






# Typology of Digital Devices for Museums









## **Which digital device to choose for my museum?**

All the digital devices detailed in this typology can be set in a museum, whatever are its topics and its publics. The visitors-museum communication objectives allow to define which digital device is the more relevant for the museum.

It is important to remember that we find numerous museum digital devices which are a mix of two or several categories detailed in this typology (hybrid devices). The digital field allows almost infinite possibilities. Thus, this typology and its categories are a tool to find inspiration. The digital device designer should not limit his/her creative reflexion to the listed categories. This typology is not an exhaustive review.



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# Handling devices



Set digital devices and mechanism to handle in order to offer a dynamic and an interactive visitor experience.

## Control panel with buttons

- Cité des Sciences, *Feu* exhibition (2018-2019), Paris, France.



© Levy, Ph. / Universcience

## Mechanism to activate

- Cité des Sciences, Children City, Paris, France.



© Robin, A. / EPPDCSI

## Objects to handle

- Cathedral of Trier, *AproposLuther* Project, Trier, Germany.



© Apropos Luther! / Universität Trier

Video link: [https://www.youtube.com/watch?v=h06CaF2P\\_3I](https://www.youtube.com/watch?v=h06CaF2P_3I)



# Viewing devices



Allow the visitors to visualize a fact, a phenomenon, features, works of art etc., and to better understand and analyse them.

## Data visualization

Data visualization is a field related to communications and graphic design. Data visualization allows to communicate an information with an original and - sometimes - an artistic format. This field is a good way to bring to the visitors a unique reading experience and a better understanding of data related to a topic.

- Thai Broadcasting and Television Organization (PBS) Museum, Thailand.



© Studio Aeroplane, Co., Ltd.

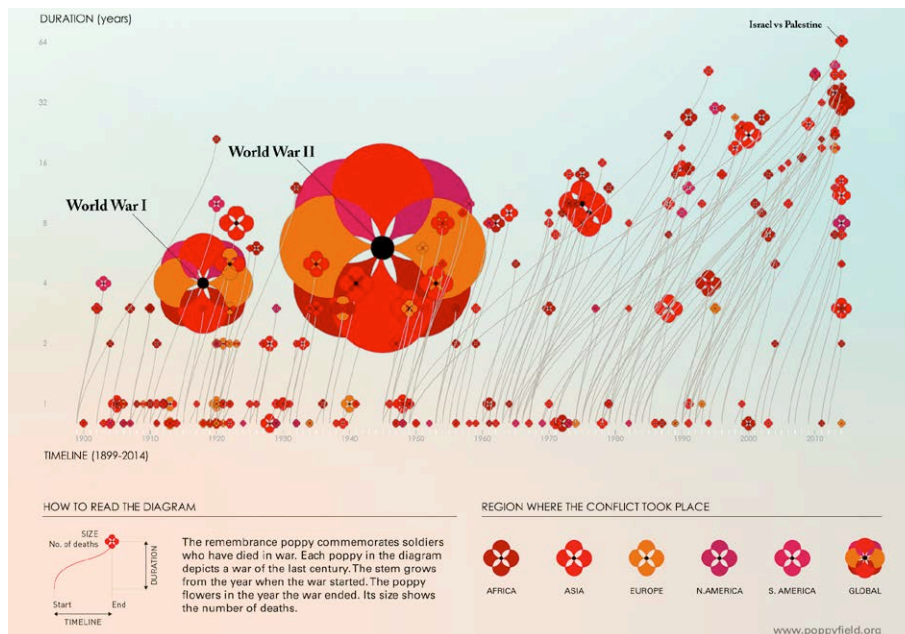


© Studio Aeroplane, Co., Ltd.

Projection of a data visualization of the freedom level in the world. It seems that this projection is an interactive projection (there is a handle being touched by the visitor to the right).

## Artistic data visualization

- Poppy Field, by Valentina D'Efilippo, Nicolas Pigelet.



© D'Efilippo, V., Pigelet, N.

Wars duration in the world and their number of victims, from 1899 to 2014. Link: [www.poppyfield.org](http://www.poppyfield.org)

## Live data visualization

- Tweetping - Live data visualization of tweets in the world.



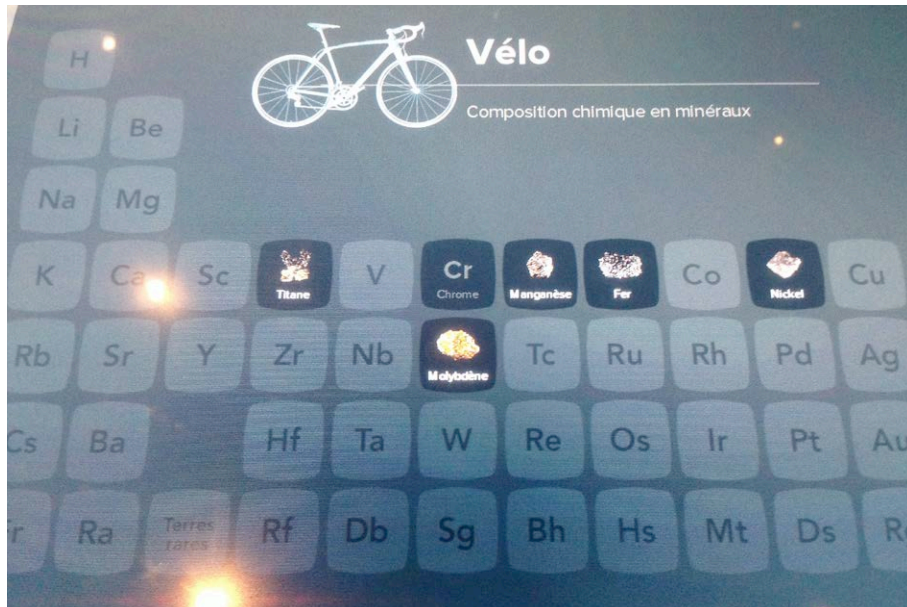
© Tweetping

Link: [www.tweetping.net/#](http://www.tweetping.net/#)

## Decoder

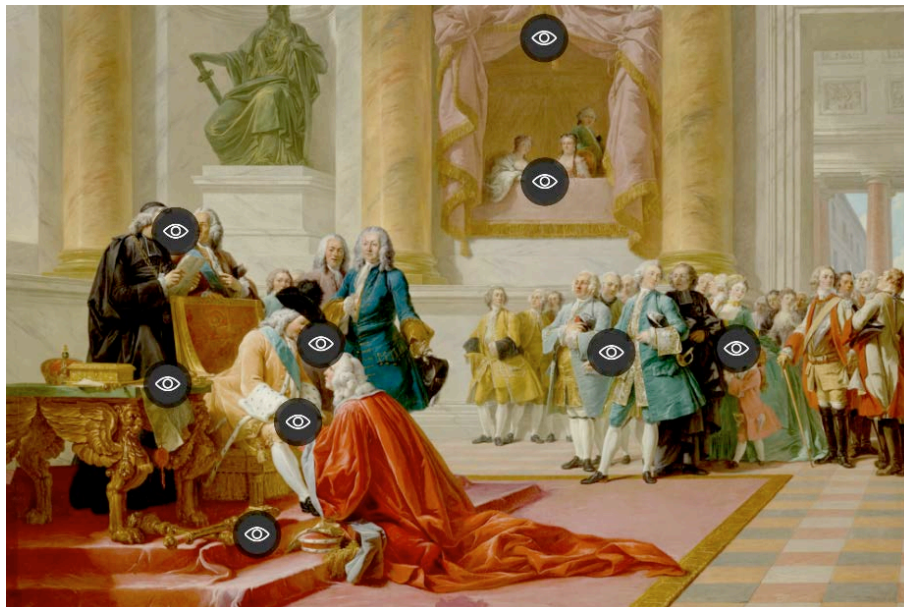
The decoder device allows to comprehend a topic, a work of art, the features of an object/a topic.

- Musée des Confluences, Lyon, France.



© Lassère, O.

- Musée Lorrain, Nancy, France.



© Musée Lorrain, Palais des Ducs de Lorraine

Paint: Vincent, F.A. (1778). La Galaizière est créé chancelier par Stanislas. Huile sur toile. Musée Lorrain, Nancy, France.

## Digital cartography

- Sea City Museum, Southampton, United-Kingdom.



© Newangle / Southampton City Council

## News wall

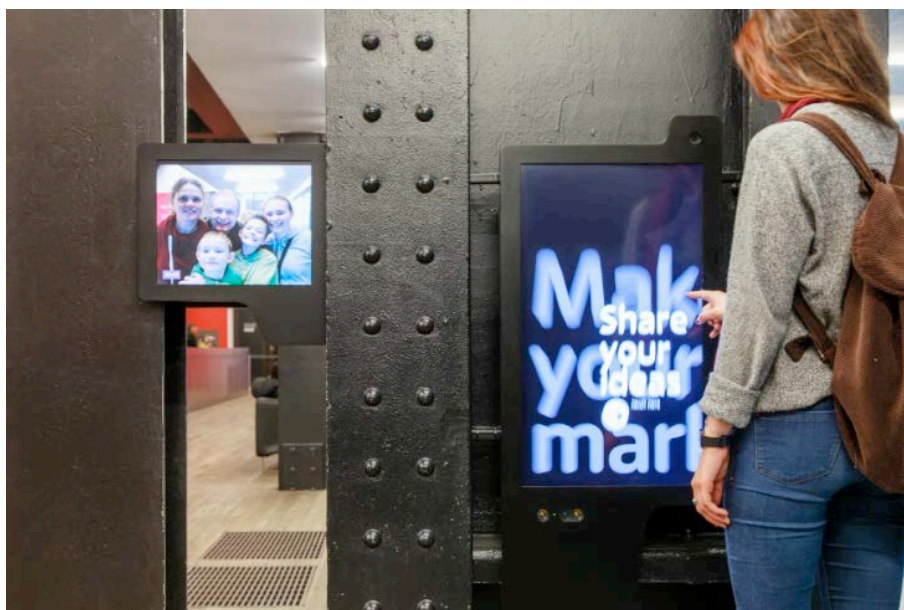
- Cité des Sciences, Paris, France.



© Besnard, V. /Universcience

## Testimonials/visitor experiences wall

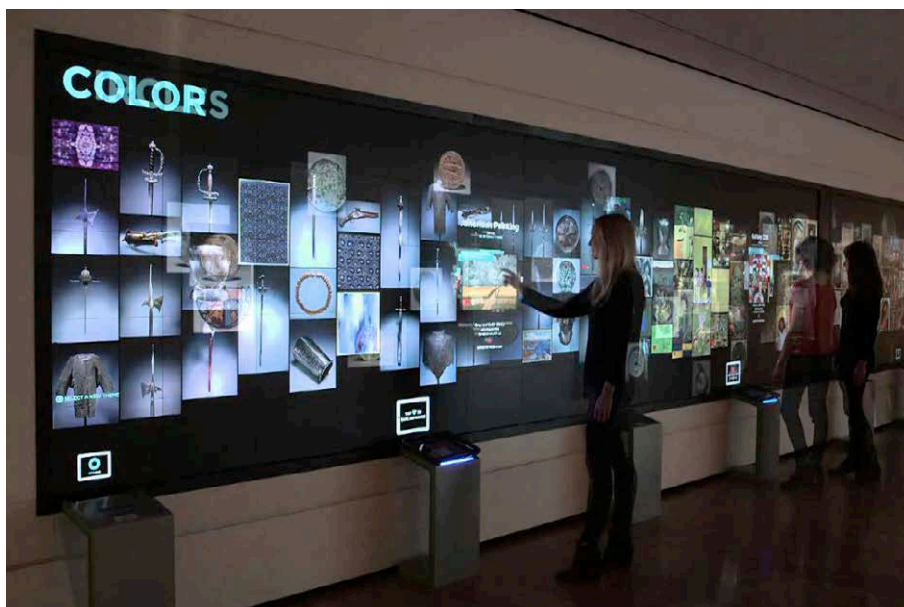
- Tate Modern, London, United-Kingdom.



© Funnell, L. / Studio Blackburn

## Digital classification

- Cleveland Museum of Art, Cleveland, United-States.



© Cleveland Museum of Art

Classification of the museum's collections by color.

## Digital reproduction

Reproduction of a work of art, an object, a building etc. on a digital device.

- Musée Lorrain, Nancy, France.



© Musée Lorrain, Palais des Ducs de Lorraine

## Before-after comparison

- Institute for Quality Communities - University of Oklahoma.



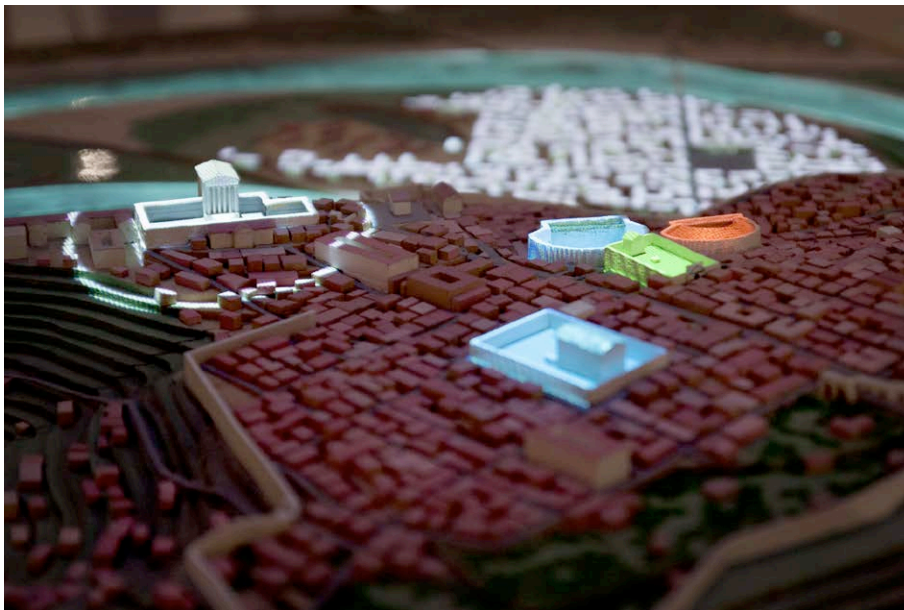
© Institute for Quality Communities / University of Oklahoma

More examples at:

<http://iqc.ou.edu/2015/01/21/60yrsnortheast/>

## Interactive model

- Lugdunum (museum), Lyon, France.



© Graphéine / Museomix



© Graphéine / Museomix

Video link: <https://www.youtube.com/watch?v=pMdvXRmpmU0>

## Totem

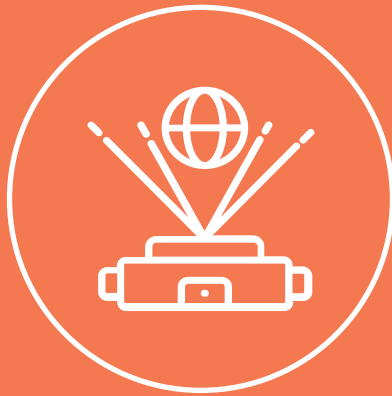
- Museum of Yugoslav History, Belgrade, Serbia.



© Engadget



# Projection devices



Display contents, interfaces and multimedia on originals and various mediums in order to create unique visitor experiences.

## Basic video projection

- Grand Rapids Art Museum, Grand Rapids, United-States.



© Grand Rapids Art Museum

## 360° projection

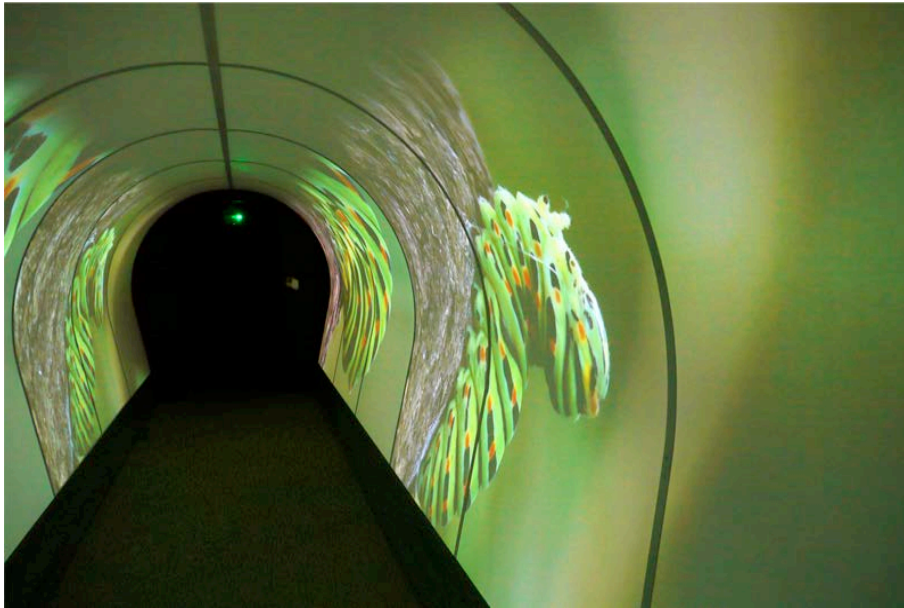
- Cité du Vin, Bordeaux, France.



© Photos Anaka/La Cité du Vin/ XTU architects

## Tunnel projection

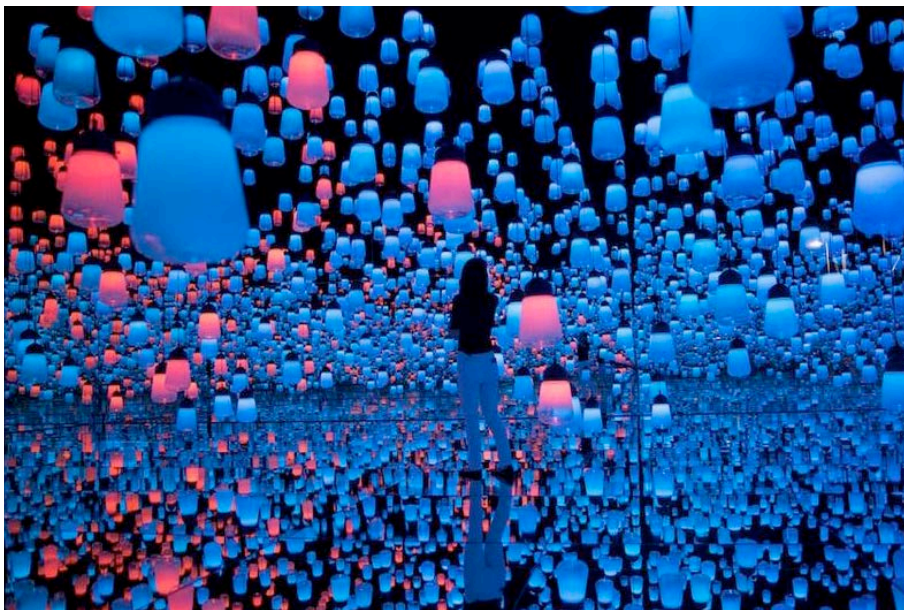
- Little Prince theme park, Ungersheim, France.



© White Space Creative Solutions

## Artistic projection

- Mori Building Digital Art Museum, Tokyo, Japan.



© Mehri, B. / Getty Images

## Interactive projection

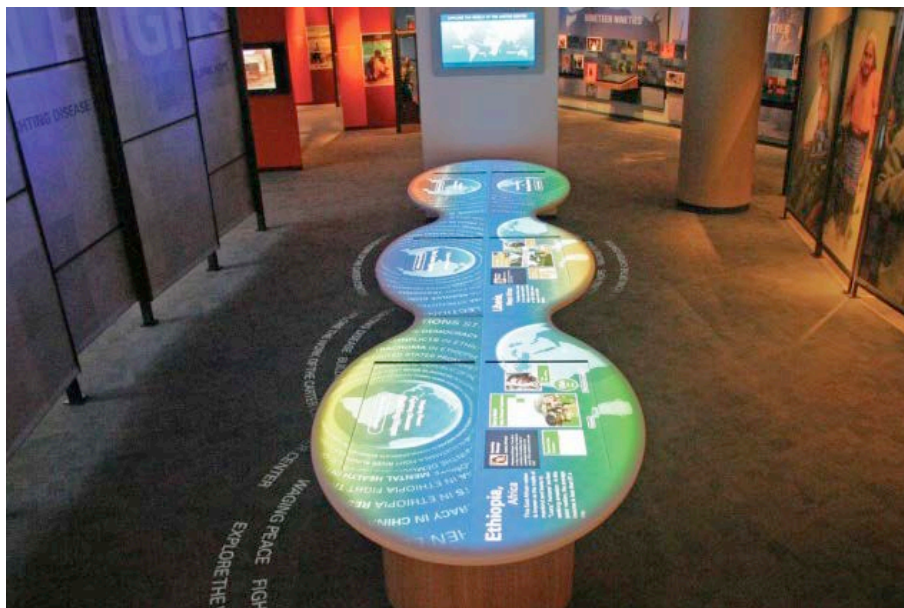
Projection of images, texts, illustrations, diagrams etc. with subsections to explore. The interactive projections are associated to a control panel allowing to explore the contents displayed.

- Helsinki City Museum, Helsinki, Finland.



© Murphy, A.

- Jimmy Carter Library & Museum, Atlanta, United-States.



© Digital Projection

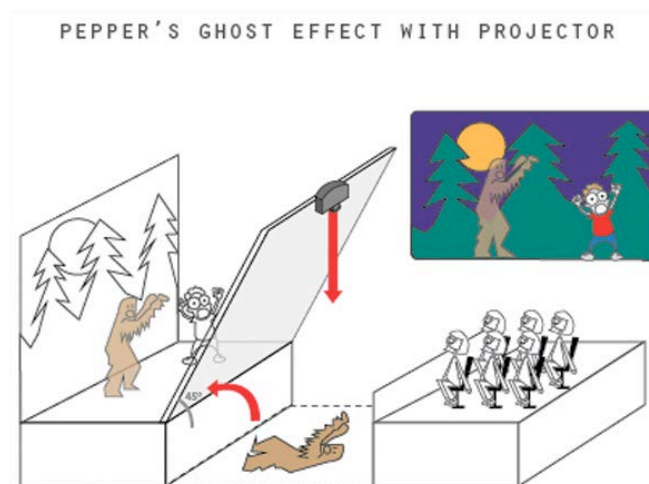
## Théâtre optique (Pepper's ghost effect projection)

Reflection of a video on a two-way mirror placed on top of a set - cf. explanations below.

- Musée du Grand Filon, Saint-Georges-d'Hurtières, France.



© Thiaffey, M. / Le Grand Filon



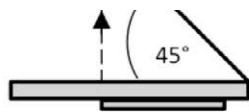
© Showtex

## Holographic projection

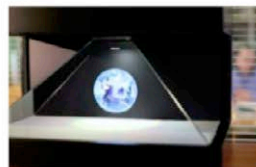
- Carrara and Michelangelo Museum, Via Sornano, Italy.



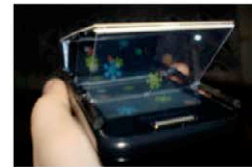
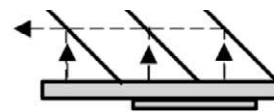
© Ambrogi, M.



- Viewable from a single direction.
- Hologram space will be large.



- Viewable from multiple directions.
- Hologram space will be smaller.



- Viewable from a single direction.
- Allows multiple layers of holograms for 3D effect.

© Projectionfilm.com

## Projection mapping

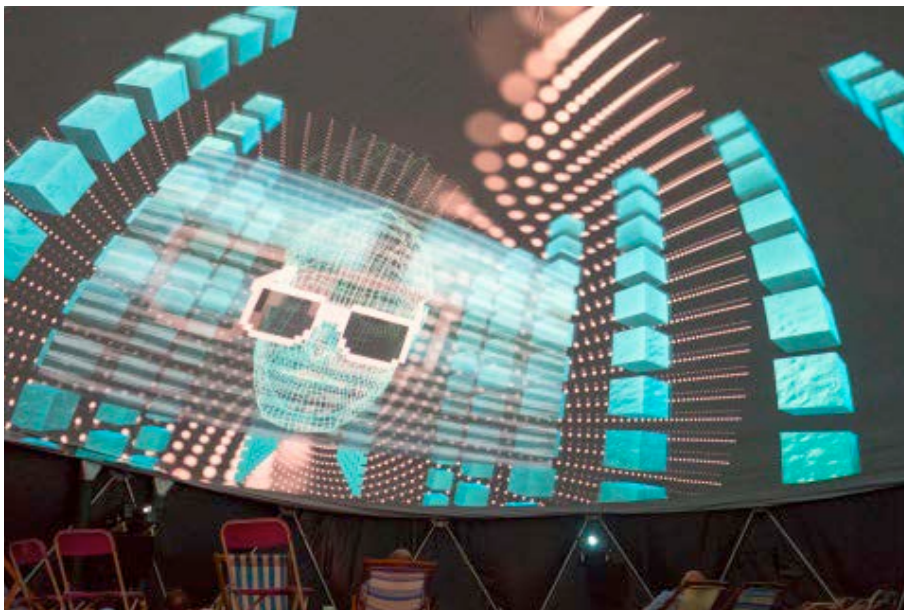
- Lille, France.



© Video Mapping European Center

## Dome projection

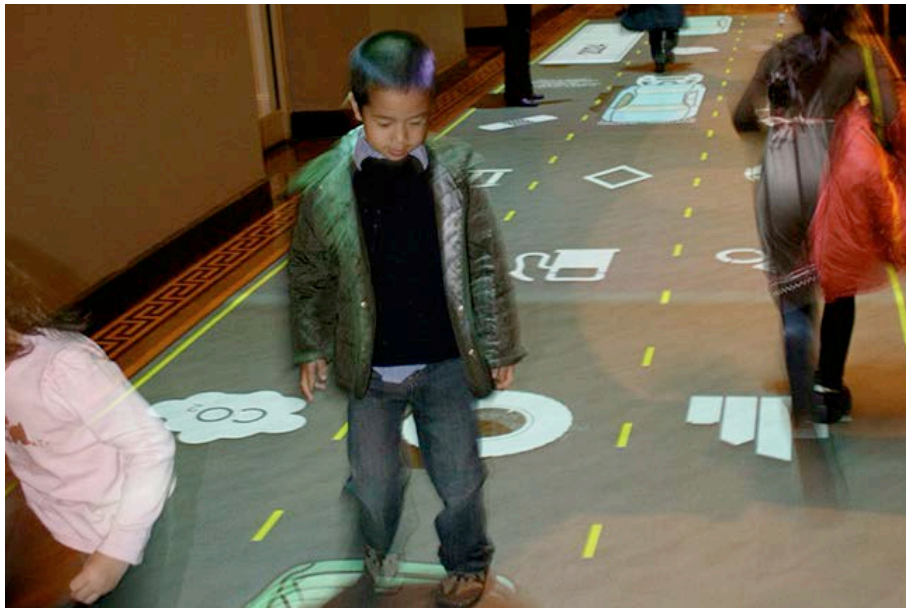
- GaiaNova 360 Theatre (event), London, United-Kingdom.



© Event Projection

## Floor projection

- National Building Museum, Washington, D.C, United-States.



© Potion

## Large format projection

- Saint-Étienne Mine Museum, Saint-Étienne, France.



© La chaîne du Wallaby

## Glass projection

Adhesive projection tape placed on a glass and allowing video projections.

- Boijmans Van Beuningen Museum, Rotterdam, The Netherlands.



© Ledgo



# Immersive devices



Offer to the visitors a sensitive and immersive experience that reproduces a universe, an ambience, a time etc..

## Visual and sound immersion

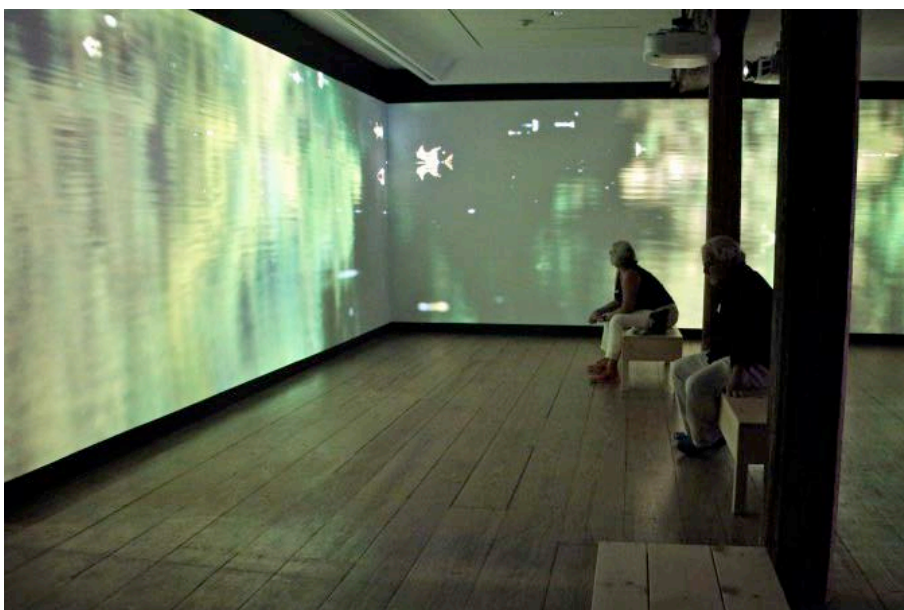
- Cité du Vin, Bordeaux, France.



© La Cité du Vin

## Visual immersion

- Brandywine River Museum, Chadds Ford, United-States.



© Brandywine River Museum of Art

## Sound immersion

Create an immersive experience thanks to the sound perception (ambience music, sound devices, speakers, headers etc.).

- City of Lausanne, Street Harassment Museum (imaginary museum created for a campaign about street harassment), Lausanne, Switzerland.



© Ville de Lausanne / Messieurs.ch / Marguet, Y.

Sound towers alley that the visitor crosses in order to hear sexist words said by men on street.

Video link: <https://www.youtube.com/watch?v=RKpKURPLB24>

## Tactile immersion (surfaces to touch)

- Tactile dome, Exploratorium, Chicago, United-States.



© Exploratorium



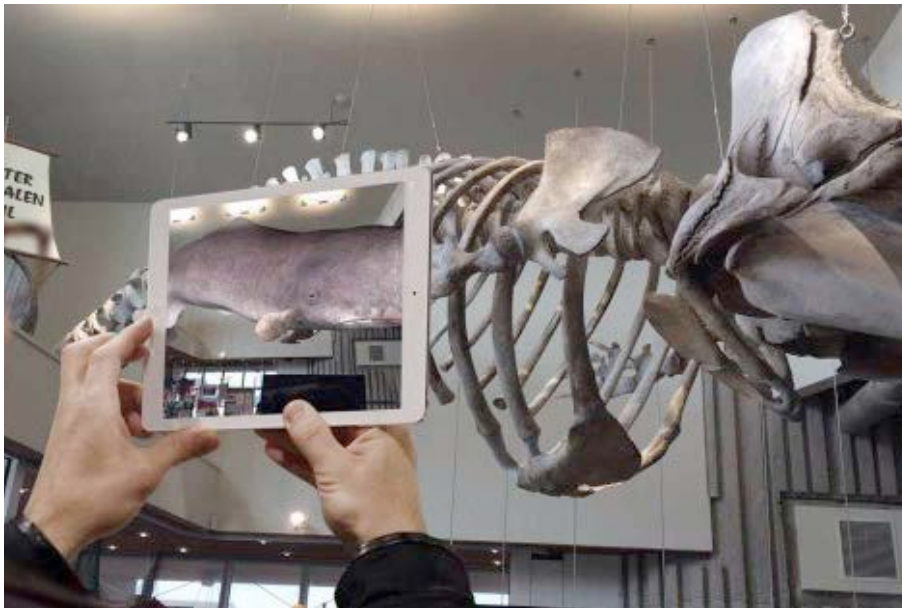
# Digital/augmented reality devices



Enrich the visitors visual perception in order to reveal invisible elements, to travel through time or to explore a reality located beyond the museum walls.

## Tablet with an augmented reality app

- Musée de la mer, Magdalen Islands, Quebec, Canada.



© Dalbéra, J.P. / Musée de la Mer

## Mobile or fixed head-mounted display

- Musée des Plans-reliefs, Paris, France.



© Microsoft / Musée des Plans-reliefs

This device is based on augmented reality glasses *HoloLens* created by Microsoft.

- Jinsha Museum, Shengdu, China.



© Jinsha Museum / CGTN



© Jinsha Museum / CGTN

Visitors can see through the glasses a reproduction of the Jinsha archeological site.



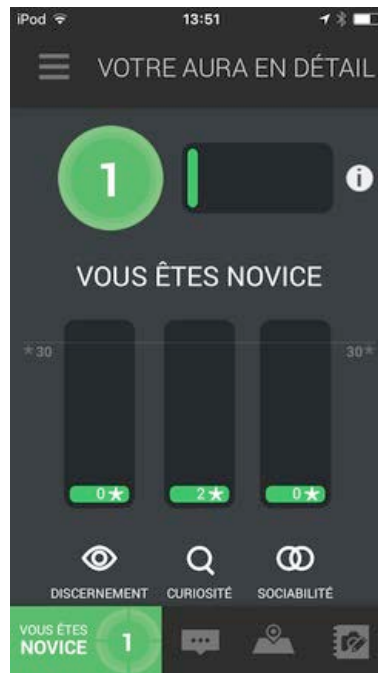
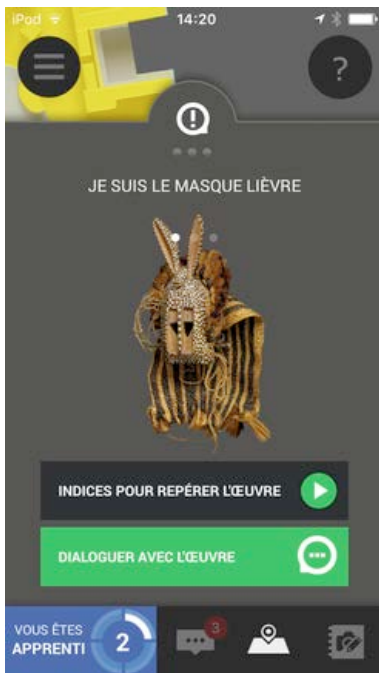
# Digital game devices



Offer a playful visitor experience and communicate with its publics thanks to the digital game.

## Digital game visit app

- Digital game visit app *TransMaître*: mobile app allowing to reveal «the secrets» of the works of art, Musée du Quai Branly, Paris, France.



© Musée du Quai Branly

## Digital game for a work of art/an object

A video game dedicated to one or several works of art.

- .

I did not find an exemple,  
maybe you have one!

# Creation devices



Allow the visitors to create, to customize in order to give their vision of a topic, a theme, a work of art. Create an appropriation of the theme by the visitor.

## Graphics tablet

In order to draw, to write, to note, to customize etc..

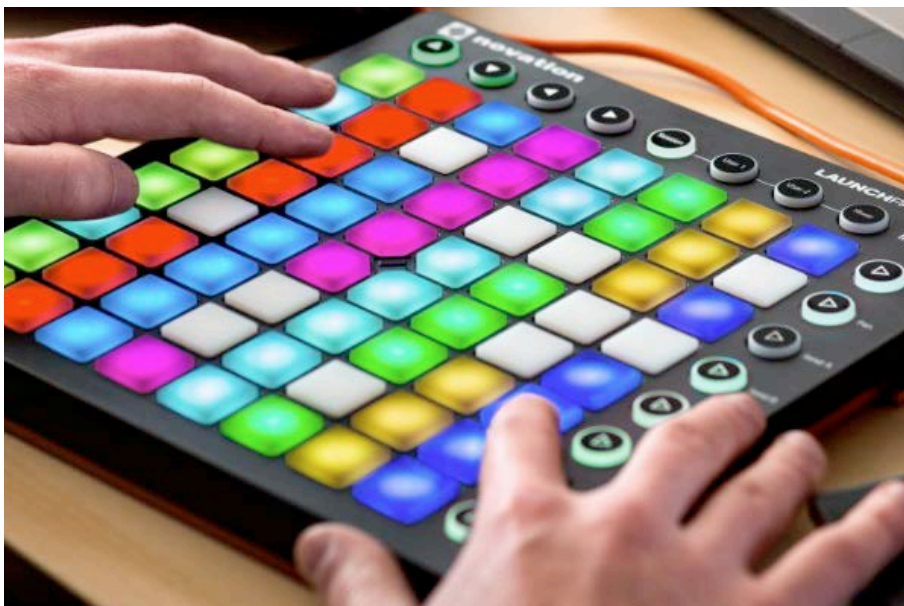
- Tate Museum, London, United-Kingdom.



© Funnell, L. /Studio Blackburn

## Mixing deck

- A Launchpad.



© Novation

## Creation app

In order to create images, sounds, to paint, to create with stickers etc..

- *SoundCamp* app (sound creation), Samsung.



© Samsung

- Cleveland Museum of Art, Cleveland, United-States.



© Cleveland Museum of Art



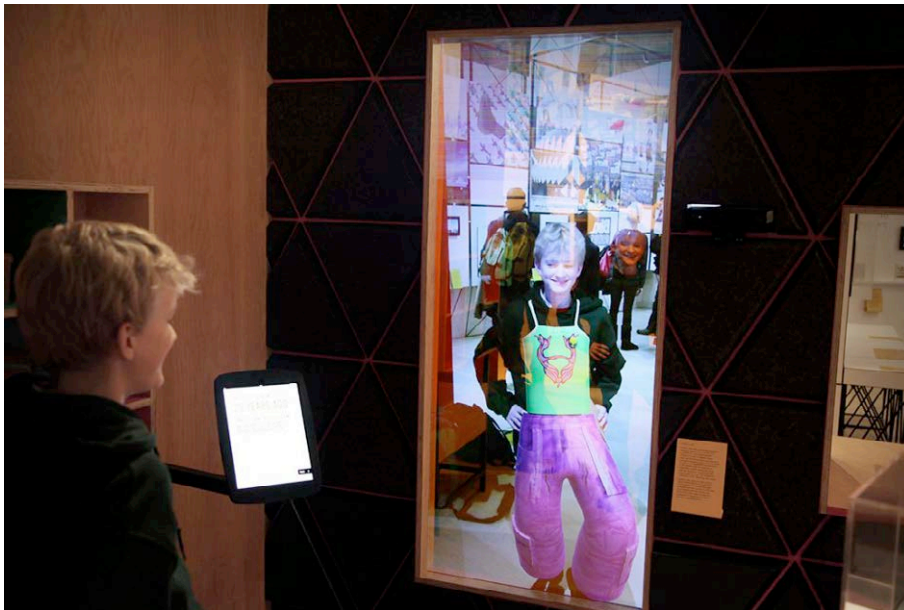
# Mirror devices



Use the image and the reflection of the visitors in order to communicate information and messages. Allow the visitor to have a personalized perception of the museum's topics.

## Augmented reflection

- The Design Museum, London, United-Kingdom.



© Design Museum / Kin Design / Blatch, H.

- Inner Mongolia Museum, Hohhot, China.

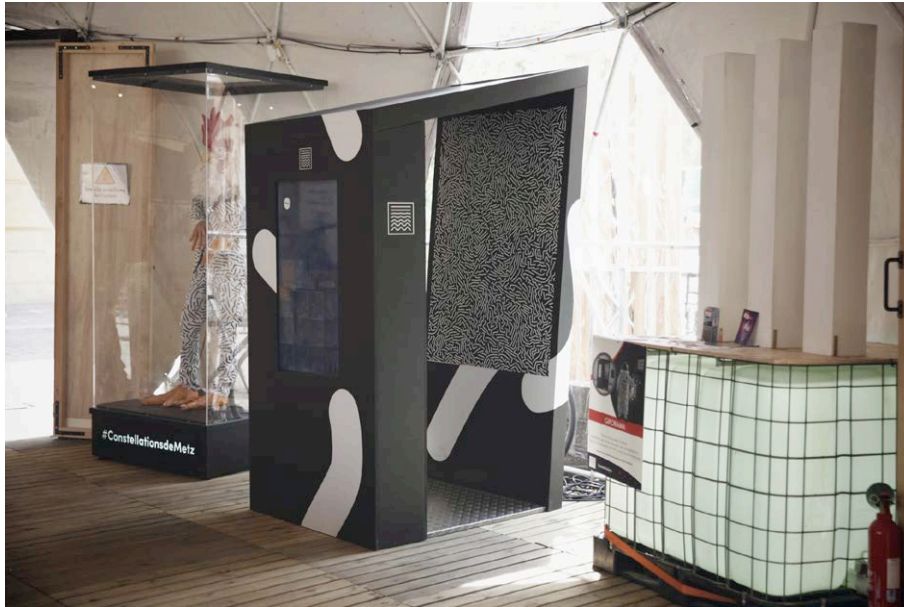


Shao, K. / Xinhua

## Gif photo booth

Device producing gif animated images.

- A gif photo booth from the company *Giforama*, Metz, France.



© Giforama



© Giforama

## Photography studio

Photography studio with personalized sets, accessories, digital filters etc..

- Pierre-Noël Museum, Saint-Dié-des-Vosges, France.



© Saint-Dié Info

- Museum-Aquarium of Nancy, Nancy, France.



© Muséum-Aquarium de Nancy

# Expression devices



Give to the visitors a way to express their opinions about the museum and its exhibitions, and allow the publics to add their personal feelings to the information presented.

## Digital visitor's book

- House of Victor Hugo, Paris, France.



© GuestViews / Maison de Victor Hugo

## Digital note

- United States Holocaust Memorial Museum, Washington, D.C., United-States.



© Small Design Firm / Holocaust Memorial Museum

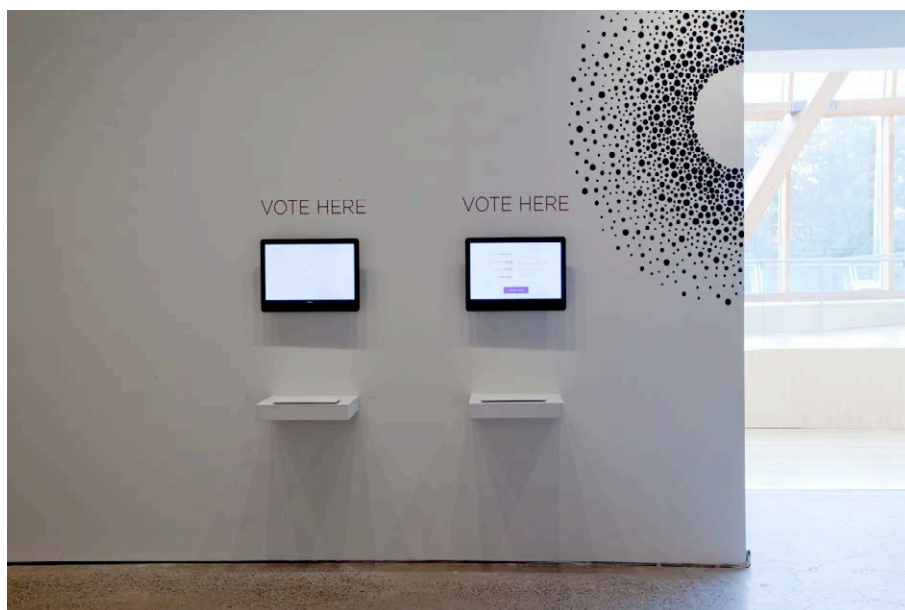
## Digital vote device

- London Natural History Museum, London, United-Kingdom.



© Faherty, A. / Strategic Content

- Art Gallery of Ontario, Toronto, Canada.



© AIMIA - AGO Photography Prize / Art Gallery of Ontario



# Video devices



Use the video in order to communicate about a topic, to make fixed images come to life or in order to offer a unique audiovisual experience to its visitors.

## Documentary video

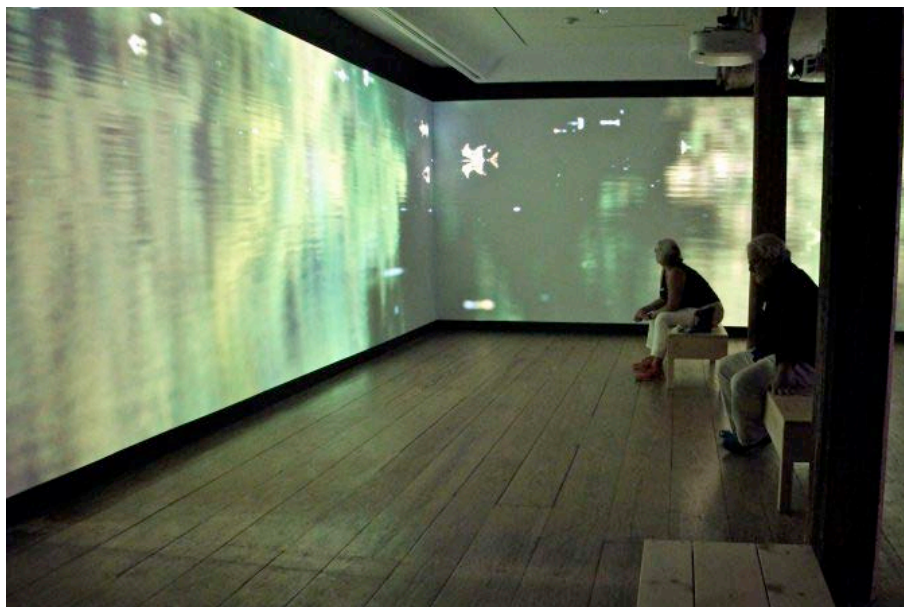
- New Museum, New-York City, United-States.



© Hutchinson, M. / EPW Studio

## Ambience video

- Brandywine River Museum, Chadds Ford, United-States.

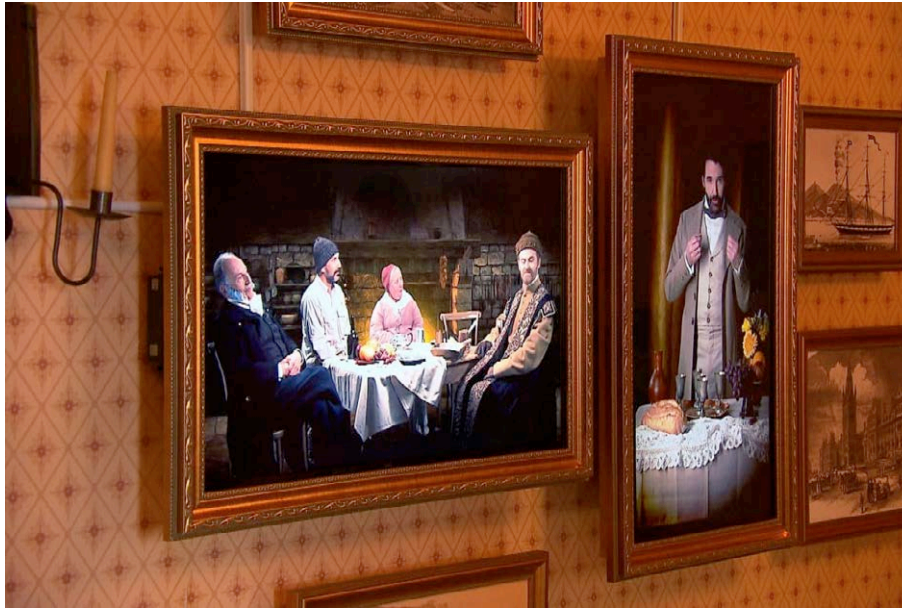


© Brandywine River Museum of Art

## Come to life video

Make a paint, an object, a work of art etc. come to life.

- Musée de la Gaspésie, Gaspé, Canada.



© Radio-Canada



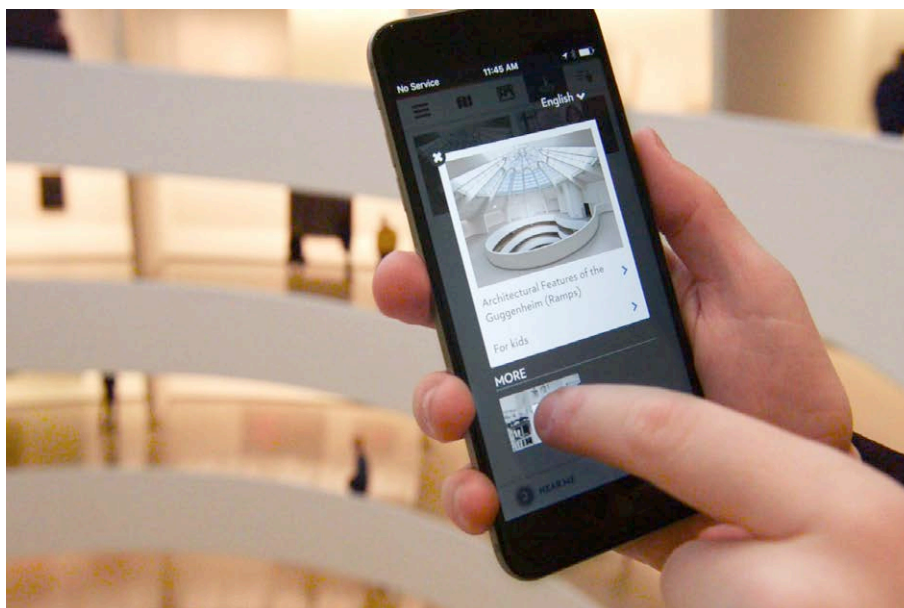
# Guidance devices



Use a unique and a personalized digital tool in order to guide the visitor through his/her visit tour.

## Visit app

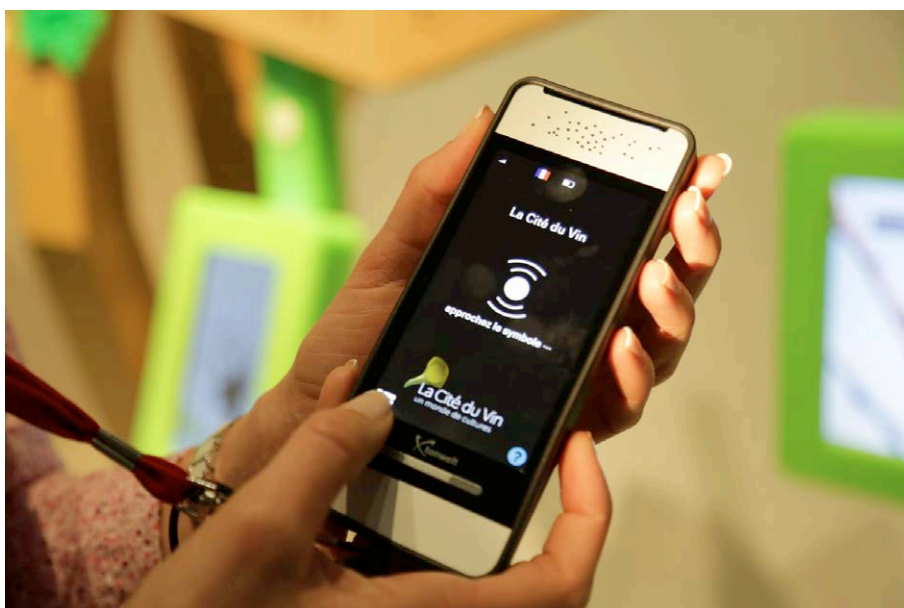
- Solomon R. Guggenheim Museum, New-York City, United-States.



© Solomon R. Guggenheim Museum

## Audioguide

- Cité du Vin, Bordeaux, France.



© Camille in Bordeaux

# Responsive devices



Add sensors to its digital devices in order to offer an interactive and a sensitive visitor experience within which the visitors have the keys to unlock information.

## Responsive to objects

- EPIC The Irish Emigration Museum, Dublin, Ireland.



© EPIC The Irish Emigration Museum

Object with an integrated chip put on a tactile screen.

## Responsive to movements

- California Academy of Sciences, San Francisco, United States.

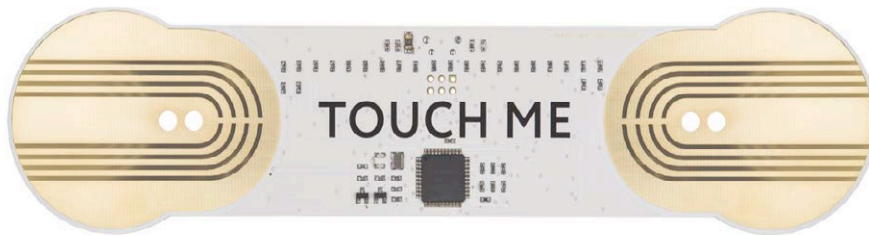


© Trimble, K. / California Academy of Sciences

The visitor has to gather the ice pieces with his/her arms.

## Responsive to touch

- *TouchMe*, created by the company Playtronica, Russia.



© Playtronica

*Touch Me* is a device that turns human touch into music.  
(More information at: [playtronica.com](http://playtronica.com)).

## Responsive to magnetic field

A device responsive to the human magnetic field.

- -

We did not find an exemple,  
maybe you have one!

## Responsive to sound

A device responsive to the sound from its environment.

- -

We did not find an exemple,  
maybe you have one!

# Hybrid devices



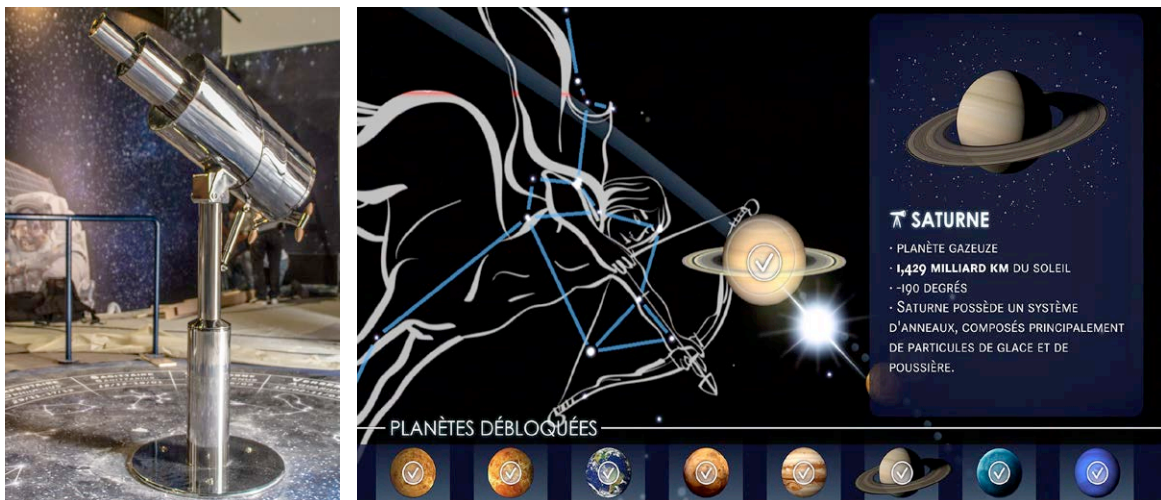
Mix the digital devices types in order to create unique and innovative digital devices for museums.

## Hybrid devices

An hybrid device is a device created from a mix of several digital devices types. We can find numerous hybrid devices in museums. Mix types of digital devices is a good way to develop his/her creativity, thus we recommend you to try to mix digital devices types.

For example, it is possible to mix a 360° projection device with an interactive projection device in order to create a 360° interactive projection. Also, we can mix a digital game device with an augmented reality head-mounted display in order to design an immersive digital game for its visitors.

- Planetarium of Montpellier, Montpellier, France.



© White Rabbit Pictures

This digital telescope displays a software allowing to look at the stars regarding their position in the sky in real time. It is a mix of a handling device with an augmented reality device.

- Musée des Plans-reliefs, Paris, France.



© Microsoft / Musée des Plans-reliefs



© 360natives

The augmented reality glasses HoloLens (Microsoft) are an hybrid device mixing an holographic device, with a théâtre optique device and an augmented relality device.

## The author

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**Website:** [julienr.pro](http://julienr.pro)

Download the typology on: [julienr.pro/typology-digital-museums](http://julienr.pro/typology-digital-museums)



## Icon credits

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Vector Bakery via the Noun Project  
(<https://thenounproject.com>).

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- **Viewing:**  
Eucalyp via the Noun Project  
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- **Immersion:**  
Gosia Gasiorowski via the Noun Project  
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- **Augmented reality:**  
Ben Davis via the Noun Project  
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### p.39:

- **Digital game:**  
mynamepong via the Noun Project  
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- **Création:**  
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- **Mirror:**  
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- **Expression:**  
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- **Hybrid:**  
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