Activities

Support for Developers with docomo Developer support

1. What is docomo Developer support?

Over The Top (OTT)[*1] players such as Google and Facebook have widely published their own functions and data through Application Programming Interfaces (APIs)[*2] to drive the diversification and strengthening of their services (**Figure 1**).

Aiming for creation of new and novel services and applications for smartphones by supporting a wide range of developer layers, NTT DOCOMO opened the comprehensive "docomo Developer support" site to publicize its APIs and also provide developers with a support environment on November 11, 2013 (**Figure 2**) [1].

This site offers speech recognition and knowledge Q&A functions used for voice agent services for DOCOMO smartphones, in addition to data such as environment sensor and photo collection data available on the DOCOMO cloud (**Table 1**).
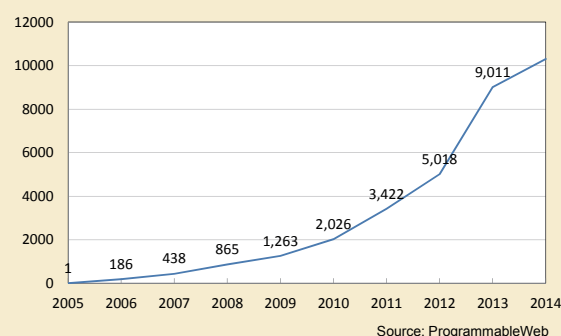
In addition, the site also provides development support tools that enable developers to program easily, such as Software Development Kits (SDK)[*3], sample codes and an API console[*4]. The site also provides technical help services and blogs that introduce topics related to application development, thereby providing developers with wide ranging support. This article presents NTT DOCOMO's open innovation initiatives as an example of the support we offer developers.

2. Open Innovation Initiatives

In recent years, a number of companies and associations have been purposely holding developer events called "application contests" and "hackathons[*5]" (**Figure 3**). Searching the Internet, one can find developer events such as hackathons on somewhere almost every week. Many participate in these events, including corporate system engineers, freelance programmers and designers, and university and vocational school students.

Figure 1   No. of APIs published
(More than 9,000 APIs as of 2013)

Figure 2   docomo Developer support site

*1   **OTT:** Businesses that provide a wide range of services and contents over the Internet.
*2   **API:** General-purpose interfaces for using functions and data.
*3   **SDK:** A set of tools and technical documentation required for developing software.

Companies and associations have 3 main objectives for these application contests and hackathons, as described below.
(1)To develop new services
(2)To invigorate in-house development
(3)To form communities

Among these objectives, NTT DOCOMO first of all aims for (3) the formation of communities, and is proactively partnering with external events such as the Mashup Awards (presented by Recruit) and Open Hack Day Japan (presented by Yahoo! JAPAN). In addition to those, NTT DOCOMO also started a developer event, "Developer Application Contest," on November 18, 2013 (**Table 2**).

There are two hackathon events held within this application contest. In the first of these, entitled "Wearable Hackathon," participants developed applications combining spectacles-type wearable devices with DOCOMO's APIs.

*4 **API console:** A tool that enables quick and easy testing of API operations on a browser.
*5 **Hackathon:** A portmanteau word derived from "hack" and "marathon." An intensive programming (hacking) session held over a number of hours or days.

Table 1   Some APIs provided by docomo Developer support (as of June 1, 2014)

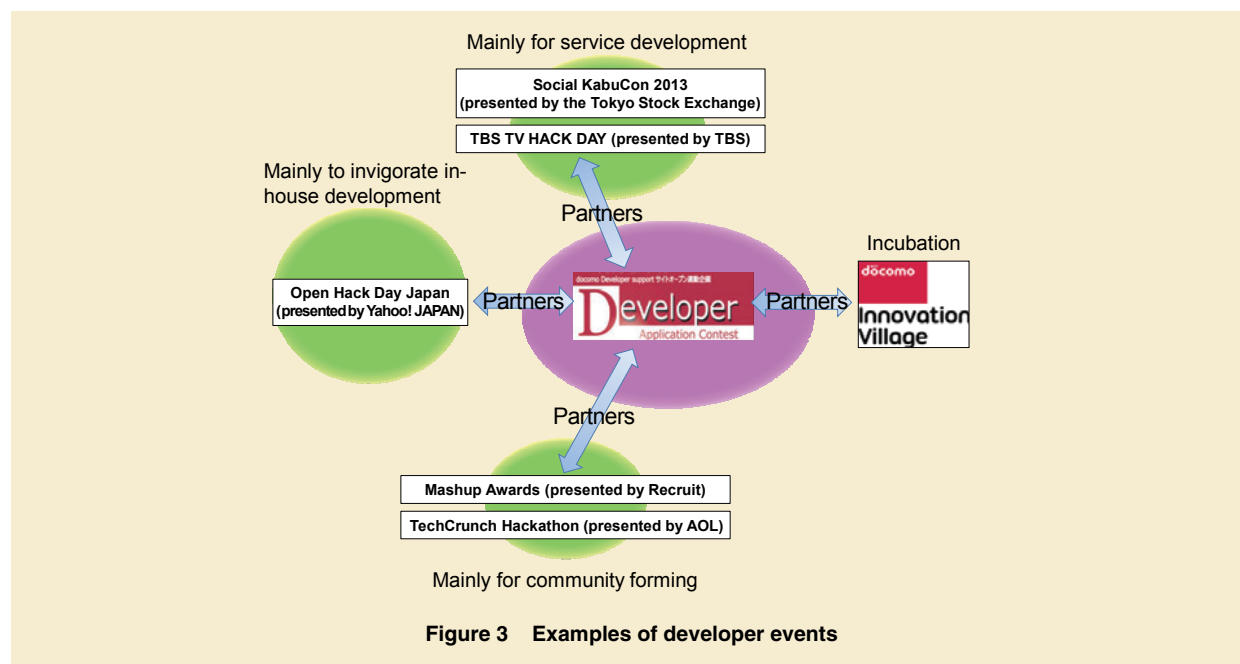| Class	API name	Overview
Function	Character recognition	Reads vocabulary written in images, and provides a score to indicate coordinates and recognition accuracy
	Speech recognition	Turns terminal voice input into text
	Speech synthesis	Turns text input into voice
	Dialogue	Receives user utterances as text, and provides chat as casual conversation in response
	Knowledge Q & A	Receives questions as text, and provides answers as text
	Trend article extraction	Acquires a list of articles gaining attention from news and blog items on the Internet, using a unique trend analysis engine
Data	Environment sensor	Provides hourly temperature and accumulated hourly rainfall data from the 47 prefectures and municipalities throughout Japan
	Photo collection	Enables photographs and video upload and download to and from the cloud
	Data storage box	Provides file upload and download to and from cloud-based storage areas
	DOCOMO phonebook	API that enables DOCOMO phonebook data management in the cloud. New contacts can be added to DOCOMO phonebook data managed in the cloud

Figure 3   Examples of developer events

In the second event, entitled "Device Hackathon," developers combined DOCOMO APIs with a range of devices including motion sensors and cameras as well as wearable devices. Over the 2 days of these hackathon events, developers engaged in team building, idea studying, programming and presentations (**Figure 4**), and proceeded with development with the aim of finally demonstrating their applications. As a result, more than 20 executable applications were developed during these two hackathon events by almost all teams, even though the teams were formed in a hurry.

A total of nine creations were nominated from the wide range of entries, and an awards ceremony was held on March 10 to announce seven award-winning creations in each contest category, and two excellent creations from the hackathon events (**Figure 5**). Award winners were selected for their innovation potential, and included the "Hand Camera" creation designed to infuse photography manners through hand gestures, designed with photographic privacy in the wearable era in mind, a creation called "Ofuton reading" that enables the user to read text in a book as if it were a ticker display on an electronic signboard while laying flat on a mattress, and health application called "TOKEIBO" that aims for lifestyle improvement by recording the time the user takes for casual morning routine activities etc in a household

account-like format.

From among the nine items nominated, the Grand Prix winner was the "OTONE GLASS" creation designed to aid sufferers of a condition called aphasia or word blindness - a condition that hinders the ability to recognize text. This application reads out text that the user is looking at when it detects the user's eye blinking (Fig. 5). Approaches to the developments by asking opinions about potential users and developer enthusiasm for their creations were assessed (**Photos 1**, **2**).

Through these application contest and hackathon initiatives, we were able to interact with developers normally not in contact with us to engage directly in discussions and understand their approaches to service and application development. Developers commonly expressed a desire to continue application development aiming to change themselves or everyday human life with never-before-seen innovations.

Austrian economist Schumpeter defined innovation as new coalescing of previously different industrial techniques, resources and labor capabilities etc in economic activity [2]. Put differently, this means the production capabilities and resources etc of a large corporation are unlikely to bring about innovation by themselves. Therefore at NTT DOCOMO, we think it's necessary to open our resources as APIs and continue our application contest

Table 2   Overview of application contest

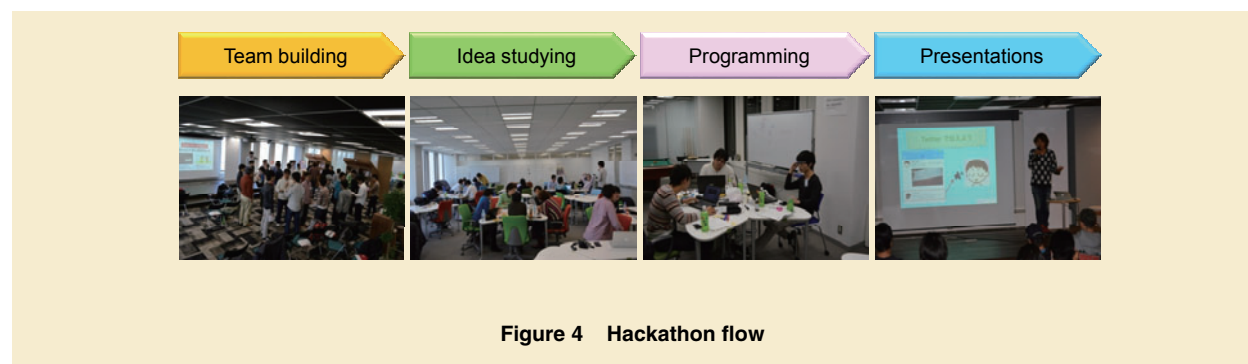| Contest name	First Developer Application Contest
Application period	November 18, 2013 to February 27, 2014
Application conditions	Must be using at least one DOCOMO API
Events held	Two hackathons during the contest period
Awards ceremony	March 10, 2014
Selection method	Nine items selected from all entries in advance. From the entries selected, the winning selections were made from presentations and Grand Prix decided (JPY 500,000)

Team building → Idea studying → Programming → Presentations

Figure 4   Hackathon flow

Winner (JPY500,000) OTONE GLASS

Award	Application	Description
Best wearable award: JPY 100,000 and extra prize "Vuzix M100"	Hand Camera	Take photographs using finger gestures for the frame. Use multiple gestures to create photographs with a variety of shapes
Smart life award: JPY 100,000 and extra prize "ArrowsTablet"	Ofuton reading	A dream-like application for reading books while lying on a mattress
Innovation award: JPY 100,000 and extra prize "Nexus7"	OTONE GLASS	Wearable device that provides sufferers of word blindness with reading and writing support
Unique award: JPY 50,000	Guri-Guri AR Card Game	Game app played by moving a card in hand to operate a character on a smartphone
Hardware award: JPY 50,000	I-tsu-de-mo Yuutai-ridatsu	System for enjoying 3D video in real time
Social communication award: JPY 50,000	FEALING The MOON	By using a viewfinder to view the moon, this app shows the weather etc in each other's location
Good design award: JPY 50,000	TOKEIBO	Records repetition in daily life, so that users can look back over the records to use their time more effectively
Hackathon excellence award "Vuzix M100"	Mimi-Miru	System for supporting the vision impaired by utilizing SNS and so forth
Hackathon excellence award "Vuzix M100"	Flying catch	System for AR Drone flying and searching using leap motion

Figure 5   Application contest results

Photo 1   Award ceremony
(Grand Prix winners OTONE GLASS developers)

Photo 2   Award ceremony (group photograph)

and hackathon initiatives to partner with other companies and developers, and raise the potential for innovation to occur. Thus, we believe that creating relationships to communicate directly with developers and partners gives us an opportunity to engage in trial and error with each other, and is thus a way for innovation to emerge.

3.   Towards Building New Ecosystems

Through these initiatives, the number of account registrations on the docomo Developer support site exceeded 850 at the end of March 2014 (in the 5 months since the site was opened), and there are now almost 400 developers actually using our APIs.

To get even more developers to use DOCOMO APIs, we are planning to increase the number of APIs available, and successively release convenient development tools. We are also continuing to enrich the content of the docomo Developer support site by searching within NTT DOCOMO and within our group companies for items that we can use.

We will also continue to hold developer events such as the application contest and its hackathons, and plan to continue activities to increase the variation of the event itself by holding it nationwide and tagging with companies in dissimilar industries. We believe that the hackathon events are not just simply a chance to make something, but an opportunity to form relationships with developers outside the company and thereby bring about good effects on our in-house innovation developments.

By providing developers with environments that make

it easier to develop applications and providing developers with opportunities to meet at events, we are expanding the development community which is central to the emergence of new services. NTT DOCOMO is aiming to configure these kinds of ecosystems*6, and is speeding up its initiatives in this direction.

We hope you will look forward to more from our docomo Developer support site and Application Developer Contest initiatives.

REFERENCES

[1] docomo Developer support homepage.
    https://dev.smt.docomo.ne.jp/?&lang=1
[2] Wikipedia: "Innovation."
    http://en.wikipedia.org/wiki/Innovation

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*6 **Ecosystem:** A mechanism in which a number of companies partner across their specialties and include consumers and society in their business activities to stimulate each other's technologies and assets, from R&D through to sales, advertising and consumption, to enable coexistence and co-prosperity.