

## **Engaging communities through smart technologies**

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### **Abstract**

Engaging communities through smart-phone device-technology and story-trail tours affords botanic gardens and other outdoor educational institutions the ability to reach out to the public in new and innovative ways. Ventura Botanical Gardens, in cooperation with The University of Redlands Spatial Institute and the Esri Corporation are developing a smart phone device Story Trail application for tours with “geo-fencing” technology that senses the proximal location of a user to a tour stop and delivers relevant educational content, including audio, image slideshow, and video. The location-aware and geo-fencing-app capabilities enable a seamless blending of thematic and geographical tour information. Tour information points can be placed beyond the garden walls to integrate into the surrounding urban community, resolving some problems associated with physical signage. The app is easily configurable to add new or to modify existing tours. The technology utilizes a cloud-based approach so that little or no in-house infrastructure is required to implement the technology. A “Commons” is being established to make the technology accessible to other gardens at an affordable cost.

### **Keywords**

App, interpretive, signage, smart phone, trail, technology, tour

### **Ventura Botanical Gardens Demonstration Trail**

The Ventura Botanical Gardens (VBG) were established in 2005 with the goal of building a botanical garden on a 109 acre coastal hillside in Southern California. The site has spectacular views of the City of Ventura, the coastline, the California Channel Islands and local mountains. The VBG opened a trail in October 2011 approximately 1 mile in length rising to about 300 ft. The start of the trail is an easy two-block walk from the downtown pedestrian heart of the City of Ventura. As of January 2014, estimates indicate that there have been about 2000 visitors per week. An ongoing trail user survey produced results for the time period from trail opening to October 2013 which indicated several trends that guided development of the Story Trail app. The survey results (115 respondents) indicated that over 70% of visitors owned smart phone devices and that the great majority of those who did not were over 65 years of age. Visitors were also asked about their opinion of technology. Visitors did not prioritize technology, but follow up personal interviews (24) were conducted in which the Story Trail technology was explained and demonstrated; this reversed the unfavorable opinions. Demonstration of the audio clips associated with the Story Trail tour seemed to elicit the greatest positive responses. Trends indicated by visitors included: a desire for more than botanical information, in particular, information about what is in the field of view at points along the Trail pertaining to history, culture, information, anthropology, and geology; coupled with a desire for few or no future signs (currently there are no signs on the Trail); and greater directional information.

A team of stakeholders was gathered to develop content based on the assets of the Gardens and the survey results of visitors' interests. Following Tilden's (Tilden 1957) vision of interpretation, a thematic interpretation based on the natural and cultural histories of the site was developed. Geographic content was then overlaid on this theme. Professional audio was recorded by a popular local newscaster Stephanie Edwards and is accessible on SoundCloud.com (search for “vbgardens”). The tour introduces visitors to the assets of the Gardens through eighteen Story Trail educational points of interest along 2 km of the Trail. The resulting outdoor Story Trail education tour app is a general tour for all audiences.

The first Story Trail tour is easily expanded into the urban communities immediately surrounding the Ventura Botanical Gardens. For example, remnant sections of stone wall along the Trail survive from the Mission period. The Story Trail information point at the walls provides visitors with cultural history and is a logical opportunity to place a correlated Story Trail point at the San Buenaventura Mission of 1782 in the downtown pedestrian area of Ventura, which is just a few blocks walking distance from the Trail entrance. A second example correlates aspects of the Australian flora represented in the Gardens. A eucalyptus forest on the Ventura Botanical Garden site presents an opportunity to connect with heritage trees in our downtown area, including a massive Morton Bay Fig planted in 1874. These examples of extending a Story Trail outdoor education tour beyond the Gardens into the surrounding community are anticipated to draw and geographically lead visitors into the Gardens. Visitor experiences with Story Trail points outside of the Gardens will be the subject of post-implementation surveys to gauge effectiveness.

The development of the Story Trial technology and content for the first tour was funded by a grant from the California Heritage Fund and contributions from private donors.

### **How the App Works**

Esri introduced its cloud-based ArcGIS environment in 2011 and developed a technology for publishing interactive, web-browser-based story trail tours. Building on Esri's concept, in late 2012 and early 2013, the Ventura Botanical Gardens explored the possibility of delivering story trail tours with other forms of engaging multimedia content via smart phones and GPS tracking.

The app opens with a list of tours. Selecting a tour changes the screen to a map view with a trail and tour stops. Users or visitors engage with the map by tapping on a tour stop or by walking the trail in a GPS or location-aware scenario. In the latter case, a tour stop animates or an audible sound is heard as the visitor enters a predefined radial distance or geo-fence. In either scenario the tour stop displays a pop-up with a title and options for switching to audio, image, or video content.

The app is designed with six screen views:

- About the Gardens view - a short description and link to the public website
- Story Trail Tours List view - a list of tours to select from
- Map view – including a garden map, topographic map, and aerial imagery map hosted on ArcGIS Online
- Audio view – an audio player with content downloaded from SoundCloud.com
- Slideshow view – an image slideshow viewer with content downloaded from Flickr.com
- Video view – a video player with content downloaded from YouTube.com

### **Advantages over interpretive signage**

The ability to extend Story Trail tours outside of the Gardens makes the technology a powerful tool for achieving the interpretive goal of relating to the everyday lives of visitors, one of Tilden's interpretive principles, and to help visitors understand how the Gardens are related to their lives and communities (Tilden, 1954; Lewis 1980). The full application of the technology in these regards has yet to be realized.

Placing Story Trail information points outside the Garden walls creates opportunities to connect with visitors' sense of exploration. Physical signs face the challenge of arousing curiosity. The location-aware aspect of the Story Trail technology inherently achieves this on some level, in that

visitors on a trail are prompted by sound and vibration when they reach an information point. The points can be moved easily and new points added, so that the curiosity of repeat visitors may be maintained.

Retention of information presented is a common problem with signs, because visitors cannot recall information presented at the beginning of a tour (Hughes and Morrison-Saunders 2002). This presented information includes both educational content and geographical information about path locations, rest rooms, entrances and exits. Story Trail technology can not only improve self-guided trail tours through visitor location-awareness and geo-fencing, but also allow visitors to retrieve information for any tour point during the tour or after the tour in their community. Placement of Story Trail information points in communities may serve to reinforce retention of information. This is another topic to be addressed in post-implementation evaluations.

Effectively communicating messages to visitors is dependent on visitors having choice of format (Veverka, 2005). Ballantyne proposed that having a suite of experiences to choose from is important when appealing to both first-time and regular visitors (Ballantyne *et al.*, 2008). Visual signs cannot satisfy every visitor's curiosity. The ease with which multiple tours can be created using Story Trail technology means that gardens can present visitors with the choice of general or specific information tours and a greater quantity that is reasonable with signage or brochures. For example, the Ventura Botanical Gardens has developed a second tour in response to visitor requests to present detailed content of the geology of the Garden site. As the quantity of our story trail content increases, the utility and presentation afforded by smart phone technology becomes truly apparent.

Botanical gardens can function as tourism anchors (Sharpley, 2007). The potential for Story Trail technology to facilitate local tourism is particularly strong for urban botanical gardens. Extending Story Trail information points into communities adjacent to gardens is an opportunity to partner with and promote local organizations with similar missions or local businesses relevant to the interests of visitors. The Story Trail app includes screens devoted to recognition of sponsors as well as a splash screen that appears after the initial tour list screen. This advertising space is a small revenue opportunity and dovetails with functioning as a tourism anchor for the surrounding community.

Lastly, the technology has some possibilities in facilitating post-implementation evaluation in terms of quantity, access, and patterns both within and outside the Gardens; but the Ventura Botanical Gardens is not actively developing data-gathering aspects of this technology.

## Technical Requirements

Using no in-house infrastructure, the app relies on the distributed information architecture of the Internet cloud to deliver its tour trails, stops, and content. A cloud-based architecture makes servicing the app affordable and manageable for any botanic garden.

Cell phone reception is required.

Esri is a corporate leader and innovator in mapping technologies with a commitment to public service and support for non-profits. Esri sponsors a non-profit program called ArcGIS for public gardens. By joining this program, botanic gardens are entitled to purchase feature-rich mapping software with a nominal fee, obtain free training, and establish a free ArcGIS Online subscription account for publishing story trail tours. You can learn more by going to this link:

[http://www.publicgardens.org/files/files/Esri\\_New\\_2012\\_APGA\\_Application\\_Process.pdf](http://www.publicgardens.org/files/files/Esri_New_2012_APGA_Application_Process.pdf).

## Join the Commons

As a non-profit organization, the Ventura Botanical Gardens is committed to assisting other gardens and outdoor nature education venues to implement Story Trail app technology in cost-effective ways. The University of Redlands Spatial Institute and Ventura Botanical Gardens have joined to create a Commons Partnership so that other entities may create story trail tours for their visitors and members. The cost for joining is still being worked out but will be significantly less than the cost of initial development and include an annual maintenance charge for code maintenance and enhancements.

## Conclusions

The Story Trail tours app implemented at the Ventura Botanical Gardens has great potential to realize geographic and thematic integration with the surrounding urban community. The flexibility in application and ease with which the Story Trail technology can be implemented is key to its widespread adoption by botanical gardens. Public access to the Ventura Botanical Gardens Story Trail app is expected by summer 2014, available through Apple Store™ and Android Play Store™. For information on joining the Commons to build a Story Trail app for your gardens, please contact University of Redlands Spatial Institute or Ventura Botanical Gardens Administrative Director.

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