Tri-Service Study 2011
27th Annual National Test and Evaluation Conference
Tampa, FL
15 March 2011
DETEC Mission

DETEC is funded by the Central Test and Evaluation Investment Program

- Develop Joint T&E MRTFB infrastructure required for T&E of DEW systems
  - Instrumentation
  - Equipment
  - Software tools
- DEW systems supported
  - High energy laser (HEL)
  - High power microwave (HPM)
- Coordinate T&E needs with TRMC S&T efforts

DETEC – Directed Energy Test and Evaluation Capability
MRTFB – Major Range and Test Facility Base
DEW – Directed Energy Weapon
TRMC – Test Resource Management Center
T&E – Test and Evaluation
T-SS Begins to identify and scope shortfalls in DE T&E infrastructure

DETEC Begins to resolve 12 high priority capabilities identified by the T-SS. DETEC is developing 16 systems (covering 40 shortfalls) to address these infrastructure shortfalls

DET S&T Begins to address high-risk, high-pay-off shortfalls identified by the T-SS. To date, DET S&T has delivered 20 systems

T-SS Update (2007) Begins to capture current DE T&E infrastructure shortfalls for DETEC II, originally planned to start in 2010

T-SS 2011 Begins to capture most current DE T&E infrastructure shortfalls

Projected Window to Begin to resolve the highest priority shortfalls identified by the T-SS 2011
• Tri-Service Study
  – Objective: identify DE T&E infrastructure shortfalls emphasizing current changes to baseline
  – Goal: reduce DE weapons programs’ need to pay for T&E infrastructure; prevent delays to programs awaiting T&E

• Scope
  – T&E infrastructure unique to DE testing
    • HEL and HPM domains
    • Impacts all test activities - modeling and simulation (M&S), developmental T&E (DT&E), operational T&E (OT&E), and live-fire T&E (LFT&E)
    • Across all phases of a test event (planning, rehearsal and execution, analysis)
    • Blue DEW vs. Red target and Red DEW vs. Blue target
  – Leverage existing MRTFB infrastructure
T-SS Process

- ID DE Missions and Supporting Systems
- ID DE T&E Requirements
- ID Existing DE T&E Capability
- ID DE T&E Shortfalls
- Scope Shortfall Resolution
- Prioritize Shortfalls
- Document Results (Roadmap and Final Report)

Denotes Modeling and Simulation Working Group (MSWG) Participation
Service Workshops

ID DE T&E Requirements

- **Air Force Workshop** (1-3 Dec 09)
  - 81 participants
  - 33 organizations

- **Army Workshop** (12-14 Jan 10)
  - 69 participants
  - 29 organizations

- **Navy Workshop** (9-11 Feb 10)
  - 49 participants
  - 28 organizations

Modeling and Simulation Working Group (MSWG)
Capability Call consists of four questionnaires to the DE community to assess what DE T&E capabilities currently exist.

Returned questionnaires were entered into the database for comparison with DE T&E requirements identified through Service Workshops.

Over 30 completed questionnaires received from 20+ organizations.
Solution Call

Scope Shortfall Resolution

- Release Solution Call (3 Sep 2010)
- Receive Solution White Papers (5 Oct 2010)
- Analyze White Papers to Scope Shortfalls

- Solution Call requested a short white paper from the DE community
- Government, industry, and academia participated
- Responses help DETEC determine cost, schedule, and risk of T-SS 2011 identified shortfalls
SAWG and SRG Review


- Services met on 31 October to validate shortfalls identified by the T-SS 2011
- Senior Analyst Working Group (SAWG) met on 19 November to establish initial priority of shortfalls
- Senior Review Group (SRG) composed of an SES from each service and a representative from the Electronic Combat (EC) Reliance Panel met on 20 January to finalize the T-SS 2011 shortfall priority
<table>
<thead>
<tr>
<th>#</th>
<th>Domain</th>
<th>Capability Shortfall</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HPM</td>
<td>Non-intrusive E-field and B-field probes</td>
</tr>
<tr>
<td>2</td>
<td>HPM</td>
<td>X-band surrogate narrowband threat source</td>
</tr>
<tr>
<td>3</td>
<td>HEL</td>
<td>CW irradiance measurement on surface moving target board, towed airborne target board, and actual target</td>
</tr>
<tr>
<td>4</td>
<td>HPM</td>
<td>C-band surrogate narrowband threat source</td>
</tr>
<tr>
<td>5</td>
<td>HPM</td>
<td>Multiple node wireless data acquisition system</td>
</tr>
<tr>
<td>6</td>
<td>HEL</td>
<td>Imagery of airborne targets</td>
</tr>
<tr>
<td>7</td>
<td>HEL</td>
<td>Front target surface temperature</td>
</tr>
<tr>
<td>8</td>
<td>HEL</td>
<td>Dynamic hazard analysis tool (M&amp;S)</td>
</tr>
<tr>
<td>9</td>
<td>HEL</td>
<td>Predictive avoidance and airspace deconfliction tools (M&amp;S)</td>
</tr>
<tr>
<td>10</td>
<td>HPM</td>
<td>Beam propagation in and near surfaces (M&amp;S)</td>
</tr>
<tr>
<td>11</td>
<td>HPM</td>
<td>THP/Builder integration (M&amp;S)</td>
</tr>
</tbody>
</table>
Conclusion

- T-SS 2011 identified 11 high priority capability shortfalls
- In process of documenting final results and delivering to the Test Resource Management Center (TRMC)
- Collecting Service endorsements of the T-SS 2011 results