Developing Coalition BML for Air Operations

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- Report: Unclassified
- Abstract: Unclassified
- This Page: Unclassified
BML for Air Operations

• Aims:
  – To permit a BML capability in Joint Air-Land environment
  – To represent Air Tasking Order & Airspace Coordination Orders in C-BML
  – To permit simulated aircraft to be controlled using BML orders
  – To provide a Recognised Air Picture for use in, e.g., a Brigade C2 cell

• Benefits:
  – Orders and Reports are available to any federated BML system
  – Tactical graphics may be shared with other users, e.g. air corridors, SEADs
  – Air tasking may be generated by any BML-capable air planning system
  – Reports from ground units may be displayed on air C2 systems
  – Swivel chairs eliminated
1. Objectives
2. Targets
3. Weapons
4. Force Application
5. Planning & Execution
6. Assessment

C-BML Can help here
The ACO – Airspace Coordination Order

- Lists ACMs – Airspace Control Means
  - Geometrical features, e.g. routes, race-tracks, SEAD areas
  - May be constrained by flight levels
  - May be given temporal properties, when active, dormant, expired, etc
  - May be associated with control command networks
  - May be parameterised, e.g. race-tracks, circular orbits
- C-BML permits control measures to have temporal rules associated
- ACOs used to coordinate and deconflict air operations

- ACOs are used to specify the control measures associated with C-BML Orders
PTL – Prioritised Target List

- Targets – What the targets are
- DMPI – Desired Mean Point of Impact – Where the targets are
- Weapon Solutions – Which weapons are to be used against which targets

- PTL is used to assign targets to aircraft and missions
The ATO – Air Tasking Order

• Helps plan the use of air force assets:
  – Resource allocation – *which* aircraft are available, *where* they are based, what their capabilities are
  – Time coordination – *when* aircraft need to take off, *when* they need to be on station
  – Spatial coordination – *where* the aircraft will fly, what flight level
  – Interaction with ground and naval forces – CAS, SEAD, pre-determined ground targets

• Gives air crew their allotted tasks

• Does not ‘micro-manage’ the air crew tasks
ATO Contents

- Header
- Groups of Tasks (per country, per service)
  - Groups of Missions
    - Aircraft
    - Route to: location, refuelling, target, recce, new airfield
    - Mission notes
- SPINS – Special Instructions – all free text, e.g.:
  - General information, ROE, Comms plan, EW plans
  - Free text is a challenge!
Example ADatP3 F058 ATO

EXER/UK C-BML Demo//
MSGID/ATO/UK Air Gp Cmd/0/
AKNLDG/NO//
AIRTASK/ATO A/3510N07901W/LOCATION OF COALITION AIR BASE//

Who – Tasker

Who – Taskee

What – Mission type

When – Start & End Where - Eln Where Ctrl Measure

Task 1

TASKUNIT/23SQN/
AMSDAT/AM01/-/ZZ/MC/JCP/-/BAT/
AMSNLOC/141325ZFEB/142000ZFEB/AWACS ORBIT/350/1A/LATM:3510N07901W/NAM:PT ALPHA//

Task 2

TASKUNIT/617SQN/
AMSDAT/AM02/-/ZZ/MC/EW/-/BAT/
GTGLOC/P/TOT:141325ZFEB/NET:141320ZFEB/TOF:141325ZFEB/MOBILE COMMAND
POST/ID:B1234F12345/CP/-/DMPID:351025.3N0790125.7W/W84//

Where – RouteWhere

ROUTE

1/3510N07901W/ IP/141400Z/450KTS/300
2/3520N07908W/TRN/142000Z/450KTS/300
3/3530N07914W/TRN/142500Z/450KTS/200
4/3560N07918W/ RP/143000Z/450KTS/ 5//
Review Process

- Battle Damage Assessment
- Assign recce aircraft
- Get reports & imagery
- Amend task orgs, etc
- Feed info into another targeting/planning/execution cycle
BML Requirements

- Resource allocation *not* required – this is an MSDL requirement
- Mission planning
- Mission execution
- Aircraft reporting

- Response to requests:
  - CAS – US MTF, ADatP-3 messages (CASREQ, AIRSUPREQ)
  - Scramble – associated air task data required
  - Corrections, rescheduled and cancelled missions

- C-BML FRAGO processing is appropriate
  - not part of BML, part of operating procedures
ICC Data Tables

- ICC maintains numerous data tables in a database
- To generate a representative ATO a subset of these is required:
  - **Who** Units
  - **Where** Air bases, Routes, Patrol Areas, Targets*, etc
  - **What** Mission types
  - **When** Allocation and timing of missions

* Targets are also Affected Who
Air Additions to C-BML Schema

- Simple schema modifications:
  - `<Task>` split into:
    - `<AirTask>`, `<GroundTask>` & `<MaritimeTask>`
    - Not really necessary – will recommend all domains simply use `<Task>`
  - Locations added:
    - `<height above ground level>`
  - Reports added:
    - `<velocity vector>`
Timing Considerations

• Real aircraft fly with time-based goals, e.g. fly to location X to arrive at time T
  – ATO does not give intermediate timings
• JSASF does not have any such behaviours – typically the behaviour will be: fly
  route R at speed S, arrival is consequential and speed is not moderated
• Air Control Measures usually have a temporal validity:
  C-BML* has always permitted the expression of a Taskee’s control measure
  being associated with a particular Tasker for a specified period of time

* 06S-SIW-68 Schade, Hieb
Sequencing Considerations

- A **single** mission in an ATO consists of a **sequence** of tasks

- C-BML requires this breaking down into single tasks

- Beware of default simulation behaviour at end of tasks, e.g. Orbiting or Landing
Mapping C-BML onto Simulation

- Does a representative behaviour exist in the simulation?
- If so, can it be scheduled and tasked?
- Does it need extra information not available from the C2 system?

- `<AirTask>`
  - `<Who>`
  - `<Where>`
  - `<What>`
  - `<When>`
  - `<Why>`

- [Simulation Task]
  - [Task static data]
  - [Task parameters]
  - [Task scheduling]

- In a Semi-automated simulation how acceptable is it to use human intervention?
- Can MSDL supply extra information?
## Task Mapping

<table>
<thead>
<tr>
<th>Scenario</th>
<th>ATO Mission Type</th>
<th>C-BML</th>
<th>JS AF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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<tr>
<td>Fly Route</td>
<td>AR</td>
<td>Line</td>
<td>Route</td>
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<tr>
<td>Air Refuel (Orbit)</td>
<td>AR</td>
<td>Area</td>
<td>Route</td>
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<tr>
<td>Defensive Combat Air (Orbit)</td>
<td>DCA</td>
<td>Area</td>
<td>Route</td>
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<tr>
<td>Air Interdiction (Ground target)</td>
<td>AI</td>
<td>Point</td>
<td>Target</td>
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<tr>
<td>Airborne Command (Circular orbit)</td>
<td>ABC</td>
<td>Point</td>
<td>Air Control Point</td>
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<tr>
<td>Suppression of Enemy Air Defence (Jam orbit)</td>
<td>SEAD</td>
<td>Area</td>
<td>Route</td>
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</tbody>
</table>
Example for Air FRAGO

Tgt identified by UAV recce, CAS FRAGO issued
Questions