



SE 591 MED-FLEET

The Second Presentation

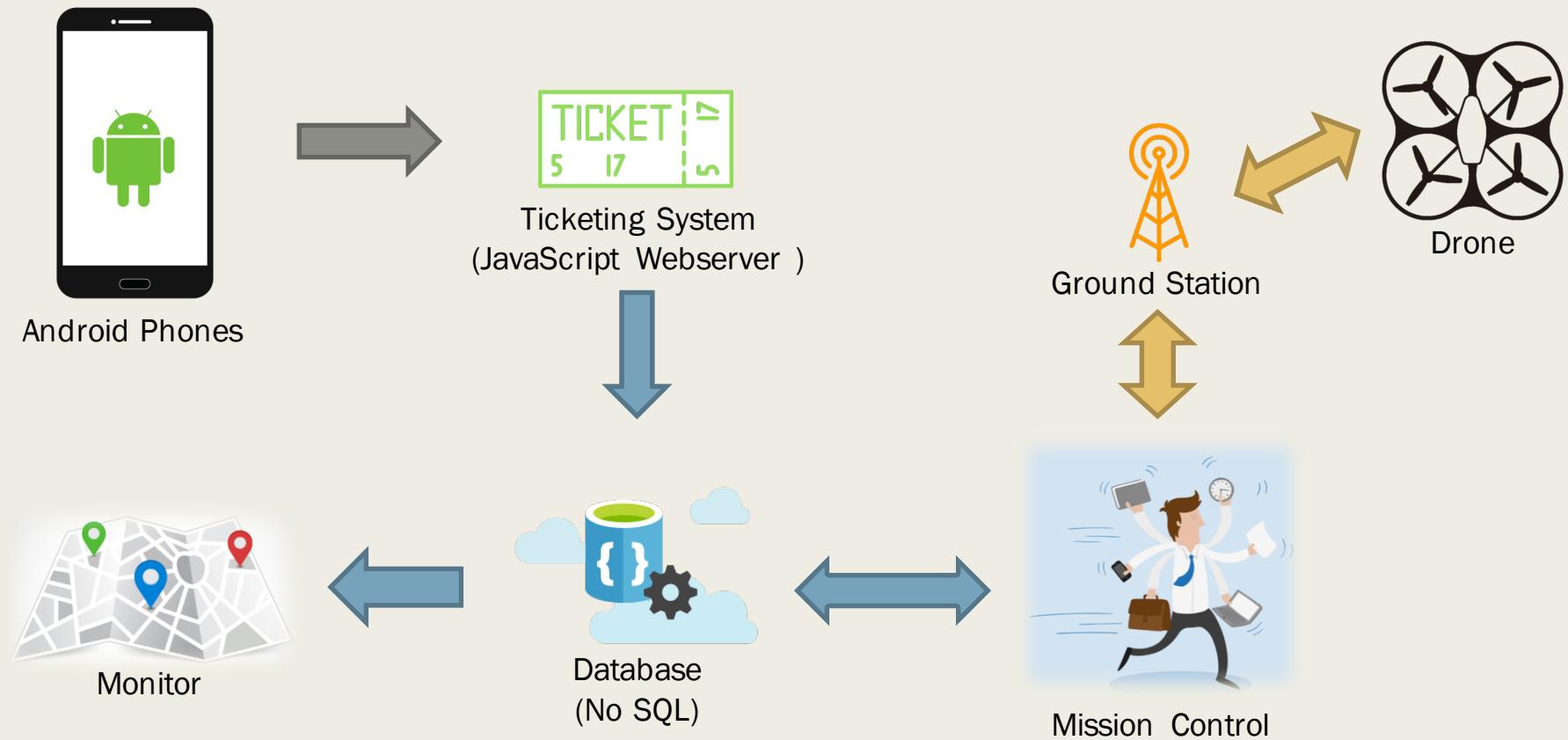
Icon made by [Freepik](#) from www.flaticon.com



Assignment Review

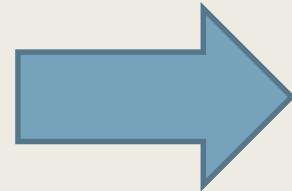
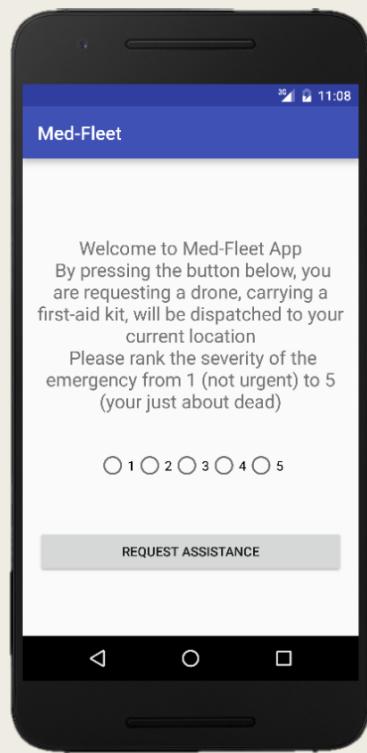
- The Med Fleet Project uses a fleet of drones to prioritize and synchronize the delivery of medical supplies in a disaster zone.
- Requests for assistance are sent to the application from a mobile app.

Technology Architecture Review





Mobile App/Ticket Demo



Ticketing System
(JavaScript Webserver)

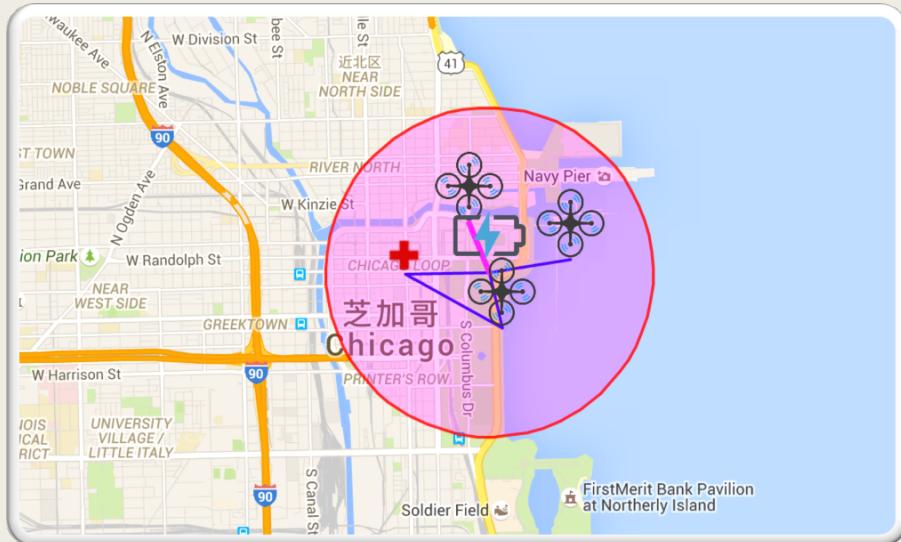


Field Tests





Med-Fleet Monitor



<http://www.med-fleet-monitor.co.nf/home.html>

Web Application shows real time status of Drones and Missions utilizing google maps, JavaScript and Ajax.



Ground Station and DroneKit API

■ Ground Station responsibilities

- *Receive missions from Mission Control.*
- *Connect and send commands to drones; DroneKit API.*

■ Testing

- *Static testing.*
- *Simulator: Software in the Loop (SITL) and MavProxy.*
- *Iris Plus.*

■ Easy to use “Ready to Fly (RTF)”

- *Automatically connect to drones and the system.*



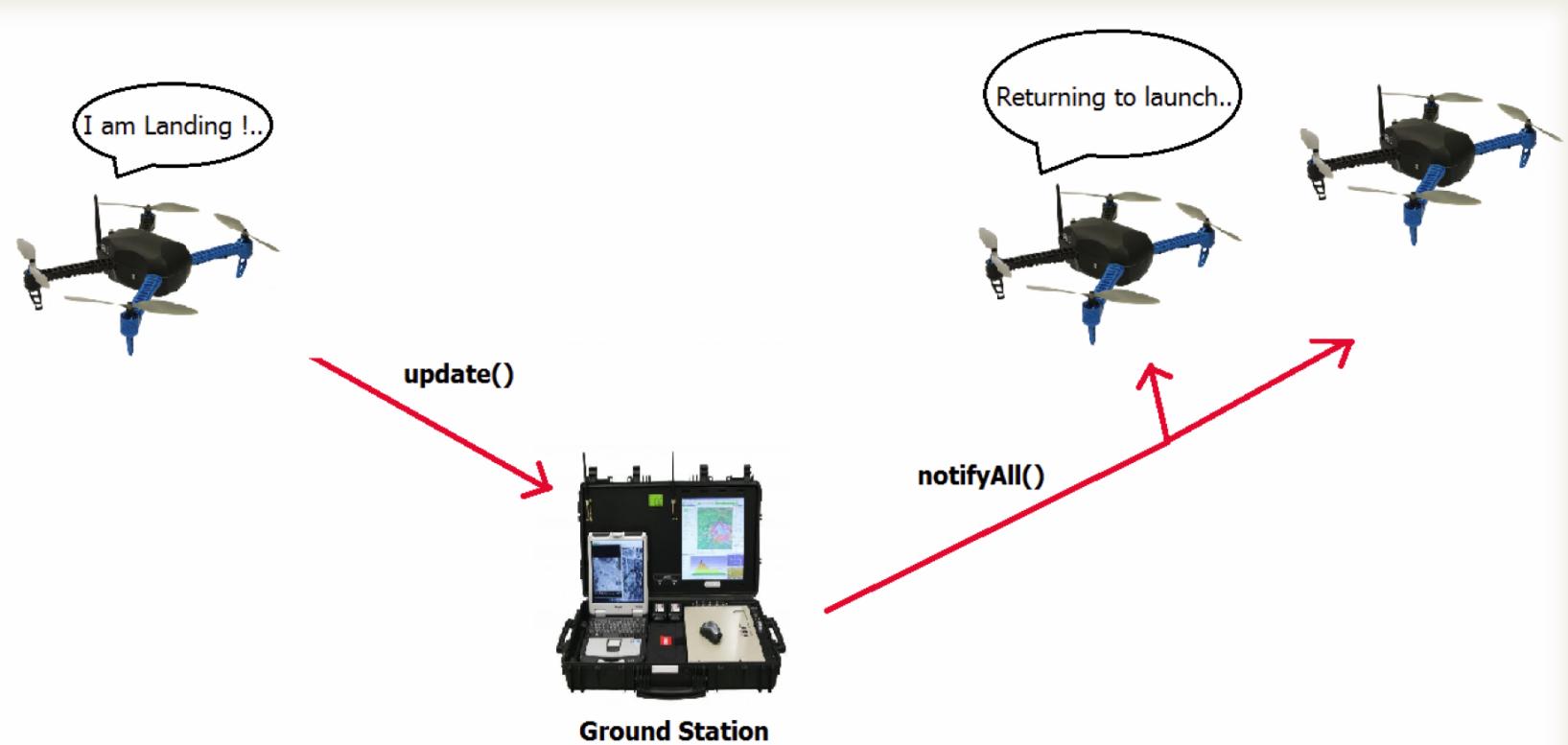


Future Sprints

- Add multiple drones to project.
- Options for delivery: land or drop.
- Managing air traffic.
 - Assign each drone to fly in a different altitude.
 - Add an observer to Ground Station.



MFGS Observer





FMECA

- Drones and Emergency Situations make Med-Fleet a Safety Critical Project
- Through our FMECA we discovered our Safety Limitations could be broken down into three main categories:
 - ***Hardware Issues***
 - ***Software Issues***
 - ***Regulatory Issues***
- Dissecting the intricacies that each issue grouping can create and how they affect another is essential to the success of our project.
- The impact on the customer could be Fatal!



FMECA - Hardware Issues

- Due to Safety Critical nature of project, resources need to be stable and fully tested to assure proper functionality.
- All Servers need to provide constant uptime when missions are deployed
- In case of emergency, tested failovers need to be in place
- All servers need to have Monitoring Agents running at all times to alert team of both immediate issues and potential problems
- Drones need to be examined and tested after every day deployed to ensure they are still functioning properly



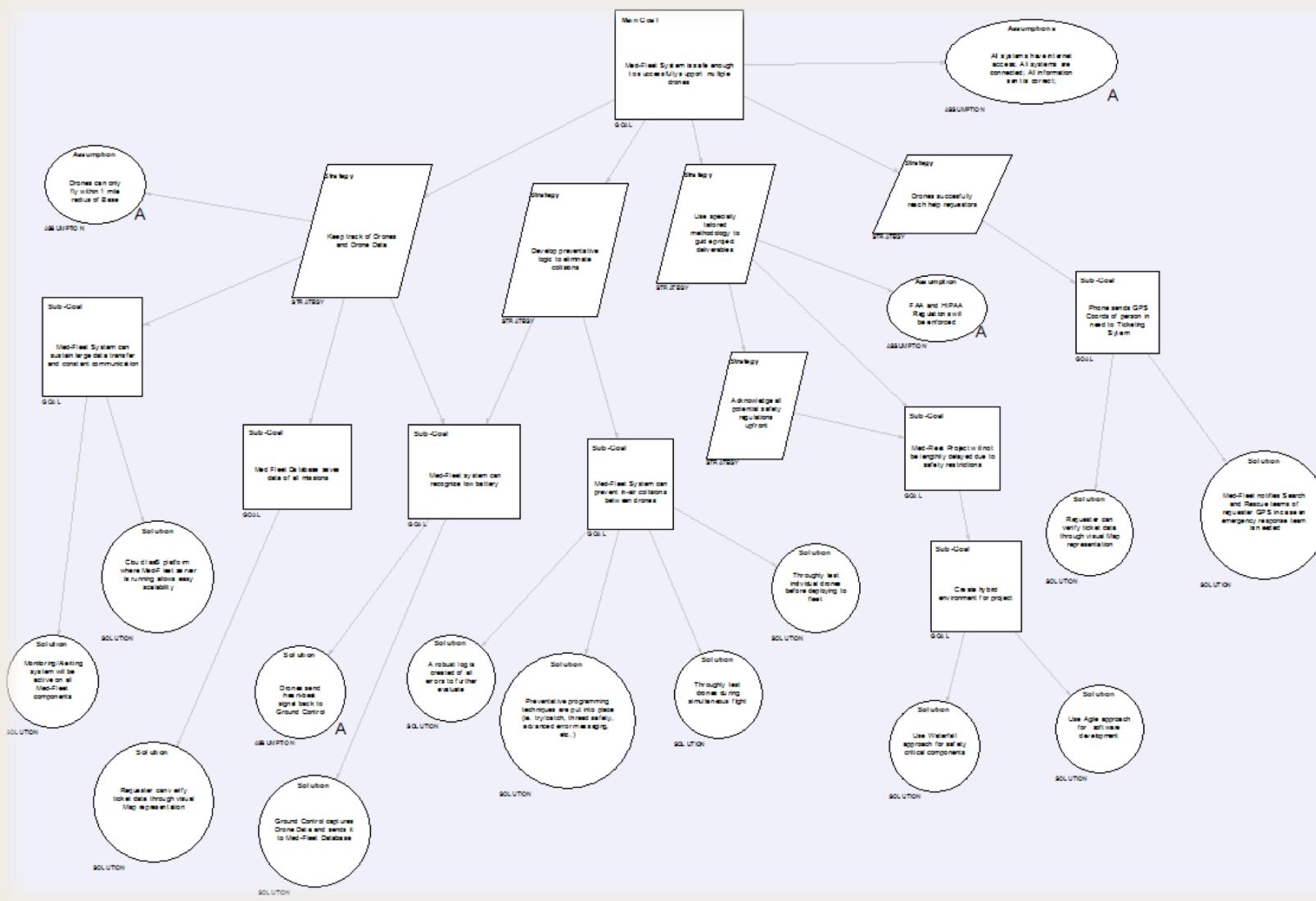
FMECA - Software Issues

- Software plays a vital role in all aspects of the Med Fleet system.
- Software controls where the drones are deployed to, it is vital that this logic is being properly calculated.
 - *Otherwise Drones could crash or get lost and requesters will be without medicine*
- Software also handles the communication between all of the Med-Fleet servers, app, website, and drones.
 - *The collection of all these components utilizing different technologies and software is what allows the Med-Fleet system to work.*
 - *With such a dependence on software, proper testing is a necessity!*



FMECA - Regulatory Issues

- Very Strict Regulations could hold back progress due to oversight by organizations such as HIPAA and FAA.
- Through proper planning and foresight discovered in FMECA document, project is able to navigate around such hurdles.
- One of the biggest discoveries was the idea to essentially partition project into two sectors:
 - *One part is Regulatory and Planning branch*
 - *Other part is Development branch*
 - *These two different branches require different processes to achieve success within their respective domain*
 - *Regulatory and Planning works better under a more waterfall approach, as it has mandatory approval processes that must be attended to*
 - *Development Branch works better with an Agile Methodology, once dev work is approved by the proper regulatory committees, a true Dev Sprint can begin.*





FIN