

Just Another Service Composition Model for Smart Home

Tsung-Chi Wu, Cheng-Liang Lin, Ping-Chung Po, Chi-Ping Freg, Che-Wei Hu, Ting-Wei Hou
 Department of Engineering Science, National Chen-Kung University
 Tainan City, Taiwan, ROC
 {n96014138, n96014170, , hou}@nc.es.ncku.edu.tw

Abstract—We propose a service composition model to provide a user a simple graphic interface and to help a user to configure service compositions easily. We developed a first version OSGi based prototype, which translates the graph based modeling into a physical service composition and control flow. A second prototype is now under development to have an Android based GUI and more flexible composition rules.

Keywords—Service Composition, OSGi

I. INTRODUCTION

The basic smart home services are dedicated functions. Along with the thriving of diverse consumer electronic devices to provide a variety of services, users would begin to think of combining environmental information and consuming electronic devices, together with their functions, respectively, in order to create more diverse and multiple services. Then it comes “service composition”. For a user, one needs to learn or to be trained to use the dedicated service, and the newly composed service. The second reason is that the developers would to study complex mathematical and data model.¹

II. SERVICE COMPOSITION MODEL

Because the users are much familiar with graphic user interface (GUI), we develop an interface to manifest any kind of services and users can easily compose personal services, as shown in Figure 1.

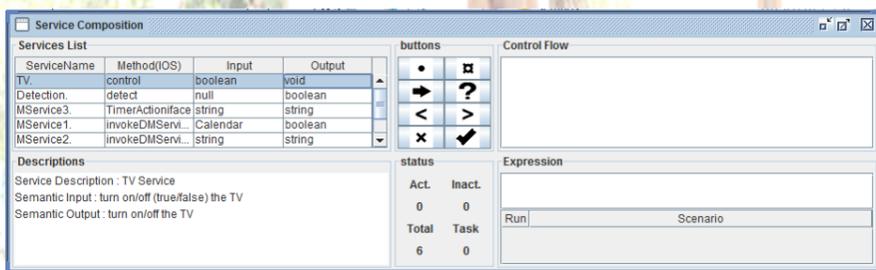


Figure 1 Service Control Panel

According above issue, we build a service composition model prototype, as shown in Figure 2.

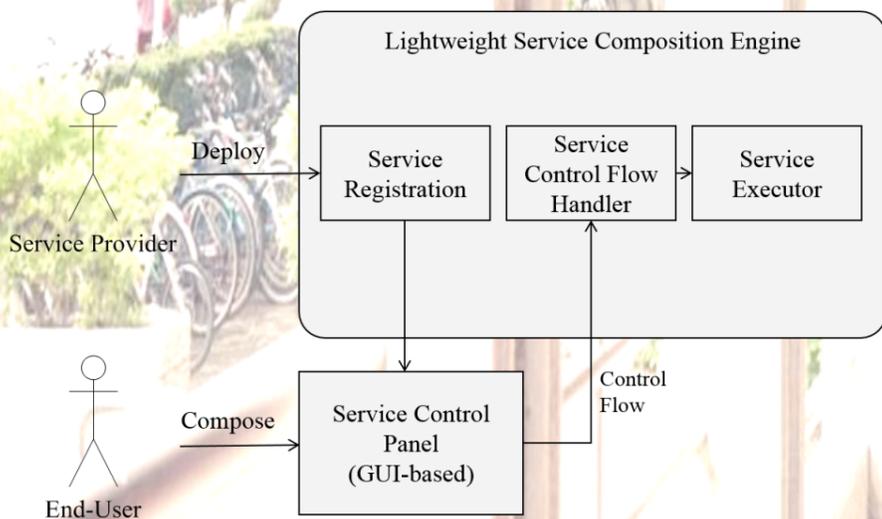


Figure 2 Lightweight Service Composition Model

III. CURRENT STATUS

On the contrary, we consider in sensor services which can provide tremendous information to variety services. We assign another services which can manage and collect sensor services information, so called Sensor Information Service (SIS). The Sensor Information Service module is shown in Figure 3.

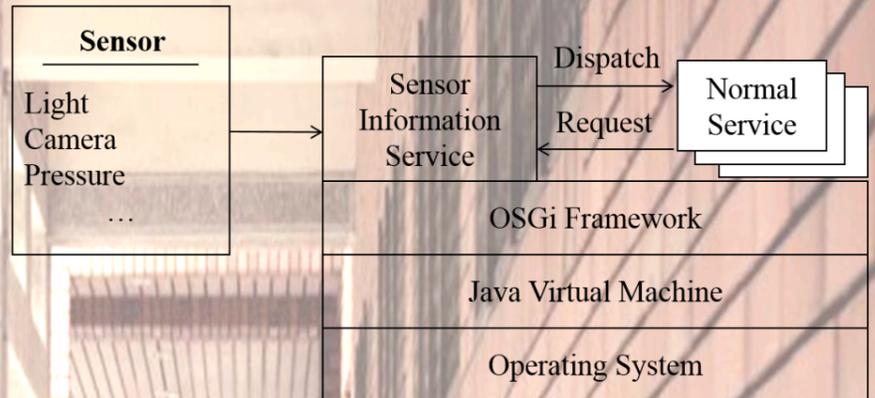


Figure 3 Sensor Information Service

In Sensor Information Service, we define it as a counselor between sensors and services. Services only obtain data when requesting SIS.

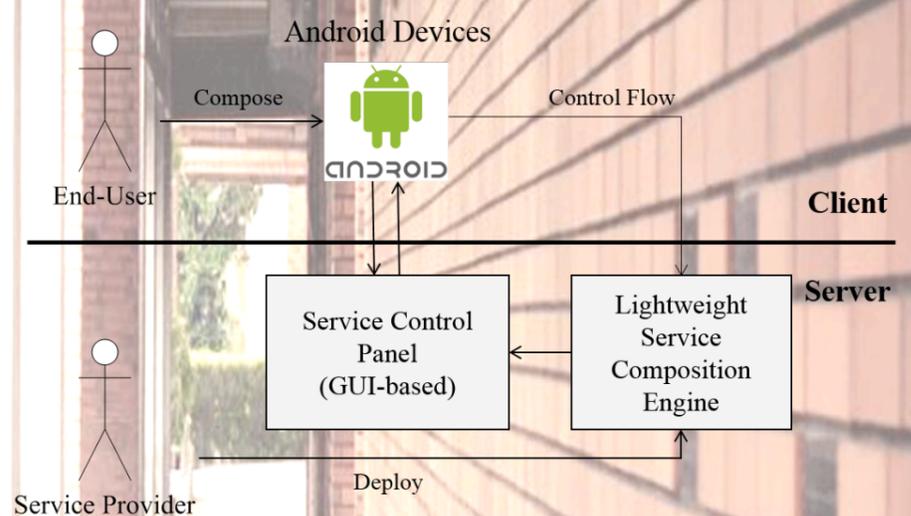


Figure 4 LSCM with Android Client

We divide the system into client and server parts. In part of client, user can set conditions to operate environment devices by Android Devices. Then, the system would determine whether the condition is correct. For example, it is an unreasonable condition that start heater when the temperature is 30 degrees centigrade. The system would ask user to reset conditions. If the condition is correct, the system would send data to server. The System Control flows Chart is shown in Figure 4.



Figure 5 Real-Time Monitoring Screen

In Figure 5, the house floor plan was built by software which works on smart phone or tablet PC. The devices place was set by user. By the screen, user can easily know devices state and comfortably operate devices.

¹ ACKNOWLEDGEMENTS

The research is supported in part by National Science Council under contract NSC101-2221-E-006-071 and NSC102-2221-E-006-138