Re-engineering the Consequences Assessment Tool Set (CATS)

William B. Samuels, Ph.D
Science Applications International Corporation
McLean, VA

Christopher Kiley, Ph.D
Defense Threat Reduction Agency
Fort Belvoir, VA

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Track: Disaster Management and Emergency Response
Session: Understanding Vulnerabilities and Calculating Risks
What is CATS?

- CATS is a consequence management tool package which integrates hazard prediction, hazard containment, consequence assessment, and routing using critical population and infrastructure data.

- Using the overlay of the hazard footprint superimposed on a GIS street map, a user can:
  - quickly establish areas potentially at risk,
  - assess affected population and infrastructure,
  - facilitate initial resource deployment and
  - assess needs and locate resources for a sustained response or mitigation strategy.
Address Matching
Find Place

Place: Banks
City: Washington
State: DC
Zip Code: 

OK Cancel
Get Weather
Generate Hazard Footprint and Roadblocks
Roadblocks Report

Roadblocks Editor
Add/Delete
Population at Risk

Assessment Report

Report Name: 20% census blockgroup - no grouping
Assessment Layer Name: 2007 Census Blockgroup Population
Area of Interest Layer Name: ERG - 11 Dimethylhydrazine - Large Day - 27 Apr 2010 154014

1. Area of Interest Level
   Zone: Protective Action

1.1 - Area of Interest - Accrual Values

<table>
<thead>
<tr>
<th>Features</th>
<th>POP2007 At Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5,461</td>
</tr>
</tbody>
</table>

1.2 - Assessed Details

<table>
<thead>
<tr>
<th>POP2007 At Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>195</td>
</tr>
<tr>
<td>258</td>
</tr>
<tr>
<td>76</td>
</tr>
<tr>
<td>576</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>348</td>
</tr>
<tr>
<td>1084</td>
</tr>
<tr>
<td>1867</td>
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<tr>
<td>982</td>
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<tr>
<td>0</td>
</tr>
<tr>
<td>74</td>
</tr>
<tr>
<td>0</td>
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</table>

Total - Accrual Values

<table>
<thead>
<tr>
<th>Features</th>
<th>POP2007 At Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5,461</td>
</tr>
</tbody>
</table>
Infrastructure at Risk

Assessment Report

Date/Time: 4/10/2010 1:09:51 PM
Report Name: hospitals
Assessment Layer Name: Hospitals
Area of Interest Layer Name: ALOHA CHLORINE Confidence - 28 Apr 2010 130402 2500 Meters Surrounded Buffer

<table>
<thead>
<tr>
<th>NAME</th>
<th>BEDSIZE At Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEORGE WASHINGTON UNIVERSITY HOSPITAL</td>
<td>GEORGETOWN UNIVERSITY HOSPITAL</td>
</tr>
<tr>
<td>HOWARD UNIVERSITY HOSPITAL</td>
<td>CHILDREN'S NATIONAL MEDICAL CENTER</td>
</tr>
<tr>
<td>WASHINGTON HOSPITAL CENTER</td>
<td>VETERANS AFFAIRS MEDICAL CTR</td>
</tr>
<tr>
<td>NATIONAL REHABILITATION HOSPITAL</td>
<td>HOSPITAL FOR SICK CHILDREN PEDIATRICS CENTER</td>
</tr>
<tr>
<td>PROVIDENCE HOSPITAL</td>
<td>WALTER REED ARMY MEDICAL CENTER-DOD</td>
</tr>
<tr>
<td>WASHINGTON ADVENTIST HOSPITAL</td>
<td></td>
</tr>
</tbody>
</table>

Total - Accrual Values

<table>
<thead>
<tr>
<th>Features</th>
<th>BEDSIZE At Risk</th>
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</thead>
<tbody>
<tr>
<td>11</td>
<td>4,793</td>
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</tbody>
</table>
Vehicle Routing

Network Builder

Origin

Destination
Routing Report

Consequence Assessment Toolset (CATS)

CATS Routing Report

Date/Time: 4/27/2010 4:00:55 PM
Area of Interest Layer Name: ERG - 11 Dimethylhydrazine - Large Day - 27 Apr 2010 154014
Road Layer Name: Streets
Network Name: dc streets - no cost factors

<table>
<thead>
<tr>
<th>Direction</th>
<th>Distance Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Begin driving on L ST NW towards MASSACHUSETTS AVE NW</td>
<td>0.42</td>
</tr>
<tr>
<td>Bear right onto MASSACHUSETTS AVE NW</td>
<td>0.50</td>
</tr>
<tr>
<td>Merge onto SCOTT CIR NW</td>
<td>0.03</td>
</tr>
<tr>
<td>Merge onto MASSACHUSETTS AVE NW</td>
<td>0.47</td>
</tr>
<tr>
<td>Bear left onto DUPONT CIR NW</td>
<td>0.06</td>
</tr>
<tr>
<td>Turn right onto NEW HAMPSHIRE AVE NW</td>
<td>0.32</td>
</tr>
<tr>
<td>Bear right onto M ST NW</td>
<td>0.14</td>
</tr>
<tr>
<td>Turn left onto 23RD ST NW</td>
<td>0.15</td>
</tr>
<tr>
<td>Turn right onto WASHINGTON CIR NW</td>
<td>0.00</td>
</tr>
<tr>
<td>Turn right onto NEW HAMPSHIRE AVE NW. Your destination is ahead</td>
<td>0.06</td>
</tr>
</tbody>
</table>

Total Route Distance: 2.28 Miles
**Question:** What is HSIP Freedom and how does it differ from HSIP Gold?

**Answer:** HSIP Freedom is a subset of the HSIP Gold datasets developed and compiled by NGA over the past few years. Approximately 190 datasets were identified from HSIP Gold as license-free and distributable to state and local Homeland Security/Homeland Defense mission areas. HSIP Freedom can be shared and distributed among state and local government agencies and is being made available through the HSIN GIS Community of Interest (COI).
Summary
CATS Features

• **CATS – CJMTK, ArcEngine, ArcGIS 9.3.1 Extension**
  • Internal Models: High Explosive, ERG 2008, ALOHA
  • External Models: JEM, HPAC, HAZUS
  • Enhanced roadblocks
    • Roadblock editor – add, delete, move roadblocks
  • Route planning
    • Build CATS road network (CRN) file
    • Find shortest path
    • Routing around hazards
  • Net tools
    • Geocoding
      • Find address
      • Find location
    • Place Tools
      • Find place
      • Find place by radius
    • Weather Tools
      • Find Weather
      • Find Weather by latitude/longitude
      • Find closest weather lat/lon
• Scope and establish initial development plan for web services
• Correct developmental, architectural issues, maintenance and operability issues
• HSIP GOLD data bundle
• HSIP Freedom data
• Software issue methodology
Summary
CATS Requirements

Hardware Requirements
• CPU: 2.2 GHz or higher
• Processor: Intel Core Duo, Pentium 4, or Xeon
• Memory: 2GB or higher
• Display: 24 bit color depth
• Resolution: 1024 X 768 Recommended or higher at normal size (96 dpi)
• ·Swap Space: 500 MB Minimum
• Disk Space 3.2 GB
• Video/Graphics: 24-bit capable graphics accelerator with a minimum of 512MB video memory

Software Requirements
• CJMTK or ArcGIS Desktop or Engine 9.3.1 or 10 with the Spatial Analyst Extension
• Net Framework 3.5 SP1 (For ESRI 9.3.1 products) or .Net Framework 4 (For ESRI 10 products)
• Aloha 5.4.1.2
• Adobe Acrobat Reader
• Storage: Shapefile, File-based Geodatabase, Personal and Enterprise SDE

Operating Systems (32 or 64 bit):
• Windows XP SP2
• Windows 7
• Windows Server 2003 SP2
• Windows Server 2008

Interoperability
• Joint Effects Model (JEM) 1.1
• Hazard Prediction and Assessment Capability (HPAC) 4/5
• Hazards U.S. Multi-Hazard (HAZUS-MH) 1.4