

Software Factory

“Wearable Computing”

wearable@fontysvenlo.org

HMD (Head Mounted Displays)
data glove

Presentation Wearable Computing

emergency response system

Martin Hoffmann & Stefan Sobek

health critical
context-sensitive

06.12.2006

fireman alert system

Hans Muller

♥ 150

SoFa Team

“Wearable Computing”

wearable@fontysvenlo.org

- Martin Hoffmann (Project Manager)
- Danny Schwitzgebel (Configuration Manager)
- Hans-Gert Dahmen (Quality Manager)
- Stefan Sobek (Software Engineer)
- Andreas Mülder (Software Engineer)

Overview

“Wearable Computing”

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- **What is Wearable Computing?**
- **The Client - MRC**
- **Task**
- **The Product**
- **Demo**

What is Wearable Computing

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- Intro
- Wearable Computing compared to conventional mobile systems
- Context Awareness



What is Wearable Computing

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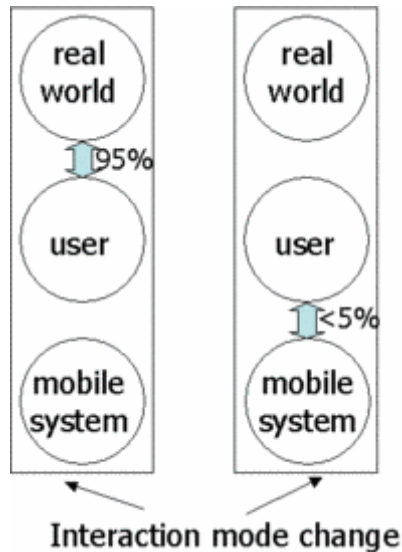
- Innovative way of interaction between
 - User
 - System
 - Environment



What is Wearable Computing

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Conventional Mobile Systems



Wearable Systems



What is Wearable Computing

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- Context Awareness
 - Interact with the environment
 - Certain degree of awareness of user activity
 - User interface with minimal cognitive effort
 - No complex menus
 - Simple binary decisions
 - Input interface like a glove
 - Simple gestures
 - Automatically present information when needed

The Client - MRC

- Mobile Research Center
 - Contact: Dr. Kenn
- University of Bremen
 - Technologie-Zentrum Informatik TZI
 - <http://www.wearable-computing.de/>



Task

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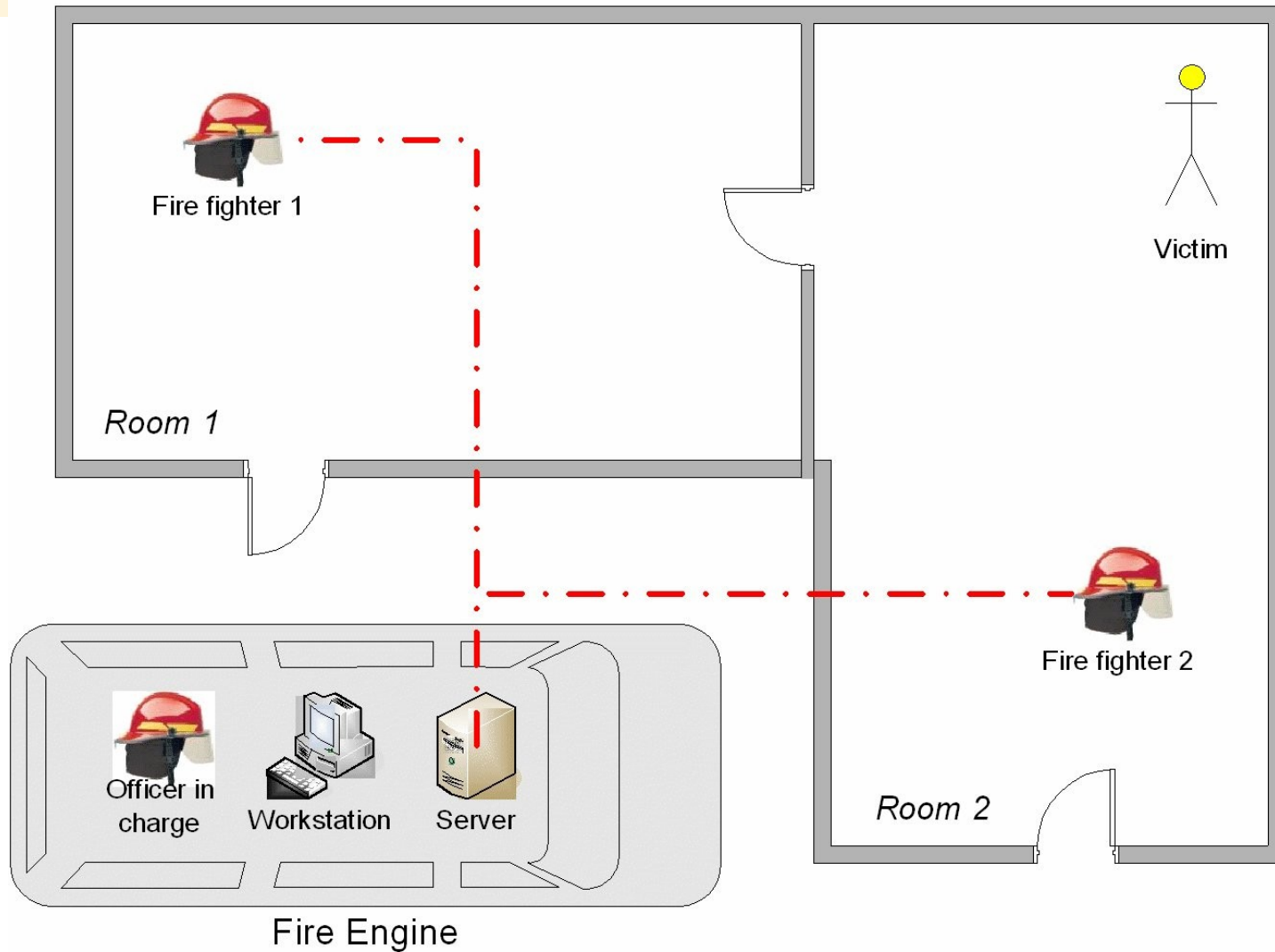
- Scenario
 - Support a SAR Mission (our concrete case: fire-fighter mission)
- Working Prototype
 - To demonstrate the capabilities of wearable computing in a special environment
- Actors
 - Officer-in-charge
 - Fire-fighter
 - Victims
- Sensor Data
 - For example: temperature, pulse, gas, position, communication

Task

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Fire-Fighter Scenario



Overview – half time

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- ✓ **What is Wearable Computing?**
- ✓ **The Client - MRC**
- ✓ **Task**
 - **The Product**
 - **Demo**

The Product

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- Requirements
- Design
 - Model
 - Context Framework
 - Map & GUI
- Demo

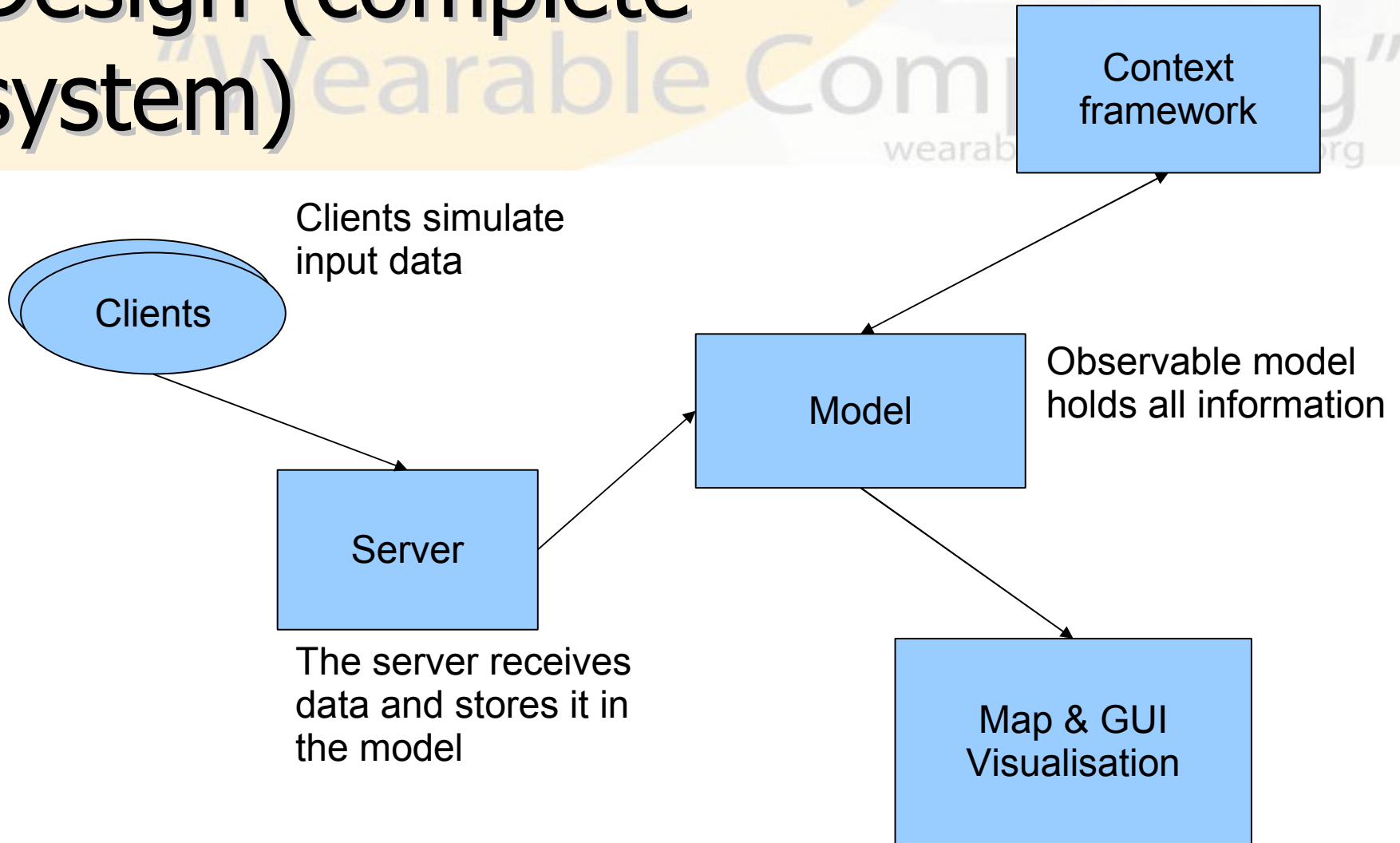
Requirements

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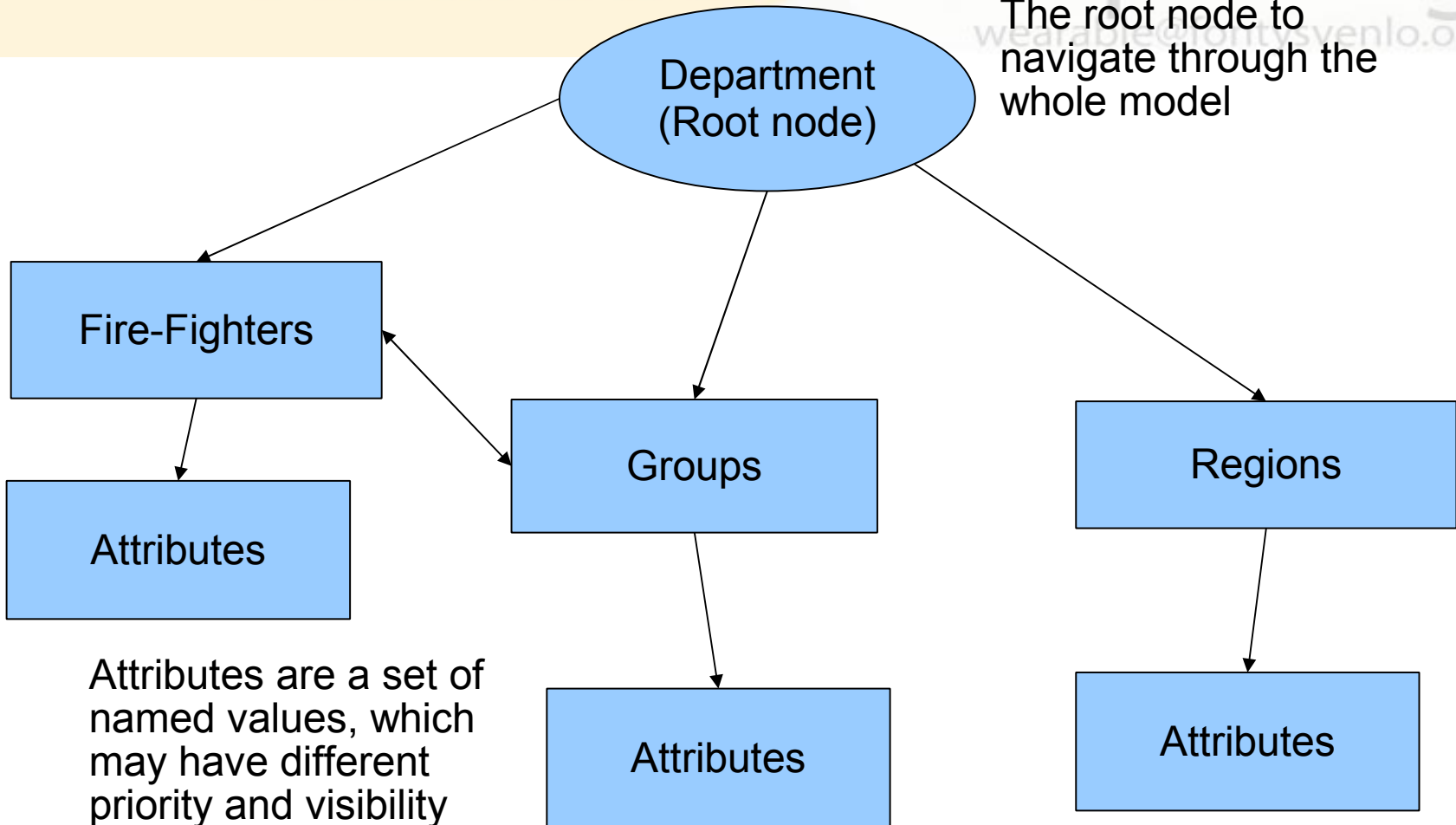
- Determine critical situations
 - The software should be able to recognize critical events of a mission on base of sensor data
- Give a good overview
 - The overview should react automatically on new situations
- Require *nearly* no attention
 - The user has other tasks than interacting with the system

Design (complete system)



Design - Model

The root node to navigate through the whole model



Attributes are a set of named values, which may have different priority and visibility

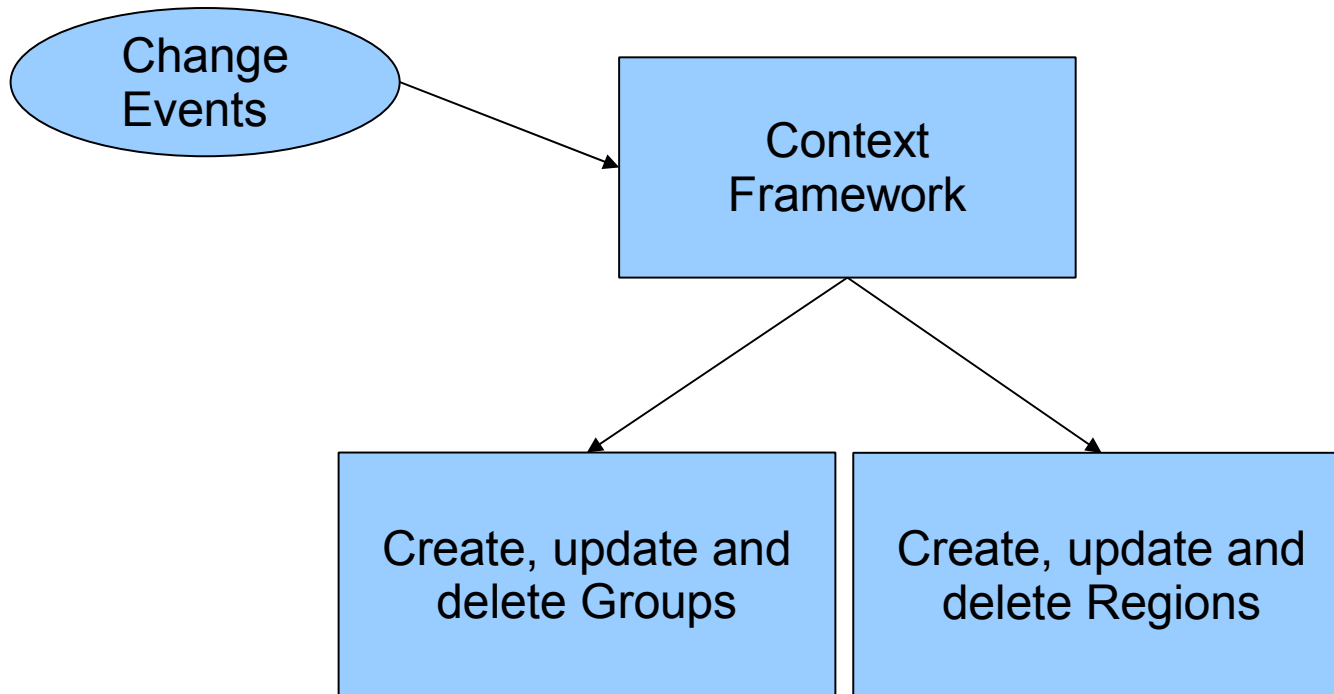
Design – Model

- **Strict Java Bean Design**
 - Reusable components
 - Observable properties (Bound properties)
 - Java Beans Specification 1.01
 - Extensible and easy to extend behaviour
- All elements are accessible through the root node (department)

Design – Context Framework

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Design – Context Framework

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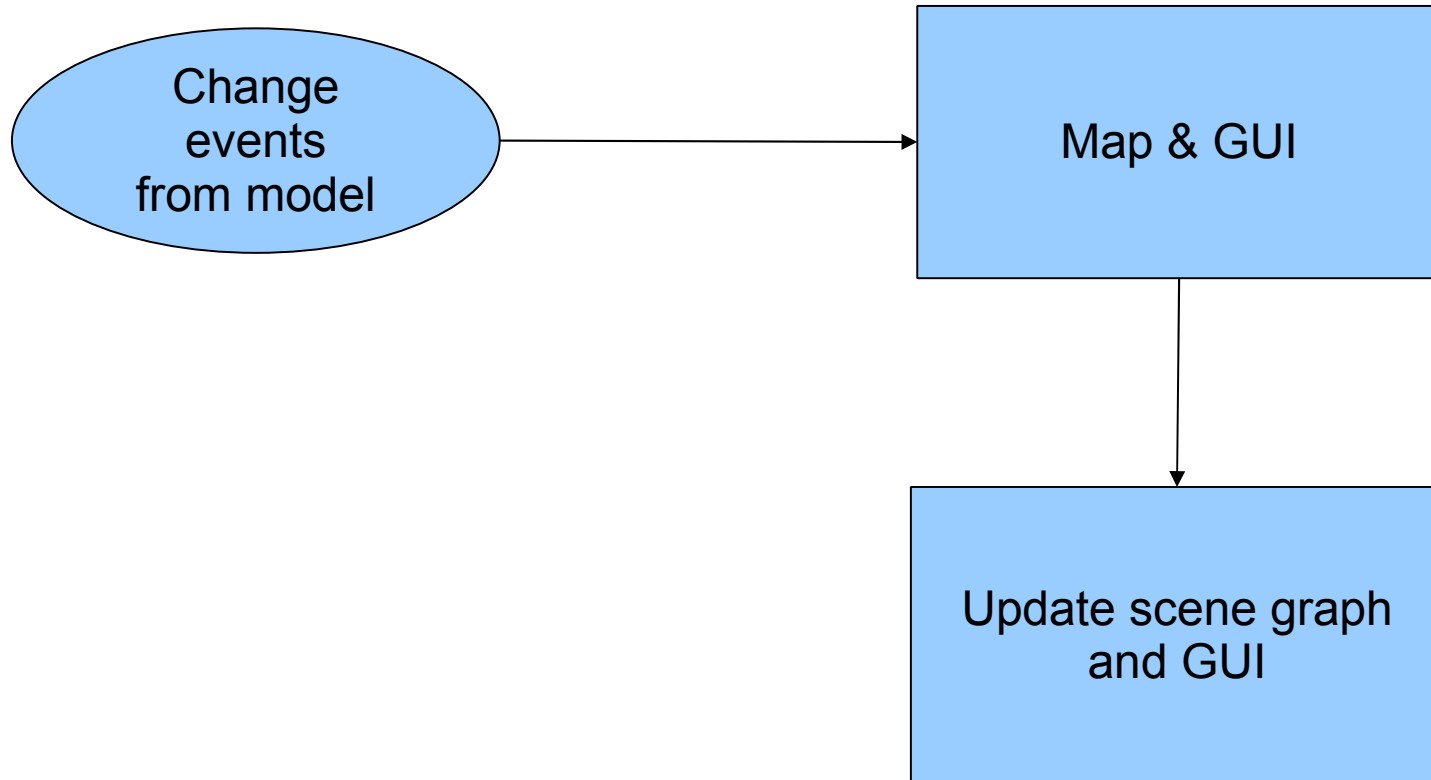
- Observes the department
- Listens for changes on fire-fighters
- Updates groups, regions and attributes based on predefined context specifications

Design – Map & GUI

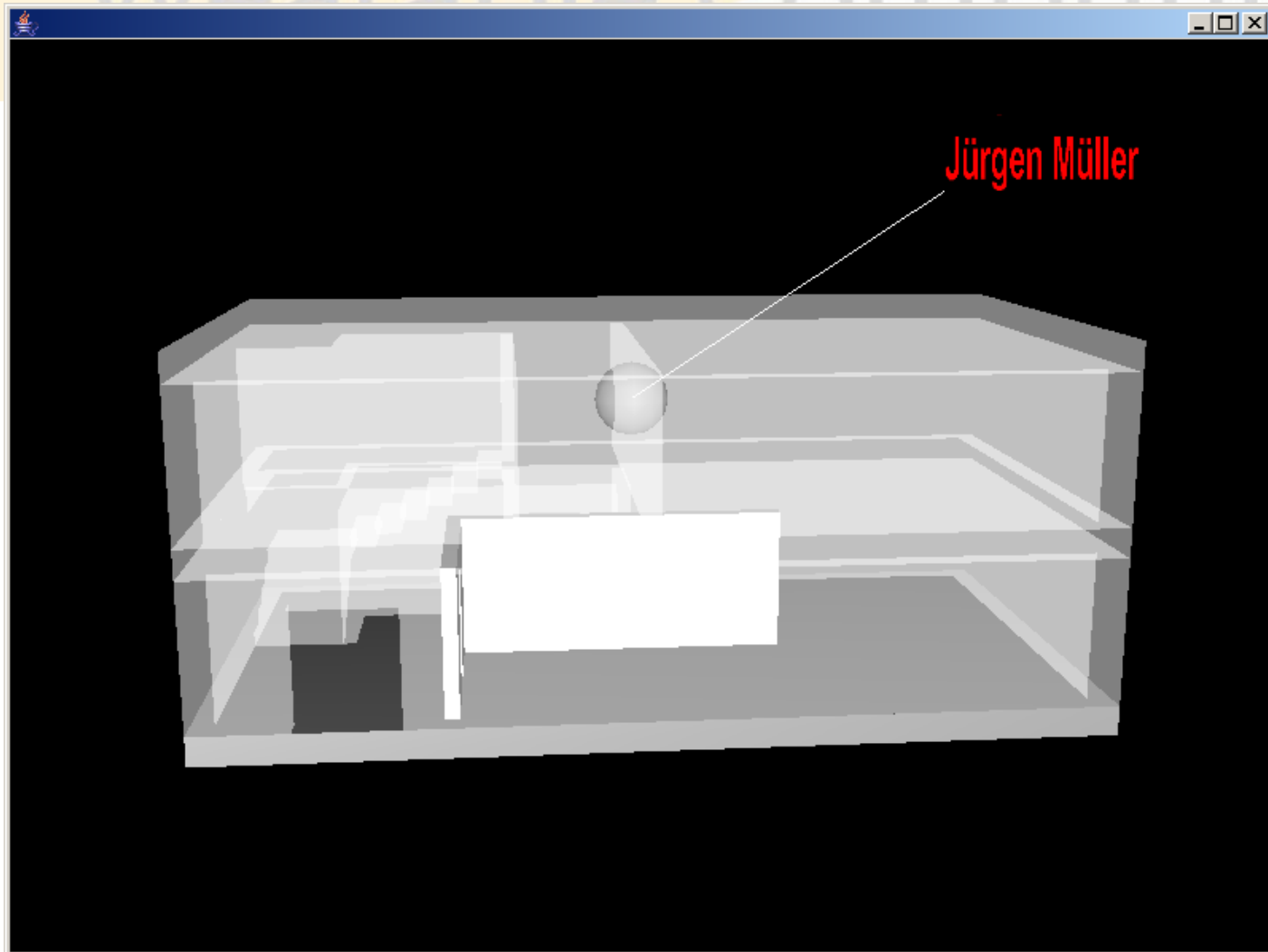
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- Swing/Java3D
- 3d Studio Max File Format for Buildings
 - Support of Materials
 - Support of named objects
 - Can be created by using Blender (open source 3d tool)
- Shows actual fire-fighter status
- Keeps the focus on important objects



Demo





Thank you for your attention!

Any questions?