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Final Text

**The Real Time Service Product:
Conquering Customer Time & Space.**

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Abstract

Real time service products are a revolutionary new form of services that replace those that are based on either mass customization or relationship marketing. Real time service products blur the line between pure products and services, by meeting the needs of customers at their first use and continually adapting to changing customer needs over time.



The Real Time Service Product:

Conquering Customer Space & Time

Service professionals traditionally think about a new service product as something that a centralized marketing department creates (on the basis of understanding a new customer need) for its customers. The success of a new service product depends on the accuracy of understanding customer needs, the ability to create (or customize) the service to meet specific needs of customers, and the competitive speed at which the service is delivered. In most service categories, the traditional approach may take many weeks, months, or years. In today's highly technological environment, with its concomitant increase in customer empowerment, this traditional approach is often too slow and unresponsive to meet rapidly changing customer needs.

Technological advances in a number of fields, however, makes it possible to develop new service products in *real time*, that is, at the "customer's point (place and time) of requirement". Real time products and services meet the needs of individual customers at the first time of use, *and* as those needs change over time. This approach is known as *real time* because it involves the service product adapting dynamically to *both* the specific customer segment (customer space) *and* to the constantly evolving needs (customer time) of the customer. Developing real time service products implies both individualizing the service product and vesting it with the power to adapt itself to changing customer needs -- an approach that is now feasible due to decreasing costs of technologies in a broad range of areas.

An important consequence of this development is that it blurs the line between pure products and pure services. In fact, real time products and services should not be thought of as distinct categories, but as opposite ends of a real time continuum. Examples of products with real time services already abound: a video camcorder that adjusts automatically to the individual customer needs at different times (for example, a shaky hand caused by the user being jostled); a vacuum cleaner with a sensor that changes its suction and power needs based on the level of dirt in a carpet; a washing machine that changes its wash cycles with the varying weight, type and dirt on clothes; a car that adjusts its various functions (suspension, for example) to the driving habits of the user, software "agents" that provide personalized services but are embedded in physical products such as phones, "smart cards" and other information appliances.

Further, it is important to understand that such an approach is inherently decentralized because the relevant customer information will be resident in the service product itself and under the customer's control. Increasing privacy concerns will hasten the move of information about customers from central company databases to those retained privately by the customer.

Notwithstanding the ability of new technologies to create such real time services and products, recognizing and accommodating increasing customer power is now an inherently necessary part of marketing and service product creations because of the growing expectations of customers in most product and service categories. The value (cost-functionality) equation delivered in product categories such as computers and telecommunications -- with such products as increasingly cheaper, more powerful and portable PCs, hand-held personal organizers and pocket size cell phones -- are creating

new levels of customer expectations in virtually every product and service category. If customers can get better, faster, smarter and smaller products such as these, at ever-decreasing prices, they ask, why not in every product or service category?

BLURRING THE LINE BETWEEN PRODUCTS AND SERVICES

Technological capabilities then, combined with the increasing knowledge and sophistication of service customers, compel the service practitioner to think very differently about service product creation and marketing. In fact, real time service products may even change the very nature of what is considered a service, converting, at least in the customer's perspective, many physical products into service products, and conversely, many service products will take on the characteristics of hard products. In addition to blurring the line between the products and services themselves, real time functionality also blurs the line between what was traditionally a product, or a service company.

One simple example is the "service" offered by the next generation cellular phone from South Korea's Samsung Corporation, generally considered a product company. Samsung's new cell phones offer "voice dialing." The individual user programs the phone with the name and number of frequently called parties (and changes such programming on an as needed basis). Then, whenever the user wishes to make a call, they simply state a name and the phone dials the number. Such enhanced "voice services" (as opposed to simple stored number dialing) are traditionally thought of as the province of telephone companies (and were even regulated by the Federal Trade Commission), but now become a real time service offering from a product company.

In such scenario, real time products are now regarded as *goods bundled with services*. By blurring the line between product and service categories, real time service products play a powerful role in acquiring and keeping customers. Smart companies look for unique ways to create real time service products that capture customers quickly and keep them for long periods of time. These companies target unique customer segments and design a real time product/service to meet their individual first time use and evolving needs. These companies customize a service or product for an individual customer, and embed it with decentralized "intelligence" capable of anticipating or reacting to customer needs (either overtly or covertly), or to environmental changes. REAL TIME MARKETING

We call the process of developing and delivering such service products *real time marketing*, because it integrates and extends *both* advanced forms of mass customization (1: 1 marketing) and relationship marketing (Oliver, Rust & Varki, 1999). Due to its power to create customer loyalty, real time marketing will become the dominant paradigm in a number of service and product areas.

We argue then, that real time marketing provides a new approach to marketing, in which the *different* and *evolving* needs and preferences of individual customers are satisfied over time. Real time marketing extends both mass customization (conquering customer space by accounting for the uniqueness of customer needs) and relationship marketing (conquering customer time by meeting those needs as they evolve). We also argue that real time marketing is made possible when marketing practitioners recognize that relationships with customers are managed best at the customer level, and are often inherent in the good or service itself.

In this chapter we define and develop the details of the real time service product and then demonstrate how the marketing of such service products is different conceptually from the concepts of relationship marketing and mass customization. In particular, we argue that service products are *distorting the traditional definitions of a product and a service*, and are forging a radically *new relationship*, not between producer and consumer, but *between the service product and the consumer*.

A real time service product can be defined as a *individually customized service product that continuously tracks changing customer needs and updates itself to meet the customers' personal needs through interaction with the customer (often without conscious or overt action on the part of the customer) and the environment*. These products are marketed in a framework that provides individual customers with a unique combination of benefits:

1. Service products are customized to the consumers' needs, at the customer's first point of requirement, and
2. Service products interact continuously with individual customers and cater to their post-purchase product and service needs usually without the need for reference or contact with the original producer.

THE CHANGING NATURE OF THE SERVICE PRODUCT

The Service Revolution

We have seen a service revolution during the 20th century. The economy of the United States and, in fact, most of the developed world, has become one of services. In fact, even in developing countries such as Asian "tigers", services now account for more than half of the GDP. In terms of trade, services are growing at twice the rate of

merchandise trade. Perhaps the changing nature of the economy is understood best in United States employment figures: at the end of the 19th century, 93.5 percent of Americans were employed in agriculture and fishing, 5.7 percent in manufacturing, construction, and mining, and less than one percent in services. By the end of the 20th century, those numbers are nearly reversed, with 73 percent employed in service industries, nearly 25 percent in manufacturing, and only 2.9 percent in agriculture. This is even more dramatic considering that the majority of those employed in manufacturing are not factory workers, but are really service workers (e.g., sales, service, research and development, and engineering). Other western nations exhibit similar patterns. The oft-cited fear that we are becoming a nation of "hamburger flippers" is not true. Rather than eliminating jobs, new technologies tend ultimately to create better-paying, more knowledge-intensive work, albeit in different commercial areas. As we move to the next century, we expect to have about the same number of people employed in advanced service industries as we had in both agriculture and manufacturing when we entered the current century. Of particular concern to this discussion, is the rise of information services.

The Rise of Information Services

One of the most dramatically growing areas of services is information services. The discovery of the transistor (forerunner to the silicon chip and microprocessor) in the New Jersey-based Bell Labs of AT&T in the late 1940s created a new economic era. Unlike the Industrial Age, where the technological developments were in a few Western nations, the Information Age was the first economic era to develop simultaneously around the globe. Rapid exchange of information created new dimensions of global trade and

investment, integrated world economies, and created vast new wealth and economic value.

Microprocessor technology transformed many Industrial Age businesses, first in design and manufacturing, and later in virtually every other function. The information explosion continued with satellites, supercomputers, software, personal computers, and a whole range of home electronics. These new technologies culminated in the creation of the Internet.

The microprocessor, software, and digitization of information technologies are the key elements underlying all other products, technologies, and services in information management. Virtually all information content today is either created digitally or being converted to digital form for advanced services to customers.

Many enhancements in software and digital technologies are proceeding quickly. The most dramatic improvements in costs and function, however, are occurring with the microprocessor or computer chip itself. Originally, computer chips were glacially slow and narrow in function, but now they deliver an astonishing range of function at lightning speed. IBM announced a new product in early 1998, for example, that would double the speed and power of existing supercomputers, to about 10 trillion transactions per second.

Every eighteen months, according to Moore's Law, microprocessors double in power and experience a concomitant reduction in costs. This means that microprocessors have experienced a one-hundred-fold decrease in cost and a one-hundred-fold increase in function during the past decade.

The same dynamics of rapidly falling prices combined with equally increasing functional and performance can be found in a telecommunication system or any other service dependent on the processing power of microprocessors. The hardware and the services that it makes possible is getting faster, smarter, cheaper, and more elegant at dizzying speed. The results of rapid miniaturization are cost reductions up to 30 percent annually in areas such as software and microelectronics, and the doubling of computer memory, processing power, and fiber optic transmission capacity every year. We are seeing, therefore, that sophisticated, but still inexpensive services, are being developed and delivered at the speed of light.

Information management technologies are finding their way into all facets of life-from "intelligent toasters" to "intelligent cars" to "intelligent roads." By the mid-90s, a typical automobile had more computing power than did Neil Armstrong's lunar landing craft in 1969. The computer chip, in fact, is now found as frequently in other products as in computers.

As the computer chip became ubiquitous, and made services and products smarter and cheaper, it also gave rise to a whole new kind of empowerment as people demanded and gained more control over their lives. The use of technology was not the exclusive domain of the producer, but, largely under the control of the customer.

The Information Age revolution has not been fostered just by hardware, however. Software is fast replacing hardware as the key information technology and is creating a new world of possibilities, and a new language (e.g., applets, NCs or network computers, fat servers and thin clients, browsers and websites). Software, also, has driven the development of networking.

As we focus attention on the larger world of services brought to us over the Internet, we should not lose sight of the fact that information technologies transformed the products and services of daily life, and rendered them smarter, faster, cheaper, and more elegant. These same technologies, moreover, are invading every aspect of service products, more than anyone thought possible just 50 years ago. In fact, it is information products and services that are at the heart of real time service products.

However, it is important to note that other areas of technological development are also creating new abilities for marketers to develop and deliver real time service products. "Intelligent creation technologies" are closely related to and based upon information management technologies. These special technologies refer to the radically new ways products and services are designed, developed, produced, distributed and sold.

Intelligent creation technologies (such as CAD/CAM, rapid prototyping, "desk top manufacturing", and the like) open new capabilities in the process of service conceptualization and design and mark a dramatic shift in the potential for customization and cost reductions.

Today's hardware and software capabilities allow anyone with a computer to become a one-person "desk-top service producer." Sophisticated software provides the ability to conceive, design the architecture, produce and even deliver a service right at one's desk. Intelligent creation technologies were originally used producing hard goods, **but now** they can also be applied to service goods. For example, WebSell, a "product" of LikeMinds, Inc., of San Francisco, enables producers to develop one-to-one marketing by accurately predicting customer preferences with collaborative filtering and predictive modeling technology. It predicts the best products for individual people and tracks

explicitly expressed preferences, filters the information through a statistical analysis engine and produces product predictions for individual customers (www.likeminds.com).

The shift of service development from unassisted workers to machine intelligent creation intensifies as computers using parallel processing are powered with advanced software and network capabilities (for example, fuzzy logic and neural networks) for smart, multiple, and simultaneous functions. The theory of parallel processing assumes two brains can perform twice the number of tasks in half the time, multiple brains can increase capacity and reduce work time by tens or hundreds. Parallel processing offers advantages beyond just speed, however--it provides a level of redundancy to reduce the impact of a single system failure.

Parallel processing can unite a number of processes within a single system and assign tasks in the same way that committee assignments are made. Computer companies are pushing this technology out of the research labs and into commercial and entertainment applications. An example of such software is "One-To-One" from BroadVison Inc. of Redwood City, California, for financial services, retail/distribution and travel/leisure companies among others. The software (with profiling and dynamic matching capabilities) allows non-technical managers at service companies to deliver personalized service products (e.g., tailored promotions, customer loyalty programs) based on diverse factors such as user preferences, product uses and geographic location (for example with airline customers, based on their local airport and frequent destinations).

Another new technology, "smart materials," is also blurring the distinction between products and services. Smart materials are new or existing materials enhanced

with special properties such as inherent intelligence or abilities to reshape or develop new properties based on sensory feedback. Examples include airplane "skins" that adapt to cold weather by automatically de-icing the wings, automobile paints that change color at the customers discretion, (e.g., make the car more visible in poor light conditions or more heat reflective in sunlight) clothing materials that change shape or allow the wearer to warm up or cool down as circumstances dictate, and metal surgical instruments that adjust themselves to physician needs and patient conditions.

High performance "sensors" are a relatively new category of technology spurring real time marketing. They function as "sensory organs" interacting and mediating between the physical world of customer needs and the world of electronic devices that service those needs. The early sensor, now found widely in products such as smart air bags, are yielding to new applications such as "smart courier" boxes whose "skins" contain sensors that adjust to shipping conditions.

Another new application is "smartifacts," smart materials and intelligent artifacts such as "a bridge truss or aircraft spar that in inert form lacks the intrinsic structural strength to support a given load, [but can] dynamically sense and align its elements to yield the desired strength at a fraction of the weight of a traditional structure" (Saffo, 1997). A device already in use is a diagnostic chip that Caterpillar embeds in all of its new bulldozers. The chip monitors various components and notifies the local dealer when it senses a part that needs to be repaired or replaced. These smart materials and sensors, along with the other technologies we have mentioned, are creating new customer demands for functional and speed, and, consequently, new concepts of service products

HOW TECHNOLOGY IS SHRINKING SEGMENT SIZES

We can see from our brief look at today's new technologies that they have set the stage for the real time service product. Now we turn our attention to how those key technology trends impact service marketing, production cost structures, and in particular, the economics of segment sizes.

Real time marketing is the logical result of powerful forces that have transformed business and marketing during past decades from mass marketing to large segment marketing, niche marketing, relationship marketing and mass customization (marketing to segments of one). (Varki and Rust, 1998). Among the requirements of real time service products and marketing, as distinct from many, but not all, previous types are modular in design, focus on both product outcome (end result of the transaction) and process outcome (the manner in which the product outcome is delivered). Further real time service products almost always need direct distribution versus through intermediaries.

We will take a brief look at mass marketing and then focus on the phases of marketing and technology development, i.e., relationship marketing and mass customization, that immediately precede introduction of the real time service product and the new concept of real time service marketing. Segment Size and the Cost of Customization

The earliest stirrings of the Industrial Revolution were seen in the era of craft production, where a few farmers moved off the land and became artisans who produced hand-crafted goods with simple, uncomplicated technology and much labor. The later technologies of the Industrial Revolution, essentially continuous process machinery, however, mandated ever-larger segment sizes to make their outputs economically feasible. "Marketers" of the time, therefore, searched for mass markets for goods. Such

market activity also demanded the centralization of control in all aspects of business, from production to marketing, and collateral activities such as advertising and customer service. In effect, the increasingly sophisticated mass production technologies of the Industrial Age enlarged and centralized everything, from farms to factories, from markets to organizations.

The influence of Industrial Age technologies continued until the advent of the computer chip, which spurred evolution from the mechanical to the electronic age and created the financial need and opportunity to reduce market segment size and decentralize customers relationships. The efficient and effective customer segment size shrank as production became more efficient. It was the availability of electronic media, radio and TV, however, that provided the major impetus to shift from mass marketing to segmentation, because marketers then had a cost effective way to communicate with smaller groups. These technologies in production and communication led marketers away from mass marketing to segmented and niche marketing.

Technological advances in microelectronics, particularly since the early 1980s, led to reduced size, cost, and efficiency of manufacturing, to streamlining of front office operations, and to the ability to develop large, cost-effective customer databases. Developments such as reduced cost and increased effectiveness of relationship marketing, further reduce the practical segment size, or niche. New technology development since 1980 has continued to push the limits of optimal segment size or customer space, ultimately to one. Combined with the other new technologies we have discussed, marketers have products and services at their disposal that can meet the unique and individual needs (customer space) and orient themselves dynamically to evolving

customer needs (customer time). The real time service product has both the means and the motive (of increasing customer demands), to be the logical heir to marketing's most recent manifestations.

Conquering Customer Time and Space

The direct antecedents of real time marketing are mass customization and relationship marketing, two powerful forms of marketing that combine to create the ultimate customer solution, i.e., products that uniquely fit current individual needs, and constantly and dynamically change over time to meet the evolution of those needs. We will look at mass customization and relationship marketing before we move to a detailed discussion of the new real time service product.

Mass Customization: Conquering Customer Space

Mass customization demonstrated that firms can customize the physical product (Pine 1993). Manufacturing technologies developed in the 1970s and 80s, such as flexible manufacturing and programmable automation, enabled firms to produce in lot sizes that approach the limit of one. As machines can be programmed to switch almost cost free between production jobs (Noori 1990), product-setup costs and times have declined substantially, enabling the production of a greater variety at little or no increase in unit costs.

Many auto manufacturers, for example, build to predetermined customer specifications. Toyota Motor Co., of Japan has implemented mass customization concepts. Customers pre-specify their car-design requirements, and Toyota tailors the manufacturing process to produce the desired car. Other manufacturers also offer such mass customization. Dell Computer customers, for example, can configure a unique

computer, over the phone or via the Dell website. Dell assembles and delivers the computer within a few days at prices comparable, to or better than, pre-configured computers available in retail outlets.

These examples illustrate the critical advantage of mass customization, namely that of meeting the needs of individual customers at prices competitive with those of mass-produced goods and services (Kotler, 1989). Mass customization, however, caters only to the different requirements of individual customers, whereas real time marketing products also serve the changing needs of customers. This translates into a requirement for products to be flexible, or adaptable, in product performance over time, often accomplished with the addition of real time service components.

Mass customization assumes that a customer's requirement is static and there is, therefore, no need for further improvement after the custom-tailored product is delivered. In many market areas, however, customer preferences and needs change over time as a result of learning or context changes. Peskier and Handdlesman (1984) recognize this phenomenon when they refer to the "temporal variation" in consumer needs. Computer shoppers, for example, expect that their computational needs will change with increased sophistication in usage and application (i.e., with changes in context) and thus, are concerned about the compatibility of the computer under consideration with future generations of chips and memory expansion capabilities.

Real time marketing, unlike mass customization, is not limited an inability to evolve dynamically with the changing needs of those customers. To meet those changing needs of customers even more effectively, marketers have come to rely on the concept of relationship marketing.

Relationship Marketing: Conquering Customer Time

Competitive firms have long recognized the opportunity that lies in satisfying the changing product and service needs and preferences of individual customers over time. Traditionally, marketers keep abreast of customer preferences by tracking their relationship with the firm using methods such as mail and telephonic surveys, focus group interviews, and informal feedback.

Relationship marketing was created to take advantage of this information so that firms can maintain regular contact with individual customers through interactions that usually involve "product, financial, information, and social exchanges" (Crosby 1991, p. 270). Chase Manhattan Bank, for example, routinely markets individualized offerings to some 25 million of its banking customers on the basis of the customers' individual banking and investment portfolios.

The ability to undertake relationship marketing on a vast scale today is the result of the rapidly increasing electronic information services and their corresponding rapid decrease in costs. The decrease in costs of electronic information and communication technology, in fact, is inversely proportional to its increase in function. Such powerful dynamics have given marketers greatly enriched opportunities to create large databases of customer preferences, which has resulted in a great surge in direct marketing.

Relationship and direct channel marketing is being fueled by the fragmentation of media and computer and information technology that can track large numbers of individual customers, and using software (such as neural networks) and parallel computing, discern trends and patterns in customer needs. This has developed into a specialized area of relationship marketing known as database marketing.

Another compelling reason for real time marketing, with its "database" resident within the service product and therefore closest to the customer, is the increased concern about customer privacy with large centrally located and controlled databases. Such databases often create serious concerns about security and privacy of customer information. Although no standards exist now, it is likely that the customer demand for privacy will hasten the need to decentralize databases or put under the control of the customers themselves.

The centralized databases of the producing firm which collects and manages the customer information, is at the heart of the relationship marketing model. Information flowing to centralized databases however, does not support direct and rapid interaction with the customers. There is a considerable delay in the acquisition of information and also a possibility for distortion to occur as information trickles upward to the marketer. Relationship marketing often leads to channel "dis-intermediation" (or the reduction of intermediaries between producer and consumer), but, at a conceptual level, the company's databases essentially become an intermediary between the customer and the good or service. Such a model often implies huge costs, inflexibility, and slow response. At its best, this accumulated knowledge base is used to fine-tune *service* to these individual customers, but there is no corresponding strategy to change *products* to meet these changing needs.

Therefore, on one hand, the very powerful marketing concept of mass customization develops unique products for segments of one. On the other hand, the equally attractive approach of relationship marketing attempts to change product and related service offerings over time, but seldom accommodates individual customers.

Until recently, there hasn't been a marketing strategy to develop customized products that adapt continuously to the changing needs of customers. An early step toward integration of this concept occurred with advanced applications of mass customization that added a customer feedback loop (Gilmore and Pine, 1997). This concept adds information from the customer over time to the mass customization process, but the information loop is not considered "real time" and typically involves feedback to the central database of the producing organization. As is obvious by now, real time service products differ in that change dynamically, and through feedback loops directly between the service product and the customer.

THE REAL TIME SERVICE PRODUCT

The real time service product then, is the result of the TIME of the power of mass customization to meet precisely the needs of a customer *right now*, with the ability of relationship marketing to understand the evolving needs of the customer *over time*. The advent of the real time service product underscores the need for service product performance to match dynamically the rapidly changing needs and sophisticated preferences of individual customers and requires *active and decentralized* application customer preference information.

To illustrate the main features of the real time service product, we will look at the example of "Ultra Hal," a digital secretary and assistant, produced by Zabaware, of Erie, Pennsylvania.

Ultra Hal is a digital assistant (a "knowbot") that learns your habits and incorporates them into the personalized services it provides, such as scheduling appointments, and reminders of birthdays, anniversaries, etc. Ultra Hal "speaks" English

and will even chat with its user. As the producers describe it, Ultra Hal, "learns from every sentence that you tell him. You can teach Hal anything and he will learn it forever. You can either teach him by typing in sentences to him, or you can give him an ASCII text file to read... Hal will read and automatically learn by himself . . Ultra Hal loves to just chat! ... Ultra Hal always learns when he talks to you, so the more you talk to Hal the more he learns from you" (www.zabaware.com).

Another "evolving" example can be found in popular word-processing software such as early versions of Microsoft Word or WordPerfect that enabled users to configure (customize) document-settings to individual specifications. For example, a user could specify the type-face, font-size, margins, layout, etc., required for a document, and, thus, "mass-customize" the product at his or her end (Pine 1993). In addition to offering this feature the companies provided expert advice and technical information as an on-going service to customers. In addition, therefore, to offering mass customization features that enable the user to tailor his or her project, these companies practice a degree of relationship marketing.

We might think Microsoft was using relationship marketing and real time marketing when it incorporated "mass customization" features in its "Word for Windows" product. However, considering our definition of real time marketing, this product is not a real time product for two reasons. First, it does not adapt to a customer's preferences by "learning" them over time, and secondly, the relationship is not decentralized.

Microsoft did begin to use real time marketing techniques when it introduced Windows 95, which contains "active computing" features. Active computing is a

software environment in which the software adapts to the context and "to the habits and preferences of the user, (Mossberg 1994, p. B 1). One active computing feature in the Word for Windows 95 version, for example, is a spell-checker that actively monitors and stores information on the words that a user often misspells (Mossberg 1994). Armed with this information, this feature then automatically corrects the misspelled word -- including every form and tense of the misspelled word -- without requiring the user to run the spell-check program.

Microsoft's spell-check function continuously adapts to the needs of individual customers throughout the period of their relationship with the firm and underscores a key principle of the real time marketing concept, "that it is more effective to adapt the organization to fit environmental realities than to attempt to adapt the environment to fit the organization" (Sheth and Gross 1988, p. 18). However, one of the critical concerns for marketers in this situation, is the perception of yielding management and control of service product development to the customer.

DECENTRALIZING SERVICE DEVELOPMENT

We have noted that speed and the increasing expectations and demands of customers have rendered centralized management and control nearly obsolete. Fortunately, the new technologies we have described have made it possible to meet the new requirements for decentralized and networked management of customer information and relationships. Because of the widespread availability of media such as the Internet and interactive TV, marketers will find it easier to customize products and to adapt them continuously to individual user requirements. New technologies will help marketers to collect and respond to customer information easily. Marketers, furthermore, will be able

to tailor not only the physical product, but also the service product to individual specifications. Consider the case of a customer who has ordered a customized product. Using interactive technologies, marketers can keep the customer posted about the progress of his or her order, include shots of the product under Progress, and coordinate delivery to suit to the individual's schedule.

New media such as the Internet, provides marketers with an enriched data source, but such information alone will not be sufficient to reach the true potential of real time marketing, because the information is traditionally housed in huge centralized databases, to be used at the discretion of the company or to the skill of the individual marketing professional. True real time marketing occurs when the customer "intelligence" is embedded in the product or service itself

To make continuing customization economically feasible, however, it must be built into the product itself and it must be available to the customer directly, without centralized intervention from the provider. The principles of mass customization are easily seen in tangible products like automobiles, but imagine a car that is tailor-made to individual customer preferences and that adapts its performance to an individual owner's driving style. Such a car may seem an impossibility, but several major car manufacturers are experimenting in this area.

We have noted that many manufacturers already build cars customized to user requirement, but once the car is delivered, it does not adapt to the changing needs or environment of individual owners. Now, however, many companies are attempting to harness the power of real time marketing. Mitsubishi Motors, for example, has taken the lead in showing that it is possible to design major functions of cars that adapt to changing

customer needs. Its HSR IV car series was unveiled at the 1993 Frankfurt Motor Show and has several features that continuously "adapts" the car's performance to an individual customer's needs:

- Artificial-intelligence-enhanced transmission, braking and traction control system that "learns" the owner's driving style and automatically adjusts the car for best-performance,
- On-Demand Access Panel that automatically extends to match the driver's reach,
- Eye-position detector that automatically adjusts a driver's seat both horizontally and vertically for maximum view.

The above example illustrates real time marketing has two important features:

1. Decreasing effort is required of the consumer as the product automatically adjusts performance to suit the situation, and
2. Responses to the changing requirements of the customer are streamlined, because all nuggets of information gleaned from the behavior patterns of the consumer are employed in the adaptation.

Clearly, while mass customization at repeated intervals caters to the changing needs of customers, it does so less efficiently and requires more effort from the consumer. The decentralized nature of the relationship and the real time power embedded in the good or service therefore defines and distinguishes real time marketing for earlier marketing concepts.

Services and goods such as software have a high need for high levels of customization and relationship management, and are among the richest ground for real

time marketing. Consider the development of "knowbot" (knowbots are knowledge robots) or "intelligent" agents of specialized software whose activities may be based on, for example, "learning" a customer's reading habits and preferences. Such products can be made adaptable by equipping them with the "intelligence" to sense the context and to adapt performance accordingly. These agents will be found widely in computer networks and smart cards for many other services.

Real time goods and service products require an approach to development and service that is different from that of traditional products, even mass customized ones. All real time marketing will require much rethinking, and perhaps, restructuring of an organization's attitude to new product development and the nature of its customers.

INFORMATION SHIFTS TO THE CUSTOMER

While technologies make it economically feasible for marketers to adopt new real time service products, the principle driver is a consumer who is empowered with information. Today's "plugged in" wired, and wireless consumer knows instantly what's happening around the world, what new goods and services are available anywhere, and on what terms. Information is power for customers and they show a propensity to use it. The "informationally empowered" customers of today, *demands* to be involved. Real time marketing converts the "theory" (i.e., "give the customer what they want"), into practice. The radical difference today is that *customers are in charge*. They demand active engagement in the market process.

A NEW PARADIGM FOR SERVICE DEVELOPMENT

We suggest that real time marketing will become the dominant marketing paradigm, because it enables firms to give customers what they want and when they want

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it. Real time marketing, therefore, offers a superior way to increase customer loyalty and brand choice. Competitive advantages that are derived from real time marketing can be highly sustainable and should lead to favorable growth in market share, as customer satisfaction increases. Firms that employ real time marketing will see their costs decrease as market share increases. Dowling and Undes (1997) have recently argued that many widely held beliefs about "customer loyalty" programs are not true. They found that marketing programs such as frequent purchaser programs, that were designed to enhance customer loyalty, were ineffective in many competitive situations. Real time marketing, however, holds out real hope to dramatically and effectively enhance customer loyalty by sharply reducing the impetus, or need, to switch.

Not all companies will find it equally easy to implement real time marketing, because product/service-market characteristics affect the implementation. Product/ service-market characteristics that do not support either mass customization or relationship marketing, for example, prevent the practice of real time marketing, because real time marketing subsumes both these strategies.

Modular product or service designs, for example, are integral to mass customization. Modularity in design implies that the separate components of a product or service are readily identifiable and separately manufacturable or provided. This allows firms to gain economies of scale in providing the components and to cater to differing needs of customers through thoughtful recombination (Pine 1993). Non-modular products (e.g., theatrical performances), therefore, may inhibit the practice of both mass customization and real time marketing.

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In such cases, real time marketing cannot be practiced either. Consider the example of a coffee-vending machine. Because individual customers can vary the quantity of milk and sugar, in their coffee, the marketer is able to "mass-customize" the product offering--coffee. The marketer, however, is unable to practice relationship marketing because of the anonymity of the customers. Individual customers cannot be compensated for problems such as coin-jams or cold coffee, and regular customers cannot be acknowledged (e.g., given a special price). Relationship marketing is infeasible in this product-market, and, therefore, so is real time marketing. Real time marketing, in fact, is ordinarily not possible in those product-markets where the relationship between the marketer and the consumer is not direct. In the case of the coffee-vending example, the machine can be viewed as a marketing intermediary that hinders direct contact between the marketer and the consumer. However, using a new service product, "smart cards," with individual customer information embedded in them, might make real time marketing possible.

In real time marketing, the relative emphasis between service-product customization and physical-product outcomes will shift depending upon whether consumers in a particular product-market value product outcomes or process outcomes more. Product outcomes are the end-result of a transaction, whereas process outcomes are the manner in which product outcomes are delivered. In an expensive restaurant, for example, the process of service (i.e., how one is greeted, seated, and served), is judged more critically than the meal itself (product outcome), but in fast-food restaurants, minimal service is acceptable as long as the food is "good value for the money." Marketers who implement real time marketing, therefore, need to be sensitive to this

aspect of customer values when customizing the product-both physical product and service product.

The concept of real time service products is an entirely new and revolutionary paradigm in services. Importantly, it blurs the traditional definitions that separated products and services. It represents both the confluence of relationship marketing and mass customization, and the final frontier in meeting the unique and changing needs of customers. Real time service products will dominate most higher level services and many categories of hard goods as well. Marketers should be creative in their approaches to service development and flexible enough to embed the intelligence (and thus the responsibility for the customer "relationship") into the service products themselves. We believe that those who develop real time service products will reap significant rewards.

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