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Sparks! Virtual Illinois, a Roadside Guide
Project Completion White Paper

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1. Administrative Information

Institution:
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Sparks! Virtual Illinois, a Roadside Guide (#LG-45-12-0603-12)
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University of Illinois at Springfield

2. Project Summary

With few exceptions, museum-based knowledge and educational resources are largely removed from everyday life and the local environment where their audiences live and work. Museum outreach and exhibits have traditionally focused on connecting local knowledge to larger-scale regional, national, or international themes to provide new insights and greater historical context. Yet at their core, these larger concepts are constructed of a myriad of local story lines. These local "stories" may be based on a paleontological site or a historic house; a public sculpture piece or a vacant lot. Collectively, these stories make up the larger historical context. Although each may be only a small component of a larger theme, together they can be important local benchmarks in community histories. Their contribution to science or society may be acknowledged through a monument or local marker, but the historical event itself is interpreted and re-interpreted within the academic sphere. Its contribution to larger processes is evaluated, diminished, promoted, or forgotten, depending on the goals of researchers. Regardless of its ultimate fate in the research realm, it often retains an important place in a local community history.

These tangible locations are a large part of the intellectual currency of a community. They are important building blocks in the development of community identities. They link new

generations to the physical past, and they form the foundation for local tourism. There is a strong need for a vehicle to communicate this information to the public, while at the same time creating a desire to visit and explore local communities. Museums have been slow to leverage new, location-based technologies to improve access to public histories. Furthermore, few examples exist in the private sector, although those that are available illustrate the utility of the technology for distributing information quickly and easily to a wide audience.

Conceptually, the Virtual Illinois project is innovative because it will allow an end-user to navigate through historic landscapes in real-time while accessing rich, user-defined, multi-media content. The technical framework is extensible, so additional content can be uploaded quickly and easily without the need for additional web design services. Finally, the potential scope of this project encompasses the entire range of the social, cultural, aesthetic, and natural history of the state of Illinois. We are unaware of any other project that combines these characteristics into a user-friendly, open-access end product. This pilot project provided funding for the initial development of the technical resources needed to attain these goals. As the database and web resources become operational, additional content will be added.

3. Process

Conceptually, the Virtual Illinois database consists of story points, topics, and tours. Story points are the individual locations and non-spatial entities that make up the database. All story points have short descriptions that explain the importance of the entity, and multiple keywords that define the relationship of this point to other points (i.e., topics). Most story points have additional content: in-depth descriptions, historic imagery, and/or associated audio. Topics are categories that describe each story point, like subjects in a library catalog. Tours are a group of story points that can be combined to form a coherent story, describe an event, or chart a virtual fieldtrip.

Virtual Illinois is built to be easily queried. For instance, a user might define a query by selecting story points with the following tags: “AD 1800-1899”, “Southern Illinois” and “History”. The result will include a variety of historic story points that appear in a list and on a map. As content for the database is developed, there will be the potential for more powerful, user-defined queries. The end result will be a dynamic and interactive database of historical information that will distribute shared institutional and public knowledge. Virtual Illinois is different from existing public domain databases in that the user will be able to 1) select nearby story points based on user-defined or GPS-supplied information, 2) easily query the database by topic or tour, and 3) view auxiliary content associated with story points (imagery, audio files, webcasts, short and long descriptions). The ultimate goal of Virtual Illinois is to create a shared knowledge network between institutional (e.g., museums, universities, scholars) and public (oral histories, educators and students) sources of historical information for education and tourism.

1. <u>Development of a spatial database of Illinois story points that reflect the rich aesthetic, cultural, and natural history of the state.</u> We have designed and implemented a database of

content types to accommodate a wide variety of cultural, historic, and natural history site types. This database is built in SQL using the open source Drupal CMS as a front-end. Ultimately, digital media will be embedded within this framework through connections to Alfresco 5.0 Community Edition, a Digital Asset Management (DAM) platform. Each content type is associated with metadata appropriate to categorize a particular location, including a brief description and vocabularies that will allow efficient querying of the database once it is public. Consistent with "best practices" in museum and library science, database vocabularies utilize extant metadata standards whenever possible (e.g., CDWA, [Getty Institute] is integrated into the Public Art vocabularies, Biological vocabularies utilize DarwinCore, etc.). Although we have begun to develop media resources in Alfresco, this system is not yet integrated with the web and mobile portals. We hope that with further development, this system will allow the user to seamlessly access digital images, digitized documents, audio, and video content.

2. Development of a user-friendly portal to provide rich, map-based content to web and mobile users. The intent of the Virtual Illinois web platform is to allow a user to easily query a database of rich historic and natural history content. The web platform serves two primary purposes. It provides a portal for querying the database by topic or location. However, it is also intended to act as an information discovery tool by providing links to "similar content". Currently, users can perform location-based or categorical searches and view the results in a list (with short text) or on a map. Clicking on a story point will open a stub with a longer description, additional media, and any related story points. Although we envision the database to consist primarily of textual and image data (e.g., a brief description of an historic site and a photo), it also has the capacity to link ANY digital file (e.g., video, audio, scanned documents) to a story point and distribute to the user. This is potentially very important to the interpretation of some content types, such as early jazz clubs in Chicago, where copyright-free recordings of period jazz artists could be associated with a story point. We have also built in the capacity to link the database to images of objects from museum collections that could be associated with a story point (e.g., Abraham Lincoln's stovepipe hat).

Figure 1. Entry page to the Virtual Illinois web-portal.

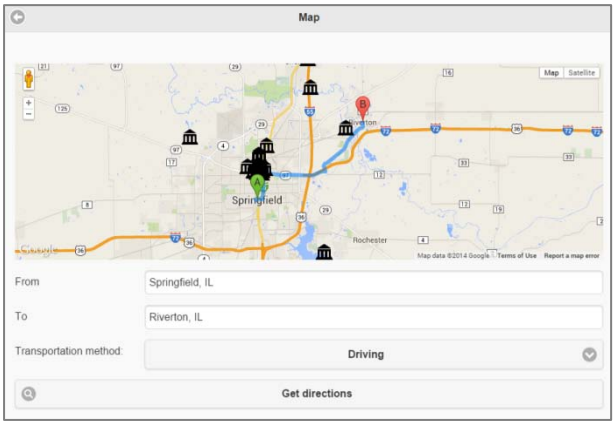

Figure 2. Mobile Application query showing Virtual Illinois story points along a route.

3. Development of Virtual Illinois Mobile app. The prototype mobile application allows the user to explore the database using a mobile phone or tablet. Currently, the app can identify the user's location (if GPS enabled) and display this location and story points on a map. The app can also map a route between departure and arrival points, and create a list of story points that will occur along that route. For testing, the app runs in a mobile browser, so it can be tested on either iOS or Android.

4. Preliminary content development for purposes of testing and evaluation. Since this was a prototype system focused on the development of the underlying database structure and mapping applications, content development was considered a secondary priority. However, the database needed to be populated with some datasets in order to rigorously test the applications. Two types of story point datasets were used to test the Virtual Illinois applications. The first dataset was a compilation of 1633 roadside markers and National Historic Register sites. This dataset is distributed statewide and encompasses a wide diversity of site types (e.g., historic, geological, archaeological, fine arts), however, the quality of roadside marker textual elements was highly uneven. Furthermore, acquiring media or related resources to associate with these story points would take an enormous amount of time. For the purposes of the present project, this story point dataset was used only to internally test mapping and database functions at the statewide scale. The second dataset used in the project consisted of 65 story points that could be linked together topically or historically. These data were physical locations (N=46), biographical entities (N=4), biological organisms (N=6), cultural descriptions (N=1), museum objects (N=2), and linear transportation features (N=5). Most of these story points were fully developed with associated textual descriptions and media files. A few were "placeholders" to illustrate how different content types were linked together. A total of 19 of these points were located within and around Springfield, IL to facilitate testing by local students, museum volunteers, and the interested public.

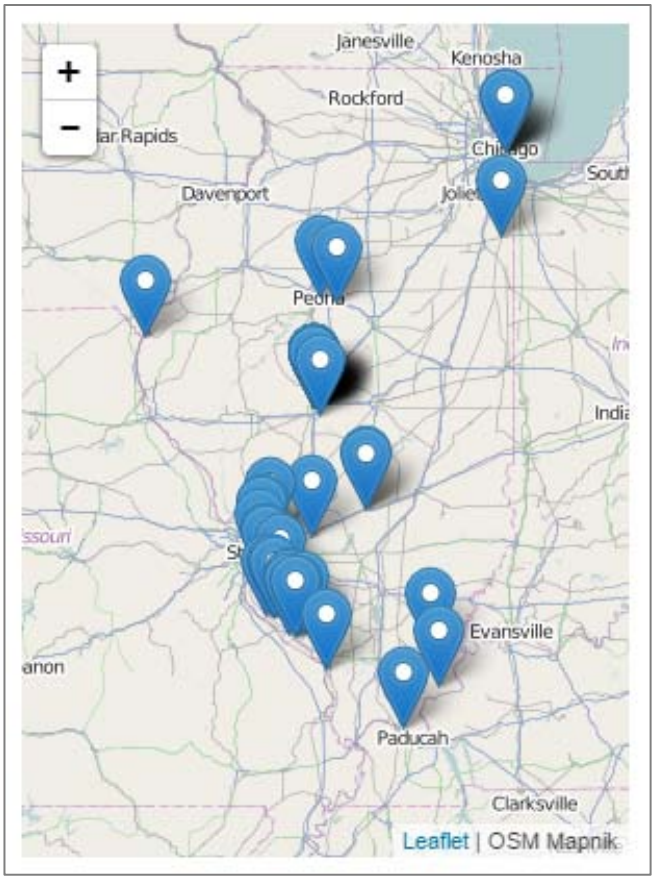

Figure 3. Story points used for public testing of the Virtual Illinois platform (N=65).

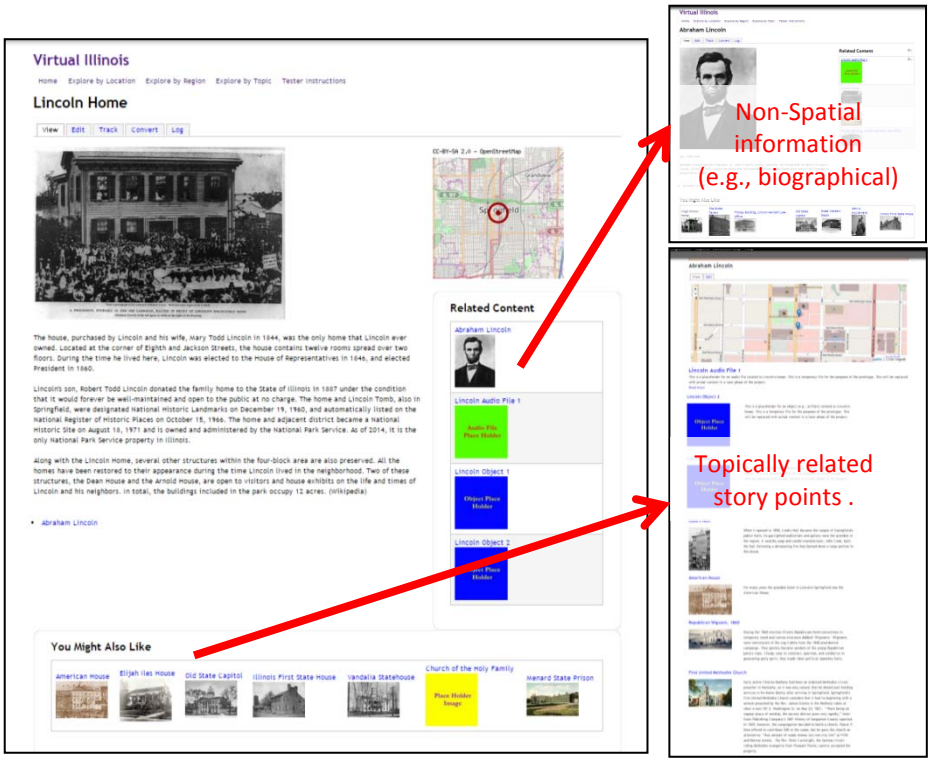

Figure 4. Example of a story point landing page with related content.

5. Outreach to Stakeholders. Through local lectures and personal connections we have reached out to local libraries and historical societies, primarily to assess their needs for distributing digitized content. Although there have been significant efforts to digitize museum and library collections throughout the state, the resulting digital products are uneven in visibility and public accessibility. Large geo-referenced datasets are present for natural history data, but these localities are often inappropriate for public dissemination (i.e., contain sensitive information). Digitized products for Historic sites are unstandardized, often project-specific, and highly de-centralized in their online distribution. The Illinois Digital Archives (IDA), in operation since 2000, is a digital repository for the Illinois State Library, libraries, and cultural institutions in the state. Visual and archival media (e.g., digitized slides, documents) from 149 collections (>230,000 records) have been incorporated into IDA. However, this collection is not geo-referenced, so is of limited utility in creating dynamic mapping applications. We have found that there is a critical need for new ways of distributing digitized information in the library and museum communities outside of traditional database-driven approaches. More than ever, we believe that Virtual Illinois will help to address this need.

4. Project Results

The Sparks! Virtual Illinois project has resulted in three primary products. The first is a spatial database structure that is capable of storing metadata on a wide variety of cultural and natural history sites. Second is a web-portal that can easily query this database based on topical or spatial variables. Finally, the Virtual Illinois mobile app is a mobile link to the project database that can be accessed from a tablet or smart phone platform.

Evaluation and Review of project prototype. The web-portal and mobile application were available for public testing and comment for a two-week period. Emails with links to testing instructions and a post-test survey were sent to museum staff, historians, interested researchers in other institutions, museum volunteers, students at the University of Illinois-Springfield, and interested community members. Links were also posted to social media outlets to capture the broadest diversity of interests and technological experiences. Although the people who viewed this announcement numbered in the hundreds, only 21 people tested the applications and provided responses to the survey.

The 10-question survey was designed to 1) provide some background on the prior experience of the user with mobile devices, 2) determine what types of information users might be interested in accessing on their mobile devices (e.g., History and Architecture, Natural History, The Arts), and 3) assess the usability of the Virtual Illinois web and mobile access portals. Respondents were allowed to check more than one answer and open comment boxes were provided for feedback on many questions.

Types of Testers. Over 70% of respondents owned a smartphone or tablet that is connected to a mobile network. This is significantly higher than the state and national rates of smartphone use (~50%). Most respondents (67%) use multiple apps on their mobile device suggesting a relatively high degree of comfort with mobile technology. 50% of testers used GPS navigation apps on their device, which is similar to the numbers of people who used their device to check email (55%), and significantly higher than the number of people who accessed social networking sites (28%). These data indicate that at least two-thirds of the respondents are comfortable with mobile technology, including navigation apps.

Desired Services. The specific types of information respondents were interested in was split almost evenly between the Arts (23%), History, Architecture, and Archaeology (23%), and Natural History (17%). However, it is interesting to note that most respondents would like to see a diverse range of information available to them on their mobile device (58%). This suggests that an application serving this information to the public should not be limited to a single discipline, but should include diverse options. One respondent added that it would be useful to have information on current events (e.g., relevant public lectures) integrated into the system.

Testing Virtual Illinois applications. Most survey respondents tested the web-portal to the Virtual Illinois database (80%). Fewer tested the mobile application (30%), and a few (10%) were unable to gain access to either application. The survey requested feedback on four tasks that were performed within the web-portal, and one within the mobile app. Each task was given a ranking between 1 and 3 that reflected ease of use; 1) Easy to query and explore, 2) Not very easy, but not too difficult to query and explore, 3) Difficult to query and explore. Respondents were also given the option to “not test” a particular task.

Four web-portal tasks were tested, 1) Explore by location, 2) Explore by region, 3) Explore by topic, and 4) Map interface for site selection. The "Explore by location", "Explore by region", and "Explore by topic" tasks were scored by >50% of users as "Easy to query and explore". The map interface was slightly less user-friendly with only 44% of respondents scoring it as "Easy". About 30% of respondents tested the mobile app. The mobile app was overall less user-friendly with 24% of these respondents scoring it as hard to intermediate difficulty to query and explore.

The testing of the above navigation tasks was followed up by the question, "Were you able to find information you were interested in?" Approximately two-thirds of respondents indicated that they either found information they were interested in, or they discovered new information for which they did not have prior knowledge. The remaining respondents indicated they did *not* find information that they were interested in. In retrospect, this question may have been interpreted in different ways. We intended to assess whether testers found the content interesting, and particularly, whether they were discovering NEW information that they did not already know about. However, some of the comments from testers suggested that the level of content we provided did not meet their expectations (e.g., "I know that site X is in this location, but it is not included in the database"). In other words, our priority in development was to build and test a prototype with minimal content for testing. Some respondents expected a large, fully-featured, content-rich database, which will require much more development.

Overall these responses indicate we are making good progress towards developing a system that is consistent with the project goals. Most users who were technologically proficient were able to easily query the database through the web-portal. Further development will continue to improve usability. Since the mobile app is still in an early stage of development, its usability scores were lower. Future work and the expansion of routing functions (not available to testers, but now functional) will improve this application.

Future Directions. We believe that the Virtual Illinois prototype is a success and demonstrates the potential for distributing digitized historic and natural historic information to web and mobile users. Public access to online resources through wired and mobile networks is now an expectation of our audiences, and museums should develop resources accordingly. The next steps for the Virtual Illinois project will be to continue development of the web and mobile portals to improve usability. We will also begin to systematically develop content, in-house, for geological and archaeological field guides to the state. Future outreach efforts will focus on identifying collaborators to assist in creating history and arts content.

5. Resources

To Access the system, follow this link:

http://www.villinois.museum.state.il.us/content/project-overview

Username: guest

Password: guest2014