Incorporating PC's into AHA

T. Delbruck 22.5.03

With thanks for discussions with

Adrian Whatley

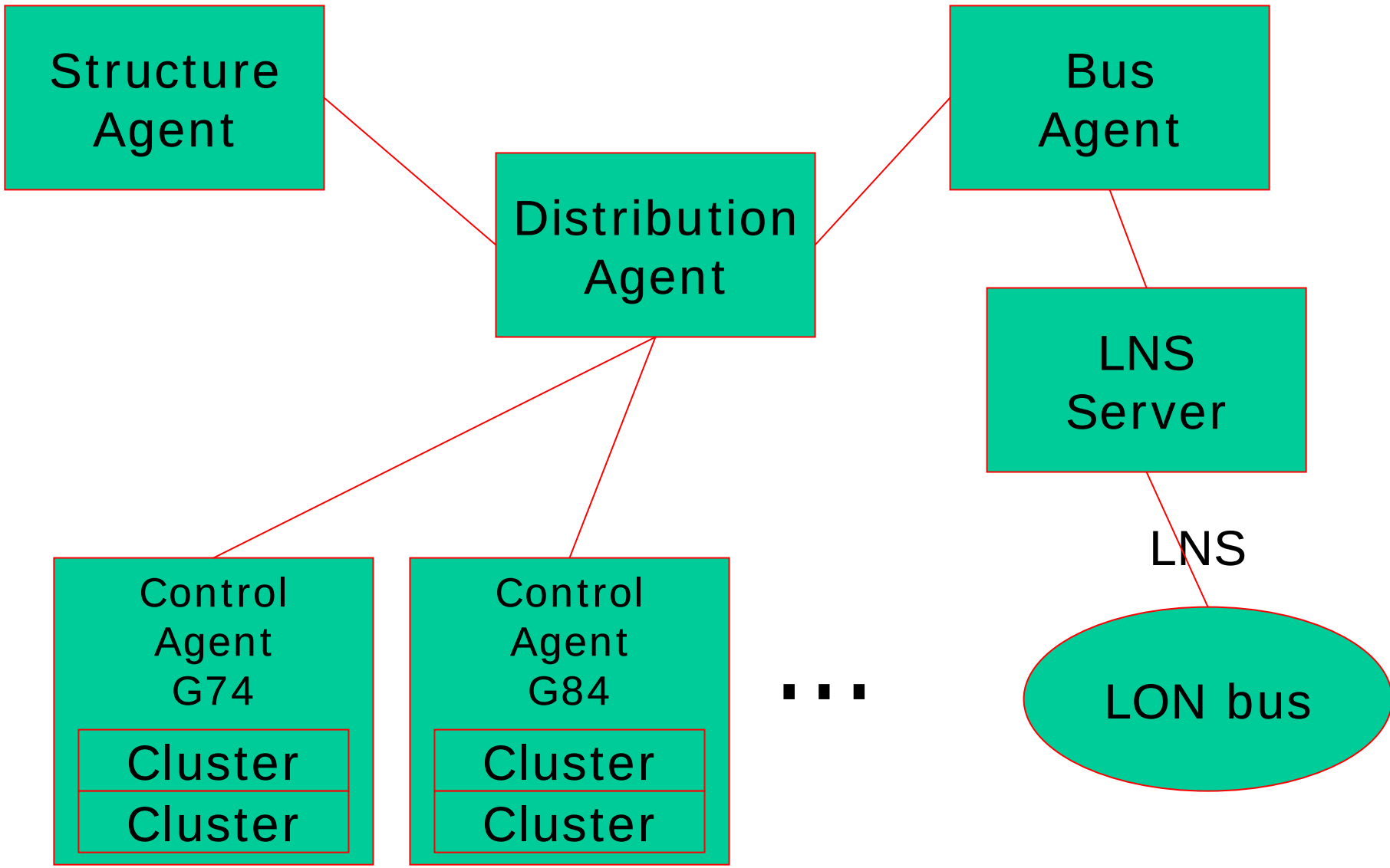
Ueli Rutishauser

Jonas Trindler Raphael Zwiker

AHA
(Adaptive Home Automation)

ABI
(Adaptive Building Intelligence)

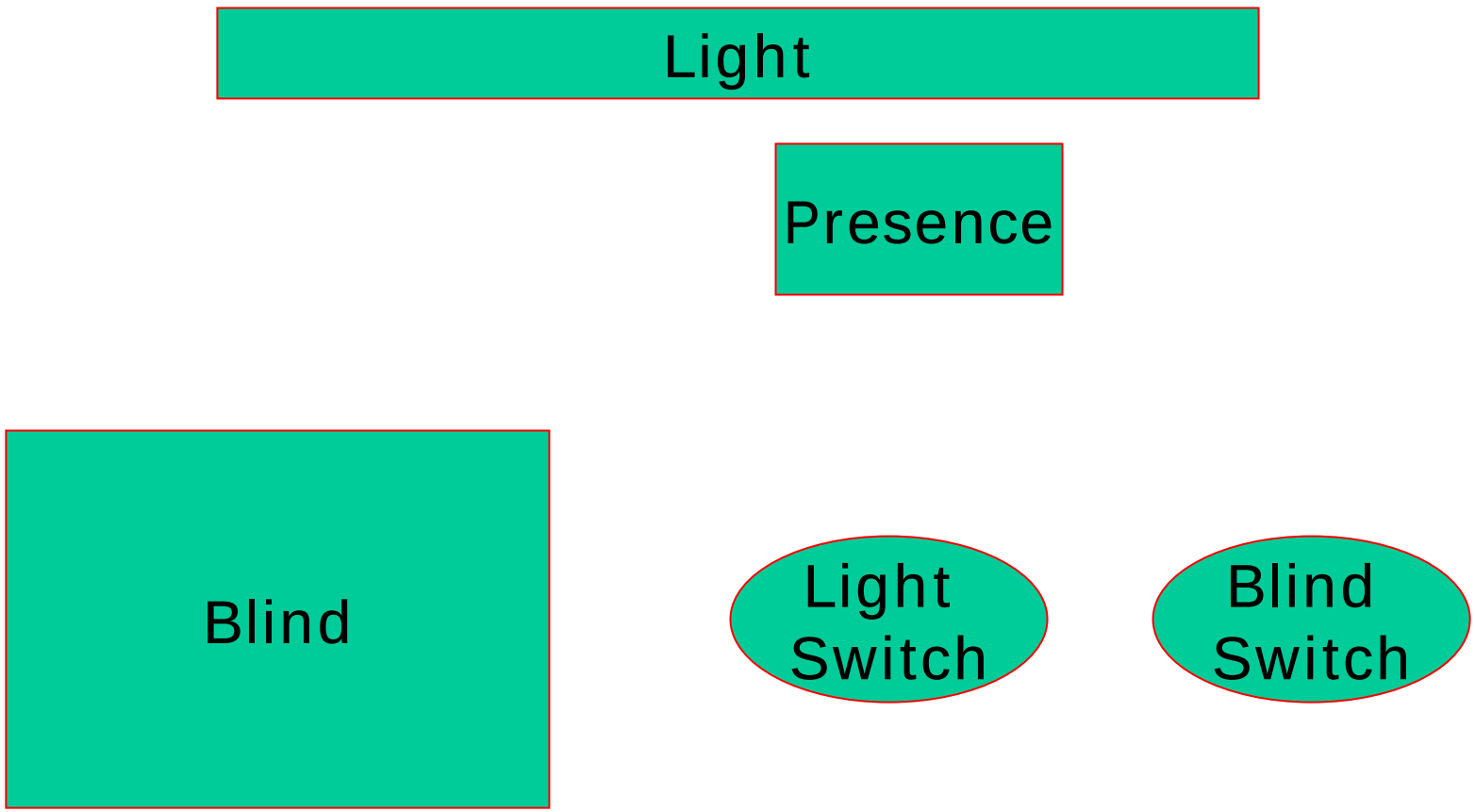
The existing ABI system



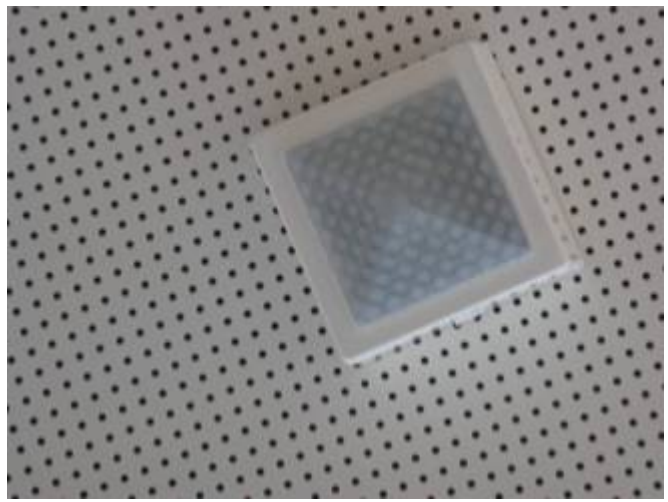
What is a JAS ABLE Agent?

- It is an ABLE (Agent Building and Learning Environment) agent that runs on a JAS (Java Agent Specification) platform that runs on a JVM (Java Virtual Machine) that runs on a computer running a native OS.
- The JAS platform provides infrastructure for
  - Messaging
  - Lifecycle control
  - Etc?

A cluster




Licht Wand
Licht Fenster



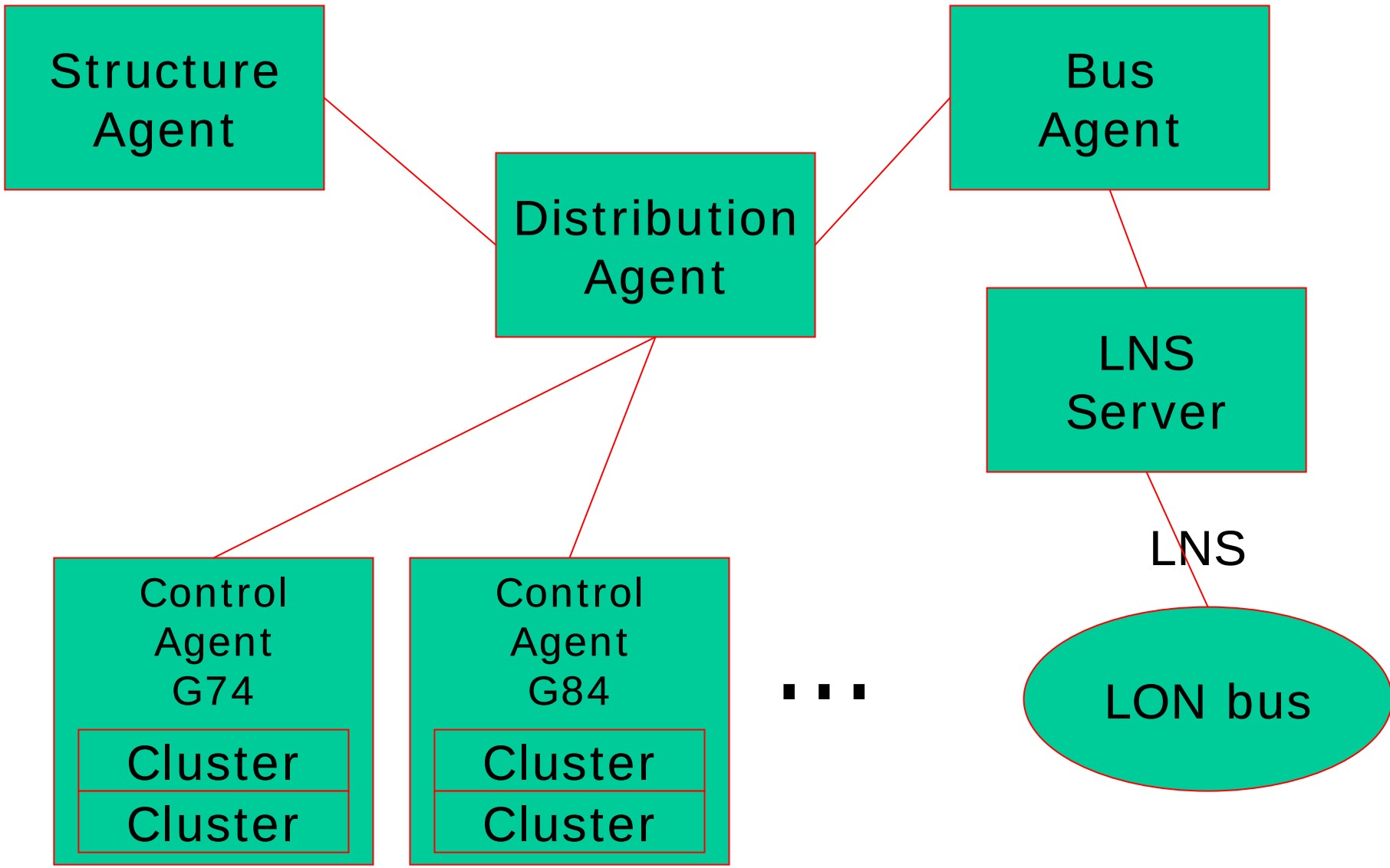
Typical scenes at INI


This one is different

The new sensor effector

- PCs are already on a network
- They sense you exactly when you aren't moving around the room
- They can act as presence detectors and as alternative light and blind control inputs

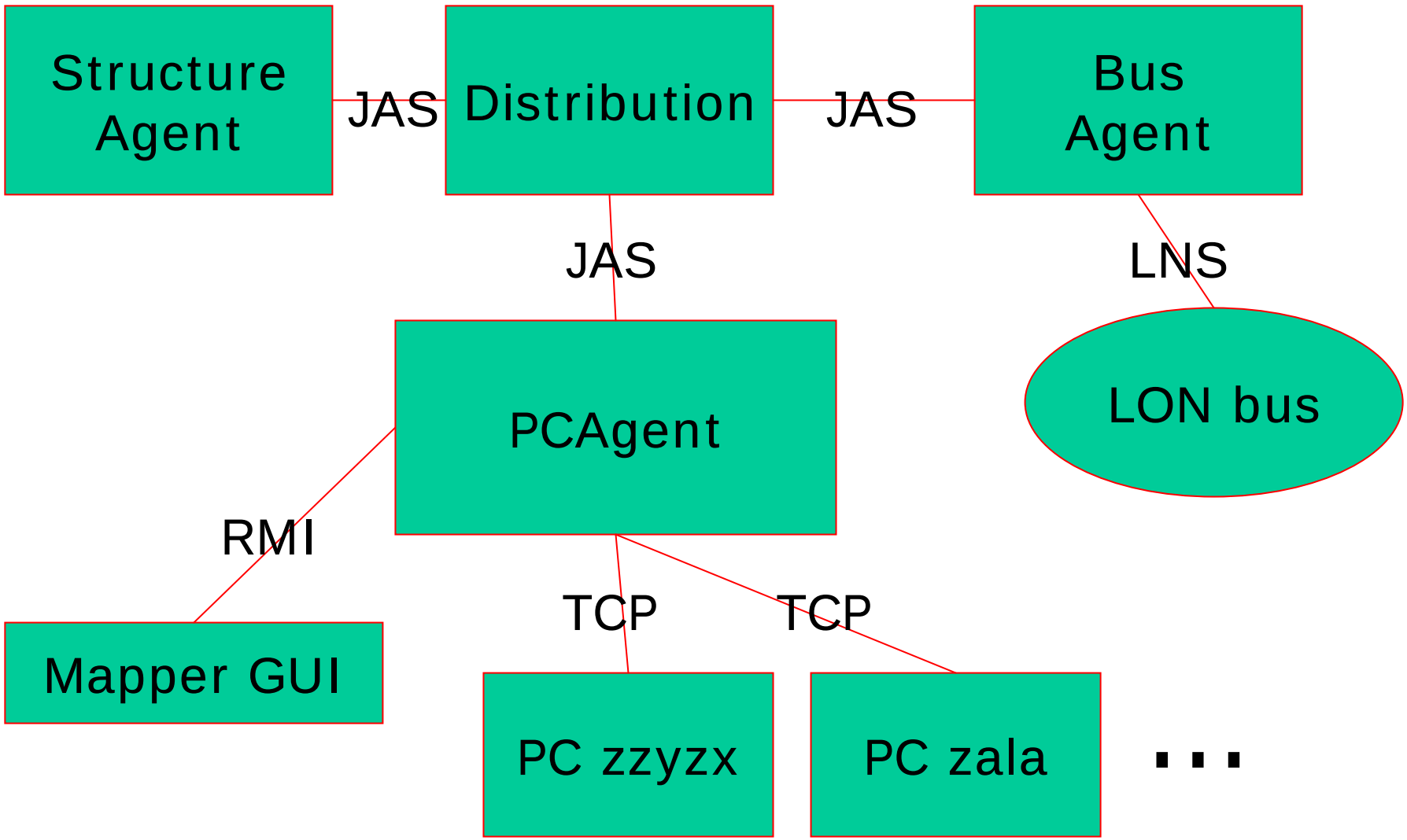
The existing ABI system



The problems with using JAS ABLE Agents

- An agent can never System.exit(). If it does, it brings down the virtual machine and all other agents running on the same platform.
- An agent can't use a GUI because it may have been started somewhere other than where it runs.
- An agent needs to run on a platform on a host with a static IP address and DNS entry.
- An agent can't be stopped and restarted – only moved around.
- Because of all these factors, agents are a pain in the butt to use for client applications.
- All communication with an agent must be via **another**

How PCAgent fits in



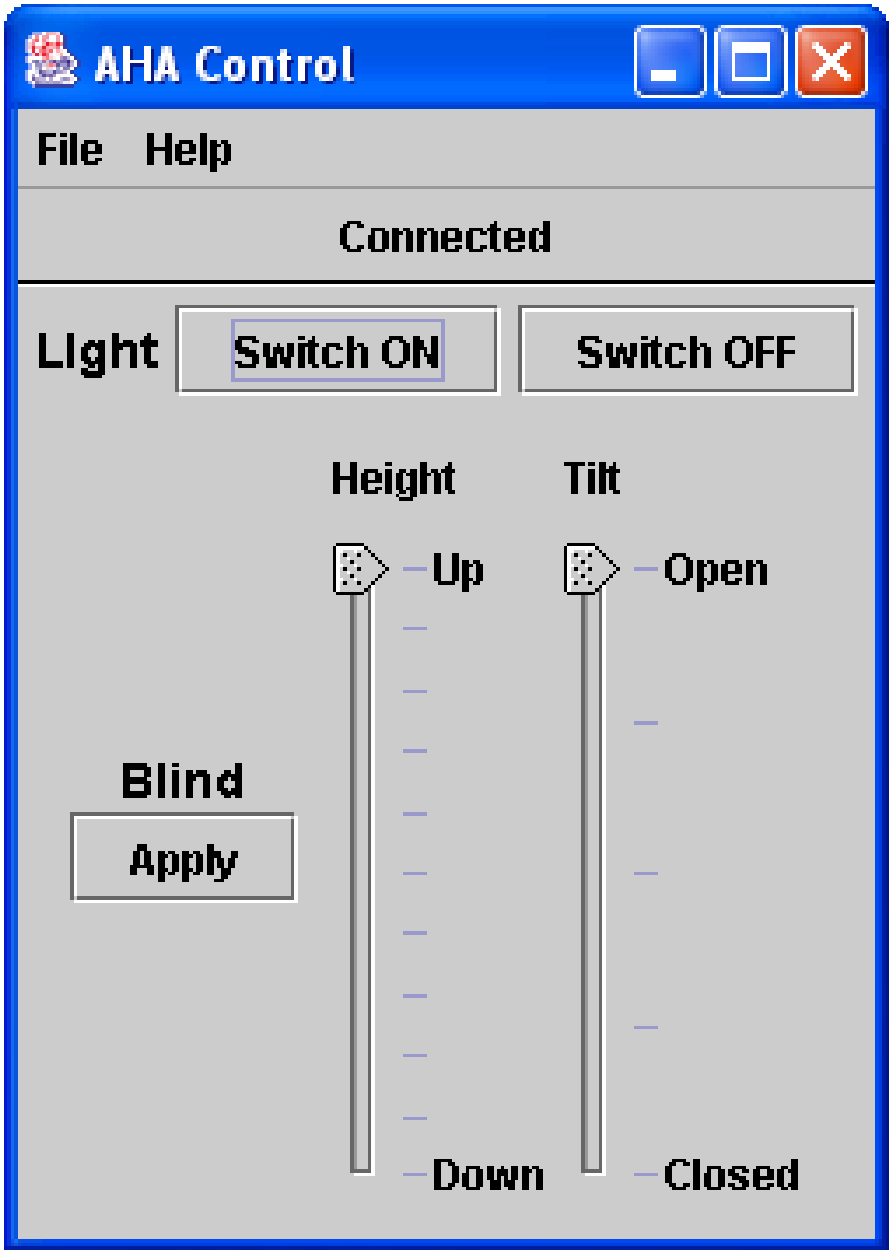
PC Client functions

- Lets you control your light and blind
  - These controls affect room learning just like switch presses
- Acts as alternative presence detector

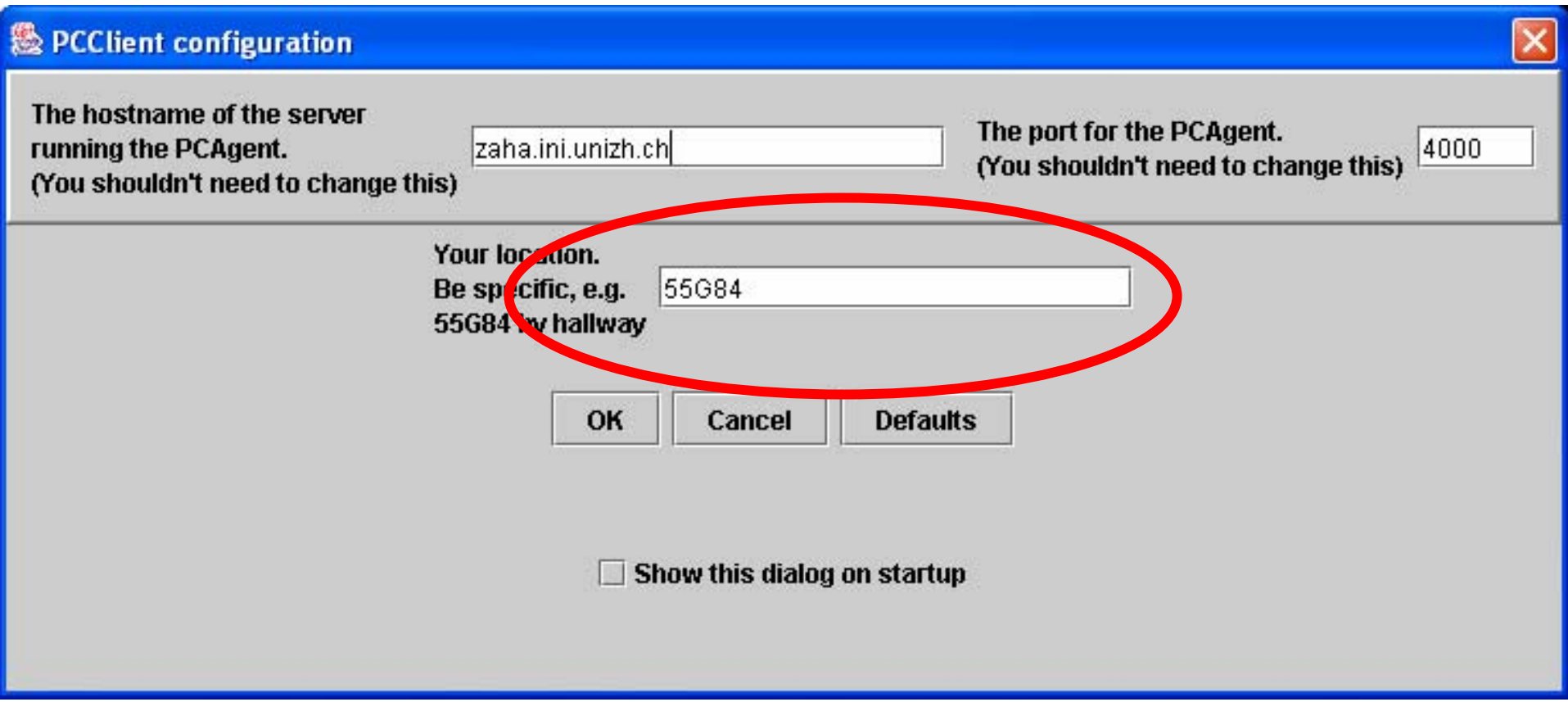
PC Presence detector

- Spoofs the existing HTS occupancy sensor
- Uses native code to measure time since last keyboard or mouse activity
  - Windows: a system hook IdleTrac
  - Linux: X11 ScreenSaver extension
- Controller program does not need to be in foreground

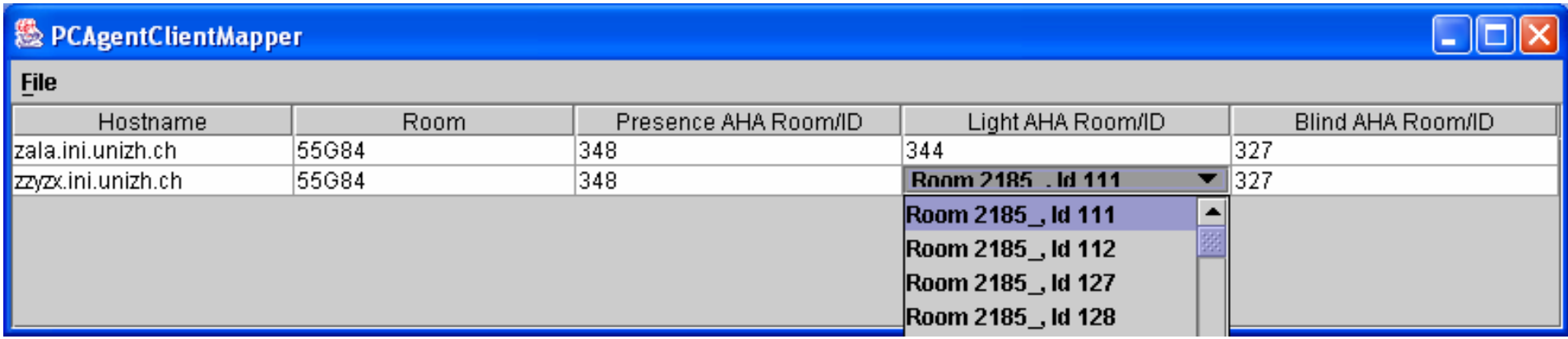
PCController GUI



PCClient properties dialog

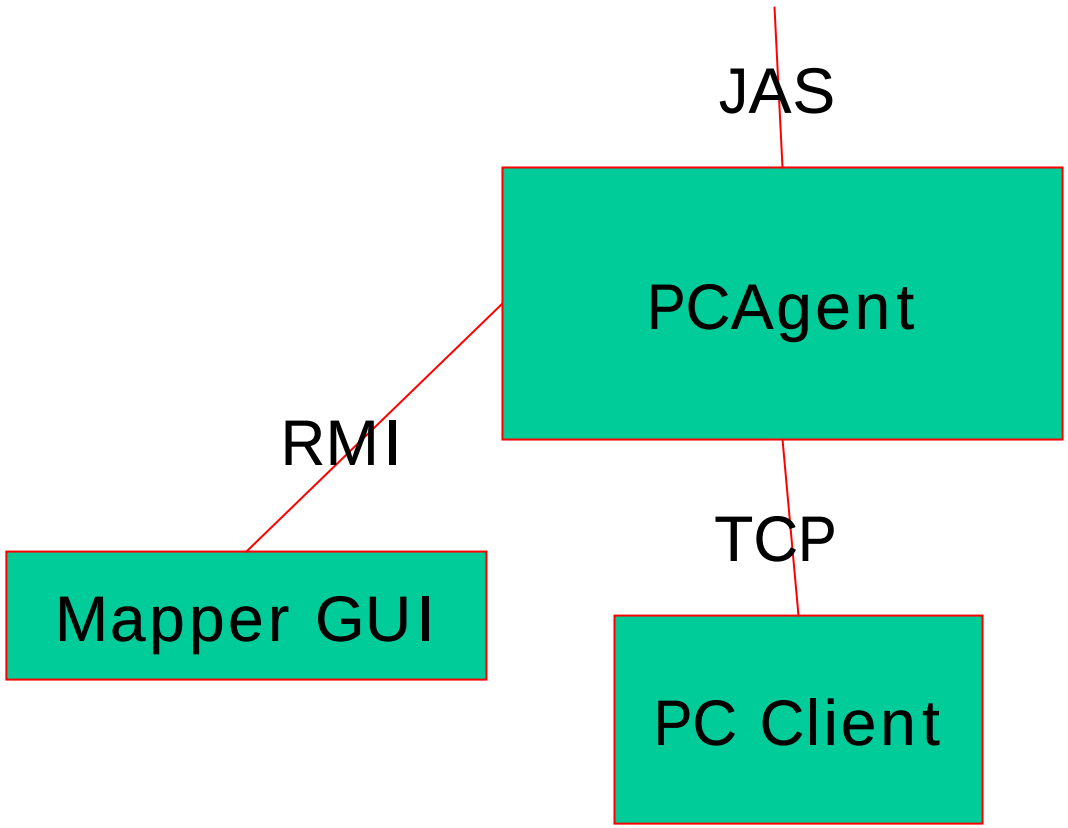


PC Client Mapper



- Uses RMI (Remote Method Invocation) calls to PCAgent to set the mappings from PCs to LON devices.
- PCAgent uses RMI to update the GUI
- These mappings are stored persistently as preferences of PCAgent

PC network consists of 3 applications



Software stats

- AHA total:
  - {Methods=1410, Classes=166, Interfaces=9, Lines=18651}
- PC software:
  - {Methods=149, Classes=14, Interfaces=4, Lines=2580}

The Java part of Ada was about 60k lines

Problems…

- Hi tobi,
- can you tell the students that are working on the intelligent room that the blinds in our office in the morning are going up every 5 min and every time I push the blinds to be shut, in about 2 min, the lights come on and the whole procedure repeats. It is getting annoying.
- sc

...layer and various computer opponents to fighting military, ...economic, and cultural battles across a randomly generated set

BY STEPHEN CASS
Associate Editor

Mind Games

To beat the competition, video games are getting smarter

IEEE Spectrum, Dec. 2002

says Steve Rabin, editor of the book, *AI Game Programming Wisdom*:

"The hardest thing in game AI is just making sure that the game never looks dumb. You'd be better off having an AI that was just above average all the time, rather than one that was brilliant 98 percent of the time and stupid 2 percent of the time," points out editor Rabin. Neural networks and genetic algorithms might seem to be useful. But when "something misbehaves with one of these technologies, it's not easy to fix. You can't exclude the one thing that's broken without destroying all of the other beautiful things in there. It's all or nothing, which is a very difficult situation when deadlines approach," he concludes.

To run the PC client

http://www/~tobi/aha