**Multi-Robot Caravanning**
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**Definition:**
An application for distributed group coordination of movement amongst heterogeneous agents in an environment.

**Application:**
Caravanning has applications in the military, in construction, and search-and-rescue missions.

**Problem:**
Agents need to work together in large groups, where individual knowledge may not be known about the environment.
- It can be computationally costly or even impossible to send a copy of each agent’s information to every single agent, especially as the number of agents or size of the environment increases.

**Solution:**
Caravanning reduces the amount of information that needs to be sent between agents.

**What is Caravanning?**

**Key Concepts**

- **What is Flocking?**
  - A group of agents interacting cooperatively in order to navigate through an environment.

- **How do we map an environment?**
  - Using probabilistic roadmaps (PRMs), we can generate random points in the environment and connect them to create a map.

- **What is Localization?**
  - Determining a robot’s position and orientation.

- **What is Leader Election?**
  - An electoral process by which a group of agents chooses a member to guide them towards achieving a goal.

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