA Bronze
1994	9790 for Medtronic Portable pacemaker programmer	1995 Red Dot 1995 iF Hanover 1995 Appliance Manufacturer
1995	4000 & 7000 Series Lan Extender for Cisco Systems Routers that control and connect network traffic	
1996	V12 for Nike Sports sunglasses	1997 Red Dot Best of the Best 1997 iF Hanover; 1997 D&AD Silver 1997 Design Week Best of Show
1997	Yeoman XP-1 GPS map plotter	1999 ID Magazine Design Distinction 1998 iF Hanover; 1998 Red Dot
1998	Q for Steelcase Mobile workstation concept	
1998	Royal Post Boxes for Royal Mail Update of UK's ubiquitous mailbox	
2000	Leap for Steelcase Adjustable office chair	2000 IDEA Silver 2000 Red Dot
2000	2010 Connected Products for IDEO Conceptual future products exploration	2001 ID Magazine Design Distinction
2000	Acela for Amtrak Interiors for high-speed train	2001 IDEA Gold
2001	Dilbert's Ultimate Cubicle for United Media Conceptual office cube	2002 IDEA Gold
2001	Bank Customer Service Strategy for Juniper Financial Customer research and website architecture	
2001	Triumph Convertible & Apollo Booster for Evenflo Children's car seats	2003 IDEA Silver (Triumph)
2001	Personal Skies for MoMA Installation at Museum of Modern Art	2002 ID Magazine Design Distinction
2002	CD Player for Muji Wall-hung CD player	2002 iF Hanover Gold 2002 Design Week; 2002 D&AD
2003	Method Cards for IDEO 51-card deck of user observation techniques	2003 IDEA Silver (Design Research)
2003	MoneyMaker Deep Lift Pump for ApproTEC Human-powered irrigation pump	
2003	mMode Design Strategy for Data Offering for ATT Mobile data service redesign	

Source: IDEO.

Exhibit 2 DeWalt Table Saw



Source: IDEO.

Exhibit 3 Recent Phase 0 Projects**Eastman Chemical, Collective Vision, 2003: Conceptual exploration in materials for eyewear**

In collaboration with Eastman Chemical, IDEO explored the applications of two of Eastman's well-known materials, copolyester and cellulose, to new products. The framework for the project was to create a series of design stories around the theme of eyewear, each of which inspired a concept later implemented in copolyester or cellulose. The concepts culminated in a book, *Collective Vision: The Advance of Design Through Materials*. This project was featured in *ID Magazine*.

Stanford University, Stanford Center for Innovations in Learning, 2001

The Stanford Center for Innovations in Learning is a multistory teaching environment and research facility dedicated to improving student learning and promoting creativity in education. The Center wanted its new facility to act as a living prototype space, flexible enough to accommodate new tools, new workspaces, and new methods discovered by the Center's research. In collaboration with the Center and an architectural firm, IDEO conducted on-campus interviews, photo-surveys, and shadowing to understand the work process of the students and the Center's staff and faculty. This work informed the design documentation IDEO delivered, including visualizations of every aspect from architecture and furnishings to information systems and protocols of use. The Center features display spaces, information kiosks, and spaces conducive to a wide range of research activities, from small private spaces that allow concentration to large-scale presentations.

DePaul Health Center, Patient care delivery model, 2001: Redesigning the patient experience

Realizing that hospital services influence the well-being and care of people, DePaul Health Center aspired to provide innovation for a comfortable patient experience. To achieve this, IDEO explored the hospital's space usage, technology, services, and staffing from the patient's point of view and then developed design concepts for a new patient care delivery system. By training a cross-functional DePaul team in the basic steps of process innovation and generating a rough implementation plan, DePaul was able to refine and actualize the design concepts. Jane Fulton Suri, head of the human factors practice, explained that in the DePaul project IDEO was effectively "transferring the capacity to be innovative to the organization." The DePaul project was featured in *Health Forum Journal* and *Metropolis*.

ElekSen, ElekTex smart fabric exploration, 2000

Fabrications is an exploration of five interrelated communication products using ElekSen's ElekTex, a "smart fabric" that combines conductive fabric structures with microchip technology. These products offer features such as increased tactile feedback during use, modularity, and resistance to breaking if dropped. ElekTex has the potential to change the aesthetics and functioning of communication tools, adding more variety, tactility, and malleability. The five products form a conceptual product landscape to introduce this technology to a wider audience. Included are a soft computer keyboard, a soft TV remote control, a conference phone, and a phone module that can be placed in a standard-size soft mobile phone body, or into a soft wrist phone worn like a watch. This project was awarded a 2002 *ID Magazine* Design Distinction.

Source: Adapted from IDEO website.

Exhibit 4 Excerpts from “Understand and Innovate” Project Proposal**Objective**

The goal of Phase 0 is to gain deeper insight into needs and motivations regarding beds and mattresses, and map opportunities for new products that provide a compelling value to users, and are a rational next step for Simmons. From an understanding of the user, the bedroom environment, the market and technology, Simmons and IDEO will collaborate to define product concepts which break new ground in bedding.

Approach

In this phase, IDEO assembles a team of our technical and strategy staff to delve into three broad areas of research. Our business factors group would provide market driver analysis of the competitive landscape and purchasing cycle, our human factors and industrial design groups would analyze the needs and behaviors surrounding bedding, and our engineering group would help understand technological constraints and opportunities, as well as manufacturing implications.

This is not traditional statistical or marketing research. The objectives of market researchers typically are to understand the market, who the other players are, and what they offer. Statistics are very important. They hope to identify untapped markets, and to prioritize them. On the other hand, design research looks at the interactions and environment, which fuels scenarios for what could be. By doing design research we want to fuel innovation by generating information about users and product use that is rich for designers. We want to identify perceptions about usage, rather than perceptions about the motivation to buy. We broaden the range of opportunities, rather than narrow it, especially in the early stages of product development. Statistics are of less importance.

In addition to identifying unmet needs to craft a real value proposition for the product, this information uncovers and clarifies the drivers of market dynamics to guide our product definition. Thus, the research could focus on answering critical questions such as:

- What is the role of the bed in users’ lives, beyond that of a sleeping place, and how can we expand upon Simmons’ segmentation research?
- What are the personal, familial and social issues and needs that users associate with the bed and its environment?
- In this context, how do people care for themselves, others, the bed and its surroundings?
- What are the non-sleep functional aspects of the bed. Does it provide storage, seating, a workspace?
- What are the aesthetic functions and failures of the bed?
- How do people approach the planning / purchase / use / disposal cycle? Who are the influencers and deciders, and what are their interests?

In approaching these questions, we will want to explore target users, as well as boundary users who help challenge assumptions, such as:

- Travelers
- Visiting relatives

- College dorm residents
- Elders
- People confined to bed or under bed rest (common cold, pregnancy, handicap)
- People shopping for a bed or mattress

As well as a meaningful cross-section of age, marital and family status, and gender.

User understanding is gathered in a variety of ways, which must be matched to the understanding desired. We would apply techniques such as:

- Direct observation of individual users
- Activity-based exercises with individuals or groups of users
- Self-documented camera studies
- Team member role-playing exercises
- Interviews and brainstorming with Simmons personnel

Building upon our learning, IDEO would collaborate with Simmons to envision system concepts for products, combined with an evaluative framework that judges the concepts against user needs and your own business environment. These system concepts would form the basis for design briefs for full development.

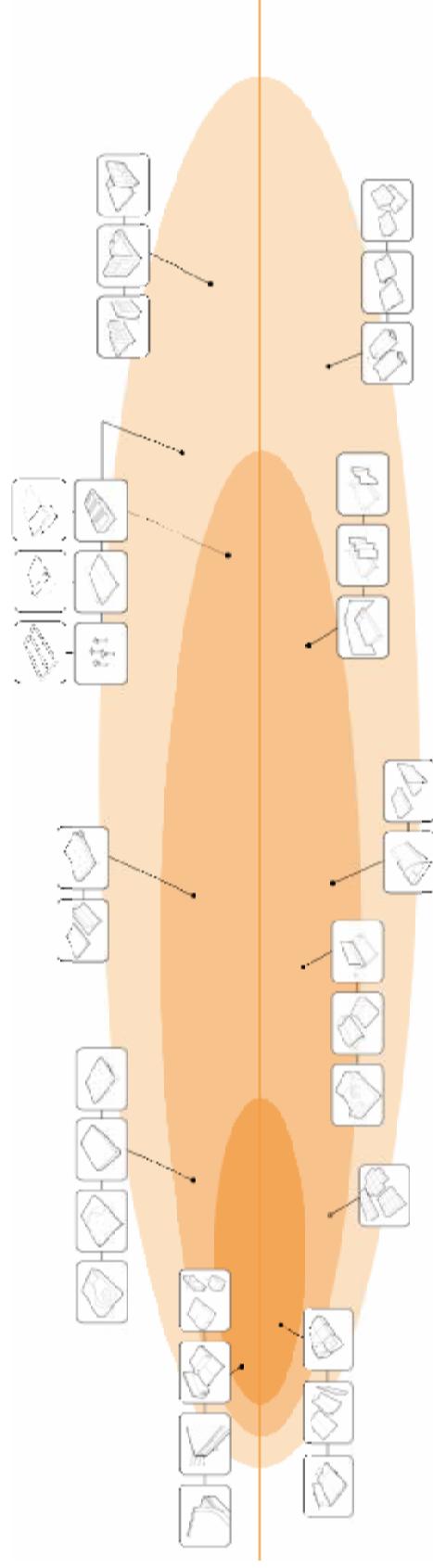
Source: IDEO.

Exhibit 5 Simmons' Project Timeline

	Activity	Material
March 2000	Ling contacts IDEO IDEO presentation to Simmons in Atlanta	
November 6, 2000	Submitted project proposal to Simmons	Project proposal, "Understand and Innovate"
March 2001	Simmons delayed start date Kickoff meeting in Boston	
(6 weeks)	Phase 0a – Targeted multidisciplinary research. Establish a project framework. Conduct field research. Descriptive meeting following fieldwork.	"Users, beds, environments," May 23, 2001
(3 weeks)	Phase 0b – system map ideation. Explores how people relate to the bed and its surrounding space.	"Working sketches," July 14, 2001
(3 weeks)	Phase 0c – Concept integration and product specification.	
Week of September 11, 2001	Final meeting scheduled but cancelled due to terrorist attacks. Little contact with Simmons. IDEO team gives itself one week to explore one idea (the self-contained bed) from Phase 0c.	"Soft Inside"
November 2001	Preview meeting with Simmons team	"Soft Inside"
May 16, 2002	Final presentation in Atlanta. Reviewed solution categories for singles market.	Product Strategy Report: "Project Bindle"

Source: Casewriter.

Map of the "single" solution



Source: Simmons.