

Smart Hospital Room

Responsibilities, Roles, and Components Table

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Brandon Chavez
Zachary Hanan Rudy
Klucik Victor Palacios
Bryce Reiber Jonathan
Vu

Responsibilities, Roles, and Components Table

Responsibilities	Roles	Hardware (HW), Software (SW), or Both
Tablet		
Respond to user input (voice)	Android Device	SW -- Detect when user is talking to system and respond to input
Display updated control menu to patient	Android Device	SW -- Display control menu with correct state of environment
Respond to user input (touch)	Android Device	SW -- Respond to user input when user touched device screen
Digitize input	Android Device	SW- Voice Recognition Software HW- Microphone and filters to transform sound waves to digital inputs.
Translate the command	Android Device	HW- Use Bluetooth to communicate between interfaces. SW- Show correct devices connected to.
Bed Control		
Receive Bed Adjustment User Command	Android Device	SW- Interpret user speech SW- Interpret user button input
Send bed adjustments through GATT Server	Android Device	SW -- Use device's built in Bluetooth to send control commands
Receive Bed Adjustments through GATT server	Bed Module	HW -- Bed Bluetooth SW -- Bluetooth Handler
Convert bed adjustments into commands for bed	Bed module	HW -- Bed BL600 SW -- interpret adjustments and translate into the bed protocol
Send commands to bed	Bed module	HW -- Button pusher DB9, that connects by SPI, or I2C via Bluetooth
Infrared TV Control		
Receive IR Adjustment User Command	Android Device	SW -- Interpret user speech SW -- Interpret user button input

Commented [1]: The core function of each responsibility is good, but some of them are too vague. They are essentially just your use cases put in the form "System does x."

Commented [2]: I concur. These responsibilities need to be a bit more descriptive, and should also follow directly from your use case main success scenarios and extensions. If your use cases have good system coverage, then your RRC will have good coverage, as will your SD and FD that follow.

Commented [3]: The roles you have seem too high level, and do not capture the essence of the responsibilities they action. These roles should translate into high level boxes (HW) or circles (SW) in your system diagram. Your Components column on the right will lead to further breakdown of those boxes/circles in your Functional Decomposition. I understand the foregone conclusions you've reached due to your predecessor project. Just want you to understand the system design process as intended.

Commented [4]: Why is it necessary to digitize the input? What part of the system uses the digitized input?

Commented [5]: What is the purpose of doing this? You should add what the command is being translated for.

Send IR adjustment through GATT Server	Android Device	SW -- Use device's built in Bluetooth to send adjustments
Receive IR Command through GATT server	IR Module	HW -- IR Bluetooth SW -- Bluetooth Handler
Convert IR adjustment into commands for TV	IR Module	SW -- Interpret adjustments and translate into TV commands
Send commands to TV	IR Module	HW -- IR LED
Light Switch Control		
Receive User Light Switch Command	Android Device	SW -- Detect user speech SW -- Detect user button input
Send command to toggle power switch through GATT Server	Android Device	SW -- Use device's built in Bluetooth to send toggle command
Receive command through GATT server	Light Switch Module	HW -- Bluetooth LE SW -- Bluetooth Handler
Process the command	Light Switch Module	SW - Interpret Commands and translate into signals for the switches.
Toggle light switch	Light Switch Module	SW -- Toggle pin on microcontroller HW -- Switch toggle
Setup IR Commands		
1. User initiates Setup	Android Device	SW -- Detect User Speech or button input
2. User selects a TV brand library	Android Device	SW - Uses device's built in Bluetooth to send Command
3. Send IR Signal	IR Module	HW - IR Blaster
4. User checks if command worked as expected; if not, Repeat from Step 2.	Android Device	SW - Prompt on Android device
5. Receive ready command	Android Device	SW - Update user interface and to say that signal saved and ready