

License Plates & Drone Information Requirements

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Outline

- Background (15-20 min)
- Information needs (20 min)
 - Observers, drones, other aircraft, regulators
- Licensing and registration (10 min)
- Technical requirements (10 min)
- Other interests (10 min)
 - Proprietary, anonymity, security

Background

- Clear privacy and safety interests
 - How do other aircraft know what's around them?
 - How do ground-based people know what's up?
- Imagined an analogy:
 - vehicle license plates, aircraft N-numbers



Background

- Wrote a blog post:



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ABOUT



'License Plates' for Drones?

by Joseph Lorenzo Hall
March 8, 2013

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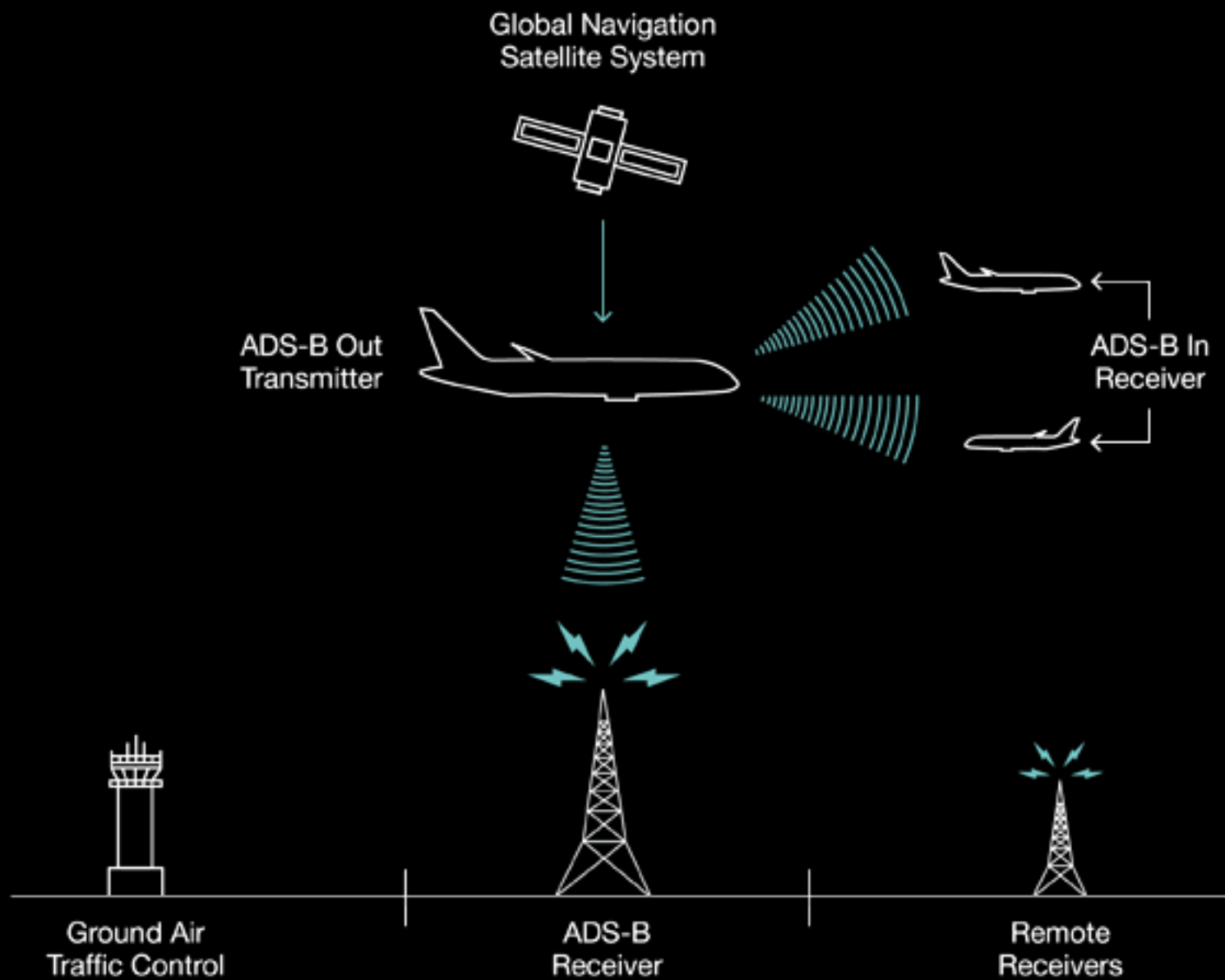
Filed under Security & Surveillance, More Issues in Security & Surveillance
Tags: drones

If we're going to put cameras on drones and let just about anyone with a few hundred bucks fly them around our neighborhoods, recording video of anyone in our backyards and doing who-knows-what with them, shouldn't there at least be a way to identify who the drone belongs to?

Shouldn't there be something akin to a "license plate" for drones? We think so.

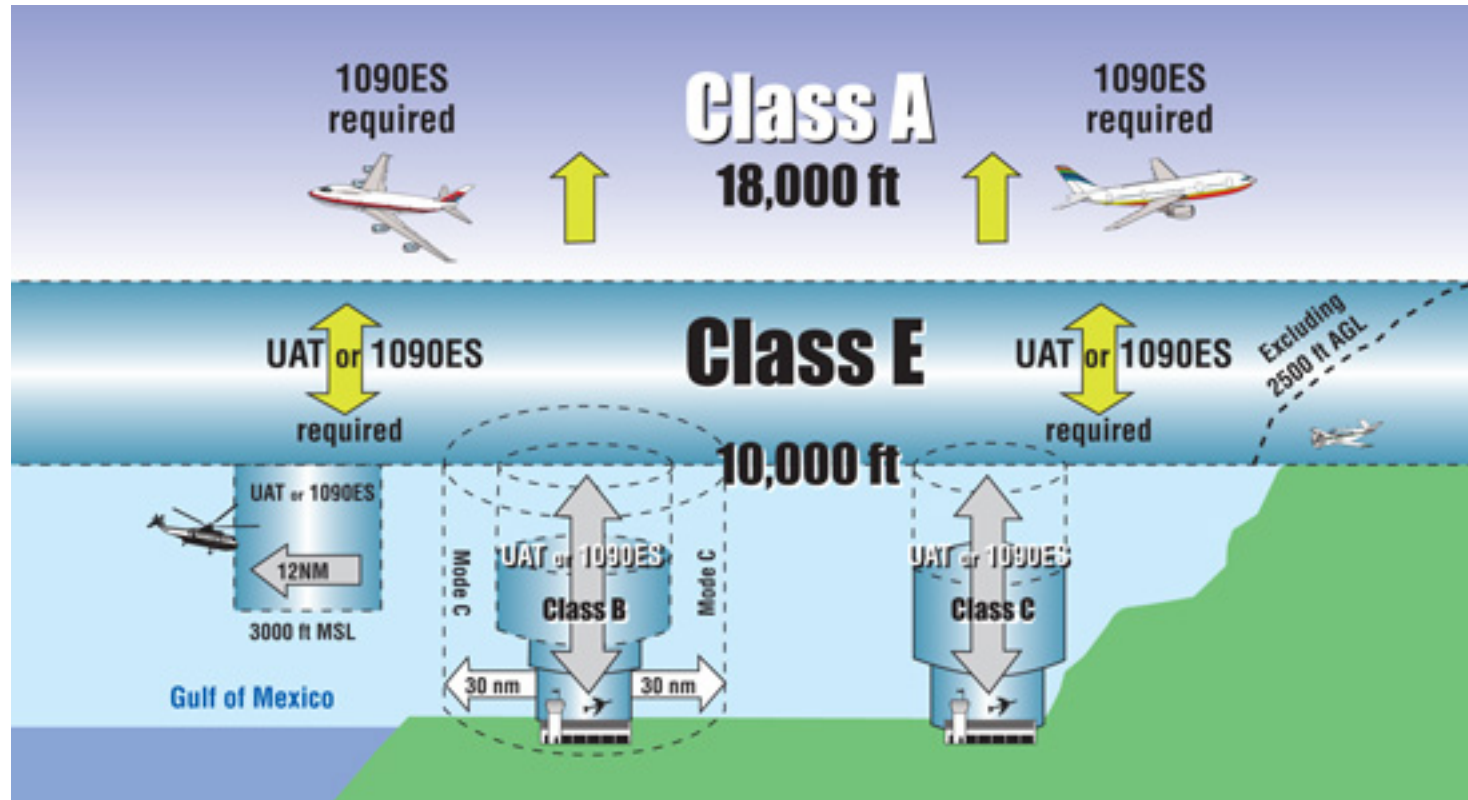
Background

- Feedback clued us into “ADS-B Out”
 - Radio-frequency standard required by FAA for most aircraft by 2020
 - Broadcasts identifier, position, velocity, altitude once every 2 seconds
 - Used on manned aircraft to replace radar positioning and to better locate aircraft and organize airspace by ATC



Original from: http://www.boeing.com/commercial/aeromagazine/articles/qtr_02_10/2/

Background



Original from: http://www.propilotmag.com/archives/2012/April%202012/A4_ADS-B%20Out_p1.html

Background

- In CDT's FAA comments we proposed:
 - UAS Registry:
 - UAS ownership information
 - UAS classification: airframe type, weight, dimensions, locomotive mechanics/power and max aloft
 - Data Collection Statement: operational purposes, sensing packages, info. collected, retention, minimization, data sharing, point of contact
 - Mode S "hex code": 24-bit ID (16 MM)
 - "U"-number: U-1a2b3, human friendly (11 MM)

Background

- In CDT's FAA comments we proposed:
 - Broadcast ADS-B Out signal
 - Transponder on airframe (or ground?)
- Vision:
 - Both aircraft and ground observers can see in real-time what UAS are operating in the skies above.
 - FAA/Companies provide web services for visualizing and tracking UAS operations.

Background



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Home

iPad & iPhone

Stratus ADS-B

Testimonials

Overview

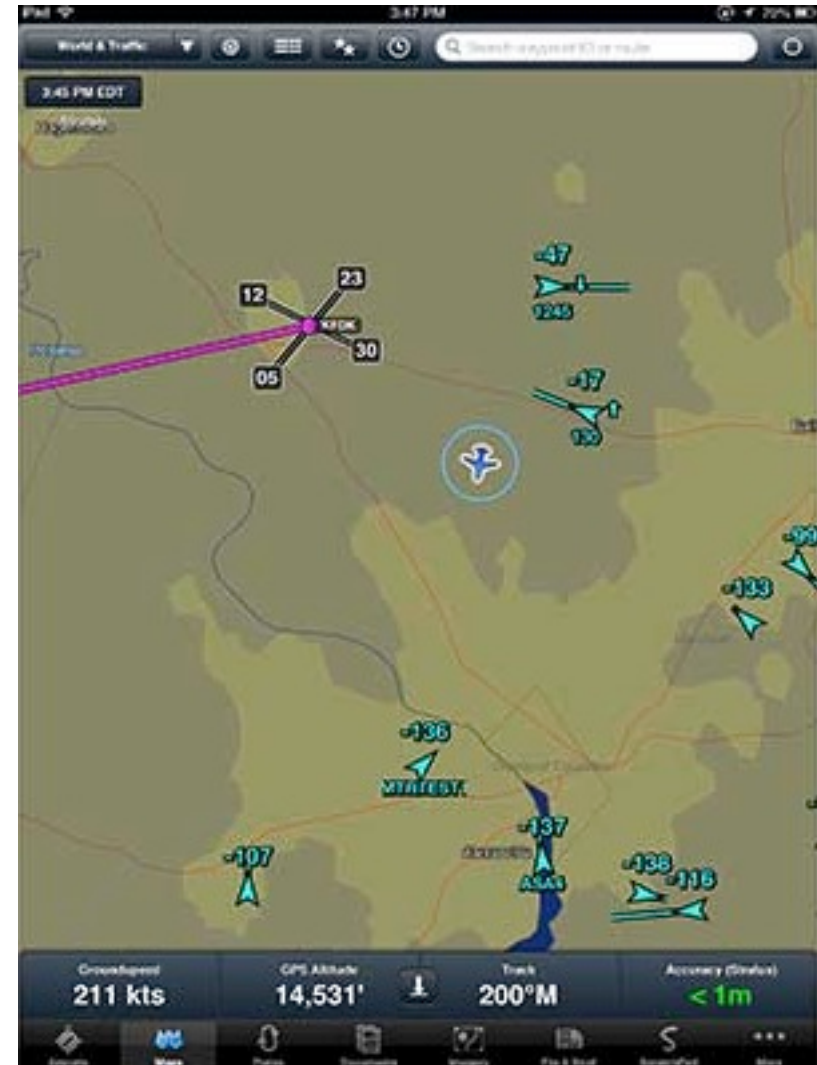
Tech Specs

Coverage

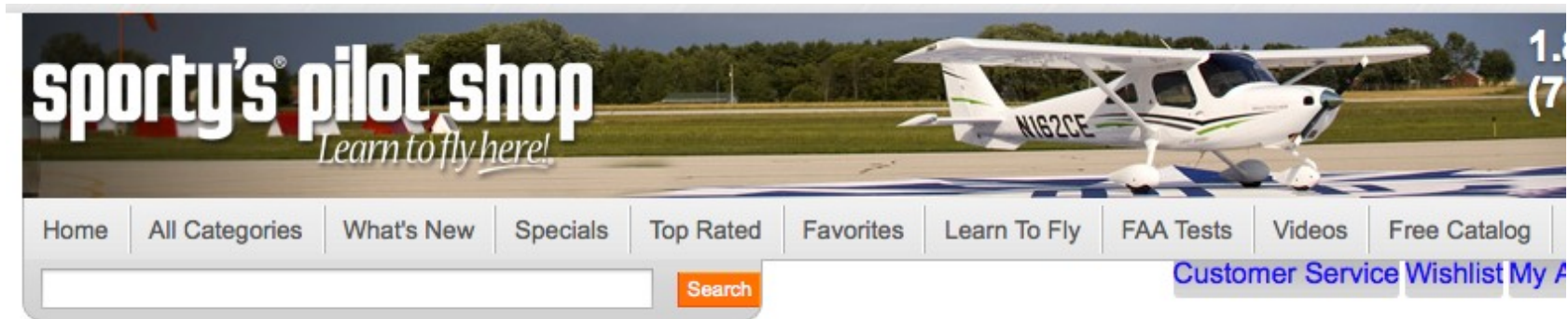
FAQs

Stratus 2

Smart. Simple. Subscription free weather and traffic.



Background



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• new low price - \$699!

\$699.00

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Overall C
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Background

- Since our FAA comments, a lot of interest
- Lots of complications!
- Technical:
 - Requires an IFR-certified GPS Receiver (\$\$\$)
 - Requires a Mode-S Transponder
 - Trig Avionics claims "smallest and lightest Mode S transponders" at 440g; power: 0.15A idle, 0.28A active

Background



Control Head



Hardware Box (antenna, etc.)



Background

★ **Andy Davis** to Me and Trig-Support-Team

Dear Joe,

The TT21 is already used by a number of UAV builders. The transponder itself is 350 grams; when combined with a controller, altitude sensor, antenna, wiring and appropriate GPS the total weight is about 1kg. List price for such an installation is around \$6,000 (of which only about \$2,200 is the transponder itself), although there is engineering integration effort involved – we're not talking about a hobbyist "plug and play" product.

The reason UAV vendors are using these transponders is to facilitate integration in the airspace and interoperability with other aircraft, although as you correctly point out, it makes the UAV visible to inexpensive ground based surveillance as well.

At that price and 1kg payload, this is a reasonable installation for a medium to large UAV, but is not appropriate for the very small hand launched types. It is unlikely that an autonomous ADS-B compliant surveillance product would/could be available for the very small UAV airframes because of weight and power constraints.

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Information Needs

- Other aircraft?
- Drones?
- Observers?
- Regulators?

Licensing and Registration

- Licensing: Do drone pilots have to show competence wrt safety and privacy?
- Registration: What kinds of requirements of drone classes, sensing packages?

Technical Requirements

- Every UAS or some subset?
 - E.g., EU: weight above 5,700 kilograms (12,600 lb) or max cruise of over 250 knots
 - Where does that leave privacy/safety interests?
- If mandated, will the market provide a better solution?

Other Interests

- Proprietary interests?
 - Specific activities may be business sensitive.
- Anonymity interests?
 - Not available currently for commercial or non-commercial vehicle license plates.
- Security Interests?
 - May be easier to damage drones.