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TELL

It is problematic to create a system that enables visitors to generate high quality content:

There are some principles of interactive design that can help to lower the barrier to participation:

There are techniques that can be employed to reduce offensive or inappropriate material

It's not about the technology, it's about the experience:

Some examples of new technologies that could be used as part of a commenting system, in no particular order or preference.

Case Studies

A selection of projects that have sought to use social interpretation and visitor generated content

References

It is problematic to create a system that enables visitors to generate high quality content:

• There is a question about why this activity should exist

The cultural and technological shifts that accompanied the rise of the social Web have changed people's expectations of what makes experiences worthwhile or appealing. People assume the right to co-opt and redistribute institutional content, not just to look at it. They seek opportunities for creative expression, both self-directed and in response to the media they consume. They want to be respected and responded to because of their unique interests. They crave the chance to be recognized by and connected to sympathetic communities around the world.

The aim being to rebalance the authority / audience divide; turning museums into social, participatory organisations

to find a way to invite visitors to report their personal perceptions in hopes that the act of committing them to writing would stimulate introspection and reflection. We further hoped that the sum and diversity of these responses would evoke a larger, more collective representation [of these two exhibitions] in a way that no one person – or museum – could hope to convey alone.

It is increasingly recognized that social interaction, interaction between visitors, is critical to how we experience museums and galleries (cf. Falk and Dierking 1992; Hein 1998). We often visit museums with others – whether friends, family, peers or colleagues – and even when we visit a museum alone we are sensitive to the behaviour of others. Our own research and studies by others reveal the ways in which social interaction has a pervasive influence on what we choose to look at, how we approach exhibits, the ways in which we explore and examine particular objects and artefacts and undoubtedly the conclusions we draw (cf. Bradburne 2000; Heath and vom Lehn 2004; Leinhardt, Crowley, and Knutson 2002; vom Lehn, Heath, and Hindmarsh 2001). Our aesthetic and practical experience of exhibits and exhibitions in museums and galleries emerges in and through our talk and interaction with others, be they people we are with or others who just happen to be in the same space.

How can cultural institutions reconnect with the public and demonstrate their value and relevance in contemporary life? I believe they can do this by inviting people to actively engage as cultural participants, not passive consumers. As more people enjoy and become accustomed to participatory learning and entertainment experiences, they want to do more than just "attend" cultural events and institutions. The social Web has ushered in a dizzying set of tools and design patterns that make participation more accessible than ever. Visitors expect access to a broad spectrum of information sources and cultural perspectives. They expect the ability to respond and be taken seriously. They expect the ability to discuss, share, and remix what they consume. When people can actively participate with cultural institutions, those places become central to cultural and community life.

..offering every visitor a legitimate way to contribute to the institution, share things of interest, connect with other people, and feel like an engaged and respected participant.

Social interpretation happens anyway in person, it's not new, you share stuff with other people all the time, we are just using new digital platforms to facilitate it.

• There is a question about who the content is for

Is it a conversation? Between who?

Visitor <-> museum?

Visitor <-> other visitors? (across time or who are present 'now')

Visitor <-> 'the powers that be'

• **There are physical constraints**

Physical keyboards engage the user's tactile sense, providing critical information as fingers feel, engage, and press. The interaction is well known: Keys resist, then give way, and embark on their downward journey, dutifully informing the user that the intended *key press* is complete. No similar experience exists with soft keys rendered on a touchscreen. And so, alternate sensory channels are engaged, typically visual, auditory, or both.

Besides the tactile sense, devices with physical keyboards create, through kinesthesia and proprioception, a sense of space and location. Users feel the tops and edges of keys, and groups of keys, and develop a sense of where their fingers are and the direction and distance to move to engage other keys. Again, no such experience exists for a soft keyboard on a touchscreen display. And there is little that visual or auditory feedback can offer to help. Users must look at the display to locate a destination key, then move the finger toward the key to select it. Visual attention is essential.

Efforts to increase the speed [efficiency] of text entry fall into two primary categories: (1) new means of input, which increase efficiency by lessening the physical constraints of entering text, and (2) predictive typing aids, which decrease the amount of typing necessary by predicting completed words from a few typed letters.

• **There are technological constraints**

People do not, however, always understand and react to a new system in ways that designers anticipate. As Suchman illustrates, understanding what to do with an 'unfamiliar artifact' is an 'inherently problematic activity' requiring 'active-sense making' [10:9]. In this sense, any design of a new system, which is outside of their anticipated experience requires building opportunities for people to learn how to use it

• **There are psychological constraints**

..people who create content represent a narrow slice of the participatory landscape, which also includes people who consume user-generated content, comment on it, organize it, remix it, and redistribute it to other consumers.

Jakob Nielsen wrote a landmark paper on participation inequality, introducing the "90-9-1" principle. This principle states: "In most online communities, 90% of users are lurkers who never contribute, 9% of users contribute a little, and 1% of users account for almost all the action."

There are some people who are drawn to create, but many more prefer to participate in other ways, by critiquing, organizing, and spectating social content.

In describing his experience of using the interactive [a visitor] explained how he initially felt 'embarrassed' and 'stupid'. This soon subsided when he understood how to use the pen. He felt compelled to write something because he described feeling privileged to be acknowledged as part of the history of the Run and part of the 'club'. However he also felt 'exposed', because he was in a

public space and didn't know what to write. He overcame this because he'd been shown how to use the pen, which gave him some control.

• There are financial constraints

Always..

• Participation inequality

..a minority of social media users are creators—people who write blog posts, upload photos onto Flickr, or share homemade videos on YouTube. There are so many more people who join social networks, who collect and aggregate favored content, and critique and rate books and movies. These are all active social endeavors that contribute positive value to the social Web.

http://www.nngroup.com/articles/participation-inequality/

How to Overcome Participation Inequality

You can't.

The first step to dealing with participation inequality is to recognize that it will always be with us. It's existed in every online community and multi-user service that has ever been studied.

Your only real choice here is in how you shape the inequality curve's angle. Are you going to have the "usual" 90-9-1 distribution, or the more radical 99-1-0.1 distribution common in some social websites? Can you achieve a more equitable distribution of, say, 80-16-4? (That is, only 80% lurkers, with 16% contributing some and 4% contributing the most.)

Although participation will always be somewhat unequal, there are ways to better equalize it, including:

Make it easier to contribute.

The lower the overhead, the more people will jump through the hoop. For example, Netflix lets users rate movies by clicking a star rating, which is much easier than writing a natural-language review.

Make participation a side effect.

Even better, let users participate with zero effort by making their contributions a side effect of something else they're doing. For example, Amazon's "people who bought this book, bought these other books" recommendations are a side effect of people buying books. You don't have to do anything special to have your book preferences entered into the system. Will Hill coined the term *read wear* for this type of effect: the simple activity of reading (or using) something will "wear" it down and thus leave its marks — just like a cookbook will automatically fall open to the recipe you prepare the most.

Edit, don't create.

Let users build their contributions by modifying existing templates rather than creating complete entities from scratch. Editing a template is more enticing and has a gentler learning

curve than facing the horror of a blank page. In avatar-based systems like Second Life, for example, most users modify standard-issue avatars rather than create their own.

Reward — but don't over-reward — participants.

Rewarding people for contributing will help motivate users who have lives outside the Internet, and thus will broaden your participant base. Although money is always good, you can also give contributors preferential treatment (such as discounts or advance notice of new stuff), or even just put gold stars on their profiles. But don't give too much to the most active participants, or you'll simply encourage them to dominate the system even more.

Promote quality contributors.

If you display all contributions equally, then people who post only when they have something important to say will be drowned out by the torrent of material from the hyperactive 1%. Instead, give extra prominence to good contributions and to contributions from people who've proven their value, as indicated by their [reputation ranking](#).

There are some principles of interactive design that can help to lower the barrier to participation:

• There are issues related to groups

...our own research suggests that in some cases, while enhancing an individual's experience, 'interactives' – in particular those relying on computing and information technologies – may inadvertently undermine co-participation and collaboration that can arise with and around exhibits in museums and galleries. There is a danger that we confuse 'interactivity' with social interaction and collaboration.

..in many cases users spend a substantial proportion of their time attempting to operate the exhibit in the way intended and that collaboration is often limited to one person helping the other to follow the instructions..

The collaboration of others is restricted in large part to watching the principal user as he/she 'interacts' with the system and occasionally helping or interjecting comments.

None of this is to suggest that visitors do not use, or do not attempt to use, these exhibits for more complex forms of collaboration; indeed they do, sometimes successfully. Moreover, when the opportunity arises and they have worked out how to use the system, visitors will take turns in using the exhibit and compare and contrast their performance and results. In fact, not unlike some games in amusement arcades, some of these computer-based exhibits are specifically designed to encourage

comparison and competition between users. Unfortunately, however, despite their commitment to 'interactivity' in many cases, computer-based exhibits support relatively limited forms of co-participation and collaboration. In many cases it consists of little more than helping to operate the system or interjecting answers or solutions to a puzzle, often to the frustration of the principal user. The fact that something like 70% of people visit museums and galleries with other people makes this something of a disadvantage.

• Create a meme

you … might remember viral hits like The Flying Spaghetti Monster, JibJab, and – one of my favorites-We Love the Iraqi Information Minister (dot com).

These groovy internet sensations started social conversations. They were shared, person-to-person, primarily via email and IM, and the really hot ones sold incredible numbers of T-shirts. I called this "hit business" at the time, but at its core those concepts that arrested the attention of people online to the point that they were emailing it around and purchasing T-shirts to be in on the joke are great examples of how an idea becomes word-of-mouth marketing: those concepts were participating in relevant social conversations in an appealing way that kept larger community considerations in mind.

Creating social conversations is about creating a [meme](): an idea that spreads from person to person. In the magical land of the internet, cats are the unofficial rulers of the meme kingdom ([Grumpy Cat](),[Keyboard Cat](), [various other cats]()), but there are other ways to start word-of-mouth marketing that don't involve a feline.

• Feedback to the visitor

When participants contribute to institutions, they want to see their work integrated in a timely, attractive, respectful way. Too many participatory projects have broken feedback loops, where the ability to see the results of participation are stalled by opaque and slow-moving staff activities like content moderation or editing.

• Use modeling

The easiest way to make contributors' roles clear and appealing to would-be participants is through modeling. When a visitor sees a handwritten comment on a board, she understands that she too can put up her own comment. She takes cues from the length and tone of other comments. The models on display influence both her behavior and the likeliness of her participation.

Good modeling is not as simple as displaying representative contributions. The diversity, quality, and recency of the models, as well as the extent to which the platform appears "full" or "empty," significantly impact whether newcomers participate.

In platforms like comment boards, where every new contribution is added to the model content, it's important that visitors feel like the board is physically open to their contributions. No one wants to act alone and be under the microscope, but participants also don't want to be lost in the crowd. We all intuitively know the difference between a conversation that feels open to our opinion and one that is already overcrowded with voices. Platforms that have explicit "slots" for content on display, such as comment boards or video kiosks that display grids of videos, can overwhelm and discourage continued participation when the slots appear to be all filled up.

One easy way to solve this problem is to give each new participant a clear position of privilege in the map of contributions to date. In exhibits that invite visitors to add their own personal memories via sticky notes onto maps or timelines, this position of privilege is self-evident. The newest layer of notes lies on top of older ones, giving participants confidence that their story will be read, at least for a while. In digital environments, or ones in which staff is in control of the presentation of contributions and model content, it is useful to provide visitors with an obvious "pathway" or slot for their contribution, so they can see where it will go visually and physically.

Visitors notice whether model content on contributory platforms is up-to-date. Recency of model content signals how much the staff cares for and tends to contributions. Imagine an exhibit that invites

visitors to whisper a secret into a phone and then listen to secrets left by other visitors. If the secrets they hear are several months old, visitors may have less confidence that their own secrets will soon be made available to others.

• Create perceptible affordances

Affordances - how to afford relevant, considered input

[He] defined affordances as all "action possibilities" latent in the environment, objectively measurable and independent of the individual's ability to recognize them, but always in relation to agents and therefore dependent on their capabilities. For instance, a set of steps which rises four feet high does not afford the act of climbing if the actor is a crawling infant. Gibson's is the prevalent definition in cognitive psychology.

At a perceptible affordance, there is perceptible information available for an existing affordance, meaning that the actor perceives and can then act upon the existing affordance. This means that, when affordances are perceptible, they offer a direct link between perception and action, and, when affordances are hidden or false, they can lead to mistakes and misunderstandings.

• Reward participation

People often have low expectations of potential rewards.

In the book *Here Comes Everybody*, technologist Clay Shirky argued that there are three necessary components for a participatory mechanism to be successful: "a plausible promise, an effective tool, and an acceptable bargain with the [participants]."

John Falk's research into visitors and identity-fulfillment indicates that visitors select and enjoy museum experiences based on their perceived ability to reflect and enhance particular self-concepts. If you think of yourself as creative, you will be fulfilled by the opportunity to contribute a self-portrait to a crowdsourced exhibition. If you see yourself as someone with valuable stories to share, you will be fulfilled by the chance to record your own recollections related to content on display. If you perceive yourself as helpful, you will be fulfilled by the opportunity to pitch in on tasks that clearly support a larger goal.

Regardless of the timeline, rewarding participants involves three steps that should remain consistent. First, the institution should clearly explain how and when visitors will be rewarded for participating. Second, it should thank visitors immediately upon participating, even if their content will now go into a holding pattern. And third, the staff should develop some workable process to display, integrate, or distribute the participatory content—and ideally, inform participants when their work is shared.

Gamification to encourage participation

• Scaffold the experience

..Museums see open-ended self-expression as the be-all of participatory experiences. Allowing visitors to select their favorite exhibits in a gallery or comment on the content of the labels isn't seen as valuable a participatory learning experience as producing their own content.

This is a problem for two reasons. First, exhibits that invite self-expression appeal to a tiny percentage of museum audiences.

Second, open-ended self-expression requires self-directed creativity. You have to have an idea of what you'd like to say, and then you have to say it in a way that satisfies your expectations of quality. In other words, it's hard, and it's especially hard on the spot in the context of a casual museum visit.

Visitors don't want a blank slate for participation. They need well-scaffolded experiences that put their contributions to meaningful use.

The best participatory experiences are not wide open. They are scaffolded to help people feel comfortable engaging in the activity. There are many ways to scaffold experiences without prescribing the result. For example, a comment board that provides ballots for people to vote for favorite objects and explain the reason behind their preferences offers a better-scaffolded experience than an open-ended board with blank cards and a question like "What do you think?" A supportive starting point can help people participate confidently—whether as creators, critics, collectors, joiners, or spectators.

• When it all goes wrong

There's much to learn from failed projects in our field and #MW2012 used this as a topic for its closing session. Hats off to the project cases studies that took the stage to reveal what didn't work and why. Each project report included a round of bingo, with categories for failure occupying spaces on the card. Among them:

- • poor organizational fit

- • must-be-invented-here syndrome

- • feature creep

- • tech in search of a problem

- • no user research

- • pleasing donors and funders

- • no local context

- • no backup plan

- • not knowing when to say goodbye.

There are techniques that can be employed to reduce offensive or inappropriate material

• The negative effects of 'bad' comments

Popular Science has recently closed it's comment system:

• Uncivil comments not only polarized readers, but they often changed a participant's interpretation of the news story itself.

• In the civil group, those who initially did or did not support the technology — whom we identified with preliminary survey questions — continued to feel the same way after reading the comments.

•Those exposed to rude comments, however, ended up with a much more polarized understanding of the risks connected with the technology.

•Simply including an ad hominem attack in a reader comment was enough to make study participants think the downside of the reported technology was greater than they'd previously thought.

Another, similarly designed study found that just firmly worded (but not uncivil) disagreements between commenters impacted readers' perception of science.

If you carry out those results to their logical end--commenters shape public opinion; public opinion shapes public policy; public policy shapes how and whether and what research gets funded--you start to see why we feel compelled to hit the "off" switch.

• Moderation

  •Most important that users feel they are being listened to.

  •Don't alienate by pre-moderation

  •Possibly use some automated system to flag suspect content

  •Always need humans to have final say

  •there will be false positives and false negatives

  •A 'report' button can shift the responsibility away from the institution - must be acted on quickly.

  •If pre-moderating allow the contributor to see their content in context immediately but don't let it out into the wild until later.

  •Let the user know how long it will be before their content is 'live'

  •consider informing the contributor when their content goes live - 'Congratulations your post is now live - click here to see it..'

  •Notify contributor when their comment has been responded to / liked etc.

  •people are more accepting of community moderation

Now, this post-moderation thing makes museums (understandably) very nervous. Until an offensive comment is removed, it kind of sits there, looking for all the world as if the museum authored it. Of course, we have bound the interfaces with disclaimers and T&Cs, telling visitors that this isn't the museum's voice, and users familiar with commenting and threaded forums will recognise the default state of the user voice in all this.

But for anyone who has to protect the fragile brand of a publicly funded charitable institution, particularly one with such emotive subject matter as IWM, the words 'post-moderation' are enough to strike terror into their weary hearts.

So, our first SI comment kiosks have just gone live in the A Family in Wartime exhibition. We have put as much in place to negate any potential problems as we can, from building in a 'switch' to enable pre-

moderation to happen all the way to training front of house staff who have to deal with SI at the front line. [Jane Audas - Social Interpretation project at IWM]

A big design challenge for high-traffic 'have your say' interactives is providing a quality experience for the audience who is reading comments - they shouldn't have to wade through screens of repeated, vacuous or rude comments to find the gems - while appropriately respecting the contribution and personal engagement of the person who left the comment.

there's a role for clever visualisations in presenting the gist of content.

how can museums increase the signal-to-noise ratio so that the rarer, more contemplative, factual, heart-felt or personal experiences can shine?

Gardening

One topic for discussion .. was whether the museum should do some 'gardening' on the comments. Participation rates are relatively high but some of the comments are nonsense ('asdf'), repetitive (thousands of variants of 'Cool' or 'sad') or off-topic ('I like the museum') - a pattern probably common to many museum 'have your say' kiosks. Gardening could involve 'pruning' out comments that were not directly relevant to the question asked in the interactive, or finding ways to surface the interesting comments.

Sentiment analysis

Various tools exist that might be able to assist in automatic moderation using sentiment analysis of large corpora of text to provide a baseline against which to measure comment content.

Possibility to aggregate the simpler one-word comments (25 'cool', 130 'asdf' ..)

Comments that are identified as potentially pointless or non-discriminant could be earmarked for moderation.

what about scaling the subject of analysis to a group of objects or even an entire collection or institution - asking the questions - "what does *everyone* think?" - "what's the collective sentiment?"

NLTK

http://text-processing.com/demo/sentiment/

Training a naive bayes classifier for sentiment analysis using movie reviews

http://www.laurentluce.com/posts/twitter-sentiment-analysis-using-python-and-nltk/

• Curation

By framing the activity as curation rather than moderation you can promote the sense that you are actively choosing the best examples of content rather than weeding out the worst.

..re-designed Gawker to serve the people reading the comments, rather than the people writing them..The new design dispenses with the tyranny of time order. ... On most systems, the most prominent comments are posted either by the most obsessed users (when comments are posted oldest first) or the drive-bys (newest first). ...there is, by design, no way for regular participants ... to use either volume or aggression to maximize attention.

The Guardian comment system has recently changed to feature staff-picked content and require the user to actively click through to read the entire comment thread. In the museum context this could be effective in shielding the public from undesirable comments. Popping up a warning that the full-thread section is un-moderated and may contain offensive/boring content could absolve the museum of some responsibility and reduce the moderation overhead.

• Quarantining

Only allowing certain types of input, e.g. use banned word lists

• Nudging

Pre-filtering happens when the visitor applies their own filtering (can be prompted using psychology - a pair of eyes, even a rudimentary representation, can lower the incidence of profanity)

Positioning terminals near the ladies toilets (you don't want your mum to see)

• Promote quality contributions

put the data results in the entrance hall where they are seen by everyone on the way in. Encourage people to go to certain areas and vote knowing that their voice will be added - on leaving they can see if they've made a difference

• Ask the right questions

Daisy is a chatbot that tries to engage visitors in conversation. As part of its program, Daisy asks canned questions, intended to have the visitor reflect on the nature of his/her own thinking and feeling as well as those of the machine.

http://www.exploratorium.edu/vre/pdf/daisy2_rp_02.pdf

..promoting self-reflection depends on the nature of the question asked. More specifically,

• The results indicate that the following questions work well in eliciting elaborated answers about visitors' own thinking and feeling:

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DAISY> My mind works by recombining and regurgitating things
that people tell me. But how is that different than what
your mind does?
DAISY> Are you usually a logical person? Give me an example
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• Alternatively, some questions, though good at eliciting elaborated answers, tended to focus visitors on Daisy's rather than their own thinking and feeling

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DAISY> If I say something that makes sense, does that mean I
was thinking? If I wasn't thinking, where did the thought
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          come from?
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• Other questions, elicited more answers focused on topics other than thought and emotions. More than one-third of the elaborated answers to

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    DAISY> Does the fact that my name is Daisy affect the way we
    interact? What if my name were Ludwig or Prudence instead?
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referred to the names themselves.

• And, some questions were more confusing than others:

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    DAISY> Are there some stereotypes that you believe?
    DAISY> Are you usually a logical person? Give me an example
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About one-quarter of visitors who tried to give an elaborated response asked for help with these questions; many of these visitors simply did not know what stereotype means. Likewise, a few visitors did not knowing what would count as an example.

Does the second part of a 2-part question elicit more elaborated answers?

a 2-Part format is comparable if not better than its Complex counterpart in eliciting richer responses, adding a follow-up question can prompt for additional elaboration from visitors. Visitors were more likely to give an elaborated answer when a more general prompt was used.

Suggests that we should include questions that ask visitors pointedly about themselves in order to promote self-reflection.

• Trust the audience

There is an ingrained fear in museums that if you let visitors participate they will write rude things. Just because they can doesn't mean they will. Trust your visitors.

The fact that visitors can moderate comments is a brave move on the part of the IWM, and one that I hope pays off. By relinquishing some control, the museum has the opportunity to deepen visitor engagement and kick-start new dialogues and relationships with visitors.

Supporting participation means trusting visitors' abilities as creators, remixers, and redistributors of content.

When staff members put their confidence in visitors in this way, it signals that visitors' preconceptions, interests, and choices are good and valid in the world of the museum. And that makes visitors feel like the owners of their experiences.

• Treat each visitor as an individual

"You are what you do" profiles have great potential in cultural institutions. If you can find ways to capture even a small amount of the data generated by visitors' experiences—the exhibitions they visit, the amount of time they spend looking at different objects, the blend of experiences they pursue, the amount of money they spend on food or the gift shop—you will understand them better and be able to respond accordingly.

There is no single right way to construct a user profile. While many profile-making activities are creative, with users inputting unique content about themselves, others are selective, with users picking

from among a few options. The key is to make sure that the institution is able to be responsive to people based on their profiles. There is waste in over-profiling—both for visitors whose time is squandered answering profile questions and for institutions that can't meaningfully use the data gathered.

It's not about the technology, it's about the experience:

• Simple things can work

[Tate Modern] Low-tech had much higher number of comments relating to the topic - when you knew you were addressing fellow visitors who had had a similar experience (as distinct from twitter where it was more about 'ooh look there's my comment projected 5 foot high on a wall')

• There are also novel technologies that can work

Some examples of new technologies that could be used as part of a commenting system, in no particular order or preference.

Mobile Devices

Nancy Proctor, head of mobile strategy and initiatives, Smithsonian

Look at how your audience are already using mobile: We recently did a study of mobile use by visitors to the Smithsonian's National Air & Space Museum. 50% of what people were doing with their own phones in the museum was taking photos. I think this represents an incredible opportunity for museums to convert a mobile behaviour that is by now already very natural on the part of our visitors into a gesture that triggers content and experiences around what they are looking at.

[http://www.theguardian.com/culture-professionals-network/culture-professionals-blog/2013/aug/20/mobile-museums-tips-advice-experts?INTCMP=ILCNETTXT3487]

..by far the most frequently reported smartphone activity while at a museum is taking a photo or video of an object on view.

Of course it is significant that foreign visitors comprise almost half of all V&A visitors and are far more likely to have their data roaming turned off to avoid hefty charges. This makes the availability of Wi-Fi – something increasingly expected by consumers in public spaces – crucial for overseas visitors to access mobile interpretation.

[http://www.theguardian.com/culture-professionals-network/culture-professionals-blog/2013/may/31/museums-mobile-visitors]

If mobile can be the "glue" that connects people, platforms and experiences both inside the museum and beyond, then its success is co-dependent on museums embracing their audiences across platforms, geographies and other sorts of divides as well – which includes, but must not stop at, understanding their mobile habits and preferences.

Augmented Reality

Local Positioning Service (LPS)

https://www.indooratlas.com/

Modern buildings with reinforced concrete and steel structures have unique spatially varying ambient magnetic fields that can be used for positioning, in very much the same way as the animals use Earth's magnetic field, but on a smaller spatial scale. In principle, a non-uniform ambient magnetic field produces different magnetic field observations, depending on the path taken through it.

In IndoorAtlas' technology, anomalies or fluctuations of ambient magnetic fields are utilized in indoor positioning like never before. This has been facilitated by modern smartphones and the rapid development of sensor technology. No more do we need complex and costly technical infrastructure setup.

http://lighthousesignal.com/

Indoor positioning solutions have existed for many years. Our approach is unique in combining micro-positioning accuracy and massive scalability:

Significantly more accurate than existing technologies

- Positions smartphone within 5-7 meters, enabling store-level accuracy

- Identifies user floor location

- Combines wireless data and inertial navigation information

Massively scalable

- No need for proprietary networks (e.g., venue does not need its own WiFi network; end users do not need to log into a WiFi network)

- No need for beacons or other new equipment

- Up to 20X faster to develop "fingerprint database" for an indoor location than existing approaches (e.g., typical mid-sized mall requires less than 1 day for 1 non-engineer)
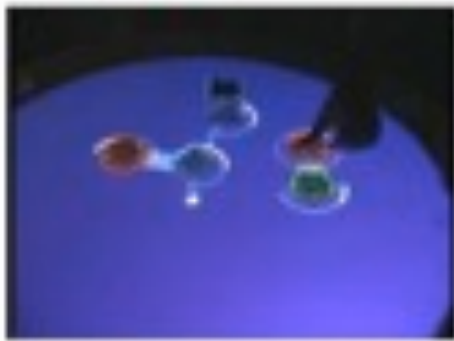
Object recognition

http://www.youtube.com/watch?v=tlC2O9T9jks

http://www.intorobotics.com/how-to-detect-and-track-object-with-opencv/

Near Field Communication

Not yet ready for prime-time

Tangible user interface

e.g. Reactable

Predictive text

http://www.adaptxt.com/beta/openadaptxt.html

Handwriting - recognition or direct posting

http://www.betriebsraum.de/projects/gestures/ - flash implementation of $1 gesture recognizer

http://depts.washington.edu/aimgroup/proj/dollar/

Natural Language Tool Kit

http://www.visualthesaurus.com/app/view (spring graph AS3)

http://escapeflight.com/?a=STN&w=T&p=W&i1=1&i2=3

Natural Language processing with node

http://agnetpro.wordpress.com/2012/04/02/nodejs-nltk/

Fleksy: https://itunes.apple.com/us/app/fleksy-happy-typing/id520337246?mt=8

Open Mind Common Sense

http://conceptnet5.media.mit.edu/

http://en.wikipedia.org/wiki/Attempto_controlled_English

source: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.66.2469&rep=rep1&type=pdf

Using OMCSNet to Complete Words. As the user types, the system queries OMCSNet for the semantic context of each completed word, disregarding common stop words. OMCSNet returns the context as a list of phrases, each phrase containing one or more words, listing first those concepts more closely related to the queried word. As the system proceeds down the list, each word is assigned a score..

..In this way, words that appear multiple times in past words' semantic contexts will have higher total scores. As the user shifts topics, the highest scored words progressively get replaced by the most common words in subsequent contexts.

Bookmarking

http://www.museumsandtheweb.com/mw2007/papers/filippini-fantoni/filippini-fantoni.html

"bookmarking" (Filippini-Fantoni, 2006a)

When well-integrated into the visitor experience, bookmarking can be a powerful tool for supporting the learning experience in museums (Csikszentmihalyi & Hermanson, 1995) and creating a stronger relationship between the institution and the visitor. The ability to save an

Array of Actuated Spheres 2010 World Expo at Shangai, Japanese firms ADK and Murayama and Las-Vegas firm Fisher Technical Services, Inc.

important part of the content encountered during the museum visit and access it at home or in another context allows the visitor the possibility of focusing more on discovery and the aesthetic experience while in the museum and to leave the more traditional didactic aspects for later. Research also indicates that repetition is a major mechanism for retaining memories over time (Brown & Kulick, 1997), so bookmarking can play an important role in increasing visitors' knowledge about a collection or exhibition as well as stimulating a positive response to their visit and the intrinsic desire to learn more. In a culture of "information on demand", bookmarking has the potential to become a major bridge between the "real" and the "virtual" museum visit.

http://www.amnh.org/apps/explorer

Active Physical Visualizations in real time

http://www.aviz.fr/Research/ActivePhysicalVisualizations

• Motivate participation by displaying content in compelling and desirable ways

Being successful with a participatory model means finding ways to design participatory platforms so the content that amateurs create and share is communicated and displayed attractively.

Some people participate in supplemental contributory projects because they enjoy the momentary jolt of fame that comes from seeing their creation or comment on display. Others contribute to share a deeply felt sentiment or creative expression they feel driven to add to the evolving body of content

From the participant perspective, a good contributory project:

- •Provides specific, clear opportunities for visitors to express themselves

- •Scaffolds the contributory experience to make participation accessible regardless of prior knowledge

- •Respects visitors' time and abilities

- •Clearly demonstrates how visitors' contributions will be displayed, stored, or used

Case Studies

A selection of projects that have sought to use social interpretation and visitor generated content

• Imperial War Museum - Social Interpretation

Claire Ross, from University College London's Centre for Digital Humanities, has been working on the social interpretation project.

http://www.slideshare.net/claireyross/exploring-the-potential-of-digital-lables

Social Objects at the IWM

The exhibition is also part of a research exercise called the Social Interpretation project, which aims to bring social interactions already found online (on Twitter, Facebook and forums, for example) and apply them to museum collections.

The idea is that museum objects aren't purely historical objects; they are "social objects, inspiring emotional attachment, discussion, debate and action".

In practice this means visitors to A Family in Wartime are able to comment (and read other people's comments) on six objects in the exhibition. There are also eight QR codes on panel labels that link to online content about the associated objects.

Key Take Aways from the Social Interpretation Project

- Content, Content, Content

- Post moderation works

- Deeper engagements happen online

- QR Codes ain't all that

- Communication and advocacy

- Be prepared to compromise

- Resourcing

- Raising Awareness

- Build in evaluation

- Incremental institutional change, baby steps

- It's not about the technology it's about the experience

- Is R&D right for your museum? – robust, stakeholders

- QRator

[QRator](#) allows visitors to type in their thoughts and interpretations of museum objects and click 'send'. Their interpretation becomes part of the object's history and ultimately the display itself via the interactive label system to allow the display of comments and information directly next to the artifacts.

powered by http://talesofthings.com/

New Tale Monitor - Speaks the latest tale added to Tales of Things http://talesofthings.com/thing/10258/

-

• I Went to Moma..

http://www.moma.org/explore/inside_out/2011/12/07/i-went-to-moma-and-it-s-back/

After creating a card, visitors can now insert their submissions into a specially designed scanning station. Pushing a button pulls a card in, scans it, and then returns it to its owner. Seconds later, the card is placed in the queue, enlarged at 1,000 percent and ready to be projected onto MoMA's lobby wall alongside other submissions. Simultaneously, the card also appears on the new website and mobile experience, where it can easily be found and shared using the unique URL printed on each card. If the creator claims their card (via Facebook log-in), they can even embed it on their blog!

Visitors can also browse the virtual wall of other cards or search for one in particular. A ticker at the top counts the total number of uploads in real time, and there's also a "featured" section—our design department's stash of cards we love most.

• My Life as an Object'

http://www.digitalengagementnetwork.org/mylife/

My Life as an Object' was a pilot project carried out by Rattle, a research company based in Sheffield. The aim was to use participatory media (e.g. Twitter, Facebook etc.) to engage audiences around a selection of objects taken from East Midlands museums. Objects were given voices in order to 'give them a life'.

Rattle asked;

'If these objects were alive, which social networking site would they join and why?''

• Hancock

The Great North Museum and Newcastle University's Culture Lab did a great exhibition using special pens and digital paper, which seems to be a nice hybrid.

Figure 3. The interactive installation in the Great North Museum: Hancock. It consisted of thirteen single touch touch-screens placed along the length of a long table. Nine of the screens had associated Anoto digital pens and pads. The screens displayed stories and photographs from runners and visitors plus an invitation for people to write or draw on the pads. On returning the pen to a docking station their contributions were uploaded onto the associated screen and to a live server and connected website. This produced a number, which visitors could write down on the pad. This number could then be used to recall the entry via numerical key pads linked to two large display screens located on a wall next to the table. In addition to the systems deployed in the museum, visitors could also view and submit their own contribution at home from the website.

• Dr Johnson's House

Dr Johnson's House also digital pens in the 'interactive dictionary', pen and inkwell. Visitors could then write entries on the paper pages of the dictionary using an Digital Pen and the visitor contribution would be displayed on a screen as well as the handwritten version.

Figure 1: a visitor contributing to 'The Interactive Escritoire' (left) and the exhibit *in situ* in the Garret of Johnson's House, London (right)

• Nightstand interface for Twitter

http://vimeo.com/17280777

On the outside, the Tableau may not look like much — it's an antique-looking nightstand constructed from reclaimed materials, with a single cable sticking out of it — but it's really on the inside that the magic happens. When a piece of paper is dropped into its drawer, the data is scanned and sent over WiFi or a cellular network to the user's Twitter account. When a picture is sent to the predefined

account, the nightstand quietly prints it and drops it in the drawer, as the softly glowing knob invites the owner to open it.

• Turner Prize

As usual, the Reading Room in the 2008 Turner Prize exhibition was the final room through

which visitors exited the show. It contained four small square tables, seating four people each, and

two long tables, seating twenty people each. The brief of the Reading Room was to create a

comfortable and inviting space to accommodate the primary interpretative devices of the exhibition.

In all, there were six ways a visitor could engage with these devices:

•read the wall panel texts which introduced the shortlisted artists and provided information about the Turner Prize

•read a book about the artists or contemporary art in general

•watch short videos about the four finalists

•select a badge with the name of one of the finalists to vote for a favourite

•read the comments on the notice boards arranged around the room

•write a comment and pin the comment card to a notice board.
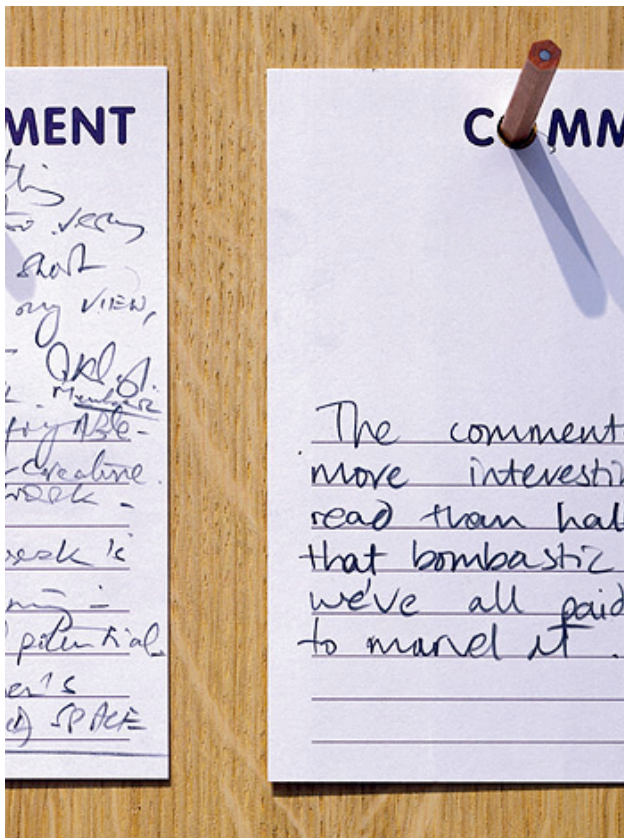
• Memory Palace at the V&A

Memory Palace – Drawing and storing memories at the V&A

Memory Palace

For the interactive work in the exhibition, Johnny Kelly devised a digital platform where visitors are able to draw their memories at the venue on an Android Note tablet and then on submit they are presented as a mosaic of memories inside the Memory Palace. In addition each week, an A1 poster of all the submissions will be screen printed and displayed at the venue, adding to the growing installation.

In tandem, Nexus Interactive Arts and director Evan Boehm developed a web-based drawing tool that thats the idea beyond the museum and allows anyone to contribute to this Memory Bank.

• Object Stories at Portland Art Museum

http://objectstories.org/stories/#

object stories booth

They designed a participatory project that delivers a compelling end product for onsite and online visitors… and they made some unexpected decisions along the way.

In the education department, we have some key values around slowing down, conversation and participation around art, and deep looking. And so this concept of asking visitors to spend some focused time thinking about their relationships with objects and artworks really made sense to me.

We ended up with a gallery in the museum instead. It's in a good location, but it's also kind of a pass-through space to other galleries. It has a recording booth that you sign up in advance to use, and you go in and tell a story about an object that is meaningful to you. The other parts of the gallery are for experiencing the stories, and for connecting with the Museum collection. We have cases with museum objects that people told stories about, with large images of those storytellers adjacent to the object, and in the middle of the gallery is a long rectangular table with touchscreens where people can access all the stories that have been recorded.

We rigged up a video recording booth in Fashionbuddha's studios. We found people would go in, do their story, come out, say it was so powerful and cathartic, but then the videos would be really bad— boring, too long, unstructured. They were often visually uncomfortable to watch. And some participants were turned off by the video recording—they found it too scary, and being on camera distracted them from telling their story – especially older people.

We came up with a system that was much more structured and is based on audio, not video. In the current setup, you walk into the booth, all soundproofed and carpeted, and then you sit down on a cozy bench. You can come alone or with up to three people. You face a screen, and the screen is close enough to reach out and touch without getting up. The screen prompts you, with audio and with words, and it's in both English and Spanish, because we really wanted to reach out to the Spanish-speaking community in Portland.

[read more..](#)

• The Guardian comments

• Gawker.com comments

• San Fransisco Museum of Modern Art - Olafur Eliasson

http://www.sfmoma.org/media/features/eliasson/data/index.html

Who Has The Responsibility For Saying What We See? Mashing up Museum, Artist, and Visitor Voices, On-site and On-line

http://www.museumsandtheweb.com/mw2008/papers/samis/samis.html

Your Line or Mine – Crowd sourced animations at the Stedelijk Museum

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Innovative uses of digital media in museums and galleries, Ben Gammon

A review of current trends, August 2010

Reducing Visual Demand for Gestural Text Input on Touchscreen Devices

Scott MacKenzie and Steven J. Castellucci

http://www.yorku.ca/mack/chi2012.html

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http://claireyross.wordpress.com/tag/social-interpretation/

iSay: Visitor-Generated Content in Heritage Institutions

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Ashlee Honeybourne

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Scott MacKenzie and Steven J. Castellucci

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http://www.theguardian.com/culture-professionals-network/culture-professionals-blog/2012/apr/13/social-interpretation-imperial-war-museum

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Read more: Archives & Museum Informatics: Museums and the Web 2008: Paper: Samis, P., Who Has The Responsibility For Saying What We See? Mashing up Museum, Artist, and Visitor Voices, On-site and On-line http://www.museumsandtheweb.com/mw2008/papers/samis/samis.html#ixzz2f4E6KHAq

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http://www.popsci.com/science/article/2013-09/why-were-shutting-our-comments