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Wargaming to Support Strategic Planning

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Outline

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- Methodology
- Results & Discussion
- Conclusions / Next Steps
- Questions

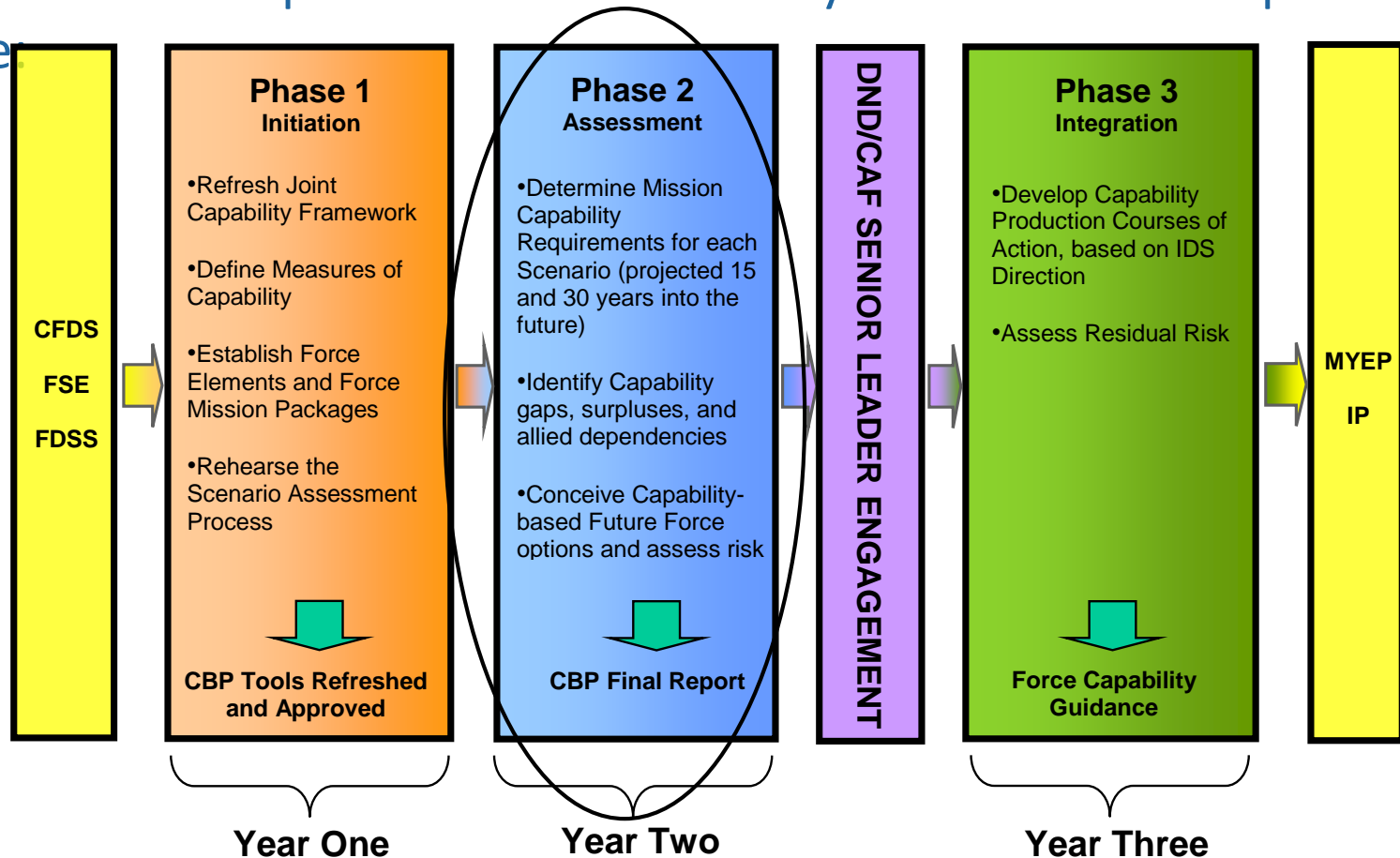


Bottom Line Up Front

- DRDC CORA Recently completed 1+3 iterations of an ISIS-themed Matrix game to explore wargaming as an enhancement to the Capability Based Planning (CBP) process used by the Canadian Armed Forces (CAF).
- A set of metrics was defined to help assess the enhancement.
- Initial results are necessarily limited but:
 - This game was a useful platform to introduce the complexities of the scenario.
 - Provide a preliminary test of our hypothesis using the metrics.
 - Assessed the impact of SMEs and non-SMEs on game outcomes and gameplay.
 - Gained valuable experience running Matrix games.
- Next steps include:
 - Developing a new game using a CAF scenario.
 - Testing the UK's Rapid Campaign Assessment Tool (RCAT)

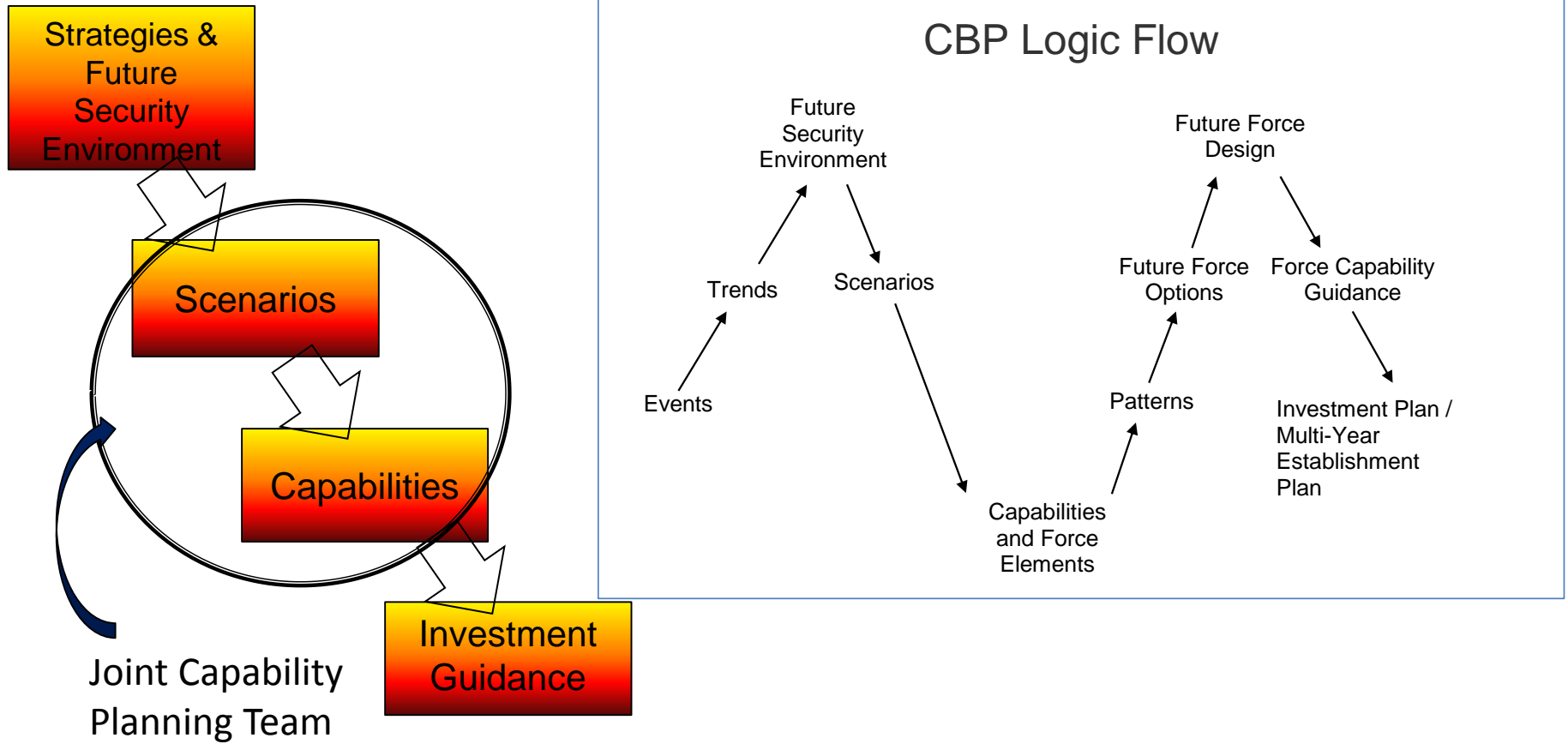
Introduction

- The Canadian Armed Forces (CAF) employs an elaborate CBP process in its strategic planning to produce guidance for future force structure development. We're currently in Phase 2 of the present cycle



Introduction

- Or more simply, CBP process does this:



Methodology

- DRDC CORA established a project to investigate two wargaming methods:
 1. Matrix games
 2. Rapid Campaign Assessment Tool (RCAT) – from UK MoD/Cranfield U.
- Just completed an initial Matrix game series: MATrix Games for the Improvement of CBP or “MAGIC”.
- Began by developing an hypothesis:
 - Wargaming techniques can overcome limitations of CBP process:
 - They better inform the process with broader and differing perspectives on the key drivers.
 - They improve the player awareness of key drivers.
- And then some metrics to test it:
 1. Suitability for CBP purposes: scenario validation.
 2. Suitability for capability assessment.
 3. Effects of the style of gameplay.
 4. Impact of player population on gameplay and outcomes.
 5. Game planning, execution, analysis.

Methodology

- Based on an ISIS scenario.
- Considered several game variables to test
 1. Player population: SME vs non-SME, military vs civilian etc.
 2. “communal” or “cooperative” play styles.
 3. Networked play (separated teams).
- With time/resource constraints focussed only on player population to date.
- All SMEs for MAGIC 1.
- Players all volunteer, non-SME, CORA defence scientists for MAGIC 2, 2a, 3.



Results & Discussion

■ Suitability for Scenario Validation.

- Practical limits on number of players.
 - Discussion time per turn.
- Background info on each faction vital:
 - Balance detail vs. the overall picture.
 - Types and amounts of resources available to each faction.

Turns	MAGIC-1	MAGIC-2	MAGIC-2a	MAGIC-3
Turn 1	5:34	7:30	5:25	6:45
Turn 2	6:50	8:37	5:05	6:23
Turn 3	7:24	5:03	6:00	6:43
Turn 4	4:17	N/A	N/A	N/A
Turn 5	4:12	N/A	N/A	N/A
Overall Average	5:35	7:03	5:34	6:37

DISTRIBUTION OF AVERAGE TIME TAKEN PER TURN

Results & Discussion

- Suitability for CBP capability assessment.
 - Player discussions did not generally highlight capability issues.
 - Not unexpected given the design and purpose of the ISIS game.
 - Political & military dominated the drivers the players leveraged.

PMESII-C	MAGIC-1	MAGIC-2	MAGIC-2a	MAGIC-3
Political	9	4.5	5	8.5
Military	16	13	15	9
Economic	0	1.5	0	1
Social	3	0.5	1	1.5
Information	0	0.5	2	0
Infrastructure	0	0	0	0
Cultural	0	0	0	0
Unknown	7	0	1	0
Total Moves	35	20	24	20

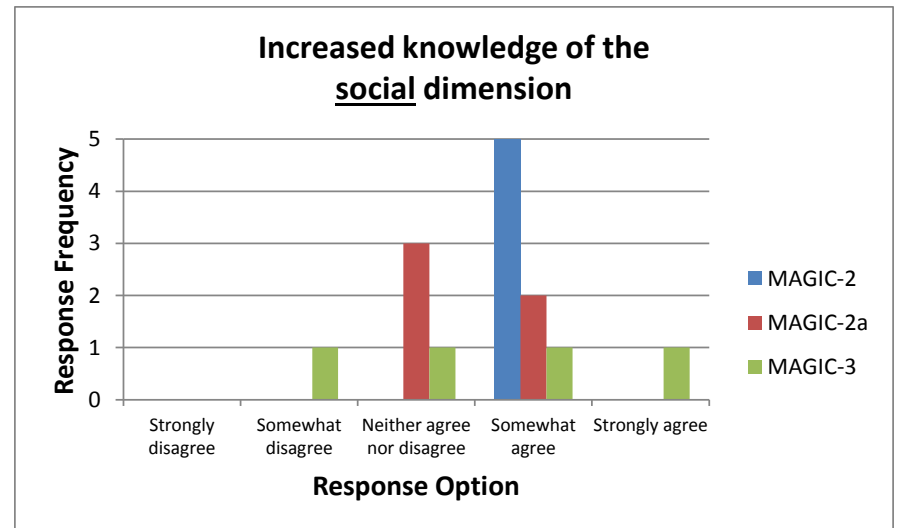
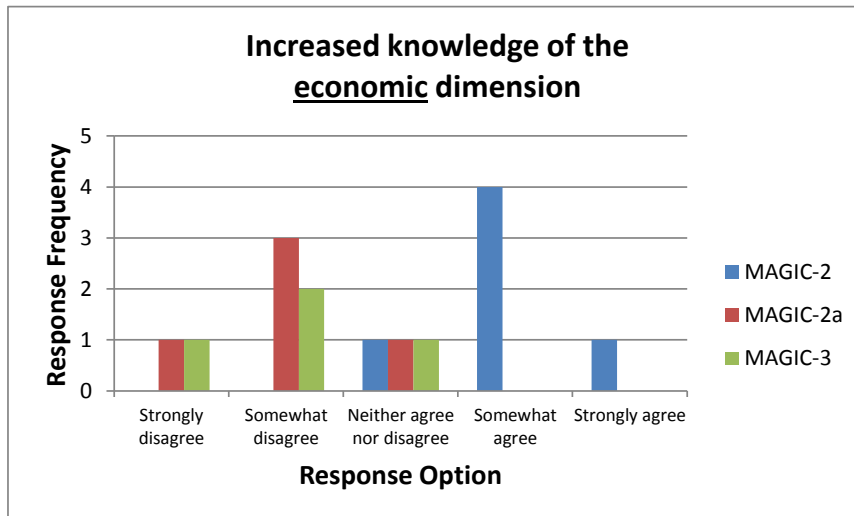
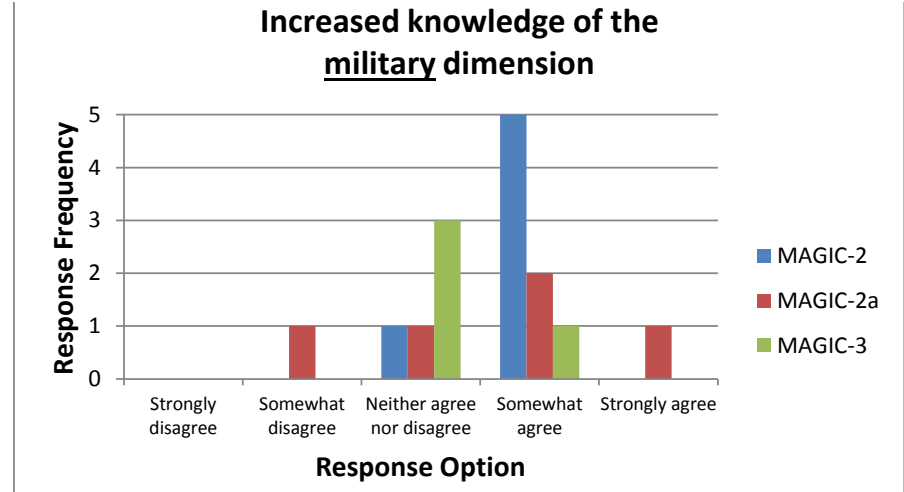
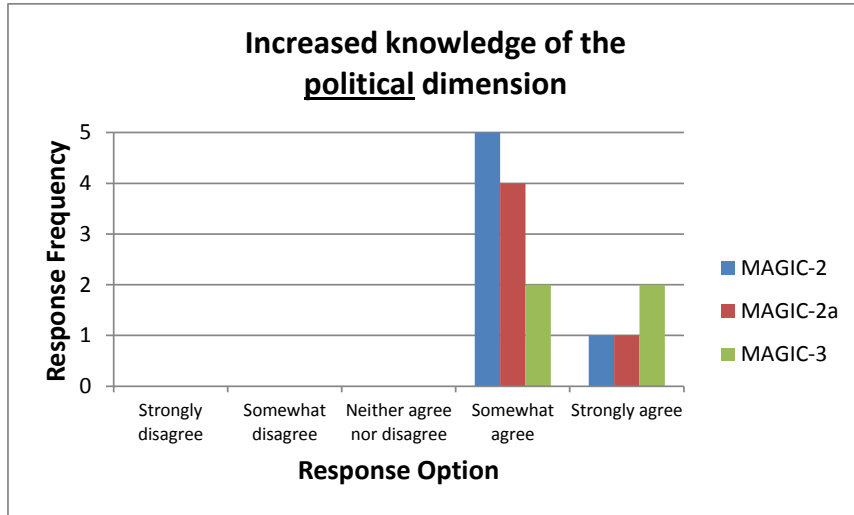
DISTRIBUTION OF PLAYER TURNS BY PMESII-C DOMAIN

Results & Discussion: Effects of Style of Gameplay

- Competitive style leveraged all players and motivated counter arguments.
- Game gave players the freedom to play as they saw fit. No attempt to focus players on any specific PMESII-C driver. They used the drivers they thought would be most useful to their faction.
- Matrix games can increase player knowledge of some of the key drivers. (Next slide)
- Game design created constraints: start state favoured pol/mil moves.
- Limited number of moves:
 - limited exploration of drivers
 - constrained execution of strategies.

Results & Discussion: Effects of style of gameplay

Sample PMESII-C Results



Results & Discussion: Impact of Player Population Choice 1

- Variable: SME versus not.

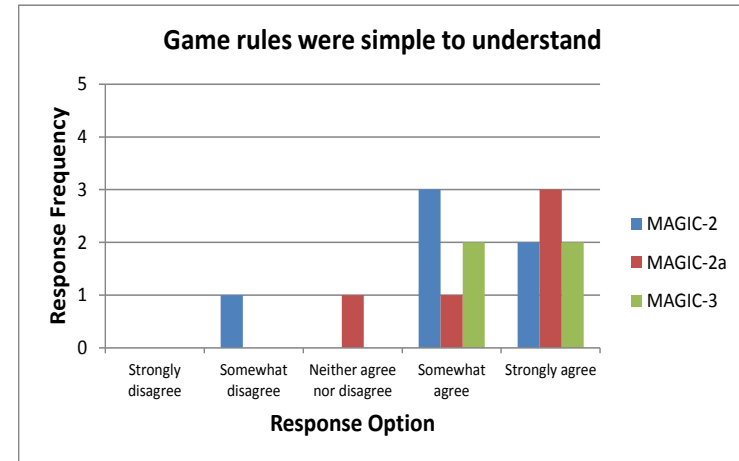
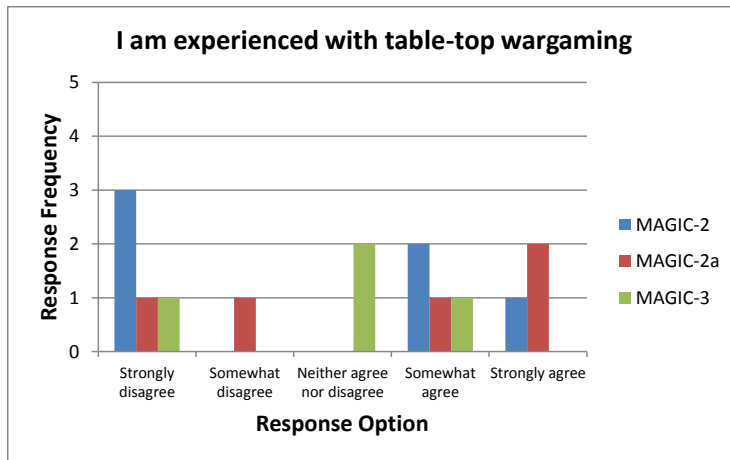
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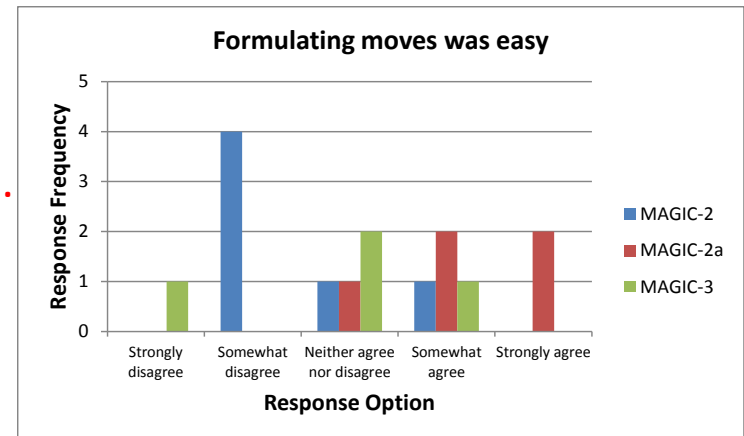
- No effect – gameplay and outcomes the same.

Results & Discussion: Impact of Player Population Choice 2

- Variable: wargaming experience.



- Was a learning effect.
- No impact on gameplay and outcomes.
- Even with experience: moves were hard to do.



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Extras

Extras: PMESII-C Definitions:

- ***Economic dimensions*** – elements of scenario play related to money, finance, business.
- ***Information dimensions*** – elements of scenario play related to situational awareness, cyber, and knowledge.
- ***Infrastructure dimensions*** – elements of scenario play related to physical resources such as industry, roads, bridges, and communications.
- ***Military dimensions*** – elements of scenario play related to armed forces.
- ***Political dimensions*** – elements of scenario play related to diplomacy, public opinion and influence.
- ***Social dimensions*** – elements of scenario play related to quality of life.
- ***Cultural dimensions*** – elements of scenario play related to the beliefs, traditions, values of the people making up the factions.

Extras: Hypothesis (full statement)

- Wargaming techniques can overcome the observed limitations in the CBP process related to the scenario development and validation phase and the JCPT capability assessment phase. Specifically:
 - Wargaming techniques better inform the JCPT process compared to the Operational Planning Process (OPP) method by better informing the process with broader and differing perspectives on the key drivers of how a scenario plays out.
 - Wargaming techniques improve the awareness by players of the key drivers affecting how a scenario plays out thus diminishing the possibility that players will focus on a single driver or dimension of the scenario.

Extras: Metrics (Full set)

1. **Overall suitability of the game for CBP Purposes.**
 - a) Suitability for the validation of the FDSS in Phase 1 of CBP.
 - b) Suitability for the capability assessment phase (Phase 2).
2. **Effects of the style of gameplay.**
 - a) Facilitates examination of all dimensions of the scenario (PMESII-C).
 - b) Leverages the contributions of all players.
3. **Impact of player population choice on game play and outcomes.**
 - a) Impact of level of player expertise on game play and outcomes.
4. **Game planning, execution, data collection, analysis.**
 - a) Lessons about / observations concerning planning.
 - b) Lessons about / observations concerning game execution.
 - c) Lessons about / observations concerning data collection.
 - d) Lessons about / observations concerning analysis of the data collected.