

Dream up the future.

Digital Transformation by NRI

Clearing a Path to the Future with Digital Technology



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Published Mar 2020





Are you ready for change?

It's coming.

Information Technology is not only improving business process efficiency, it is transforming business models.

We at NRI envision a future built on digital transformation in all industries.

Business model transformation through digital transformation requires not only speed, but a medium- to long-term vision and management strategy.

Furthermore, digital transformation initiatives must be company-wide.

The time to build that future is now.



トロレているのは、「別相

Our service model of providing consulting and solutions is how we are able to fully support clients from all project aspects in their digital transformation as it expands and accelerates across the business.

As digitalization accelerates changes in society and consumer behavior, there is a great need for a digital transformation partner who can leverage technology while providing comprehensive support, from developing strategy to implementing solutions to transform business processes and models.



Shingo Konomoto Chairman and President & CEO Representative Director, Member of the Board

With one of Japan's largest consulting divisions, NRI possesses expert consulting capabilities for various industries and operating processes. Under NRI's consulting and solutions model, our consultants and system engineers work as a team to support clients. The consultants provide experience and expertise through long-term business relationships with industry players and clients. System engineers, meanwhile, provide state of the art technologies while keeping utility in mind. This is something our competitors cannot offer, and we are proud to offer this advantage to our clients as we robustly support their digital transformations.

In our Business Platform Strategy, with a focus on the financial sector, we will further expand shared online

services that NRI has fostered over many years, such as THE STAR and BESTWAY, for the nonstrategic areas of our clients. For our clients who will be entering the financial services business from other industries to meet transformations in the industry structure, we will provide new business platforms that support swift creation of new businesses and advancements into new markets.

With our Cloud Strategy, we will boost the agility of our client's businesses and help optimize IT costs by modernizing outdated and slow legacy systems*1, developing cloud-native applications, and other means.

*1 Modernizing legacy systems refers to optimizing and modernizing system platforms and applications

NRI's Digital Business Strategy



The company driving NRI's digital business strategy

NRIdigital

To bring innovation to businesses through digital technologies and further enhance our clients' strengths, NRI digital supports clients on both levels of digital transformation (1.0 and 2.0).

In addition to consulting and solutions development for digital transformation, we offer performance-based services to increase the efficiency of marketing and sales, as well as engaging in activities that enhance the performance of the transformation by participating in clients' businesses.

Building cross-industry platforms that seek ecosystems

· Establishing services and providing functionality in particular fields

Digital front office

Major digitalizing solutions for end users

• Helping clients execute D2C*² strategies · CRM, digital marketing

Digital back office

Major digitalizing solutions implemented in client companies

 SCM reforms such as inventory optimization • Operational efficiency improvements using AI, RPA, etc. • Industry standard business platforms

Enhancing cloud, security and other infrastructure

 Support migration from on-premises to cloud • Managed services for system platforms · Security business led by NRI Secure Technologies, Ltd.

*2 D2C: Direct to Consumer



VRI's Digital	Transformation	
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- Co-creation

Co-creation of new value for the future beyond corporate boundaries

Corporate digital transformation strategy has shifted from the "Introducing IT to Business" era to "Creating Business through IT" era. To accelerate this trend, NRI is partnering with a variety of companies. Through leveraging each other's strengths such as the collective strength of diverse human resources and open collaboration, we are creating new value that overturns conventional wisdom.



Bringing together NRI's comprehensive capabilities in digital transformation <Order of establishment>



investors through bitREALTY, an online real estate investment platform developed by real estate asset management company Kenedix and NRI. With our combined expert judgment, high transparency, and IT prowess, we provide genuine means of alternative investment for equity and bond investments.

https://www.bit-realty.com/

DENSO × /NRI SECURE/

NDIAS



NDIAS is a joint venture between global automotive parts manufacturer Denso and NRI Secure Technologies, Ltd., NRI's Managed Security Services Provider (MSSP) subsidiary. Leveraging both companies' strengths, we provide integrated security diagnosis and consulting services for in-vehicle electronic products from the development stage to after-launch support.

https://ndias.jp



JAL Digital Experience

JAL Digital Experience combines JAL's customer base and high-quality services with NRI Group's data analysis and AI technologies to gain a deep understanding of needs of each customer. Through this system, we offer personalized suggestions for rich experiences and new lifestyles while traveling and in daily life.

KODI × NRI

KDDI Digital Design



Building on the strengths created by synergies between KDDI and NRI, KDDI Digital Design provides consistent support for development of corporate side digital transformation from strategy planning to business feasibility verification and system development. As corporate IT investment shifts toward business IT, which leads to sales growth and new services, we are contributing to the development of society and industry by focusing on early business realization and expansion.

https://www.k-digitaldesign.com/



build a new platform using blockchain technology for corporations to issue and distribute securities and other financial products. With BOOSTRY we will introduce a new form of financial technology to the market.



DMG MORI × NRI

Technium

TECHNIUM

Technium specializes in leveraging digital technology to offer systems and services to maximize output at production facilities. DMG Mori Seiki and NRI have combined their expertise to provide new services to support the versatile use of machine tools and contribute to the development of the manufacturing industry.

https://www.technium.net/



Evolving together

A culmination of three years of knowledge sharing: NRI's 'Dream Up the Future Forum' - "Clearing a Path to the Future with Digital Technology"

Since 2017, NRI has held an annual forum on the topic "Clearing a Path to the Future with Digital Technology" to discuss the future of Japan and the world, and the role digital will play in the direction of corporate management. In 2019, we compiled the results, identified the changes that would occur in the social and industrial structures due to digitalization, explored the ways to respond to the associated issues and derive solutions, and proposed the direction in which we will use digital technology to create the future.



NRI's diverse range of experts discuss and outline "Clearing a Path to the Future with Digital Technology"

In the 2017 Forum, we drew up three scenarios of "Digital Capitalism" on what the economies of societies would look like in a future under constant digitalization. In 2018, we pinpointed the industrial structure shift to aaS (as-a-Service) and that it is the digital platform that drives maximization of customer utility. In 2019, the final year of this topic, we created a compilation of the research of the past three years. This included proposals for new economic indicators for the digital era, the course of action to realize national and regional affluence through digitalization, the value of data assets supporting the digital society, and the best way for companies to respond to change in the digital age.



"NRI Dream Up the Future Forum 2019" Keynote address by Shingo Konomoto, Chairman and President & CEO



NRI Panelists at the "NRI Dream Up the Future Forum 2019



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The NRI Journal provides an eloquent summary of articles by NRI's diverse range of experts on the latest topics and our experts' outlooks for future society. The NRI Journal covers a wide range of topics including macroeconomics, management strategies such as digital transformation, and technological trends like AI, IoT and information security. Here, we present articles on digital transformation. We will continue to take the NRI Journal farther and make it a gateway to a more dynamic future.





Please visit our website for details www.nri.com/jp/journal/



How Will Businesses Change with 5G?

Commercial services for fifth-generation mobile communications systems (5G) will begin in 2020. Characterized by high-speed, high-capacity, ultra-reliable, low-delay, and multiple simultaneous connections, 5G opens the door to a variety of business opportunities. We spoke to Takuya Kamei, an expert on technology and uses for 5G, about what some of those practical uses might look like.



Article URL https://www.nri.com/en/journal/2019/0815

Takuya Kamei Group Manager, ICT Media & Service Industry Consulting Department

Creating new value through "Connected"

What will be achieved by the shift to 5G?

The entertainment sector will be the first area where consumers will see changes with the introduction of 5G. The creation and distribution of content that uses virtual reality (VR) and augmented reality (AR) to provide new experiences will open up new opportunities in this sector such as live sports and games.

However, more than personal devices such as tablets and smartphones, it is the industrial sector that will truly demonstrate 5G's core strengths, with services emerging in a variety of industries, including connected cars, healthcare, factories and advertising.

Examples of these new services

For instance, safe driving assistance for automobiles will become possible. It is said that sudden brakes cause traffic congestion on expressways, but it is difficult for drivers to guess the state of the road as they can only see the car directly in front of them. However, with 5G-enabled connected cars, a video shot by a car may be uploaded to the cloud and shared with the cars behind it, giving the drivers an idea of the movement of the few cars ahead. This may lead to safer driving.

Another thing I found interesting was the Tokyo Women's Medical University's Smart Cyber Operating Theater (SCOT). The operating theater is now equipped with a communication system that can send images to experienced doctors off premises, who provide advice to younger doctors in charge of the operation. This combines experienced doctors possessing good judgment with skilled but younger, less experienced doctors, creating a greater number of very

skilled operating teams, thereby revolutionizing the field of healthcare by solving social problems such as shortage of doctors in rural areas.

The focus areas are remote operations and camera-based sensing

What areas can easily adopt 5G?

The first are those industries where remote work is possible, such as conducting PoCs to run construction equipment and robots in places that people cannot actually go. These characteristics of high-speed, highcapacity communications can also be utilized in areas where we want to capture changes in condition and volume. In particular, the use of highdefinition cameras will significantly improve sensing technologies, and this will greatly help operations such as process monitoring, order picking, and logistics at factories and distribution centers.

Moreover, this is economical as well. Even if the amount of data to be communicated increases ten-fold, communication charges are not expected to increase at the same rate. Therefore, the unit price per bit will decrease, making IoT (Internet of Things) solutions also less expensive. If this happens, it may be possible to obtain and utilize data in a novel way, such as by using a camera to take a complete picture of something that has been detected partially by a sensor and processing it.

It is expensive to develop telecom infrastructure and introduce compatible equipment. Won't the spread of 5G compatible devices be limited?

There is certainly some skepticism, but if more people see the opportunity and adopt it, carriers

will invest more, make better infrastructure, and lower telecom and device prices. This will bring in more users and create a virtuous cycle, which we are eager to help create.

Creating new user experiences with B2B2X models

Currently, more and more companies are embracing digital transformation. But if 5G is incorporated in that transformation, the scope of applications will likely be broadened.

I think so too. However, with 5G attracting increasing interest, it is important to think not about how to use it, but about whether new value will be created if the "connected" element becomes part of digital transformation. In particular, by utilizing the telecom infrastructure and data possessed by telecommunications carriers, we should be able to provide new user experiences that we could not otherwise have provided independently. In this sense, I believe that B2B2X models, in which a third-party operator intervenes between a telecom carrier and a user, will become crucial in the future.

Since 5G commercial services have not yet begun, most people would find it difficult to imagine specific benefits and ways of using them. But in 2019, the Japanese public will have a lot of opportunities to experience 5G remotely through various events. I encourage everyone to experience 5G for themselves and think about its uses. NRI intends to use its networks with various industries to support the transformation of business models and the creation of new user experiences and promote cross-industry initiatives.



Will salaries soon be paid with "XX Pay"?

In Japan, employers are legally required to pay workers' salaries only through cash payment or bank transfer. At present, the government is formulating rules such that these regulations can be relaxed and salaries can be received even via smartphone apps. Katsutoshi Takehana, who analyzes money circulation and researches currency and financial system theories, explains the impact of this deregulation.



Article URL https://www.nri.com/en/journal /2019/0225

Katsutoshi Takehana Senior Researcher, Financial Market & Innovation Research Department

Deregulation Further Enables Cashless Economy

There are many e-payment apps. What kind of apps will be able to receive salaries?

In recent years, a number of payment apps named "xx Pay" have appeared, making it somewhat difficult for users to understand the difference among them. There are several possible methods of classification, but I think it will be easiest to understand if we divide them into three categories depending on when the user's wallet or bank account is debited: "prepaid," "spot payment," and "postpaid".

Prepaid apps are similar to electronic money such as "nanaco" or "Suica". Prepaid apps charge a bank account registered in the app to a wallet (account) of the app itself, and use a QR code or a bar code for payment. Spot payment is withdrawal of money on the spot from the user's bank account when he/she purchases something, and the most popular app of this kind is "Origami". Recently, other payment apps provided by banks themselves, such as "Hama Pay" by the Bank of Yokohama, and "YOKA!Pay" by the Bank of Fukuoka, have been expanding rapidly. For postpaid apps, payment can be made by registering one's credit card information in the app in advance and presenting a QR code at the time of shopping. In fact, multiple payment types such as prepaid and postpaid are often combined in one app. Prepayment apps can be further divided based on whether the amount charged can be refunded in cash or to a bank account or not. Broadly speaking, refundable types can be classified as "funds transfer businesses" and non-refundable types as "prepaid instruments". A typical example of the former is "LINE Pay" and that of the latter is "Kyash". It may seem like a minor detail, but whether cash refunds are possible or not is a very important legal distinction, and funds transfer businesses and prepaid instruments

are treated differently under the law.

It is rumoured that the ban on receiving salaries may be lifted for refundable "funds transfer business" apps. The funds transfer business is a business stipulated by the Act on Financial Settlements, and 64 companies were registered as funds transfer businesses as of February 2019. Currently, the Ministry of Health, Labor and Welfare, which oversees labor laws in Japan, is in the process of examining in detail what rules are required to make "funds transfer business" apps able to receive salaries. Among the 64 companies, the "funds transfer business" apps that satisfy the requirements would be made available for salary transfer.

What impact does this deregulation have on society and companies?

First of all, we expect that this will further encourage a cashless society. The transfer of one's salary is the starting point of people's savings. When this starting point is changed from a bank account to a smartphone app that is more often used in everyday life, more time and effort is saved and it will be more convenient for users. Therefore, it will be widely adopted. If this happens, shops will also adopt the system since everyone is using it, and both users and member stores will increase. The introduction



of other types of payment apps will also accelerate in response to that of funds transfer apps, and as a result, the e-payment market as a whole will receive an impetus and a cashless economy will be further nourished.

Finally, I think there is a possibility for expansion of financial services that use smartphones as the gateway. App payment providers collect information that is useful for financial services suggestions, such as user preferences, purchase history, and life events. However, they cannot provide financial products or services themselves. On the other hand, since existing financial institutions are subject to strict regulations, there are many restrictions on direct collection of information. This makes the case for cooperation and sharing roles and responsibilities, such as apps being the contact point for customers and existing financial institutions providing financial products. As a result, e-payment apps may be used to receive payments and may begin to function as entry points for financial transactions such as investment and insurance, thereby making financial transactions that have so far been inaccessible to the general public more familiar and easy to access. We believe that the current deregulation will play a significant role in initiating these developments.



Trends in Chinese Tourism in Japan as Seen through the Use of "Nitori Public × NRI" DX Service:

Many Chinese tourists visit Hokkaido every year. Nitori Public Co., Ltd. hopes to revitalize tourism in Hokkaido by utilizing the strengths of the Nitori Group, which is expanding its operations in China. Therefore, Nitori Public and NRI worked together during the 2019 Sapporo Snow Festival and the Otaru Snow Light Path Festival to collect information on the purchasing and other behavior of Chinese tourists on holiday in Japan. We spoke with both the companies about their new initiatives using the social networking app WeChat*1, which boasts an overwhelming share of the Chinese market, and ideas that can be used for future tourism marketing.



Article URL https://www.nri.com/en/journal/2019/0718

Mr. Isao Arai President and Representative Director, Nitori Public Co., Ltd. (Center right)
Mr. Takeshi Nonaka General Manager, Sapporo Sales Department, Nitori Public Co., Ltd. (Center left)
Tomofumi Watanuki Services & Industrial Systems Business Promotion Department, Nomura Research Institute, Ltd. (right)
Takaaki Kurasawa Platform Architect Unit, NRI Digital (left)

Connecting Behavioral History to Hokkaido's Tourism Marketing

Increasing number of Chinese tourists, but insufficient information on them

The number of foreign nationals visiting Hokkaido is increasing every year. Chinese tourists make up the largest number of visitors from a single country and spend the most per capita, thereby representing a huge business opportunity.

President Isao Arai of Nitori Public explains the history of this project as follows: "Hokkaido is the birthplace of the Nitori Group. I saw that the tourism sector in Hokkaido was an area of significant growth in terms of business development, where we could utilize our knowledge accumulated in China and elsewhere. In this context, I received a proposal from NRI about analyzing the behavior of Chinese tourists using WeChat and decided to work together with them."

"Chinese tourists have moved from group travel to individual travel, and from consumption of products to consumption of experiences. We do not have information on what these individual tourists in Hokkaido are interested in, what experiences they consume, and what they are satisfied and dissatisfied with," says Mr. Tadashi Nonaka, General Manager at Nitori Public, about the challenges of marketing to Chinese tourists.

"I came to know that location information can be obtained from the operation logs of miniprograms*² in WeChat, which has about 1 billion Chinese users, and then I realized that tourist behavior could be visualized by performing a time series analysis," says NRI's Tomofumi Watanuki. This led to the establishment of the WeChat mini-program "Hokkaido Complete Capture" to collect and analyze behavioral history.

Use of the WeChat miniprograms

After this, we decided the project would be implemented during the Sapporo Snow Festival and the Otaru Snow Light Path Festival, which see the largest numbers of Chinese tourists annually. Members of Nitori Public called on local tourism associations, relevant authorities, and stores to participate in the project. Moreover, they used influencers to spread the word, organized stamp rallies (collecting series of stamps at railway stations, tourist spots, etc.), and provided prizes to increase interest and usage among Chinese tourists.

Takaaki Kurasawa of NRI Digital explains the challenges with the project: "The technical difficulty was that there was no way to estimate access numbers. Although there was a possibility that server access would be concentrated at certain times of the day, building a server capable of handling a huge amount of data would be costly. Hence, we spent time studying the kind of system that should be built."

Impressed with the results of this project, Mr. Nonaka says, "The WeChat mini-program eliminates the need to download a separate app. Moreover, tourists can access information on Hokkaido simply by scanning the QR codes at tourism spots and stores. Since it was so easy to use, the Chinese tourists I introduced to the app immediately tried it."

Keeping the goal in sight is important in digital technology use

Analysis of the data collected revealed where the Chinese visitors tended to make detours on the popular route between Sapporo and Otaru. "We came to be aware of a popular detour to Asari, as many people were visiting there. Later we found out that it was the location of a movie that had been released in 2018 in China," says General Manager Nonaka. "In the future, we would like to create a platform which would be well appreciated by tourists, containing information on new places to visit along their route and other such content. This would be useful not only for tourists but for tourism businesses as well."

"We have been able to understand new issues, such as improvement of user awareness, and the selection of urban areas that will attract more tourists in the future. We want to create valuable services for Hokkaido while solving these issues together with Nitori Public," says Watanuki.

Kurasawa says, "It was difficult to design and develop the product in a short period of time, but it was worth it. We have been able to gain experience in agile development where we can quickly respond to changes while constantly keeping the client in the loop."

"When I hear the word digital, my first instinct is to think that it means the work can be completed magically. However, I realized that it was essential to set up the project with the goal in mind. This time, I knew that we would collect an enormous amount of data. Although I constantly wanted to try all sorts of things with the app, I found that packing it full of functions would result in an inconvenient system. In order to make the best use of digital technology to produce results, it is necessary to think about what is really important. We intend to continue these activities for future projects as well," said President Arai.

*1 WeChat : A free instant messaging app created by the major Chinese IT firm Tencent. *2 WeChat mini-programs : Applications available in WeChat. Since they do not need to be downloaded from the AppStore, they are convenient to use.



Information Security Required in the Digital Transformation Era

Many companies are paying attention to digital transformation, which uses digital technology to transform existing businesses or to create new business models. However, if information security measures are neglected in promoting digital transformation initiatives, it is fully conceivable that a large amount of damage could be caused by cyberattacks. We asked Ken Sato of NRI SecureTechnologies, Ltd. (NRI Secure) about the importance of information security and the key points to be addressed in the digital transformation era.



Article URL https://www.nri.com/en/journal/2019/1106

Ken Sato Division Manager, DX Security Business Division, NRI Secure Technologies

Information Security in the Digital Transformation Era **Requires Understanding of Business Models**

Currently, many companies are working on digital transformation initiatives, but what should one be careful about regarding information security measures?

So far, information security was considered mainly in terms of how to prevent attacks against vulnerabilities such as bugs and misconfigurations. However, if we create a new business by digital transformation, I fear that it will lead to an attack that exploits the weaknesses of that business model.

For example, a service may be secure when used by itself, but risks may arise when it is combined with another service or technology. Furthermore, there may also be problems with the logic of the business that provides the service. Therefore, it is necessary not only to look at the information system but also to understand the entire business model and to verify the information security risks.

What information security measures should be taken during digital transformation projects?

In many cases, digital transformation projects are carried out in a style called "Agile Development", in which small projects are started and gradually expanded. For this, information security must be guaranteed as the project progresses.

Neglecting information security just because a project or a service is in its initial stage can put you at great risk in the future. It is necessary to consider information security from the stage of idea development or PoC (Proof of Concept) and to incorporate it into the information

system or business model.

Digital transformation projects should have information security personnel

What should one be aware of when considering promoting digital transformation with agile development?

Agile development is characterized by breaking up information systems to be developed into smaller development cycles, releasing them in a short period of time, and then iterating to complete the whole thing. Because of this shortened development cycle, it is difficult to ensure information security. NRI Secure provides specific advice on what needs to be considered in each phase of the development process and supports the incorporation of information security in agile development.

In addition to utilizing external resources, it is also essential to develop human resources in charge of information security within each company or in each individual project. You at least need someone on your project team who can be the flag-bearer for information security, if not an expert, and take measures to improve your security level. Otherwise, you will not be able to proceed with digital transformation speedily.

The information security risks of digital transformation should be recognized as a management issue

What support does NRI Secure provide for the realization of safe and secure digital transformation?

As I mentioned earlier, for security in the digital transformation era, even the business models and the logic contained therein must be considered. We believe NRI Secure is the only company that can provide consistent information security services ranging from the technical aspects to business models. Our main services include consulting services to support projects related to digital transformation from the perspective of information security and S-SIRT (Service-Security Incident Response Team) to specifically address issues and weaknesses.

When we talk to our clients, they often have guestions about how to deal with information security in the course of their digital transformation projects. Especially in Japan, where agile development initiatives lag behind those in other countries, information security tends to receive a low priority.

We believe that information security risks are an important management issue in an era in which digital transformation greatly influences businesses. As an information security vendor with expertise ranging from managed security services* to consulting and development of services and software, NRI Secure works with its clients to support the success of their digital transformation projects.

*Managed security services: Full outsourcing services ranging from secure network design to deployment of security devices and roundthe-clock operational monitoring.



ASG helps Australian Bureau of Statistics (ABS) renew its complex system environment and drastically improves work-efficiency

Since its establishment in 1996, Australian IT enterprise ASG Group Limited (ASG) has been providing IT solutions and consulting, including enterprise resource planning systems (ERP) and management data analysis, to Australian governments and private companies. In 2016, ASG became a member of the Nomura Research Institute Group.

This case study presents the work that ASG undertook to overhaul the ERP of the Australian Bureau of Statistics (ABS)*, a government body that collects and publishes a variety of data related to population, industries, and other areas.

Article URL https://www.nri.com/en/journal/2019/0128

PROBLEM OVERVIEW

ABS was seeking to create a programme that amongst other things, transformed the way data was being digitally managed with a view to streamlining data acquisition, processing, analysis and delivery. They also wanted to find ways of increasing the value and re-usability of the data they already had.

THE CHALLENGE

As Australia's national statistics agency, the ABS is over 100 years old. Its role was traditionally in taking a Census of the Australian population every five years, but this has expanded over the years with the agency now comprising over 3,000 staff, incorporating new surveys and reporting, and looking to new projects.

However, over the years its portfolio of applications had grown significantly with many older applications remaining. These legacy systems and processes were causing huge challenges for the agency, with escalating costs and siloed data

processing holding them back.

The agency recognised the need to transform how its data was managed and at the same time, they realised there was a need to take the exciting iump from a more traditional linear approach (Waterfall) to an iterative, team-based approach which would encourage a higher level of customer involvement (Agile).

They were faced with the question of how to re-engineer their business processes to focus on providing services and information solutions through the assembly of data and data processes, rather than focusing on 'made to order' processes and products. While at the same time seeking to facilitate greater innovation, more data analysis, and tailored service delivery.

THE SOLUTION

In April 2016, ABS signed a \$10 million foundational deal with ASG to deliver an innovative Enterprise Data

Dean Langenbach - Chief Executive Officer, ASG Group



ASG are proven experts in digital transformation, providing 10 core capabilities across key business areas such as advisory, program delivery, business analysis, data and analytics, enterprise applications, and managed IT.

Our breadth of service offerings and agnostic solutions are built for the agile operating environment and cater to our clients current and future market needs around things like efficiency, intelligence, and innovation.

To date, our experience includes work with clients across Australia's largest industries, such as banking, government, and natural resources; providing complete digital transformation services and solutions that enable our clients to thrive in the new digital economy.

As we continue to invest and grow, so does our ability to service large enterprise organisations choose us for many reasons. We're local; we have the global backing of our parent company NRI; we have hundreds of innovative projects under our belt; some of ICT's best talent - and most importantly - we deliver 100% to our client's needs.

Management Environment using Oracle technologies.

The outcome of this was a solution that supports the production of coherent, in-depth statistical information gained from multiple sources, which incorporate both traditional data warehousing and BI approaches, as well as Big Data and advanced analytics.

The engagement was delivered by ASG through their Agile Delivery Methodology, which not only contributed to the successful completion of the program, but more broadly helped the organisation transition to a more Agile-focused approach.

ABOUT THE ABS

The Australian Bureau of Statistics (ABS) has a reputation for being one of the top statistical offices in the world. They are known and respected for delivering objective statistics which hold a mirror to Australian communities and governments, as well as coordinating data between other official statistical bodies, both local and overseas.



What is a Successful "aaS" (as-a-Service)?

The term "as-a-Service," such as SaaS (Software as a Service) and MaaS (Mobility as a Service), has become a recent buzzword. Business models are shifting from providing goods to providing services, and these services are collectively referred to as XaaS (Everything as a Service). At the NRI Dream Up the Future Forum 2018, we explained the shift towards aaS occurring in various industries. Here, Shohei Ishiwata, Yukio Shigeta, Hiroshige Muraoka, and Junichi Yoshida again come together to share their views on XaaS.

Article URL https://www.nri.com/en/journal/2019/0808

Shohei Ishiwata General Manager, Analytics Business Department (Top left)
Hiroshige Muraoka Group Manager, Global Infrastructure Consulting Department (Top right)
Yukio Shigeta Group Manager, Global Manufacturing Industry Consulting Department (Bottom left)
Junichi Yoshida Business Design, NRI Digital (Bottom right)

The difference between commuter passes and XaaS

One of the characteristics of XaaS is that it is a subscription-based or continuous billing model. In Finland, for example, a service called "Whim" is being implemented as a MaaS trial. It allows unlimited rides on buses, trains, and taxis in the city of Helsinki for a monthly fee of under 500 euros. However, we can say that the conventional commuter passes for buses and trains also provide all-you-can-use services at a fixed price. Hence, purely on the basis of the form, these may also be called aaS. What is the difference between the two?

One criterion for determining whether a service is XaaS is its regularity of contact with customers. For example, sightseeing tour tickets. After a customer purchases the ticket, he or she simply has to present it at the entrance gates to be able to freely ride trains and buses. However, although the issuer knows how many passes have been sold, it is not possible to know how many people actually used them or on which routes they were used. In the case of Whim, the app records the utilization data each time it is used, so data can be obtained for every instance. Of course, commuter passes are now digitalized and usage history is available. However, aaS is not merely a question of adoption of IT. What is provided as a service is not only its "use" but also "value". The commuter pass only sells the service of "movement" (use) from one station to the other. On the other hand, MaaS can offer services such as suggesting routes with shorter walking time during bad weather or routes via places you want to stop by. In fact, Whim is trying to sell the "utility" (value) of freely moving around the city.

What data is required to realize XaaS?

Next, let us consider the conditions under which XaaS can be realized. First of all, it is very important for a company to deeply understand its customers. For example, when water is provided, its "use" (drinking) is the same but its "value" (quenched thirst, feeling calm, etc.) varies from person to person. In order to understand the true value of something for a person, we need to be constantly connected to and have a lot of data on that person.

Our experience has shown that the difference in the amount of data required for one-off, periodic, and steady businesses is about 1:10:1000 respectively. From the viewpoint of the customer's perceived difference in value between the "product" and "utility/outcome", if we set the value of the product at 1, then the value created by utility/outcome is around 100. We believe that aiming for XaaS and digital transformation to create this value can have an unprecedented impact.

However, it is necessary to determine how much data to collect for each business. For instance, even if it is technically possible to obtain data once a minute, for cases in which the machinery or equipment we are handling comes with a service life of around ten years and a maintenance period of once every 3 to 6 months, it is necessary to consider whether we need to collect such detailed data every minute, or if only once a month or another fixed period is enough.

Rather than aiming for XaaS as the ultimate goal, it is important to identify the specific

businesses to be transformed

As with Alibaba and Google, one business strategy is to make largescale investments and constantly acquire a large quantity of data. However, most Japanese companies cannot follow this. Rather, it is important for them to think about what data to acquire and how based on their specific objective. Rather than simply digitalizing or changing the traditional system of billing, companies should seriously reassess their value proposition and redefine their business. We believe that this will be the determining factor in making an essential XaaS.

It is important to measure and increase value

Many Japanese companies have become accustomed to a pricing model that calculates profits on the basis of production costs. However, this may not necessarily be commensurate with the value that can be achieved with XaaS. To promote value and utility, it is essential to quantify and measure the value perceived by the customer. By combining conventional performance data such as CS (Customer Satisfaction) questionnaires with indicators such as analysis results of usage logs / usage patterns and NPS (Net Promoter Score), which measures customer loyalty and confidence in companies and brands, we will be able to measure the utility and value of services and implement measures to increase customer value. We believe that the transition to Digital Transformation 2.0 will be further accelerated if we can better use technology to measure and enhance customers' perceived value.



Global Expansion of CASE Business and Problems Faced by Japanese Companies

CASE*1 is a phenomenon that has a significant impact on the automotive industry. The development of the CASE business is not limited to developed countries, and various business demonstrations have started in emerging countries as well. We asked Keiichi Okazaki, Noriyuki Kobayashi, and Yi Zhang, who have been studying trends of the automotive industry, to present the latest trends on CASE and problems that Japanese companies face in expanding their CASE business globally.



Article URL https://www.nri.com/en/journal/2019/0731

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CASE Business Initiatives are Progressing in Many Countries

Trends in the next-generation automotive industry of ASEAN

Relationship between the growing ASEAN automotive market and CASE

The ASEAN-5 economy, which consists of Indonesia, Malaysia, the Philippines, Vietnam, and Thailand, is somewhere in between the scale of China and of India. While the market for new car sales is saturated in developed nations, ASEAN-5 is gaining attention in terms of growth. It is likely that CASE will grow faster, or that more innovative business models will emerge in ASEAN-5 than in the developed nations.

Trends in the next-generation automotive industry in ASEAN

In ASEAN countries, new players are entering into the CASE business. In the Connected domain, the activities of communication carriers have intensified, and Japanese communications carriers have also started to work on it. As regards the Autonomous domain, manufacturers in several ASEAN nations are conducting proof of concept projects.

In terms of Shared & Service, ASEAN is ahead of the Japanese market. The app-based car service Grab was able to expand its business in eight Southeast Asian countries in a very short period of time. Among the four elements of CASE, commercialization has progressed most in the Electrification domain, and the entry of new players is also advancing. In the ASEAN region, collaboration among local companies in the automotive sector, local governments, and other industries is becoming very active. Therefore, Japanese companies also need to work on business creation through such collaborations.

Ride-sharing in the U.S. and its impact on the automotive market

Emergence of ride-sharing and its relationship with taxis in the U.S.

Ride-sharing is a service in which drivers use their own cars to take users to their destinations. Uber has been providing this service in the U.S. for a decade since 2009. Despite the prediction that the taxi industry would decline, the United States Census Bureau data shows that the number of employees of taxi companies is almost 80,000 and that there has been no major change in it. On the other hand, the number of self-employed in the industry was 970,000 as of 2017, increasing by about 800,000 from 2009. According to a guestionnaire survey conducted by NRI in January 2019, about three-guarters of ride-share drivers were engaged in concurrent businesses. About 80% of the full-time drivers were not former taxi drivers, indicating that ride-sharing had created new jobs.

Present and future of ride-sharing businesses and things to learn from them

Uber's sales are rapidly expanding, but profits remain negative as 80% of proceeds is spent in payments to drivers. Under these circumstances, Uber has invested 165.6 billion JPY (2018) in developing self-driving technologies. Ride-sharing businesses are eager to introduce technologies such as selfdriving. Thus, there will be an increase in opportunities for Japanese companies to provide self-driving technologies and products.

Uber's business involves demand and supply matching, and this approach is expected to be applied to all aspects of the mobility industry. Companies need to focus on dynamic marketing to meet rapidly changing customer needs.

Intelligently evolving Chinese automobile industry

Initiatives taken by the public and private sectors of China for CASE Projects

It is said that due to the Chinese government's investment policy on digital infrastructure and the existence of private communications companies strong in V2X*2-related equipment, selfdriving is likely to accelerate in China with its own unique and coordinated infrastructure*3.

The "Made in China 2025", one of China's

major national policies, indicates that 10% to 20% of vehicles will be self-driving at Level 3 (mostly vehicle-controlled driving) by 2025, and 10% will be at Level 4 or more (fully automatic) by 2030.

So far, foreign companies have been following a model of developing products at home and selling them in China. However, in the case of datadriven intelligent vehicles, it is necessary to develop business models in China using Chinese data, for which many foreign companies have already started gathering.

Automobile manufacturers disclose a portion of the vehicle data to platformers, who are working to create a monetization system that creates a new service by multiplying it with customer data. New business initiatives have already begun, such as the joint venture between SAIC Motor and Alibaba.

Creation of dynamic technologies through social implementationdriven innovation

In China, social implementation-driven innovations are garnering attention. These are finding an increasing number of applications in the context of market formation. The 2022 Asian Games host Hangzhou city in Zhejiang province, along with Alibaba, is promoting a digital city project that integrates transportation, social, and urban infrastructure. Western companies are actively involved in government-led social experiments. They are already exerting their influence on the Chinese government in establishing technical standards. Japanese companies should also be involved in these projects and consider new global strategies and ways to interact with Chinese industries.

^{*1} CASE: Acronym for Connected, Autonomous, Shared & Services and Electrification *2 V2X: Vehicle-to-everything; a wireless technology that enables communication between an automobile and its surrounding environment *3 Coordinated infrastructure: A system that ensures safe driving by enabling twoway communication of information, between infrastructure and vehicles as well as between vehicles and vehicles, which cannot be captured by vehicle sensors.