Agent & the Magic Lamp

This idea is based on the popular story of Aladdin and the Magic Lamp. In that story, a genie appeared whenever Aladdin rubbed the lamp. In our lamp, we expect that rubbing the lamp would invoke user's agents. Magic helped Aladdin to invoke genie and we expect technology to help modern users to interact with the software agents (modern day genie?).

We propose this interface as an intelligent single point remote control for all the home electronic devices. Software agents are used to model and learn user preferences. Due to the paradigm of lamp (well known all over the world), we think this interface would be easy to learn and intuitive to use.

We assume that the home electronic devices such as VCR, TV etc provide APIs for our system to inter-operate with them.

Design

Structure

We are retaining the established structure and controls of the lamp to make the interface easy to understand and operate (people shouldn't have to read a manual to operate a lamp). Our design enhances the characteristics/structure of the lamp to include all the functionality required. The enhancements are:

The number of collars is more than one. For each application that the lamp controls, a collar is placed on the oil font. These collars are stacked. Also, for easy identification these collars are color-coded.

As per the current design, this lamp could control the following three application. The applications and the color codes that are used as collar colors and light colors are the following:

Application	Color Code
Ambience	Red
Communication	Green
Entertainment	Blue

To provide better feedback to the users, the color of the flame, so to speak, changes to indicate the application chosen.
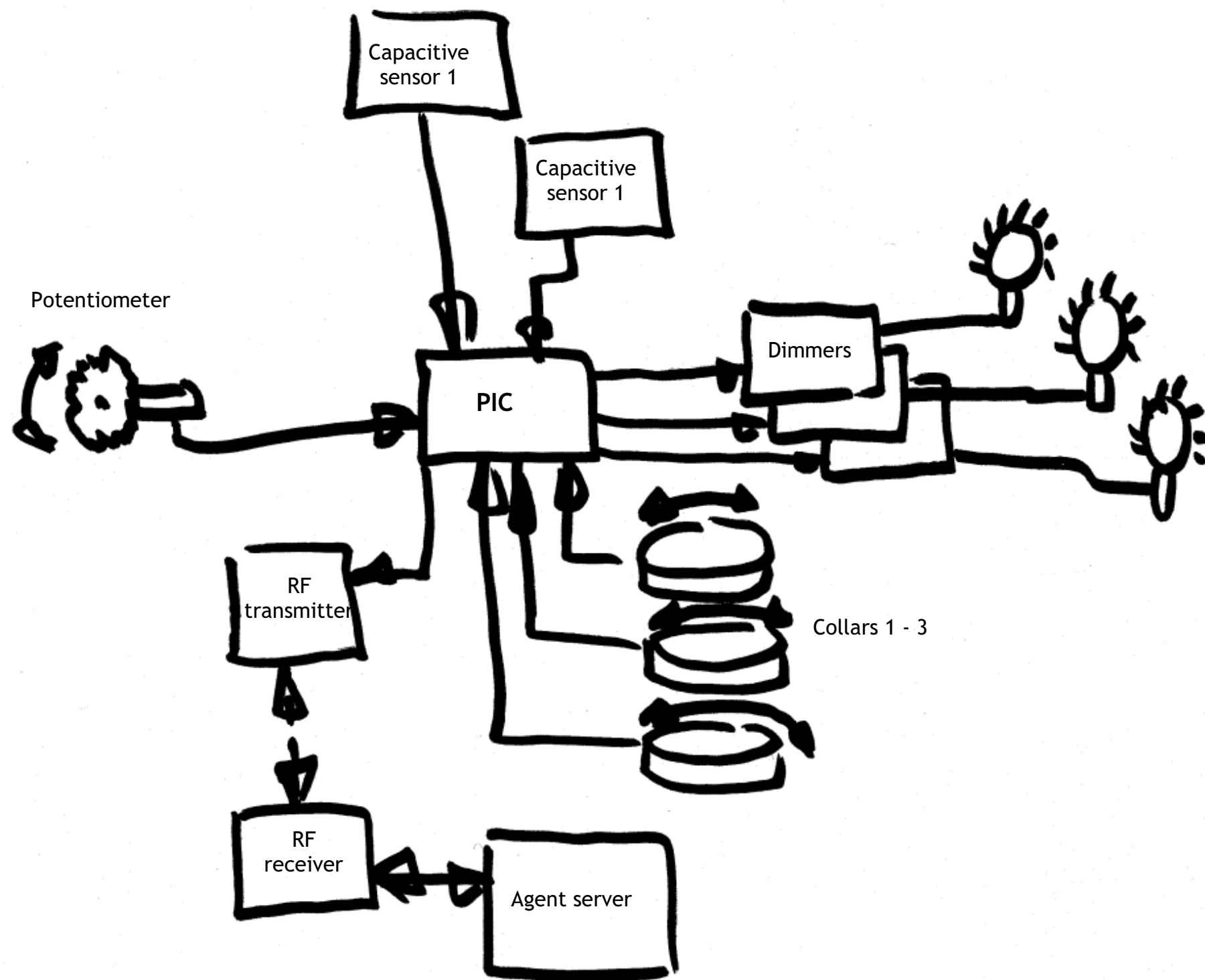
Technology

The hardware and software components of the system are:

Hardware - Input Sensing

Two capacitive sensors are used to sense the rubbing and closing. In addition, a potentiometer is used to measure how much the wick raiser is being turned.

Hardware - Feedback

Different color lamps are used to indicate to the user the attribute that is being modified. The intensity of those lamps varies to indicate the values.

Software - Client

The client is a simple piece of software that reads inputs from various sensors and transmits wirelessly to the server. Client software exists on the lamp.

Software - Server

The server software has the following functionality:

1. Constantly waits for input from client software.
2. It interacts with the home devices using the API exposed by those devices.
3. Finally, it has the user interface to elicit user preferences and the ability to model and learn user's preferences.

Interaction

The different interactions available are:

(a) Activation

The user can activate the lamp by rubbing the base of the lamp. In response, the lamp glows to show it is activated.

(b) Deactivation

The user can deactivate the lamp by closing the chimney opening at the top. In response, the lamp goes off to show it is deactivated.

(c) Choosing the application and the attributes

Since there is one to one mapping between the application and the collar, choosing the application is implicit. An application may have multiple attributes. For example, the application that controls Ambience might have attributes like heat, lights, blinds, and music. On the collar, there is a small rectangular area per attribute. The user can bring the attribute directly in line with the attribute to express its selection.

(d) Changing the value of the attributes

Users can increase the value by rotating the wick raiser in the clockwise direction and decrease the value by rotating the wick raiser in the counter clockwise direction.

We expect the changes to occur in real time. That is, we expect the user is able to perceive the changes in application as he is varying the values. All these controls and operations are intuitive and follow the well-known mechanisms and controls.

Scenarios
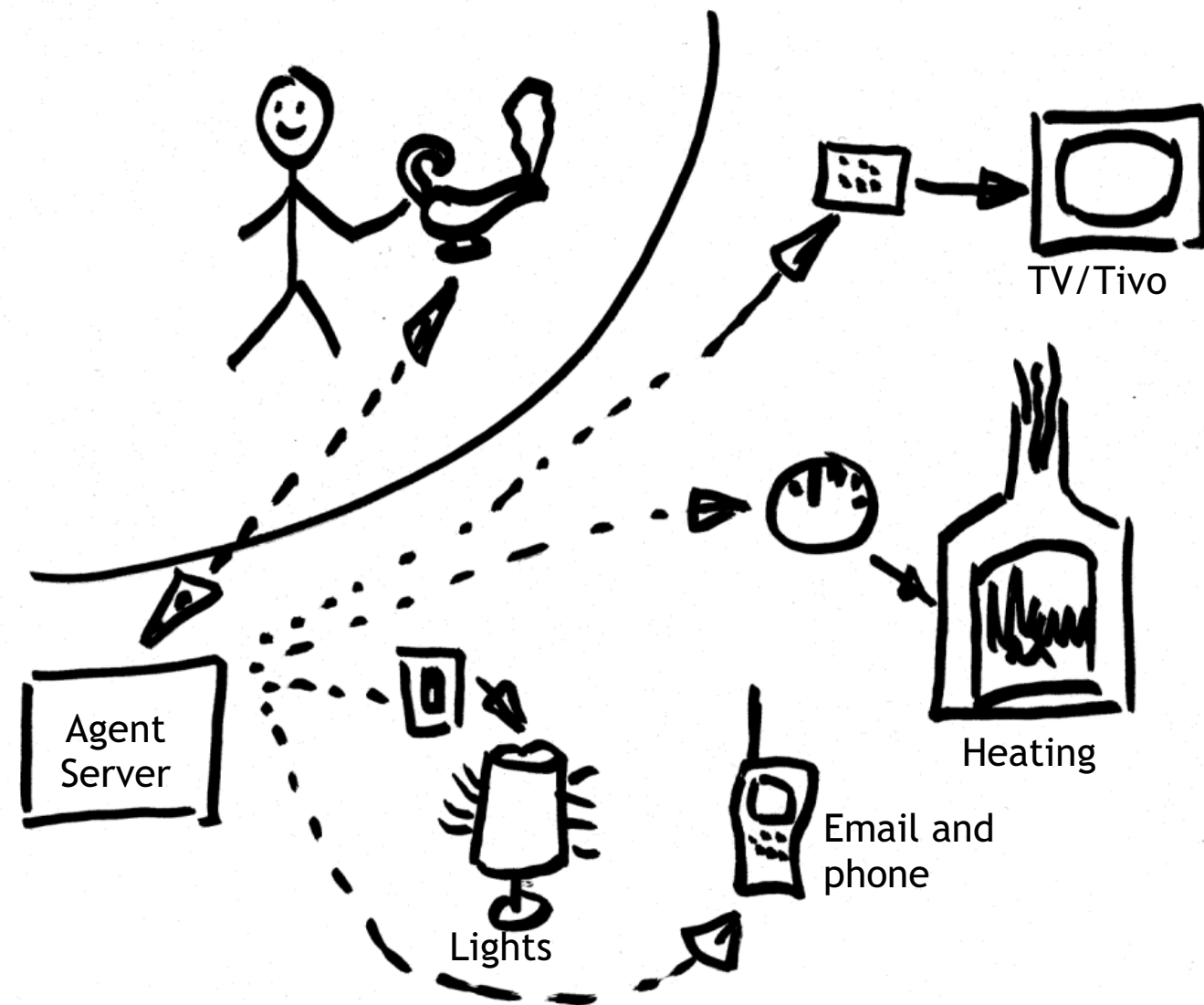
Scenario 1 - User wants to make her living room cozy.

1. She has to activate the lamp.
2. She has to move the Ambience collar and bring the area on the collar marked "cozy" under the notch. To indicate that the Ambience collar is being moved the red bulb would go on.
3. She can increase the coziness by rotating the wick raiser in the clockwise direction. The intensity of the lamp will increase to provide feedback to the user. The coziness may be defined as a combined function of room temperature, light, and ambient music.

Although she can control the ambient coziness at a high-level, this interface also allows the user to control low-level details such as temperature, light, and music.

Scenario 2 - User wants to reduce the number of notifications.

The user may want to spend few quiet moments without any distractions. To do so, she would not want to be disturbed by incoming messages and mails. She would want to be. So, she would like to notify her pager, mobile phone and other such communication devices that she wants to be notified only if the incoming message/call is of utmost importance.

1. She has to activate the lamp.
2. She has to move the Communication collar and bring the area on the collar marked "reachability" under the notch. To indicate that the Communication collar is being moved the green bulb would go on.
3. She can decrease the reachability by rotating the wick raiser in the counter clockwise direction. The intensity of the lamp will decrease to provide feedback to the user.

Deva Seetharam and Stefan Marti, November 7, 2000, v3.0