



Capability Based Operational Analysis: URBAN WARRIOR 5

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URBAN WARRIOR 5

- Challenge:

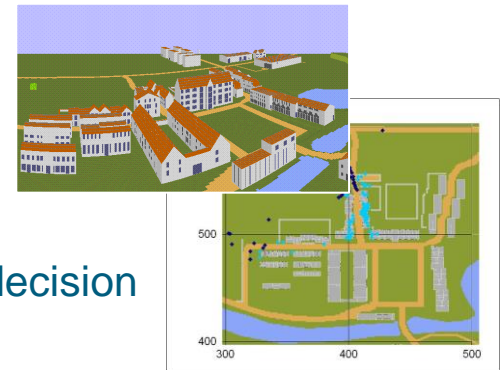
- demonstrate how complementary analyses can inform evidence-based decision making, through an investigation of AI Coy Gp effectiveness.

- Method:

- Primary DLoDs (Organisation, Doctrine and Equipment) investigated using Live, Virtual and Constructive modelling.

- Exploitation / impact:

- Army Field Manual on experimentation
- Capability development
- Understanding complexity of questions
- Demonstration of capability- and evidence- based decision support
- Clarifying strengths and limitations of experimentation methods



UW5 Core Questions

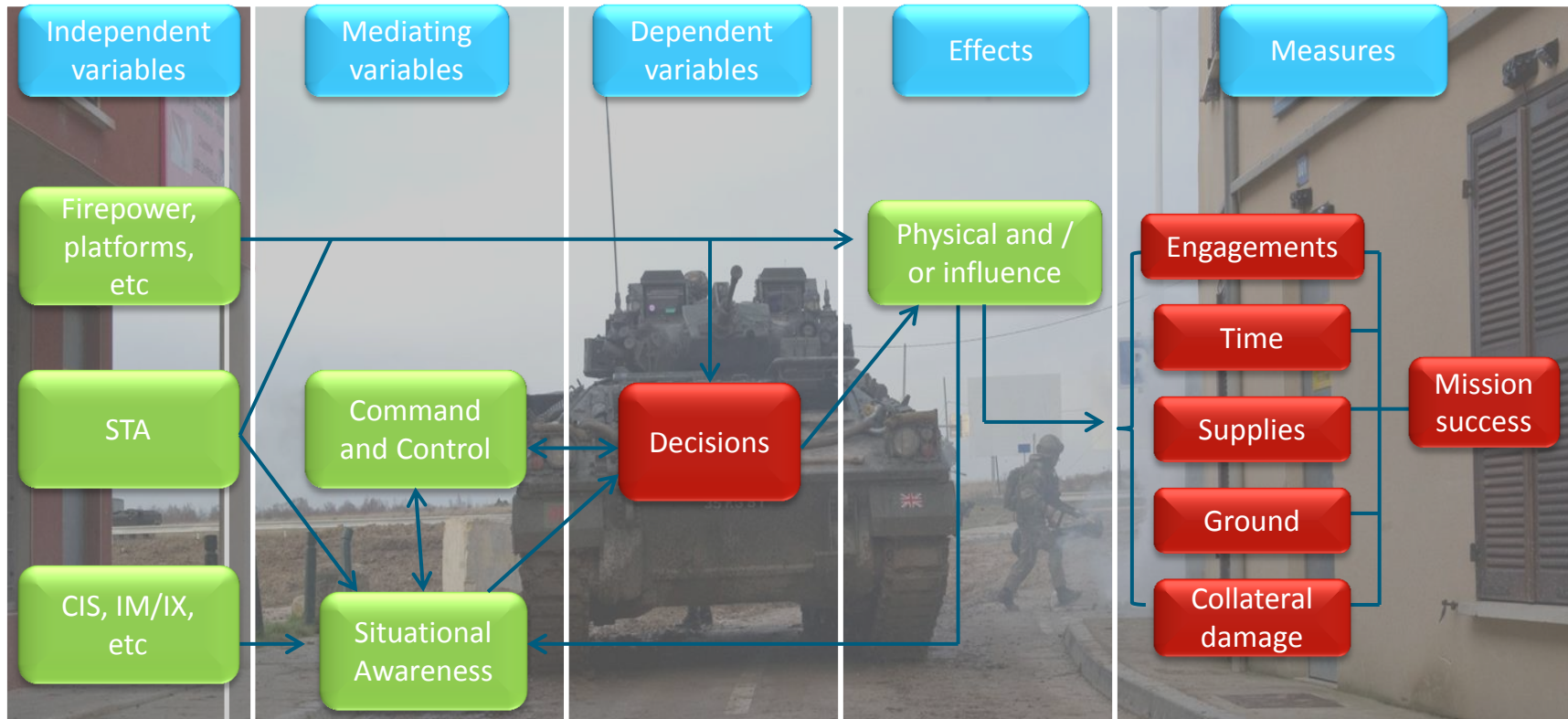
- Question 1. How can live, virtual and constructive (LVC) simulation methods for experimentation be used to provide complementary analysis for evidence-based decision making? [For DFD.]
- Question 2. How can the effectiveness of the Armoured Infantry (AI) Company Group in 2020 be improved for urban major combat operations? [For CD Cbt.]

Question 1 is to inform future Army HQ FD activities and requires a viable and credible approach to answering Q2 if the Main Effort is to be answered successfully.

Capability Based Decision Support

- UW5a studies found that focus areas for Q2 were in improving C2 and SA at all levels of command within the AI Coy Gp.
- Analysis of Customer Questions identified other areas of interest:
 - ORBAT (alternative numbers of infantry and MBT).
 - The effect of different types of urban terrain on doctrine / TTPs.
 - IM / IX enhancements.
 - CIS and STA (and hence, C2 and SA,) enhancements.
- Army capability comprises many facets, but:
 - Can't be characterised by simply representing equipment.
 - Results from teams' Collective Performances where decision making is crucial.
 - Changes to DLODs may affect AI Coy Gp effectiveness but too many changes will result in poorly controlled experimentation (and a lack of conclusive evidence as a consequence).

Capability Based Decision Support



Capability Based Decision Support

- OA methods have different strengths and weaknesses:
 - no single method / technique covers all facets of Army capability;
 - ‘campaigning’ approach needed using combinations of techniques to allow weaknesses of one method to be compensated for by the strengths of another i.e. an Integrated Analysis and Experimentation Campaign (IAEC);
 - strengths from all methods need to be combined in culminating investigation.

Constructive (eg CAEn)

Good: kinetic effect.

Good: future scenarios and capability options.

Good: experimental control.

Good: multiple runs

Poor: CP, C2 / SA, integration, and operational friction.

Tactical functions and ODE explored via wargames.

Low relative cost, fast to develop, not resource intensive.

Virtual (eg VBS2)

OK-ish: kinetic effect.

Good: future scenarios and capability options.

Good: CP, C2 / SA, ODE, and integration issues.

OK: element of friction via SE immersion

OK: experimental control

Multiple runs are not easy to achieve.

Higher cost, slower to develop, can be resource intensive.

Live (eg CENZUB/TES)

Good: CP, C2 / SA, ODE, Human Factors, and integration issues.

Good: operational friction

Poor: kinetic effects

Poor: future scenarios and capability options.

Poor: experimental control.

Difficult to do multiple runs.

Highest cost, slowest to develop, is resource intensive.

UW5 IAEC



Develop data & assumptions:

Armr, inf, CIS & STA for MCO
Baseline ORBAT, TTPs, JFs etc.

Oct-Nov

5b Constructive

MODEL (Wargame & Simulation)

Test baseline ORBAT and TTPs.
Vary ORBAT & TTPs (MBT & inf nos).

Dec '12

5e Live

Warfighting EXPERIMENT:

Test baseline ORBAT & TTPs.
Vary ORBAT, TTP, & limited CIS / STA enhancements.

Jan '13

5c Virtual

Warfighting EXPERIMENT:

Test baseline ORBAT & TTPs.
Vary CIS, STA, IM/IX across ODE.

Apr-Jun '13

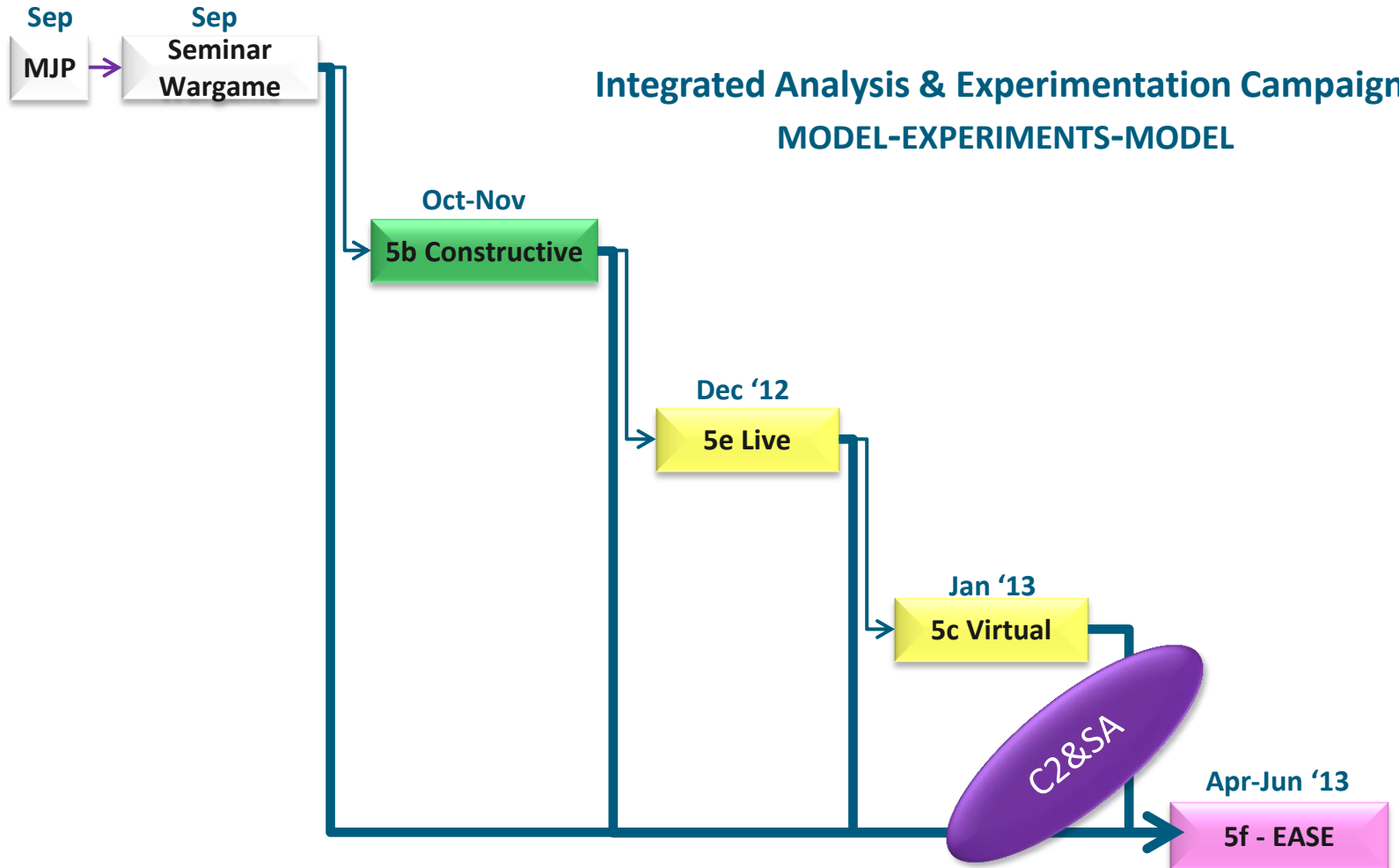
5f - EASE

MODEL (Enhanced Analysis & Simulation Environment):

Abbreviations:

CIS – Command Information Systems
Eqpt – Equipment
JFs – Joint Fires
Loc - Location
ODE – Organisation, Doctrine & Equipment DLODs
ORBAT – Order of Battle
Org - Organisation
STA – Surveillance & Target Acquisition
TTP – Tactics, Techniques & Procedures
wrt – with respect to

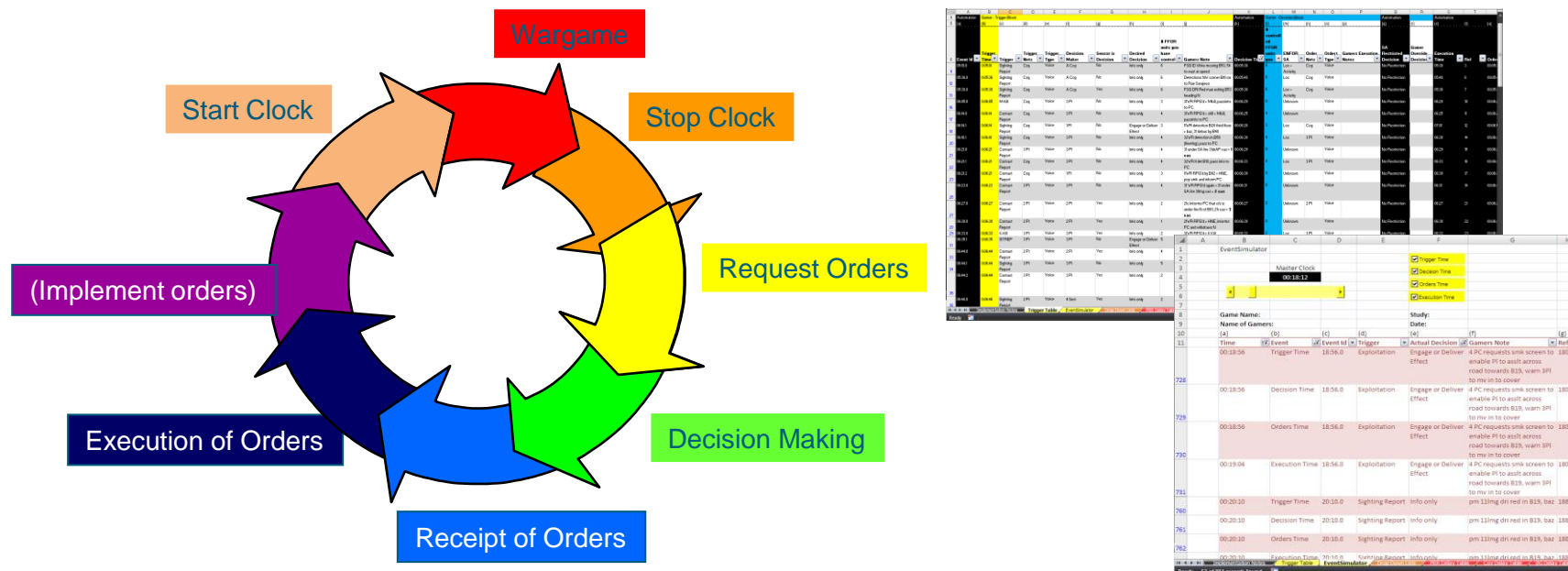
UW5 IAEC



- Each activity contributes evidence and insights.
- Final activity also assesses improvements on a holistic, capability basis.
- **Only by drawing upon all activities, culminating in EASE, can UW5 ME be achieved**

Incorporation of C2&SA Information

- C2&SA Protocol Tool developed by Roke Manor:
 - Insights and data from a variety of sources used;
 - (Constructive) modelling provides mission context;
 - Workload and network modelling calculates time delays;
 - Provides an automated C2 & SA Future Event Ring.



Summary

- All aspects of capability need to be investigated to ensure correct representation:
 - cannot assume that non-tracked variables are constant.
- No single OA method adequately covers all aspects of capability:
 - combination of techniques required and/or intelligent assumptions made.
- An Integrated Analysis and Experimentation Campaign plan should be established to link and inform investigation components, building on:
 - TTCP GUIDEx
 - NATO CoBP for C2
- Strengths from all methods need to be combined in a culminating investigation:
 - compensating for inherent weaknesses and exposing limiting factors.
- Lessons identified in previous work need to be re-learnt:
 - Eg King's Ride, Big Picture.
- As a result of this study, work on an evidence framework is being pursued.

Acknowledgements

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[dstl]

Questions?