

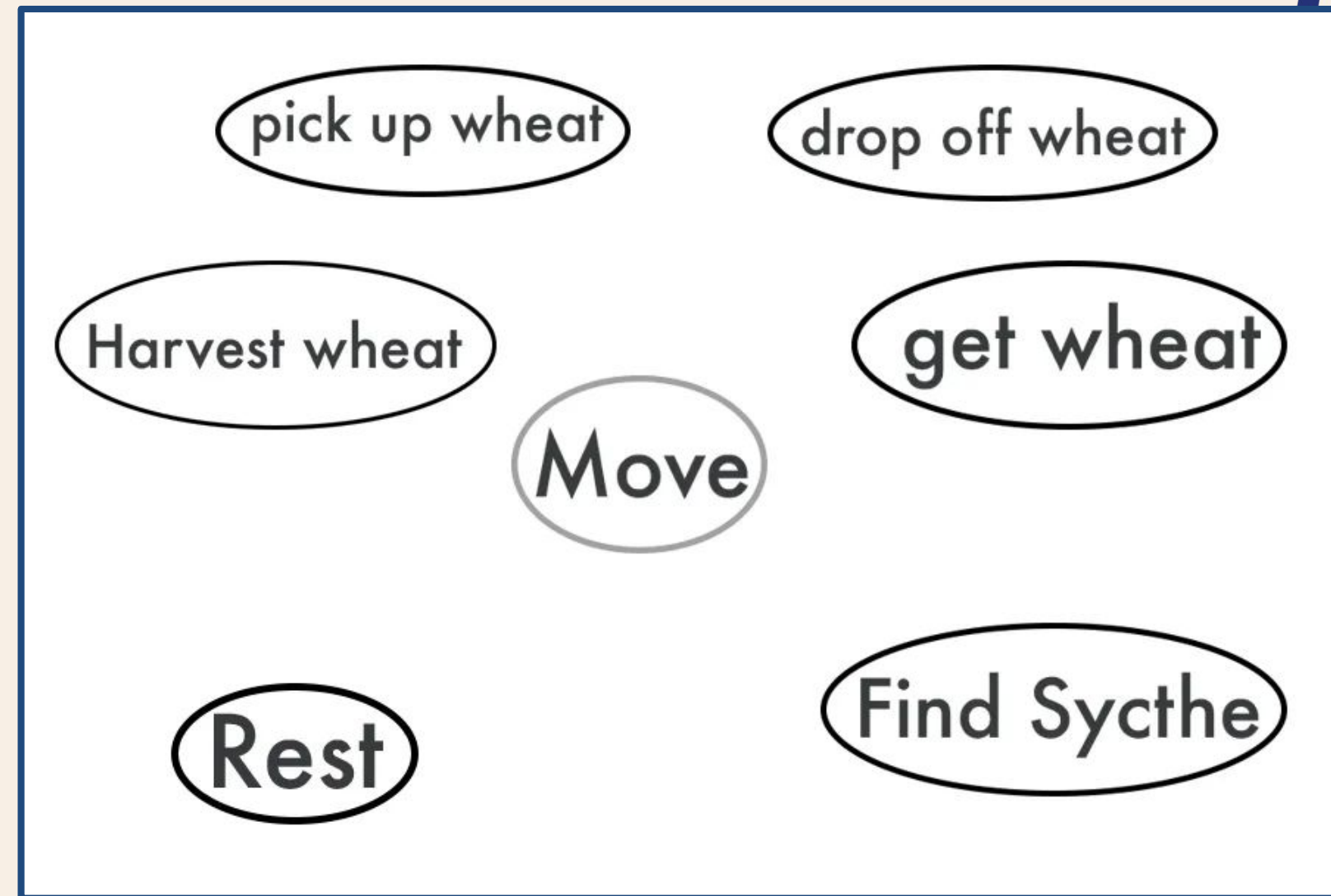
Jayden and Drew

Goal Oriented Action Planning

What is GOAP?

What?

- Flexible AI Planning Technique
- Decision Making NPCs
- Goal Weighing + action Pool



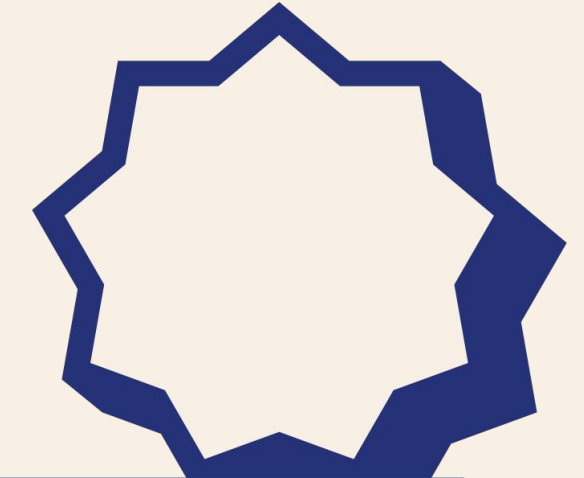
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Quick History:

Jeff Orkin - AI for F.E.A.R.

How does it Work?

How?

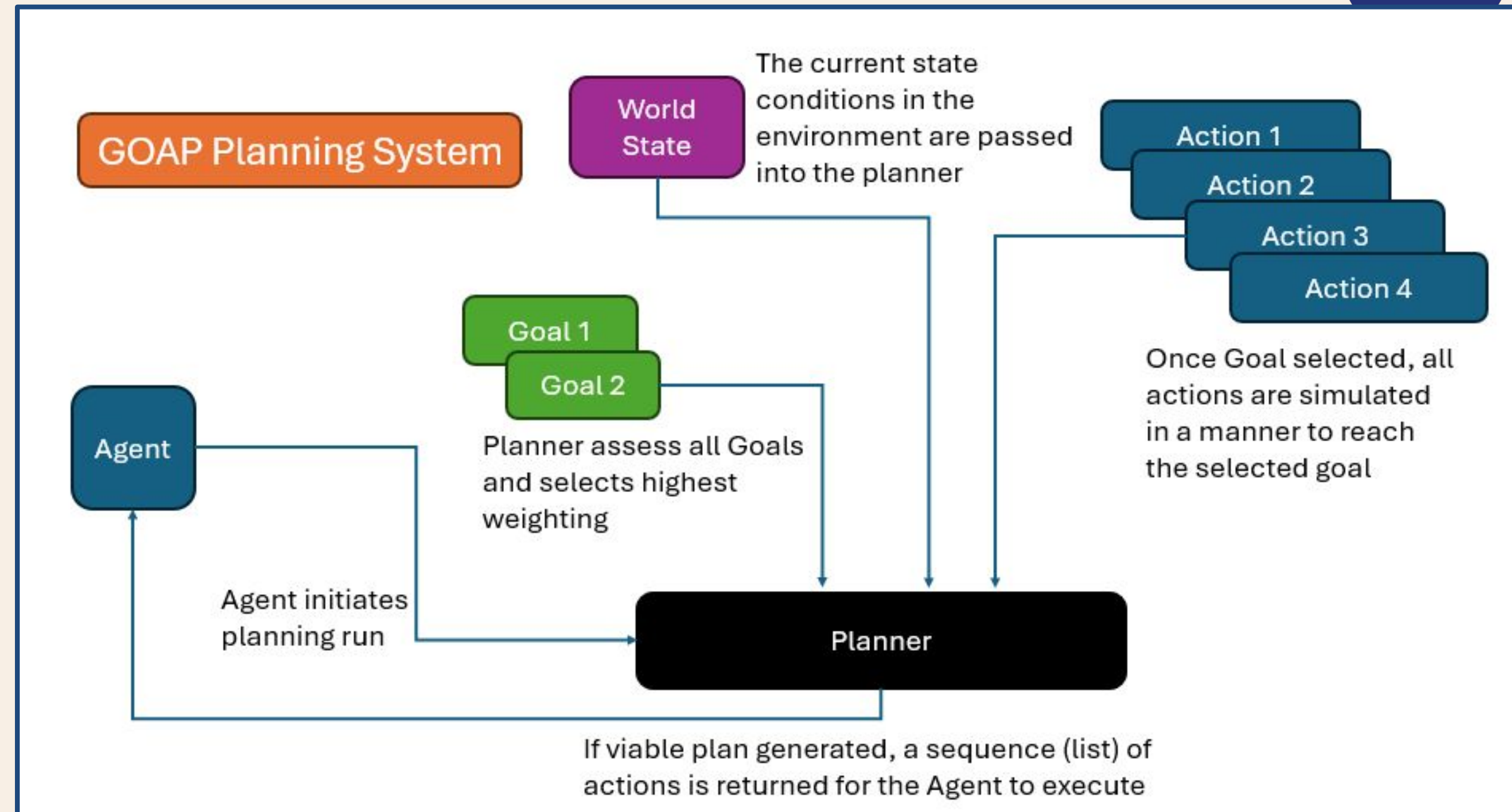


Agent

Goals

Action

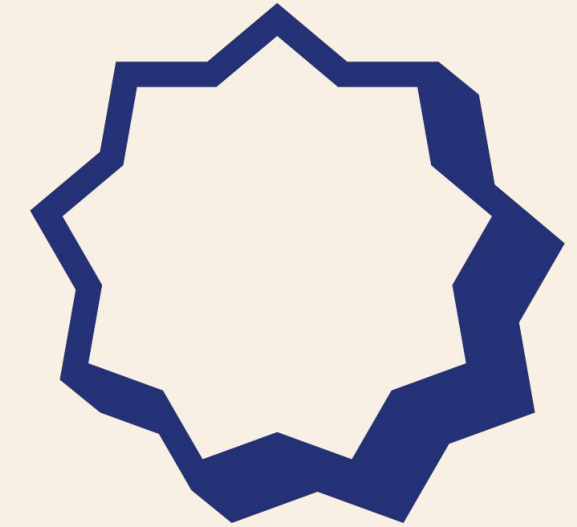
Planner



[Link to Source](#)

Why Use GOAP?

Why?



**Dynamic/Adaptive
Decision Making (In
real time)**

**Efficient Action Pool
Pathfinding**

**Modular and
Scalable**

Limitations?

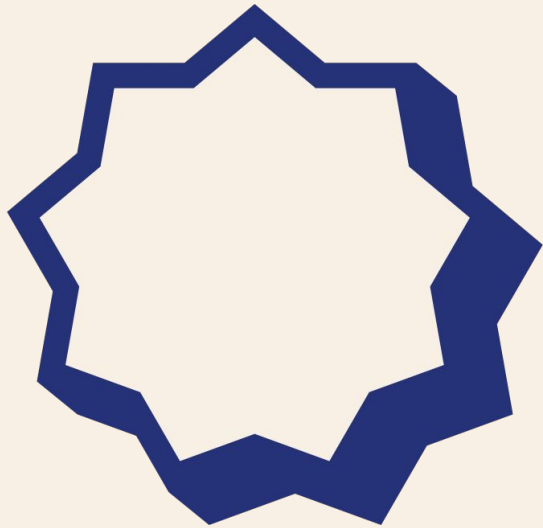
Yes! :)

- **New Gen
Computer/Console**
- **Real Time Strategy**
- **Life Simulators**
- **Open-World**
- **Unity-Based**

NO! :(

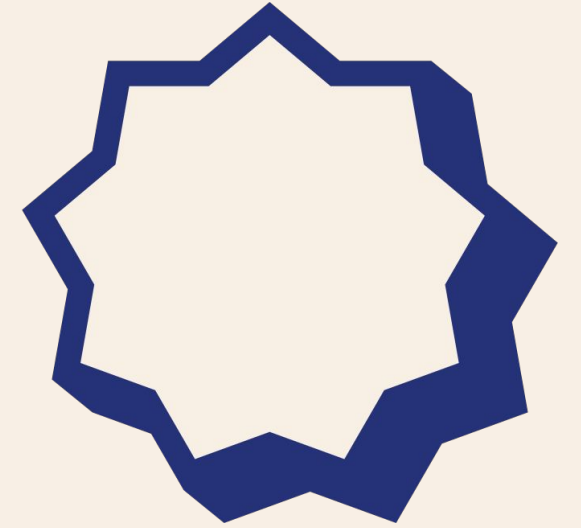
- **Low Resource/Old
Computer/Console**
- **Rigid, Constrained
Movement Games**
- **Turn Based Tactical
Games**

Problems



- [09:53:46] Evaluating goal: CollectResources with priority 3, checking if resources are available...
UnityEngine.Debug:Log (object)
- [09:53:46] Resource FoodAvailable is available.
UnityEngine.Debug:Log (object)
- [09:53:46] Goal Added: CollectResources
UnityEngine.Debug:Log (object)
- [09:53:46] Current Goal: CollectResources (Priority: 3)
UnityEngine.Debug:Log (object)
- [09:53:46] Last Goal: CollectResources
UnityEngine.Debug:Log (object)
- [09:53:46] Potential Plan Found!: Goal: CollectResources with 1 actions in plan
UnityEngine.Debug:Log (object)
- [09:53:46] Goal: Wander with 1 actions in plan
UnityEngine.Debug:Log (object)
- [09:53:46] Popped action: Wander
UnityEngine.Debug:Log (object)
- [09:53:47] Found current goal, checking if more important ones exist
UnityEngine.Debug:Log (object)

Problems



```
1 reference
void SetupGoals()
{
    goals = new HashSet<AgentGoal>();

    //set relax goal
    goals.Add(new AgentGoal.GoalBuilder("Relax")
        .WithPriority(1)
        .WithDesiredEffect(beliefs["Nothing"])
        .Build());

    //set wander goal
    goals.Add(new AgentGoal.GoalBuilder("Wander")
        .WithPriority(2)
        .WithDesiredEffect(beliefs["AgentMoving"])
        .Build());

    //set collectresources goal
    goals.Add(new AgentGoal.GoalBuilder("CollectResources")
        .WithPriority(3)
        .WithDesiredEffect(beliefs["FoodAvailable"]) // Collect food if it's available
        .WithDesiredEffect(beliefs["WoodAvailable"]) // Collect wood if it's available
        .WithDesiredEffect(beliefs["StoneAvailable"]) // Collect stone if it's available
        .WithDesiredEffect(beliefs["WaterAvailable"]) // Collect water if it's available
        .Build());
}
```

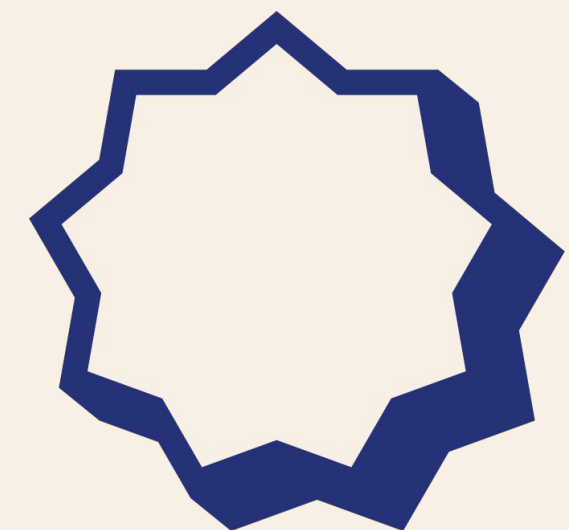
Optimization?

**Reduce Number of
World State
Variables**

**Reduce Number of
World State
Variables**

**Reduce Number of
World State
Variables**

Optimization



Questions

Credits

This presentation template is free for everyone to use thanks to the following:



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Pexels, Pixabay

for the photos

Happy designing!