
Airways International White Paper

Leaving no stone unturned:

Transforming ANSP operational efficiency by unlocking
the value of ATM system data

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1 Executive summary

- From the 9/11 terrorist attacks until today has been a period of unprecedented tumult for the aviation industry. The ongoing terrorist threats, natural impacts such as Avian Flu and volcanic eruptions, rising oil prices and the global financial meltdown have all combined to cause upheaval and ultimately failure for some in the sector.
- Within this environment ANSPs have faced enormous challenges as their revenue and profitability has come under threat while costs continued to rise. Focussing more on operational efficiency and cost recovery effectiveness is critical for ANSPs.
- ATM technology is undergoing a massive shift, with major initiatives like NextGen from the FAA and the Europe's SESAR, along with new aircraft technology. They will bring unprecedented benefits for the environment and the economy through reductions in carbon emissions, fuel consumption and noise.
- In this new era it is important for ANSPs to fully realise the potential of new ATM technology by integrating it effectively with their back office systems.
- Using ATM system data effectively produces significant benefits in terms of improving operational effectiveness, and ensuring cost recovery is maximised.
- Airways New Zealand is pioneering this approach in its own business, and starting to share the initiative with other ANSPs.

1.1 A background of crisis

The period from 2001-2010 will be written into history as one of the most tumultuous periods in modern aviation. The 11 September 2001 terrorist attacks in the USA abruptly ended a golden period of aviation.

Fears triggered in those horrendous incidents were magnified by subsequent terrorism threats at airports and in the air worldwide. Passenger, airport and aircraft safety has consequently become more important than ever before, with increased layers of process and security putting pressure on airlines, airports and associated providers.

A series of other issues over the decade has compounded this, transforming a highly profitable and successful sector into a crisis-ridden one.

Natural phenomena like the Avian Flu from 2004 and then 2009's Swine Flu impacted on the confidence of air travellers, particularly in the most affected regions. Climatic events that caused enormous disruption to air travel, most recently by the Iceland volcano eruption, have also hit the sector.

In the background there have been significant increases in oil prices, and growing speculation of peak oil being reached. The economic and environmental sustainability of air travel has increasingly been questioned over the last decade.

Just when the industry couldn't be hit harder, the global financial meltdown hit both commercial and consumer travel hard from 2008, finally driving some airlines to the brink.

After almost a decade of challenges and \$50 billion in losses, the airline industry is still fragile but showing signs of recovery.

Boeing and Airbus have recently announced plans to increase production, as analysts point to new growth in the sector. This confidence was reinforced by IATA recently announcing that airlines are reporting net profit of \$4.4 billion for the 2010 second quarter compared to \$1.9 billion losses in the previous quarter, with a projected annual profit of \$8.9 billion.

However IATA is forecasting a drop in profit to \$5.3 billion for 2011, and continues to be concerned about the duration of the cyclical upturn. The 2010 performance to date suggests there are reasons for optimism in the industry, the increasing demand and disciplined capacity management are leading to stronger yields pushing revenues higher.

In many ways it has been a cathartic process for the airlines and the supporting industries, forcing a new focus on efficiency and cost reduction.

Implications for ANSPs

During this turbulent time, Air Navigation Service Providers (ANSPs) have been hampered by their inability to influence their revenues and are consequently caught in a vicious cost cycle. While an ANSP's normal reaction in a declining revenue environment is to increase their user charges, there has recently been enormous pressure on ANSPs to avoid these, and focus on cutting expenses instead.

The challenge for ANSPs, is to transform their operational approach thereby improving efficiency and safety, while funding new technologies that support the change. Longer term the introduction of the new technology will result in lower operating costs, but at this stage there will be strong resistance to any costs being passed on.

1.2 New era for ATM technology

Projects like the FAA's NextGen and SESAR in Europe are using technology as a catalyst for change in air traffic control. Real-time traffic tracking through GNSS, multilateration or ADS-B, functional airspace blocks, SWIM (system wide information management), enhanced communication technologies and better collaborative flow management systems will all have a major impact.

These technological shifts will herald a move from tactical Air Traffic Control (ATC) to strategic Air Traffic Management operations, stepping from the use of reliable systems to more sophisticated and smarter systems. This will require investment from all ANSPs whether they be large or small, and unparalleled levels of collaboration to realise the full benefits.

Potential benefits significant

Aircraft will be able to safely fly closer together on more direct routes, reducing delays and providing unprecedented benefits for the environment and the economy through reductions in carbon emissions, fuel consumption and noise.

More specifically, the new era of ATM technology will make travel more predictable because there will be fewer delays, less time sitting on the ground and holding in the air, with more flexibility to get around weather problems.

Environmentally, fuel use will be more efficient, and ANSPs and their stakeholders will be able to work together to minimise the noise impact that communities experience.

In an already highly safety-conscious industry, the new technology will further enhance accident prevention by enabling organisations to better predict risks, and then identify and resolve hazards.

Visibility enhanced

All of this will be made possible by the visibility new ATM technology will facilitate. Clear information will get to the right people faster, enabling them to make decisions that help the whole air movement system to operate more effectively.

ANSPs can get further gains by ensuring the data from these new systems flows right through their operations, providing data that helps business and financial managers make decisions that improve other parts of the business including the back office.

1.3 Fully realising the gains of new ATM technology

ANSPs are technology-intensive organisations by nature, who invest huge sums in sophisticated ATM systems that deliver millions of operational data points, ensuring high levels of efficiency, reliability and operational safety. However, if understood and managed well, the data can be converted into information and eventually intelligence. It can be the catalyst for unprecedented cost recovery and untapped operational efficiencies for the ANSP.

It's the understanding of how to capture and use that information that makes the difference between good and exceptional ANSP operations.

Operational insights

Understanding and gathering key metrics around areas such as aircraft movements, airport utilisation and delay metrics provide important insights for ANSPs. For example:

1. Aircraft data

- Use airport movement data to better meet runway capacity during peak demand periods while minimising restrictions on traffic flows.
- Route usage data can simplify and prioritise the charting of air routes plus assist in improving the forecasting of route usage.
- Flight path monitoring data reveals how close airline customers follow the required trajectory, opening up opportunities for identifying improvements.
- Metrics can be established for recording fuel and emissions savings, giving the ANSP a stronger hand in airline fee negotiations.

2. Airport metrics

- Taxi-in and taxi-out times enable the accurate modelling of gate to gate trajectory.
- Runway-in-use statistics provide useful information for improving the forecasting of route usage and modelling the impact of operational changes on the airport environment (e.g. noise emissions).
- Hourly movement data for controlled airports highlights the relationship between demand and capacity as well as monitoring the tension between ATC workload and rostered staffing levels.

3. Delay metrics

- Delay causes categorises reasons for delay and establishes where ANSP operations had an impact on these.

- Start-up and departure delays plus en-route delays establish KPIs for assessing the effectiveness of flow management.

In addition further metrics can be developed to assist in the management and benchmarking of the ANSP in terms of safety, training, HR management and of course financials.

Enhancing cost recovery

While operational improvements are at the core of improving ANSP performance, there are also significant financial gains from an integrated back office approach that connects ATM technology with management information systems.

Additional revenue identified from a smoother billing process not only helps pay the salaries of controllers and others and covers all operational costs such as electricity and maintenance, but helps covers debt payments for the purchase of new technology and facilities.

The benefits of achieving back office integration are significant for ANSP cost recovery:

- Elimination of manual processes and inefficient systems: re-entry of data results in missing information, transcription errors and a lack of confidence in process accuracy. An integrated, automated approach increases billing speed and increases accuracy.
- Leaves no flight revenue unrecovered: data integrity is ensured, eliminating the uncertainty and inconsistency of manual charge calculation.
- Deliver a shortened billing cycle: identifying charges automatically and accurately means you can increase the speed and quality of billing. Process delays and bottlenecks are eliminated with timely invoice creation and customers are unlikely to dispute and delay payment due to the transparency of the process.

1.4 Finding practical solutions

The next decade will be an exciting one for the aviation industry; a stark contrast to the last few years of tumult. It will be growth, but not at all costs. Every element of the industry, especially ANSPs, will need a laser-like focus on their operational effectiveness and cost management.

As an industry ANSPs have been guilty in the past of failing to realise the full benefit of integrating ATM and back office systems. To achieve the transformation needed to meet stakeholders' demands in the future it is something that needs to change.

To realise operational and financial gains, ANSPs need a back office solution that captures flight data from multiple air traffic management systems and present it to systems that can analyse and provide important business insights, as well as improve the billing process.

Airways has helped several customers in Asia and the Pacific recover more than \$5 million in additional revenues with the help of this tool and our intimate understanding of the ANSP business. As it becomes tougher to meet the increasing cost demands that technology and industry pressure put on the Air Navigation Services, it is through improvements like those offered by Flight Yield that good ANSPs will make the difference between financial success and cost-cutting pain.

Airways International

Airways International is a fully owned subsidiary company of Airways Corporation New Zealand. The parent company is an air navigation services provider, with a staff of 650 people managing 37 million square-kilometres of domestic and oceanic airspace. Advanced technology systems featuring high levels of automation and satellite facilitation are used in support of aeronautical services.

Airways International was established in 1992 to take the parent company's skills and experience into the global arena. Airways International has worked with organizations in more than 65 countries, offering a portfolio of services and products aimed at:

- strengthening and commercialising ANS providers
- designing, planning, implementing and project managing air navigation systems and associated services
- training air traffic controllers and air navigation system engineers and technicians
- providing support services including quality assurance, auditing, flight inspection and equipment maintenance.

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