Digital Wayfinding Trends: Lessons Learned from Museums, Healthcare, and Transit Experiences
Introduction

Over the last three years, experience designers have unveiled ground-breaking fusions of traditional and interactive wayfinding elements, animating the public realm and molding new user experiences. Museums, healthcare facilities and transit systems have been particularly forward-thinking, combining apps, indoor location technology, and digital and static signage to guide visitors in and around their facilities.

This study explores eight digital wayfinding experiences across the seemingly disparate environments of art museums, hospitals, and public transit to learn what makes for the most successful and seamless blend of digital and physical guidance. We will consider these tools—whether they are apps, touchscreens, or digital signs—from a user's perspective, evaluating their usefulness in navigating and deciphering the environment.

Our goal is to assemble lessons in user experience and system design that can be applied to tomorrow’s digital wayfinding projects. There is a great deal to be learned from interacting with this generation of tools and assessing their successes and limitations. As we know, technology evolves swiftly, only to be outpaced by our expectations for it.
Diverse Missions Yet Similar Wayfinding Challenges

What do museums, hospitals and transit systems have in common? Despite their distinct roles in the civic realm they share more than a few attributes:

1. Large maze-like spaces
Many museums have outgrown their Beaux-Arts footprints and sprawl into contemporary additions, challenging primary circulation patterns. Medical centers often develop as accretions of buildings and additions, growing over time to span city blocks. Multi-modal transit centers weave subway, rail, and bus traffic through labyrinthine connections.

2. Complex programs
Beyond their concrete conglomeration, these facilities are built to house complicated systems: clinics require specialized equipment like MRIs and labs; museums need distinct spaces for exhibits and storage; and transit centers are built around platforms, turnstiles, and gates. Requirements of these stationary elements often take precedence over the design of an ideal visitor experience, resulting in more challenging journeys for their audiences.

3. High percentage of first-time visitors
During a recent hospital wayfinding project, researchers found that 30% of those surveyed were first-time visitors to the facility and an additional 40% visited rarely, 1-2 times a year. A study of visitors to the Carnegie Museums of Pittsburgh revealed that 40% of participants visit the museum “every few years” or less. In 2016, half of all transit rides in the US were by commuters on familiar routes (routes they’ve traveled more than once). But the other half of rides were people navigating to a new destination and new riders, like tourists and visitors.

4. Purpose-driven journeys that benefit from pre-trip planning
No one visits a hospital without a specific reason, whether it’s for a lab test, doctor’s appointment or to visit a patient. While visitors may meander within a museum’s galleries, they probably planned the visit ahead of time. And public transit—as a means to get from point A to point B—requires some preliminary planning to get to the right bus stop, train station, or subway entrance to start the journey.

5. Google Maps doesn’t help indoors
Google Maps has become smartphone users’ default digital wayfinding companion. comScore’s 2017 U.S. Mobile App Report cites that 24% of users “cannot go without” their Google Maps app—namely, it their fourth most essential app. Google has mapped nearly the entire planet (not to mention Mars), but Google Maps is of little help indoors or on private property. The Google Indoors initiative, to provide “blue-dot” wayfinding (see sidebar, p. 3) inside airports, museums and other large venues launched in 2014. Naturally, the program requires permission from and contracts with facility owners, but those hurdles have hampered its expansion and have prevented it from becoming a ubiquitous and reliable tool.

6. These institutions want you to find your way...
In the very competitive healthcare market, hospitals compete on “patient experience,” which is often soured by getting lost, encountering parking problems, or arriving late to appointments. Museums are seeking novel ways to make their environments more welcoming and less intimidating—with the goal of helping visitors get the most out of their visit. Transit systems must encourage ridership to meet their revenue targets and effectively serve their communities.

7. …and are investing in digital wayfinding to better serve their communities
As the rest of this report will illustrate, innovative institutions in each of these segments have made digital
wayfinding a priority, launching public-facing tools to help people find their way to and around their environments.

**Broadening the Definition of Wayfinding**

Today’s technology expands upon the traditional definition of wayfinding, from finding your way to finding meaning along the way and context at your destination.

Urban planner Kevin Lynch defined the term “wayfinding” in his seminal book *Image of the City*, published in 1960. To paraphrase, he characterized wayfinding as “definite sensory cues from the external environment [such as] maps, street numbers, route signs, and bus placards.”

Lynch's original ideas about how we decipher our surroundings resonated with architects and designers, and effectively cultivated a new discipline in the gaps between the two professions: experiential graphic design (EGD).

The first generation of EGD practitioners focused on those traditional cues of maps and signs, codifying best practices to orient and guide visitors. Over time, they widened their domain to “placemaking,” making the places we visit distinct and memorable.

With the debut of the smartphone, the definition of wayfinding has once again evolved. At its core, wayfinding’s role is still to guide visitors to their destination easily and efficiently. But now our smartphone's sensors and apps can infuse meaning along the journey and helpful, contextual tools upon arrival.

In general, when we navigate, we look for the shortest, most efficient route—wayfinding apps address our time-driven needs by routing us around traffic, highlighting the closest gas station, and directing us to the fastest transit option. It’s no surprise that transit apps are the most innovative and popular wayfinding apps.

However, when we meander through a park or visit a museum, efficiencies don’t drive most of us—instead, we want to get the most out of our sojourn.

For example, in museums, wayfinding has become inseparable from the museum’s mission to enlighten and illuminate the collection. The term “playfinding” highlights how people wander and explore environments like museums (or parks or cities, for that matter), in a less directed and more serendipitous manner. Playfinding apps and interactive screens reveal the secrets of the place as you navigate: such as the history of an artifact or the biography of its maker.

In a hospital, wayfinding’s role is explicit and necessary, but subordinate to the main reason for the visit: medical care. In these facilities, wayfinding is most effectively expressed within the personal context of the visit. For example, a hospital’s app may list a patient’s appointment with “Get Directions” or “closest parking options.”

These new tools—whether pre-trip planning on your home computer, a smartphone app, or on-site digital signs and kiosks—inspire a new level of confidence in navigating. We’re assured that we’ll get to our destination without getting lost. And if we do get lost, we are equipped to find our way.

Armed with these convictions—and with our smartphone in our pocket—perhaps we will find deeper meanings along the journey.

**Blue-dot wayfinding** is an app or a website that shows your current location (often marked by a blue dot) on a map; the dot moves with you as you travel.

All blue-dot wayfinding relies on a way for the user’s smartphone to determine its location in the environment—Google Maps uses the phone’s GPS chip to identify its location from the network of GPS satellites above (and therefore works best outdoors.)
Augmented Reality Among the Relics

Heave open the bronze doors at the formal entrance of the Detroit Institute of Arts and the museum's Beaux-Arts grandeur envelopes you. Suits of armor flank the Great Hall which is crowned by a cathedral-like illuminated ceiling. This may not be where you would expect to find cutting-edge technology for wayfinding but in January 2017, this 135-year-old institution debuted Lumin, the first museum tour based on Tango, Google’s experimental augmented reality (AR) platform.

At the information desk, visitors borrow a 6.4-inch Lenovo Phab 2 Pro smartphone perched sideways on a short grip handle. Lumin, especially built for this souped-up smartphone, guides visitors through the Middle East and Africa galleries to introduce visitors to seven artifacts that are brought to life by augmented reality experiences.

This device becomes the visitor’s “bionic eye” unlocking the original use, context, and condition of each relic.

As you turn, Lumin renders the sandy brick walls, crenelated blue fortifications, and the expansive desert beyond. Scan the scene and see that this beach-blanket-sized dragon panel is merely one of hundreds that wallpaper the massive fortress—you begin to grasp the scale and sophistication of this ancient city.

“Your brain transports you to Babylonia,” explains Andrea Montiel De Shuman, Digital Experience Designer at DIA and manager of the Lumin project. It’s “a moment of enlightenment about art”—a much more immersive experience than the old audio guide.

De Shuman recounts how the Lumin project began: “we created learning outcomes first... we wanted to engage, rather than instruct so that people aren’t intimidated; they are encouraged.”

To guide visitors from one artifact to the next, Lumin places virtual blue dots on the floor, guiding through doorways and around corners. Tango’s real-time rendering engine places these dots in perspective and they “stick” to the floor, making them easy to follow. In post-visit surveys, De Shuman found that 77% of visitors found this wayfinding feature helpful in navigating the labyrinthine galleries.

Without question, the most popular stop on Lumin’s tour is the 2,000-year-old mummy encased in a sarcophagus flecked with gold. Pan across
its body and Lumin reveals its skeleton with x-ray (actually, CAT-scan) vision. Visitors play “Indiana Jones meets CSI” as they discover a fracture in the mummy’s skull and ponder its provenance.

DIA undertook this project as a partnership with Google and New York-based GuidiGO, an AR-based publishing platform that utilized Google's development tools.

For four months after launch, DIA staff conducted observational user research, intercept interviews, and post-visit surveys to learn visitors’ perceptions.

Despite the technical glitches common in any prototype, Lumin scored high levels of visitor satisfaction: 9 out of 10 visitors stated that Lumin “helped engage with the art.”

In fact, the most successful tour stop was also the one most prone to technical problems: lighting in the mummy’s gallery (dimmed to preserve the relics) strained the Phab’s sensors and caused some lag-time in rendering the mummy’s secrets.

While visitors must learn how to point and scan the mounted device, they got comfortable with Lumin relatively quickly, as it revealed surprising and delightful secrets.

When it comes to using new technology, “people are willing to try new things” De Shuman noted. “As long as you make it meaningful, it doesn’t have to be perfect.” That response may be situational—in the low-risk environment of a museum visit, people may be more willing to experiment.

De Shuman and her colleagues consider the Lumin experiment a success—more than 80% of visitors experienced the whole tour, spending an average of 35-40 minutes with the exhibits, sometimes revisiting their favorite stops for another round of playful exploration.

Google has evolved Tango into a new platform, ARcore, which doesn’t require as much specialized hardware. DIA is testing a new version of Lumin this summer and by the end of 2018, DIA visitors will get to experience Lumin’s secrets across the entire museum.
Its scale and substance could easily overwhelm, but visitors consistently rank the Art Institute as the number-one museum in the world on the travel website TripAdvisor. That’s a result of an ongoing commitment by museum staff to provide a range of visit-planning and on-site resources, all with the goal of making the collection more approachable and meaningful.

Perhaps the most innovative tool was designed specifically for one of the toughest audiences to please—families with young children. In August of 2016, the Art Institute introduced JourneyMaker, digital touch-tables where younger members of the family are invited to create a customized tour of the museum.

Families start their visit at the Ryan Learning Center just inside the Millennium Park entrance and sit at low wooden tables embedded with touch screens. Kids spin a virtual twelve-sided die to select a theme like “Time Travelers” or “Strange & Wild Creatures.” Then they choose from a scattering of images to create their five-stop tour.

The images are shuffled by a sophisticated algorithm to create the best sequence of stops (shortest walking route) and then the family’s personalized adventure is printed in color on a tabloid sheet. The JourneyMaker guide folds into a little booklet, with activities to engage with the artifacts at each stop and an illustrated map on the back.

JourneyMaker turns wayfinding into playfinding, diffusing decisions about what to see and where to go. Kids are deputized as leaders of the family’s visit. This active role entices the whole group to be more curious and playful—an ideal mindset for learning.

JourneyMaker was conceived by teams from the museum’s Education and Digital Experience departments along with Seattle-based Belle & Wissel, the design firm that produced the interactive experience. The team started with a hypothesis: “Could we use imaginative storytelling and participatory activities to connect families with fine art?”

A key factor in its success is the fact that the digital aspect of JourneyMaker is limited to the straightforward act of tour-creation at the touch-tables, where staff are available to help. Families walk away with their “low-tech” tour booklet to guide them through the collections.
Jennifer Snyder, Director of Interactive Media at the Art Institute, sees her department's mission as developing an “ecosystem of digital experiences for different levels of engagement.”

Their core offering is the Art Institute app, which features audio tours, exhibit guides, and an interactive map. The internal team designed and developed the app in 2016 with Potion, a New York-based interactive design studio. Version 2.0 debuted in April 2018.

The interactive map features blue-dot wayfinding (see sidebar, p. 3) inside the museum. It took some effort to make the experience seamless and precise enough for visitors to use.

The app identifies the visitor's location by triangulating from nearby WiFi access points.

The museum's double- and triple-height spaces were a challenge to this nascent technology—and staff found that the blue dot was not accurate enough to orient and direct visitors effectively until the WiFi network was upgraded to truly blanket the galleries.

The interactive map is the keystone of the app, where visitors can zoom in to see icons of major artwork and navigate to them. The app also features a robust search utility that finds any artwork on view.

The app's most popular feature is “Look it up.” Visitors can type in a code printed on the artwork's wall label to get an audio segment about it. This feature has increased average dwell times from 14 to 18 minutes. More importantly, visitors learn more about the art that captures their attention.

The team continues to analyze data generated by visitors using the app. Their hypothesis is that visitors navigate better by landmarks (“turn left at the Chagall Windows”) than by blue dot alone. They plan to launch landmark-based wayfinding on the map and in audio directions soon.
The Children’s app, like most of today’s indoor blue-dot wayfinding apps, uses Bluetooth (or BLE, short-range wireless technology) to receive its position from beacons installed in the environment.

The Children’s app also displays wait times at the ER, allows parents to reserve a spot at a nearby urgent care clinic, and connects to the system’s medical record app.

Atlanta-based Gozio Health developed the Children’s app using their indoor location platform and installed custom Bluetooth beacons along the corridors and in the public spaces at the three hospitals.

Powered by AA batteries and about the size of a deck of cards, these beacons broadcast their location to any passing devices that have Bluetooth enabled and the Children’s app installed.

As the smartphone identifies its location from the beacons above, the app orients the building map to show the surrounding “neighborhood” and displays the blue dot at the user’s position. As the visitor walks, the app updates its position and the blue dot moves forward on the map.

After beacons have been installed, there’s a critical step to be completed before the app can work: a map of the environment must be created and synchronized with the network of beacons, matching a beacon’s physical location with its correct location on the map.

Gozio has taken a unique approach to this task, employing a bespoke robot to wander the public areas of the hospital, using its multiple sensors to record the routes, corridors, and rooms that will be displayed in the app.

Open the Children’s app and you can view all the care locations. Tap “Scottish Right Hospital” and basic information about the hospital is displayed, along with a “Let’s Go!” button. Tap it, and the app offers to open your Maps app to follow driving directions to the hospital.

Once you enter the hospital, you can return to the Children’s app to get directions to locations, like “Day Surgery.”

Your position is highlighted on the map, along with a yellow path toward your destination. Step-by-step directions like “Right Turn Ahead (170 ft)” and “Take Elevator to the Second Floor” pop up while you walk. The blue dot moves as you move, nearly as accurately and smoothly as walking down a city street following Google Maps.
But how easy is it to follow a blue dot indoors, navigating narrow corridors instead of city sidewalks?

There is a learning curve—it takes some time to figure out how closely to monitor the map (while not bumping into walls and other people.) The pace of directions can be faster than expected, making it easy to miss your turn and veer off route.

We all know that the blue dot works well in a car, at the scale of highways to driveways. It also works as we walk within a city, at the scale of neighborhoods, blocks and buildings.

For example, when you walk down a city street and Google Maps says “Turn right on Madison St.,” you may have several minutes of walking to orient yourself, see the cross street up ahead and get ready to turn. We innately understand the scale of the city, the momentum of its blocks, and its parade of buildings.

However, we are not equipped with a mental model to follow when we walk inside a building: hallways swerve and branch, stairways take flight and elevators hide in alcoves. Following a blue dot indoors requires more of your attention, as you constantly scan between the abstracted map on your smartphone and the potential paths and obstacles ahead.

Psychologists speak of the “cognitive load” of a task, meaning the level of mental effort or working memory required to complete it.

The goal of any wayfinding system—and especially those in hospitals—is to lessen the cognitive load required to get from point A to point B. Even with practice, following a blue dot indoors may not get easier, since the process requires a high and persistent cognitive load to orient, re-orient, navigate, and course-correct.

This inherent challenge to indoor blue-dot wayfinding may either be diminished or exacerbated by the app’s user interface.

The Children’s interface is relatively simple, with directions in large type at the top of the screen. The map is colorful with corridors delineated in gray and “zoomed in” enough to show your context. Nearby destinations are labeled.

In addition to Gozio, there are two major competitors in indoor blue-dot wayfinding: New York-based Connexient has built apps for Memorial Hermann in Houston and National Institutes of Health, among others. Dignity Health’s network of hospitals utilizes Austin-based Phunware’s indoor wayfinding platform.

All three companies promote similar functionality and rely on beacons or other sensor networks to pinpoint users’ locations.

In addition to the heightened attention that these apps require from their users, there are some additional hurdles visitors must overcome to install and use them. Users must turn on Bluetooth to connect with the beacons and turn on Location Services to allow the app to track their location.

The fundamental assumption shared by these providers is that imitating the tools we use to navigate cities is the best way to navigate building interiors. Unfortunately, the cognitive load of tracking the blue dot as it hovers above the maze-like floor plan may just be too great for most visitors.
New York-based design firm Two Twelve partnered with the institution to produce a wayfinding master plan and has been collaborating with the staff ever since on a sequence of digital and physical wayfinding deployments.

Debuting early in 2018 in the new Science Building is the latest rendition of a freestanding interactive screen that the team named the “digital pylon.”

Positioned at decision points on the ground floor of the medical center, these digital pylons direct visitors to major destinations. On the embedded digital screen, directions to nearby destinations are listed in English, with their equivalents rotating in visitors’ four major languages (Spanish, Mandarin Chinese, Russian and Arabic).

Anna Sharp, Creative Director at Two Twelve explains: “while the pylons are designed to be hard-working wayfinding elements, they also broadcast a larger mission of the medical center: to welcome non-English speakers and assure them they will find care in their own language.”

In the melting pot of New York City, NYU Langone Health offers interpretive services (via phone and in person) to all visitors who request them.

Today’s digital pylons are the result of a series of participatory design sessions, usability studies, and user research efforts by Two Twelve and LVCK, a New York-based design firm.

As the team began designing the wayfinding signage system, they wrestled with the need to communicate to non-English speakers. With Spanish (38%) and Russian (27%) nearly tied as most-requested on-site interpretation, signs would need to carry at least three languages, which would result in overly-crowded signs. The cognitive load required to parse through unfamiliar text would make them unusable for everyone.

Instead, they came up with a unique hybrid of a sign and a touch screen, where destinations and directional information would be displayed in
English, with other languages scrolling by in tandem, connecting the native department name with the English name visitors would encounter on physical signs. Visitors could also click on a destination or a map to see directions translated to their chosen language.

It was a novel idea at the time (2011) to encase an interactive screen in a free-standing enclosure—it looked like a digital sign but you could walk up and touch it to get custom directions. Would anyone understand these hidden features?

Two Twelve designers built a low-tech prototype (foam-core, a TV and a MacBook) to test with Spanish-speaking volunteers at the medical center. A majority of participants reached out to touch the screen—the novelty of its shape didn’t seem to be a hurdle to usage. And now, it’s hard to imagine a screen that doesn’t respond to a touch.

When the first generation of digital pylons were installed, a larger user research study was conducted to gauge the effectiveness of the interface design and the translated content.

Two dozen non-English speakers were invited to visit the medical center (most for the first time) and participate in a “scavenger hunt” looking for a particular destination. They were not specifically directed to use the digital pylon, but like all visitors, scanned everything in the environment to find their way. It was a test of all components of the wayfinding system, from signs, to maps, to the digital pylons. Researchers observed how people navigated and which tools they consulted along the way.

The study generated a series of design recommendations, many of which endorsed further interactive features for the pylons, like the ability to click on a map to get directions to a particular location.

One memorable story from a subsequent usability session was when a first-year medical student and his mom approached the pylon. Mom smiled when Mandarin swept over the screen. Her son translated: “what a surprise to see my language at this prestigious place!”

Enhancements have been made to the content and interface of the pylons over the years. The opening of the Science Building and Kimmel Pavilion in 2018 afforded a fresh look at the physical design and an opportunity to once again review usability and add new features.

Today’s digital pylons offer a directory of major destinations and the ability to tap on any destination to get directions. The screens are now vertical instead of horizontal, to better match the shape of the campus map and to be more accessible to all visitors.

A trio of digital pylons welcome visitors in the Kimmel Pavilion. Metrics from existing pylons informed the placement and number of screens.

The oldest of the pylons are seven years old—“ancient” in terms of technology—but because they were designed to address a specific audience, they remain useful today.
Minding the Gaps in Transit Journeys

By now, most transit systems in major metropolitan areas provide trip-planning and system status information on websites and apps. Across the nation, traditional bus stop signs are being replaced or augmented by digital signs that provide “next bus” countdown clocks. But perhaps the most helpful innovations in transit wayfinding are the small tools that fill in the gaps between travel modes—stitching the commuter’s fragmented trip into a more seamless and efficient journey.

The Chicago Transit Authority (CTA) is currently updating their network of digital screens at bus stops and around the L, Chicago’s subway/rail system.

Modest changes in content and placement of these screens is yielding a huge payoff in rider experience.

“Next train” messaging is now displayed outside L stations—before riders descend to the tunnels or hike the stairs up to the elevated platform.

Nudging this information outside the turnstiles beyond the physical boundaries of the system gives riders more information to adjust their commute in real-time. For example: “Green Line to Cottage Grove is delayed? The 55 bus will get me home faster.”

Wayfinding tools often reflect the bureaucratic silos of the authority that manages them. The breach at the CTA between bus and rail divisions is legendary and prevented staff from seeing the system from a rider’s perspective.

The new signs outside L stations give riders more autonomy to change their route on the fly. But those silos remain: neither bus nor L signs display information about the other mode’s nearby arrival times.

New York’s Metropolitan Transit Authority (MTA) recently made a similarly modest but truly rider-friendly improvement in their digital signage by adding “Next Stop” signs on Select Bus Service (SBS) buses. Three ceiling-mounted signs on each bus broadcast the upcoming sequence of stops and transfer options (to subway, ferry, and other buses) with their arrival times at each stop.

During rush hour, when your bus is flanked by trucks, it’s hard to know where you are along your route. These overhead signs provide assurance to commuters and extra context for tourists.

They also broadcast that the MTA is one cohesive network by giving riders real-time options at each potential decision point along their journey.
American Airlines is an innovator in producing digital tools for their fliers. In 2016, American launched blue-dot wayfinding via the AA app at their major hubs. When a visitor uses the app (with Location Services turned on) in one of these airports, they can open the terminal app and see their location on the map. From there, they can explore amenities and shops or get directions to a particular gate.

In the fall of 2017, the app added an “order food” button to the bottom of the map: as your plane taxis into the gate at DFW, you can order your brisket tacos (“Ready in 3-10 minutes”) at Salt Lick Bar-B-Que next to Gate A16, where your flight to Boston takes off in less than an hour.

Oakland-based LocusLabs provides the interactive mapping and pinpoints the user’s location through a mix of technologies including: “BLE beacons, WiFi, and geomagnetism—as well as third-party solutions such as smart lighting” as their website explains.

Continuing their experimental approach to new technologies, American produced a proof-of-concept video that shows how Apple’s new AR platform, ARKit, could be used to guide visitors through terminals, overlaying a virtual blue path on the phone’s screen similar to Detroit Institute of Art’s Lumin wayfinding path of blue-dot breadcrumbs.

CASE STUDY | American Airlines & Houston Airports

High- and Lower-Tech Airport Maps

Depending on how much you travel, you may have learned the secrets of your hometown airport—closest place to park, shortest security lines, or best coffee in the terminal. But descending a skybridge into an unfamiliar airport can shake even a veteran traveler’s confidence, especially when rushing to make a short connection. Airlines and airports are adopting digital wayfinding tools to ease these stopover worries by providing gate alerts, interactive maps and even meals on the go.

American Airlines & Houston Airports

American Airlines


The site offers real-time wait times at all security checkpoints and availability of parking spaces in the garages.

Click on the airport map (also produced by LocusLabs) and get directions to any location. The site doesn’t utilize blue-dot wayfinding, but directions are clear and easy to follow.
Lessons Learned

What can we learn from this generation of digital wayfinding technology? These eight case studies reveal useful insights from both the user's perspective and from the perspective of the institution offering the tools.

User Experience

1. Blend physical and digital wayfinding into one cohesive experience.
   The Art Institute’s Journey-Maker is a great example of blending the digital (designing your tour at the touchtables) and physical (following your paper guide to the tour stops, referring to signs along the way.) Digital tools create the custom tour and traditional tools guide the way. It is critical that all wayfinding tools share the same vocabulary and iconography to make the journey as seamless as possible. (See the Sign Research Foundation Report “Wayfinding Management: Models & Methods in Healthcare Environments” for more on how to manage wayfinding content effectively.)

2. Look for ways to provide context along the journey.
   As mentioned in the introduction, today’s broader definition of wayfinding demands that we incorporate contextual information and features. What information could your visitors use to make their experience in your environment more efficient, more rewarding, or more memorable? Something as simple as locating the nearest restroom is a practical, relevant feature that most digital wayfinding tools lack today.

NYU Langone Health prominently welcomes their non-English speakers with the digital pylons. American Airlines solves the practical problem of finding a meal during a layover. Each element conveys the dedication of the owners to understand and serve their audience.

It is also important to note that visitors benefit from pre-trip planning tools that equip them with helpful information even before they leave home.

3. Lessen the cognitive load.
   Navigating takes attention and attention is in short supply in our chaotic world. Cluttered interfaces, stuttering blue dots, and dense maps are too confusing to use. When faced with too much information, most visitors abandon the tool and ask a human to show them the way.

Most of today’s indoor blue-dot wayfinding apps ask too much of their users, resulting in unsatisfying interactions. Scale is definitely an issue: it is easier to navigate the Art Institute’s spacious galleries than Atlanta Children’s narrow corridors. While the technology enjoys a “cool factor,” it hasn’t achieved real-world usability yet.

4. People are willing to try new things in low-risk situations.
   As Andrea Montiel De Shuman at Detroit Institute of Arts found, people are not intimidated by new technology if they are encouraged to play in congenial environments like the museum. One thrilling interaction like spying inside a sarcophagus can overcome any technical hiccups.

We are in the early days of wayfinding technology and today’s experiments will inform tomorrow’s ubiquitous tools. Just as we learned to use our car’s GPS and MapQuest in the 1990’s, today we navigate confidently with the maps app on our phone.

5. “Right-size” the technology for your visitors and your environment.
   Digital signs were the right solution for the CTA and MTA to deliver real-time arrival information to commuters at stations and on buses. A mobile-optimized website was the lowest-friction way for Houston Airports to offer information to their transitory visitors.

Apps are frequently the wrong answer. The sheer difficulty of promoting an app to your visitors, reminding them to use it,
and keeping it relevant in the over-populated app universe can rarely be overcome by the app’s usefulness.

Usage statistics confirm this: the top five apps (Facebook and Facebook Messenger, YouTube, Google Search, and Google Maps) account for 80-90% of total app usage.

In today’s smartphone era, touchscreen kiosks only make sense in very specific use cases. People prefer to find answers and directions on a device that they carry and can refer to as they travel.

**Lessons Learned:**

**System Management**

1. **Start with a goal to serve a specific audience—do not start with the declaration “we should have an app.”**

   The team that created JourneyMaker began by defining a challenge to serve a specific audience: “Could we use imaginative storytelling and participatory activities to connect families with fine art?”

   They listed the needs of their audience (short, well-paced encounters with approachable artifacts) and tested each proposed interaction against that supposition until they landed on the right mix of interactive and traditional tools.

2. **Experiment and iterate.**

   American Airlines began experimenting with indoor location technologies in the 2000s, well before the commercialization of Bluetooth beacons. They’ve undertaken many pilot projects at DFW airport to test various technologies and often invite their app users to try new features.

   NYU Langone Health commissioned a series of usability tests with native speakers of Spanish, Mandarin Chinese and Russian to test the usefulness of the digital pylons well before they were fabricated. A rented TV and a MacBook served admirably as a make-shift prototype.

   Those low fidelity experiments yielded concrete improvements to the user interface design, from the pace of animation to the density of the map display.

3. **Observe and evaluate.**

   It may be impossible to count the number of people who notice a particular sign. But we can analyze both the usage and usability of interactive wayfinding elements.

   What destinations are people searching for on an interactive directory? What are the most-used features of our app? Where do people abandon the process of following a blue dot?

   It is also important to observe people using these tools in real life. The many tools of usability research—from pre- and post-surveys to intercept interviews—provide surprising insights into the entire wayfinding experience.

4. **Collaborate with experts.**

   Many of the systems highlighted in this report are the result of collaborations among three kinds of experts: experts of the place itself (such as museum curators or facilities managers), wayfinding professionals, and technology specialists.

   Without all three disciplines at the table at the inception of the project, the outcome can suffer. For example, without wayfinding professionals to weigh in on how to create the easiest route to follow, an app’s algorithm may direct visitors the shortest, but more confusing or even dangerous route.

5. **Commit staff and funds to longer-term visions.**

   The more successful systems are not simply the outcome of a vendor-selection process. Their design and implementation is a result of thoughtful decisions to invest in wayfinding technology and the people and operations to support it.

   Above all, these tools reflect the institution’s desire to make their environments more intelligible and more convenient—an expression of the institution’s commitment to wayfinding as a core component of visitor experience.
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Leslie Wolke, Founder of MapWell Studio, consults with institutions and design firms on wayfinding technology and strategy.

Additional reading

Museums

Kelly McHugh, JourneyMaker nomination for GLAMi Award, Museums and the Web 2017.


Healthcare


Meeri Kim, “For Hospitals: Don’t get lost on your way to better wayfinding,” Modern Healthcare, January 21, 2017.


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Gillian Jenner, “Connecting Passengers: The proliferation of smartphones and wireless proximity detecting technologies will lead to a rapid evolution in the way airports and Airlines Communicate,” Airline Business, December 2014.


Technology and Usability Overviews


Kate Kaye, Location Tracking and the Trouble with ‘Opting In,’” Advertising Age, October 3, 2016.


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