

Special Feature 2

Regional Vitalization and New Business Creation Using Advanced Technologies



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President and Executive
General Manager of
Corporate Sales and
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Overview of Medium-Term Strategy for Corporate Sales

Regional vitalization/New business creation

Regional vitalization through solution co-creation/
Work innovation and other new business creation

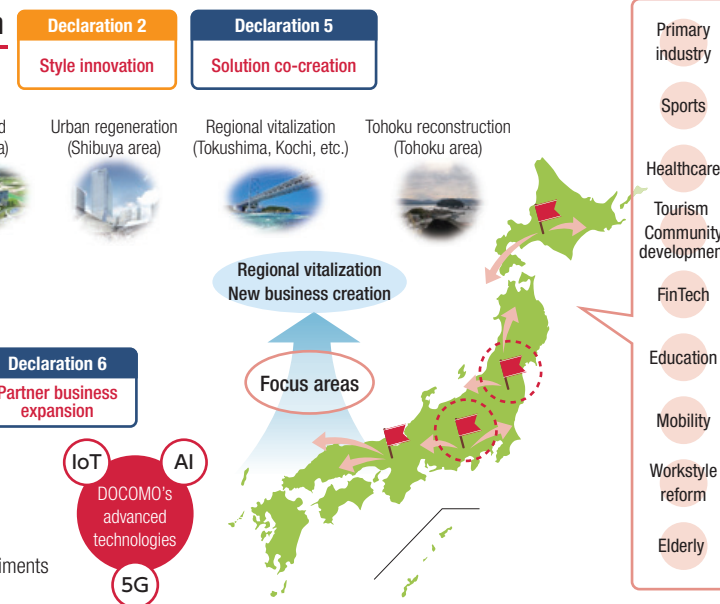
- Strengthen the creation of a **business to business to X (B2B2X)** model in strategic areas
- Accelerate the nationwide horizontal deployment of **created businesses**
- Promote the shift to information and communications technology (ICT) among small and medium-sized enterprises
- Develop globally mainly through the Internet of Things (IoT)



Advanced technologies (IoT, AI, 5G)

Contribute to various industries using
DOCOMO's technology

- Strengthen provision of high value-added services such as the IoT platform and data analysis platform
- Promote solutions co-created with partners through 5G trial experiments
- Implement "Top Gun" initiative and other technical sales programs



In FY2018, DOCOMO pushed ahead with initiatives related to the “+d” concept in which we add DOCOMO assets to those of our partners, regional vitalization and the commercialization of 5G (the 5th generation mobile communications system), enabling the overall achievement of targets under business plans of the Corporate Sales and Marketing team.

DOCOMO's Advanced Technologies

Innovation in industry and technology, known as the fourth industrial revolution, continues apace around the world, particularly in the realms of the Internet of Things (IoT), artificial intelligence (AI) and robotics, leading to the generation of new economic value.

DOCOMO has been delivering innovation to society since we started business. In addition to the area of mobile telecommunications central to our business, such as devices and networks, we have created a variety of services that enhance customer convenience and industrial efficiency. To realize our Medium-Term Strategy 2020 “Declaration beyond,” we are pursuing R&D in three key areas: “5G,” “AI,” which is gaining in prominence for use as a personal agent, and the next new “device” to smartphones.

Aiming to Drive New Business That Goes beyond Conventional Frameworks

To accelerate these trends, the Corporate Sales and Marketing team in charge of services for enterprises formulated the Medium-Term Strategy for Corporate Sales aimed at realizing our medium-term management strategy. By promoting DOCOMO's advanced technologies and co-creation with various partners, and by making maximum use of our nationwide sales network, we proactively seek to create new businesses.

Previously, the business model for customers of the Corporate Sales and Marketing team focused on companies using DOCOMO's mobile services. Going forward, we will provide solutions that target more customers irrespective of whether they have a DOCOMO mobile subscription or not. Key themes associated with these solutions will be contributing to the resolution of social issues and regional vitalization. To give an example, mixing and matching customer data that has been digitized in the process of creating solutions with data on population demographics based on DOCOMO's mobile spatial statistics is expected to create new additional value to business and to lead to new business that goes beyond conventional frameworks.

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Promoting Solutions Co-Created with Partners

By utilizing accumulated advanced technologies, promoting co-creation with diverse partners and deftly leveraging a nationwide sales network, DOCOMO seeks to resolve social issues such as slumping regional economies and workforces caused by an aging population and dwindling birthrate with the aim of driving regional vitalization and creating new businesses.

We will look to generate flagship cases of new businesses through co-creation with partners in strategic areas (Okinawa, Tokushima, Kochi, Tokyo/Shibuya, Tohoku) and centered on nine focus fields (workstyle reform, FinTech (Finance & Technology), healthcare, primary industry, education, mobility, sports, the elderly, and tourism/community development) by combining the assets of DOCOMO and these partners, and expand the scale of business nationwide.

To create new usage settings based on 5G with a wide range of partners, we started deploying the DOCOMO

5G Open Partner Program in February 2018, thereby accelerating initiatives to create solutions by providing the space for workshops to provide information and exchange opinions on 5G technology and specifications. As of June 30, 2019, over 2,800 companies/organizations had participated, with 185 trial projects already underway. In March 2019, we held the 5G BUSINESS CAMP for companies taking part in the program as a place for examining the viability of actual solutions ahead of 5G pre-service.

Further, we set up DOCOMO 5G Open Labs in Tokyo, Osaka and Okinawa. Leveraging the DOCOMO 5G Open Cloud, these labs provide the latest technology in such areas as image recognition and AI agent platform developed by DOCOMO. The labs are used as places to verify 5G technology for DOCOMO's solution for connecting to cloud infrastructure remotely and demonstrate solutions that include gathering technologies of partners and DOCOMO in the cloud. In March 2019, we opened labs in Guam (the United States), helping us respond to the global expansion of companies.

Service for the 5G Era

“Co-Creation” of 5G Services Jointly with External Partners

From February 2018:

>>5G DOCOMO 5G Open Partner Program

- Organized 5G Workshop
- Opened 5G technical verification environment “DOCOMO 5G Open Lab” Tokyo, Osaka, Okinawa, Guam
- Provision of latest 5G tips

From May 2017:

5G trial site

- 5G x SPORTS AR/multi-viewpoint demo
- 5G x GAME VR game, VR viewing

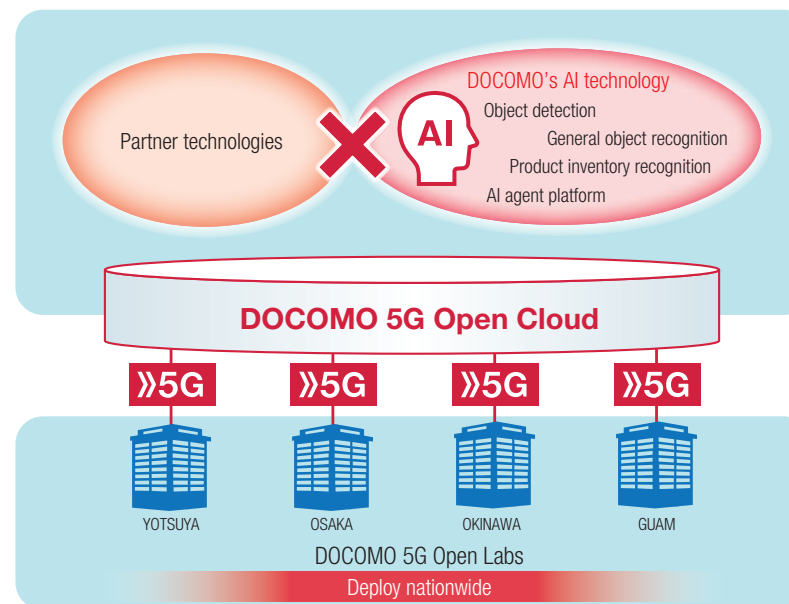
5G service commercial launch

185 trials conducted or in progress toward the goal of creating new services

Over 2,800 companies/organizations announced intent to join the program

Platform for Co-Creation in the 5G Era

Accelerating Solutions to Social Issues through Co-Creation



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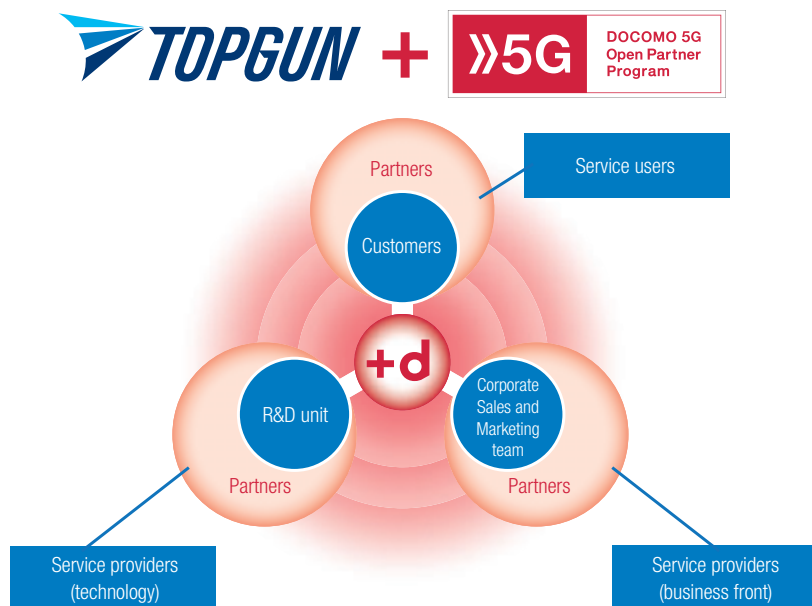
Business System to Accelerate the Co-Creation of Solutions

DOCOMO expanded its nationwide team for the co-creation of solutions and established the 5G & IoT Solution Office at its head office in April 2019 to promote the co-creation of solutions with partners. Going forward, a co-creation model devised mainly at the head office will be deployed in each branches and offices across Japan.

Ahead of this initiative, DOCOMO began its “Top Gun” program in October 2017, in which the Corporate Sales and Marketing team and R&D unit work as one with customers to implement projects aimed at swiftly resolving issues. This involves identifying potential customer needs and leveraging advanced technologies from the R&D and partners to devise and test hypothetical proposals, thereby speeding up the provision of services.

Three-Party Team of Customers, Corporate Sales and Marketing Team and R&D Unit (Image of Top Gun system)

Promoting Co-Creation of Solutions with Partners



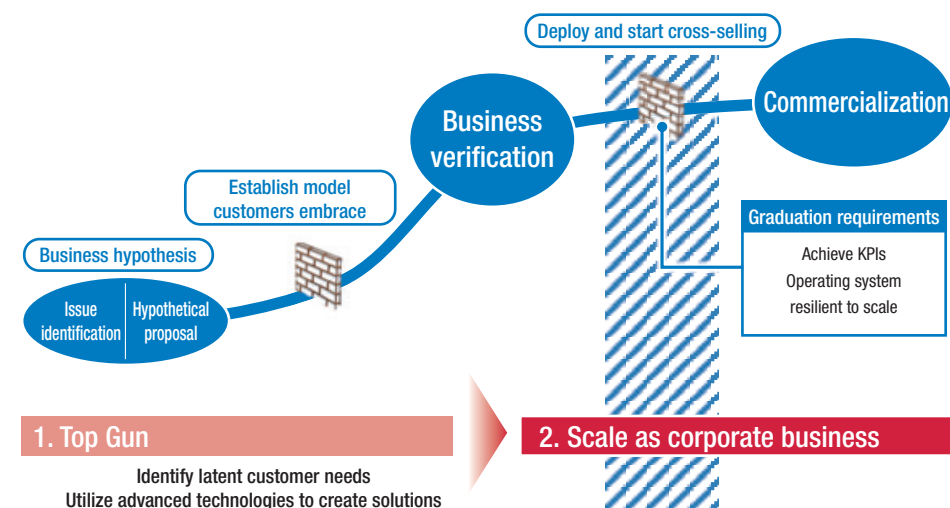
“Top Gun” collaborations are not limited to the departments at the head office. Corporate Sales and Marketing staff at DOCOMO’s regional offices and branches in Japan can voluntarily join the initiative. Each project will be implemented upon setting of a rough schedule and clarification of the timing and conditions of commercialization.

In addition, DOCOMO has established a system to share information among regional office branches and the head office about “Top Gun” nationwide and at the head office we provide opportunities where staff working at that location can meet for discussions. As the projects progress, DOCOMO will look to generate new businesses in collaboration with other companies and local governments in each region based on these ties.

The “Top Gun” initiative has encouraged greater interaction and collaboration nationwide. DOCOMO will support the launch of new businesses never seen before by actively utilizing new human resources.

Business Stage Aimed for by Top Gun

Form a Portfolio from Idea Inception to Commercialization and Launch Multiple Projects



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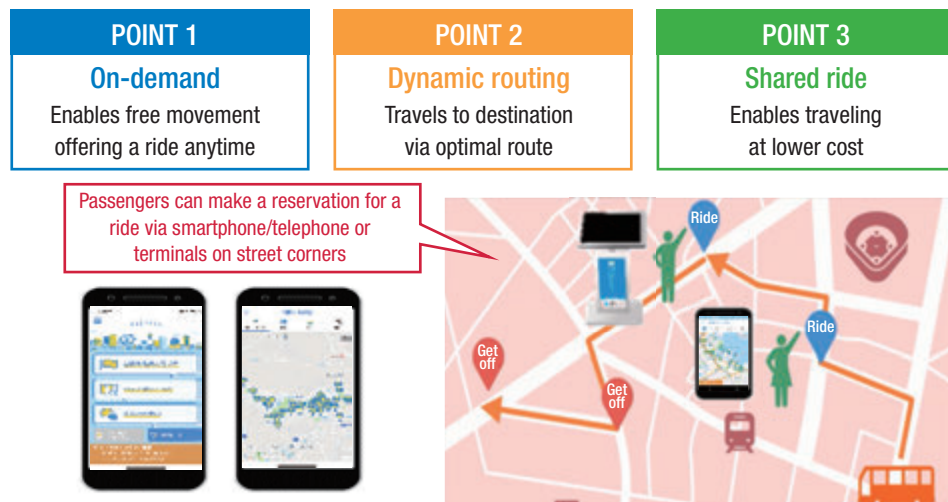
Aiming to Create Community-Oriented Business

DOCOMO is devising a co-creation business model for different regions in Japan by reinforcing relationships with local governments and partner companies through seminars on regional revitalization and 5G based on the idea that demand for 5G, IoT and AI exists outside of major urban centers. In FY2019, DOCOMO plans to hold such seminars all around the country.

As part of this project, teams have been formed with multiple members from local governments, regional financial institutions, universities and other facilities to work on the promotion of Okinawa and Tohoku, urban regeneration and co-existence with the community. The solutions generated in each field are being deployed throughout Japan.

As one example, a demonstration test for an “AI-operated bus” got underway at Kyushu University in conjunction with local government and related business enterprises in July 2016, with actual services commencing nationwide in April 2019. With extremely high needs for the application of public transportation necessary for daily life in regional locations, DOCOMO decided to conduct the demonstration tests in the Kita Ward, Kobe City and in Maebashi City. AI-operated buses can be used to replace and reorganize existing community bus systems and previous generation transportation systems in areas where the residential population is low and it is difficult to maintain and establish bus routes. This will contribute to the resolution of the social issue of ensuring transportation means in an aging society. It will also help enhance and expand

Started Nationwide Service of AI-Operated Us in Collaboration with Local Governments and Relevant Private Enterprises



secondary transportation and resolve tourist-related traffic congestion in sightseeing regions. AI-operated buses are expected to have the added effect of bringing in customers as well by connecting the buses with services and taking advantage of the community-based freedom of movement they offer to even provide excursion trips for visitors.

In addition, the potential for primary industry is high in regional locations while such areas are faced with the problem of dwindling populations, driving the heightened need for labor-saving and efficiency-boosting measures in agriculture and fisheries. DOCOMO believes that devising proposals for remote monitoring and unmanned operation using 5G and drones to swiftly meet these challenges will bolster Japan’s primary industries and contribute to the revitalization of society.

Further, DOCOMO is conducting demonstration tests for video streaming and remote operational assistance using 5G in different parts of Japan in collaboration with various partners with the aim of creating business.

Through these initiatives, DOCOMO aims to resolve social issues by creating 100 cases of 5G pre-commercial services, our target for FY2019.

Aiming to Create New Businesses Using 5G

<p>Video streaming</p>	<p>Remote medical treatment</p>	<p>Remote monitoring</p>
<p>xR*</p>	<p>Robotics</p>	<p>Recognition/AI technology</p>

* Abbreviation of X Reality, a general term for such technologies as virtual reality (VR), augmented reality (AR) and mixed reality (MR)

Creation of Innovative Industry with 5G

Example of a Demonstration Test Leveraging 5G Characteristics

Toward an Enriched Society for More People

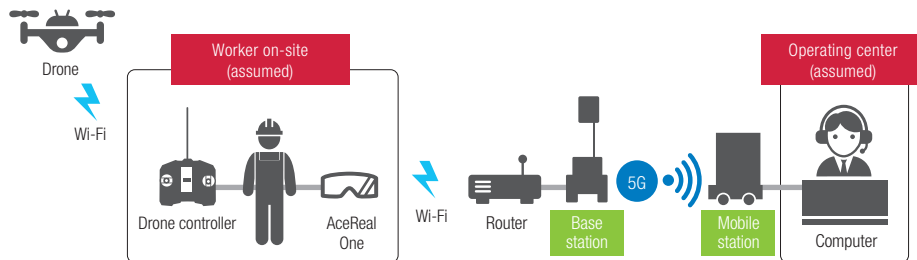
Remote Assistance for Drones Using 5G and AR Smart Glasses

DOCOMO has joined forces with SUNCORPORATION to conduct demonstration tests mainly for remote assistance via drones using that SUNCORPORATION's AR smart glasses AceReal One. The aim of the tests is to check the viability of providing real-time support and guidance from a remote location in such instances as the inspection of plant facilities or relief in a disaster. This is achieved by combining AceReal One and 5G network to enable images taken with a drone camera to be displayed vividly and without delay on a computer.

In addition, images taken with the drone camera can be shown on the see-through display of the AceReal One smart glasses via Wi-Fi, allowing both a visual check of equipment and confirmation of image content. This also serves to enhance drone operability by reducing vertical fluctuation in the line of sight and ensuring a fixed direction.

The two companies are looking into and planning a variety of future demonstration tests using 5G that go beyond remote assistance via drones and hope to contribute to the resolution of customer issues by working together on proposals for other business solutions.

Conceptual Configuration of Advanced Demonstration Test for Remote Assistance via Drone



Success in 5G Demonstration Test Using the World's First 360-Degree 8K VR Live Video Streaming and Viewing System

DOCOMO has conducted a 5G demonstration test using the world's first 360-degree 8K virtual reality (VR) live video streaming and viewing system at one of Japan's largest dance festivals, Niigata total dance, held in September 2018.

The system comprises equipment that stitches together high-resolution videos taken from multiple cameras at the venue into 360-degree 8K video, compresses them in real time and broadcasts them over 5G, taking advantage of the ability of 5G to send high-speeds, large capacity transmission. A specially erected booth provided people the opportunity to view the powerful video through a head-mounted viewing system creating highly realistic VR experiences that allow viewers to feel as if they had front-row seats at the event. This is believed to be the world's first* field test of 360-degree 8K VR live video streaming and viewing provided wirelessly over 5G.

Niigata is taking steps to revitalize the region by way of promoting industry through the use of advanced technology and is taking part in the DOCOMO 5G Open Partner Program. Application of the technology is expected in a wide array of fields, including industry, entertainment, education and disaster prevention in addition to showcasing the beauty of the Niigata total dance festival to people from the region and abroad in real time.

Going forward, DOCOMO aims to create a variety of 5G usage settings and realize different solutions based on 5G together with partners.

* As of September 18, 2018 (Survey by DOCOMO)



Niigata total dance festival



VR experience

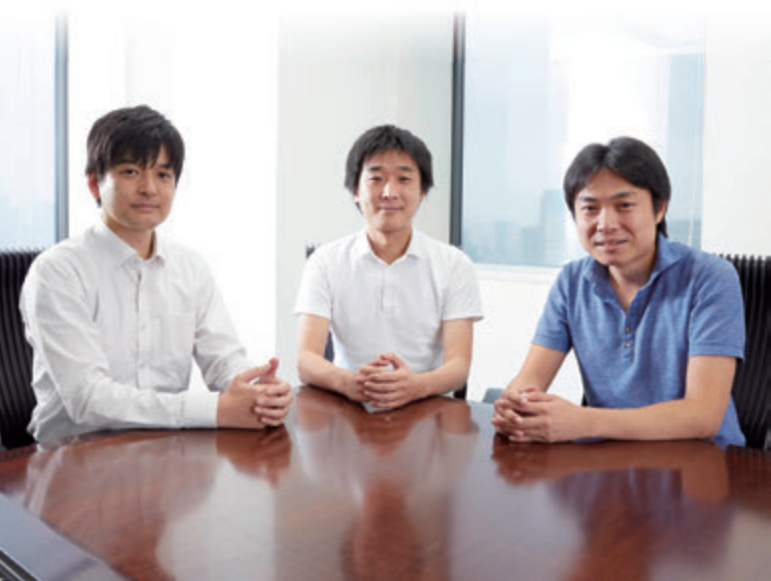
Discussion

Inside Story of a “Top Gun” Initiative

“TANA SCAN®-AI” Integrating DOCOMO’s Image Recognition Technology and a Partner’s Image Database of Retail Products

“TANA SCAN®-AI” is a system to capture product and position information from images of store shelves taken by smartphones and other devices and utilize the captured information as a database. Its applications include comparative analysis of products on the shelf and their sales, and the system is expected to help invigorate sales in retail stores.

As an example project under DOCOMO’s “Top Gun” initiative, which is designed to encourage three-party teamwork of our Corporate Sales and Marketing team, R&D unit and partners, we asked members of the “TANA SCAN®-AI” project to talk about what they started the undertaking, how the system was developed and what they aspire for the future.



Kou: The “TANA SCAN®-AI” project literally began when a customer told me about a similar system operating overseas. I know DOCOMO has image recognition technology to analyze imagery with artificial intelligence (AI) and talked to the relevant R&D unit.

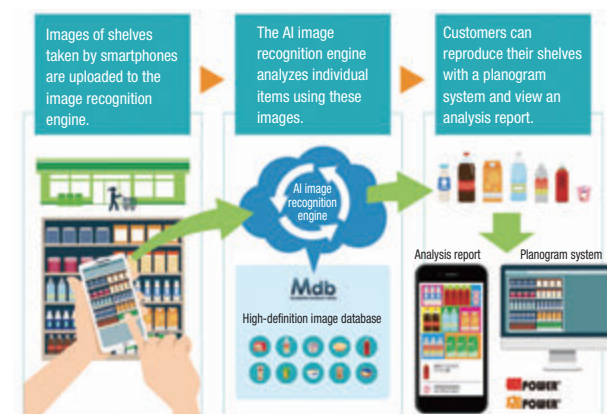
Akatsuka: At the R&D unit, we verified and confirmed such a system was possible and decided to give it a try first as an internal project of DOCOMO. As many companies have expertise in image recognition, the first challenge we faced was deciding how to differentiate the system and make it unique to DOCOMO. Also, an image recognition capability needs images of retail products to distinguish them individually. In Japan’s retail market, products are replaced very frequently, so the key to success was finding an efficient way to manage a huge database of retail product images.

Kou: To overcome these challenges, we settled with an idea to join hands with a company having an image database of retail products. We thought we can create an original one-stop solution by integrating our unique image recognition technology and another company’s high-quality database that can make the most of our technology. We then contacted CYBERLINKS.

Ushimi: Actually, we felt somewhat dubious when we first heard about the project. But we gained confidence as we met with Mr. Kou and heard his business plan. Based on the plan, we were able to envision a service in concrete terms, which combines DOCOMO’s technology, our image database and planogram system to automate data input and aggregation, previously done by customers manually, and save labor.

We have another ongoing business with DOCOMO, and knowing each other as a reliable partner had a positive impact when working as one team.

How “TANA SCAN®-AI” Works



Akatsuka: After going through feasibility tests with CYBERLINKS, we successfully developed the “TANA SCAN®-AI” system with a practical-level store shelf image recognition capability. Currently, it has been adopted by several beverage, processed food and other companies willingly engaging in the development of an advanced logistics system. In addition, our “TANA SCAN®-AI” won the Excellence Award at the 19th Automatic Identification Systems Awards* in 2017.

* Award program hosted by the Japan Automatic Identification Systems Association to recognize leading-edge automatic recognition technologies and systems having outstanding performance, with the aim of promoting the development, use and public recognition of these technologies and systems

Seeking a New Solution Surpassing Customers' Expectations through the New Project Launched under "Top Gun"

The "Top Gun" framework has made it easier to start something new than before.



*Corporate
Sales and
Marketing*

Masaaki Kou
Solution Service Department
Corporate Sales and Marketing
Division

Kou: Starting the project under the "Top Gun" initiative has greatly increased its speed. When launching a product or service, we usually need to perform many surveys and prepare a lot of materials to show the marketability and profitability in an objective manner. In contrast, our project started with a simple idea of an individual, as in "Why don't we try this?" All we did was to consult the relevant R&D unit and take a try-and-see approach. "Top Gun" has made it easier to start something new.

Akatsuka: Previously, I had felt it takes too long for a new idea to overcome the first obstacle and reach commercialization. Another good thing about "Top Gun" is that the division of roles has become clearer. We were able to concentrate on the development of image recognition technology, which was the key enabler of the system's commercialization.

Ushimi: I was surprised by the speed at which DOCOMO does business. I feel especially thankful for your quick and to-the-point improvement advice provided in our daily communications in response to customers' requests and issues.

Kou: To promote the service of the "TANA SCAN®-AI" system further, I plan to increase the public recognition of the system by offering as many opportunities as possible for customers to actually see how it works. This includes demonstrating its capability at exhibitions.

Akatsuka: We are working to refine the system according to various comments from customers. We do so with a sense of speed. For example, we aim to change the specifications, if necessary, within two weeks after receiving customer feedback.

As an example of improvement made through communicating with customers, we upgraded the system, which was initially based on black-and-white images, to recognize colors using AI.

Ushimi: Our efforts also include further reducing the working hours of customers. Shelves of retailers are often called a black box, but we can make shelving allocations "visible" if we compile accurate data and associate it with sales data.

Close collaboration enabled us to understand the issues facing the partner and concentrate our efforts on development.



R&D

Hayato Akatsuka
Innovation Management
Department
R&D Innovation Division

I was surprised by the speed at which DOCOMO does business.



*Business
Partner*

Shintaro Ushimi
Chief, No. 3 Sales Section
Sales Department
Logistics Cloud Division
CYBERLINKS CO., LTD.

Kou: In the future, we aim to extend the scope of our system from beverage and food items, our current target, to all categories of items on the shelf. As 80% of purchases made at a supermarket are said to be spur-of-the-moment purchases, not preplanned, there should be many more markets needing the "TANA SCAN®-AI" system than we imagine. As an additional effort, we would like to cover these markets as well.

Akatsuka: The "TANA SCAN®-AI" system's image recognition capability to directly monitor the shelves of retail stores has led to automation of customers' related work. Going ahead, we hope to turn the system into a solution that could vitalize stores based on local characteristics by utilizing the data in the system and DOCOMO's mobile spatial statistics (demographic) data.

Partner Business Expansion Leveraging Business Platforms

Example of Resolving Social Issues

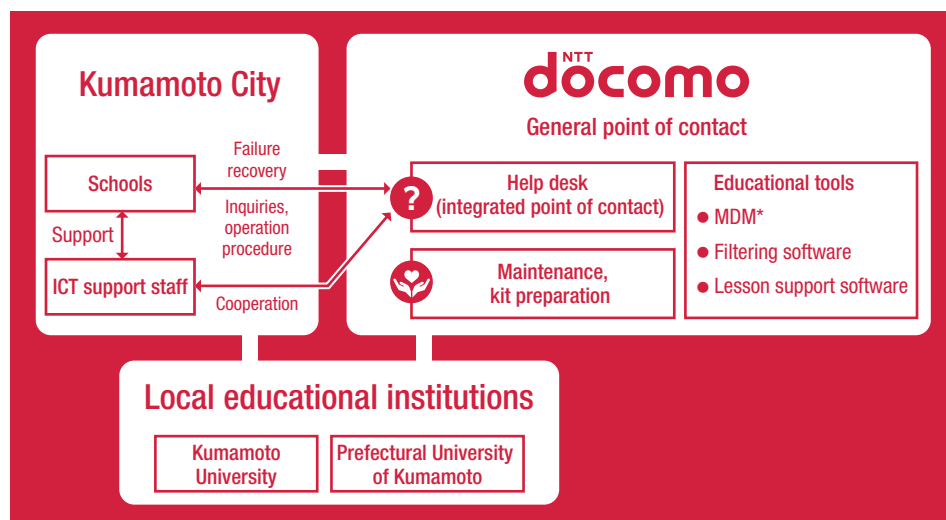
The Future of Education Nurtured with “+d”

DOCOMO’s Educational ICT Project with Kumamoto City

Human resources requirements are changing in society in line with rapid shifts in globalization, informatization and an aging society coupled with a declining birthrate. In order to develop the capabilities necessary to survive in the 21st century, there are growing calls for the application of information and communications technology (ICT) including in elementary, junior high and senior high school education as part of new educational guidelines gradually being brought into effect from FY2020.

Against this backdrop, DOCOMO has initiated a project to co-create an educational ICT environment in Kumamoto City together with city officials. The aim of the project is to enhance the city’s educational ICT

Outline of Kumamoto’s ICT



* Mobile Device Management (MDM) refers to tools (or services) aimed at protecting information when a smartphone, tablet or other mobile device is lost or stolen by remotely locking devices, initializing systems, temporarily suspending communications and deleting data.

environment to the highest level of any government-designated city by providing 23,460 iPads to all 134 public schools and leveraging DOCOMO’s stable, high-quality Long Term Evolution (LTE) network.

In addition, in October 2018, DOCOMO signed a partnership agreement with Kumamoto City, Kumamoto University and Prefectural University of Kumamoto with regard to promoting the informatization of education. The industry-academia-government collaboration seeks to develop a new educational curriculum using ICT and implement various training courses for teachers and school administration staff as part of efforts to improve children’s learning and build up Kumamoto’s educational ICT foundations.

DOCOMO’s educational ICT solutions extend beyond the introduction of equipment and networks. We are providing total support for the project, from initial proposal for use of our resources to consultation, encouraging practical application and follow-up. Integrating all points of contact into DOCOMO relieves the burden on the customer and enables the establishment and operation of an educational ICT environment.

DOCOMO will consider taking what it has learned from this project and apply the exceptional potential of ICT to the resolution of other social issues and regional revitalization with the aim of advancing local communities. We also accumulate knowledge gained by implementing educational ICT as critical know-how and contribute to the evolution of the field.

In the future, we aim to realize an environment in which every person can learn anytime and anywhere using a tablet terminal.



The use of tablet terminals increases children’s interest in education and appetite for learning. (Kumamoto Municipal Kusunoki Elementary School)



Teachers from Kumamoto City share experiences and knowledge during a training session organized by DOCOMO.

Partner Business Expansion Leveraging Business Platforms

Expanding Partner Business

Aiming to Create Business with Partner Companies to Help Achieve the SDGs

Launch of IoT × 5G × SDGs Partner Co-Creation Project

The Sustainable Development Goals (SDGs) have been adopted as global common goals and the market associated with the SDGs, traditionally focused on CSR, has now been gaining attention as a new business market expected to create demand of approximately ¥70 trillion in Japan by 2030. Early efforts to tackle the SDGs are expected to lead to the opportunity to generate new value and revenue by driving innovation and leading the development of related businesses and services. The social issues highlighted by the SDGs are extremely massive, however, and require collaboration between industry, government and the private sector to bring about resolution. This fits with DOCOMO's management policy to create new value through co-creation with partners.

Against this background, in December 2018 DOCOMO launched the IoT × 5G × SDGs Partner Co-Creation Project that examines the viability of creating new business by connecting the Internet of Things (IoT) and 5G with the SDGs for partners participating in the DOCOMO 5G Open Partner Program. The project aims to resolve social issues and create new sustainable businesses by integrating the various fields of expertise held by multiple partners framed around such "connecting technologies" as 5G and IoT.

DOCOMO's Aim to Connect IoT and 5G and the SDGs

- 1 Resolve social issues** Contribute to the achievement of the SDGs through co-creation of solutions based on IoT and AI and 5G
- 2 Create new businesses** Aim to create new businesses that lead to revenue for partners
- 3 Promote co-creation with partners** Encourage participation by various partner companies and promote co-creation that transcends industries



Creating an Effective Co-Creation Scheme

In terms of concrete initiatives, DOCOMO established three working groups to work on advance themes aimed at achieving the various goals of the SDGs, namely: Increased medical costs and burden on nursing care due to the aging population and dwindling birthrate; workforce shortage in the manufacturing industry and difficulties in skills transfer; and ensuring safety and security following the trend toward the nuclear household and dual-income families. Each group sets its sights on creating new businesses. The groups also get together for events to help share information.

Companies that play a central role in the running of the working groups are positioned as joint leaders along with DOCOMO in an effort to create an effective co-creation scheme that encourages the participation of multiple companies. DOCOMO provides support to working group members through the advance provision of a test environment and telecommunications equipment, expansion of sales channels using corporate channels, publication on its corporate site and joint exhibition at trade shows and other events.

Going forward, DOCOMO will strengthen ties with a wide range of industries by promoting the participation of various companies and organizations in the project, which is expected to accelerate initiatives toward the creation of new IoT solutions for the 5G era and achievement of the SDGs.

Project Format

