



How Systems Engineering (SE) can support Developmental Test & Evaluation (DT&E)?

How Test & Evaluation can support Systems Engineering (SE)?

Navy Panelist Response

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Ways SE can support DT&E - # 1



- Include DT&E in SE team that manages requirements and translates them to technical specifications.
 - Disparate interpretations of performance measures for test indicate insufficient early coordination of program requirements.
 - T&E provides results of performance measures and does not participate in negotiation of trade space.
 - Written correctly, tech specs would ensure technical and operational T&E definitional needs are clearly set, reducing disputes on what constitutes requirements.

Ways SE can support DT&E - # 2



- Establish a lessons learned and best practice forum for Systems Engineering Plans (SEP) to generate an effective planning tool for DT&E (and SE).
 - Perception is the development process and structure of the SEP is not effectively implemented or enforced, resulting in inconsistent documentation.
 - T&E elements in OSD SEP Preparation Guide may not be as useful as they need to be.
 - Develop improved SEP guidelines for T&E aspects as needed.

Ways SE can support DT&E - # 3



- Require cross training and rotational assignments between SE and DT&E communities to improve integration, cooperation, and understanding.
 - Perception that SE and DT&E are separate communities who acknowledge each other's importance but lack effective collaborative processes and procedures.
 - Workforce limitations and culture of “doing more with less” generates smaller teams resulting in less collaboration between skill sets.
 - Cross training can help attack issue from two perspectives
 - Broader knowledge set within constrained workforce.
 - Recognition of what T&E expertise adds to team and when it is needed.

Ways SE can support DT&E - # 4



- Identify how DT&E and OT&E (i.e. Integrated T&E) can be better used to help SE community assess Interoperability.
 - Interoperability assessment, especially at the System of Systems level, presents a major challenge.
 - DoD is still working to understand and develop appropriate evaluation processes.
 - - Representative joint mission threads/environments and CONOPS are key to assessing performance.

How can DT&E support SE?



- Fulfill Verification in SE
 - Sync TEMP with SEP on CTP resolution for technical reviews.
 - Participate in RAM growth plan development.
 - Early in development stress components and systems to anticipated operational limits.
 - Track status of all deficiencies identified during test.
 - Formalize test result reporting within the program to quickly provide feedback across all working levels.
- Bridge Verification to Validation:
 - *DODI 5000.02, EMD Phase: “Developmental and operational test activities shall be integrated and seamless throughout the phase.”*
 - Link Operational Test objectives with measures of technical performance early in requirements generation.
 - Relate DT results to impact on COI resolution.
 - *DODI 5000.02, “T&E ... should be reported in terms of operational significance to the user.”*

Ways T&E can support SE



- DT tests spec compliance, OT test operational environment
- Use of Joint Mission Threads across life cycle provides realistic R&D and test scenarios.
- Getting OT involved early in SE process helps identify operational issues that can be corrected early in the system design. Full IT helps solve this.
 - Issues
 - Does the OTA really understand fleet need
 - Is OTA staffed to develop test requirements that early in program life
- Potential for sharing of models, simulators, labs, scenarios across SE and T&E
 - Cost savings and reduction of conflicting analysis environments



Questions?