



Threat Probability to Action Tool (TPAT)

D. Edwards, L. Yang, J. Ray, S. Mueller

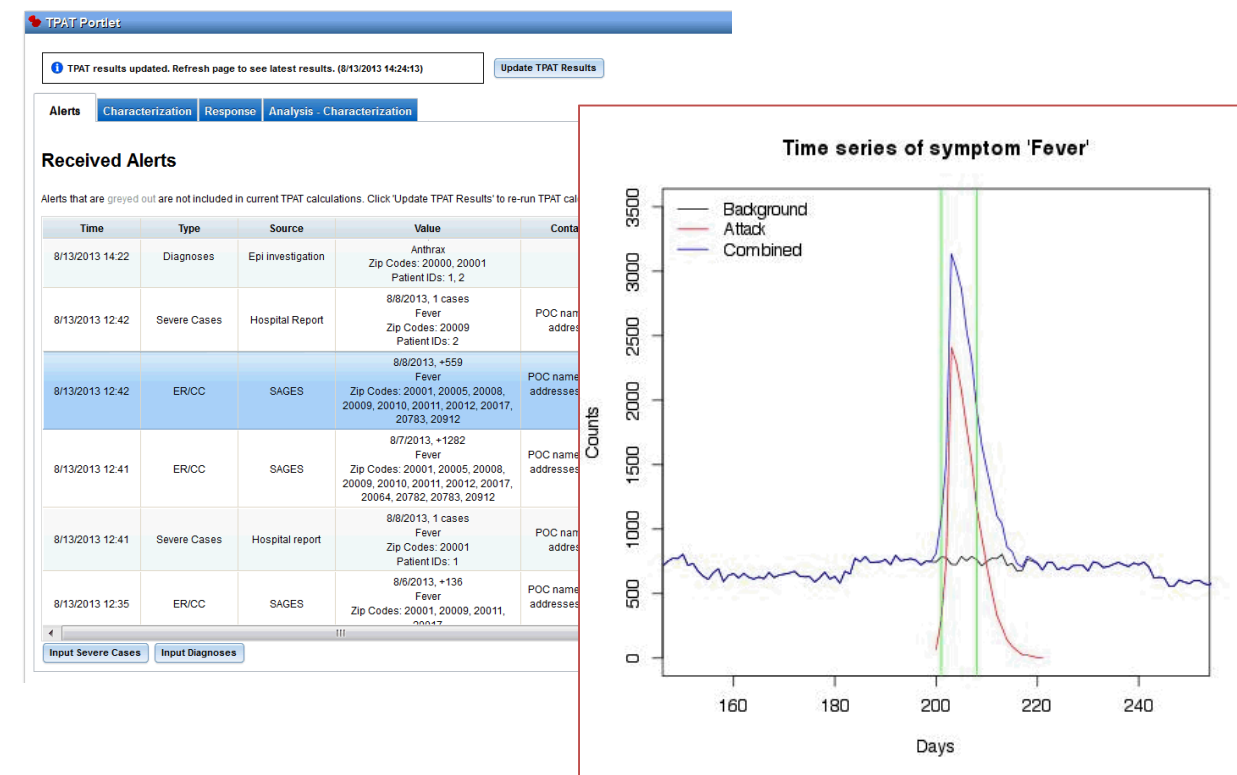
Sandia National Laboratories



Problem

In the early stages of a bioterror attack there is limited information to determine the size and geographical extent of the emerging epidemic.

Early in an outbreak, the information streams may include a few diagnosed cases plus an incidence of influenza-like illness above background levels.



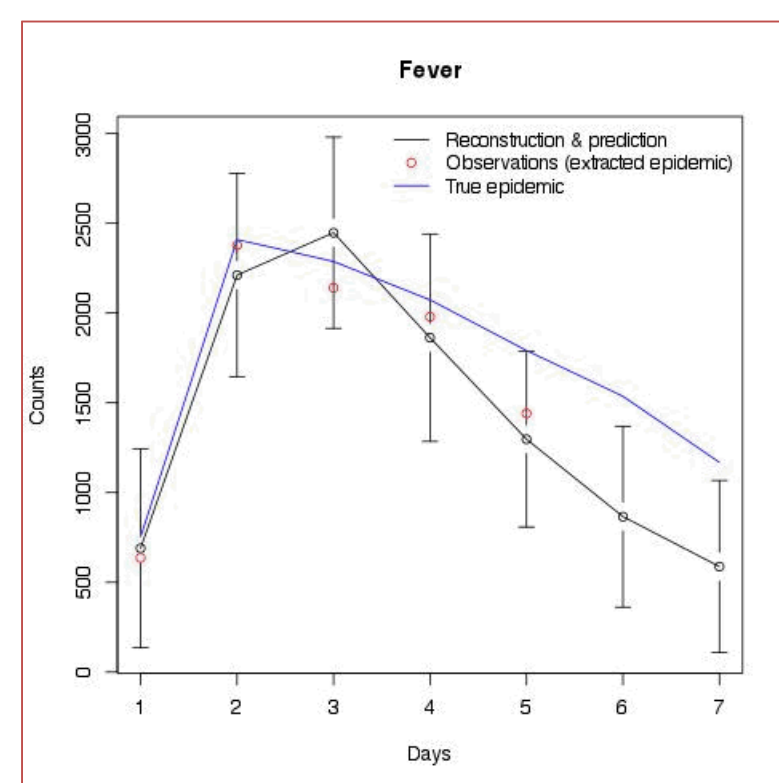
Decision-makers want to know:

- How many people will become infected?
- Over what timeframe?
- Where are they located?
- How best to respond?

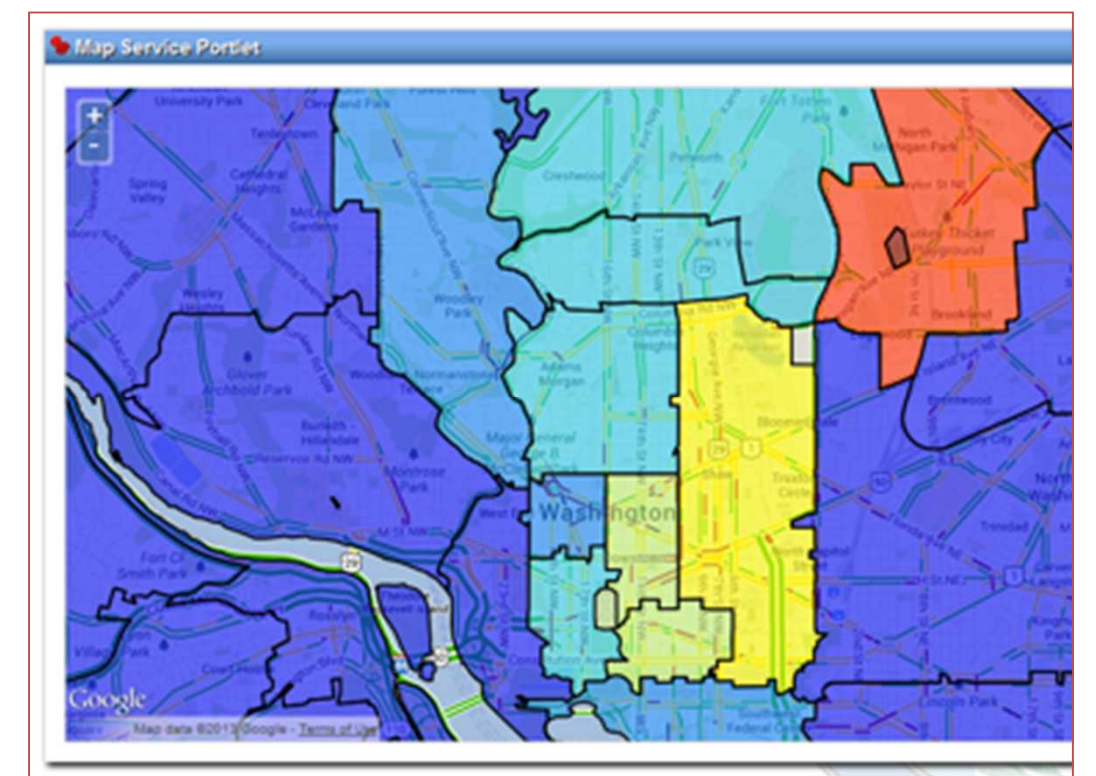
Approach

TPAT brings a multidisciplinary approach, including systems analysis, epidemiological modeling science, and software engineering to fuse disparate sources of information.

TPAT integrates public health data with epidemiological disease models to project the evolution of incident.



TPAT correlates public health data with environmental sample data to show the geo-spatial impact.



TPAT uses decision rules to recommend appropriate responses based on the incident characterization.

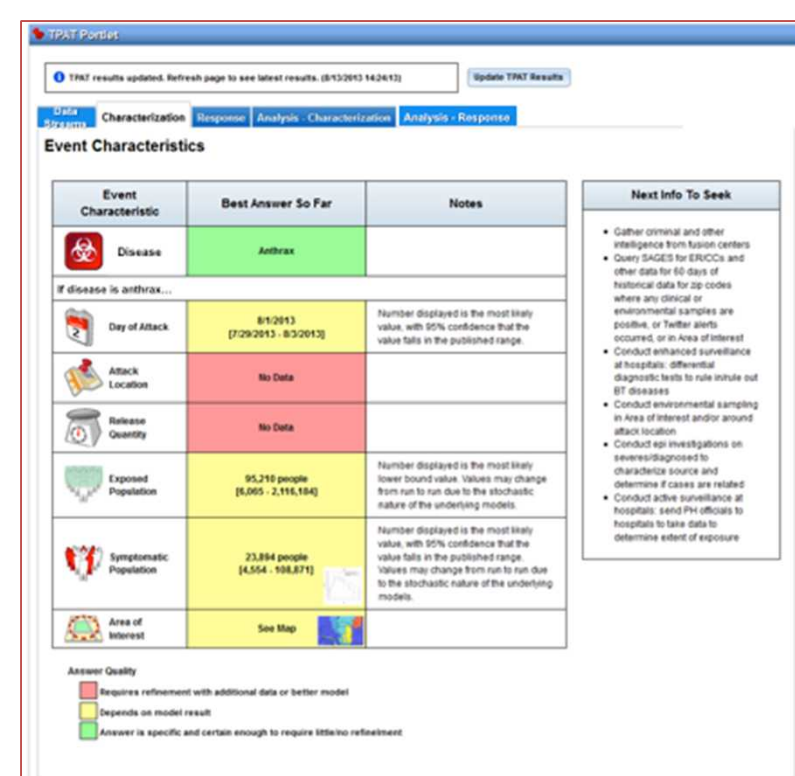
TPAT Portlet				
Data Feeds	Characterization	Response	Analysis - Characterization	
TPAT recommended responses highlighted in green				
Gather More Information	Communicate	People Movement	Medical Countermeasures	Agent Containment
<ul style="list-style-type: none">Syndromic/veterinary surveillanceEpidemiological investigationEnvironmental samplingSituational assessment to review and interpret available informationInitiate virologic testing and testing for bacterial infection	<ul style="list-style-type: none">Communications with publicCommunication and coordination with national officials and agencies	<ul style="list-style-type: none">Consider shelter-in-placeConsider evacuation / temporary relocationEvacuation and closure of potentially contaminated facilities	<ul style="list-style-type: none">Post-exposure prophylaxis campaignSocial Distancing/QuarantineNational/government resources	<ul style="list-style-type: none">Contamination isolationDecontamination and/or fixativesEvacuation and closure of potentially contaminated facilitiesRestrictions on transportation
Show Cost/Benefits				



Results

TPAT provides a comprehensive decision-support tool for response to a biological incident.

TPAT transforms state-of-the-art epidemiological modeling science into high-visibility, impactful, actionable response recommendations for real-time decision-making in an unfolding biological-agent attack incident.



Impact

TPAT reduces uncertainty in a highly uncertain incident, allowing decision-makers to lean forward response assets that can save lives.

- TPAT was tested extensively by US and Polish Military personnel in multiple technical and operational demonstrations.
- TPAT was integrated by the DoD DTRA's Transatlantic Collaborative Biological Resiliency Demonstration (TaCBRD) program into its TaCBoaRD integrated suite of response and recovery decision-support tools.