

2017 NTT Data Business Briefing  
(Public & Social Infrastructure Segment)

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(Description abbreviated)

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### Notes

\* Descriptions and predictions in this document are based on the current information and may change due to domestic and international economy, trend in the information service industry, development of new services and technologies. Therefore, our Group will not guarantee its certainty.

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I am Hiroyuki Aoki from NTT DATA. Thank you for taking time out of your busy schedules to be here today. I am responsible for the Public & Social Infrastructure Segment and am going to explain its current status.

I shall talk about the organization structure, the business outline, and the market environment of the Public & Social Infrastructure Segment first, then the growth strategy we are pursuing and initiative cases.

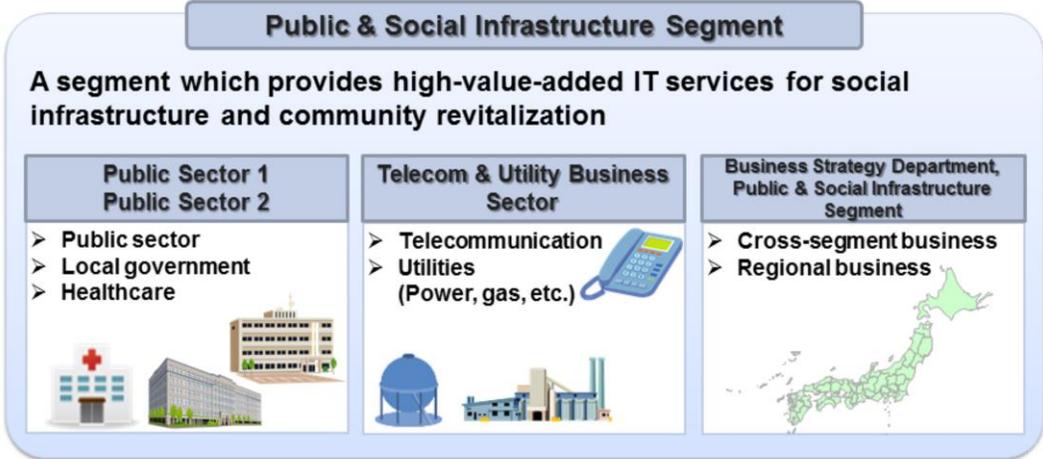
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# Organization Structure

(Description abbreviated)

# Positioning of Public & Social Infrastructure Segment

Established in July, 2015 after consolidating public and regional business segments including the government, telecommunication, and energy, into one segment and adopting a cross-segment strategy for business expansion.



I will now explain the mission of the organization. The Public & Social Infrastructure Segment works for the government and social infrastructures, especially public systems as a foundation of society as well as utilities and telecommunication segments. In addition, the segment controls regional companies under themes including regional activation. The segment's mission is to provide value-added IT services for various segments where IT is utilized.

The segment is comprised of Public Sector 1 and 2 that provide services for the public sector, local governments and the healthcare industry, the Telecom & Utility Business Sector that provides services for the telecommunication and utilities industries, and the Business Strategy Department that controls the overall business segment including businesses of regional companies.

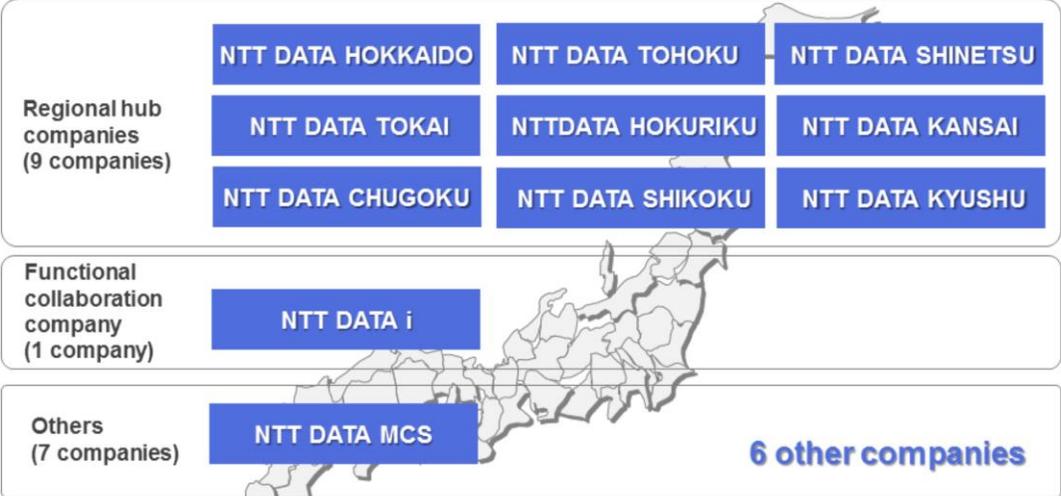
# Organization Structure of Public & Social Infrastructure Segment

 <p><b>Hiroyuki Aoki</b> Director and Executive Vice President Responsible for Public &amp; Social Infrastructure Segment</p>	 <p><b>Shinichi Usui</b> Senior Vice President Head of Public Sector 1</p> <ul style="list-style-type: none"><li>&gt; Public sector</li><li>&gt; Local government</li></ul>
	 <p><b>Hidenori Chihara</b> Senior Vice President Head of Public Sector 2</p> <ul style="list-style-type: none"><li>&gt; Public sector</li><li>&gt; Healthcare</li></ul>
	 <p><b>Shunichi Takeuchi</b> Senior Vice President Head of Telecom &amp; Utility Business Sector</p> <ul style="list-style-type: none"><li>&gt; Telecommunication</li><li>&gt; Utilities (Power, gas, etc.)</li></ul>
	 <p><b>Satoru Yanagimachi</b> Head of Business Strategy Department, Public &amp; Social Infrastructure Segment</p> <ul style="list-style-type: none"><li>&gt; Cross-segment business</li><li>&gt; Regional business</li></ul>

I will now talk about the organization structure. As the responsible executive vice president, I oversee the overall business segment. Mr. Usui, Mr. Chihara, and Mr. Takeuchi are responsible for Public Sector 1, Public Sector 2 and the Telecom & Utility Business Sector, respectively, as the sector heads. Mr. Yanagimachi, who is attending this meeting, controls this business segment and is responsible for the regional business.

The main clients of Public Sector 1 are ministries and agencies including the Ministry of Internal Affairs and Communications and the Ministry of Land, Infrastructure, Transport and Tourism. The main client of Public Sector 2 is the Ministry of Health, Labour and Welfare.

# Group Companies of Public & Social Infrastructure Segment



17 companies in total



The Public & Social Infrastructure Segment has 17 group companies in total. Nine regional hub companies from Sapporo in the north to Hakata in the south are controlled by the Business Strategy Department. NTT DATA i is a functional collaboration company that works with NTT DATA to develop systems of the national government mainly in the SI business area. When including 7 other companies, there are 17 group companies in total.

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## Business Outline

(Description abbreviated)

## Business Outline

### – Segment mission and performance trend –

**Public & Social Infrastructure Segment**

Providing high-value-added IT services that play important roles in social infrastructure, such as government, healthcare, communication, and utility systems as well as in community revitalization



IT service vendor ranking in domestic governmental & healthcare markets: **3rd place\***

\* Gartner "Market Share : IT Services, 2016" 19 April 2017

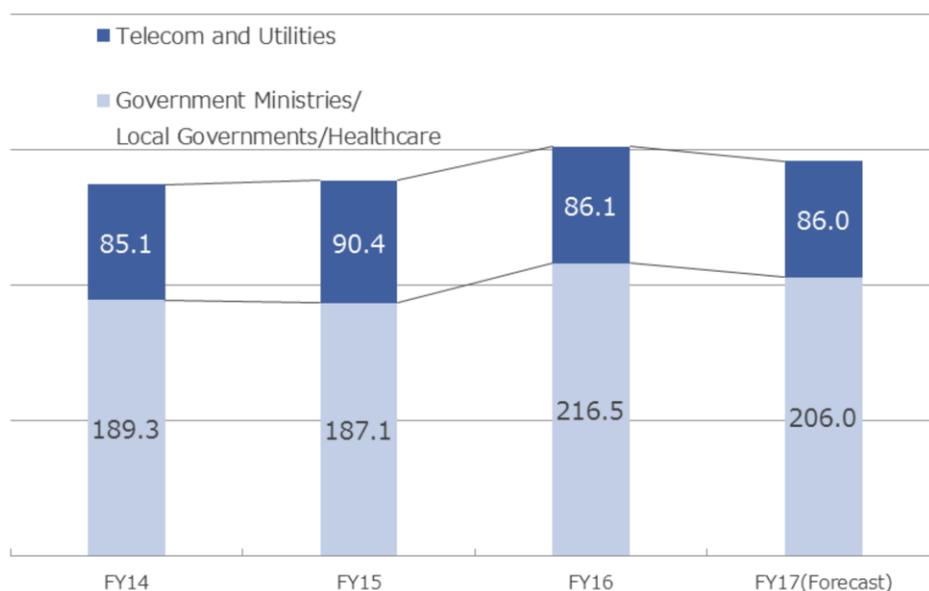
Domestic government & healthcare = Government, Education, Healthcare Providers based on vendor revenue in 2016 IT Service market. All descriptions which attribute to Gartner in this report are interpretations by NTT DATA for data, research opinions, and understandings published as a part of subscription services to Gartner's clients, and no review of the report by Gartner has taken place. Gartner's publications contain opinions at that time, and not at the publication of this presentation/report. Opinions in the Gartner's publications are not assumed to state facts and may change without prior notice.

Now, the business outline. The Public & Social Infrastructure Segment provides value-added IT services handling social infrastructures including the government, healthcare, telecommunication and energy infrastructures, and for regional activation. As the disclosed information shows, the expected net sales in FY2017 are 447 billion yen, which is lower than the actual net sales in FY2016 of 455.4 billion yen. Typically, projects handled by the Public & Social Infrastructure Segment take a long time and are very large in scale. In the previous fiscal year, for some of such large projects, we reached the cutover phase and started to provide services. In this fiscal year, for some projects, we will reach the cutover phase, but the number of such projects will be lower than that of the previous fiscal year, which will result in slightly decreased net sales.

Speaking of the operating income, we are making efforts to achieve a target set at 45 billion yen, which is a very difficult target to attain, by trying to prohibit expected risks from occurring, which are considerably high for some projects.

## Business Outline – Breakdown of net sales (for outside clients) –

(Unit: billion yen)



I shall now explain changes in net sales to outside clients. In FY2017, net sales for the overall business segment are expected to be about 300 billion yen, including about 206 billion yen of net sales to the national government, local governments and the healthcare industry, and about 86 billion yen to the telecommunication and utilities segments. Net sales for the overall business segment including those to inside clients will exceed 450 billion yen. The difference between the two figures mainly represents net sales to NTT DATA's group companies.

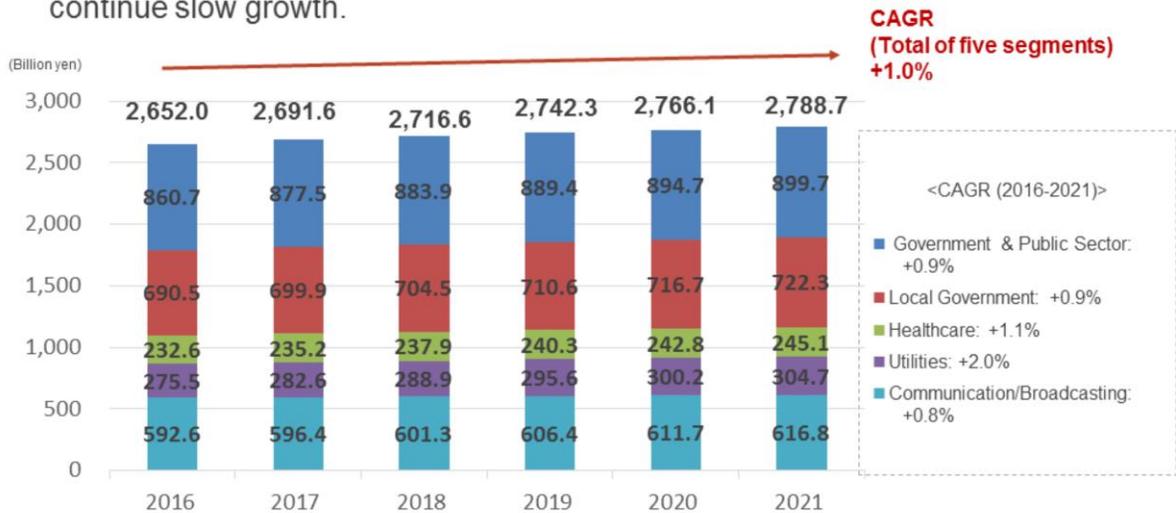
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# Market Environment

(Description abbreviated)

## Market Environment (Domestic IT Investment Trend)

Five segments: "Government & Public Sector", "Local Government", "Healthcare", "Utilities", and "Communication/Broadcasting" are expected to continue slow growth.



Graphed by NTT DATA based on Gartner's research results.

Source: Gartner Prediction of 2017 2Q Domestic IT Service Market Size by Segment (Data), M. Sawai, August 25, 2017

All descriptions which attribute to Gartner in this report are interpretations by NTT DATA for data, research opinions, and understandings published as a part of subscription services to Gartner's clients, and no review of the report by Gartner has taken place. Gartner's publications contain opinions at that time, and not at the publication of this presentation/report. Opinions in the Gartner's publications are not assumed to state facts and may change without prior notice.

Let's move on to the market environment. As I explained earlier, the business segments for which the Public & Social Infrastructure Segment is responsible are the public sector, local governments, and the healthcare and telecommunication/utilities industries. According to the Gartner Prediction of Domestic IT Service Market Size, the segment has grown at CAGR of 1.0%, which is slightly slower than the IT industry. Looking at the current status, you can see that NTT DATA has entered numerous technology segments such as IoT, AI and digital transformation. Another Gartner forecast shows that new technology segments will grow further. Thus, we believe that there will be an opportunity where we can try to enter a new segment.

### Market Environment

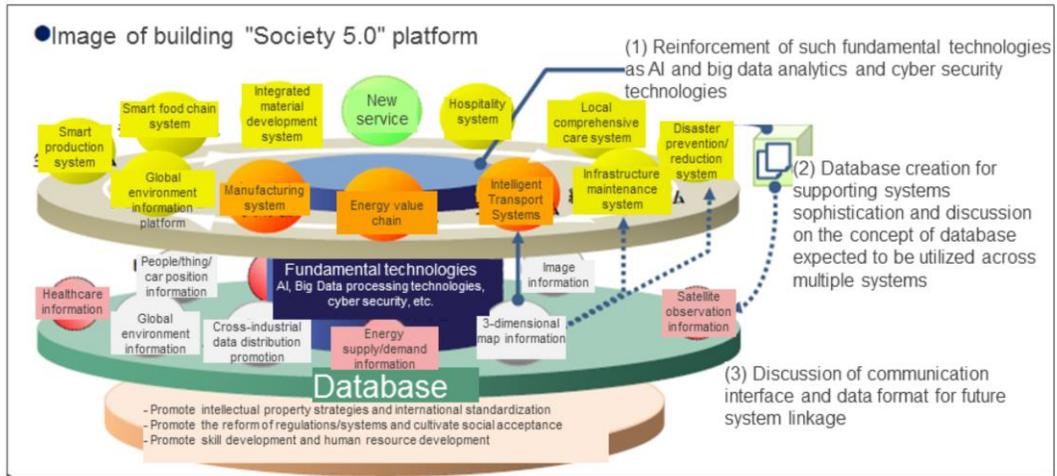
Renewal and operation costs of existing systems are being reduced, but investments in new IT initiatives and compliance with revised regulations are expected to keep increasing.

	Opportunity	Threat
<b>Government Ministries</b>	<ul style="list-style-type: none"> <li>- Business opportunities have been increasing in pursuit of realizing and succeeding as the world's highest level of IT utilization society using IoT and AI</li> <li>- A trial operation of My Number launched in July 2017 for starting full-scale information sharing</li> </ul>	<ul style="list-style-type: none"> <li>- Demand for cost reduction of the government information system</li> </ul>
<b>Healthcare</b>	<ul style="list-style-type: none"> <li>- Further acceleration of ICT implementation in the healthcare and other sectors and medical information utilization</li> <li>- Expanded AI application in healthcare and other sectors</li> </ul>	<ul style="list-style-type: none"> <li>- Careful consideration is assumed to be required for the utilization of medical information in companies</li> </ul>
<b>Telecommunication/Utilities</b>	<ul style="list-style-type: none"> <li>- IT investment in the utilities industry for various purposes, such as helping to reduce costs by improving operational efficiency, ensuring compliance with various regulations, and enhancing the safety of facilities</li> <li>- Investments in new services in the telecom industry</li> </ul>	<ul style="list-style-type: none"> <li>- Increasing competition in the telecommunication industry, and demand for further cost reductions in IT investments in existing areas</li> </ul>
<b>Local government</b>	<ul style="list-style-type: none"> <li>- Increased business opportunities thanks to the promotion of regional revitalization through IT utilization</li> <li>- A trial operation of My Number launched in July 2017 for starting full-scale information sharing</li> </ul>	<ul style="list-style-type: none"> <li>- Trend of budget tightening, growing demand for cost reduction, and increasing competition</li> </ul>

Regarding the current status of each business segment, we are still in a very tough situation because the national government, the healthcare and telecommunication/utilities industries and local governments strongly demand a reduction of operation costs in the traditional systems. However, there are opportunities for widely sharing My Number and medical information. Especially for medical information, a law that allows anonymized information to be distributed was established. IT investments have been actively made in areas related to ways of utilizing various data and ways of private utilization and you can see the development of PoC in these areas. We will take these opportunities and try to provide diversified infrastructure services.

## Market Environment (Trend in Society: Society 5.0)

A cross-sectoral initiatives between public and private sectors are being launched led by the government to create a new economic society.

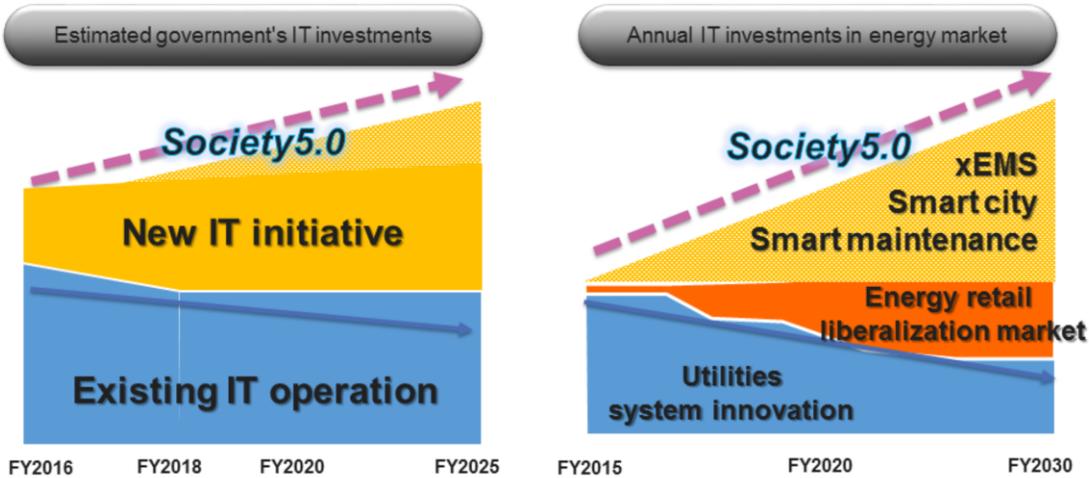


Source: Minutes from Council for Science, Technology and Innovation

Among the trends in society, the government focuses especially on Society 5.0. Each database contains many types of big data. In various segments, you can see initiatives for service advancement, for example, in order to specify the location and method of handling such big data. While it is the government that creates an overview of these initiatives, NTT DATA is conducting trials in order to determine specific services to provide by making proposals to the government and repeating demonstration experiments in various segments.

### Market Environment (Domestic IT Investment Trend)

Propose ideas for streamlining business/creating added value for existing systems to stop cost reduction while solidifying a leadership position in new-born markets including new IT initiatives and compliance with revised regulations to expand business.



\* Prepared by our company based on materials in Government CIO's Portal (as of January, 2017)

I will now explain the domestic IT investment trend in Japan. According to the government's estimate of IT investments, costs for the existing IT operation will be reduced in the natural course of events, but it will take a long time until costs for new IT segments are reduced. It is expected that there will be more opportunities for us to prepare diversified infrastructures as social foundations. Especially, in advance of the Olympic and Paralympic Games, I think that it is a very big challenge for us to determine how we can show Japanese IT capabilities to the world. We will try to catch up with competitors in this segment, too.

Regarding the annual IT investments in the energy market, new technologies will emerge, like the 5G technology in the telecommunication segment. Under such circumstances, in the segments of Smart City and Smart Maintenance, we will provide services to a diversified user base. Our major challenge will be to determine how we should provide a platform in such segments.

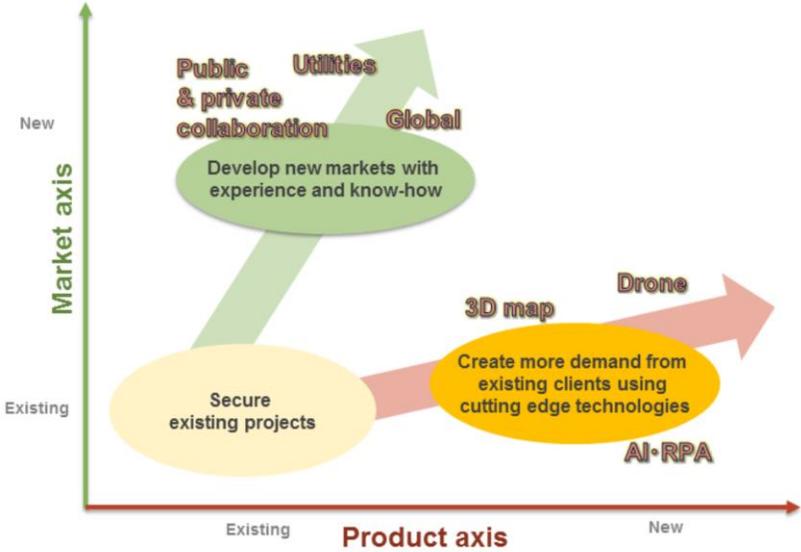
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## Growth Strategy and Initiative Cases

(Description abbreviated)

## Growth Strategy of Public & Social Infrastructure Segment

Secure and expand existing initiatives while sharing experience and know how of this segment horizontally and utilizing cutting edge technologies aggressively to develop new businesses. Target mid- and long-term business expansions that do not depend on existing SI projects.



Now I would like to talk about the growth strategy and initiative cases. For the existing projects, we will secure them firmly while broadening and expanding new business with the diversification of results and know-how in this segment in various situations. As we need to target a mid- and long-term business expansion independent of existing SI projects in the natural course of events, especially in the public and private arena linking power and global segments, we are broadening and expanding new business with the diversification of results and know-how and have taken various initiatives by utilizing our experience.

## Initiative Cases

The followings are case examples of initiatives where experience and strength of this segment and cutting edge technologies have been utilized.

No.	Growth strategy	Product/ market	Case/solution name
1	Create more demand from existing clients using cutting edge technologies	AI/RPA	Next-generation mobility society implementation research
2			WinActor
3		Drone	airpalette UTM
4		3D map	AW3D
5	Develop new markets with experience and know-how	Public & private collaboration	BizPICO
6		Global	AMLAD
7			Launch of Myanmar NACCS/CIS service
8		Utilities	ECONO-CREA

In terms of creating more demand from existing clients using cutting-edge technologies, we provide a 3D map called AW3D, a drone and an RPA tool called WinActor that has become a topic of conversation. Thus, we are working to spread cutting-edge technologies to other segments.

**[Case 1] Industry-academia partnership agreement with Gunma University on the next-generation mobility society implementation research**

Create more demand from existing clients using cutting edge technologies

Strengthen our operations to leverage AI and IoT. Provide new value in advanced areas such as next generation automotive by accelerating collaboration between industry, government and academia

**Industry-academia-government collaboration (Co-Innovate)**

- Industry-academia partnership agreed with Gunma University on the next-generation mobility society implementation research.
- First self-driving demonstrated on a public road in the center of Sapporo city in collaboration with No Maps, Sapporo City, and NTT.

**Reinforcement of the promotion system**

- Organized a professional team with knowledge of analytics, AI, and edge computing technologies that are required in IoT society.



\* To improve value AI and big data analytics

Self-driving demonstration in Sapporo City



Targeting an implementation of fully automated driving in the society in 2020



(Description abbreviated)

Create more demand from existing clients using cutting edge technologies

## [Case 2] Initiative for RPA (Robotic Process Automation)

RPA is a mechanism by which white-collar work can be streamlined and automated by utilizing a rule engine, machine learning, and AI. It is also called Digital Labor. WinActor is a domestic RPA solution and a software-driven robot created at NTT R&D laboratories, which learns every operation available on Windows computer, including Excel, Internet browsers, and individual work systems, etc., as a scenario, and automates PC operations.



Features of WinActor (differences from other tools)

Can automate various applications	High source code analysis technology x high imaging analysis technology
Can create a scenarios without background knowledge	Intuitive screen x full Japanese support
Best suitable for small-start with its compact design	Can run on a single PC x reduced time for creating instructions

Windows operation robot  
Windows操作ロボット  
WinActor

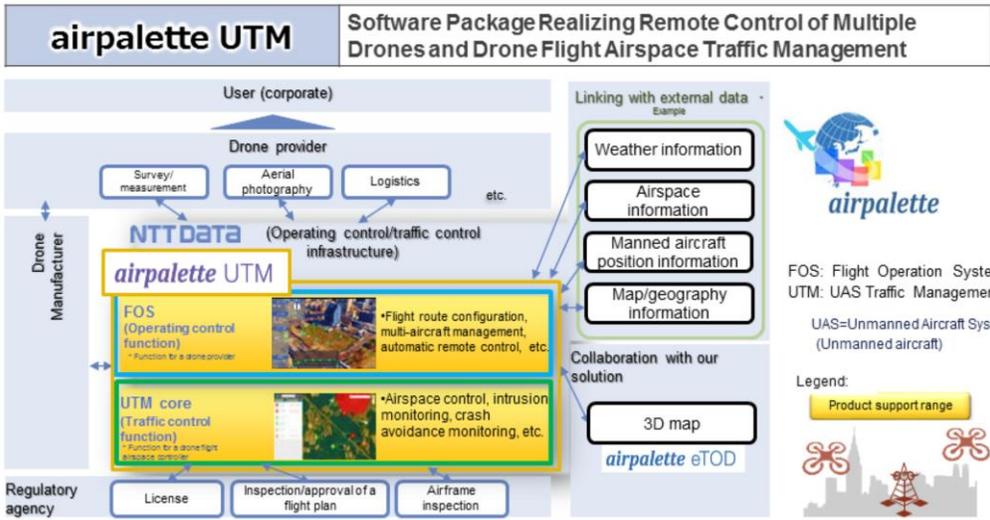
- A home-grown software-based robot born in NTT Basic Research Laboratories
  - Easy-to-use and affordable, which is best suitable for small-start
  - NTT DATA delivering it to more than 300 companies
- No.1 performance in RPA!**

I shall now explain initiative cases focusing on important points. There is an AI- and RPA-related solution called WinActor. This is a solution developed in Japan, which is very easy to introduce because it boots Windows on a client PC and completely works on the PC only. Therefore, we have received inquiries for it from a lot of clients in different situations. We will aim to increase what can be used in the private segments.

[Case 3]

**Air Traffic Control Brand "airpalette" Drone Operation Control Solution**

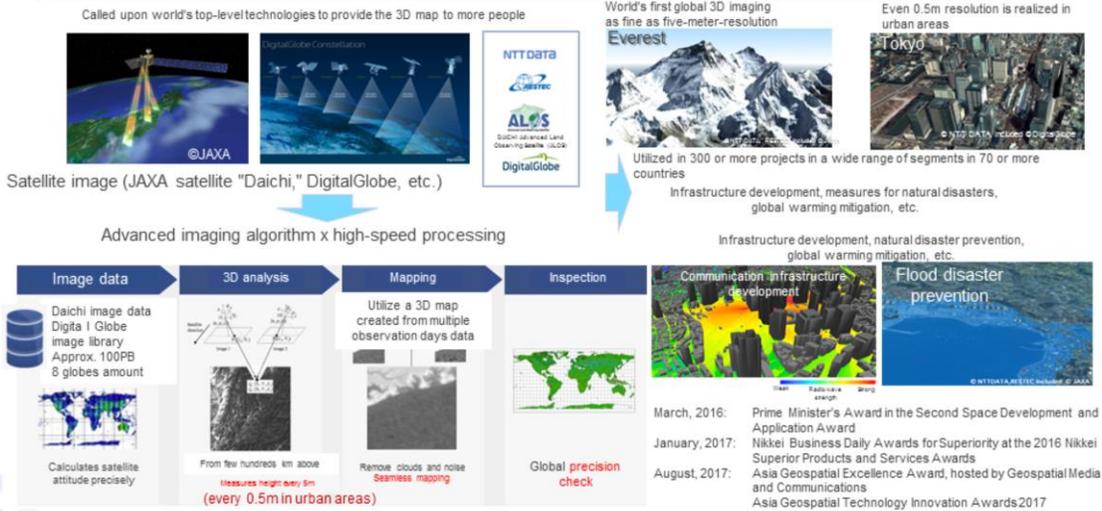
As the world's aviation demands are changing, a brand "airpalette" is promoted, which flexibly supports a range of business models, including a product sales business, service provision, and system integration, etc., and controls the NTT DATA's product lineup of the air traffic control segment. A drone operation control software "airpalette UTM" is scheduled to be launched in October, 2017.



(Description abbreviated)

[Case 4]  
AW3D Global Digital 3D Map Services

AW3D is the world's first digital 3D map rendering all of the Earth's undulating landscape in detailed, five meter resolution. In addition, 3D data of up to 0.5m resolution is provided for urban areas. Compared to traditional 3D maps, it provides unparalleled speed and cost efficiency, expanding potentials in businesses from resource and infrastructure development and VR in its usage.



A 3D map service called AW3D can create a very fine map with the improved resolution in about 0.5 meters in an urban area from the previous resolution level of about 5 meters. In this segment, there are many opportunities to use the technology for purposes including the prevention of disasters and telecommunication signal interference. As there are many opportunities where mapping technologies like this can be utilized in the autonomous driving segment, we will make an effort to expand the sales.

**[Case 5]**  
**Identification Solution BizPICO**

Strict online identification service compliant with various laws.  
NTT Data is approved by the Minister for Internal Affairs and Communications as a platform provider for public authentication of individuals, and client companies can reduce the load involved in acquiring approval for using the service.

<BizPICO future concept (use image)>

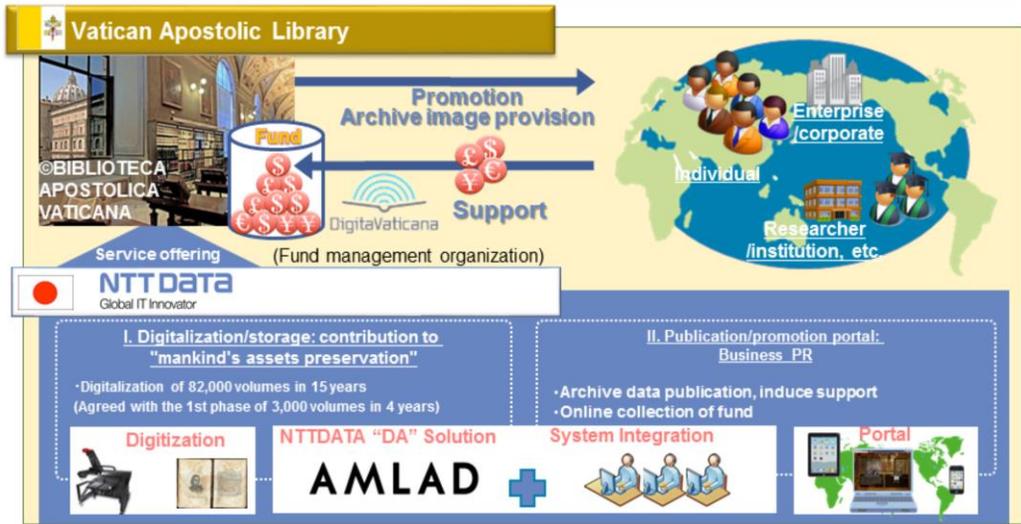


Source of the illustration of a personal identification number card: Ministry of Internal Affairs and Communications' home page ([http://www.soumu.go.jp/kojinbango\\_card/03.html](http://www.soumu.go.jp/kojinbango_card/03.html))

In terms of broadening and expanding new business with the diversification of results and know-how in this segment, there is a solution called BizPICO. This is a solution for authentication using a My Number card and is approved by public agencies. There have been constraints related to the places and methods of using a My Number card in the private segment such as security issues, but we are now providing authentication services via NTT DATA's BizPICO. Thus, we provide a platform for data utilization in the private segment.

**[Case 6-1]**  
**Participated in the digital archive business of historical manuscripts in the Vatican Apostolic Library**

We participated in a "long storage business" of mankind's valuable asset manuscripts promoted by and archived in the Vatican Apostolic Library. The Vatican Apostolic Library established a new fund for the business, called for wide support, and gathered operating costs. NTT Data built a digitalization/DA system and published a manuscript on the Web site based on our proven performance in the Digital Archive (DA) segment.



Another case is AMLAD, a digital archive solution NTT DATA has provided for some time. This was introduced by the Vatican Apostolic Library and Koyasan University as a digital archive solution.

[Case 6-2]

Opened "Koyasan Archive" to the public, in which valuable cultural treasures of Kobo Daishi Kukai can be browsed

Koyasan University located in one of the World Heritages, Koyasan with a tradition of 1200 or more years has numerous documents regarding Buddhism and Esoteric Buddhism. NTT Data digitalized those historically valuable documents and opened them widely to domestic/international researchers and general public as "Koyasan Archive" on Internet.

Having people all over the world accessing those historically valuable documents unconstrained by time and geography, as well as handing over the documents to future generations, will lead to advancement and promotion of Esoteric Buddhism studies, rediscovery of the region as an international and religious tourist city, and enhance the brand power.



(Description abbreviated)

### [Case 7] Launch of Myanmar NACCS/CIS Service

For trade procedure and customs clearance systems "NACCS (Nippon Automated Cargo and Port Consolidated System)/CIS (Customs Intelligence Database System)," as a part of an ODA (Official Development Assistance) infrastructure export promoted by the Japanese government, we received a second order of Myanmar NACCS/CIS development after Vietnam's and launched the service in November, 2016.

Both systems in Vietnam and Myanmar are working stably without critical problems.

Deploying domestic business know-how to APAC countries

Myanmar  
MACCS  
Service launched  
in November, 2016



Vietnam  
V-NACCS  
Service launched  
in April, 2014



There is a global case, trade procedure and customs clearance systems "NACCS." In October 2017, NACCS/CIS was upgraded as the sixth NACCS. Vietnam was the first country to introduce NACCS based on the NACCS system in Japan and Myanmar followed the country's move.

[Case 8]

## Cloud Service for New Power Providers "ECONO-CREA"

Develop new market  
with experience and know-how

ECONO-CREA is a cloud-based service which provides electric power providers with such fulfilling functions as demand management, client management, etc., that are essential for their business operation.



Feature	Result
Provides electric power providers with <b>necessary functions all-in-one</b> (client management, call center, etc.) Enhances <b>functions used to differentiate from other companies</b> as appropriate for the future expansion of electric power business.	<b>15 or more power providers have implemented ECONO-CREA</b>
Selection of a service based on the business stage and a pay-as-you-go system based on actual demands realizing <b>IT investments based on business scale</b> .	Rate of satisfaction for required functions so far is <b>90% or more for all</b>
<b>Business start-up consultation and BPO option</b> menus help to support the entire business comprehensively.	<b>Numerous proven results of business start-up consultation /electric power call center</b>

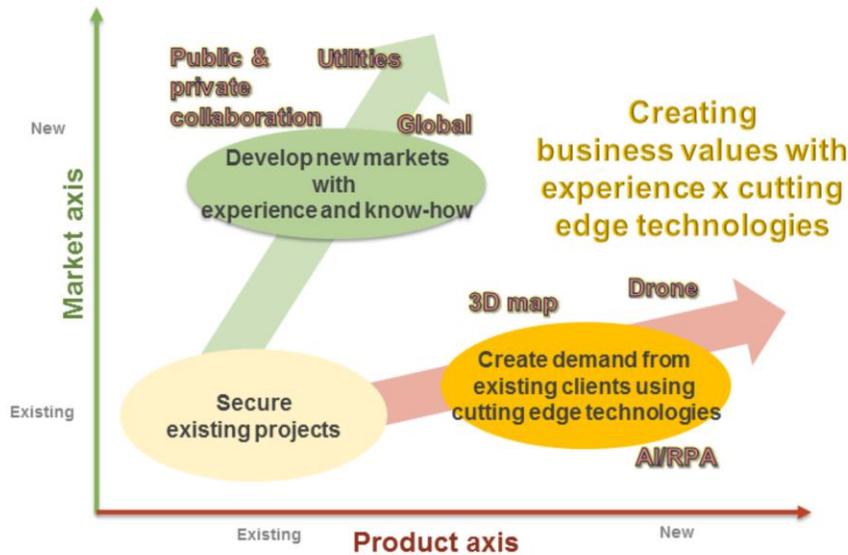
Received Minister for Internal Affairs and Communications Award and Grand Prix of ASP/SaaS in ASPIC IoT/Cloud Award 2017

In the power- and gas-related segment, we have provided a cloud service called ECONO-CREA with the function of calculating power supply and demand for electric power retailers.

These are only part of our new initiatives. For details, please see the material you received.

## Summary

We will continue to create business values by working to “develop new markets with experience and know-how” and “create more demand from existing clients using cutting edge technologies”.



As I explained, we will not only develop traditional systems but also expand into a new market with results and know-how we have fostered. Then, we will aim to create more demand from existing clients by utilizing cutting-edge technologies such as AI and IoT and continue to create business values.

Meanwhile, there are still large-scale systems as a business foundation in the Public & Social Infrastructure Segment. We will continue to work hard to maintain the foundation and develop large-scale systems.

That concludes my presentation. Thank you for your kind attention.



# NTT DATA

Global IT Innovator

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