



ANNUAL
PERFORMANCE
REPORT
2015

CONTENTS

Chief Executive's Introduction	2
IAA Performance Overview 2015	4
1. Introduction	6
2. Safety	8
2.1 Corporate ATM Safety Strategy	8
2.2 Safety Performance Indicators	8
2.3 Operational Safety Management	9
2.4 Safety Achievement Metrics	10
3. Efficiency	11
3.1 Traffic 2015	11
3.2 Staffing	11
3.3 Human Resource Policy	12
4. Financial Results	13
5. Performance Comparison	14
6. Cost effectiveness	15
6.1 Estimated Commercial Rates	15
6.1.1 En-route Rate	15
6.1.2 Terminal Rate	16
7. Capacity & Efficiency	17
8. Delays	18
9. Environment	19
10. Developments in Operational Infrastructure	20
11. Innovations in Operations & Infrastructure	21
12. Customer Consultation Process	22
Glossary	24





CHIEF EXECUTIVE'S INTRODUCTION



EAMONN BRENNAN
CHIEF EXECUTIVE

It gives me great pleasure to introduce the Annual Performance Report for the Irish Aviation Authority (IAA) covering the performance of the Air Navigation Services function for the year 2015.

The Authority, throughout 2015, continued to deliver safe, efficient and cost-effective air navigation services in Irish controlled airspace and this report sets out our performance as required under common requirements laid down in Commission Regulation (EC) 448/2014, which amends EC Regulation 1035/2011.

Competitive Efficiency: The IAA's competitive position is amongst the very best in Europe, with well below average charges to customers and high levels of operational performance and project delivery. Our gate-to-gate financial cost effectiveness is some 24% more efficient than the European average and our gate-to-gate costs have increased by just 2.9% over the last eight years compared to an estimated increase of 4.7% in the European average. We are one of the most productive air navigation service providers (ANSP) in Europe. Our en-route customer charge for 2016 of €29.67 is, once again, one of the lowest in Europe. The IAA reported no air traffic management attributable delays in 2015 at Cork, Dublin and Shannon airports. Airport slot adherence statistics demonstrate a performance level above the EU standard.

Air Traffic Management: The ATM Operations and Technology Directorates delivered a safe, efficient and reliable service to our airline customers in 2015. We met, and exceeded, the targets of the EU Performance Scheme for environment and capacity, offering direct routings for airlines with no IAA attributable air traffic management delays. Airport slot adherence statistics continue to demonstrate a performance level above the EU standard. During the year, we delivered a number of key projects, which are set out in detail within this report.



A key enabler of our operations strategy is our air traffic management system (COOPANS). The COOPANS alliance is an international partnership between the air navigation service providers of Ireland, Austria, Croatia, Denmark and Sweden with Thales as the chosen industry supplier. The partners operate a fully harmonised, world-class, safe and cost-effective air traffic management system. In 2015, the partners successfully upgraded their common air traffic management system across 7 centres over a two-week period. This was done seamlessly with no impact on operations, demonstrating a level of co-operation which is unique in the industry. Work is continuing between the COOPANS Alliance and the DSNA (the air navigation services provider in France) to investigate the possibility of introducing a common system in the years ahead. COOPANS has reduced our system provision cost by 30%.



In early 2015, the **UK-Ireland FAB (Functional Airspace Block)** Performance Plan 2015 to 2019 was approved by the EU. This plan sets out the State's en-route and terminal customer charges for the five years and contains national and joint FAB targets for safety, environment (en-route flight efficiency), capacity (delays) and cost-efficiency. Ireland met all of its targets in 2015. Within the scope of FAB activities, the IAA worked closely with NATS in the UK in relation to the X-MAN trial and the completion of the Dynamic Sectorisation Operational Trial (DSOT).



Strategic Alliances: During the year, we increased our shareholding in Aireon LLC, a US company developing space based global air traffic surveillance systems. Our investment to date of US\$ 18.4 million equates to an equity shareholding of 3.75%. We will increase our shareholding to 6% by 2017. Aireon will revolutionise the way air traffic is managed and we are currently working with other AIREON investors to obtain

regulatory approval from EASA (European Aviation Safety Agency) for the operational use of satellite-based ADS-B data. The Aireon ALERT service, to be hosted at our Ballygirreen location and providing enhanced surveillance services, will be operational in 2018.



We continue to co-operate effectively with **Entry Point North** in its provision of air traffic training services to the IAA. ATM training is of the highest quality, regulatory compliant and cost-effective.



The IAA is participating with a number of other air traffic management companies, airlines and airports in the management of the EU SESAR (**Single European Sky Air Traffic Management Research and Development**) Deployment Manager. The Deployment Manager has a budget in the order of €3 billion to be assigned to the modernisation of European airspace.



The IAA continued to support the work of Borealis, a nine-member ANSP alliance, and has used the Alliance to market commercial service opportunities. During 2015, work continued on the implementation of Free Route Airspace across the entire airspace for the region by 2018 (the IAA introduced this operational concept in 2010 but is supporting this wider Borealis initiative).

Human Resources: A significant five-year collective agreement was signed with IMPACT union covering the period 2015 to 2019. The agreement records revised terms and conditions of employment for new entrants to the grades of air traffic controller, radio officer and certain other grades within the IAA. The duration of the agreement aligns with the current economic regulatory period under Single European Sky legislation 2015 to 2019. The agreement also makes provision for a 1.5% annual pay increase in respect of the years 2016 to 2019 inclusive. Agreement was reached with staff representatives on a new Internal Dispute Resolution Board (IDRB). The Board comprises three independent senior industrial relations practitioners and will manage disputes of a collective nature within the IAA. Outcomes from the IDRB will be binding on all parties.

Customer Consultation: The IAA will continue to consult regularly with its customers in the evaluation of the quality of service provided. The IAA is dedicated to improving its performance and to greater consultation with our customers to ensure that our level of service continues to improve. We have made strong progress again in 2015 in positioning the IAA to safely meet these service requirements and also to meet future challenges in what is a dynamic and changing industry.

I would like to thank all of the staff of the Authority for delivering another successful year. In particular, I would like to express my gratitude to my management colleagues for their hard work and support throughout another challenging year.

I would also like to thank the Chairman, Ms. Anne Nolan and my colleagues on the Board for their guidance and support.

Go raibh míle maith agaibh go léir.

Eamonn Brennan
Chief Executive

IAA PERFORMANCE OVERVIEW 2015

GATE TO GATE COSTS
AND DELAYS - ALL
BETTER THAN EU
AVERAGE

SECOND IN EUROPE
FOR SAFETY
MANAGEMENT
EFFECTIVENESS

ALL CAPACITY
TARGETS FOR THE
SHANNON AND
DUBLIN ACC WERE
DELIVERED

NO ATM
ATTRIBUTABLE
DELAYS FOR 2015

TOTAL FLIGHTS IN
IRISH AIRSPACE
WERE UP +5.4%.

COST CONTAINMENT
MEASURES
RESULTED IN LOWER
THAN FORECAST
COSTS

COMMITTED TO
PLAYING OUR PART
IN PROMOTING
AVIATION IN
IRELAND

OUR COOPANS
SYSTEM LEADS
THE WAY IN
TECHNICAL
COOPERATION

DELIVERING
INNOVATIVE ATM
SOLUTIONS
THROUGH
ADVANCED
TECHNOLOGY

WORLD'S 1ST
ONLINE DRONE
REGISTRATION
MODULE

GLOBAL AIRCRAFT
"SPACE BASED"
TRACKING SERVICE
(ALERT) COMING TO
IRELAND

CUSTOMER
CONSULTATION,
"SATISFACTION
RATING",
AT 93%, OVERALL



1. INTRODUCTION

The Irish Aviation Authority is required under Single European Sky (SES) regulations to produce an annual report on its performance.

The Single European Sky regulations provide, inter alia, that the provision of air navigation services within the European Community shall be subject to certification by Member States that they meet the **common requirements laid down in Commission Regulation (EC) 448/2014, which amends EC Regulation 1035/2011**. This imposes an obligation on individual States **to certify providers that comply with the common requirements and to subsequently designate air navigation service providers (ANSPs)**.

Responsibility for the certification process rests with the National Supervisory Authority (NSA), which is currently within the Safety Regulation Division of the IAA. The designation process is a matter for the State but in order to be considered for designation, an entity must have prior NSA certification.

ANSPs' must submit to their NSA a five-year Business Plan, an Annual ANS Plan and audited accounts. In addition, ANSPs must submit an Annual Performance Report at the end of their reporting period. A brief summary of the requirements under each of these areas is as follows.

1.1 FIVE YEAR BUSINESS PLAN

The IAA's **Business Plan** is required to cover a minimum period of five years and sets out:

- ▶ The overall aims and goals of the provider, and its strategy towards achieving them, in consistency with any overall longer term plans and with relevant Community requirements;
- ▶ Appropriate performance objectives in terms of quality and level of service, safety and cost effectiveness.

1.2 ANNUAL ANS PLAN

The **Annual ANS Plan** specifically relates to the ANSP and should specify further the features of the Business Plan and describe any changes to it. The Annual ANS Plan shall cover the following provisions on the level and quality of service such as the expected level of capacity, safety and delays to flights incurred as well as on financial arrangements:

- ▶ Information on the implementation of new infrastructure or other developments and a statement on how they will contribute to improving the level and quality of services;
- ▶ Indicators of performance against which the level and quality of service may be reasonably assessed;
- ▶ The service provider's expected short-term financial position as well as any changes to or impacts on the business plan.

1.3 ANNUAL REPORT

The **Annual Report** shall include as a minimum:

- ▶ An assessment of the level and quality of service generated and of the level of safety provided;
- ▶ The actual performance of the service provider, compared to the performance objectives and indicators established in the Business Plan;
- ▶ Developments in operations and infrastructure;
- ▶ The financial results, if they are not separately published in accordance with article 12(1) of the Service Provision Regulation;
- ▶ Information about the formal consultation process with the users of its services and about the human resources policy.

This publication is primarily concerned with the areas outlined in 1.3 above and covers the period **1 January 2015 to 31 December 2015** and is designed to meet the common requirements laid down in Commission Regulation (EC) 448/2014 to “**provide a description of progress achieved in relation to the business plan, reconciling actual performance for 2015 against planned performance in the IAA’s five year corporate plan 2015 -2019**”.

The Authority provided forecasts in its five year Corporate Plan 2015-2019 in the following areas:

- ▶ Safety
- ▶ Efficiency
- ▶ Cost effectiveness
- ▶ Delays
- ▶ Capacity

A detailed analysis of actual performance versus planned performance under each of these areas is set out under section 2 to section 12 of this report.





2. ATM SAFETY

2.1 CORPORATE ATM SAFETY STRATEGY

The Safety Management System (SMS) within the IAA ANSP provides the vehicle by which we will continue to develop and mature our safety management system, while simultaneously meeting the regulatory requirements and safety targets set by EASA for Reference Period 2 RP2 - 2015-2019. The IAA has a strong and effective SMS, which is continuing to mature and progress in a manner that will enable us to achieve in the first instance the required maturity level and performance score target set for RP2.

New regulatory ANSP safety performance measurement requirements, in combination with the civil aviation regulators' mandatory requirements to provide a more cost efficient service, pose very significant organisational challenges in the Performance Scheme RP2.

The IAA continued to concentrate its efforts on a number of interconnected focus areas, which are driven by associated strategic safety goals, contained in the Corporate Strategic Safety Plan 2012-2015. This plan will be replaced with a new Strategic Safety Plan 2016-2020 which will contain new focus areas on which to build on the previous period's achievements and SMS enhancements:

2.2 SAFETY PERFORMANCE INDICATORS

The IAA is continuously developing safety performance indicators for all aspects of the ATM system in line with the regulatory requirements of ICAO and EASA, and also CANSO and EUROCONTROL recommended best practices.

The IAA ANSP is measuring, monitoring and reporting on the three leading Safety Performance Indicators from EC Regulation 390/2013, which have been monitored since 2012 and measured since 2014 at European, National and FAB levels; these are:

1) Effectiveness of Safety Management (EoS_M): the safety maturity survey methodology developed and conducted by EUROCONTROL and CANSO. This survey has been adopted by EASA as a Key Safety Performance Indicator Measurement since 2013. Both surveys are completed by the Safety Management Unit (SMU) annually.

- ▶ The IAA ANSP scored 84% (Table.1) in the EASA survey (RP2) measurement, which is an improvement on the 2014 performance score and is 6% above all SES ANSPs' average score.

Table.1

IAA ANSP EASA EoS _M Annual (Effectiveness of Safety Management) Survey.		
2013	78%	
2014	81%	
2015	84% Management Objectives Level '4'	SES ANSP Average 79%

- ▶ CANSO/Eurocontrol. The outcome from this EoS_M separate process supports the EASA measurement highlighting a continuous year on year improvement. Overall, there has been an 11.5% improvement since 2013.

Table.2

CANSO/Eurocontrol Standard of Excellence/EoS _M	2013	2014	2015
Overall maturity score	75%	78%	86.5%

- 2) Application of the severity classification scheme of the **Risk Assessment Tool (RAT) methodology.**
- ▶ This process is well embedded and all occurrences (i.e. Separation Minima Infringements, Runway Incursions and ATM Specific Occurrences) as required by RP2, are reviewed and classified in accordance with this scheme. We are continuing to develop the level of sophistication and effectiveness of our preventative measures and risk mitigation strategies based on the RAT severity classification outputs, thus facilitating the organisation's drive to meet our safety targets.

- ▶ The RAT is currently applied to 100% of Separation Minima Infringements and Runway Incursion occurrence events (already exceeding the RP2 requirement of 80% application by 2017). It is planned to achieve the same level for ATM Specific Occurrences by mid-2016.

3) Reporting of **Just Culture Implementation**.

- ▶ During 2012, the IAA commenced the development of a Just Culture process and procedures based on our published policy. This process was rolled out in Q4 2013 for implementation and application to ATM occurrence investigations from Q1 2014. This process has been in operation and is now supported by all Staff Associations/Unions.
- ▶ To further improve the maturity of our reporting culture and to enhance our excellent levels of reporting, the ANSP introduced a Confidential ATM Occurrence Reporting (CAOR) scheme managed independently by the Head of Safety Management in Q4 2012; the operation of the scheme was consolidated during 2013 and is now an embedded component of the SMS and is functioning satisfactorily and as intended.

2.3 OPERATIONAL SAFETY MANAGEMENT

The IAA's ATM **Safety Management Unit (SMU)** is ensuring that, in collaboration with local managers, appropriate safety performance improvement plans are being developed and implemented, as follows:

- ▶ The IAA safety management system (SMS) utilises the **Unit Safety Manager (USM)** function to ensure continuous SMS progression and development, so as to attain a higher level of Safety Maturity for the ANSP and for providing the capability to meet RP2 safety requirements. The USM function, since its inception in 2013, has been a significant contributory factor in the steady year on year measured safety maturity improvement. The Safety Management Unit continues to provide expert advice, support, guidance and training, so as to ensure the USMs attain and maintain the qualification levels necessary to provide the essential Safety Management support to the General Managers of the IAA's en-route and terminal business units.

- ▶ **The FAB safety management 'harmonisation' strategy** provides for wider FAB integration. The UK-Ireland FAB's Safety Management Arrangements Document (SMAD), which was published in 2013, defines this integration. This strategy includes the development of a Joint Just Culture policy which was agreed and published in both ANSPs underpinning the Just Culture review processes. In addition, the joint "Day 2 Day" operational survey project has been completed in 2014 and 2015 for all units involving both ANSPs' interface units. This Joint FAB safety activity has generated joint reports complete with safety improvement recommendations, accepted and implemented as applicable to each unit.
- ▶ **SMS Policy Review.** The Head of ATM Safety Management reviewed the strategic safety management system during 2014. This review was conducted in advance of RP2, to provide assurance that the operation of the SMS is consistent with best practice. In particular, the review evaluated the SMS structures and its capabilities, regarding the demands and the requirements of RP2. The review report's recommendations received executive approval in 2014, which included an enhancement of the Safety Specialist capabilities provided by the SMU. The reviews recommended changes were commenced in 2014 and concluded in Q1 2016. The actions resulted in the transfer of the responsibility for the management and oversight of Safety Occurrence Investigations from Operations Safety, Standards and Procedures (SS&P) to the SMU in line with best SES ANSP practice. The transfer was initiated in November 2014 and completed by end of December 2014. The final piece of the enhancement of SMU capabilities was completed in Q1 2016 with the establishment and staffing of a Safety Data Analyst function.



2.4 SAFETY ACHIEVEMENT METRICS

Safety data produced from the **IAA's mandatory and voluntary Occurrence Reporting** scheme enables analysis of our Performance Indicator (PI) safety trends. Throughout 2015, the IAA improved its safety reporting arrangements with Operational Units reporting the trends in their top five **Performance Indicators (PIs)**. The trends are reported quarterly in an Operations Safety Report, which is reviewed by the Operational ATM Safety Committee. These quarterly reports were consolidated in the National 2015 Annual Safety Performance Report.

The reports review our reporting levels, measurement and analysis of the **Safety Key Performance Indicators (SKPIs)**:

- ▶ Separation minima infringement
- ▶ Runway incursions
- ▶ Unauthorised penetration of airspace
- ▶ Deviation from ATC clearance
- ▶ Level bust
- ▶ ATM Specific Occurrences (Technical Events)

The predicted and actual events for 2015 in the PIs were within the overall tolerable variance of the target set by **IAA Safety Regulation Division (SRD)**, with a continued positive improvement trend (reduction) in ATM contribution. Enhancements have been implemented, such as runway protection measures through the implementation of technical measures (upgrade of ASMGs to Level 2) in addition to the IAA's proactive involvement in the Local Runway Safety Action Teams and DAOPG (Dublin Airport Operational Planning Group). Moreover, in areas where the ATM contribution is low, e.g. Level Busts and Deviation from ATC Clearance, there is ongoing dialogue with aircraft operators to highlight these issues.

To enhance capabilities regarding the IAA's ATM Safety Strategy, "Plan, Do, Check, Act" **Operational Safety Improvement process**, the acquisition and full implementation of the APF (Airspace Performance Factor) tool was completed in Q3 2015. The tool is being utilised to monitor and analyse trends more effectively, enabling efficient focus of our safety efforts and resources, in particular to monitor negative PI occurrence trends so as to provide timely actions to reverse such trends. Interaction and dialogue with operators and Airport authorities is a key component of this process and the SMU conducted its inaugural **ANSP Stakeholder Safety Forum (SSF)** with 12 local and international Airline Operators and Irish Air Corps Safety managers participating. This is a collaborative forum the central activity of which is data sharing.

3. EFFICIENCY

3.1 TRAFFIC 2015

The IAA uses EUROCONTROL forecasts, in addition to local economic knowledge, to forecast its traffic growth. This forecast estimated a growth in total IFR traffic for Europe of +3.8% during 2015.

However, **2015 was a very positive year for Irish air traffic, which saw strong growth at Dublin Airport.** Traffic at the State's largest airport was up +10% in 2015, while total flights in Irish airspace were up +5.4%. This growth continues to indicate a strong return to positive territory for almost all sectors of Irish air traffic and this sustained growth has continued into 2016 and Dublin Airport is now operating at 2008 levels.

- ▶ Ireland's en-route traffic (flights that pass through Irish airspace but don't land) increased by +5.4% to 317,739 movements.

Growth in this area was strong throughout 2015 with August being the busiest month on record for IAA's en-route business. The winter months also performed very well as passenger demand held up, particularly on the routes between Europe and North America. Growth in the number of flights handled by our Shannon Area Control Centre (ACC) exceeded 5% but our flexible operation ensured that during the year, there were no IAA attributable delays in Irish controlled airspace;

- ▶ The IAA's High Frequency radio communications service, based at Ballygirreen in Co. Clare also saw an increase in traffic of over 5% during 2015.

More aircraft using the Tango routes to fly between destinations in the Canary Islands, North Africa, Southern Spain and Portugal, combined with increases in transatlantic traffic were responsible for this growth. Our Radio Officers efficiently handled over 1.1 Million messages from almost 443,000 aircraft during the year.

- ▶ On the domestic front, commercial traffic grew by 6.0% in 2015 at the three State airports of Dublin, Shannon and Cork, with a total of 228,084 movements;

There were no IAA attributable delays at Dublin, Cork and Shannon airports during 2015. There were however increasing challenges at Dublin Airport, where strong growth to 192,000 movements (+10%) placed enormous pressure on airport infrastructure, leading to congestion at peak times. Our Operations Team at Dublin ACC reduced departure intervals from 1.5NM to 1.0NM. This has seen runway capacity increase to 35 departures per hour.

The IAA welcomed the strong growth in Irish air traffic figures for 2015 and is delighted to note that this sustained growth has continued into 2016 and Dublin Airport is now operating at 2008 levels.

As the Irish economy grows, **the IAA will continue to support the airlines, the airports and the travelling public** through the provision of safe, cost-efficient and industry leading air traffic services in the years ahead.

3.2 STAFFING

The average staffing in 2015 was 563 (excluding Safety Regulatory Division). The manpower planning strategy continues to focus on maximising flexibility and productivity while ensuring a cost efficient deployment of resources.

Recruitment continued across our front line positions in 2015 including a further intake to our Air Traffic Controller Training Programme. In addition, the Authority continued to offer student internships to a small number of third level students in 2015.

A significant collective agreement with IMPACT union included agreement on staffing complements consistent with RP2 under Single European Sky legislation.



3.3 HUMAN RESOURCE POLICY

The conclusion of a five year collective agreement with IMPACT (2015 – 2019) should pave the way for stable industrial relations through the introduction of an Internal Dispute Resolution Board (IDRB) which has the power to issue binding decisions.

This development reinforces the commitment of management and staff to guarantee continuity of services to our customers through the timely management of workplace issues.

There was a continued strong commitment to learning and development in 2015 through management development programmes, awareness workshops on respect and dignity in the workplace and mental health awareness.

The volatile economic conditions in 2015 did not help our pension recovery plan. The plan was implemented in 2011 with the purpose of eliminating the minimum Funding Standard deficit by 2018. However, it is likely that a review of the recovery plan may be actioned in advance of 2018 and a number of alternative options are being considered to bring stability and affordability to pension benefits.



4. FINANCIAL RESULTS

The Authority does not propose to review its financial results in this report as the financial results are separately published and independently audited in accordance with article 12(1) of the Service Provision Regulation. These can be accessed on the IAA's website www.iaa.ie





5. PERFORMANCE COMPARISON

The IAA reported no air traffic management attributable delays in 2015 at Cork, Dublin and Shannon airports.

- ▶ Airport slot adherence statistics also demonstrate a performance level well above the EU standard.

In addition, the 2015 publication by EUROCONTROL of the ACE (ATM Cost-Effectiveness) report, confirmed that:

- ▶ The IAA's gate-to-gate financial cost effectiveness was reported as €324 per flight hour compared to a European average of €429.
- ▶ The IAA's air traffic controllers' (ATCOs) productivity is in excess of 20% higher than the European average. ATCO-hour productivity measures the efficiency with which an ANSP deploys and makes use of its ATCOs.

This ACE benchmarking analysis is based on information provided by **37 ANSPs** to the Performance Review Commission (PRC), in compliance with Decision No. 88 of the Permanent Commission of EUROCONTROL.

The IAA's **competitive position** is amongst the **very best in Europe**, with well below average charges to customers and high levels of operational performance and project delivery.



6. COST EFFECTIVENESS

The IAA has been focusing on further improving, the **quality of its services**, while maintaining an eye towards the final costs for its customers.

The capacity of the IAA to deliver services to its customers in the most cost-effective manner possible is one of its key strategies, with the IAA continuing to contribute to a European reduction in en-route charges via the implementation of the UK-Ireland FAB Performance Plan for Reference Period 2 (2015 – 2019).

This plan was submitted by the Irish and UK Governments in Q4 2014 and adopted by the European Commission in Q1 2015.

In 2014 (latest year of full independent comparison – source Eurocontrol Performance Review Report 2015, published June 2016), IAA overflight charges were again amongst the lowest in Europe. The IAA en-route charge was 52% lower than the average unit rate for all states in Europe. The IAA has consistently maintained one of the lowest en-route user charge unit rates, making Irish airspace economically attractive to airspace users. Similarly, terminal charges at Irish airports remain within the cheapest quartile of European States and are almost 10% lower than the European average (2014 data).

6.1 ESTIMATED COMMERCIAL RATES

The IAA is responsible for the provision of safe, efficient and cost effective air navigation services in Irish-controlled airspace. The costs of providing these services and facilities are funded by charges levied on airspace users.

6.1.1 En-route Charges

The IAA recovers the costs of en-route air navigation facilities and services by means of en-route charges. A charge is levied on airspace users for each flight made under Instrument Flight Rules taking into account the distance flown and the weight of the aircraft (service units).

The IAA establishes its determined en-route cost base for the year in which the charges are collected. This cost base comprises of operating costs plus depreciation plus interest on capital expenditure plus the State's share of EUROCONTROL costs. Ireland is a member of EUROCONTROL, the European organisation responsible for the safety of navigation and also responsible for helping to develop a coherent and co-ordinated air traffic management system in Europe.

The unit rate that is charged by the IAA is established by dividing the determined costs by the estimated traffic, measured in terms of service units, to give the en-route service unit rate. An adjustment mechanism is operated so any adjustments such as traffic risk sharing and inflation in a particular year are taken into account in determining the unit rate in future years. The unit rate is applicable from 1 January.

This system allows the IAA to recover only the determined costs, which have been approved by the NSA to provide the en-route service. The en-route rate charged to the IAA's customers in 2015 was €28.87 (2012 prices). The submission to the NSA assumed chargeable en-route determined costs for 2015 of €118,046,200 and chargeable service units (CSUs) of 4,000,000. The actual outturn for 2015 was as follows:

	En-route Costs (Incl. MET)	Chargeable Service units
Actual outturn	€106,657,766	4,182,450
Forecast figure (NSA Submission)	€118,046,200	4,000,000
Variance	-€11,388,434	+182,450
Variance in %	-9.6%	-4.6%





The en-route and terminal cost bases were lower than forecast, due to **exceptional cost containment measures, resulting in lower headcount, lower operating expenses and depreciation costs than forecast.**

6.1.2 Terminal Charges

The IAA recovers the costs of terminal navigation facilities and services by means of terminal charges. These charges were previously established within the price cap allowed by the Commission for Aviation Regulation (CAR).

However, going forward from 2015, these terminal charges are determined by the provisions of the European Commission Charging Regulation 391/2013, operated through the EUROCONTROL bilateral system.

A charge is levied on users for approach, landing and take-off services provided at each of the State airports, Cork, Dublin and Shannon, taking into account the weight of the aircraft, where this weight exceeds two tonnes.

The IAA's terminal cost base comprises of operating costs, plus depreciation, plus a regulatory return.

For 2015 the IAA froze the terminal service rate at 2014 levels.

The terminal service unit rate for 2015 was €156.92. The actual outturn for 2015 was as follows:

	Terminal Costs (Incl. MET)	Terminal Service units
Actual outturn	€22,332,565	149,863
Forecast figure (NSA Submission)	€24,272,300	141,200
Variance	-€1,939,735	8,663
Variance in %	-8.0%	+6.1%



7. CAPACITY & EFFICIENCY

The ATM Operations Directorate, together with the Technology Directorate, is responsible for the provision of **safe, efficient and reliable air traffic services which meet the needs of its customers in a cost-effective manner.**

The IAA in delivering a safe and efficient service provide the necessary airspace procedures to ensure sufficient capacity. These procedures are designed to ensure an efficient use of airspace for our airline customers. The following are examples of how we achieve this and meet our stakeholder requirements:

- ▶ While the Shannon ACC is a very complex airspace block, the IAA uses dynamic sectorisation within its free route airspace, to ensure capacity meets current and future demand. Sectors are made of 'building blocks', which are shaped several times a day, so that the sectorisation best suits the traffic flows. These building blocks can also be split vertically.

A review of a number of these building blocks was carried out over the winter period 2015/2016. As a result of this review, Shannon ACC made a number of changes including a change to the DFL (Divisional Flight Level) to the sectors to best meet our customers' demands. These changes were looked at, not only in the context of current traffic demands, but also looking ahead to changes on the North Atlantic. This method, along with the expansion of CPDLC for FANS aircraft and the addition of ATN CPDLC, allows Shannon ACC to ensure Irish airspace is used as efficiently as possible and allows for increased demand.

In December 2015, Shannon ACC introduced level changes for FANS CPDLC message set as part of an ongoing expansion of the messages. Further changes are under review. During 2015, the Shannon ACC fully met its capacity plan of +3%.

- ▶ The IAA and NATS through their FAB partnership have embarked on a two phase trial to examine the feasibility of cross border dynamic sectorisation. The first phase of this trial involved the delegation of ATS to GAT in a portion of the UK Rathlin airspace from NATS UK, to the IAA.

This phase required significant cooperation at an ANSP, Regulatory, and Military and State level.

Phase 1 of DSOT has seen the Shannon Free Route Concept introduced into a portion of the UK Rathlin west sector. Operational analysis have shown savings in both track miles and time to the customers, during phase 1 of the trial. Phase 1 of DSOT ended on September 18th 2014, Phase 2 has taken place. This phase was a shadow operation using the NATS future ITEC system and the current Shannon COOPANS system. This trial evaluated the system's, requirements as well as the ATC requirements with teams working in Shannon ACC and the UK to evaluate the concept.

- ▶ The **Dublin ACC fully met its capacity plan of +4%**, which was enabled by the TMA 2012 and Point Merge projects. Both TMA 2012 and Point Merge have enabled a highly flexible and efficient approach to opening and closing sectors to meet demand. The Point Merge arrivals procedures were introduced for Runway 10 at Dublin Airport during 2015, resulting in an average reduction in track miles of almost 6 NM per flight, thereby facilitating a reduction in fuel burn and CO₂ emissions.
- ▶ In March 2015, the IAA introduced the use of Mode S Downlinked Aircraft Parameters (DAP) as part of an upgrade to the COOPANS system. Mode S DAP displays the flight level/altitude selected by the crew of a participating aircraft, along with the speed and heading. This ability to see the flight level information is helping to reduce the incidence of level busts with 28% fewer incidents occurring in 2015 than in the previous year.
- ▶ During 2015, the IAA commenced a large scale demonstration in conjunction with the SESAR JU to develop the concept of operations for the remote provision of ATC services at two airports simultaneously. Initially at night and other periods of very low traffic demand, we intend to provide ATC services for Cork and Shannon airports from a Remote Tower Centre at Dublin. The project will deliver a final report towards the end of Q3 2016.
- ▶ During 2015, the distance between departures from Dublin Airport was reduced to 1 NM (from 1.5NM), leading to an average reduction in the departure interval of 12 seconds per flight. This has increased the capacity of the runway and will facilitate additional slots from the summer 2016 season.



8. DELAYS

Irish ATFM delays recorded by the Central Flow Management Unit (CFMU) for 2015 amounted to only 16,387 minutes and were **primarily attributable to the weather, with no ATM contribution.** Irish delays are **significantly less than 1%** of total European delays.



9. ENVIRONMENT

The IAA is reviewing its Energy Management Policy to help ensure we reach the 2020 target to reduce our CO₂ emissions by 33%. This target is in line with the Sustainable Energy Authority of Ireland's (SEAI) public sector programme to achieve the required Government target of a 33% reduction in energy consumption for all public sector businesses by 2020.

The IAA is currently reviewing its **Environmental Policy** to ensure it is up-to-date and reflects current environmental trends.

To support these policies, the IAA is committed to:

- ▶ Being a leader in Environmental Management.
- ▶ Ensuring that the delivery of Air Navigation Systems takes account of the impact of aviation on the environment in the planning, designing and revision of airspace and air traffic procedures.
- ▶ Considering environmental impact on strategic decision making process, assess and manage environmental risks and establish environmental targets and priorities.
- ▶ Seeking to reduce the IAA's direct environment footprint and minimise future adverse environmental impact.
- ▶ Using energy and water in an efficient manner, minimising waste and recycling materials where possible.
- ▶ Ensuring that all goods and services supplied by external contractors meet the environmental requirements of the IAA.
- ▶ Minimising the use of solvents, lead based paints, non-biodegradable chemicals, CFCs, ozone-depleting substances and materials from unsustainable sources.

Almost all capital projects undertaken by the IAA's ATM Operations Directorate will result in a reduction in the impact of air traffic management on the environment in airspace controlled by the Irish Aviation Authority.

The IAA has been very successful in introducing innovative procedures and new technology, which facilitate a reduced fuel burn for our airline customers and in replacing obsolete equipment with more energy efficient solutions.

Increasingly, the IAA is required to demonstrate that the environmental impact of our activities is being considered, particularly during the planning phase and in this regard, a short section is being added to all new business cases which demonstrate that the environmental impact of these projects has been considered and which records the expected benefits.





10. DEVELOPMENTS IN OPERATIONS INFRASTRUCTURE

The objective of the Authority's Technology Directorate is to develop and deliver the IAA's Technology Strategy. The IAA Technology Strategy is reviewed on an annual basis, to ensure it continues to meet the IAA's operational requirements and its obligations under the SES legislation. The IAA's current Technology Strategy covers the period 2015-2019.

The methodology used in compiling the Technology Strategy is to:

- ▶ Identify the Communications, Navigation and Surveillance (CNS) goals we wish to achieve;
- ▶ Support the IAA's on-going commitment to implement SES legislation requirements;
- ▶ Identify which emerging technologies the IAA must monitor and evaluate in order to position the organisation for the challenges ahead.

All identified technology projects are subject to approval by the Air Traffic Management Planning Group to ensure that the proposed technology changes meet operational requirements. Projects are also subject to internal scrutiny from the "Capital Expenditure committee" which approves business cases and tracks budgets.

Operational requirements are the driver for technology change, and can be expressed as requirements to increase the system capacity, improve safety, improve performance or remain compatible with changing SES requirements. The most significant developments in Operations and Infrastructure during 2014/15 were as follows;

- ▶ **COOPANS Development:** The COOPANS system remains at the forefront of European ATM system developments. In 2015 all of the COOPANS partners went live with the COOPANS Build 2.6. Planning is underway for the introduction of B3.1 in 2016 which will see the existing SNMP safety nets function being replaced by the TSN product. The COOPANS partners have revised the COOPANS roadmap to ensure it is compliant with the Deployment Program. The road map extends to 2025 and includes a migration to a Java Based HMI and the incorporation of the Flight Object interoperability requirements.

- ▶ **Surface Movement Radar Replacement:** The replacement of the Surface Movement RADAR was completed and a new Surface Movement Radar now in service.
- ▶ **SIRP Phase 2:** the second phase of SIRP has been completed and is in service. SIRP 2 has enabled a higher level of cooperation between the two service providers, as the new TCP IP based voice switches implemented with ISAVIA will enable **a virtual centre where all HF resources can be accessed from every controller working position.**
- ▶ The Communications Domain is working on the replacement of the existing **VCS (Voice Communication System)** replacement program.
- ▶ The installation of the SAAB remote tower system was completed in preparation for the planned SESAR trials in 2016. SAAB are also installing the Electronic Flight Strip system (EFS) at Dublin Airport, this is a key enabler for the delivery of ACDM at Dublin Airport.
- ▶ The first IAA PENS connection was established in November 2015 and the IAA is working on migrating existing OLDI connections on to the PENS network.
- ▶ In the medium term the IAA will migrate its existing TDM data networks to an IP WAN. An IP network has been established to deliver Remote Towers connectivity and Centralised Monitoring of operational systems.
- ▶ The Technology Directorate is currently commissioning a new contingency facility for the Shannon FIR located at the Ballygirreen North Atlantic Communications facility. The contingency connectivity will be based entirely on IP data networks and the use of VOIP.

Our COOPANS system continues to be on the **leading edge of ATM systems in Europe** and is the only harmonised system of its kind, implemented in 5 ANSPs.

11. INNOVATION IN OPERATIONS AND INFRASTRUCTURE

The IAA will be one of five partners involved in a \$400 million cutting edge technological partnership, including Iridium (USA) and the air navigation service providers from NAV CANADA (Canada), ENAV (Italy) and Naviair (Denmark) to establish global space based ADS-B coverage by including ADS-B receivers on the new Iridium NEXT satellite constellation.

It's a **Revolution in Global Air Traffic Surveillance**

Starting in 2018, it is estimated, this new service will **save airlines over \$127 million per year in the North Atlantic alone** without requiring any additional avionics investment.

The objective of the system is to provide surveillance coverage in remote and oceanic areas, where there currently is no surveillance service. It will provide coverage that is commensurate with 15 NM separation. The first satellite launch is expected in 2017, with the system to be available in 2018.

Although ADS-B is an established technology, that is already widely used, the availability of global surveillance will have a transformative effect on ATC services, not only on the North Atlantic, but for the Pacific and Polar regions as well. It represents an opportunity for the IAA to provide ATC surveillance services beyond 15 degrees West, which is the cut off point for RADAR coverage. When available this would facilitate the early streaming and sequencing of the east bound traffic flow into European airports. For west bound traffic flows it will offer the potential of flight level changes that are not possible in procedural airspace. It is likely however to lead to the eventual demise of HF radio on the North Atlantic. This will probably require us to engage with the UK on the issue of joint service provision in the North Atlantic.

Creates **Airspace Flexibility, Reduces Fuel Costs and Increases Safety**

The IAA, in partnership with NAVIAIR and ENAV has already conducted a detailed technical review of the system and its capability and has concluded that the proposed technical solution is viable.

The simulations and studies conducted to date indicate that the system design is capable of meeting the required operational requirements.

To date, the analysis has been conducted in regions where higher levels of traffic and interference are anticipated, for example the eastern coast of the United States in the region of New York and Washington. The design demonstrates that the system is capable of working in such difficult environments.

The hosted payload has the capability of handling 1,000 tracks in a worst case traffic scenario, and the system overall has the capability of processing 10,000 tracks on a worldwide basis. The design solution demonstrates a high level of system redundancy.

- ▶ All of the ground processing elements and down link portal are fully redundant.
- ▶ 72 satellites will be placed in orbit, giving 6 spare satellites which can be moved into position in a period of 10-14 days to cover a failed satellite.
- ▶ Overlapping satellite coverage. The satellites are placed in 6 orbital planes, which transit the North and South Poles. As the satellites converge on the poles, their respective ADS-B coverage footprints overlap, resulting in multiple levels of overlapping satellite ADS-B coverage. As a consequence, single satellite failures would have no impact on coverage in higher latitudes, where the majority of North Atlantic traffic is routed. A single satellite outage would manifest as an area of no coverage lasting for a maximum of 9 minutes in equatorial regions where overlapping coverage is at a minimum.

This development represents a major opportunity for the IAA to extend its sphere of influence in particular on the North Atlantic. The COOPANS system is fully capable of integrating the ADS-B output from the AIREON system and processing it directly in the COOPANS system and we are currently in discussion with EASA about the certification of ADS-B.

A **Breakthrough in Aviation Safety**



12. CUSTOMER CONSULTATION PROCESS

Our Annual Customer Care Programme is a Key Consultation Tool with our Customers

During 2015, 33 Programme Partners were visited with 30 CRM surveys completed

During the year, the Customer Care Team received 397 individual requests from our Customers

Our Response Rate was 92% of Customer Requests were closed in 24 hours

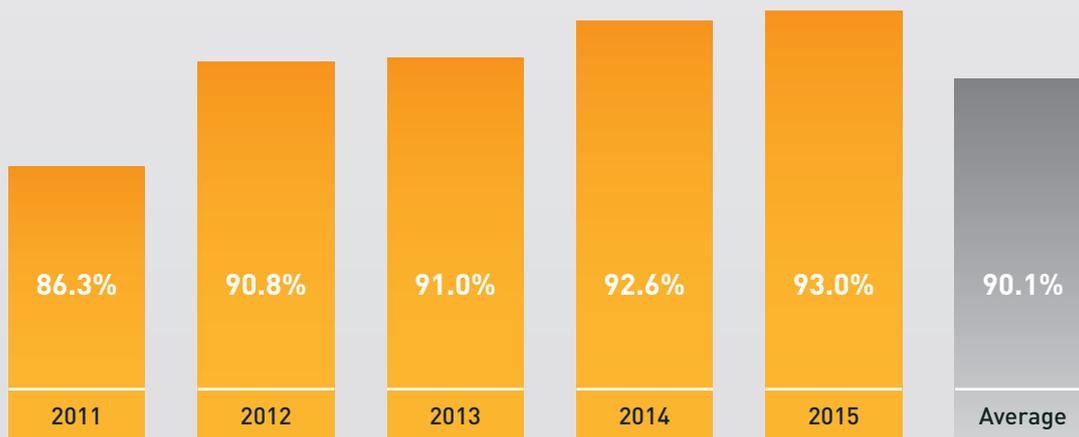
The IAA commissioned the independent organisation, Schuman Associates based in Brussels, to conduct a Customer Survey for 2015. Using their web based customer relationship model (CRM), Schuman contacted our customers directly and asked them to complete an online scorecard/questionnaire.

Customers were asked to rank the IAA across a number of relevant areas and encouraged to complete a "free format" section which recorded comments, concerns, questions and suggestions. The average response rate to these surveys was over 90%. Schuman collected the data from the survey responses and compiled a series of reports for the IAA.

The results of this independent survey show that overall customer satisfaction in 2015 is at 92.95%, a 0.4% improvement on 2014. This continues the upward trend of recent years.

This performance is reflective of the IAA's consistently low user charges, lack of air traffic delays, a highly efficient Free Route Airspace, high levels of customer engagement and our continued support to the commercial aviation industry.

TREND OF CUSTOMER SATISFACTION



IAA CUSTOMER PROGRAMME PARTNERS



GLOSSARY

A

ACC	Area Control Centre
ADS-B	Autonomous Dependent System Broadcast
ANS	Air Navigation Services
ANSP	Air Navigation Services Provider
ATM	Air Traffic Management
ACE	ATM Cost Effectiveness (Eurocontrol performance benchmarking report)
ATFM	Air Traffic Flow Management
ATCO	Air Traffic Controller

C

CAPEX	Capital Expenditure
COOPANS	Co-operation in the Procurement of ATM Systems
CRM	Customer Relationship Management

D

DSOT	Dynamic Sectorisation
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E

EASA	European Aviation Safety Agency
EoSM	Effectiveness of Safety Management

F

FAB	Functional Airspace Block
FIR	Flight Information Region

H

HF	High Frequency
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I

IAA	Irish Aviation Authority
ICAO	International Civil Aviation Organisation

N

NATS UK	National Air Traffic Service UK
NAT	North Atlantic Traffic
NSA	National Supervisory Authority

R

RAT	Risk Assessment Tool
RP	Reference period

S

SES	Single European Sky
SESAR	Single European Sky ATM Research
SMS	Safety Management System
SMU	Safety Management Unit
SRD	Safety Regulation Directorate
SS&P	Safety, Standards & Procedures
STATFOR	Statistical Forecasts (unit in EUROCONTROL)

V

VoIP	Voice over Internet Protocols
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X

XMAN	Cross Border Arrival Management
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