

# Configuration & Interaction Tools in a UbiComp Environment

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## Introduction

- Research Question
- Intuitive & Ontological Configuration
- Interaction Model
- Proposed Architecture
- Completed Work
- Current Work

## Research Question

- Proliferation of Devices
- Two Challenges
  - Configuration
  - Interaction
- Both must be user-centric
- Any models used should re-usable

## Intuitive & Ontological Configuration

- Intuitive Configuration
  - Should facilitate users with varying expertise
  - Must be powerful enough to enable appropriate user control
- Ontological Configuration
  - Configuration will require abstract models
  - Models should adhere to some standard
  - Models should capture all relevant data in a way that allows the knowledge to be understood by multiple consumers and shared among them

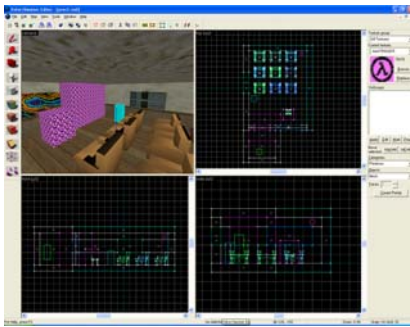
## Interaction

- Standardised Interfaces
- Environment Interface
  - User interacts naturally with environment
  - Management system interprets actions and infers intent
  - It then communicates with the available resources to offer appropriate support

## Configuration Tool

- Uses a Half-Life map editor
- Users create a 3-d world representing the target environment
- The resulting map is processed to extract useful data – e.g. physical locations of objects, their types, object identifiers
- Map is transformed into an incomplete OWL document based on the SOUPA standard
- The system will not accept the incomplete document
  - User must add in additional data – e.g. access rights, connectivity
- Result is a complete model of the room which can be used to configure and position resources

## Example –Presentation Scenario



Map Editor



3-D Model of Environment

## Interaction Model

- Consists of three elements
  - Task Descriptions
  - System Model
  - User Preferences
- The first two combine to produce a tailored model for that scenario
- User preferences applied to give tailored view
- Result is a Bayesian Network linking basic actions to high level tasks

## Completed Work

### ● 2-D Simulator

- User interacted with 2D Office
- Mouse Pointer simulated gaze
- Bayesian Network used to combine actions to form inferences
- Experiments conducted to test effectiveness



## Current Work

### ● Design Tool

- Creating the tool that will allow users to intuitively configure the environment
- Using a Half-Life API developed by Eleanor O'Neill (KDEG)
- Plan to integrate the API with the Bayesian Network technology to create a 3-D simulator