Location-Based Crowd-Sourcing for Preference and Place Perception Analysis at UMass Amherst

Alexander C. Schreyer
Lecturer, Building and Construction Technology

Alexander Stepanov
GIS Architect, A&F Administrative Systems

University of Massachusetts, Amherst

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Outline

• UMass Master Plan Background
• The "Favorite Places" Site
• The "Likes & Dislikes" Site
• Results
Purpose of the Campus Plan

So our short term decisions are part of a long term vision for the campus

To ensure the look, feel and function of our campus is reciprocal with our academic mission

To create a shared and supported framework which will inform our planning decisions campus wide

To create a document which can help us meet our goals, raise our aspirations, and help raise funds
The Participants

Division of Capital Asset Management

The University of Massachusetts Amherst

• Executive Oversight Committee
• Facilities and Campus Services
• Campus Planning

• Campus Master Plan Committee

• Stakeholder Groups
  – Teaching, Research and Libraries
  – Student Life
  – Administration and Support
  – Transportation, Land Use and Open Space
  – Building, Grounds and OIT

• Existing Governance and Committees
  – Faculty Senate
  – Student Senate
  – Capital Asset Board
  – Parking Transportation Advisory Board
  – Campus Physical Planning Committee
  – University Public Art Committee
  – Pedestrian Safety Committee

External Participants

• Neighbors
• Local Community Officials and Commissions
• Pioneer Valley Regional Plan Commission

Consultants

• Wilson Architects
• Ayers Saint Gross
• VHB
• Tighe and Bond
Over the Past Nine Months

• Nearly 200 Events
• Over 350+ Hours
• With
  – Campus Stakeholder Groups
  – CPPC, UPAC, PTAB, Pedestrian Safety, etc.
  – Faculty Senate
  – Individuals
  – Open Campus Forums
• Over 3,500 Web Visits
The "My Favorite Places" Site
2010: University was starting Masterplan process.

Discussions in Campus Physical Planning Council (CPPC) led to question:

"Where are our sacred places?"

Needed tool to survey sentiment about locations!
My Favorite Places Website

Goals:
- Fun to use
- Easy to add place
- Multiple submissions possible
- Aggregate submissions view
- Statistics generator
- Mobile website access
- Social sharing integration
- Spam control

Tools:
- Google Maps JavaScript API
- PHP / MySQL
My Favorite Places @ UMass Amherst

Renee says:

"The hill" is a great place to relax after classes or on weekends. People sit out on the hill to watch people play basketball, play guitar, catch some rays, chat with friends, hula hoop, read a book, etc. alone or with friends! - Visit this place

What are YOUR favorite places at the University of Massachusetts Amherst?

If you are part of the UMass community, a member of our host communities or have just visited the campus, show us and tell us about your favorite place(s) on our campus. Submit any kind of place and as many as you like. You can even share them with your friends. Click the buttons below to get started:

Submit your favorite place or See what others have submitted

www.umass.edu/myfavoriteplaces
Responsive Design!
My Favorite Places @ UMass

The pins below show the most recent 500 submissions. Click the pins to view comments.

Sarah says:
Being near the campus pond is always a treat, and seeing the lively student activities on the lawn near the library fills my day with color and a sense of community here on campus. Also, there are so many wonderful trees surrounding the area - wonderful!
My Favorite Places @ UMass

This is what has been submitted so far. Filter by:

- I am not with UMass
- I'd rather not say
- Outdoors

Show heatmap (full data)  Update Map

View as a table  Download entire data set: KML  View Website Stats

Submit a favorite place  or  Visit UMass.edu
Map:

Google Maps Javascript API object (few lines of code)

Geolocation - Pre-setting of pin to location on campus:

Google Maps Javascript API (two lines of code)
Points import:

KML-file generated from database (using PHP, based on selection criteria). Loaded into map.

http://umass.edu/myfavoriteplaces/getkml2.php?type=und&gender=mal&location=out

Heatmap:

Color-mapped image generated with PHP/GD script. Overlay in Map.
## Statistics

### Submissions

<table>
<thead>
<tr>
<th>Category</th>
<th>Female</th>
<th>Male</th>
<th>Other</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate S.</td>
<td>56</td>
<td>58</td>
<td>3</td>
<td>117</td>
</tr>
<tr>
<td>Graduate S.</td>
<td>28</td>
<td>28</td>
<td>2</td>
<td>58</td>
</tr>
<tr>
<td>Faculty</td>
<td>11</td>
<td>17</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>Employee</td>
<td>48</td>
<td>10</td>
<td>5</td>
<td>63</td>
</tr>
<tr>
<td>Alumni</td>
<td>126</td>
<td>74</td>
<td>3</td>
<td>203</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>1</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>272</strong></td>
<td><strong>188</strong></td>
<td><strong>13</strong></td>
<td><strong>473</strong></td>
</tr>
</tbody>
</table>

### Graph

- Page Loads
- Unique Visits
- Returning Visits

**Date Range:**
- This Week
- Jan 1, 2011 - Jan 1, 2012

**Summary Log:** No Limit
Heatmap Results
KMZ: http://goo.gl/Z1oYJ
The people are GREAT, the view is excellent, and it's the heart of the campus!

This is where I met my greatest mentor in life for the first time.

It's a place where a lot of people gather on warm days to play music, sports and hang out with friends.

This place has a really nice vintage elevator.
Results for “My Favorite Places”

• Custom "pin" tools useful for generic location analysis (esp. with heatmap output).

• PHP / MySQL application flexible but intelligence (database structure, spam filtering etc.) must be added manually.

• Effective “spam” protection necessary.

• Desktop / mobile UI in same web-based app useful approach (smartphones are pervasive).
The "Likes & Dislikes" Site
“Likes and Dislikes” Web App

Purpose

To outreach & engage Campus community in the master planning process
To survey & document public’s perception of the Campus (+ & -)
what they like and what could be improved
To facilitate Master Plan being “a living document”

Required Functionality

1. Web Input Tool(s)
2. Context (BaseMap)
3. Web “Output” Tool
4. Backend “Storage”

Analysis & “Packaging”

? Available Options ?!

ArcGIS Online: the Community Base Map Program & University Campuses
ESRI Web APIs: JavaScript, Flex and Silverlight
Content Management System (Drupal) as backend storage

http://www.umass.edu/cp/sites/cp/apps/places/index.html
“Likes and Dislikes” Web App

1 http://www.umass.edu/cp/sites,cp/apps/places/index.html
Initial user survey

http://www.umass.edu/cp/sites.cp/apps/places/index.html
Interface Elements

http://www.umass.edu/cp/sites/cp/apps/places/index.html
Define what (& where) you like and don’t like

1. Strong Place
2. Weak Place
3. WEB DuBois Library
4. This is an old building
5. This is an excellent use of this space to limit traffic

University of Massachusetts
Munson Hall
Munson Hall Annex

This is an old building

This is an excellent use of this space to limit the traffic
Done! What did other people say?

Thank you for participating in this planning exercise. Your opinion is important for us to consider.

We would be glad to hear your feedback and suggestions at cp@cp.umass.edu
Use of standard Flex Viewer to demo comments

Customized (Config file)
- Title & Logos
- Icons
- Menu elements
- Splash screen with instructions
- All functionality – out of box!

ESRI Flex Viewer - Need a data stream!

Interface Elements & “Likes” (Out of box)
What is to improve?

1. Bryan says:
   "I think this would be a great spot to expand the Student Union—which definitely needs more space. I picture a new glass facade facing Stockbridge, which will connect the SU to directly to the Campus Center concourse, currently being renovated. With the new academic building being built behind the spot, this would complete a large central concourse, making the CC plaza and the grass quad just north of the pond become a natural gathering spot."

2. I don't like these places
   - Spring NEARC says: "This is an old building"
   - Anonymous says: "I love this building.

3. I like these places
   - Spring NEARC says: "This is an excellent use of this space to limit the traffic"
   - Spring NEARC says: "The best place to eat lunch and chill.
   - Anonymous says: "I love this building."
“Dislikes” (372 Comments, as March 2012)
“Likes and Dislikes” Web App

Purpose

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Required Functionality

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Web “Output” Tool
Analysis & “Packaging”

Available Options
ArcGIS Online: the Community Base Map Program & University Campuses
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Content Management System (Drupal) as backend storage

http://www.umass.edu/cp/sites/cp/apps/places/index.html
Design & Implementation

- Web Input Tool(s)
- Context (BaseMap)
- Backend “Storage”
- Analysis & “Packaging”
- Web “Output” Tool

University of NC Chapel Hill
University of Kentucky
University of Massachusetts
University of Minnesota
Harvard
McMaster University
Pasadena City College
Cal State Doigues Hills

Please refer to ArcGIS Online
For more examples ....

http://www.arcgis.com/explorer/?open=77dfe574c2c34cd296f9caa716dbf12d
Design & Implementation

Web APIs

The ArcGIS Web APIs offer similar GIS functionality; you choose your preferred developer platform.

Each API provides the resources you need. Read the API references; view working samples that help you get started and show you what's possible; and communicate with others through the forums, blogs, and code galleries.

1. Evaluated JavaScript v.2.0 and Flex API
2. Free FlexBuilder for Academia
3. SolarBoston App as an inspiration
   (Thanks to Greg Knight for help with MVC architecture!)

Web Input Tool(s)

Context (BaseMap)

Web “Output” Tool

Analysis & “Packaging”

Backend “Storage”
1. PHP&MySQL
2. Drupal CMS
3. “Geo-Comment” as a content type
4. Content Management & Administration
Drupal CMS is able to aggregate content types into "VIEWS", and publish them as GeoRSS.
Design & Implementation

Web Input Tool(s) → Context (BaseMap) → Backend “Storage” → Analysis & “Packaging” → Web “Output” Tool

ArcGIS Viewer for Flex

March 2012 - version 3.0 prerelease available in new resource center.

Read about What's new in version 2.5 that was released in December 2011: application builder Chart.

The ArcGIS Viewer for Flex is a ready-to-deploy viewer application. It is configurable, so you can easily custom widgets yourself with the ArcGIS API for Flex. The ArcGIS Viewer for Flex is ideal if you want more

- Ready to deploy GIS Web client mapping application for ArcGIS Server built with ArcGIS API for Flex
- Easily configurable to meet custom business needs and requirements - no programming skills needed
- Viewer functionality is defined by widgets - many core widgets are included.
- New functionality can be created by developing custom widgets using the ArcGIS API for Flex.

Flex Viewer v.2.x
- Campus Base Map
- GeoRSS feed from Drupal CMS
Design & Implementation

1. Web Input Tool(s)
2. Context (BaseMap)
3. Backend “Storage”

Web “Output” Tool
Analysis & “Packaging”

System of components,
Not one supersize, do-it-all component

Only one custom component,
Combine existing and working solutions!
Thank you!

Any questions?

http://giscadadbim.info/