

Introduction to Multi-Agent Programming

Exercise 1

Organization, introduction to Rescue
Simulation, and first Exercise

Christian Dornhege, Dapeng Zhang

Organization I

- Written exercises + Programming (Rescue Simulation)
 - Others, for example OOP, design patterns?
- Group of [maximum] five students
one group one submission
- Time slot?

Organization II (today)

- An introduction to rescue simulation
- A Tutorial for the simulation software

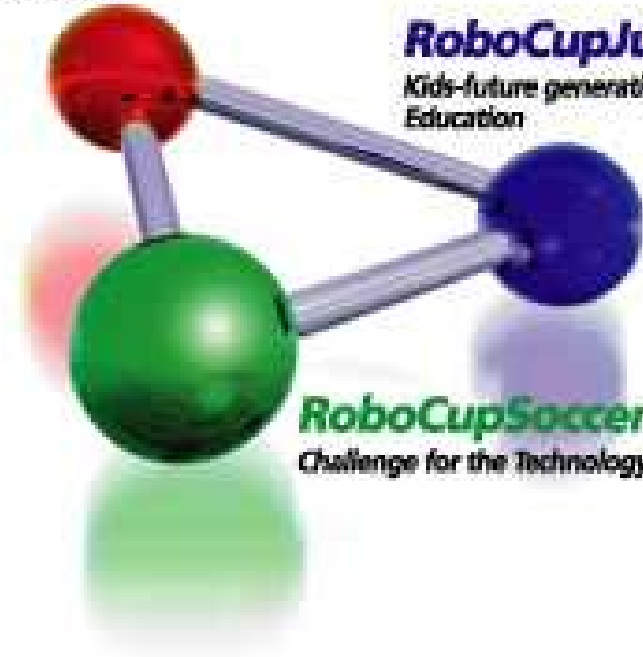
Goals

- RoboCup
 - RoboCupSoccer
 - Simulation
 - **Small Size**
 - Middle Size
 - Four - Legged
 - Humanoid
- MAS
 - Individual
 - Coalition

RoboCupRescue
Application for Practice

RoboCupJunior
Kids-future generation
Education

RoboCupSoccer
Challenge for the Technology



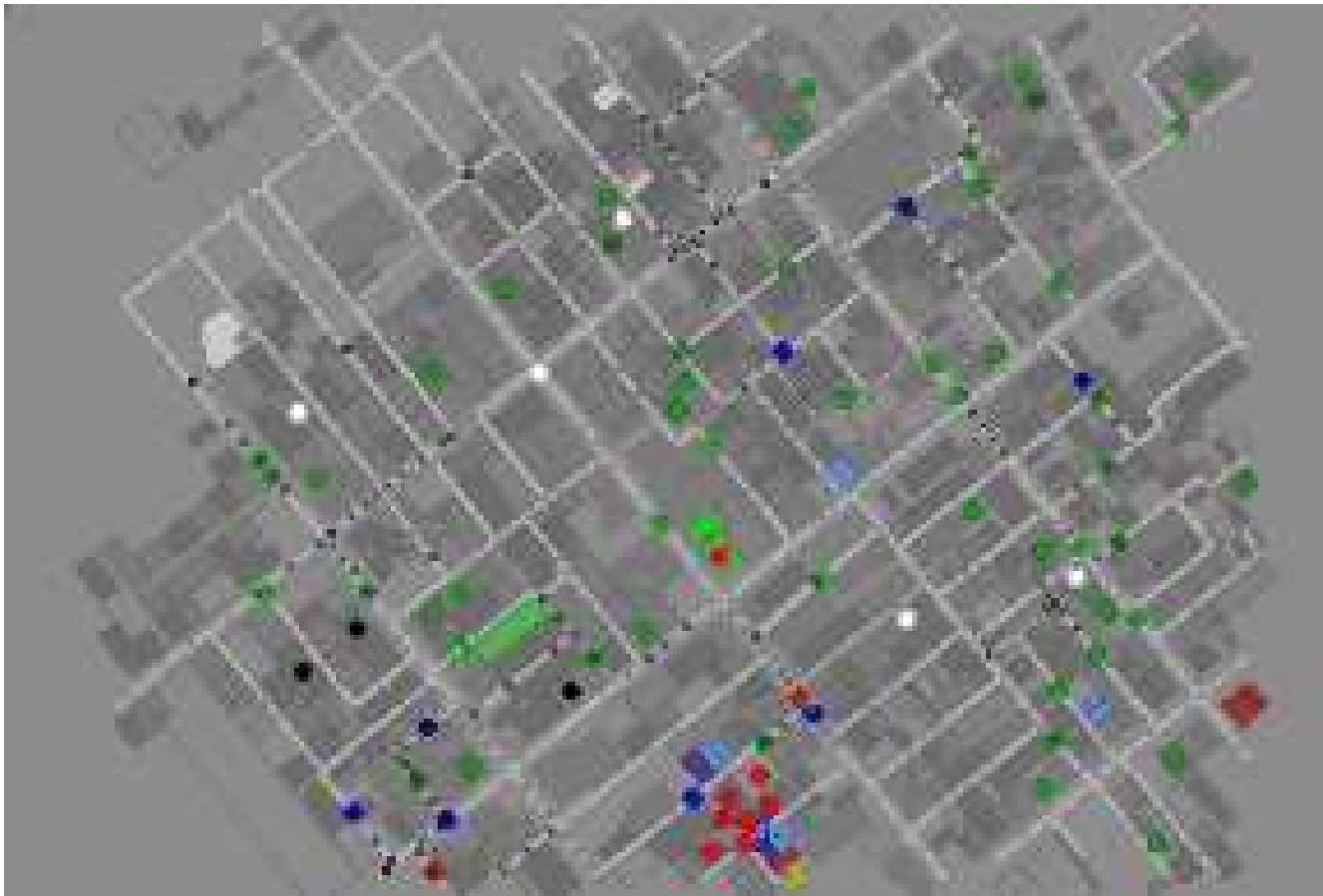
Scenario

- **RoboCupRescue**
 - Infrastructure
 - **Simulation**
 - Virtual Robots
 - Robot
- **Background**
 - **Earthquake**
 - Polices
 - Ambulances
 - Firefighters
 - Victims

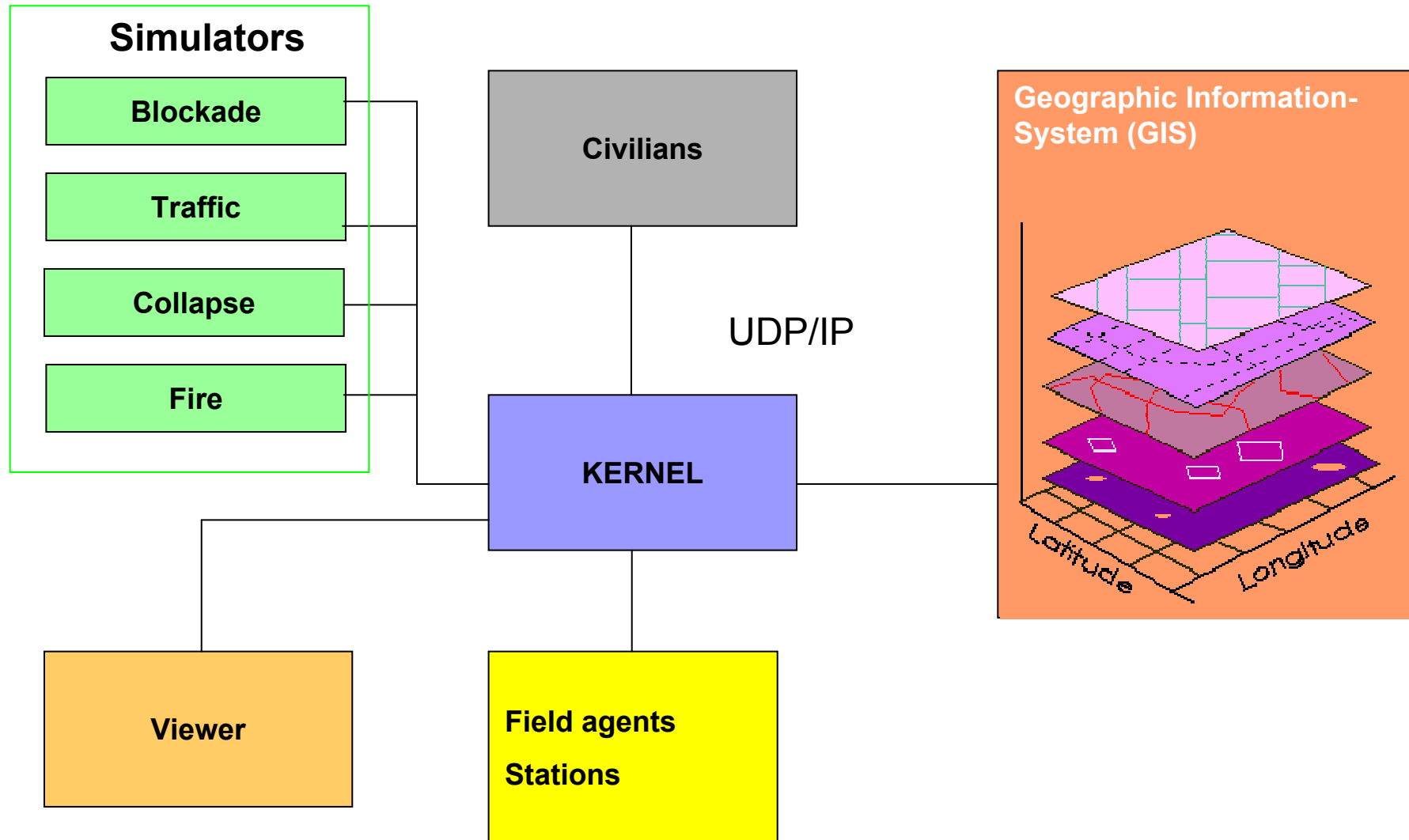


Simulation

- Simplified



Architecture



The Running System

Fire Brigade	15
Police Force	15
Ambulance	8
Civilian	90
Fire Brigade Center	1

Ambulance Center	1
Police Force Center	1
Refuge	2
Ignition points	6

SUNTORI: Kobe 2008 2nd place

The Exercises

- Setup the system
- Individual
 - Path finding
- Coalition
 - Exploration
 - Cooperation etc.

Organization II (today)

- An introduction to rescue simulation
- A Tutorial for the simulation software
 1. Get the software
 2. Compile the software
 3. Run the simulation
 4. Exercise 1

Step 1

- Linux systems
 - Packages
 - java
 - C/C++
- Get the source package
 - Download from exercises page

Step 2

- Directories
 - boot, docs, maps, programs
 - Programs/rescuecor/mas08
- Compile the software
 - \$> cd rescue/rescue-0.50.0/programs/
 - \$> make
 - Warnings ...
 - Errors...

Step 3

- Run the program

```
$> cd rescue-0.50.0/boot
```

```
$> ./allNoEarthquake.sh
```

```
$> ./sampleexplorationagents.sh
```

```
$> ./killall.sh
```

- Environment variable

```
export RESCUE_KERNEL_HOME=[your path  
to]/rescue-0.50.0
```

Simplified Simulation

- No disaster (earthquake, blockades, fires)
- Only ambulance (exploration), civilians (targets)
- Ground truth are defined in text files
 - maps/Kobe_expl/civstates.txt targetlocs.txt

Step 4

- Exercise
 - Log files
 - In boot directoy
 - Java package
 - rescuecore.mas08 → rescuecore.grp[X]
 - Derive from BaseExplorationAgents to create your own agents (for now, they can do exactly the same as SampleExplorationAgent)
 - Change sampleexplorationagents.sh to start your agents