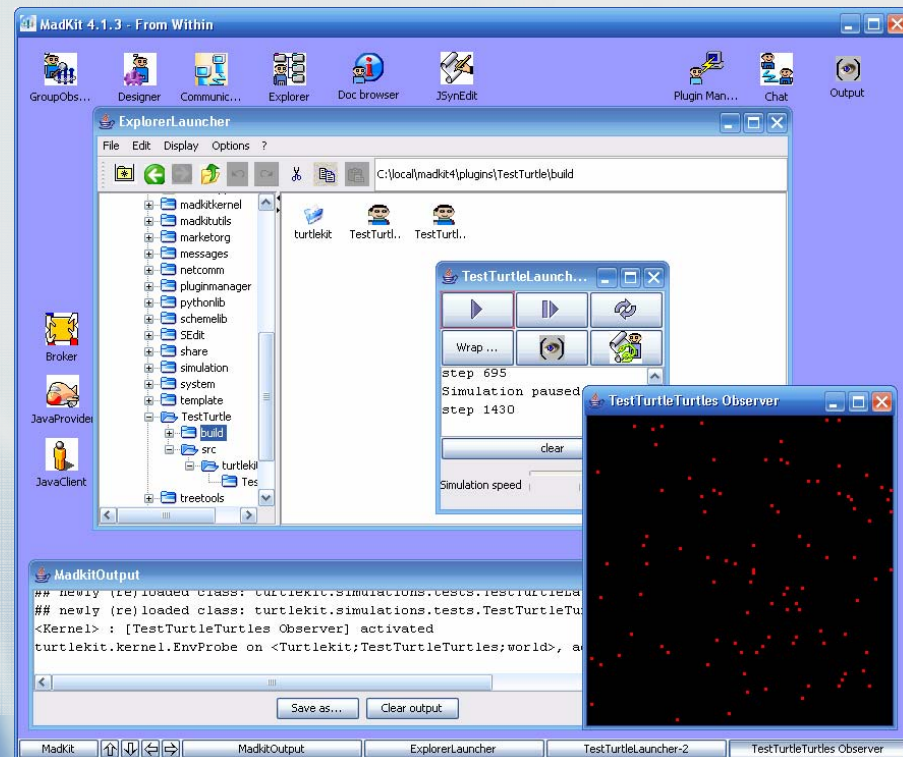# AM/AMP24
Presentation of MAS software

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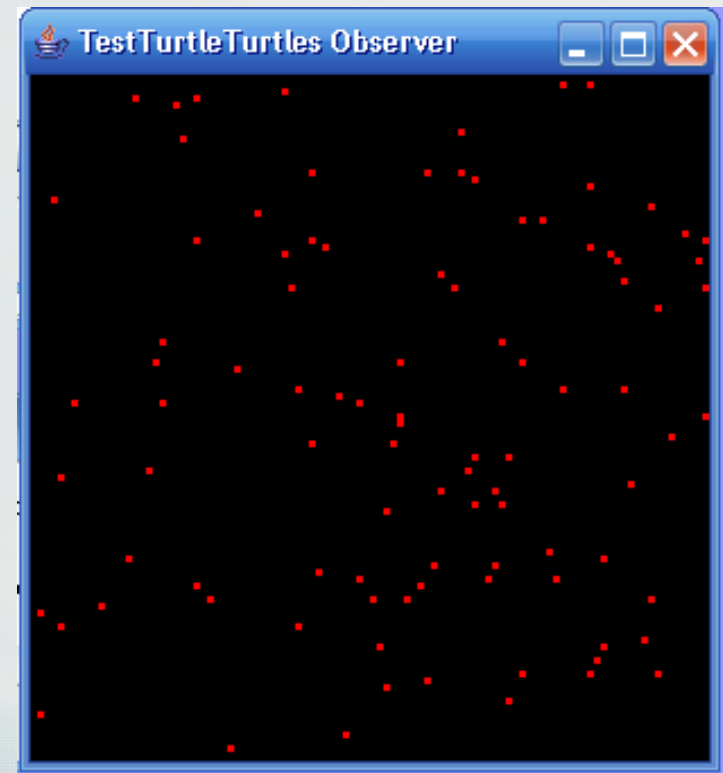
MadKit

- **A modular and scalable multiagent platform written in Java.**

- **Available from www.madkit.org**

- **General documentation and Java API available online.**
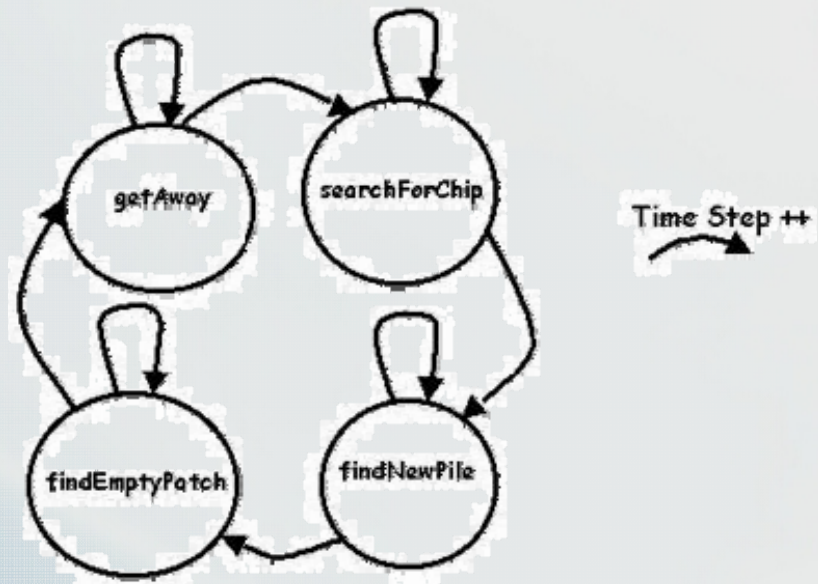
TurtleKit

- **Provides tools for modelling, using and exploiting multiagent simulations based on agents who evolve in a discrete world and act on it.**

- **Agents are referred to as Turtle, which inhabit a 2D discrete world with which they can interact (other turtles or patches).**

TurtleKit – Programming Turtles

- **The behaviour of a turtle is defined as an automaton of atomic behaviours.**
- **Each atomic behaviour is implemented as a method and can use tests, turtle commands etc. and returns the "next actions" string.**

```
public String findNewPile() {
  if (getPatchColor() == Color.yellow)
    return("findEmptyPatch");
  else {
    wiggle();
    return("findNewPile");
  }
}
```

TurtleKit – Creating Turtles

- ## The Constructor
  - **Specify first behaviour**

- ## The Setup method
  - **Initialize turtle properties**

- ## Default values
  - Color RED
  - Heading EAST

```
public Termite() {
    super("getAway");
}
```

```
public void setup() {
    playRole("termite");
    setColor(Color.red);
    setHeading(West);
}
```

TurtleKit – Basic Turtle Commands

- **Movement**
  - Fd(int nb)
  - Bk(int nb)
  - moveTo(int a, int b)
  - setHeading(double direction)
  - xcor()
  - ycor()
- **Environment**
  - countTurtlesAt(int a, int b)
  - setPatchColor(Color c)
  - getPatchColor()
- **Communication**
  - sendMessage(AgentAddress, message)
  - broadcastMessage(community, group, role, message)
  - isMessageBoxEmpty() & nextMessage()

TurtleKit – Launcher Agent

- **Specialized agent which launches the simulation.**

```java
public class TestTurtleLauncher extends Launcher {
    public TestTurtleLauncher () {
        setSimulationName("TestTurtleTurtles");
        setWidth(100);
        setHeight(100);
    }

    public void addSimulationAgents(){
        for (int i = 0; i < nbOfWalkers; i++)
        addTurtle(new TestTurtleTurtle("walk"));
        addViewer();
    }
}
```

TurtleKit – Getting Started

- **Download & install MadKit (www.madkit.org)**
- **Download TurtleTest.zip (http://www.madkit.org/madkit/TestTurtle.zip)**
- **Extract into madkit/plugins**
- **Run madkit (madkit/bin/madkit.exe)**
- **Open the Explorer and browse to the new plugin**
- **Double click the build.xml file**
- **And run the TestTurtleLauncher agent…**

- **Remember the online documentation!!!**