Software Architecture Evaluation – Individual assignment phase 1

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# General observations and description of the proposed architecture

The proposed architecture for this first part of the SA course is quite comprehensive and I think you have done a great job. The part about device discovery and communication was interesting. The overall view of your architecture is very good and the logical views helps to understand which objects the system involves.

The architecture takes its offspring in the IoT ARM and quickly jumps into to a solution running in a cloud. There are not to many user stories and the users are not described in detail. I would fear that some important considerations could have been missed prior to determining the architectural requirements. For example are usability not being discussed. The scope of the proposed architecture are also very broad and focusing on having an architecture for many smart-houses more than on the single smart-house itself. I guess one could question the need for running the smart-house application in the cloud since each smart-house basically only controls itself. I understand that when thinking about IoT cloud is inevitable, but I guess that each implementation of a smart-house could also be seen as a very small local IoT instance. In the large aspect the architectural requirements in regards of scalability is quite understandable, if the focus however were on a single instance I guess it would be less important. The need for a virtual entity part is important when talking about IoT because of the potential tremendous scale and find that nicely describes.

In regards of availability the rationale is obvious, but could again be somewhat contradictory to cloud based solutions. Perhaps some other architectural patterns could be used for handling emergency cases. I do like the proposed 4G backup solution which enables a device to contact for example the fire department in case of lost internet connection. I guess however that having 4G capabilities in every device would make the system quite costly why the smart-house perhaps could have a central 4G backup gateway.

The security part of requirements are quite obvious especially when the application are running in the cloud. I am not to convinced about not having a backup system running on the local device hub. As well as I do not like the lack of a manual override kind of capability. I think that in regards of personas and user stories, that you could find personas who would require this – I guess that most customers would like to be able to access their house even if their smart phone did run out of battery somehow.

The overall architecture proposes a multi-layered architecture, an Event Dispatcher(messaging) and a Broker. I am not completely sure how these pattern interact and how the orchestration works. I like the use of the Event Dispatcher and Event Driven Messaging which seems to be perfect for handling events from devices like the fire alarm, but I don’t see when and what triggers one or the other, for example how are the Alarm process orchestrated and why use synchronous calls when invoking multiple services (or calling the same service multiple times).

# Questions

* Do you think your personas and use cases covers your system in regards of architectural requirements?
* What about usability, is that not important in an architectural perspective in this example?
* Have you considered having a more comprehensive smart-house in the house?
* What about performance when for example turning on the light and what about device to device communication, is everything orchestrated by the Process Management layer?
* Don’t you have the need for responses?
* How about manual override in-case of an emergency and no internet/4G?
* I understand the need for being able to scale, but what about elasticity if your smart-house controls a lot of instances, wouldn’t you have large variations in requests/events during the day and on special occasions?