Esri News
for Federal Government
Summer 2012

Mobile Application Shows US Recovery Projects

Beyond Illustrating Spending, the Application Enables Reporting of Fraud and Waste

Citizens can now use their smartphones to see just how the United States government is spending stimulus funds from the American Recovery and Reinvestment Act of 2009 (ARRA). Shortly after the act passed, the Recovery Accountability and Transparency Board launched a web application based on Esri technology that enables the public to track the $276 billion being spent on contracts, grants, and loans throughout the country. In late 2011, the board released a mobile version of the application for iPhone and iPad that offers the same functionality on the go.

"We felt that in order to do what we do, which is ensure transparency and accountability, we have to stay current and keep up with the ways people are accessing information and communicating," says Edward Pound, director of communications for the Recovery Accountability and Transparency Board. "You can really get to a lot of information from the app. It's very easy for anyone to use."

The mobile application launches using the user's GPS location to immediately provide a view of projects in the area. Users can also search for projects by entering a specific location. By touching a color-coded dot on the map—green for contracts, blue for grants, or pink for loans—users can access project details, including the amount of the award and the jobs funded. They can also send feedback on projects, along with an image, or use the application to report fraud or waste related to recovery funds.

The application was named the 2011 Government Mobile App of the Year by Government Technology Research Alliance at its GOVTek Awards gala in Washington, DC. The awards recognize government and industry IT leaders whose work improves the way government delivers services, interacts with citizens, shares information, and protects national assets.

"While all the nominees were worthy of the recognition," says Parham Eftekhari, director of research at Government Technology Research Alliance, "we felt →

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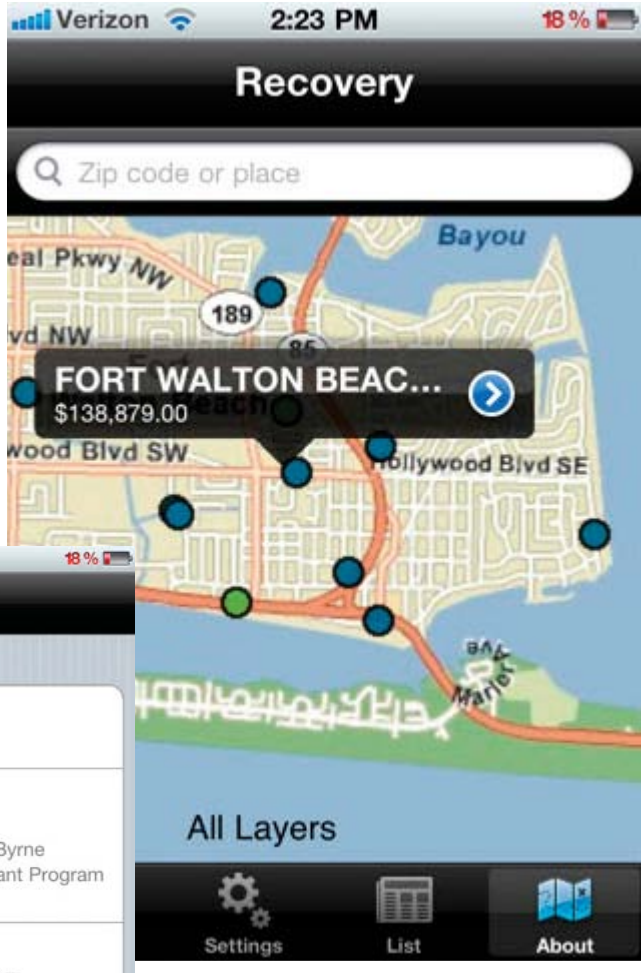

↑ Award details are provided for each selected project location, and citizens can send feedback or report misuse of funds directly from the application.

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Optimizing Your Federal Facilities

Shelli Stockton,
Esri Facility Management
Industry Manager

Do you know what you don't know about your building, campus, or base? You don't if you're looking at your building or campus as a group of disparate objects as opposed to seeing it as an integrated, functional system of interdependent parts.

Building information modeling (BIM) and specific facilities management (FM) technologies provide detailed data on a myriad of items, from the smallest screw to the largest HVAC system. However, these technologies cannot show you the items' proximity to each other so maintenance workers can address several repairs at once. They also can't tell you whether incidences of crime have spiked in an area where outdoor lighting fixture illumination is blocked by overgrown bushes, or that your CPR-certified employees have all ended up on one floor, leaving three others without access to that resource.

Smarter facilities—those that are safe, secure, energy efficient, and optimally operated and utilized—result from the convergence and interoperability of BIM, these specific FM technologies, and GIS. We need to take many different pieces of past, present, and future data from a variety of sources and merge them into a single system. GIS is uniquely positioned to do this. Already widely used by planners, engineers, and facility managers, GIS helps you capture, store, analyze, and use all forms of location-referenced data about where people live and work. This helps you improve decision-making capabilities, shorten the time it takes to make these decisions, and enhance the reliability of the results, translating into recognizable and often dramatic increases in cost efficiency, reduction of risk, and greater facility sustainability.

To make it even easier, the ArcGIS for Facilities system includes a series of templates and a data model for facilities.

For more information on how GIS helps facility managers, visit esri.com/FM.

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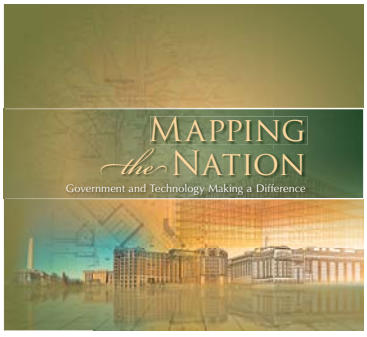


Mapping the Nation: Government and Technology Making a Difference is the latest in Esri's series of map books that illustrate the many ways federal agencies rely on GIS analysis to help make the world a better place. Pulled from a broad range of agencies, maps included in the book demonstrate how GIS can be used to evaluate and respond to social, economic, and environmental concerns at local, regional, national, and global levels. These examples—on topics such as green government, economic recovery and sustainability, and climate protection—show how government agencies use GIS to facilitate initiatives, improve transparency, and deliver strong business models.

This book is available through Esri Press at esripress.esri.com.

Study Ranks Esri US Demographic Data Most Accurate

Some people assume that using accurate data is not a particularly important element of an overall project; however, incorrect data can negatively impact the results of any analysis and have dramatic consequences for affected populations. Data inaccuracies may occur by either overestimating or underestimating populations or households.

Faulty population data could cause health care providers to underestimate the population and miss vaccinating vulnerable people, or overestimate it and waste vaccination doses. Government officials could lose grant funds if poor data is used to calculate the area population. Public safety and risk management agencies could overlook special-needs populations before, during, and after a disaster. Does data accuracy matter? Indeed it does—in terms of dollars, health, grants, services—or even life itself.

How Do Data Providers Verify Accuracy?

The release of each US decennial census enables data vendors to evaluate the accuracy of their annual demographic estimates, because these estimates are benchmarked against census results. Data vendors can also learn how their data compares to those of other providers. In 2011, Esri took advantage of this once-a-decade opportunity and commissioned an independent study to obtain an unbiased answer to the question of its data accuracy.

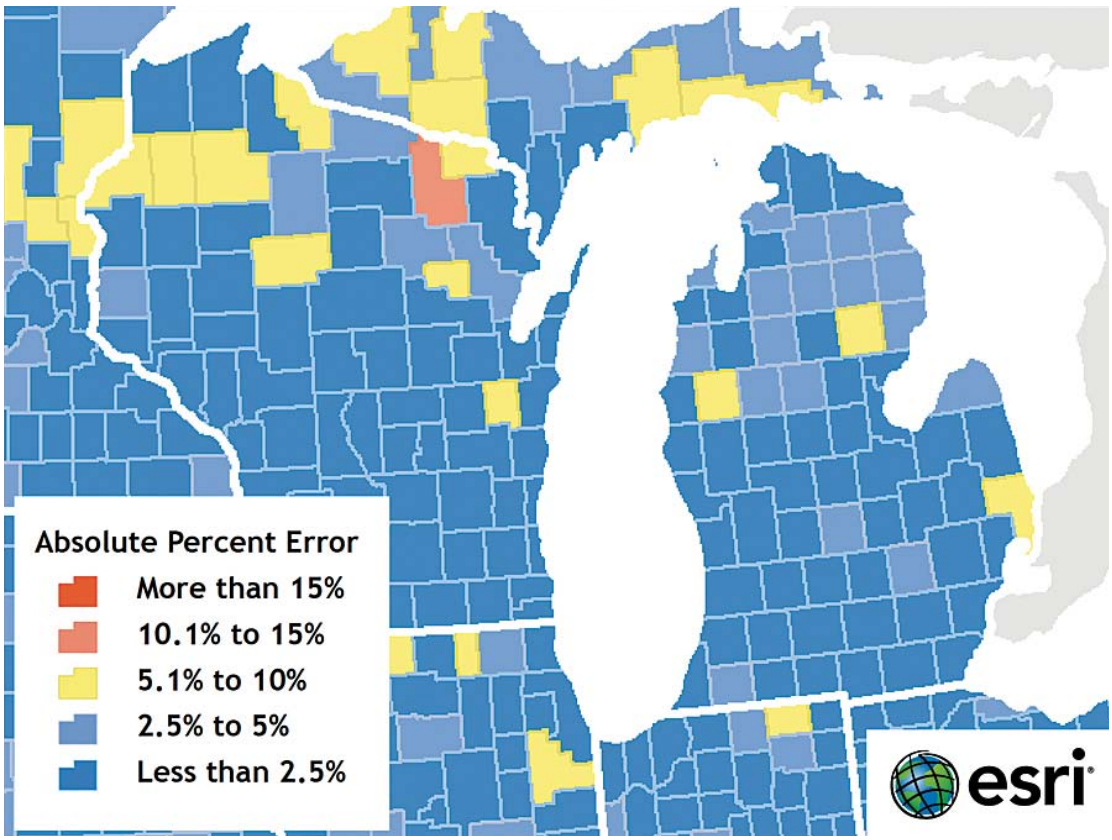
The research team conducting the study consisted of GIS, demographic, and forecasting experts from academia and the private sector who have written about and made presentations extensively on these subjects. The data was provided to the research team without identifying the individual vendors, enabling a blind study. The researchers had no idea which vendor data was included or which methodologies were used by the respective vendors. Esri's motivation for the study was twofold: to test the accuracy of Esri's demographic data to identify areas for improvement in its update methodologies, and to ensure that Esri is providing the most accurate data to its users.

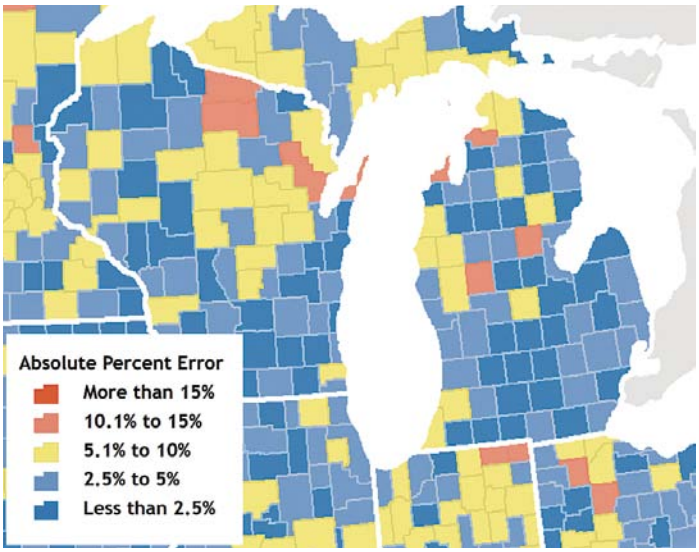
How the Study Was Conducted

The researchers compared the total population and total households data variables from Esri and four other major data vendors. The team conducted the study for the entire United States at the state, county, census tract, and block group levels. All the vendors, including Esri, had created their forecasts using 2000 Census geography. To analyze the accuracy of the vendor forecasts without modifying their data or compromising the original results, the 2010 Census counts were assigned to 2000 Census geography.

The research team investigated and evaluated a range of direct and supporting measures to assess vendor accuracy and reported

→ The researchers conducted the study for all 50 states. This map inset of data from vendor 2 (Esri) shows a less than 2.5 percentage error for most counties in Michigan and Wisconsin.





↑ Data from a leading competitor was significantly less accurate than Esri's (shown on page 4). This map inset of data from that vendor illustrates the percentage of error for the same areas of Michigan and Wisconsin.

the results as a scorecard. The scorecard was then used to measure forecast accuracy across three dimensions of accuracy—Precision, Bias, and Allocation—to obtain a total (unweighted) score. The lowest score denoted the highest accuracy.

Esri Ranked First for Precision

The results are in: Esri ranked first for Precision among the five vendors at each geography level. Esri's estimates were also the closest to the Census 2010 results. Precision measures the percentage difference between a forecast and a census count and is particularly accurate at measuring small-area forecasts. Therefore, because Precision is the best single measurement of accuracy, it is discussed in the excerpted study report located at esri.com/accuracy.

What Does This Mean to Data Users?

This study proves that Esri's demographic update methodologies produce the industry's most accurate demographic data. Users can be confident that Esri's Updated Demographics data will provide them with the best possible analysis results.

How to Access Updated Demographics Data

Esri's Updated Demographics data is available as a database in a variety of formats, including shapefile, file geodatabase, and Microsoft Excel. Updated Demographics is also available in Esri Business Analyst Online, Business Analyst for Desktop, and Business Analyst for Server; Esri Community Analyst; and the Business Analyst Online and Community Analyst APIs.

To learn more about Esri's Updated Demographics data, visit esri.com/demographicdata.

Esri Online

Watch Videos from the Esri Federal GIS Conference

If you missed this year's conference, catch highlights from the Plenary Session at esri.com/video.

Videos feature deputy secretary of the US Department of the Interior David J. Hayes; chief information officer of the USDA Christopher L. Smith; and our stories from the road, showcasing individuals at a variety of agencies who are changing the world with the help of GIS.

← US Department of the Interior Deputy Secretary David J. Hayes at the Esri Federal GIS Conference

Get Facilities Tools and Templates

GIS works with facilities management systems to bring a new level of efficiency and sustainability to your federal facilities. The ArcGIS for Facilities system includes a series of templates and a data model so managers can integrate their facilities data into one standard format, apply cartographic rules to the data so it is easy to view and understand, and make the data easily accessible to others in their organizations. Learn more at resources.arcgis.com/en/communities/facilities.

↑ The Campus Place Finder is one of many facilities templates available to ArcGIS users.

Data-Rich Maps for Safer Farming Practices

GeoPDFs Reveal When and Where to Fertilize

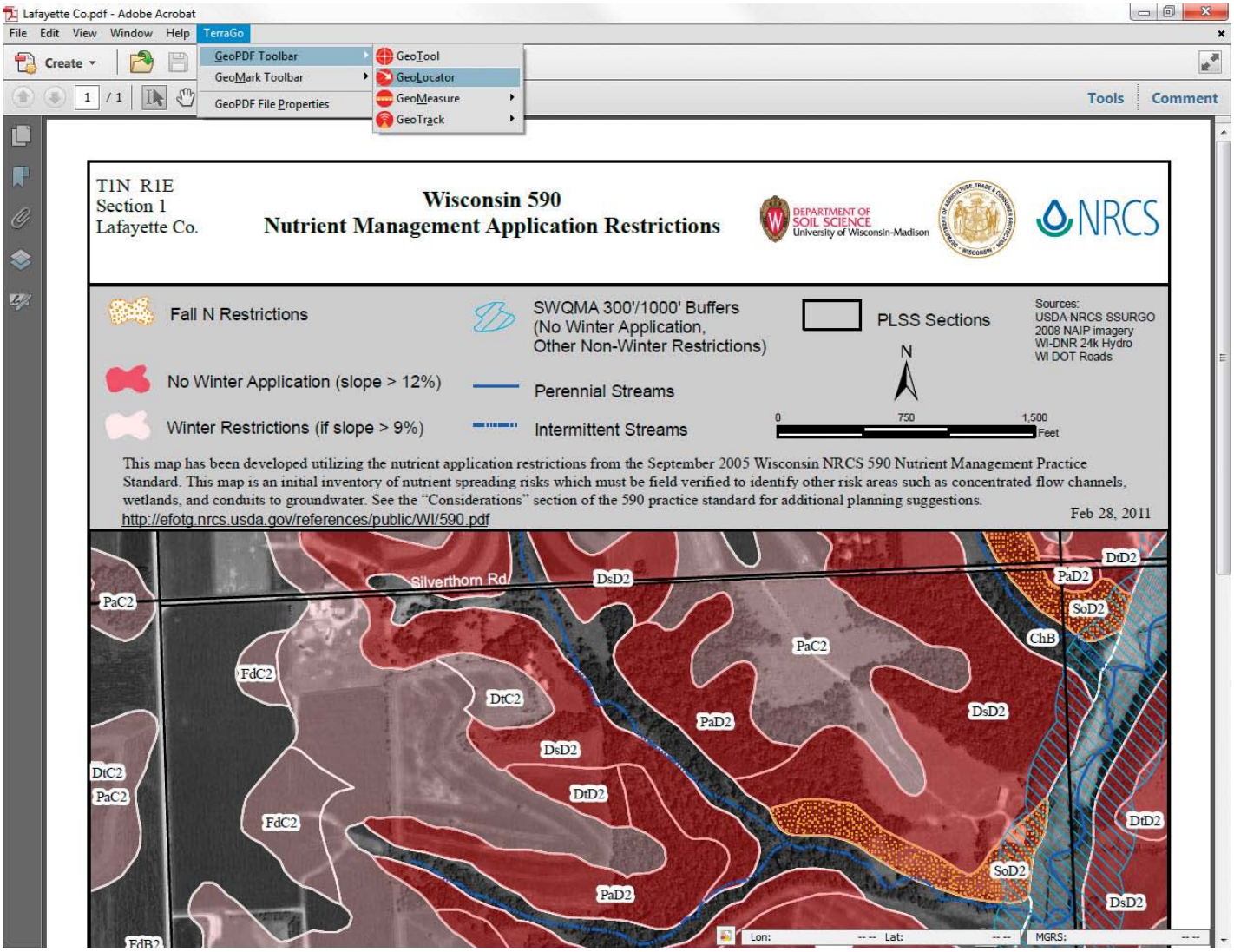
"It really functions as a GIS but in a widely accepted and accessible PDF format."

Kent Peña, State GIS Coordinator for USDA-NRCS

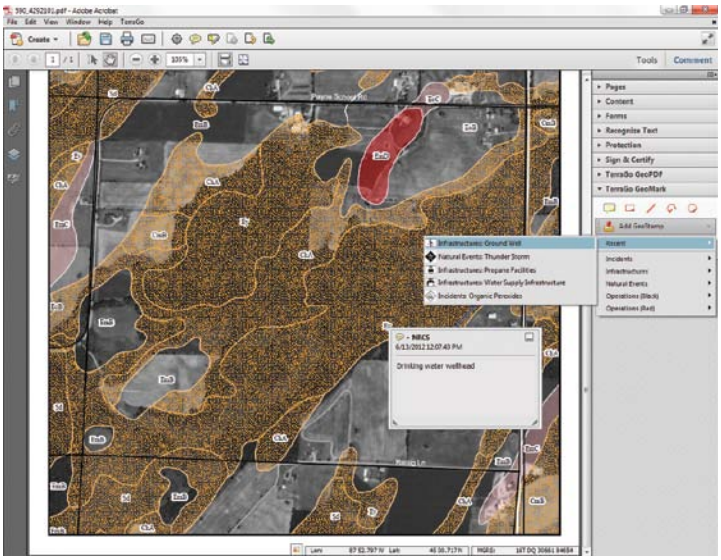
Fertilizers and nutrients help farmers create ideal environments for their crops and livestock to maximize revenue and ensure a sufficient food supply for the nation. Unchecked use, however, can have dire consequences. When applied at the wrong time or in the wrong place, both natural and synthetic treatments can contaminate drinking water and disrupt river and stream wildlife.

The US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) collaborates with farmers and state and local governments to make sure that doesn't happen. Communication is key. Thousands of agriculture businesses, from the smallest organic farm to the largest commercial operation, need quick access to precise information on when, where, and how they can apply nutrients that ensure successful yields while maintaining a safe and sustainable environment.

The answers to those questions involve careful analysis of a variety of geospatial data related to soil and crop types, hydrography,



↑ Each GeoPDF provides a quick visual display of the nutrient spreading restrictions currently in place. Determinations are based on slope, bodies of water, infrastructure, and many other factors.



← By installing the TerraGo toolbar for Adobe Reader, users can show and hide data layers to create a custom view, zoom to specific locations, and add new features and notes to the map.

and the boundaries of watersheds and surface water such as streams and lakes. GIS technology makes it easier to synthesize this data and produce maps that illustrate current conditions and regulations all the way down to the farm plot level.

In Wisconsin, farmers get this critical information via easy-to-use interactive PDF maps created with GeoPDF technology from TerraGo Technologies. Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) website users select their county, and a GeoPDF opens as a standard PDF. The fully interactive features are enabled once the user downloads the free TerraGo toolbar, which integrates directly with Adobe Reader.

"It really functions as a GIS but in a widely accepted and accessible PDF format," says Kent Peña, state GIS coordinator for USDA-NRCS. "The toolbar gives you great functionality. Being able to turn layers on and off is key. It allows us to create just one map from which users can view whatever they need. One of our criteria was to keep file sizes as small as possible so the maps could be e-mailed easily. GeoPDFs allow you to create nice maps with good resolution and many layers in a small file size."

The GeoPDF maps also enable users to measure distance and area, perform queries of specific attributes, and add their own features and shapefiles to the map. For example, an agriculture consultant advising a dairy farm on a nutrient management plan may know of a drinking water wellhead that's not indicated on the PDF map. NRCS added a custom set of "geo stamps" to the TerraGo toolbar so anyone could add common features such as wells, fractured bedrock, and tile inlets.

The GeoPDFs are the result of a collaborative effort between NRCS; DATCP; and the University of Wisconsin, Madison, Department of Soil Science. As a companion to the GeoPDFs, DATCP provides a statewide online map that uses real-time National Oceanic and Atmospheric Administration (NOAA) data to combine weather forecasts for the next several days with soil and watershed maps so farmers can assess the risk of contaminating groundwater.

Ease of use has turned out to be the key to this project's success and has made the GeoPDF a popular product for farmers, state and local governments, and others who collaborate on issues related to environmental safety. NRCS staff report that there is virtually no learning curve to using the GeoPDFs, since PDF is a format with which most people are already familiar. The staff members are considering other ways to use GeoPDFs to communicate with the public, and for internal use, they now create GeoPDFs for biologists who are monitoring wetland easements.

"We can cram a lot of information onto the map," says Peña. "The GeoPDFs package all the possible interpretations of the data into one file that's easy to read."

Mobile Application Shows US Recovery Projects

continued from page 1

→ that the Recovery app was one of the best examples of how mobile technology can be used by the government to provide transparency and communicate with citizens—sharing data in an app that is easy to use and understand."

The custom application is available free through the Apple App Store at store.apple.com. Search for Recovery.gov to find the application. To view the board's mapping application online, visit www.recovery.gov and select Where is the money going? Anyone can download the free application from the Apple App Store and use it on an iPhone or iPad to see how ARRA funds are being spent.

"We felt that in order to do what we do, which is ensure transparency and accountability, we have to stay current and keep up with the ways people are accessing information and communicating."

Edward Pound, Director of Communications for the Recovery Accountability and Transparency Board

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