

Internals of orts competition entry for game 4:

The basic idea of this client is to line up all marines in a circle formation. The marines try to stay together as good as possible in order to mass their shooting power against the adversary. The details of the inner working are as follows.

1. Marines line up in circle formation with wide spacing (eases position finding of the marines).
2. After every marine is on its assigned position they reduce their distance between each other and thus form a circle with close spacing.
3. This circle is going to attack the opponent at the most vulnerable position.
4. This position is estimated to be the position of the opponent which has the largest distance to the center of mass of all the opponents
5. The circle center will be set to this point and the marines get commanded to a precalculated position in a coordinate system which has the circle center as its origin. There is no continuous movement of the circle center it rather jumps to the next destination and the marines are supposed to find their way by just doing a direct movement to the desired position. No path-finding takes place. When a marine gets stuck it makes a random movement and then it is trying to beeline to the desired position again. This procedure is repeated until the marine is in the assigned position.
6. The actions of the circle are based on its state which is determined by external and internal events.
 1. If the circle has no enemies in range it will go to the attack point (see 4)
 2. If there are enemies in range the circle checks for local superiority
 1. Local superiority: Circle starts to rotate. the rotation is supposed to serve two goals:
 1. Get hits distributed over all marines, i.e. keep more shooters in the game as long as possible.
 2. Get new shooters in range of enemies before the end of one marines cool-down period
 2. No local superiority: Find new attack point (see 4).
 3. If the circle encounters enemies on its way to a new position it also checks for local superiority:
 1. Local superiority: Get all marines in position.
 2. No local superiority: Back of from enemy to current center of mass of own forces. Wait until circle is in formation and find new attack point. This could be the same as before but now the circle is in better shape to attack.
7. Shooting: In every frame each marine checks for targets. Every marine picks the target with the lowest number of current healthpoints. There will be no more marines assigned to shoot on a target than necessary to kill it. The cool-down period is observed and marines, who can not shoot, move, if a movement is necessary.