

Building the Foundation of a Successful Wargame



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- 30-year career U.S. Army Officer
 - 10 years Field Artillery
 - 20 years Operations Research/Systems Analyst (ORSA)
- 15-year career as a senior lecturer in the NPS Operations Research Dept
- In 2009 redesigned the NPS Wargaming Applications course to teach students how to design, develop, conduct and analyze wargames for a defense sponsor
- In 2011 with Fred Cameron, created a week-long Mobile Education Team (MET) course that teaches basic analytic wargaming to organizations at their locations
- In 2020 with Rob Burks and Fred Cameron co-authored the book “The Craft of Wargaming”





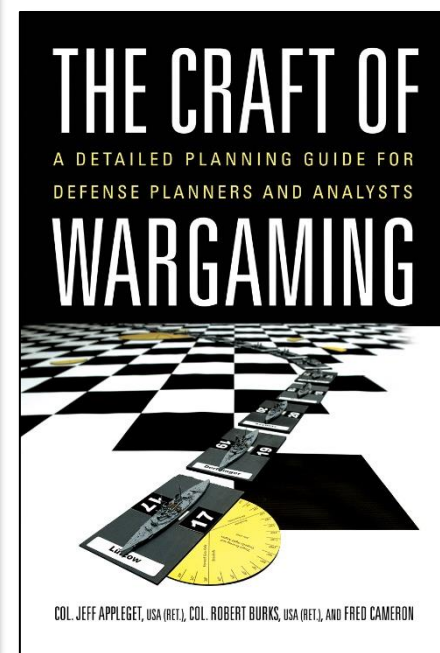
NPS Resident Wargaming Course



Student teams spend over half of the 11-week course designing, developing, conducting and analyzing wargames for Navy, other DoD, or defense partner sponsors.



Taiwan Wargame - 2019



**DoD Capstone Sponsors : 22 Navy, 13 Joint, 7 Int'l, 6 Marine Corps, 4 Army, 2 Industry.
Wargames (116 total): 41 Navy, 29 Marine Corps, 17 Int'l, 16 Joint, 10 Army, 3 Industry.**



NPS Wargaming Mobile Education Team (MET) Workshops Delivered and Projected (2024-2025)



- Basic Analytic Wargaming workshop
- Non-standard Wargaming workshop

North America

Royal Canadian AF
(Trenton, 2011)

STRATCOM
(Omaha, 2014)

U. S. Space Force
(C. Springs, 2021)

Lockheed Martin
(Sunnyvale, 2012)

TRAC
(WSMR, 2018)

NAVAIR
(China Lake, 2017, 2019)

NSMWDC
(San Diego, 2019)

NSMWDC
(San Diego, 2021 [2])

MARFORPAC
(Camp Smith, 2019)

NATO JWC
(Stavanger, 2020, 2021, 2023)

Nordic Tri-Lateral
(2019, 2022, 2023)

NATO SOF HQ
(Mons, 2019)

NATO School
(O-gau, 2022, 2023, 2024)

Spanish Joint Forces
(Madrid, 2022, 2024)

USA Futures Cmd
(Picatinny, 2021)

DTRA
(Ft Belvoir, 2021)

MCWL
(Quantico, 2018, 2019)

MCCDC
(Quantico, 2016, 2022)

II MEF
(Camp Lejeune, 2022, 2023)

CENTCOM
(Tampa, 2015, 2017[2])

FOI Swedish DRA
(Stockholm, 2018)

Hybrid Centre of Excellence
(Helsinki, 2021, 2022, 2023, 2024)

USAREUR-AF
Wiesbaden (2021, 2023, 2024 (2))

Slovene Armed Forces
(Maribor, 2023, 2024)

6th Fleet/NAVEUR-AF
(Naples, 2023, 2024(2))

AFRICOM
(Stuttgart, 2018)

Europe

USNFK
(Busan, 2024)

Taiwan
(Taipei, 2019)

Indonesian Navy
(Surabaya, 2015)

Oceania and East Asia

ADF Joint Exp
(Canberra, 2017-2021)

DST-Group
(Adelaide, 2016)

DTA
(Auckland, 2013)

What is Wargaming?

- A dynamic representation of conflict or competition in which people make decisions and respond to the consequences of those decisions.



Computer-based combat simulations are typically NOT wargames, although you may consider using a computer simulation as a component of a wargame.

The Naval Postgraduate School conducts 25-30 Wargaming events a year

Sponsor Focused

To extract insights from players for a sponsor dealing with real-world problems



Analytical

Educational **Experiential**

Player Focused



To educate players on defense issues

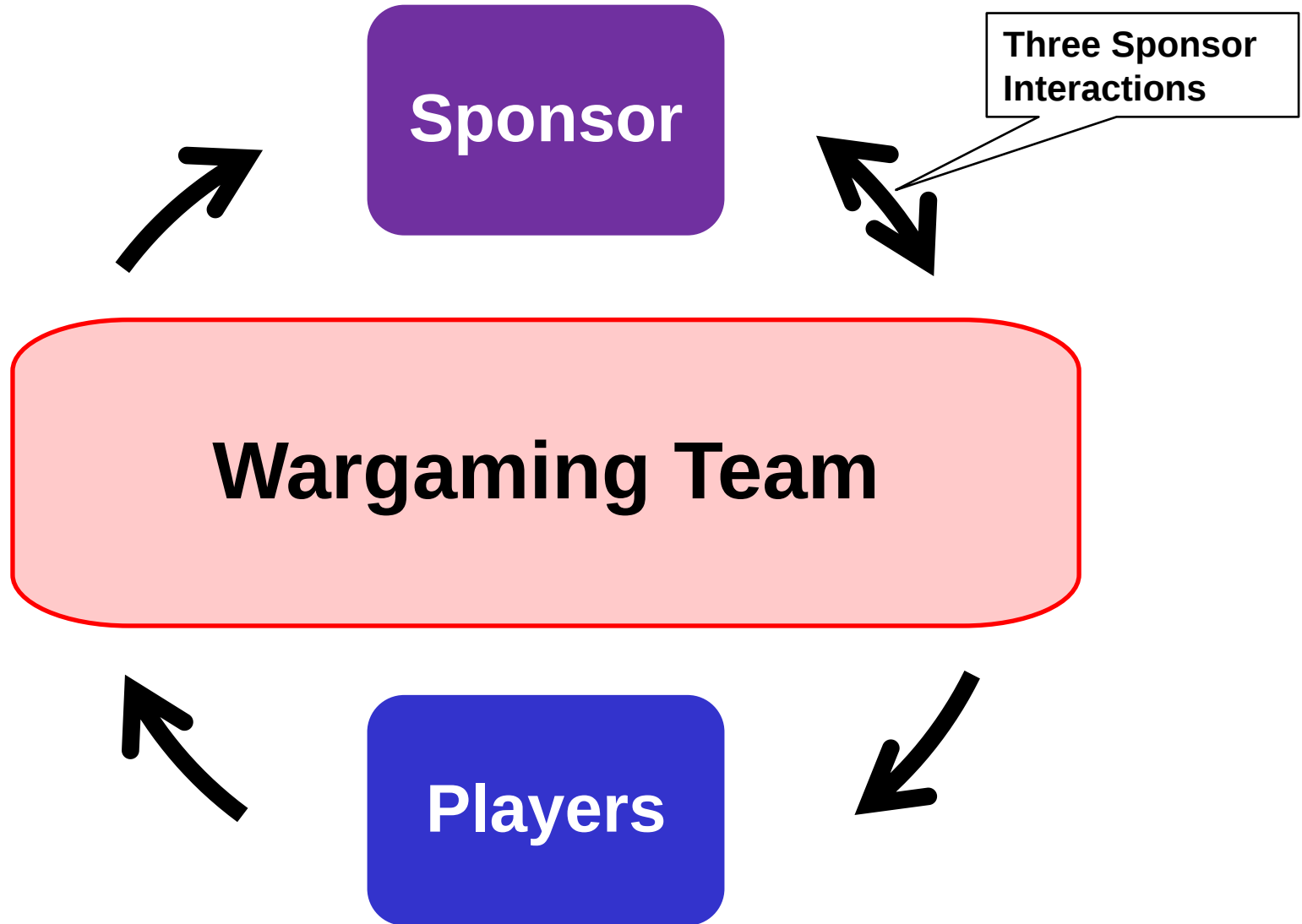
The focus of your game determines the type of foundation you need!



To provide players practical experience performing activities in a realistic setting

Communication

Sponsor, Wargaming Team, and Players





Unified Quest 2005



Sponsor Objectives:

- The Unified Quest wargame objectives are **to explore the application of future Joint, interagency and multinational concepts.**
- More specifically, wargame planners are asking, **“How well do the projected 2015 concepts and capabilities enable the combined and Joint force to defeat adaptive, networked adversaries who have catastrophic weapons and a strategy of protracted, asymmetric operations employing all forms of traditional and irregular warfare?”**



Assumptions...



- The sponsor wants an analytic wargame
- The wargaming sponsor and the wargaming team are in complete agreement on:
 - Wargame's Objective*
 - Wargame's Key Issues*
 - Initial Constraints, Limitations, and Assumptions (CLAs)*
 - A glossary of terms
- Best practice: Sponsor and wargaming team sign a Wargame Proposal Agreement* that provides the above details

* For more details, see "The Craft of Wargaming"

** Idea Borrowed from the U.S. Naval War College



Develop Relationship with Sponsor

Form Core Wargaming Team

Determine Sponsor's Objective and Issues

Scope Problem

Data Collection and Management Plan (DCMP)

Design

Determine Scenario

Choose Adjudication Models, Methods, Tools (MMTs)

Determine Player Roles Required

Determine Wargame Data Reqts

Develop

Playtest all components of wargame (1 of 3)

Playtest all components of wargame (2 of 3)

Blind Playtest wargame

Full Dress Rehearsal of wargame

Conduct

Collect Data

Manage Players

Exercise Contingencies (as necessary)

Develop Quick Look Report

Analyze

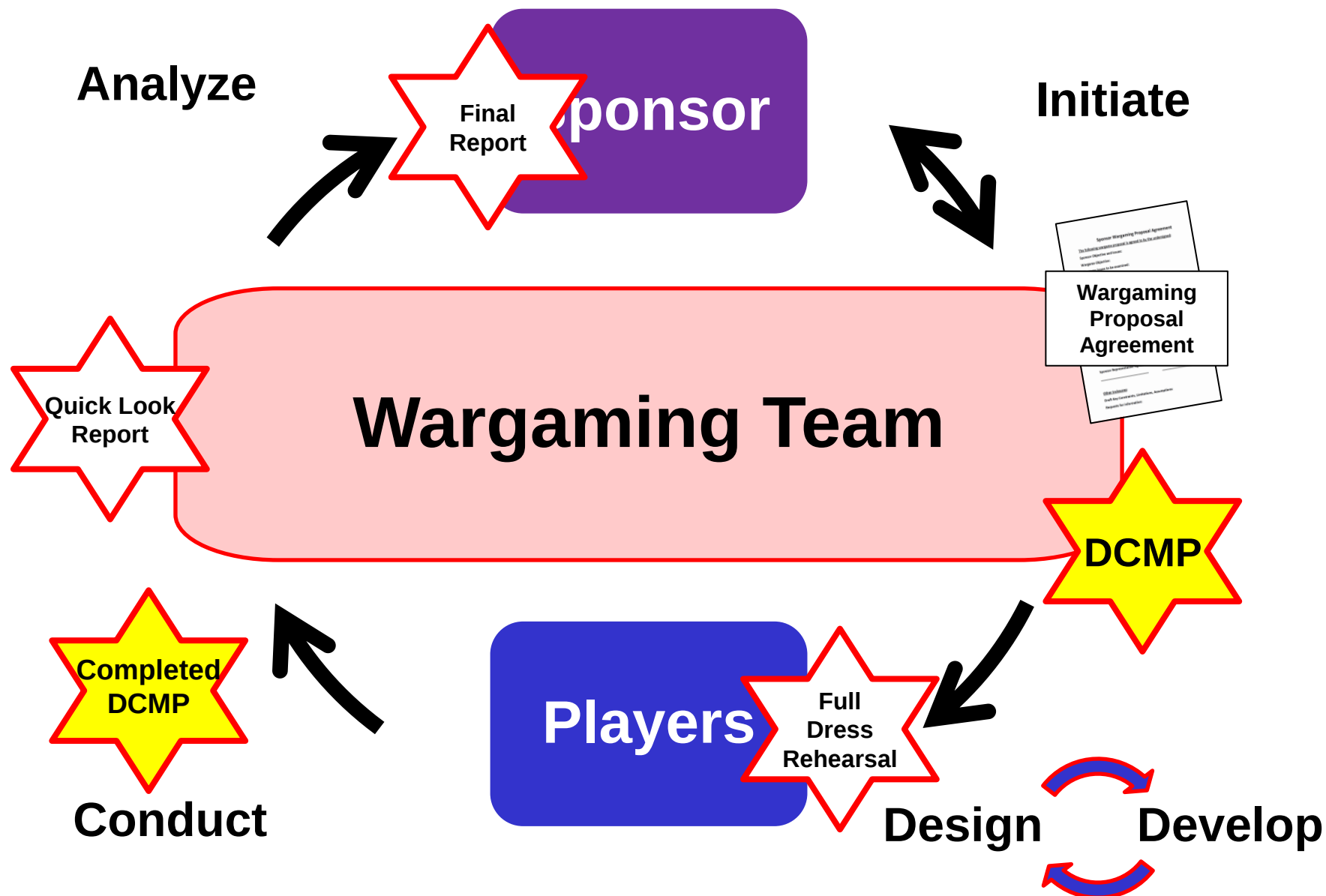
Review and Process Data

Develop Final Results

Develop Final Report

From “The Craft of Wargaming”

Communication and the Phases of Wargame Creation



The Data Collection and Management Plan (DCMP)

- The DCMP ensures your wargame supports the wargame's objective.
- The DCMP ensures your wargame can provide insights into each of the sponsor's key issues.
- The DCMP is the foundation of your wargame.



***You don't go into battle without a plan, and
you don't design a wargame without a DCMP***

Wargame Objective

- Analyze the NATO force required to defeat a Russian attempt to secure a land bridge from Belarus to Kaliningrad in 2030.



Key Assumption: NATO forces can mobilize in time to counter the Russian attempt.



Key Issues



- What ground forces are required?
- What air forces are required?
- What naval forces are required?
- What amphibious forces are required?
- What special operations forces are required?
- What space forces are required?
- What sustainment forces are required?



Essential Questions:



Forming the foundation of your wargame

- The DCMP tracks the decomposition of the Sponsor's **Key Issues** into the **Essential Questions** that need to be answered to provide findings or insights back to the sponsor.
- Most of the answers to the **Essential Questions** will be produced by the **players** during the wargame and collected by the wargaming team's **data collectors**.
- There may be some **Essential Questions** that must be answered **BEFORE** the wargame. In many cases, these become “**Requests for Information**” or **RFIs** to the sponsor, and the sponsor's responses becomes “**initiate data**” needed to begin the wargame.
- **There is no agreed ‘standard format’ for a DCMP.**



Decomposing Key Issues



- Key issues may require several layers of decomposition, e.g. peeling the layers of the onion back.
- Beware the curse of the “ands, ors, commas, slashes”—their presence in an issue really means there are several issues lurking within...
- The goal of decomposition is to:
 - Understand what questions need to be answered in your wargame. These then become what you design your wargame around!
 - Understand the level of complexity of each of the sponsor’s key issues.



Decomposing Key Issue #1:

What ground forces are required?



- What infantry forces are required?
 - What dismounted infantry forces are required?
 - What mechanized infantry forces are required?
- What armored forces are required?
- What field artillery forces are required?
 - What cannon artillery forces are required?
 - What rocket artillery forces are required?
- What engineer forces are required?
 - What construction engineers are required?
 - What demolition engineers are required?
- What scouting forces are required?
- What rotary wing attack aviation forces are required?
- What ground sustainment forces are required?



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	WARGAMING Data Collection and Management Plan (DCMP)													
2	Linkage from Sponsor Issues to EQ				Core DCMP Elements									
3	Sponsor's Issues	Constraints	Sub-issues	Sub-sub issues	Essential Question (EQ)	Players	Scenario Details	Methods, Models, & Tools	Limitations	Assumptions	Requests For Info (RFI)	Player Information IN	Player Information FEEDBACK	Player Information OUT
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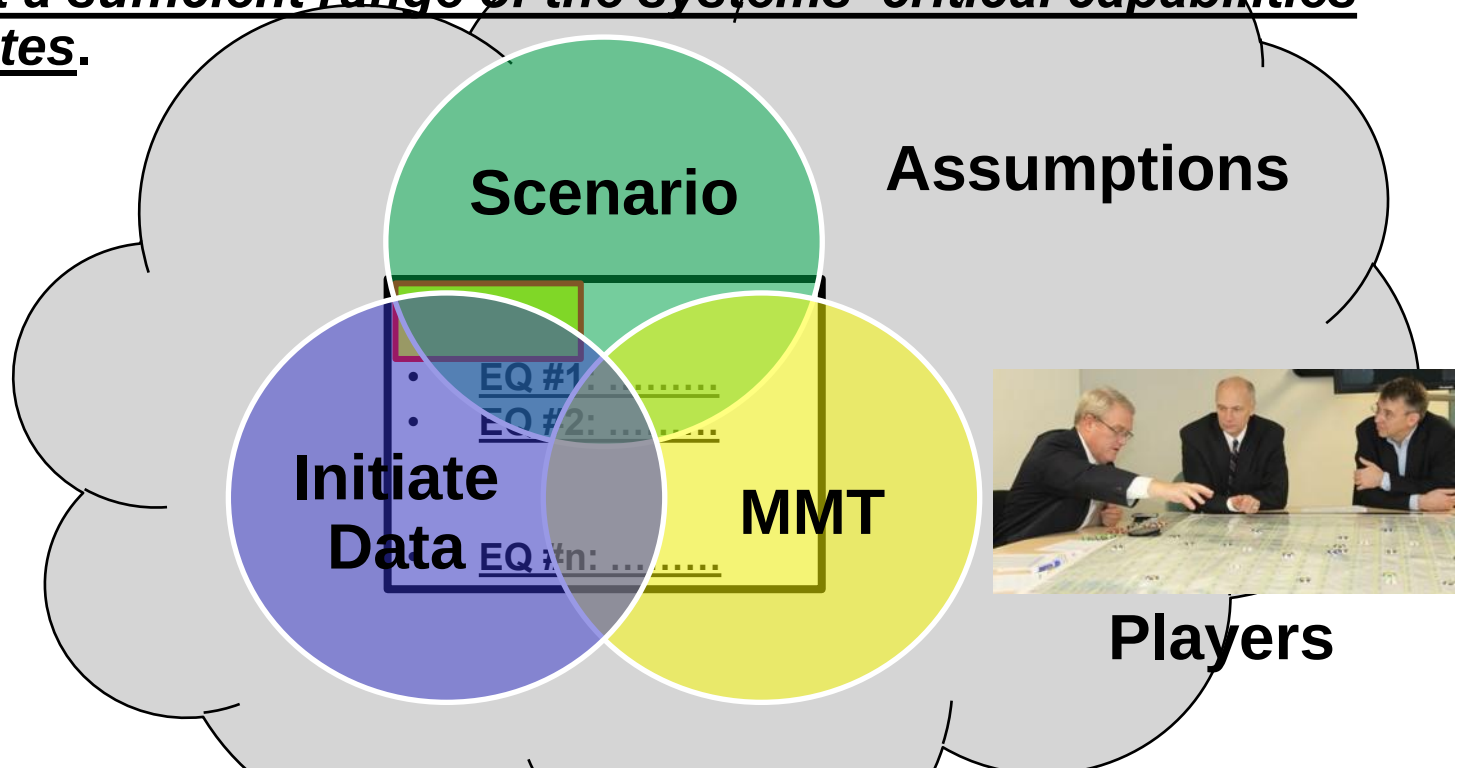
Each Key Issue is decomposed into several sub-issues.

Decomposition can go several levels, and only stops when the current sub-issue cannot be further decomposed.

A sub issue that cannot be decomposed further is an Essential Question

Measurement Space

- Measurement space is a function of the scenario, Methods, Models, or Tools (MMTs), and data used in an analytic study. The objectives of the study can only be met if the measurement space allows enough latitude to permit the systems under study to be assessed throughout a sufficient range of the systems' critical capabilities and attributes.



Who do you get to play the adversary? What credentials should they have? Any other concerns?



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
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The other three elements of measurement space are Scenario, Methods Models, and Tools, and Initiate Data

The two elements of measurement space unique to wargaming are the Players and Assumptions.

The type of game, information format (closed/open), players required, Methods, Models, and Tools needed, and data collection techniques employed will all be informed by the completed DCMP.



The Data the DCMP *must* specify



- **Initiation Data**: The data needed before the wargame begins to include the data that any method, model, or tool (MMT) will need.
- **Feedback Data**: Data that informs the players on the outcome of their decisions.
- **Analysis Data**: This is the data needed from the wargaming results to answer the sponsor's issues and meet the sponsor's objective.

Feedback Data is almost always Analysis Data as well, so maintain a record of Feedback Data provided to players.



Educational Wargames



- We have seen the use of wargames in the classroom increase in some of our DoD schools since 2014.
- Some attempts have been better than others.
- In many cases it is not clear that specific learning objectives were actually considered when introducing wargames into the classroom.
- “The students had fun” and “It stimulated more discussion than my lecture on the same topic” aren’t necessarily good indicators that learning actually occurred.

<https://warontherocks.com/2016/04/wargaming-in-the-classroom-an-odyssey/>



PLA (Chinese Armed Forces) Wargaming Competitions



“For nearly a decade, PLA officers have been publicly criticised for their poor command capabilities. Some significant proportion of them suffers from the ‘Five Incapables’ (五个不会), that is to say, they ‘cannot judge situations, understand higher authorities’ intentions, make operational decisions, deploy troops, nor deal with unexpected situations’. Today, the Five Incapables remains a vexatious problem for the Chinese military, including the PLAN. **Wargaming, including wargaming competitions, is seen as one way of curing this malady.**”

Ryan D Martinson (2024) The Rise of Wargaming Competitions in the Chinese Navy, The RUSI Journal, 169:3, 16-27, DOI: 10.1080/03071847.2024.2380423



PLA (Chinese Armed Forces) Wargaming Competitions



The organisers highlighted two main aims in holding the event. One was to excite the enthusiasm of participants for teaching, learning and researching about war. The other was to **improve their minds in the ways needed for effective battlefield command**. According to one university instructor, this manifested in four ways: 1) increased knowledge of the weapons/equipment fielded by China and its adversaries; 2) enhanced mental toughness; 3) improved ability to respond to the rapidly changing battle situation; and 4) better ability to grasp the overall picture of a major maritime campaign.

Ryan D Martinson (2024) The Rise of Wargaming Competitions in the Chinese Navy, The RUSI Journal, 169:3, 16-27, DOI: 10.1080/03071847.2024.2380423



Educational Wargames



- Educational wargames seek to impart knowledge to the players.
- Questions to consider:
 - Are there building blocks of knowledge that the players are expected to already know?
 - Is the knowledge you want to impart context-dependent? e.g. do you fight Russia using the same doctrine with which you fight China?
 - How will players acquire the knowledge you want to impart?
- Assessing learning:
 - Pre-wargame survey to assess pre-game knowledge level
 - Post-wargame survey to assess post-game knowledge level
 - Post-wargame survey minus pre-wargame survey should equal the knowledge the players acquired from the wargame!

Survey Design best practices closely parallel Wargame Design best practices!



Educational Wargame Structure



- An educational Data Collection and Management Plan replaces the analytical wargame's Key Issues with Learning Objectives.
- Like Key Issues, Learning Objectives may have several subordinate elements that all need to be imparted to the players for a single Learning Objective to be met.
- Is there data that you can collect during an educational game that allows you to assess the players' learning?



Summary



- **Build the foundation of your wargame using the DCMP. It takes some practice and can be tedious, but it demonstrates the due diligence of the professional wargamer. *Without the DCMP, your wargame has a foundation made of sand!***
- **Educational wargames require as much, if not more, rigor as an analytic game if done properly!**
- **Wargaming design is a skill that must be developed over time by:**
 - Observing games
 - Playing games
 - Designing (and playtesting) games



Questions/comments/concerns?