



**OPPA European Social Fund  
Prague & EU: We invest in your future.**

---

# #4: AOP, Jazzyk, Massim (AE4M36MAS tutorial)

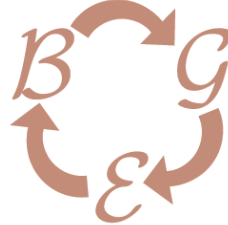
- Tutorial time: 9 Oct 2012 @ 14:30
- Notes by: Jan Hrnčíř

## Agent-oriented programming

- excerpt of slides from [A4M33MAS/Lecture #4](#)

### Structure of agent's internal state

- beliefs  $\rightsquigarrow \mathcal{B}$
- goals  $\rightsquigarrow \mathcal{G}$
- intentions/plans  $\rightsquigarrow \mathcal{I}$  (optional)
- + an interface to the environment  $\rightsquigarrow \mathcal{E}$



### Minimal flow of information

- 1 agent perceives the environment and reflects it in the belief base
- 2 its beliefs about the world determine the goals it pursues
- 3 pursuing goals triggers behaviors aimed at fulfilling them

## Jazzyk

- BGE cycle
- Jazzyk language
  - interpreted language (via JVM interpreter)
  - modules (body, beliefs, goals)
    - can be written in different programming languages
    - we will use beanshell script (interpreted Java)
    - modules queried in a loop
  - initialisation
    - declare module *body* as jazzyk.module.JzzJava
    - notify <module> on initialize [{ beanshell script }]
  - jazzyk blocks
    - { jazzyk block1 }, { jazzyk block2 } ... execution in sequence
    - **when** query *body* (v1, v2) [{ beanshell script }] then { jazzyk block }
    - **update** *beliefs* (X,Y) [{ posX=X; posY=Y; }]
  - condition evaluation & variables
    - when query *body* (**var1**, **var2**)
      - variables for a query ... when we want to transfer information between modules
      - variables have a scope (all nested when queries)
    - query is evaluated as true if the result of the beanshell script is true

```
when query body (X,Y) [{ X=self.sense().posX; Y=self.sense().posY;
                        return true; }] then {
    update beliefs (X,Y) [{ posX=X; posY=Y; }]
}
```
    - goals check

```
when query goals [{ !goals.isEmpty() }] then { ... }
```
  - technologies
    - [BeanShell script](#) ... Lightweight Scripting for Java
    - [GNU M4 macro processor](#) ... macro definitions, file inclusion

## Massim

- [download package](#)
  - run server
  - run monitor
  - import agents in Netbeans/Eclipse
  - run agents

- show a template for an agent and explain the code
  - notify
  - main body
  - macro definition ... PERCEIVE
  - when
  - update

## First assignment

- [first assignment requirements @ CW](#)



**OPPA European Social Fund  
Prague & EU: We invest in your future.**

---