JOINT FORCE TRAINING CENTRE

ISSUES RUNNING ANALYTICAL WARGAMING BASED ON SIMULATION SYSTEMS (CAWs)

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Objectives

- **Clarification between CAX – EdCAW – AnCAW**
- **Exploring separately the procedures and issues between the Domains and per stage.**

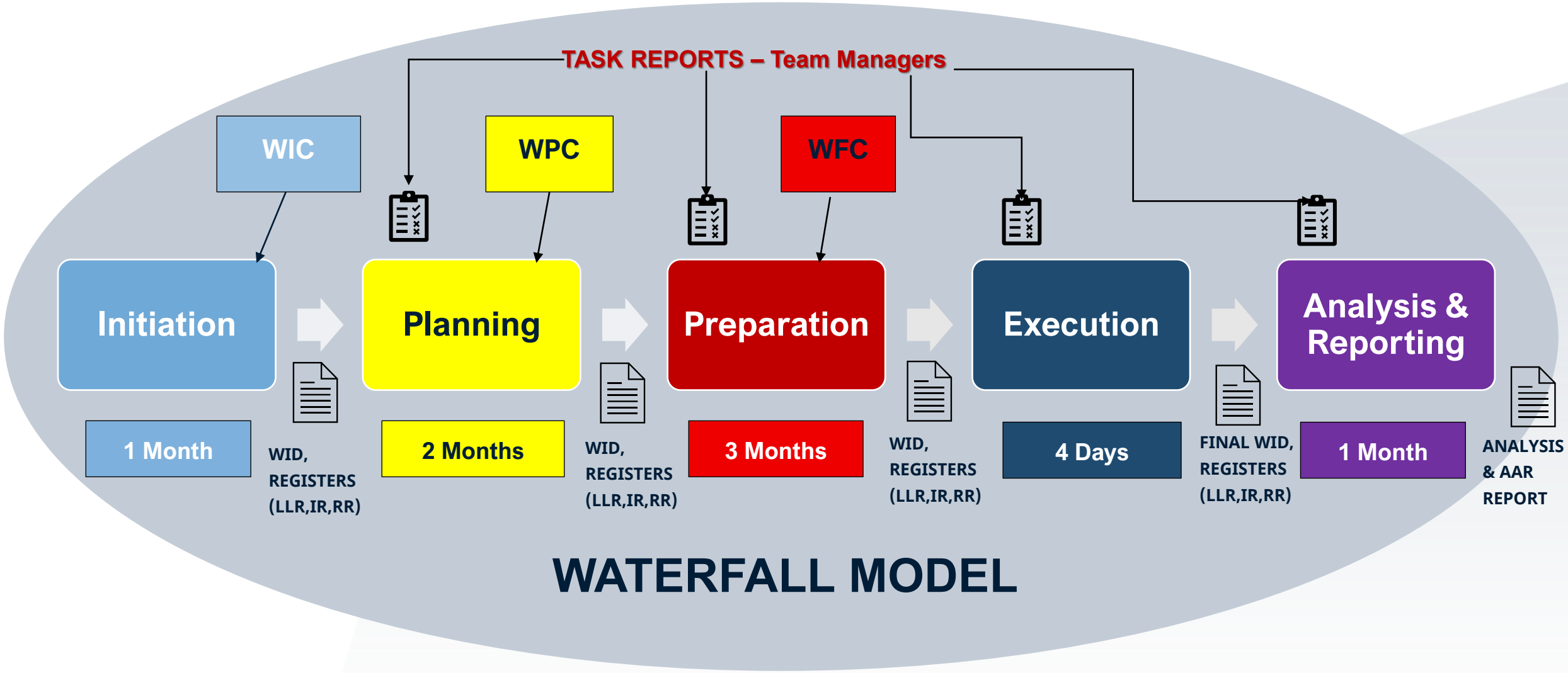
CAX – Educational – Analytical CAWs (Differences)

- ✓ One training side
- ✓ Mainly MEL-MIL scripting driven
- ✓ Connection with C2I – C3Is.
- ✓ The result is positive or neutral.
- ✓ Low or Middle detailed DB.
- ✓ Main objective: The audience to be trained in procedures

- ✓ Multiple training sides
- ✓ Without MEL-MIL scripting- flexible adjudication rules
- ✓ Possible connection with C2I-C3Is.
- ✓ The result is uncertain.
- ✓ Training criteria with WIN-DRAW-DEFEAT
- ✓ Middle or High detailed DB.
- ✓ Main objective: The dealing with the risk.

- ✓ No side -scenario
- ✓ No connection with C2I – C3Is.
- ✓ The result is depended on PKIs, executing the plan multiple times.
- ✓ High classified and detailed DB.
- ✓ Implementation of sophisticated middleware tools for data analysis
- ✓ There is no specific period time for the execution.
- ✓ Main objective: Evaluation of operational plans

STAGES OF AnCAW



Initiation Stage
Main elements of WID (Version 0.1)

- Organizational structure – roles & responsibilities (Managerial Domain)
- Simulation System(s) – Location – Networks (Technical Domain)

Initiation Stage
Organizational structure(1)

- Wargaming Board:
  - Wargaming Director
  - Sponsor
  - Support Unit as Supplier
- Wargaming Manager
- Wargaming Designer AND/OR Developer

Initiation Stage
Organizational structure - Teams(2)

- **Communication Information Systems Team – CIST (Provider - Sponsor)**
- **Simulation Team – SIMT (Provider - Sponsor)**
- **Analysis Team – ANT (Provider – Sponsor)**
- **Event Management Team – EMT (Provider) – ADHOC participation**
- **Assurance Management Team - ASMT (Wargaming Designer AND/OR Developer- Operational planners – Team Managers)**

Teams' activities (1)

- **MANAGERIAL DOMAIN**
  - **ASMT (Assurance Management Team)**
    - Operating as POC of Wargaming Board with external NATO Bodies
    - Giving solutions to the misunderstandings between the members of the Teams (Provider - Sponsor) & between Teams.
    - Control tool of Wargaming Manager & Designer and/or Developer
    - Active for all the stages except the last "Analysis & Reporting"
  - **EVMT (Event Management Team)**
    - Ad-hoc Team, active only for the preparation – execution stages.

Teams' activities (2)

- TECHNICAL DOMAIN
  - CIST (Communications Information Systems Team)
    - Active for all the stages except the last "Analysis & Reporting"
    - Controlling the efficient operation of CIS infrastructure including external COTS (Pitch-RTI)
  - SIMT (Simulation Team)
    - Preparation – execution of simulated OPLAN.
    - Active for all the stages, except the last "Analysis & Reporting"

Teams' activities (3)

- TECHNICAL DOMAIN
  - ANT (Analysis Team)
    - Active for all the stages.
    - Responsible for the DCAP (WID) & Final Analysis Products (AAR report – Final Report).

Initiation Stage Issues - Risks

- The unclear points of Sponsor's request.
- No existing dedicated Section or Branch for Wargaming (Provider's side)
- Educational background of the involved personnel (Sponsor – Provider)
- Misunderstanding tasks – delay progress
- Conflict with other parallel Provider's events

Planning Stage (1)
Clarifying Sponsor's Demands

- Operation Plan (assumptions, granularity for terrain & operations)
  - Military actions to be focused only to the land domain.
  - Logistics operations to not be evaluated (max 3 days of operations).
  - ORBAT – INITIAL Positions – Defence Lines
  - Weapon systems & munitions from both sides (combat effectiveness)
  - Key Performance Indicators (KPIs) clarifying acceptable casualties & consumptions.
  - Level of training for blue & red forces.
  - Classification of simulated data.
  - Details for possible federation agreement between Provider and Sponsor.

Planning Stage (2)
Use of AWS – Batch Analyzer

- Usage of "**Batch Executable**" defining the scenario and the number of repetitions (100) for total evaluation of the OPLAN.
  - Usage of "**Batch Analyzer Tool**" to collect all the available simulated results exporting them in ".csv" format
- Usage of "**Analyst Workstation**" for the evaluation of tactical actions from specific units (After Action Review – AAR). Critical factor the determination of frequency for saving the simulated data (DATSPOT).

Planning Stage (3) Issues - Risks

- Change of involved military personnel because of the annual transfers.
- The delayed accomplished tasks from the previous stage.
- New programmed parallel activities of Provider, increasing the workload of the Wargaming personnel.
- Long term procedure for the accreditation of COTS tools. Possible rejection.
- KPI's of OPLAN which have conflicts with each other.

Preparation Stage (1) Managerial Domain

- Creation & finalization of an effective and productive daily timetable.
  - Details about accommodation, transportation, lunches and physical security guidelines (ASMT – EVMT).
- Effort for the approval to use COTS tools (ASMT).

Preparation Stage (2) Technical Domain - SIMT

- Preparation of SIM/DB – Test of the simulated entities' behavior (interactions).
- Examining possible federation between two similar SIM systems (e.g. JCATS)
  - Both forces need to be to one simulation system for using "Batch Executive" and the "Batch Analyzer Tool".
  - The time management of federated interactions is so sensitive with unexpected delays for the detection of the opponent unit
  - Some tasks of the subunits had disappeared executing the disaggregation order during the federation.
- Testing the interoperability with external COTS tools (RTIs).
- Changes of WID (technical architecture – DCAP) – Exception report

Preparation Stage (3) Technical Domain - ANT

- Evaluating the quality of simulated data “before” – “during” & “after” the execution of test.
- Multiple types of Kills (KK – MK – FK – MFK) guided to the consideration of KPIs related to fire effectiveness and casualties.
- Evaluating the automated analytical reports and the need for new modified.
- Evaluating the time processing of:
  - “Batch Executive” to run 100 times the OPLAN (12MIN)
  - “Event Batch Analyzer” to read the archived files (1MIN)

Preparation Stage (4)
FINAL TIMETABLE FOR THE EXECUTION

- **1st DAY: The whole operational plan to be executed 100 times by the "Batch Executive". The Sponsor to specify actions of units which wants to make changes (maneuvers - "Rules of Engagement" – formations)**
- **2nd DAY: Simulate and analyze the result of these specific changes. Decision which of those changes will be used to the initial plan for testing of an updated version.**
- **3rd DAY: Repeat the 1st day with the modified OPLAN. The Sponsor to specify actions of units with minor changes.**
- **4th DAY: Final OPLAN – Running MONTE CARLO.**

Preparation Stage (5) Issues - Risks

- Existence of uncleared or wrong attributes for the ammunitions and weapon systems for both sides.
- Changing the existing or adding new KPIs during the tests.
- Unclear turn arounds for specific artillery systems.
- Disapproval of the usage of proposed COTS.
- Moving forward for execution without testing the processing simulated times and the behavior of the simulated entities

Execution Stage (1) Managerial Domain

- Control of the daily timetable by EVMT & ASMT.
- The daily “hot wash” meetings of Wargaming Board

Execution Stage (2) Technical Domain

- Major problem: The modification of ORBAT and reconfiguration of SIM/DB which guided SIMT & ANT to work extra working hours.
- Delay to submit the daily exception reports, informing only orally the Wargaming Designer and the Wargaming Board through the “hot wash” meetings.
- Daily updated of registers to not loose the control of the execution.
- For the usage of AWS needed more CAX operators for the 2nd – 4th day.

Execution Stage (3) Technical Domain

- Major problem: The production of modified reports according to extra demands of Sponsor.
- The production of ad hoc KPIs because of the above and the testing if these KPIs were controversial to the existing of DCAP.
- Multiple modification of WID related to simulation and analysis activities.

Execution Stage (4) Issues - Risks

- Bad reaction of Sponsor's planners for the simulated results.
- Delays because of managerial and support activities (registration time, extended coffee breaks and lunches)
- Accepting Sponsor's demands for a deep modification of SIM/DB and more complicated reports during the "hot wash" meeting of Wargaming Board.
- No consideration of the extra daily work of SIMT and ANT, which increases the fatigue of the personnel and the percentage of mistakes.

Analysis & Reporting Stage (1)

- Only ANT was responsible to inform the “Wargaming Designer” with weakly task reports for the analysis’ progress and development of the “After Action Review (AAR)” and “Final Report”.
- “Wargaming Director” organized:
  - Two web briefings for the “Wargaming Board” to inform them about the progress of analysis.
  - Two web meetings for the discussion and approval of the final analysis products “AAR & Final Report”.

Analysis & Reporting Stage (2)

- AAR: It was generated by the daily presentations during "hot wash" meetings.
- Final report:
  - Main body with generic conclusions of the three options of the operational plan.
    - Three Annexes: including every executed option of the operational plan referring to the related KPIs in combination with the time and the duration in which the military actions were conducted.
      - Every annex had two appendices. One which included the simulated results (quantitative) from the execution of the whole plan and from every extra or modified COA for specific units and one in which developed the qualitative results.

Analysis & Reporting Stage (3) Issues - Risks

- The different configuration of security gateways between NATO and national Domains.
- The extra demands of Sponsor which are out of the DCAP of the final version of WID (approved by WFC – END of preparation stage).
- The KPIs of the last moment (during execution) to be in contradiction with the already approved in WID.

OUTCOME (1)

- ✓ The whole pilot project was successful with useful outcomes for the future.
- ✓ How to organize the Teams & Managers.
- ✓ Which and how to put limits to the Sponsor for every extra demand during the execution stage.
- ✓ How to react to any negative reaction of the Sponsor's personnel when they receive negative results.

OUTCOME (2)

- ✓ How crucial are:
  - ✓ The granularity of the terrain
  - ✓ The configuration of munitions and weapon systems
- ✓ To avoid the same day to use the two different approaches for analysis running AWS & Batch Analyzer Tool.
- ✓ AnCAW's time of execution stage needs to be longer.

CONSIDERATIONS

- ✓ The denial of operational planners to accept the negative simulation results.
- ✓ To build a “win to win” relationship with them from the early stages of the AnCAW.
- ✓ The classification of the data and the usage of possible COTS analytical tools.
- ✓ The execution stage needs to be extended depended by the complexity of the OPLAN

QUESTIONS

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