



Data collection/Technical analysis

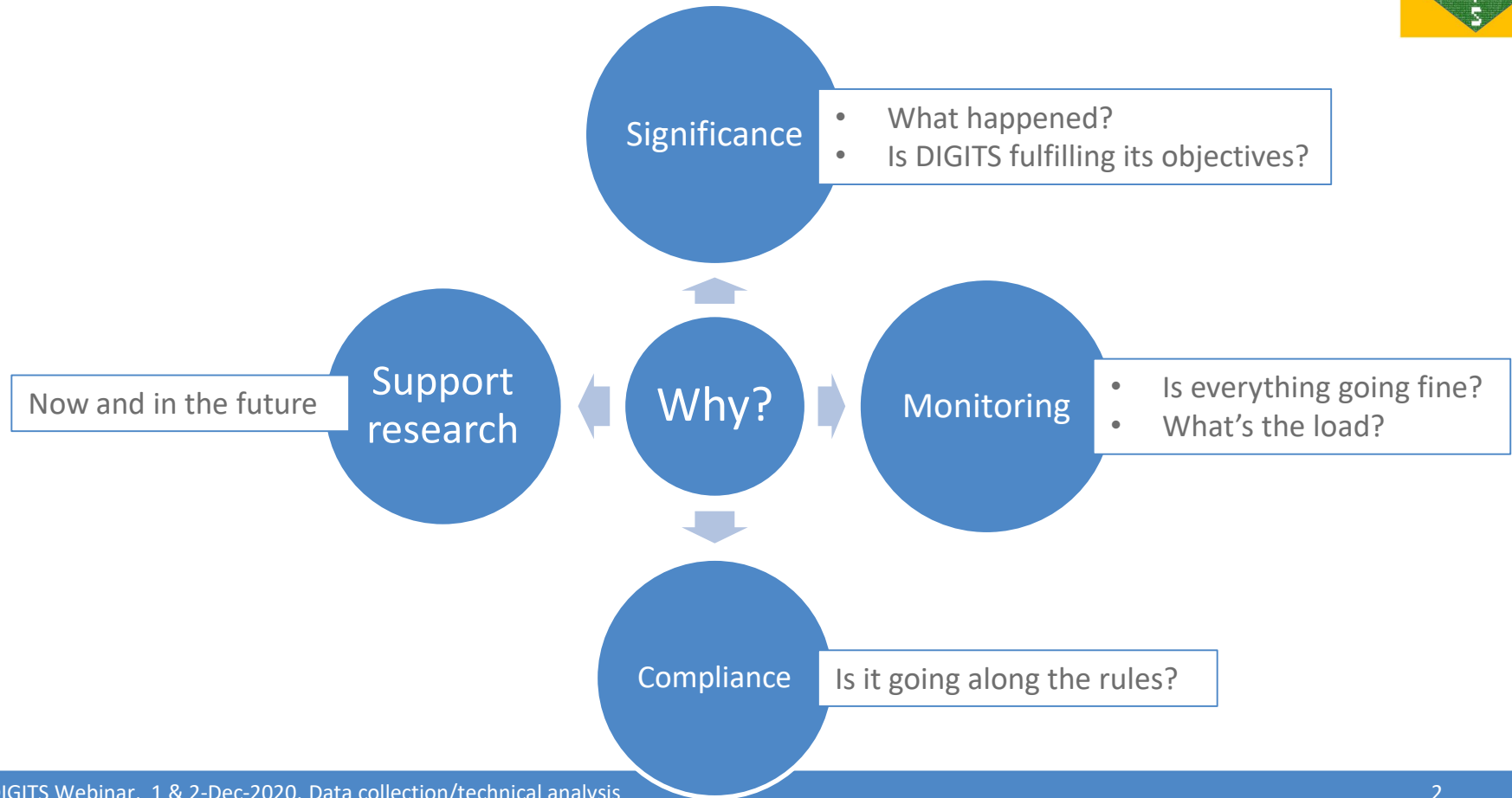
Jean Boucquey
Senior ATM Systems Expert
EUROCONTROL
DIGITS Webinar 1st Dec 2020



founding members



Data collection/Technical analysis



DIGITS in numbers

(as of 30-Sep-2020 / DEMOR V2)



- 82 Aircraft
- 52704 flights (Source NM)
- Average duration 2h14
- 258 airports visited

Operational domain:

- 8898 logons
- 8174 ADS-C Dialogues
- 137000 ADS-C Reports

Test domain:

- 19938 logons to TESTEDGG

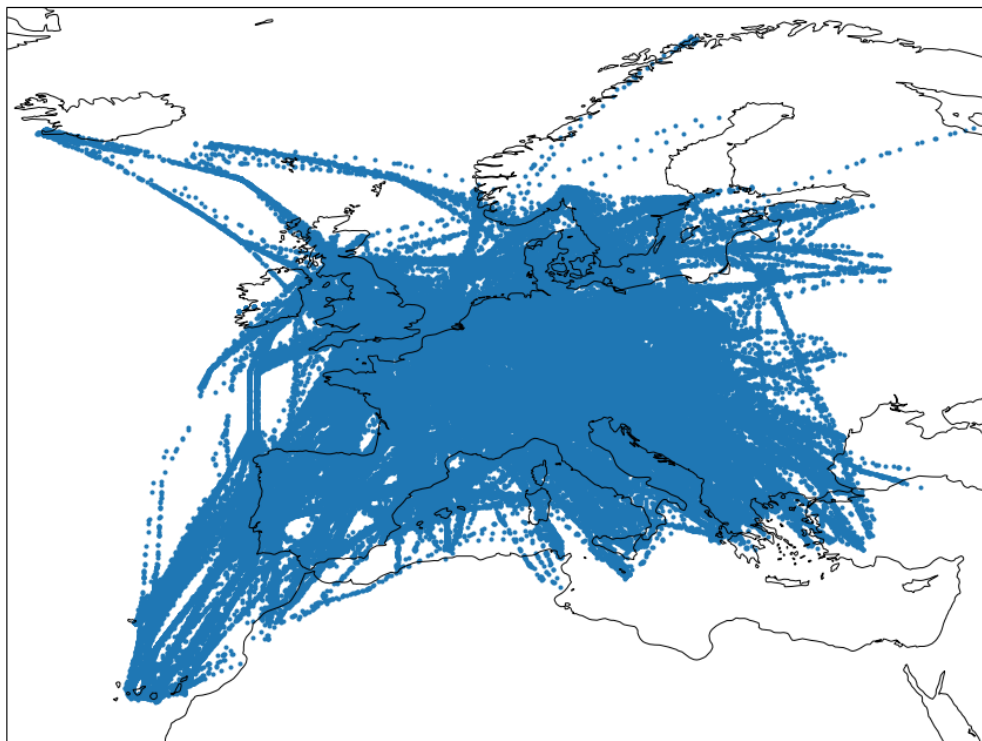
Partner	# Dialogues	# Reports
DFS	7757	122535
EEC	15707	794168
ENAV	2914	65808
NATS	4966	139268

DIGITS in numbers

(as of 30-Sep-2020 / DEMOR V2)



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ports

535

168

08

NATS

4966

139268

DIGITS in numbers

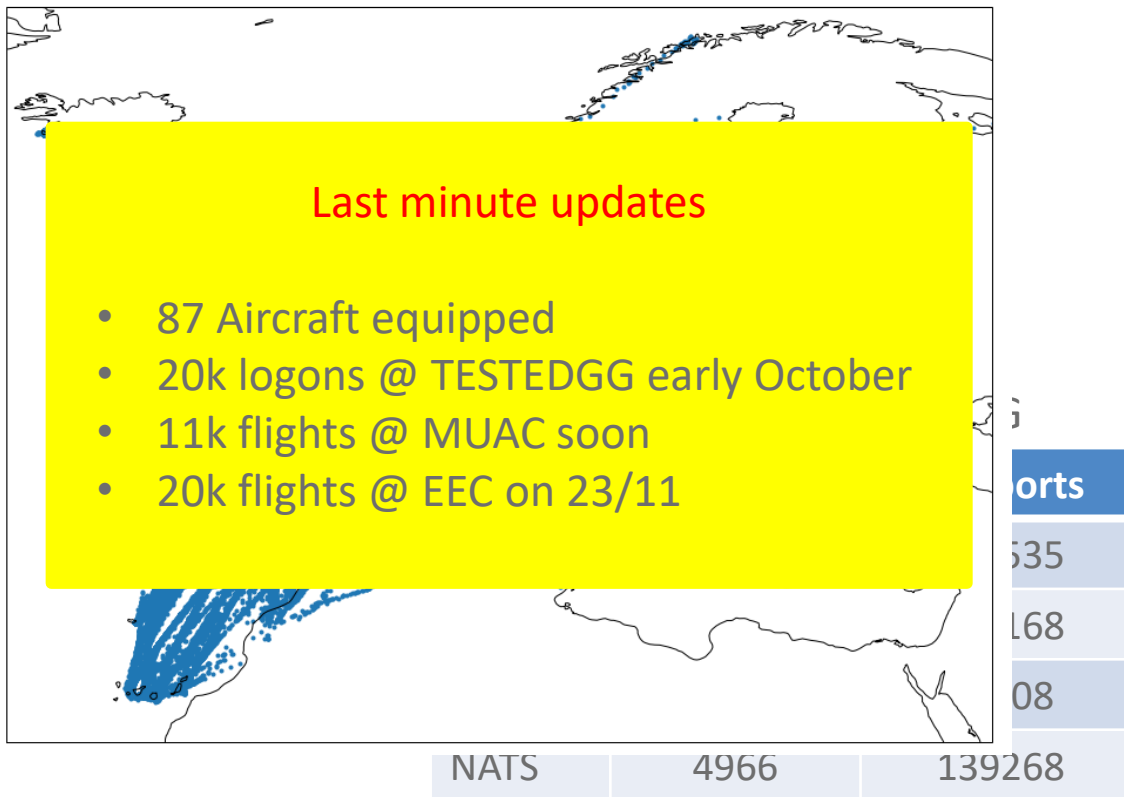
(as of 30-Sep-2020 / DEMOR V2)



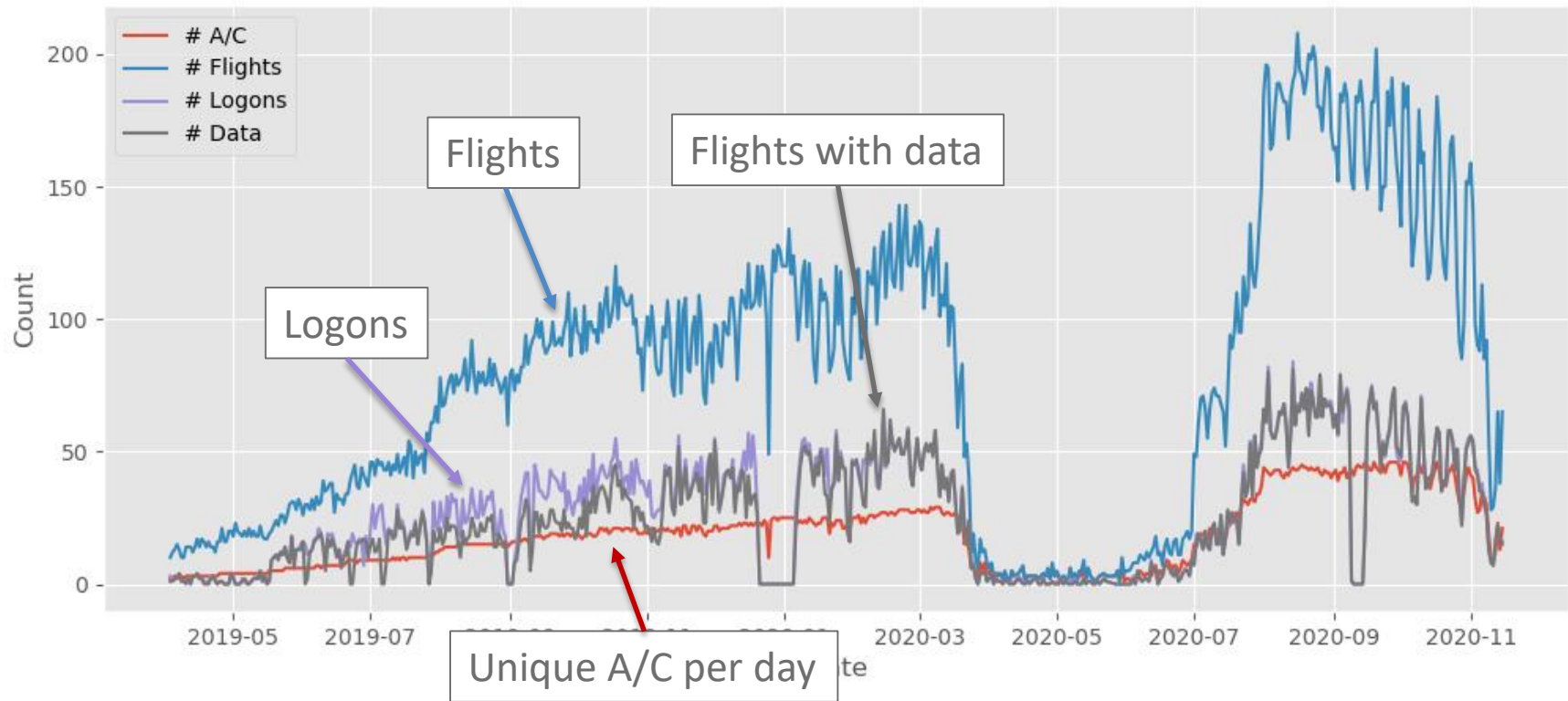
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Last minute updates

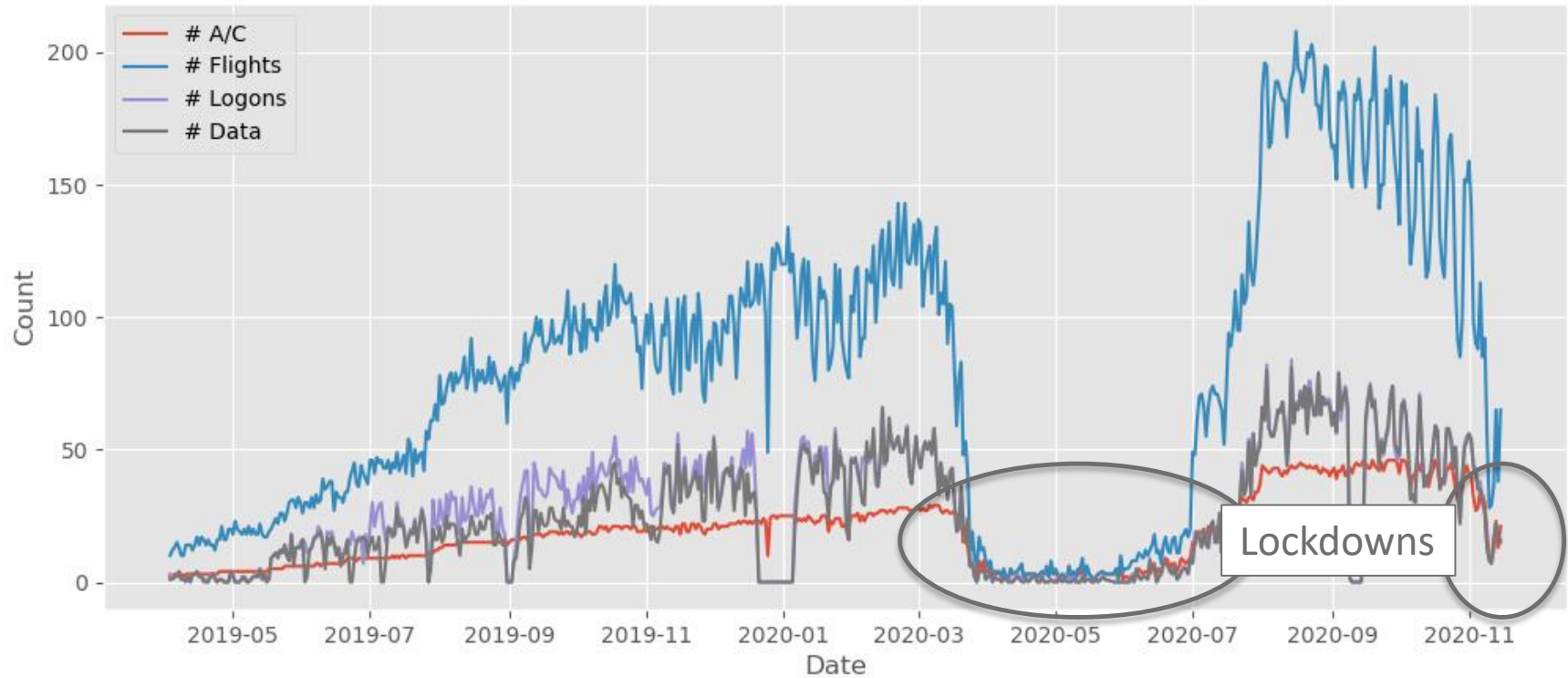
- 87 Aircraft equipped
- 20k logons @ TESTEDGG early October
- 11k flights @ MUAC soon
- 20k flights @ EEC on 23/11



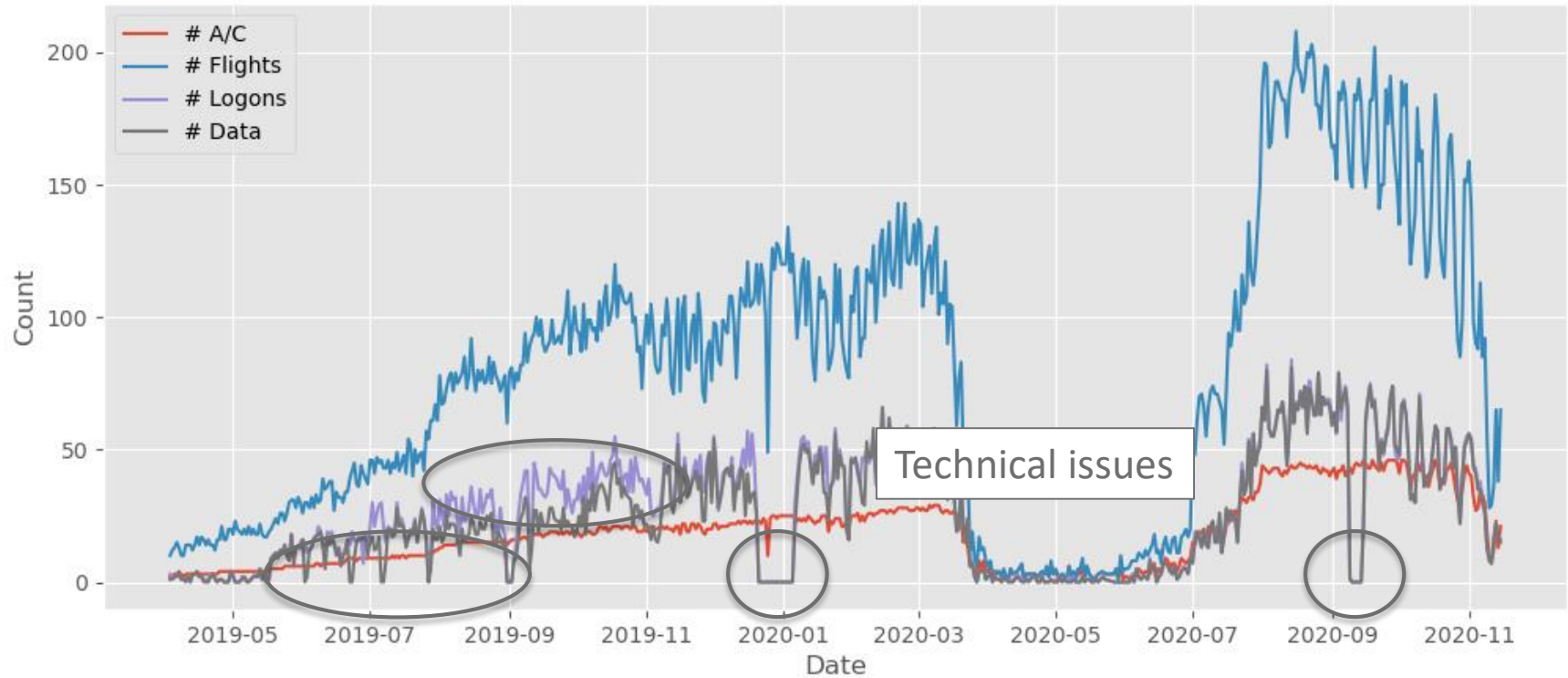
Data collection



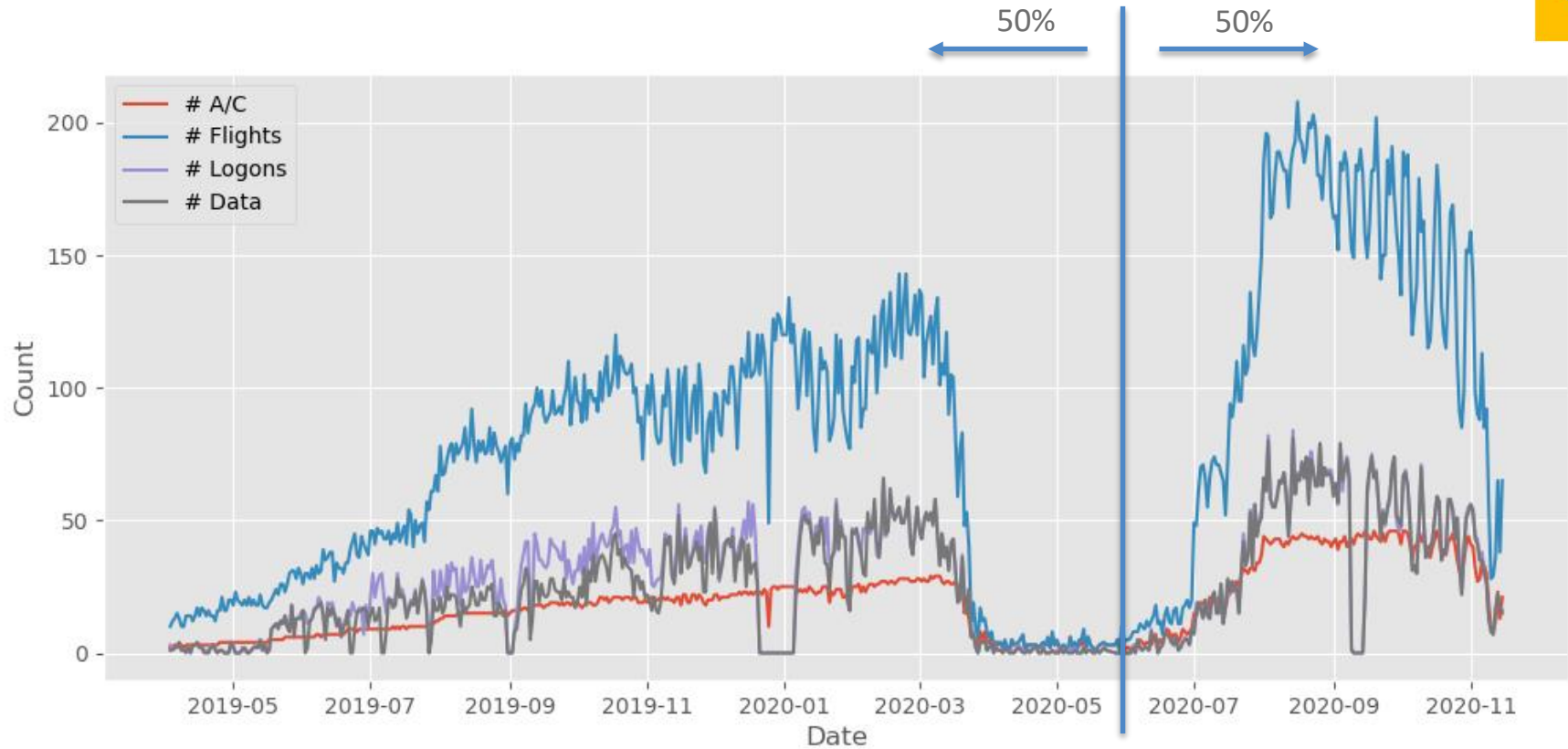
Data collection



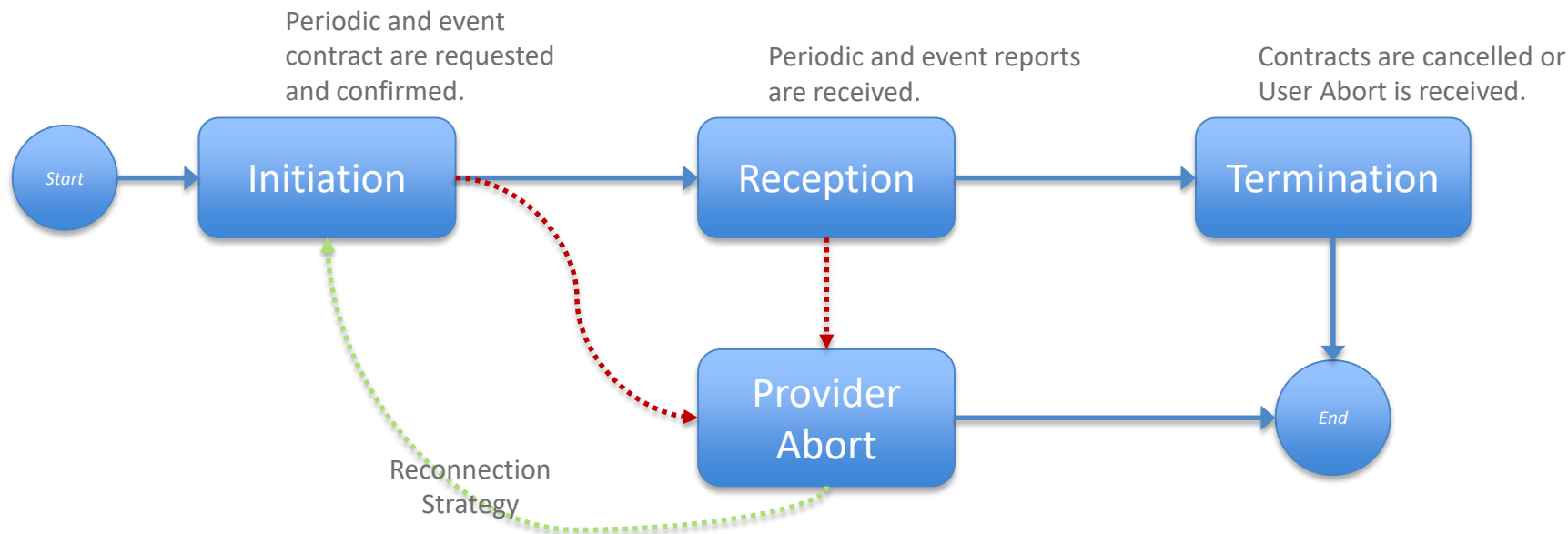
Data collection



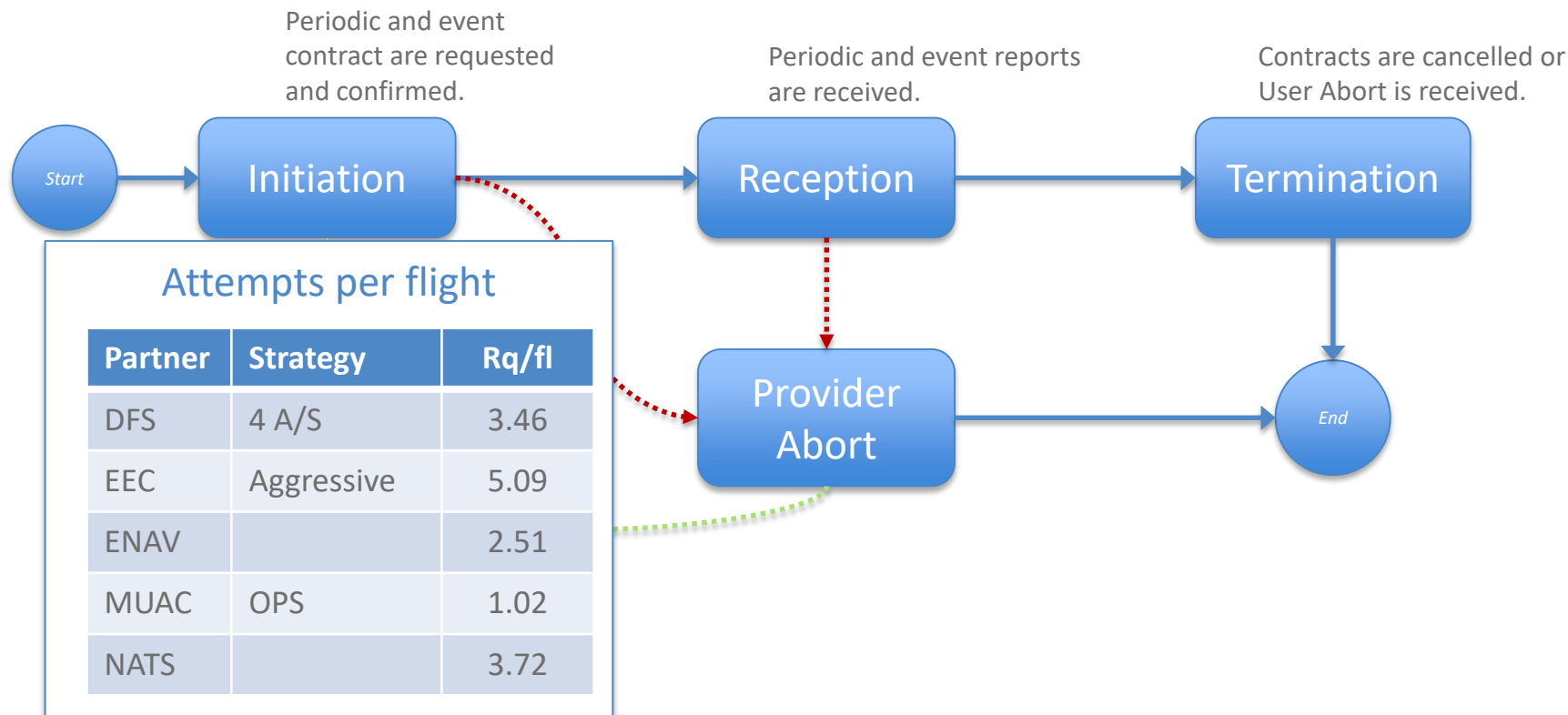
Data collection



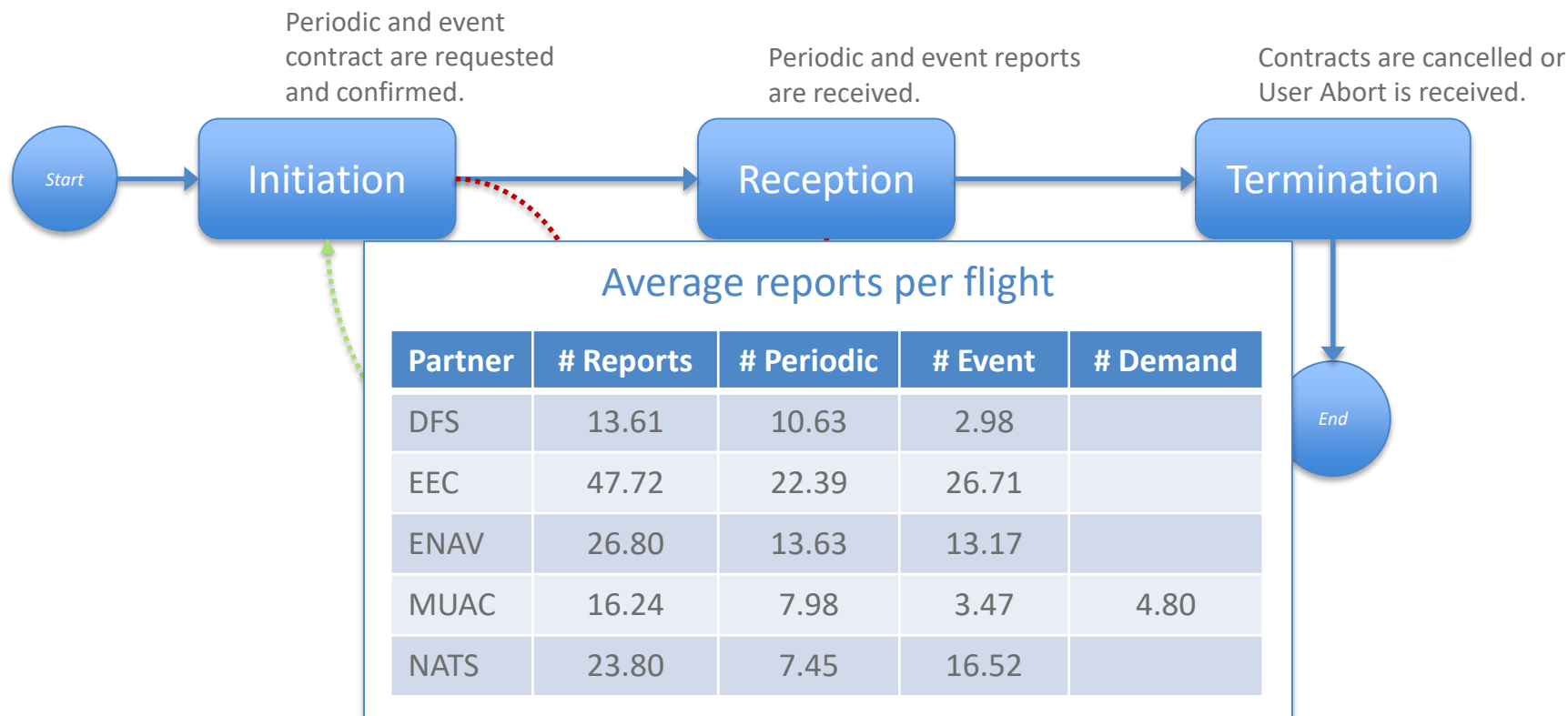
ADS-C Dialogues



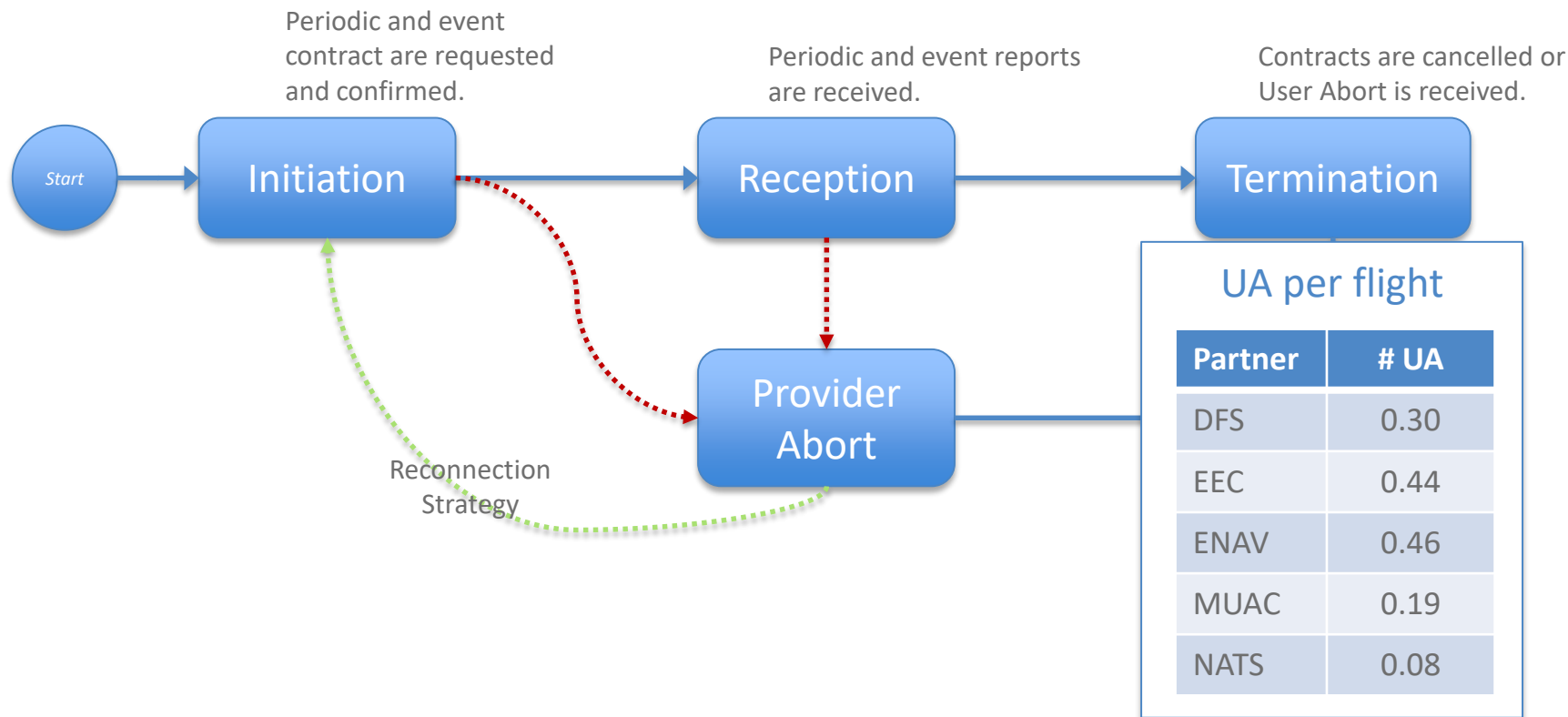
ADS-C Dialogues



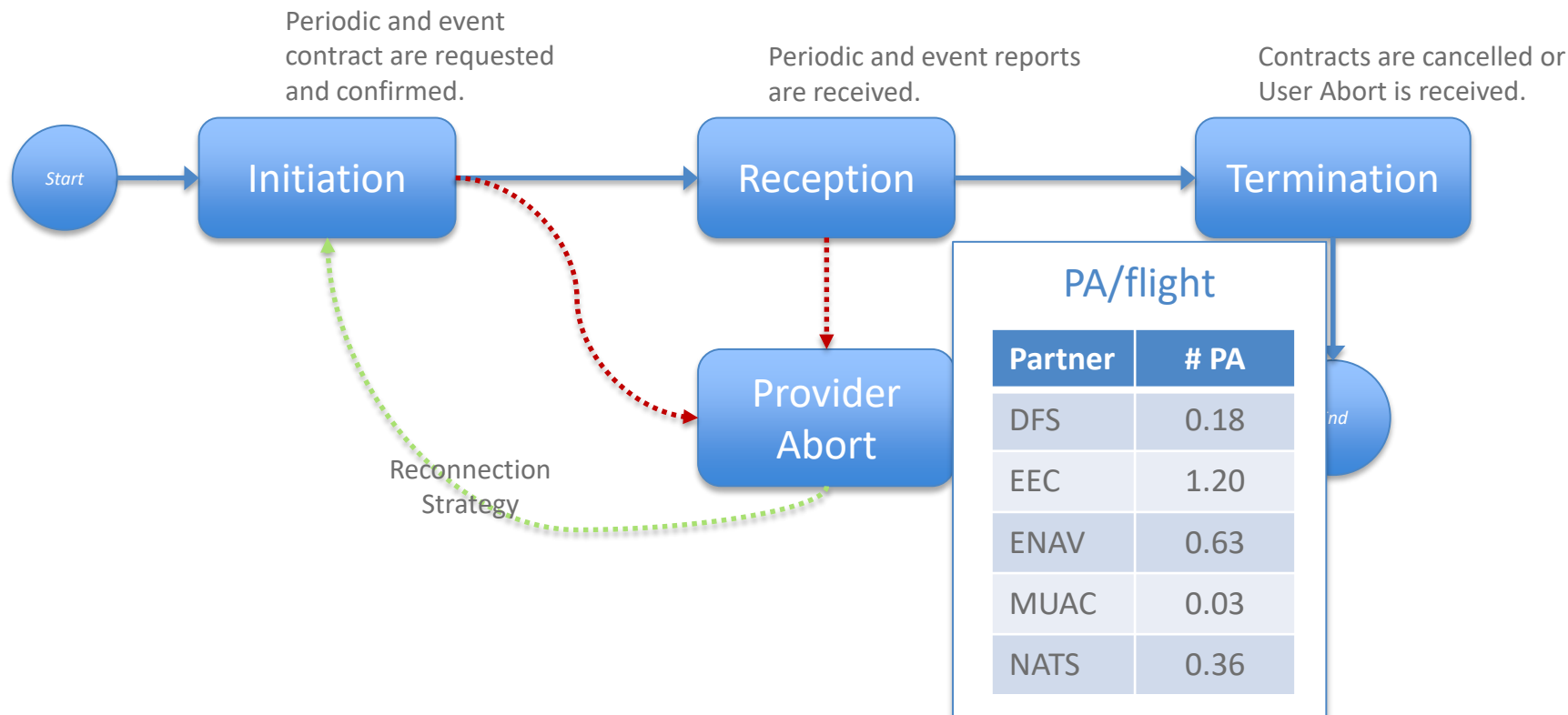
ADS-C Dialogues



ADS-C Dialogues



ADS-C Dialogues





Bandwidth usage & transmission times

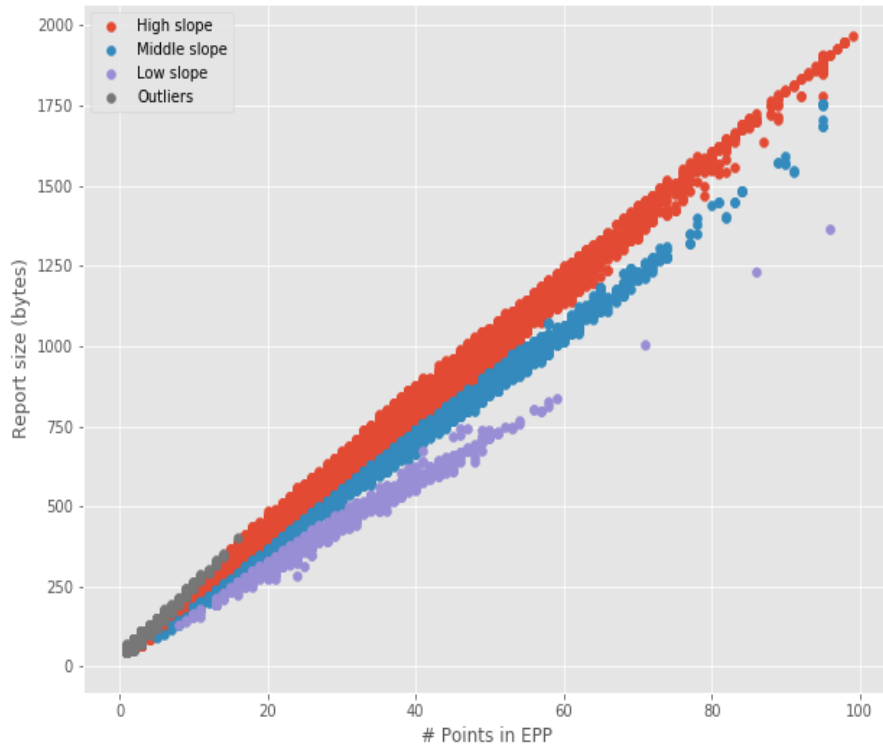
Report size

- Periodic:
average 527 bytes (stdev 223 bytes)
- Event flight-plan-change
average 440 bytes (stdev 225 bytes)
- Event waypoint-change
average 66 bytes (stdev 8 bytes)
- Function of the contract definition.
- Main contributor: EPP
 - 21 bytes per EPP point

Bandwidth usage & transmission times



Periodic report size in function of EPP length





Bandwidth usage & transmission times

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Transmission times

- 95% of the time
 - Average: 2.68s
 - Maximum: 7.64s
- Longer transition times linked to reconnections.

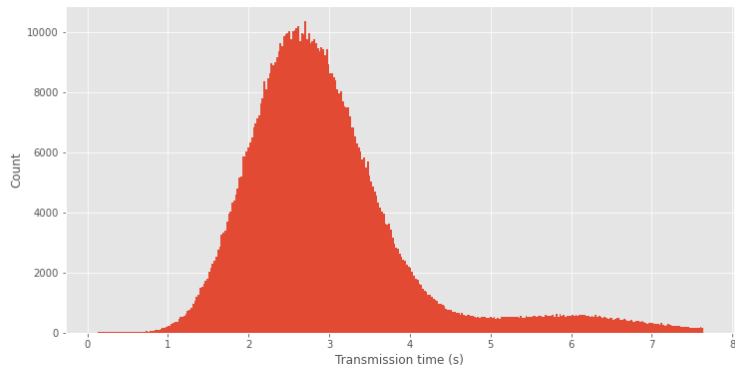


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Transmission times



Compliance



- ATS-B2 V1 Rev.A standard implementation
 - ADS-C Reports compliant to requests and to standards
 - Few non compliances found (ADS-Reject, List of connected ATSU...)
- Ground issues
 - VGS issue (completely solved early 2020)
 - Several issues with the ground systems (solved)
 - Some of these issues were related to the size of the PDUs
- Airborne issues
 - Several anomalies detected in airborne implementations
 - Most will be fixed in next update.

Takeaways...



- Data collection is required to monitor the infrastructure, to prove its compliance and to support the development of ground tools using ADS-C data.
- Despite technical issues, Pj31 DIGITS succeeded in performing a significant number of flights covering all Europe.
- A large amount of ADS-C data has been collected during the demonstration.
- While many analyses have been conducted in DIGITS, many additional analyses can be (or should be) carried: the collected data is central to support further research.

AIRFRANCE

BRITISH AIRWAYS

easyJet

IBERIA

novair

WIZZ

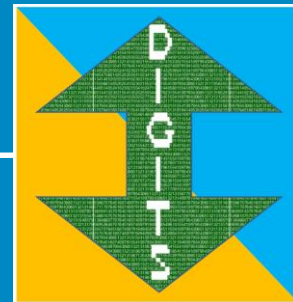
Airlines

AIRBUS

Honeywell

THALES

Airborne
Industry



Thank you very much for your attention!

ANSPs

AIRTEL^{ATN}

indra

LEONARDO

Ground
Industry

DFS Deutsche Flugsicherung

ENAV

EUROCONTROL

NATS

LFV
AIR NAVIGATION SERVICES
OF SWEDEN

NAVIAIR



founding members

