Designing Quality *into* SERVICES

BLUEPRINTING IS A technique that identifies key features in the design of a service. Important opportunities that emerge from this analysis are a better understanding of service "fail points" and a clearer focus on what Rajendra Sisodia refers to as "hail points" – contacts that leave customers with strong positive service experiences. Using contemporary technologies, Sisodia argues that designers can significantly enhance the quality and impact of these service hail points.

By Rajendra S. Sisodia

Design management has traditionally focused primarily on physical end-products: how well such products look, perform and endure, along with how easily and reliably they can be manufactured and assembled. In the service sector, however, the role of design has been poorly defined. Since customers are actively engaged in service creation and delivery, a thoughtfully designed service can lead to great customer satisfaction. Good service design thus has a strong impact on perceived service quality and on the attitude and demeanor of service providers.

The service sector dominates the economy, and the quality of services thus profoundly affects both economic well-being and the quality of life. However, most consumers regard services as poor in quality and worse in delivering value. As evidence, a Conference Board study which examined consumer perceptions of value in 38 product categories (of which half were services and half were tangible goods) found that only three of the nineteen services were rated above-average in delivering value, whereas the bottom seven, and sixteen of the bottom nineteen product categories cited, were services.[1] Clearly, service companies can obtain substantial competitive advantage by addressing this quality and value gap. The best way to do that is from the ground up – by designing services to maximize delivered and received quality and customer satisfaction.

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Service Design and Service Quality

Two complementary perspectives can be used to evaluate the role of design in service quality. The first perspective, somewhat like earlier conceptualizations of the meaning of quality in the goods arena, stresses the provision of defect-free services. This is clearly necessary, but is no longer sufficient for marketplace success.

1. Fabian Linden, "Value of the Dolls," *Across the Board*, December 1985, pp. 55-57, 60.

The second perspective emphasizes maximizing the number of "things gone right" in the service encounter. Doing both well requires detailed attention to the service design process.

Based as they are on repeated human contact, services are extremely vulnerable to human error. It can take only one negative service encounter in a relationship to negate dozens of positive encounters. As Table 1 shows, the odds are squarely against the service provider.

How can management reduce the odds of failing? They can work to increase the odds of each encounter going well or try to reduce the total number of encounters (in a manufacturing context, these options are akin to tightening the tolerances on component parts and reducing the total number of parts). Accomplishing the former requires providing greater employee training, more incentives, more monitoring etc., but very rapidly runs into the limits of our ability to standardize human performance. Reducing the number of encounters, on the other hand, seems heretical to a service-minded provider, and is seen as *lowering* the level of service in order to deliver better (i.e., more error-free) service. This calls for a philosophical adjustment – the best service is not one with the maximum amount of personal contact, but one in which the desired outcome is achieved with an *optimal* level of personal attention (which, of course, varies across customers and which is a function of expectations and previous norms).

If something still goes wrong, as it eventually must in every service, management must be prepared with contingency plans for rapid recovery. It has been shown that this can be an extremely profitable activity, and can in fact cement customer loyalties even more strongly than they had been before the need for recovery. Such actions result in highly positive word-of-mouth. Service providers must, in a sense, over-react; they must overwhelm the customer into not only overlooking the problem, but also into talking about the remedy for a long time. Providing such "wow" experiences is immensely valuable to the service provider's image and future business. It also serves the useful purpose of creating corporate folklore, stimulating employee morale.

What's more, such extravagant remedies do not have to break the bank. Most service businesses have heavy fixed costs and very low variable costs. For example, while it costs a hotel next to nothing to provide a customer a free stay in a suite (provided the suite would otherwise be vacant), such a stay is worth a great deal to many customers. All service providers need to keep a list of such low-variable-cost, high-customer-value remedies to offer customers when problems arise. This way, they can ensure that they achieve what has been termed "zero defections."[2] This is crucial; research has shown that customers become more profitable over time, and that reducing defections by just 5% can boost profits 25% to 85%.

The limitation of this view of quality assurance is that it presupposes that the service is well designed in its fundamentals, and that if it were performed without error, customers would be highly satisfied. Such is not necessarily the case.

Table 1: The Odds Are Against You

Probability that you will have at least one negative encounter in a five-day hotel stay

		p			
		0.80	**0.90**	**0.95**	**0.99**
n	5	0.67	0.41	0.23	0.05
	10	0.89	0.65	0.40	0.10
	20	0.99	0.88	0.64	0.18
	30	1.00	0.94	0.79	0.26

p = probability of each encounter being handled satisfactorily
n = number of service encounters during hotel stay
Take the context of a five-day business stay at a hotel, during which time the customer has thirty service encounters. We can use the following equation to estimate the probability of a negative service encounter:
Probability of at least one negative service encounter
= 1- Probability of no negative encounters
= 1 p^n
where p = the probability of each encounter going "right," and
n = the total number of encounters during the hotel stay.
If the hotel estimates p = 0.95 (i.e. that employees will perform as intended nineteen times out of twenty), then the odds of at least one negative encounter are 1 - $(0.95)^{30}$, or 78.5%!

The Concept of Service Integrity

Service marketers would do well to heed some quality-related lessons which are only now being learned in the goods sector. U.S. automakers, for example, have made considerable progress over the last decade in improving the quality of their products, based on minimizing "things gone wrong." However, Japanese automakers have now progressed to another definition of quality – a holistic view which emphasizes overall product performance and fit with the user. This view recognizes that competitive success comes to companies which are also able to maximize "things gone right." Mazda has in recent years touted this philosophy under the label of "kansei engineering."

This form of product quality has been referred to as "product integrity."[3] It has two components: *internal integrity*, which refers to the extent to which dif-

2. Frederick F. Reichheld and W. Earl Sasser, Jr., "Zero Defections: Quality Comes to Services," *Harvard Business Review*, September-October 1990, pp. 105-111.

3. Kim Clark and Takahiro Fujimoto, "The Power of Product Integrity," *Harvard Business Review*, November-December 1990, pp. 107-118.

ferent components of the product work harmoniously and seamlessly together; and *external integrity*, which pertains to how well the product fits the users' values, lifestyles, needs, etc. For services, it is useful to consider the concept of "service integrity." Since customers are (usually) active participants in the service process, it is important to consider their *overall* perceptions of the service experience. Designers must develop the components of the service, and then assemble them into a smooth process. They must examine customer feelings and reactions throughout the entire process, rather than simply at the beginning and end.

The most outstanding service companies provide high levels of service integrity. Federal Express, Disney, Singapore Airlines, and McDonalds are examples of companies which understand not only the component parts of their service (and manage those exceedingly well), but also understand how the components fit together and how customers fit into the whole process. At Disney World, long lines move constantly, and are snaked repeatedly to make them seem shorter. The company has installed an elaborate pneumatic system for the quick disposal of stray refuse. As a result, the average life of a piece of trash there is said to be about seven seconds. Federal Express makes it a point to answer the phones on the first ring. Their couriers appear to jog between the van and your front door. Offering more than operational efficiency, these practices subtly affect customer perceptions about the quality of the service they are receiving.

On the other hand, unsuccessful or poorly regarded services, such as the Department of Motor Vehicles, many airlines, health-care offices, and automobile repair facilities, clearly lack the same level of service integrity. In these situations, customers might perceive waiting times to be longer than they really are, or have the sense of being part of a needlessly tedious process. Employees in these contexts are often ill equipped to provide customers needed information, and have no incentives to maximize customer satisfaction. These are clearly service design issues which transcend a mechanical, componential view of the service process.

The need for companies to pay attention to service integrity will become especially acute as the hitherto largely domestic service sector becomes more susceptible to international competition. It is also important to remember that even organizations we are accustomed to thinking of as manufacturing concerns are, in fact, largely in the service business. Only 6% of IBM's employees work in a factory; the rest are essentially service personnel. The Japanese luxury automakers Lexus and Infiniti emphasize service quality as much as the quality of their cars. Evidence of this trend is further provided by the fact that J.D. Power in 1991 has increased the service component in their overall customer satisfaction index for cars to almost 60%. For manufacturing companies, then, service integrity must include consideration of "service-product integrity" – the extent to which service elements are consistent with and reinforce elements of the physical product. Clearly, companies in all industries need to better understand and manage service quality. The process begins with an appreciation for the power of service integrity.

How can a service firm adequately define and implement service integrity? Certainly, a "design-by-committee" approach can never yield a service with a high degree of integrity. The technique of service blueprinting can help create quality services with high integrity. Figure 1 is an example of a service blueprint.

Designing Services – The Use of Blueprinting

A service blueprint depicts all the subprocesses in the service creation and delivery process.[4] The sub-processes are linked with one another in a chronological sequence. In this sense, a service blueprint is a detailed flow chart of the service process. There are three key concepts in a service blueprint: the line of interaction, the line of visibility, and fail points. A fourth concept, hail points, is introduced here.

Line of interaction: This defines the locus of direct interaction between customers and service providers.

Line of visibility: This separates processes visible to customers from those that occur behind the scenes. It is important to understand the interrelatedness between service processes on either side of the line of visibility. Customers' perceptions of service quality often depend on below-the-line processes. Services should have relatively few, but high-impact, visible elements. Service designers, especially if they are dealing with technology-resistant consumers, should create the service so that a maximum number of "high-touch" factors are above the line of visibility, while as many as possible of the "high-tech" aspects are kept below the line. Of course, some companies may choose to highlight certain high-tech aspects of their service as a part of their differential advantage over competitors, which

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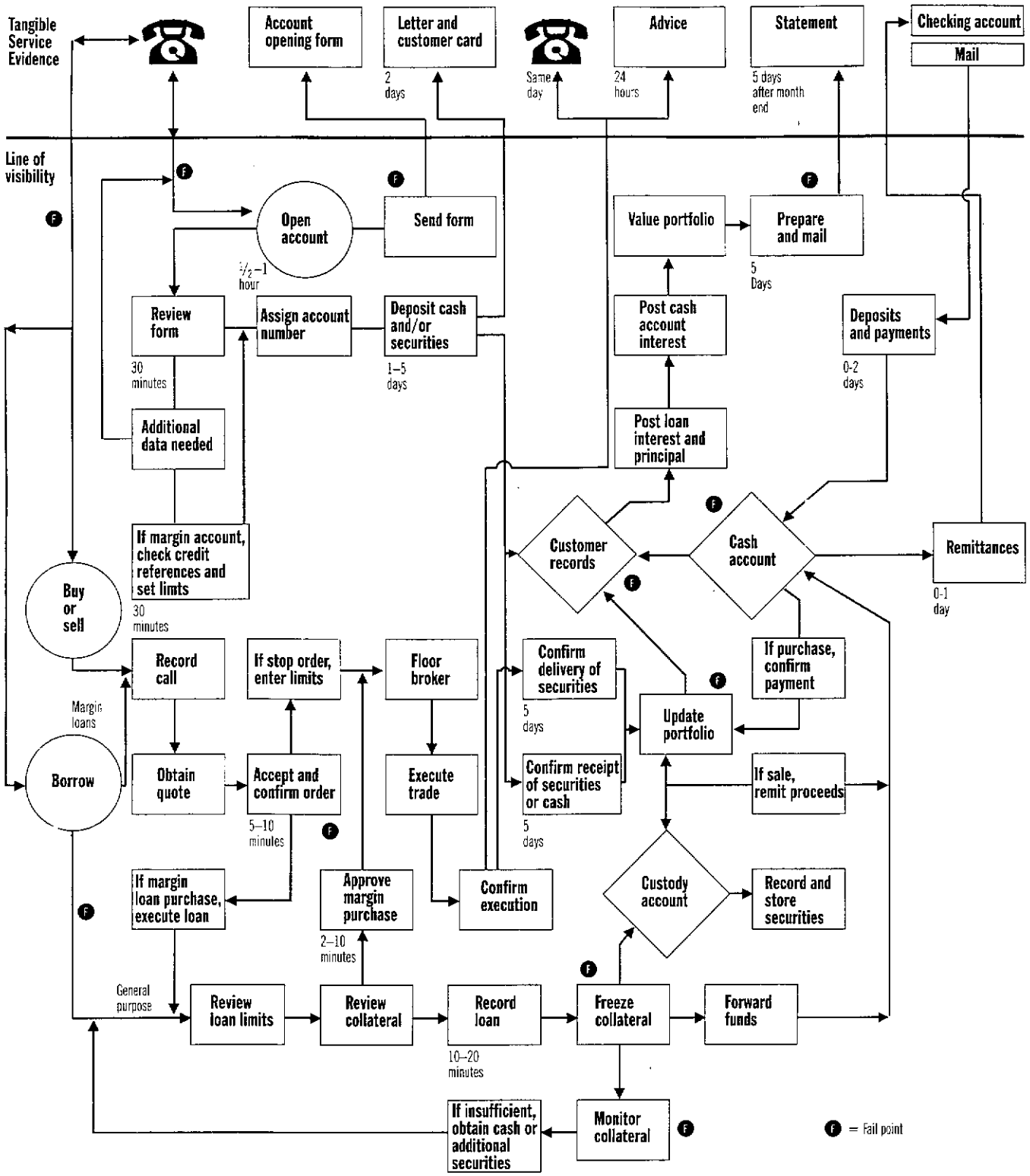
4. G. Lynn Shostack, "Designing Services That Deliver," *Harvard Business Review*, January-February 1984, pp. 133-139.

Figure 1: Blueprint for Discount Brokerage

A service blueprint makes processes clear



would require moving some hidden elements above the line of visibility. Others may choose to allow the customer to dictate the degree of visible technology they are comfortable with, as banks do when they allow customers to use electronic banking, ATMs ,or human tellers.

Fail points: These are points within the service process where defects are most likely to occur. Their identification allows companies to focus additional resources, training, back-up systems, and recovery protocols on appropriate subprocesses. They also identify those portions of a service which need to be redesigned.

Hail points: The most error-free service is not always the most successful one. An exclusive focus on fail points may cause a service organization to create a smoothly functioning but ultimately dull and undistinguished service experience. Service marketers have for several years now talked about "moments of truth" and the need to create customer delight. However, the systematic approach to service design embodied in blueprinting has largely ignored the need and value-creating potential of such service elements.

I thus recommend adding a fourth consideration to blueprinting – the identification and exploitation of what can be termed "hail points," points during the service process at which significant opportunity may exist to provide customers with a strongly positive experience. It is important to realize that not all points within the process are good candidates. While specific possibilities vary widely across service contexts, such hail points are likely to be most successful when they are least anticipated by customers. Identifying and acting upon hail points can thus allow a company to turn a potential negative into a substantial positive, especially if potential fail points can be converted to hail points.

Possible hail point actions should be evaluated on their ability to generate positive customer affect, as well as on their effectiveness in bringing about positive word-of-mouth and other free publicity. It is well known that a service failure typically results in enormous negative word-of-mouth, while error-free services generate little attention. Hail points can restore the word-of-mouth balance in the service provider's favor.

Creativity is essential in the management of hail points; many such activities can eventually become unnoticed entitlements unless they are varied. Customers have to be gently (and subtly) reminded about the extraordinary level of service they are getting.

The Building Blocks of Quality Service

The Marketing Science Institute has sponsored a series of studies, known as the SERVQUAL studies, which have sought to uncover the generalized dimensions of service quality from the customer's perspective, and to determine their relative importance.[5] The five main dimensions of service quality have been found to be:

1. Reliability
2. Tangibles
3. Responsiveness
4. Assurance
5. Empathy

Nine empirical studies in six different service industries have yielded a remarkable degree of consistency in the relative importances of these dimensions. Designing quality services thus requires conscious attention to each of these factors.

Reliability: This refers to the ability of service providers to perform the promised service dependably and accurately. The SERVQUAL studies have identified reliability as the most important dimension of service quality in each of several service industries. Clearly, then, services must be designed to ensure extremely high levels of reliability. In the absence of such performance, no service company can survive for long.

Key design elements for reliability include (1) task simplification, (2) process control, and (3) the extensive and high-level use of information technology.

Task simplification can be achieved through the re-engineering of services so as to keep a sharp focus on the desired ends while disregarding traditional means. Such a zero-based approach to service design can yield enormous dividends; many companies have achieved several-fold improvements in efficiency and effectiveness through the use of re-engineering.

Process control refers to the regulation of service components. It can be facilitated through the extensive use of blueprinting, and the use of well-established SPC (Statistical Process Control) techniques. It is important not to over-control a service process; certain unstructured activity areas are best handled through the empowerment of competent front-line personnel rather than through programmatic strictures.

Information technology is absolutely essential in achieving high levels of reliability in service performance. The most successful service companies have used information technology to set new standards of reliability in their industries. L.L. Bean's legendary reliability rate of 99.89% gives them a tremendous competitive advantage. Their order processing and fulfillment systems are the envy of the industry.

5. Valerie A. Zeithaml, A. Parasuraman, and Leonard L. Berry. *Delivering Quality Service* (New York: The Free Press, 1990), p. 26.

Similarly, Federal Express has a sterling reputation as one of the most reliable companies in any industry, becoming the first-ever service company to receive the Malcolm Baldrige National Quality Award in 1990. The company's success can in large measure be attributed to their early decision to invest heavily in cutting-edge information technology, including bar-code scanning and tracking of packages, wireless communications between local offices and vans, centralized order processing, etc.

Tangibles: These include the appearance of physical facilities, equipment, personnel, and communication materials. This is the domain in which design can play its most-accustomed role, through the creation of visual themes and design elements which appropriately convey the company's desired image and operating philosophy. Key design elements include those mentioned above, as well as various silent communicators or cues of service quality. In the context of blueprinting, tangibles exist above the line of visibility, and thus should be strongly emphasized in designing services.

Responsiveness: This factor measures the willingness of employees to help customers and provide prompt service. Key design elements include (1) economy and leanness, (2) adequate informational support, and (3) the empowering of customer-contact employees.

Economy and Leanness: Customers should be maximally preprocessed before meeting with a service provider. Employee time should be leveraged effectively; service providers who spend the bulk of their time on mechanical, valueless tasks are unlikely to be highly responsive to real customer needs. At Mrs. Field's Cookies, for example, the philosophy is simple: "If a machine can do a task, it should. If an administrative task can be automated, it should be."[6] The computer handles all routine chores such as ordering materials, paying invoices, scheduling maintenance, even forecasting demand and planning production of cookies. Managers are thus left free to deal with more challenging and rewarding problems.

Adequate Informational Support: Information technology can be used to enhance responsiveness by creating services which are "smart" rather than mechanical, so that users are prevented from making mistakes and are prompted to extract maximum value from the service. For example, several popular tax preparation packages now on the market use artificial intelligence technology to alert users to inconsistencies, overlooked deductions, and items likely to trigger an audit. Every service should have an underlying "agent" or expert system watching over its various elements to ensure compatibility with norms, consistency with other service elements, and exploitation of every possible opportunity.

The Empowering of Customer-Contact Employees is a powerful way to make them more responsive to customer concerns. This can be achieved by flattening and loosening organizational structures, increasing the status and upward mobility of customer-contact positions, and "throwing away the rule book." Nordstrom, a company renowned for its extraordinary service, has effectively achieved all three of these objectives. Their organizational chart depicts customer-contact employees at the top of an inverted pyramid, and the board of directors at the bottom. Most managers and executives are drawn from customer-contact ranks. And their employee "handbook" consists of one page with one rule: "Use your good judgment in all situations."

Assurance: This refers to the knowledgeability and courtesy of employees and their ability to convey trust and confidence. It includes the dimensions of competence, credibility, and security. The central issue in service design for assurance is: How can this be done with the "ordinary" employees? The answer lies in warehousing corporate knowledge not solely in individuals but also in expert systems. The objective of such an approach is to apply the *organization's* best knowledge to each service encounter. This again is largely an issue of designing the service information infrastructure to institutionalize the knowledge of what works and what doesn't work, and making that knowledge readily available as needed.

For example, American Express has used an expert system called Authorizer's Assistant to greatly enhance the quality and speed of their decision-making for the approval of credit-card charges. A similar approach has been used by their financial planning subsidiary, IDS Financial Services.[7] A system called Insight has captured the expertise of their best financial planners, allowing the worst of their 6,500 financial planners to perform better with the help of the system than their average planner performed *without* the system. In the four years the system has been in use, the number of clients leaving IDS has been reduced by over one-half.

Empathy: This refers to the provision of caring, individualized attention to the customer. It includes understanding the customer, being accessible, and maintaining open communication channels. Services can be designed to convey a strong sense of empathy to the customer. Key design elements include (1) accessible and well-organized knowledge about the customer and their past service encounters with the

6. Tom Richman, "Mrs. Field's Secret Ingredient," *Inc.*, October 1987, pp. 65-72.

7. Thomas A. Stewart, "Brainpower," *Fortune*, June 3, 1991, pp. 44-60.

company; (2) basing actions directly on that knowledge, with the link being transparent to the customer; and (3) providing the customer with a facility for communicating special needs to the company, and encouraging its use.

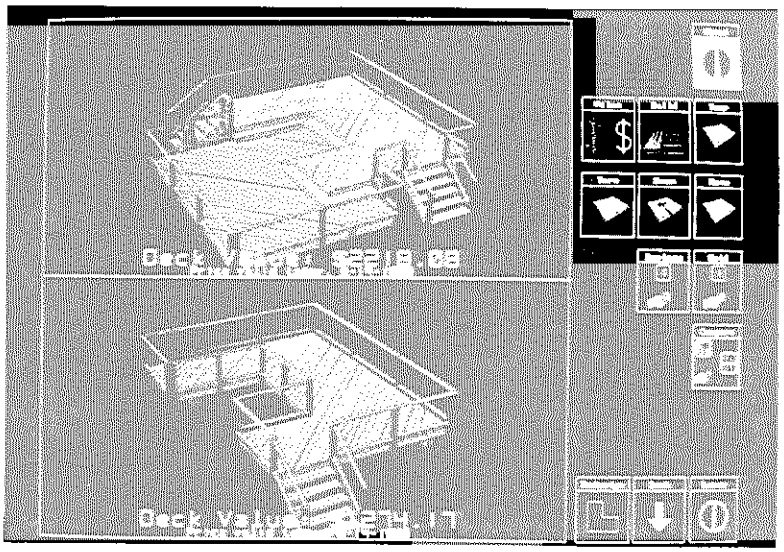
Dorothy Leonard-Barton has talked about the importance of empathic design, which stresses understanding the ways in which customers interact with products and addressing real but non-obvious needs[8] such as GE's development of a soft bathtub for the elderly. A similar orientation would yield great returns in service design.

How Emerging Technologies Will Affect Service Design

The intersecting vectors of computer technology and telecommunications promise substantial changes in how services will be created and delivered in the future. Present trends point to the ubiquity of fiber-based broadband communications, extensive distributed computing power, high-definition displays, rapid access to global libraries of information, and the widespread dissemination of expertise.

What will this mean for service designers? For one thing, customers will play an even more active role in the service process. They will actively seek out service providers who are accessible through electronic distribution channels. Services which are highly interactive and intelligently designed will have an even greater advantage than they do today. It will be possible for service companies to leverage the expertise of their employees in multiple ways – by making them available internationally within minutes, and by capturing their expertise in ever more sophisticated expert systems. Through the use of holography and virtual reality systems, customers will be able to "experience" services before they are created. Such technologies could radically change industries such as architecture, real estate, and cosmetic surgery.

How effective can such advanced technologies be? Two examples suggest that they have the potential to be highly successful. Innovis Technologies, Inc. (a former division of Weyerhauser Co.) has recently developed a computerized design system called "DesignCenter," which is placed in hardware stores and allows customers to interactively design home improvement projects.[9] The computer checks each design against the principles of structural mechanics and suggests needed changes. When the design is satisfactorily completed, the system provides the customer with a detailed printout of the project plans, including assembly steps and a complete description of the needed lumber and hardware. Stores with these systems have reported that sales of designed items have increased by 25%, and 50% of the customers who use the DesignCenter place an order.



Innovis Technologies DesignCenter

A system called Magic Mirror has been used to help shoppers "try on" clothes without physically putting them on.[10] It is an electronic dressing room, in which the customer sees a reflection of herself. The computer creates the clothed figure, shaping and sizing as appropriate. Outfits can be changed in seconds, allowing customers to sample hundreds of outfits before choosing a few to put on physically. When the entire Liz Claiborne collection was put on the system, sales soared by 700% in one week.

Services designed in this fashion allow the customer to take control of the service encounter. Such services are efficient (they require less ongoing effort on the part of service providers), effective (they result in greater sales), and highly satisfying to customers (they result in customized products closer to the customer's conception of "ideal"). ◆

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Suggested Readings

Michael Hammer, "Re-engineering Work: Don't Automate, Obliterate," *Harvard Business Review*, July-August 1990, pp. 104-112.

Theodore Levitt, "The Industrialization of Service," *Harvard Business Review*, Sept.-Oct.1976, pp. 63-74.

Theodore Levitt, "Marketing Intangible Products and Product Intangibles," *Harvard Business Review*, Sept.-Oct.1976, pp. 63-74.

8. Dorothy Leonard-Barton, "Inanimate Integrators: A Block of Wood Speaks," *Design Management Journal*, Summer 1991, pp. 61-67.

9. John Holusha, "Computers in the Toolbox," *The New York Times*, September 23, 1989, pp. 16,48.

10. Stanley M. Davis, *Future Perfect* (Reading, MA: Addison-Wesley, 1987), p. 177.