

# Adaptive User Interface Assistance in Smart Home Environments

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## Motivation

The capabilities of devices are rising continuously. On the other hand, those devices are becoming more complex when interacting with them. Smart environments antagonize this complexity by adapting to the current context of the user. As a consequence, the appearance of the user interface is unforeseeable at design time. Thus, the user interface has to be adapted at runtime.

Such highly adaptive systems require new kinds of help systems, which are at least as adaptive as the guided software system itself. An essential premise for adaptive help is a comprehensive description of the system not only at design-time, but also at runtime. Adaptive help systems are able to exploit the self-describing nature of models by introspectively access the artifacts of the guided system at runtime and additional context information.

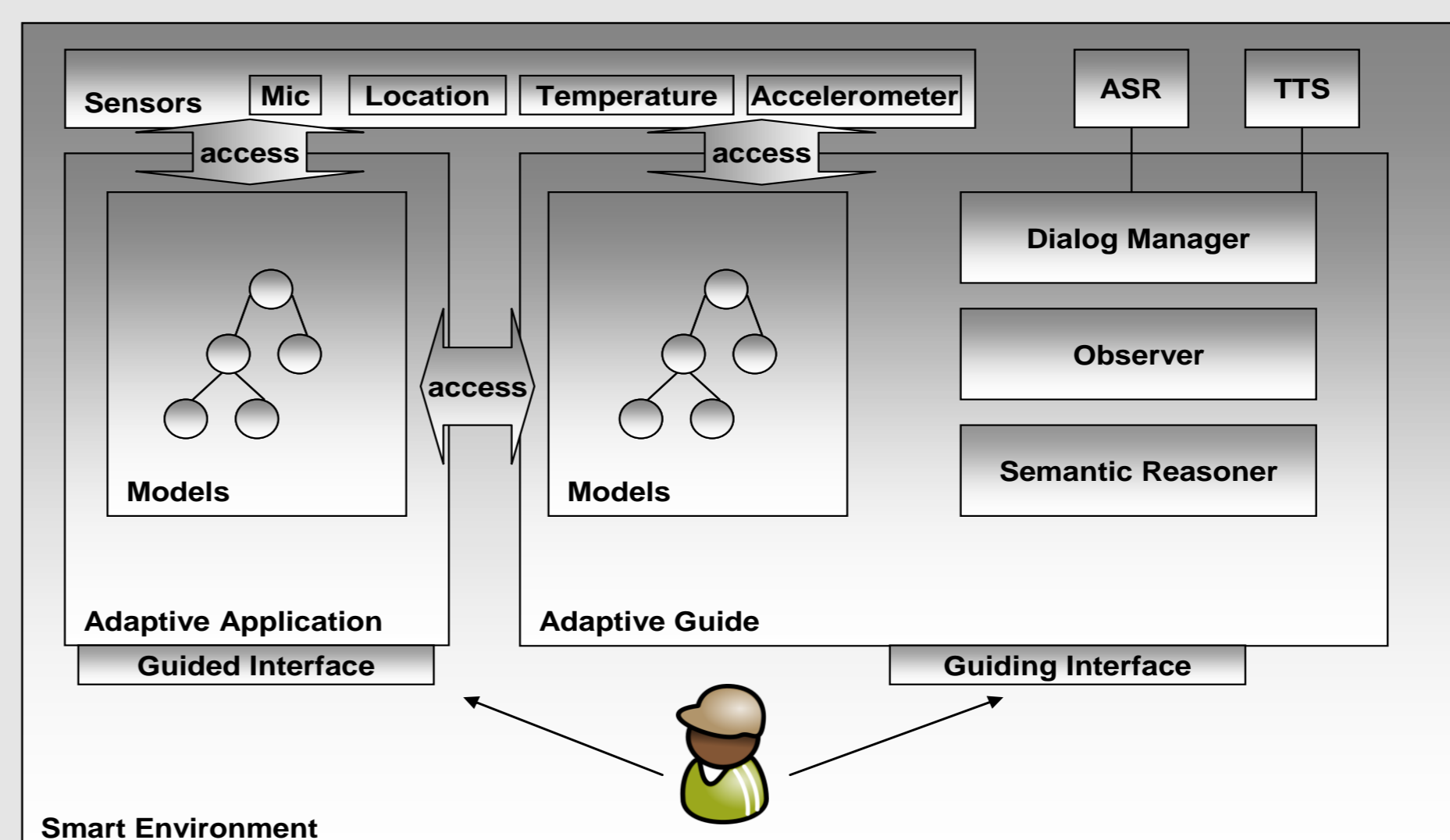
## Approach

This work deals with the utilization of information of a guided interface at runtime. Beside the original user interface of a dedicated guided system, a dialog between the user and the guiding system is established.

The guiding system is able to access information and call functionalities of the guided system. Thus, the user is able to gain additional information on the user

interface about available tasks and options, reasons for unavailable options and troubleshooting hints.

Furthermore, instead of only providing instructions for accomplishing a desired task, the system can illustrate the interactions of this task by running the user task on behalf of the user. Additionally, the guiding system can retrieve further context information and reason on it in order to be even more adaptive than the guided application.



## The MASP Guide

The MASP Guide is a guiding application which gathers the description of a task model of an arbitrary underlying application. It is capable of answering dynamically questions such as “What can I do here?”.

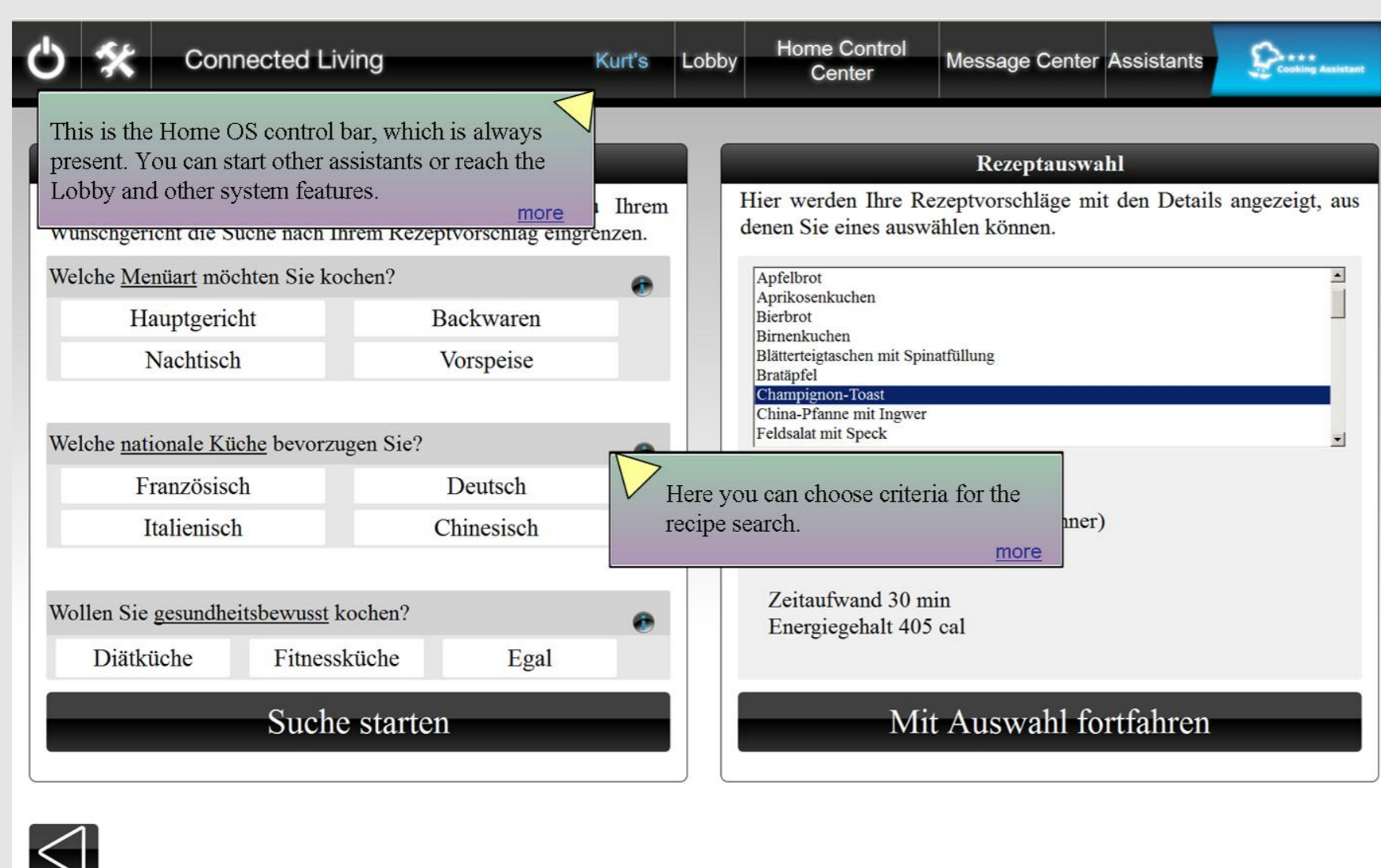
Furthermore, the user can play an interactive tour through an arbitrary application (e.g. the 4\*-Cooking-Assistant).

Within a tour, a sample workflow will be illustrated by controlling the explained application and by highlighting mentioned areas.

The MASP Guide is communicating to the user optionally via voice, sticky notes or a split screen. A tour can be simply created by recording the interactions done on the original interface of the dedicated application. This is accomplished by putting an editing overlay on top of the guided application.

## Outlook

In the future, the guide will be capable of answering more specific questions on control elements and their semantics. An initial interactive help support will be incorporated in order to provide help to the user when he uses an application for the first time. The tours will be generated dynamically from system description. Finally, by incorporating NLP techniques, the user gains more flexibility in the way of communicating her wish.



## Links

MASP  
<http://masp.dai-labor.de>