

# Risk Analysis Workbench (RAW)

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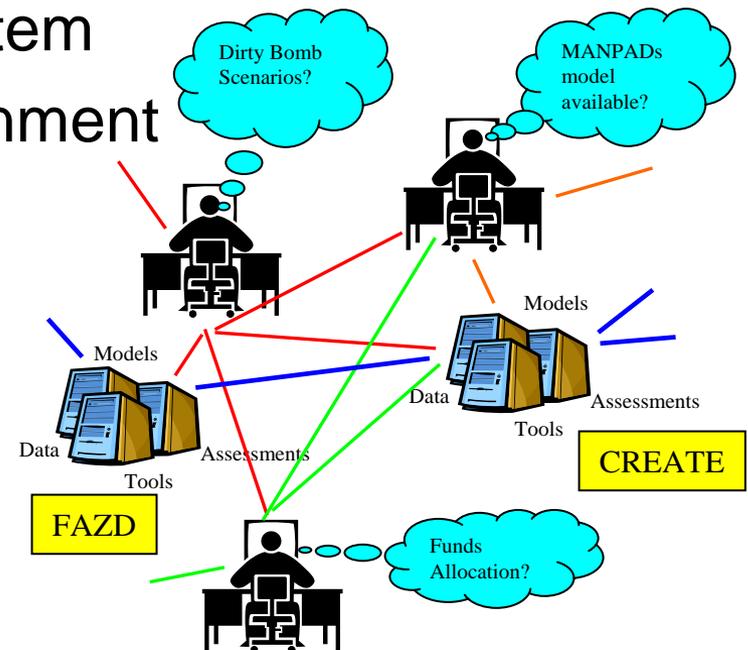
*And*

Center for Risk and Economic Analysis of Terrorism Events  
(CREATE)

DHS S&T Summit  
15-16 March 2007

# Outline

- What is the problem being addressed?
- What is the Risk Analysis Workbench (RAW)?
- The Decision-Support System
- Common Modeling Environment
- Questions



Risk Analysts' Workbench (RAW)

# What is the Problem?

No single source for researchers and policy/decision-makers to access for recommendations, information, and resources to risk-based questions and problems.

- What research and/or risk assessments have been undertaken in the areas I'm interested in?
- Who can I contact or collaborate with?
- Are there existing resources that I can use for my research and/or use to answer risk-based questions?
  - How can I access and use these resources?
  - How can I leverage what has already been done?
  - What are the assumptions behind these resources?
- How accurate, current, and reliable is the data/information?
- Is my data protected? Can I control access to my data/information?
- What's new?
- Who has accessed my research? How's it being used?



# Current Situation

- Existing models, decision-support tools, data, reports, and other information is located in disparate locations
  - Difficult to find information of interest
  - Sensitivity of data may limit access
  - Accuracy/reliability of information can be difficult to ascertain
- Sharing of information (e.g., models, tools, data) is difficult due to different formats, assumptions, and communication interfaces
  - Hampers reuse and collaboration
  - Intermediary data (i.e., by-product) is typically not available
- Decision-makers and researchers are not always aware of each others goals and objectives
  - Decision-makers not aware of what is available
  - Researchers don't always know what decision-makers need

# Risk Analysis Workbench (RAW) Vision

Develop a tool that **policy/decision-makers** and **risk analysts** can use to access risk analysis resources – **get the resources into the user's hands**

Phase I

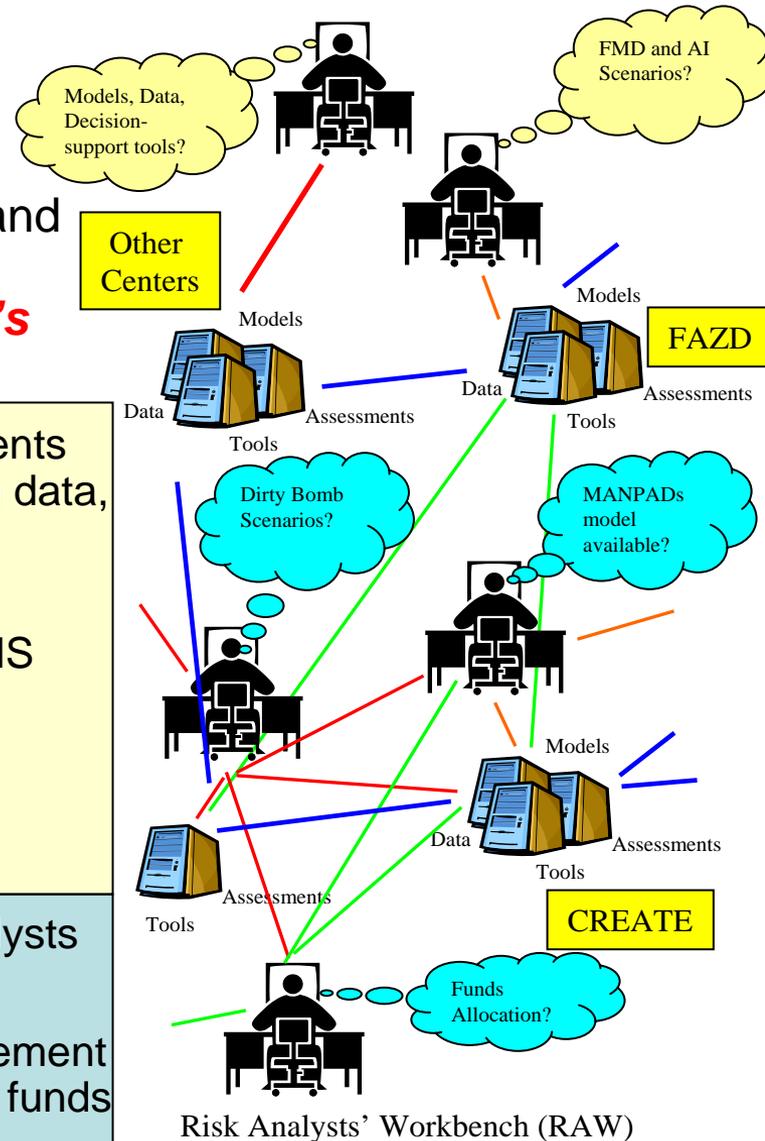
Implemented

- **Resource repository:** Integrate risk assessments and models, decision-support tools, supporting data, and other risk-based resources
- **Collaboration:** Promotes collaboration and information exchange between and outside DHS “Centers of Excellence” through a shared environment
- **Security:** Protect sensitive resources from unauthorized access

Phase II

Currently Under Development

- **Education:** “Hands-on” training for future analysts
- **Decision-support tools:** Undertake “what-if” analyses to determine what and where to implement countermeasures or allocate counter-terrorism funds
- **Software Reuse:** Common Modeling Environment (CME) for new model/decision-tool creation using existing resources in RAW

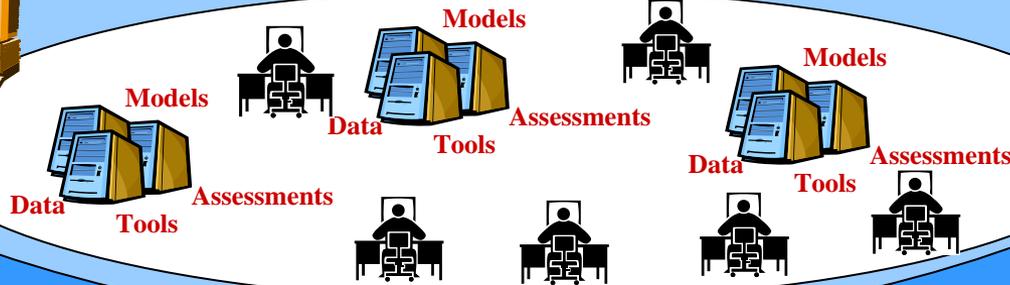


Risk Analysts' Workbench (RAW)

- What do I need to know to make a decision?
- Who can I consult with?
- What are the risks and how expensive is protection?

- How can my work make a bigger difference?
- Who is using my model?
- What are my colleagues up to?

## Bring together producers and consumers of models and data



Fine-grain access  
control and audit

Common modeling  
environment

Mixed-initiative  
workflows

Multiple organizations  
with controlled boundary  
transparency

Configurable  
portals and  
semantic search

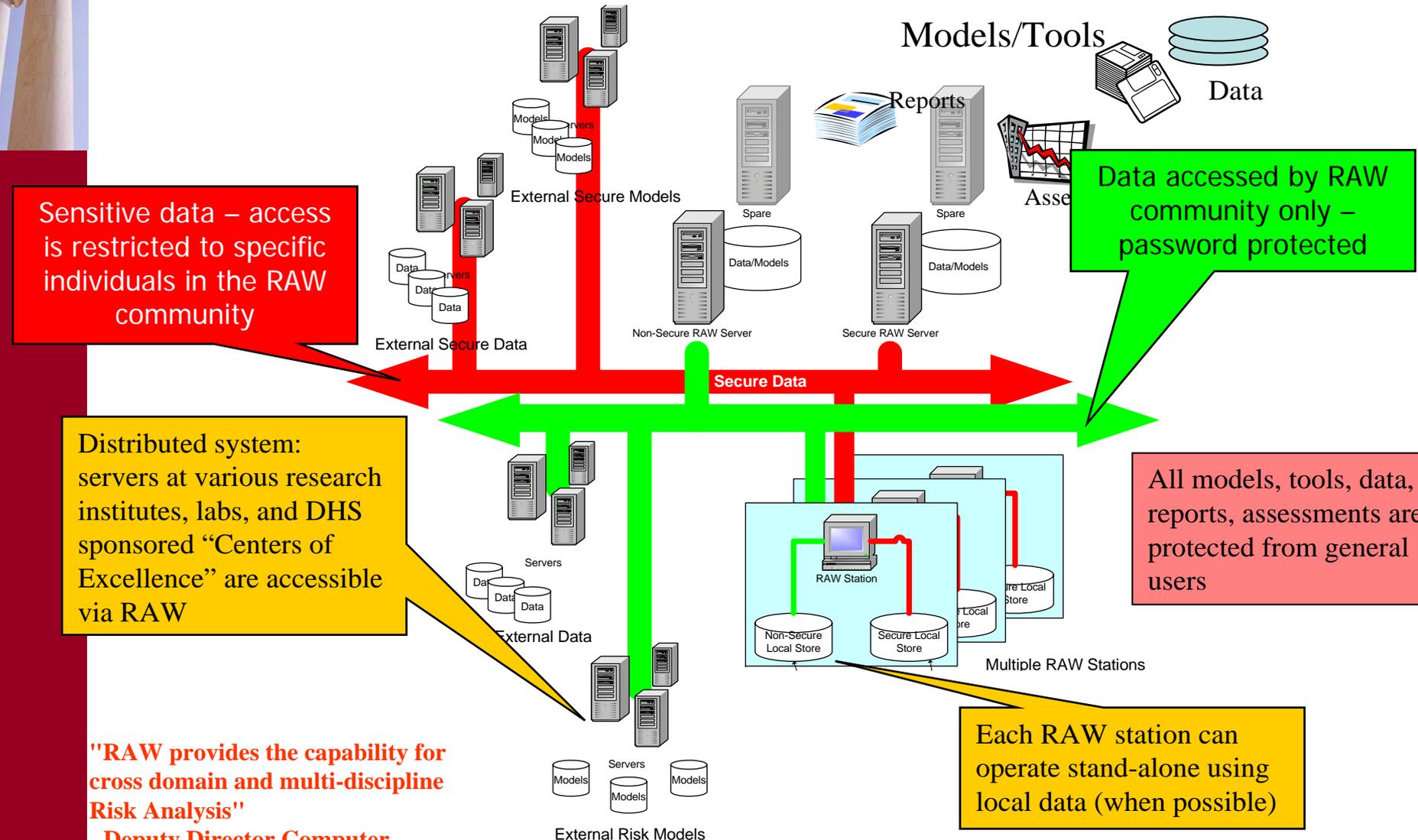
Easy integrated access to  
models, 3<sup>rd</sup> party tools,  
documentation, and data

Computed resources  
and links

Semantically-  
filtered  
information  
feeds

Early warning  
systems  
and  
plan sentinels

# A Distributed System



Sensitive data – access is restricted to specific individuals in the RAW community

Data accessed by RAW community only – password protected

Distributed system: servers at various research institutes, labs, and DHS sponsored “Centers of Excellence” are accessible via RAW

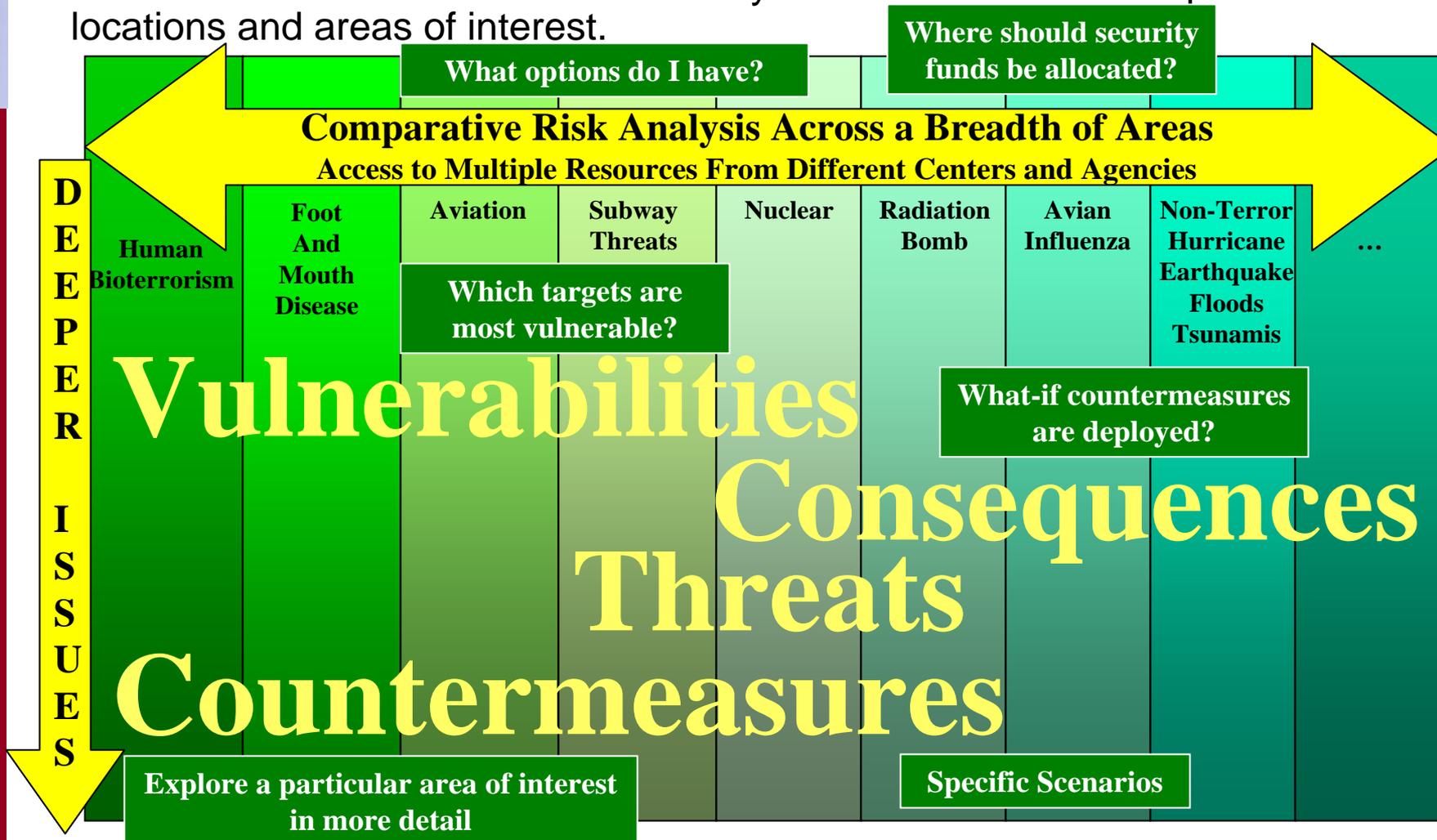
All models, tools, data, reports, assessments are protected from general users

Each RAW station can operate stand-alone using local data (when possible)

**“RAW provides the capability for cross domain and multi-discipline Risk Analysis”**  
- Deputy Director Computer Networks and Security

# “What-if” Analysis

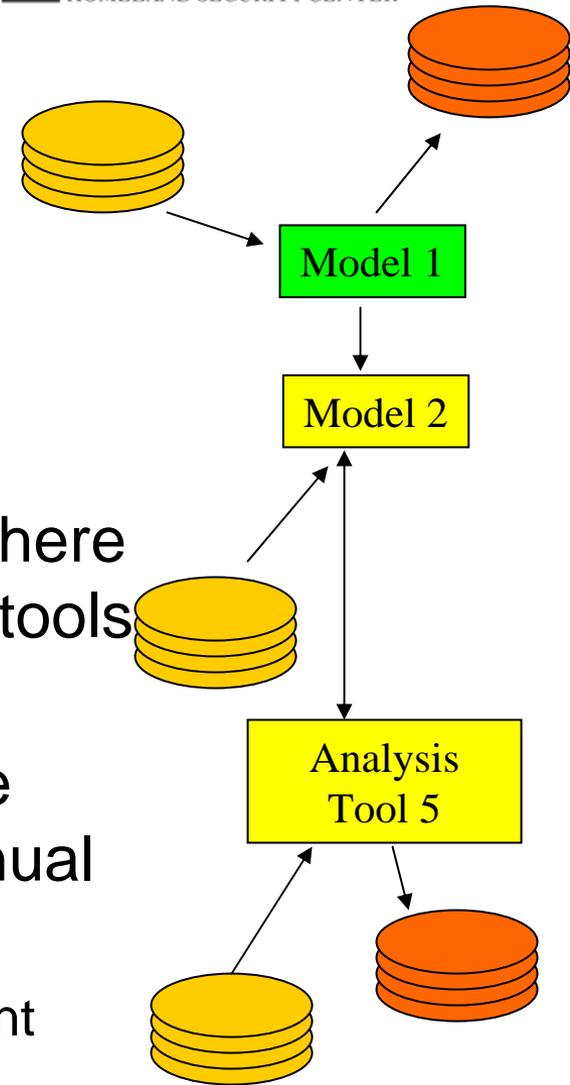
A software platform that *risk analysts* and *policy/decision-makers* can use to collaborate and access risk analysis resources from multiple locations and areas of interest.



**RAW provides the capability for cross domain and multi-discipline risk analysis**

# Common Modeling Environment (CME)

- Support the creation of composite analyses using existing resources
- Concept: an electronic white board where icons representing data, models, and tools are linked into a new “system”
- CME determines how modules can be linked together, advises users on manual steps if needed
  - Semantic network technology in the current RAW infrastructure enables this



# Decision-Support System (DSS)

- Under development at FAZD Center
- Models/Data from FAZD Center, framework built from RAW components
- Software infrastructure that allows FAZD-based resources to be shared
  - Models and data are electronically linked
  - Information available for viewing and export
- Building block for the Common Modeling Environment (CME) in RAW



# Current Implementation

- Prototype (RAW 2.0) is operational
  - Web-based and stand-alone interfaces available
    - Can download resources to local PC/Laptop system for use
    - Supports disconnected (from RAW network) operations
    - Web-based interface can support linkage to any “trusted” site
  - Semantic network is fully implemented
  - User/password authentication implemented
  - Currently supports a single server
  - Access to available resources can be controlled
  - Global keyword search is available
- Populated with resources from CREATE, FAZD, and START



# What is the RAW Advantage Over Other Solutions?

- Examples of competing solutions:
  - Plone
  - MS Groove
- Advantages of RAW:
  - Vetted resources
  - Fine-grained access control to services
  - Audit trails of usage
  - Common modeling environment – help in combining tools
  - Smart searches
  - Intelligent, interest-sensitive alerts to what is new

## Summary

- Repository of risk-based resources (models, decision-support tools, etc.,) from a variety of sources available to researchers and policy/decision-makers
- Common modeling environment – a toolkit for creating composite systems to model complex problems
- Decision-analysis tools to allow policy/decision-makers to assess risk and the effectiveness of counter-measure implementation by undertaking “what-if” analyses.

*RAW: Maximizing synergies among analytical efforts, rapidly addressing decision-makers' questions*