Salisbury University's Government and Non-Profit Application Workshop

Michael Scott & Tu Hoang

ESRGC – Salisbury University

April 18, 2012

A Mobile Revolution!

Leading Trends of 2012

- Bring Your Own Device
  - Enabling a mobile workforce (and citizenry!) is no longer a luxury, it's a necessity
  - Need to make actionable data available from mobile devices
- Big Data
  - Massive amounts of data are slowly become unlocked from proprietary or "siloed" databases
  - Need both structured and unstructured data analytics to turn data into information
- Cloud Computing
  - Shared server space that can expand capacity when you need it
  - Leverage data across platforms, devices, etc
- Geospatial (!)
  - A GPS in the palm of everyone's hand!

SU's Focus on STEM Workforce

- All universities have must balance deference to well-tested traditions and changing workforce demands

- Recent Programs
  - Master of Science in GIS Management
  - Master of Science in Applied Biology
  - Bachelor of Science in Mathematics, Actuarial Science
  - Dual Degree in Engineering and Physics

- Recent Developments
  - Henson Medical Simulation Center
  - Guerrieri Summer Research Experience
  - Research Experiences for Undergraduates (REU): Explore Emerging Computing in Science and Engineering (EXERCISE)
  - GNAppWorks

Introducing GNAppWorks

- **G**overnment, **N**on-Profit **App**lication **Works**hop
- A mobile application development initiative for government agencies and non-profit organizations.
- Inter-institution collaboration between
  - Eastern Shore Regional GIS Cooperative (ESRGC)
  - Business, Economic, and Community Outreach Network (BEACON)
  - Department of Information and Decision Science
  - Department of Marketing and Management
  - Department of Mathematics and Computer Science
  - Department of Geography and Geoscience
- Funded by SU's Henson School of Science and Technology and the Perdue School of Business

GNAppWorks Goals

- Bringing together a variety of skill sets of faculty and students in cross-institutional collaboration

- Reaching out to meet needs in the community and fill the gaps in the mobile market

- Experiential learning for students

- Attract STEM students

- Push applications to lower socio-economic classes who may have access to handheld devices but not personal computers

- Economic Development at the system-level (SU) and micro-level (community/region)

- Next-generation workforce development

SU's Full Technology Commitment

- As a matter of principle and practice, SU remains committed to exposing our students to the breadth of possible software and hardware solutions

- Most solutions will be a combination of open-source, free versions of proprietary solutions, full versions of COTS software, and vendor-neutral hardware

- The best tool for the job…whatever that happens to be.

Mobile web app with JavaScript and HTML

- Cross-platform
  - Run on any web kit browser such as Safari, Google Chrome, and mobile browsers.

- No objective C
  - Developed in both Windows and Mac.

- Can be embedded with native app using PhoneGap.
  - Native look and feel.
  - PhoneGap provides an API allowing access to device sensors.
  - App store? Yes

- Programmed and styled using JavaScript and CSS

JavaScript Mobile and Mapping APIs

- Sencha Touch (latest version 2.0)
  - Provides a framework for mobile app development with MVC architecture.
  - Highly maintainable with the new class system in version 2.0.
  - Runs faster on Android and other tablets compared to version 1.1
- Mapping APIs
  - OpenLayers
  - Leaflet

Server side with ASP.NET MVC

- Web development framework with Model View Controller architecture.

- Take advantage of powerful .Net libraries.
  - Entity Framework.
  - Linq (Language integrated query).

- Restful style services.

- Connect to most data sources.
  - SQL Server, Oracle, MySql, Manifold GIS, etc.

GNAppWorks Project: Getting Started

- In the fall of 20111, the GNAppWorks Team, led by Dr. Arthur Lembo of SU Department of Geography and Geosciences and the ESRGC, needed a trial app project
  - Hone project management skills
  - Explore what is reasonable to ask of students
  - Learn how to engage a diverse group of collaborators
  - Work out the process and degree of client communication
- Just happened to meet some regional directors of The Nature Conservancy (TNC)

GNAppWorks Project: TNC Trail App

- TNC has reserves all over Maryland that contain significant natural resources and well-regarded trails

- They want people to visit but want to keep the trails as close to their natural state as possible

- They have a LOT of content about the trails to share but don't know how to deliver it so that it's effective

- So, the goals of the app are:
  - Have people see where they are on the trails
  - Access content (audio/visual/text) based on their location
  - Access content based on the season, or the theme
  - Give feedback to TNC about what they saw

Other Mobile Apps: Pipelines Nearby

- The Pipeline Association for Public Awareness (a non-profit corporation) provides educational information concerning pipeline safety and emergency preparedness to residents and businesses located near pipelines, emergency responders and public officials in communities with pipelines and excavators working near pipelines.

- They needed an app that determined a user's location, found the nearest gas pipelines, and communicated who to call in case of emergency.

- Key point – We should not show the pipelines on a map

- http://www.pipelinesnearby.org/

Other Mobile Apps: Broadband Nearby

- The Maryland Broadband Cooperative is a not-for-profit corporation that seeks to drive economic development through universal, open access to broadband services via a fiber optic network that serves rural Maryland

- MdBC is the recipient of the ARRA-funded State Broadband Mapping Grant and is responsible for insuring completion (and periodic updating) of the Maryland Broadband Map

- They have a need to inform potential customers about the broadband network availability near any location in the state, in order to drive those customers to their members

- http://fairview.salisbury.edu/MVCWebApps/BroadbandNearby/Mobile/index.html

Other Mobile Apps: Foodsheds

- Art Lembo at SU is partnering with Cornell University and Tufts University to explore the geographic dimensions of food sources in New York and Michigan

- The project goal is to improve understanding of the land requirements of the human diet and the capacity for producing more of our food through local and regional food systems

- The researchers needed an app that would allow them to easily explore the results of the foodshed models

- http://fairview.salisbury.edu/MVCWebApps/KellogFoodshed/MobileMap/Map/SenchaOLMap

New Project Ideas

- Maryland Legislature Online

- Storm Water Issues Collection System

- Pothole Tracking

- Shady Activity/Neighborhood Watch

- Septic System Inspection Management

- Remote Health Management App

- Town Hall App

- "Kids of Honor" Points Tracking App

- Surplus inventory sale app

- Citizens Help: Environmental Reporting Program

Project Challenges

- Aligning university curriculum to support workforce initiatives
- How to get students' up to speed fast enough to get involved before they graduate
- High expectations from pro-bono clients
    - A GNAppWorks app may lead to a commercial-quality app
- Technology is changing at a dizzying rate
- Support of past apps
- "Tyranny of good ideas"