

# Museum Informatics: User and Web Driven Exhibitions

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## Introducing Museum Informatics

The information revolution has played a hand in rapidly altering many social service and community institutions. In particular the recent transition to Web2.0, or a world-wide-web based increasingly on dynamic, scalable services and collaborative production, has only served to strengthen this impact. One such institution greatly affected by the shifting sands of the information era is the museum, in nearly all of its various forms. Not surprisingly, “the study of the impact of information science and technology on museums, museum professionals, and museum visitors” (Marty 2003: 1906) is what is frequently referred to as *Museum Informatics*. Traditionally museums have primarily been repositories of knowledge; they have sought to facilitate research, preservation and education of many kinds. In recent years this task has unfolded into new information era specializations such as digitization, information storage and retrieval, online database management and web-based education. Like other forms of informatics, museum informatics is a multidisciplinary and developing field of study.

The internet has transformed the ways both museum professionals and patrons alike think about the capabilities and services of museums. Indeed in many cases the foundational mission of a museum has evolved to incorporate new tasks such as establishing and maintaining digital representations of their artifacts, determining and negotiating standards for the sharing of information about their artifacts (and potentially joining or creating initiatives to do so), and inventing and investigating new methods of personalizing visitor experiences with exhibits and collections of artifacts (Marty 2003). In doing so museums actively partake in creating engaging digital institutional identities. They design compelling technology-linked exhibits and educational techniques for audiences that may visit in person, online, or both in any order. This facet of museum informatics is still being explored as different museums experiment with technology tools that make use of user generated content and organization preferences online (Chan 2007) and in person.

## Exploring a Directly and Indirectly User-Generated Exhibit

One such exhibit that takes unique advantage of distributed computing concepts and user-generated content is the *Times Square of Science and Technology* (T2ST) located at the [Liberty Science Center](#) in Jersey City. This rather innovative display not only involves the use of ICT's but actually creates the entire exhibit around them. A paper recently presented at the *Museums and the Web 2007* conference entitled *Science Mobilized: Bringing Up-To-The-Minute Headlines Into The Museum and Back Out Again: "The Times Square of Science and Technology* (MacDonald et al. 2007) adequately explains the display. The premise is much like Times Square in New York, a large open area filled with digital displays of information in various forms. The bulk of the exhibit takes place in the main atrium area, where a mobile of large projection screens (like that which goes over a baby's crib) slowly rotates and changes position throughout the day. A key difference, however, is that the exhibit is specifically designed to be a communication tool and information is specialized by display surface and orchestrated to create a coherent set of messages that compliment one another instead of competing for a viewer's attention.

The displays present a mixture of pre-determined and web-based (RSS feed-driven) information related to recent science and technology developments. Users can help to pick which information goes up on the displays, effectively making it an interesting combination of user, machine, and museum staff generated knowledge. Consider this for a moment—the exhibit has no artifacts in a traditional sense but is instead purely information. Since it comes from news articles and feeds on the web it is human-created and organized in a distant sense but also mediated by search and display algorithms and then remixed once again by the museum staff and visitors picking through it. In a sense the exhibit is a multi-layered sociotechnical system, full of both formal (official news and museum staff mediation) and informal (visitors) knowledge. What's more is that visitors can choose which displays they wish to use to present material and can experiment with different combinations of form and content, adding an additional element of education. Visitors with text capable cell phones and PDA's can also feed back into the system with these tools, voting on polls, providing key words, and taking away customized science and technology reports. They could potentially do so in person or remotely, possibly without ever having visited the exhibit!

The endeavor is not without its challenges, as the museum staff still have to act as gate keepers (but they are no longer experts who are solely in control of the exhibit) and there are screening programs to keep feeds clean. They deal with Fair Use laws by limiting display time on the screens and providing links and logos when possible. There are issues of content management as well, as the type of material can vary (text, video, audio), RSS aggregation methods can vary, and there may be theme differences depending on who constitutes what as science or technology. Some users also may not have phones but loaners are available at the main desk for in-museum use only.

Overall the exhibition is a brilliant way to leverage science and technology data from the web to make a modern and user-relevant experience.

### **Distributed Knowledge Concepts**

The Liberty Science Center exhibit is fascinating—previous studies may have concluded that visitors and museum exhibits co-create one another in a dynamic and emergent fashion (Umiker-Sebeok 1994) but seldom has the productive process been so direct. T2ST could go even further in this regard because it presents a couple of significant opportunities:

First, it is a novel innovation in education. If the best exhibits in museums are those that are goal directed and discovery oriented (Screven 2002) then T2ST fulfills this by offering visitors a chance to make predictions, complete tasks and resolve questions. It could do more, however, in this regard. Most of the material presented comes in the form of small fragments of media, headlines and statistics but doesn't give viewers and opportunity to dig deeper into the information at hand. The endeavor could be better if users were compelled to do something with the information (beyond carrying around more facts or ideas in their head). They may already do this by taking a list of feed links home with them on their PDA but for visitors who don't use mobile technology devices there's a distinct need. Site designers could erect a public computer lab nearby the exhibit that would allow intrigued visitors to investigate specific headlines, videos, or numbers. They might integrate use of it into tours or even conduct workshops for educational groups. Since around 93% of museum visitors come on behalf of

informal learning or recreational purposes and only about 2% are students who show up with formal education objectives (Griffiths et al. 2007) they might do well to just have a museum staff person who assists visitors with explorations in the lab and also sees to the moderation of feeds. This staff person could also guide visitors who have questions about a feed or poll to exhibit already in operation in the museum or in collaborating institutions. By helping patrons to understand the processes and people from which the feed data comes they could not only deepen their pool of knowledge but also satisfy their curiosity. Visitors to the museum website could do this online if links and data from the exhibit nexus were aggregated in a single web space or active flash interface.

Second, T2ST is a veritable untapped pool of information for research in several dimensions. If often “the motivations, preconceptions, attitudes and learning capabilities of visitors are less understood” (Screven 2002) then compiling data on visitors who partake in this exhibit could be very important. T2ST offers voluntarily given, non-personally identifiable and easily quantifiable behavioral data. User-chosen content could be tracked and recorded, thus presenting an accurate profile of current user interests as well as the potentially most interesting current science and technology topics. Researchers and museum administrators might be able to add demographic variables to the mix based on which users are using cell phones and PDA’s. Predictions might be made to create exhibits about topics users request information on frequently. Evaluations could come with this as well – museum administrators could purposely introduce data into the presentation streams and see how many users take it home with them. On some level this might just be a way of raising awareness but it could also be an interesting method to test interest in a topic. If other museum sites created similar exhibits then they could start feeding into centralized data pools in an organized and standardized manner. Non-participating institutions such as other museums, libraries and universities with a stake in such information could access to inform their own operations (like collaboratories!). The museum might even present their aggregation of this distributed knowledge on their own website, thus creating a sort of newsfeed similar to Digg and others but with a unique spin. In a sense it would really just be applying a lens to a large-scale user-driven science and technology data-set: informal learning in a museum setting.

## Future Research

Obviously these opportunities bring with them a few curious questions.

Such a concentration on education and data collection would invariably require a qualitative component, perhaps just formal and informal observation conducted by museum staff. To really know how to interpret the resultant numbers and make plans for new research, evaluations, or exhibitions will always require direct experience with the general public (Screven 2002). Visitors themselves might be invited to volunteer and document or journal their experiences. Could there be any way to invite general community members into administrative decisions? Letting visitors orient the agenda for exhibits could be the gateway to a more crowd based and potentially democratic style of leadership.

The use of PDA’s and cell phones are an innovative start and reveal the possibility for the integration of other ICT’s into museum exhibits. Cell phone texting is common among teenagers (ages 12-17), with over 27% sending messages consistently (Lenhart et al. 2007), as compared to the overall 16% of visitors

to T2ST. What other exhibit types geared for kids might make use of this type of technology? It would be potentially worthwhile to experiment with other communication systems like social networking services in the creation of new exhibits, even if only as a method of awareness. Visitors could load their Facebook profile to perhaps compare their current friends network to one they might have in a different historical period or create a portion of an exhibit and post it on YouTube.

Ultimately all of these questions fall in the vein of the still yet developing field of museum informatics. Library science, education, and community studies all stand to benefit from learning about new innovative museum techniques and should incorporate their innovations into their transdisciplinary approach. T2ST is hopefully just the first of a many creative and exploratory applications of museum informatics, it should be exciting to see what the future holds.

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