

Title	ホームネットワークのマルチユーザ化におけるコンテンツを考慮した動的権限管理に関する研究
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Context-aware control method of user authority for multiuser Home Network Services

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In recent years, the services that use the functionality provided by home network system are becoming widespread. Those services control home appliances and household equipment that are connected to the home network in order to provide convenience. It is necessary to consider the individual situation to operate those services smoothly, because each inhabitant is in different situation and the resources used by the service are limited. The existing research proposes to configure the behavior of the services used in a home network environment by individuals to solve this problem. In the near future, the services used in a home network environment are expected to be increased and diversify. It is assumed that the frequency of resource conflict and the conflict of the influence between services will be increased in such environment. Therefore, it is hard for user to configure the behavior of many services that may cause confictions. We propose the service platform system whose users have authority for fix a behavior of services, and we also proposed the event-driven control method for user authority considering the situation of individuals. By realizing our proposed system, it is expected that it will be possible for users to control easily the behavior of services without considering the service's detail.

In this paper, we explain the control function that is required in multiuser home network environment first. Then, we explain the problems in the

method for configuring the behavior of the services used in a home network environment by individuals.

In our research, we proposed a service platform system that controls the behavior of services in consideration of individuals and the domestic conditions. First, we defined the features and quantity of services, users, and devices used in home network environment in order to use those information for smooth service control. Next, we defined user authority models that are referred in order to make a decision about the behavior of services. Then we defined the event-driven control method for user authority considering the individual situation. The event that the proposed system considers consists of the condition of working service, the condition of users, time, and the conditions of sensors in home. In the proposed system, users have authorities that determine whether services can use the categorized functions of devices per the categorized service objective and per room. Therefore, a specific user authority means what and where is the specific user allowed to use. Users and service objectives have a priority for solving a resource conflict between services. In the proposed system, a user makes a scenario that consists of the condition for changing user authorities and the contents of authority change. The condition is divided into five parts. Users can make the scenario by defining the content of each condition and relationships between the conditions. The relationships that users can designate are “and”, “or”, “not”.

To evaluate the proposed system, we developed a simulator. The simulator reads the configuration files of user information, service information, device information, house information, and the behavior of users and service. The simulator outputs the user authority transition and device condition against the behavior of users and service as input. The result of the simulation shows that the proposed system can control more services than the number of scenarios if the conditions for changing user authority are same when many authorities are changed.

In conclusion, we believe that the proposed system can effectively decide on a policy for using a service in home environment that has many services.

As the future work, we will consider the method to inform an authority change to users properly, and we will consider the more user-friendly interface.