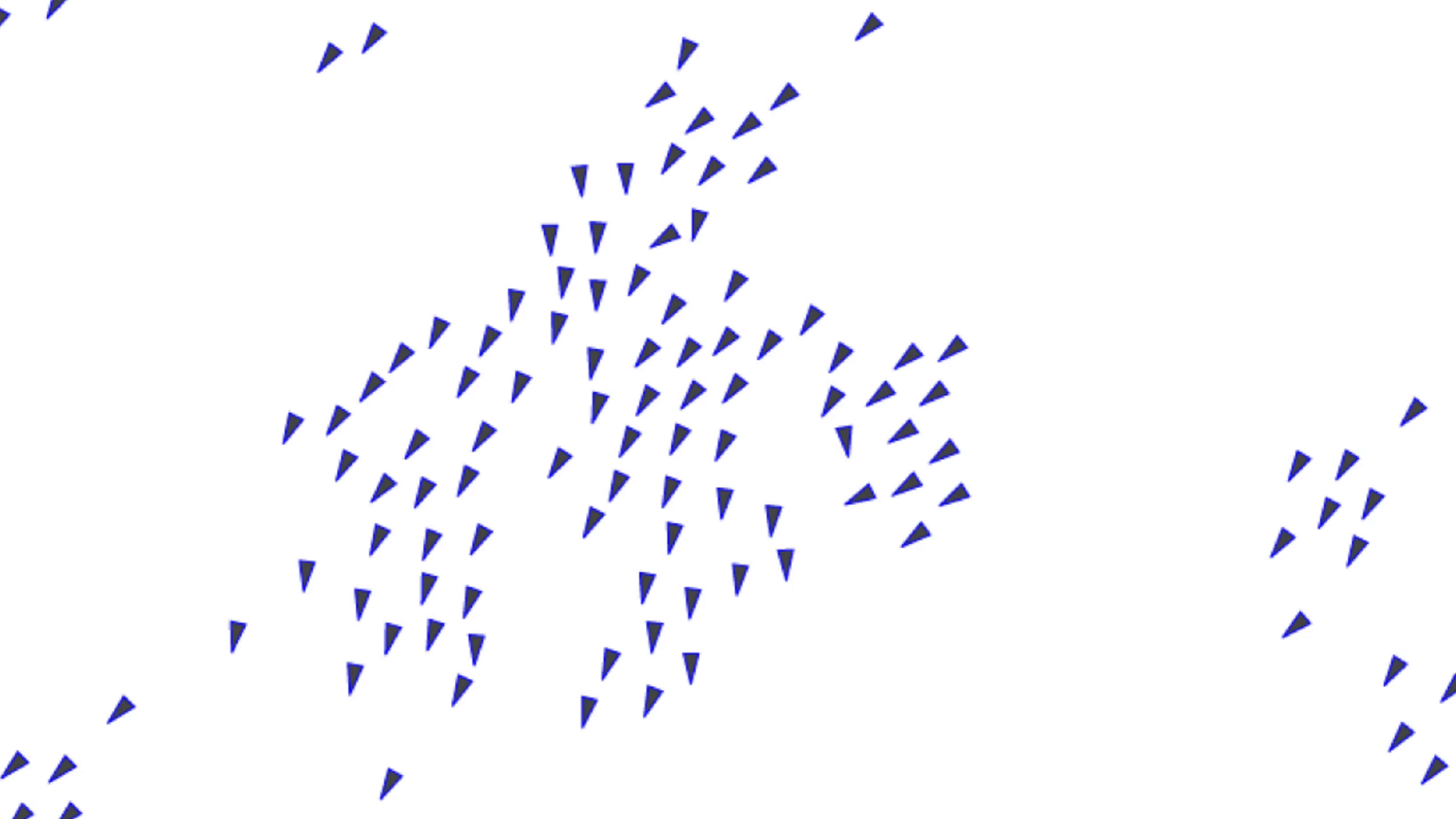


The background of the slide features a flocking simulation. Numerous small, dark blue triangular markers are scattered across the white background, representing individual agents in a flock. These markers are concentrated in several distinct groups or clusters, particularly in the upper and lower portions of the frame, illustrating the emergent behavior of the simulation.

# **Flocking Simulation with Phoenix Channels**

# Flocking Theory





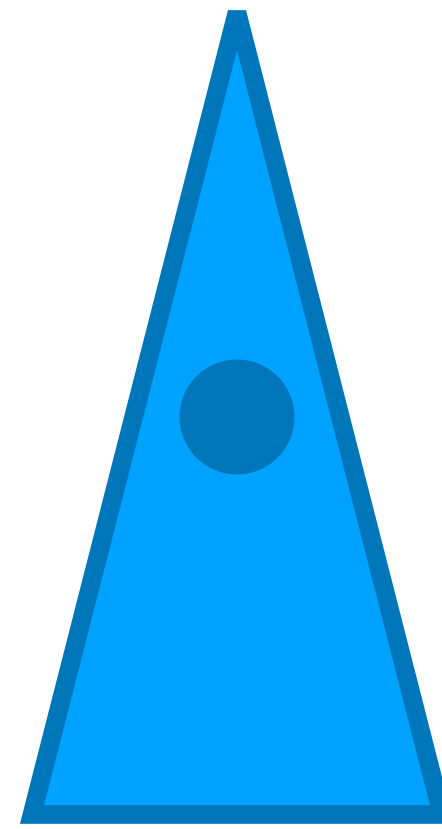


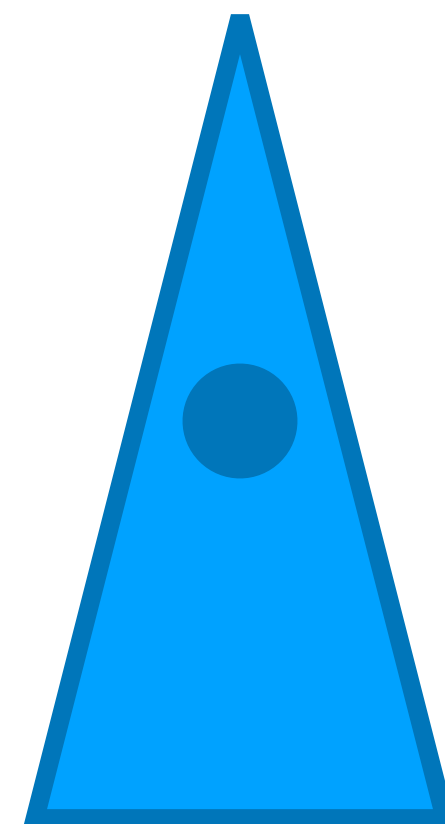
Damn.

Damn.

**Use case: Cinematic effects**

**Boid: One member of a flock**



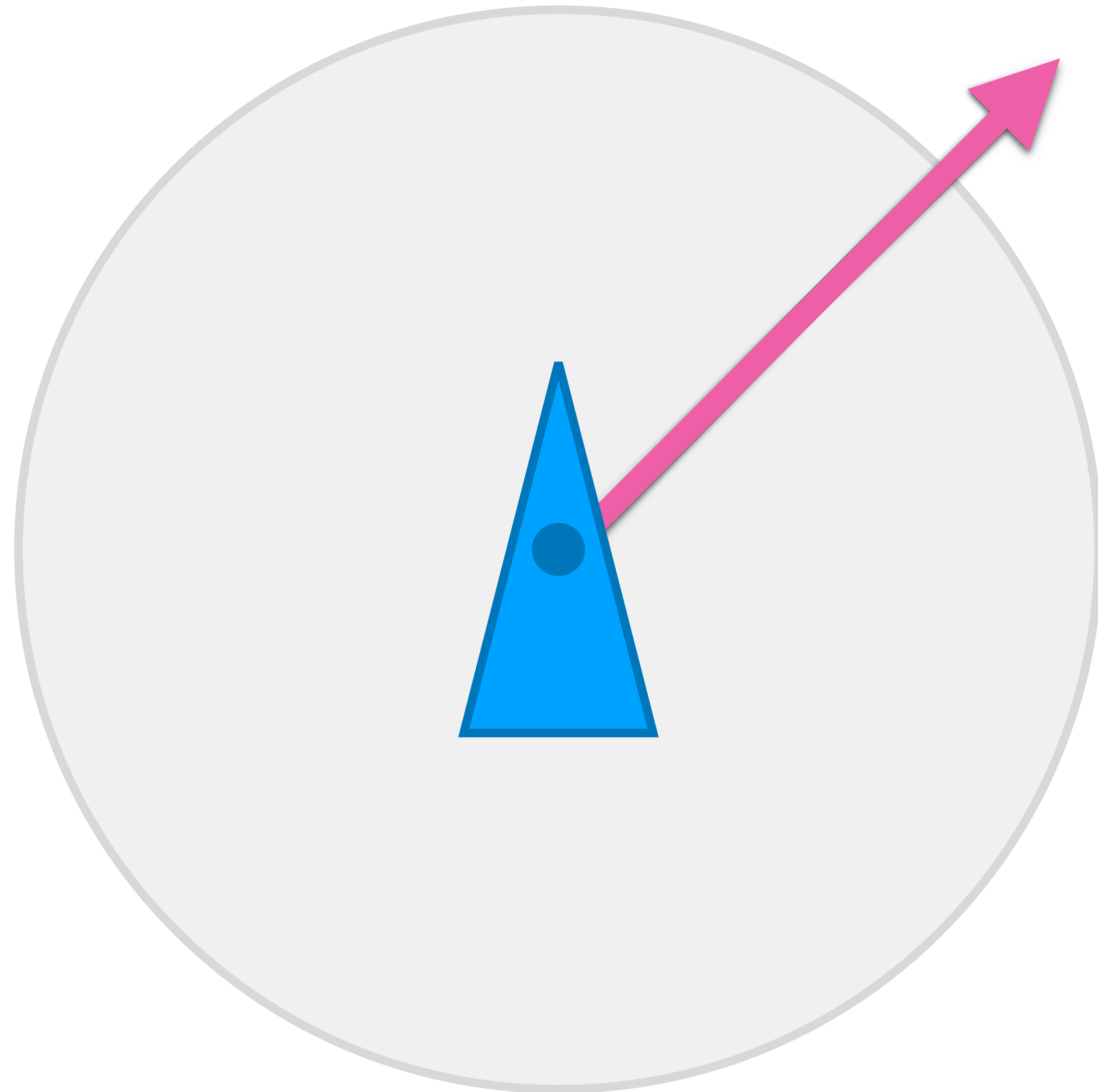


**\* Location**



**\* Location**

**\* Perception Radius**



\* Location

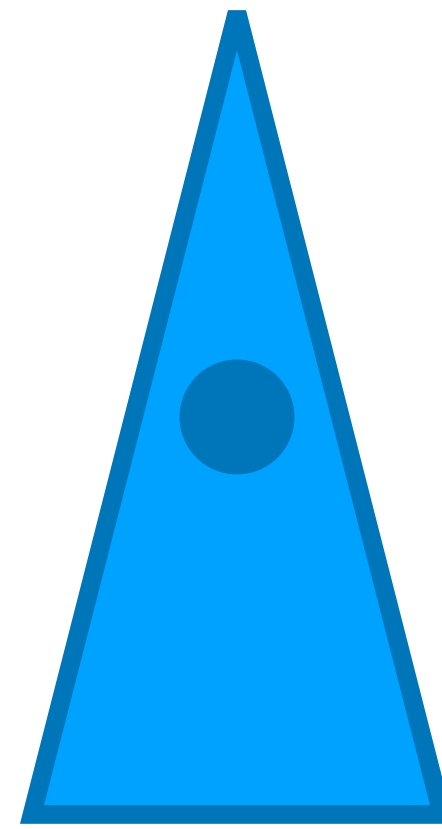
\* Perception Radius

\* Velocity

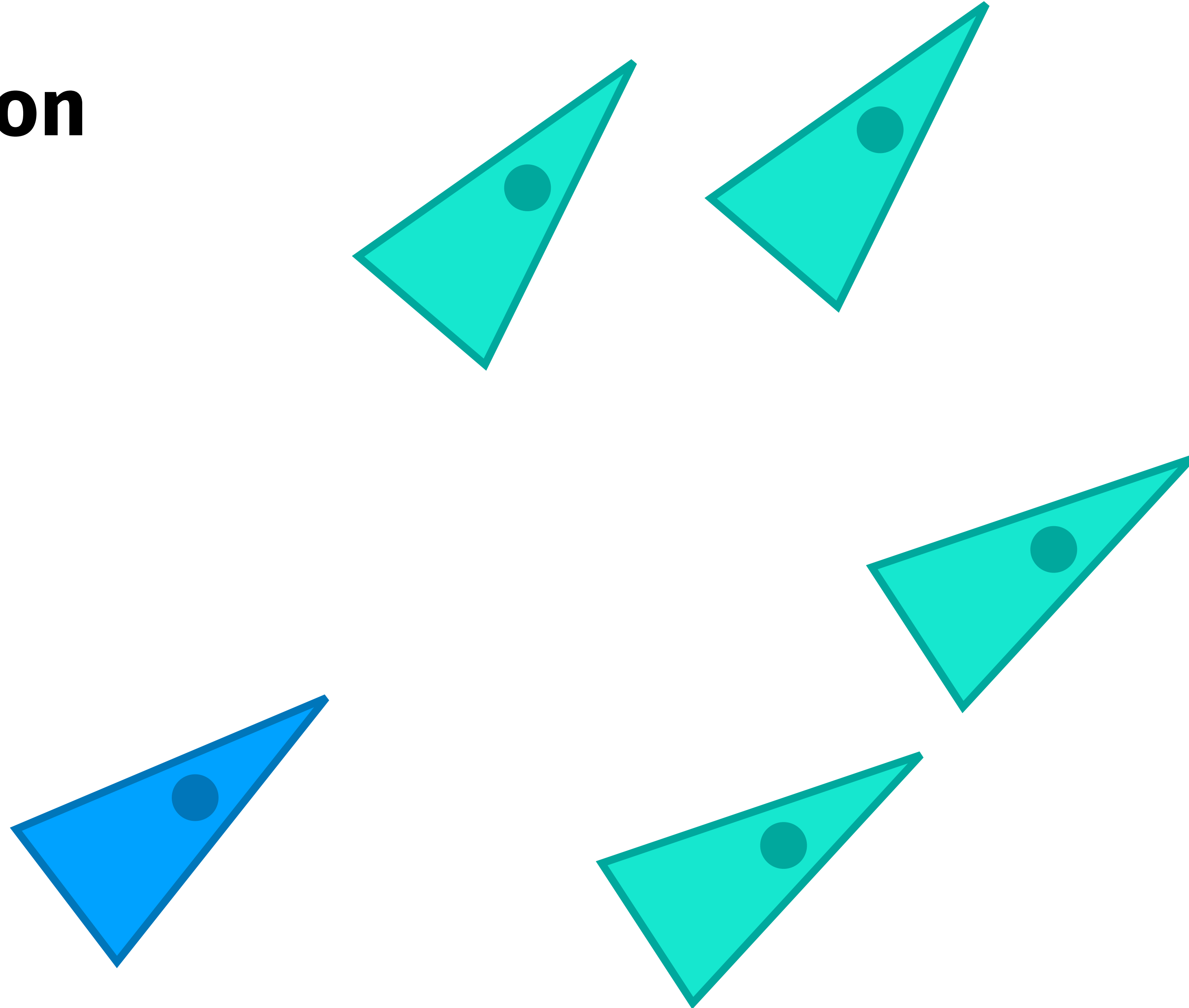
\* Heading



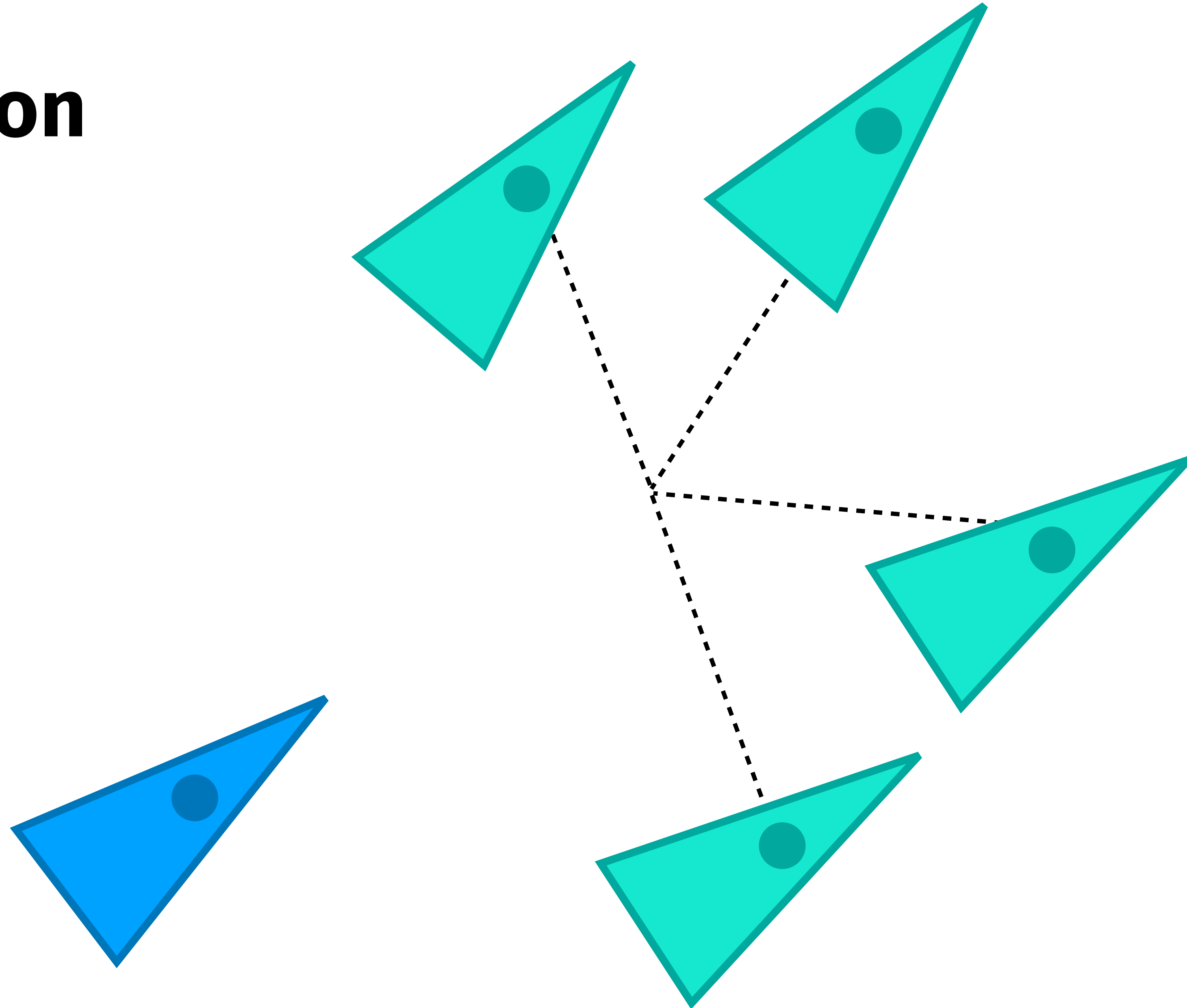
# You Need Three Behaviours



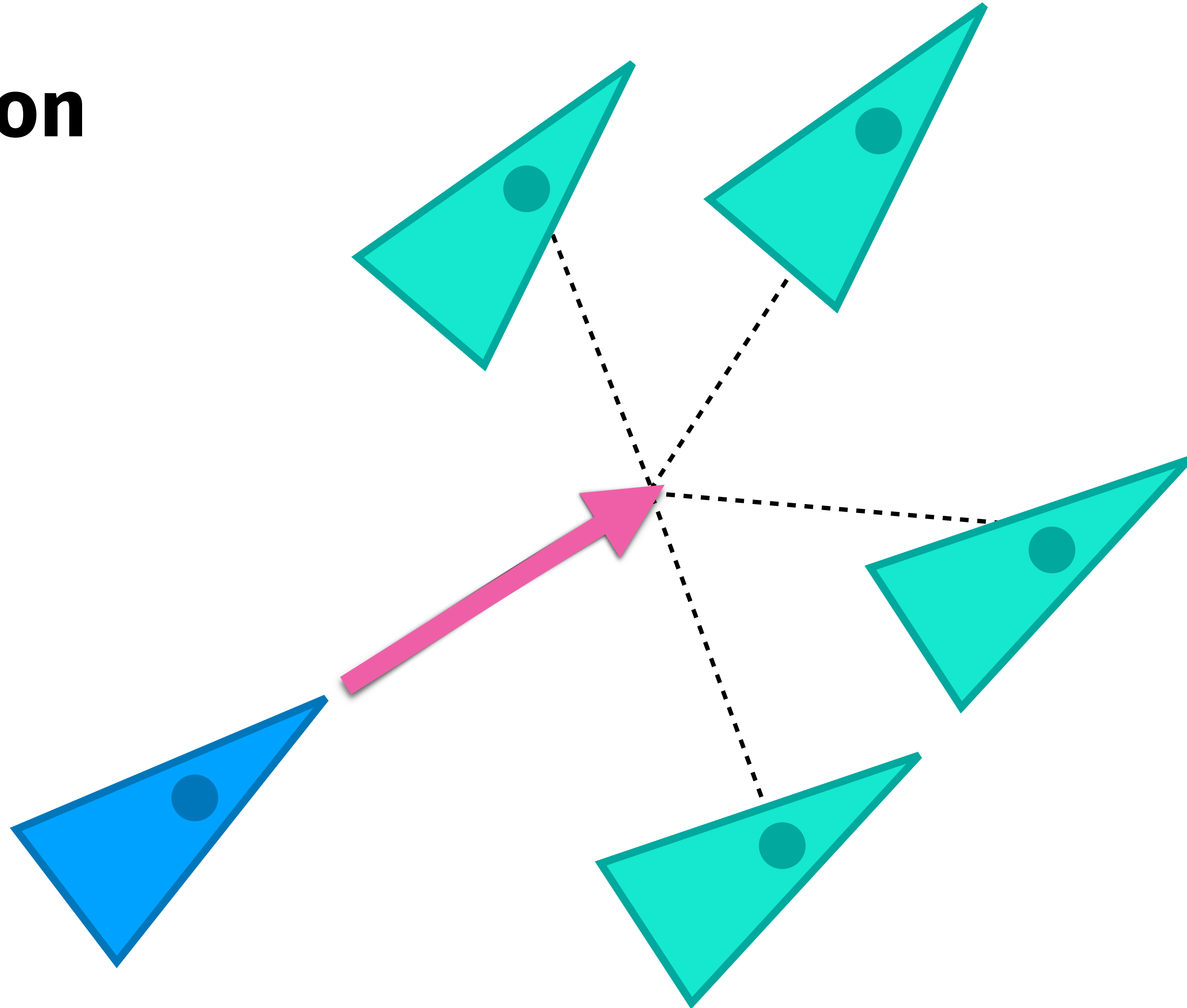
# 1. Cohesion



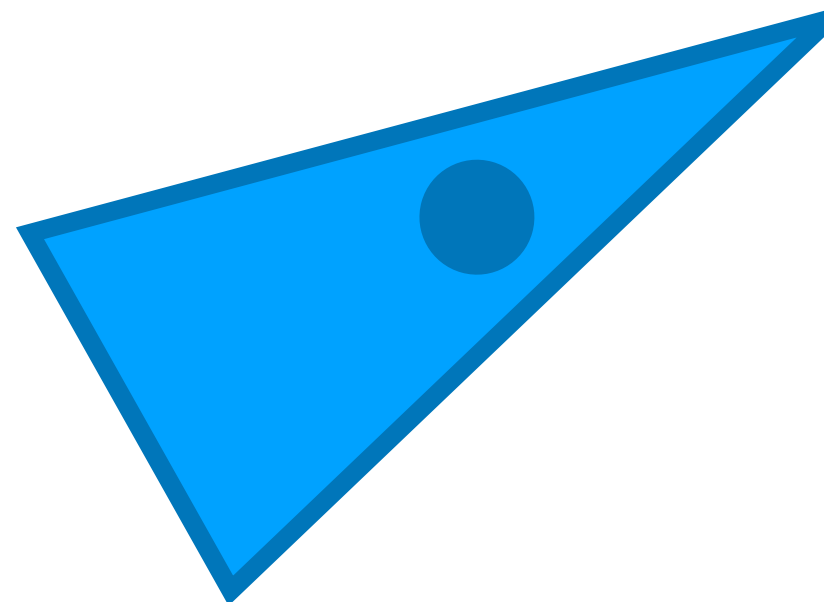
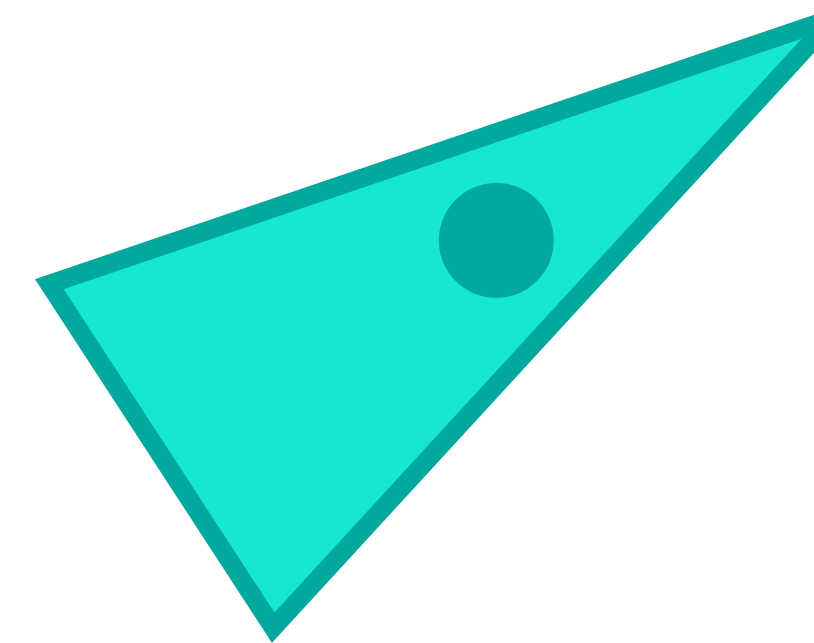
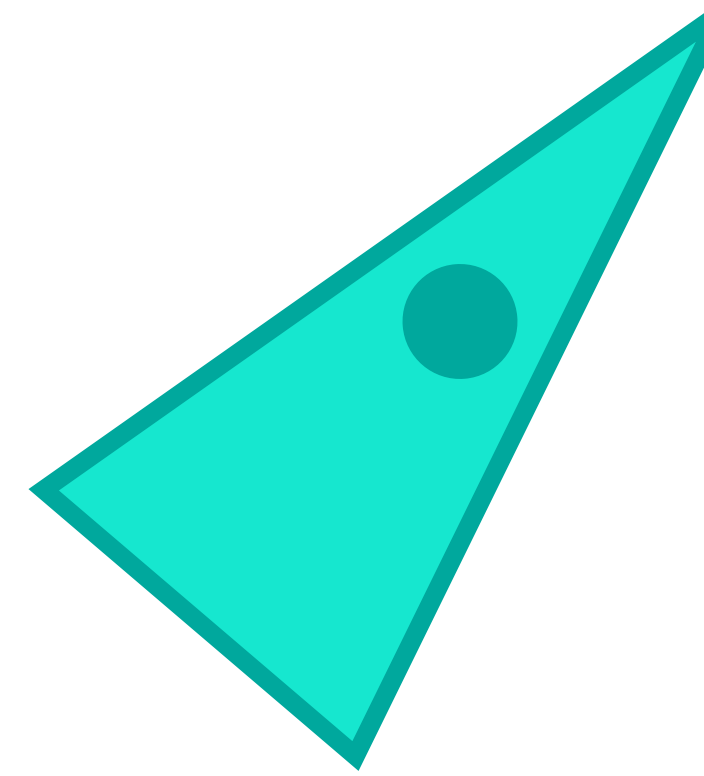
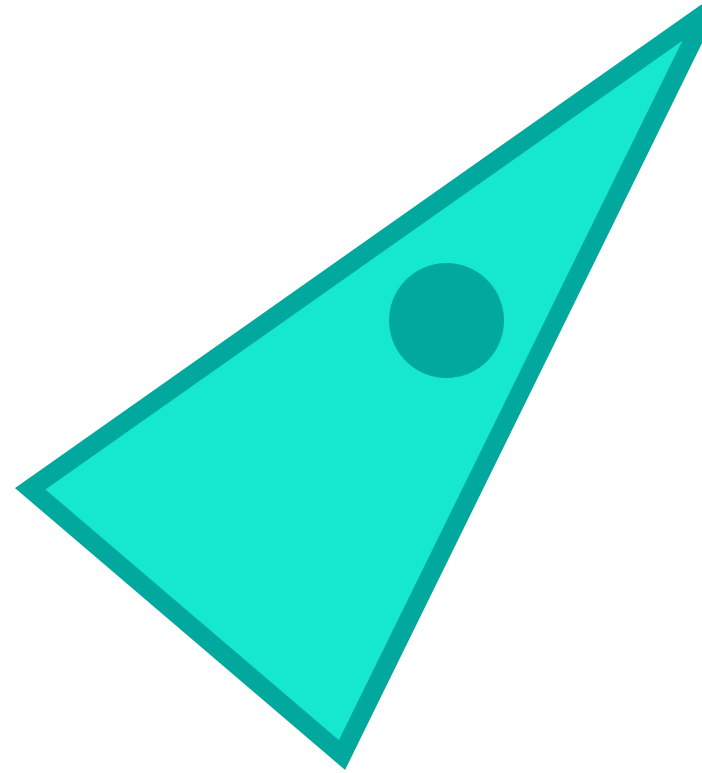
# 1. Cohesion



# 1. Cohesion

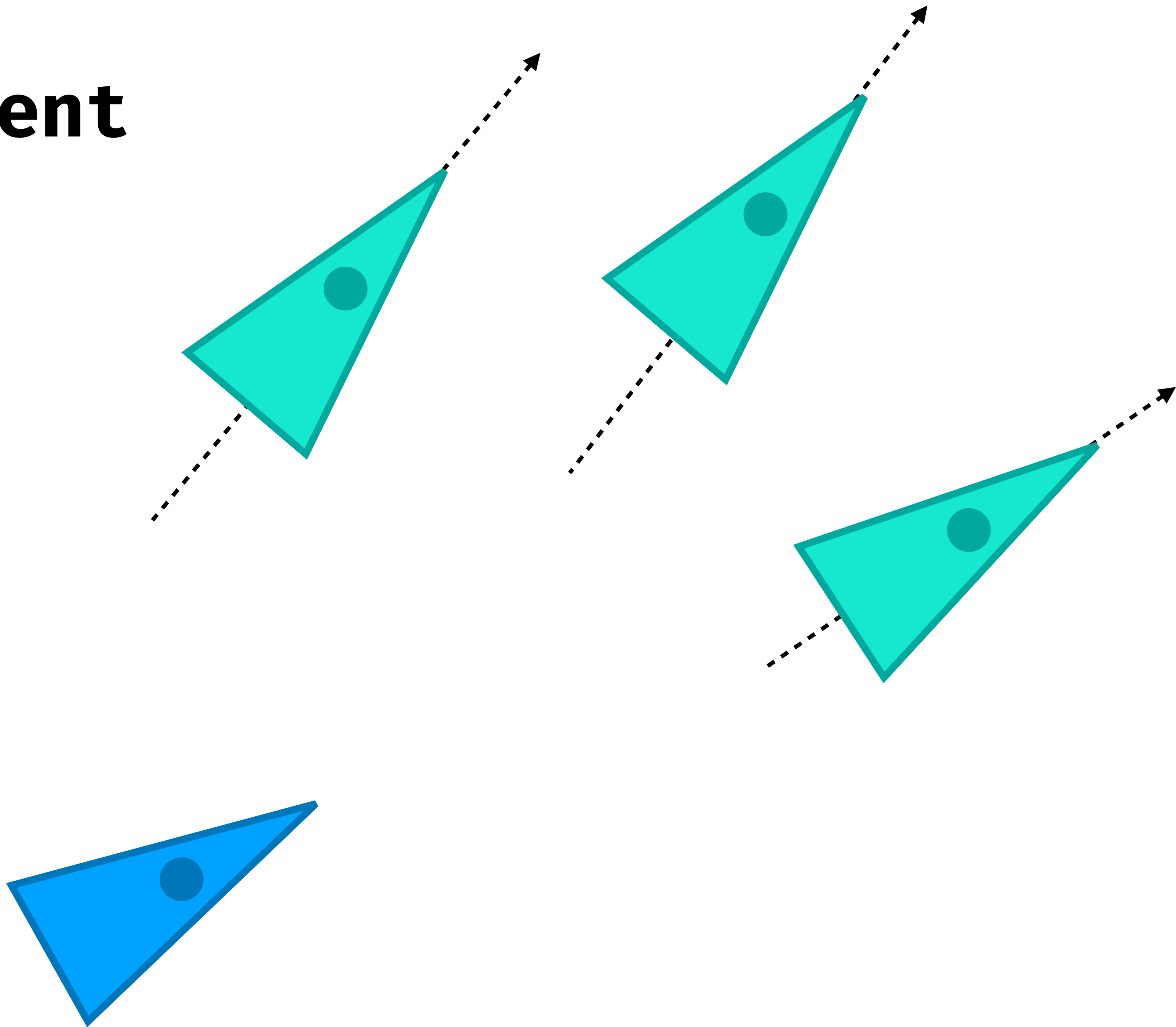


## 2. Alignment

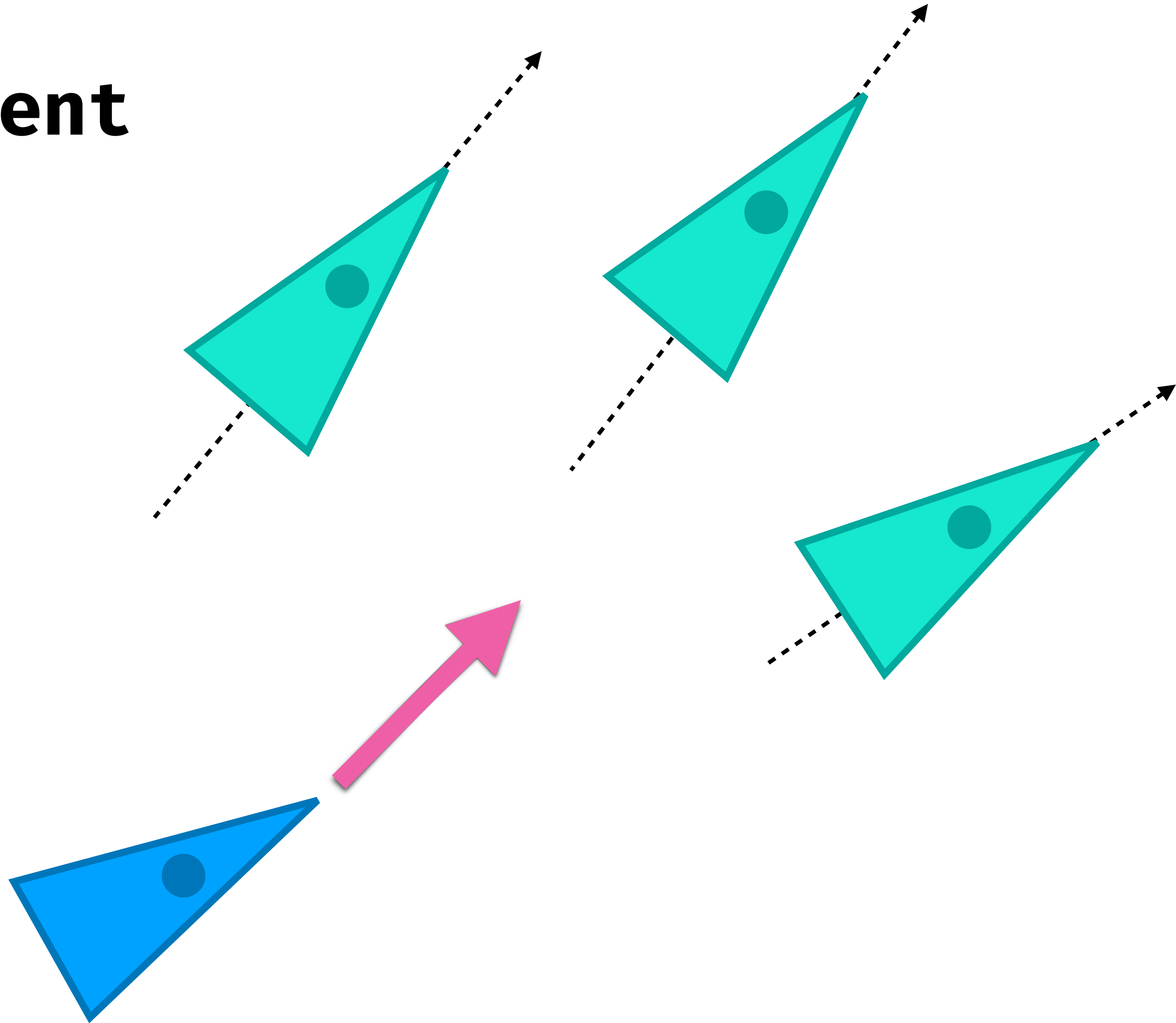




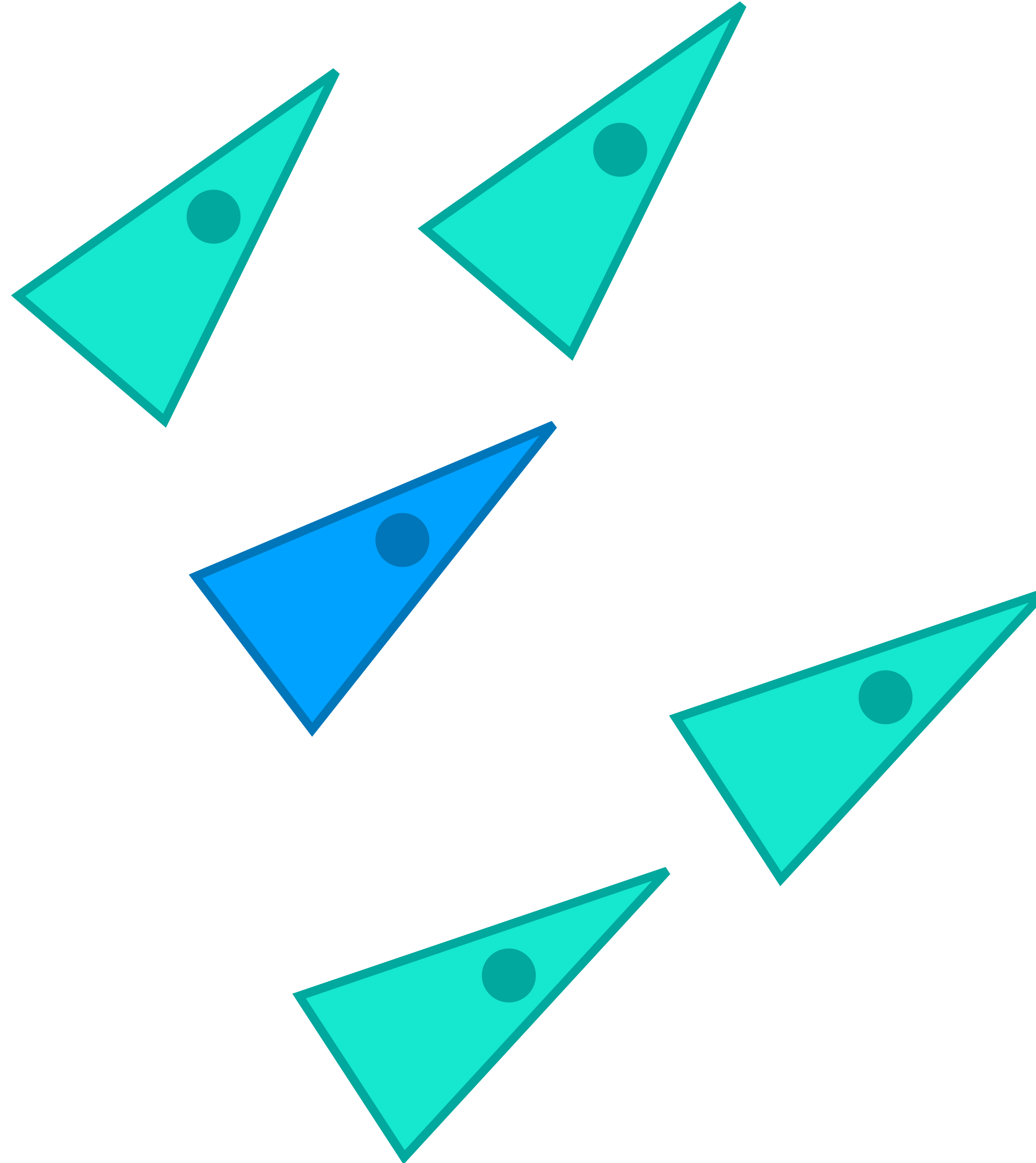
## 2. Alignment



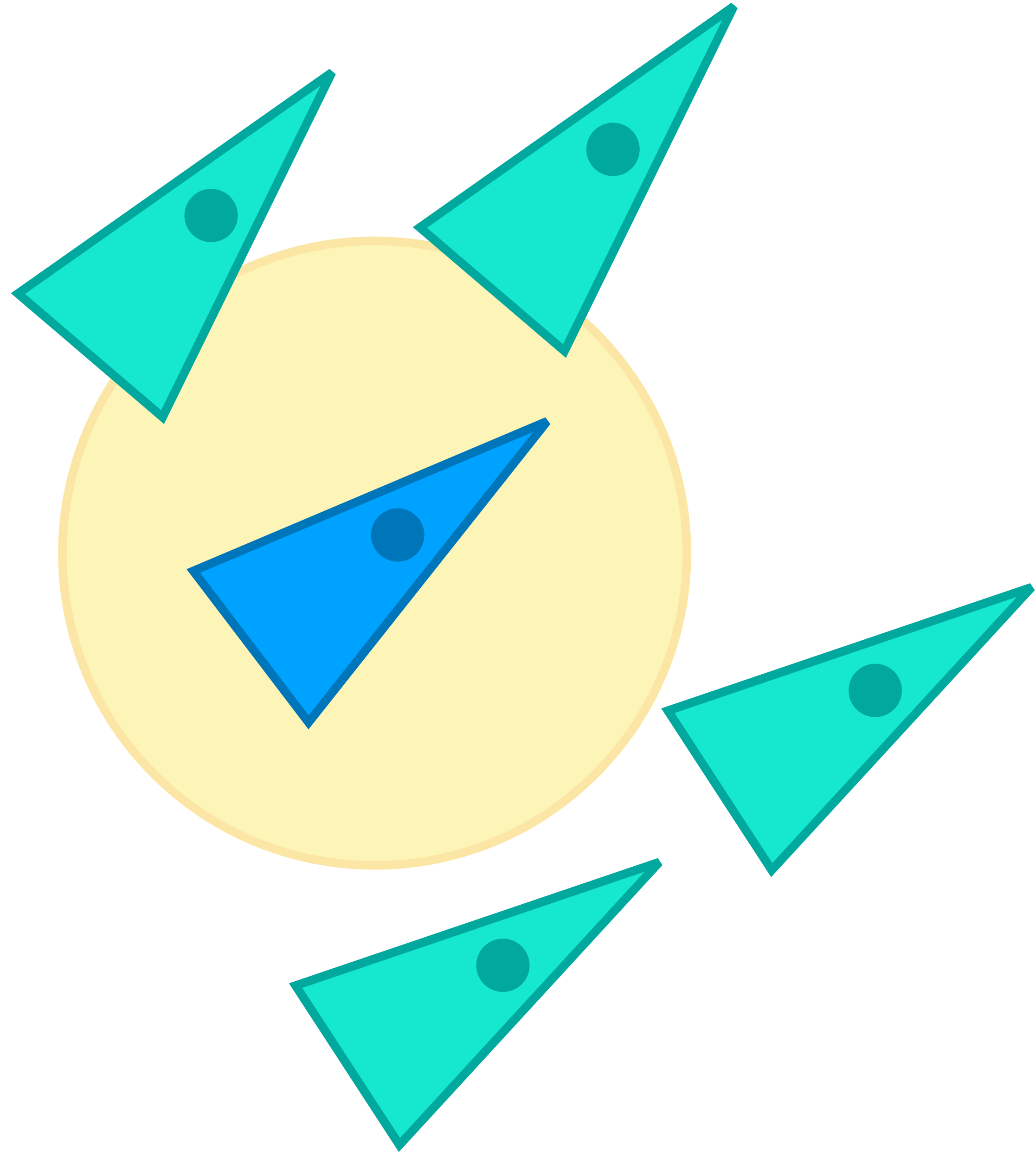
## 2. Alignment



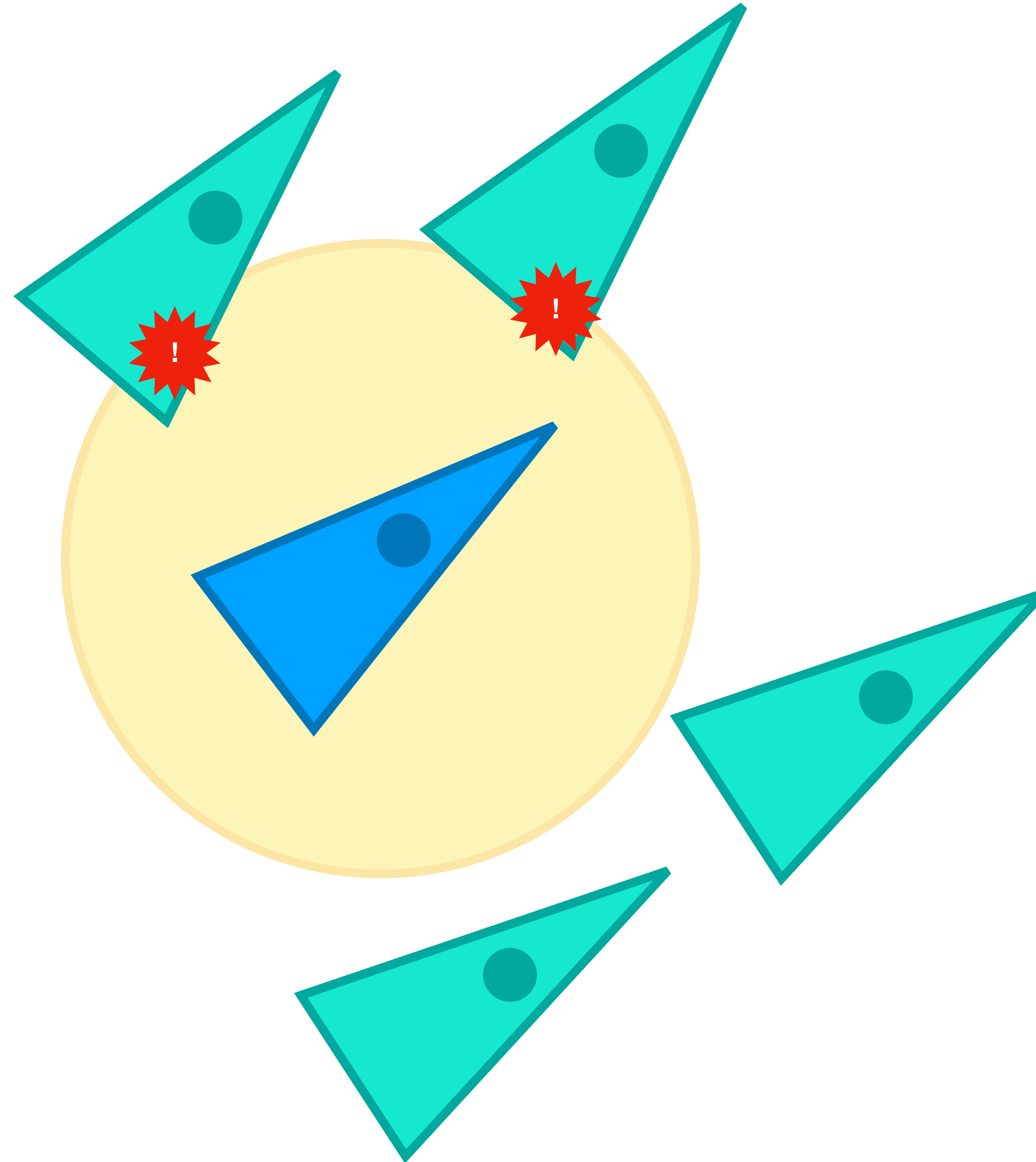
# 3. Separation



### 3. Separation

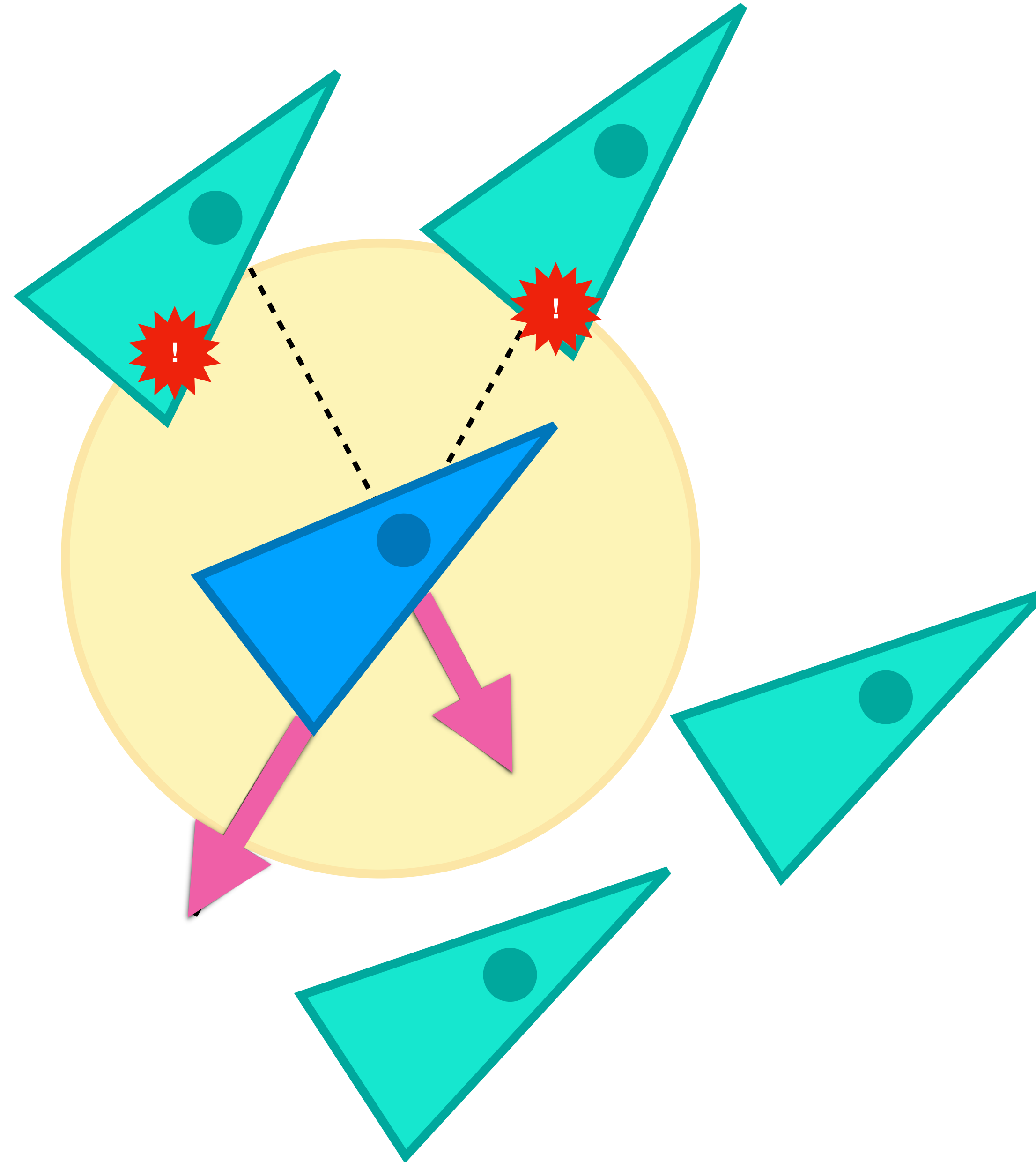


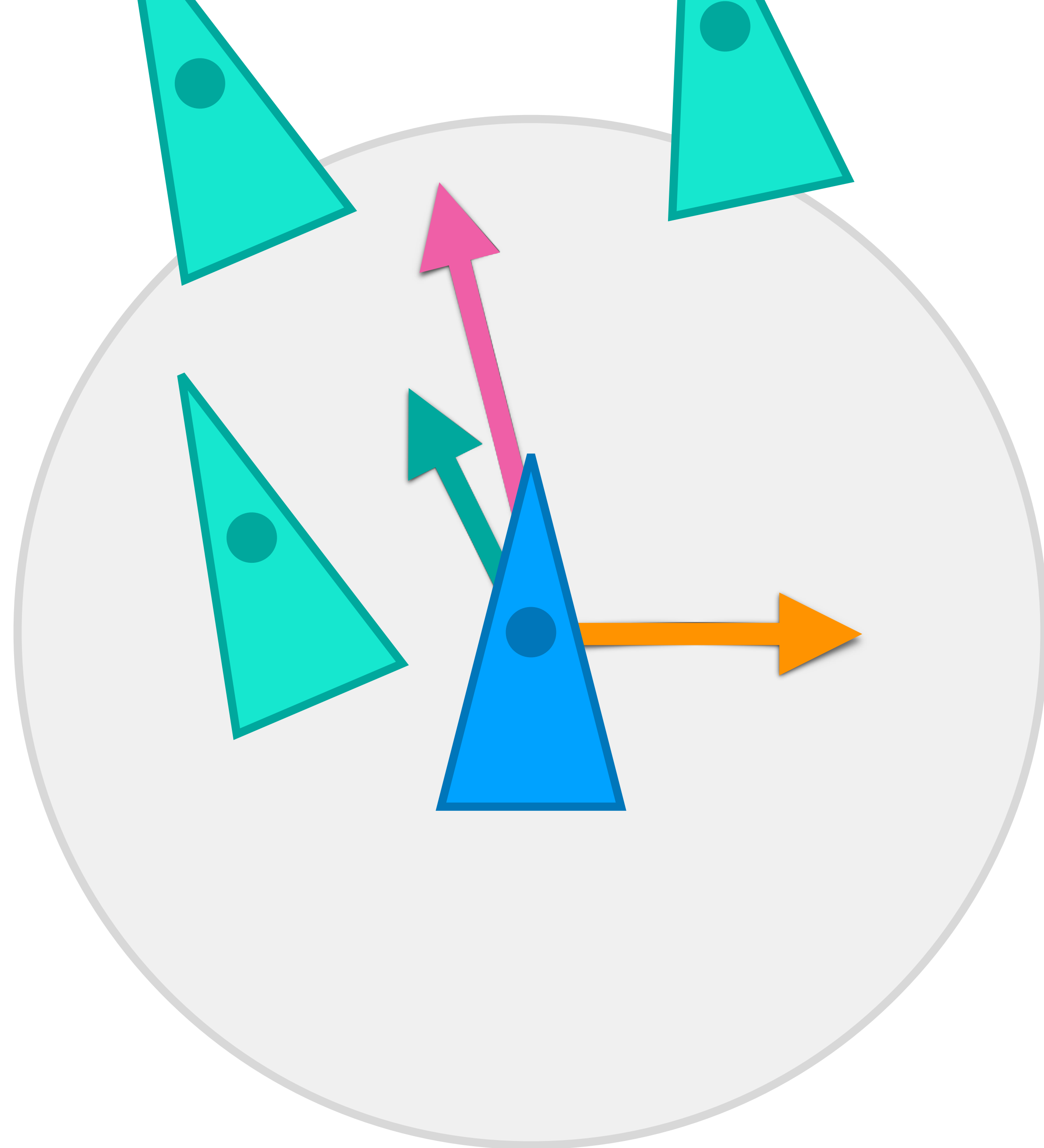
### 3. Separation





### 3. Separation





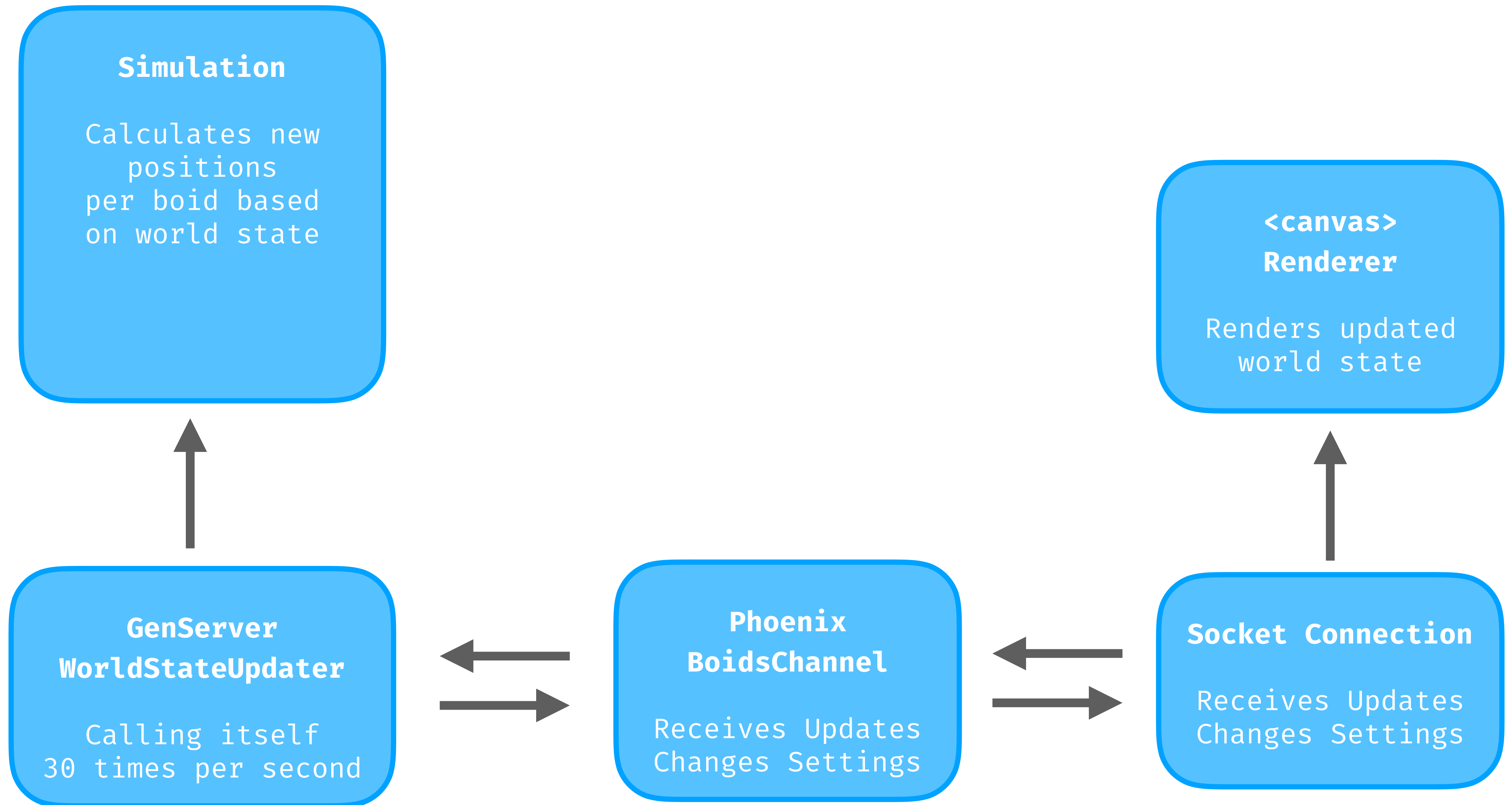
\* Cohesion

\* Alignment

\* Separation

= Next move

# **Architecture**



**Demo Time!**



# Read on!

<http://harry.me/blog/2011/02/17/neat-algorithms-flocking/>

<http://www.red3d.com/cwr/boids/>