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Wide Area Restoration Decision Support Tool Transition Project

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Sandia employs an End-to-End approach to biodefense

- **Threat assessment**
  - *What is the problem / threat?*
- **Attack prevention / hardening**
  - *What measures can be implemented to reduce the likelihood or impact of an attack*
- **Countermeasures evaluation**
  - *How can we effectively respond to an attack?*
- **System requirements**
  - *What support / information is needed to implement effective actions?*
- **System architecture design and deployment**
  - *How do we best deploy available assets?*
- **Signal interpretation / decision support**
  - *How do we use available information to make the best operational decisions during an event?*
- **Restoration and recovery**
  - *How do we get back to normal operations after an attack?*

Integrating cutting-edge technology and real-world response operations through sustainable solutions, training, and exercises

PATH/AWARE Prioritization Analysis Tool for all Hazards/ Analyzer for Wide Area Restoration Effectiveness

PATH/AWARE – A Toolset for Restoration and Recovery Planning, Exercising, and Operations

PATH/ AWARE is an analysis and decision-support toolset to prioritize critical infrastructure and plan restoration operations following natural or man-made disasters, including earthquakes, floods, fires, chemical, biological, and radiological incidents.

Capabilities – PATH/AWARE integrates a front-end GIS and mapping capability, national building and asset datasets, prioritization and remediation operations algorithms, enabling recovery decision-makers and planners to efficiently and effectively:

- *Identify critical infrastructure in area of interest;*
- *Assess impacts to lifelines and other critical services;*
- *Analyze critical infrastructure interdependencies;*
- *Prioritize critical infrastructure based on recovery objectives;*
- *Evaluate restoration and remediation strategies*
- *Determine resource requirements for operations;*
- *Identify chokepoints in the process, and*
- *Allocate and manage resources effectively*

Mapped Bio-contamination Scenario

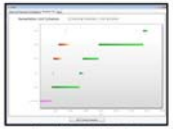
Scenario and Resource Inputs ***(default or user-defined)***

- ***Scenario Description*** – Geographically defined areas of interest including red, yellow, and green zones; building/asset demographics (e.g. square footage, number of floors, number of occupants)
- ***Recovery Objectives*** – Priority weightings for recovery objectives, functions, and services (e.g., Maintain Public Safety, Minimize Economic Impacts, Restore Continuity of Operations)
- ***Screening and Characterization*** – Number of sampling teams, sampling rate, sample types, sampling approaches (e.g. judgmental, statistical) lab capacity, unit costs
- ***Decontamination and Waste Handling*** – Indoor and outdoor decon options and rates (e.g. fumigation, surface treatment, owner/self decon), waste volume, type, characterization and treatment methods
- ***Clearance*** – Sampling methodology, sampling approach (e.g. judgmental or statistical or combination); lab processing capacity; planning and data analysis delay factors

Summary of Affected Buildings

PATH/AWARE Outputs

- ***Impacted Region and Facilities*** – Tabulation of potentially affected services and assets by location and building use designation
- ***Prioritized List of Critical Services and Assets*** – Rank-ordered lis of services and assets based on recovery objectives, scenario impacts, and critical service and asset interdependencies
- ***Remediation Timelines and Costs*** – Timelines and cost estimates for each remediation phase; comparison of costs and timelines for alternative remediation strategies
- ***Reporting*** – Documentation including PowerPoint presentations and PDF summaries containing scenario information, resource quantities, critical infrastructure priorities, time and cost estimates



Generated Remediation Timelines

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Following a wide-area biological release:

- Many critical assets will be potentially contaminated, and ***key functions disrupted***
- Restoration ***resources will be extremely limited***
- Time to complete ***restoration will be months to years***

Project Goals and Objectives:

Support development of a ***nationally accessible capability for regional restoration and recovery planning***, through technology refinement, application, and transition for long term sustainment

Decision-makers will need to know:

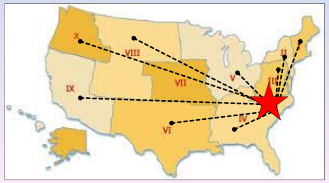
- Which assets have been impacted? What functions are disrupted?
- ***What resources are available***? How can they be utilized most effectively?
- How long will the clean-up take? ***When will critical functions be restored***?

First Responders & Sampling | Laboratory Analysis | Decontamination

Current efforts are focused on increasing the usefulness, usability, and accessibility of the PATH/AWARE toolset:

- **Useful**
  - Expand to Chemical and Radiological hazards
- **Usable**
  - Develop Concept of Operations
  - Vetting of capability through Interagency Working Group
- **Accessible**
  - Installation in local EOC's
  - Develop web-based capability, which can be centrally located and maintained

Concept of Operations



After response, restoration challenges will be significant

1

2 Technology has been developed to support restoration & recovery

3 The Tool Transition Project seeks to transition technology for long term use & sustainment

Decision-support tools provide restoration planners with information and analysis

The Prioritization Analysis Tool for all-Hazards/Analyzer for Wide-Area Restoration Effectiveness (PATH/AWARE) helps decision-makers:

- identify critical infrastructure in area of interest;
- assess impacts on critical services;
- analyze critical infrastructure interdependencies;
- develop an integrated, unified prioritization strategy;
- determine resource requirements for restoration operations;
- identify chokepoints in the process, and
- allocate and manage resources effectively

… during planning and operational phases.

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