It's time to talk about **drones.**

Presented by

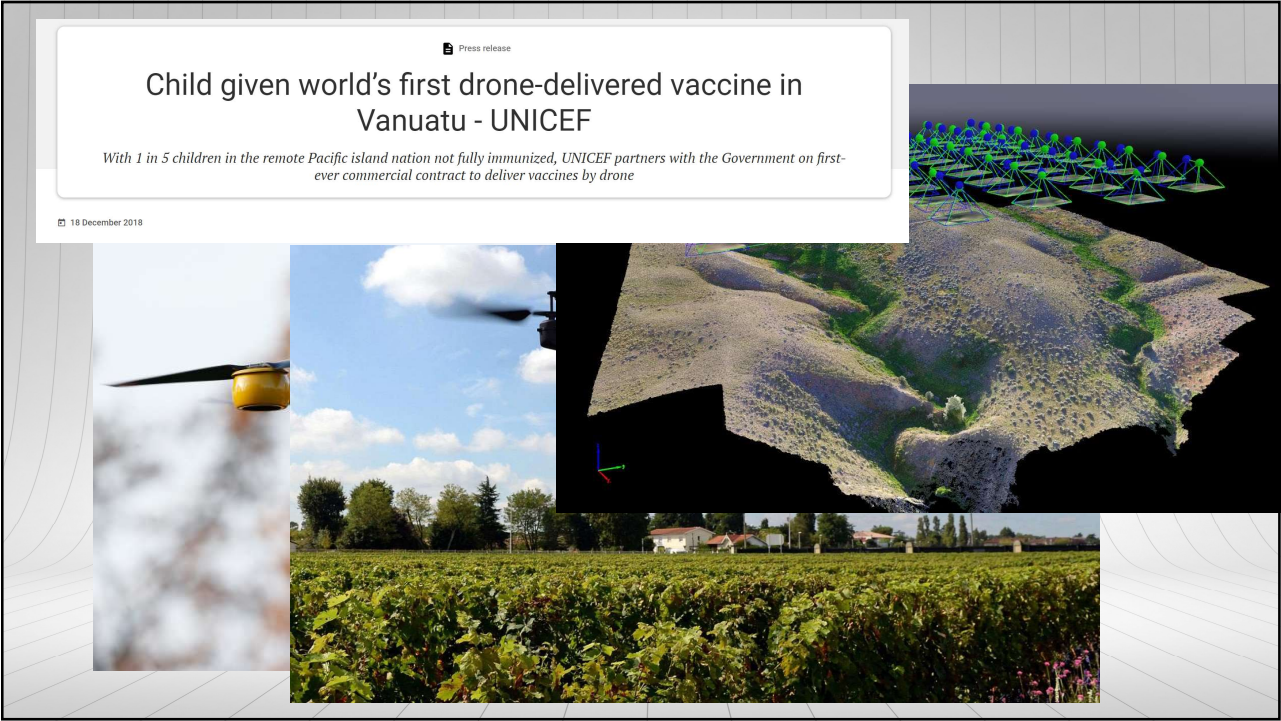**Richard Parker**
Founder & CEO

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COMMON COMMERCIAL USE CASES FOR DRONES

- Locating vulnerable/missing persons/SAR applications

- Linear infrastructure surveying

- Large area mapping/surveying

- If you use helicopters or planes for anything other than transporting people or goods, perhaps drones will start to be beneficial to you in the short term.

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BUT, NOT *REALLY* UNTIL…

- Beyond Visual Line of Sight
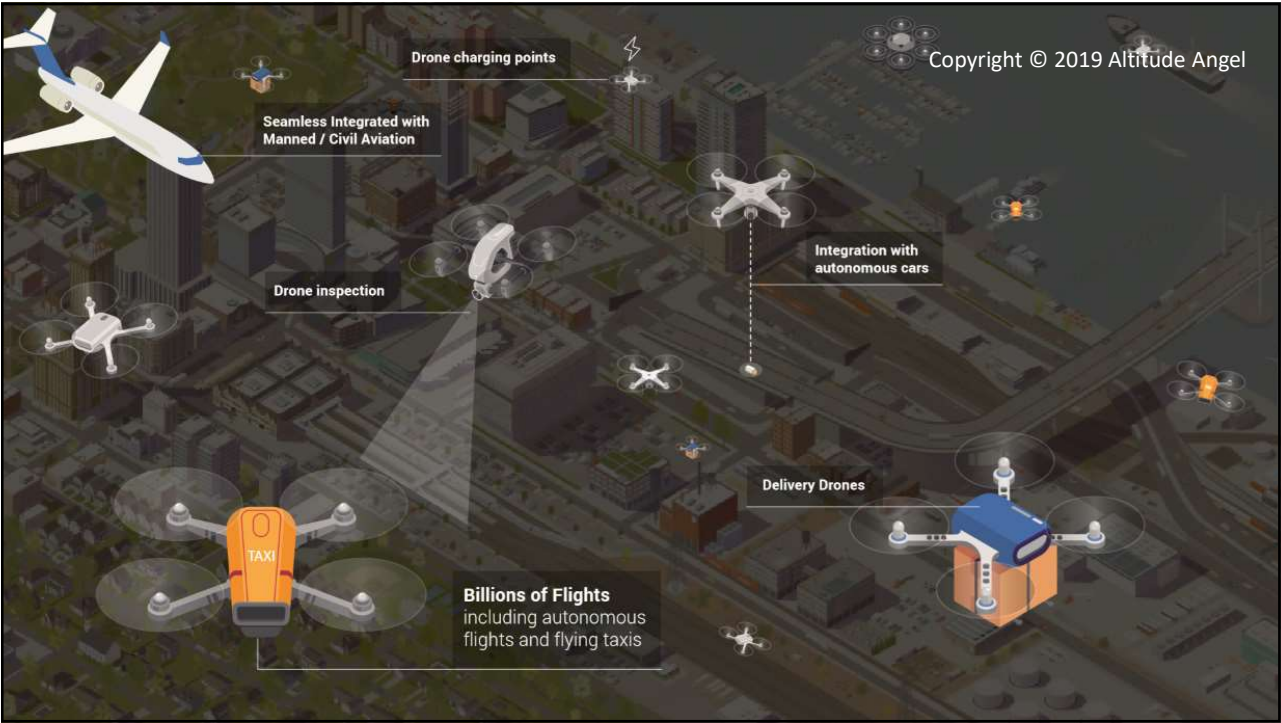- Break the 1:1 ratio between drone pilot and drone

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DRONES ARE POWERFUL MACHINES,
BUT THEY'RE **NOT** GREAT AERIAL CITIZENS.

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NATS – UK 24 VIDEO

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WHAT DO WE DO ABOUT IT?

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1. WE NEED TO AUTOMATE NAVIGATION.

Which means, we need data. Lots of it.
- Land zoning
- Property titles
- Infrastructure maps
- Terrain/elevation models
- Aeronautical maps
- Aviation NOTAMs
- Digital regulatory datasets
- Digital risk assessment for insurance
- Environmental feeds
- Transport infrastructure
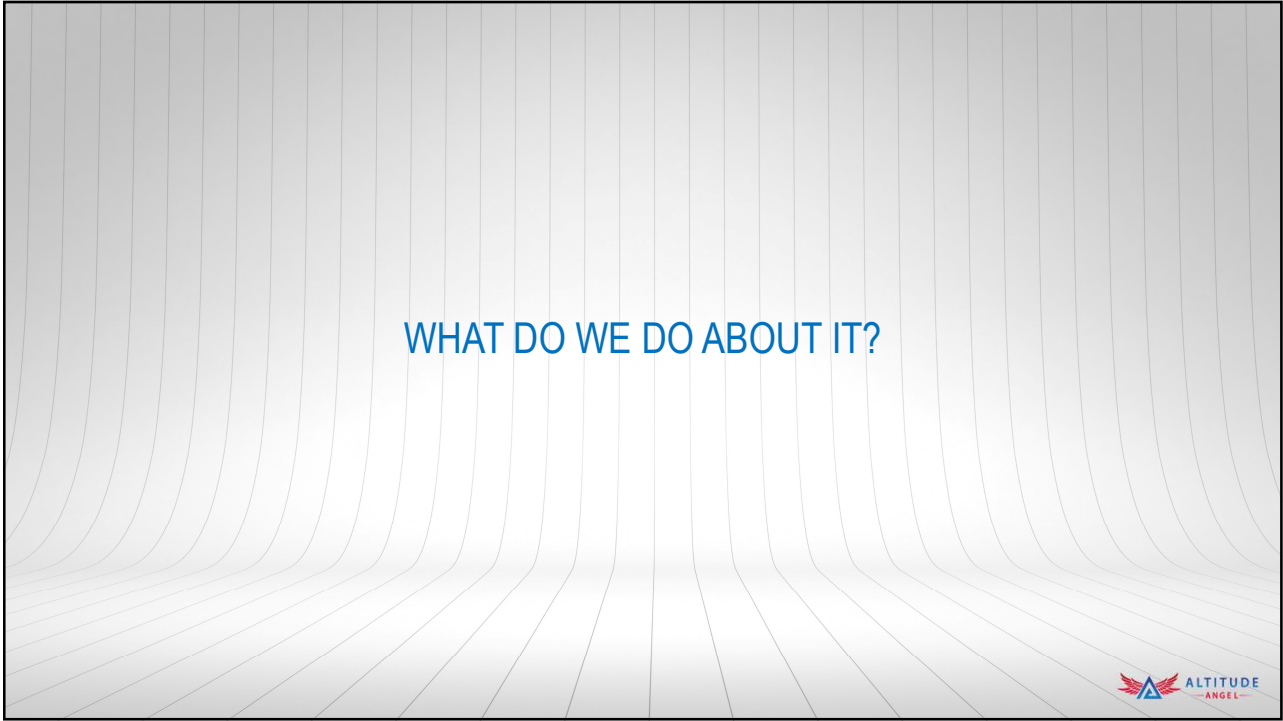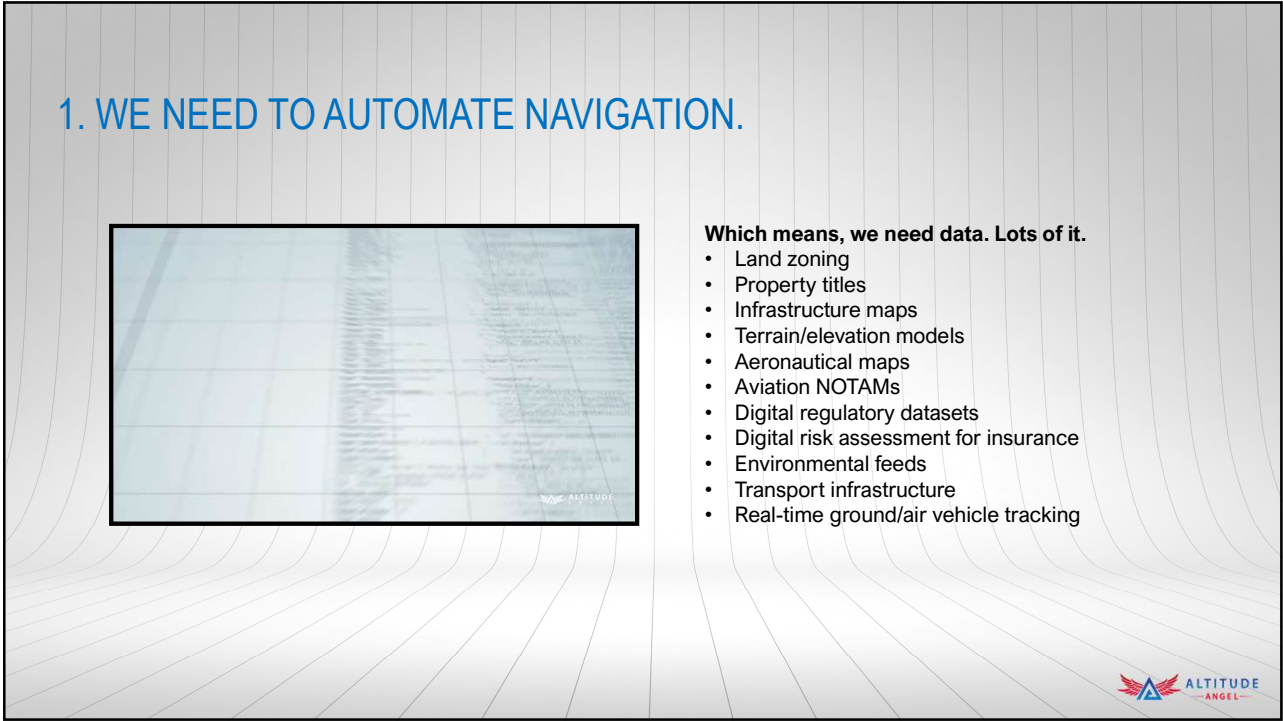- Real-time ground/air vehicle tracking

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2. WE NEED DATA.

Which means, we need data. Lots of it.
- Land zoning
- Property titles
- Infrastructure maps
- Terrain/elevation models
- Aeronautical maps
- Aviation NOTAMs
- Digital regulatory datasets
- Digital risk assessment for insurance
- Environmental feeds
- Transport infrastructure
- Real-time ground/air vehicle tracking

Just the ingredients

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INTRODUCING UTM.

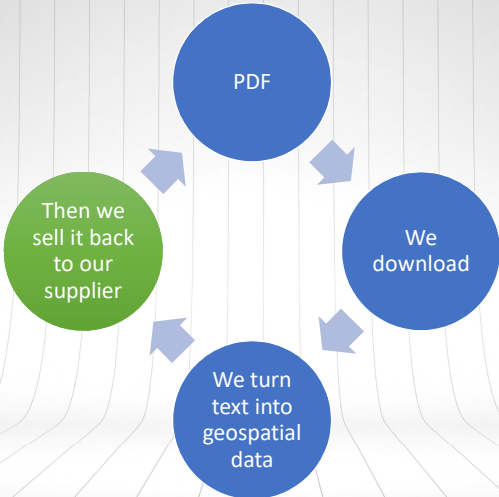| Phase		Service	
U1	Foundation Services	U1.1	e-Registration
		U1.2	e-Identification
		U1.3	Pre-tactical Geo-fencing
U2	Initial Services	U2.1	Tactical Geo-fencing
		U2.2	Flight Planning Management
		U2.3	Weather Information
		U2.4	Tracking
		U2.5	Monitoring
		U2.6	Drone Aeronautical Information Management
		U2.7	Procedural Interface with ATC
		U2.8	Emergency Management
		U2.9	Strategic De-confliction
U3	Advanced Services	U3.1	Dynamic Geo-fencing
		U3.2	Collaborative Interface with ATC
		U3.3	Tactical De-confliction
		U3.4	Dynamic Capacity Management
U4	Full Services	-	TBD

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CHALLENGES/OPPORTUNITIES.

Aviation data is temporal.

- It's updated every 28 days (the AIRAC cycle)
- But a "NOTAM" can be issued at any time which completely changes the original dataset.
- NOTAMS have a start and end date…
- As does the data in the AIRAC cycle.

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CHALLENGES/OPPORTUNITIES.

PDF

We download

We turn text into geospatial data

Then we sell it back to our supplier

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ACCURACY

Q) EGTT/QRTCA/IV/BO/W/000/025/5128N00012W011

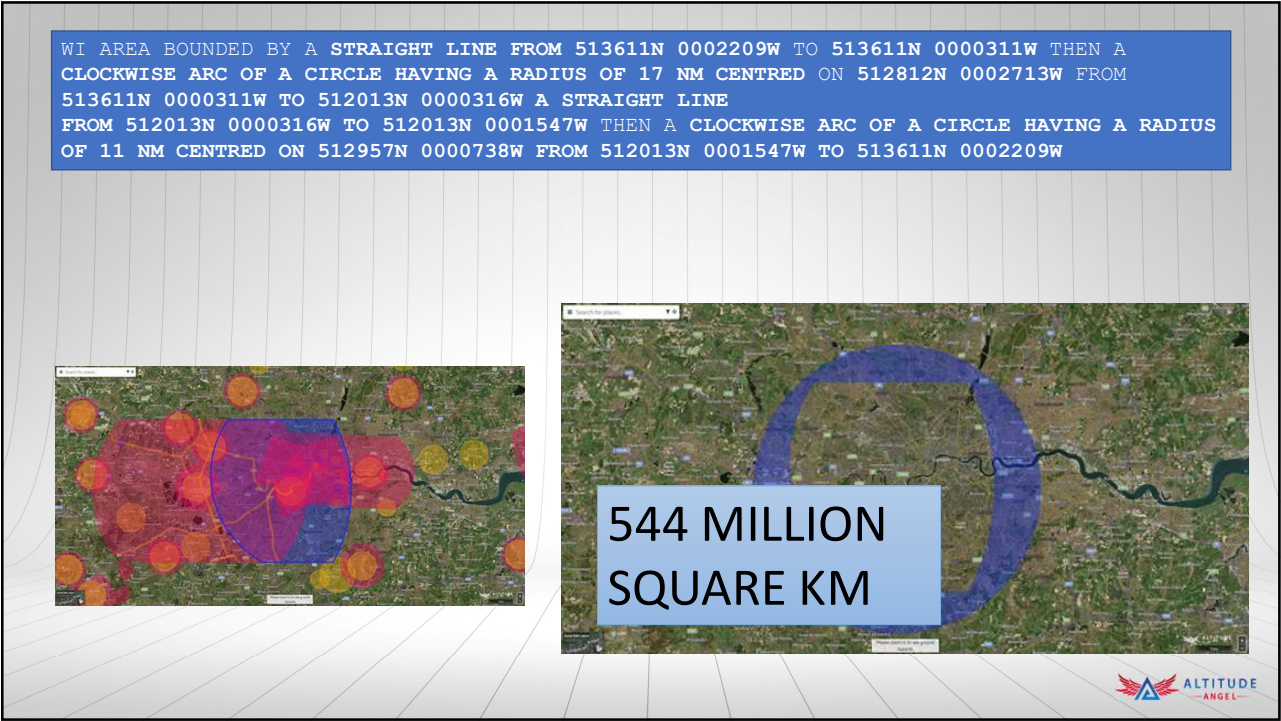E) RESTRICTED AREA (TEMPORARY) IN CENTRAL LONDON. RESTRICTION OF FLYING

REGULATIONS MADE UNDER ARTICLE 239 OF THE AIR NAVIGATION ORDER 2016. A BRIEFING SHEET WHICH INCLUDES A CHART CAN BE FOUND AT

HTTP://WWW.NATS-UK.EAD-IT.COM. NO ACFT IS TO FLY WI AREA BOUNDED BY A STRAIGHT LINE FROM 513611N 0002209W TO 513611N 0000311W THEN A
CLOCKWISE ARC OF A CIRCLE HAVING A RADIUS OF 17 NM CENTRED ON 512812N 0002713W FROM 513611N 0000311W TO 512013N 0000316W A STRAIGHT LINE
FROM 512013N 0000316W TO 512013N 0001547W THEN A CLOCKWISE ARC OF A CIRCLE HAVING A RADIUS OF 11 NM CENTRED ON 512957N 0000738W FROM
512013N 0001547W TO 513611N 0002209W. THESE RESTRICTIONS DO NOT APPLY TO ACFT MAKING AN APPROACH TO, OR DEPARTING FROM, LONDON CITY
AIRPORT WHILST UNDER THE CONTROL OF THE LONDON TERMINAL CONTROL CENTRE, SWANWICK OR THE ATC UNIT AT LONDON CITY AIRPORT OR MAKING AN
APPROACH TO, OR DEPARTING FROM, LONDON HEATHROW AIRPORT WHILST UNDER THE CONTROL OF THE LONDON TERMINAL CONTROL CENTRE, SWANWICK OR THE
ATC UNIT AT LONDON HEATHROW AIRPORT OR MAKING AN APPROACH TO, OR DEPARTING FROM, ROYAL AIR FORCE NORTHOLT WHILST UNDER THE CONTROL OF
THE ATC UNIT AT ROYAL AIR FORCE (UNIT) SWANWICK OR THE ATC UNIT AT ROYAL AIR FORCE NORTHOLT OR ACFT MAKING AN APPROACH TO OF DEPARTURE
FROM THE LONDON HELIPORT, BATTERSEA, TO THE WEST OF A LINE RUNNING TRUE NORTH TO TRUE SOUTH THROUGH 512852N 0001018W (BATTERSEA BRIDGE)
WHILST UNDER THE CONTROL OF THE LONDON HELIPORT ATC UNIT OR ACFT OPERATED BY THE NATIONAL POLICE AIR SERVICE OR THE QUEENS
HELICOPTER FLIGHT OR FLYING IN THE SERVICE OF THE HELICOPTER EMERGENCY MEDICAL SERVICES OR OPERATED WITH THE PERMISSION OF
INSPECTOR HEIDI BOUTCHER OF THE METROPOLITAN POLICE SERVICE WHO MAY BE CONTACTED THROUGH THE NATIONAL POLICE AIR SERVICE OPERATIONS
ENTRE ON TELEPHONE NUMBER 01924-296281. THIS RESTRICTION OF FLYING ALSO RELATES TO THE OPERATION OF ALL UNMANNED AIRCRAFT SYSTEMS.

2018-04-0158/AS 6

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WI AREA BOUNDED BY A **STRAIGHT LINE FROM 513611N 0002209W** TO **513611N 0000311W** THEN A **CLOCKWISE ARC OF A CIRCLE HAVING A RADIUS OF 17 NM CENTRED** ON **512812N 0002713W** FROM **513611N 0000311W TO 512013N 0000316W A STRAIGHT LINE** FROM **512013N 0000316W TO 512013N 0001547W** THEN A **CLOCKWISE ARC OF A CIRCLE HAVING A RADIUS OF 11 NM CENTRED ON 512957N 0000738W FROM 512013N 0001547W TO 513611N 0002209W**

544 MILLION
SQUARE KM

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Altitude Angel GuardianUTM
Vision Video

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UNLOCKING THE SKY

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ATC 2.0

"Avoiding No Fly Zone"

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INNOVATION

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BEING AN INNOVATION-FRIENDLY DATA SUPPLIER.

- The tech industry changes rapidly. Have your systems kept up-to-date?
- Provide real-time access via APIs; don't rely on downloads.
- Does your license model permit innovation?

  - Do you make assumptions about **how** people use your data, or do you provide use-agnostic licensing?

  - One aeronautical mapping supplier licenses by "size of aircraft fleet"; thus only companies who operate fleets of aircraft could buy the data.

- Collaborate with other industries!

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CAN YOU ADD **MORE** VALUE TO WHAT YOU ALREADY HAVE?

- Services are better than data: "Don't make me think!"

- Parse it – better than anyone else!

  - Q) EGTT/QWPLW/IV/M/W/000/018/5050N00006E001 A) EGTT B) FROM: 19/05/11 07:00 C) TO: 19/05/11 17:00 E) PARAGLIDING ACTIVITY IN LOW FLYING AREA 18 WILL TAKE PLACE WI 1NM RADIUS OF PSN 505001N 0000551E (FIRLE, E SUSSEX). 1000 FT AGL. MILITARY AIRCRAFT SHALL AVOID THE AREA. POC 07854458177 19/05/024/LFBC LOWER: SFC UPPER: 1711FT AMSL

- Standardise it; make it easy to consume

- Keep it up-to-date and relevant

- Make it easy for electronic systems to determine when it was last updated

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