

# Interactive Museum Media: Bring Your Own Personal Device

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*As part of RLMG's continuing efforts to anticipate and respond to potential Covid-related impacts on visitor experiences in museums, we're creating a series of reports on exhibit interactivity, technology, and related topics. While the future is unpredictable, we're hopeful we can offer information that will help you adapt to a range of possible changes in your institutional policies and visitor expectations.*

In the first report we introduced a variety of hands-off approaches to conventional touchscreen exhibits, and in the second we focused on gesture and camera tracking specifically. Here, we explore how visitors might use their own personal devices (or smartphones/tablets handed out by an institution) to:

- Access exhibit content and information via the web.
- Control or contribute to a shared display.
- Layer information, stories, and graphics onto physical space.
- Share written messages or use text to modify a shared display.

Most of these approaches are relevant whether a museum is building a new exhibit with personal devices in mind or retrofitting existing experiences.



Visitors at the Great Lakes Science Center use tablets handed out by the museum to explore artifacts.

## Access Content and Information via the Web

Both Quick Response (QR) codes and Near-field Communication (NFC) tags can be incorporated into graphic signage where they are easily scanned using a personal device. On most devices, QR codes are scanned using the native camera application, while NFC tags are read by simply bringing a device within a few inches of a tag. When scanned, these codes or tags provide access to a microsite that allows visitors to, for example:

- Access web-based versions of touch-screen interactives. By placing tags or codes near these exhibits, visitors can use their device to interact with versions of the content adapted for the web, without touching the existing hardware.
- Access additional content. QR codes and NFC tags can be used to activate new layers of information or storytelling at an exhibit. For example, visitors might use their device to:
  - Activate a video showing how a display object was made.
  - Translate wall text or text on screen into a different language.
  - Manipulate a 3D model of an object on display.
  - Hear a piece of audio, or
  - Vote on a topic posed by the exhibit, and send responses to a display.
- Provide wayfinding or services throughout a museum. A system of QR codes, NFC tags and website addresses throughout a museum can connect visitors to maps, guides, live presentations, etc. (See [Teleportivity](#) as an example of a similar service in commercial environments such as hospitals or hotels.)



Sample QR code

**QR codes** are matrix barcodes that are simple to print and easy to use. iOS and Android platforms incorporate QR code readers into their native camera applications. All a visitor needs to do is to point a phone or tablet camera at a code to link to content.

**NFC tags** are small microchips that can be embedded in stickers and the data they store is sent to other devices with NFC capabilities. Most tablets and smartphones are NFC-enabled, and will read an NFC tag when it's in close proximity (within a few inches).

A **microsite** is a page, or a cluster of pages, dedicated to a specific topic or function within an organization's larger website.

## Control or Contribute to a Shared Display

Another opportunity afforded by the use of QR codes, NFC tags, as well as other mechanisms, is the ability for visitors to pair their devices with a local WiFi network so that they can engage with or control elements on a shared display.

For instance, visitors with a paired device might:

- Use arrow buttons on their personal device's screen to flip through images on a shared display or control characters in a multiplayer game.
- Create a visual element and release it into a digital environment.
- Select a video of an individual to hear that person tell their story (and listen via the personal device).

### Considerations:

This type of deep integration works best in new installations, or if significant resources are available to modify an existing installation. Careful consideration of the user interface design for the exhibit station and the personal device is needed, as is a robust networking infrastructure and a dedicated back end.



Sketch and Release, which we created in partnership with the Maritime Aquarium at Norwalk, offers an interesting hypothetical example of how to retrofit an existing exhibit for use with personal devices. As built, visitors use a touch screen station to create an animal and send it to a large-scale digital seascape, where it comes to life. In a post-pandemic world, visitors might pair their device with the large, shared display in order to use the same set of tools to sketch and release a creature from their phone or tablet.

## Layer Information, Stories, and Graphics onto Physical Space

Augmented Reality (AR) is the seemingly magical superimposition of digital imagery onto the actual physical world. With a dedicated AR app on their device, visitors scan a unique graphic that activates animations, text, or other visual elements on their screens. These are carefully mapped to the physical space in front of the user as seen through the camera. In a museum context, AR allows visitors to:

- Layer content onto a physical display object or environment.
- Manipulate or examine an artifact that can't otherwise be touched.
- Bring an object, space, or scene to life with video, sound, or animation.
- “Bring home” items from the collection to interact with or display in their own spaces.

### Considerations:

AR experiences are most successful when the digital world on screen integrates as seamlessly as possible with the real world. Prototyping is critical during the design phase to ensure this integration. Note: one of the benefits of AR is that it can be added to an existing exhibit without requiring significant modifications.



At the Great Lakes Science Center, visitors use museum-provided tablets to scan a series of unique graphics (called “mission patches”) located near corresponding artifacts. With AR visitors can, for instance, scan the “Apollo” patch and explore a 360 degree view of the interior of the museum’s Apollo space capsule, or scan the “Rover” patch and see how the Mars Rover’s airbags helped the rover land safely.

Sample mission patch that visitors scan to trigger AR activity.

## Share a Written Message

Text messaging is a ubiquitous form of communication that can be applied in the context of a visitor experience. Visitors can send a text message to a dedicated phone number in order to add their words to a collective display, or they can modify the appearance of a shared graphic or sculptural display by, for instance, texting the name of a color. If an experience already incorporates feedback from visitor-input stations, a museum might consider adding text messaging as a secondary form of feedback.

### Considerations:

These systems require a custom back-end server to manage the incoming messages and internet access for the display stations in the exhibition. Emailing is also a viable option, though perhaps a less-preferred platform at this moment in time.



The Word Wall at the National Aquarium in Baltimore relies on input screens where visitors compose a short message about what water means to them and share it to a large display. A system like this could be retrofitted to include text messaging as an input mechanism in addition to, or instead of, the permanent screens.

We continue to look to our own experience, to our partners, and to existing case studies to provide inspiration and insight as we write this series of reports, and we'd love to hear about the creative solutions you would like to investigate further. Our team at RLMG is ready to continue this exploration with you.

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