InterUSS Platform™

Open Source solution to facilitate communication amongst USSs

Scalable, industry developed & hosted ensures **data consistency** to **maximize safety** while minimizing data transfer and **protecting privacy**

https://groups.google.com/forum/#!forum/interuss-platform

FAA UTM ConOps v1

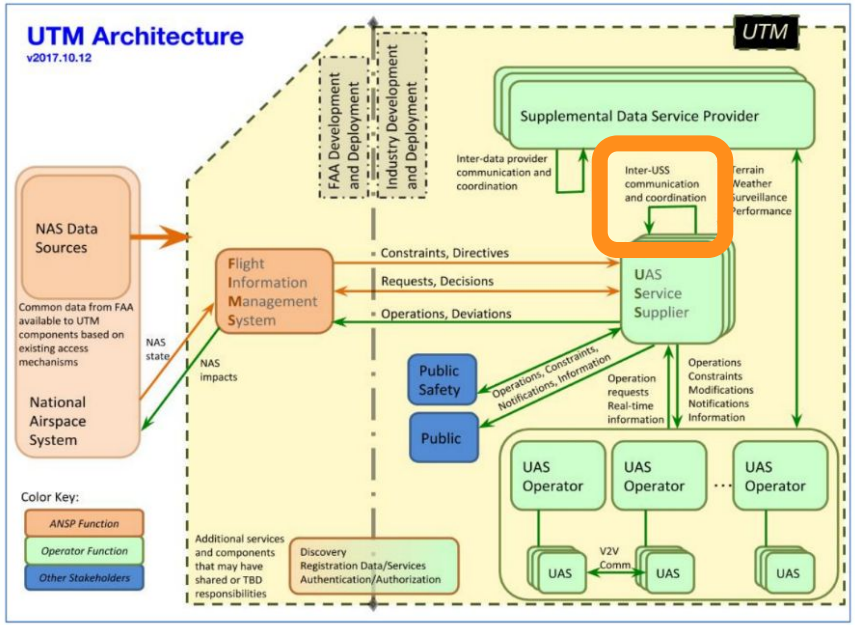

Figure 3. Notional UTM Architecture

Airbus UTM Blueprint

1

Safety and Security are Paramount

Air traffic management systems are responsible for safely guiding physical objects through airspace which carry both people and cargo over populated areas and sensitive sites. That means the consequences of a dropped packet are far more severe in aviation than on the Internet. Services like tracking, identification, and registration must be established rapidly. However, the airspace will also become more dense. That means these services must be quickly followed by those that provide active risk management, deconfliction, emergency alerts, and other critical functions. Provisions must exist for emergency and security response vehicles to rapidly access the airspace. Operators must be incentivized to invest in safety through airspace, process, and service design. Safety, security, and the integrity of the airspace against careless, clueless, and criminal actors must always be the top priority and considered at every step of design, testing, certification, and operation.

2

Airspace Must be Shared

Unmanned aircraft will share airspace with manned counterparts. A piloted passenger jet will share airspace, runways, and taxiways with an unmanned cargo jet. Self-piloted air taxis will share airspace with helicopters. High altitude drones will share airspace with super-

3

Drones Must be Allowed to Self Pilot

The commercial viability of drone and air taxi operations depends on achieving economies of scale. Requiring a human to serve as an onboard or remote pilot significantly limits economic feasibility of drone businesses. This means that drones must be able to react to changing conditions. Not all drones will be self-piloting, and self-piloting drones will sometimes need human control. But they must be capable of adapting their flight paths to ensure they can safely co-

4

Fleets Must be Able to Self-Manage

tors want to manage their own fleets. This includes flight planning, vehicle assignment, vehicle management, flight dispatching, and fleet coordination. Examples include coordinated formation flying, hovering near warehouses, and fleet balancing.

5

Airspace Must be Harmonized Worldwide

Systems, vehicles, and technology built for one region will need to be interoperable with other regions. Incompatible

6

Airspace Must be Accessible

The rules for access to airspace must be impartial, clear, and openly available. Two identically-licensed operators should
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or characteristics in the interest of ensuring safety or meeting societal desires such as vehicle noise limits.

7

Airspace Must be Futureproof

When the Internet was first created, a supercomputer in everyone's pocket was science fiction. But the decentralized and layered design of the Internet made it possible to create new and wildly different uses of the technology without ever requiring the core archi-

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Multiple providers exist for most services, each aircraft can choose between entities.

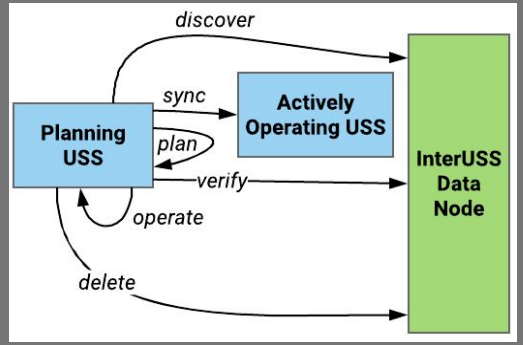
InterUSS Platform Overview

Similar to how DNS works, the platform allows USSs to discover each other to provide safety services to operators and identification to the public.

Technical solution based on Google heritage of globally distributed data, easy-to-use API, and assured consistency backbone.

Open source to allow USSs to develop new features as the drone industry evolves.

Strategic Deconfliction



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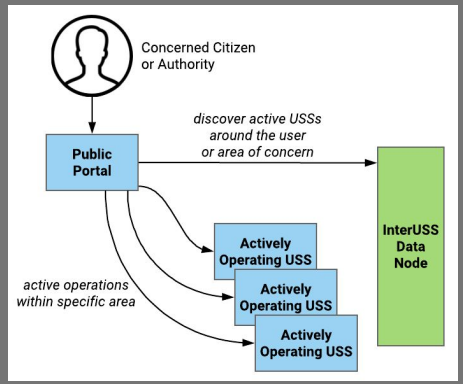
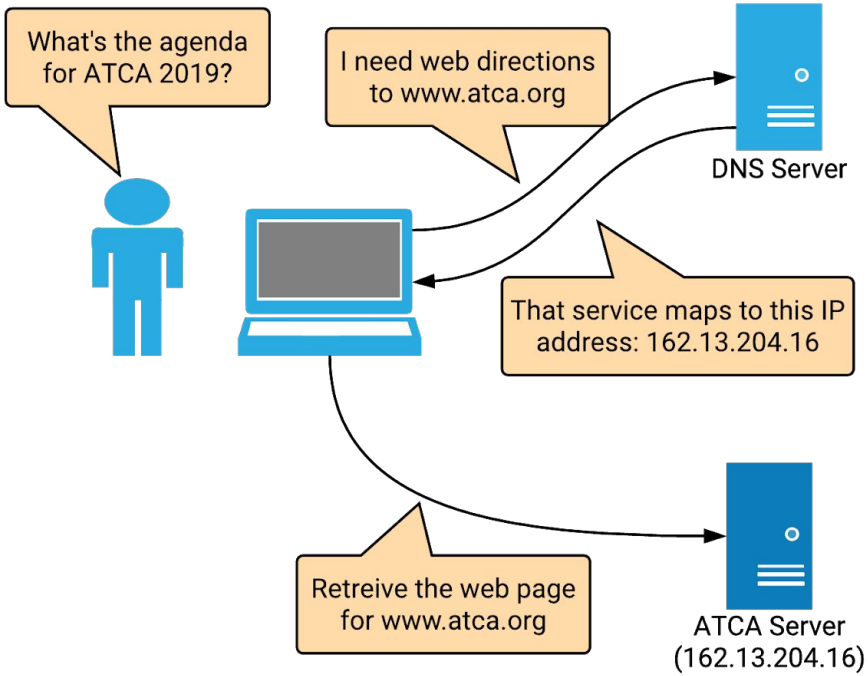
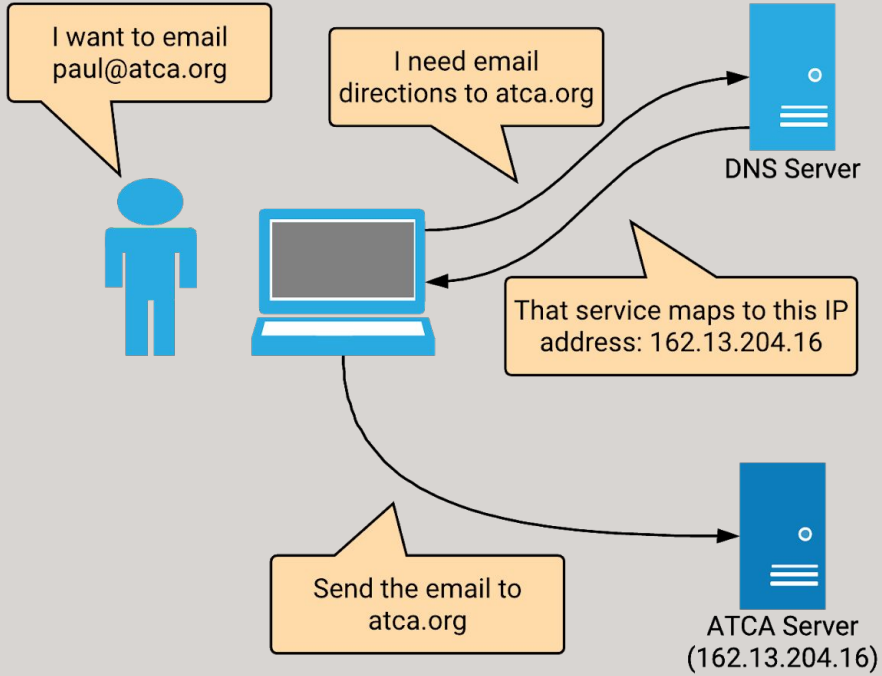


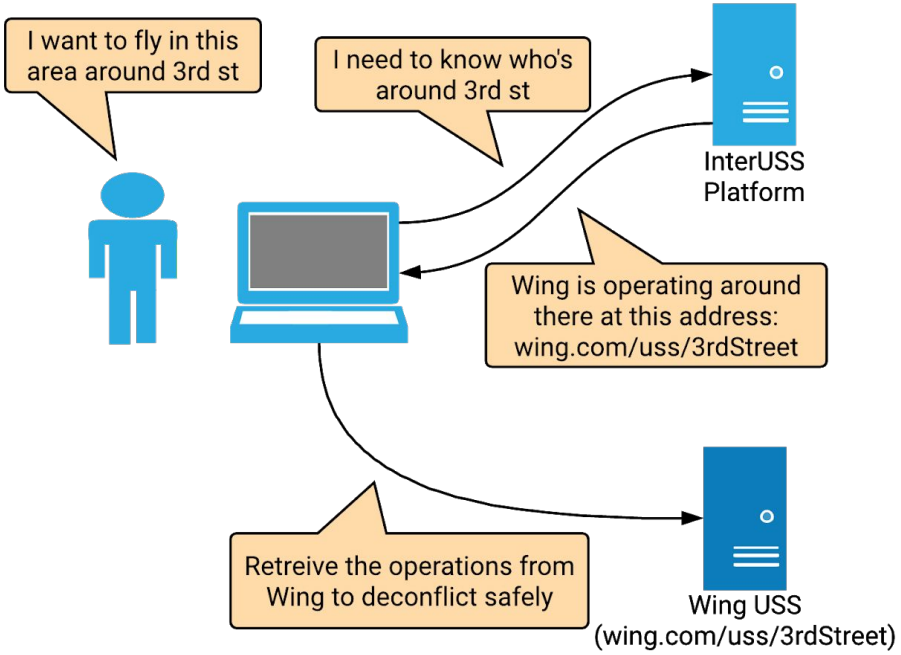
DNS for a Web Page



DNS for an email



Strategic Deconfliction



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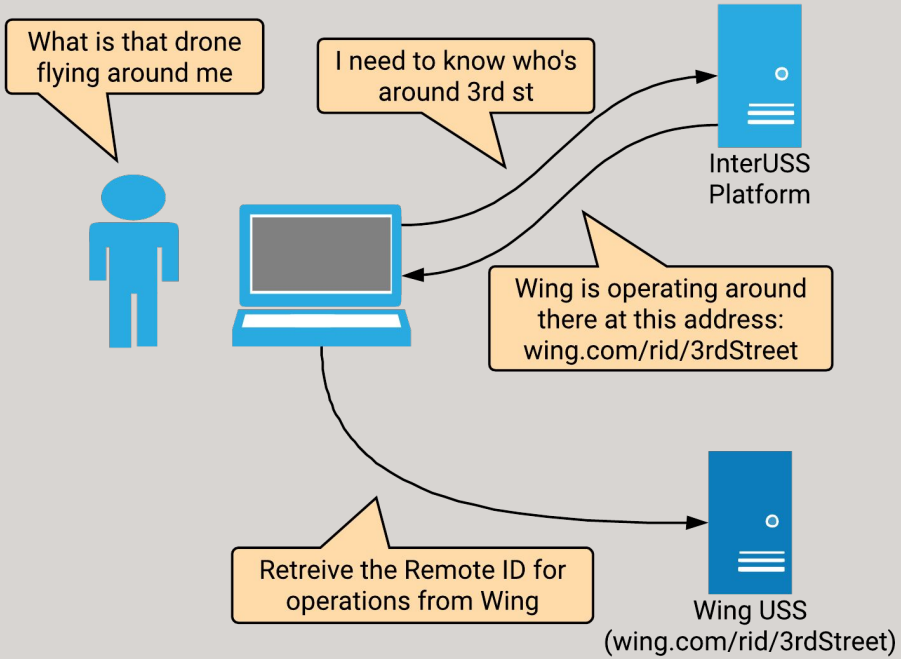


Open Source Solution to USS Coordination

8
Active Forks

5
Contributors

3
In-Progress Demonstrations

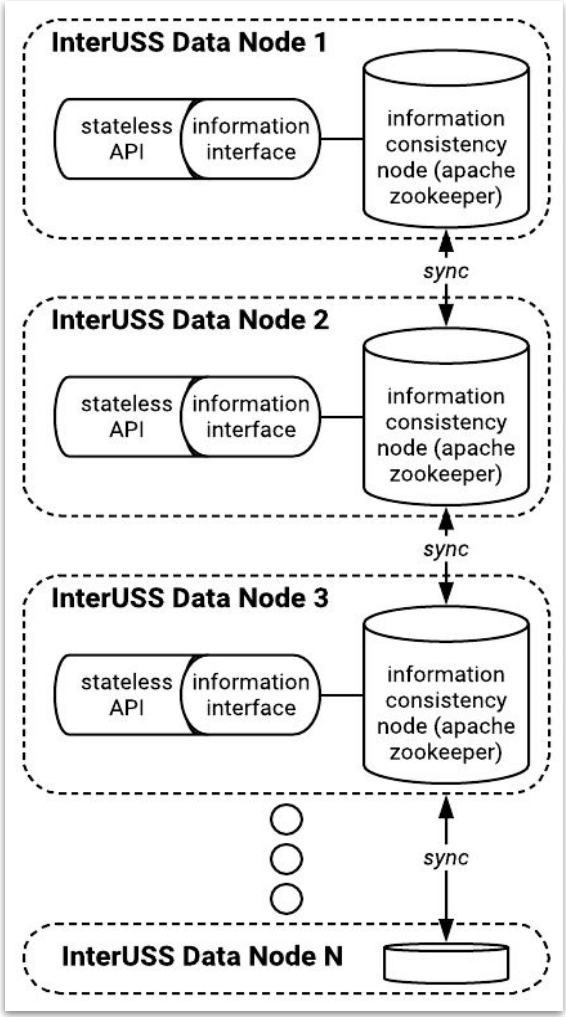
33
Organizations

74
Group Members

https://opensource.google.com/projects/interuss-platform

Platform Architecture

- **Gridded system**
  - The world space is separated into a well known grid format, minimizing contention and over-sharing, while allowing flexibility as the number of USSs and countries with UTM systems grows.
- **Distributed Consistency**
  - Multiple open source data consistency nodes hosted by USSs result in a scalable, distributed, auditable, and flexible way to prevent race conditions when multiple USSs are planning at the same time.
- **Pull based**
  - Flight information is acquired at the time of need, which protects operator and consumer privacy while sharing the right amount of information to safely deconflict and inform multiple USSs.



Questions?

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Interested in joining the Community?

https://groups.google.com/forum/#!forum/interuss-platform