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Final Copy of Case Study

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Auburn, AL, US

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Laureate

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Safety & Security

ORGANIZATION:
Auburn University

ORGANIZATION URL:
http://www.auburn.edu

PROJECT NAME:
Disaster Recovery Integrated Process Platform (DRIPP)

PROJECT OVERVIEW

Protecting and ensuring the resiliency of the critical infrastructure and key resources (CIKR) of the United States is essential to the Nation's security, public health and safety, economic vitality, and way of life. Past research shows that all communities need a baseline of CIKR and a disaster recovery policy and implementation plan so that CIKR can be located using geospatial data and restored quickly after a disaster. Studies have shown that 50% of damage to the facility and utility infrastructure as a result of a large-scale disaster is caused by debris removal operations. By being innovative in process, efficiency, and efficacy in these human-capital-intensive areas, the nominated project, Disaster Recovery Integrated Process Platform (DRIPP), would be of great value to prepare and sustain communities from calamities by reducing the damage sustained to CIKR. This project, led by Auburn University, is developing and testing a DRIPP that integrates social media with the latest mobile communications systems and technologies and geospatial and computing technologies to map, store, and retrieve critical infrastructure facilities in communities. Auburn University is partnering with two companies, Quantum International, Inc., and NamesBeyond, Inc., in order to achieve the goals of this project. The DRIPP comprises three components, and each partner has a distinct role in developing, testing, and integrating that component into the overall platform (Appendix 1): • Community Infrastructure Facilities Integration Manager (developed by Quantum Research International Inc.) • Information Collection and Dissemination Element (developed by Names Beyond) • Continuous Improvement and Sustainability Element (developed by Auburn University) We plan to test the DRIPP to collect and retrieve geospatial data on infrastructure facilities of five sites: City of Gulf Shores, City of Orange Beach, Dauphin Island, Bayou La Batre, and Cummings Research Park, Huntsville (Appendix 2). The sustainability of these communities will be enhanced by this project through four actions: First, this project allows students to work on data collection and recovery projects, thereby preparing them for real world projects. Second, the publicity campaign on recycling debris will lead to use of less landfill space in the impacted communities. Third, utilities will use the

infrastructure facilities for a longer period of time since breakage would have been prevented, thereby sustaining these facilities further. Fourth, the communities will recover quickly as a result of implementing DRIPP and will be able to provide economic benefit to the community. The broader impact of this activity is that it will advance knowledge and understanding within the fields of government administration and leadership, continuity of operations, emergency response, CIKR, data security, recycling debris, Geographical Information Systems, and mobile communications. The technology used in this project are a mobile command, control and communications system, DGPS units, laptops, tablet PCs, mobile radios, cell phones, camera, flags, blogs, wikis, web sites, e-mails, tweets, and social media site updates. The major technical challenge is to coordinate among the multiple technology partners, utilities, and cities to develop a working system, test it, and then market it.

SOCIETAL BENEFITS

Increased sustainability and reduced recovery time after a disaster will improve the local economy through reduced cost and fewer devastating effects on local businesses. This project provides real-world working experiences for students, challenging research issues for faculty members, and resulting technologies to be transferred to industry.

PROJECT BENEFIT EXAMPLE

This project has benefited the cities and utilities in the Alabama Gulf Coast. Professors, Auburn personnel, students, and companies are all involved in making this project successful. In the process of developing this project, several professors and employees of the University took the lead in finding funding and developing a process to make this project a reality. Students were included to help adopt the DGPS units for mapping, interpret the data, provide results to the stakeholders, and to conduct meetings at the Gulf Coast to coordinate recovery efforts during potential hurricane seasons in 2011 and 2012. As a result, the University has authorized the formation of the Geospatial Research and Applications Center (GRAC) to sustain this project and promote further student and faculty involvement. The students working with the city and utility employees have participated in mapping and retrieving data points in coastal areas, completing recovery exercises, and preparing to aid in the recovery process after a disaster. The quotes from individuals who collaborate on this project and received benefit are provided below. D. Frank Pitts, CEO, Quantum Research International: “This project has tremendous potential for commercial success. Once this capability is demonstrated and validated, the pre-disaster planning capabilities and post-disaster recovery and cost-savings potential will likely lead to the creation of a spin-off company through which this platform can be commercially marketed.” Uma Murali, President & CEO, Names Beyond: “This project has tremendous scope and I am excited that this project will be one of a kind to bring communities and local agencies together for fast and efficient recovery after disasters strike.” Bill Hardgrave, Dean, College of Business, Auburn University: “By way of this project, our students will get an opportunity to work with communities in Alabama coastal communities so as to mitigate disasters and reduce costs of hazardous events.” Steve Henderson, GIS Coordinator, City of Gulf Shores: “With the economic blows suffered by this community from the downturn of the economy followed by the effects of the Deepwater Horizon disaster, our community has learned the benefits of partnering with other agencies to bring the necessary resources to quickly respond and recover. This partnership is yet another opportunity to enhance our joint capabilities.” Larry Benefield, Dean, College of Engineering, Auburn University: “I envision that the efforts that the researchers in this project bring to the field of research and education would have a positive influence on the economy of hurricane-prone areas in Alabama and help the stakeholders be

better prepared to meet future disasters." Tony Kennon, Mayor, City of Orange Beach: "As a coastal Alabama resort destination, the City of Orange Beach, Alabama realizes the need for a fast and orderly recovery from coastal storm damage. Our partnership with the Geospatial Research and Applications Center (GRAC) at Auburn University over the last year has allowed us to take the first step to accommodate the need for quick utility location in advance of a debris recovery effort."

IS THIS PROJECT AN INNOVATION, BEST PRACTICE? Yes

ADDITIONAL PROJECT INFORMATION

As a part of working on this project, students and faculty travel to coastal areas to map the utilities and perform recovery exercises to familiarize themselves with the technology and the process. In addition, the cities and utilities continue to benefit from the technology transfer activities that take place due to the collaboration efforts. There is a potential for a spinoff company to be formed as a result of the conceptualization, development, testing, and implementation of the DRIPP platform. Nothing, other than a war or a major terrorist attack, does more damage so quickly to an economy and region than a natural disaster such as a hurricane. For example, in 2008, Hurricane Gustav required the evacuation of the city of New Orleans, and Hurricane Ike required the evacuation of the city of Galveston. Hurricane Gustav caused an estimated $7 billion to $15 billion in damages to homes and other buildings across Louisiana and $2.5 to $5 billion in economic losses. The cost of repairing damaged infrastructure elements is very expensive. Studies have shown that 50% of damage to the facility and utility infrastructure as a result of a large-scale disaster is caused by debris removal operations. For example, $4.24 million was spent by Dauphin Island Water and Sewage Authority to repair water-based utilities from the last three major hurricanes. Currently, the U.S. spends close to one billion dollars each year in recovering broken infrastructure facilities in disaster-impacted areas. In addition, recycling of resultant debris is very important since it can reduce the amount of landfill needed, increase land available for other purposes, and sustain the communities. For example, there were 1.2 million cubic yards of debris, 1.8 million pounds of household hazardous waste, 53,000 white goods (heavy consumer durables), and 7,200 televisions of debris for the City of Galveston with the cost of debris removal being over $43 Million. Recovery of infrastructure facilities for communities is expensive and time consuming; the process of identifying and wresting from myriad sources the information that would be of greatest utility to recovery teams after a disaster is critical. Innovation in process, efficiency, and/or efficacy in any of these human-capital-intensive areas would be of very great value and DRIPP has the potential to make such an impact.