
DE BOARD GAME AN INTRODUCTION TO DE SYSTEMS

Stephen Sagartz

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Tech Note

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**AIR FORCE RESEARCH LABORATORY
Directed Energy Directorate
3550 Aberdeen Ave SE
AIR FORCE MATERIEL COMMAND
KIRTLAND AIR FORCE BASE, NM 87117-5776**

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DE Board Game: An Introduction to DE Systems

Stephen Sagartz DR-01

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What is a Wargame?

- No single definition seems to agree on what is and is not required for a game to be a “Wargame”
- The most general definition gives that the key is opposition. “A Wargame is adversarial. There must be two opposing sides whose players react intelligently to each other’s decisions”

https://modestomilling.com/wp-content/uploads/2019/10/modetso_milling_salt-rock_9498.jpg



https://media.cnn.com/api/v1/images/stellar/prod/230104173032-02-chess-stock.jpg?c=16x9&q=h_720,w_1280,c_fill



- There already exist many Wargames, some of which are household names like Risk, Axis and Allies, and even Chess
- Initially many questions came up:
 - What kind of game do I want it to be?
 - What do I want the game to show?
 - How do I show it?
 - How complicated should it be?
 - What should be abstracted / removed?
 - How long should it take to learn / play?



What kind of game?

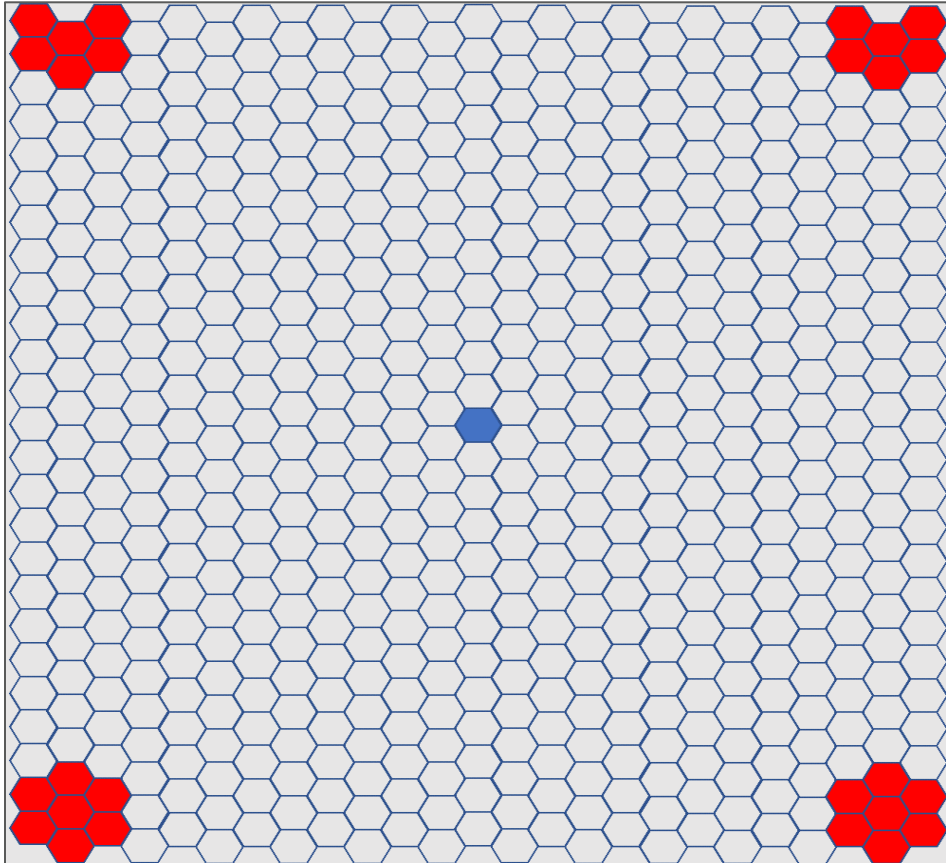


Figure 1: The 25x25 hex grid that represents the main play area

- Why not a board game?
- It would allow players to visualize their actions and decisions in real time and engage them on a level more concrete than a thought experiment
- Hexes, not squares, save yourself the hassle



What will the game show and how?

- As part of the Directed Energy directorate, DE was going to play a focal part in the game, but how?
 - These systems would have to “improve” on what kinetic systems in the game could do.
 - Strengths of DE systems would have to be incorporated
 - Deep magazine
 - What would that mean?
 - Speed of light
 - How do you show that?
 - Scalability of effects
 - Luckily intuitive, some effects will just “hamper” rather than destroy



<https://i0.wp.com/asiatimes.com/wp-content/uploads/2022/01/Airbourne-Lasers-Lockheed-Marting-Laser-Weapons.png?fit=1200%2C703&ssl=1>

How hard can it be?

- As a training aid / roadshow product, it should be simple, fast, and fun
 - If something could be abstracted without a significant loss to realism, it should be
 - Sensing and Kill chain considerations
 - Two players can run the game themselves
 - Rules should be easy to understand and not need a Game Master to play
 - There should be meaningful choices involved
 - “Shopping list” of systems / upgrades
 - Not everything goes to plan in real life
 - Dice are a great tool to add chance to a game and keep a sense of tension
 - Could we make the game “balanced” under these constraints?



<https://media.npr.org/assets/img/2020/07/04/gettyimages-1212201194-4ec3c82a40a41644543a69d931a6140a8a939c35-s800-c85.webp>



Base Defense Alpha Basics

- Scenario – Base Defense from Red Opponent on surrounding islands. Missiles will be inbound to destroy the Blue Defended Area. Victory is achieved by either eliminating all High-Value Assets from Blue’s Defended Area or by Blue still having at least 1 remaining after Red has expended all their threats.
- Systems – Red will have access to Ground Kinetic Launchers, Fighters, and Spy Planes. Blue will have access to Ground Kinetic Launchers, Ground Laser Systems, Ground High-Power Microwave Systems, Fighters, Laser equipped Fighters, and High-Power Microwave equipped Fighters.
- Upgrades – Various upgrades exist that modify how difficult it is to engage a platform, how well a platform can “track” a threat, how quickly a Laser system can rearm, how destructive a missile is, and even if the missile is “hardened” against DE.



But does it work?

- Basic rules were drafted and tested
 - Six-sided dice (d6) were used for engagement success / failure
 - Blue and Red loadouts
 - Fighters were fragile
 - Red Ground Kinetic Launchers had two types of missiles to complicate the “waves”
 - Slow missiles could move 4 tiles, fast moving could move 6
 - 6 slow and 2 fast per launcher
 - Missiles launched at the Defended Area must always move towards the Defended Area
 - Range of missiles was 4*
 - *Red Ground Kinetic Launchers also have a technical range of 4, but can always fire at the Blue Defended Area
 - Penalties applied if engaging beyond listed range
 - Laser and High-Power Microwave range was 3
 - Lasers could not miss, but would deplete magazine
 - High Power Microwave systems shot one target and could cause a “miss”
 - Blue’s Defended Area represented by a separate board of 5x5 tiles that could be destroyed
 - Also allowed High Power Microwave systems effects added depth

Some findings (aka. Why playtesting is important)

<https://www.thedrive.com/content/2021/01/A-10-Warthog-Dogfight.jpg?quality=85&crop=16%3A9&auto=webp&optimize=high&quality=70&width=1440>



- Fighter aircraft should more resilient
 - Defensive measures were abstracted to a defensive roll compared to the attacker's roll
- DE Systems do not have a range that makes them useful
 - Because of the board, missiles would be 4 away from the Defended Area before impacting, making the range of 3 pointless
 - Increased DE systems range to 4
 - Since DE weapon range is a concern, no out of range DE engagements
 - I wanted KE range to be greater than DE, so adjusted missile range to 5
- Cost of Systems needed to be adjusted
 - Assets that cost a heavy amount of money eliminated too easily or did not provide enough incentive to purchase
- Each system could only “attack” once per turn which caused concern about overwhelming KE attacks
 - DE equipped fighters allowed to use every weapon per turn



Results

- Game has undergone some significant changes for the sake of balance
 - Many core mechanics remain unaltered, while others that I may not have brought up have been introduced
- But does it do what it is supposed to?
 - While the balance of the game may need tweaking, the game does do what I set out to do from the beginning by covering the strengths of DE and separating those effects from KE
 - Deep Magazine – Lasers have a magazine depth that can rearm making it useful compared to KE launchers which can run out of missiles. High Power Microwave Systems do not have any limitation on number of times in the game they can be used, but only once per turn per system.
 - Speed of Light – DE weapons show this by the fact that they cannot miss. They will always hit their target. The question is however, if they put enough energy on the threat to impact it.
 - Scalability of Effects – It is true, the Lasers in the game don't show this, but High-Power Microwaves do. Instead of eliminating a threat, the effect is that the missile will be increasingly unlikely to impact the Defended Area



QUESTIONS?