

### **Cognitive Kitchen Assistant**

The Cognitive Kitchen Assistant (CoKA) investigates an assistive real-time framework for kitchens that aids humans. Thereby individuals with particular needs, i.e. elderly or impaired, are supported in everyday tasks. The agent can help to prepare meals and to control the kitchen's infrastructure, including white goods and infotainment equipment. The key idea is to model human input and output modalities in form of a Virtual User, which enables a comprehensive variety of possible user profiles and addresses impairments with regard to hearing and vision. This model also covers the users' preferences being learned by monitoring the interactions in a cognitive way. The CoKA framework using (3D-) modelling and symbolic representation of the kitchen environment can also identify the user's intentions: Security functions like "forgotten oven" or "wrong hotplate" issues are covered. A scalable and reconfigurable static kitchen environment including typical objects, e.g. knives and plates, will be modelled in Virtual Reality. This scene becomes interactive by adding the Virtual User concept with adjustable perception and (inter-) action capabilities, i.e. speech and hearing, deictic gestures and seeing, motoric dexterity, etc. This set of perception and interaction capabilities together with symbolic user properties represent the Virtual User. Besides the investigation of a purely virtual environment, the Virtual User model will be instantiated for verification by a real kitchen mock-up with robust, contact-free human-machine interaction paradigms. Throughout several interaction episodes, the Virtual User model will try to adapt its parameters to the user's actual needs in a cognitive manner by interpreting and learning the individual way of specific user's communication habits. End user partners for the virtualisation of ergonomic models and integration into coherent simulation tools for pre-manufacturing user tests and producers of white goods ensure twofold commercial exploitation.