

Policy-based Home Care Systems

Feng Wang

University of Stirling, Stirling, FK9 4LA, SCOTLAND
fw@cs.stir.ac.uk

Abstract. It is accepted that home care systems need to be customised and personalised for individual person. They also need to evolve over time. Besides, conflicts may occur between care services. We propose applying policy-based management in home care systems to facilitate the delivery and evolution of home care systems, and help the detection and resolution of conflicts in these systems.

Motivation

It is recognised that home care systems need to be customised and personalised for individual person. As aging process is progressive, home care systems must also be able to evolve over time.

Most research prototypes of home care systems have been created in an ad hoc way. The systems are usually hand-crafted and manually customised to the needs of individual scenarios. Because the solutions for home care services are hard-coded, they are therefore costly to change. Besides, as home care services run as individual applications, conflicts may occur between individual care services, for example, two services might adjust the light level simultaneously.

Proprietary, off-the-shelf telecare products suffer from similar problems. The functions of a product are typically fixed in special-purpose devices. Data from these devices cannot easily be accessed, and the devices work only with products from the same company. Domestic health monitoring and home automation are currently very limited.

Policy-based Home Care Systems

We observe that many home care services are reactive applications. Typically, an action is taken when some event happens. For example, when someone falls, call for help. A policy-based home care system captures this by specifying the behaviour of a system in policies (or rules). A typical policy in our home care systems consist of an *event*, a *condition* and an *action*. When some event happens, if the condition evaluates to be true, then some action is taken.

We propose using policy-based systems to facilitate the delivery and evolution of home care systems. By taking out the application logic outside the program code, we allow the change of behaviour of home care systems without changing the code. Besides, techniques for the detection and resolution of policy conflict will help to resolve the conflicts between home care services.

Current Status

In the MATCH project (www.match-project.org.uk), we have defined a policy language for home care and designed the system architecture of home care systems. A lab prototype has been built on top the OSGi platform. Preliminary work on the policy conflicts in home care systems has also been done.