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## 2. Traffic Data Summary



Traffic Data Summary	2017 Mean Value	Max Value	Min Value
Number of connected flights (Monthly average)	1217	1548 [Dec]	1040 [Feb]
Percentage referred to total number of flights in the EUR/SAM Corridor (Canarias reference)	53.73%	58.34% [Oct]	46.43% [Jan]
Percentage referred to flights in the EUR/SAM Corridor indicating data link and ADS-C capacity in the Flight Plan	94.53%	99.84% [Mar]	91.87% [May]
Number of different aircraft (aircraft registration) connecting to ENAIRE FANS Ground System (Monthly average)	295	343 [Dec]	256 [Feb]

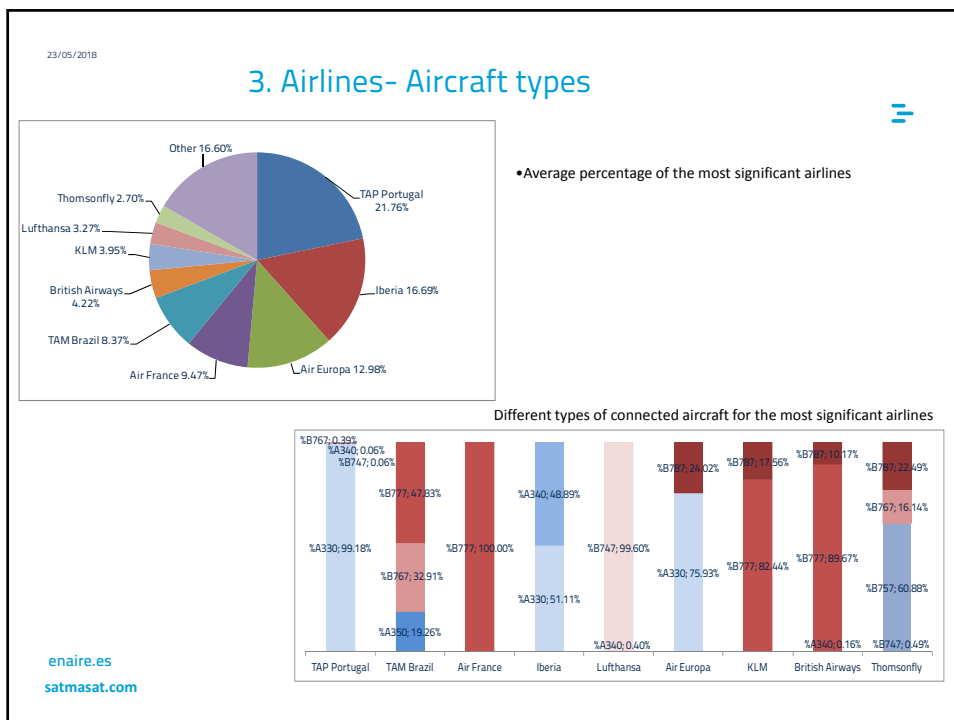
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## Summary of analyzed traffic

Month	Number of connected flights	Percentage referred to total number of flights in the EUR/SAM Corridor	Percentage referred to flights in the EUR/SAM Corridor indicating data link and ADS-C capacity in the Flight Plan	Number of different aircraft (aircraft registration) connecting to ENAIRE FANS Ground System
Jan 2017	1086	46.43%	93.14%	268
Feb 2017	1040	49.31%	99.52%	256
Mar 2017	1260	53.57%	99.84%	292
Apr 2017	1146	50.55%	94.09%	278
May 2017	1119	56.06%	91.87%	281
Jun 2017	1244	55.76%	94.10%	301
Jul 2017	1313	54.71%	95.42%	300
Aug 2017	1268	52.83%	93.20%	335
Sep 2017	1257	55.87%	94.23%	311
Oct 2017	1437	58.34%	94.66%	325
Nov 2017	1426	54.68%	95.83%	342
Dec 2017	1548	55.86%	95.03%	343
<b>Average (2017 Mean Value)</b>	1217	53.73%	94.53%	295
<b>Average (2016 Mean Value<sup>3</sup>)</b>	1080	51.65%	89.90%	301



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### 3. Airlines- Aircraft types

As it is shown, airlines with the highest number of connections in the EUR/SAM Corridor are

**TAP Portugal** :monthly percentage **19% to 24%**  
**Iberia** :monthly percentage **13% to 19%**  
**Air Europa**:monthly percentage **10% to 16%**

These three airlines comprise around **50%** of total connected flights.

**Air France** :between **8% and 12%**  
**TAM Brazil** :between **7% and 11%**  
**British Airways** :between **2% and 5%**  
**KLM** :between **3% and 5%**  
**Lufthansa** :between **1.5% and 4.5%**  
**Thomsonfly** :between **1.5% and 4.5%**

Adding these six airlines to the previous three ones, they comprise around **83%** out of the total connected flights.

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### 3. Downlink DELAYS (AFN,CPDLC,ADS-C)

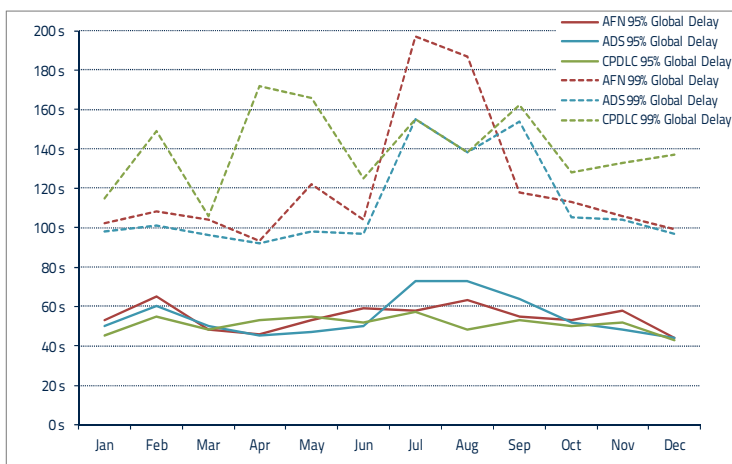


Month	Downlink messages delay (seconds)	
	95% of delays	99% of delays
Jan 2017	less than 40 s	less than 100 s
Feb 2017	less than 60 s	less than 109 s
Mar 2017	less than 49 s	less than 98 s
Apr 2017	less than 47 s	less than 96 s
May 2017	less than 49 s	less than 105 s
Jun 2017	less than 51 s	less than 102 s
Jul 2017	less than 70 s	less than 156 s
Aug 2017	less than 68 s	less than 141 s
Sep 2017	less than 61 s	less than 151 s
Oct 2017	less than 52 s	less than 108 s
Nov 2017	less than 50 s	less than 107 s
Dec 2017	less than 44 s	less than 100 s

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## Messages FOM



FOM cumulative percentages (2017)

FOM Figure	Annual cumulative percentage
FOM = 7 (Error < 0,05 NM)	16.67%
FOM ≥ 6 (Error < 0,25 NM)	99.96%
FOM ≥ 5 (Error < 1 NM)	99.96%
FOM ≥ 4 (Error < 4 NM)	99.96%
FOM ≥ 3 (Error < 8 NM)	99.99%
FOM ≥ 2 (Error < 15 NM)	99.99%
FOM ≥ 1 (Error < 30 NM)	99.99%
FOM ≥ 0	100.00%

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## ADS-C Contracts



In the Canaries FIR, initial ADS-C contracts are automatically set with every logged-on aircraft. These initial contracts consist of a **15 minute** periodic contract, requesting the transmission of flight identification, predicted route, earth reference and air reference with every periodic report, and an event contract including vertical rate change, altitude range, waypoint change and lateral deviation events, the latter with a 5 nautical mile threshold.

After the initial contract, new periodic or event contracts are subsequently requested, as it is shown in Table 4. Demand contracts are also requested.

Initial contracts (monthly average)	Non initial contracts (monthly average)		
	Periodic	Event	Demand
1265	609	3659	116

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## CPDLC messages. UPLINK

Month	Most frequently used UL message elements (percentage referred to total)				
	CONTACT [icaounitname] [frequency]	[freetext]	NEXT DATA AUTHORITY [icaofacilitydesignation]	SQUAWK [beaconcode]	END SERVICE
Jan 2017	20.77%	20.55%	8.30%	16.94%	10.65%
Feb 2017	21.34%	21.34%	2.52%	17.64%	12.40%
Mar 2017	21.19%	19.77%	9.29%	16.27%	9.45%
Apr 2017	19.42%	21.09%	11.90%	12.34%	11.54%
May 2017	21.36%	21.31%	12.52%	10.39%	11.81%
Jun 2017	22.44%	19.80%	10.66%	14.90%	11.31%
Jul 2017	22.88%	19.58%	11.63%	13.69%	11.70%
Aug 2017	21.07%	21.05%	12.55%	11.47%	12.26%
Sept 2017	21.07%	20.88%	11.85%	11.53%	11.74%
Oct 2017	21.39%	20.59%	13.22%	10.48%	13.55%
Nov 2017	20.21%	18.39%	19.75%	12.13%	10.70%
Dec 2017	19.41%	17.13%	22.19%	11.26%	11.09%

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## CPDLC messages. DOWNLINK

Month	Most frequently used DL message elements (percentage referred to total)			
	WILCO	ROGER	[freetext]	POSITION REPORT [positionreport]
Jan 2017	51.92%	14.03%	9.13%	7.45%
Feb 2017	52.73%	13.07%	8.02%	8.38%
Mar 2017	53.90%	12.14%	8.20%	7.19%
Apr 2017	53.18%	13.26%	9.43%	7.11%
May 2017	56.70%	13.56%	9.29%	5.75%
Jun 2017	57.93%	13.00%	7.81%	6.50%
Jul 2017	57.06%	12.87%	9.06%	6.57%
Aug 2017	55.79%	13.82%	8.89%	7.14%
Sept 2017	55.08%	12.43%	9.21%	7.21%
Oct 2017	57.46%	12.87%	9.31%	7.21%
Nov 2017	55.80%	12.09%	10.05%	8.42%
Dec 2017	56.86%	10.41%	9.15%	8.47%

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## CPDLC Global messages

Type	Message element	Percentage referred to total		
		2017 Mean Value	Max Value	Min Value
UPLINK	CONTACT [icaounitname] [frequency]	20.96%	22.88% [Jul]	19.41% [Dec]
	[freetext]	19.94%	21.34% [Feb]	17.13% [Dec]
	NEXT DATA AUTHORITY [icaofacilitydesignation]	13.06%	22.19% [Dec]	2.52% [Feb]
	SQUAWK [beaconcode]	12.96%	17.64% [Feb]	10.39% [May]
	END SERVICE	11.52%	13.55% [Oct]	9.45% [Mar]
DOWNLINK	WILCO	55.46%	57.93% [Jun]	51.92% [Jan]
	ROGER	12.70%	14.03% [Jan]	10.41% [Dec]
	[freetext]	9.00%	10.05% [Nov]	7.81% [Jun]
	POSITION REPORT [positionreport]	7.35%	8.47% [Dec]	5.75% [May]

•The most frequent **uplink** message elements, apart from the "freetext" element and the SQUAWK message, are the "contact message" (uM117) and those related to the CPDLC communications transfer ("NEXT DATA AUTHORITY [icaofacilitydesignation]" and "END SERVICE").

•For **downlink** elements, the most common ones are the responses "WILCO" and "ROGER", followed by the "freetext" element; the "Position Report" message is also usually transmitted.

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## Monitoring activities for PBCS (ADS-C/CPDLC)

No reports from involved SAT states or airlines have been received with regard to operational (operative) or technical or related to FANS interoperability issues detected during the analysed period.

As a reminder, Figure 7 shows FANS/CFRA Notification Form to be filled and forwarded to SATMA-CFRA in case of detection of any potential problem

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1. Reporting Date:		2. Reporting Unit:	
3. Operator Name:	4. Call Sign:	5. Aircraft Type:	6. FANS EQUIPE
7. Date of Occurrence:	8. Time UTC:	9. Occurrence Position	
15. Description and Action Followed:			
CLASSIFICATION			
1. Log-On received from aircraft not flying your airspace 2. A/C Log-On with incorrect flight identification 3. Log-On from Aircraft not declaring ADS-C capacity in FP 4. Unknown ADS-C messages are received. 5. A/Cs remain ADS-C connected after exiting airspace 6. A/Cs remain ADS-C connected after landing 7. Different reports in the same ADS-C message. 8. Identical reports of Waypoint Change received in an ADS-C message 9. CPDLC Message: "Not Current Data Authority" 10. Incorrect downlink CPDLC messages have been received: 11. Other (describe): _____			
Crew/Controller comments (if any)			

When complete please forward the report(s) to: South Atlantic Monitoring Agency (SATMA-CFRA)  
E-Mail: [satma@aena.es](mailto:satma@aena.es)

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## Conclusions



From the analysis of 2017 data, it can be concluded that:

- Almost 54% of the EUR/SAM Corridor flights (Canarias area) connect to ENAIRE FANS Ground System (almost 95% of flights notifying FANS equipage in its flight plan connect to ENAIRE FANS Ground System). It represents an increase from 2016.

- Regarding ADS-C:

- Initial ADS-C contracts are currently established consisting of a 15 minute periodic contract, requesting the transmission of flight identification, predicted route, earth reference and air reference with every periodic report, and an event contract including vertical rate change, altitude range, waypoint change and lateral deviation events, (the latter with a 5 nautical mile threshold).

- Position accuracy notified in ADS-C reports is not worse than 0.25 NM 99.98% of the times (i.e. 99.98% of the times FOM 6 or 7 is notified, being FOM 6 the most common value).

- Regarding CPDLC message elements used:

- For **uplink** messages, those message elements related to the process of CPDLC communications transfer (NEXT DATA AUTHORITY and END SERVICE) are among the most used by controllers, representing a percentage of about 25% of the total. Along with the CONTACT message these three represent a percentage around 46% of the total. Apart from them, the normal priority free text is also a frequently used element.

- For **downlink** elements, response message elements WILCO and ROGER represent almost 70% of the received message elements.

**Downlink messages delay, on average 95% of the calculated delays are usually not greater than 60 seconds whilst 99% of calculated delays are usually well below 180 seconds (RCP180)**

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Thank you



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