ANNUAL PERFORMANCE REPORT 2013

CONTENTS

Chief Executive's Introduction Annual Performance Report

It gives me great pleasure to introduce the ninth annual performance report for the Irish Aviation Authority covering the performance of the Air Navigation Services function, for the year 2013.

The Authority, throughout 2013, 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) no 1035/2011.

Safety: Aviation-safety **standards are set** internationally by the International Civil Aviation Organisation (ICAO); and, in a European context, by the European Aviation Safety Agency (EASA); the European Union (EU); EUROCONTROL; the European Civil Aviation Conference (ECAC); and, in the North Atlantic, by the North Atlantic Systems Planning Group (NAT SPG).

The Safety Regulation Directorate (SRD) of the IAA **oversees and regulates the implementation of these standards** for the Irish civil aviation industry and its activities are, in turn, subject to independent audits by these organisations. In 2014, we continued to maintain high standards of safety in the civil aviation industry in full compliance with international standards.

Safety and safety management are the overriding objectives, of the IAA. In 2013, the European Aviation Safety Authority (EASA) and the Eurocontrol Performance Review published a report, in which the IAA attained a maturity score of 79% safety maturity index, placing the IAA among the top air navigation service providers.

The IAA was also delegated responsibility, by the State, for **ICAO Annex 19 "Safety Management"**. The purpose of this Annex is to assist States and services providers **to manage aviation safety risks in order to improve their performance.**

In addition, the United States Federal Aviation Administration (FAA) also signed an **historic agreement** that permits delegation of **safety oversight of US registered aircraft, habitually based in Ireland, to the IAA.**

2013 was the first year of the IAA's responsibility for the **oversight of civil aviation security in the State.** A full programme of audits, inspections and tests of security measures implemented by airports, air carriers, cargo companies, airport suppliers and suppliers of in-flight services were carried out.

Cost Effective: The IAA continues to deliver on its commitment to remain **cost-effective** and provide en-route, terminal and communications services at charges that are stable and as low as possible.

- In 2014 our en- route charges remained one of the lowest in Europe and the terminal charge will reduce by 4% p.a. (in real terms) during 2014 and 2015. **The IAA is amongst the lowest in Europe, for ATC charges, in 2014.**

Efficiency: The IAA has demonstrated in published, Eurocontrol Air Traffic Management Cost Effectiveness (ACE) reports, that:

- IAA air traffic controllers (ATCOs) are amongst the most productive in Europe and **provide the service at a lower cost than most other western European air traffic controllers.**
    - IAA Air Traffic Controller (ATCO) productivity is in excess of 20% (2013) higher than the European average. ATCO-hour productivity measures the efficiency with which an Air Navigation Service Provider (ANSP) deploys and makes use of its ATCOs.
- The IAA's ATCOs are in the **top quartile of performance,** far above, the European average.

- The IAA's total costs are, on average, **only 1 % of the total European air traffic management costs.**
- The IAA is one of the most cost-effective providers in Europe and its **costs are significantly below the European average.**
- The IAA is amongst the **lowest in Europe, for ATC charges.**
- The IAA's employment costs, which are adjusted for purchasing parity power, are **significantly below the European average.**
- The IAA has amongst the **lowest level of en-route and airport delays in Europe, contributing only 0.001% of total European delays.**
- There were **no ATM flow regulation delays** attributable to the IAA, **at Irish airports**, during 2013.
- Dual runway operations at Dublin airport continue to reduce the average taxi-times during the morning peak, by 50%, delivering savings in fuel burn and more on time departures to our customers.

Air Traffic Management: A year on, from its successful implementation, the **IAA's Point Merge Project** has provided **savings of €5.5 million** to **airlines**, at Dublin airport, through fuel savings along with further tangible savings in CO2 emissions. The IAA has also successfully commenced the first phase of the **Dynamic Sectorisation Operational Trial (DSOT)**, with the temporary delegation of a portion of UK airspace from NATs to the IAA. It is the first trial of its kind within Europe, on this scale. To date the trial has **delivered customer fuel savings through optimal traffic routing and is forecast to deliver future customer savings through more operational efficiencies.**

A key enabler of our operations strategy is our air traffic management system **(COOPANS)**. Since early 2014, seven control centres, in five European countries, are operating a fully harmonised version of COOPANS, **which results in significant cost savings, of up to 30%**. This is a unique step forward in European air traffic control, where most centres have been developed individually with different systems.

Strategic Alliances: In 2014, the IAA became a stakeholder in Aireon a company leading the **development of space based global air traffic surveillance systems**. Aireon offers a technological step change, which will **deliver significant fuel savings in the order of €100 million per annum on the North Atlantic alone.** The Aireon system uses Automatic Dependent Surveillance – Broadcast (ADS –B) technology installed on a network of 66 Iridium NEXT satellites, to receive and send aircraft positional and tracking data. The IAA has agreed a 6% stake in Aireon. Other shareholders include NAV CANADA, ENAV and Naviair. However, Aireon is not just an investment; **the IAA is planning for Aireon services to become part of our operations, once the system is operational in 2018.**

With effect from 01/01/14, the IAA has transferred its air traffic management training into a 100% owned subsidiary of **Entry Point North (EPN).** There are many advantages to be gained from consolidating our operational training requirements in EPN namely, **standardised training requirements,** which are fully compliant with EU regulatory requirements, **lower IAA capital investment** through centralised and shared investment and development and **greater efficiency in COOPANS training.**

We continued to monitor **SESAR** developments through our membership of **NORACON** (North European and Austrian Consortium).

The IAA's membership of BOREALIS, a formal commercial alliance, established in June 2012, comprising nine North-European air navigation service providers, allows for collaboration on various air traffic management projects for the purpose of delivering efficiencies and reducing costs and reducing the impact of aviation on the environment.

Staff: 2013 was a good year in which the drive to **promote efficiencies** in terms of manpower deployment arrangements and **cost containment** successfully continued in collaboration with staff representatives.

Revised procedures for c**onsultation and dispute resolution** were agreed and implemented in 2013. This process involves the establishment of an arbitration panel chaired by an independent industrial relations practitioner who, with one management and one staff representative attempt in the first instance to mediate a solution.

Where this fails, the adjudication panel will make a determination. Management and staff representatives can decide to utilise the mechanisms of the State's industrial relations machinery, as necessary.

Customer Consultation: The IAA will continue to consult regularly with its customers in the evaluation of the quality of service provided. In 2013, it received the **highest average customer relations score (95%)** since this process commenced. 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 2013 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

IAA PERFORMANCE 2013

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) no 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.**

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

Air Navigation Service Providers (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 set 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 Plan

The **Annual Plan** specifically relates to the ANSP and should specify further the features of the Business Plan and describe any changes to it. The annual 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 above, of the Annual Report, and covers the period **1 January 2013 to 31 December 2013** and is designed to meet the common requirements laid down in Commission Regulation (EC) no 1035/2011: to '**provide a description of progress achieved in relation to the business plan, reconciling actual performance for 2013 against planned performance in the IAA's five year corporate plan 2013 -2017"**.

The Authority provided forecasts in its five year corporate plan 2013-2017 in the following areas.

1. Safety
2. Efficiency
3. Cost effectiveness
4. Delays
5. 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. Safety

2.1. Corporate ATM Safety Strategy

The Safety Management System (SMS) within the IAA Air Navigation Service Provider (ANSP) provides the vehicle by which we will continue to develop and mature our safety system, while simultaneously meeting the regulatory requirements and safety targets set by Eurocontrol and EASA, for Reference Period 2 (RP2). 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.

New regulatory ANSP safety performance measurement requirements, in combination with the civil aviation regulator's mandatory requirements to provide a more cost efficient service, pose very significant organisational challenges in the forthcoming Reference Period (RP2; 2015-2019). In order to meet these demanding requirements and attain this level of safety maturity, the IAA must concentrate its efforts in 5 interconnected focus areas, driven by associated **strategic safety goals**, contained in the Corporate Strategic Safety Plan 2012-2015. This plan contains focus areas and strategic safety goals which are summarised as follows:

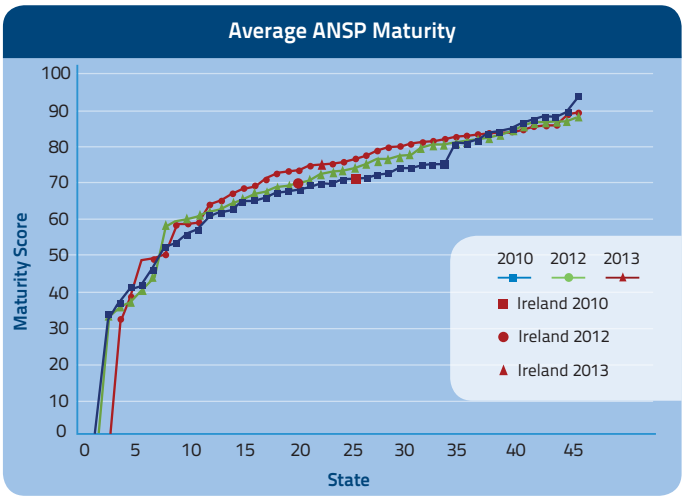
2.2. Safety Performance Indicators

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

In consultation with the Irish NSA, the IAA is developing and implementing three leading Safety Performance Indicators from EC Regulation 390/2013, which have been monitored since 2012 at European, National and FAB levels: these are:

a) **Effectiveness of Safety Management (EoSM):** based on the safety maturity survey methodology developed and conducted by EUROCONTROL and CANSO. This survey has now been adopted by EASA as a Key Safety Performance Indicator Measurement.

1) The outcome from the Eurocontrol process in the 2013 survey (see next diagram) resulted in a significant improvement of our 2012 maturity score overall, to a score of 75%. This exceeds the overall average of 72% for all ECAC ANSPs for that period.



i. Fig.1

2) The IAA ANSP scored 78% in the first EASA survey published in 2013 for 2012.

b) Application of the severity classification scheme of the **Risk Assessment Tool (RAT) methodology.**

1) This process is well embedded and all occurrences as required by Reference Period 2 (RP2) are reviewed and classified in accordance with this scheme, however 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.

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

1) 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 and implementation and application to ATM occurrence investigations from Q1 2014.

2) 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 Head of ATM Safety Management is ensuring that, in collaboration with local managers, appropriate safety performance improvement plans are being developed and implemented.

a) The IAA has implemented a **Unit Safety Manager (USM)** function for each of the Operations & Strategy business units. The USM is a critical appointment for the attainment of higher levels of Safety Maturity for the ANSP and for providing the capability to meet the RP 2 safety requirements. The appointments have been functioning as full-time permanent positions since October 2013, re-enforcing the Safety Management System (SMS) at operational unit level. The **Safety Management Unit (SMU)** will continue to provide expert advice, support, guidance and training, so as to ensure the USMs are suitably qualified to provide the essential Safety Management support to the General Managers of our En-route and Terminal business units.

b) In collaboration with the IRL\UK FAB Supervisory Committee (FSC) 'Harmonisation Working Group', we will develop and implement a **FAB safety management 'harmonisation' strategy** that provides for wider FAB 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 the IAA. In addition, the development of a FAB Safety Management Arrangements Document (SMAD) was completed, published and forwarded to both regulatory authorities in 2013. The successful UK /IRL FAB DSOT airspace project's joint safety risk assessment processes, were enabled by the arrangements and requirements contained in the SMAD.

c) The Head of the ATM Safety Management Unit commenced a review of strategic safety management systems arrangements and principles in 2013. The review was conducted to provide assurance that the operation of the SMS and is consistent with best practice. In particular, the review evaluated the SMS structures and its capabilities regarding the demands and the requirements of Reference Period 2. This review was completed in December 2013.

2.4. Safety Achievement Metrics

Safety data produced from the IAA's **mandatory Occurrence Reporting (MOR)** scheme enables analysis of our safety trend. Throughout 2013, the IAA improved its safety reporting arrangements with Operational Units reporting the trend in their top five Key Risk Areas in a standard Quarterly Operations Safety Report.

- **Separation minima infringement**
- **Runway incursions**
- **Unauthorised penetration of airspace**
- **Deviation from ATC clearance**
- **Level bust**

The predicted and actual events for 2013 in the 5 Key Safety Key Performance Indicators (SKPIs) were within the overall tolerable variance. Continued enhancements are being implemented, such as runway protection measures, and in areas where the ATM contribution is low, e.g. Level Busts, there is ongoing dialogue with aircraft operators to highlight this issue.

As part of the IAA's ATM Safety Strategy, the Authority's 'Plan, Do, Check, Act" **Operational Safety Improvement process is** utilised to focus safety effective efforts on assuring that the occurrence trend for the SKPIs does not increase and, where possible, will decrease. Interaction and dialogue with operators and Airport authorities is a key component of this process.

3. Efficiency

3.1. Traffic 2013

The Authority uses the EUROCONTROL STATFOR forecasts, in addition to local economic knowledge, to forecast traffic growth. There are however, a number of sources of uncertainty in these forecasts, including:

- Network and route changes, tourism trends, oil prices, airline reaction to aviation taxation, load factors and local effects.

This forecast estimated a decline in total IFR traffic for Europe of -0.9%, during 2013. However, **2013 was a positive year for Irish air traffic, which saw strong growth at Dublin Airport.** Traffic at the State's largest airport was up 4.5% in 2013, while total flights in Irish airspace were up +0.3%.

A number of airlines announced new international and regional routes from Dublin, Shannon and Knock that will greatly boost Irish air traffic in 2014. These include new routes to the US market to Toronto and San Francisco and also new routes to the European and North African destinations of Lisbon, Prague and Marrakesh.

Additionally, another airline has also increased both the capacity and frequency of its Dublin/Abu Dhabi route.

The IAA was encouraged to see such strong growth in Irish air traffic figures for 2013 and is confident that the years ahead will be even more positive.

The Irish traffic statistics reflect a renewed confidence in the general economy and in the Irish aviation industry, while the announcement of new routes in and out of Ireland is a very positive and welcome development.

There were 196,566 commercial terminal traffic movements for Dublin, Shannon and Cork airports in 2013, up **+3%** on 2012.

There were 298,270 en route movements in 2013 (flights that pass through Irish airspace but do not land), down **-1%** on 2012.

3.2. Staffing

The actual staffing in 2013 was 566 staff (excluding Safety Regulatory Division) which was 2.9% less than 2012 actual staffing. This was primarily due to a readjustment in the IAA's authorised staffing requirements following a review of staffing, as a result of the continuing downturn in traffic, the introduction of increased net weekly hours for staff and improvements in the application of crewing to workload principles.

3.3. Human Resource Policy

The IAA values its staff and its goal is that staff are educated and trained to the highest standard to ensure safe and efficient service. Consequently, the IAA has implemented the following initiatives for this purpose.

The IAA has in place a number of training and development initiatives to assist in the personal development of staff and to ensure the staff possess the requisite skillset to meet their personal development and contribute to a culture of high performance in the Authority. These initiatives are supported by a progressive Succession Management Policy.

In addition to the foregoing, staff members have access to an Employee Assistance Programme. This is a free and confidential service and gives invaluable information, specialist counselling and support to employees and their immediate families during periods of emotional distress.

Furthermore, a confidential Critical Incident Stress Management (CISM) service is available to staff in the operational area. CISM is a support system to deal with human reaction to an abnormal occurrence / critical event. CISM is an integrated

programme with several levels of intervention. The primary support is provided on a voluntary basis by peer supporters all of whom have received the appropriate professional training and they in turn are supported by external health professionals as required.

The agreement reached with staff representatives and implemented in 2011 to address our pension fund deficit remains on track to eliminate our pension fund deficit by 2018. In addition, the Authority is working very closely with Mercer to ensure robust monitoring of pension plan and asset management performance. The pension fund's on-going funding level was 80% at Quarter 1 2014.

The 1996 and 2008 Staff Superannuation Schemes are closed to new entrants. All new hires to the Authority with effect from 1 January 2012 join a Hybrid Pension Scheme which comprises a defined benefit and defined contribution arrangement.

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. EC Benchmarking

The IAA participates in the ATM cost effectiveness (ACE) benchmarking exercise, **which presents factual data and analysis on cost-effectiveness and productivity for 37 Air Navigation Service Providers (ANSPs) in Europe.**

The latest available report was published in June 2014 and highlights that:

- The IAA's air traffic controllers (ATCOs) are amongst the **most productive in Europe** and provide the service at a lower cost than most other western European air traffic controllers.
    - IAA Air Traffic Controller (ATCO) productivity is in excess of **20% (2013) higher than the European average.** ATCO-hour productivity measures the efficiency with which an Air Navigation Service Provider (ANSP) deploys and makes use of its ATCOs.
- The IAA's ATCOs are in the **top quartile of performance**, far above the European average.
- The IAA's total costs are, on average, **only 1% of the total European air traffic management costs.**
- The IAA is one of the **most cost-effective providers in Europe** and its costs are significantly below the European average.
- The IAA is amongst the **lowest in Europe, for ATC charges.**
- The IAA's **employment costs**, which are adjusted for purchasing parity power, are **significantly below the European average.**
- The IAA has amongst the **lowest level of en-route and airport delays in Europe**, contributing only 0.001% of total European delays.
- Dual runway operations at Dublin airport continue to reduce the average taxi-times during the morning peak by 50%, delivering savings in fuel burn and more on time departures to our customers.

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

6. Cost Effectiveness

6.1. Financial Cost Effectiveness

The IAA has continually reduced overall costs through the rigorous management of Operating Expenditure, thorough examination of Capital Expenditure and by improving Human Resources Management strategies.

The capacity of the IAA to deliver services to its customers in the most cost-effective manner possible was a key feature of this year. IAA management has been focusing on improving further the quality of services with an eye towards the final costs for its customers.

The IAA continues to contribute to a European reduction in en-route charges through the implementation of States National Performance Plan 2014-2014, adopted by the European Commission in 2012.

The IAA competitiveness at European level is strong. In 2013, the IAA over flight charge was **the lowest in Europe**.

In 2013, we continue to make progress on delivering cost effectiveness to costumers with reduction in charges across the major service delivery areas. These advances are clearly depicted in the table below:

	2012	2013
Over-flight Rate Reduction	**Decreased** by **-8.9%**	**Decreased** by **-6.3%**
Airport ATC Rate Reduction	**Decreased** by **-21%**	**Decreased** by **-4.1%**

6.2. 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.

6.2.1. 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 of charge is determined by the IAA 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 2013 was € 28.20.

The submission to the NSA assumed chargeable en route determined costs for 2013 of € 119,609,000 and chargeable service units (CSUs) of 3,906,000. The actual outturn for 2013 was as follows:

	Terminal Costs (Incl. MET)	Terminal Service units
Actual outturn	€105,991,000	€3,812,940
Forecast figure (NSA Submission)	€119,609,000	€3,906,000
Variance in €	-€13,618,000	-€93,060
Variance in %	-11.4%	-2.4%

The en route cost base was lower than planned mainly due to **exceptional cost containment measures** resulting in **lower headcount, lower operating expenses and depreciation costs than forecast.**

6.2.2. Terminal Charges

The IAA recovers the costs of terminal navigation facilities and services by means of terminal charges established within the price cap allowed by the Commission for Aviation Regulation (CAR). 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 plus a regulatory return comprises of operating costs, plus depreciation.

For 2013 and in accordance with EC regulations, the IAA's terminal service charge has been calculated as the maximum take-off weight divided by fifty to the power of 0.8. This rate must operate within the CAR price cap.

This system operates within the price cap set by CAR, allowing the IAA to recover only those costs which have been allowed in providing a terminal service. A two year adjustment mechanism is operated so that any adjustments in relation to traffic volumes, inflation and impact of milestones in a particular year are taken into account in determining the unit rate of a future year.

The Commission for Aviation Regulation (CAR) was established under the Aviation Regulation Act, 2001, to regulate, inter alia, certain aspects of the aviation sector in Ireland. In accordance with the Act, CAR is required to make determinations governing the maximum levels of aviation terminal services charges that can be levied at Dublin, Cork and Shannon by the IAA.

	Terminal Costs (Incl. MET)	Terminal Service units
Actual outturn	€22,072,000	€136,935
Forecast figure (NSA Submission)	€21,600,000	€142,135
Variance in €	€472,000	-€5,200
Variance in %	2.2%	-3.7%

The terminal service unit rate for 2013 was €153.72. The actual outturn for 2013 was as follows:

The terminal cost base for 2013 was higher than planned as the **CAR did not allow for full costs to be recovered and exceptional measures are being implemented to address this issue.**

7. Capacity & Efficiency

7.1. Shannon ACC Capacity

Shannon ACC is a very complex airspace block; however, the IAA uses dynamic sectorisation within it's free route airspace, in order to ensure capacity meets current and future demand. Sectors are made of building blocks, which are shaped several times a days, so that the sectorisation best suits the traffic flows. This method, along with the expansion of CPDLC for FANS aircraft and the addition of ATN CPDLC, allows Shannon to ensure Irish airspace is used as efficiently as possible and allows for increased demand. During 2013, the Shannon ACC fully met its capacity plan of +3%

7.2. Dublin ACC Capacity

During 2013, the Dublin ACC fully met its capacity plan of +4%, to meet requirements, for the new 'Point Merge" project. The sectorisation scheme developed in TMA2012 has enabled a highly flexible and efficient approach to opening and closing sectors to meet demand. The major capacity bottleneck at Dublin airport, in the short to medium term, is the airport infrastructure, in particular the single runway operation.

7.3. Operational Efficiency

The IAA's Operations Division continuously meets the needs of our customers, which are identified as part of the IAA's customer care programme. Throughout 2013, in addition to other operational projects, the division focused and delivered, on the following **customer requirements:**

- The IAA ANSP continues to proactively work with all stakeholders to reduce safety related events.
- There were no ATM flow regulations delays attributable to the IAA during 2013 and Irish Air Traffic Controller (ATCO) productivity is in excess of 20% (2013) higher than the European average. ATCO-hour productivity measures the efficiency with which an Air Navigation Service Provider (ANSP) deploys and makes use of its ATCOs.
- Dual runway operations at Dublin continue to reduce the average taxi-times during the morning peak by 50%, delivering savings in fuel burn and more on time departures to our customers.
- **Low Visibility Procedures:** Following a request from Airline Customers at a Dublin DAOPG meeting, to reduce the impact of low visibility on operations at Dublin Airport, the IAA committed to review these procedures. The cloud ceiling minima in use and the length of time taken to transition out of low visibility operations once the weather started to improve were the main concerns.

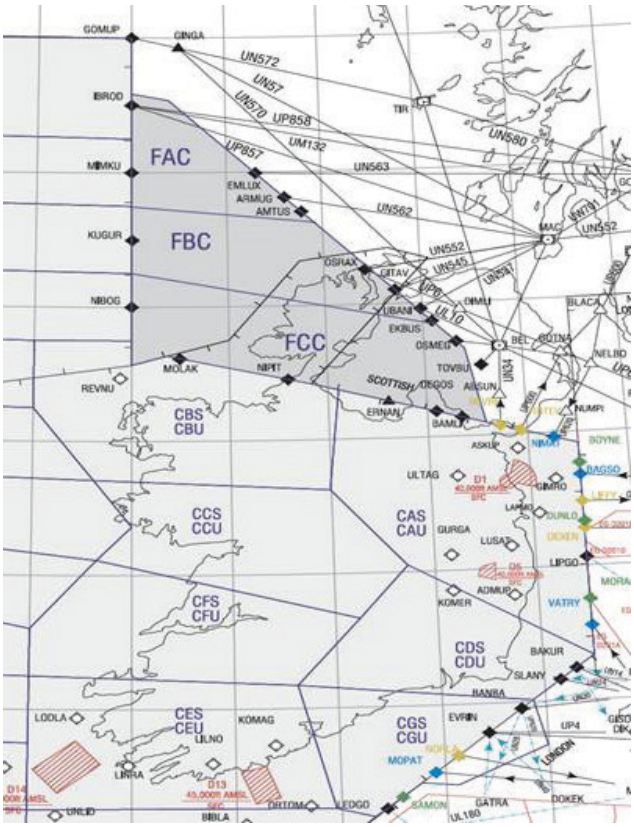
  The IAA team at Dublin, working with customers and regulators developed a revised procedure which was introduced on 31st January 2013 following the successful completion of a safety assessment. Since then, low visibility procedures have been in operation at Dublin Airport for an average of 40% less time than would have been the case under the old procedures.
- **Point Merge:** The IAA introduced the Point Merge arrivals procedure for RWY28 at Dublin Airport in December 2012 and committed to publishing details of its impact on flight efficiency. The IAA engaged the NATS Environmental Team to conduct a study into the environmental impact of the new procedures using their 3Di airspace environmental efficiency measurement tool. This study sought to provide an independent assessment of how the IAA's Point Merge project has delivered tangible benefits to airlines at Dublin.

Using the **3Di tool**, NATS compared data from both, before and after implementation of Point Merge and the results of the study were made available at the end of July 2013. Over 18,000 flights (pre- Point Merge) and nearly 20,000 flights (post-Point Merge) formed the basis of the study, with flights being analysed for fuel burn as well as the average track distances flown within Dublin airspace. The results show a positive effect on environmental efficiency and are shown in the table below:

Dublin Airspace	Average Full Burn (kg)	Average Track Distance (NM)
Pre-Point Merge	668.5	67.0
Post-Point Merge	540.9	55.7
Percentage Improvement	19%	17%

The IAA's implementation of Point Merge has been independently shown to have a positive effect on the environmental performance of flights in Dublin airspace. The introduction of these innovative procedures and the attendant reduction in fuel burn and flown track distances reinforces the Authority's on-going commitment to the provision of innovative, cost-efficient and environmentally beneficial measures to our Airline customers.

- **Dynamic Sectorisation Operational Trial** (DSOT). The IAA and NATS through their FAB partnership have embarked on a three phase trial to examine the feasibility of cross border dynamic sectorisation. The first phase of this trial involves 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, 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. Initial figures from the Operational Analysis of the trial have shown savings in both track miles and time to the customers, during phase 1 of the trial. Phase 1 of DSOT is due to end on September 18th 2014 with subsequent phases currently being discussed.



- **North Atlantic communications:** The introduction of Long Distance Operational Control (LDOC) was deferred due to an increased development cost, to our customers. The most cost effective option is to integrate the facility into our new Voice Communication Switch planned for October 28th 2014 under the Shanwick Radio Iceland Radio Phase 2 (SIRP2) 'Virtual Centre concept". Previously, Shanwick Radio operated on 20 HF frequencies to support air-ground communications, listening to our customers. A drawback of High Frequency (HF) Operations was the sharing of HF frequencies with other North Atlantic Network Stations. In order to safely increase the efficiency and capacity of the North Atlantic Communications Network, an additional thirty four new HF Frequencies have been introduced and used on a tactical basis at Shanwick Radio since January 2013.

8. Delays

8.1. ATFM Regulation delays

It should be noted that Ireland has one of the lowest levels of delays, as recorded by the central flow management unit (CFMU) in EUROCONTROL; they are normally significantly less than 1% of total European delays.

Total Irish delays recorded by the Central Flow Management Unit (CFMU) for the period January 2013 to December 2013 amounted to only 9,543 minutes on 382 aircraft.

There were no ATM flow regulation delays, attributable to the IAA.

- **99% of delays were due to adverse weather conditions**, with 379 aircraft being delayed by 9,484 minutes and only 1% being attributable to exceptional and infrequent events, with 3 aircraft being delayed by 59 minutes, due to aerodrome capacity.

- There were **no en-route delays** to over-flights, flying over Ireland, during 2013.

The low level of ATFM delays are primarily due to the reduction in traffic levels across Europe and the pro-active management, of air traffic, by IAA air traffic controllers.

9. Environment

9.1. Free Route Airspace

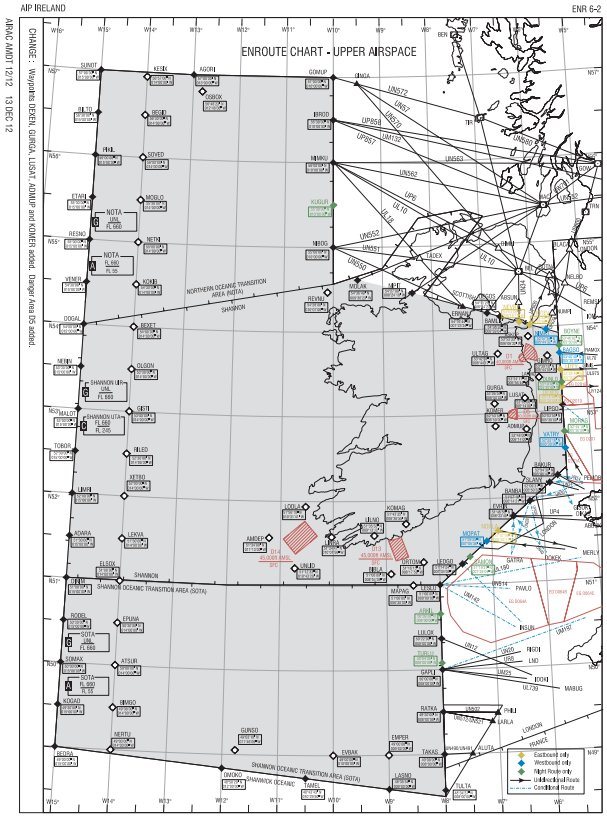
In 2009, the IAA removed all impediments to user preferred trajectory that were under the control of the IAA in Irish en-route airspace.

The IAA's **ENSURE (En-Route Shannon Upper Airspace Re-Design)** project removed the airway structure from the en-route airspace, thereby changing its nature to route free. Aircraft Operators (AOs) may choose to flight plan the great circle track from entry point to exit point. Should the AO make this choice, the last filed flight plan trajectory will be 100% efficient and cannot therefore be improved.

The reasons that the actual route flown may vary from the user preferred trajectory are:

- Pilot requested weather avoidance.
- User selected flight planning away from great circle route to take advantage of more favourable upper winds.
- Avoidance of active Danger Areas which penetrate upper airspace.
- ATM direction for reasons of maintaining minimum separation.

For the vast majority of time, these combined reasons amount to a very marginal distance between actual trajectory and great circle route, so therefore, the actual trajectory within Irish airspace is very close to being 100% efficient.



While a lower Airways structure exists it is optimised to provide close to 100% efficiency between the great circle track and the last filed flight plan trajectory. When possible, direct routeings are given in the lower airspace and with Class C airspace at 7,000 feet and above, aircraft always remain within controlled airspace. As with the upper airspace, the direct trajectory will only be altered for:

- Pilot requested weather avoidance.
- Avoidance of active Danger Areas
- ATM direction for reasons of maintaining

As it is now route free, there are currently no opportunities to improve en-route horizontal flight efficiency (KEA) within Irish airspace. The IAA will however, subject to their economic viability and sustainability, leverage future technological developments (e.g. 4D trajectories) as they become available to ensure the optimisation of KEA and will support efforts made by the UK to improve efficiency in UK airspace with a view to delivering FAB-wide improvements.

9.2. Functional Airspace Block Environmental Initiatives

The Authority has, since 2009, been delivering significant savings to airlines through the various UK/IRL Functional Airspace Block (FAB) initiatives.

The UK/IRL FAB is providing significant savings to our airline customers in terms of reduced fuel burn, reduced CO2 emissions and reductions in other airline operating costs (via reduced delay savings).

In summary:

- In 2013, it was estimated that the UK-Ireland FAB helped deliver **€30m of enabled savings** to airlines, including **29,000 tonnes of reduced fuel and 92,000 tonnes of reduced CO2 emissions.**

- This brings the estimated savings to customers since 2008, as a result of the optimisation of FAB airspace through **more direct routings, to over €100m, including 324,000 tonnes of CO2 and 102,000 tonnes of fuel.**

The IAA was the winner, in 2013, of the **"Innovation in Action"** award from the Chartered Institute of Logistics and Transport in Ireland for its work in **optimising airline routes and reducing fuel burn and CO2 emissions.**

The IAA remains committed to implementing future environmental projects

Project Breakdown of enabled UK/IRL FAB savings

Project	Measure	2008 - 2020
P600	Fuel Burn (t '000) Fuel cost €m CO2 (t '000) CO2 €m Total €m	22.4 €15.8 71.1 €1.0 €16.7
ENSURE Project	Fuel Burn (t '000) Fuel cost €m CO2 (t '000) CO2 €m Non-Fuel € ('000) Total €m	181.8 €131.7 577.9 €8.2 €64.7 €204.6
Fuel Saving Routes	Fuel Burn (t '000) Fuel cost €m CO2 (t '000) CO2 €m Non-Fuel € ('000) Total €m	70.0 €50.7 222.6 €3.2 €15.2 €69.1
CDA into MAN	Fuel Burn (t '000) Fuel cost €m CO2 (t '000) CO2 €m Total €m	2.4 €1.8 7.7 €0.1 €1.9
Reduced Long. Separation	Fuel Burn (t '000) Fuel cost €m CO2 (t '000) CO2 €m Total €m	14.5 €10.7 46.1 €0.7 €11.5
Dublin TMA (Point Merge)	Fuel Burn (t '000) Fuel cost €m CO2 (t '000) CO2 €m Total €m	41.0 €30.5 130.5 €2.3 €32.8

10. Developments in Operations and Infrastructure

The aim of the Authority's Technology plan is to deliver a strategic roadmap for the IAA's Air Traffic Management (ATM) Technology Directorate up to 2017.

The methodology used in compiling the Technology Strategy is to:

- Identify the Communications, Navigation and Surveillance (CNS) goals we wish to achieve;
- 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 'CAPEX 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 2013/14 were as follows;

- **COOPANS Development:** The COOPANS system has now been **successfully deployed** by five ANSPs, the IAA, LFV of Sweden, NAVIAIR of Denmark, Croatia Control and Austro Control. The Vienna Centre went into operation in February 2013.Croatia Control went into operation in February 2014, and the IAA implemented ATN Data Linking in 2014. COOPANS 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.
- **Surface Movement Radar Replacement:** The replacement of the Surface Movement RADAR is ongoing with operations expected in Q1 2015.
- The **Communications Domain** is working with Schmid Telecom on the replacement of the existing **VCS (Voice Communication System)** replacement program.
- The IAA has been selected by the EC's Innovation & Networks Executive Agency for:
  - Funding of the A-CDM implementation at Dublin Airport.
  - Funding as part of COOPANS to analyse the implications of future interoperability requirements.

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

In 2014, the IAA became a stakeholder in Aireon a company leading the development of space based global air traffic surveillance systems. Aireon offers a technological step change, which **will deliver significant fuel savings, to airlines, in the order of €100 million per annum on the North Atlantic alone.** The Aireon system uses Automatic Dependent Surveillance – Broadcast (ADS –B) technology installed on a network of 66 Iridium NEXT satellites, to receive and send aircraft positional and tracking data. The IAA has agreed a 6% stake in Aireon. Other shareholders include NAV CANADA, ENAV and Naviair.

However, Aireon is not just an investment; **the IAA is planning for Aireon services to become part of our operations, once the system is operational in 2018.**

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 scheduled for March 2015, with the system to be available in 2017.

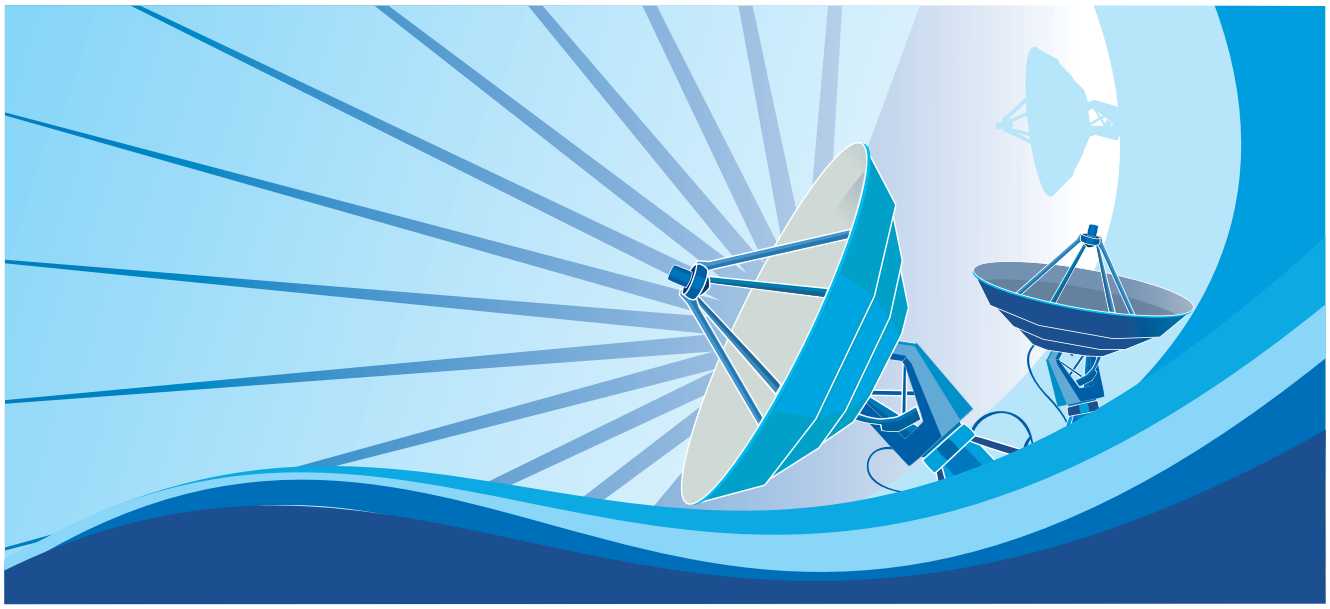
Although ADS-B is an established technology and widely used, the availability of global surveillance will have a transformative effect on ATC services, not only on the North Atlantic, but for the Pacific and Polar regions as well. **It represents an opportunity for the IAA, to provide ATC surveillance services beyond 15 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.

The IAA in partnership with NAVIAIR and ENAV have already conducted a detailed technical review of the system and its capability and have 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.** A key element of this will be to ensure that the COOPANS system is fully capable of integrating the ADS-B output from the AIREON system and processing it directly in the COOPANS system. The Technology Directorate plan to have ADS-B integration into COOPANS completed in 2015.

In 2014, the IAA became a stakeholder in Aireon, a company leading the development of space based global air traffic surveillance systems. Aireon offers a technological step change, which will deliver significant fuel savings in the order of €100 million per annum on the North Atlantic alone. The Aireon system uses Automatic Dependent Surveillance – Broadcast (ADS –B) technology installed on a network of 66 Iridium NEXT satellites, to receive and send aircraft positional and tracking data. The IAA has agreed a 6% stake in Aireon. Other shareholders include NAV CANADA, ENAV and Naviair. However, Aireon is not just an investment; the IAA is planning for Aireon services to become part of our operations, once the system is operational in 2018.

12. Customer consultation process

Our annual Customer Care Programme is a key consultation tool with our customers

11.1. Introduction

The IAA prides itself on being a safe, innovative, and highly cost-efficient provider of air navigation services.

The core to that ethos is to our aim to **meet customer needs** and **future expectations**. Therefore the IAA is committed to the development and maintenance of **strong customer relationship management with our airline customers.**

Our customers' feedback, which is obtained during face-to-face meetings, as well as through our online Customer Relationship Management (CRM) Scorecard system, is invaluable to the IAA. It enables the management of the IAA to identify customer priorities, as well as areas which may require additional attention.

The results are reviewed by the Board of the IAA, who take particular interest in ensuring that customer expectations are taken into consideration, by the IAA, with regard to our technical investment policy.

Once again, 2013 was a very successful year for the IAA. It was a year in which we maintained our very strong safety record and returned to modest growth in parts of our business, including Terminal operations at Dublin. We also maintained our highly competitive charging structure.

Looking forward, 2014 and beyond will undoubtedly be challenging. The IAA is conscious of the difficulties faced by its airline customers, especially with regard to fuel costs.

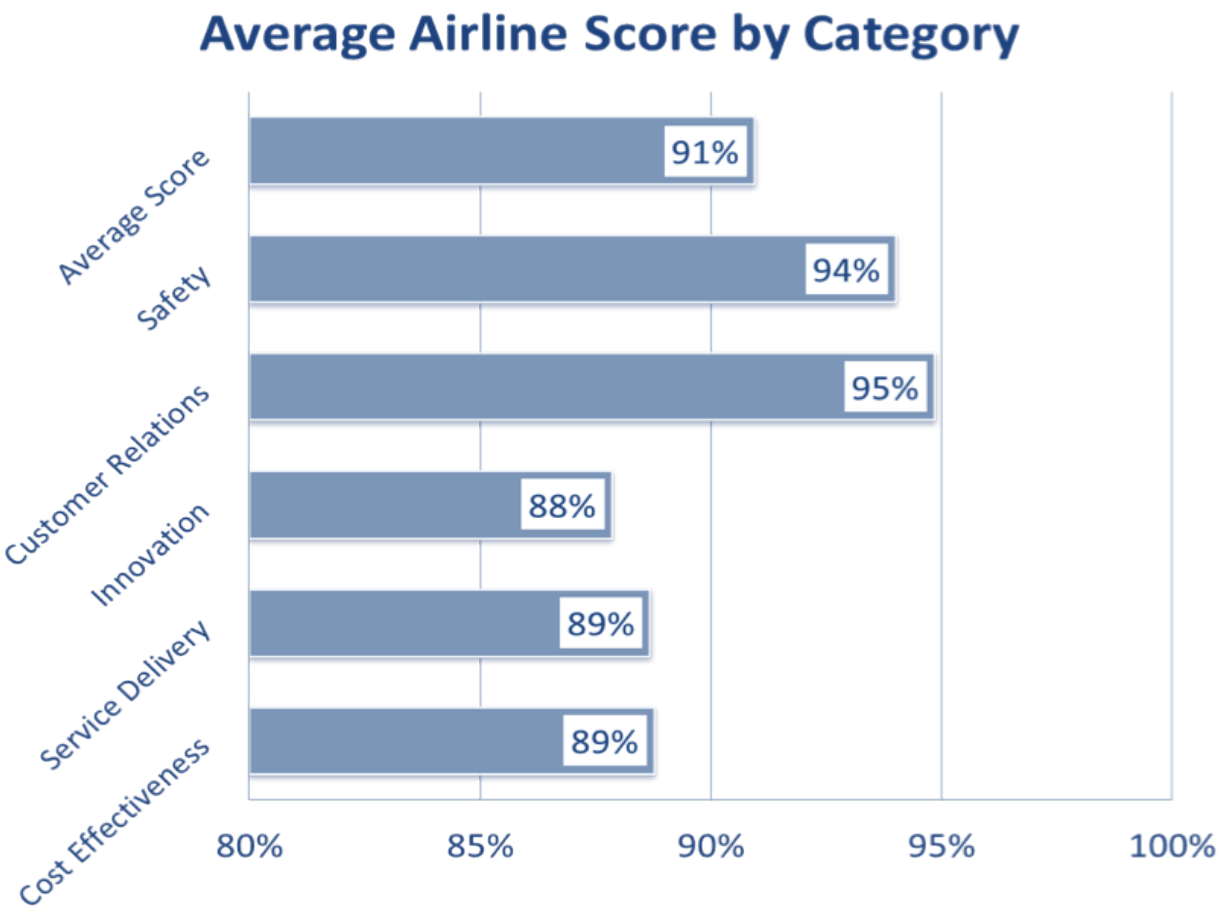
Therefore, the IAA will continue to focus on innovative solutions which will ensure enhanced services and optimum route profile opportunities. At the same time, our focus on safety enhancements will be maintained.

This will all be achieved in a cost efficient way as we fulfil our EU Performance Scheme targets.

The IAA will continue to consult regularly with its customers in the evaluation of the quality of service provided.

- The IAA secured in 2013, the highest total average score since launch at **91%**.
- The **Cost Effectiveness** score of **89%** has been the category with the highest improvement rate in 2013.
- **Safety** and **Customer Relations** continue to secure the highest scores, at **94%** and **95%** respectively.
- **Service delivery and Innovation** continue to secure high scores, at 89%.
- The following diagram sets out the average airline scores, **from 25 different airlines**, for all categories during 2013.

The results have been very positive and our customers recognize the efforts we have been making to reduce costs, while maintaining the highest safety standards and investing in new technology and approaches.


Average Airline Score by Category
Average Score
Safety
Customer Relations
Innovation
Service Delivery
Cost Effectiveness
91%
94%
95%
88%
89%
89%
80%
85%
90%
95%
100%

IAA CUSTOMER CARE PARTICIPANTS, 2013

IAA Performance against our Customer Care Requirements, 2013

Identified requests	IAA Action
Convene an ATM Safety Forum for airline customers	The ATM Safety Forum was hosted on the 7th of November 2013
On financial cost effectiveness, the IAA will continue to comply with the National Performance Plan 2012-2014, as approved by the EU Commission	Financial cost effectiveness was one of the key goals, for the IAA, which has seen a decrease of -6.3% in 'charges for en-route unit rate' as well as for Terminal rates with a decrease of -4.1% throughout 2013
Introduce LDOC service in 2013	The introduction of Long Distance Operational Control (LDOC) is planned to take place on October 28th 2014. LDOC has been slightly postponed due to increased development cost which in turn would have increased costs our customers. Currently IAA is adopting a more prudent and cost effective option which entails the integration of the facility into the new Voice Communication Switch under the Shanwick Radio Iceland Radio Phase 2 (SIRP2) 'Virtual Centre concept
High Level Cross Border Sector	On the High Level Cross Border Sector the IAA in 2013 has carried out two successful simulations and the Operational Trial will be launched on January 9th 2014
Publish savings measurement for Point Merge	The IAA introduced the Point Merge arrivals procedure at Dublin Airport in the end of 2012. Since then IAA has updated its data as regards its impact on flight efficiency. Environmental impact studies have been undertaken by the NATS Environmental Team using their 3Di airspace environmental efficiency measurement tool. Noticeable improvements were made in 'average fuel burn' and average track distance' reinforcing the Authority's on-going commitment to the provision of innovative, cost-efficient and environmentally beneficial measures to our Airline customers
Conduct LVP at Dublin review	Dublin LVPs reviewed and at introduced the 31st January 2013
Re introduce CPDLC	On April 30th 2014 Shannon Air Traffic expanded the CPDLC message set used in the Shannon FIR/UIR/SOTA/NOTA. The new message set expand the current FANS set and also provide for an ATN connection.

Glossary

A	
ACC	Area Control Centre
ADS-B	Autonomous Dependent System Broadcast
ANS	Air Navigation Services
ANSP	Air Navigation Services Provider
A-SMGCS	Advanced Surface Movement Guidance and Control System
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
ATM	Air Traffic Management
ATFM	Air Traffic Flow Management
C	
COOPANS	Co-operation in the Procurement of ATM Systems
CAR	Commission for Aviation Regulation
CRM	Customer Relations Module
D	
DAA	Dublin Airport Authority
DME	Distance Measuring Equipment
E	
EoSM	Effectiveness of Safety Management
F	
FAB	Functional Airspace Block
FDP	Flight Data Processing
FIR	Flight Information Region
FL	Flight Level
H	
HF	High Frequency
I	
IAA	Irish Aviation Authority
ICAO	International Civil Aviation Organisation
L	
LDOC	Local Distance Operational Control
M	
MAESTRO	Airport Arrivals Manager
N	
NATS	National Air Traffic Service
NAT	North Atlantic Traffic
NAV AIDS	Navigational aids
P	
PSR	Primary Surveillance Radar
PRR	Performance Review Report
R	
RNAV	Area Navigation
RAT	Risk Assessment Tool
RP	Reference period
S	
SES	Single European Sky ATM Research
SESAR	Single European Sky ATM Research
SPO	Single Person Operations
SRD	Safety Regulation Directorate
STATFOR	Statistical Forecasts
T	
TCPIP	Transmission Control Protocol, Internet protocol
TNC	Terminal Navigation Charge
TSU	Terminal Service Unit
V	
VHF	Very High Frequency
VoIP	Voice over Internet Protocols
W	
WAM	Wide Area Multi-Lateration


Donegal Control Zone
Eglinton Control Area West
Sligo Control Zone
Donnaugh Control Zone
Galway Control Zone
Dublin Control Area
Danger Area D 14
Dublin Control Area
Dublin Control Zone
Danger Area D 5
Shannon Control Zone
Shannon Control Area
Class C FL 75 \ FL 245
Dublin Control Area
Kerry Control Zone
Danger Area D 6
Waterford Control Zone
Danger Area D 14
Cork Control Zone
Danger Area D 13
Shannon Control Area