

Ricoh Selects the Winning Works of the RICOH THETA x IoT Developers Contest

First Prize Goes to "Shotoku Tamago"

TOKYO, November 7, 2016 – Ricoh today held the awards ceremony of the RICOH THETA x IoT Developers Contest and announced the winning works at the National Museum of Emerging Science and Innovation (Aomi, Koto-ku, Tokyo). The contest is part of the events marking the 80th anniversary of Ricoh's establishment. Among the 54 works of applications from 11 countries and regions, "Shotoku Tamago" by Infocom Technical Planning Office was chosen for the First Prize. "Shotoku Tamago" is a system used for remote communications combining spherical movies and omnidirectional sounds.

Capable of taking 360-degree, spherical images or movies in one shot, RICOH THETA is expected to offer many different uses in the coming IoT society. Based on RICOH THETA's concept of creating a product through the effort of not only the manufacturer alone but with the involvement of the users, the contest extensively sought entries of apps and gadgets that work in conjunction with RICOH THETA, including apps using a new platform for the IoT age, which was provided to the applicants in advance. The following are the winning works and the comments of their entries.

< Winning Works >

Winning works and registered team name	Outline of the works
•First Prize	
"Shotoku Tamago" Infocom Technical Planning Office	The communication system displays images in the direction where a sound comes from, in real-time, by combining 360-degree, spherical movies with omnidirectional sounds.
•Second Prize	
"THETA EYE" THETA EYE	The web service to live stream RICOH THETA's images.
"360 stream to AR app for image-based lighting and real-time reflections" grigtod *United Kingdom	The plug-in uses RICOH THETA's 360-degree movies to create IBL*1 for AR in real-time.
"360EyeToEar" StrawberrySours	The system converts visual information (a person's face) into audio information and communicates these images using sounds in real-time.

•80th Anniversary Prize	
“Veaver Theta S Mobility Streamer” Team Veaver (from IOK Company) *South Korea	The app is designed to live stream RICOH THETA’s movies on YouTube™ and other media.
“VANISH360” ViRD	While using RICOH THETA, passersby or the photographer may be unintentionally captured in an image or a movie. This app eliminates this problem.
“Sun Light Estimator” Masashi Baba	The app uses RICOH THETA to create HDR (high dynamic range) images for IBL.
“Next Number VR360” muteua	The game involves sequentially capturing tiles that are numbered from 1 to 32 covering a 360-degree image by positioning each tile in front of player’s view, and erasing them.
“i-Ball, an underwater, fully spherical system for real-time image distribution” Tanigawa and Yamagata	Real-time image distribution system for underwater photography.
•Honorable Mention	
“Panomate” Magichour Corporation	A web service designed to create panoramic images for use in the real estate business from a 360-degree image taken by RICOH THETA.
“MOUTHETA” virtual dentist center	The gadget uses an insertion opening on a piece of paper, a plate, or something similar through which RICOH THETA can shoot an intraoral movie.
“THETA Monitoring System” Tsukasa Horinouchi	Surveillance system using RICOH THETA.
“World in a jar – A world in a Jam Jar” MIRO	Machine for projecting 360-degree images that have been processed into reversal film slides, onto an object, such as a spherical container.

*1. IBL (image-based lighting) is a method of lighting that uses computer graphics as a light source.

< Comments >

Ken Sakamura, Chief Judge of the Contest

RICOH THETA x IoT Developers Contest is now in its second year and this year called for applications and gadgets that use RICOH THETA. As the title suggests, this year’s contest was held with the theme of IoT (Internet of Things), a keyword of our time. As a result, there were new types of submissions never seen before, which was especially impressive. The projects submitted included applications which showed a strong collaboration between RICOH THETA and the cloud as well as gadgets for RICOH THETA in which small computers are embedded and work with the cloud. Also, it is great to see so many entries from a diverse number of countries across the globe.

Among the many high quality submissions, the First Prize this year was awarded to “Shotoku Tamago” which made excellent use of the features of RICOH THETA, and is a highly practical solution that has been finished to a very high standard. Second Prizes were awarded to “THETA EYE” which allows you to perform 360-degree live video streaming easily via the cloud, “360 stream to AR app for image-based

lighting and real-time reflections” which tackled IBL (Image Based Lighting) in AR to be used widely in applications of RICOH THETA in the future, and “360EyeToEar” which offers a creative idea of converting vision to hearing.

Taking on many challenges intensively is the only way to increase the probability of bringing about innovation. Using prizes to drive innovation by means of a competition, the most famous one being from the X prize foundation, is now widely used and has produced good results. This technique has achieved significant progress in developing automated driving and humanoid robots in the U.S. I hope a new trend for product development will be created together with users by adopting the new ideas developed in this contest.

The general quality of the works has improved markedly when compared to last year. Once again, may I repeat my belief that innovation can only be achieved by regularly repeating challenges. I look forward to a bright future for the RICOH THETA and this competition.

<Contest Overview>

Sponsor	Ricoh Company, Ltd.
Co-sponsor	YRP Ubiquitous Networking Laboratory
Special Cooperation	Institute of Infrastructure Application of Ubiquitous Computing, Interfaculty Initiative in Information Studies, Graduate School, the University of Tokyo
Cooperation	National Museum of Emerging Science and Innovation DWANGO Co., Ltd.
Judging criteria	<p>Innovative concept appropriate for IoT</p> <p>Entries will be judged comprehensively based on the points below:</p> <ul style="list-style-type: none"> • Whether it is innovative (originality) • Whether it represents a vision (promise for the future, can be developed further) • Whether it would yield practical benefits
Judges	<ul style="list-style-type: none"> • Ken Sakamura, Professor of Interfaculty Initiative in Information Studies, the University of Tokyo • Atsushi Ozawa, Principal Investigator(Science Communication), National Museum of Emerging Science and Innovation (Miraikan), Japan • Ryotaro Muramatsu, CEO/Director, NAKED Inc. • Toshihiro Shimizu, General Manager of Human Resources Department, DWANGO Co., Ltd. • Shiro Kondo, Representative Director and Chairman of Ricoh
Awards	<p>First Prize (one award): 1 million yen</p> <p>Second Prize (three awards): 500,000 yen</p> <p>80th Anniversary Prize (five awards): 300,000 yen</p> <p>Honorable Mention (four awards): 100,000 yen</p>

Detailed information	Contest overview, comments, etc. RICOH THETA x IoT Developers Contest website http://contest.theta360.com/index-en.html
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| About Ricoh |

Ricoh is a global technology company that has been transforming the way people work for more than 80 years. Under its corporate tagline – *imagine. change.* – Ricoh continues to empower companies and individuals with services and technologies that inspire innovation, enhance sustainability and boost business growth. These include document management systems, IT services, production print solutions, visual communications systems, digital cameras, and industrial systems.

Headquartered in Tokyo, Ricoh Group operates in approximately 200 countries and regions. In the financial year ending March 2016, Ricoh Group had worldwide sales of 2,209 billion yen (approx. 19.6 billion USD).

For further information, please visit www.ricoh.com

| About YRP Ubiquitous Networking Laboratory (UNL) |

UNL promotes research and development in ubiquitous computing and IoT (Internet of Things) technology, in which many objects in our surroundings are embedded with small computer nodes with sensors and actuators that communicate with each other and operate in a cooperative manner to offer sophisticated services to human users.

www.ubin.jp/en

| About National Museum of Emerging Science and Innovation (Miraikan) |

Miraikan (The National Museum of Emerging Science and Innovation) highlights cutting-edge science and technology as "new knowledge and innovation" through various methods, such as permanent and special exhibitions, events, on the web. To arouse the interest of the general public, Miraikan is developing methods of expression and communication to present the information in an easy-to-understand manner.

<http://www.miraikan.jst.go.jp/en/>

*One of its official partners since October 2006, Ricoh is helping the next generation get acquainted with science and technology.

| About DWANGO Co., Ltd. |

DWANGO Co., Ltd., is an entertainment company striving to create the next generation of network communication throughout various genres such as gaming and music.

Our products include online and packaged games, music services for mobile, and "niconico douga"— a service that has over 50 million registered users and is one of Japan's largest video sites.

<http://dwango.co.jp/english/>

*niconico douga is a registered trademark of the DWANGO Co., Ltd.