

# **A system for connecting the past and present, and the real and virtual of historical sites using ICT**

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## The present situation of historical sites

### **Famous historical sites**

- Preservation as subjects of archaeological research.

### **Recent historical sites** (not subjects of archaeology)

- Lack of recognition of their importance as historical sites.
- Destruction for developments, which leads to less research and less data.



## The present situation of retained records

On the other hand, museums, libraries and organizations have a lot of records about recent historical sites.

Most of these records are not open to the public.

As a result, it is difficult to become aware of the importance of recent historical sites.



## Research objectives

- Practical use of records and data of recent historical sites that museums, libraries and organizations hold.
- The diffusion of knowledge about recent historical sites.
- Attraction of visitors to museums.

## Augmented Reality

### **Augmented Reality (AR)**

- The technology for expanding the real world.
- Addition, deletion, emphasis, attenuation of some information in the real world through electronic devices.

### **Application example**

- IKEA catalog



image by IKEA

## Application examples of Augmented Reality at museums

### Osaka Museum of History

- Reconstruction of ancient buildings using computer graphics.



image by Osaka Museum of History

### Tokyo National Museum

- Interior guidance system
- Stamp rally (Like an orienteering sport)



image by Tokyo National Museum

## Application examples of Augmented Reality at museums

### Acropolis App

- Reconstruction of ancient buildings



image byMOPTIL

### The British Museum

- Game for education

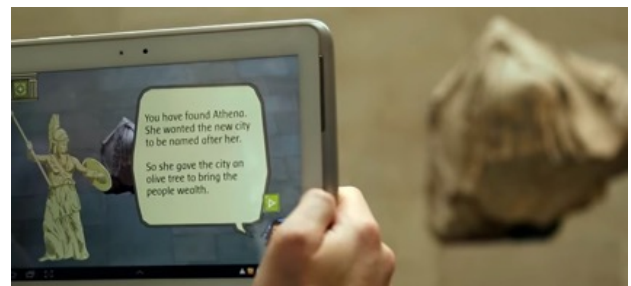


image by IBTimesUK youtube



## Originality of our research

There are few applications of Augmented Reality used at real historical sites or using real historical data.

In this research, our aim was:

- The application for real historical sites
- The application of real historical data
- Connecting real historical sites and museums

Through this research, we can connect not only the past and the present, the reality and the virtuality, but also places and people.

Field of research

### **Matsushige Lock Gate**

Nagoya, Japan

It was built in 1932 for the purpose of water level adjustment between two canals. It has been abolished to use from 1976 because of a decline of water transportation. Though it is preserved as cultural heritage, few people are aware that it exists, and understand its historical importance.

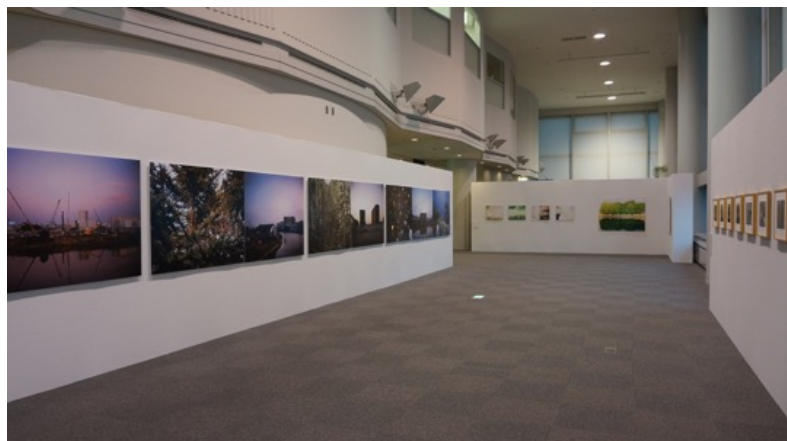


Field of research

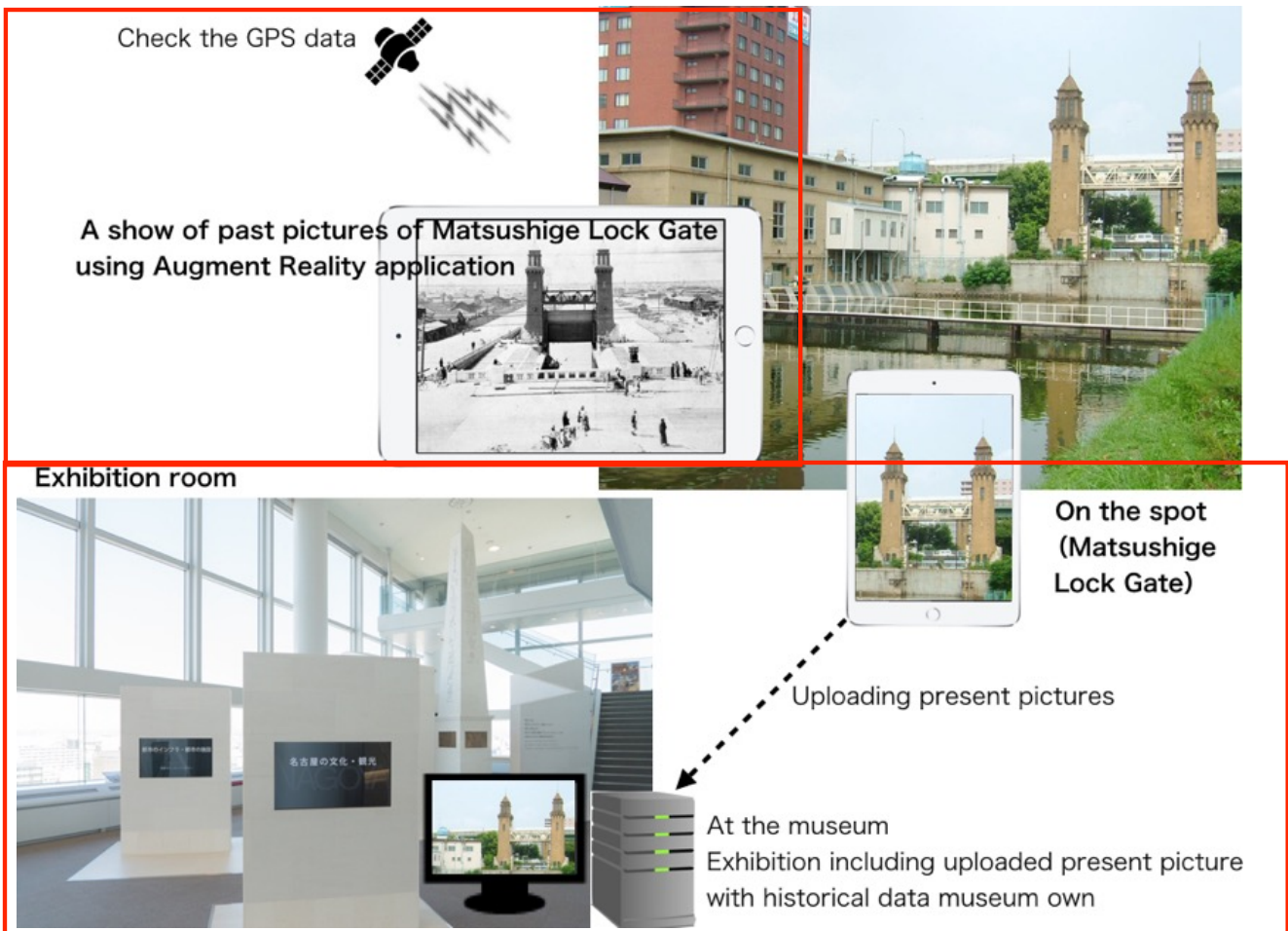
## **Nagoya Urban Institute**

Nagoya, Japan

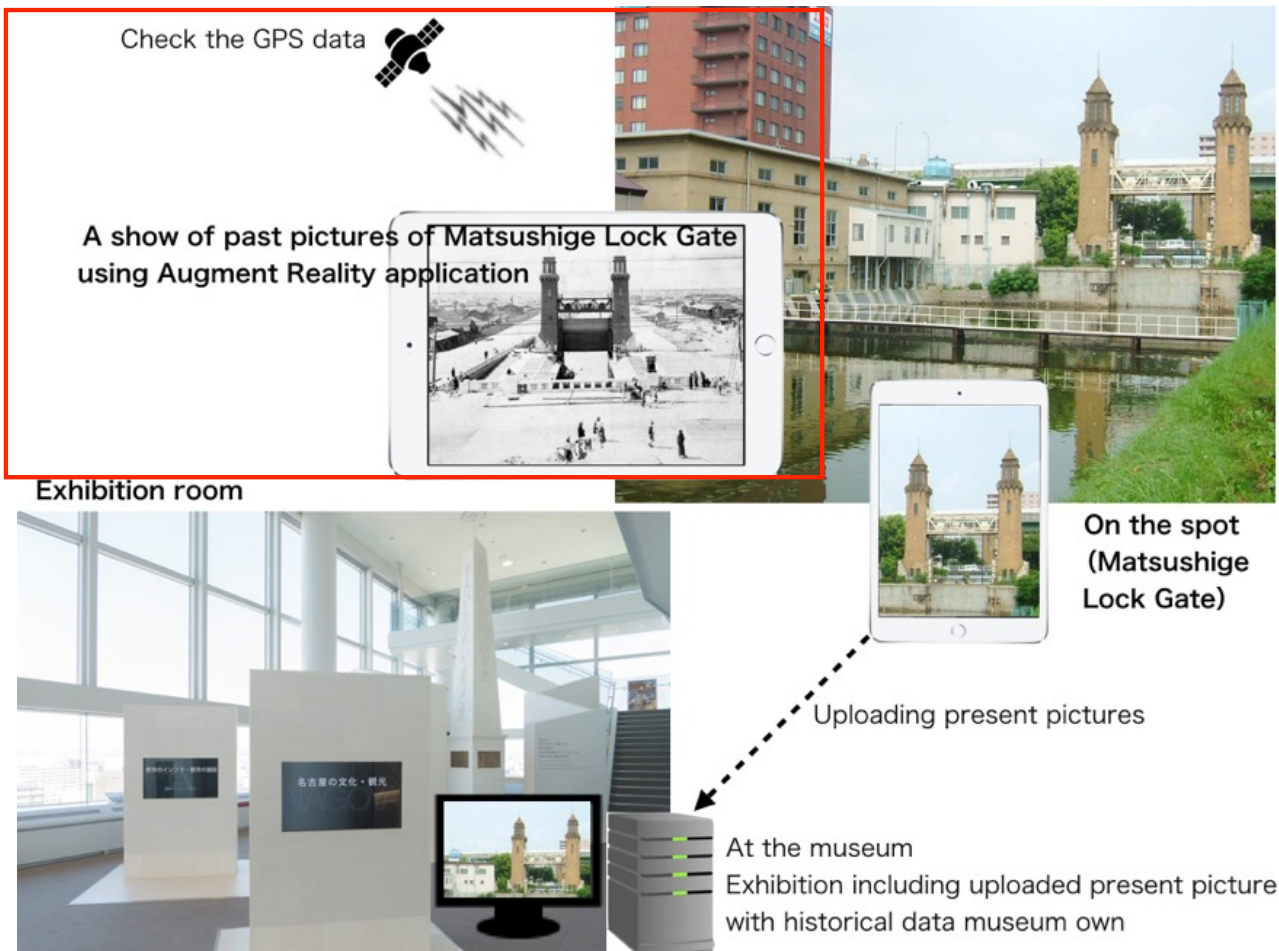
Nagoya Urban Institute is the organization for supporting of the urban planning of Nagoya city. There are many records and data of Nagoya's urban planning. Its exhibition space is quite large and the library has substantial collection.



# System summary



# System summary



## The Augment Reality application

In case  
the place is far from the historical site,  
the application indicates the distance and  
the direction.

- GPS ( Global Positioning System )
- Compass



## The Augment Reality application

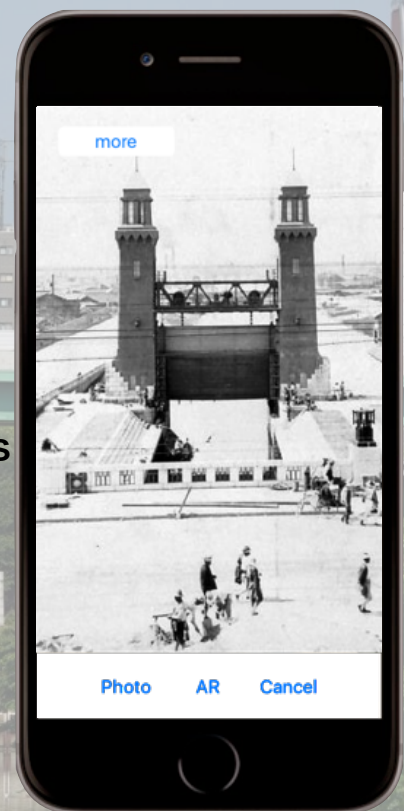
In case the place is close to the historical site, the application indicates the inclination of the device, in addition to the distance and the direction.

- Gyro sensor



## The Augment Reality application

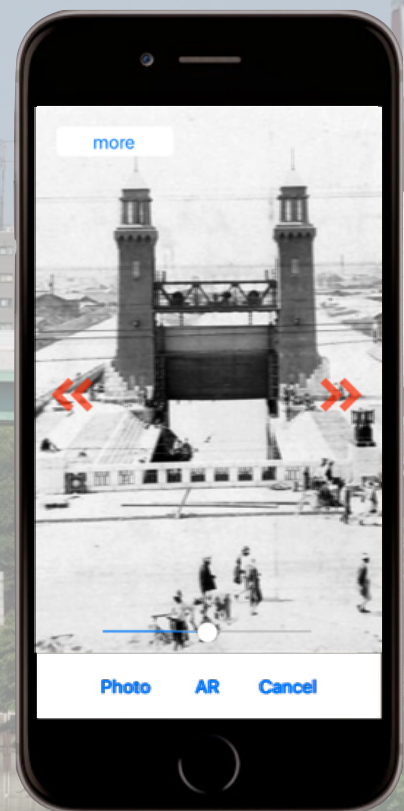
When all conditions (distance, direction, inclination) are met, the application displays historical pictures of that site.





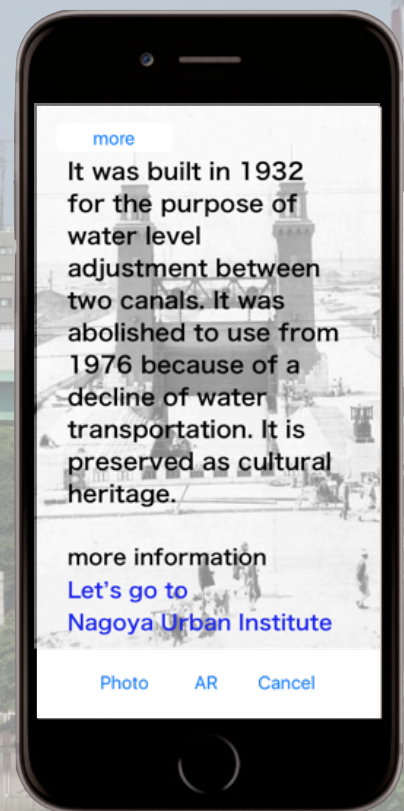
## The Augment Reality application

If there are other historical pictures of different locations, the application indicates the direction. If there are other historical pictures of different age, it displays slide bar and users can change pictures.



## The Augment Reality application

The application displays more detailed information of the historical site. In addition, it leads users to a museum.



# Exhibition at the museum

Check the GPS data



A show of past pictures of Matsushige Lock Gate using Augment Reality application



On the spot  
(Matsushige  
Lock Gate)

Exhibition room



Uploading present pictures

At the museum  
Exhibition including uploaded present picture  
with historical data museum own

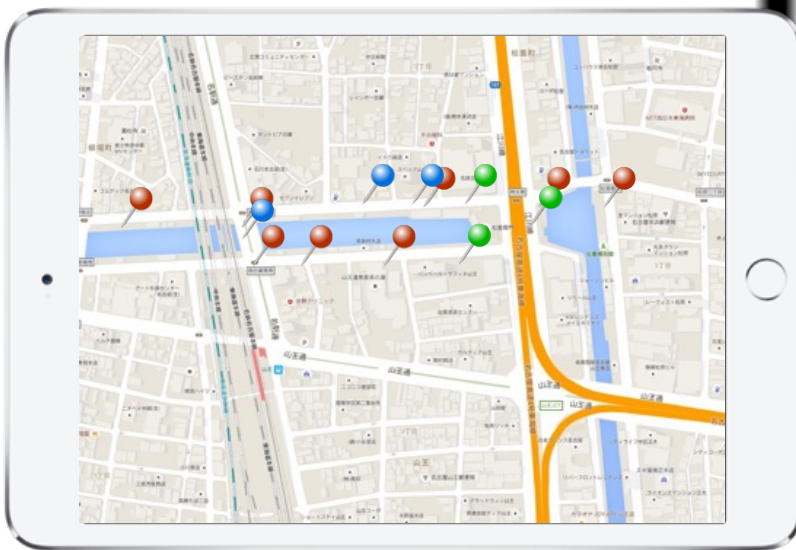
## Exhibition at the museum




Historical data that museum own

- records
- books

Interactive exhibition

- uploaded pictures
- historical pictures



-  now
-  in 20 years
-  over 20 years ago

Future plan

### **Evaluation of the system's effects**

Nov. 2016

- Using Augmented reality application at an event that will be held at the Nakagawa canal.
- At the same time, display pictures uploaded using the application, together with records and data that the organization holds at the exhibition space of Nagoya Urban Institute.

## References

IKEA

[http://www.ikea.com/ms/ja\\_JP/customer-service/about-shopping/catalogue-and-brochures/](http://www.ikea.com/ms/ja_JP/customer-service/about-shopping/catalogue-and-brochures/)

Osaka Museum of History

<http://www.mus-his.city.osaka.jp/news/zyousetu/arnaniwanomiya.html>

Tokyo National Museum

[http://www.tnm.jp/modules/r\\_free\\_page/index.php?id=1634](http://www.tnm.jp/modules/r_free_page/index.php?id=1634)

IBTimes UK ( The video about The British Museum )

<https://www.youtube.com/watch?v=88Hv2FeRO98>

Thank you for your attention

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## **Nagoya Urban Institute**

- A center of new city planning.
- A center of exchange and information distribution.

## **Projects**

- Investigation and Research
- Information gathering and offer
- Foresting human resources and information exchange

