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Understanding the Mission – A "How-To" Guide for MBT&E Practitioners

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Department Manager and Senior Military Analyst

15 March 2011

Purpose and Agenda

- Purpose: To explain the process and logic for specifying an understanding of the mission (MBTE Step 1)
- Agenda
  - Introduction
  - Where the Mission fits in the MBT&E framework
  - Warfighting 101 – Analyzing the Mission
    - Mission? What Mission??
    - Analyzing the mission
    - Decomposing the mission into tasks
    - Determining conditions and standards (i.e. MoPs and MoEs)
  - Translating tasks from native language to common language
    - Authoritative Task Lists
    - Capturing the results
    - An alternative approach
  - Questions to ask

Mission Role in MBTE

Why? - Acquisition Initiatives
Common Focus on Mission Capability

DoD

DOD 5000.1 – "The primary objective of Defense acquisition is to acquire quality products that satisfy user needs with measurable **improvements to mission capability**…"[1]

JCS

Joint Capabilities Integration and Development System – The primary objective of the JCIDS process is to ensure the capabilities required by the joint warfighter are identified … **in order to successfully execute the missions assigned.**"[2]

DOT&E

Director, Operational Test and Evaluation – "The evaluation of operational effectiveness is linked to **mission accomplishment.**"[3]

Goal: T&E Focused on Mission Capability

1. Office of the Under Secretary of Defense, Acquisition, Technology and Logistics, Department of Defense Directive Number 5000.1, 12 May 2003.
2. Office of the Joint Chiefs of Staff, Chairman of the Joint Chiefs of Staff Instruction 3170.01G, 1 Mar 09.
3. Memorandum, OSD DOT&E, subject: Reporting of Operational Test and Evaluation Results, 6 Jan 10.

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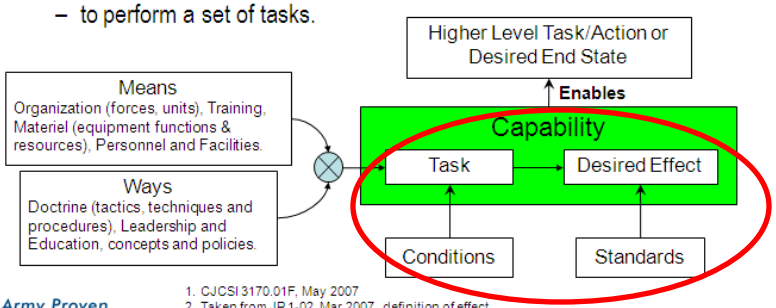
What? - Framework Building Block

Capability[1] – The ability to achieve a **desired effect** [or result, outcome, or consequence of a task[2]] …

- under specified **standards and conditions**
- through a combination of **means and ways**
- to perform a set of tasks.



1. CJCSI 3170.01F, May 2007
2. Taken from JP 1-02, Mar 2007, definition of effect.

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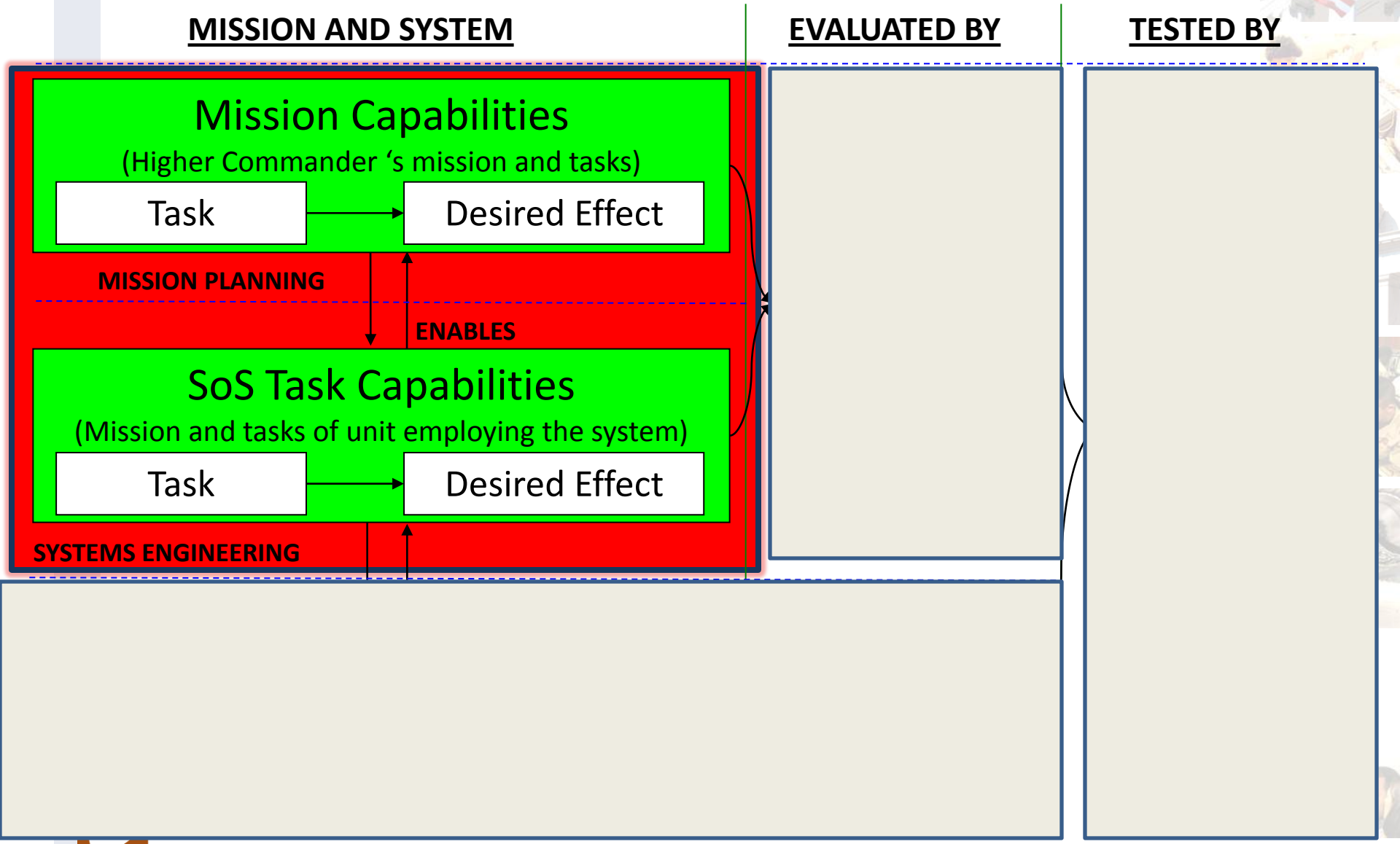
MBT&E Framework – Where's the Mission?



Mission? What Mission??

- For MBT&E purposes, want to know "What" the unit employing the system under test is supposed to do, and "Why".
  - In the context of at least the next higher level headquarters mission
  - And a broader operational context (i.e. Operational Environment (OE) and Concept of Operations (CONOPS))
- What are some potential sources for the Mission?
  - Requirements documents from JCIDS/CBA analysis
  - Army Functional Concept (AFC) or Concept Capability Document (CCD)
  - CONOPS based on ongoing operations
  - Approved Defense Planning Scenarios (DPS) or Army Scenarios based on DPS – Often used for Analysis of Alternatives (AoA)
  - Lower level, higher fidelity vignettes based on above
  - Other CONOPS directed or approved for use by appropriate authority (i.e. Test Director, MDA, etc.)

Analyzing the Mission

- FM 5.0, The Operations Process, dated March 2010, describes the Military Decision Making Process (MDMP).
  - Mission Analysis is step 2 of the MDMP

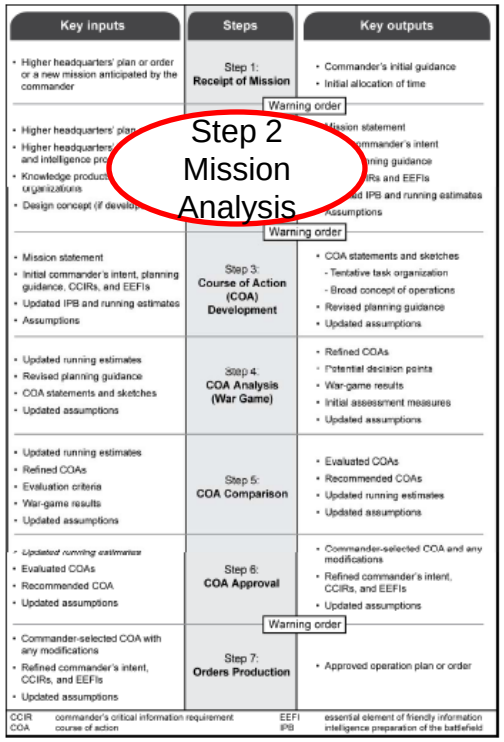
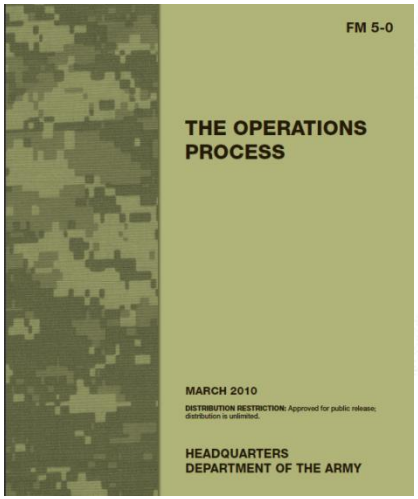


Figure B-1. The steps of the military decisionmaking process



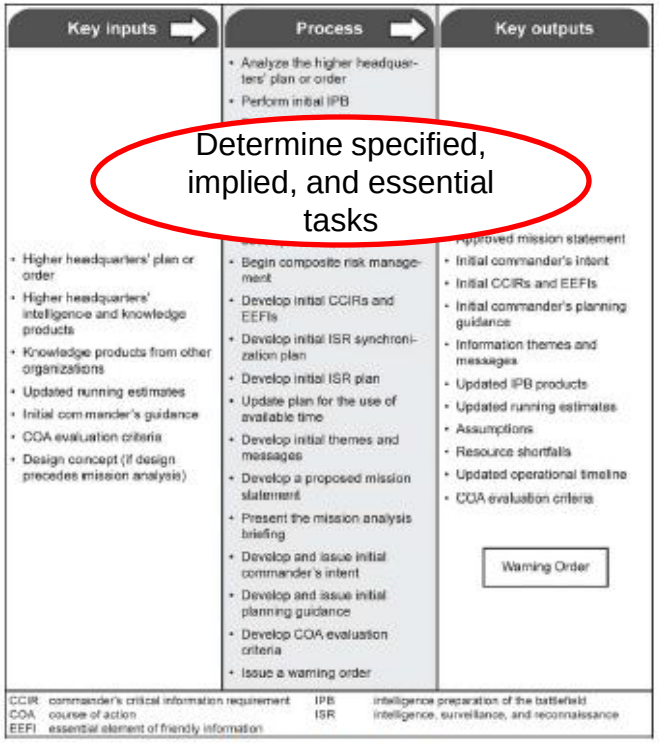


Figure B-2. Mission analysis

Decomposing the Mission into Tasks

Determine Specified, Implied and Essential Tasks

- The "what" of a mission statement is always a task.

- Analysis of the higher headquarters' order and commander's guidance identifies specified and implied tasks.

- In the context of operations, a task is clearly defined as a measurable activity accomplished by Soldiers, units, and organizations that may support or be supported by other tasks.

- Essential tasks are derived from the list of specified and implied tasks, and incorporated in the restated mission.

A specified task is a task specifically assigned to a unit by its higher headquarters

An implied task is a task that must be performed to accomplish a specified task or mission but is not stated in the higher headquarters' order

An essential task is a specified or implied task that must be executed to accomplish the mission. Essential tasks are always included in the unit's mission statement

Determining Conditions and Standards

Conditions

- Definition: (joint) Those variables of an operational environment or situation in which a unit, system, or individual is expected to operate and may affect performance. (JP 1-02)
- Condition variables that may effect performance are typically identified during the Intelligence Preparation of the Battlefield (IPB) process and further refined as a result of Course of Action (COA) Analysis, or Wargaming.

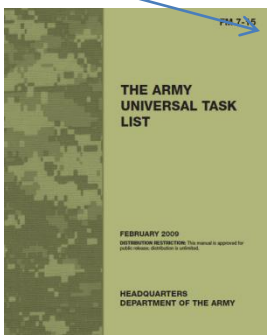
Standards

- Definition: A quantitative or qualitative measure and criterion for specifying the levels of performance of a task.(FM 7-0)
- For Mission Based Testing and Evaluation we want to determine Measures of Effectiveness (MoE) to measure whether a task had or is having the desired effect; and, Measures of Performance (MoP) to determine whether task performance meets or exceeds the minimum criterion for performance.
- Standards are derived from analysis of what it will take to accomplish assigned mission and tasks – normally via the wargaming process.

Translating Tasks into ATL Tasks

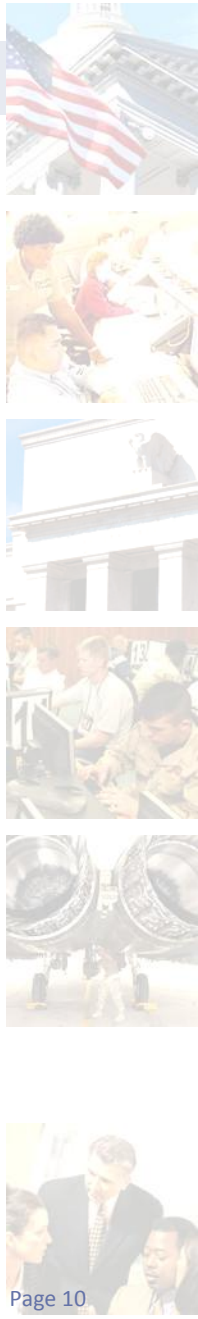
- Sample task list from mission analysis process
  - Specified Tasks
    - Move along Route Charlie
    - Occupy Assembly Area (AA) Mike
    - Secure roads and bridges leading into and out of Town in order to prevent infiltration by insurgents
  - Implied Tasks
    - Maintain situational awareness
    - Recon Route Charlie
    - Detect, locate and clear IEDs
    - Recon AA Mike
    - Maintain perimeter security
    - Establish traffic control points

- Corresponding tasks drawn from AUTL and other ATLs
  - ART 1.3.3 Conduct Tactical Convoy
  - ART 1.5.1 Occupy an Assembly Area
  - ART 7.5.19 Isolate an Enemy Force
  - ART 6.4.2 Maintain constant situational awareness
  - ART 2.3.3.1 Conduct a Route Recon
  - ART 1.6.1 Overcome barriers, obstacles, and mines
    - ART 6.12.3 Conduct IED Operations
  - ART 2.3.3 Conduct an Area Recon
  - ART 6.5.3.3 Establish Perimeter Security
  - ART 6.5.3.2 Establish Checkpoints



Capturing the Results

- How is it done now?
  - Manual look up?
  - Cut and paste from requirement documents?
  - Captured in PowerPoint, Word Tables, Excel Spreadsheets?
- Why this may not be sufficient
  - Manual look up
    - Currency of authoritative sources – ATL's updated regularly
    - Time consuming process
    - Increased chance of omission and/or fat-finger errors
  - Cut and paste from requirement documents
    - Conditions may have changed since publication
    - Potential for adopting faulty or incomplete analysis
  - Captured in PowerPoint, Word Tables, etc.
    - Suitability for Re-Use and/or collaborative development

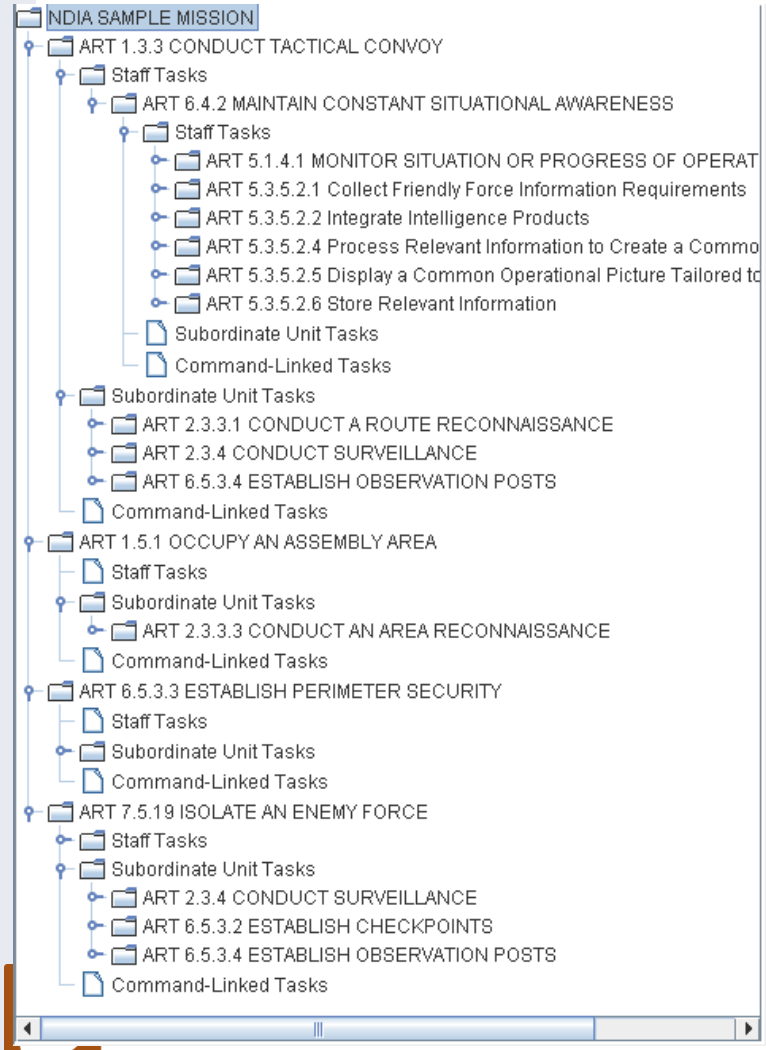


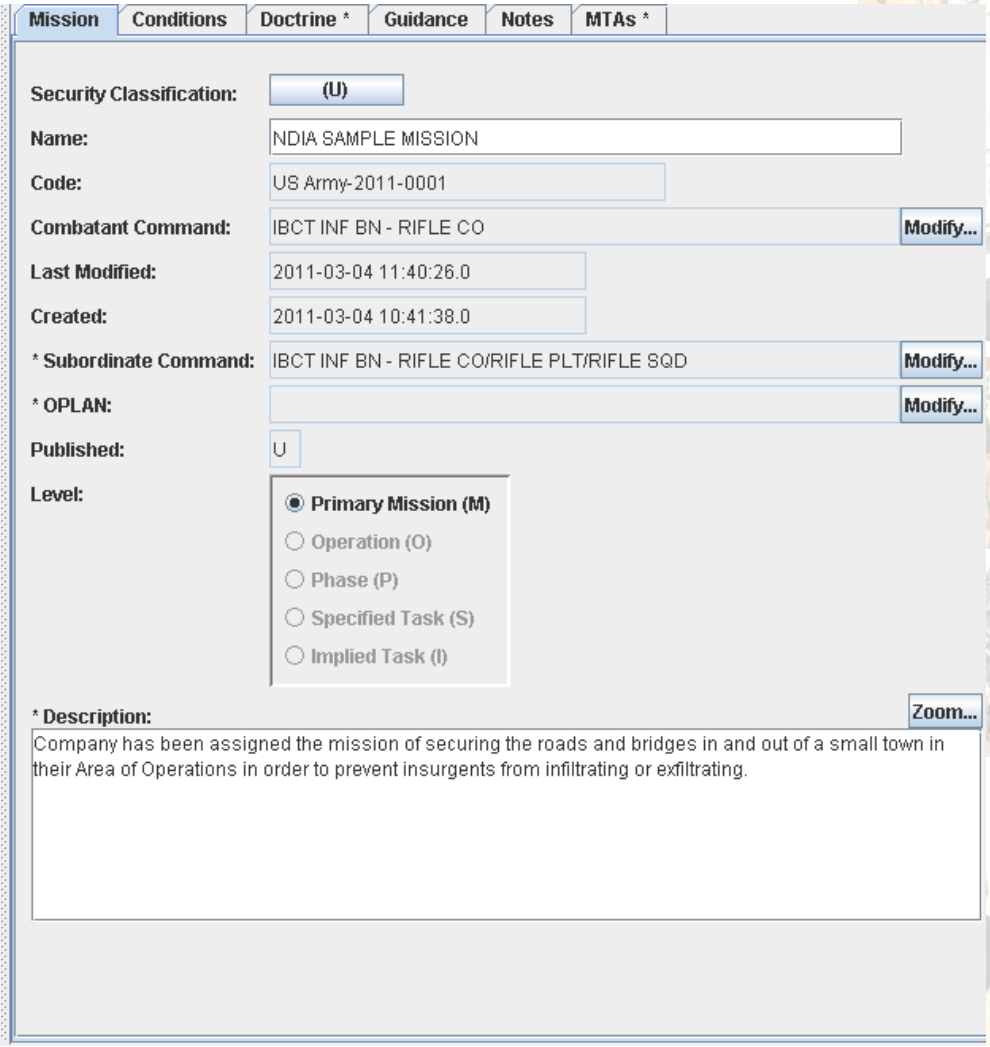
An Alternative Approach

- Online, collaborative knowledge capture tool
  - Use to support the following functions:
    - Determine and document mission requirements in the form of tasks, conditions and standards for systems under test and associated operational context
    - Develop and document planning for Test and Evaluation events
    - Record and maintain task execution results
    - Record and maintain resulting assessment for each task
  - Participation and permissions limited to members of authorized user groups

How it Works

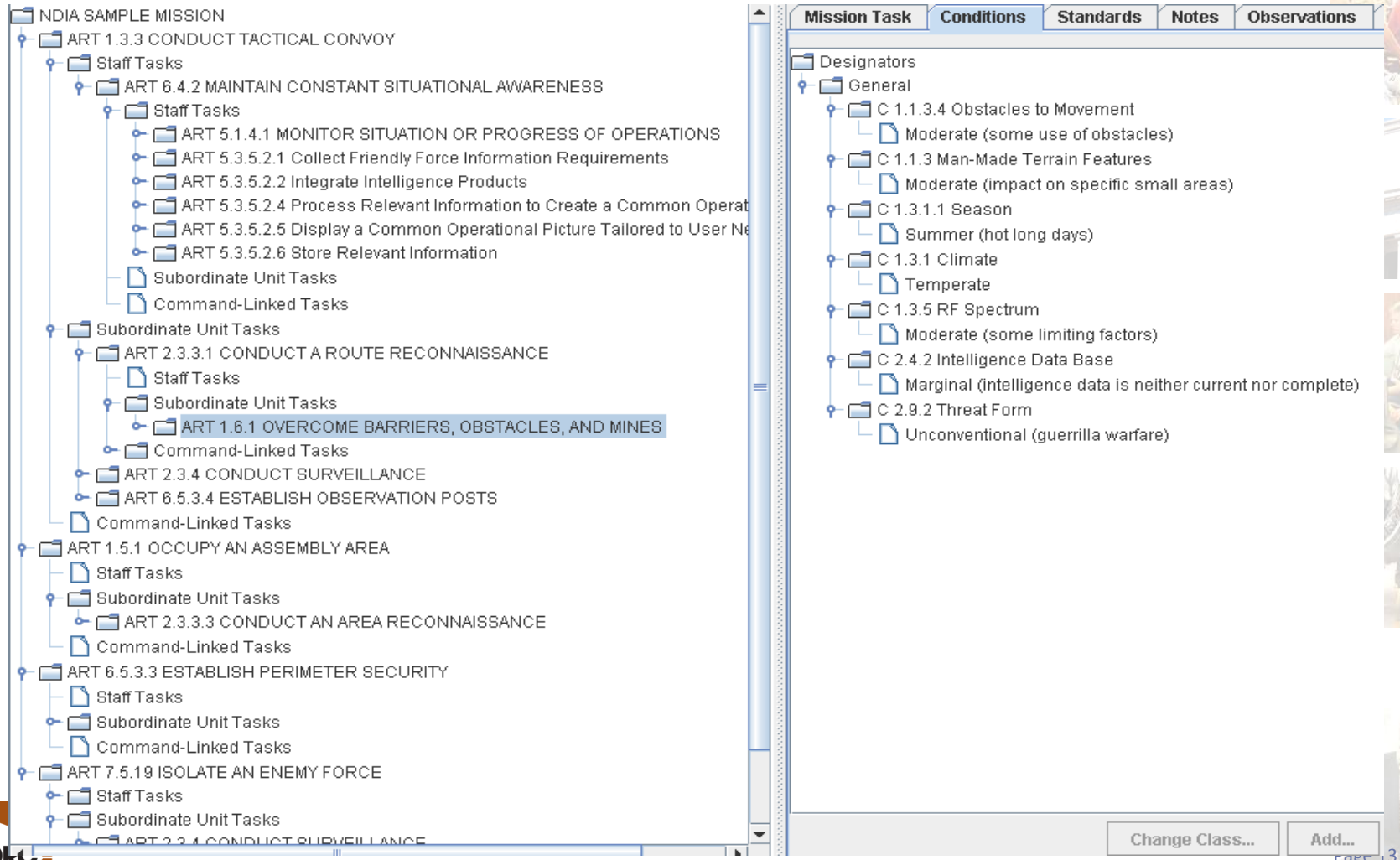
Determine and document mission requirements – Converting to ATL Tasks





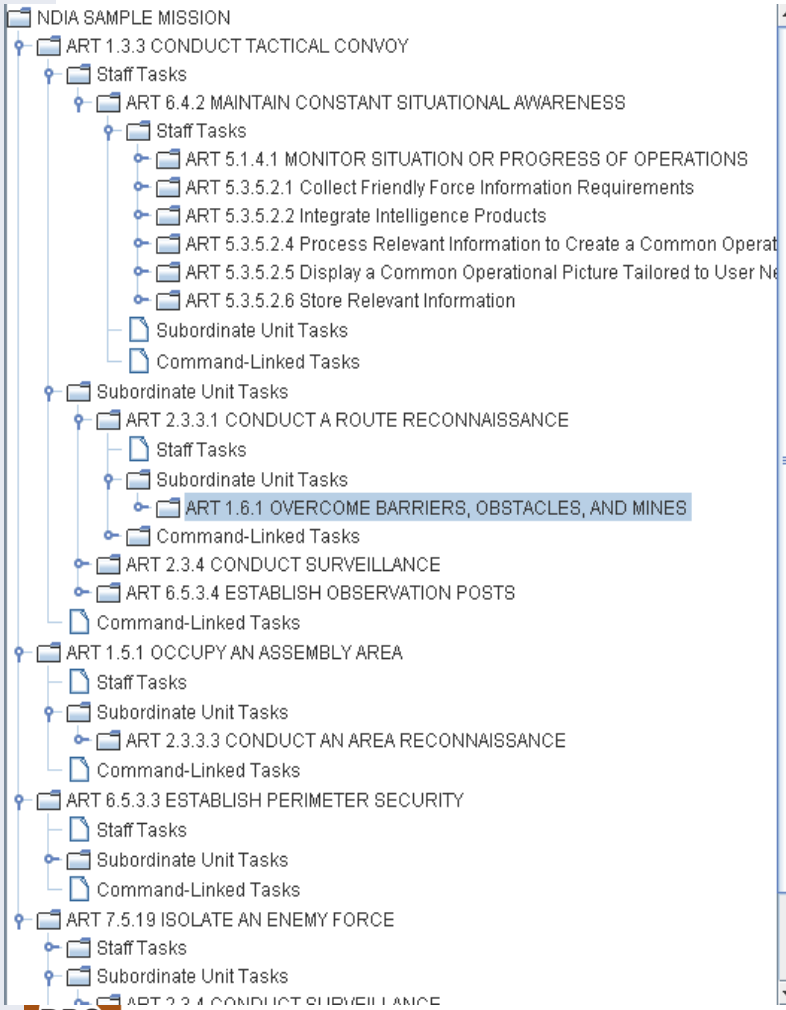
How it Works cont.

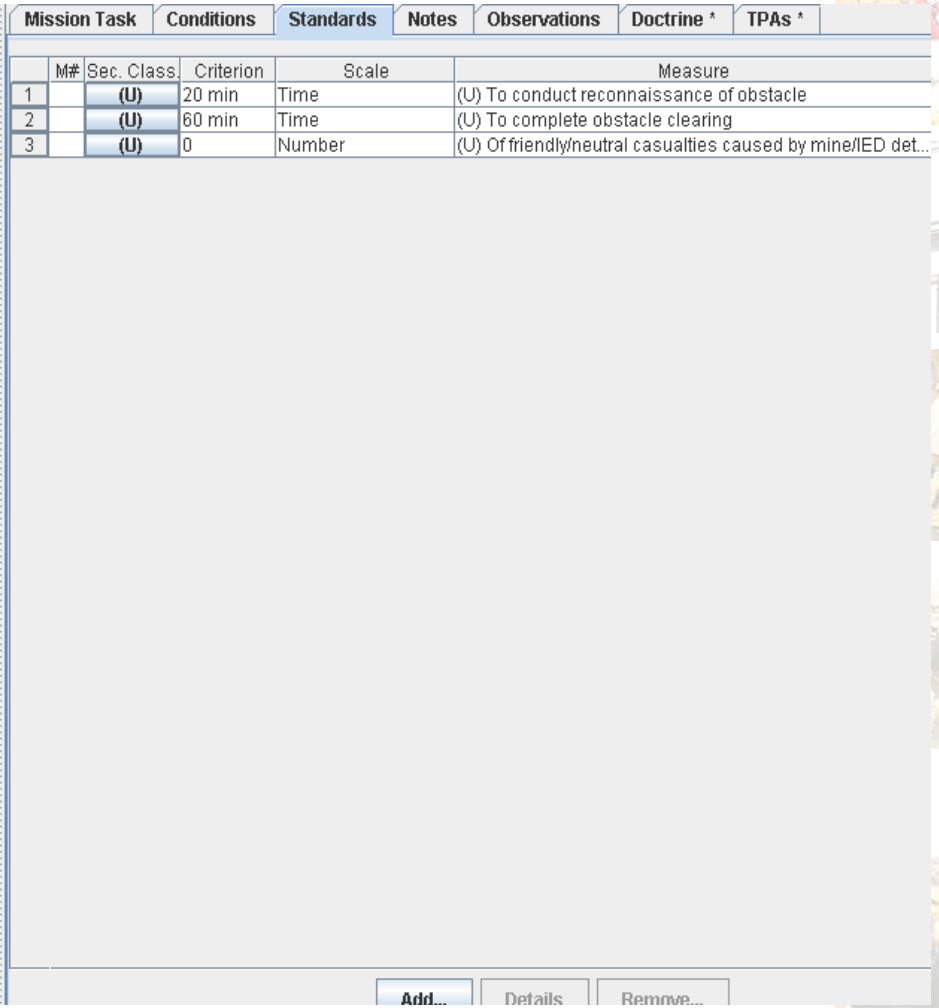
Determine and document mission requirements – Conditions



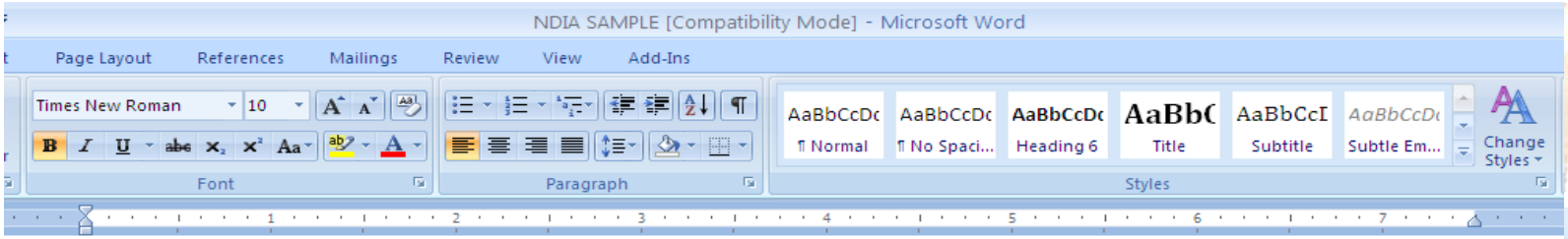
How it Works cont.

Determine and document mission requirements – Standards





Mission Task Report in TEO Format



Mission: (U)NDIA SAMPLE MISSION

Task: (U)ART 1.3.3 CONDUCT TACTICAL CONVOY

Responsible Organization: IBCT INF BN - RIFLE CO

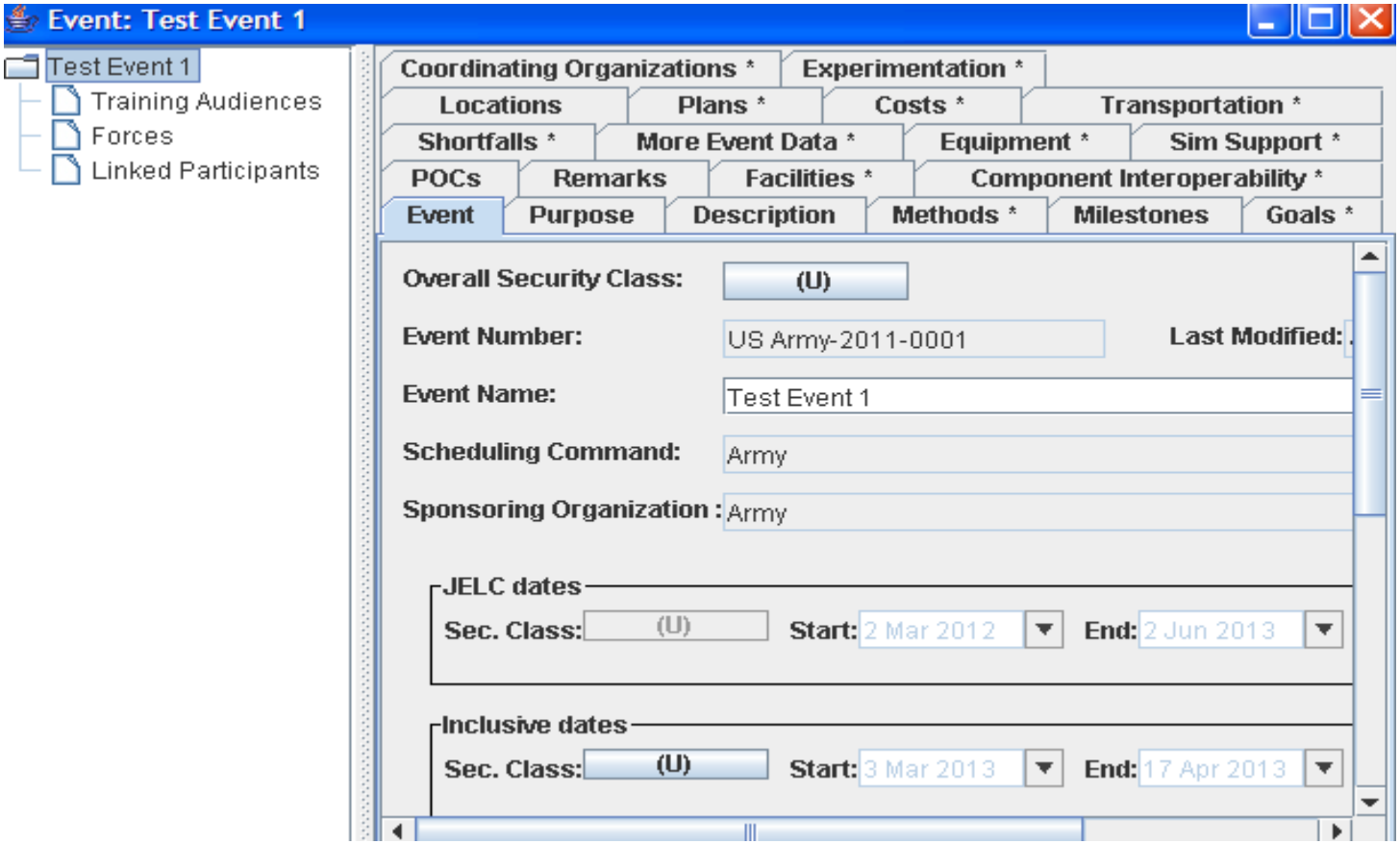
Description: 1-52. Conduct tactical convoys by employing one or a combination of three types of column formations: open, close, and infiltration. Tactical convoys are combat operations in which forces and materiel are moved overland from one location on the battlefield to another while maintaining the ability to aggressively respond to enemy attempts to impede, disrupt, or destroy elements of the convoy. (FM 55-30) (ALMC)

Standards:

M#	Criterion	Scale	Measure
M1	(U)	Y/N	(U) The SIR that prompted the conduct of reconnaissance was answered.
M2	(U)	Y/N	(U) Reconnaissance system/force orients on the reconnaissance objective.
M3	(U)	Y/N	(U) Recon system/force reports all information rapidly and accurately.
M4	(U)	Y/N	(U) Recon mission completed no later than time specified in the order.
M5	(U)	Y/N	(U) Support requirements for each reconnaissance asset are identified.
M6	(U)	Y/N	(U) Unit maintains continuous reconnaissance by employing multiple means.
M7	(U)	Time	(U) From receipt of tasking until reconnaissance assets are in place.
M8	(U)	Time	(U) To provide answers to IR/PIR to requesting agency.

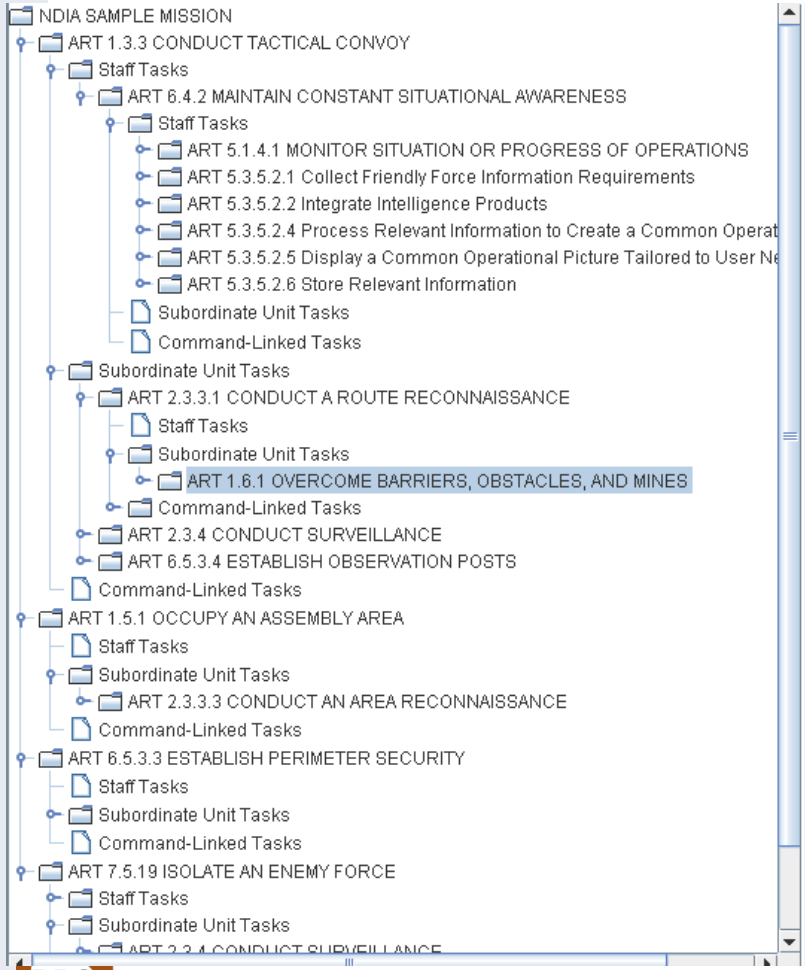
How it Works cont.

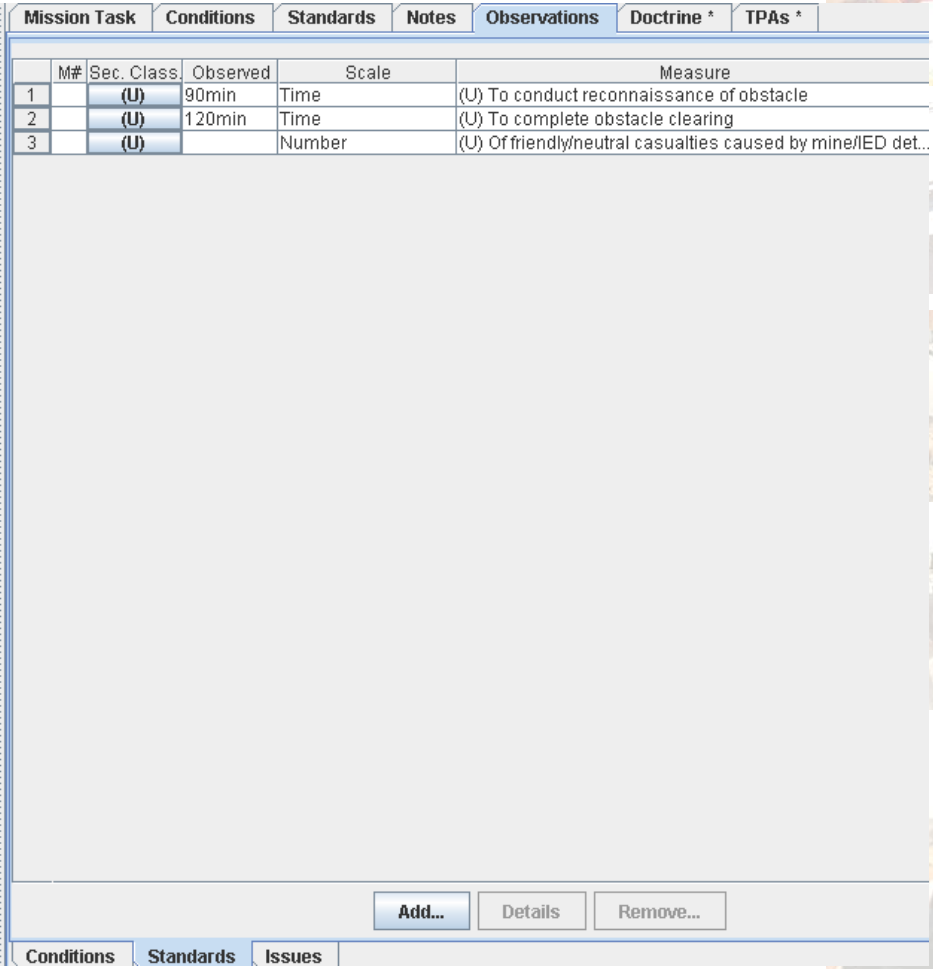
- Develop and document planning for test events



How it Works cont.

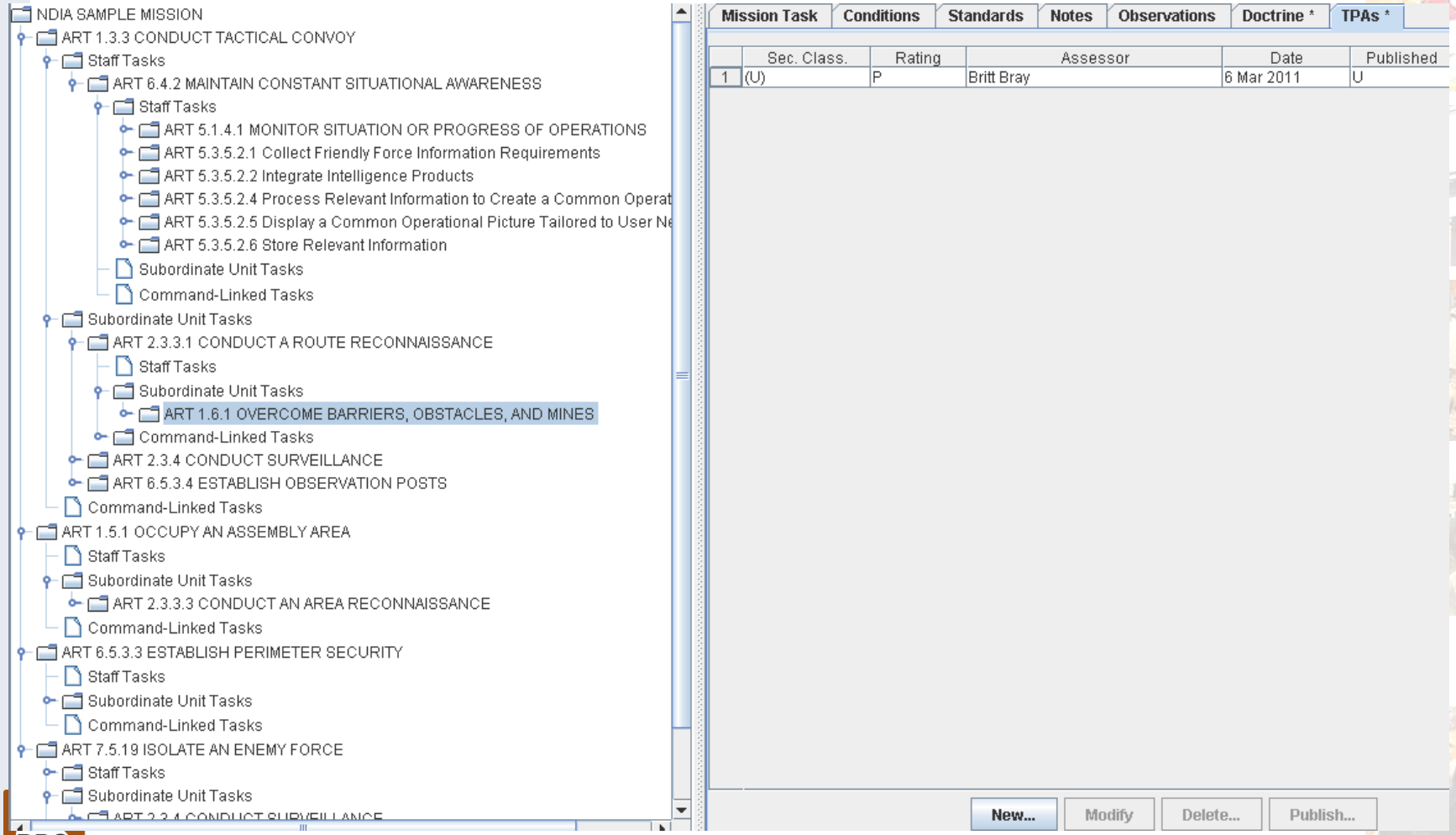
Record and maintain task execution results





How it Works cont.

Record and maintain task assessment results



Questions to Ask

- To properly describe mission context for Systems under test
  - What is the source scenario/vignette/CONOPS for the mission?
    - Is it the same CONOPS used to develop requirements for the system?
    - If not, why not? Valid reasons might include guidance from on high, changes in assessment of current and/or future operating environment, etc.
  - Are tasks already identified in one or more of the requirements documents (i.e. FAA, FNA, ICD, OMS-MP)?
    - As the independent evaluator, are you satisfied that all relevant tasks are included?
    - Do the tasks include conditions and standards? If not, where do they come from?
  - Are the tasks decomposed to level where they can be mapped to system attributes and functions?
    - Are they linked to other tasks and the mission? If not, how will you determine and justify an assessment of mission impact?

Summary

- Major Points:
  - Understanding the Mission is essential to MBT&E. Selecting the right Mission is also essential
  - The process for analyzing and specifying the Understanding of the Mission using a common, authoritative language is well defined and doctrinally based
  - Automated tools are available to assist in capturing, maintaining, managing and sharing results of Mission Analysis and conversion to ATL tasks as well as other T&E related functions
- Recommendations/Way Ahead:
  - Adopt and codify a "how-to" guide for specifying Mission Understanding
  - Evaluate and select existing GOTS and COTS tools to facilitate knowledge capture
  - Coordinate and collaborate with Joint and Service requirement communities (e.g. JFCOM/JS J7, TRADOC ARCIC, TRAC, etc) to clarify desired format for Scenario/CONOPS products

QUESTIONS?

FOR ADDITIONAL INFORMATION OR QUESTIONS PLEASE CONTACT:
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