

Sample Application

2011 National Leadership Grants for Museums

Advancing Digital Resources

Indianapolis Museum of Art Indianapolis, IN

TourML and TAP: A Toolkit Supporting Museum Mobile Experiences

Abstract: *TourML & TAP: a Toolkit Supporting Museum Mobile Experiences*

The *TourML & TAP: a toolkit supporting museum mobile experiences* project seeks to develop tools and a specification for building, sharing and preserving mobile tours that can be used by museums of all types and sizes to create and deploy their own mobile experiences. Led by the Indianapolis Museum of Art, the *TourML & TAP* project continues important work within the community to create mobile standards and open-source tools.

The project's work, which began in 2009, has been heavily driven by the museum community, and the *TourML & TAP* grant submission continues that practice by featuring a diverse partnership of leading thinkers about mobile tours in museums. Formal partners of the grant include: the Balboa Park Online Collaborative, Dallas Museum of Art, Eiteljorg Museum of American Indians and Western Art, the Metropolitan Museum of Art, Minnesota Historical Society, Museum of Contemporary Art San Diego, Museum of Fine Arts Boston, Smithsonian National Air and Space Museum, and Smithsonian Office of the Chief Information Officer.

A two-year project starting October 1, 2011 and running through September 30, 2013, the *TourML & TAP* grant will address significant challenges facing many museums who are planning, developing, and using mobile content tours. As highlighted in the 2011 Museum and Mobile Survey, the pace of mobile content development in museums is staggering. This project's goals are to ensure that the content created for these tours is well-described, sharable, easily-migrated between authoring tools, and supports long-term preservation. Intended audiences for the grant's work include museums of many sizes and types with staff who possess varying degrees of technical proficiency. Perhaps more important than the tangible products of the grant, this project seeks consensus among museums and the vendor community regarding the nature of mobile tours, and offers a powerful model for how open-source and proprietary systems can co-exist within the museum community. Initial evidence of this community can be seen in the letters of support (for an open-source project) provided by many of the important vendors in the mobile museum space.

Specific work of the grant will focus in three areas. 1) Completion and ratification of the TourML mobile specification through deep conversation with the museum and vendor communities. 2) The project will develop software tools geared to spur the adoption of the TourML specification by museums and vendors. These tools will include a validation suite for TourML documents, and a modular toolkit of mobile software which can be used in whole or in part to create and host mobile tours. 3) Project partners will test and evaluate the tools and specifications in their own museums authoring case study whitepapers that evaluate the suitability of these tools for use in museums.

The success of the project will be seen in at least three specific ways. 1) The creation and deployment of mobile tours in museums that use the products of the grant, including the TourML specification and/or components of the mobile toolkit. 2) A productive collaboration between museums and vendors as evidenced by a TourML steering committee with representation from both communities. 3) The case-study evaluations written by museum partners who have used the tools in practice.

TourML and TAP: A Toolkit Supporting Museum Mobile Experiences

I. ASSESSMENT OF NEED

Mobile content has become an undeniably important platform for museums. An explosion of new tools and companies have emerged in the last 24 months to address the needs of museums that are planning, producing and launching new mobile experiences. The 2010 Horizon Report for Museums highlights “mobiles” as one of two technology trends on the near-term horizon, stating that *“Mobile technology has developed at a staggering pace over the last few years, and today affords many more opportunities for museums...”*¹ A recent Pew Internet survey indicates that 40% of American adults had access to the Internet from a mobile phone in 2010,² and studies from Gartner suggest that by 2013 mobile phones will overtake PC’s as the most common method for accessing the Internet worldwide.³

With 4 billion mobile phone subscribers worldwide, it is clear that mobile devices and content will be an important means of access for museum visitors today and in the future. More recent anecdotal evidence suggests that these trends have accelerated rather than subsided, and that an increasing number of museums are contemplating how they might deliver content via mobile devices. The Museums and Mobile Survey 2011 indicates that over half of large museums (annual attendance of more than 50,000) already have mobile experiences, and almost 70% of all museums say that their institution will “definitely” have in-house mobile content development within the next five years.⁴

While the promise of mobile technology seems self-evident, the more perplexing problem of how to manage the content museums produce for these devices is daunting. How will museums ensure that the mobile content they produce today will be available and accessible five years from now? For example, when the mobile vendor selected to produce a museum’s first mobile tour is no longer viable two years later, how can the museum retain and reuse the valuable content they created? Is there any hope of sharing content between museums with related collections, programs, and exhibitions? These questions are among many critical—and currently unaddressed—issues related to today’s mobile content explosion.

The creation of a common and open software platform for mobile tours, which can be shared and referenced by museums and vendors, would offer an effective way to answer many of these questions and would provide a mechanism to ensure that content created today could be easily re-purposed and adapted to future generations of mobile tools. Building consensus among museums and vendors for a description of mobile content, and building tools to aid in the adoption of this platform are necessary steps to achieve the goals of content sustainability and cross-collection sharing that museums desire. A successful platform of this kind would provide a way to integrate and interoperate between a number of content creation systems and mobile interfaces, allowing both vendor-provided and custom-developed application software to use the same set of content.

The key element in achieving such a platform is the existence of a specification—a common language—describing mobile tours, their content, and the experiences they provide. In the summer of 2009, the Indianapolis Museum of Art (IMA) proposed a simple draft specification called TourML (*tûrmoil*),⁵ which offered a working, but preliminary, example of what such a standardized language might look like.

If successful, a content specification like TourML would provide a number of important advantages:

- Museums could choose authoring tools which best fit their staffing and workflow needs, integrating with whatever mobile solution was best for their content, even if these tools were provided by different vendors.

- Similarly, this specification would allow the same tour to be used on a variety of mobile devices regardless of hardware or operating system.
- The TourML specification would allow museums to share the content and structure of a tour with other museums offering related content.

In order to ensure a high level of input from the community, Robert Stein (IMA) and Nancy Proctor (Smithsonian Institution) organized two half-day workshops, inviting museum staff members, academics and software vendors to join a preliminary effort to formulate just such a standard. The first meeting was held at the Tate Modern in conjunction with the Tate Handheld Conference in September 2010. The second meeting was hosted by the Museum Computer Network in Austin, Texas, in October 2010. A third workshop is scheduled to be held in conjunction with the 2011 Museums and the Web conference in Philadelphia, Pennsylvania in April 2011.

In all, nearly 100 members of the museum community will have played a significant role in these workshops, resulting in multiple subsequent revisions to the TourML specification. Notes from all meetings are available from the Museum Mobile Wiki,⁶ and the resulting TourML specification is available under an open-source license from the project's Google Code website.⁷

In addition to promoting the creation of a mobile content standard, it is important for museums to have access to a simple and easy-to-use content authoring platform to facilitate the creation of mobile content and spur the adoption of the TourML specification which ensures the long-term sustainability of this content. Thus, in 2008 the IMA created and released a mobile content management system called TAP, which is also available under an open-source license.⁶

TAP provides a way for non-technical museum staff to assemble a wide range of mobile experiences without needing to know any of the underlying technical details of the Web or mobile technology. In addition to the means for assembling content, TAP in its current state also provides user interfaces for Web-based mobile tours and simple native applications for an iPod-based tour.

Freely available tools and standards are essential to the museum community to promote the adoption of best practices, to facilitate collaboration, and to encourage the creation of potential avenues for future content sharing. IMA's initial work with the TAP authoring tool includes support for an early version of the TourML specification and offers a functional, but incomplete, proof-of-concept, demonstrating how such a system might work. Since its release, the TAP system has been successfully adopted and deployed by a few independent developers—including other major museums—and has served as a model and example code for a number of other implementations.

In its current state, TAP provides a workable tool for museums with significant skills in software development and a willingness to use the system in its entirety. The current version of TAP does not support the extensions to the TourML specification that are recommended by the community, and it is not currently modular or robust enough to support an integration of components from the system with other tools. Museums with limited technical skill will find it challenging—if not impossible—to support TAP in its current state without further investment in ongoing technical support.

II. NATIONAL IMPACT AND INTENDED RESULTS

As a result of the mobile explosion described above, museums are investing significant financial resources on an annual basis to produce new content for mobile consumption. Because much of this content is focused on the

permanent collections of museums, it may be just as relevant ten years from now as it is today. However, trends indicate that the mobile platforms for which this content is designed will become obsolete far sooner. For museums, this situation recalls similar challenges of a mismatch between enduring content and technical change that has become all-too-familiar for museums. Many kiosk and interactive Web applications developed just a few years ago have proven to be very difficult to maintain over time, and repurposing content from these applications is often impossible. This project evolved in response to the lessons learned from those failures and seeks to avoid similar mistakes as museums embark on many new content efforts for mobile devices.

In the past, museums have depended on commercial partners to ensure the preservation and sustainability of produced interpretive content. Vendors, however, are likely to be focused on the more immediate concerns of creating a strong user experience and features that distinguish them from their competitors. The nature of commercial competition often makes it difficult for vendors to lead the charge for portability and preservation. In addition, without a consensus in the community around content definitions, tools that succeed in ensuring portability and preservation are all but impossible. Previous successes in defining content specifications and standards—such as those supporting object collection metadata (LIDO, CDWA Lite, and Dublin Core)—have been led by the content producers. In short, the onus of consensus and collaboration around standards falls squarely on the shoulders of the museum community. Partnering with commercial vendors to encourage adoption of these standards and ensuring that these tools help to enhance the vendor's business, is the only sure way to secure the viability of such an effort.

Through the ratification of the TourML specification, museums can influence the adoption of this specification by the vendor community. In exploring the feasibility of this effort, many commercial vendors have been very receptive to TourML as a potential specification for mobile content, and many have been actively engaged in the mobile workshops that have been held. Some vendors have already experimented with incorporating support for the draft TourML specification into their products. Ideally, a healthy relationship and involvement of vendors in this process will result in a viable and sustainable specification that can truly recognize the benefits sought by museums.

The Museum Mobile Survey 2011⁴ reveals that two of the top three challenges faced by museums that are planning mobile experiences are a lack of funds and the technical expertise required to host and maintain them. In an effort to provide free, user-friendly, and high-quality tools for these museums and modular components that can be adapted by museums to existing tour systems, another major goal of this project is to create a toolkit of mobile software—based on TAP—that supports the final TourML specification agreed upon by the project partners and the museum community.

The current reference implementation of the TAP content management system (CMS) has proven useful in its present state, as evidenced by its adoption at several major museums. Further development is needed to update this tool to incorporate community feedback on the TourML specification. The CMS provides value to museums by allowing non-technical content creators to easily assemble and manage their tour content in a first-class Web-based system. Museums can design and create tour content in this system even while they evaluate how they want to distribute the content on mobile phones. This dramatically lowers the entry point for museums that wish to plan, produce and collaborate on mobile tours. The TAP content management system is based upon the open-source tool Drupal,⁸ which has become widely adopted and familiar to many in the museum community. One advantage of building upon a mature platform is that support for internationalization is already available, allowing museums to easily manage content reach out to non-English-speaking audiences.

Seeking to provide a complete toolkit for mobile experiences, the project proposes the creation of several user interfaces for mobile content. Each user interface would be created to support the complete set of features from the TourML specification. The interfaces would be used by visitors to experience the content of the tour and also as a software sample that demonstrates how TourML's features can be supported by developers wishing to add TourML support to their own user interfaces. Sample user interfaces developed in the grant would include a native iOS application that can be run on iPod Touches, iPhones and iPads and a Web-based mobile application that targets a more comprehensive set of mobile smart phones, tablets, and personal mobile devices. The purpose of these applications is to reduce the barrier of entry for museums to the lowest possible point, given the current state of mobile technology. Deploying the intended mobile Web application would be similar in difficulty to setting up and hosting a blog online. Making these tools available would provide a complete front-to-back and open-source mobile tour platform for museums, enabling those who lack the financial and software development resources to reach out to new audiences.

III. PROJECT DESIGN AND EVALUATION PLAN

Though the initial efforts on TourML and TAP show great promise, there is still a serious need for investment in the project to ensure that these resources can be effectively utilized by the museum community. In this project, the IMA proposes a number of steps that will ensure the creation of a successful toolkit for mobile tours, that the TourML specification will become widely adopted, and that the resulting tools will be easily used and integrated by a wide range of museums.

Completion of the TourML specification (Months 0-12)

The ratification and acceptance of the TourML specification by vendors and the museum community is at the core of this project. The primary representatives from each partner institution have committed to be actively involved in the development of TourML and will contribute to the compatibility of the specification as it relates to their existing and planned mobile content deployments. Specific activities to be accomplished during the first 12 months of the project include:

- Collaboration and communication with a wide range of museums and mobile vendors regarding the nature and specific structure of the TourML specification to ensure that it meets a broad range of needs
- Hosting a final design workshop with the project partners, other museums, vendors, and experts from the community to address any remaining issues with the TourML specification; incorporate the feedback from those meetings into updates to the TourML XML Schema and formal documentation that will describe a 1.0 release of TourML
- Authoring and dissemination of a white paper outlining the development process and best-practice use of the TourML specification in museum mobile experiences

Establish TourML Steering Committee (Months 9-12)

The project team will ask museum professionals and commercial vendors who have been actively involved in the formulation of the TourML specification to form a steering committee to ensure sustainability of the specification. The steering committee's function will be to ensure that TourML is able to adapt as needed to evolving technology. Any changes to the specification after its 1.0 release will be specifically approved by the TourML steering committee. Diverse representation on the committee will provide a broad view that mitigates any potential institutional or vendor-specific bias. Self-governing rules will be developed by the steering committee to ensure that

enhancements to TourML do not deviate from the original intent of the specification. During this phase of the grant, the project team will do the following:

- Form a governance committee with diverse representation
- Establish and publish steering committee by-laws

Creation of a Validation Suite for TourML (Months 9-12)

A free online validation tool, which can be used to verify that third-party tour content adheres to the TourML 1.0 specification, will be developed and made available to the public. This validation tool will provide a number of benefits to the community. Commercial vendors will have a free and convenient tool to ensure that the import and export features in their products are functional and adhere to the TourML specification. Also, museums will have a platform-neutral tool to verify that their content matches the specification and will reliably import into any TourML-compliant system. The validation tool will go beyond simply verifying whether or not the content documents match the specification. It will also contextually analyze the contents of the uploaded files and provide warnings to users of deviations from best-practice, possible limitations faced from lack of specificity, orphaned content, and other useful messages that help users diagnose the structure of their tour content. During this phase of the grant, the project team will do the following:

- Create a set of tools for validating a TourML document. The tools will provide a neutral method for museums to evaluate how well any particular tool supports the TourML specification.
- Identify and host a neutral online platform for validation services to run free of charge for anyone who wishes to test their TourML document.
- Release the validation software to the community to ensure a sustainable method for validation after the grant period, and to allow the incorporation of these tools into third-party mobile platforms

Development of a Mobile Toolkit (Months 0-24)

Throughout the grant period, the core software team will develop a modular and configurable toolkit of mobile software—based loosely on TAP—that supports the features of the TourML specification.

The first 12 months of the grant will be dedicated to creating a mobile toolkit that matches the adopted TourML 1.0 specification. Software development can begin before the formal acceptance of a 1.0 specification, given the significant amount of feedback already provided from three mobile workshops that will have been held at the start of the grant. Early development will focus on the upload of media to the content management system and the technical requirements of publishing a TourML document with its associated media. Subsequently, the team will focus on building two complete sample mobile applications. These will implement several of the most common navigation methods, such as typing in a code, and will provide a customizable user interface that allows partners to easily change the look and feel of the applications to match their specific tours.

During the final twelve months of the grant period, software developers will focus on the support of partner deployments and documentation. The mobile toolkit will also be enhanced with one or more non-traditional navigation methods—such as location awareness or camera support—in order to demonstrate TourML’s ability to use the same mobile tour content with different user interface experiences. The reusability of content is at the heart of this project’s sustainability and preservation goals. Software development activities in the grant will include:

- Creation of an open-source toolkit of modular software that implements all features of the TourML specification
- Ensuring that the toolkit functions as a complete system that can be used by any museum as a beginning-to-end solution for mobile tours
- Documenting the software of the toolkit to make sure that each component is well-described and easy for others to re-purpose in other applications
- Ensuring that pieces of the resulting mobile toolkit can be extracted from the larger tool for use with other systems
- Providing sample software and examples of how the modules in the toolkit can be used and integrated with other systems
- Demonstrating the use of the same mobile content across multiple platforms with a variety of navigation methods

Successful Integration and Deployment of Tools by Museum Partners (Months 13-24)

The application of the mobile toolkit and TourML across a variety of institutions and technical platforms will showcase the flexibility of the solution. Partners will test the feasibility of supporting TourML—in some fashion—as a platform supporting the publishing and sharing of mobile tour content. These tests may include formal deployments of mobile tours, customizations of components of the mobile toolkit, or internal evaluations of the tools, including 'mock' tours designed to test the functionality of the toolkit for a future implementation. Opportunities to integrate support for the TourML specification with commercial platforms will be specifically sought to ensure the ability to integrate with these tools. Each partner has committed to author a case-study whitepaper which describes their particular use of TourML and the supporting software. Whitepapers will focus on the specific requirements needed to launch a tour and the partner's individual evaluation of the effectiveness of the toolkit. The project team will do the following activities during this phase of the project:

- Partner museums, representing a wide range of museum types including art, culture, history, and science, will use the mobile toolkit to support their own needs in deploying a mobile tour
- Partners will choose different approaches to using the mobile toolkit
 - At least one partner will integrate the tools with an existing tour
 - At least one partner will support TourML to/from a commercial tour system
 - At least one partner will use the complete mobile toolkit for the entire tour system
- Enable the storage and migration of content via the TourML specification for each museum partner regardless of implementation strategy
- Document case-study whitepapers for each partner detailing how they achieved success with their particular implementation

Evaluation of Community Impact and Mobile Toolkit (Months 21-24)

In the final phase, the core project team will evaluate the adoption of the TourML standard by the museum community and the degree of community knowledge of the mobile toolkit. An online survey will be created and advertised through museum technology mailing lists. The survey will frame a series of questions designed to measure the degree of adoption achieved for the TourML specification. Users will be asked if they are aware of TourML, and if so, whether they find the specification applicable to their mobile tours. Furthermore, users will be asked about

their plans for long-term sustainability for their mobile content and whether or not TourML would support their needs. The project team will also survey mobile products in order to determine the number of third party tools that support TourML and measure the number of mobile tours being driven from TourML.

The success of the mobile toolkit and the validation suite will be measured through a combination of questions posed to each partner as a part of their case study white papers. In addition to an open narrative describing their use of the mobile toolkit, partner case studies will evaluate the effectiveness of the mobile toolkit for their specific deployment. The same questions will be posed to all partners in order to draw broad conclusions about the tools. Web analytics will be used to establish the number of outside developers who are using the TAP Mobile Toolkit. The number of downloads of the tools and unique visitors to the TAP project website will be tracked. The number of document submissions to the hosted validation suite will be monitored. Measurements of how well those documents performed against the mobile specification will also be tracked. The following activities will be performed to accomplish the evaluation goals of the project:

- Conducting a community survey evaluating the adoption of the TourML specification and the sustainability of museum mobile content
- Counting the number of third party mobile products which have built support for TourML and ask those providers for an approximate number of tours deployed that use the specification
- Project partners will evaluate the mobile toolkit through template questions paired with their individual case studies
- Using web analytics to track online activities for the TAP website, validation suite and mobile toolkit

IV. PROJECT RESOURCES: BUDGET, PERSONNEL, AND MANAGEMENT

The project features a dynamic collaboration of professional staff from many of the leading museums currently developing content and deploying mobile experiences for visitors. Many of these partners have a prestigious track record of producing and disseminating cost-effective technology solutions within their own institutions and to the museum community at large. All partners will act in an advisory role for the development of the TourML specification and the mobile toolkit, while also representing the needs of their individual museums and cultural sectors. Project partners will evaluate the success of the tools by implementing or testing these tools inside their museums. The IMA has long practiced Agile Project Management,⁹ which is an iterative design philosophy for allowing projects to react to changing needs. Applying this methodology, functional software is available at the end of every development cycle, which typically is performed on a weekly basis. Clients of the software are deeply involved at every phase of development in order to ensure delivery of useable tools which match their requirements.

Management Plan

The IMA will provide overall project management and serve as the fiscal agent. Key personnel from the IMA include Robert Stein, Deputy Director of Research, Technology, and Engagement; Charles Moad, Director IMA Lab; and Kyle Jaebker, Application Developer. Stein will serve as Project Director and co-Principal Investigator. Stein previously served as Project Director for the *Steve* IMLS National Leadership Grant and as Technical Lead on the subsequent *Steve in Action* and *T3: Text, Tagging and Trust* IMLS National Leadership Grants. Moad will serve as co-Principal Investigator and Project Manager and previously served as Project Software Development Manager on all three aforementioned IMLS National Leadership Grants. Jaebker will serve as Project Software Development Manager and previously served as Lead Software Developer on the *Steve in Action* IMLS National Leadership Grant.

Software Development Project Partners

Two of the project partners will collaborate with the IMA on the software development of the TAP Mobile Toolkit in addition to their advisory roles. The Balboa Park Online Collaborative (BPOC), represented by Rich Cherry, Director, is a technology cooperative of 20 institutions in San Diego's Balboa Park. Cherry has a long history of providing innovative technology solutions for museums while serving as Director of Operations at the Skirball Cultural Center and Chief Information Officer at the Solomon R. Guggenheim Museum and Albright-Knox Art Gallery. The Museum of Fine Arts, Boston, represented by Jenna Fleming, Manager of New Media, has demonstrated its technical expertise with the existing TAP Mobile Toolkit. They have extended the existing software for their newly launched Multimedia Guide, which consists of several tours deployed on more than 750 mobile devices.

Additional Advisory Project Partners

Project Advisors will participate in the specification of TourML, and the design of the mobile toolkit ensuring that the needs of their institutions and their cultural sectors are met. Many will deploy tours using the tools of the grant in their own museums and evaluate the effectiveness of the solution for the creation of mobile content.

Dallas Museum of Art – Jessica Heimberg, Senior Developer ; Ted Forbes, Multimedia Producer
Eiteljorg Museum of American Indians and Western Art – Peter Brown, Web and New Media Manager
The Metropolitan Museum of Art – Erin Coburn, Chief Officer of Digital Media; Peter Adamczyk, Associate Analyst
Minnesota Historical Society – Rose Sherman, Director/CIO Enterprise Technology & Business Development
Museum of Contemporary Art, San Diego – Kathryn Kanjo, Chief Curator
National Air and Space Museum – Victoria Portway, Chair, Web & New Media Division
Smithsonian Institution: Office of the CIO – Nancy Proctor, Head of Mobile Strategy & Initiatives

Notable to the project topic: Proctor guides Smithsonian institutions' use of mobile and provides more than a decade of museum mobile tour experience; Coburn, Co-Chair of the CIDOC Data Harvesting and Interchange Working Group, has extensive experience in developing standards for the representation and communication of cultural objects.

Budget

The Indianapolis Museum of Art requests \$745,554 from the IMLS while providing \$768,946 of match for a total project budget of \$1,514,500.

V. COMMUNICATION PLAN

The project partners will continue to communicate about the development of TAP and TourML in a transparent and open forum. The museum community will continuously be consulted regarding requirements for the TourML specification and the usability of the TAP Mobile Toolkit.

Website and Mailing List

A comprehensive website will be established to serve as the starting point for information about the TAP Mobile Toolkit and the TourML specification. The site will bring together all available documentation and community activities, and will also publish frequent news postings in order to keep users apprised of publications, presentations, software releases, and TAP installations being deployed in museums. The existing TAP mailing list¹⁰ will be used to support museum staff who are considering or using the TAP software tools at their institution. A separate technical

mailing list will be established for museum and commercial software professionals who are enhancing the software tools for their own use. Social media outlets (Twitter, Facebook, etc.) will also be used and incorporated back into the website as an effective means to distribute project updates to interested parties.

Conferences and Papers

Several mobile workshops have been held at the Tate Handheld, and Museum Computer Network (MCN) conferences with an additional meeting planned at Museums and the Web (MW) 2011. Project partners will continue this dialogue with the museum community throughout the duration of the grant period at appropriate venues and continue to work with peers on the best practices of deploying and sustaining mobile content. At MCN and MW, partners will produce papers and give presentations that educate the museum community on the benefits of an open mobile standard. Case studies will also be offered which evaluate the effectiveness of the deployments at the partner institutions.

Distribution of Open-Source Software

The IMA has a proven track record of building and sharing open-source software for the museum community. The project partners will continue to collaborate on the hosted Google Code project site, making the latest source code available and allowing feedback from the general public during all stages of development. Periodic software updates will be released and featured on the project website. All software will be released under the GNU Lesser General Public License (LGPL), which allows anyone to download, modify, distribute and even sell the software as long as they maintain the license and credits noted by the project developers.

VI. SUSTAINABILITY

The mobile explosion is showing no signs of slowing its growth. Museums will commit more and more time and resources to the production and deployment of mobile tours. As a result, the need for a standards-based description of mobile tour content will be relevant for the foreseeable future. TourML will remain a constant in the ever-changing landscape of mobile technology ensuring a sustainable way to produce mobile content. Mobile platforms will come and go, but much of the content will remain relevant. Having a way to migrate and archive this mobile content is critical to its preservation and continued dissemination.

The software will be distributed under an open-source license. The users of the mobile toolkit will have a vested interest in the longevity of the software well beyond the grant period. Having the software in the public domain will allow a large collaborative community to enhance, sustain and maintain the software.

Adoption by Mobile Vendors

The draft TourML specification has already benefited greatly from the active involvement of commercial mobile tour vendors, many of whom continue to support and contribute to the project. Broad adoption of the TourML specification by mobile vendors is one of the most important evaluation metrics, because the integration of the specification into their tools will act as one of the most powerful sustainers of the work being performed by this grant. TourML and the mobile toolkit will allow vendors to easily incorporate support for the specification and will likely be a valuable feature for museums looking to purchase a commercial tool for mobile content. Many vendors have expressed their strong support of this work and several have already started to test the compatibility of the draft TourML specification with their tour content.

Community Driven Steering Committee

The TourML Steering Committee will be a vital part of the sustainability plan. This group will be established by the project and charged to develop a working governance model for the specification that will extend beyond the grant period. Diverse representation across museum types and the inclusion of mobile vendors will be required to ensure success. Charles Moad, Project Manager, will serve as the TourML Steering Committee Chair Person through the first year following the completion of the grant. At the expiration of that term the steering committee will appoint a replacement chair to serve in two-year cycles. The steering committee will ensure that TourML is updated as needed in order to adapt to advancements in technology. As few imagined the current state of mobile devices ten years ago, it is virtually impossible to predict where the market will be in another ten years. The steering committee has been envisioned to address this unknown.

Conclusion

Advances in technology often provide exciting opportunities for museums to consider new ways to deliver innovative and dynamic content to their visitors. The advent of personal mobile computing has changed the fabric of our culture, and likewise changes the expectations of museum visitors. This project envisions a series of strategies that will allow museums to leverage today's technological advancements, while being smart about the ways content will outlive today's particular devices.

The TourML specification has matured significantly since the IMA's initial release. Important contributions by the museum community have resulted in a best-of-breed specification that truly reflects the needs and ideas of a broad cross-section of museums. The TAP content management system holds promise as the precursor to an easy-to-use and modular mobile toolkit that will spur the adoption of TourML and offer every size and type of museum a high-quality, standardized solution for mobile experiences.

The assembled team of partners for the grant includes many of the best minds in the museum field who work regularly on mobile experiences. Each has a depth of experience thinking about and designing solutions for mobile tours, and has demonstrated commitment to sharing knowledge with the field. The IMA has consistently proven its ability to solve large and complex problems, and has a record of successfully leading large, multi-institutional collaborative efforts .

If funded, this project promises to realize meaningful and immediate results that will change the landscape of mobile experiences in museums. Rather than building a single stand-alone application, this project has envisioned the creation of a suite of tools that will foster an ecosystem of support for mobile experiences in museums. The proposed project outlines a detailed plan for how these benefits can be sustained well beyond the grant period.

BUDGET FORM: Section B, Summary Budget

	\$ IMLS	\$ Cost Share	\$ TOTAL COSTS
1. Salaries and Wages	\$213,062.00	\$301,740.00	\$514,801.00
2. Fringe Benefits	\$28,454.00	\$74,507.00	\$102,960.00
3. Consultant Fees	\$0.00	\$0.00	\$0.00
4. Travel	\$33,120.00	\$0.00	\$33,120.00
5. Supplies and Materials	\$2,500.00	\$8,000.00	\$10,500.00
6. Services	\$0.00	\$8,600.00	\$8,600.00
7. Student Support	\$0.00	\$0.00	\$0.00
8. Other Costs	\$0.00	\$0.00	\$0.00
TOTAL DIRECT COSTS (1-8)	\$277,135.00	\$392,846.00	\$669,981.00
9. Indirect Costs	\$142,837.00	\$118,085.00	\$260,922.00
TOTAL COSTS (Direct and Indirect)	\$419,972.00	\$510,932.00	\$930,903.00

Project Funding for the Entire Grant Period

1. Grant Funds Requested from IMLS	\$419,972.00
2. Cost Sharing:	
a. Applicant's Contribution	\$510,932.00
b. Kind Contribution	\$0.00
c. Other Federal Agencies*	\$0.00
d. TOTAL COST SHARING	\$510,932.00
3. TOTAL PROJECT FUNDING (1+2d)	\$930,903.00
Percentage of total project costs requested from IMLS	45.11 %

*If funding has been requested from another federal agency, indicate the agency's name:

SCHEDULE OF COMPLETION																																				
Core Project Activities	2010		2011						2012									2013								2014										
	Q3	Q4	Q1	Q2	Q3	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Q4	Q1	Q2	Q3			
	Pre-grant period		YEAR 1															YEAR 2								Post-grant period										
Completion of TourML Specification																																				
Project Partners Address Open Issues of the Draft TourML Specification																																				
Final Design Workshop (MW2012)																																				
Produce and Publish Comprehensive Documentation of TourML on the TAP Website																																				
Release of TourML 1.0																																				
Whitepaper documenting best practices and process for using TourML																																				
Establish TourML Steering Committee																																				
Project Partners Identify Committee Nominees																																				
Approval of Steering Committee Members and Initial Phone Meeting																																				
Publication of Committee By-Laws																																				
TourML Steering Committee Phone Meetings																																				
Nomination and Approval of New Chair of the TourML Steering Committee																																				
Development of the Tap Mobile Toolkit																																				
Launch of TAP Website																																				
Software Development Team Kickoff Phone Call																																				
Update TAP Content Management System to Reflect Approved Portions of the TourML Specification																																				
Version 1.0 Release of the TAP Content Management System																																				
Creation of Validation Suite for TourML																																				
Launch of hosted TourML Validation Suite and Release of Validation Software																																				
Development of Mobile Web Application for Delivering TourML-Based Tours																																				
Version 1.0 Release of Mobile Web Application																																				
Development of iOS Native Application for Delivering TourML-Based Tours																																				
Version 1.0 Release of Native Application																																				
Partner Testing of TAP Mobile Toolkit																																				
Documentation for Installation, Customization and Deployment of Mobile Applications																																				
Partner Support for Mobile Tour Deployments																																				
Navigation Enhancements to the Mobile Applications																																				
Full Documentation of the TAP Mobile Toolkit																																				
Successful Integration and Deployment of Tools by Museum Partners																																				
Finalize Partner Deployment Projects and Timeline																																				
Evaluation of Community Impact and Mobile Toolkit																																				
Community Survey Evaluating TourML Adoption and Sustainability of Mobile Content																																				
Project Partners Deliver Case Studies																																				
Submit Partner Deployment Survey																																				
Collect Number of Third Party Products with TourML Integration & Approximate Number of Tours Deployed on those Platforms																																				
Publish Web Analytics for the Mobile Toolkit and Validation Suite																																				
	Pre-grant period		YEAR 1															YEAR 2								Post-grant period										
Project Kickoff Meeting																																				
Final TourML Design Meeting & Tools Preview																																				
Deployment Partner Meeting & Training																																				
Weekly Developer Phone Calls																																				
Monthly Partner Phone Calls																																				
	Pre-grant period		YEAR 1															YEAR 2								Post-grant period										
Tate Handheld Conference 2010: Mobile Workshop & Keynote Presentation "Predicting the Future of Mobile Experiences"																																				
Museum Computer Network 2010: Mobile Workshop & Presentation "TAP: A Mobile Tour Platform and Strategy for Museum Mobile Content"																																				
Museums and Mobiles Online Conference 2011: Presentation																																				
Museums and the Web 2011: Mobile Workshop & Paper																																				
Museum Computer Network 2011																																				
Museums and the Web 2012																																				
Museum Computer Network 2012																																				
Museums and the Web 2013																																				
Museum Computer Network 2013																																				