This report sets out the feedback from the 2018 independent customer survey which helps inform us what our customers think of the IAA and our ATM services and also the key areas where we can support customers in the delivery of their business objectives.

During 2018, we have delivered safe, efficient and excellent value for money ATM services to a record 345,400 aircraft in Irish controlled airspace (+0.5%) and 226,200 flights at Dublin Airport (+5%). The rate of growth in En-Route traffic did however slow down compared to 2017, with flights up by just 0.5%. Cork and Shannon airports also saw strong growth with our Air Traffic Controllers handling 3.8% and 4.2% more traffic respectively.

This continued growth demonstrates the ongoing strength of the aviation industry in Europe and North America, the two most important markets for Ireland and the IAA. While it is very welcome, the increases in traffic did not come without challenges. Our already busy En-Route Operation based in Shannon was stretched further to accommodate the extra traffic, but we worked hard to ensure that there were no capacity related delays in Irish airspace during the year. Minimising delays remains a key priority for our customers and it is a core objective of ours to provide a safe and delay free service on an ongoing basis.

Across Europe, 2018 was a difficult year for the network and the airlines that used it, with EUROCONTROL reporting that delays, at 19.1 million minutes, were twice as high as they had been in 2017. Problems with capacity and staffing were responsible for over 60% of these delays, bad weather for a further 25% with strikes and other disruptive events causing
over 14%. Irish airspace continued to have among the lowest level of delay across Europe and the IAA worked hard to support the network and our neighbouring ANSPs by efficiently transitioning flights from North America to European domestic airspace and vice versa.

Demand at Dublin Airport continued to grow in 2018, despite the airport being at capacity (all slots full) for much of the operating day. This growth has again put significant pressure on the ground infrastructure at the airport, resulting in congestion on the airfield and consequential delays, particularly during the hours of peak demand. Our Controllers handled a record 226,000 flights in 2018 and although delays increased over the previous year, they were almost totally attributable to bad weather and shortage of aerodrome capacity.

Dublin Airport’s northern runway, scheduled to be operational by late 2021, will help to resolve this congestion. The IAA is continuing to develop our new visual control tower and the associated infrastructure necessary to allow for operations on the new runway. This will be a new landmark building for Dublin and it will allow Dublin Airport to meet the demand from the airlines and their passengers, and to continue as a key driver of the Irish Economy.

Unfortunately, in the last quarter of 2018 we suffered two unrelated outages of our ATM systems, the first system outages we have experienced for a number of years. I very much regret that these events resulted in the first IAA attributable delays in 10 years and I apologise to our customers for any disruption that was caused to their operations. We safely and quickly returned the systems to normal operations on both occasions, and I can assure you that we have been working with the system supplier and our partners to ensure that there is no recurrence of the problems. System resilience and reliability are key priorities for us during the next year.

2019 looks like it will be another busy year as airline announcements indicate that traffic between Europe and the US will continue to increase and Dublin, Cork and Shannon will all see new services. We have recruited new Controllers and are working hard to ensure that they are in place to meet the increase in demand from the beginning of the summer season. We are also recruiting and training new Engineers to support the delivery of an ambitious capital expenditure programme over the next five to six years. These investments in our business are necessary to ensure long term sustainability of a safe, high quality, reliable, customer focused service.
2019 will also be an exciting year for the IAA as the construction phase of our new Dublin ATC tower comes to an end. At 86.9m tall, it is certainly an impressive structure and it will allow us to provide safe, efficient and value for money ATC services to Dublin Airport when the new parallel runway opens for business. Our ATC and Technical Teams will then spend close to 12 months installing and testing the equipment and training our Controllers. Once these programmes have been completed, we will build experience by using the new tower to provide services to the existing runways so that our Teams are ready for the new runway when it opens in 2021.

We understand that high performance and cost control are hallmarks of the airline industry and are of vital importance to our customers. I can assure you that all of us at the IAA will continue to put in place, innovative technical and procedural solutions to ensure we deliver our trademark safe, efficient and excellent value for money ATM services to all our airline customers.

Our Customer Care programme focuses on face to face meetings with our airline customers and an independently administered online survey to get detailed feedback from them. It provides a mechanism for them to tell us what they think of the ATM services we provide and what we can do to better meet their needs. In 2018, we again asked Schuman Associates, a Brussels based consultancy, to conduct the survey on our behalf. The independence that they bring to the process helps to provide a clear understanding of our customers’ needs and concerns.

I am delighted to say that for 2018, our customers awarded the IAA an overall satisfaction rating of 92.3%. This is a very good result, but I recognise that there are still opportunities for improvement across our operations, particularly as traffic continues to grow. I would like to take this opportunity, on behalf of all of us at the IAA, to say thank you to all of our airline customers who took time out from their busy schedules to meet with our Customer Care Team during 2018 and to complete the Schuman Associates online survey. I assure you that we welcome their feedback and that where practicable, our Teams will take the necessary action to deliver the ATM services that our customers demand.

Thank you.

Peter Kearney
Chief Executive
September 2018
This Customer Care report sets out the operational highlights and the IAA ANSP’s performance outcomes for 2018. It also provides details of what our Customers think of the IAA in the areas of:

- **Safety**
- **Value for Money**
- **Service Delivery**
- **Innovation**
- **Customer Service**

2018 was another record year for en-route traffic in Irish controlled airspace with 344,400 flights (+0.5%) managed by the IAA. Our North Atlantic Communications centre saw a traffic increase of 1% to over 505,000 flights during the year. Dublin again experienced record numbers with over 226,000 flights, up 4.8% on 2017. Cork and Shannon airports also delivered strong growth at 3.8% and 4.2% respectively.

Levels of delay in Irish Airspace attributable to the IAA, have historically been extremely low. In 2018, we did however see 2,615 minutes of delay caused by two, unrelated system failures and 59 minutes resulting from demand which exceeded the capacity of the airspace around Dublin Airport. A further 26,250 minutes of delay resulted from bad weather and lack of aerodrome capacity.

There were other disruptions, particularly at Dublin, where the capacity of the airport’s ground infrastructure has not kept pace with traffic growth in recent years. The ensuing congestion has seen start up delays, particularly during peak periods. Where possible, our Teams at Dublin and Shannon Air Traffic Control Centres are working with the various stakeholders to minimise these delays.

The outcomes of the 2018 independent survey are largely positive with an **average overall satisfaction rating of 92.30%**. This is reflective of the safe and efficient service provided by our people, Ireland’s consistently low user charges and the excellent delay performance of Irish airspace and airports. It is also indicative of the good working relationship between the IAA and our Airline Customers.

Schuman Associates asked our Customers to help us understand what mattered most to their airlines, by ranking five service delivery items in order of importance. Our Customers told us that Efficient Airspace is the most important of the items to their Airline with 55% ranking it as top priority. In second place was Low Levels of Delay with 26% and Operational Resilience was third with 19% ranking it Number 1. While Low User Charges and Customer Relationship were important to their businesses, none of our Customers that completed the survey ranked them Number 1.

We would like to acknowledge the contribution of our Customer Airlines in our Customer Care process. Without their ongoing commitment to meet with us and complete the Schuman Associates independent survey, the programme could not work and the significant benefits to all from enhanced communications and performance improvements would not be realised.

Thank you to all of our participating Customers.
We work hard to support our Customers’ operational objectives by delivering safe, high quality and value for money ATM services throughout Irish controlled airspace and at Dublin, Cork and Shannon airports.

Our Customer Care programme plays a key role in helping us to understand our Customers’ objectives. We meet with as many of our Customers as is practicable, to listen to what they have to say about the ATM services that we provide and how they can be improved. These meetings also provide an opportunity for us to brief our Customers on our operational performance and our latest improvement initiatives.

Each year, we try to meet with a representative sample of our Customers and in 2018, we met with 35 airlines across Europe, North America and the Middle East, the most important markets for the IAA. These airlines cover all the major business models, both passenger and freight and from Ultra-Low Cost Carriers to Full Service Airlines. This group was responsible for approximately 88% of flights in Irish airspace and 87% of our revenues during the year.

Our face to face meetings at our Customers’ home bases allow the opportunity for as many of their people as is possible, from a range of operations and business disciplines to talk to our Team, with minimum disruption to their busy working days. The comments, concerns and suggestions expressed at these meetings are fed back to our Operations Team who then work to resolve any issues as quickly as is possible.

We engaged an independent consultant to conduct an online survey to measure our Customer’s levels of satisfaction with our performance across a number of key performance areas and to provide us with feedback on the results. In 2018, we again asked Schuman Associates, a Brussels based consultancy, to conduct this survey.

We take the feedback from the survey and use it to inform our Operations and Technology plans so that they can be aligned with the needs of our Customers, as well as those of our people and our organisation. We include this data in our annual Customer Care report which we send to our Customers and publish on our website (www.IAA.ie)
**OUR PARTICIPATING CUSTOMERS**

<table>
<thead>
<tr>
<th>Air Canada</th>
<th>ASL Airlines Ireland</th>
<th>Emirates</th>
<th>Lufthansa</th>
<th>Swiss</th>
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<td>Aer Lingus</td>
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<td>easyJet</td>
<td>Kuwait Air</td>
<td>Stobart Air</td>
<td>Virgin Atlantic</td>
</tr>
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</table>
At our facilities in Dublin, Shannon en-route and Ballygirreen, Co. Clare, our Air Traffic Controllers and Radio Officers handled record numbers of flights and Cork and Shannon airports also saw strong growth. En-route traffic through Irish controlled airspace grew by 0.5% and flights at Dublin airport increased by 4.8%. Our North Atlantic HF Communications Team handled 1% more aircraft than in 2017. Traffic on the North Atlantic routes was at record levels in 2018 but the rate of growth continues to ease.

Safety

Safety is the Number 1 priority for all of us and delivering a continually safe ATM service to our Customers and their passengers and crew, is a core objective of the IAA. It is the first consideration in everything we do.

We are committed to complying with all National and European safety regulations and with ICAO’s Standards and Recommended Practices. Where it is practicable, we strive to go beyond compliance and work to implement international best practice throughout our organisation.

The IAA ANSP has a strong Safety Management System in place which has enabled us to reach our Single European Sky (SES) RP2 Performance Target well in advance of the 2019 deadline. The level of safety maturity of the IAA has been measured and is recorded at 91%, the highest in the EU SES area. The equivalent CANSO / EUROCONTROL “Standard of Excellence” measure of safety maturity places IAA at the top of 44
participating ANSPs. Retaining these high levels will be a challenge, particularly as the regulatory landscape continues to change, but we can assure you that we remain committed to continuously improving the safety of our operations in Irish airspace and airports.

As part of an extensive safety management system, the IAA pays particular attention to 5 Key Safety Performance Indicators (KSPIs):

1. Runway Incursions
2. Separation Minimum Infringements
3. Level Busts
4. Deviation from ATC Clearance
5. Unauthorised penetration of airspace

In 2018, the rate per 1,000 flight hours** for each KSPI reduced with the exception of Deviation from ATC Clearance which saw a minor rise, mainly due to issues at the oceanic boundary. This is an excellent performance when current record traffic levels are taken into account.

The IAA’s Stakeholder Safety Forum provides a framework for discussions between our Safety Management Unit and our Airline Customers. During 2018, our Safety Management Unit continued to promote this initiative throughout our Customer base. Membership of this forum includes the IAA, a growing number of airlines, the Irish Air Corps, Irish airports and ANSPs at the regional airports. This broad cross section of the aviation community facilitates the confidential sharing of de-identified safety data, which in turn allows for better data quality and analysis of safety significant events.

The Stakeholder Safety Forum has helped to identify problem areas and develop shared risk mitigations, and this has led to an improved overall safety performance in Irish airspace. Each member airline receives a biannual report on their safety performance in Irish controlled airspace.

For 2019, we can assure you that the IAA will continue to improve the overall safety performance of Irish Airspace and the airports at which we provide ATM services.

### Value for Money

Ireland’s ATM user charges have met the cost efficiency targets set under the European Commission’s RP2 Performance Scheme and continue to be some of the lowest in Europe. The IAA recognises the importance of low ATM costs to its Airline Customers and is committed to providing safe, efficient and value for money ATM services that meet their operational needs.

Ireland continues to maintain one of the lowest en-route user charges in the EUROCONTROL collection area with its 2019 unit rate at €28.12 (nominal) being the 7th lowest (4th lowest in EU).

The 2019 Irish Terminal Air Navigation Service (TANS) user charge, which applies at Dublin, Cork and Shannon airports is reduced to €150.44 (nominal). It remains in the lowest

<table>
<thead>
<tr>
<th>KSPI</th>
<th>2017 Rate / 1,000 Flight Hours</th>
<th>2018 Rate / 1,000 Flight Hours</th>
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<tbody>
<tr>
<td>Runway Incursion**</td>
<td>0.055</td>
<td>0.025</td>
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<tr>
<td>Separation Minima Infringement</td>
<td>0.029</td>
<td>0.012</td>
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<tr>
<td>Level Bust</td>
<td>0.157</td>
<td>0.178</td>
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<tr>
<td>Deviation from ATC Clearance</td>
<td>0.462</td>
<td>0.504</td>
</tr>
<tr>
<td>Unauth. Penetration of airspace</td>
<td>0.103</td>
<td>0.101</td>
</tr>
</tbody>
</table>

** Runway incursions calculated per 1000 movements
quartile of the EUROCONTROL collection area on a like for like basis and compares very favourably against operations of a similar scale and complexity across Europe. Both en-route and TANS user charges are in line with the targets approved under the EC’s RP2 Performance Plan.

In 2019, the IAA will return over €14 Million to its customers through reductions in the calculation of Terminal and En-Route user charges under the terms of the RP2 performance plan risk-sharing scheme. This is largely as a result of 2017 actual traffic volumes across the Terminal and En-Route environments being significantly ahead of the STATFOR forecasts used to prepare the RP2 performance plan.

The North Atlantic Communications (NAC) charge remains unchanged at €45 for the 7th year in succession. This fee is charged for the provision of HF radio communications in the SHANWICK region of the eastern North Atlantic.

**SERVICE DELIVERY**

In 2018, traffic once again grew across the IAA’s En-Route and Terminal operations, despite geopolitical instability, the uncertainty surrounding BREXIT and currency volatility. En-Route traffic managed by our Controllers at Shannon increased by 0.5% to 345,400 flights. Traffic handled by our North Atlantic Communications Centre in Ballygirreen grew by 1% where our Team provided HF Communications services to over 505,000 aircraft. These are record levels of traffic, but the rate of growth has eased as passenger demand softened and costs increased. Many airlines with significant operations between Europe and North America reported increases in non-fuel costs such as staffing and the average fuel price paid by the airlines grew by over 31% during 2018.

Traffic at the three State airports where IAA provides terminal ATM services increased, with Dublin recording another record year with traffic up 4.8% to 226,200 flights. Cork and Shannon airports returned to strong growth with increases of 3.8% and 4.2% respectively.

The IAA provides En-Route Air Traffic Management (ATM) services in Irish airspace, NOTA and SOTA. 2018 was the busiest year on record and 2019 looks like being even busier. This growth is largely driven by schedule expansion by the IAA’s Customer Airlines although we have accommodated additional unexpected traffic as a result of disruption elsewhere in the European network. We will always welcome increases in traffic, but it does not come without challenges. Our already busy En-Route Operations Team, based in Shannon, were stretched further to accommodate the extra traffic, but our people worked hard to ensure that there were no capacity related delays in Irish airspace during the year. Minimising delays remains a key priority for our customers and it is a core objective of ours to provide a safe and delay free service to our customers on an ongoing basis.

In 2018, we did however see some delay in en-route airspace. Unfortunately, we had two unrelated outages of our ATM systems in Q4, the first we have experienced for many years. We very much regret that these events resulted in the first IAA attributable delays (2,615 minutes) in 10 years and we apologise to our Customers for any disruption that was caused to their operations. On both occasions, we safely and quickly returned the systems to normal operations and you can be assured that we have been working with the manufacturer of the system and our ANSP partners, to ensure that there is no recurrence of the problems. System resilience and reliability are key priorities for us in 2019.
The IAA provides Terminal Air Navigation Services at Dublin, Cork and Shannon airports where traffic grew by a total of 4.7% in 2018. It is expected that 2019 will again set records for the number of aircraft and passengers at Dublin Airport although the rate of expansion may slow as the airport is very close to full at peak times. In this environment which has seen no increase in the capacity of the airports’ runway and taxiway infrastructure, the IAA continues to deliver an efficient, high quality and value for money service to our Airline Customers.

Delays at Dublin increased significantly in 2018 with weather delays more than doubling as a result of high winds and snow. Problems with aerodrome capacity also resulted in similar increases in delay, largely as a result of disruptions due to work on the runway, taxiways and the ramp, in an environment where no capacity has been added to this infrastructure to handle the significant growth in traffic in recent years. There were also 59 minutes of delay at Dublin where the demand exceeded the capacity of the terminal area airspace on one occasion.

**Innovation**

The IAA remains committed to the implementation of new procedures and technology that are pragmatic and innovative, to deliver enhanced levels of safety and efficiency to meet the ATM needs of our Customers and to ensure compliance with our regulatory obligations. During 2018, most of our effort was however focused on service delivery as traffic for the year was significantly above the levels forecast in the RP2 Performance Plan. Our staffing levels were aligned with the forecast traffic volumes and so we were obliged to suspend all non-critical projects and use our Controllers and Technical Specialists to ensure that we could provide sufficient ATM capacity to cope with the additional demand.

Our Team at Dublin did however work with our Customers and other stakeholders on initiatives to achieve enhanced capacity out of the existing runway. A project to reduce the separation between departures and arrivals resulted in an additional two movements per hour at busy times of the day by the end of the year. Another project to further reduce the separation between departures is currently underway and will likely yield another 2 movements per hour at peak times by the end of June 2019.

Our Dublin Team has continued to participate in Dublin Airport’s A-CDM project to improve the efficiency of ground operations at the airport. H24 trials commenced in early January 2019 and although there are still some teething problems with the project, it is expected to be connected to the EUROCONTROL A-CDM system by the end of the year.

The biggest and most visible Dublin project is the construction and commissioning of the new Visual Control Tower. Construction will be complete by the end of March 2019 and our people will begin a year long programme of installation of technology and training. We plan to use the new tower to control traffic on the existing runway by Q3 2020 with operations on parallel runways when the new northern runway opens in late 2021.
Our Team at Shannon has refined the sectorisation of the airspace to optimise the efficient flow of traffic during peak times. This ongoing process, combined with changes in procedures, has allowed Shannon to handle record numbers of flights with no additional controllers. We have recruited new staff and are training them to be ready for the 2019 peak summer season when traffic volumes are again predicted to increase.

Shannon also commenced work on the development of a remote tower facility at the ATC Centre in Ballycasey. Once complete, our Team will begin trials that will see Shannon Airport being controlled from a remote tower. This will allow us to avoid the cost of building a new visual control tower at the airport to replace the current one which is becoming costly to maintain. It will also allow for enhanced productivity as many of our Shannon Controllers hold multiple ratings and will be able to operate across the en-route and terminal areas as they will be in the same building.

Also in County Clare, our en-route contingency centre at Ballygirreen will open by the end of the year. It will provide the foundation to our en-route contingency plans and will double as a test centre for new ATM technology.

Our Customer Care programme focuses on face to face meetings with our Customers and an independently administered online survey to capture detailed feedback from these airlines. It provides a mechanism for them to tell us what they think of the ATM services we provide and what we can do to better meet their needs.

During 2018, the IAA’s CRM team had face to face meetings with 34 Airline Customers and one Industry Association. Each meeting provided opportunities for discussion and feedback on key areas of importance to both Customer and Service Provider (e.g. Finance, Operations and Strategy).

In 2018, we again asked Schuman Associates, a Brussels based consultancy, to conduct a survey on our behalf. The independence that they bring to the process helps to provide a clear understanding of our Customers’ needs and concerns. The results of this survey are published in this report.

We are very pleased to report that for 2018, our Customers awarded the IAA an overall satisfaction rating of 92.3%. This is a very good result, but we recognise that there are still opportunities for improvement across our operations, particularly as traffic continues to grow.

We would like to take this opportunity, on behalf of all of us at the IAA, to say thank you to all of our Airline Customers who took time out from their busy schedules to meet with our Customer Care Team during 2018 and to complete the Schuman Associates online survey. We assure you that we welcome their feedback and that where practicable, our Teams will take the necessary action to deliver the ATM services that our customers demand.

CUSTOMER SERVICE

The IAA’s Customer Care programme plays an integral role in the development and maintenance of the working relationship between our Airline Customers and the ANSP. Our CRM Team serves as the day to day point of contact between the airlines and the IAA.
TECHNOLOGY UPDATE

2019 looks like it will be another busy year as airline announcements indicate that traffic between Europe and the US will continue to increase and Dublin, Cork and Shannon will all see new services.

Looking further out, the EUROCONTROL STATFOR traffic forecast (Oct 2018) indicates that flights through Irish airspace will grow by up to 2.6% per annum out to 2024. We have new Air Traffic Controllers in training and they will be ready to meet the increase in demand from the beginning of the 2019 summer season. We are also recruiting and training new Engineers to support the delivery of an ambitious capital expenditure programme over the next five to six years. These investments in our business are necessary to ensure the long term sustainability of safe, high quality, reliable, customer focused ATM services. Some of the key projects that our Teams are working on include:

NEW DUBLIN VISUAL CONTROL TOWER

Dublin Airport confirmed its intention to construct a new parallel runway which is expected to be operational in 2021. To enable operations on this new runway, the IAA has commenced the construction of a new visual air traffic control tower and by the end of March 2019, the construction phase will come to an end. The new tower will allow us to provide safe, efficient and value for money ATC services to Dublin Airport when the new parallel runway opens for business. Our ATC and Technical Teams will spend close to 12 months installing and testing the equipment and training our Controllers. Once these programmes have been completed, we will build experience by using the new tower to provide services to the existing runways so that our Teams are ready for the new runway when it opens in 2021.

ENHANCED SURVEILLANCE INFRASTRUCTURE AT DUBLIN AIRPORT

To provide sufficient capacity to meet the increasing traffic demand at Dublin Airport, we need to maintain the capability to deliver 3NM separation between aircraft in the Dublin terminal area. This requires that we have 2 radar systems providing surveillance coverage in the area at any one time so should we have to withdraw one radar from service for maintenance or any other reason, the separation standard will increase, leading to possible delays to aircraft arriving and departing the airport. To enhance the resilience of the Dublin radar service, we will install a third radar system which will allow us maintain dual coverage and 3NM separation on a continuous basis.
Remote Tower at Shannon

Our Technology Team at Shannon has commenced work on the development of a remote tower facility at the Shannon ATC Centre in Ballycasey. Once complete, our Team will begin trials that will see traffic at Shannon Airport being controlled from a remote tower. This will allow us to avoid the cost of building a new visual control tower at the airport to replace the current one which is becoming costly to maintain and update. It will also allow for enhanced productivity as many of our Shannon Controllers hold multiple ratings and will be able to operate across the en-route and terminal areas as they will be in the same building. We expect the trials to be completed by the end of 2019 with 24 hour operations commencing by the end of Q1 2020.

En-route Contingency Centre

Our en-route contingency centre at Ballygirreen, Co. Clare, will open by the end of the year. Once operational, it will provide full contingency for our Shannon en-route operations and will be the foundation to our en-route contingency plans. The Centre will also operate as a test centre for new ATM technology for the IAA and our COOPANS ATM System partners.

Space Based ADS-B Surveillance for ATM

The IAA is a partner in Aireon LLC, a revolutionary satellite based global air traffic surveillance venture. We have signed a data services agreement with Aireon to access space based ADS-B surveillance data for Irish controlled airspace (Shannon UIR/FIR, NOTA & SOTA). We are currently receiving test data at our Shannon ACC and are evaluating it against terrestrial ADS-B data. Once regulatory approval has been secured, we will use the data to provide an augmented surveillance source for the Shannon ACC. We expect to be using space based ADS-B data in the operational environment by the end of 2019.

Aireon ALERT

The IAA, in conjunction with Aireon, will offer Aireon ALERT, a space based air traffic surveillance system, to track flights in emergency situations, as a free, public service to the global aviation community. This service is expected to be operational by the end of 2019.
NAVAIDS REPLACEMENT PROGRAMME

Instrument Landing Systems (ILS) and Instrument Runway Visual Range (IRVR) equipment is vital to the provision of safe, reliable and efficient Terminal ATC services. The equipment installed at Dublin, Cork and Shannon airports is now reaching end of life and some components are becoming obsolete. Over the next three to four years, we intend to replace existing ILS and IRVR equipment at these airports to ensure that we can continue to provide a safe reliable and efficient service to our Customers. The new systems will be more reliable and will help ensure the resilience of operations at the airports. Additionally, as part of our project to support the new parallel runway at Dublin, we will install ILSs and IRVRs.

VOICE COMMUNICATIONS SYSTEMS (VCS) UPGRADE PROGRAMME

Over the next four years, IAA will replace the VCS at Dublin, Cork and Shannon Towers and at the Shannon ACC. This will deal with end of life and obsolescence issues and upgrade them to IP based communications systems, designed to meet future SESAR ATM requirements.

TANGO ROUTES

The IAA is currently working with the Spanish ANSP to establish a new VHF radio communications site in northern Spain. This will support the new TANGO routes linking Irish airspace with the Iberian Peninsula through Oceanic airspace, for aircraft not equipped with FANS Datalink. IAA is also working with the French ANSP to take radar data from their Brest facility into our COOPANS system to strengthen our surveillance capability in the area.

We understand that high performance and cost control are hallmarks of the airline industry and are of vital importance to our customers. We assure you that all of us at the IAA will continue to focus on innovative technical and procedural solutions to ensure we deliver our trademark safe, efficient and excellent value for money ATM services to all our airline customers.
In 2018, the IAA commissioned the Brussels based consultancy, Schuman Associates, to conduct a Customer satisfaction survey on our behalf. The independence that they bring to the process helps ensure that we get a clearer understanding of our Customers’ needs and their opinions of the services we provide.

This year, Schuman used the European Commission’s EU SURVEY web based tool to reach out to our Customers and ask them to complete an online survey. This asked our Customers give their opinions of the IAA’s ATM operations across some key performance areas and to say if they thought there had been improvements over last year. The survey also encouraged them to submit comments, concerns, questions and suggestions in a “free format” section.

Schuman Associates downloaded the data, collated it and compiled a number of reports for the IAA.

The results of the 2018 independent survey show that the overall level of Customer satisfaction with the IAA is 92.3%. This performance reflects the IAA’s consistently high levels of safety, value for money user charges, lack of delay, efficient Free Route Airspace and a high level of Customer engagement.
This scheme requires all EU Member States to put in place targets which make a contribution to Union-wide goals to enhance safety, reduce average user charges, cut delays and lessen the impact of Air Traffic Management on the environment. For the period 2015 – 2019 inclusive, known as Reference Period 2 (RP2), Ireland and the UK submitted a joint Performance Plan as required under EU Legislation which contained targets in these areas and which was one of the first accepted by the European Commission.

The EC has confirmed that Ireland and the IAA has met our targets for 2015, 2016 and 2017. Although not yet verified by the Commission, our performance for 2018 was on target and we are on course to do the same in 2019.

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<thead>
<tr>
<th>KPI</th>
<th>Status</th>
<th>Detail</th>
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<tbody>
<tr>
<td>Safety</td>
<td>Fully Compliant</td>
<td>Effectiveness of safety management (EoSM) - 2019 target fully achieved by 2015 and maintained in 2016 and 2017. Application of Risk Assessment Tool (RAT) for incident severity classification - 100% application in 2017. Just Culture - Fully Compliant</td>
</tr>
<tr>
<td>Cost Efficiency</td>
<td>Fully Compliant</td>
<td>2017 En-route user charge €29.54 (nominal) - Fully compliant with RP2 Performance Plan 2017 Terminal user charge €171.69 (nominal) - Fully compliant with RP2 Performance Plan</td>
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<tr>
<td>Delay</td>
<td>Fully Compliant</td>
<td>2017 actual ATFM delay was 0 minutes per flight, substantially below the target of 0.13 minutes</td>
</tr>
<tr>
<td>Environmental</td>
<td>Fully Compliant</td>
<td>Combined target with UK of 3.27% inefficiency for en-route horizontal flight efficiency. Actual for Ireland is 0% as Free Route Airspace is as efficient as it is possible to get</td>
</tr>
</tbody>
</table>
CUSTOMER FEEDBACK

THANK YOU TO ALL OUR AIRLINE CUSTOMERS WHO TOOK TIME FROM THEIR BUSY SCHEDULES TO COMPLETE THE 2018 ONLINE INDEPENDENT SURVEY FOR SCHUMAN ASSOCIATES

We welcome their comments and suggestions and can assure you that we will take them on board as we work to ensure that IAA continues to deliver a safe, efficient and value for money ATM service in Irish controlled airspace and at Dublin, Cork and Shannon Airports. Our Customer’s key messages from 2018, telling us what we do well and where we can improve, are shared below:

SAFETY

Safety is the NUMBER 1 priority for everyone in the aviation industry. Our Customers recognise the high levels of safety throughout the IAA’s operation but reminded us that they expect us to continue to drive safety improvement and that safety should always be the top priority for all at the IAA.

“The IAA has maintained its high safety standards and continued to provide very good customer service” – Virgin Atlantic

“High level safety has been delivered by the IAA over the past 12 months” – CityJet

“Improved efficiency of ATM services at Dublin Airport while maintaining high safety standards.” – ASL Airlines Ireland

“Continue to maintain and improve the high safety and efficiency standards” – Jet2.com

“Do not let safety standards decline” – Virgin Atlantic

“We commend the professional and proactive approach taken by the IAA to ATM Safety which is demonstrated by its ICAO ranking and by its Single European Sky Effectiveness of Safety Management (EoSM) score. Well done to all at the IAA for being ranked top in Europe by EASA and 2nd in Europe by ICAO for Safety.” – Ryanair

VALUE FOR MONEY

Our Customers said that they appreciate our low charges but they also made it clear to us that we must maintain our focus on cost control into the future. Some Customers argue that we should try harder and that charges should be even lower.

“Value for money is good and this is important to us as an airline” – TUI Airways
“Cost control has been delivered by the IAA over the past 12 months” – CityJet

“We get really good service in Irish airspace, and of course would like it to cost less.” – Air Transat

“It has to be repeated again that the comparatively low unit rate is a result of an average aircraft weight, which is twice as high as that of most European countries, and a very simple route structure with little climbing and descending traffic in Irish airspace. In other words, the low unit rate is not proof of a very efficient organisation or of above-average cost-saving efforts, but simply a logical result of low complexity and high average aircraft weights.” – Lufthansa

“We do appreciate the received services and also the low unit rate. But you will admit that the complexity of the Irish Airspace is comparatively low. This should already lead to a lower average unit rate. The main trigger however is the average weight factor in the Irish Airspace. Almost every flight is a wide body Aircraft overflying the North Atlantic. European Traffic to and from Ireland only operates in Irish Airspace for a few kilometres. IAA will return over Euro 14 Million to Customers in 2019 through traffic risk sharing and adjustments for 2017. This was mainly achieved through the fact that the traffic growth was significantly higher than forecasted and not because of any real cost saving measures.” - Swiss

“Continue to focus on costs and therefore charges” - Virgin Atlantic

“Keep focusing on cost creep” - Delta

We are disappointed by the IAA’s increase in its ATC charges in 2019 particularly given the additional traffic Ryanair is delivering to Ireland. We expect the IAA to control its costs through innovative solutions to continue providing a safe and efficient service.– Ryanair

“SERVCE DELIVERY”

Our Customers said they are very satisfied with the efficient En-Route service that IAA provides in Irish controlled airspace and they like that there is no delay. Terminal Customers too, were largely happy but a number expressed concerns about the level of ground delays at Dublin Airport

“I find IAA really customer focused and will always try and accommodate and help their customers especially with test flights” – Thos Cook Airways

“Separately discussed approach procedures (Point Merge) with ATC, feedback was provided in the excellent way. Perfect cooperation. Thanks” – Qatar Airways

“Operator - ATC engagement and face to face meetings to discuss operational challenges useful” – Norwegian

“Continues to look for improved efficiencies, both operationally and procedurally” – Emirates

"Keeping delay minutes low in terms of the aspects that are within the control of the ANSP, e.g. ATC staffing and airspace management is important to us. Well done in this regard." – TUI Airways

“We have also received good service when we have used airports in Ireland for diversion purposes”. – Virgin Atlantic

“We have now begun operating into SNN and DUB and have received time critical operational information and support for operations improvement.” – UPS

“A consistently functioning fit for purpose system has been delivered by the IAA over the past 12 months” – CityJet
“The system failure during the Fall of 2018 leading to the shutdown of the CPDLC process is a concern. The actions taken, and communications outreach efforts were excellent... I realize that there are challenges with the available ramp space, but Dublin needs a careful review for both arrival procedures and ground procedures during the morning arrivals. Extended on to in times have become the norm or at least sufficiently frequent to be noticeable as a trend.” – American Airlines

“Aer Lingus operated 6 flights for the Papal Visit and needed consultation and co-operation from the IAA on many levels. We were supported throughout the operation by the IAA and they assisted us greatly when issues arose... Relationships between the Ops Manager in the control tower, Darren Pollard, and Aer Lingus are excellent, with every query promptly answered with excellent detail enabling us to deal with any issues in a timely manner.” – Aer Lingus

“Very good cooperation during technical issue at the Shannon Air Traffic Control Centre” – Air France

“Keep doing what you are doing.” – Air Transat

“From an operational perspective we are very satisfied with the service provided” – Lufthansa

“Adverse weather briefings [have been useful]” – Austrian Airlines

“The IAA has helped us particularly with our serviceability/check flights, which we are finding increasing difficulty in being able to carry these out in UK airspace. The co-operation from the IAA/Shannon ACC is outstanding and we are very grateful for this... We also find that our operations out of Belfast and the northern UK are always handled in the most professional way and we are always given the best possible routes within the FRA in Ireland... Continue in the same vein as now as we suffer from no significant delays” – Jet2.com

“Great delay performance – Punctuality” - Swiss

“Anything that can be done to reduce delays, either inbound or outbound of [Dublin] airport or when transiting through your airspace is very important to us. For the record we do not experience major delays but none the less every minute we can save is important” – Air Transat

## Innovation

Our Customers support the ongoing innovation of ATM services by the IAA. We can assure them that we will continue to evolve our procedures with a focus on safety and efficiency across the operation and introduce new technology where it can deliver value to all Stakeholders.

“Free route system is best in Europe and best in world.”- Atlas Air

“The expansion of FRA [free route airspace] has been a great help” – Delta

“IAA is the only provider that actively works with its users on innovation and solutions. Their desire to provide a cost-effective solution is industry leading.” – UPS

“The IAA's belief in AIREON is also to be commended.” – American Airlines

“Free Route Airspace (FRA) [has been useful to our members]” – IATA

Free route airspace [is useful] - Swiss

“We recognise the IAA as having a willingness to adopt new technology or new ways of working, while never compromising safety.” – Ryanair
**CUSTOMER SERVICE**

Many of our Customers told us that they believe IAA’s Customer Service to be one of the best in the industry. They recognise our efforts to build and maintain an excellent working relationship with their businesses on all levels.

“Yearly meeting between IAA and Qatar Airways was held in Doha. Operational, technical and safety aspects were discussed. QR is utilizing Airspace handled by IAA for overflights (US flights) and daily operations to DUB. Thanks”  
– Qatar Airways

“Very impressed with the communication with the CPDLC outage [in October] - good concise, accurate information was shared.”  
– Air Canada

“SAS greatly appreciate IAA’s yearly visit to our headquarters. IAA shows an example we wish other ANSP would follow.”  
– SAS

“Excellent communications and customer service.”  
– United Airlines

“Customer visits appreciated to ensure we still receive value for money, develop two-way communication and good to hear about the safety aspect.”  
– TUI Airways

“The organisation is approachable and understands the importance of safe and efficient air traffic services to our N. Atlantic oceanic flights.”  
– Virgin Atlantic

“Their customer interfacing is excellent”  
– UPS

“Excellent customer service from David Usher who kept us regularly informed when we were faced with a zero-flow rate due to SNN radar going down on the 2nd October. We were constantly updated on the situation giving us a clear overall picture of developments”  
– Aer Lingus

“With respect to customer service, it has been excellent over the last years and is still excellent so hence no change.”  
– Air Transat

“We have appreciated very much, the Customer Briefing held by Mr. David Usher. It has been a very good occasion to realize the changes in your organization and the opportunity for us. Well done.”  
– Alitalia

“The IAA customer service is excellent. Dave Usher is always contactable, helpful and responsive.”  
– Ryanair
WHAT IS IMPORTANT TO OUR AIRLINE CUSTOMERS?

The 2018 independent survey asked our customers to help us understand what mattered most to their airlines by ranking five service delivery items in order of importance.

The results tell us that the key areas of concern relate to the support of efficient aircraft operations. The IAA welcomes this feedback and will continue to work with our customers to ensure we provide services that best meet their needs.

Our customers told us that Efficient Airspace is the most important of the items to their airline with 55% ranking it as top priority. In second place was Low Levels of Delay with 26% and Operational Resilience was third with 19% ranking it Number 1.

While Low User Charges and Customer Relationship were important to their businesses, none of our customers that completed the survey ranked them Number 1.

Irish En-Route airspace is some of the most efficient airspace in Europe. Our Free Route concept of operations allows our customer airlines to fly the optimum routing for their aircraft on any given day through Irish Airspace. We will continue to work with all stakeholders to drive further efficiency where possible.

Levels of delay in Irish Airspace within the control of the IAA, have historically been extremely low. In 2018, 2,615 minutes of delay were caused by two, unrelated system failures and 59 minutes by demand which exceeded the capacity of the airspace around Dublin Airport. In the case of the system problems, they were quickly resolved, and we are working with the manufacturer and partners to enhance its robustness. A further 26,250 minutes of delay resulted from bad weather and lack of aerodrome capacity. Where possible, our team at Dublin Air Traffic Control Centre are working with the various stakeholders to minimise these delays.

Operational resilience is also very important to our customers and we aim to enhance our resilience and contingency capabilities over the coming years to ensure that they support our customers’ needs. An example of this is our intention to commission a third radar at Dublin to provide enhanced backup to support increasing traffic levels at the airport.

We will also complete our En-Route contingency centre at Ballygirreen, Co. Clare.
This will provide a full suite of communications and ATM systems that are independent from our Shannon Centre. During 2019, we will also work with our Customers to ensure they understand and are comfortable with the level of contingency across our Operations.

We are also aware that cost control is critically important to our Airline Customers and we can assure them that the IAA will continue to provide excellent value for money by providing safe and efficient ATM services at some of the lowest user charges in Europe.

We believe that a good working relationship between the IAA and our Customers is also important. Our Customer Care programme will continue to support these relationships and we will maintain and enhance where necessary, the day to day interface between our Customers and our front-line Operations Teams.

**What’s Most Important To Your Business?**

**We asked our Customers to select which feature is most important to their business?**

**Low User Charges**

**Low Delay**

**Efficient Airspace**

**Customer Relationship**

**Operational Resilience**

1. Efficient Airspace
2. Low Delay
3. Operational Resilience
4. Low User Charges
5. Customer Relationship
Customer Scores by Category

**Safety**
- Extremely Safe: 45.7%
- Very Safe: 48.6%
- Safe: 5.7%
- Adequate: 0.0%
- Unsafe: 0.0%

**Value for Money**
- Excellent: 8.6%
- Very Good: 51.4%
- Good: 31.4%
- Adequate: 8.6%
- Poor: 0.0%

**Service Delivery**
- Excellent: 42.9%
- Very Good: 54.3%
- Good: 2.8%
- Adequate: 0.0%
- Poor: 0.0%
### Customer Scores by Category

#### Innovation

<table>
<thead>
<tr>
<th>Rank</th>
<th>Excellent</th>
<th>Very Good</th>
<th>Good</th>
<th>Adequate</th>
<th>Poor</th>
</tr>
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<tbody>
<tr>
<td>RANK</td>
<td>28.6%</td>
<td>48.6%</td>
<td>20.0%</td>
<td>2.8%</td>
<td>0.0%</td>
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<tr>
<td>CHANGE</td>
<td>GREATLY IMPROVED</td>
<td>IMPROVED</td>
<td>UNCHANGED</td>
<td>DISIMPROVED</td>
<td>GREATLY DISIMPROVED</td>
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<tr>
<td></td>
<td>2.9%</td>
<td>37.1%</td>
<td>60.0%</td>
<td>0.0%</td>
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#### Customer Service

<table>
<thead>
<tr>
<th>Rank</th>
<th>Excellent</th>
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### Overall Customer Satisfaction

<table>
<thead>
<tr>
<th>Score</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>EXCELLENT</td>
<td>28.6%</td>
</tr>
<tr>
<td>VERY GOOD</td>
<td>48.6%</td>
</tr>
<tr>
<td>GOOD</td>
<td>20.0%</td>
</tr>
<tr>
<td>ADEQUATE</td>
<td>2.8%</td>
</tr>
<tr>
<td>POOR</td>
<td>0.0%</td>
</tr>
<tr>
<td>IMPROVED</td>
<td>2.9%</td>
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<tr>
<td>UNCHANGED</td>
<td>37.1%</td>
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<tr>
<td>DISIMPROVED</td>
<td>60.0%</td>
</tr>
<tr>
<td>GREATLY DISIMPROVED</td>
<td>0.0%</td>
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</tbody>
</table>

**Overall Customer Satisfaction in 2018**: 92.3%
2018 Customer Care Survey Results

Change from 2017

Customer Satisfaction

SAFETY
VALUE FOR MONEY
SERVICE DELIVERY
INNOVATION
CUSTOMER SERVICE

Poor Adequate Good Very Good Excellent

Greatly Disimproved Disimproved Unchanged Improved Greatly Improved

95%

AIR CANADA rouge

90%

AIRFRANCE
American Airlines

Customer Scores by Category

2018 Customer Care Survey Results

Change from 2017

Overall Customer Satisfaction

ASL Airlines Ireland

Customer Scores by Category

2018 Customer Care Survey Results

Change from 2017

Overall Customer Satisfaction
Customer Scores by Category

2018 Customer Care Survey Results

Overall Customer Satisfaction

Austrian
2018 Customer Care Survey Results

### Overall Customer Satisfaction
- 90%

#### Change from 2017
- Safety: Improved
- Value for Money: Improved
- Service Delivery: Improved
- Innovation: Improved
- Customer Service: Improved

### Emirates

#### Customer Scores by Category
- Safety: Good
- Value for Money: Adequate
- Service Delivery: Good
- Innovation: Good
- Customer Service: Good

### Etihad Airways

#### Customer Scores by Category
- Safety: Good
- Value for Money: Adequate
- Service Delivery: Good
- Innovation: Good
- Customer Service: Good
2018 Customer Care Survey Results

Change from 2017

Overall Customer Satisfaction

95%

Jet2.com
The low cost airline

2018 Customer Care Survey Results

Change from 2017

Overall Customer Satisfaction

90%

KLM

2018 Customer Care Survey Results

Change from 2017

Overall Customer Satisfaction
Customer Scores by Category

2018 Customer Care survey results

<table>
<thead>
<tr>
<th>Category</th>
<th>2018 Percentage</th>
<th>Change from 2017</th>
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<tr>
<td>Safety</td>
<td>95%</td>
<td>Greatly Improved</td>
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2018 Customer Care survey results

Change from 2017 Customer Satisfaction

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2018 Customer Care survey results

Change from 2017 Customer Satisfaction

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<tr>
<th>Category</th>
<th>2018 Percentage</th>
<th>Overall Satisfaction</th>
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<tbody>
<tr>
<td>Safety</td>
<td>80%</td>
<td>Excellent</td>
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<tr>
<td>Value for Money</td>
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<tr>
<td>Service Delivery</td>
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</table>
Customer Scores by Category

2018 Customer Care Survey Results

Change from 2017 Overall Customer Satisfaction

98%

2018 Customer Care Survey Results

Change from 2017

Overall Customer Satisfaction

98%
2018 Customer Care Results

**Qatar Airways**

- Overall Customer Satisfaction: 90%
- Change from 2017: Improved

**Ryanair**

- Overall Customer Satisfaction: 85%
- Change from 2017: Improved

**Customer Scores by Category**

- Safety
- Value for Money
- Service Delivery
- Innovation
- Customer Service

**365**

- Poor
- Adequate
- Good
- Very Good
- Excellent

**2018 Customer Care Survey Results**

**Change from 2017**

- Greatly Disimproved
- Disimproved
- Unchanged
- Improved
- Greatly Improved
2018 Customer Care Survey Results

Customer Scores by Category

Stobart Air

Overall Customer Satisfaction: 90%

SAS

Overall Customer Satisfaction: 100%

Change from 2017

Customer Satisfaction
Customer Scores by Category

2018 Customer Care survey results

Comparison to 2017:
- Safety: Greatly Disimproved
- Value for Money: Disimproved
- Service Delivery: Unchanged
- Innovation: Improved
- Customer Service: Greatly Improved

Overall Customer Satisfaction:
- Swiss: 85%
- Thomas Cook Airlines: 95%
Customer Scores by Category

2018 Customer Care survey results

Change from 2017

Customer Satisfaction

85%

Customer Service

Safety

Value for Money

Service Delivery

Innovation

Turkish Airlines

2018 Customer Care survey results

Change from 2017

Overall Customer Satisfaction

91%
### 2018 Customer Care Survey Results

#### Change from 2017

**Customer Satisfaction**

<table>
<thead>
<tr>
<th>Category</th>
<th>Poor</th>
<th>Adequate</th>
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<th>Very Good</th>
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<td><strong>Safety</strong></td>
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</table>

**Overall Customer Satisfaction:**

- **United:** 100%
- **UPS:** 95%
Customer Scores by Category

2018 Customer Care Survey Results

Overall Customer Satisfaction: 89%

Change from 2017:
- Safety: Improved
- Value for Money: Improved
- Service Delivery: Improved
- Innovation: Improved
- Customer Service: Improved
Our Top 50 Customers

1. BRITISH AIRWAYS
2. AER LINGUS
3. RYANAIR
4. DELTA
5. UNITED AIRLINES
6. AMERICAN AIRLINES
7. LUFTHANSA
8. AIR FRANCE
9. VIRGIN ATLANTIC
10. AIR CANADA
11. KLM
12. SWISS
13. EMIRATES
14. TUI AIRWAYS
15. QATAR AIRWAYS
16. STOBART AIR
17. TURKISH AIRLINES
18. THOMAS COOK AIRLINES
19. JET2.COM
20. NORWEGIAN AIRSHUTTLE
21. AIR TRANSAT
22. FEDERAL EXPRESS
23. NORWEGIAN AIR UK
24. ALITALIA
25. ETHIOPIAN AIRLINES
26. NORWEGIAN AIR INTL
27. UPS
28. CARGOLUX
29. ETIHAD
30. ATLAS AIR
31. EASYJET
32. AUSTRIAN AIRLINES
33. CONDOR
34. EUROWINGS
35. SAUDIA
36. AIR CANADA ROUGE
37. ELAL
38. SINGAPORE AIRLINES
39. FLYBE
40. KALITTA AIR
41. KUWAIT AIRWAYS
42. BRUSSELS AIRLINES
43. LUFTHANSA CARGO
44. AEROMEXICO
45. ARKEFLY
46. WESTJET
47. SAS
48. OMNI AIR
49. CITYJET
50. WOW
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC</td>
<td>Air Traffic Control Centre</td>
</tr>
<tr>
<td>A-CDM</td>
<td>Airport Collaborative Decision Making</td>
</tr>
<tr>
<td>ADS-B</td>
<td>Automatic Dependent Surveillance - Broadcast (a surveillance technology where an aircraft determines its position via satellite navigation and periodically broadcasts it, allowing itself to be tracked)</td>
</tr>
<tr>
<td>ANSP</td>
<td>Air Navigation Service Provider</td>
</tr>
<tr>
<td>ATC</td>
<td>Air Traffic Control</td>
</tr>
<tr>
<td>ATM</td>
<td>Air Traffic Management</td>
</tr>
<tr>
<td>COOPANS</td>
<td>IAA’s Air Traffic Control Computer System</td>
</tr>
<tr>
<td>CRM</td>
<td>Customer Relationship Management</td>
</tr>
<tr>
<td>FANS</td>
<td>An onboard avionics system which provides direct data link communication between the pilot and the air traffic controller.</td>
</tr>
<tr>
<td>FIR</td>
<td>Flight Information Region (airspace is divided into FIRs, each managed by service provider that is responsible for the provision of air traffic services to aircraft flying within it)</td>
</tr>
<tr>
<td>HF</td>
<td>High Frequency (radio communications - long distance)</td>
</tr>
<tr>
<td>IAA</td>
<td>Irish Aviation Authority</td>
</tr>
<tr>
<td>ILS</td>
<td>Instrument Landing System</td>
</tr>
<tr>
<td>IP</td>
<td>Internet Protocol (a methodology for the delivery of voice communications and multimedia sessions over Internet Protocol networks, such as the Internet)</td>
</tr>
<tr>
<td>IRVR</td>
<td>Instrument Runway Visual Range (measures horizontal visibility on a runway)</td>
</tr>
<tr>
<td>NOTA</td>
<td>Northern Oceanic Transition Area</td>
</tr>
<tr>
<td>SESAR</td>
<td>Single European Sky ATM Research</td>
</tr>
<tr>
<td>SHANWICK</td>
<td>Oceanic Airspace for Eastern North Atlantic</td>
</tr>
<tr>
<td>SOTA</td>
<td>Shannon Oceanic Transition Area</td>
</tr>
<tr>
<td>TANGO</td>
<td>North - South routes through NAT Oceanic airspace from Ireland / UK to Spain / Portugal / Canary Islands.</td>
</tr>
<tr>
<td>UIR</td>
<td>Upper Information Region (FIR in Upper Airspace above 24,500 feet)</td>
</tr>
<tr>
<td>VCS</td>
<td>Voice Communications System</td>
</tr>
<tr>
<td>VHF</td>
<td>Very High Frequency (radio communications - short distance)</td>
</tr>
</tbody>
</table>
Irish Aviation Authority
The Times Building, 11-12 D'Olier Street,
Dublin 2, Rep. of Ireland.
Tel: +353 (0)1 671 8655
Fax: +353 (0)1 679 2934
Web: www.iaa.ie