

Understanding the Direct Value of Capability Enablers

Andrew Hodges, Arke Ltd

ISMOR35, 20th July 2018



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Micro-SME. Est. 2006

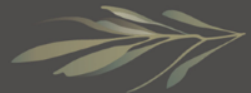
- Cost Estimating & Modelling
- Cost-Benefit Analysis
- Benefits Management
- BoI & Research Exploitation



**Never argue with stupid
people, they will drag you
down to their level and then
beat you with experience.**

Mark Twain





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**There is no greater
impediment to the
advancement of
knowledge than the
ambiguity of words.**

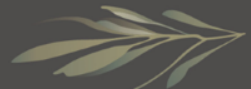
Thomas Reid



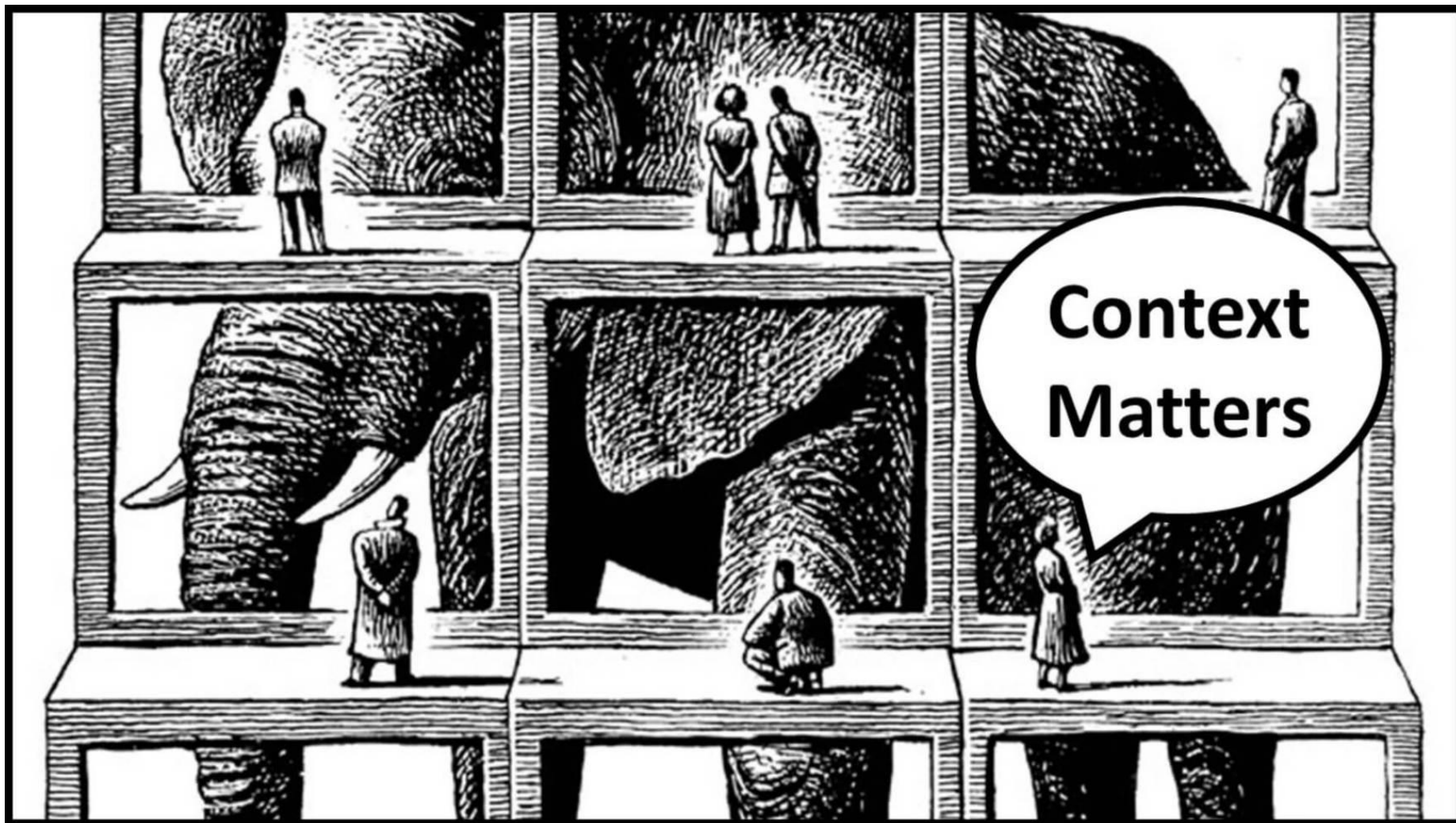
www.arkeltd.co.uk



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FOE35 = 5C's & Unpredictable

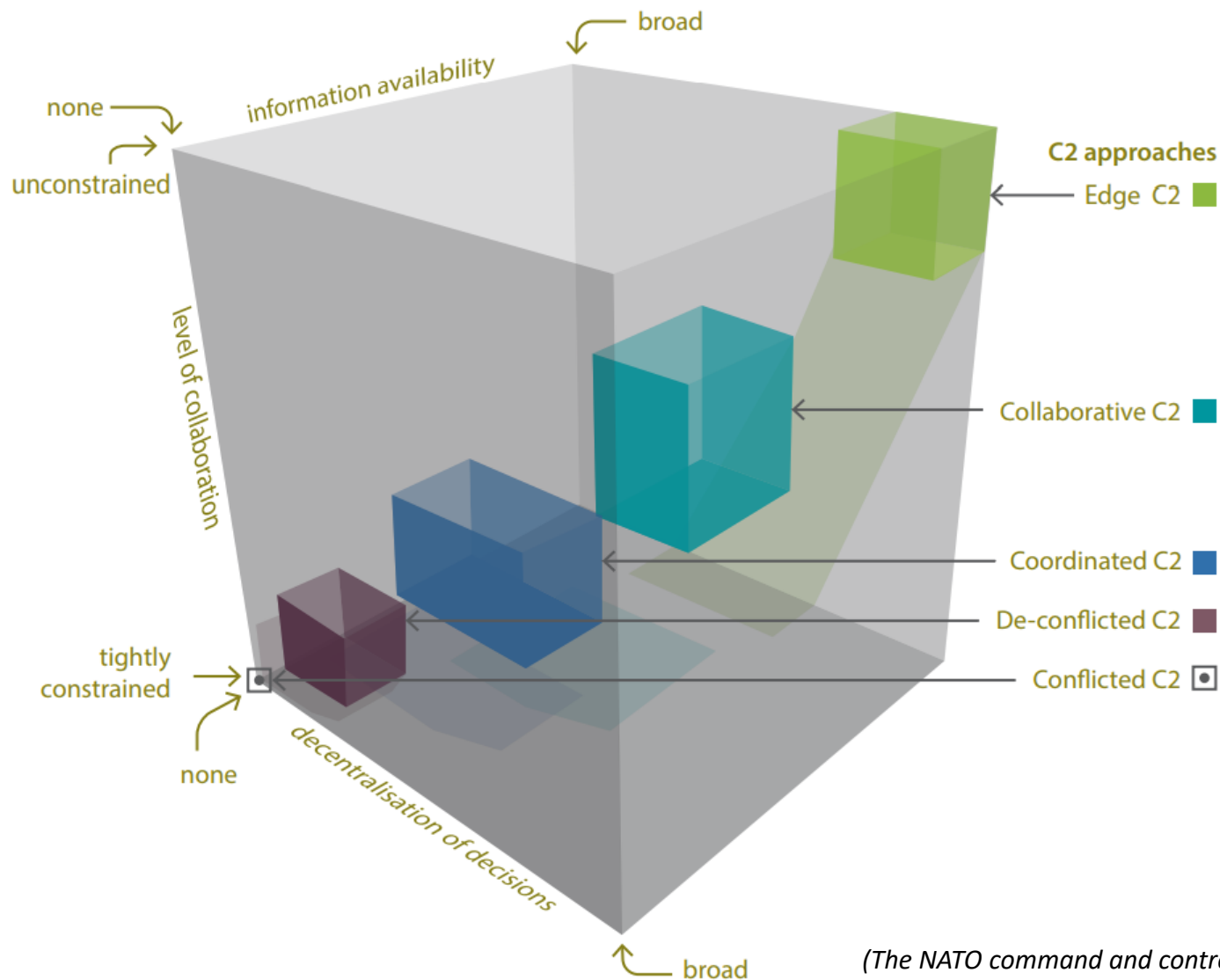
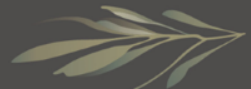


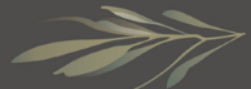
$$f \left(\begin{array}{c} \text{Information} \\ \text{Advantage} \end{array} \middle| \begin{array}{c} \text{Integrated Action,} \\ \text{Mission Command} \end{array} \right) = \left\{ \begin{array}{l} \text{Agility, Adaptability, Scalability,} \\ \text{Automation, COP, Connectivity,} \end{array} \right.$$



∴ better buy me
some AI







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Risky Business



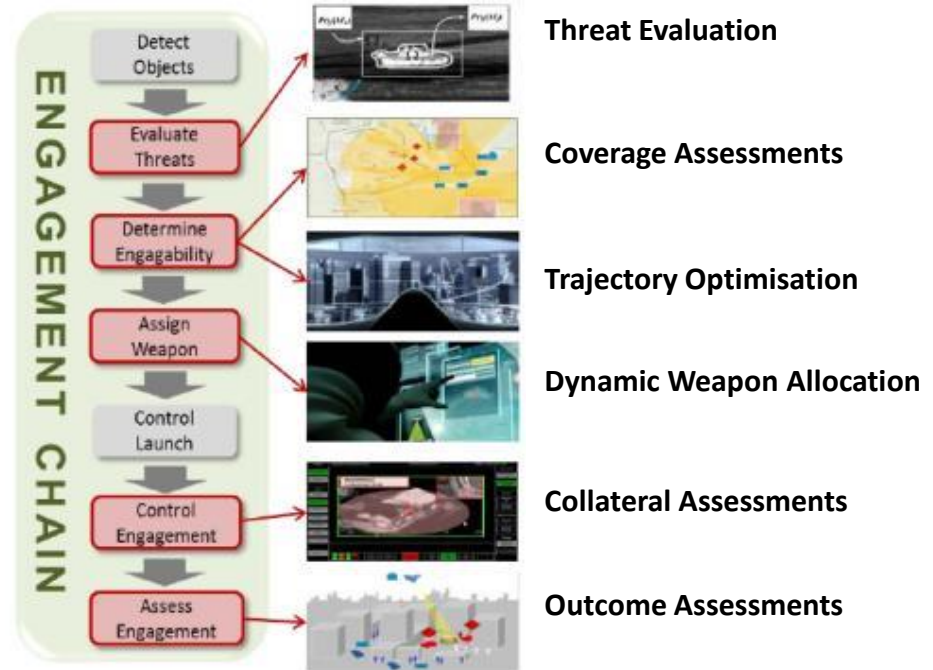
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Information	<ul style="list-style-type: none">• Autonomous Systems• Cyber Deterrence• ISR and Data Fusion• Next Generation C2• Affordable Space
Effects	<ul style="list-style-type: none">• Novel Weapons• Protection
Skills	<ul style="list-style-type: none">• Synthetic War Environments• People

Information	• Autonomous Systems
	• Cyber Deterrence
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	• Affordable Space
Effects	• Novel Weapons
	• Protection
Skills	• Synthetic War Environments
	• People



- What should we measure
- What is the objective
 - Manoeuvre \approx OODA. With Information Advantage

Operational Tempo - Rate of tasks through chain of command: from generating understanding, command planning and orders to subsequent mission command, manoeuvre and action (OODA)

Efficiency of Action - The ability to **rapidly** achieve a given course of **action**, moving quickly through a single cycle of the OODA loop.

Reactivity - The ability to take **control** of a dynamic tactical battlespace by providing feedback into the OODA loop.

Enabled through greater assurance of targeting data and efficiency of transfer (e.g. autonomy). Enhanced through decision aids for target recognition, deconfliction and hence reduced duplication of fires.

Enabled by adaptable engagement planning, digital targeting handover and selection of best effector.



Threat Evaluation

Coverage Assessments

Trajectory Optimisation

Dynamic Weapon Allocation

Collateral Assessments

Outcome Assessments

Commonality

**Open Systems
HCI Design**

Automated
Information
Dissemination

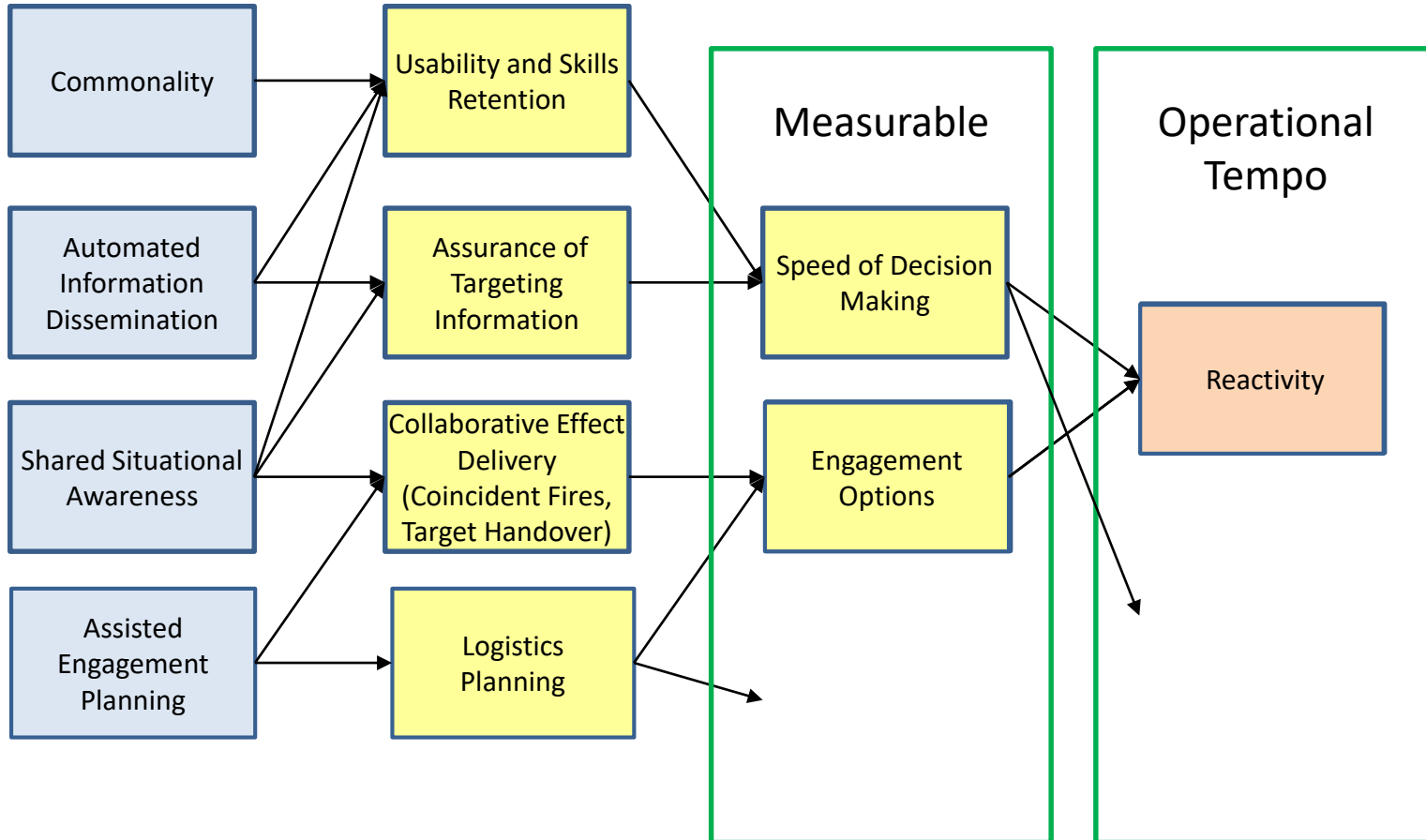
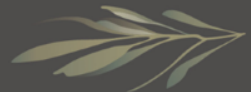
Network Connectivity

Shared Situational
Awareness

**Airspace Deconfliction
Coverage Assessments**

Assisted
Engagement
Planning

**Outcome Assessments
Weapon Allocation**



1. Seminar.

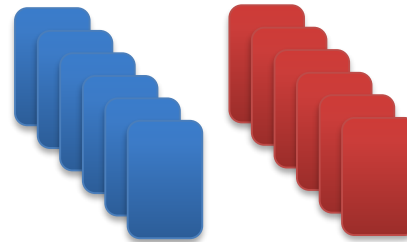
- How strong is the relationship between technological attributes and outcomes
- Indicative contribution by different concepts - how they enable the benefits.



Contextual Game Set-up Map
with Unit Tokens

2. Board-based.

- Measure effect of IWO capability enablers
- Specific recommendations for further experimentation / research



Balanced Team Capability Cards



Game Map with Unit Tokens

- Too many ambiguous value propositions
- Holistic characterisation of risk
- Outcome and Benefit-focused



Thankyou for listening...

