# Flocking Research

Model for Flocking

* Each unit can sense flocking
* Each unit can sense 3d space
* All units recalculate their current state simultaneously once each time

Rules for Flocking

* Separation: steer to avoid crowding local flock mates
* Alignment : steer towards the average heading of local flock mates
* Cohesion: steer to move toward the average position of local flock mates.

It is possible to use an array to hold the units that wants to flock. From this, you can ask the state of the units and the position /velocity. We have to see if we want to make the 3D environment (sectors) smaller, to gain performance when each unit needs to detect flocking. We need to distinguish one flocking group from another. This can be done via an array or a special variable. When a unit that is in the searching state or in the idle state, there will be a random factor to see if it will stay in that state or will flock with the group. This state changing happens once when a flock group comes in range of the unit.

State changing can also happen to the leader of the flock. The state of the flock leader has a chance to change state within a time interval. It is also possible, if the group gets to large, that it will split into two groups, each following a different velocity. The chances to split get higher if the group gets bigger.

In the beginning of the game, when in a sector, there will be a few units that will go in the searching state and will be a flock leader.