



Strategic Command

Defence Experimentation and Wargaming Hub

BAE SYSTEMS

The Analysis-Led Wargaming Lifecycle

Introduced by: Lt Col Tom Ellen (COS Defence Experimentation and Wargaming Hub)

Presented by: Dr James Bennett (BAE Systems CORDA)

Connections UK 2024

10 September 2024

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Defence Experimentation and Wargaming Hub (DEWH)

- Part of the Integrated Warfare Centre (used to be Joint Warfare);
- Formally opened in March 2024, the DEWH's purpose is to address UK Defence's wargaming capacity and capability shortfalls and to champion the increased use of wargaming across Defence;
- In partnership with the Defence Science and Technology Laboratory (Dstl), industry, allies and academia the DEWH provides an end-to-end, state-of-the-art wargaming and experimentation service to customers operating at the joint and strategic levels;
- Based at MoD Southwick Park;
- Working in full partnership with and building on and complementing Dstl's Defence Wargame Centre: maintaining 2 wargaming sites under a common narrative;
- "Evidence-based decisions ... faster" (and better);
 - Dedicated staff, facility and budget;
 - Analysis-led design;
 - Focus on **rigour**: independent, objective, grounded in reality and reflective of complexity;
- DEWH does not do: cost-saving opportunities or "wargame washing".





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Analysis-Led D3AR Wargaming Lifecycle

1) Discover

2) Design

3) Deliver

4) Analyse

5) Report

Evidence-based decisions faster

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Analysis-Led D3AR Wargaming Lifecycle

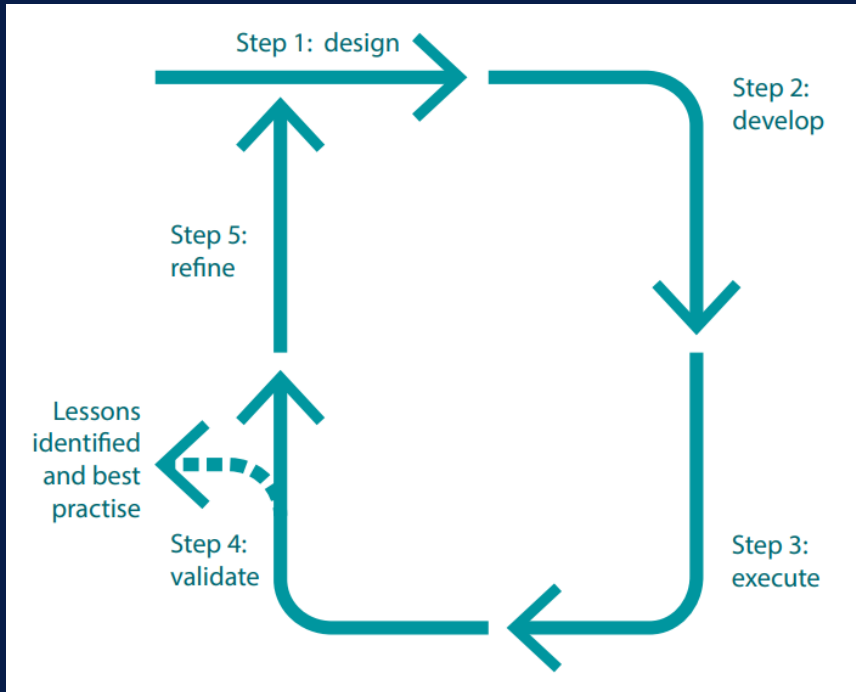
1) Discover

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The Wargame Process – Ministry of Defence Wargaming Handbook

- Designed to be broadly applicable to wargames for all types of purpose (*training, education, analytical etc.*)
- Therefore, does not include analysis as a discrete part of the wargaming process (*analysis is consistently referred to throughout*)





Analysis-Led D3AR Wargaming Lifecycle

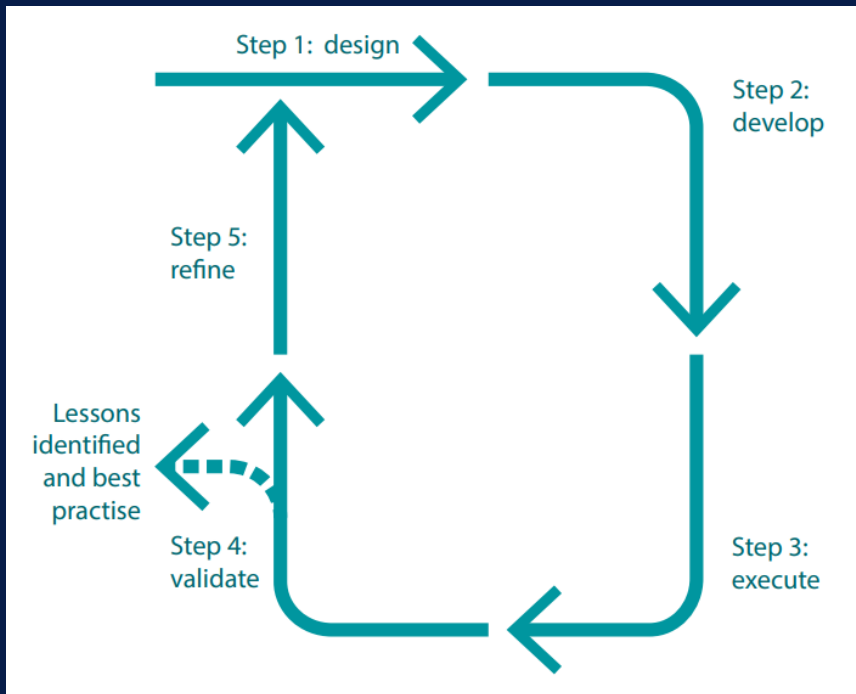
1) Discover

2) Design

3) Deliver

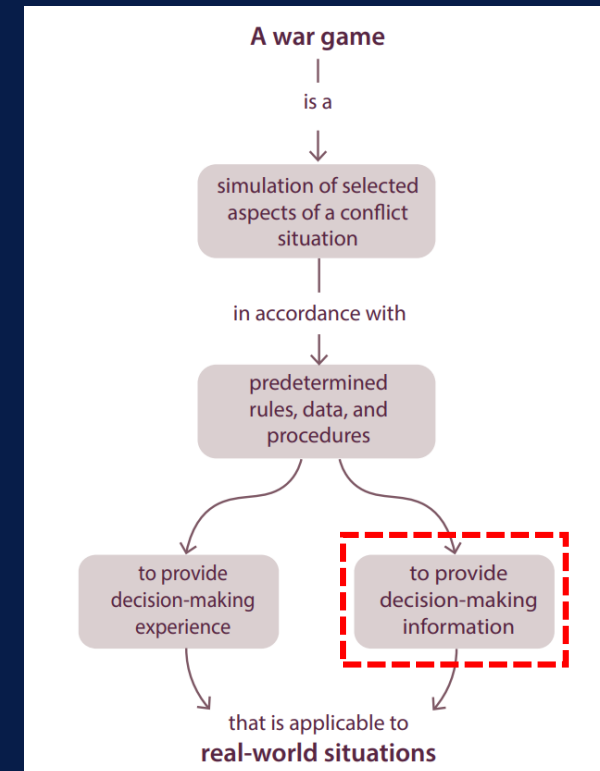
4) Analyse

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The Wargame Process – Ministry of Defence Wargaming Handbook

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Analysis-Led D3AR Wargaming Lifecycle



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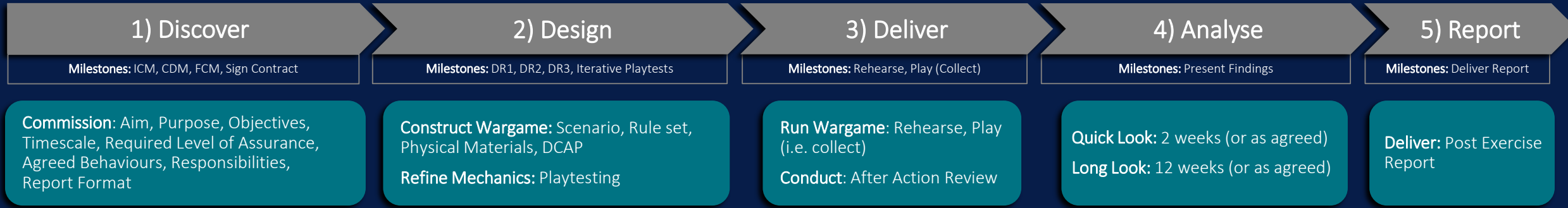


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Analysis-Led D3AR Wargaming Lifecycle



 Delivery Cycle

Evidence-based decisions faster

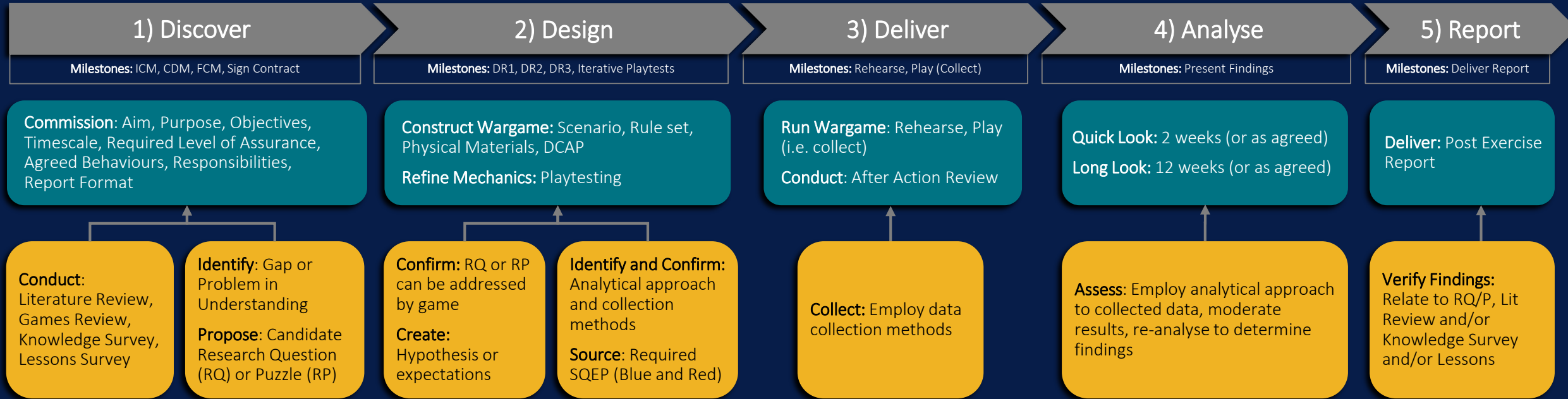
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Analysis-Led D3AR Wargaming Lifecycle



Delivery Cycle



Analysis Cycle

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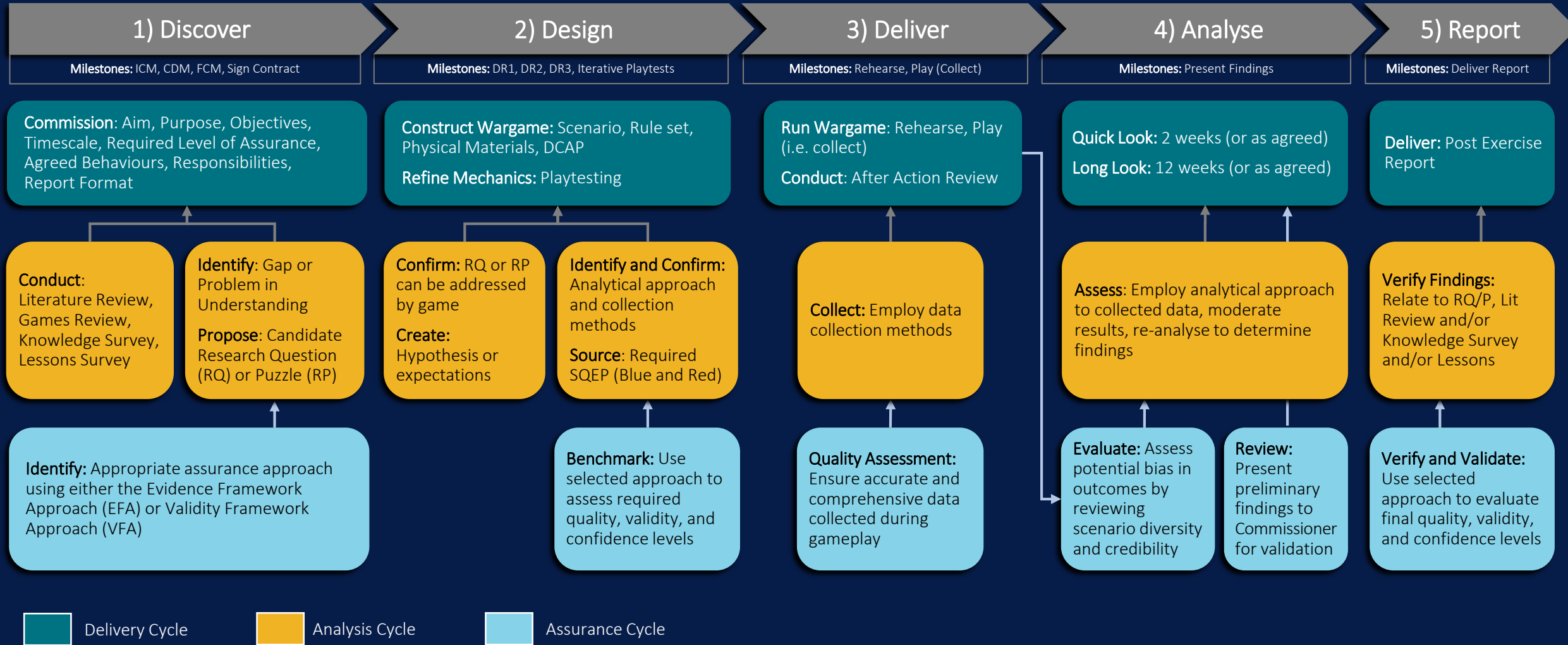
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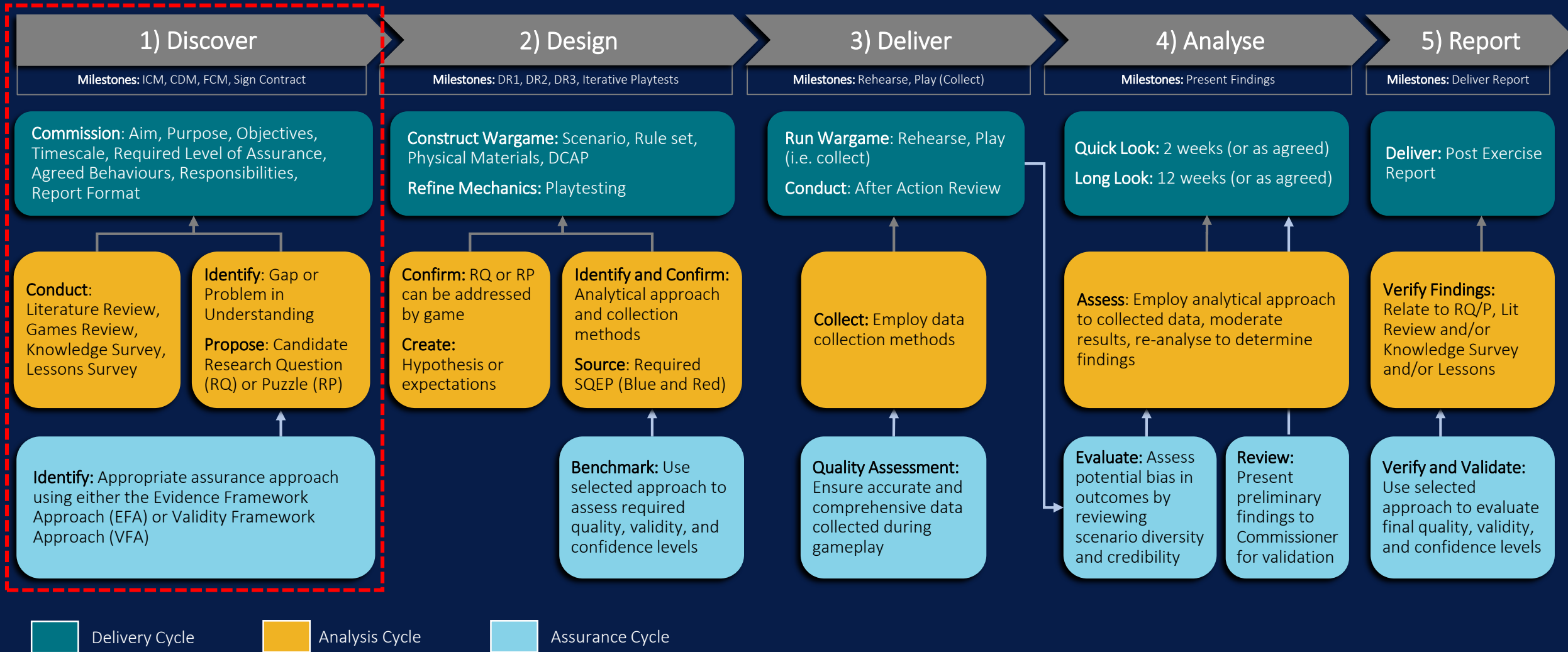


Analysis-Led D3AR Wargaming Lifecycle





Analysis-Led D3AR Wargaming Lifecycle



Wargame Commissioning Protocol

- **Aim:** to ensure that the commissioner of a wargame and the DEWH generate a shared understanding/expectation of what a wargame is to examine and how it will be delivered prior to commencing the wargame *Design* stage
- **Output:** a *Commissioning Contract* between DEWH and Commissioner
- **Pathway:**
 - Initial Commissioning Meeting (ICM)
 - Concept Development Meeting (CDM)
 - Final Commissioning Meeting (FCM)
 - Contract

ICM – The Basics

- Why do you need this activity?
- What will it (the activity) allow/enable you to do once complete?
- What other means are available to you, and why will they not work?
- What is your current:
 - Timescale;
 - Classification;
 - Ability to resource: time, people, T&S etc;
 - Willingness to adapt;
 - Frame of reference;
 - Preferred venue and its capacity.

ICM – The Questions

1. Who is commissioning the wargame?
2. What do you want the wargame to do?
3. What do you want the wargame to reveal?
4. What is already known that needs to be reflected in the wargame?
5. What format of report is required and when?
6. What level of insight (new knowledge) does the Commissioner want from the wargame?

Question 6: Analysis Requirement

- **What level of insight (new knowledge) does the Commissioner want from the wargame?** *Noting the higher the level, the greater effort and longer the time required to conduct analysis.*

Level	Description
1	Self- capture of conversation and opinion (i.e. no analysis by DEWH)
2	Collated capture of conversation and opinion by DEWH (i.e. what was said, organised by theme, framework etc)
3	Findings (i.e. Level 2 + application of a narrow range of analytical techniques to determine what new knowledge was derived from the game and likely first-order effects on MQ/RQ/Puzzle etc). May offer correlation.
4	Conclusions (i.e. Level 2+ application of a broad range of analytical techniques to determine what new knowledge was derived from the game, the likely first and second-order effects on MQ/RQ/Puzzle etc, and how a change to the game conditions may alter the outcome). May offer correlation and causality. Could offer an uncertainty matrix.

The greater the risk associated with the wargame outcome, the higher the level of analysis **should** be

ICM – The Questions

1. Who is commissioning the wargame?
2. What do you want the wargame to do?
3. What do you want the wargame to reveal?
4. What is already known that needs to be reflected in the wargame?
5. What format of report is required and when?
6. What level of insight (new knowledge) does the Commissioner want from the wargame?
7. How will the outputs be used and thus what level of assurance does the commissioner seek in the wargame's output?

Question 7: Assurance level

- **How will the outputs be used and thus what level of assurance does the commissioner seek in the wargame's output?** *Noting that achieving a high assurance level generally suggests Level 3+ analysis.*

Usage	Suggested Assurance Level
Exploratory: output will be one of many inputs to a decision.	Low: ad hoc/partial Validity Framework Approach
Informative: output will be one of several inputs to a decision.	Moderate: full Validity Framework Approach (VFA) or partial Evidence Framework Approach (pEFA)
Definitive: output will a primary input to a decision.	High: full Evidence Framework Approach (EFA)

ICM – The Questions

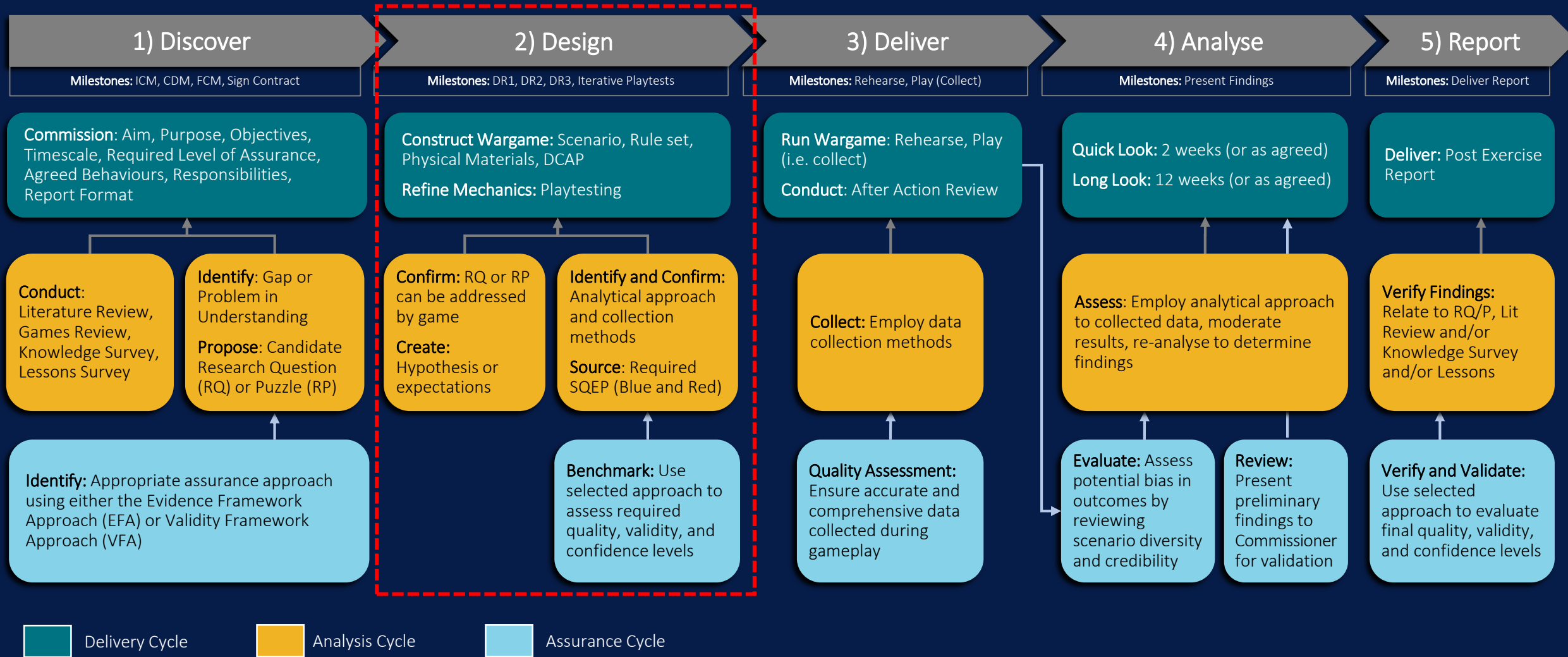
1. Who is commissioning the wargame?
2. What do you want the wargame to do?
3. What do you want the wargame to reveal?
4. What is already known that needs to be reflected in the wargame?
5. What format of report is required and when?
6. What level of insight (new knowledge) does the Commissioner want from the wargame?
7. How will the outputs be used and thus what level of assurance does the commissioner seek in the wargame's output?
8. What kind of decision-making do you want the wargame to emphasise?

Question 8: Level of Realism (or normativity)

- What kind of decision-making do you want the wargame to emphasise?:
 - **Normative decision making** (ideal conditions – what ought to be)
 - **Non-normative decision making** (realistic conditions – what could be)
- What level of stress do you wish player's to be under?
- Do you want the wargame to focus on perfect, good, good enough or survival decision-making outcomes?



Analysis-Led D3AR Wargaming Lifecycle





Design Stage Interactions with Commissioner (Large-Scale Wargame)

2a) Design Review 1 (2-3 Hours)

2b) Design Review 2 (2-3 Hours)

2c) Design Review 3 (4+ Hours)

2d) Playtest (6+ Hours)

2e) Test Game
(6+ Hours)

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(6+ Hours)

Construct

Scenario

Analysis

Assurance

Dependencies

Logistics

Risks

Next Steps

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Design Stage Interactions with Commissioner (Large-Scale Wargame)

	2a) Design Review 1 (2-3 Hours)	2b) Design Review 2 (2-3 Hours)	2c) Design Review 3 (4+ Hours)	2d) Playtest (6+ Hours)	2e) Test Game (6+ Hours)
Construct	- Initial options for model/simulation types - Proposed complexity and functionality - How construct will address the core questions				
Scenario	- Options for top level scenario(s) - Sets direction for further development - Identification of potential areas for vignettes				
Analysis	- DCAP structure briefed to commissioner - Types of data to be captured - Proposed methods of analysis - Expected insights - How analysis will address the core questions				
Assurance	- Identify how construct, scenario and analysis will align to assurance requirements - Confirm benchmarking requirement				
Dependencies	- Identify expected dependencies/inputs from the commissioner and their team - Assess timelines for delivery				
Logistics	- Initial expectations regarding manpower requirements - SME expertise requirements - Game team requirements				
Risks	Initial identification of all potential risks and issues associated with the game's design relating to all six other areas				

Next Steps

- Commissioner sign off of activities so far
- Roadmap and agreed activities leading to DR2
- Initial Agreed Date for DR2



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Design Stage Interactions with Commissioner (Large-Scale Wargame)

	2a) Design Review 1 (2-3 Hours)	2b) Design Review 2 (2-3 Hours)	2c) Design Review 3 (4+ Hours)	2d) Playtest (6+ Hours)	2e) Test Game (6+ Hours)
Construct	- Initial options for model/simulation types - Proposed complexity and functionality - How construct will address the core questions	- Present solid outline of selected game design and initial ruleset covering some cells and mechanics - Identified complexity and expected functionality - How construct will address the core questions			
Scenario	- Options for top level scenario(s) - Sets direction for further development - Identification of potential areas for vignettes	- Present outline of selected scenario(s) - Identify vignettes within scenario - Sets direction for further development			
Analysis	- DCAP structure briefed to commissioner - Types of data to be captured - Proposed methods of analysis - Expected insights - How analysis will address the core questions	- Outline of DCAP produced - Identification of specific data to be captured - Details of analysis methods and expected insights - How analysis will address the core questions			
Assurance	- Identify how construct, scenario and analysis will align to assurance requirements - Confirm benchmarking requirement	- Confirm continued alignment with assurance requirements - Identify potential timelines and dates for required benchmarking			
Dependencies	- Identify expected dependencies/inputs from the commissioner and their team - Assess timelines for delivery	- Align with commissioner on progress to provide required dependencies/inputs - Continuous assessment of timelines for delivery			
Logistics	- Initial expectations regarding manpower requirements - SME expertise requirements - Game team requirements	- Confirm requirements from step 2a) - Initial game delivery assessment – identification of requirements for location including size, classification, technology etc.			
Risks	Initial identification of all potential risks and issues associated with the game’s design relating to all six other areas	- Continued identification and update of all potential risks and issues - Impact assessments and mitigation strategy developed and implemented			
		Iterative Playtesting: The design team will undertake internal small-scale playtests throughout the design phase to support meeting the required inputs for the design reviews			
Next Steps	- Commissioner sign off of activities so far - Roadmap and agreed activities leading to DR2 - Initial Agreed Date for DR2	- Commissioner sign off of activities so far - Roadmap and agreed activities leading to DR3 - Initial Agreed Date for DR3			

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Design Stage Interactions with Commissioner (Large-Scale Wargame)

	2a) Design Review 1 (2-3 Hours)	2b) Design Review 2 (2-3 Hours)	2c) Design Review 3 (4+ Hours)	2d) Playtest (6+ Hours)	2e) Test Game (6+ Hours)
Construct	- Initial options for model/simulation types - Proposed complexity and functionality - How construct will address the core questions	- Present solid outline of selected game design and initial ruleset covering some cells and mechanics - Identified complexity and expected functionality - How construct will address the core questions	Detailed walkthrough of a prototype game construct, including all functionality, rules, roles, cells, prototypes of physical materials, adjudication processes and other mechanics		
Scenario	- Options for top level scenario(s) - Sets direction for further development - Identification of potential areas for vignettes	- Present outline of selected scenario(s) - Identify vignettes within scenario - Sets direction for further development	- Present detailed outline of selected scenario(s) - Scenario and vignettes partially integrated into game construct as inputs		
Analysis	- DCAP structure briefed to commissioner - Types of data to be captured - Proposed methods of analysis - Expected insights - How analysis will address the core questions	- Outline of DCAP produced - Identification of specific data to be captured - Details of analysis methods and expected insights - How analysis will address the core questions	- Walkthrough of well-developed DCAP - Specific data capture requirements and methods identified and partially integrated into game construct – templates produced - How analysis will address the core questions		
Assurance	- Identify how construct, scenario and analysis will align to assurance requirements - Confirm benchmarking requirement	- Confirm continued alignment with assurance requirements - Identify potential timelines and dates for required benchmarking	- Benchmarking session prepared and executed at appropriate time in design processes as determined by the game design team - Benchmarks inform changes to game design to align with assurance requirements		
Dependencies	- Identify expected dependencies/inputs from the commissioner and their team - Assess timelines for delivery	- Align with commissioner on progress to provide required dependencies/inputs - Continuous assessment of timelines for delivery	- Commissioner provides dependencies/inputs - Impact assessment if failure to provide - Development of mitigations (if required)		
Logistics	- Initial expectations regarding manpower requirements - SME expertise requirements - Game team requirements	- Confirm requirements from step 2a) - Initial game delivery assessment – identification of requirements for location including size, classification, technology etc.	- Update of ongoing logistical arrangements, to include identification of and invites to players and SMEs, booking of suitable location etc. - Outline of game construct’s logistical requirements		
Risks	Initial identification of all potential risks and issues associated with the game’s design relating to all six other areas		- Continued identification and update of all potential risks and issues - Impact assessments and mitigation strategy developed and implemented		
Iterative Playtesting: The design team will undertake internal small-scale playtests throughout the design phase to support meeting the required inputs for the design reviews					
Next Steps	- Commissioner sign off of activities so far - Roadmap and agreed activities leading to DR2 - Initial Agreed Date for DR2	- Commissioner sign off of activities so far - Roadmap and agreed activities leading to DR3 - Initial Agreed Date for DR3	- Commissioner sign off of activities so far - Roadmap and agreed activities leading to Playtest - Initial Agreed Date for Playtest and Test Wargame		

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Design Stage Interactions with Commissioner (Large-Scale Wargame)

	2a) Design Review 1 (2-3 Hours)	2b) Design Review 2 (2-3 Hours)	2c) Design Review 3 (4+ Hours)	2d) Playtest (6+ Hours)	2e) Test Game (6+ Hours)
Construct	- Initial options for model/simulation types - Proposed complexity and functionality - How construct will address the core questions	- Present solid outline of selected game design and initial ruleset covering some cells and mechanics - Identified complexity and expected functionality - How construct will address the core questions	Detailed walkthrough of a prototype game construct, including all functionality, rules, roles, cells, prototypes of physical materials, adjudication processes and other mechanics	- Functional playtest of a fairly advanced game prototype - All major aspects of the game will be exposed to the commissioner for final tweaks	
Scenario	- Options for top level scenario(s) - Sets direction for further development - Identification of potential areas for vignettes	- Present outline of selected scenario(s) - Identify vignettes within scenario - Sets direction for further development	- Present detailed outline of selected scenario(s) - Scenario and vignettes partially integrated into game construct as inputs	Scenario and vignettes fully integrated into game construct as close to finalised inputs	
Analysis	- DCAP structure briefed to commissioner - Types of data to be captured - Proposed methods of analysis - Expected insights - How analysis will address the core questions	- Outline of DCAP produced - Identification of specific data to be captured - Details of analysis methods and expected insights - How analysis will address the core questions	- Walkthrough of well-developed DCAP - Specific data capture requirements and methods identified and partially integrated into game construct – templates produced - How analysis will address the core questions	- Walkthrough of almost complete DCAP - Data capture fully integrated into game construct - Walkthrough of analytical processes - Confirmation if how analysis will address the core questions	
Assurance	- Identify how construct, scenario and analysis will align to assurance requirements - Confirm benchmarking requirement	- Confirm continued alignment with assurance requirements - Identify potential timelines and dates for required benchmarking	- Benchmarking session prepared and executed at appropriate time in design processes as determined by the game design team - Benchmarks inform changes to game design to align with assurance requirements		
Dependencies	- Identify expected dependencies/inputs from the commissioner and their team - Assess timelines for delivery	- Align with commissioner on progress to provide required dependencies/inputs - Continuous assessment of timelines for delivery	- Commissioner provides dependencies/inputs - Impact assessment if failure to provide - Development of mitigations (if required)	If dependencies/inputs were not provided then appropriate mitigations will be implemented and demonstrated to commissioner	
Logistics	- Initial expectations regarding manpower requirements - SME expertise requirements - Game team requirements	- Confirm requirements from step 2a) - Initial game delivery assessment – identification of requirements for location including size, classification, technology etc.	- Update of ongoing logistical arrangements, to include identification of and invites to players and SMEs, booking of suitable location etc. - Outline of game construct's logistical requirements	- Update of ongoing logistical arrangements, to include identification of and invites to players and SMEs, booking of suitable location etc. - Detailed game construct logistical assessment	
Risks	Initial identification of all potential risks and issues associated with the game's design relating to all six other areas		- Continued identification and update of all potential risks and issues - Impact assessments and mitigation strategy developed and implemented		
Iterative Playtesting: The design team will undertake internal small-scale playtests throughout the design phase to support meeting the required inputs for the design reviews					
Next Steps	- Commissioner sign off of activities so far - Roadmap and agreed activities leading to DR2 - Initial Agreed Date for DR2	- Commissioner sign off of activities so far - Roadmap and agreed activities leading to DR3 - Initial Agreed Date for DR3	- Commissioner sign off of activities so far - Roadmap and agreed activities leading to Playtest - Initial Agreed Date for Playtest and Test Wargame	- Commissioner sign off of activities so far - Roadmap and agreed activities leading to Test Wargame	

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Design Stage Interactions with Commissioner (Large-Scale Wargame)

	2a) Design Review 1 (2-3 Hours)	2b) Design Review 2 (2-3 Hours)	2c) Design Review 3 (4+ Hours)	2d) Playtest (6+ Hours)	2e) Test Game (6+ Hours)
Construct	- Initial options for model/simulation types - Proposed complexity and functionality - How construct will address the core questions	- Present solid outline of selected game design and initial ruleset covering some cells and mechanics - Identified complexity and expected functionality - How construct will address the core questions	Detailed walkthrough of a prototype game construct, including all functionality, rules, roles, cells, prototypes of physical materials, adjudication processes and other mechanics	- Functional playtest of a fairly advanced game prototype - All major aspects of the game will be exposed to the commissioner for final tweaks	Full test of game construct to ensure functionality
Scenario	- Options for top level scenario(s) - Sets direction for further development - Identification of potential areas for vignettes	- Present outline of selected scenario(s) - Identify vignettes within scenario - Sets direction for further development	- Present detailed outline of selected scenario(s) - Scenario and vignettes partially integrated into game construct as inputs	Scenario and vignettes fully integrated into game construct as close to finalised inputs	Scenario and vignette inputs finalised and integrated
Analysis	- DCAP structure briefed to commissioner - Types of data to be captured - Proposed methods of analysis - Expected insights - How analysis will address the core questions	- Outline of DCAP produced - Identification of specific data to be captured - Details of analysis methods and expected insights - How analysis will address the core questions	- Walkthrough of well-developed DCAP - Specific data capture requirements and methods identified and partially integrated into game construct – templates produced - How analysis will address the core questions	- Walkthrough of almost complete DCAP - Data capture fully integrated into game construct - Walkthrough of analytical processes - Confirmation if how analysis will address the core questions	Data capture processes subjected to live testing at scale
Assurance	- Identify how construct, scenario and analysis will align to assurance requirements - Confirm benchmarking requirement	- Confirm continued alignment with assurance requirements - Identify potential timelines and dates for required benchmarking	- Benchmarking session prepared and executed at appropriate time in design processes as determined by the game design team - Benchmarks inform changes to game design to align with assurance requirements		Demonstrate alignment with assurance requirements
Dependencies	- Identify expected dependencies/inputs from the commissioner and their team - Assess timelines for delivery	- Align with commissioner on progress to provide required dependencies/inputs - Continuous assessment of timelines for delivery	- Commissioner provides dependencies/inputs - Impact assessment if failure to provide - Development of mitigations (if required)	If dependencies/inputs were not provided then appropriate mitigations will be implemented and demonstrated to commissioner	
Logistics	- Initial expectations regarding manpower requirements - SME expertise requirements - Game team requirements	- Confirm requirements from step 2a) - Initial game delivery assessment – identification of requirements for location including size, classification, technology etc.	- Update of ongoing logistical arrangements, to include identification of and invites to players and SMEs, booking of suitable location etc. - Outline of game construct's logistical requirements	- Update of ongoing logistical arrangements, to include identification of and invites to players and SMEs, booking of suitable location etc. - Detailed game construct logistical assessment	Full testing of all logistics relating to game functionality
Risks	Initial identification of all potential risks and issues associated with the game's design relating to all six other areas		- Continued identification and update of all potential risks and issues - Impact assessments and mitigation strategy developed and implemented		
Iterative Playtesting: The design team will undertake internal small-scale playtests throughout the design phase to support meeting the required inputs for the design reviews					
Next Steps	- Commissioner sign off of activities so far - Roadmap and agreed activities leading to DR2 - Initial Agreed Date for DR2	- Commissioner sign off of activities so far - Roadmap and agreed activities leading to DR3 - Initial Agreed Date for DR3	- Commissioner sign off of activities so far - Roadmap and agreed activities leading to Playtest - Initial Agreed Date for Playtest and Test Wargame	- Commissioner sign off of activities so far - Roadmap and agreed activities leading to Test Wargame	Commissioner sign off of game design

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Participants Thoughts and Feedback

Feedback from the community:

- How could we work to continually evolve the Analysis-Led D3AR Wargaming Lifecycle in future iterations?
- How could we work to continually evolve the Wargaming Commissioning Protocol in future iterations?
- How could we work to continually evolve the Design Stage Interactions with Commissioner in future iterations?