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Final Copy of Case Study

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STATUS:
Laureate

Organization:
Michigan Department of Technology, Management and Budget

Organization URL:
http://www.michigan.gov/dmb

Project Name:
USAHerds Cattle Tracking: Protecting Michigan's Food Supply

What social/humanitarian issue was the project designed to address? What specific metrics did you use to measure the project's success?

Issue: Michigan's agriculture industry contributes over $71 billion annually to the state's economy, making it the second largest industry in Michigan. The sustained growth of agriculture is a key element in Michigan's economic recovery strategy. Bovine tuberculosis (TB) is an infectious disease that is close to being eradicated in the United States, but still poses a significant risk to domestic livestock, wildlife and humans throughout the world. Michigan has bovine TB in both cattle and wild free-ranging white-tailed deer. Every time bovine TB is transferred from deer to cattle it sends shockwaves through the agriculture industry, putting the $71 billion industry at risk. The Michigan Department of Agriculture and Rural Development (MDARD) formed a multi-disciplined team of food experts, scientists, economic planners, animal experts and technologists to develop an aggressive strategy that included information, communication and technology (ICT) solutions to help track down, contain, eradicate and prevent outbreaks of bovine TB in Michigan's cattle industry. So important is this effort to Michigan's economy and citizen health, these efforts are monitored and measured as part of Michigan's "well-being" report card. The end product of this research was the implementation of a first-of-its-kind animal disease traceability solution (USAHerds). Metrics: Selected benefits and associated metrics include process improvements, savings and cost avoidance, reduction of health risks and providing the agriculture industry with a sustainable technology safety net (see sections 5 and 9). Reduced turn-around time for processing reports and permits; decreased human error due to electronic scanning of RFID tags;

decreased time and cost related to conducting herd tracing; decreased time required for herds to remain under quarantine; decreased need to conduct random TB tests on 750 herds statewide.

Please describe the technologies used and how those technologies were deployed in an innovative way. Also, please include any technical or other challenges that were overcome for the successful implementation of the project.

Challenges: Barriers included (1) the need to coordinate across multiple stakeholders, (2) an aged technology infrastructure and (3) manual processes for monitoring and responding to reported cases of bovine TB outbreak. MDARD recognized a critical need to track cattle movement to prevent the spread of bovine TB using traceability and GIS capabilities not available in earlier technology solutions. Michigan also developed a strategy to implement radio frequency identification devices (RFID), making Michigan one of the first states using this technology. This effort was successful in that it relied upon a role-based project management governance structure that clearly defined outcomes and specific responsibilities of team members. Michigan's solution expands on the agriculture related IT platform, represents a national caliber advance, and can be shared with other states and thus extended further. Technology: Working with the Pennsylvania Department of Agriculture, Michigan selected the USAHerds software platform. Michigan was able to re-engineer this base platform to provide additional enhanced functions to meet Michigan's disease eradication effort. The new USAHerds system includes: Traceability of herds and incidents via an electronic interface with the Federal Premises Allocator module of the National Animal Identification System (NAIS). Use of RFID to track the cattle EID number and integration with Bing Maps to display the instances of bovine TB on MDARD interactive radius maps. Enhanced intrastate and interstate movement permitting that included integrated data sharing to monitor cattle management from market to slaughter facilities. TB testing software and integration with Federal USDA databases to help pattern the impact of bovine TB across state jurisdictions. Net 2.0 using SQL Server Reporting Services (SSRS) and a SQL2005 database and Bing Maps Michigan's Security Zone ensure sensitive data is protected by a series of well-positioned firewalls.

Please list the specific humanitarian benefits the project has yielded so far.

Food safety is MDARD's Number One priority. The ability to trace an animal from farm to fork in a matter of minutes rather than weeks or months protects this state's and nation's food supply. Reports generated by USAHerds software provide immediate traceability. Real-time information equates to real dollars saved, as producers could easily lose anywhere from $1,000 to over $10,000 per day depending on the situation related to a disease outbreak. The new USAHerds tracking technology and processes developed in Michigan supports MDARDS's top priority for food safety by providing a sustainable, portable, mobile system that ensures a high degree of animal and disease traceability, for both Michigan livestock as well as tagged livestock imported into Michigan processing plants. Further, significant process improvements enabled by this technology have provided operational efficiencies to both government and business. Selected benefits and associated metrics include process improvements, savings and cost avoidance and providing agriculture industry with a sustainable technology safety net. Reduced need for in-office processing resources. Reduced turn-around time for processing reports and permits ($700,000 - $1.2 million savings). Decreased human error due to electronic scanning of RFID tags versus costly data entry. Decreased time and cost related to conducting herd tracing. Improved accuracy by eliminating random TB testing 750 herds ($800,000 - $6.5 million). Decreased time required for herds to remain under quarantine. Decreased need to conduct random TB tests on 750 herds statewide. Provided the agriculture industry with a sustainable technology safety net for preventing and minimizing the impact of bovine TB, thus protecting revenues from the inevitable quarantine that would result from an outbreak. Further, Michigan's $71 billion agriculture industry is a key element to Michigan's sustained economic recovery.

Please provide the best example of how the project has benefited a specific individual, enterprise or organization. Feel free to include personal quotes from individuals who have directly benefited from the work.

Industry Benefits: USAHerds software improves the ability of field customers (veterinarians, markets, agriculture officers, and producers) to input and review their data from Michigan database systems. Improving data sharing capabilities results in increased compliance by the industry and improves the MDARD's ability to regulate the bovine TB and EID programs. There are from 1,000 to 1,200 herds briefly quarantined during testing every year. If there is a positive test, single animal traces could involve hundreds, even thousands, of cattle. Still further, trace-back may involve up to a 5-year period in multiple states. Without the RFID tags, movement permits and processing plant scanning, bovine TB tracing would be virtually impossible. Project outcomes: Since 2010, a total of 4,015 movement permits have been created. A related 111,847 animal records were entered/uploaded for those permits. During 2010, over 210,000 RFID tags were scanned at the 13 livestock markets and over 285,000 RFID tags were scanned at slaughter plants both in-state and out-state. Financial Return on Investment: Savings: Michigan Reduced turn-around time for processing reports and permits ($700,000 - $1.2 million savings). Decreased time and cost related to conducting herd tracing (improved accuracy by eliminating random TB testing 750 herds) ($800,000 - $6.5 million). Six solution transferability and operational savings: Michigan participates with a consortium of states nationwide to leverage additional enhancements to the USAHerds livestock application. Other states participating in the consortium include; Pennsylvania, Kentucky, Indiana, Montana, and Vermont. These innovator states benefit from the enhancements added by other states at no cost. All states in the U.S. could be impacted by a TB outbreak and this solution is transferable to any and all states.