

# **IT When “Generation Y” Becomes the Predominant User Group**

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Given the cost-cutting measures being implemented by enterprises (its customers), Japan’s IT (information technology) service industry is finding it difficult to grow. Furthermore, neither the IT department of an enterprise nor its IT subsidiary is able to function effectively, which constricts the growth of the enterprise.

The approaches adopted by enterprises in response to changes in the environment have been shifting from emphasizing cost reduction to placing importance on increasing the top line (sales). Moves are seen among enterprises to promote “responses to diversity” whereby efforts are made to meet the demands of each and every customer.

In any attempt to respond to the diversity of customers, it is thought that information systems that support such endeavors, in particular, application software, will have shorter life cycles. In addition, the behavior of the members of Generation Y (Gen Y) (those born between 1981 and 2000), who are expected to become the principal customers of companies several years from now, is one factor that will influence the information systems of companies.

To develop information systems for the Gen-Y era, a management method must be selected according to life cycles that differ for each information system. For example, quality is essential for the information systems of financial institutions, back office systems generally have long life cycles and front office systems that have closer contact with customers have shorter life cycles.

It is considered that there are two issues that must be overcome to realize information systems for the era where Gen Y becomes the predominant user group. They are “ensuring the presence of development staff members” who have skills to develop information systems in a shorter period and “fostering ‘connoisseurs’ who can identify useful external services.” In order to move towards establishing management strategies and IT strategies that are designed to respond to diversity, it is time for company management to recheck its own information systems and take any necessary actions to prepare for the next several years.

# I Responses of Japanese Companies to Changes in the Environment

## 1 Japan's IT service industry fails to grow

Ever since the collapse of Lehman Brothers in the U.S. in September 2008, every Japanese company has been working towards cost reduction, with IT investment not escaping these cost-cutting endeavors. As a result, investment in IT is down about 20 percent. When we look at the areas where these cost reductions have been made, we find that the development of new systems has either been cancelled or delayed, while other cuts have been made in operation and maintenance expenses for existing information systems. As a result, many Japanese IT vendors saw their second quarter sales in fiscal 2010 fall by around 3 percent, compared to the same period in the preceding year, while some companies suffering a greater decline saw their sales fall by more than 7 percent. Furthermore, when we look at operating profit, we find that, with the exception of Fujitsu, many companies recorded very disappointing results, with a drop of 20 to 30 percent in operating profits (Table 1).

On the other hand, if we look at the situation in other countries, we find that the IT services market is

expected to grow by 2.9 percent in terms of sales over those in 2010, shifting towards an increasing, albeit small, trend (according to Gartner Research). Actually, in Asia, China has quickly entered a recovery phase and is playing the role of a new driving force of IT investment. In North America, also, even though a solid recovery has yet to be seen in the U.S., it too is expected to enter a recovery phase, which will lead to increased investment in IT. While the rest of the world seems to be moving ahead, only Japan seems to be lagging behind.

While Japan's IT service supply industry continues to struggle hard, how is each company dealing with its IT? It is not the fact that every company is pursuing only cost reduction and is not investing in IT. They have been implementing measures to reduce operation and maintenance costs that entail some amounts of investment such as shifting to virtualization technology and a cloud computing environment. The 2010 results of Nomura Research Institute (NRI)'s annual "survey on the positioning of IT in management strategy" verified this trend. As the purpose of IT investment, 66.8 percent of the companies surveyed selected "improvement of business operations." This was followed by "advanced corporate performance management" to understand corporate performance on an across-the-board basis, which was selected by 46.3 percent (Figure 1).

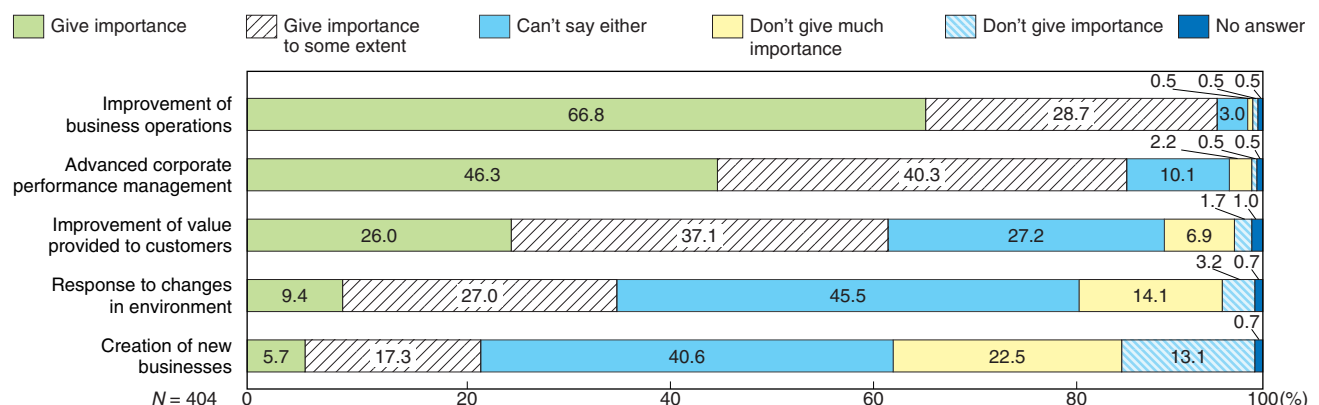
**Table 1. Major IT vendors' financial statements for the second quarter of fiscal 2010**

(Unit: ¥ Million)

	Sales	Operating profit
NTT Data	533,727 (+ 0.2%)	25,397 (- 24.1%)
IT Holdings	154,009 (+ 4.8%)	4,667 (- 19.6%)
Nomura Research Institute (NRI)	162,106 (- 2.9%)	16,009 (- 27.5%)
Hitachi (software services)	520,100 (- 1.6%)	30,700 (- 1.6%)
Fujitsu (services)	1,129,100 (- 3.8%)	38,500 (+ 12.2%)
NEC (IT services)	370,981 (- 3.0%)	3,543 (- 66.1%)
Nihon Unisys	116,531 (- 7.4%)	1,386 (- 1.1%)

Notes: 1) Figures in parentheses indicate year-on-year change. 2) IT = information technology.  
Source: Compiled based on Investor Relations (IR) published by each company.

**Figure 1. Purpose/goal of IT investment**



Source: "Survey on the Positioning of IT in Management Strategy," Nomura Research Institute, 2010.

## 2 IT departments constrict corporate growth

Recently, the effective use of IT is said to be essential for corporate growth. Then, what views do IT departments and IT subsidiaries that actually promote the use of IT have towards the issues they are facing? The interviews we had with chief information officers (CIOs) revealed the following problems that they have come to recognize.

- After we outsourced IT operations to an IT vendor, we are experiencing the aging of and a decline in the number of in-house IT employees along with a loss in operational expertise [pharmaceutical company].
- The evaluation of the IT headquarters is based on “whether the in-house IT department is contributing to the reform of business operations;” evaluation of whether a contribution is actually being made is based on actual corporate performance [precision machinery company].
- By the end of the current fiscal year, we intend to prepare a mid-term plan, which also includes the strengthening of an IT subsidiary [retail company].
- In the past, system engineers (SEs) created the system they wanted, and business operations were adjusted to the system. However, now, this way of creating a system is no longer acceptable. We believe that we have to create a system that anyone can “use” by assuming a wide range of usage scenarios by a variety of users [broadcasting company].
- We are reexamining the optimization of the IT department and IT personnel. While the IT subsidiary created a system in exactly the way it was requested by the order issuer, the result was the creation of a system that could not be used because the order issuer could not precisely define the system requirements [power company].

In sum, these CIOs consider that they must deal with the following three issues: (1) lack of quality of and a deficiency in the number of IT personnel, (2) IT is not making the expected contribution to business operations because an IT department and/or IT subsidiary lacks adequate knowledge of actual business operations, and (3) the IT department must be equipped with knowledge necessary to become independent. It is assumed that because of these reasons, Japanese companies do not have the sufficient IT resources and skills necessary to keep abreast of a quickly changing business environment. In this context, IT constricts a company’s growth.

## 3 How best to respond to diversity constitutes a major challenge

By considering how companies should be changed from the perspective of customers who are causing changes in

the business environment, the best method for dealing with IT will also become clear.

Usually, for a company to grow, two types of measures are implemented side by side—“eliminating waste,” such as improving business operations, and increasing the top line (sales), such as the development of new products and services. While the question of “matters mentioned in a company’s management strategy” is not indicated in this paper, this question was asked during the above-mentioned survey. To this question, the majority of respondents (81.6 percent) selected “the direction to pursue for sales and marketing activities.” The percentage increased by 7.0 points over the preceding year (2009).

Moreover, the management measures to which these companies are devoting their efforts include “shifting towards products and services offering high added value (26.0 percent),” “strengthening the ability to use information for sales activities that involve direct contact with customers (25.2 percent)” and “diversifying products and services according to the market and consumer needs (24.0 percent).” These findings suggest approaches adopted by the companies surveyed to increase sales by analyzing the needs of each and every customer and by carefully targeting the products and services that they offer to those customers. That is, the author believes that the keyword to increasing the top line lies in “responses to diversity.”

Regarding “diversity,” we can point to another interesting phenomenon in the world of media. In the presidential election held by the Democratic Party of Japan in 2010, what opinion did the public actually have on a suitable person as the party’s president? In public opinion polls conducted by the mass media, including TV and newspapers, slightly more than 60 percent “did not support Mr. Ozawa.” On the other hand, in network media such as blogs and Twitter, slightly more than 60 percent were “Ozawa supporters.” The degree to which people rely on the media varies between cities and rural areas, and people in certain age brackets tend to use the Internet often. Therefore, we probably need to verify exactly how much the individual voices of network media reflect public opinion. Nevertheless, we can probably say that this phenomenon gave an impression that while the mass media takes a conservative view with an eye to keeping things as they always have been, the network media is looking for change.

Moreover, the case of the collision with a Chinese fishing boat near the Senkaku Islands, where video files were made freely available on the Internet, can be said to be a symbolic example that shows “behavior” in which the contributor took a different stance from that of the mass media. This incident can be interpreted that “net society” is leaning in the direction of “halting dependence on mass media” and instead calling for responding to diversity. The main driving forces behind the rise of network media include cloud computing technology

and the appearance of smartphones such as iPhone and those using the Android OS. As the popularity of these information appliances and the progress in e-government services indicate, Japan is shifting towards a network society. Given this shift, it would seem that having to respond to diversity is a foregone conclusion. As the results of the above-mentioned survey suggest, companies are expected to rely on their efforts to respond to diversity to attain growth. To this end, it is important that they closely observe the sense of value and behavioral patterns of their principal user groups. For this purpose, IT will play a major role. The efforts of IT departments to respond to diversity would provide a means of no longer being the constraints that have been hampering company growth.

## II Optimum IT in a Society where Generation Y is the Predominant User Group

### 1 Characteristics of Generation Y

When we consider the shift to a network society and look forward to a point ten years in the future, on whom should companies be concentrating their efforts? The author believes that the predominant users of new technologies such as iPhones, iPads, Android-based terminals and cloud computing are the demographic cohort known as “Generation Y,” that is, those persons who were born between 1981 and 2000. The number of people constituting Generation Y stands at around 26 million, or roughly the same as that of the “baby boomers” (those born between 1946 and 1964) and “Generation X” (those born between 1965 and 1980).

Although the age range of Generation Y is currently 10 to 30, in ten years, it will be 20 to 40, and this generation will become the principal customer base that drives the growth of companies. Accordingly, by analyzing the characteristics of Generation Y, consideration is given to how society and IT will change. The following sections discuss the roles that people in this generation will play and the optimum information systems when these people are the principal customers.

If we observe the behavioral patterns of Generation Y, we find three distinct factors that members of this group regard as being “natural.”

First, they believe that “the Internet can be used anywhere.” Generation Y takes the existence of the Internet and wireless LANs for granted, not only in the workplace but also at home. Many elementary schools now offer a program of using the Internet in their curricula.

The second point is “building relationships through the Internet.” With Wi-Fi or 3G-enabled devices such as handheld game consoles, mobile phones and smartphones, connecting to the Internet comes as second

nature to Generation Y. In addition to real-world friends, they also have playmates in the Internet world, and are having more and more such friends even though they are at home. Such online relationships are becoming increasingly more common with the spread of social networking services such as Mixi, Twitter and Facebook.

Third, Gen-Yers “download and use whatever they need.” With the spread of devices such as iPhones and iPads, it is becoming very common for them to download and use their favorite “content” such as application software, books and music.

We assume, therefore, that we will enter an era where a company’s IT services must be designed based on the premise that these three basic patterns of behavior will become commonplace.

### 2 Role of Generation Y in the world of IT

From the viewpoint of IT service providers, how do they perceive the behavior of Gen-Yers? In describing Gen-Yers, one of the first things that come to mind is that they can get the most done whenever they have a mobile phone or iPad with them.

For example, people who trade stocks and bonds online are not interested in the trading information system that actually conducts such transactions. Rather, they are interested in how they can acquire information that is useful to them, and how promptly they can conclude a contract. While day traders would work from their PCs at home, salaried workers who have only limited time for trading would far prefer to make online trades from their mobile phones. In this sense, people in this generation for whom being connected to the Internet is natural can be regarded as those who are accustomed to using content (IT) that has been created by someone other than themselves.

When they need to use application software, Gen-Yers will download it to their devices from mobile phone websites, app stores that sell application software for iPhone, etc. They usually begin by downloading a free version of the application software. Then, if they like it, they pay to download the full version. The free version of the software is basically the same as the paid version, but does not have all the functions that the paid version has. For those companies that provide application software, how to attract customers with their free versions is the key to attaining many downloads of the paid version.

On the other hand, even if there are some problems with the free version, users are unlikely to complain about such problems because the software did not cost them anything. In a sense, therefore, the users of free versions are welcomed by companies because they often report any problems they find at no charge to the company. However, because the software is free, Gen-Yers base evaluations on the experience of themselves and others, and constantly change between software that has earned a good reputation.

That being the case, how is it possible for users to change out their application software so often? One major reason for this is that their data exists on Internet servers (cloud servers).

Let's look at Twitter as one example. Users access the official Twitter website from their PCs, and navigate the site using a web interface. Because Twitter, Inc. has made the application program interface (API) for accessing Twitter services open to the public, anyone can make their own client application software for accessing Twitter. It is this client application software that is available through the Internet. Because the information that we personally enter, such as the messages that we send and the accounts that we follow, is stored on Twitter's cloud servers, the only information that is stored by the client application software is the Twitter account name and password. The only reason for the client storing this information is that signing in every time is troublesome.

After several years when Generation Y becomes the principal group within society and Gen-Yers become the leading users of a variety of IT services such as Twitter, what influence will the behavior of Gen-Yers have on the companies that provide application software and IT services?

If software companies do not steadily improve the functions of their client application software, users will quickly switch to a different well-regarded software product, and the original product will no longer be used. That is, developed programs will be replaced after a very short time, leading to a repeat of the situation where products are developed and then soon abandoned, as exemplified by the "scrap and build" pattern. This means that little time or cost can be expended on the development of application software. Even if six months or a year are spent on software development, if the final product has a lifespan of only a few months, the developer will never be able to keep pace.

Furthermore, because any development cost would have to be recovered over a very short period, any attempt to offer enhanced functions by expending substantial costs would conversely entail increased risk. Generally, while responding to the diverse needs of customers leads to new services being introduced to the market, it shortens the life cycle of information systems. In addition, the behavior of Gen-Yers who are the users of such services is considered to shorten the cycle even further.

Up to this point, we have looked at the behavior of Gen-Yers in their capacity as company customers. Because there are Gen-Yers in business departments as the users of information systems within a company and there are also those in IT departments as employees who issue orders to IT vendors, the behavior of Gen-Yers will also influence the development of in-house information systems.

Let's look at an example in which a company issued a request for a proposal when it needed to build a con-

struction work management system. The main functions of this information system included adjusting the work schedules of persons in charge of construction work and arranging the workforce so that work could progress as scheduled. As such, the system was required to provide the functions of managing the schedules of the persons in charge of construction work.

In response to this request, a major system integration (SI) vendor, Company A, proposed scratch development in which programs are developed from scratch with a development period of six months and a budget of 3 billion yen. However, a mid-sized SI vendor, Company B, proposed the use of Salesforce.com (an external service) with the development of the functions considered to be lacking, requiring a development period of three months and a budget of 300 million yen. Considering the operation and maintenance costs that would be incurred once the system started operating, we cannot simply say that the budget proposed by Company B is lower. If emphasis is placed on the initial costs and the time needed to start service, the degree of functional enhancement and the quality of functions alone cannot reasonably explain the difference between the two companies' quotations. In the future, therefore, the number of development projects for which an order issuer is not reluctant to use an external service to develop a system quickly and at low cost, which can be regarded as characteristic of Generation Y, is expected to increase.

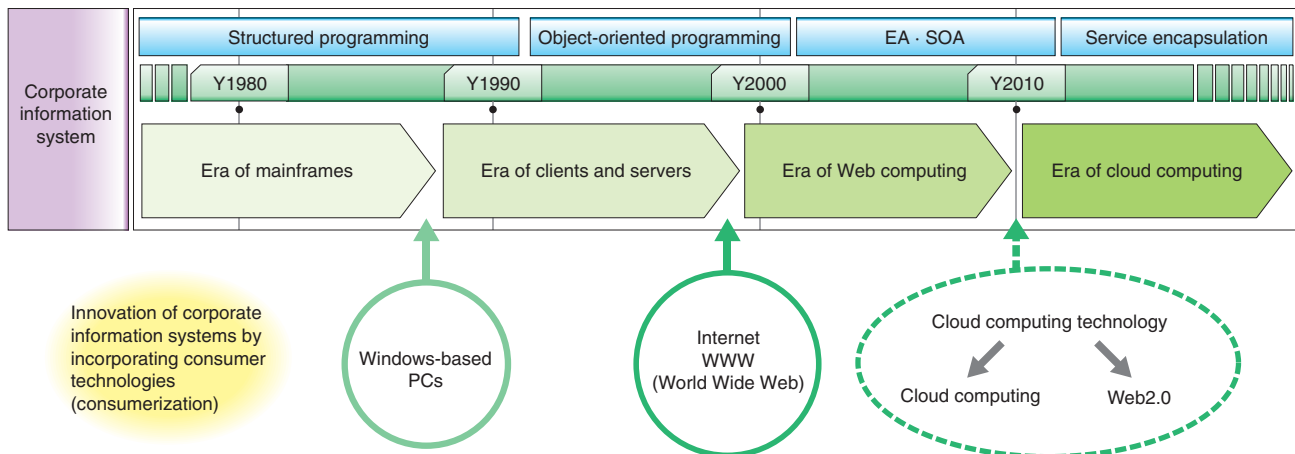
In much the same way, "consumerization" is making its way into companies. In this trend, new technology that emerged for consumers is incorporated into corporate information systems. In the latter half of the 1980s, we saw a shift from mainframe computers to client/server systems. This shift occurred because Windows-based PCs, which up until then had been used by individuals, came to be adopted by companies. With the appearance of Web computing in around 2000, companies began to use the Internet and the World Wide Web for their information systems (Figure 2). Now, as we enter the era of cloud computing, the behavior of Gen-Yers that is described above is more than likely to become "natural" in the development of a corporate information system.

### 3 The keyword of information systems in the Gen-Y era is "3S + C"

In the era in which Gen-Yers become the principal user group, what form should corporate information systems take? As an example of using a mobile phone as a terminal, I would like to talk about an experience I had in May 2010 when I bought an iPad at an Apple Store in the U.S.

Apple Stores in the U.S. are much like those in Japan in terms of the actual premises, with Apple products including iPads on display for shoppers to try and several salespersons available for assistance.

Figure 2. Consumerization



Notes: EA = enterprise architecture, SOA = service-oriented architecture.

When I told a salesperson that I wanted to buy an iPad, he disappeared into the back of the shop, and then reappeared with a box containing the product, saying “Is this what you want, sir?” After I said, “Yes,” the salesperson took the iPhone hanging from his waist and scanned the barcode on the box. The name of the product and its price then appeared on the screen of the iPhone. After showing me the screen and getting my agreement to purchase the iPad, the salesperson took my credit card and swiped it through the reader attached to the iPhone. After the authorization came through from my credit card company, the salesperson passed the iPhone to me and had me sign the screen with my finger. After I signed, the salesperson went over to a nearby table to bag the product for me, took a receipt from a small printer under the table, and then passed it and my packed iPad to me to end the transaction.

That is, this Apple Store forgoes the conventional cashiers and POS (point of sale) registers in favor of iPhones that are fitted with card reader adaptors. Of course, it would be impossible to achieve a “register-free” setup in a store that handles many small-money transactions. However, for stores selling products whose purchase prices are equivalent to what most people would use a credit card, for there is no reason why a similar system to that used by the Apple Store could not be set up in Japan.

What we should note from this example is that people who usually use their credit cards to buy products at home online with their PCs or mobile phones will also be receptive to doing the same thing in an actual store. A further, hidden advantage is that eliminating cash registers and their queues eliminates the possibility of customers changing their minds as they wait in line, which should improve the store’s efficiency.

Although this is a relatively advanced example of an information system in the Gen-Y era, how should we go about building such information systems in the future? The requirements for this purpose are discussed from four aspects, namely, (1) system architecture, (2) devel-

opment methods, (3) technology to be used and (4) development structure.

### (1) System architecture

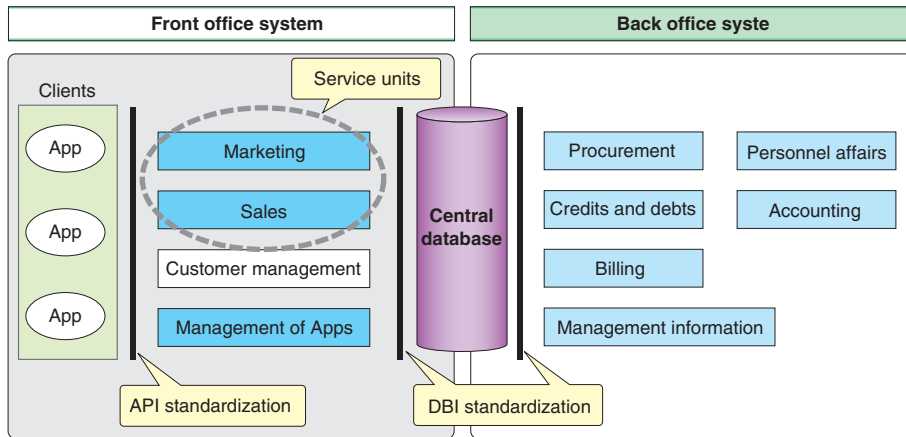
A requirement that the system architecture must satisfy is that even if application software products with short life cycles are put into service one after another, their influence on the existing information system should be as localized as possible. That is, a service-oriented architecture (SOA) should be adopted.

However, because the information systems of many Japanese companies have previously been optimally developed to provide functionality to enhance a company’s competitive edge, the information systems are very closely coupled, and separation into service units is difficult. Therefore, any shift to SOA would require overall restructuring and temporarily incur very large costs, which is the reason that prevents many companies from switching to SOA. However, when we consider that the business environment will continue to change in the future, it becomes clear that this is a hurdle that will eventually have to be surmounted. To overcome this hurdle skillfully, it is essential that we pursue “visualization” and “standardization” in our current information systems.

Then, what must be done to achieve visualization? The information systems that consist of those for work related to personnel affairs and accounting, which is relatively common in every company, those for work ranging from receiving orders from customers to settling payments and those for work related to performance management are called “back office systems” in this paper. The group of information systems through which channels are established with customers such as those for sales and marketing activities and customer management is called the “front office system.” The data that connects the front office system and the back office system is called the “central database” (Figure 3).

By using these three categories to visualize how current information systems are configured, we can see

**Figure 3. Configuration of information system in view of shifting to SOA**



Notes: API =application program interface, App (Apps) = application software, DBI = database interface.

what we need to address when introducing SOA, such as checking to see if there are any closely coupled functions that should be separated, and finding out if data that should be stored in the central database are currently distributed in individual databases.

While it is necessary to pursue product standardization in terms of hardware and products to be adopted that consist of the system infrastructure, the shift to SOA requires the standardization of interfaces to exchange data between the central database and the front office system and between the central database and the back office system. This is because the structure of application software used in the front office system is generally based on units of products and services, while that used in the back office system is usually based on organizational units within a company. Such differences lead to the differences in standard time and units in handling data. If the rules for accessing data are not determined, the central database itself will become complex and difficult to manage. Accordingly, standardization is important for smooth data access and is significant in facilitating business improvement and operation and maintenance.

Furthermore, by standardizing the interfaces to access the application software that provides services and making them open to the public, customers and employees who are the users of the information systems can easily create client application software. This will increase the usage rate of the information systems and, as a result, spur an increase in the number of transactions.

**(2) Development methods**

Currently, there are several different development methods including the waterfall method, spiral method and agile method that are used according to the characteristics of an information system. However, because the life cycles of application software are so short in the Gen-Y era, there is a need for a development method that can complete development in a very short time. Generally, development of an information system involves creating

a plan that considers three aspects: quality (Q), cost (C) and delivery date (D). For the information systems of financial institutions, the priority of “ $Q \gg C \geq D$ ” is very common. In the retail and service industries, for companies whose IT investment is less than 1 percent of total sales, the priority is more often “ $C \geq D > Q$ .” In the Gen-Y era, for services aimed at customers, the priority is likely to change to “ $D \geq C > Q$ .” That is, in the Gen-Y era, the model of business growth will be changed to that in which the principal goal is to launch a new service ahead of other companies and attain profit, albeit small, and introduce another new service at the instant that this service comes to be seen as being a commodity.

In this model, there is no point in having a multi-functional, high-quality information system. If the system initially has a certain level of quality, the model adopts a strategy of gradually improving functions and quality through a series of frequent updates. The author considers that the period of this high-speed development after a development decision is made until a product is released will ultimately be no more than 72 hours.

Currently, companies that adopt a model that is closest to this model are mobile phone carriers. The discount competition based on a variety of complex pricing plans represents a trend that is specific to mobile phone carriers whose principal customers are “fickle” Gen-Yers. The “student discount service” offered in 2010, which was aimed at those students who were to enter junior high or high schools in April, had to start in February. Company A, which announced this new service ahead of its competitors in late January, launched the service in early February. Company B announced a competing service one week after Company A, but was able to launch the service on February 1. Only three days elapsed from the announcement to the launch of service. After that, Company C announced its service one week after Company B, but had its service available the next day, on February 4.

As a result, Company A, which was the first to issue an announcement, was actually the last to start its



service. While we could say that Company C was a winner in terms of the speed at which it brought its service to market, Company B is a good example of attaining synchronization between the speed at which it developed the information system and the speed at which it made its service available in the market. Company B did not actually develop its information system in 72 hours; but it had prepared services that were assumed to be introduced in the future. Promptly after Company B heard the details of Company A's service announcement, Company B was able to establish the details of its competing service. Considering this quick response, it can be said that Company B already had a basis for developing a system at high speed.

To achieve high-speed development, we must change the way we consider the granularity of a project. For example, by dividing a project that would conventionally have been a single project into 20 micro-projects, we can shorten the time needed to start operating a system under any one of those micro-projects. Furthermore, conventional information system development involves many processes and procedures. These include creating many documents such as specifications and plans for each process, securing quality by repeatedly reviewing these documents and conducting progress management by means of work breakdown structure (WBS). However, regardless of the number of micro-projects into which a project is divided, by no means will there be enough time to give the same amount of attention to every micro-project. As such, some procedures such as the creation of some documents would have to be postponed. However, in the case of financial institutions that require confirmation of all processes, procedures cannot be deferred. Therefore, high-speed development is not suitable for information systems used by financial institutions.

### (3) Technology to be used

In order to develop an information system that can cut costs as a life cycle becomes shorter, development periods must be shortened, that is, we must seek out ways of reducing the development load. To this end, we can reduce the amount of in-house development by using packaged products and external services. According to the survey conducted by Gartner, the compound annual growth rate (CAGR) of Japan's SaaS (software as a service) market will be 12.1 percent in the four years between 2010 and 2014, with the market size in 2014 expected to reach 48.4 billion yen. When we remember that the annual growth rate for the entire Japanese IT service market is only 1 percent on average, we can see that this is a major growth area.

In other countries, this trend has already been established, mainly among mid-sized companies. With the arrival of a new CIO, Company S, an enterprise operating a health care service business in the U.S., reduced its IT costs by making full use of external services (SaaS).

The CIO had the following to say about his company's in-house system development.

"Whenever we undertake our own development, there is risk involved, plus we have to operate and maintain the completed system. Whenever a company does its own development, the release of Version 1 usually precludes the release of Version 2. This is because the company will be too busy operating and maintaining Version 1. There is neither the time nor the money to move on to Versions 2 and 3."

He went on to mention the following disadvantages of not using external services.

"If we don't draw on SaaS, we need another 10 IT staff members. Of those, half have to be assigned to the operation and maintenance of infrastructure including hardware. The other half must be assigned to the development of application software and subsequent operation and maintenance. The result is that in-house developers will only be likely to achieve around 30 percent of the functionality that can now be achieved with SaaS."

With this new CIO in place, Company S has greatly changed the way in which it develops information systems. In the 1.5 years since the new CIO assumed the position, 75 percent of IT staff members retired from the company. This is because the mindset of these former staff members who were accustomed to the waterfall methodology based on mainframes was very different from the mindset exhibited by the new CIO.

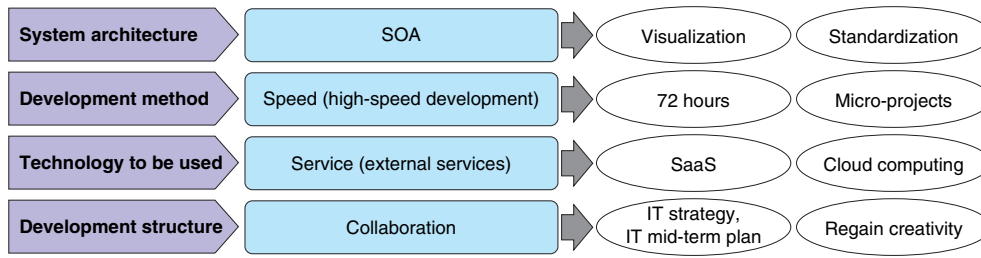
As the case of Company S suggests, the positive use of external services in developing information systems is thought to be an effective choice as we move toward the Gen-Y era. In Japan, however, where changing jobs is not as common as in the U.S., productivity is unlikely to increase and costs cannot be reduced if the mindsets of IT staff members are not changed. Japanese IT departments must still overcome these problems.

### (4) Development structure

As we move toward the Gen-Y era, what kind of organization should an IT department be to best contribute to corporate growth? Rather than assuming the passive stance that it has tended to assume in the past, the IT department must become independent and autonomous. For this purpose, a development structure that enables two types of collaboration must be established.

The first type of collaboration needed to establish a structure to develop new services is that between the IT department and the IT vendor. This collaboration will enable the IT department to provide business value to business departments. The factor behind the need for this collaboration is that as business grows and information systems become larger and more complicated, it has become more and more difficult for the IT department to have personnel who are conversant with complete information systems. Moreover, as mentioned above, it has become unavoidable to use packaged products and

**Figure 4. The keyword of information systems in the next generation is “3S + C”**



Note: SaaS = software as a service.

external services in order to reduce IT costs and increase development speed. The IT department is now in a situation where it is difficult for the IT department alone to develop and maintain a company’s own information system, much less to develop new services.

To overcome this issue, it is essential to establish high-quality relationships with an IT vendor. From the perspective of covering the entire information system through collaboration, the IT department must be transformed into an organization that manages the company’s IT.

The other type of collaboration is related to establishing a structure to develop information systems through the joint efforts of management and business departments in order to avoid a situation where the IT department restricts the speed of business evolution. In the Gen-Y era, there will be a constant demand for creating business value by means of IT. However, there are actually very few areas in which IT alone can create business value. Such value must be created through collaboration with management and business departments. For example, the IT department can support speedy decision making by management by providing management with timely information on the current state of business operations. For business departments, support to increase top-line sales can be provided by expanding the channels of sales activities and providing new services.

When establishing a development structure that realizes these two types of collaboration, there are two points that the IT department should consider. One is that a company’s IT strategy and/or an IT mid-term plan must specify the details needed to achieve collaboration between the IT department and management and between the IT department and business departments. The other point is the need for the IT department to return to an organization that pursues creative activities.

When I spoke to the staff members of IT departments, they said that in the past, there was excitement in the IT department as well as a sense of enjoyment of being able to create information systems by using new technology. However, now, meeting the requests of business departments takes up all of their time, and they must work under a great deal of pressure because they must create a trouble-free information system. Under such a situation, IT staff members experience great amounts of stress and can no longer enjoy their work. When talk of “collabora-

tion” never actually becomes more than just talk, the IT vendor that is a partner of the IT department might become an outlet for the stress of the IT department. If this situation is left as is, I strongly feel a sense of danger that the IT department might collapse. An important factor in avoiding such a situation and vitalizing the IT department is that the IT department should not limit itself to only IT management, but instead should strive to regain the creativity that it once had.

In this section, we have looked at how an information system should be in the era in which Generation Y becomes the predominant user group by considering four aspects. The keywords for these aspects are “SOA,” “Speed (high-speed development),” “Service (external services)” and “Collaboration,” otherwise known as “3S + C” (Figure 4).

### III Corporate IT Strategy Designed for the Gen-Y Era

#### 1 Days when management of information systems becomes increasingly difficult

Since the early 2000s, IT management has been considered as consisting of four fields—IT strategy, IT investment management, IT organization management and information systems management. This mindset is now widespread. The trends for the 20 years following 2010 include a continued demand for reduced IT costs and the further complexity of information systems. In particular, when we assume that individual development projects will be increasingly divided into micro-projects and systems will be developed faster in shorter periods, the conventional project management methods that rely on creating documents such as design specifications and plans and reviewing the results would require much time even for projects with short life cycles. This would mean administrative costs accounting for a greater proportion. Therefore, there will be a need to consider the simplification of some procedures.

In the past, project management attained its maturity based on the waterfall development model in which all development processes from upper to lower processes are predetermined. However, when Generation Y becomes the principal user group, the spiral and agile

development styles will likely become more dominant. Therefore, it will be difficult to control a project using the project management methods of the past. If we look at all systems, we will find that information systems developed using the waterfall model coexist with systems developed using the spiral and/or agile models. Accordingly, the staff members of IT departments must be equipped with skills to apply the appropriate type of project management for each development style.

On the other hand, for information systems used for business activities that exhibit little change and those for financial institutions for which quality is essential, conventional IT management will continue to be effective. As such, from among a company's own information systems, those using conventional management models and those designed for the Gen-Y era and giving priority to speed and cost must be separated. In Chapter II, systems were classified into two categories, namely, front office and back office systems. One possible solution for the question of how to separate systems would be to classify them according to their life cycles. For example, the management of front office systems gives priority to speed and cost while that of back office systems adopts the conventional type of IT management. Although a project might not necessarily go well even if this method of separation is adopted, full consideration should be given to the differences between the characteristics of these two types of systems. Table 2 lists the differences in the degree of weight given to management in six areas according to life cycles.

## 2 Issues facing information systems in the Gen-Y era and their solutions

To this point, I have discussed the forms of information systems in the Gen-Y era. However, there are still some issues to overcome in order to develop such systems.

One is ensuring the presence of skilled development staff members. When a project is "diced up" into many

micro-projects in order to increase development speed, if staff members are separated into planning and development teams, all available time will be spent simply for both teams to come to share the same recognition. During the development process as well, if different roles are played by the IT department and the partner, most time will be spent on meetings and review. Accordingly, there is a need for a team of "a select few" that can undertake both the planning and development functions. Given that there is already a shortage of personnel with sufficient development experience, how many such teams can be formed will result in a difference in the ability to achieve high-speed development.

The decision as to whether to perform in-house development or to outsource development also has a major impact on the ability to achieve high-speed development. Roughly speaking, with an IT organization of 100 people who are engaged in in-house development, about eight teams of a "select few" can be created (Table 3). On the other hand, with only 20 people engaged in development, most of which is outsourced, only about two such teams can be created. How quickly the personnel required to create these teams can be secured and whether the number of teams can be increased will affect the speed at which business grows.

Another issue involves acquiring the ability of a "connoisseur" to identify services that are (considered to be) useful and beneficial and to adopt such services in order to shift towards system development that makes the best use of external services and packaged products. As seen in the case of Company S in the U.S. that used SaaS, if an organization fails to convert itself to one that makes full use of the ideas that are not held back by the restrictions imposed on the development of a company's systems in the past, it will not be possible to foster connoisseurs. For this purpose, management must truly understand the competitive advantages that can be brought about by the effective use of IT, and must be ready to take the risks involved in such use.

**Table 2. Differing degrees of weight given to management according to life cycle**

	Conventional type of development	72-hour type of development
Progress management	<ul style="list-style-type: none"> <li>Define results</li> <li>Create WBS (work breakdown structure)</li> </ul>	<ul style="list-style-type: none"> <li>Create patterns for each task</li> <li>Confirm progress at each checkpoint</li> </ul>
Quality management	<ul style="list-style-type: none"> <li>Design review</li> <li>Quality management items</li> <li>Quality analysis</li> </ul>	<ul style="list-style-type: none"> <li>Final review only</li> <li>Eliminate bugs</li> </ul>
Cost management	<ul style="list-style-type: none"> <li>Define expense items</li> <li>Collect data on actual costs; plan/results management</li> </ul>	<ul style="list-style-type: none"> <li>No additional cost if development completed within scheduled time</li> </ul>
Risk management	<ul style="list-style-type: none"> <li>Identify anticipated risks</li> <li>Monitor risks</li> </ul>	<ul style="list-style-type: none"> <li>Any risk that occurs is dealt with within the next 72-hour development period</li> </ul>
Issue management	<ul style="list-style-type: none"> <li>Define issue management procedures</li> <li>Monitor issue solutions</li> </ul>	<ul style="list-style-type: none"> <li>Same as at left</li> </ul>
Change management	<ul style="list-style-type: none"> <li>Change request management</li> <li>Reflect change in WEB and costs</li> </ul>	<ul style="list-style-type: none"> <li>Change request management only</li> </ul>

**Table 3. Forming “select few” teams**

	In-house development	Outsourced development
Size of IT organization	100 people	20 people
Composition of IT personnel	Planning and management: 10% Infrastructure: 20% APL development: 70%	Planning and management: 60% Infrastructure: 10% APL development: 30%
Systems for new services	12 to 13 persons	1 to 2 persons
	Note: Ratio of IT investment is: New systems : Existing systems = 3 : 7 It is assumed that 60% of investment in new systems is allocated for systems for new services	
Composition of “select few” team	One project manager Four sub-leaders Eight team leaders 24 partners	Two team leaders Six partners
	Note: Team leaders : Partners = 1 : 3	
Number of “select few” teams	Eight teams	Two teams

Note: APL is a type of programming language.

In closing, it is predicted that the types of information systems needed when Generation Y becomes the predominant user group, as described in this paper, will become a reality in the near future. When we think about the need to establish a development structure and foster personnel such as connoisseurs, we realize that we have only a limited amount of time to prepare for these matters. The management of an organization, including the CIO, should recognize a need to recheck its own information systems, identify the areas where preparations

are insufficient and endeavor to take any necessary actions ahead of its competitors.

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