

**FOR IMMEDIATE RELEASE**

## **JEPICO and Hitachi Systems Successfully Create High-Accuracy 3D Model of Inside the Great Pyramid**

Contributing to "The Great Pyramid Project" by use of 100-million pixel ultra-high resolution camera and 3D modeling technology

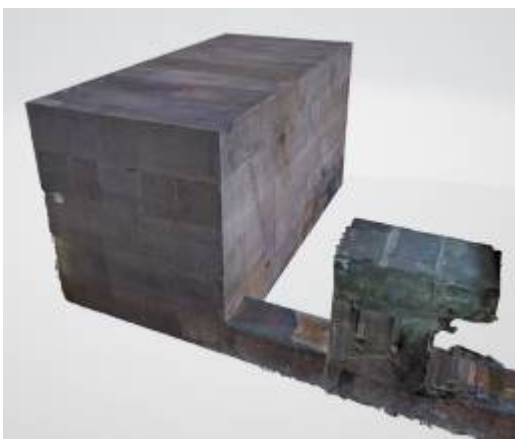
### **Overview**

**Tokyo, January 30, 2020** --- JEPICO Corporation ("JEPICO") and Hitachi Systems, Ltd. ("Hitachi Systems"), a wholly owned subsidiary of Hitachi, Ltd. (TSE: 6501), today announced that their participation in "The Great Pyramid Project" headed up by Higashi Nippon International University has resulted in the successful creation of a highly accurate 3D model of the interior of the great pyramid by use of a high-performance 100-million pixel camera and 3D modeling technology.

The high-accuracy 3D model that was created is due to be used for investigating the unknown giant void of the Great Pyramid and similar applications.



The Great Pyramid: Subject of investigation



High-Accuracy 3D modeling of inside the Great Pyramid

### **Background**

In 2017, a different project team announced the discovery of an unknown giant void inside the Great Pyramid of Giza located in Egypt. Upon hearing this announcement, the government of Egypt requested Higashi Nippon International University to re-examine this discovery, leading to the launch of "The Great Pyramid Project" in April 2018.

JEPICO, with its high-performance 100-million pixel camera, and Hitachi Systems, which has advanced technical capabilities and extensive experience in 3D modeling of 2D images, joined this project as partners in order to verify the existence of an unknown giant void.

### **Project Details**

This investigation consisted of JEPICO capturing images of the interior of the Great Pyramid by using a 100-million pixel ultra-high resolution camera from Phase One. This camera uses medium-size CMOS sensors to provide enhanced light sensitivity and a wide dynamic range for accurate color reproduction. This allowed the researchers to capture images with bright accurate color reproduction never thought possible for dark interiors inside the Great Pyramid where the lack of light from outside normally only allows for capturing dark images.

Afterwards, Hitachi Systems converted the 2D images captured by JEPICO to 3D images by using the Pix4Dmapper from Pix4D to successfully create high-accuracy 3D modeling of the inside of the Great Pyramid where it is dark and has minimal colors. The high-accuracy 3D modeling created by Hitachi Systems enables remote investigation and verification of imaging subjects with no need to travel to the actual site because it provides a faithful reproduction of the colors, shapes and similar aspects of the imaging subjects. Additionally, this high-accuracy 3D modeling can be used in place of diagrams even in historic ruins and cultural properties with no existing diagrams such as pyramids in order to contribute to the restoration and preservation of such sites.

One of the subjects of this investigation, the "King's Chamber" inside the Great Pyramid, is dark and narrow, making it especially difficult to create a 3D model with faithful reproduction of the interior based on 2D images. However, the imaging know-how for creating high-accuracy 3D modeling and technical capabilities from 3D modeling, such as image editing and processing, accumulated by JEPICO and Hitachi Systems was utilized to successfully create a highly accurate 3D model and provide three-dimensional verification of inside the "King's Chamber" in its original colors. Moving forward, JEPICO and Hitachi Systems are due to also use their technology for

verifying the existence of the large unknown void, the objective of this project, and it is expected that this technology will also be applied to other hitherto unknown discoveries such as the ability to distinguish materials by their image color.

Hitachi Systems and JEPICO will continue their current collaboration with Higashi Nippon International University and other institutes in performing various studies towards achieving the success of "The Great Pyramid Project".

The following comment was provided by Higashi Nippon International University regarding these efforts.

"I was simply astounded at how instead of using CGI for reproduction or similar methods, images of all objects were used and drawn in the colors of the actual objects. Clear and sharp images and videos like this of the King's Chamber have never been seen before and will be extremely useful in future pyramid studies."

Sakuji Yoshimura,  
President of Higashi Nippon International University



### **High-Accuracy 3D modeling of inside the Great Pyramid (video)**

<https://youtu.be/e2Y5KKySfto>

### **About "The Great Pyramid Project"**

The objective of this project is to re-examine the results of the study performed by a team from ScanPyramids, a project started by Nagoya University and other institutions in 2017, stating that, "an unknown giant void was discovered inside the Great Pyramid." Professors Zahi Hawass and Khaled El-Anany, the former and current Egyptian Minister of Antiquities respectively, directly requested Sakuji Yoshimura, President of Higashi Nippon International University, to re-examine the results of the investigation, leading to the launch of this project.

Project members mostly consist of researchers from the Institute of Egyptian Archaeology of Higashi Nippon International University, together with researchers from the Chiba Institute of Technology, Tohoku University, Kyushu University, and the University of Tokyo of Japan, and from Suez University, and the National Research Institute of Astronomy and Geophysics of Egypt, as well as private sector professional engineers from companies such as TYPE-S, Front Bridge, Topcon, Surveying Systems, iFLY Egypt, JEPICO, and Hitachi Systems, who are all performing investigation and research together in joint teams.

For more details: <https://egypt-archaeology.jp/research/大ピラミッド探査プロジェクト/>  
(For more details on the Institute of Egyptian Archaeology of Higashi Nippon International University: <https://egypt-archaeology.jp/>)

### **Websites related to the high-precision 3D modeling of Hitachi Systems**

<https://www.hitachi-systems.com/solution/s0308/robo-d/index.html>

### **About JEPICO Corporation**

JEPICO Corporation is a trading company mainly engaged in sales of foreign high-performance semi-conductors and electronic parts mainly for fields such as aerospace, railroads, and industrial machinery. The company has additionally started in-house design of analog LSI (ASIC) and systems development utilizing wireless networks, taking advantage of its strengths in technical abilities and quality support. In recent years, JEPICO has started advancing into new sales fields such as import sales of flight computers and high-performance cameras for drones. JEPICO aims to use the synergy of product development and sales prowess that utilize its marketing capabilities accumulated as a trading company in order to further improve the company's financial results for contributing to the development and expansion of social infrastructure.

For more details: <https://www.jepico.co.jp/english/>

### **About Hitachi Systems, Ltd.**

Hitachi Systems is a leading IT service provider specializing in developing and implementing business systems for customers of diverse sectors and sizes. We also operate, monitor, and maintain those systems by using a multi-tiered service infrastructure comprising data centers, network and security operations centers, contact centers, and a nationwide network of around 300 service sites. Hitachi Systems assists customers with their digital transformation needs and works with them in creating new value by delivering unique services that leverage our diverse human capital and advanced IT solutions. We strive to become a global service company that earns the complete trust of customers.

For details: <https://www.hitachi-systems.com/eng/>

### **About Hitachi, Ltd.**

Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, is focusing on Social Innovation Business combining its operational technology, information technology and products. The company's consolidated revenues for fiscal 2018 (ended March 31, 2019) totalled 9,480.6 billion yen (\$85.4 billion), and the company has approximately

296,000 employees worldwide. Hitachi delivers digital solutions utilizing Lumada in five sectors including Mobility, Smart Life, Industry, Energy and IT, to increase our customer's social, environmental and economic value. For more information on Hitachi, please visit the company's website at <https://www.hitachi.com>.

### **About Higashi Nippon International University**

Higashi Nippon International University was founded based on the spirit that "Righteousness is the path to all successes." This phrase is found in "The Analects of Confucius" by the famous Chinese thinker, and its meaning is that "Working for others with the dreams and goals will help you find your own path."

Students can experience numerous inspirational moments, and meet new and interesting people, which serve to sow their future dreams. While studying together and enjoying many activities with the excellent faculty and friends, "human potential" in the form of courage to give one's all for another person and the ability to overcome difficulties is cultivated in the students.

For more details: <http://www.shk-ac.jp/eng/index.html>

### **About Phase One**

Phase One is a top global company in the field of medium-size digital cameras and imaging solutions for professional photographers and industrial applications. Phase One industrial-use camera systems are optimized for a wide variety of industrial applications such as aerial photography and surveying, inspection and study of structures, infrared photography, 3D mapping, and machine vision.

Phase One is headquartered in Copenhagen, Denmark, with branches in New York, London, Tokyo, Cologne, Hong Kong, Shanghai, and Tel Aviv, and provides service and support together with its global partners.

For more details: <https://industrial.phaseone.com>

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