

**Catch me if you can: Flightradar24,
Plane Finder and the like, the
nightmare of secretive aircraft owners?**

gbf Aviation Law Afternoon Workshop

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11. September 2019

Apps

- Most popular Apps:
 - www.flightradar24.com Swedish (150'000 flights per day, 1 mio visits per day)
 - www.planefinder.net UK 2009
 - <https://de.flightaware.com/> US 2004
 - <https://www.adsbexchange.com/> (co-op of unfiltered data US)
 - <https://opensky-network.org/aircraft-database> CH

Lewis Hamilton (G-LCDH)



www.flightradar24.com

<https://www.adsbexchange.com>

Bestellvorgang | Schnellwahl | ADS-B Exchange - World | Flight Activity for G-LCDH

flight-data.adsbexchange.com/activity

Amazon | eBay | Booking.com | Bonprix | Facebook | Erste Schritte

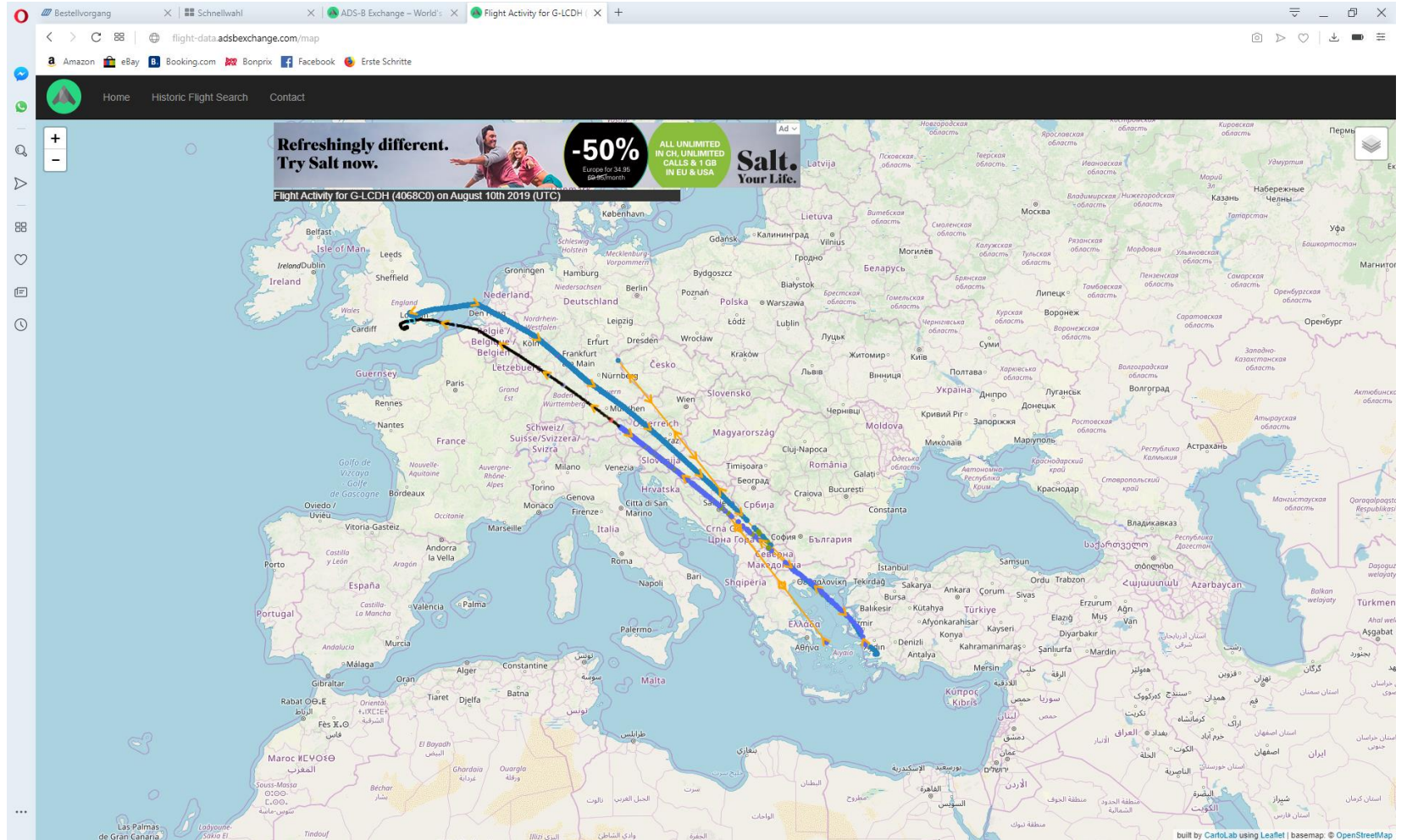
Home | Historic Flight Search | Contact

Flight Activity for G-LCDH (4068C0)

Here are the dates (UTC) this aircraft has been active (scroll for more). Click on a date to view the flight activity for that date on a map.

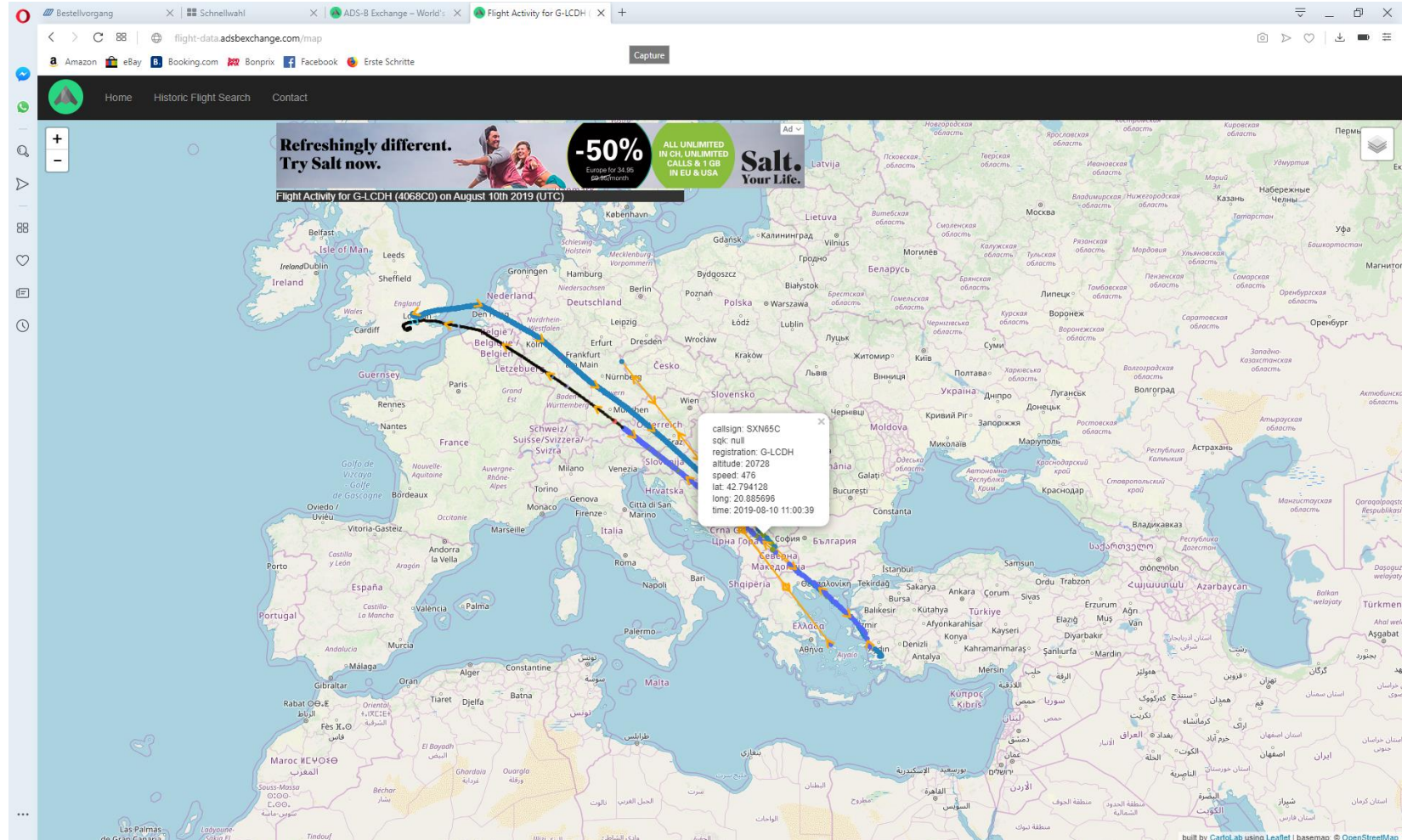
- August 21st 2019
- August 20th 2019
- August 18th 2019
- August 17th 2019
- August 16th 2019
- August 15th 2019
- August 13th 2019
- August 12th 2019
- August 11th 2019
- August 10th 2019
- August 9th 2019
- August 7th 2019
- August 6th 2019
- August 5th 2019
- August 4th 2019

10 August 2019

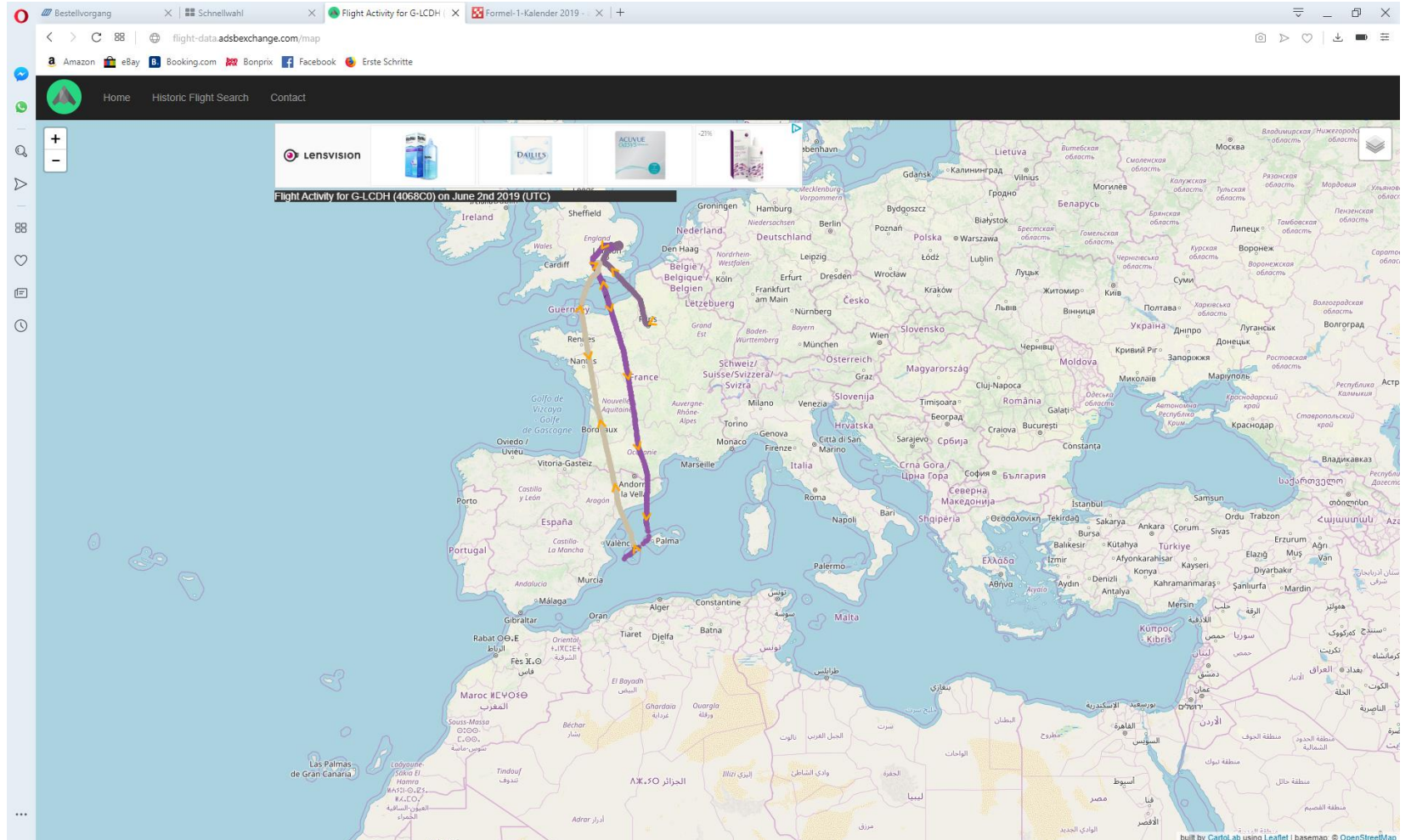


11.09.2019

10 August 2019

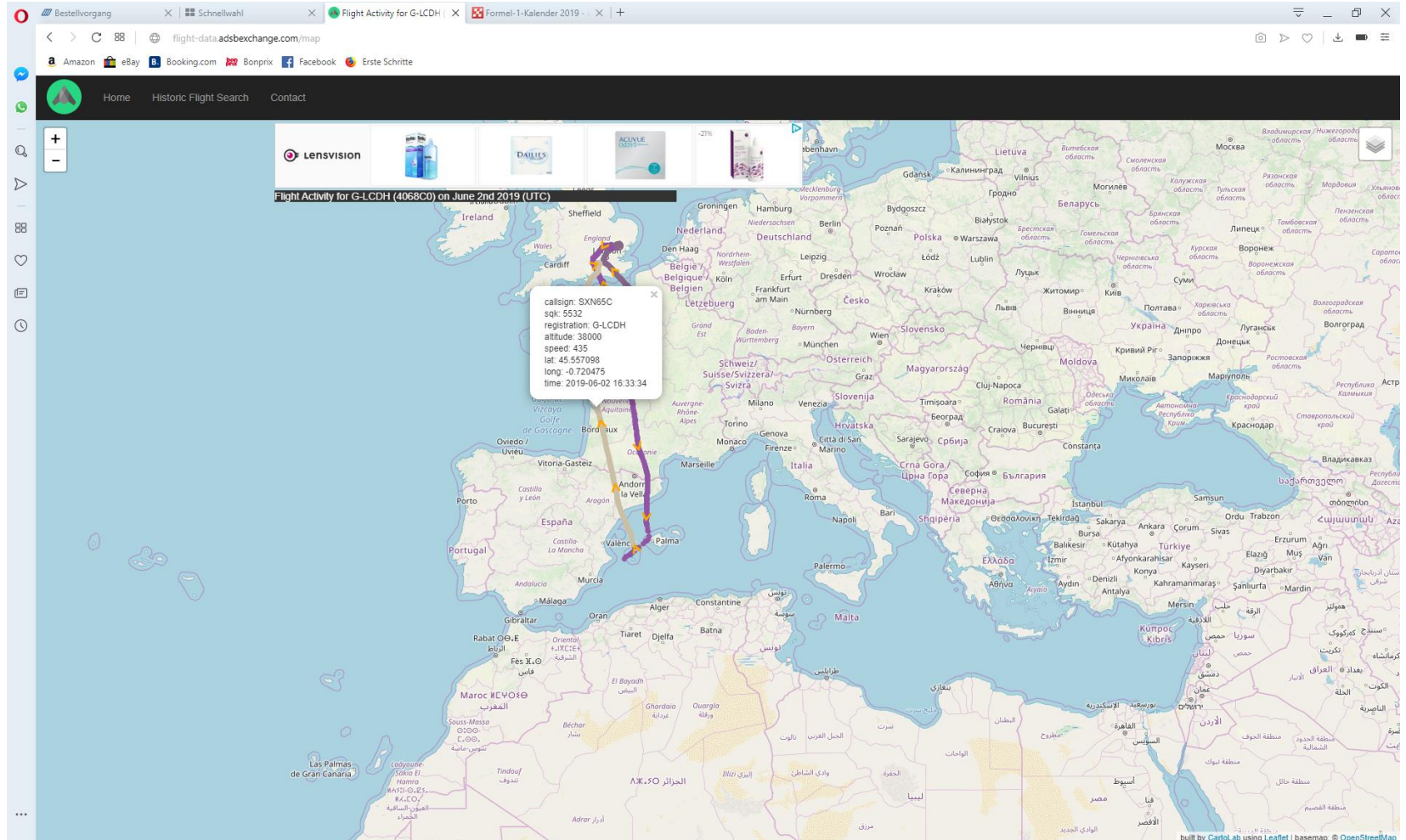


2 June 2019



11.09.2019

2 June 2019



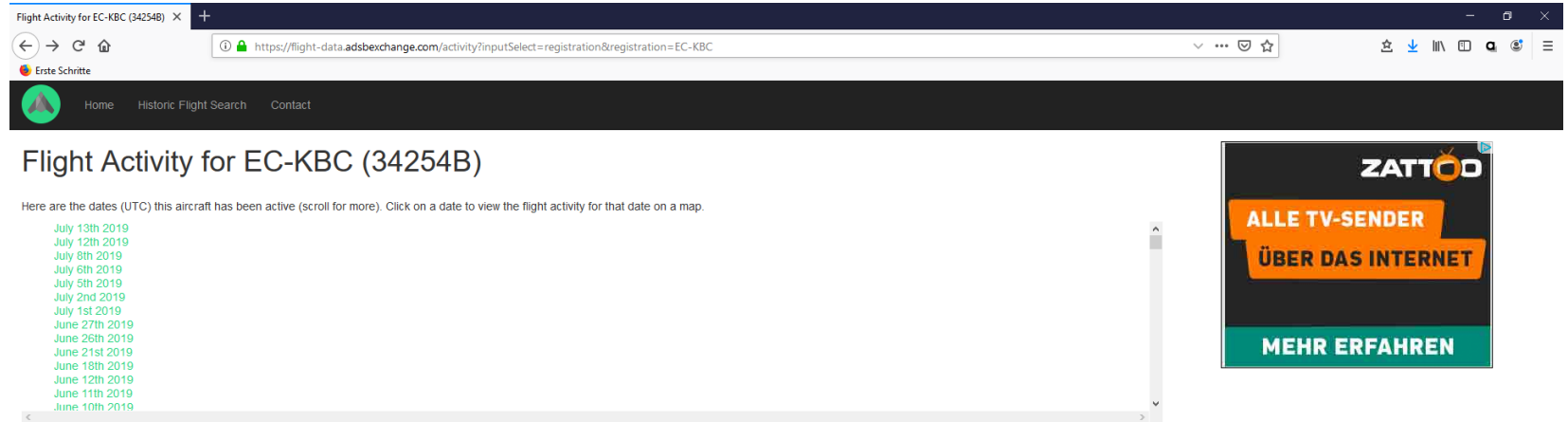
11.09.2019

Cristiano Ronaldo (EC-KBC)



www.flightradar24.com

<https://www.adsbexchange.com>



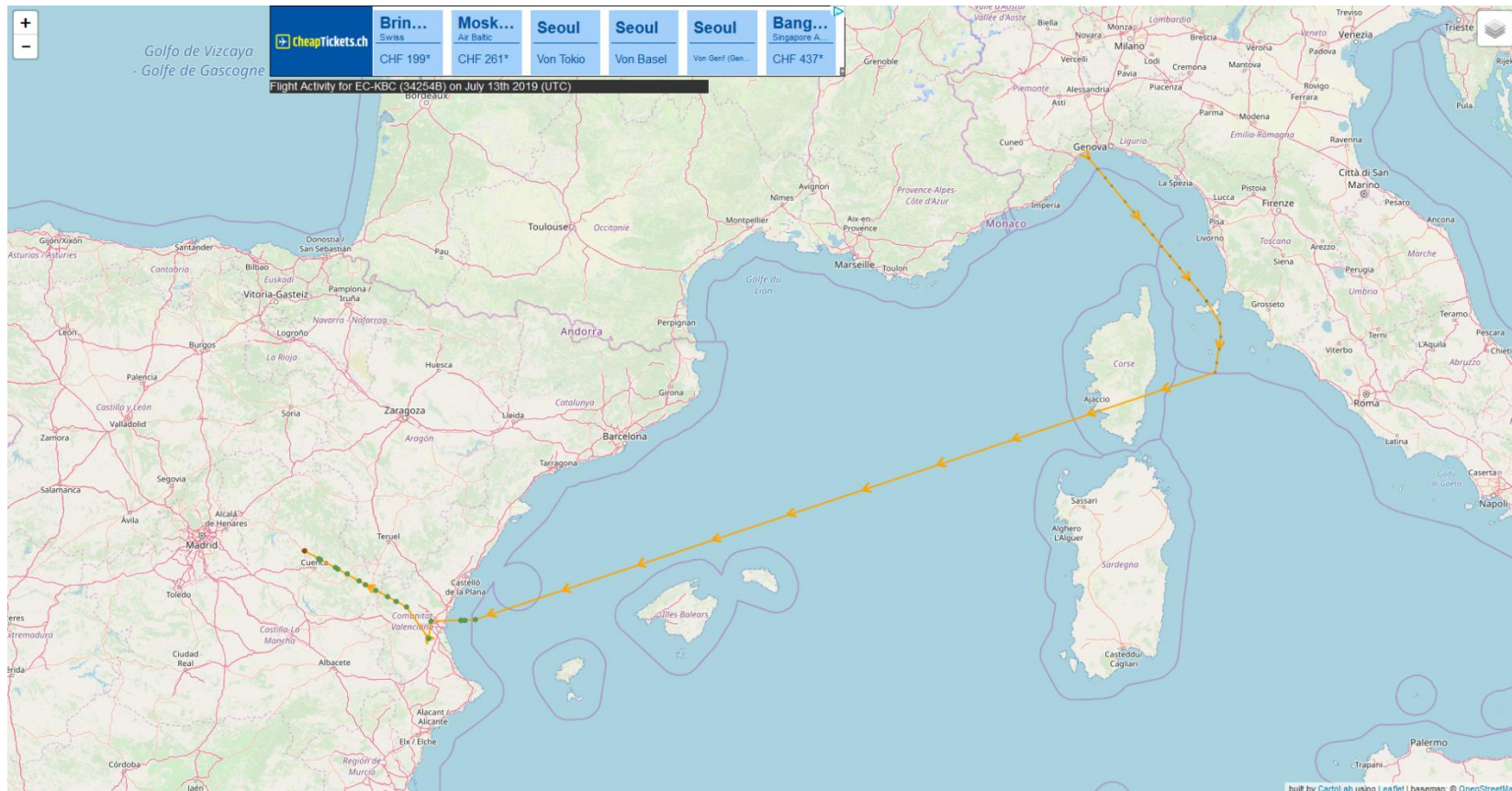
Flight Activity for EC-KBC (34254B)

Here are the dates (UTC) this aircraft has been active (scroll for more). Click on a date to view the flight activity for that date on a map.

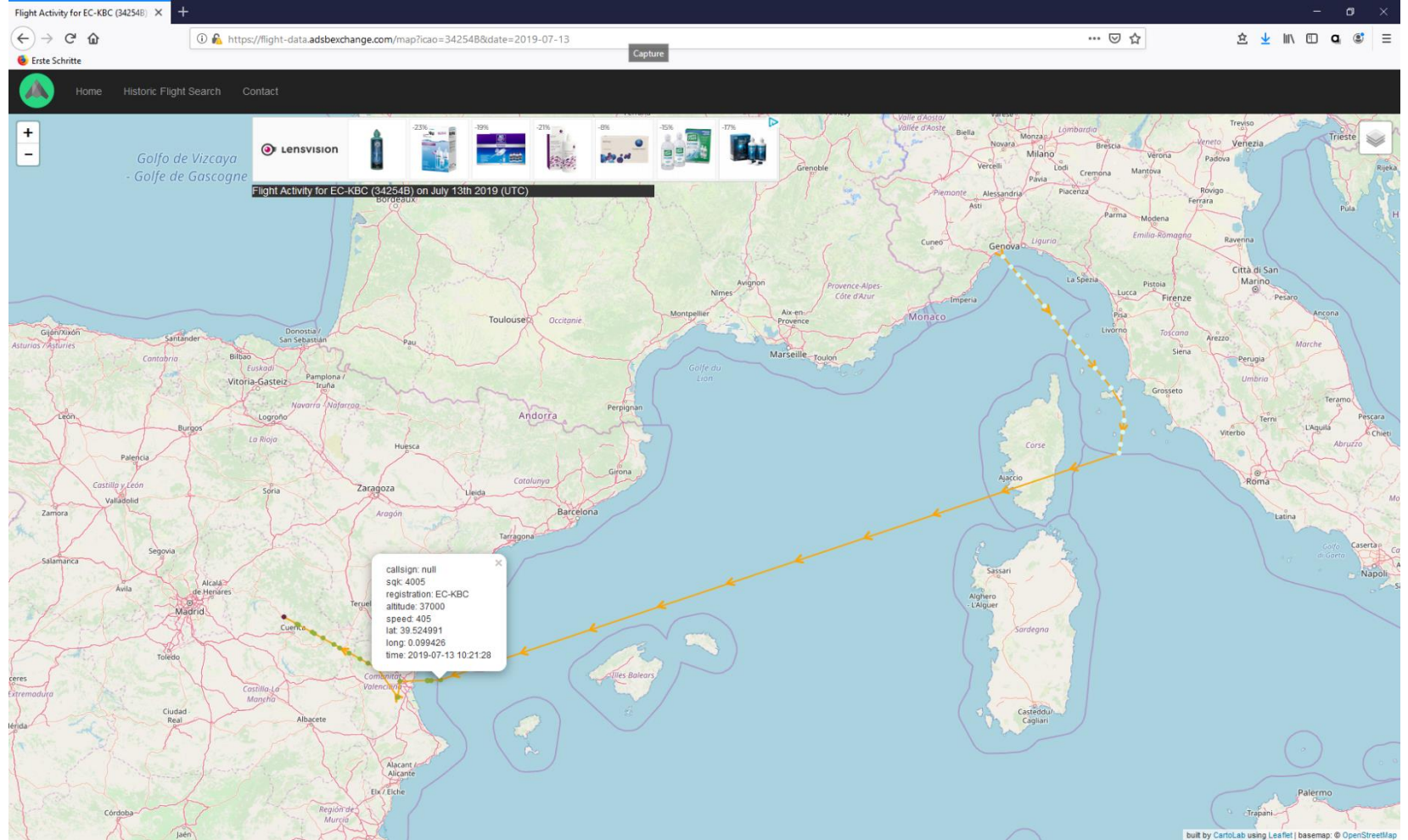
- July 13th 2019
- July 12th 2019
- July 8th 2019
- July 6th 2019
- July 5th 2019
- July 2nd 2019
- July 1st 2019
- June 27th 2019
- June 26th 2019
- June 21st 2019
- June 18th 2019
- June 12th 2019
- June 11th 2019
- June 10th 2019

ZATTOO
ALLE TV-SENDER
ÜBER DAS INTERNET
MEHR ERFAHREN

13 July 2019



13 July 2013



Air Force One



Air Force One (CH)



<https://www.adsbexchange.com>

<https://opensky-network.org/aircraft-database>

Flight Activity for T-785 (4B7F4C) × +

← → ↻ 🏠 <https://flight-data.adsbexchange.com/activity?inputSelect=registration®istration=T-785> ⋮ 📧 ☆


Erste Schritte

🏠 Home Historic Flight Search Contact

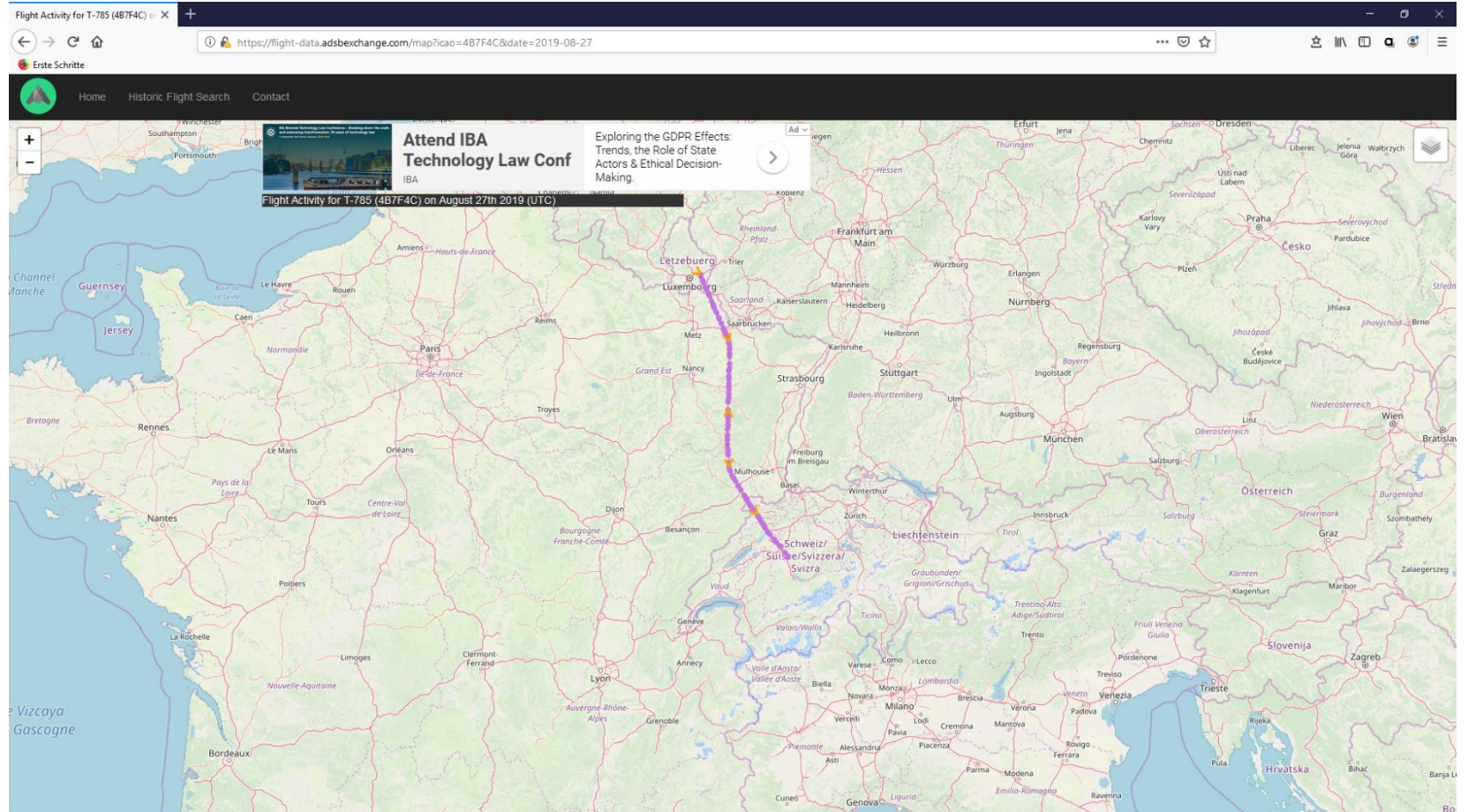
Flight Activity for T-785 (4B7F4C)

Here are the dates (UTC) this aircraft has been active (scroll for more). Click on a date to view the flight activity for that date on a map.

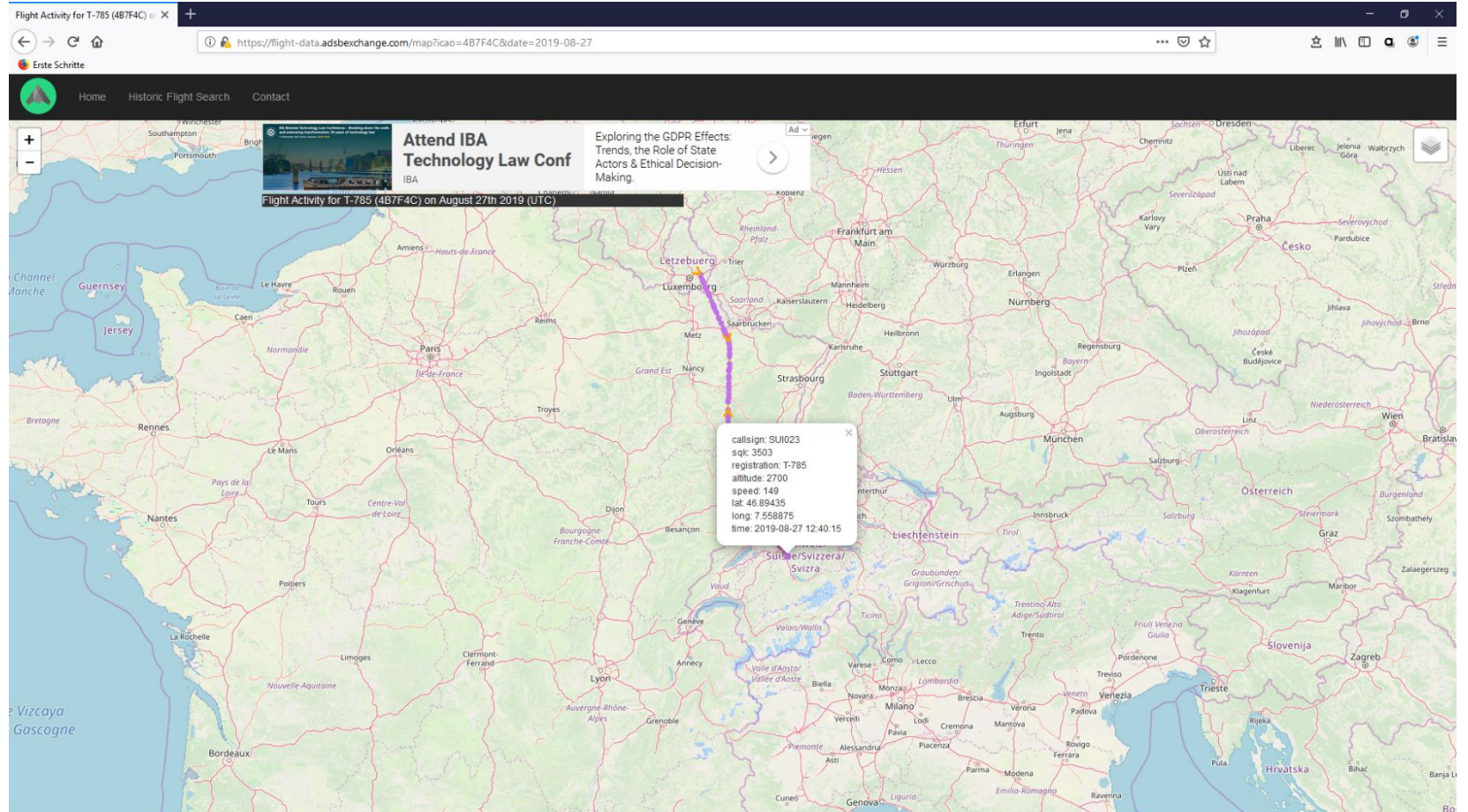
- August 27th 2019
- August 26th 2019
- August 25th 2019
- August 24th 2019
- August 22nd 2019
- August 19th 2019
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- August 5th 2019



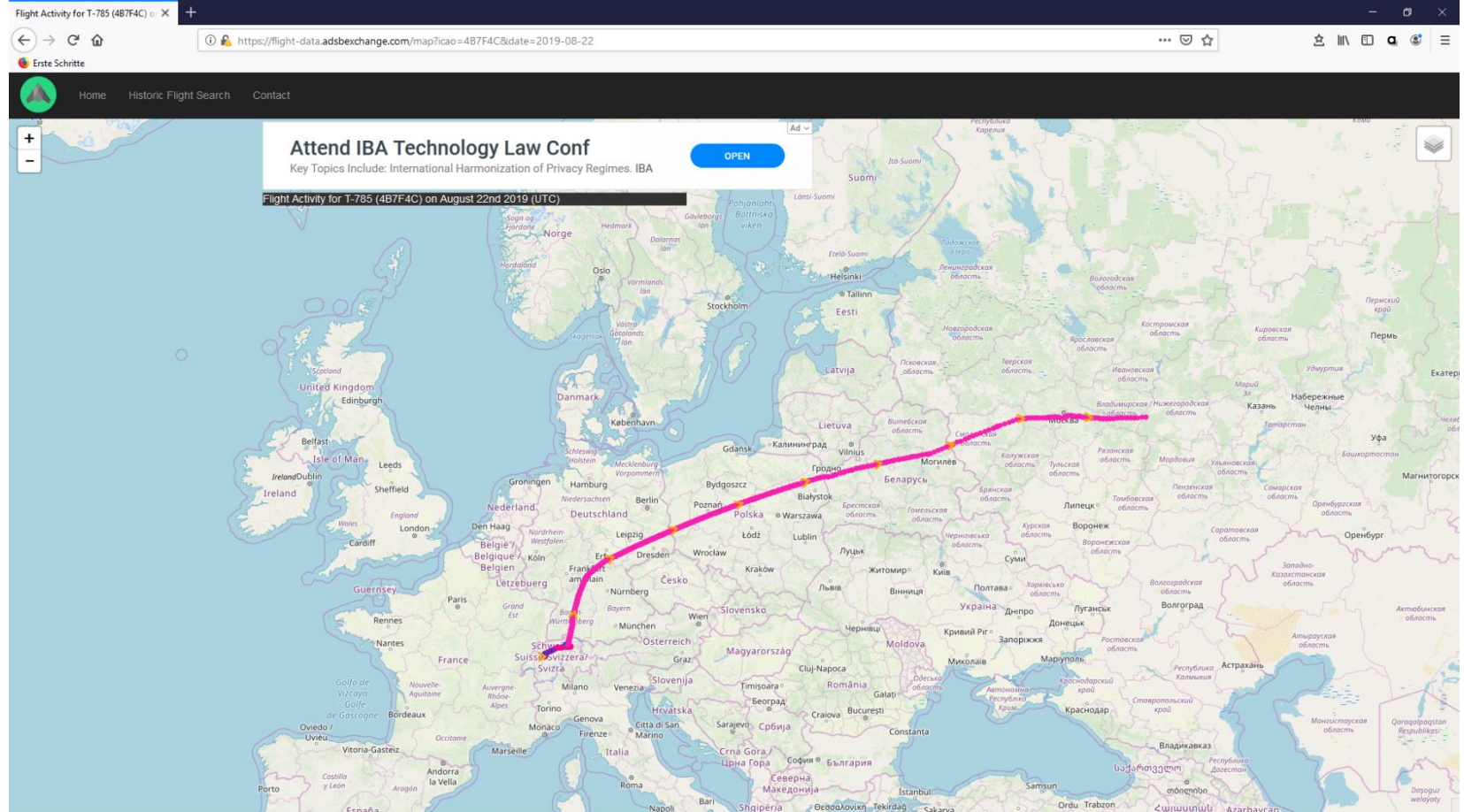
27 August 2019



27 August 2019



22 August 2019



- Donald Trump (N757AF)
- Bill Gates (N887WM)
- Roman Abramovich (p4-MES)
- Harrison Ford (N6GU)
- Tom Cruise (N808T)
- Lewis Hamilton (G-LCDH)
- Cristiano Ronaldo (EC-KBC)
- Lionel Messi (LV-IRQ)
- Swiss Air Force 1 (T-785)

Technology

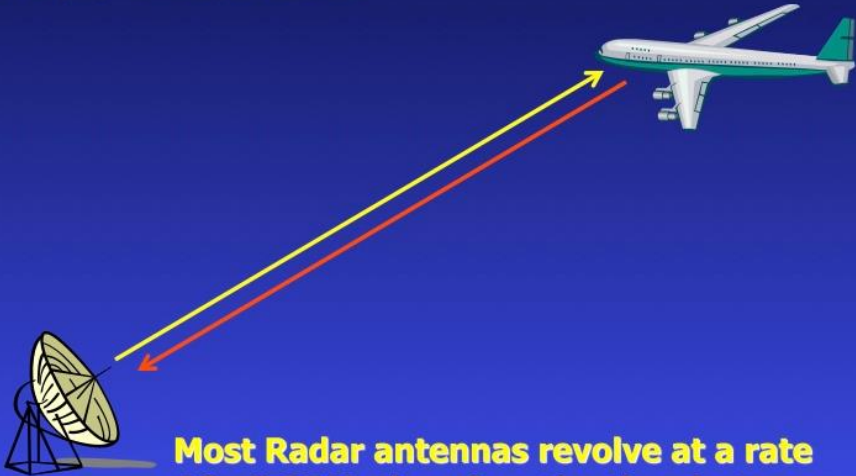
- Radar
- ADS-B
- Space Based ADS-B

Radar

ADS-B Technologies 9

RADAR

Typically, surveillance radar sends a signal that causes the aircraft's transponder to reply and provide its position.



Most Radar antennas revolve at a rate Of ~ 5 RPM, therefore the time between Signal returns is ~ 12 sec. For an aircraft flying at 500 Kts, this means that the aircraft can move ~ 0.6 Nm between returns.

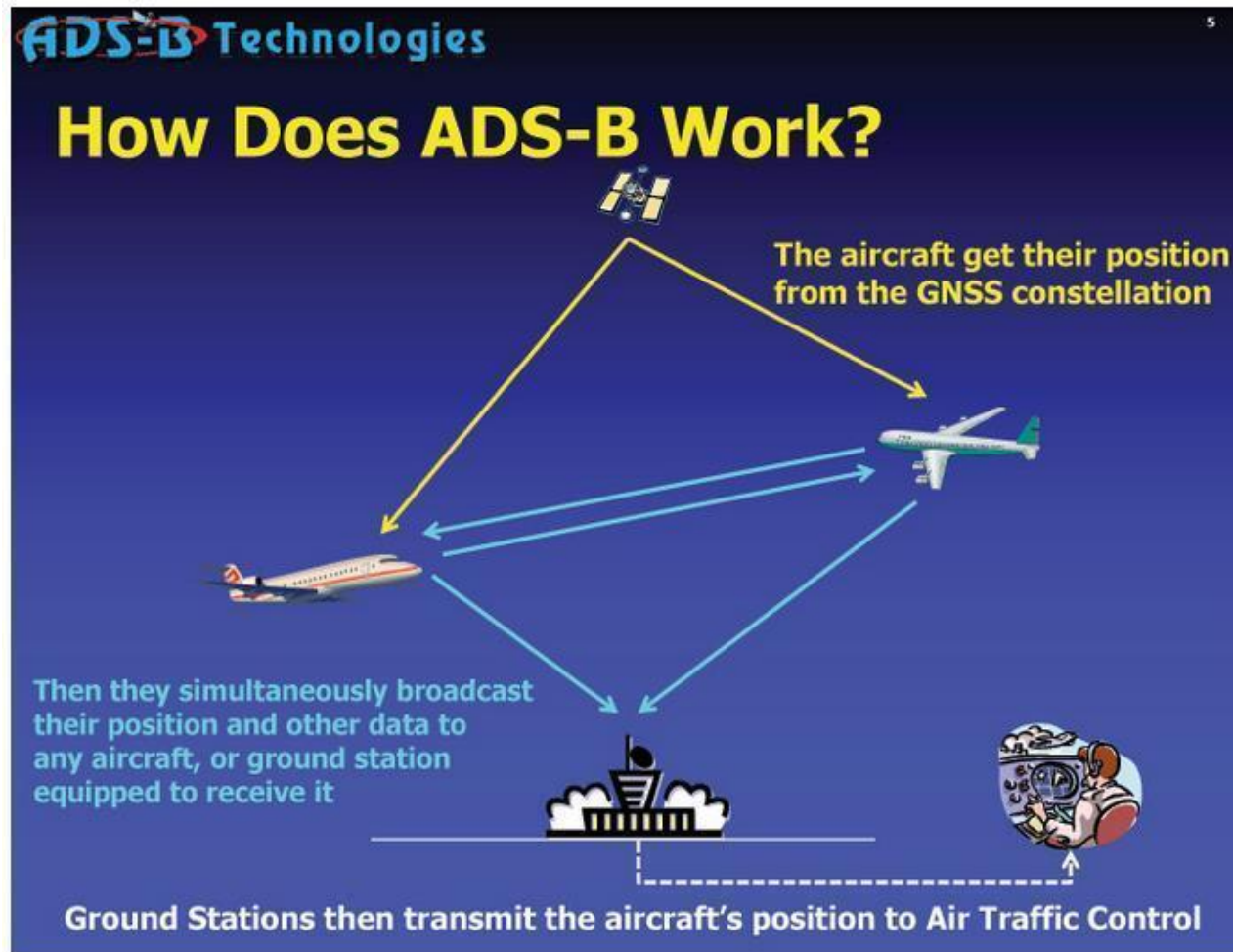
Radar

- Dominant air traffic control surveillance technology in the past
- Bouncing radio waves off the aircraft (**primary radar**)
- **Secondary radar** receives additional information from the target's transponder
- Expensive to build and maintain
- Accuracy and efficiency affected by environmental factors such as rain and dust

ADS-B

- **Automatic** → «always on» – no operator attention required
- **Dependent** → relies on very accurate GNSS position data
- **Surveillance** → provides aircraft position, altitude, speed, heading, identification and other data
- **Broadcast** → does not require interrogation, or triggering by other stations – data broadcasted to any aircraft or ground station equipped to receive the data link signal

ADS-B



ADS-B

- **Requirement** for most aircraft in US and EU controlled airspace by **2020**
- **80%** of aircraft equipped
- Reach **250-400 km**
- Due to restriction of reach **global network** required
- Relies partly on sensors operated by commercial and government entities, and partly on rooftop and window receivers run by thousands of flight tracking enthusiasts across the globe (**bird watchers of the aviation age**)
- Helps airlines fly **more direct routes** at more efficient speeds and altitudes, give pilots better awareness of nearby aircraft → **safer flows of traffic** to the world's increasingly crowded skies

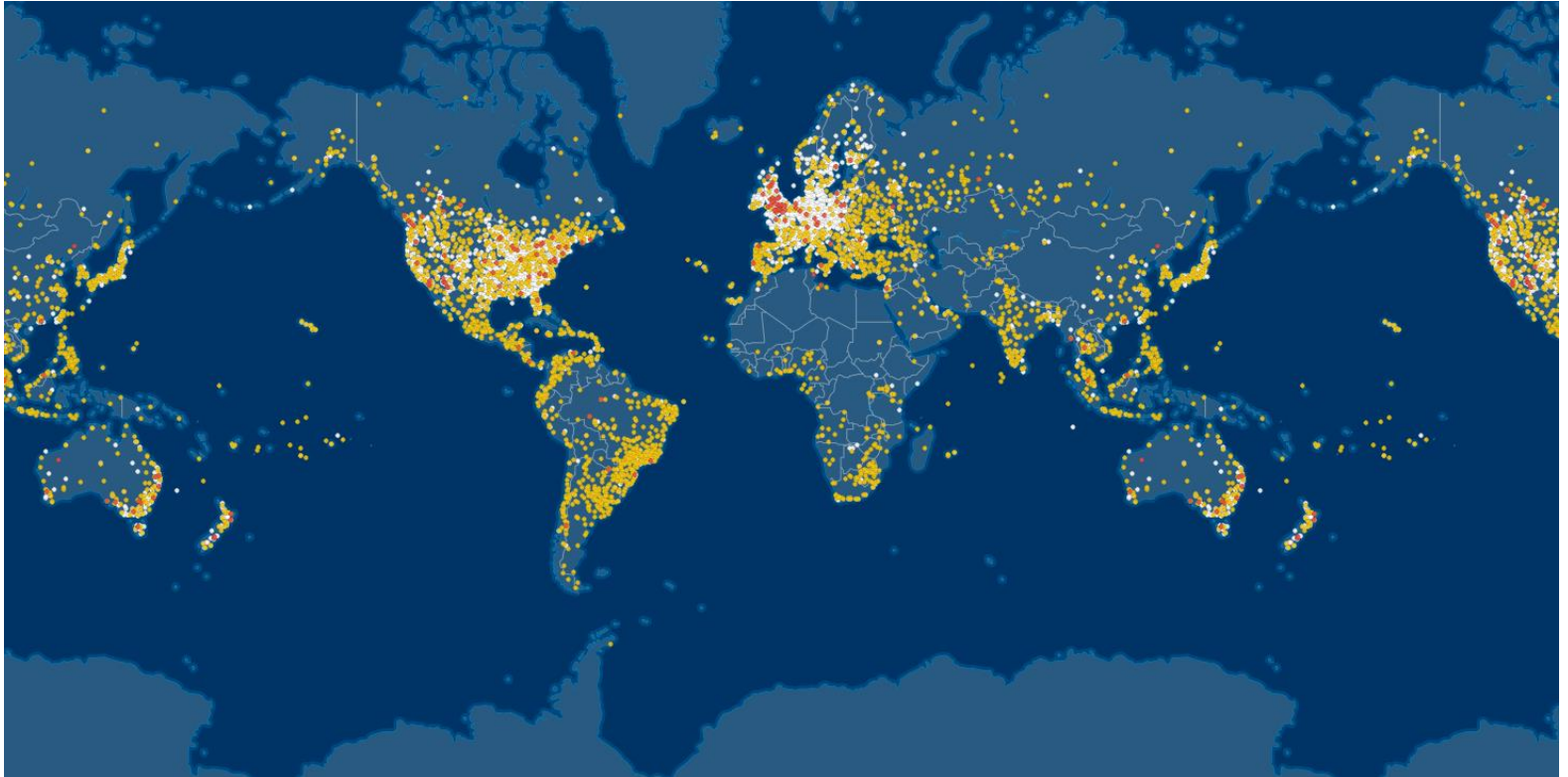
Flight Tracking Companies

- Rely on the global **network of hobbyists** with low-power, soda-can-sized ADS-B receivers (small computer, a GPS antenna and an ADS-B frequency antenna)
- Flightradar and FlightAware ADS-B data from over **20'000 aviation enthusiasts** (distribute between 75 and 100 at no cost to sites with limited or no ADS-B coverage/month)
- **Over 40 sources** in addition to ADS-B, including air traffic control systems in over 50 countries, airlines' operations systems and directly from airplane cockpits over datalink
- Together, the two companies' ADS-B systems span 90 countries across the globe, with over 125'000 square miles of coverage, or about **80% of the world's landmass**





However

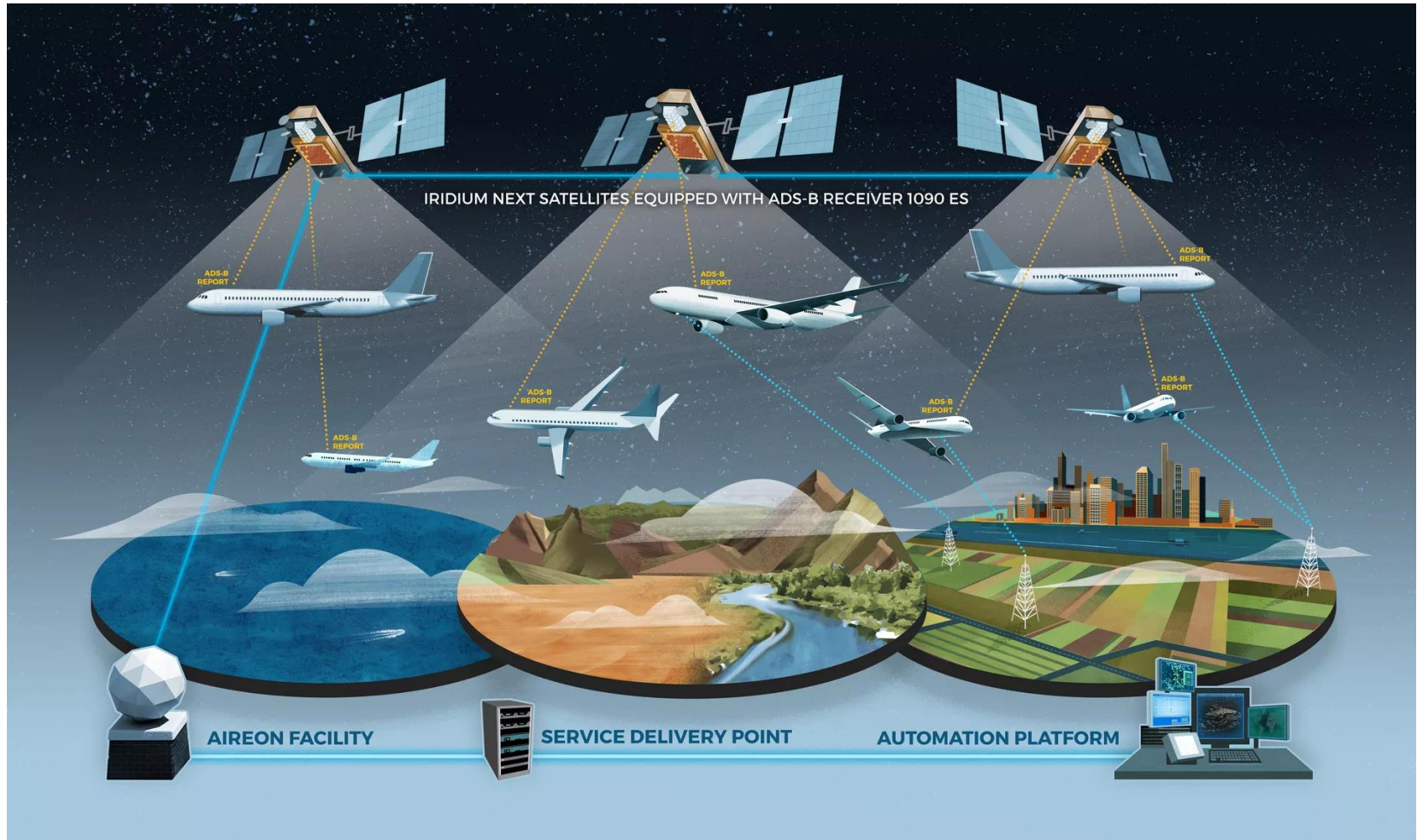


However

- Most of the planet is **water**, not land
- Companies rely on ground-based receivers
- Cover the remaining **71% of the planet's surface**, Flightradar has been experimenting with tiny **satellites** equipped with ADS-B receivers
- Separate waterborne trial was conducted by equipping a small autonomous boat with ADS-B receivers and a satellite uplink. The nicknamed “**floatradar**” boat can be remotely positioned to boost coverage in critical areas

Future: Space Based ADS-B

- ADS-B shares one problem with radar: both **line-of-sight technologies** – maximum range limited by horizon or obstacles
- Space Based ADS-B:
 - Eliminates line-of-sight problem via very simple **satellite link**
 - Proprietary **encoding** to satellite gateway link could be applied
 - **Accuracy** not affected by range, terrain or number of aircraft



Legal situation

- Privacy
- Commercial
- Security

Data Protection

- General Data Protection Regulation (**GDPR**)
- Regulation of the European Parliament and of the Council concerning the respect for private life and the protection of personal data in electronic communications (**ePrivacy**)

GDPR

- In force since 25. Mai 2018
- Strengthens rights of data subject

GDPR/Material Scope

- Art 2: Applies to the processing of personal data wholly or partly by automated means
- Art 4 (1): “personal data” means any information relating to an identified or identifiable natural person

GDPR/Material Scope

- **Absolute approach:**
 - Data personal as long as **any third party worldwide**
 - holds **identifying information**, which could be used to identify a person (regardless of the likelihood of attribution)
- **Relative approach:**
 - Identifying information must be **sufficiently accessible**

GDPR/Material Scope

- **European Court of Justice** ruled that dynamic IP addresses may constitute “personal data” even where only a third party (in this case an internet service provider) has the additional data necessary to identify the individual – **but only under certain circumstances:**
 - Possibility to combine the data with additional data must constitute a “**means likely reasonably to be used to identify**” the individual
 - Third party knowledge (**additional data**) needs to be considered but only to certain extent - identification of the data subject must be **legally and practically possible (without disproportionate effort** in terms of time, cost and man-power)
- ⇒ **Relative Approach**

In casu

- Commercial flights
 - Third party knowledge (additional data) not legally and practically accessible → **no identification**
- Business flights
 - Possibility to combine the data with additional data constitutes a “**means likely reasonably to be used to identify**”
 - Identification of the data subject can be **legally and practically** possible → **yes**

Territorial Scope

- Processing of personal data in the context of the activities of an **establishment** of a controller or a processor **in the Union**, regardless of whether the processing takes place in the Union or not
- Processing of personal data of **data subjects** who are **in the Union** by a controller or processor **not established in the Union**, where the processing activities are related to:
 - the **offering of goods or services**, irrespective of whether a payment of the data subject is required, to such data subjects in the Union; or
 - the **monitoring of the behaviour of the data subjects** as far as the behaviour takes place within the Union

In casu

- Flight tracking companies
 - Establishment
 - Offering of goods or services
 - Monitoring of their behaviour within the Union
- ⇒ **Yes**

Principles

- Personal data shall be:
 - processed **lawfully** and transparently
 - collected for specified and **legitimate purposes**
 - **necessary** in relation to the purposes for which they are processed
 - **accurate** and up to date
 - **no longer** than necessary
 - processed in a manner that ensures appropriate **security**

Lawfulness of processing

- Processing shall be lawful only if and to the extent that at least one of the following applies:
 - the data subject has **given consent** to the processing of his or her personal data for one or more specific purposes
 - processing is necessary in order to protect the **vital interests of the data subject** or of another natural person
 - processing is necessary for the performance of a task carried out in the **public interest** or in the exercise of official authority vested in the controller
 - processing is necessary for the purposes of the **legitimate interests** pursued by the controller or by a third party

Rights

- **Erasure** of personal data concerning him or her without undue delay and the controller shall have the obligation to erase personal data without **undue delay** where personal data have been **unlawfully processed**
- Any person who has suffered **material or non-material damage** as a result of an infringement of this Regulation shall have the right to receive **compensation** from the controller or processor for the damage suffered

Infringements and fines

- Infringements of basic principles or data subjects' rights are subject to administrative fines up to **20 mio EUR**, or in the case of an undertaking, up to **4 % of the total worldwide annual turnover** of the preceding financial year, whichever is higher

Conclusion GDPR

- Commercial flights not applicable
- Business flights applicable if flight data can be combined without disproportionate effort
- Territorial scope is given
- Violation of data processing principles
- No Consent

ePrivacy

- **Lex specialis** to GDPR (addressing data processing in general): Protection of privacy in electronic communications in general
- Harmonise the European laws on the **confidentiality of electronic communications** data including machine-to-machine communications, email and online marketing and the online tracking of individuals

ePrivacy/electronic communication

- Term "**electronic communication**" very broadly interpreted - in a technology-neutral way
- Include data to trace and identify the source and destination of a communication, **geographical location** and the date, time, duration and the type of communication
- Signals and related data conveyed by wire, radio, optical or electromagnetic means, including **satellite networks**, cable networks, fixed and mobile terrestrial networks, electricity cable systems,
- Data related to such signals considered as electronic communications **metadata**

ePrivacy/sensitive information

- **Metadata** derived from electronic communications may also reveal very **sensitive and personal information, inter alia geographical location**, allowing precise conclusions to be drawn regarding the **private lives** of the persons involved in the electronic communication, such as their social relationships, their habits and activities of everyday life, their interests, tastes etc.
- Electronic communications data may also reveal **information concerning legal entities**, such as **business secrets** or **other sensitive information** that has economic value → regulation should apply to natural and legal persons

ePrivacy

- Creation of **individual motion profiles** using tracking methods should be prohibited without corresponding **consent**
- Providers of communications services should be required to **protect user communication** from unauthorized access according to the latest state of the art to secure technology, in particular to encrypt it
- Any **interference** with the transmission of electronic communications data without the consent of all the communicating parties should be **prohibited**

Conclusion ePrivacy

- Flight tracking services = electronic communication
 - ePrivacy Regulation most probably will apply to the flight tracking services
 - Consent and protection required
- ⇒ **Game changer for the industry**

Countermeasures

- **Voluntary adherence** to industry block lists (FlightAware and Flightradar)
- *“does not remove information from the service platforms unless a subpoena or court order valid in our jurisdiction is received requiring us to do so”*
- Lodge a **notification/complaint** with the competent supervisory authority
- Initiate **court proceedings**

Summary

- Flight Tracking Sites rely on «Birdwatchers» and ADS-B technology
- GDPR
 - Commercial Aviation → no
 - Business Aviation → yes
- ePrivacy = Game Changer
- Space Based ADS-B

Thank you for your attention!

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