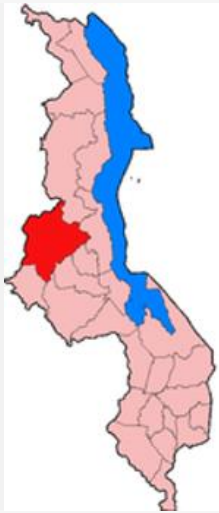


Open-UTM in Malawi

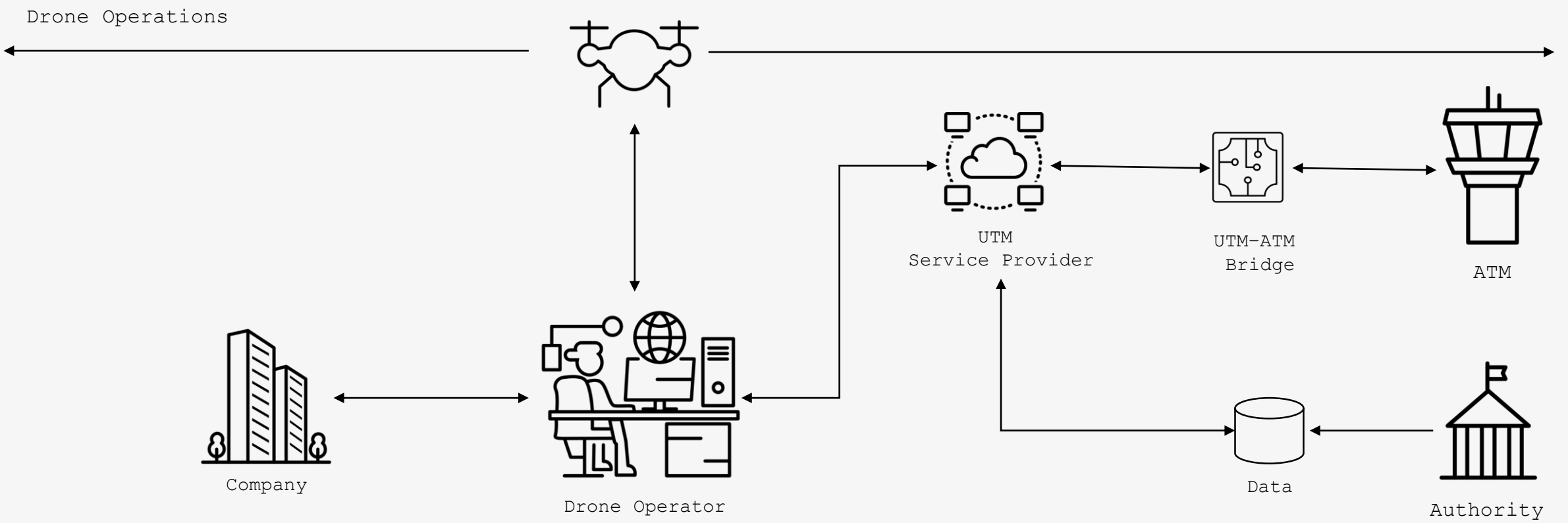
Dr. Hrishikesh Ballal

November 2022

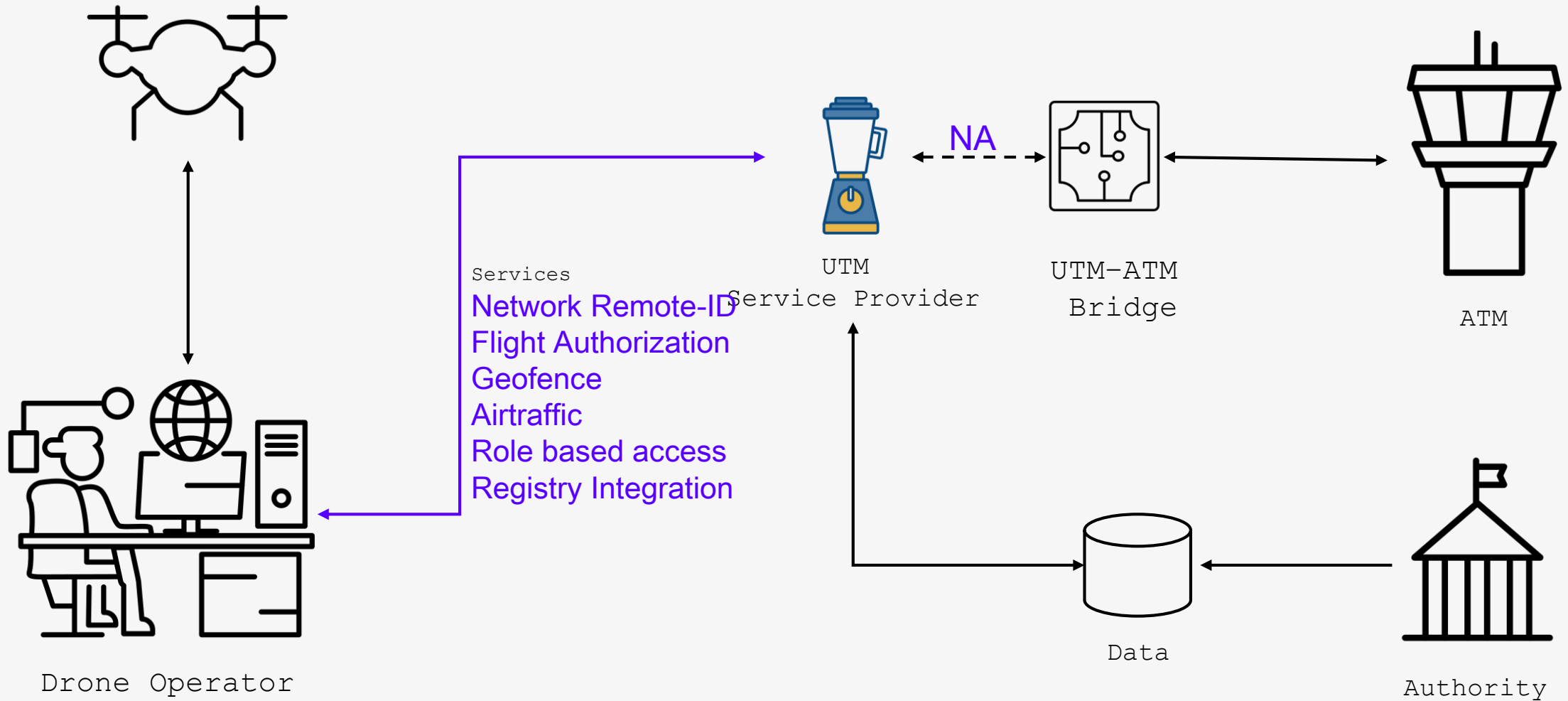


Malawi Drone Corridor

- 5000 Km2 of Corridor -> UNICEF, GIZ, Malawi CAA
- Regulatory gateway to issue permits
- Main airport: Kasungu Airfield that has limited crewed flights
- Serving 10 Healthcare facilities, 100s of BVLOS flights daily (across the country)
- African Drone and Data Academy -> Local expertise, pilots etc.



Flight Blender + Flight Spotlight



UTM Services and Capabilities

U1	U2	U3	U4
1.1 e-Registration 1.2 e-Identification 1.3 Pre-tactical Geo-fencing	2.1 Tactical Geo-fencing 2.2 Flight Planning Management 2.3 Weather Information 2.4 Tracking 2.5 Monitoring 2.6 Drone Aeronautical Information Management 2.7 Procedural Interface with ATC 2.8 Emergency Management 2.9 Strategic De-confliction	3.1 Dynamic Geo-fencing 3.2 Collaborative Interface with ATC 3.4 Tactical De-confliction 3.5 Dynamic Capacity Management	

UTM Services and Capabilities

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Reference Implementation

	Standard	Reference implementation
1.1 e-Registration	ASD-Stan	Github
1.2 e-Identification	ASTM , IETF , ISO	Github
2.1 Tactical Geo-fencing	EuroCAE	Github
2.2 Flight Planning Management		
2.4 Tracking	ASTM	
2.6 Monitoring	ASTM	
2.9 Strategic De-confliction	ASTM	Github



<https://flightblender.com>

Standards Compliance

September 2022

1 Network Remote ID

[ASTM F3411](#) Standard specification for Remote ID and Tracking

2 Flight Authorization

Authorization

Ability to authorize flights in the context of conflicts and incorrect data (strategic

3 Geofence

Ability to consume and utilize geofences per the [ED-269 data format](#) and standard

4 UTM <-> UTM

[ASTM F3548-21](#) UAS Service Supplier Interoperability

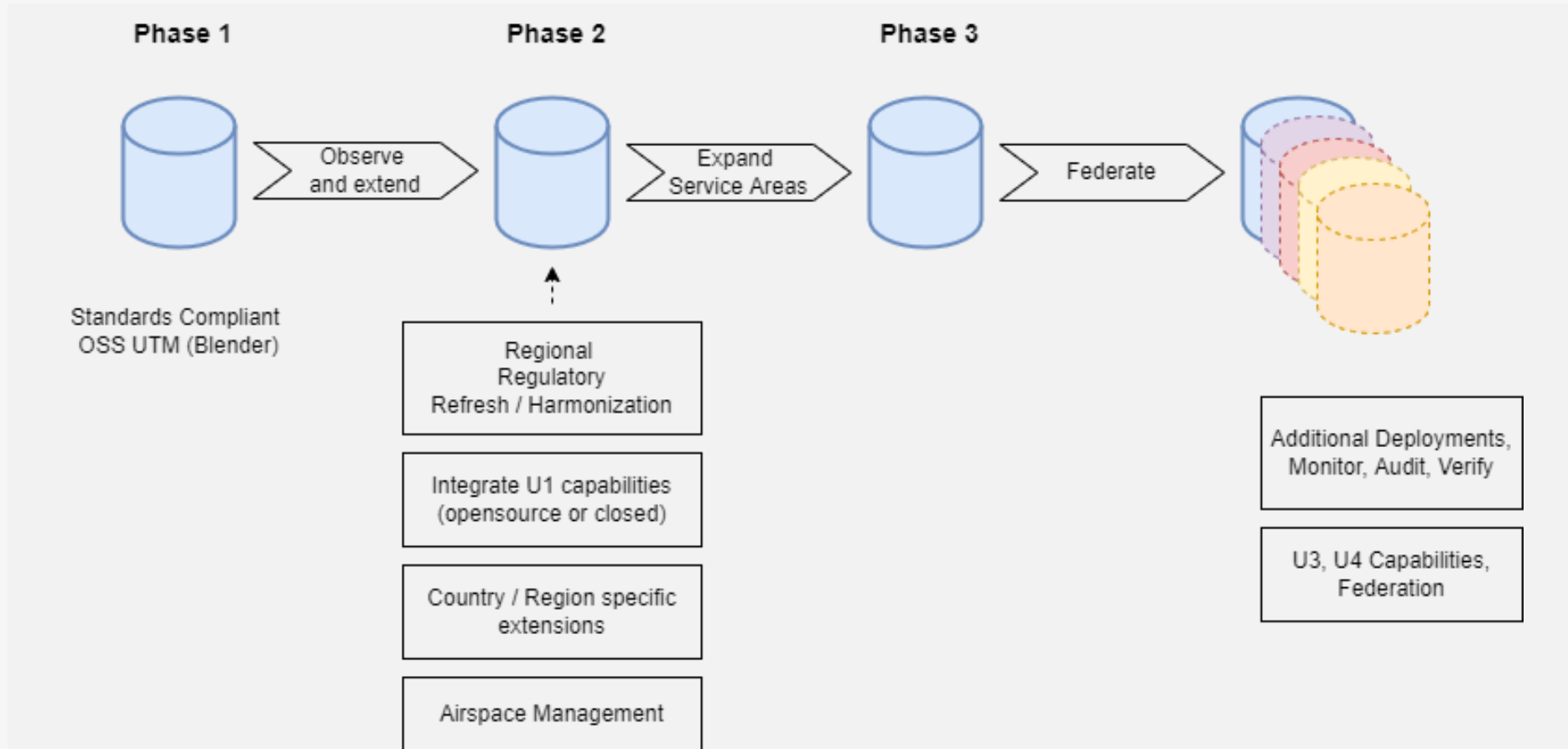
Flight Blender

(Backend) Fully complaint with ASTM and U-Space standards: Network Remote ID and Flight Authorization, Geo-Fences.

Also has integrations for consuming live flight data aggregation and fusing.

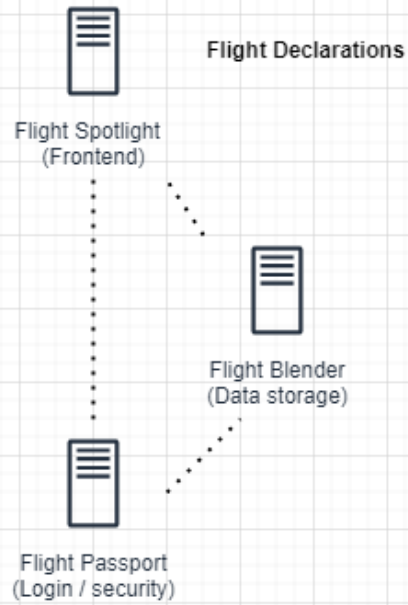
- 1 UTM Services**
You can achieve software compliance with regulatory mandates for services e.g., services mandated by U-Space
- 2 Standards Compliance**
Deploy standards compliant opensource tooling that is professionally supported.
- 3 Extend**
Extend capabilities of Blender by building proprietary extensions while leveraging existing capabilities.

Embrace and Extend Strategy

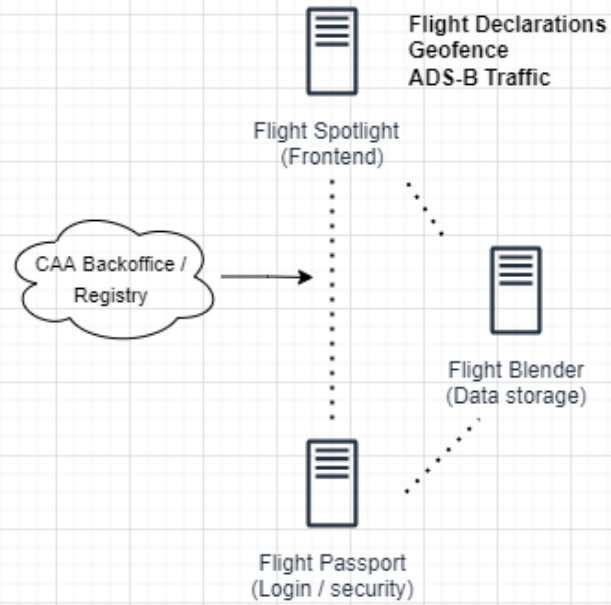


Open UTM Deployment Roadmap

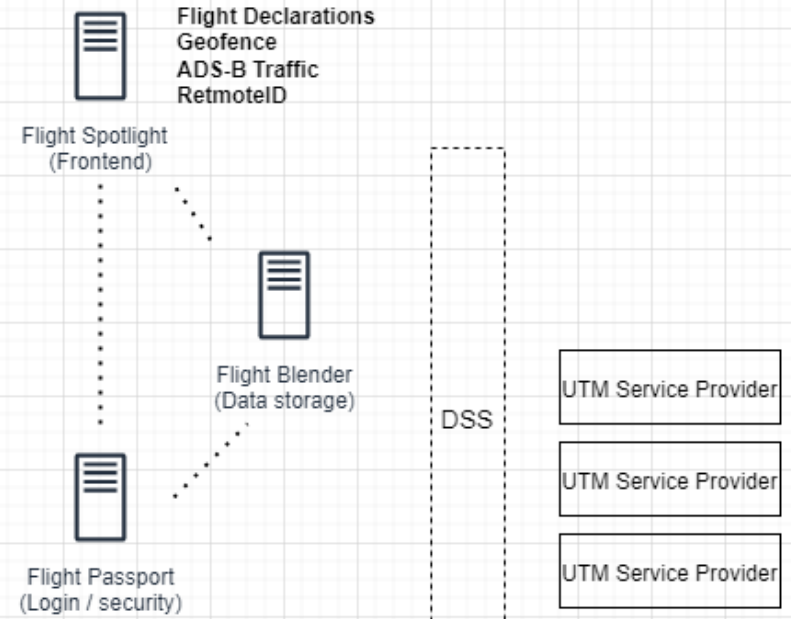
1. Start



2. Short term



3. Medium to long term



1 CAA back-office

Discussions on going on setting up a full back-office drone registration management software for the CAA.

2 Integrations

Integration of CAA management software with Blender via APIs (Work in progress)

3 Service Expansion

Deployment of InterUSS / DSS, UTM data exchange. Federation of other verified UTM suppliers.

Next steps

Why opensource?

Opensource tooling gives you maximum flexibility and choice. It allows you to adopt technology easily and extend / customize it as per your needs. Adopt -> Extend is a proven model saving time and costs and avoiding vendor lock-in.

1 Speed

Build extensions without having to re-invent the wheel or build everything from scratch.

2 Compliance

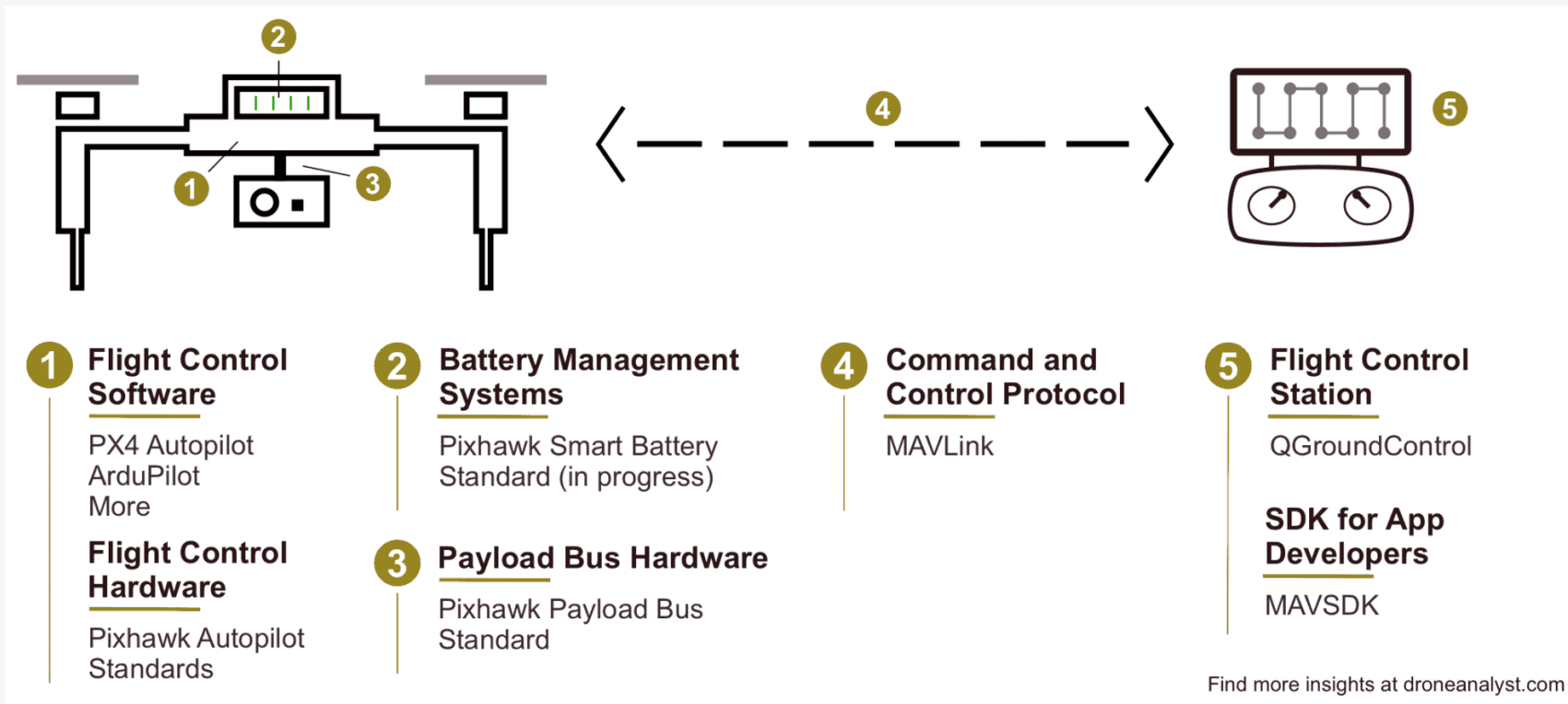
You don't have to worry compliance with standards as they change an evolve.

3 Long term cost savings

By adopting open technologies and focusing on proprietary extensions built on top.

First Generation Opensource

Unmanned aviation has a long history / started with open-source tooling



[Image Source](#)

Opensource is not just volunteers

Many modern organizations have a strong opensource strategy

Auterion

**Open
Beats
Closed**



As companies look to replace their fleet they need a provider that has a large shelf space, not just individual vehicles. Auterion is the only viable choice for enterprise customers looking to replace an entire fleet.

RANK	ORGANIZATION	ACTIVE CONTRIBUTORS	TOTAL COMMUNITY
1	Google	2069	5710
2	Microsoft	1925	4799
3	Red Hat	1859	3372
4	Intel	792	2247
5	IBM	680	1982
6	Amazon	600	1761
7	Facebook	456	1806
8	VMware	415	902
9	GitHub	391	1098
10	SAP	326	814

[Image Source](#)

