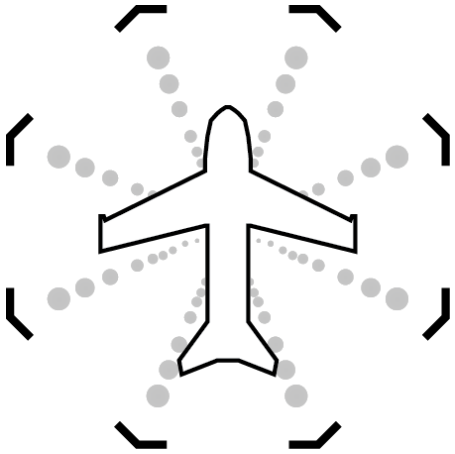
1.2 Android Application

Roles Responsibilities and Components



Phase Factor

1.2 Android Application

Matthew Arendall Bryan
DiLaura Ariel Hoffman
Andrew Kee
Ryan Montoya
Jonathan Quinn

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1 Responsibilities, Roles, and Components

1.1 Phased Array

Responsibilities	Roles	HW Components, SW Components, or Both
Adjust signal to point the phased array in a specified direction	Antenna control	HW: phase shifters, signal attenuators SW: controlling the digital lines to create desired state in hardware
Understand software commands	Antenna control	SW: parse packet
Functionin the ISM band of 902 - 928 MHz	Antenna Design	HW: Antenna elements
Report health status	System health	HW: Thermistors, current sensors SW: Poll from sensors, report information to user
Receive updates from UAV to confirm lock	Tracking	SW: Parse incoming data for valid packets
UAV Tracking	Tracking	HW: Power meter SW: Wiggle where pointing, and adjust to maximize power
Scanning	Tracking	SW: Sweep over our viewable area in order to locate the UAV, and get an initial lock
Use GPS coordinates for pointing	Tracking	SW: Interpret GPS coordinate and adjust pointing information accordingly

Commented [1]: In general, looks like good coverage. Would be better if responsibilities came directly from your use cases. Organizing by Phased Array and Android App is fine. See other comments.

Commented [2]: Lots of detail here, which is generally great. All of these responsibilities should tie back to use cases. Looking back at your Req Spec 1.0, I see that may be the case, but not directly. For example, from your Scanning UC (should be UC1): "The base station scans for the UAV" should be a responsibility listed here. If your use cases have good coverage, then RRC has same good coverage, as do SD and FD that follow.

Commented [3]: These roles will 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.

Commented [4]: What signal? Input? If so, from where? Output? If so, where to?

Commented [5]: Commands from where?

Commented [6]: Need to separate these two words.

Commented [7]: Report the health status of a human? Of the signal integrity? Of the connection?

Commented [8]: Sounds like a System Health Manager module.

Commented [9]: Scanning for what? Scanning for a UAV?

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Responsibilities	Roles (Components)	HW Components, SW Components, or Both
App presents drone commands visually	GUI	SW: GUI
When user sends command through app, app can package command and send it in a packet to STM	Packet Scheme	SW: Packet Scheme and Packet Creator
App connects to the phased array wirelessly	Wireless Connection	SW: Connection Routine; HW: Possibly Bluetooth Module
App reports health and status of phased array periodically	Health and Status Monitor	SW: GUI for health and status; HW: Wireless interface
App gives user access to phased array power consumption	Information relay	SW: GUI for viewing power
App relays telemetry information about the drone periodically	GUI for Telemetry	SW: GUI for Telemetry
App informs user if the drone is about to go out of range	Warning Manager	SW: Telemetry Checker
App provides mechanism for managing multiple drones at once	Multitenancy	SW: Multitenancy Manager
App provides user access to the scanning communication mode (phased array scans for drone and uses limited feedback to direct beam)	Scanning Switch	SW: GUI

Commented [10]: Packet Manager maybe?

Commented [11]: Do you mean displays? I interpret "relays" as a data transfer or communication action.

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App provides user access to the tracking communication mode (phased array uses GPS of phased array and of drone to direct beam)	Tracking Switch	SW: GUI

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Responsibilities	Roles (Components)	HW Components, SW Components, or Both
Must accept data in digital format	Communication Bus	HW: cable; SW: Packet Scheme
Must convert that data into an analog format	DAC	HW: DAC
Must transmit at 902-928	Transmitter	HW: Antenna
Must receive RF signal at 902-928MHz	Receiver	HW: Antenna
Must translate RF signal to digital signal	ADC	HW: ADC
Must be able to communicate over Ethernet	Communication Mechanism	HW: Ethernet Cable

Commented [12]: Some of the responsibilities you've listed are getting a bit too low level for this stage of system design.

Commented [13]: Your roles should be stated in terms of actions.

Commented [14]: These roles effectively translate to submodules in your system diagram.

Commented [15]: Always qualify "what" data. Just stating "data" is too vague. There are many data types to contend with in a given system.

Commented [16]: What data?

Commented [17]: A DAC is a component, this should be your submodule that contains the DAC..

Commented [18]: an RF signal in the 902-928 MHz ISM bands.

Commented [19]: an RF signal in the 902-928 MHz range.

Commented [20]: Similarly, the ADC is a component, the role should be the submodule that contains the ADC.

Commented [21]: Communicate what? Be more specific.

Commented [22]: Too vague.