

MSETT Ltd

CAX Methodology

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Introduction

- MSETT's new CAX and Wargaming methodology is based on Service Oriented Simulation and Project Management Tools.
- It is a complete methodology which can generate tailor made solution for different kind of services, operational levels, areas of interest and budgets.
- The basic idea is a modular schema that can be very flexible and can meet all kinds of requirements in short terms.
- This methodology is the stepping stone for an innovative and budget based tool called Fast Preparation CAX (FPCAX)
- For developing this methodology, MSETT used:
 - NATO's CAX management modules and methodology
 - Prof. Erdal Cayrci and Dr Dusan Marincic book, "Computer Assisted Exercises and Training, A Reference Guide" (Willey, 2009)
 - RAND Corporation papers and projects regarding Wargaming and Operational Research
 - MSETT's experience and knowledge in CAX, IT and Operational Research



The basic advantages of the methodology are:

- Short preparation time (scheduled without meetings and long discussions).
- Capability of contacting a CAX or a Wargame related on the client's budget.
- Training Audience Evaluation method.
- Simulation with different levels of realism.
- Low cost solutions for technical support for CAX and Wargaming architectures.
- Value added services after the CAX or Wargame execution.
- Simulation reliability methods.
- Game Theory models for operational planning.



- The whole methodology is divided in five Phases and every Phase is divided in Tasks, every task in modules and finally every task maybe divided in Steps.
- The CAX / Wargame preparation and organizing is faced as a unique project that is held by Task Groups.
- During the Execution Phase Task Groups personnel can be transformed to specific Response Cells, EXCON (Exercise Control Group), SITCEN (Situational Center) etc.



MSETT CAX Methodology Phases

- **Phase 1: *Preparation – Planning***
- **Phase 2: *Organizing***
- **Phase 3: *Training & Execution***
- **Phase 4: *After Action Review & Lessons Learned***
- **Phase 5: *Training Audience Evaluation & Exercise Optimization***

Phase 1 Tasks & Modules:

Task 1.1: Exercise Project Planning

Module 1.1.1: *Scenario Requirements Analysis*

Module 1.1.2: *Scenario Scripting*

Module 1.1.3: *Timetables and Project Planning*

Module 1.1.4: *Architecture Definition*

Module 1.1.5: *Technical Solution*

Module 1.1.6: *Budgets and Costs*

Phase 1 Modules:

Task 1.2: Objectives

Module 1.2.1: *Exercise Objectives Definition*

Module 1.2.2: *Training Objectives Definition*

Module 1.2.3: *Simulation Objectives Definition (Realization)*

Task 1.3: Task Groups Organizing & EXPLAN

Module 1.3.1: *Task Groups Definition and Manning Plan*

Module 1.3.2: *Task Groups Timetables*

Module 1.3.3: *Main Exercise Plan*

Preparation – Planning Phase (1)

Task Groups

Task Group1: *Operational - Planning Group*

Task Group Manager: **Exercise Director**

Personnel: **Operational Planners, Support Personnel, CAX Experts**

Task Group2: *Support Group*

Task Group Manager: **Exercise Financial Manager**

Personnel: **Financial and Logistics Personnel, Operational Planners, Support Personnel, CAX Experts**

Task Group3: *Scenario – Database Group*

Task Group Manager: **Scenario & MEL/MIL Manager**

Personnel: **Operational Planners, Simulation Models Database Experts, CAX Experts, Support Personnel.**

Preparation – Planning Phase (1)

Task Groups

Task Group4: Technical (CIS – C2 – SIM) Group

Task Group Manager: **Exercise Technical Manager**

Personnel: **CIS – C2 – C4I Experts, Simulation Models Experts, CAX Experts, Support Personnel.**

Task Group5: Exercise Control Group

Task Group Manager: **Coordination Manager**

Personnel: **Operational Planners, CAX Experts, Support Personnel**

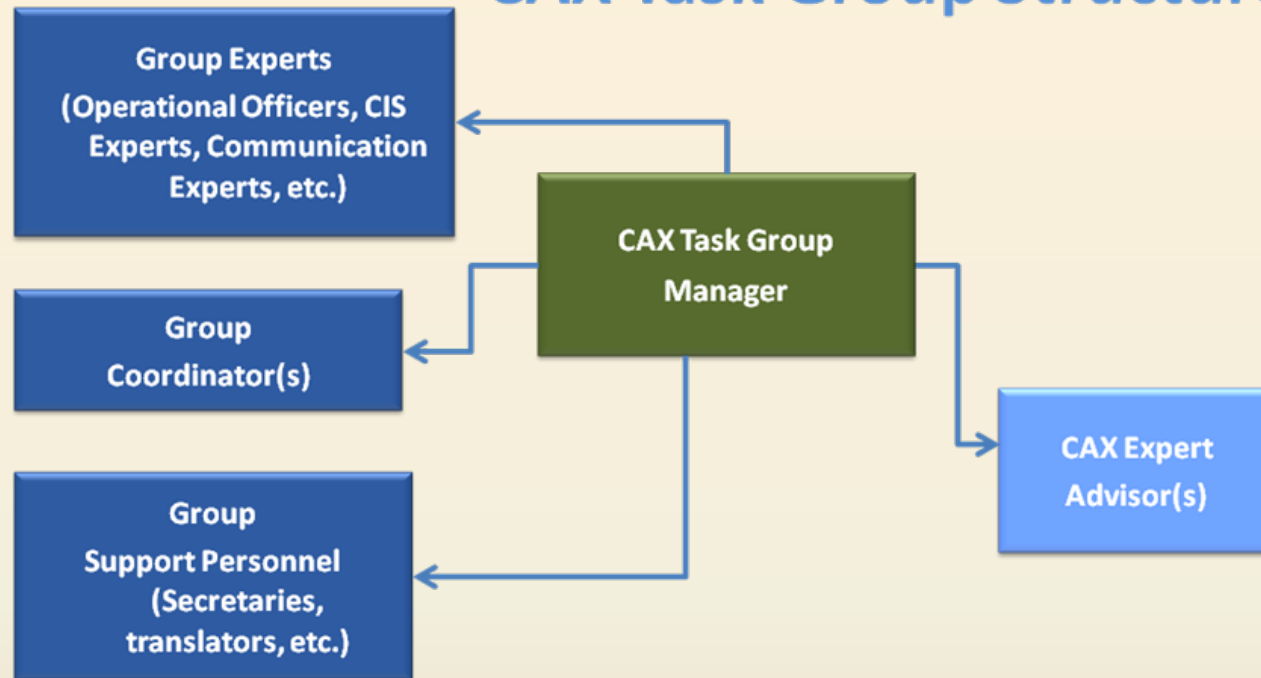
Task Group6: Experts – Mentors Group

Task Group Manager: **Scientific Coordination Manager**

Personnel: **CAX Experts, Operational Planners, Strategic Analysts, Scientific Advisors, Operational Consultants, Support Personnel**

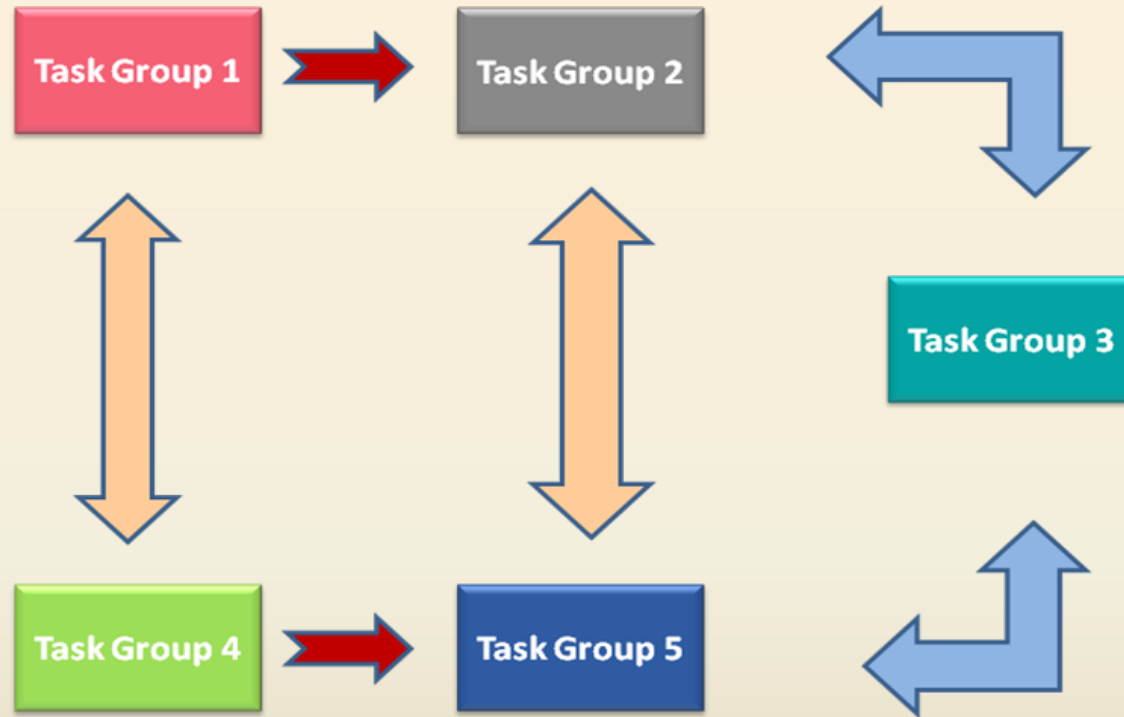
Preparation – Planning Phase (1)

CAX Task Group Structure



Preparation – Planning Phase (1)

Task Groups Working Process



Organizing Phase (2)

Phase 2 Tasks & Modules:

Task 2.1: Scenario & Database Development

Module 2.1.1: *Scenario Requirements for Simulation*

Module 2.1.2: *Geopolitical Conditions Representations*

Module 2.1.3: *Maps and Geo References for Simulation Model (s) Terrain*

Module 2.1.4: *Entities and Targets Analysis (Tactical, Operational, Strategic)*

Module 2.1.5: *Relational Databases Planning*

Module 2.1.6: *Modeling Methodology for Simulation Entities*

Module 2.1.7: *Simulation Model(s) Capabilities and Restrictions Analysis*

Module 2.1.8: *Realization Process (Rational & Irrational Approach)*

Module 2.1.9: *Simulation Model Database preparation, building, testing, evaluation and documentation*

Module 2.1.10: *Simulation Trials*

Module 2.1.11: *Simulation Model (s) Database Rebuilding and Final Testing*

Module 2.1.12: *Scenarios' and Databases Final Evaluation*

Organizing Phase (2)

Phase 2 Tasks & Modules:

Task 2.2: Development for the Technical Solution

Module 2.2.1: CAX Architecture Equipment Requirements

Module 2.2.2: Distributed CAX and Distributed Simulation Technical Coordination

Module 2.2.3: Networking and Security

Module 2.2.4: Simulation Models Technical Support

Module 2.2.5: C2 Systems Administration and Usage

Module 2.2.6: C2 – Simulation Models Interoperability

Module 2.2.7: EXCON Command & Control Process

Module 2.2.8: TA Command & Control Process

Module 2.2.9: CAX Support Tools and Software

Module 2.2.10: CAX Support Tools – Simulation Models Interoperability

Module 2.2.11: CAX Support CIS Systems



Phase 2 Tasks & Modules:

Task 2.3: Virtual Machines, Service Oriented CAX and Cloud Computing

Module 2.3.1: *Service Oriented CAX Management (procedures)*

Module 2.3.2: *Cloud Computing Configuration Process*

Module 2.3.3: *Virtual Machines Configuration Process*

Module 2.3.4: *Equipment and Software Requirements for Virtual Machines and Cloud Computing*

Phase 2 Tasks & Modules:

Task 2.4: Real Life Support Management Planning



Phase 3 Tasks & Modules:

Task 3.1: CAX Training

Module 3.1.1 : Training Audience Training (Module 3.1.1)

Module 3.1.2 : Exercise Command & Control Group (ECCG - EXCON) Training

Module 3.1.3 : Technical Training

Module 3.1.4 : MEL/MIL Training

Module 3.1.5 : Role Players and Strategic Analysis Training

Module 3.1.6 : CAX Support Training



Phase 3 Tasks & Modules:

Task 3.2: EXCON and Training Audience Structure

Module 3.2.1: *EXCON Structure & Positioning*

Module 3.2.2: *Primary Training Audience Structure & Positioning*

Module 3.2.3: *Secondary Training Audience Structure & Positioning*

Phase 3 Tasks & Modules:

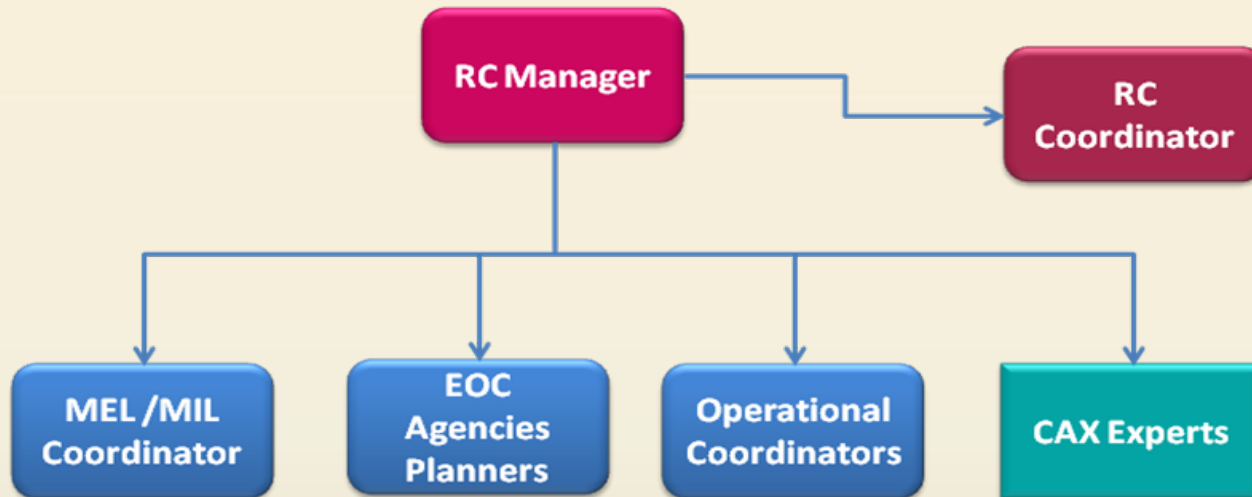
Task 3.3: Response Cells and Role Players

Module 3.3.1: *Response Cells Configuration based on Scenario Requirements*

Module 3.3.2: *Role Players Check and Control based on Scenario Requirements*



Response Cell Structure





Phase 3 Tasks & Modules:

Task 3.4: SITCEN and SITFOR Roles

Module 3.4.1: Situational Center Configuration

Module 3.4.2: Situational – Opponent Forces Positioning and Scenario Testing

Module 3.4.3: EXCON – SITFOR Testing

Module 3.4.4: SITCEN Activities Scheduling

Module 3.4.5: SITFOR – RC Simulation Models Operators Communication

Phase 3 Tasks & Modules:

Task 3.5: White Cells, Experts and Mentors Configuration Process

Module 3.5.1: *White Cells Role Testing*

Module 3.5.2: *Mentors, Experts and Observers Role Testing*

Phase 3 Tasks & Modules:

Task 3.6: MEL/MIL Coordinators & Battle Captains Configuration Process

Module 3.6.1: *Main Events List / Main Incidents List Coordinator Role Testing*

Module 3.6.2: *Battle Captains Scenario(s) adaptability Testing*

Module 3.6.3: *Battle Captains training Audience Communication Testing*



Phase 3 Tasks & Modules:

Task 3.7: CAX Experts Configuration

Module 3.7.1: CAX Experts STARTEX Testing

Module 3.7.1: CAX Experts – EXCON Coordination Process

Module 3.7.1: CAX Experts Simulation Models Evaluation and Checking

Module 3.7.1: CAX Experts Operational (Tactical) Planning Overview



Phase 4 Tasks:

Task 4.1: Daily Hot Wash Up

Task 4.2: Daily Simulation Results Analysis

Task 4.3: Daily Training Audience Reaction Analysis

Task 4.4: Daily SITCEN Control Actions

Task 4.5: ENDEX After Action Review

Task 4.6: ENDEX Training Audience Activities Description

Task 4.7: Lessons Learned Processes



Phase 5 Tasks & Modules:

Task 5.1: Simulation Results Analysis

Module 5.1.1: *Significant simulation models' reports collection and analysis*

Module 5.1.2: *Simulation results evaluation*

Module 5.1.3: *Simulation results realistic analysis*

Module 5.1.4: *Simulation results operational (tactical) analysis*



Phase 5 Tasks & Modules:

Task 5.2: Training Audience Evaluation Process

Module 5.2.1: TA Capabilities Overview

Module 5.2.2: TA Activities Overview

Module 5.2.3: TA Scenario Adaptability

Module 5.2.4: TA Reactions Analysis

Module 5.2.5: TA Timing Analysis

Module 5.2.6: Messages Evaluation Procedure

Module 5.3.7: Results and Conclusions



Phase 5 Tasks & Modules:

Task 5.3: Optimization Procedures

Module 5.3.1: Scenario Optimization

Module 5.3.2: Simulation Optimization

Task 5.4: Final Exercise Reports and Conclusions

Module 5.4.1: Training Audience Activity & Evaluation Report

Module 5.4.2: Exercise & Training Objectives Achievement Report

Module 5.4.3: Exercise Conclusions & Proposals Report

The End ...

