

Japan's IT Market: Racing Towards the Second Phase of Growth

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Japan's IT (information technology) market as a whole is expected to expand at an annual average rate of 15.6 percent up to 2008. As the trend towards increased IP (Internet Protocol) utilization is rapidly surging throughout the overall IT market, 2003 will be a year that will mark a clear distinction between expanding and declining market segments.

The communications segment, which has so far been the driving force behind IT market expansion, will reach maturity through accelerated rate reductions for communications infrastructural services stemming from the impact of IP-focused moves. On the other hand, a relatively high growth rate can be expected for the e-business and digital contents segments, which can be classified as so-called upper-layer businesses. Indeed, e-business will replace communications as the largest IT market segment by 2008.

The keys to success in the IT market have become clear. "Securing access lines" and "Becoming a major contractor through a deep relationship with the customer" will become the important elements in order to achieve success in a market that is moving towards maturity.

The role of the platform segment is extremely important in the IT market. It is no exaggeration to say that success or failure in starting platform businesses will likely impact the growth of such upper-layer businesses as the e-business and digital contents segments. However, there are many cases that will require the continued input of management resources over a long period of time in order to achieve success in the platform business area. Accordingly, it is necessary to develop a perspective on what effects can be expected by combining platform businesses and company activities at other business layers, rather than evaluating the platform business alone.

I E-Business and Digital Contents as the Driving Force in the IT Market

1 The IT Market Continues to Expand in the Future

Since 2000, Nomura Research Institute (NRI) has published its annual *IT Market Navigator*—the core contents of which consist of segment-by-segment projections for the IT (information technology) market. The 2004 edition (*IT Market Navigator: “Analyzing the Future of the Information and Communications Market”*) issued in December of 2003 marks the third edition of this publication, and includes a series of projections on market size up to 2008. In more focused terms, the report targets the following five major market segments for detailed analyses: communications, broadcasting, platforms, e-business, and digital contents.

In line with the contents of this publication, this paper describes the changing paradigms that are emerging in each of these five major market segments, as well as the inter-market synergies that can be expected. (Please refer to the actual publication for details on each segment and specifics on the hardware markets involved.)

Looking at the future prospects of the IT market, we see that the market as a whole still gives every indication of a high growth potential. From a market scale of

¥11.8 trillion in 2002, it is expected to grow at an annual average rate of 15.6 percent to reach ¥28.3 trillion in 2008 (Figure 1).

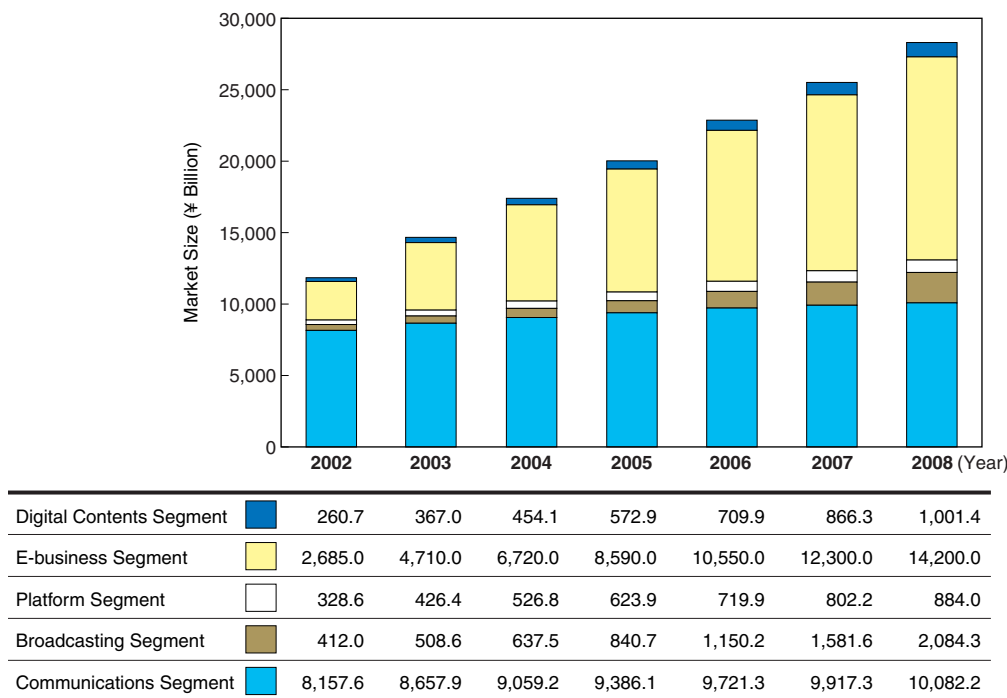
2 Surging IP Usage

Although there still is substantial potential for growth in the overall market, the distinctions between growing and declining segments as well as the differences between winners and losers among individual businesses and players became clear in 2003. The moves towards increased IP (Internet Protocol) usage are exerting a major impact on the IT market. These trends have become especially significant since 2000 and are now exerting a strong influence on both players and users. As a result, it has become widely accepted to use IP applications for data communications due to the spread of personal computers and the Internet, regardless of the companies or individuals involved.

In specific terms, these IP-focused trends have been nothing less than the driving forces behind the moves towards lower prices for communications services. While many individual users may actually feel the impact of such trends in the sharp and rapid declines in consumer prices for broadband services, similar changes have been taking place in the corporate user market as well—although at a pace that tends to lag behind that driving the consumer market.

In the past, the best-selling products in the communications market for corporate users were leased lines and FR (frame relay). However, IP-based communications

Figure 1. Estimated Size of Five Major IT Market Segments



Note: The e-business segment targets only the B-to-C (business-to-consumer) market.
 Source: NRI's Information and Communications Consulting Department, *IT Market Navigator (2004): "Analyzing the Future of the Information and Communications Market,"* Toyo Keizai Inc., December 2003.

services such as IP-VPN (IP-based virtual private networks) and wide-area Ethernet have attracted user interest due to such advantages as lower costs and greater convenience, and have quickly assumed the starring roles in the product lineup in a short period.

The progress in IP utilization has also brought about changes among providers other than communications carriers. Players such as contents providers have also jumped into the IT market in anticipation of the increasing number of communications service users that are being attracted to the communications environment because of declining prices. At the same time, the enhancement of contents services has increased the number of communications service users, leading to accelerating participation by an expanding number of players that see promising developments in these trends. As such, a positive spiral has been created that is adding new strength to the winds of growth.

3 E-business Becoming the Market Driving Force

In terms of the size of five major market segments, communications amounted to some ¥8.2 trillion, e-business came in at about ¥2.7 trillion, and the other three market segments totaled approximately ¥1 trillion as of 2002. As such, it can be said that the communications segment has been the main engine of the IT market so far.

However, projections for 2008 indicate that the e-business segment will begin to occupy a major share of the market, racking up some ¥14.2 trillion in turnover, with communications coming in next at approximately ¥10.1 trillion, and the other three segments bringing in a total of about ¥4 trillion. In terms of the annual growth rates, both the e-business and broadcasting segments are expected to show remarkably high averages each year, exceeding some 30 percent annually as indicated in Table 1. On the other end of the scale, the growth rate for the communications segment will hover near a low 3.6 percent average rate per year.

4 The IT Market—Where Dynamic Growth Coexists with Lethargy

The five major IT market segments targeted by projections are those that are expected to see relative growth. Even among these segments, however, those that are experiencing dynamic growth coexist with those that seem mired in a rut or even experiencing declining trends.

In particular, while communications has been the driving force of IT market expansion up to now, it is expected to shift to a matured phase that will be characterized by general sluggishness in the future. And although the broadband, wide-area Ethernet, and IP-VPN segments will still retain high growth potential in the realm of communications, the conventional leased line market is expected to record negative growth.

Table 1. Annual Average Growth Rate for Major Market Segments (2002 ~ 2008)

Market Segment	Annual Average Growth Rate
Communications Segment	3.6%
Broadcasting Segment	31.0%
Platform Segment	17.9%
E-business Segment	32.0%
Digital Contents Segment	25.1%

Source: NRI's Information and Communications Consulting Department, *IT Market Navigator (2004)*: "Analyzing the Future of the Information and Communications Market," Toyo Keizai Inc., December 2003.

The mobile phone market that has propelled the expansion of the communications segment so far is expected to achieve only low, single-digit growth, and may slide into negative growth from around 2006. As the fixed telephone call market (which is not targeted in this forecast) is also expected to record only negative growth due to the influence of IP telephony, the possibility emerges that a pervasive lethargy may firmly take root in the overall communications segment.

On the other hand, the fields in which a relatively high rate of growth can be expected are the e-business and digital contents segments, both of which fall under the so-called upper-layer businesses. Although a general weeding out process shook up all providers in the e-business segment with the bursting of the dot-com bubble around the year 2000, e-business has continued to steadily permeate the lifestyles of consumers.

What can be expected to drive the digital contents segment in the future is premium content service for mobile phones. Demand for such premium mobile phone services is projected to reach around ¥370 billion in 2008, or slightly less than twice the ¥200 billion recorded in 2002.

While the broadcasting segment is also expected to grow, one aspect of terrestrial digital broadcasting (which is targeted in this forecast) is its role as a substitute for the current analog broadcasting market. As both are still based on an advertising revenue model, no major impact such as the tapping of new markets can be envisioned.

An overview of the moves in each market segment indicates that the infrastructural services that form the foundation of the IT market have been developed, and that new products and services to be provided on this infrastructure are about to emerge in a series of full-scale roll-outs from this point forward. In short, now is a time of growth for the IT market, which is rapidly getting its second wind.

5 Competitive Domains Becoming Borderless

Communications carriers have been searching for new revenue sources to compensate for the decline in call revenues under the inroads of IP utilization. As part of

these activities, an increasing number of carriers have been focusing on a shift towards systems integration (SI) and outsourcing businesses such as hosting services (rental of computer capabilities) that utilize data center functions, various gateway services, as well as system installation, operations and maintenance services.

If the NTT Group is taken as an example, there was formerly a clear-cut distinction in terms of business contents between NTT East, NTT West and NTT Communications, which provided communications services, and NTT Data, which provided SI services. Recently, however, NTT East, NTT West and NTT Communications have also started handling SI business, and the borderlines that formerly fenced off NTT Data business activities are becoming increasingly vague.

Although communications carriers had long sought a foothold in these SI and outsourcing businesses, it was difficult for them to overcome the strongholds that were established and maintained by SI providers. However, this situation has now changed with the emergence of IP-based communications services such as IP-VPN and wide-area Ethernet.

This means that customer needs have shifted from communications services that focused merely on components (e.g., leased lines) to services that provide comprehensive network operations on a customer-unit basis by means of IP-VPN and/or wide-area Ethernet. At the same time, customer awareness has also changed from "SI providers best know our needs" to "communications carriers also understand our problems." Accordingly, user perceptions of communications carriers are rapidly undergoing very positive changes.

As a result, moves in which communications services and SI businesses are operated on an integrated basis are seen among major communications carriers and communications carriers affiliated with electric power companies. If required by the circumstances, moreover, there is a possibility that mergers and alliances between communications carriers and SI providers may start to take place.

II Keys to Success in the IT Market

1 Securing Access Lines

While this is mainly applicable to providers offering network services, the ownership of access lines that link end-users has become a key to success. This requirement stems from progress in IP utilization, as its spread brings with it flat rate billing that is expected to become the widespread standard in terms of pricing. Under this system, however, not all of the parties involved are assured of gaining a fixed revenue amount. Those candidates that have the most likely

means of acquiring constant returns are those that control their own access lines.

Conversely, network service providers that do not have their own access lines, such as long-distance communications carriers and ISPs (Internet service providers), will be pressed to confront an increasingly harder fight. Although local communications carriers are now facing a difficult situation, their success or failure will ultimately be decided by the number of access lines they can acquire, such as FTTH (fiber-to-the-home) service.

Moreover, one of factors that enable the three major mobile phone companies to generate stable profits is that they have their own access lines. In this sense, should any structural change take place in the mobile phone industry, it will likely occur when full IP utilization permeates the wireless field and an increased range of frequencies are allocated to accommodate new participants.

2 Importance of Customer Contact and Development of Primary Contractor Relationship

As a result of deregulation over the past several years, a number of new players have entered the IT market—in particular, venture firms that specialize in each of the various IT business layers. Companies that specialize in differing network services, such as online settlements, CDNs (content delivery networks) and ASPs (application service providers) have appeared in the market. However, unless a company manages to dominate its market through its control of a de facto service standard or operates a business that is close to being a market monopoly, it has become difficult to generate profits.

Rather, maintaining a subscriber base and having direct contacts with customers are becoming the keys to success. With the expansion of the underlying technological foundations, a number of new technologies and new services are making their appearance. This has made it difficult from a user perspective to examine and select each of these individual components. Hence, the growing demand to leave the total service package up to a reliable provider that can offer a combination of optimal service and product components is also a factor that reinforces the importance of having direct contact with customers.

For example, the reason for a relatively steady status observed in the solutions market such as SI, NI (networks integration) and outsourcing is based on the fact that a solutions provider establishes a close relationship with its customers as a primary contractor relating to IT.

And the steady performance of mobile phone companies is attributable to a business model in which contents fees and terminal prices, as well as communications rates, initially go through the hands of the

mobile phone company, which is the primary contractor with customers.

3 Concentrated Input of Resources Needed to Acquire Market Share

In the case of new services that are still at the take-off stage, it is difficult to acquire a major market share in competition with other companies without inputting resources on a concentrated basis at the proper timing.

For example, the competition between Yahoo! BB and NTT East/NTT West with respect to the broadband DSL (digital subscriber lines) market indicated the need to input resources on a concentrated basis at the proper timing. Yahoo! BB set prices at a level that could upset the basic perception of pricing for DSL service. In addition, it engaged in a barrage of marketing and sales activities, such as numerous incentives and the distribution of free modems on the streets, in addition to carrying out promotional activities using the Yahoo brand as a portal site. This carpet-bombing approach to marketing activities enabled Yahoo! BB to succeed in acquiring a number of subscribers.

On the other hand, NTT East and NTT West acquired a share slightly above that of Yahoo! BB by utilizing their overwhelming brand power as communications carriers, establishing sales channels through ISPs, and actively implementing promotional activities focused on a single FLET'S ADSL service.

In terms of the measures pursued, a pattern was repeated in which Yahoo! BB started first, and NTT East and NTT West followed suit in order to keep up. Introductory barriers were lowered through the activities of both sides, and the torrential downpour of promotional activities made not only heavy Internet users but also non-users as well fully aware of DSL service. As a result, the speed at which DSL service penetrated the market was substantially increased, and the overall market for DSL service has grown even more than anticipated. This has led to a status that is noteworthy from the marketing perspective as well.

4 Return From General Purpose to Dedicated Usage

It is generally assumed that the contents business will be an outgrowth of the era of broadband services. Under the current status, however, the realm that is achieving substantial growth in terms of the network-based contents businesses is the mobile telephone field.

One of the factors behind the growth of the contents market in the mobile field can be seen in what is known as DRM (digital rights management). To the extent that mobile phones functioning as "dedicated terminals" are used, unlawful distribution and/or duplication of contents can be prevented. This is one factor

that is contributing to the active participation of content providers in this field.

In contrast, the PC-based Internet field is encountering a harmful situation in which the general-purpose attributes of the technology are hindering efforts to strike a balance between increasing convenience and preventing unlawful usage. In the case of music CDs, for instance, the embedded signal to prevent copying can easily be defeated by using a personal computer to duplicate the disc without any deterioration in quality. Because of this, a large volume of copied music was distributed through file exchange services such as Napster in the United States, which caused tremendous damage to the music CD industry. There is a possibility that a similar phenomenon may emerge in the field of game machines in the future.

While the spread of "digital home appliances with communications capabilities" can be expected in the future as a terminal capable of providing broadband services, the business models for mobile contents and game machines need to be fully examined. Although general-purpose terminals and functions look like all-round solutions to many problems, they may sometimes hamper growth in actual terms.

5 Incorporating Platform Functions

The word platform here refers to services that provide such foundation services as authentication and billing that are commonly required for various businesses on the network and system infrastructure. The influence the platform segment has on the vitalization of the IT market cannot be overlooked. In other words, it would be impossible to provide user-friendly IT services without platforms. The business of the platform segment can be seen as one that provides specific functions that support contents providers and application providers in carrying out activities on these infrastructural platforms.

One example is the i-mode service provided by NTT DoCoMo that made it possible for the mobile phone world to quickly start contents distribution businesses ahead of all others in the IT market and achieve considerable success in service vitalization. While there are many factors behind this success, the functions of billing, paying and collecting fees offered by i-mode service worked very effectively. Without these functions, it would have been impossible to achieve the prosperity that the mobile phone contents distribution business currently enjoys.

Because of this background, there are many providers that have high hopes and expectations for the platform market. However, it is highly likely that the platform business may become especially risky because of two factors. One is a core characteristic of the platform market that makes it dependant on the size and/or growth of the matrix market itself, therefore leaving it constantly at the mercy of this underlying

market. Another is the fact that a platform market does not necessarily offer a business format from which substantial revenues can be expected.

For example, although i-mode service looks like a grand and glorious concept at first glance, it is actually running deficits in terms of revenues from the platform business alone. This may be difficult to understand, as i-mode service in many cases is actually talked about as a success model that is heavily involved in the distribution of a large variety and volume of mobile contents. But the handling fees alone cannot possibly cover the costs of building and operating such a system, as the fees for billing, settlement and collection functions amount to just a few percent of the invoice totals.

How, then, should we define the role and position of the platform market? If i-mode is taken as an example, it would be true that the i-mode business alone continues to result in deficits. However, the packet call charges generated by the distribution of various contents will be calculated as new revenues for a communications business. Furthermore, if the implementation of a platform business makes it possible to offer easier-to-use and more attractive contents than those of other companies, this alone would make it possible to capture and retain a subscriber base. In other words, if new revenues can be expected and the company can retain existing customers through a format that integrates other business layers of the company's own operations (e.g., the communications and contents businesses), the platform business can be positioned as a fully attractive market.

Achieving success in the platform segment requires that the following three conditions be met: (1) establishing a dominant position over other companies in the market and having an adequate customer base; (2) possessing the corporate strength to both invest and hold out over the long term; and (3) generating high numbers in terms of transaction volume.

III IT Market Trends by Business Layer and the Importance of the Platform Segment

The following section introduces trends in the five major market segments discussed in this paper (Table 2). Please refer to the publication introduced previously for detailed analyses and forecast results with respect to each IT market segment.

1 Communications Segment Entering Maturity Phase

The segment most strongly affected by the trend towards increased IP utilization is communications. Long the driving force behind the overall IT market,

the communications segment has now clearly entered its maturity phase.

Broadband services such as DSL, which began to spread throughout the market at the end of March 2001, are now displaying a great deal of strength as they surge forward. As of the end of August 2003, about 9.7 million households were using broadband service, meaning that broadband had grown to reach a household penetration rate of 18 percent in only about two years. This explosive diffusion rate is unprecedented, and goes well beyond anything previously encountered in the realm of other home appliances and communications services.

However, the growth rate for Internet access service via DSL and CATV has been rapidly falling, as both markets are starting to mature. Growth rates in these areas are expected to shift to a negative figure shortly after 2005.

On the other side of the coin, the FTTH market will continue to gather strength. Because the matrix market for broadband services consists of "households × personal computers × the Internet," however, the household penetration rate for broadband services including FTTH will inevitably top out at around 45 percent as of 2008 unless new usage scenarios and purposes that do not rely on personal computers are brought forward.

Communications services using IP technology such as IP-VPN, wide-area Ethernet and VoIP (Voice over IP; IP telephony) are showing a strong cost competitiveness compared to pre-IP communications services such as leased lines, and are now being rapidly accepted by the market. At the same time, the revenue foundation for communications carriers has begun to weaken as pre-IP communications services such as telephones and leased lines—both of which have constituted the core of communications carrier revenues up to now—are replaced by communications services using IP technology.

For example, the leased line market has already shifted to negative growth, and communications carriers are seeking new revenue sources to make up for this decline. This is prompting all carriers to seriously pursue approaches to the SI and outsourcing businesses, as described in a previous section (Competitive Domains Becoming Borderless).

Market maturity is also overtaking the mobile phone market, which has long held a core role in the communications segment. The number of current mobile phone contracts totals 75 million, with more than 80 percent of this number also subscribing to IP access services. The size of this mobile phone market is already close to ¥7 trillion. However, such growth is expected to slow and may shift to a negative figure in or after 2006, depending on the circumstances at that time. In entering a market environment where no new subscribers can be expected, the pressing needs that mobile phone carriers must deal with are "building and retaining a stable customer base" and "establishing new revenue sources."

Table 2. Size and Annual Average Growth Rate Projections for Five Major IT Market Segments

(Unit: ¥ Billion)

Market Segment		2002	2003	2004	2005	2006	2007	2008	Annual Average Growth Rate	
Communications Segment	DSL	175.2	282.4	335.2	336.4	328.9	322.2	306.4	9.8%	
	FTTH	12.7	45.3	113.6	193.9	260.3	312.1	359.3	74.6%	
	Cable Internet	111.4	135.4	143.6	133.5	126.9	118.3	115.7	0.6%	
	Public wireless LAN	0	1.0	3.0	9.0	18.0	30.0	43.0	112.2%	
	Wide-area Ethernet	54.0	115.0	182.0	320.0	470.0	545.2	605.2	49.6%	
	Conventional leased line service	1,036.8	900.0	796.0	695.0	630.0	587.8	561.8	-9.7%	
	IP-VPN	109.3	215.9	298.0	342.0	398.0	429.8	464.2	27.3%	
	Mobile phones	6,658.1	6,962.9	7,187.9	7,356.3	7,489.2	7,571.8	7,626.5	2.3%	
Broadcasting Segment	BS digital	61.1	92.7	131.6	180.7	233.2	284.0	351.4	33.9%	
	CS digital	181.0	205.9	234.8	262.1	286.9	314.4	337.6	11.0%	
	CATV	169.9	188.3	201.3	209.0	213.1	214.6	215.2	4.0%	
	Terrestrial digital	0	21.7	69.8	188.9	417.0	768.7	1,180.1	122.4%	
Platform Segment	Electronic authentication	B-to-B, G-to-B	0	2.3	10.1	23.2	34.7	41.2	43.9	79.8%
		B-to-C	0	0	0.9	1.8	5.1	6.4	8.5	114.1%
		G-to-C	0	0	0	0.2	1.3	3.7	12.3	167.6%
	Internet advertising		84.6	101.1	120.4	139.8	161.8	184.5	209.3	16.3%
	Billing, payment		31.1	56.9	81.8	104.9	129.6	151.1	172.7	33.1%
	DRM	Video	0	0.4	0.8	1.3	1.8	2.9	3.9	61.8%
		Music	0	0.5	1.5	2.4	3.3	4.4	5.1	57.6%
	Network security									
	Monitoring and operations services		22.9	34.2	46.5	59.0	70.8	81.4	90.7	25.7%
	Design and installation services		182.3	221.1	253.3	278.7	298.1	312.6	323.2	10.0%
	Consulting and inspection services		7.7	9.9	11.5	12.7	13.5	14.0	14.4	10.9%
E-business Segment	B-to-C electronic commerce	Overall	1,498.0	2,760.0	3,990.0	5,150.0	6,400.0	7,510.0	8,670.0	34.0%
		Automobiles, real estate	1,187.0	1,950.0	2,730.0	3,440.0	4,150.0	4,790.0	5,530.0	29.2%
	B-to-B electronic commerce	EMP	4,717.0	5,850.6	7,703.0	8,454.0	9,253.9	9,813.6	10,407.2	14.1%
		Other than EMP	41,589.3	53,538.9	65,870.0	81,209.6	97,907.1	115,911.9	137,227.8	22.0%
Digital Contents Segment	Online games	Mobile phones	22.0	31.0	38.0	46.0	53.0	61.0	67.0	20.4%
		Portable type	0	0	1.0	2.0	4.0	5.0	6.0	56.5%
		Personal computers	2.0	4.0	6.0	9.0	12.0	15.0	18.0	44.2%
		Stand-alone type	2.0	9.0	17.0	26.0	37.0	46.0	53.0	72.7%
	Electronic books	Rich format	0.1	0.2	0.5	1.0	2.0	4.0	6.0	97.9%
		Light format	0.4	1.2	2.7	6.0	8.0	12.0	16.0	84.9%
	Online music delivery	À la carte	0	0	2.8	9.7	26.6	54.3	72.2	126.3%
		Single	0.7	1.5	3.1	5.4	8.5	12.2	16.2	70.1%
	Video delivery		2.8	9.6	25.2	57.0	103.0	169.0	246.0	110.8%
	E-learning	Corporate training	21.5	37.4	54.6	72.9	89.4	102.4	111.9	31.7%
		Self-learning	5.6	9.2	12.7	15.4	17.1	18.0	18.6	22.0%
	Premium contents for mobile phones									
	Entertainment		132.7	169.7	186.3	204.7	227.6	244.1	246.5	10.9%
Information service		70.9	94.2	104.2	117.8	121.6	123.3	124.1	9.8%	

Notes: (1) The annual average growth rate indicates changes between 2002 and 2008 after the market scale moves above zero; (2) BS = broadcasting satellite; B-to-B = business to business; CS = communications satellite; DRM = digital rights management; DSL = digital subscriber line; EMP = e-marketplace; FTTH = fiber to the home (optical fiber), G-to-B = government to business; G-to-C = government to consumer, IP-VPN = virtual private network using IP (Internet protocol); LAN = local area network.

Source: NRI's Information and Communications Consulting Department, "Analyzing the Future of the Information and Communications Market," Toyo Keizai Inc., December 2003.

As mobile phones are a personal tool, each carrier operates in an environment in which it is relatively easy to set up various strategies to retain customers by utilizing the monthly usage data of each subscriber. However, all carriers seem to be lacking risk awareness that should be shared throughout the organization, as in-house management indexes are still based on the number of new subscribers acquired. It is necessary to thoroughly revamp this mindset and implement reforms in preparation for entering a mature market.

With respect to the establishment of new revenue sources, each mobile carrier is intent on implementing its business by targeting the mass market as represented by i-mode service, and working to achieve success in establishing operations at the platform business layer. While securing revenue sources from platform businesses and maintaining a symbiotic relationship with outside contents service providers, mobile carriers are working on establishing mechanisms that will make it difficult for customers to switch to other companies.

Moreover, with the aim of rolling out services that transcend the framework of mere communications services, efforts are under way to develop businesses in which an IC card chip built into a mobile phone can be used to serve as a commuter pass as well as to provide wallet functions. However, because carriers seem to be having difficulties in starting mobile solutions targeted at corporate users (wireless-based SI and outsourcing businesses such as system development, operations and maintenance), such mobile solutions have not yet become a new revenue source.

At present, studies are being conducted mainly by the Ministry of Public Management, Home Affairs, Posts and Telecommunications with respect to introducing the concept of “number portability” to the world of mobile phones as well. If number portability is realized, users can continue to use the same telephone number even if they switch their service contract to another carrier. It must be kept in mind, however, that the introduction of this option may constitute a factor that unleashes substantial upheavals in the market shares of each carrier.

2 Broadcasting Market Promoting Multi-Channel Capabilities and Digitization

An analysis of the reforms in the broadcasting market requires that market moves need to be studied in terms of the trends towards multi-channel broadcasting and digitization. As far as multi-channel services are concerned, the number of viewing households for multi-channel CATV, CS (communications satellite) digital and BS (broadcasting satellite) digital broadcasting has reached a total of 10 million, with a household penetration rate of 21 percent. This suggests that the trend towards multi-channel service has finally taken root in Japan.

In addition, the CS digital broadcaster SKY PerfecTV generated single-year profits in fiscal 2002, and some content-providing broadcasters are also earning profits. Accordingly, we may soon see the emergence of a new reality that will wipe out the notion that “multi-channel broadcasting is unprofitable.”

The number of multi-channel viewing households is expected to reach 25 million in 2008, with a household penetration rate of 50 percent. While we are certainly entering an era in which multi-channel capabilities are very common, the main player so far is terrestrial digital broadcasting. However, it should be noted that one of the major characteristics of this market is that it is a substitute for the existing terrestrial analog broadcasting. Nevertheless, possibilities have also emerged for the expansion of new demand, such as incorporating a built-in TV receiver in mobile phones.

While BS digital broadcasting comes next in terms of the potential for high growth, the picture is not so rosy for CATV. Although broadcasting digitization is

moving forward in technical terms, this progress has not yet reached the “true digitization” stage that will support the convergence of broadcasting and communications by means of services that can utilize interactive functions such as electronic commerce. As such, digitization has not yet been able to create new business paradigms.

3 Platform Market Showing Increased Presence

The platform market is enjoying expanded business opportunities and is rapidly showing its presence because the spread of infrastructural services that constitute the matrix market has been accelerated. Actually, the platform infrastructure has the function of linking the communications business layer and the content application business layer, and is becoming essential for the development of the IT market.

Within the platform market itself, the Internet advertising segment and the billing and payment segment are the two areas that could successfully ride the currents of the times and continue to grow with burgeoning prosperity of electronic commerce. On the other hand, the DRM segment and the electronic authentication segment are in a preparatory phase getting ready for take-off.

Although individual segments of the platform market are not necessarily large in size, they are essential to the growth of the IT market. As a consequence, substantial returns can be expected when success is achieved.

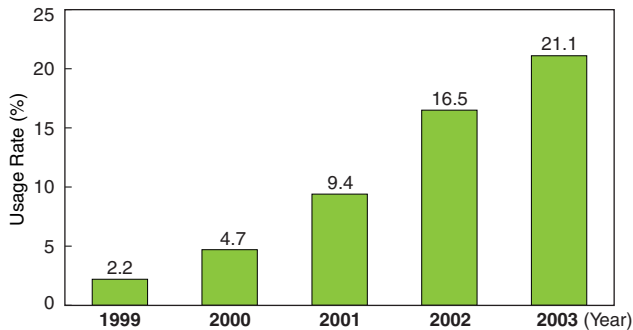
Moreover, as seen in the case of i-mode, it may be necessary in some cases to examine the significance of participation in the platform market by taking into account synergies generated on other business layers of the company, rather than simply looking to the platform business layer alone.

4 E-Business Market Assuming Role of Driving Force in Future IT Market

With the expansion of Internet usage as a background, Japan's e-business market is achieving steady growth. In particular, through the addition of the progress in broadband services and mobile commerce, online shopping has steadily begun to secure a position as a common product and service purchasing channel among consumers.

Jointly with the Ministry of Economy, Trade and Industry and the Electronic Commerce Promotion Council of Japan (ECOM), NRI conducted a “Survey on the Size and Actual Status of Markets Relating to Electronic Commerce, Etc.” in June 2003. According to the findings of this study, the B-to-C (business-to-consumer) electronic commerce market reached some ¥1.5 trillion in sales in 2002.

Figure 2. Online Shopping Usage Rate Among Internet Users



Notes: (1) Usage from workplaces and schools as well as home usage are included; (2) responses target males and females aged 15 ~ 59.
Source: NRI, "Cyber Life Observations," March 1999 ~ March 2003.

Under the current status, however, only about 20 percent of Internet subscribers are using online shopping (Figure 2). One of the reasons cited for this limited usage is the lack of an appropriate mechanism to ensure payment safety on the Internet.

Accordingly, studies that focus on a means of payment that is convenient and can be used safely are indispensable. At the same time, as information provided on the screen alone is not adequate, mechanisms that permit an operator at the call center to provide supplementary explanations linked to the user screen should be established in order to serve user segments (e.g., elderly people) that have not been tapped so far.

In the B-to-B (business-to-business) EMP (e-marketplace) segment, a shift is being made from legacy EDI (electronic data interchange; business-to-business electronic data interchanges among specific industries or among specific companies) to transactions based on the TCP/IP (transmission control protocol/Internet protocol; general Internet communications protocol), although there are differences between industries and product items. Such transactions already reached a total of some ¥42 trillion as of 2002, and double-digit annual growth can be expected in the future as well.

However, these markets are not exceptions to other markets that previously achieved rapid expansion, and the shift from a growing period to a maturity period will start within the next several years. This raises the question of whether growth in the e-business segment will reach its full potential. NRI considers that growth in the e-business market will not top out, but will retain the potential to achieve further growth.

NRI firmly believes that what will bring about this second phase of growth is the concept of "ubiquitous networking." As ubiquitous networks can provide the following capabilities, new usage scenarios that have not been available up to now can be provided: (1) delivering larger-volume contents (broadband network capabilities); (2) increasing the number of terminals that can be connected to networks (mobile, IPv6 (Internet Protocol version 6)); and (3) providing for

network and user diversification (always-on, barrier-free interfaces).

For example, the following usage can be considered. After watching a TV cooking program, a user downloads the recipe from TV to a mobile phone and orders the ingredients needed for the recipe on the following day, while reading through the instructions on the screen of a mobile phone during commuting time. Making this possible means that it is at least necessary to break free of the limitation in which personal computers alone are the only terminals capable of supporting the e-business market.

5 Digital Contents Market for Mobile Services Taking the Lead

In terms of market size, the expansion of the digital contents market for mobile services is moving at a faster pace than that for fixed networks and personal computers, where an increased usage of broadband capabilities is seen. While the size of the mobile services market already exceeds some ¥200 billion, that for fixed-network and personal computer services has not yet reached even half of that, or ¥100 billion. For the time being, mobile services will continue to be the engine that pulls the digital contents market.

As described in Chapter II (Return From General Purpose to Exclusive Usage), it looks at first glance as if fixed-network and personal computer services that are supported by enhanced broadband capabilities are better suited to satisfy the needs of users in downloading large-volume contents. From the standpoint of content providers, however, the feeling is that an appropriate business environment has not yet been fully established for fixed-network and personal computer services, as DRM and billing, payment and collection functions that can be readily used by potential subscribers are not yet available. Accordingly, the number of players participating this field is limited at present.

Providing services while preventing the unlawful usage of contents constitutes the lifeline for content providers. The current environment based on PC (personal computer) terminals is not providing the proper framework in which copyright management can function effectively.

Accordingly, NRI sees that while mobile services continue to pull the market, fixed-network and personal computer services will also expand when solutions are provided for the issues of DRM and billing, payment and collection functions that can be readily used by consumers. As it is easier to resolve such issues with non-PC terminals such as digital home appliances that have communications capabilities, creating and establishing a contents market for non-PC terminals will become the key to growth in this market.

As described above, the IT market has started to rapidly move forward towards its second phase of

growth. If efforts by each provider make it possible to offer enhanced user convenience and establish a business environment that facilitates the participation of content providers, there is a good possibility that the market size can be expanded even beyond the figures projected in this paper.

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- (1) NRI's Information and Communication Industry Consulting Department, *IT Market Navigator (2004)*: "Analyzing the Future of the Information and Communications Market," Toyo Keizai Inc., December 2003.
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