

# Introduction to GOAP



Relator Alberto Xamin

# Types AI in games

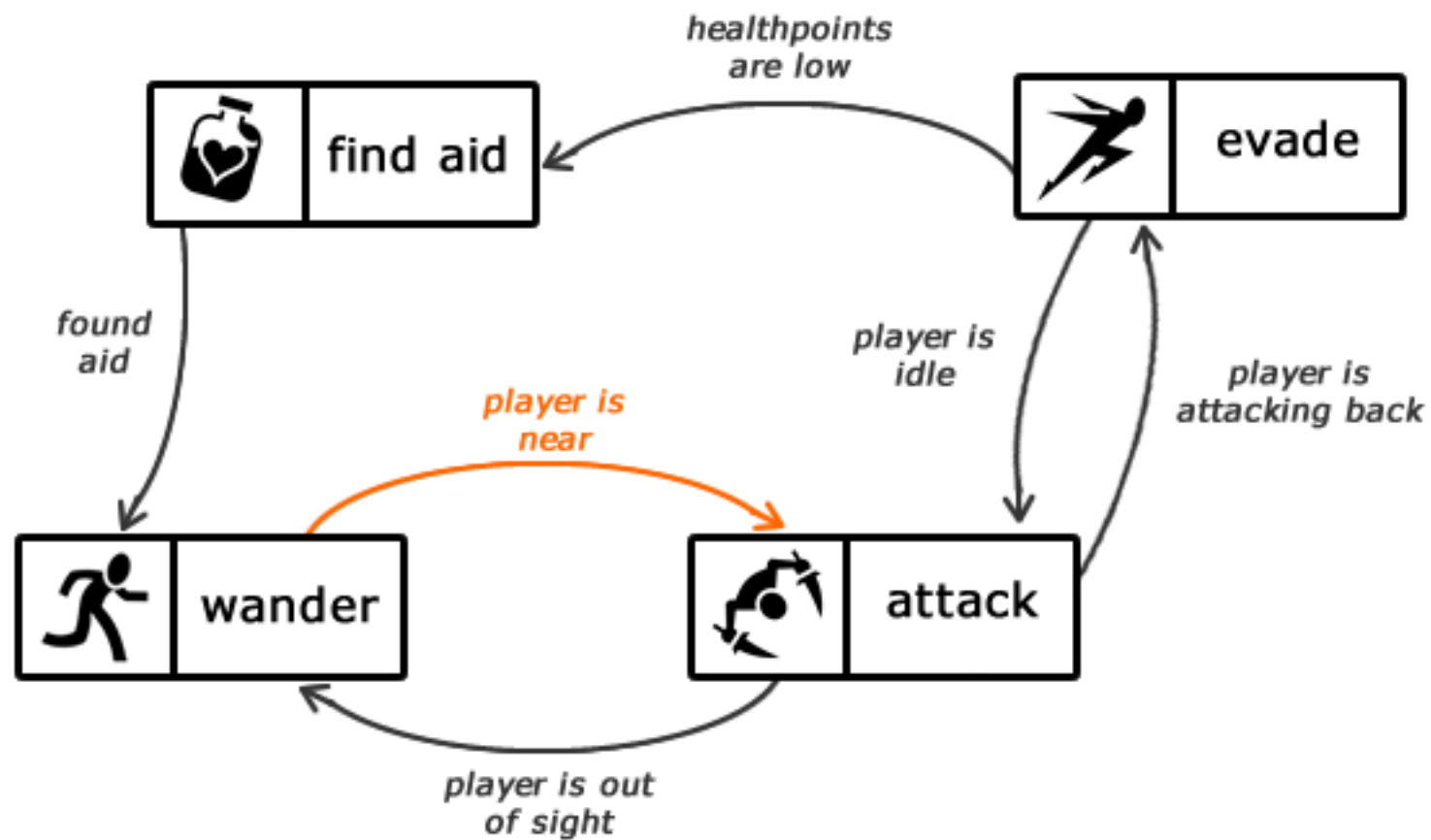
**No AI, just move and attack**

**Behaviour trees (FSM)**

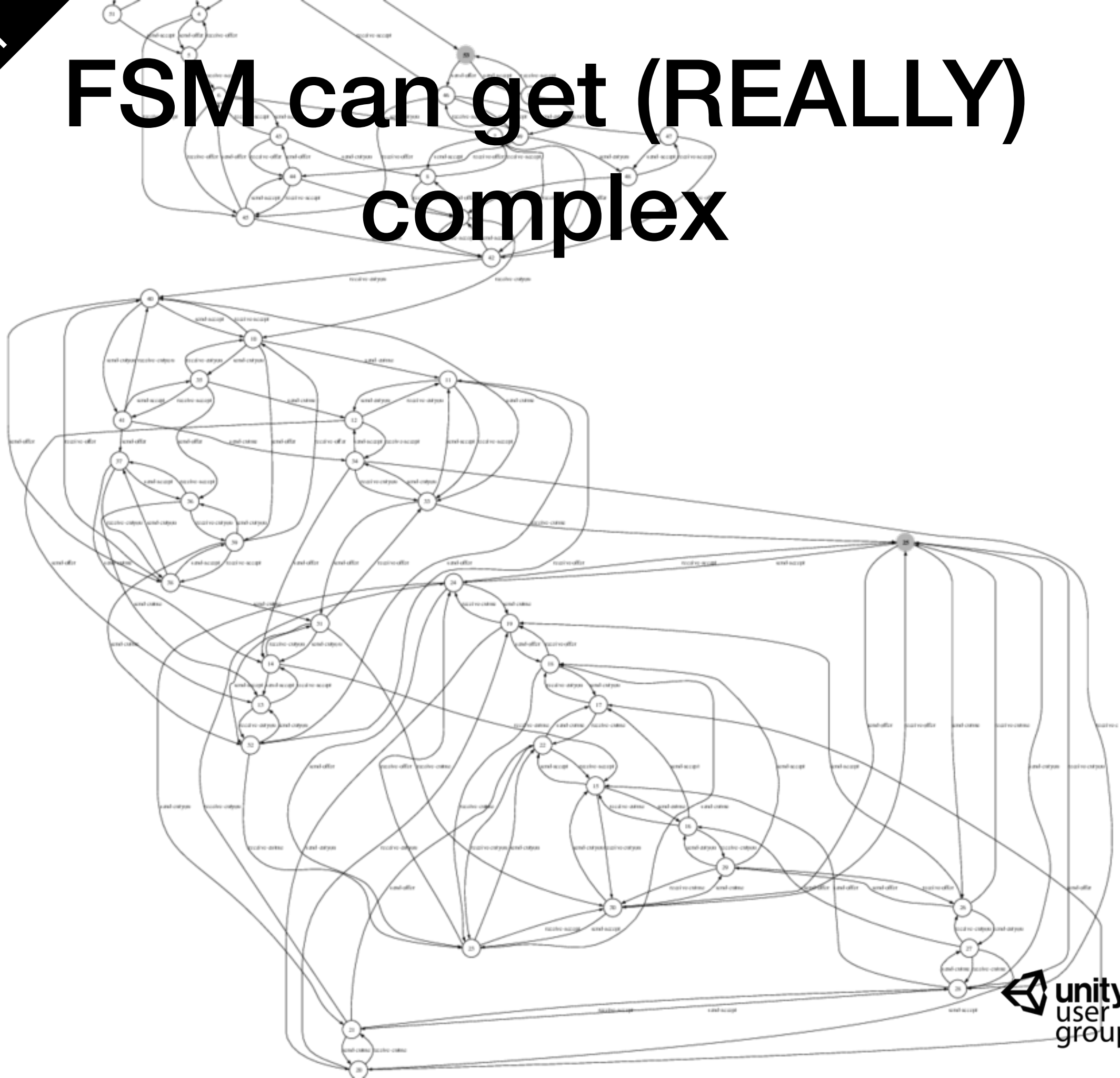
**GOAP**

**Machine Learning (ML Agents)**

# FSM



# FSM can get (REALLY) complex



# The purpose of GOAP

Goal Oriented Action Planning

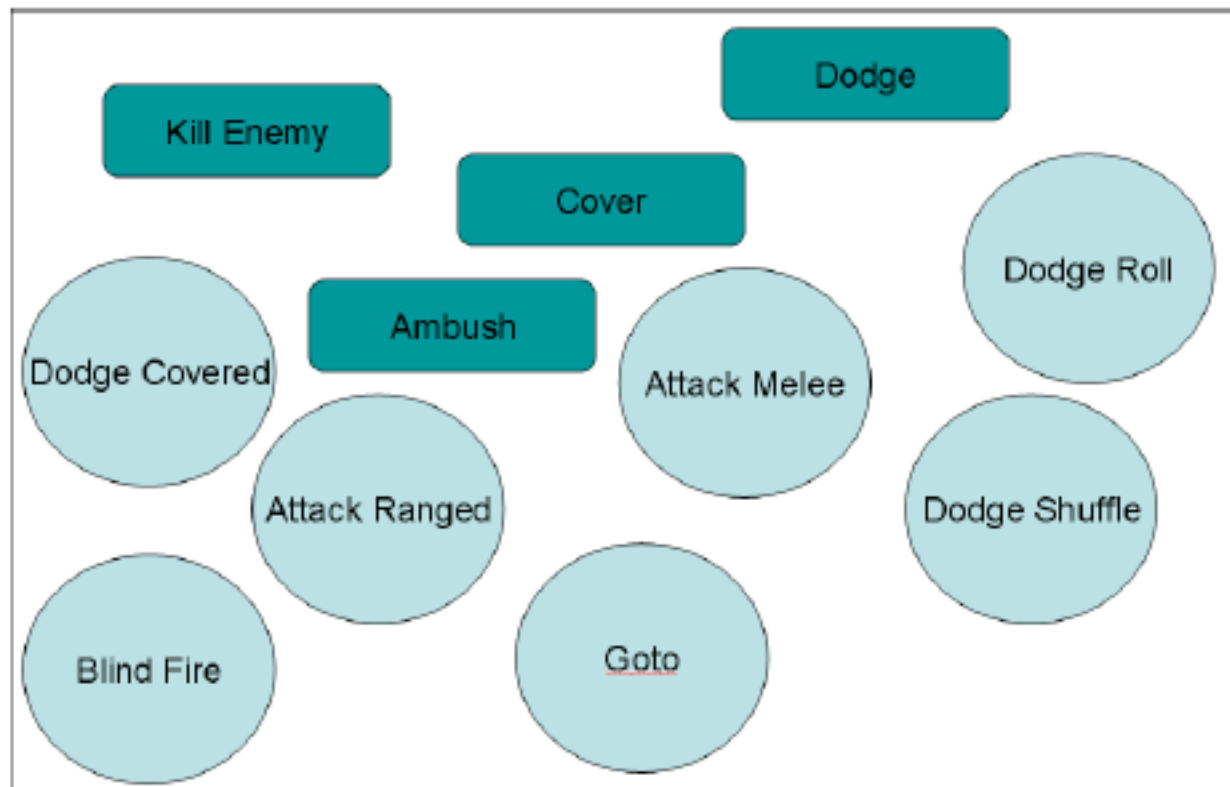
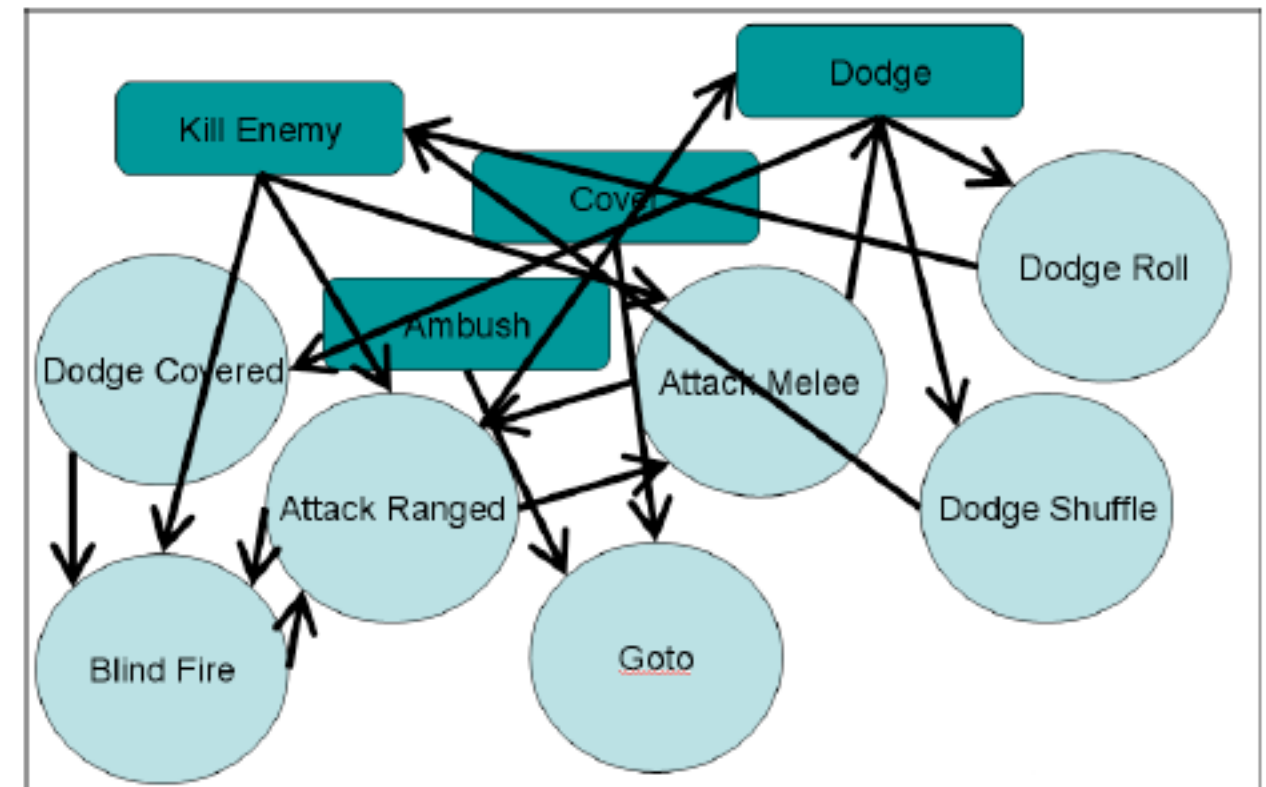


Figure 6: We do this.



But we never have to do this.

# Getting started with GOAP

**Agents**

**Sensors**

**Actions**

**Goals**

# Agents

**Have a *memory* of the world**

Sensors

Actions

Goals

# Sensors

**Observe the world and set the  
agent's memory**

Actions

Goals



# Actions

**Is what the agent can do, and  
can have memory  
prerequisites and *side* effects  
and a cost**

Action regainHp:  
prerequisites: hasPotion, isLowHealth  
sideEffects: hasPotion=false

# Goals

Goal survive:

Requirements: isAlive

**This is an invalid goal, the agent would do nothing**

**Use goals like kill enemy, which involve actions like:**

***FindEnemy->AttackEnemy***

# Action Planning

**GOAP uses  $A^*$  to find paths  
that lead to the goal, seems  
good**

# Too good to be true...

**GOAP is very intensive on the CPU, so not the best choice to button smashing games**

# Play with it!

**Download the sample scene  
(Uses ReGOAP)**

**<https://github.com/uug-trento/goap-unity>**

**And try to create an intelligent fox or  
bunny**