

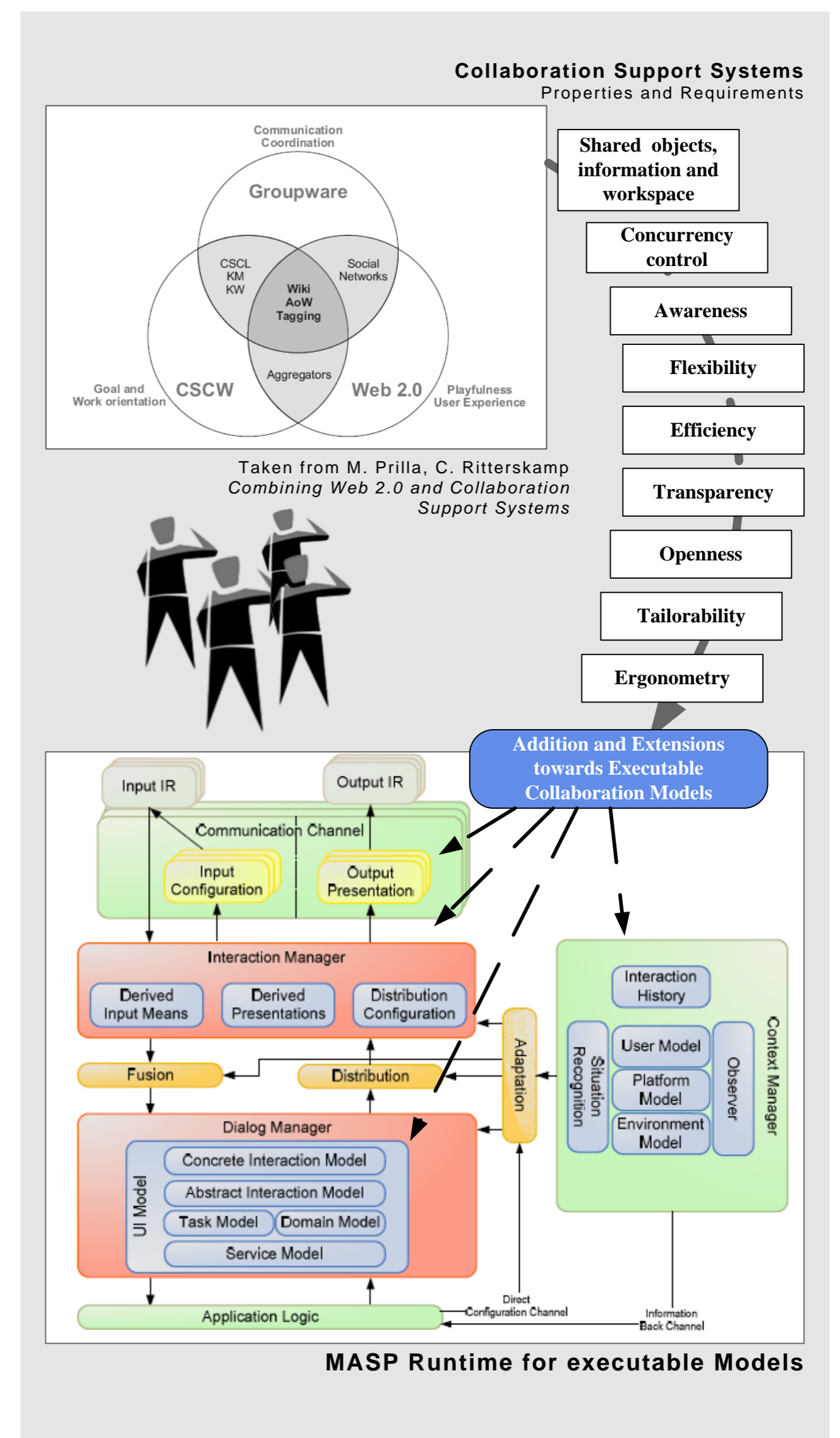
# Enabling dynamic on demand collaboration in ever-changing environments

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## Abstract

Collaboration is a very important part of work and everyday life, however computer supported collaboration hasn't yet found a way into our daily routines. Although the future trend is toward computer systems assisting us in almost every step of our lives, collaboration, as important social aspect, is insufficiently considered within these systems by now. Starting from this point I research in my work, how we can enable on demand, computer supported

collaboration in highly dynamic ambient environments. In particular, I will explore model-driven engineering approaches, which offer promising results towards ambient system realization. As result of my work I want to propose an approach which pinpoints how collaborative interactions, processes and tasks can be represented as models and how these models are utilized for dynamic collaboration enablement at runtime.



## Motivation

Model-based user interface development is a promising approach to encounter challenges from the field of ambient environments. This is because the UIs have to be developed against uncertain environments which are compromising numerous networked interaction devices. Therefore they have to be adaptive in way that the capabilities of the devices can be used even though the devices can be plugged or unplugged at any time.

UI models can be utilized at runtime for UI generation enabling multimodal device accessibility regarding the device capabilities. This new concept is raising the challenging question of how can classic collaboration approaches be transferred and utilized for enabling collaboration within highly adaptive UIs. Furthermore can the models used in the model driven UI development be extended or linked with models describing collaborative interactions, processes and tasks?

## Problem

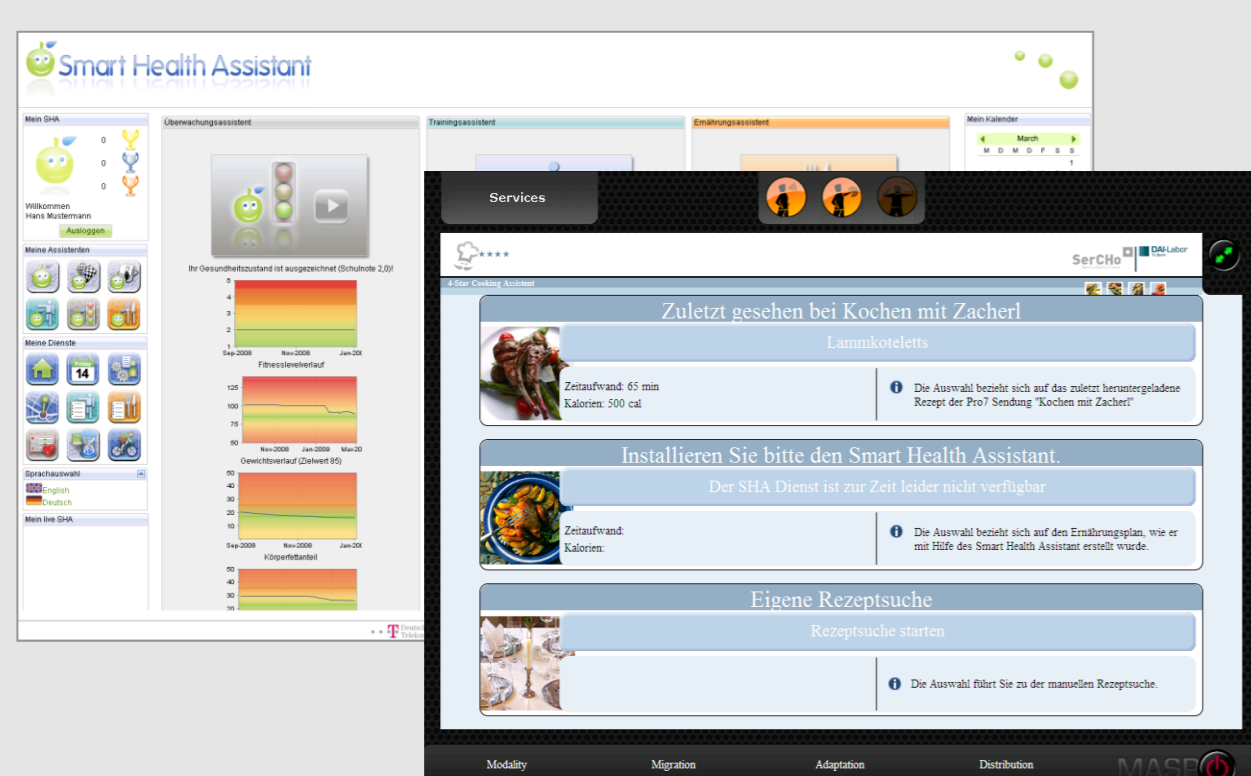
Model-driven engineering approaches offer promising results towards ambient system realization, however today there is no appropriate abstract description of collaborative interactions, processes and tasks which can be interpreted at runtime for enabling dynamic on demand collaboration. By solving this problem future systems built on a model based basis will be able to address the social need for collaboration accordingly.

## Approach

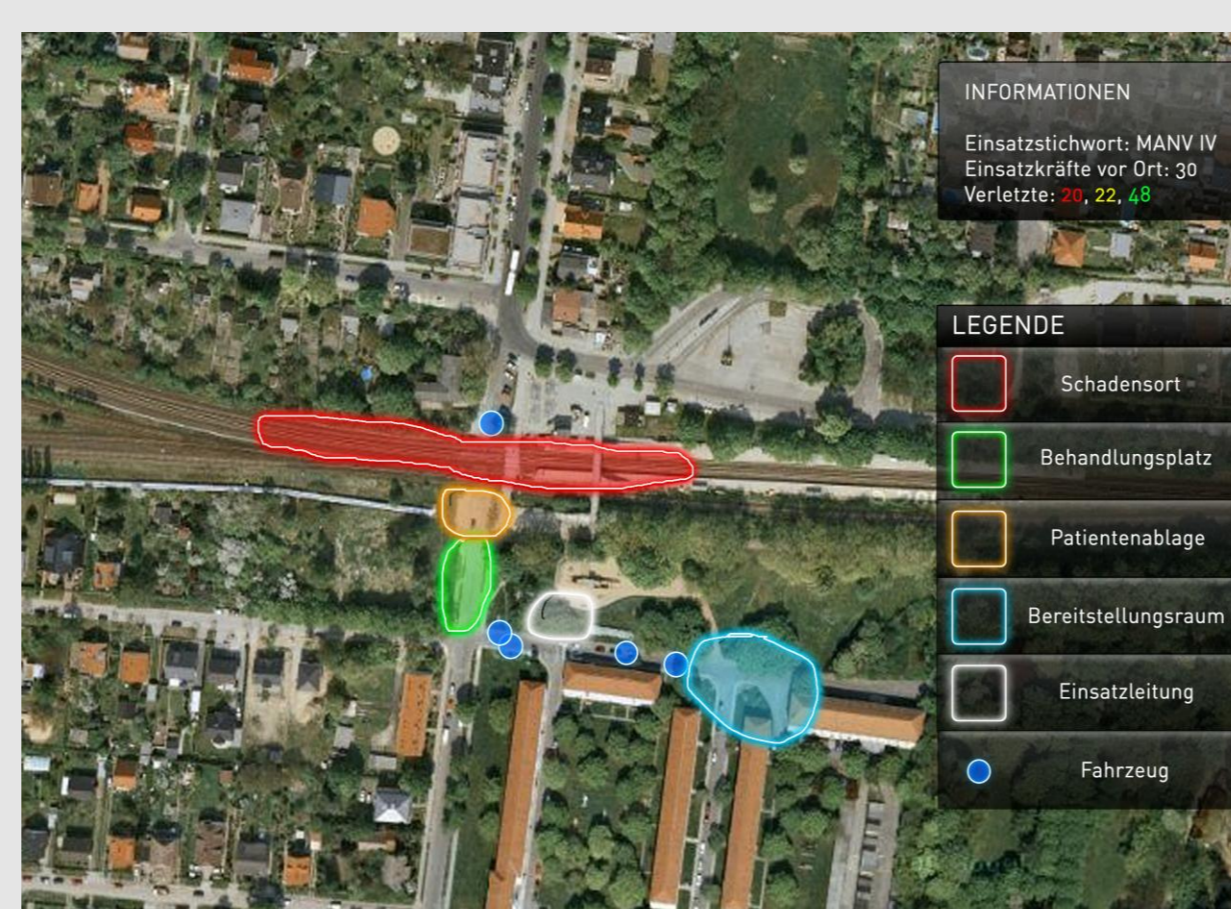
First of all the properties and requirements of collaborative applications and collaboration support systems will be identified and set into relation to the context of ambient environments. Thereafter existing concepts of model-driven engineering approaches from the CSCW and HCI domain will be analyzed regarding to expressiveness, extensibility and applicability in the given problem context.

Based on the findings a theoretical model-based framework for collaborative applications will be developed. It will enable to express collaborative aspects abstractly on one hand. In addition it will specify how these abstract models can be interpreted at runtime. Finally the framework will be evaluated by realizing demonstrators which focus on different collaboration scenarios like map-based collaboration in Emergency Medical Services or Services in a Smart Home Environment.

## Collaboration scenarios



Home Environment, Projects Smart Health Assistant and 4\* Cooking Assistant



Emergency Medical Services Project ALARM

## Links

Smart Health Assistant  
<http://www.smart-health-assistant.de/>

ALARM  
<http://www.alarm-projekt.de>

