Augmented Reality - Visualizing Biological Species Occurrences Over A Real Time Display

Primary Contacts

Derek Masaki - NGP and Biological Informatics Program

Description

Project Topic	Tasks	Resources Required	Major Outcomes	Total Funding Needed
Augmented Reality - Visualizing Biological Species Occurrences Over A Real Time Display	• Create ArcGIS geodatabase of species occurrence locations; • Expose point locations through a webservice API; Register point service through Layar platform; • Load and view species locations in mobile viewer on Android and iPhone platforms	Mobile GIS technician - student intern; iPhone /Android SDK	• ArcGIS species occurrence point layer • Dynamic Map Service - render point layer into a queryable dataset. • Layer Endpoint and Mobile AR Viewer • Registered national species occurrence layer available through a robust mobile augmented reality platform	• $1825 (travel for student intern and equipment) • in-kind support from CSS-NGP • in-kind support from Fort Collins Science Center Mobile Apps group

Additional Criteria

The mobile Layar application will be part of the demonstrations at the 2012 CDI workshop.

Benefit to FSP/Scientists/Mission Areas

The proposed project leverages efforts of Biological Informatics Program to aggregate species data into a web-based geospatial platform and makes use of existing information networks from USGS scientific staff and participating USFWS/NPS Inventory and Monitoring programs. Efforts leverage ongoing work to develop species occurrence information systems within USGS (eg. BISON).

In kind funding and work leveraged

Mobile application developer technician - student intern (in-kind)
Project lead - CSAS data coordinator (in-kind)
Species occurrence records acquired by USGS research scientists and aggregated through web-map services at University of Hawaii (leveraged resources)
Point layer developed by CSS programming staff working on Biodiversity Information Serving Our Nation (leveraged resources)

Interaction with DMWG

Geospatial layers will be registered with Geo Data portal

Deliverable and its Measurable Benefit

The proposed project will develop a mobile augmented reality system. End users of the system will be able to visualize biological species occurrences over a real time display using popular smartphone platforms. One of the most common requests that biodiversity data managers have is for species locations on a regional map. This system will provide a low cost "heads up" display allowing research scientists, resource managers and citizen scientists to see available species point data overlayed on the landscape (in 2D map view and 3D landscape view).

Methodology (process)

Tasks
1. Create ArcGIS geodatabase of species occurrence locations
2. Expose point locations through a webservice API
3. Register point service through Layar platform
4. Use Layar mobile client to query and view species locations. Layar Browser can be distributed without cost to the user or to USGS data providers.

Resources
Mobile application developer technician - student intern (in-kind)
Project lead - CSAS data coordinator (in-kind)
iPhone/Android SDK (purchase)

Deliverables
1. ArcGIS geodatabase of species occurrences
2. ArcServer based geospatial service
3. Registered species occurrence layer available through a robust mobile augmented reality platform

Partnerships

Biodiversity Information Serving Our Nation (BISON) - data provider; USGS Pacific Islands Ecological Research Center (PIERC) - data provider; University of Hawaii at Manoa - technical services; National Geospatial Program - data liaison contribution; Core Science Analysis and Synthesis - data coordinator contribution.