FLORIDA LOCAL GOVERNMENT INFORMATION SYSTEMS ASSOCIATION
TECHNOLOGY ACHIEVEMENT AWARD PROGRAM

Name of Nominee(s): Kevin Kryzda, Chief Information Officer

Nominee's Jurisdiction(s): Martin County Board of County Commissioners

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Submitter City & Zip Code: Stuart, FL 34996

☑ **Submitting for Individual Achievement Award**

Jurisdiction Size:

Please note that the jurisdiction size will be determined utilizing the latest information from the Bureau of Economic and Business Research (BEBR bebr.ufl.edu). For special districts, size is based on customer base and not population.

☐ **Innovative Leadership in Management of Information Technology**

☑ **Innovative Use of Technology to Service the Internal Operation of the Jurisdiction**

☐ **Innovative Use of Technology to Service the Public**

☐ **Submitting for Collaborative Achievement Award**

Please list the Organizations

Description:

Please describe the significant achievement in no more than three pages (excluding any photographs, samples or examples). As much as possible please provide detailed measurable results or observable advancements.

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Application: Martin County's Damage Assessment

What business problem were you trying to solve by implementing this project/application?

When disaster strikes, representatives of Martin County government agencies must identify inaccessible areas, assess the overall damage and focus recovery efforts while identifying if they qualify to submit a request for State and/or Federal Declaration within the time permitted. The collection, calculations and accuracy of the reporting is critical and could be attained by utilizing a mobile solution for data gathering, photo documentation and specific identification of the areas that have been damaged.

The goal accomplished with this application was to assess damages throughout the County in a systematic and timely manner, as quickly as possible, in order to request a State and Federal declaration and provide for needs in the event of a catastrophic disaster in Martin County. The assessment provides information to determine whether sheltering and housing needs, as well as any other needs can be met locally.

Describe the features, functionality and benefits of the project/application.

The Damage Assessment Mobile solution is an ArcGIS Mobile project that enables the members of the damage assessment team to collect, store and report, via the backend Damage Assessment Dashboard, any of the structural damage assessed during emergency response activities in real-time, with internet connectivity. The application benefits and is used by members of our Building Department, Fire Rescue, Property Appraiser's Office and the American Red Cross. The mobile solution is easily accessible from the ESRI app from any mobile device and provides a standardized field collection process to ensure consistent and detailed damage collecting and reporting on any residential and commercial structure; and damage to public facilities. The Damage Assessment Mobile solution can be deployed in a connected or disconnected network environment. Current supported devices include Windows laptop, iOS, Android and Windows Phone.

By establishing this damage assessment process framework, the continuum of activities in the three phases of Life Safety, Windshield and Detail passes will provide a damage dataset to ensure real time damage assessment and data collection. By establishing standardized processes this will reduce data duplication and provide consistent, real time assessment results and reporting. With the real-time reporting availability the request for State and/or Federal Declaration can be promptly submitted with a few clicks. The costs saved in our community, when assistance is provided to begin the recovery process after a disaster, is instrumental to the recovery of our community's economy that has been impacted by a severe event.

Benefits:

- Automates manual damage assessment
- Conforms to FEMA damage assessment required data
- Provides timeliness of data collection for required reporting
- Allows photo collection of the actual damage
- Allows for recording of the exact location (geocoding) of the damage collected
- Allows start to end automation from Life Safety through the Windshield and Detail damage assessment process providing situational and operational awareness needed for key stakeholders to initiate the required follow-up.

- Provides more accuracy in data collection
- Reduces duplicate data entry
- Provides real time, interactive query and reporting

Describe the technology used to create the application.

From the ESRI template we gathered ideas and concepts and then incorporated the actual needs from different members of the team. ArcGIS server was used to collect field data via editable feature map services with ArcGIS app in iOS and Android. We use ArcGIS mobile map services with disconnected ArcGIS for mobile. The ArcGIS for Mobile application runs on windows laptops and supports GPS along with iOS and Android

A python version 2.7 with ESRI's ArcCPY libraries is used to perform automated work including converting polygons of damage to points, converting lines of damage to points, converting tabular phone call reports of damage or public need into GIS points, and computing damage values on damage points based on their field collected damage type, improvement (residential structures only) type, and residential improvement value (structure value). These python scripts run every 5 minutes in the background without any human intervention.

The Damage Assessment Dashboard uses a combination of Oracle and ESRI technologies to provide a timely display of data collected and provides decision makers the ability to monitor the overall status of the event, maps of the damage locations, print custom reports and make needed plans for rescue and recovery. The Oracle Database 11.2 provides the backend storage of all of the data used by the application. Oracle Apex version 4.2 is used as the web presentation server in the damage application. Oracle Apex provides dynamic reports that users can quickly customize to meet their needs without any help from the Information Technology Department. ESRI server technology includes ArcSDE 10.1 for windows, ArcGIS Server 10.1 for windows and ArcGIS API for JavaScript version 3.5. ArcSDE adds GIS technology/location. ArGIS API for JavaScript provides the JavaScript libraries needed to see GIS information in a web page without the need for plugins like Adobe's Flash or Microsoft's Silverlight. The dashboard was built for use on tablets and desktop computers.

Did the project/application extend or replace an existing system? If yes, provide a description of what was accomplished.

There was no existing 'system' in place, only a manual paper process/system that included the coordination of volunteers from the Red Cross and Property Appraiser's office to prepare thirty notebooks, divided by fire district that were referred to as street sheets, of the entire County. These street sheets would have the information needed to be collected in the field and provided the preliminary areas to begin assessment. These booklets were compiled in advance on Hurricane season and during an event they are distributed to the teams to begin their completion of the FEMA field collection. Once completed, teams would then return to the building department to collect more sheets for a new area/zone. Opportunities for providing supportive evidence with photos were not an option, as they could not identify what photos belonged to which house once developed.

How has the business process been improved as a result of the project/application? Provide data that demonstrates this improvement.

Without mobile data collection, there is a delay with getting the needed status of damage in our community because field staff will need to manually complete the paper forms that must then be brought back to the office to be data entered into a spreadsheet. This inefficient process is also

vulnerable to increased data entry errors, as well as data loss — the forms can be misplaced or otherwise damaged and are often illegible. But with a mobile collection solution, data is collected only once and shared; GPS functionality and quick drop down selection lists of FEMA Category are provided to ensure consistency in data collection. The benefits include providing field staff with more time to devote to initiating the needed declaration, identifying the rescue and recovery needs to be able to deploying field staff to remove debris, rescue and begin recovery for the citizens of Martin County.

With the elimination of cross-volunteer duplication of efforts; the data collected can be immediately viewed and shared by anyone with access to the application, in real time if internet capabilities exist. Any comments, exact location (geocoding) and/or photos become part of the collecting and supporting documentation to provide for situational and operational awareness. The previous 15 team deployment of 3 volunteers per car has been reduced to 2, with only one driver and one collector on the mobile device. The number of teams is only limited by the number of staff with mobile access to the application.

Who benefits from this use of the project/application?

Staff from our Fire Rescue Department/Emergency Management, Building Department, the American Red Cross and Property Appraiser's Office will use this system during an event (hurricane, flood, high winds, etc.) to collect damage data. Using this application provides all these users with easily and consistent data field collections.

In that the County can accurately and in a timely manner report our status to FEMA, all of the citizens of Martin County benefit greatly, especially if critical safety and recovery needs are identified.

What is the current usage of the project/application and what is the population that is eligible to use it?

This application will be used to assess damage from an event and will be used by individuals from Fire Rescue Department/Emergency Management, Building Department, American Red Cross and Property Appraiser's Office. Depending upon the magnitude of the event and the number of volunteers that are involved the number of people using the system could be from fifty (50) to one hundred (100).

How has the project/application been marketed to end-users?

Regular and continual project meetings were held throughout the life of the project to review the status and progress or issues of project to ensure all user requirements have been met. Through each project member, they have now made this application the central focus for training and drills with any and all volunteers and staff that are involved with the data collection and reporting. We will also have training for volunteers to be able to provide information for anyone from the public or media inquiring on the status of their home or neighborhood, including if damage assessment has been performed or if rescue and/or recovery efforts have been initiated.

Provide a link to the project/application if available for external viewing.

This is not available externally. However, the following are screen shots of the mobile version (I thought these 2 shots were good, but if you have others or don't want to include any it is up to you.):