

## Opening of the Art Exhibition “Digital × Hokusai [Middle Chapter]” for Providing New Ways to Experience Art during the Coronavirus Pandemic

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### Abstract

NTT EAST has been holding an interactive art exhibition called “Digital × Hokusai [Middle Chapter]” since December 1, 2020 as a showcase for a “dispersed digital museum” that enables visitors to enjoy local culture and art beyond time and place, even during the coronavirus pandemic, by using the information and communication technology and assets owned by NTT EAST. The details of the company’s initiatives concerning this exhibition are introduced in this article.

*Keywords: local culture and art, during the coronavirus pandemic, regional revitalization*

### 1. Introduction

From November 1, 2019 to February 28, 2020, NTT EAST held an interactive art exhibition called “Digital × Hokusai [Introduction]” [1] as an initiative to contribute to regional revitalization by sharing valuable local culture and art. The exhibition received positive feedback from many visitors about the advantage and potential of a digital museum that allows visitors to experience valuable local culture and art regardless of time or location.

Due to the spread of novel-coronavirus infections, museums and art galleries were required to shift their operations to adapt to new ways of enjoying culture and art. Under these circumstances, we planned to hold the next interactive art exhibition called “Digital × Hokusai [Middle Chapter]” in response to the many voices that wanted to share and enjoy the valuable culture and art of the local region and the growing need for a “new normal” concerning cultural appreciation through digital data.

### 2. Overview of “Digital × Hokusai [Middle Chapter]”

This art exhibition featuring works by Katsushika Hokusai and Utagawa Hiroshige, two of Japan’s most famous *ukiyo-e* artists, is being held at the NTT Inter Communication Center (ICC) Gallery E in Nishi-Shinjuku, Tokyo. The exhibition is held in cooperation with Ars Techna Corporation, which has been officially certified by the Yamanashi Prefectural Museum of Art and the Musée d’Orsay in France as a replica master of paintings.

#### 2.1 Exhibition of digital data and master replicas reproduced using high-definition technology and certified by the owners of artworks

The following paintings are being exhibited:

- Katsushika Hokusai, “Thirty-six Views of Mount Fuji” 47 works owned by Yamanashi Prefectural Museum of Art
- Utagawa Hiroshige, “Fifty-three Stations of the Tokaido” 55 works owned by Osaka Ukiyoe Museum
- Vincent van Gogh, “Starry Night on the Rhone”

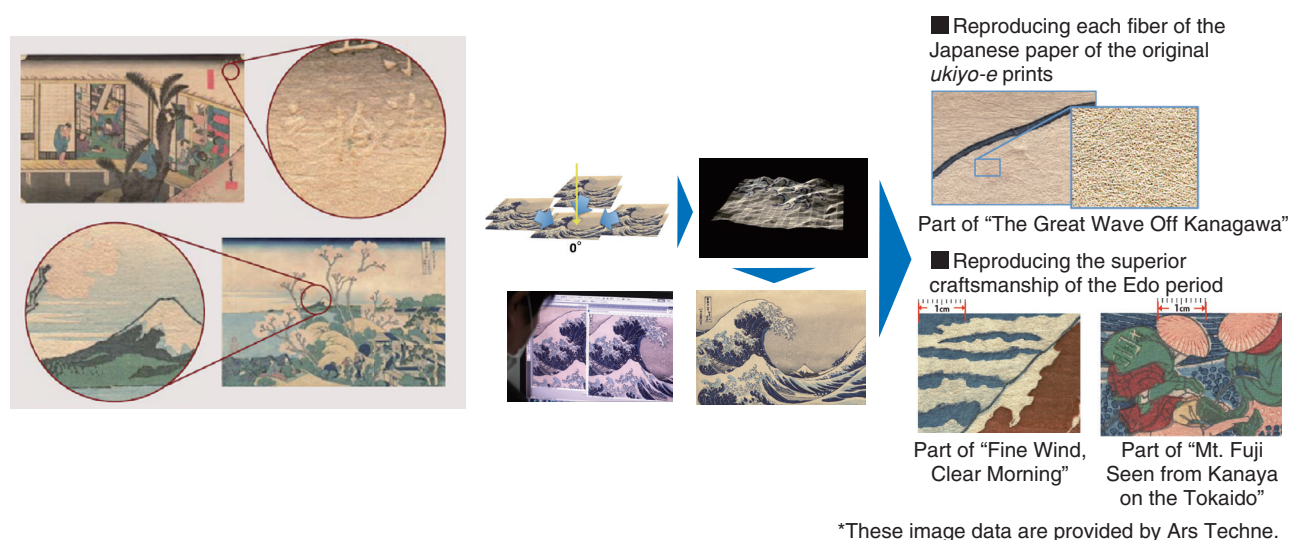


Fig. 1. DTIP: 3D-texture image-processing technology.

and 17 other works owned by Musée d'Orsay

- Gountei Sadahide, "Scene of Opening of a New Port in Yokohama, Kanagawa" owned by Kanagawa Prefectural Museum of Cultural History

Up until now, the exhibition of original artworks in museums has been restricted due to their susceptibility to damage, and it has not been possible to view them in proximity or under light. Even with high-resolution digitization of paintings, it has been difficult to reproduce the texture of materials and fine irregularities such as brush strokes.

Dynamic texture image processing (DTIP)<sup>\*1</sup> is a three-dimensional (3D)-texture image-processing technology with features, such as high-definition multi-angle optical recording, developed by our collaboration partner, Ars Techné. We used DTIP for pseudo-stereoscopic image-composition conversion and 3D color-gamut separation and calibration with the original image, and were able to faithfully reproduce every fiber of the Japanese paper of the original *ukiyo-e* prints while conveying the artist's superior craftsmanship (Fig. 1).

## 2.2 Cooperation with local communities

Gallery E at the ICC, where the exhibition is being held, is linked to local facilities and hubs that have a connection to the works on display via a high-speed network so that as many people as possible can come into contact with Japanese culture and art. Therefore, the exhibition creates a world that can be enjoyed

beyond time and place (Fig. 2).

## 2.3 Providing new experience using the latest digital applications

By fully using the latest digital applications, such as *naked-eye VR*, which allows viewers to experience virtual reality (VR) without goggles, a *3D dive theater*, in which viewers can experience the world of the artwork with their whole body as if being immersed in the painting, and *moving-art pictures*, which gives an illusion that paintings appear to be moving, we are providing new ways of appreciating cultural and artistic activities (Fig. 3).

## 2.4 High-quality distribution and secure accumulation of digital data

Taking advantage of the characteristics of NTT EAST telecommunications buildings and high-speed networks, namely, a closed network and secure environment, low latency, and disaster resistance, we will meet the needs required for the utilization of digital archives of cultural arts such as protection of cultural property rights, smooth content distribution, and disaster recovery<sup>\*2</sup>.

<sup>\*1</sup> DTIP: Original patented technology of Ars Techné Corporation.

<sup>\*2</sup> Disaster recovery: Measures to recover from damage caused by disasters or preventive measures to minimize damage.

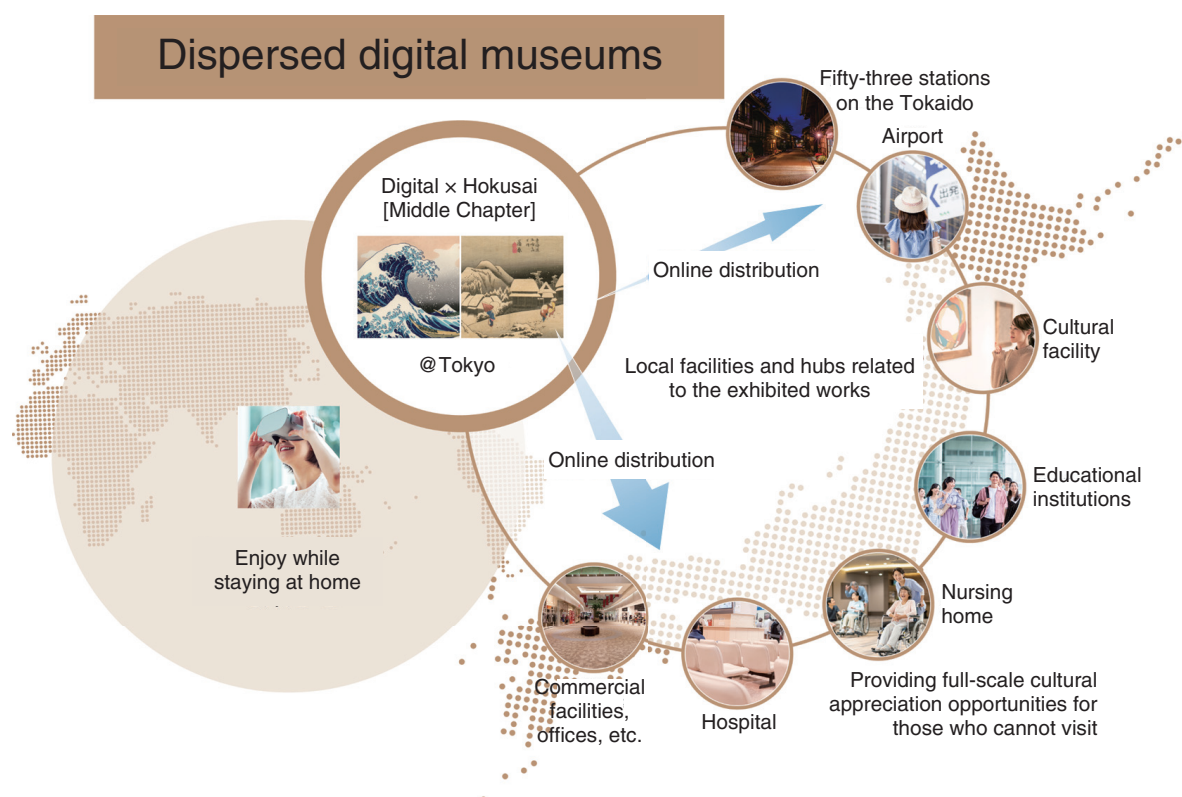


Fig. 2. Cooperation with local communities.



(a) Naked-eye VR



(b) 3D dive theater

Fig. 3. Providing new experience by using the latest digital applications.

## 2.5 Providing safe and secure non-contact museum solutions

Through mechanisms that allow visitors to enjoy all content without contact (such as naked-eye VR, 3D dive theater, and moving-art pictures), congestion detection with artificial-intelligence (AI) cameras,

and guidance from AI robots, we will continue to provide museum solutions that allow visitors to appreciate exhibits with peace of mind during the coronavirus pandemic. On the homepage of this art exhibition [2], virtual viewing via a 360-degree viewer is provided to allow visitors to appreciate part

of the exhibition without having to physically be at the venue.

We will also plan to link this art exhibition with NTT's 3D spatial owned media called DOOR that embodies the *remote world* provided by NTT.

## References

- [1] NTT EAST, ““Digital × Hokusai [Introduction]” Exhibition Contents,” [https://www.ntt-east.co.jp/pr/hokusai\\_profile\\_en.html](https://www.ntt-east.co.jp/pr/hokusai_profile_en.html)
- [2] “Digital × Hokusai [Middle Chapter]” (in Japanese), <https://www.ntt-east.co.jp/pr/hokusai-hasyo/>
- [3] DOOR (in Japanese), <https://door.ntt/>



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