## BACKGROUND

Since 2003, homeland security efforts in the Greater Kansas City metropolitan area have been overseen by the Regional Homeland Security Coordinating Committee (RHSCC). The Mid-America Regional Council (MARC) — the association of local governments and metropolitan planning organization for the region — serves as the fiscal and planning agent for federal and state grants that support homeland security, emergency preparedness and public health, including Urban Area Security Initiative (UASI) grants awarded by the U.S. Department of Homeland Security.

As part of its strategic plan, the RHSCC identified the need to build a regional capability for disease surveillance and investigation. To address this goal, the Epidemiology Surveillance, Isolation and Quarantine (ESIQ) Task Force (part of the RHSCC's Public Health Preparedness Subcommittee) is working toward a regional disease surveillance system that will help jurisdictions within the region, on both sides of the state line, better manage disease reports and enable enhanced disease surveillance. Federal homeland security funds were secured to support the project.

THE GREATER KANSAS CITY REGION
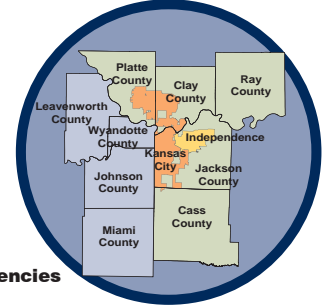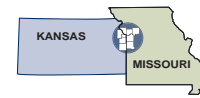
Two States
Nine Counties
120 Cities
1.8 Million People
4,000 Square Miles
11 Public Health Agencies

PROJECT GOAL

Develop a web-based disease surveillance solution for a bistate metropolitan area with multiple local public health agencies to:

- Improve the transfer of disease reports among local agencies
- Enhance the early detection of disease outbreaks
- Provide regional data for epidemiologic investigations and informed public health response

DESIGN CONSIDERATIONS

During the assessment, the following considerations/requirements were identified as essential to the design of an effective regional case notification and surveillance system:

- Vast differences exist in personnel resources among the region's 11 local public health agencies
- A lack of adequate Information Technology (IT) support for disease surveillance activities is common in most local public health agencies.
- Inter-jurisdictional communication is often slow and inefficient.
- Out-of-jurisdiction transfer of notifications is convoluted and time-consuming.
- Faster or real-time notifications from both state disease surveillance systems are needed when new case reports are entered.
- Departments need the ability to view other jurisdictions' data, regardless of state or county.
- Duplicate notifications are often difficult to reconcile and require local IT solutions to manage.
- There is a need for generating basic public health surveillance reports (line-lists, epi-curves, etc.) at a regional level.
- There is a need for better coordination, management, and dissemination of timely information in response to a public health event (outbreak, Biological Terrorism scenario, etc.).

THE SOLUTION: X-SENTINEL

Working with MARC stakeholders and following a user-centered design approach, a new cross-jurisdictional notification management and regional surveillance system was designed.

X-Sentinel integrates notification management (case/laboratory report management and event communication) with regional surveillance resources. **X-Sentinel** allows for electronic laboratory report transfer and the regional sharing of non-identifiable case data. The system leverages existing state case management systems to allow local agencies to share data across jurisdictions and across state lines while maintaining the security and confidentiality of state-specific data.

The system offers three key features:

- A case notification management system.
- An event notification management system.
- A regional surveillance system that integrates with existing state case management systems and other systems.

X-SENTINEL HIGH-LEVEL FUNCTIONAL DESIGN
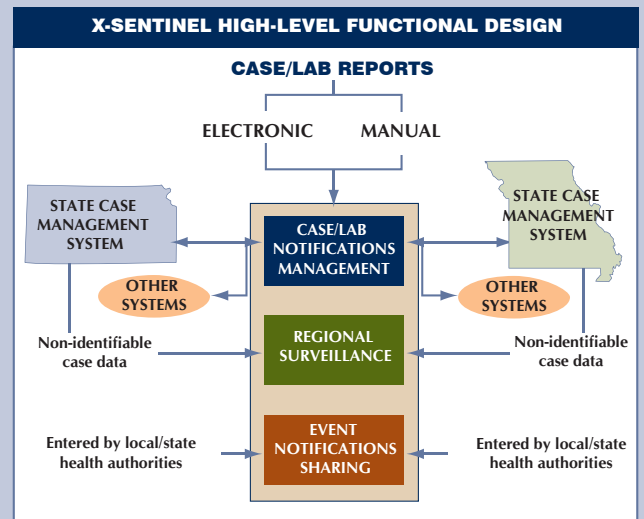
SOLUTION HIGHLIGHTS

Case Notification Management System

The most time consuming activity identified by stakeholders during the assessment phase was out-of-jurisdiction (OOJ) notification transfers — (primarily laboratory results) — between both local and state health authorities. Currently, about one-third of all notifications are originally assigned to the wrong jurisdiction.

X-Sentinel will:

- Allow individuals with relevant roles to create, edit and/or view case notifications.
- Formalize communication channels and facilitate notification management.
- Facilitate identification of the patient's responsible public health jurisdiction.
- Automatically route electronic laboratory reports to the appropriate jurisdiction.
- Eliminate the need for faxing and reduce the dependency on phone communications.
- Allow for user-specific notification alert rules.

Regional Surveillance System

Timely sharing of information across jurisdictions is an ongoing problem clearly articulated by MARC stakeholders. Currently, neither state's case management system allows users from outside the state to view case data. Inter-state communications regarding case data are handled by phone and fax alone.

While each jurisdiction depends upon its respective state reportable condition system to generate some of the information they need for basic surveillance reports, most local jurisdictions augment this information with additional data, often formatting and creating these reports by hand.
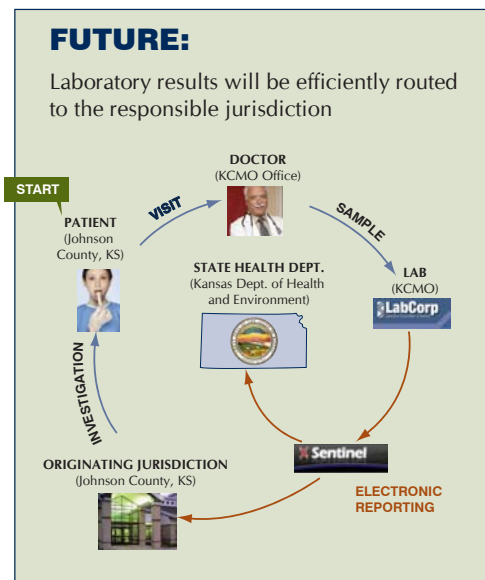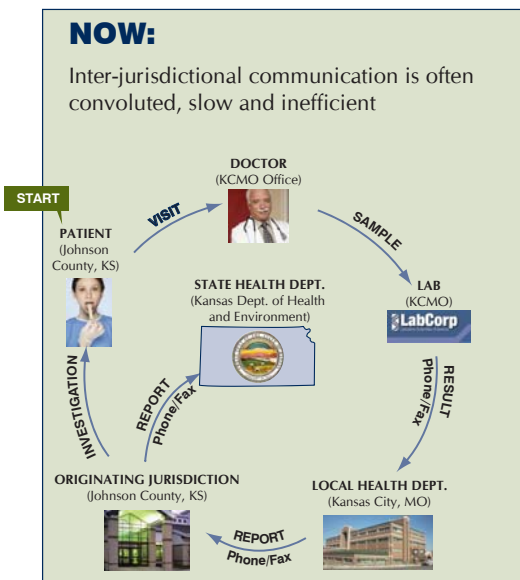
X-Sentinel will allow users to search across the two state's disease surveillance systems and immediately obtain de-identified data and new case reports. Regional case data will also be available for viewing and analysis, and users may set user-specific case alert rules.

Event Notification Management System

MARC stakeholders expressed the need for more effective and efficient mechanisms to share information on public health events. Events could include a number of situations — for example a food-borne outbreak, a Hepatitis-A positive food handler, or a contaminated drinking water supply. Stakeholders need better communication mechanisms, data sharing standards, and consistent reporting structures.

X-Sentinel will allow authorized users to create, edit and/or view event notifications, and offer event notifications to share standard event details (time, place, symptoms, pathogen, etc.) among relevant public health staff across the entire region.

NOW:

Inter-jurisdictional communication is often convoluted, slow and inefficient

FUTURE:

Laboratory results will be efficiently routed to the responsible jurisdiction

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