Mobile-Hosted Resource Composition Mediation Framework (MRCMF)

MRCMF is based on Enterprise Service Bus architecture design. It provides autonomous operation based on pre-defined and machine-learning-based Workflow Management System (WFMS). It is a plug-in component (also can be seen as a local-host service) for mobile device that is capable of leveraging different components. The role of MRCMF is the mediator between Mobile-Hosted Things Middleware (MHTM) and Mobile-Hosted Cloud Middleware (MHCM). The primary objective of MRCMF is to support the interoperability between IoT communication protocols and Web service communication protocols. For example, to enable the data processing between the MHTM and MHCM, MRCMF will normalise the message from MHTM to the standard message for MHCM (also may require semantic reasoning). Further, base on the context retrieved from MHTM, MRCMF will inform MHCM to re-configure the setting of Cloud services. MRCMF is also capable of communicate with other local-host components to support the needs such as accessing GPS, file system etc. All the processes of MRCMF are modelled in workflow patterns (e.g. in XML format) and it does not require any coding to configure the operation of MRCMF.

In this project, a proof-of-concept prototype MRCMF will be developed as an Android/iOS application/library. The major mechanisms of the prototype include follows:

- Non-programming-based mediator mechanism for leveraging different local-host components.
- Semantic reasoning for processing messages from different sources.
- Ensure the Quality of Service (QoS) of the application by using context-aware dynamic reconfiguration mechanism.