Network Manager Directorate

EUROCONTROL

EAD 2016 Annual Report

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1 Introduction

In accordance with the EC Regulation 1035/2011, Annex 1 part 8.1 Air navigation service providers shall be able to provide an annual report of their activities to the relevant competent authority.

That annual report shall cover their financial results without prejudice to Article 12 of Regulation (EC) No 550/2004, as well as their operational performance and any other significant activities and developments in particular in the area of safety.

The annual report shall include as a minimum:

(a) an assessment of the level of performance of air navigation services generated;

(b) the performance of the air navigation service provider compared to the performance targets established in the business plan referred to in point 2.2.1, reconciling actual performance against the annual plan by using the indicators of performance established in the annual plan;

(c) provide an explanation for differences with the targets, and identify measures for closing any gaps during the reference period referred to in Article 11 of Regulation (EC) No 549/2004;

(d) developments in operations and infrastructure;

(e) the financial results, as long as they are not published separately in accordance with Article 12(1) of Regulation (EC) No 550/2004;

(f) information about the formal consultation process with the users of its services;

(g) information about the human resources policy.

Air navigation service providers shall make the content of the annual report available to the Commission and the Agency on request and to the public under the conditions set by the competent authority in accordance with national law.

2 Service Description & Organisation

2.1 Description

The EAD is a service system and provided in accordance with Decision N° 83 of 13 July 2000 of the EUROCONTROL Permanent Commission which entrusts EUROCONTROL with the task of developing, establishing and operating a European AIS Database (“EAD”).

The operational Services include:

- Static Data Operations;
- International NOTAM Operations;
- INO Briefing Facility;
- Published AIP Management System.

Additionally, the following services are also offered:

- Electronic AIP production;
- Chart production;
- Workflow Management Tool.

The service entered into operations in June 2003 and is provided in accordance with the Decision of the Permanent Commission N°101 on the rules governing the provision of Aeronautical Information Services to and by EUROCONTROL for the operation of the European AIS Database service.

The EAD service relies on its own infrastructure which includes two duplicated IT sites, two Operations Centres with helpdesk functions. It was initially conceived to support AIS data management (ICAO Annex15) and distribution covering the whole data set of Europe and the worldwide “Minimum Data Set” which corresponds to the data needed for operational purpose.

2.1 Organisation

EUROCONTROL is, on behalf of its member States, the owner and sponsor of EAD and ensures that the service is provided in accordance with the service level and performance requirements.

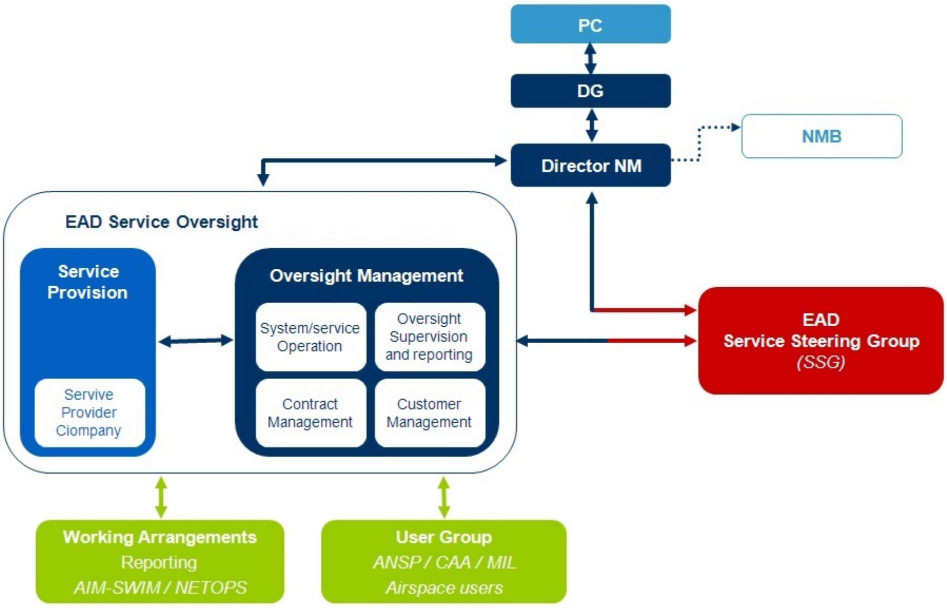
The provision of the EAD service for IT, data operations, and training is outsourced to external service providers (Industry Partners).

ANSP/AISP are involved in the supervision of the EAD services through the EAD Service Steering Group (SSG), reporting to the Director Network Manager, with a view to maintain commitment from stakeholders and encourage the use of a standardised approach to the exchange of Aeronautical Information and related data. The EAD Service Steering Group (SSG) is therefore predominantly a service and business oriented group with the aim of providing high-level guidance on all the elements in support of the EAD being an integrated, harmonized and interoperable solution for use of safe, secured and high quality aeronautical information.

Network Management Directorate (NMD) ensures the distribution/coordination of the information about the EAD service status and evolution received from both the EAD oversight management and EAD SSG to NM Board, Director General, and Provisional Council.

EAD is managed by the European Aeronautical Information Management (EAIM) unit that is responsible for:

- Oversight of the Service provision and related contracts in order to ensure a continuous quality of the delivered service;
- Management of the evolution of the EAD system and service,
- Stakeholders’ management in order to support the migration of data providers and data users to the EAD.



EAD Model – oversight by EUROCONTROL/NMD

3 Scope

This Annual Report describes the activities carried out in 2016 by EAD as a system, which entails:

- EUROCONTROL/NS/EAIM as the system and service manager;
- The operations carried out by the data operations and training services provider;
- The operations carried out by the IT service centre and application maintenance provider.

These activities are linked to the following business objectives described in the Agency Work Programme:

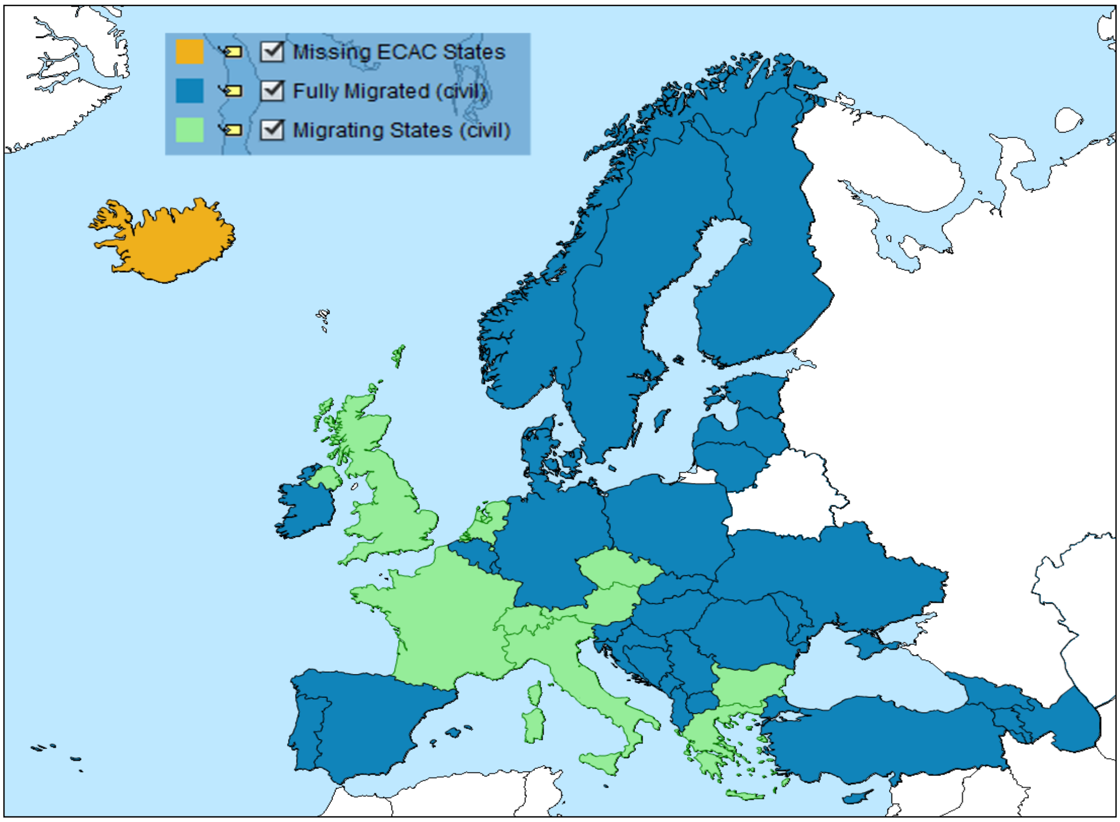
- Airspace / AIS Information Management Service Provision;
- Airspace / AIS Information Management Development;
- European ATM Information Management Service.

4 Customer perspective

4.1 Status of Data Providers

4.1.1 ECAC Region

The map below shows the connection status of ECAC States to EAD:



9 ECAC States (in green) are considered as partially migrated because not using all services of EAD. One State, i.e. Iceland, is not migrated.

For partially migrated States, initiatives or projects have been started for the following States:

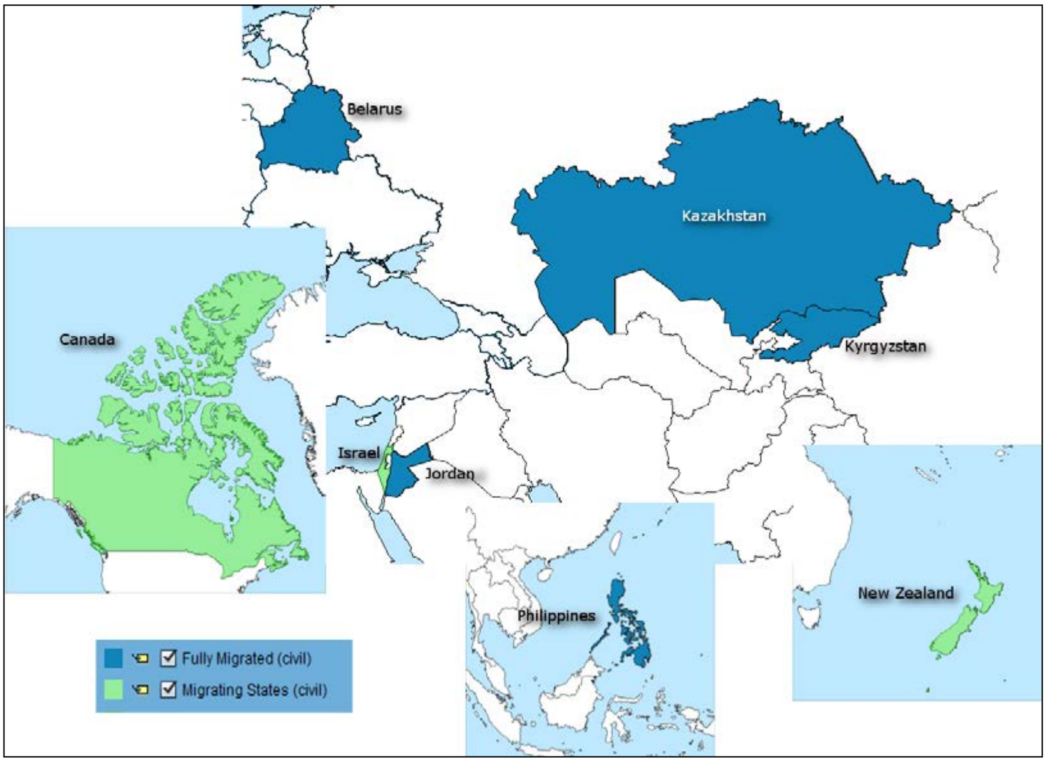
- Austria: AUSTROCONTROL will fully migrate to the EAD Flight Planning Facility. The project is ongoing in order to achieve a cutover planned in Q4 2017.
- Greece: The Hellenic Civil Aviation Authority (HCAA) has signed the Migration and Transition Plan at the end of the year, in order to start their migration in 2017.

Although already making use of the entire services provided by EAD, the following States are taking further initiatives:

- The DFS is migrating entirely to the EAD platform and will make use of the Flight Planning Facility (INO-DP). The cut over is planned in Q1 2018.
- AVINOR is also in the process of moving to the Flight Planning Facility (INO-DP) with a planned cut over in Q1 2018.

4.1.2 Outside ECAC Region

The map below shows the connection status to EAD for non-ECAC States:



Belarus, Jordan, Kazakhstan, Kyrgyzstan and Philippines are fully migrated as Data Providers, whilst Canada, New Zealand and Taiwan are only partially migrated.

Negotiations are ongoing with the following States:

- Brazil: The Brazilian ANSP (DECEA) expressed its interest in collaborating with EAD for the exchange of aeronautical information. This would consist of first migrating to EAD as a Data Provider and subsequently analyse together with EUROCONTROL the possibility of implementing a system similar to EAD in their State for the provision of AIS/AIM services to States within their region.
- Israel: The Civil Aviation Authority of Israel (CAAI) became a Data User in August 2016 and is migrating to EAD as a Data Provider. The technical steps for the provision and maintenance of the SDO minimum dataset and the connection to PAMS are ongoing with a view to start operations in Q1 2017.
- States of the Middle-East: EUROCONTROL has been approached by the ICAO Regional Office of Cairo to assist States of the Middle-East region in the development and implementation of the MID Region AIM Database (MIDAD). This implementation would happen in two steps, whereby MIDAD States would first migrate to EAD before migrating

to MIDAD once it is operational. This opportunity would offer EAD the advantage of providing its services in the middle East region to 15 States.

- South Africa: The south-african ANSP is an EAD Data User since February 2012. It has acquired a system similar to EAD, called the Centralised Aeronautical Database (CAD). Their intention is to make this system available as an AIS/AIM hub for the region and interconnect it with EAD. Negotiations are ongoing on the way to proceed and to define the legal framework under which such a service could be envisaged.

4.2 Status of Data Users

In December 2016, 193 Data Users were making use of EAD services and are broken down as follows:

	Dec 2016
Type 1	106
Type 2	27
Type 3	48
Developers	12
	Total 193

In addition to the above, the free online registration tool, EAD Basic, has more than 25.000 subscribed users.

4.3 Particular Events

The fourth EAD Eastern Region Working Group Meeting took place from 3 till 6 October 2016 in Astana (Kazakhstan). The objective of this meeting was to support States from Eastern region by providing them with information about EAD operations, future system and service evolution and give them the opportunity to exchange their experience on the use of EAD services.

4.4 Customer Satisfaction

The 2016 customer Satisfaction Survey was first distributed on the 3rd of May 2016, to 442 clients in 185 organisations. From these organisations, 54 were data providers, 126 data users and 12 internal EUROCONTROL users.

123 individual responses were received, corresponding to 88 organisations. The overall return rate was 47.57%, showing an increasing trend as compared to the previous survey made in 2012. Indeed, the return rate for Data Providers increased from 54.9% to 79.63% and the increase of Data User responses from 13.21% to 31.75%. ANSPs shoved the greatest return rate of 89.80%, whilst the lowest return rate was from Airlines with 12%. From Airports, no feedback was received.

The general perception of the whole EAD service has been assessed by clients as “very good”, i.e. 7.14 on a scale of 10, where 10 is the best grade.

The best service, according to the Survey is the INO service, where the overall result reached 8.95 – i.e. “superior”.

Behind every set of questions, clients were invited to provide comments on the system, service or function and to make suggestions for potential improvements. These remarks were reviewed in order to note the potential improvements of the service and systems.

5 Developments

5.1 Airspace/AIS Information Management Service Provision (ADS)

5.1.1 Airspace/AIS Data management

This activity consists of

- the development of operational guidance material related to aeronautical data quality and consistency improvements;
- the monitoring EU regulations and ICAO SARPS changes related to AIS/AIM relevant topics having operational and/or technical impact on EAD

In this area, the following activities took place during the year:

- **Development of the AIXM Coding Guidelines**: This development focused on the four data sets foreseen by the new ICAO Annex 15 and PANS-AIM document: the AIP data set, obstacle data set, airport mapping data set and the instrument flight procedures data set. This was carried out by a focus group which met for the first time on 10th of May 2016 to define the work programme and decide on coding guidelines developments priorities.
- **EUROCONTROL guidelines for harmonised AIP publication and data provision:** They were developed to address as a matter of priority information with cross-border relevance linked to, for example, free route airspace or cross border area publication. These guidelines are the response to the recommendations made by the AIM/SWIM

Team in 2015 on the urgent needs for European operational guidance in the absence of the updated ICAO AIS Manual (Doc 8126). The development of the document started in Q4 2016 and the first draft was presented end of November 2016.

- **Data Harmonisation Objectives:**

  A clear tendency is noticeable for development of new and updated DHO's in the EAD. The logic behind is that the EAD SDO data is used by EAD clients as single source for quality approved data, in addition new regulatory requirements force the EAD to support the further development of the DHO's.

  The EAD SDO quality improves significantly as a result of the DHO's as they are part of the DCR reviews, once approved by the EAD Stakeholders.

  The DHO developments in EAD are based currently in, aligning the existing DHO's with the latest operational and regulatory requirements and secondly development of new DHO's triggered by EAD Data Provider/User service Issues and or new regulatory and operational requirements .

  New developments in the Flexible Use of Airspace concept or FUA in 2016 also required that several DHO needed cancellation or update to stay fully aligned with the latest operational requirements.

  In 2016 there was also a steady growth in the number of new DHO's.

  As a next development EAD is looking at a similar process for Data Harmonisation in SDD (AIXM5.1)

5.1.2 Airspace/AIS Information Operations

In 2016, EAD operations services were delivered by the Data Operations Provider according to the service level specifications agreed with the Data Operations Service Provider. This included the following activities:

- the maintenance, processing and provision of static data, dynamic data, and aeronautical publications;
- the provision of data quality and consistency reviews to data providers;
- the support to data providers related to data completeness, identification of missing data and data responsibility.

Further details on the service operations performance and quality are available in chapter 8.3 below.

These services were monitored through monthly service performance reports, quarterly data consistency reports, the 2016 data completeness report and release content documents informing clients of the functionalities implemented with a new release.

Also, with a view to improve the data quality and completeness, the SSG #23 decided, during its session of 24 & 25 May 2016, to set up a Task Force providing Data Management Guidelines. To this extend, a series of Workshops starting in the second half of 2016 were organised with the following objectives:

- Draft Data Management Guidelines;
- Define Harmonised Rules for Data Encoding;
- Propose a standardised format for Service Level Agreements in order to ensure Data Management aspects are taken into account;
- Identify synergies with other Working Arrangements (e.g. AIXM Coding Specification FG) and establish coordination & cooperation;
- Identify possible shortcoming in existing concepts (e.g. FRA, FBZ), address them and initiate corrective actions.

5.1.3 Airspace/AIS Information System Support

This activity included the following deliverables:

- Delivery of EAD IT services in order to support H24 EAD data operations;
- Development and maintenance of the EAD application software;
- Management of the evolution of the EAD system by providing change proposals specifications for each subsystem.
- Monitoring of EAD system development including review, assessment and verification activities;

EAD IT services and application maintenance services were delivered in accordance with the service level specifications agreed with the IT provider and with the application maintenance contract, respectively. These services were monitored through

- Monthly performance reports;
- Release notes and side letter per subsystem, describing the changes or bug fixes included in a patch set or release;
- Assessment reports issued after the finalisation of each assessment activity.

The following releases and intermediate patches were deployed during the year with a view to enhance the service, fix application deficiencies, and improve system stability and performance:

- Release 10, on 19 January 2016, addressing system enhancements;
- Release 10 patch set 1, on 15 March 2016, fixing non critical bugs resulting from the testing of Release 10;
- Release 10 patch set 2, on 6 July 2016, improving the stability of the system and fixing non critical bugs.

Also, Release 10 patch set 3 has been developed during the year with an objective to improve the performance of EAD for SDO, INO DP & DU services and in particular the response time for end users. Since the certification of the EAD service by EASA was granted in December 2016, this release will become the first release developed and assessed under the oversight of EASA. It will be tested early 2017 in order to implement it during the first half of the year (2017).

Finally, the EAD infrastructure was also replaced on both IT sites to support the higher capacity requirements and the higher workload on the system.

Performance details on the service availability and capacity are available respectively in chapters 8.1 and 8.2 below.

5.1.4 EASA Certification

In 2016, the process leading to the certification of EAD as an Aeronautical Information Service Provider was continued.

In January and February 2016, the EASA audited EUROCONTROL, the IT Service Provider and the Data Operations Service Provider in order to assess whether their processes and services are in conformity with the prescriptions of the related regulations.

This assessment resulted in findings that were addressed through Corrective Action Plans (CAPs) submitted to the EASA for their prior acceptance. These CAPs were subsequently carried out until their successful completion and acceptance by the EASA, mid-November.

EASA certified EUROCONTROL, on 9 December 2016, as an approved Air Navigation Service Provider Organisation for the provision of the whole AIS service as described in ICAO Annex 15. The Special Conditions and Limitations under which this service is provided are described in the attachment to the certificate EASA.AOA.PAN.009 available on the EAD website.

5.2 Airspace / AIS Information Management Development (ADD)

5.2.1 EAD Data Completeness and Extensions

Aeronautical data and information transferred to and stored in EAD SDO Database do not comply with the requirements of Commission Regulation EU 73/2010[1] on aeronautical data quality, because EAD has not received the full compliance statement regarding Data Quality or the required mandatory Data Quality attributes from all States and, as a consequence, cannot claim full DQR compliance for Sates within the scope of this regulation.

However, since EAD is applying the Commission Regulation (EU) 73/2010, the level of compliance for the Sates within the scope of this regulation is monitored by EAD and accessible from the EAD website at the following link:

https://www.ead.eurocontrol.int/eadcms/eadsite/operations/quality.html

Also, according to the same Commission Regulation, “Member States shall ensure that air navigation service providers comply with the data quality requirements laid down in Annex IV, Part A” (Art 6,a) and that “Aeronautical information service providers shall ensure that aeronautical data and aeronautical information items published in the AIP of their Member State are annotated to indicate those that do not meet the data quality requirements laid down in this Regulation”. In this context EUROCONTROL, cooperates actively with the Sates within the

[1] COMMISSION REGULATION (EU) No 73/2010 of 26 January 2010 laying down requirements on the quality of aeronautical data and aeronautical information for the single European sky

scope of the Regulation, with a view to assist them in improving the data quality and publishes via the above link their annotation reports showing their DQR compliance per data item.

Finally, in order to meet the requirements of this Commission Regulation, Data Providers must be given the possibility to annotate AIS data to indicate whether they meet the Data Quality Requirements. Whilst the Aeronautical Information Exchange Model 5.1 (AIXM 5.1) allows the annotation of data, this possibility does not exist with the current AIXM 4.5 format. As a consequence and in order to provide Data Providers with a facility to annotate their data provided in AIXM 4.5, EAD upgraded the SDC tool and updates its content every second AIRAC cycle.

5.2.2 Extension of EAD PAMS

From August 2016, an initiative was started to extend the Aeronautical Publications made available via PAMS to the following States: Afghanistan, Algeria, Belarus, Egypt, Iran, Iraq, Jordan, Kazakhstan, Kyrgyz Republic, Lebanon, Libya, Morocco, Saudi Arabia, Uzbekistan, the member States of ASECNA and Cape Verde. During Q4 2016, the documents have been uploaded in PAMS by the Data Operations Provider in order to start their publication and maintenance them during Q1 2017.

Negotiations were also started with the Russian Federation, with a view to publish Aeronautical Publications for the European part of Russia, Tajikistan and Turkmenistan.

5.3 European ATM Information Management Service (EAIMS)

5.3.1 Compliance with ADQ Data Set and Data Exchange Requirements

The objective is to ensure that the EAD system is recognised as compliant with the Data Set and Data Exchange requirements of the ADQ Regulation.

In order to reach this objective EAD has:

- Implemented a facility with EAD Release 9 to allow the download of static data in AIXM 5.1 format. To do this, the AIXM 4.5 format data maintained by EAD static data providers is mapped to AIXM 5.1;
- Implemented a B2B facility with EAD Release 10 to allow static data providers to upload their data natively in AIXM 5.1 format. The key elements of this data are “backwards mapped” to AIXM 4.5 format in order to support legacy applications;
- Further refined the AIXM 5.1 upload facility when defining the content for EAD Release 11, including the provision of a pre-validation function and monitoring tools for the EAD Data Operations Provider;
- Planned and started the development of an HMI for the maintenance of static data in AIXM 5.1 format directly in the database, to support B2C data providers. This will be made available with EAD Release 12.
- Developed a process for the transition of EAD data providers from data maintenance in AIXM 4.5 format to AIXM 5.1, based on two different scenarios (data provider starts with EAD data or with own data);

- Identified an initial pilot client (LGS Latvia) to trial the transition process with, in order to identify issues and correct if necessary.

5.3.2 New service definition phase

- Contribute expertise for CS5
- CS5 CFT Functional Technical Specifications (FTS) and Service Level Specifications (SLA) were ready and published in October 2016 as planned.
- The Info session with AISP took place in Nov 2016.
- Three clarification sessions organised with bidders in Nov 2016 Jan and Feb 2017

6 Financial Results

6.1 Cost base vs actual expenses

The EUROCONTROL EAD is a centralised service that relies on external industry partners for the provision of Data Provision Operations and IT development and infrastructure services. As such, investment costs are directly supported by these industry partners. EAD costs are therefore broken down by business objectives as follows:

- Staff Remuneration: Salaries.
- External Effort: Consultancy and temporary staff.
- Operating costs: Service, maintenance and training costs.
- Depreciation costs: Costs related to the depreciation of very specific investments for oversight management.
- Indirect costs: Costs of human resources management and facility management.
- Sales of services UPP: Income from Service Charges.

The table below shows the actual expenses compared to the initial cost base:

Business Objectives		**FTE**	**Staff remuneration***	**External effort***	**Operating costs***	**Depreciation costs***	**Indirect costs***	**Total***	**Sales of services UPP***	**Total***
Airspace/AIS Information Management Service Provision (ADS)	*Cost base*	*8*	*1.636*	*850*	*12.205*	*5*	*4.009*	***18.705***	*354*	***18.351***
	Actuals	8,9	1.820	810	12.166	8	3.854	**18.658**	709	**17.949**
Airspace / AIS Information Management Development (ADD)	*Cost base*	*2*	*410*	*1.220*	*30*	*0*	*452*	***2.112***	*0*	***2.112***
	Actuals	1,16	238	116	35	0	453	**842**	0	**842**
European ATM Information Management Service (EAIMS)	*Cost base*	*3,75*	*738*	*3.500*	*50*	*216*	*1.216*	***5.720***	*0*	***5.720***
	Actuals	2	394	1.114	500	224	868	**3.100**	0	**3.100**
Total	***Cost base***	***13,75***	***2.784***	***5.570***	***12.285***	***221***	***5.677***	***26.537***	***354***	***26.183***
	Actuals	**12,06**	**2.452**	**2.040**	**12.701**	**232**	**5.175**	**22.600**	**709**	**21.891**
	Diff	-1,69	-332	-3.530	416	11	-502	**-3.937**	**355**	**-4.292**
	%	-12%	-12%	-63%	3%	5%	-9%	**-15%**	**100%**	-16%

***** *Amounts in K€*

The 2016 budget was underspent by some 4,3 million €, thanks to significant reduction of external, indirect and staff costs and to the revenues generated by the EAD service charges that were doubled compared to the initial forecast.

6.2 Service Charge and Royalties

EAD service charges are invoiced to Clients using the data for their own operational business without reselling or commercialising it, but which do not contribute to EUROCONTROL budget, or are not recognized airspace users.

EAD Clients who intend to commercialise EAD Data with or without value added products are subject to the payment of royalties in addition to the service charges.

The table below shows the breakdown of the revenues generated by the service charges and royalties

Client	Invoiced			Outstanding			
	Service Charges	**Royalties**	**Total**	**Service Charges**	**Royalties**	**Total**	*%*
Data users	101 279	122 625	**223.904**	17.697	21.328	**39 025**	*17%*
Data Providers	608 266	0	**608 266**	0	0	**0**	*0%*
Total	**709 545**	**122.625**	**832 170**	**17 697**	**21 328**	**39 025**	*5%*
Forecast UPP	*354.000*						

The service charges invoiced are twice as important as originally forecasted thanks to a more active promotion of the service. The outstanding amounts of service charges and royalties invoiced to Data Users will still be recovered in 2017 under the condition that these companies are still in the business. Otherwise the related amounts will be written off.

7 Human resources

The table below shows the comparison between the forecasted and actual functional allocation of the Full Time Equivalent resources of the EAIM Unit in 2016. The resources are broken down by business area and, for a business area; the distinction is made between EUROCONTROL (ECTL) and External staff (EXT).

Business Area	**FTE**	**2016 Planned**	**2016 Actual**	**Act-Fcast**
Unit supervision & assistance and Quality Management	ECTL	3,45	*2,95*	*-0,50*
	EXT	0,00	*0,00*	*0,00*
System Management	ECTL	2,50	*2,00*	*-0,50*
	EXT	0,50	*0,50*	*0,00*
Operations Management	ECTL	3,2	*2,10*	- *1,10*
	EXT	2,00	*1,25*	*-0,75*
Customer Management	ECTL	3,00	*1,00*	*-2,00*
	EXT	0,65	*0,65*	*0,00*
Maintenance & Evolution Management	ECTL	1,75	*1,25*	*-0,50*
	EXT	0,50	*0,50*	*0,00*
Data Management	ECTL	1,50	*1,50*	*0,00*
	EXT	3,85	*2,85*	*-1,00*
Total	ECTL	15,40	*10,80*	*-4,60*
	EXT	7,50	*5,75*	*-1,75*
Total staff		***22,90***	***16,55***	***-6,35***

The difference between the FTE shown in this chapter and those shown in chapter 6.1 above correspond to staff assigned functionally to the EAIM unit but working for other work programmes (such as Centralised Services). From a financial perspective they will appear as costs under the respective work programmes.

Resources of DOP and ITP are not included in this report since the service level specifications agreed between EUROCONTROL and these suppliers describe only the service deliverables regardless of the resources required. The management of these resources is therefore the exclusive responsibility of these suppliers.

In 2016, EAD oversight management activities suffered from severe understaffing of more than 4 FTE of which 2 were in the area of customer management, which generated delays in the migration of customers to the EAD.

This understaffing will be addressed in 2017 through the recruitment of principally contract staff.

8 Service Performance

The performance indicators mentioned in this chapter describe the planned performance of EAD, for the provision of its services to customers (principally Data Providers and Data Users).

These performance indicators are derived from the detailed performance indicators annexed to the Service Level Specifications signed between EUROCONTROL and respectively DOP, ITP and application maintenance.

8.1 Service availability

The minimum availability and maximum downtime of the services provided by EAD, as agreed with the industry partners for 2017 and acknowledged by the EAD Service Steering Group, is listed in the table below:

EAD Services	Minimum service availability	Planned unavailability	Unplanned outages
INO BF	99,975%	Shall not exceed 60 minutes in total and not more than two times in a month 180 minutes for release deployments	Shall not exceed 30 minutes
INO DP			
INO DU			
SDO			
PAMS			
CHARTS	98%		Downtime and system recovery based on best available effort
AIP			
ESI			
EAD Basic[2]	95%	Downtime and system recovery based on best available effort	

[2] Internet access for any user – Not for operational use

8.2 Service capacity

The table below shows the comparison between the average[3] capacity per service made available by EAD to its customers and the actual capacity reached in operations:

EAD Services	Description	Yearly Capacity	Actual amounts
For Data Users (& Data Providers)			
Flight plans preparation	Creation of flight plan through EAD interface, validation against SDO and IFPUV	**3.5 Million**	**3.5 Million**
Flight plans distribution	Submissions and reception of flight plans and associated messages	**8.5 Million**	**10 Million**
PIB generation	Generation of Pre-flight Information Bulletins	**3.5 Million**	**2.5 Million**
SDO reporting	Retrieval pre-defined standard aeronautical data reports	**2 Million**	**30.000**
Graphical reporting	Graphical representation of information stored in EAD	**150.000**	**Not available**
PAMS download	Browse and download the effective version of AIPs, AIP Supplements and Amendments, AICs and chart publications.	**30 Million**	**4 Million**
For Data Providers			
NOTAM creation	Number of NOTAM created through EAD	**500.000**	**400.000**
NOTAM processed	Worldwide NOTAM processed by EAD (excluding NOTAM creation through EAD)	**1.5 Million**	**1.5 Million**
SDO upload	Upload of static data based on AICM/AIXM specifications and static data changes	**800.000**	**450.000**
SDO download	Download of static data based on AICM/AIXM specifications	**70.000**	**50.000**

[3] This yearly capacity corresponds to the calculated total for a year of the daily average capacity per service.

AIP operations [4]	Validation and publication of AIPs	**324**	**162**
PAMS Upload[5]	Upload of the effective version of AIPs, AIP Supplements and Amendments, AICs and chart publications.	**300**	**222**

8.3 Service operations performance and quality

8.3.1 Service operations performance

8.3.1.1 Data Operations

EAD Data Operations maintains the ECAC full static data set and the operational worldwide (basic) data set. This data set has to be maintained as specified below, except for SDO migrated Data Providers or if otherwise agreed:

Changes received at least x days before the effective date	Maximum number of days for commitment before the effective date
Before 25	20
Between 25 and 15	10
Less than 15	by the effective date or within 5 working days after reception, whichever is later

NOTAM having an impact on static data (PERM NOTAM) are processed as follows:

- All changes based on PERM NOTAM with immediate effect or effective in the future, but not related to AIRAC information shall be committed within 2 calendar days after reception at the latest unless coordination with Data Provider is previously required;
- all changes based on PERM NOTAM with effective date in the future affecting incoming AIRAC information shall be committed at the latest two calendar days after the respective AIRAC information is committed unless coordination with Data Provider is previously required.

8.3.1.2 NOTAM Processing

This activity includes the processing of NOTAM, SNOWTAM, and ASHTAM received via AFTN. It consists of ensuring that all messages received are validated, coherent, in the required format and that their syntax and structure conform to ICAO Annex 15 and OPADD, prior to storage in

[4] The value is calculated per migrated client per AIRAC
[5] The value is calculated per migrated client per AIRAC

the INO database and further distribution. To increase the quality of the NOTAM, they are validated systematically against the static data object in SDO.

The TAM processing service is measured in terms of time and volume.

Manual processing targets for incoming TAM are as follows:

- Average processing time for messages: 10 minutes (elapsed time between reception by the system and storage after manual processing);
- 98,5% of messages processed within 30 minutes (elapsed time between reception by the system and storage after manual processing);
- 99% of checklist received as TAM shall be analysed within 48 hours after reception (elapsed time between the completion of the checklist analysis and the reception time of the TAM by the system).

8.3.1.3 PAMS

This service includes the maintenance of a library of last available Aeronautical Information Publications in digital format (AIP, Amendments, Supplements, Circulars, and Charts), for ECAC+ States which are not yet managing their Publications directly in EAD.

Two different categories are considered for the measurement of this service:

- CAT I : AMDT (Amendments), i.e. posting the PDF file of an AIP Amendment in PAMS;
- CAT II: updating in PAMS of the AIP sections and charts.

The maximum time allowed for the processing of the above categories is as follows:

Type of amendment or update	To be processed
CAT I	within 3 working days of receipt
CAT II Publications received on time[6]	by the effective date
CAT II Publications received late	within 5 working days of receipt

8.3.2 Service Desk

The service desk manages tickets opened for any incidents and service requests. Ticket management includes the identification of the severity level, appropriate assignment according to the area of responsibility, traceability, follow up, recording of applicable solution or workaround, and an the estimated target date for the availability of the deployed solution.

Tickets are classified based on the following severity classes defined by EUROCONTROL:

[6] Up to 5 days prior to the effective date.

Severity	Definition
High (A)	Service failure or malfunctioning, which has major impact on business and/or has impact on client(s) safety operations.
Medium (B)	Business is proceeding but is impaired either at Service Provider or at client.
Low (C)	No significant business impact

The Initial Feedback Time is the period from when the Ticket has been opened until the first call back or change in status has been made in the Ticket. The Initial Feedback Time does not mean resolution time.

This initial feedback time shall be in accordance with the Table below:

Severity	Initial Feedback Time
High (A)	1 hour
Medium (B)	4 hours
Low (C)	24 hours

8.4 Data Consistency Reviews

8.4.1 Introduction

EAD performs Data Consistency Reviews on data loaded by Data Provider (DP) for the following services:

- SDO (data loaded),
- PAMS (documents published) and
- INO (NOTAM issued).

It ensures that data errors loaded by DOP contained in the EAD are identified and acted upon, thus enhancing the consistency of EAD data. It is performed according to procedures described in the EAD DOP quality system.

The amount of data reviewed is based on samples provided by the different sub-system and according to the agreed level of quality of 98%. These reviews are performed on a monthly basis on the information loaded by DP during a complete quarter of the year.

8.4.2 Scope

This report summarizes the overall results of 2016 for all migrated DPs including Military DP and shows, where applicable, a comparison with the last 3 years (from 2013 to 2015).

8.4.3 SDO

8.4.3.1 Data Quality

The table below shows the comparison between 2016 and 2015 of the number of data reviewed, the related number of errors and the percentage rate:

	Total 2015	1-Q 2016	2-Q 2016	3-Q 2016	4-Q 2016	**Total 2016**	2016 vs 2015
Data reviewed	11545	2913	2256	2925	2920	**11014**	-4,6%
Amount of errors	480	137	112	163	128	**540**	12,5%
Percentage	4,16%	4,70%	4,96%	5,57%	4,38%	**4,90%**	0,7%

Compared to the previous year, the amount of data reviewed decreased by some 5%, from 11.545 in 2015 to 11.014 in 2016, besides a slight increase of less than 1% of the percentage of errors, from 4.16% in 2015 to 4.90% in 2016.

Routes, Aerodrome/Heliport and Airspaces continue to be the top 3 entities generating the majority of errors (69%). This breakdown also shows that there is a certain correlation between the complexity of the entity group and the amount of errors.

Entities group	**Amount of errors**	**% of total errors**
Route	173	32%
Aerodrome / Heliport	108	20%
Airspaces	90	17%
Procedure	68	12%
Obstacle	37	7%
Organizations	28	5%
Navaid	26	5%
Designated Point	10	2%
Total	**540**	**100%**

In addition the implementation of new and updated DHO's as part of the Data Quality review process also has an initial impact on the number of errors. For example the cancellation DHO-4 [All] Improved Readability For Textual Remarks may have a positive impact of the number of errors.

However Data Harmonisation is as a key driver for improved Data Quality and at the same time the EAD Service Provision to support Data providers on the error correction for the main Entities clearly has a positive impact.

Indeed due to the complexity of the Entity DHO's offer a way forward for a harmonised coding and interoperability of data. The new DHO's which were developed or DHO's under review are all based on Route Data, AD/HP and Airspace Data Provision.

The high number of errors on the Route Data is mainly due to the complex coding required within the ECAC FUA area of operations. DHO-13 [RSU] Types applicability and coding in combination with levels and working hours/timetable is addressing for the Route Segment Usage certain misconceptions about Data Provision within the EAD SDO FUA Route Segments. DHO-13 clearly refers to ERNIP (European Route Network implementation Plan) thus supporting the AIS community with harmonised AIP publications and resulting SDO coding.

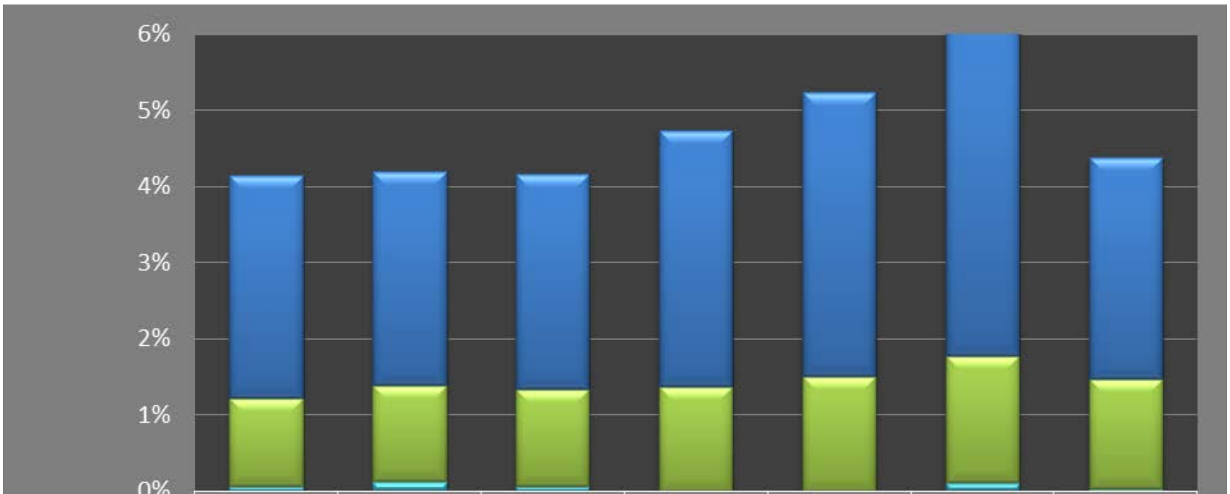
8.4.3.2 Errors Severity

The severity of the errors in SDO refers to ICAO Annex 15, Appendix 7 “definition of routine, essential and critical data”; severity “A” therefore refers to critical data.

The chart below shows the percentage by severity compared to previous years.

Although there is only a small percentage of Severity A errors reported, the overall sum of Severity B and C, has increased around 1 % in 2016 compared to the last years.

The chart below shows the results for SDO errors by severity for each quarter in 2016:

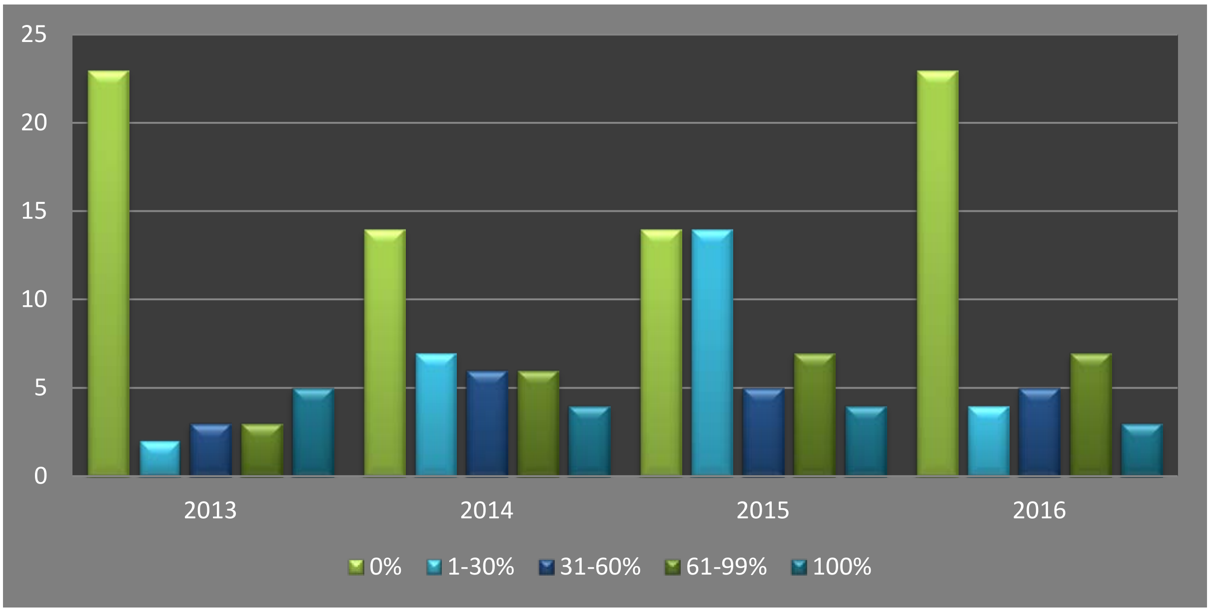


	2013	2014	2015	2016-Q1	2016-Q2	2016-Q3	2016-Q4
Severity C	2,92%	2,81%	2,82%	3,36%	3,72%	4,48%	2,91%
Severity B	1,16%	1,26%	1,27%	1,37%	1,51%	1,68%	1,44%
Severity A	0,06%	0,12%	0,06%	0,00%	0,00%	0,10%	0,03%

The distribution of errors by severity type shows that errors could not be reduced in Q3-Q4/2016 and, as a consequence, the year finished for the first time with an overall rate of errors reported above 5%.

8.4.3.3 SDO Data Timeliness

SDO timeliness is measured for AIRAC and Regular AIP Amendments only. The table below shows the number of DP by non-compliance category, where 0% is the optimal value and 100% is the worst-case.



In 2016, has shown an improvement of DP full compliance (i.e. 0%), where their level reached again the level of 2013.

It can be observed that the number of fully non-compliant DP (100%) is reducing every year.

8.4.4 PAMS

8.4.4.1 Data Quality

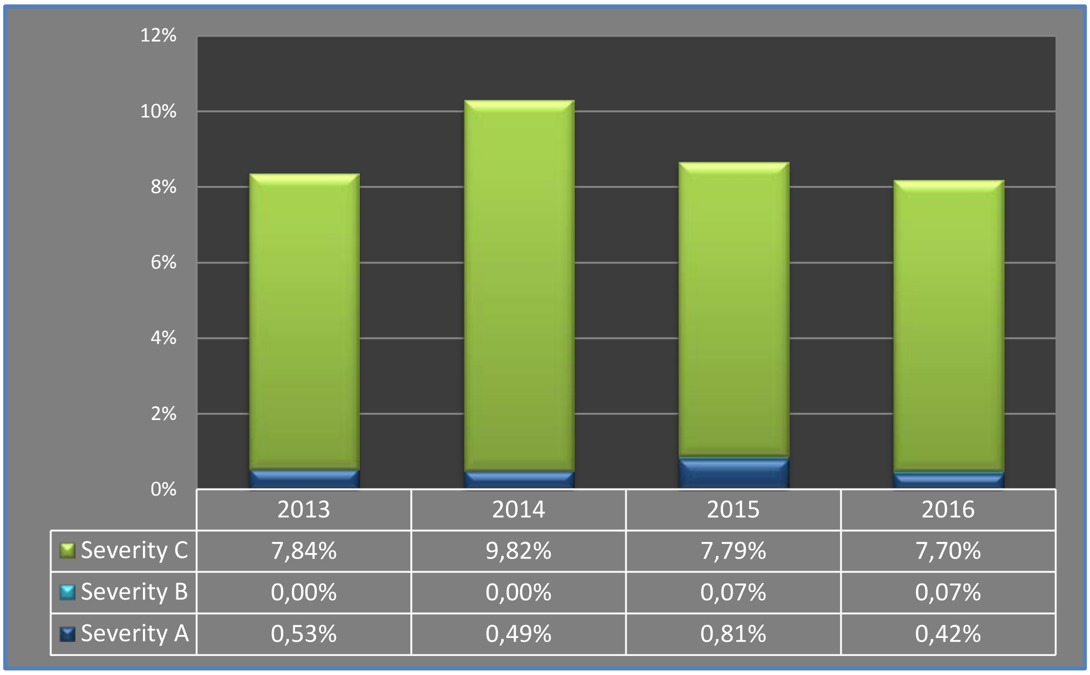
The following table shows the amount of publications reviewed and the related errors.

	2015	1-Q	2-Q	3-Q	4-Q	2016	2016 vs 2015
Amount of Publications/files reviewed	4418	1098	982	1130	1099	4309	-2,45%
Errors reported (Y)	383	85	81	84	84	334	-12,8%
Percentage	8,67%	7,74%	8,24%	7,43%	7,64%	7,75%	-0,92%

The number of errors reported in 2016 decreased by approximately 1% as compared to 2015, from 8.67% in 2015 to 7.75%.

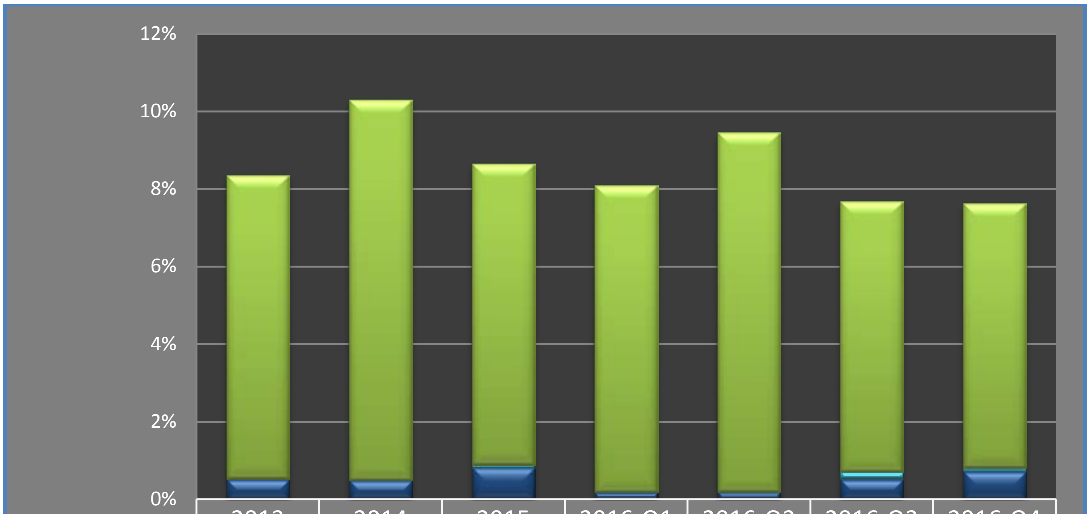
8.4.4.2 Errors Severity

The chart below shows the percentage by severity compared to previous years.



The severity types “A” and “C” rates have slightly improved over the past 4 years, since they have reached in 2016 their lowest value since 2013, whilst the errors with a severity type “B” remains constant as compared to the previous year.

The chart below shows the results for PAMS errors by severity for each quarter in 2016.



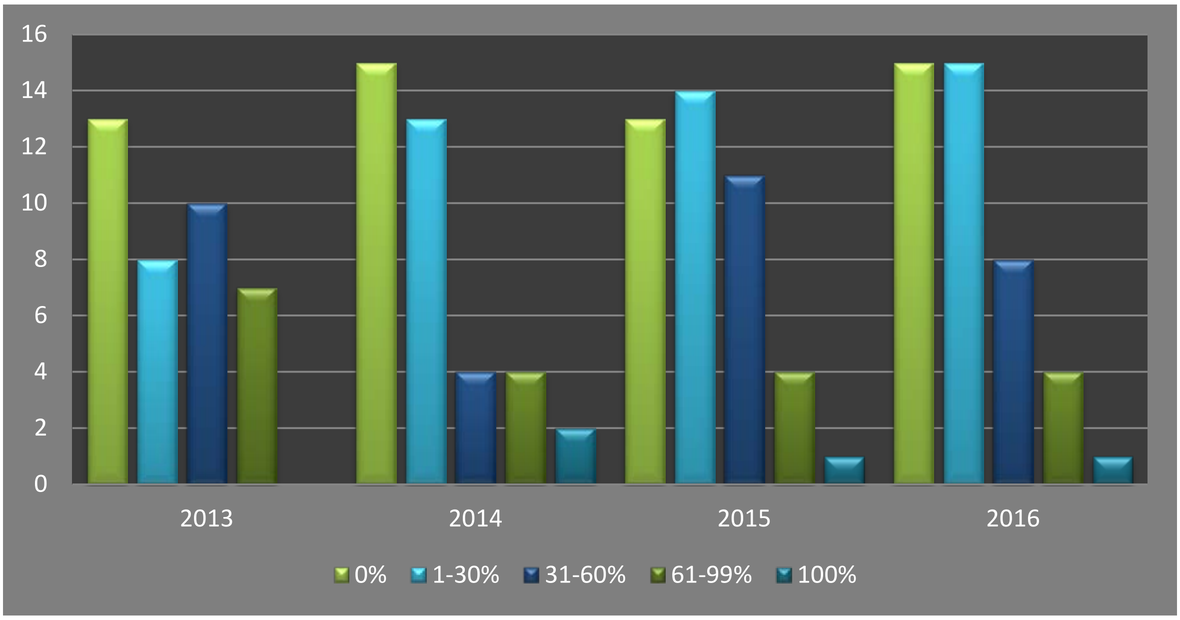
	2013	2014	2015	2016-Q1	2016-Q2	2016-Q3	2016-Q4
Severity C	7,84%	9,82%	7,79%	7,92%	9,27%	6,99%	6,82%
Severity B	0,00%	0,00%	0,07%	0,00%	0,00%	0,18%	0,09%
Severity A	0,53%	0,49%	0,81%	0,18%	0,20%	0,53%	0,73%

The severity types “A” increased slightly in Q3 and Q4 whilst severity types “C” decreased to reach the lowest level for 2016, thus contributing to the overall reduction for the year and compensating the increase in Q2.

8.4.4.3 PAMS Timeliness

PAMS timeliness is measured with regards to the AIRAC adherence criteria.

The table below shows the number of Data Providers by non-compliance category, where 0% is the optimal value and 100% is the worst-case.



The chart shows a general improvement, since the majority of Data Providers are within categories 0% or 1-30% of non-compliance and only one is fully non-compliant.

INO

8.4.4.4 Data Quality

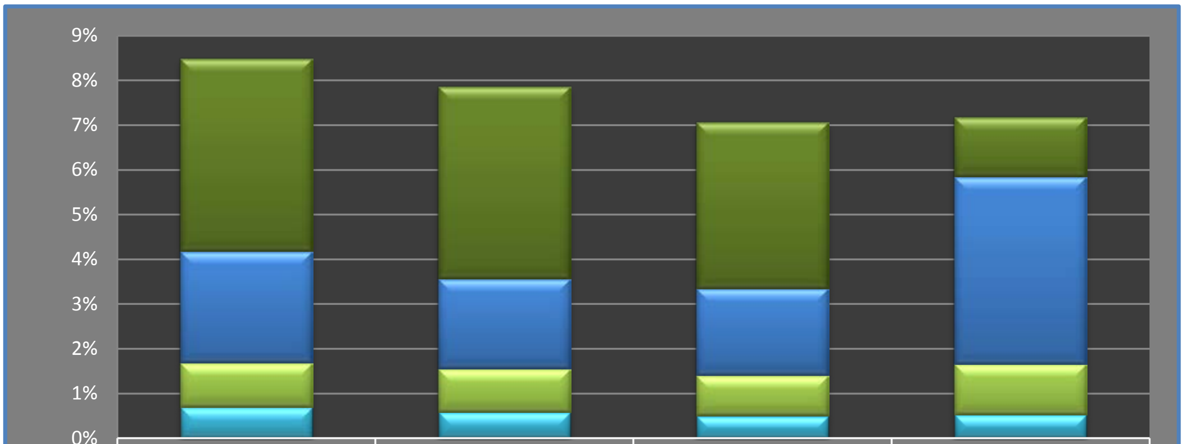
The following table shows the amount NOTAM reviewed by quarter in 2016 and the related number of errors.

	2015	1-Q	2-Q	3-Q	4-Q	2016	% 2016 vs 2015
NOTAM reviewed	23 511	5836	6077	6148	5927	23988	2%
Errors reported (Y)	790	309	389	371	436	1505	52,5%
Percentage	3,36%	5,30%	6,40%	6,03%	7,35%	6,27%	2,91%
Amount of Non Solvable errors (NS)	873	159	0	0	0	159	-81,8%
Total errors (Y + NS)	1663	468	389	371	436	1664	0,05%

The number of errors reported in 2016 almost doubled in 2016 (6.27%) as compared to 2015 (3.36%). The main reason is the removing “ESI data linkage” from the list of Non Solvable errors starting from the first quarter of 2016. As such these errors cease to be considered the known errors and will be reported as errors (Y).

8.4.4.5 Errors Severity

The table below shows the yearly percentage of errors by category and shows a decreasing trend in the amount of errors.



	2013	2014	2015	2016
NS	4,30%	4,30%	3,71%	1,33%
C	2,50%	2,02%	1,94%	4,19%
B	1,00%	0,97%	0,90%	1,14%
A	0,70%	0,59%	0,52%	0,53%

The amount of severity “A” errors reported has been stable for the last years (around 0.5%), compared to the maximum of 0.8% reported in 2012. Severity “A” errors lead to a NOTAM not being displayed in a relevant PIB and therefore the information is not available to the user.

Severity “B” errors lead to a NOTAM being displayed in too many PIB and therefore the PIB will include information that is not relevant for the user.

There is a noticeable increase in severity “C” errors due to the EUROCONTROL decision of not considering anymore the ESI data linkage as a known error (Non-solvable).

9 Abbreviations

Term	Description
ADQ	Aeronautical Data Quality
AFTN	Aeronautical Fixed Telecommunication Network
AIC	Aeronautical Information Circular
AICM	Aeronautical Information Concept Model
AIM	Aeronautical Information Management
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation and Control
AIS	Aeronautical Information Services
AIXM	Aeronautical Information Exchange Model
ANSP	Air Navigation Service Provider
ASHTAM	NOTAM reporting ash hazard
ATC	Air Traffic Control
ATFM	Air Traffic Flow Management
ATM	Air Traffic Management
BF	Briefing Facility
DOP	Data Operations Provider
DP	Data Provider
DU	Data User
EAD	European AIS Database
EADAP	EAD Annual Plan
EC	European Commission
ECAC	European Civil Aviation Conference
ECAC+	States surrounding ECAC Area
EASA	European Aviation Safety Agency
ECIT	EAD Client Interface
EAIM	European Aeronautical Information Management
ESI	EAD System Interface
FTE	Full Time Equivalent
ICAO	International Civil Aviation Organization
IFPUV	IFPS Validation system
INO	International NOTAM Operations
IT	Information Technologies
ITP	IT Provider
KPI	Key Performance Indicator
MET	Meteorological data
NOTAM	Notification to Airmen
NSA	National Supervisory Authority
NMD	Network Management Directorate

Term	Description
NS	Network Services
PAMS	Published AIP Management System
OPADD	Operating Procedures for AIS Dynamic Data
PERM NOTAM	Permanent NOTAM
PIB	Pre-flight Information Bulletin
SARPS	Standards and Recommended Practices
SDC	Static Data Completeness
SDD	Static and Dynamic Data
SDO	Static Data Operations
SDM	Static Data Management
SLS	Service Level Specifications
SNOWTAM	NOTAM reporting snow hazard
SP	Service Provider
SQSM	Safety & Quality Systems Management
SSG	Service Steering Group
SUP	Supplement
TAM	NOTAM, ASHTAM, SNOWTAM, BIRDTAM
TID	Test Item Discrepancy
TP	Training Provider
XML	Extensible Mark-up language

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