DT&E's Perspectives on Making M&S and T&E Better Partners

Panel Summary

7 March 2006

Summary of Questions

Question Category (becomes an Issue)	# of Questions that fall into Category	Potential Activity to Address Issue	Priority	Actionee
Acquisition (Potential issue to address from these questions is development of a Test Strategy White Paper for Programs to leverage)	6	System vs. Capability Focus. Industry involvement in live-virtual system development. Difference between M&S Mast Plan and Sim Supp Plan. Motivation for PO to perform joint events in SDD with risk from uncertain models? (Funding for Multi-Service events?) Can DoD streamline acquisition process using M&S as enabler?		
Definitions	1	M&S Savings Metrics.		

Summary of Questions

Question Category (becomes an Issue)	# of Questions that fall into Category	Potential Activity to Address Issue	Priority	Actionee
Re-use	2	Manage re-use of DT&E and M&S assets through program life-cycle and/or across DoD Programs.		
Partnerships	3	List of avail M&S. Confidence of sims that model sub-systems of "other" contractors (Intellectual Property?) National/International Society supporting M&S		

Introduction
Mr. DiPetto

- Testers need to assist PMs to develop M&S strategies
- Ensure Accreditation in addition to V&V
- M&S must support T&E and SE
- M&S is only practical means of SoS capability testing
- Use Model – Test – Fix – Model approach
- Many cross-cutting issues exist that are beyond the reach of PMs & testers; OSD is addressing

Dr. Kai'liwai
AFFTC

- How does DT&E use M&S data in testing today?
  - Is M&S used to help determine how much testing is enough?
  - Are M&S data used to improve DT&E?
- How does the DT&E community feed test data to M&S community, and vice versa?
  - Are test data used to refine M&S Models?
- How is DT/M&S community working together in NCO/W?
  - Are there lessons learned that can apply to DT&E/M&S communities elsewhere?

Mr. Berard
WSMR

- Data Management
  - Cross Domain (class/unclassified) solutions
  - Access/Distribution Across the Distributed Domain
- Integrated Joint Processes (Data, Architecture, Models, Control, Scheduling)
- Enforcement of DoD standards and directives
  - Joint Testing Policy
- Configuration Management
  - Document Management, Networks, Applications, Terrain
- Persistent Multi-Level Secure Networks

Mr. Cameron
Boeing

- M&S is critical for successful DT&E of complex, net-enabled Systems of Systems
  - Requires robust application of M&S across the entire product life cycle
- M&S is available, today, to provide credible DT&E involving Live, Virtual, and Constructive elements
- Partnerships are key – both government/industry, and industry/industry
- Need to effectively deal with impediments
  - Conflicting programmatic/DT&E goals
  - Intellectual Property
  - Security
  - M&S “zealotry”

Mr. Hazlett
Raytheon

- Develop plans to better integrate M&S into design and T&E of future forces
- Create a opportunity to facilitate T&E and M&S exchange and interactions
  - Include specific topics such as Electronic Attack and C^4ISR
- Integrate M&S into development and acquisition programs in a value-added manner
- Integrate M&S into development and acquisition programs in a value-added manner to facilitate integrated development and T&E
- Streamline and update DoD testing security protocol to keep current with changing requirements to protect developmental capabilities
- Think about bringing in the next generation individuals

Common Themes

- Acquisition
  - Sharing/Use of data from M&S to T&E and from T&E to M&S
  - Mapping of M&S Capabilities to T&E Requirements
  - Model – Test – Fix – Model approach
- Definitions
  - Develop a common terminology across M&S and T&E

Common Themes

- Intellectual Property
  - How to share and control data/models?
  - Connectivity concerns?
- Security
  - How to deal with secure networks across government/industry boundaries?
- Partnerships
  - Is there a body required to foster technical interchange of ideas and develop proposals for standards?

Summary of Questions

Question:	What is the difference, if any, between the M&S Master Plan versus the Simulation Support Plan? Isn't the SSP meant to be the "M&S Master Plan" for a program?
Respondent:	Chris DiPetto
Answer:	The Acquisition M&S Master Plan is a broad over-arching plan, developed by representatives of all DoD components. It identifies obstacles which hinder effective and efficient use of M&S in acquisition, and lays out a set of 27 specific actions to address those obstacles. Simulation Support Plans are used by some program offices to document specific plans for using M&S within their particular program. Implementing the actions in the Acquisition M&S Master Plan should facilitate better M&S planning and execution by programs.

Summary of Questions

Question:	Is there any plan to establish reportable metrics on how M&S effort saved resources in time, dollars, and system design?
Respondent:	George Kai'liwai
Answer:	If there aren't plans to use reportable MS metrics, there should be. In developing MS capabilities we assume a certain ROI and generally get agreement from the program offices that they would use these MS capabilities as long as they don't have to pay for them. Whether they use the MS capabilities once we deliver them is a different matter altogether as the TE community cannot force these capabilities on our customers.

Summary of Questions

Question:	How can DoD streamline the acquisition process using M&S as an enabler, e.g. what architecture, standards, and tools can/could accomplish this?
Respondent:	George Kai'liwai
Answer:	We are embarking on an effort to define the Value Stream for our operations. This will help us to stream-line our operations, and improve upon the value we provide to our customers. Another way to potentially streamline the acquisition process is to deploy systems for evaluation, rather than embark on a operational test event. Obtain the operations test information from direct use in a conflict. One way to streamline testing is to deploy prototypes into the field and if possible conduct DT and OT in the field. This would require close coordination with the field commander.

Summary of Questions

Question:	What M&S capability will be "left behind" (reuseable) after the April event with Boeing & DMOC? (planning process, network connectivity, models, etc.)
Respondent:	George Kai'liwai
Answer:	Technical expertise is the primary aspect that we will walk away with. Particularly expertise in distributed testing.

Summary of Questions

Question:	Where can a PM go today to find a lit of all the M&S currently in use within DoD, to see what might be of use?
Respondent:	Jim Hazlett
Answer:	PMs should check with DMSO, and their service's modeling and simulation organizations, such as AMSO and NMSO. This should catch most of the M&S being used in support of acquisition programs and programs of record. As a double check, one should also run the list provided by the service MSO by the system commands (i.e., NAVSEA, NAVAIR, etc.). This should also catch the M&S being used at Warfare Centers. Finally, there is M&S that is being used by DoD that is not necessarily program-related (wargaming models, etc.). To catch this one should check with the war gaming departments at the service colleges, and at the doctrine commands and battle centers. MORS and several other professional organizations do keep some databases on DoD M&S use.

Summary of Questions

Question:	Why establish a DoD society and not a National (International?) organization? Probably more potential members outside DoD than within?
Respondent:	Jim Hazlett
Answer:	Agree that a modeling and simulation society should be more inclusive than just DoD, but it should also be organized to include functionally-focused components (service, DT&E, OT&E, acquisition, open source, gaming, etc.) There is a strong argument to make this a "virtual" organization, due to the nature and diversity of the subject area. A strong web-based effort would probably be the best way to get this going. There could be both national and international branches, where one could matrix themselves in, as appropriate. The national-international linkage should be such that it accounts for export control issues, etc.

Summary of Questions

Question:	What can be done (given need for flexibility in DT&E and rigorous VV&A for OT&E and other issues) to facilitate re-use of DT&E assets through the remainder of the program life-cycle?
Respondent:	Jim Hazlett
Answer:	As spiral development continues to become the more common way of development, acquisition, and testing, the line between D and O T&E, and M&S will blur. We are now facing rapidly evolving threats (i.e., Improvised Explosive Devices (IEDs) and asymmetric warfare) that will require a blend of DT&E, DM&S, and OT&E and OM&S. We will see "build a little, model a little, test a little, field a little (or a lot)...and repeat." FCS and other future programs are likely to evolve steadily over their lifespan, and should be designed to accommodate this reality.

Summary of Questions

Question: There is much DoD talk about distributed environments for systems engineering and test. How can we bring industry into the planning, so in the future industry will be able to propose and use persistent live-virtual-constructive environments in systems development?

Respondent: Steve Cameron

Answer: The very best thing to do would be to ensure industry and government are involved together from the very beginning. We have learned in the past that having the government develop an environment, then tell industry to use it doesn't work well. It is important to treat both industry and government as partners during the requirements stage for such an environment as well as during its actual development. Industry specific issues, such as the protection of Intellectual Property, need to be treated as a concern for all team members (government and industry), and treated up front with the rest of the design requirements. In JMASS, we saw that the government can't do it on its own, and in ACD&D we learned industry can't do it on its own. The answer is "combined (industry/government) development from requirements to deployment."

Summary of Questions

Question: You said that "LabNet enables ad hoc simulation networking." Why "ad hoc" vice "persistent?"

Respondent: Steve Cameron

Answer: I used the term “ad hoc” to mean a particular user can configure LabNet however needed for a particular use. This ability allows us to conduct distributed M&S to virtually any security level. This particular configuration can then remain continuously available (persistent) for as long as the user requires.

Summary of Questions

Question:	What motivates a System PO to conduct a Joint distributed event during System Development to find bad news (potentially) with M&S tools that are uncertain and networks that are difficult to establish?
Respondent:	Steve Cameron
Answer:	This shouldn't become an issue of forcing people to use M&S. Program Managers will use M&S when it helps them best balance/manage cost, schedule, and performance. Instead, we should be focusing on helping a Program Manager determine when and how to use M&S. One glaring hole in this capability, is that we have never really been able to truly show the worth of M&S (in advance of its use…so its use can be weighed from a cost/benefit perspective). Something perhaps easier to do is to create a better decision template for M&S, such as the Acquisition M&S Master Plan is suggesting.

Summary of Questions

Question:	In your Virtual WarFare Center, your slide shows it can simulate AEGIS system. How do you validate the AEGIC model (which Lockheed Martin maintains), or are you partnering with them? For example, if it is not a Boeing product, what is the confidence of non-Boeing product simulations in your Virtual Laboratory?
Respondent:	Steve Cameron
Answer:	This is a Lockheed Martin model used on a program with which Lockheed Martin was a partner, and is used when the agreement for its use applies. In the general sense, industry obtains validation of models to the satisfaction of the customer for that simulation. For systems in our simulations which we do not produce, our company attempts to use models that have been validated by the Customer.

Summary of Questions

Question: I note you mentioned that an impediment to testing was the inability to achieve statistical significance. Do you really mean this?

Respondent: Tom Berard

Answer: Yes. A data point of one is hardly "statistically significant." I'd call that a "demonstration." That does not mean that there isn't a significant amount of information gained from such a demonstration. It's a great learning experience. I also believe that if we have done our job correctly and used M&S to characterize the test event, it can be used to validate the models used.

Summary of Questions

Question:	Who funded the multi-service distributed event? Can you speak to the coordination required to make it happen?
Respondent:	Tom Berard
Answer:	Air Force, Navy, Army paid for their service contributions. JFCOM was not a bill payer for this event.