



EXPLORE FLIGHT

WE'RE WITH YOU WHEN YOU FLY

DRF Intern Highlights

Data and Reasoning Fabric (DRF)

NASA Aeronautics Research Mission Directorate (ARM/D)

Transformative Aeronautics Concepts Program (TACP)

Convergent Aeronautics Solutions (CAS) Project

Data and Reasoning Fabric Team



Interns are a large part of our success at NASA.
Let's take a look at the important work and
contributions these students have made to the
Data & Reasoning Fabric project...



What do NASA Interns do?

NASA Interns join a community of diverse professionals who are united by a common purpose: **to pioneer the future in space exploration, scientific discovery and aeronautics research.**

NASA Internships are direct pipelines to full-time employment at NASA upon graduation.

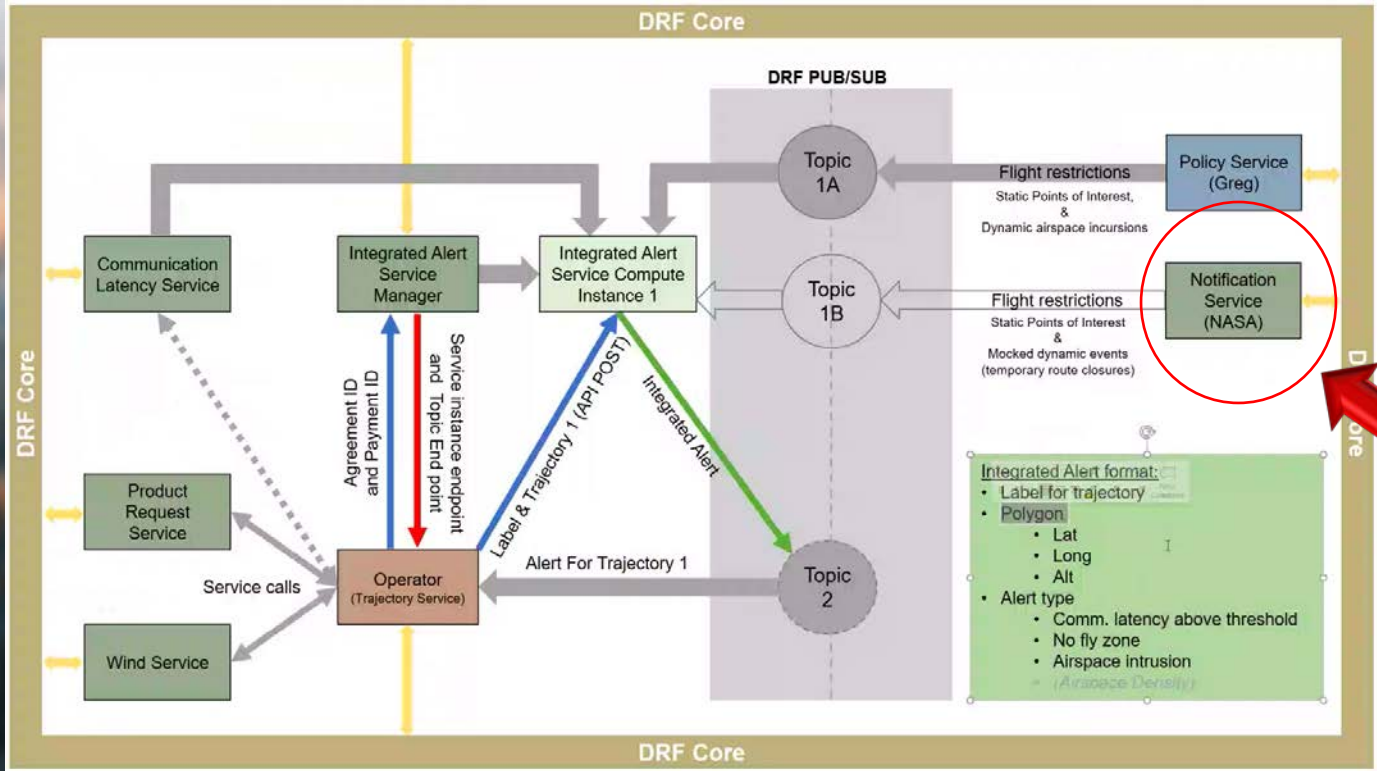
NASA Interns contribute to real projects that provide real aerospace industry experience and further NASA's goals.

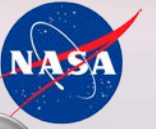


Project: DRF Notification Service



Intern: Aiden Szeto
B.E. Computer Science UCLA
Class of 2024
Project: Notification Service





Intern: **Aiden Szeto**

B.E. Computer Science UCLA
Class of 2024

Project: Notification Service

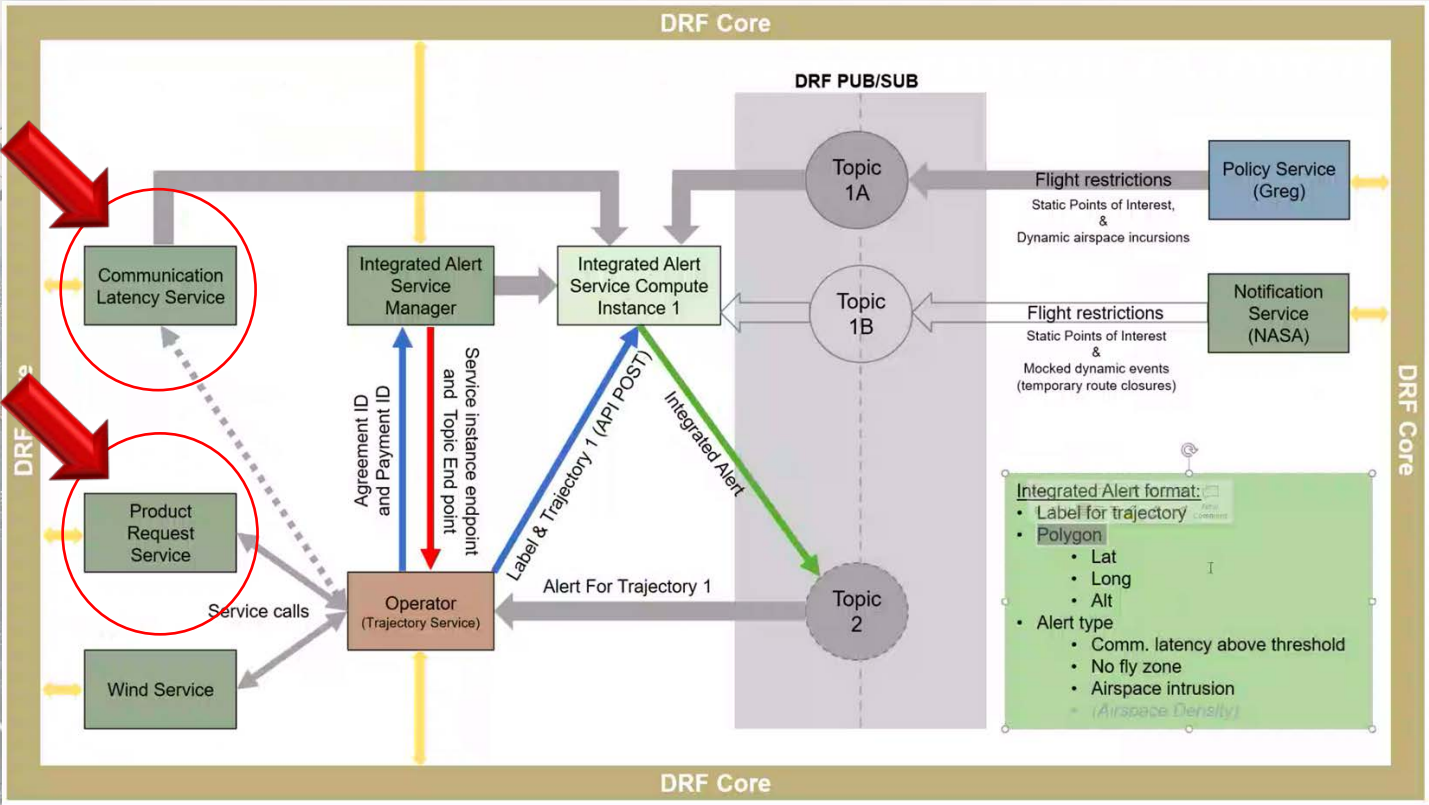
“The project challenged my problem-solving skills and has improved the way I think about scripting services used on a large scale” - Aiden

- **Input:** Open-source data of buildings, POI, and bodies of water in Arizona
- **Goal:** Develop a service to notify smart vehicles to ATC and flight restrictions.
 - Take Flight Trajectory and POI database and detect conflicts with given trajectory
 - Output trajectory-POI conflicts to DRF Core
- **Deliverable 1:** Adapted conflict detection script using hexagonal input zones
- **Deliverable 2:** Seed MongoDB database using given data.
- **Output:** Conflict responses in GeoJSON format



Project: DRF Product Request, Communication Latency, Directory Services

Intern: Nick Guo
B.S. Mathematics & Economics
Stony Brook University Class of 2023
Project: DRF Accelerator





“DRF provided amazing insight on how a complex system can be developed through the development of small parts over time.” - Nick

Intern: Nick Guo

Nick will be returning to DRF Team in Spring 2023 to continue development of DRF Accelerator!

Products Request Service

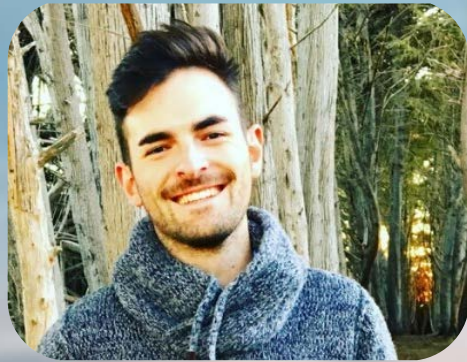
- Input: customer location (GPS Coordinates) and product request
- Output: Most efficient product pickup location and Estimated Time of Arrival

Communication Latency Service

- Input: Ookla Mobile Network Performance Map Tiles
- Output: Tiles mapped to region, trajectory minimums and maximums in high latency areas above input threshold

Directory Service

- Input: Simulated Vehicle Transponder Data (position, velocity, payload)
- Output: Dashboard for vehicle monitoring and simulated vehicle movement using interpolation to multiple databases



A special thanks to our past interns....



Stanley Dillon Hicks
M.S. Machine Learning & Data
Science
UC San Diego (2022)

Mary Everett
PhD Computer Science
University of Idaho (2023)

Aaron Mandeville
M.S. Aerospace Engineering
San Jose State University
(2021)

Eric Chen
B.S. Computer Science
University of California
Los Angeles (2023)



Olivia Alexander
M.S. Data Analytics
San Jose State University
(2021)

Ankita Somu
B.S. Computer Science
Georgia Institute of Technology
(2024)

DRF Intern Contributions Since 2021

- Weather service
- Lightning service – 2 versions:
 - GOES 16 and 17 satellite data Modus USGS Satellites (Google Maps)
- Vegetation Data service – 2 versions:
 - GOES and MODIS satellites data (NASA Terra)
- Fire service – 2 versions:
 - VIIRS (Visible Infrared Imaging Radiometer Suite) and MODIS satellite data
- Population density data service
- Product delivery service
- Wind service
- Communication latency service – 2 versions:
 - All data and Trajectory cross-referenced
- Integrated alert service
- Descriptor categorization service





**Thank you for your work and contributions to the
Data & Reasoning Fabric project!**