International initiative broadens access to survey data, using Adobe PhoneGap to rapidly deliver data visualization and mapping app across mobile devices

Since its inception in 1984, the MEASURE DHS (Demographic and Health Surveys) project has collected and disseminated survey data gathered at the household level from the four corners of the earth. Designed to advance global understanding of health and population trends in countries worldwide, MEASURE DHS has conducted more than 300 surveys in more than 90 countries. Information about population, health, HIV, and nutrition helps researchers and agencies formulate policy as well as plan, monitor, and evaluate the effectiveness of health and development around the world.

Funded by the U.S. Agency for International Development (USAID) and implemented by experienced data collection and analysis provider ICF International, MEASURE DHS project’s technology partner Blue Raster was assigned to bring together complex sets of data in readily accessible and useful ways. Noted for its expertise in data visualization, geographic information systems (GIS), and advanced web and mobile mapping applications, the developers at Blue Raster selected Adobe PhoneGap to help make accessible the thousands of indicators provided by MEASURE DHS surveys to web and mobile device users everywhere.

"Organizations without high-performance mobile applications today will certainly have them tomorrow," says Michael Lippmann, co-founder and principal at Blue Raster. "Adobe PhoneGap enabled us to rapidly and cost-effectively launch a complex, GIS data visualization app across iOS and Android™ devices, as well as position us to potentially deploy to Windows phones moving forward."
Powerful data visualization on small screens

With 25 years worth of DHS data sets already available on the web and in print, the project team needed to broaden access to information and enable users to look at statistics in meaningful ways without relying on a computer or an Internet connection. “As use of smartphones begins to trump use of computers—especially in remote parts of the world—we wanted users to have dynamic data visualization capabilities at their fingertips to explore the thousands of data points available for the selected indicators over time and across countries,” says Erica Nybro, Senior Research Associate at MEASURE DHS.

The main goals of the project were to provide users with access to data while out of Wi-Fi and cell range, support as many devices as possible, and rapidly deliver a high-performance web and mobile user experience inside an intuitive user interface, while sticking to a limited budget. Blue Raster opted to use Adobe PhoneGap as a way to rapidly, creatively, and cost-effectively deliver a superior mobile app that met all the project requirements—and more.

Previously, MEASURE DHS built a web application (STATcompiler) that can create tables, maps, and charts but was not mobile friendly.

Now, having used Adobe PhoneGap Build to easily deploy an HTML5 code base across mobile device platforms, one dynamic solution has exceeded the DHS team’s expectations. “We could only imagine such a powerful app with such great data visualization, filtering, and searching capabilities on the fly, specifically on mobile,” says Nybro. “Blue Raster delivered.”

One team, all devices

Blue Raster evaluated the idea of developing natively for multiple platforms, but it would have been too expensive to set up multiple teams, as well as bring in someone with oversight responsibility to make sure functionality matched on Android and iOS. Instead, a small team of developers capitalized on its expertise in web-standards technologies including CSS3, HTML5, and JavaScript to build a single HTML5 application.

Using a variety of editors, including Coda (Mac), Aptana Studio, and Webstorm, Blue Raster delivered a working prototype in just four weeks, and completed the project from inception to delivery in two and a half months. "The ability to code once and deploy across mobile devices using the Adobe PhoneGap Build cloud service saved us months of development time," says Lippmann.

Blue Raster designers used tools from Adobe Creative Cloud, including Adobe Photoshop and Adobe Illustrator, to create all graphics for the app. The map was built using Esri ArcGIS Server and ArcGIS Online. As development progressed, the team simply ran the code through Adobe PhoneGap Build and posted it online for client review on Android and iOS devices.
Now, the team is looking at PhoneGap to enhance mobile mapping functionality and continue improving the user experience. Based on a request from the Gates Foundation, the team is also considering PhoneGap to help make the app available on the new Windows phone.

From policy makers to ground personnel
The mobile app expands access to survey information in a user friendly format, facilitating use by policy makers in Washington D.C. as well as program managers in sub-Saharan Africa. The MEASURE DHS mobile app includes data from more than 90 countries, displays trends within a single country through Quickstats, and allows users to compare and contrast the most common indicators through a series of tables, charts, and maps. It also provides basic information about individual surveys—including sample size, time periods, and topics, as well as links to download final reports, key findings, fact sheets, and other publications.

A local storage API makes all indicator and survey data in the mobile app available offline, which is ideal for use in countries lacking reliable Internet or wireless connectivity. Thousands of data points are stored locally without requiring a connection, and data is automatically updated upon reconnection. The DHS mobile application is free and available for Apple iOS (iPhone and iPad) and Android smartphones and tablets. To date, the developers are delighted with the positive user feedback based on more than 1,000 downloads from the Apple App Store, Google Play, and the Amazon App Store for Android.

For more information
https://build.phonegap.com
www.measuredhs.com/data/Mobile-App.cfm