

**Name:** Michael R. Shannon

**Title:** BattleTech inspired board game engine.

**Project Summary:** A board game engine based on the Classic BattleTech ruleset. A tactical strategy game where units move on a hexagonal grid and fire various weapons (with hits controlled by dice rolls) in an attempt to eliminate the opposing team.

## Project Requirements

### User Requirements

ID	Description	Category	Priority
REQ.USR.1	Player's can choose from a list of units when starting the game by spending from the pool of battle value points.	Game Setup	Low
REQ.USR.2	Player 1 can place their units within 3 tiles of the south end of the board.	Game Setup	Low
REQ.USR.3	Player 2 can place their units within 3 tiles of the north end of the board.	Game Setup	Low
REQ.USR.4	Player's can view a list of all units in the game, with unique ID, type, coordinates, and health/armour percentage.	Views	High
REQ.USR.5	Player's can view the game board, showing location and orientation of units.	Views	High
REQ.USR.6	Player's can view the game board, showing the terrain type of each tile.	Views	High
REQ.USR.7	Player's can view the health/armour of any unit.	Views	High
REQ.USR.8	Player's can view the movement points of any unit.	Views	High
REQ.USR.9	Player's can view a list of weapons of any unit, showing location, range, damage, and whether it has been destroyed.	Views	High
REQ.USR.10	Player's can view percent to hit ratio against any other unit for all weapons on the current unit.	Views	High
REQ.USR.11	Player's can choose which unit to move when it is their turn.	Movement	High
REQ.USR.12	Player's can choose to not move, cruise or flank.	Movement	Low
REQ.USR.13	Player's can rotate (in any of the hexagonal directions), move forward, or (move backward if not flanking) until out of movement points.	Movement	High
REQ.USR.14	Player's can choose which unit will fire when it is their turn.	Combat	High
REQ.USR.15	Player's can choose which weapons to fire.	Combat	High

# UI Mockups

Player 1: map

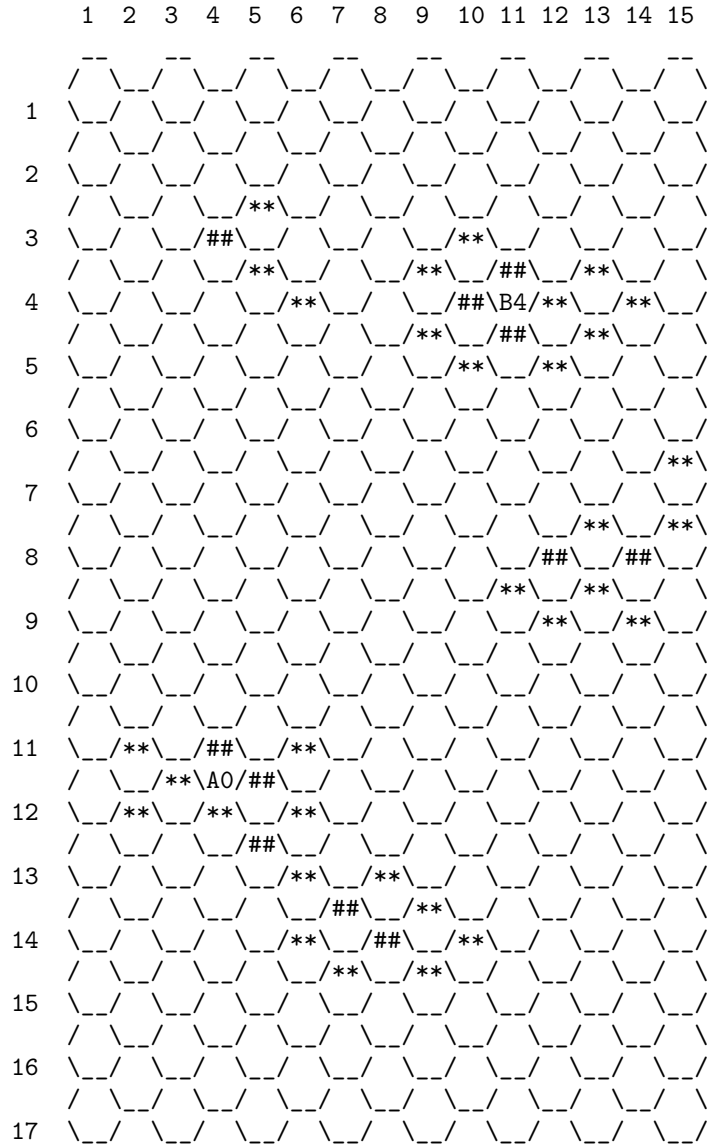


Figure 1: Map View: Shows terrain as well as location and facing direction of units.

Figure 1 is displayed when the user types `map` and shows the Map View, it shows the 15x17 map of hexagonal tiles. It also shows the terrain in the top two characters of every hex tile. The terrain types are outlined below:

- " ": Clear
- "\*\*\*": Light Woods
- "###": Heavy Woods

In the bottom two characters of some cells are unit ID's (in the first character) and it's facing direction (in the second character). In Figure 1 there are two units, they are:

- Unit A at grid 0411 with direction 0.
- Unit B at grid 1104 with direction 4.

The directions codes are:

- 0: North
- 1: North-East
- 2: South-East
- 3: South
- 4: South-West
- 5: North-West

[Player 1]: list

Player	Type	Health	Grid	Facing
1	Hunchback HBK-5G	100%	0411	North (0)
2	Manticore Heavy Tank	100%	1104	South-West (4)

Figure 2: List View: Shows list of all units still in the game.

Figure 2 shows the view that is displayed when a user types `list` in the game's prompt. It shows a list of all units for each player still in the game along with basic health status and location.

[Player 1]: status A

ID: A	
Type: Hunchback HBK-5G	
Health: 100%	
Grid: 0411	
Facing: North (0)	
Movement Points:	
Walking: 4	
Running: 6	
To-Hit Modifier: 5	
Gunnery Modifier: 4	
Weapon Type	Dmg Min Sht Med Lng Location
Small Laser	3 - 2 3 Head
Autocannon 20	20 - 6 9 Right Torso
Medium Laser	5 - 6 9 Right Arm
Medium Laser	5 - 6 9 Right Arm
Ammo Type	Shots
Autocannon 20	10

Figure 3: Status View (for mechs): Shows the status of a unit.

Figure 3 is shown when the user types the `status <unit ID>` if the unit is a mech. It shows type, location, health, weapons, and ammo. But most importantly it shows per location armour remaining the "paper doll". The same view when the unit is a vehicle is shown in Figure 4.

[Player 2]: `status B`

```

ID: B
Type: Manticore Heavy Tank
Health: 100%
Grid: 1104
Facing: South-West (4)
Movement Points:
    Cruising: 4
    Flanking: 6
To-Hit Modifier: 5

```

```

      -----
      /\ 42 /\
      /  \_/_/  \
      |33/42\33|
      |  \_/_/  |
      |_/26\_|
      \-----/

```

Weapon Type	Dmg	Min	Sht	Med	Lng	Location
Medium Laser	5	-	3	6	9	Front
LRM 10	10	6	7	14	21	Turret
PPC	10	3	6	12	18	Turret
SRM 6	12	-	3	6	9	Turret

Ammo Type	Shots
SRM	90
LRM	120

Figure 4: Status View (for vehicle): Shows the status of a unit.

[Player 1](combat): `fire A B`

Huchback HBK-4G (A) is firing at Manticore Heavy Tank (B).

#	Weapon Type	Damage	To-Hit
1	Small Laser	3	0%
2	Autocannon 20	20	23%
3	Medium Laser	5	75%
4	Medium Laser	5	75%

List weapon #'s to fire (leave blank to reset): `2 3 4`

Autocannon 20 hit Left Side for 20 damage.

Medium Laser missed.

Medium Laser hit Front for 5 damage.

Figure 5: Firing View: Shows chance of each weapon to hit and allows the player to choose which to fire.

Figure 5 is shown when a player types `fire <attacker id> <target id>` when the attacker is controlled by that player and has not fired from that unit yet. It shows damage and chance to hit for each weapon and gives the player the choice to fire 0 or more weapons.

Figures 6-10 show the views and steps found to move a single unit (the mech A).

i. Idle		(4 gunnery)
c. Cruise	(4 MP)	(5 gunnery)
f. Flank	(6 MP)	(6 gunnery)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1															
2															
3					**										
4				##					**						
5				**				**	##	**					
6				**				**	##	B4	**	**			
7				**				**	##	**	**				
8				**				**	**	**	**				
9				**				**	**	**	**				
10				**				**	**	**	**				
11				**				**	**	**	**				
12				**				**	**	**	**				
13				**				**	**	**	**				
14				**				**	**	**	**				
15				**				**	**	**	**				
16				**				**	**	**	**				
17				**				**	**	**	**				

- w. Move Forward
- s. Move Backward
- a. Rotate Left
- d. Rotate Right
- e. End
- r. Reset

Figure 6: Moving (part 1)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
2	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
3	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
4	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
5	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
6	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
7	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
8	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
9	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
10	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
11	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
12	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
13	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
14	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
15	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
16	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
17	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/

Unit: A      Grid: 0410      Facing: North (0)      MP: 3      To-Hit: 4

w. Move Forward  
s. Move Backward  
a. Rotate Left  
d. Rotate Right  
e. End  
r. Reset

Select movement: d

Figure 7: Moving (part 2)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
2	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
3	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
4	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
5	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
6	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
7	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
8	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
9	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
10	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
11	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
12	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
13	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
14	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
15	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
16	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
17	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/

Unit: A      Grid: 0410      Facing: North-East (1)      MP: 2      To-Hit: 4

w. Move Forward  
s. Move Backward  
a. Rotate Left  
d. Rotate Right  
e. End  
r. Reset

Select movement: w

Figure 8: Moving (part 3)



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
2	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
3	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
4	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
5	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
6	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
7	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
8	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
9	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
10	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
11	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
12	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
13	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
14	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
15	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
16	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/
17	/	\	/	\	/	\	/	\	/	\	/	\	/	\	/

Unit: A      Grid: 0510      Facing: North-East (1)      MP: 1      To-Hit: 4

w. Move Forward  
s. Move Backward  
a. Rotate Left  
d. Rotate Right  
e. End  
r. Reset

Select movement: w

Figure 9: Moving (part 4)

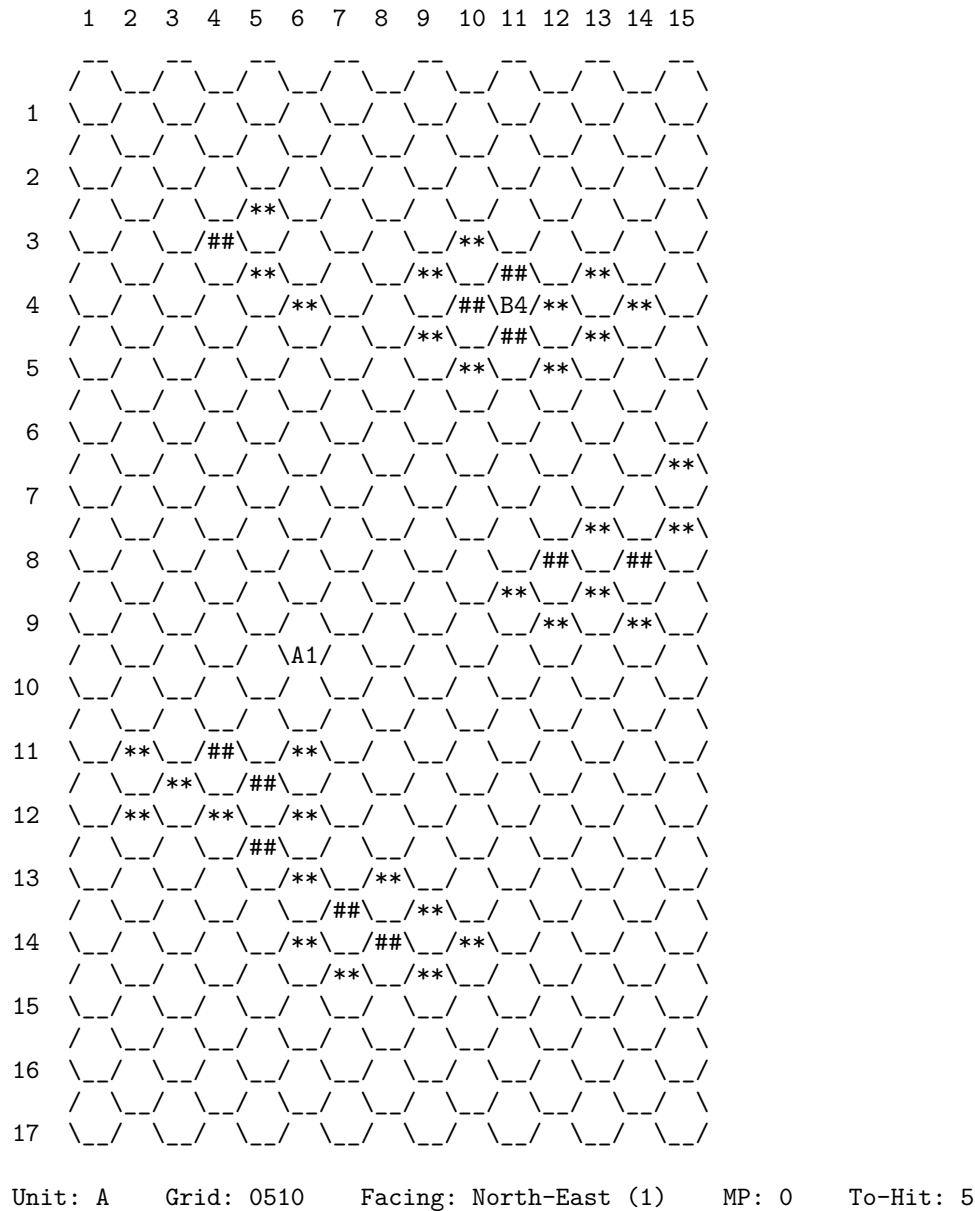


Figure 10: Moving (part 5)

## Class Diagram

The class diagram is on the next page. I am still trying to figure out what data types to pass to the views, which is the reason the method signatures for the views are blank.

I apologize for the curved lines and somewhat haphazard placement. The CASE tool I used does not give much control over these things.

