# **System Context**

****

# 1st Decomposition

|  |  |
| --- | --- |
| **Modifiability(QA08)** | **Perspective: Dynamic** |
| Architectural Pattern |  |
| Rationale |  |

# 2nd Decomposition

## **3.1) Facility Controller to Controller Service**

### **3.1.1) How to check if the Facility Controller is alive**

|  |  |
| --- | --- |
| **Availability(QA02)** | **Perspective: Dynamic** |
| Architectural Pattern | Client-Server structure with heartbeat tactic. |
| Rationale | Facility Controller send a packet every 5 seconds to Controller Service. If Controller Service doesn’t get this packet until 15 seconds, the Controller Service notify it to Manager Service for alarming to attendant. |



### **3.1.2) How to check the slot status**

|  |  |
| --- | --- |
| **Availability(QA02)** | **Perspective: Static** |
| Architectural Pattern | Client-Server structure through heartbeat packet |
| Rationale | The Facility Controller can check whether a slot’s IR sensor is broken or not through sensitivity value. So that the Facility Controller send a heartbeat packet with all stall status. |

* Packet Define

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Start Symbol** | **Arduino Id** | **Code** | **Value** | **End Symbol** |
| 1byte($) | 4byte | 1byte | Variable length | 1byte(\n) |

* Send a slot status(S) from the Facility Controller to Controller Service

\* value 0 means a slot is opened.

\* value 1 means a slot is occupied.

\* value 2 means a slot is broken.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| $ | Arduino Id | S | Slot 0 | Slot 1 | ... | Slot N | \n |

Ex1) $0001S1001\n (a Slot 0 and a slot 3 are occupied.)

Ex2) $0001S0020\n (a Slot 2 is broken.)