



panintelligence

# Building the Foundation for AI-Ready Airlines

How Modern Airlines Embed Intelligence Into  
Daily Operations in 8 weeks

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# Foreword

## Airlines are not short of data.

Across flight operations, crew scheduling, maintenance, commercial planning, customer servicing, and regulatory reporting, vast volumes of operational data are generated continuously, forming an increasingly detailed and dynamic picture of how the airline is performing at any given moment.



Charlotte Bailey

CEO, Panintelligence

Over the past decade, the industry has invested heavily in platforms, dashboards, reporting tools, cloud infrastructure, and, more recently, artificial intelligence, all with the intention of turning that data into a meaningful source of advantage.

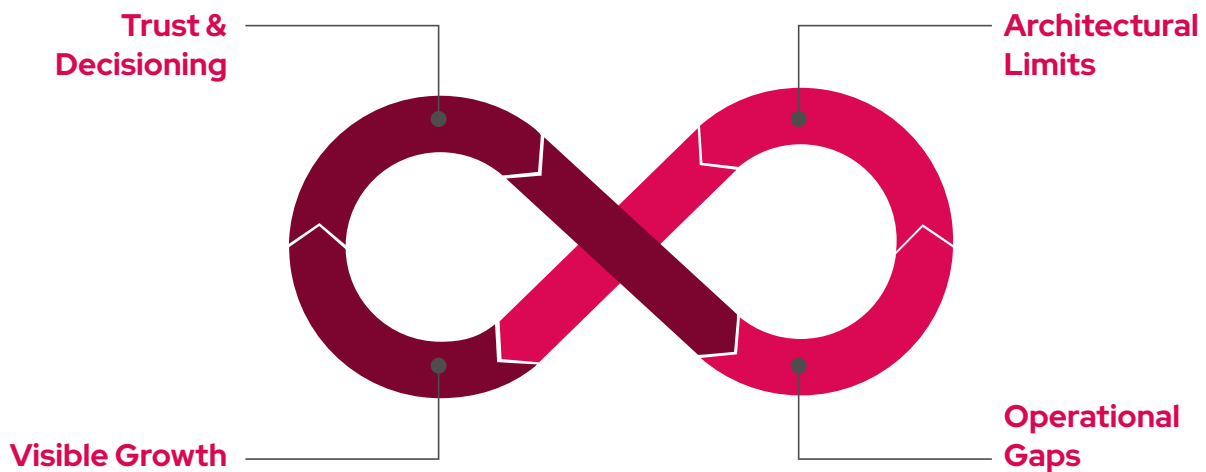


⚠️ Despite this sustained investment, the commercial reality of aviation has remained largely unchanged. The industry continues to operate on margins of just 3 to 4 percent, equating to less than £10 profit per passenger, leaving very little room for inefficiency, delay, or inconsistency in decision-making. *(International Air Transport Association)*

# The Intelligence Gap

Data is growing, tooling is evolving, and expectations, both internally and externally are increasing.

But the ability to translate insight into timely, trusted, operational decisions is not advancing at the same pace.



This is not purely a challenge for legacy carriers. Even modern airlines built on cloud-first architectures encounter this barrier rapidly. BermudAir, Bermuda's national carrier launched in 2023, discovered this within weeks of commencing operations.

Despite having no legacy systems to contend with, no decades of accumulated technical debt, and no entrenched reporting processes, BermudAir found itself facing the same fundamental challenge: *the gap between having data and being able to act upon it consistently, at the pace required by operational reality.*



## A Product Problem, Not Just a Data Problem

For Heads of Product, this is not an abstract or theoretical issue.

The question is no longer whether insight exists somewhere within the organisation in most cases it does, often in multiple forms, across multiple systems, and owned by different teams.

The more important questions are:

### **Delivered Within Workflows**

Is insight consistently delivered within the workflows where decisions are actually made?

### **Consistent Across Systems**

Is it consistent across systems and teams, with aligned definitions of key metrics?

### **Scalable Without Complexity**

Can it scale without increasing engineering or operational complexity?

### **Aligned to Real Decisions**

Is it aligned to the real decisions that ultimately drive performance?

## Where Airlines Experience Friction

This is where many airlines continue to experience friction. The problem persists even for modern carriers built from the ground up with contemporary architecture.

### **Reporting Remains Partially Manual**

Teams spend disproportionate time locating information, validating outputs, and reconciling conflicting views.

### **Definitions Are Not Always Aligned**

Key metrics are calculated differently across systems and teams, undermining trust in data.

### **Analytics Sits Outside the Flow of Work**

Insight is delivered as a separate experience rather than embedded within operational workflows.

## BermudAir: A Modern Airline, A Universal Challenge



**Robin Smallwood**

Head of Systems, BermudAir

*"It was not sustainable. We knew from the start there were limitations in what our systems could deliver on their own."*

Despite having selected modern infrastructure partners, BermudAir quickly discovered that consolidating data from multiple systems, reconciling reporting requirements across regulatory jurisdictions in the US and Canada, and maintaining consistent definitions for key metrics demanded far more than traditional business intelligence tooling could provide.

**The result:** a disproportionate amount of time spent locating information, validating outputs, reconciling conflicting views, and interpreting context, rather than acting on what is already known.



## The Cost of the Gap

In an airline environment, this gap is not theoretical. It has direct operational and financial consequences.

# £100+

### Per Minute Per Aircraft

Cost of operational disruptions when full downstream impact is considered

# 3-4%

### Net Profit Margin

The razor-thin margin that leaves no room for inefficiency or delayed decisions

# £10

### Profit Per Passenger

The industry average that makes every operational decision financially significant

- ⊗ A delay in one part of the operation does not remain isolated. It cascades rapidly across aircraft rotations, crew availability, passenger journeys, compliance requirements, and ultimately revenue performance, often within minutes and with compounding impact.



## The Cascade Effect

When operational teams must wait for manual reporting cycles to understand what has occurred, they have already lost the opportunity to influence outcomes. When compliance reporting requires days of manual preparation, regulatory risk accumulates. When crew managers lack real-time visibility into constraint scenarios, inefficiencies compound across the network.




In airline operations, these gaps are not merely inefficient. They are measurably costly. The delay between an operational event occurring and the moment a team understands its implications is time during which costs accumulate.

# Artificial Intelligence Raises the Stakes

Artificial intelligence is now firmly on the agenda across the aviation sector, with boards and leadership teams asking how it can improve operational efficiency, enhance forecasting, reduce cost, and increase responsiveness across increasingly complex environments.


## The Expectation

AI should deliver value, improving efficiency, enhancing forecasting, reducing cost, and increasing responsiveness across complex environments.

 Adoption is accelerating across the aviation sector, with significant board-level investment and attention.  
*(McKinsey and Company)*

## The Reality

Only a minority of organisations are achieving meaningful impact at scale. AI does not resolve fragmented data, standardise inconsistent definitions, or embed insight into operational workflows on its own.

 Without the right foundations, AI risks accelerating the production of answers without improving the quality or consistency of the decisions those answers are intended to support.

## AI as a Multiplier, Not a Solution

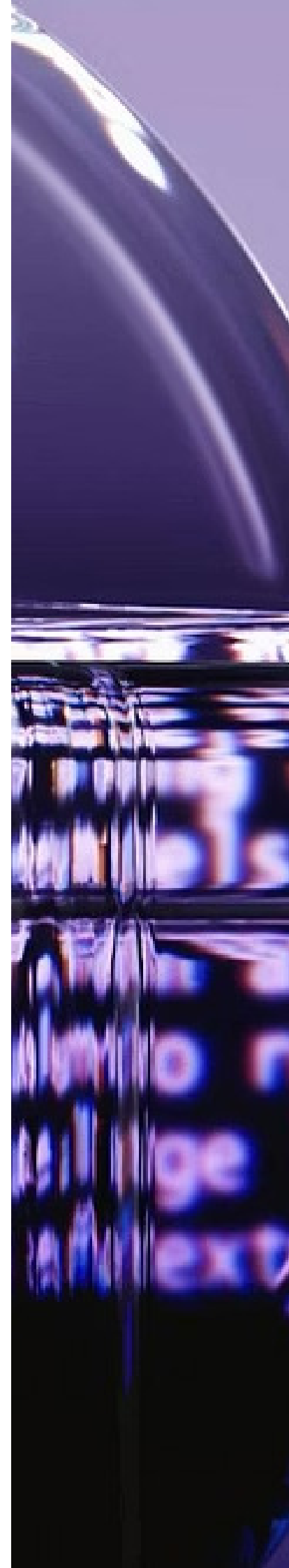
In the context of airline operations, where decisions are time-sensitive and interconnected, artificial intelligence amplifies whatever existing capability structure is present.

### Where Foundations Are Strong

Clean data, consistent definitions, aligned workflows. AI meaningfully enhances decision-making and delivers real value at scale.

### Where Fragmentation Exists

AI accelerates the production of conflicting or difficult-to-trust outputs, compounding existing problems rather than resolving them.



## A Shift Towards Operational Intelligence

This is why the focus of this report is deliberately different. It is not centred on dashboards, nor on tools in isolation, and it does not treat artificial intelligence as a standalone capability.

Instead, it focuses on how airlines can move towards a model of operational intelligence, where insight is delivered in real time, embedded directly within operational workflows, governed and consistent across the organisation, and aligned to the decisions that need to be made.

From a product perspective, this represents a **critical shift**.

Airlines do not need more access to data. They need a scalable way to deliver decision-ready intelligence across the operation, without introducing additional disconnected tools, additional engineering burden, or additional layers of complexity.

## What Good Looks Like in Practice

When implemented effectively, operational intelligence allows product teams to extend capability quickly whilst maintaining control, security, and coherence across the platform.

### **Analytics Embedded Directly**

Analytics is embedded directly into operational systems, governed at the data layer to ensure consistency.

### **No Unnecessary Data Movement**

Delivered without unnecessarily moving or duplicating sensitive data across environments.

### **Eight Weeks to Capability**

BermudAir achieved operational and compliance reporting capability within eight weeks of initial engagement.

## What This Report Explores

01

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### The Complexity of Modern Airline Operations

Why the operational environment has fundamentally changed and what that means for product leaders.

03

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### The Capability Shift Required

How to embed intelligence directly into operations in a scalable, platform-aligned way.

02

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### Why Traditional Analytics Approaches Are Failing

The structural gap that continues to exist between insight and action across the industry.

04

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### The BermudAir Journey

A modern airline that encountered these challenges within its first months and took practical steps to resolve them.

- ☑ BermudAir's transformation demonstrates that moving from manual reporting to automated, governed, embedded analytics is not an optional enhancement. It is a structural requirement for operating at scale.

# A Reframing of Competitive Advantage

This is not a paper about technology trends. It is a reframing of the problem facing airline product and operational leaders.

In aviation, competitive advantage is no longer defined by access to data. It is defined by the ability to turn that data into confident, timely action, inside the operation itself and to do so faster, more consistently, and with greater clarity than the environment changes around you.

## **Not the Most Data**

The winners are not those with the most sophisticated data platforms or the largest data teams.

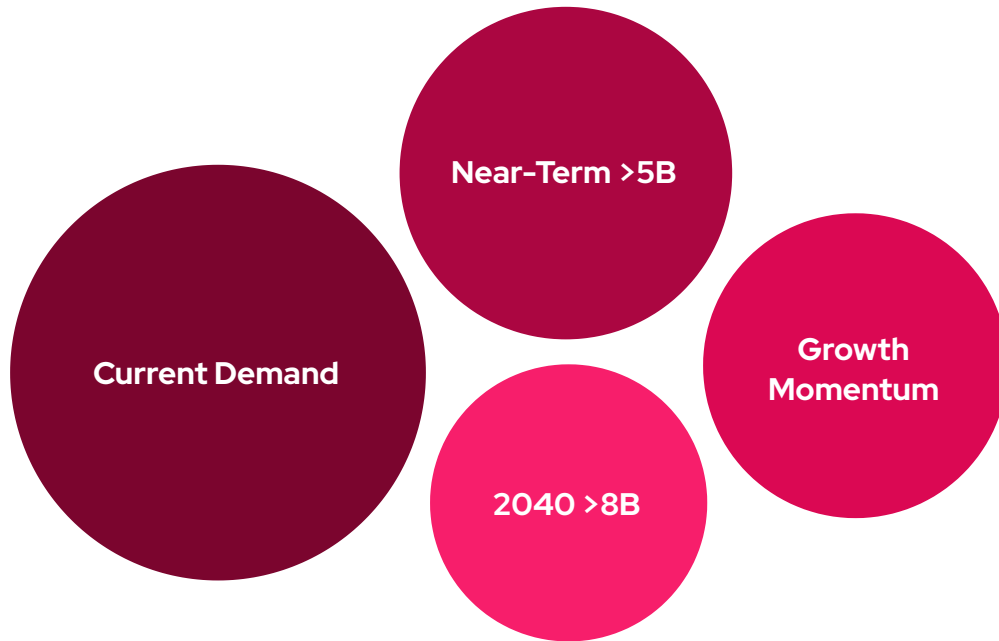
## **Not the Best Technology**

Technology alone does not create advantage without the operational model to use it effectively.

## **Insight Into Action**

Success belongs to those who transform insight into action at the moment it matters most.

# The New Reality of Airline Operations



Airlines are operating in one of the most complex and pressured environments the industry has ever faced. Passenger demand continues to rise, with global volumes expected to exceed five billion journeys annually in the near term, and long-term forecasts projecting more than eight billion by 2040. (*Airbus*)

On the surface, this growth represents opportunity. In practice, it introduces a level of operational complexity that is increasing faster than many organisations' ability to manage it effectively.

## Growth Does Not Scale Linearly

Every additional aircraft, route, and passenger increases the number of variables that must be coordinated in real time. Each of these elements is interdependent – and that has a direct implication for product leaders.

- **Flight Schedules**

Become more intricate with every new route added

- **Crew Rotations**

Grow more constrained as the network expands

- **Maintenance Planning**

Becomes more dynamic with a larger fleet

- **Passenger Flows**

Grow more demanding as volumes increase

Airline platforms are no longer supporting isolated processes. They are supporting a continuously shifting system of interconnected decisions.

## Complexity Is Now a Product Challenge

For Heads of Product, this shift matters. Operational complexity is no longer just an operational issue. It is a product and platform design challenge.

### The New Expectation

Airline platforms are not just expected to store and process data. They are expected to actively support decision-making across the operation – in real time, across roles, at scale.

### What Systems Must Now Support

- Real-time decision-making across the operation
- Integration across fragmented operational domains
- Consistent insight across multiple user roles
- Scale without increasing cognitive or technical overhead

## Margins Remain Unforgiving

*"The airline industry is expected to generate a net profit margin of just 3 to 4 percent, equivalent to less than £10 per passenger."*

– International Air Transport Association

This is one of the defining characteristics of the industry. Profitability is not driven by occasional strategic wins. It is driven by the consistent execution of thousands of operational decisions, every single day.



### Small Inefficiencies Compound

In a 3–4% margin environment, small inefficiencies accumulate rapidly into significant financial impact.



### Latency Has Measurable Cost

Every minute of delay in decision-making translates directly into operational and financial loss.



### Inconsistent Data = Inconsistent Outcomes

When data definitions diverge, decisions diverge – and performance suffers across the network.

## Disruption Is Constant, Not Exceptional

Airlines do not operate in controlled environments. They operate in systems where disruption is inevitable. Weather events, air traffic control constraints, crew availability issues, technical faults, and airport congestion do not occur in isolation. They cascade.

A delay in one part of the network impacts aircraft rotations, crew schedules, passenger journeys, and downstream flights within minutes. The financial implications are significant.

Industry estimates suggest that delays can cost airlines over £100 per minute per aircraft when full downstream impact is considered.

For product teams, this introduces a critical requirement:

**Systems must not just report disruption. They must help users understand impact and act quickly.**

## Regulation Demands Accuracy and Accountability

Aviation is one of the most heavily regulated industries in the world. Operational, financial, and passenger-related data must be accurate, traceable, consistent across systems, and available for audit at any time.

- ① This is not simply a reporting requirement. It is a product requirement. The systems used across the airline must ensure that metrics are consistently defined, outputs are reproducible and auditable, and data access is controlled and role-appropriate.

## Consistently Defined Metrics

Every metric must carry the same definition across all systems and teams to ensure regulatory alignment.

## Reproducible and Auditable Outputs

Regulatory submissions must be traceable back to source data with full audit trails.

## Controlled Data Access

Role-appropriate access ensures sensitive data is protected while enabling operational visibility.

Manual processes, fragmented definitions, and duplicated logic do not just create inefficiency. They introduce risk.

## Technology Landscapes Are Fragmented

Modern airlines operate across a complex ecosystem of systems, each designed to serve a specific function. Each generates valuable data. But that data is rarely unified.

- **Flight Operations Platforms**

Core scheduling, routing, and operational management systems

- **Crew Management Systems**

Rostering, availability, compliance, and crew communication tools

- **Maintenance & Engineering**

Aircraft health monitoring, maintenance scheduling, and engineering records

- **Revenue Management**

Pricing engines, yield management, and commercial planning tools

- **Customer & Booking Platforms**

Passenger service systems, booking engines, and customer experience tools

Data is distributed across environments, defined differently across teams, and reconciled manually through reports and spreadsheets. None of the available options – building integration layers, adding more tooling, or accepting fragmentation – scale cleanly.

## The Defining Constraint: Time to Decision

*"The ability to make faster, data-driven decisions is becoming a critical competitive differentiator."* – Deloitte

### What Airlines Have

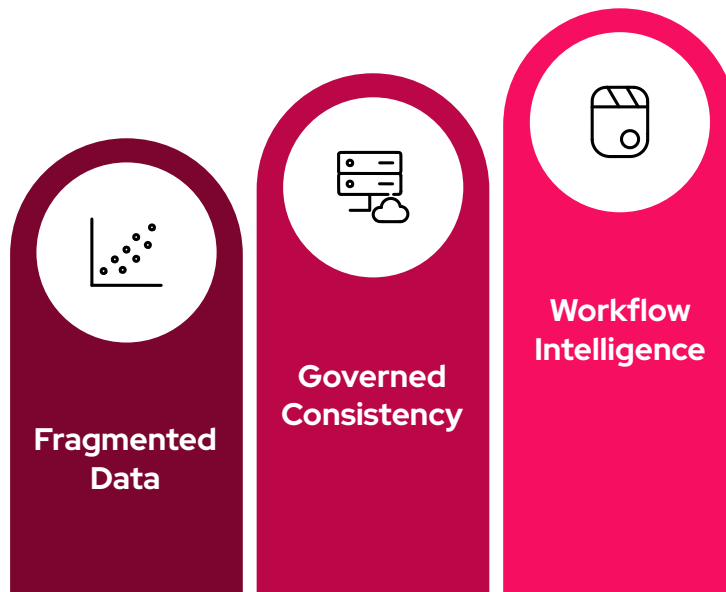
- Vast volumes of operational data
- Multiple analytics platforms and dashboards
- Specialist data and reporting teams
- Significant technology investment

### What Airlines Lack

- Insight delivered at the moment of decision
- Consistent definitions across all systems
- Analytics embedded within operational workflows
- The ability to act on insight at operational pace

Airlines are not constrained by access to data. They are constrained by the gap between insight being available, insight being understood, and insight being acted upon. This gap is where value is lost.

## A Structural Shift, Not a Tooling Problem



It is tempting to frame these challenges as a need for better tools: more dashboards, more reports, more advanced analytics. But the reality is deeper. This is not a reporting problem. It is not a dashboard problem. It is a product and operating model problem.

- In aviation, performance is not defined by what you know. It is defined by how quickly and confidently you can act on it.

# The Airline Data Paradox

## Rich in data. Constrained in decisions.

Airlines are among the most data-rich organisations in any industry. Every flight, every passenger interaction, and every operational event generates data across multiple systems. On paper, this should create a significant competitive advantage. In practice, it rarely does.

## Data Is Not the Constraint, Coherence Is

Modern airline environments are built on a complex ecosystem of specialised systems. Each system is effective within its own domain. The challenge is not capability in isolation. It is alignment across the whole.

### Data Is Distributed Across Environments

Operational data lives in multiple systems, each with its own data model, access controls, and update cadence.

### Defined Differently Across Teams

The same metric – On-Time Performance, load factor, route profitability – may be calculated differently by different teams.

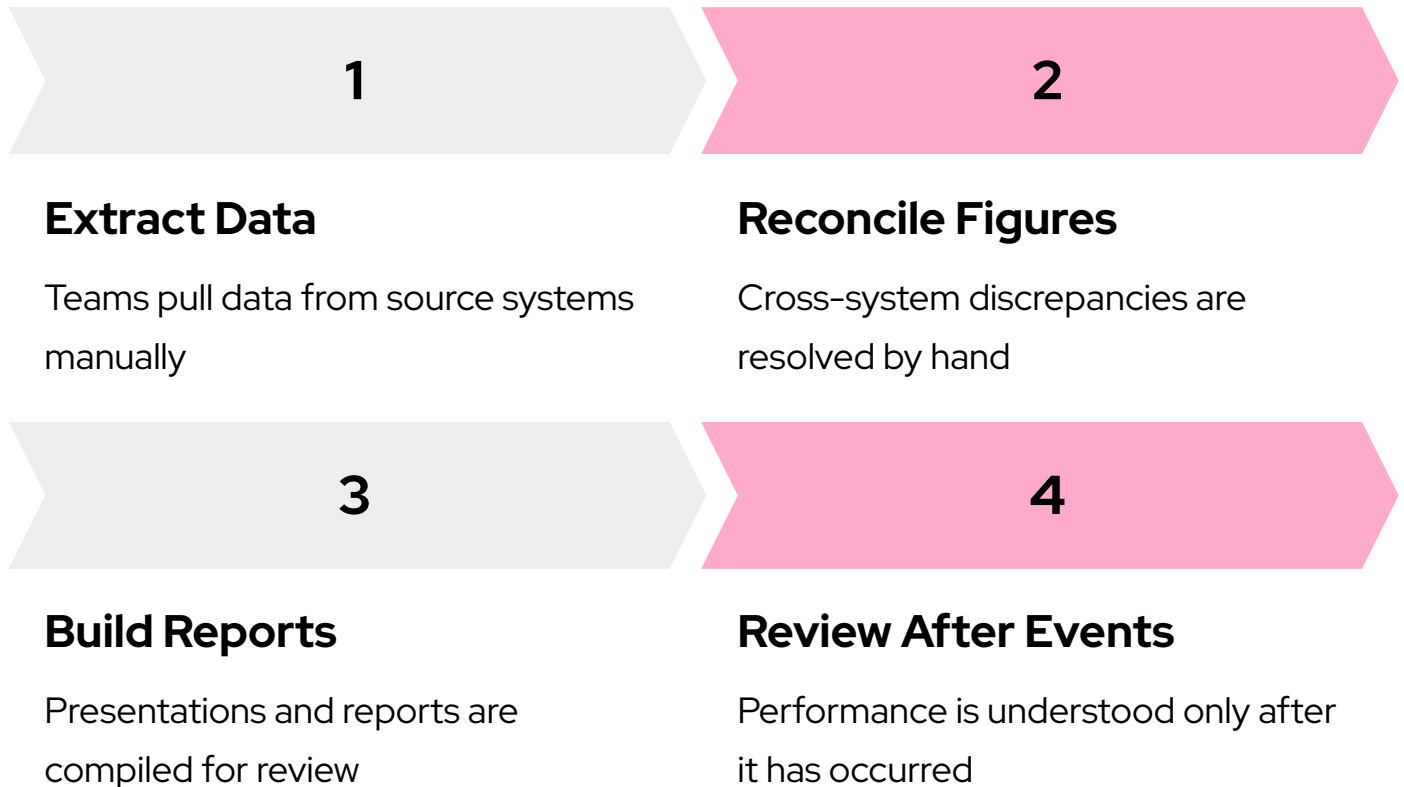
### Interpreted Through Localised Logic

Teams build their own logic to interpret data, creating divergent views of the same operational reality.

The result is not a lack of insight, but a lack of coherent, decision-ready understanding. The platform does not fail because it cannot generate insight. It fails because it cannot consistently deliver a single, trusted view of reality across the operation.

## Reporting Still Sits Outside the Operation

Despite significant investment in analytics platforms, reporting in many airlines remains separated from the operational flow.



This creates a delay between what is happening and what is understood and more importantly, between what is understood and what is acted upon. For product leaders, this is a design issue: insight is being delivered as a separate experience rather than as part of the operational workflow.

# Dashboards Improve Visibility, Not Decision-Making

## What Dashboards Provide

- Interactive exploration of data
- Drill-down capability across metrics
- Broader access across user groups
- Improved visibility into performance

## What Dashboards Do Not Solve

- Users must navigate multiple views independently
- Context must be interpreted without support
- Insight must be translated into action manually
- In time-sensitive environments, this creates friction

**i** Access to information is not the same as support for decisions. For Heads of Product, this distinction is critical. Improving visibility is not enough. The objective is to reduce the gap between seeing, understanding, and acting.

## Inconsistency Undermines Scale

Beneath the surface, one issue has disproportionate impact: inconsistent definitions. Metrics such as On-Time Performance, delay classifications, load factors, and route profitability are often calculated differently across systems or teams.

### ● **Conflicting Interpretations**

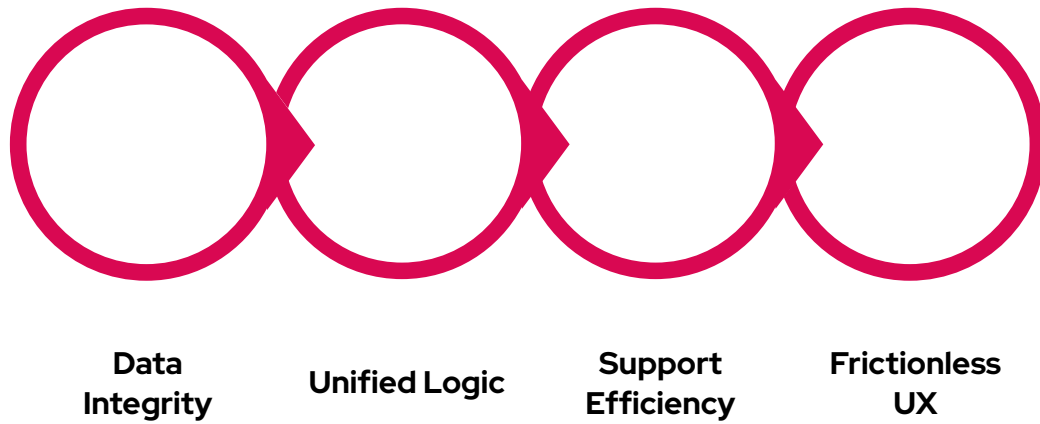
Different teams reach different conclusions from the same underlying data, creating confusion and debate.

### ● **Reduced Confidence in Data**

When outputs conflict, trust erodes and teams spend time validating rather than deciding.

### ● **Increased Validation Effort**

Every inconsistency introduces additional logic to manage, additional support requirements, and additional friction.



Inconsistent data does not just reduce trust. It prevents scale. Every inconsistency introduces additional logic to manage, additional support requirements, and additional friction in user experience.

## The Real Issue: Insight Disconnected From Action

The most significant consequence of this paradox is not fragmentation or manual effort in isolation. It is the disconnect between insight and action. Even where insight exists, it is often delivered too late, presented outside of operational workflows, and lacking the context required for immediate decisions.

This results in organisations that are highly capable of analysing what has happened but less effective at influencing what is happening now. Analytics exists. But it is not operationally integrated.

- ① Artificial intelligence is often positioned as the solution to these challenges. In reality, it depends entirely on the environment it operates within. Where consistent, governed data and integrated workflows are not in place, AI can accelerate analysis, but it cannot compensate for fragmentation. Instead, it amplifies it.

## From Data Capability to Decision Capability

The airline data paradox is not a failure of investment. It is the result of how data, reporting, and product design have evolved independently. To resolve it, airlines must shift focus.

- From access to data to delivery of decision-ready insight
- From separate analytics experiences to embedded, workflow-aligned intelligence
- From retrospective analysis to real-time decision support.

**For Heads of Product, this is a platform design challenge.**

The question is no longer: Do we have the data?

It is:

- Are we delivering it in a way that supports real decisions?
- Are we reducing or increasing complexity for our users?
- Are we enabling action, or just visibility?

# Why Traditional Approaches Are Failing

Airlines have not stood still when it comes to data and analytics. Over the past decade, significant investment has gone into data platforms and warehouses, business intelligence tools and dashboards, and reporting infrastructure and specialist teams. On paper, capability has improved. But for many Heads of Product, the outcome feels familiar: more data, more tooling, more dashboards, and yet decision-making is not materially faster, simpler, or more consistent.

- The issue is not effort. It is that the underlying approach has remained unchanged.

## Reporting Has Been Scaled, Not Solved

### The Assumption

Increased visibility will lead to improved performance. More dashboards, more views, more data points will close the gap between insight and action.

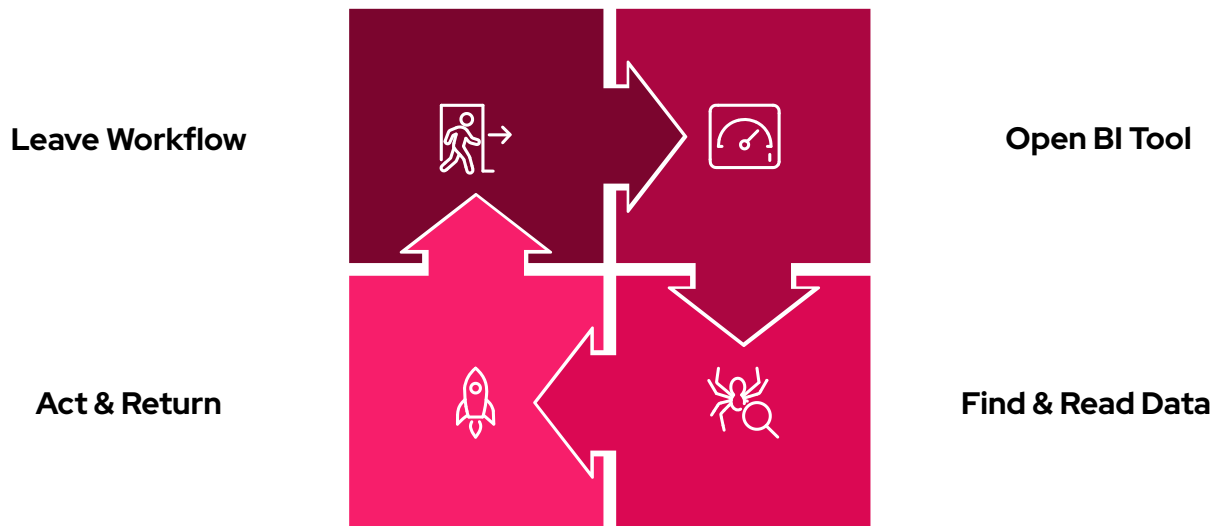
### The Reality

Greater volume of information leads to increased effort to interpret it, and continued reliance on manual processes. The format of reporting has evolved. The operating model behind it has not.

For product leaders, this is a key distinction. Improving how information is presented does not necessarily improve how decisions are made. The underlying structural problem, analytics delivered separately from operations remains unresolved.

## Analytics Remains Separated From Operations

A more fundamental issue sits beneath the surface. Analytics is still typically delivered as a separate experience.



Users are expected to leave their operational workflow, access a reporting or business intelligence tool, locate and interpret relevant data, and translate it into action.

This creates friction at the exact point where speed matters most.

Because in airline operations, decisions are not made in reporting tools. They are made within operational systems, under time pressure, and with incomplete context.

*Analytics is being delivered adjacent to the operation, rather than within it.*

## Self-Service Introduces Scale, But Not Consistency

To reduce dependency on central teams, many airlines introduce self-service analytics. The intention is sound: empower users, improve speed of access, reduce bottlenecks. And initially, this works. But without strong governance, new issues emerge.

### Phase 1: Access Improves

Self-service adoption increases. Users can access data independently. Bottlenecks reduce.

### Phase 3: Trust Erodes

Reduced confidence in outputs. Increased validation effort. Inconsistent decision-making across teams.

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### Phase 2: Definitions Diverge

Logic is recreated across teams. Multiple versions of the same metric reappear across the organisation.

### Phase 4: Scale Fails

Neither scaling access nor controlling definitions works effectively without a fundamentally different approach.

## AI Applied to the Wrong Layer

Artificial intelligence is often introduced as the next step, with an expectation that it will automate analysis, surface insights automatically, and improve decision-making at scale. However, in many cases, artificial intelligence is applied on top of existing complexity, rather than resolving it.

*"Artificial intelligence adoption is accelerating, but only a small proportion of organisations are capturing meaningful value at scale." – McKinsey and Company*

Where data is inconsistent, definitions are unclear, and workflows are disconnected, artificial intelligence produces outputs that are difficult to trust, hard to validate, and detached from real decisions.

**Artificial intelligence does not transform the operating model. It reflects it.**

## The Root Cause: An Outdated Operating Model

At its core, the challenge is not technological. It is structural. Analytics is still treated as a reporting function, a downstream activity, a separate layer from the operation. But the environment in which airlines operate has changed fundamentally.

### What Modern Operations Require

Real-time responsiveness, consistent governed data, insight delivered in context, and scalable decision-making across roles.

### What the Current Model Delivers

Retrospective reporting, fragmented definitions, insight delivered separately, and decision-making that cannot scale without proportional resource increase.

- ⊗ This cannot be achieved with a model designed for retrospective reporting. A platform shift is required, not incremental improvement, but a fundamentally different approach to how analytics is delivered.

# The Shift to Operational Intelligence

If traditional approaches are no longer sufficient, the next question for Heads of Product becomes unavoidable: What does good actually look like, and how does it translate into a scalable product capability?

The answer is not simply more reporting, nor more dashboards layered on top of existing systems, but a more fundamental shift in how insight is delivered, experienced, and used within the airline. It is a shift towards operational intelligence.

## Operational Intelligence Defined

Operational intelligence is the ability to deliver real-time, decision-ready insight, embedded directly within the flow of operations, governed at the data layer, and aligned to how the airline actually runs.

This definition matters. Because it moves analytics away from being a separate capability and into becoming an integral part of the platform itself.

Insight is not something users access. It is something the system delivers in context, at the point of need.

### **Real-Time**

Insight delivered as events unfold, not after they have occurred

### **Embedded**

Delivered within operational systems, not accessed through separate tools

### **Governed**

Consistent definitions and logic applied centrally across all outputs

### **Decision-Aligned**

Matched to the specific decisions that drive operational performance

## **The Shift for Product Teams**

For Heads of Product, operational intelligence represents a material shift in design philosophy.

- **From Analytics Features**  
Building analytics as a separate feature set that users navigate to independently
- **From Users Retrieving Data**  
Users leaving their workflow to locate, interpret, and act on information
- **To Decision Capability**  
Building platforms that actively support decisions within the operational workflow
- **To Systems Delivering Insight**  
Systems proactively delivering relevant insight within the workflow at the point of need

This is not about increasing the volume of analytics. It is about reducing the distance between insight and action.

## Embedding Insight Into Workflows

The most visible change is not the sophistication of analytics, but where it appears. Insight is embedded directly into operational systems, rather than accessed through separate tools.



### Operations Teams

See delay drivers and downstream impact in real time, within the systems they already use



### Crew Managers

Understand availability and constraints instantly, without switching to a separate reporting tool



### Commercial Teams

Access route performance and load factor metrics within their planning workflows



### Compliance Teams

Receive consistent, audit-ready outputs automatically, without manual preparation



## Governance as an Enabler of Scale

A critical and often underestimated component of operational intelligence is governance. In a scalable model, metrics are defined once and reused, business logic is centralised and consistent, and access is controlled based on role and responsibility.

### The Governed Semantic Layer

A centralised layer that ensures consistency across all outputs, regardless of where or how they are consumed – the foundation of scalable operational intelligence.

### The Impact of Governance

- Trust in data increases across the organisation
- Decisions become more consistent across teams
- Auditability is maintained at all times
- Duplication of logic is eliminated
- Maintenance overhead is significantly reduced
- Scale is achieved without fragmentation

## Delivering Insight Without Increasing Complexity

One of the most important considerations for airline product leaders is how to deliver this capability without introducing additional architectural burden.

### • Query Data In Place

Rather than replicating data across environments, operational intelligence queries data where it already lives eliminating unnecessary movement of sensitive information.

### • Align With Existing Architecture

By working with existing data architectures rather than replacing them, insight can be delivered without introducing new complexity or risk.

### • Maintain Compliance and Security

Particularly relevant in aviation, where data sensitivity is high, compliance requirements are strict, and system landscapes are already complex.

## Automation as the Foundation

Automation underpins the entire operational intelligence model. Manual reporting introduces delay, duplication, and inconsistency. Operational intelligence replaces this with a fundamentally different approach.

### **Real-Time Data Availability**

Information is available as events occur, not hours or days after the fact

### **Automated Reporting and Distribution**

Reports are generated and distributed automatically, eliminating manual preparation cycles

### **Consistent Delivery Across Roles**

Every user receives the same governed, consistent insight regardless of their system or location

For product leaders, this enables:

- Predictable delivery of insight
- Reduced dependency on specialist teams
- Scalability without proportional increase in resource

## The Role of AI Within This Model

Artificial intelligence becomes significantly more effective within a governed, embedded environment. Rather than acting as a standalone layer, it enhances the existing capability.



### Summarise Complex Data

AI can distil large volumes of operational data into clear, actionable summaries



### Highlight Anomalies

Emerging risks and operational anomalies are surfaced automatically before they escalate



### Support Forecasting

Scenario planning and predictive analytics are grounded in consistent, governed data

- ✔ Within an operational intelligence model, AI is not speculative. It is grounded, explainable, and directly linked to decision-making because the foundations it depends on are already in place.

# Operational Intelligence in Practice: The BermudAir Case Study

## BERMUDAIR

The concept of operational intelligence is clear. The challenge for Heads of Product is not understanding the theory, but translating it into something that works in the day-to-day reality of an airline, across multiple systems, roles, and time-sensitive decisions, without introducing additional complexity or delivery burden.

BermudAir launched in September 2023 as Bermuda's national carrier, with a mission to connect Bermuda with major destinations across the United States and Canada.

# A Modern Airline With a Universal Challenge

## BermudAir's Advantage

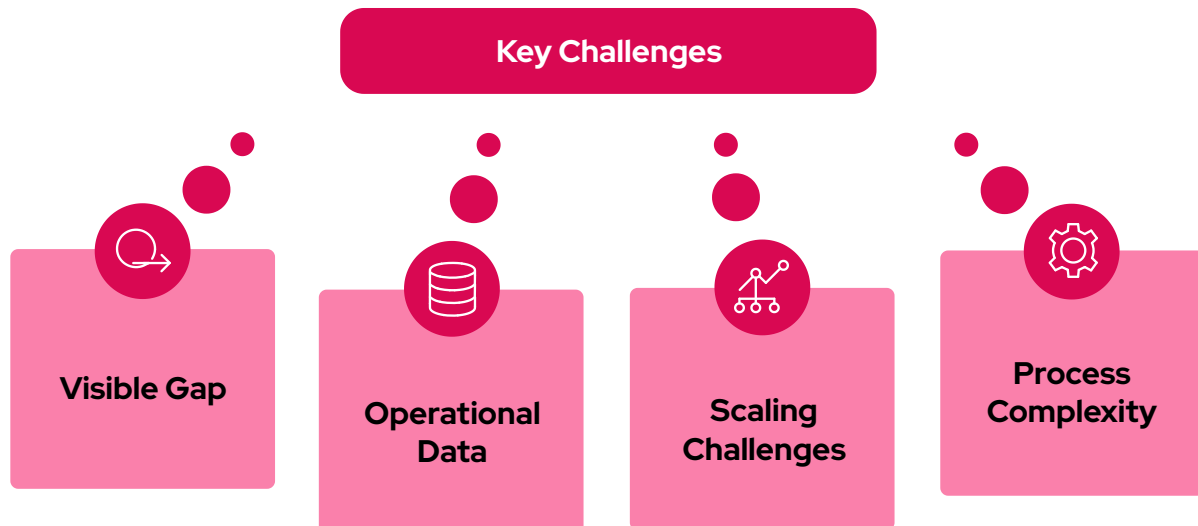
As a relatively young airline, BermudAir had a distinct advantage: the opportunity to build operational and reporting capability from the start, rather than modernising inherited systems. No legacy systems. No decades of technical debt. No entrenched reporting processes.

And yet, as the organisation scaled from launch through its first year of operation, it encountered the same fundamental challenge that traditional carriers face.

## The Universal Challenge

The gap between having operational data and being able to use that data consistently, at scale, to support real-time decision-making.

Growth introduces operational complexity that standard reporting approaches cannot accommodate regardless of the modernity of the underlying infrastructure.



## Early Challenges: Manual Processes in a Modern Environment

Initially, BermudAir relied on manual reporting processes. Data was extracted from their passenger service system, consolidated using spreadsheets across teams, and manually compiled to track sales, performance, and compliance metrics.

### Compliance Reporting Was Labour Intensive

Regulatory submissions across multiple US and Canadian aviation authorities required days of manual data preparation, review, and validation – creating unacceptable risk as the network grew.

### Operational Teams Lacked Real-Time Visibility

Decision-making relied on data that was always historical, never current. Teams could not respond to operational events at the pace the environment demanded.

### Manual Reporting Constrained Growth

The burden of manual processes created a ceiling on the business's ability to respond to growth and new market opportunities.

*"It was not sustainable. We knew from the start there were limitations in what our systems could deliver on their own."*

– Robin Smallwood, Head of Systems, BermudAir

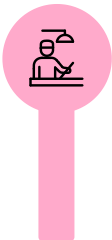
# The Strategic Shift: Embedded Operational Intelligence

BermudAir recognised that sustainable, scalable growth required a fundamentally different approach to how analytics and reporting were delivered. Rather than attempting to build an in-house analytics platform or continually expanding manual processes, the organisation pursued embedded operational intelligence.



## Governance Applied at the Data Layer

Consistent definitions centralised, ensuring all outputs draw from the same governed source of truth



## Insight Embedded in Operational Workflows

Analytics delivered directly within the systems teams were already using, eliminating the need to switch tools



## Compliance Reporting Automated

Days of manual preparation reduced to minutes of reliable, auditable output across multiple jurisdictions

## Outcomes: What Changed in Practice

Within eight weeks of initial engagement, BermudAir moved from manual, spreadsheet-based reporting to automated, governed, embedded analytics across multiple operational areas.

# 8

### Weeks to Capability

From initial engagement to full operational and compliance reporting capability

# 60+

### Automated Reports

Covering operational, commercial, and compliance needs – all from consistent, governed definitions

# Days...

### Compliance Reporting

Regulatory submissions that previously took days now take minutes, with full auditability

## What BermudAir Can Now Do

### Real-Time Operational Visibility

Operational teams have real-time visibility into flight performance, crew utilisation, and operational constraints, within the systems they already use.

### Commercial Planning Intelligence

Commercial teams access route performance and load factor metrics directly within their planning workflows, enabling faster and more confident decisions.

### Automated Compliance Reporting

Regulatory submissions to aviation authorities in multiple jurisdictions are now prepared automatically, with consistent definitions and full auditability.

## Built on Existing Infrastructure

Importantly, this transformation was achieved without requiring BermudAir to invest in building or maintaining additional systems.

### Existing Infrastructure Leveraged

- Snowflake data warehouse
- Existing passenger service systems
- Current operational platforms

No new systems built. No architectural complexity introduced. No sensitive data unnecessarily moved or duplicated.

### Capability Delivered

- Automated compliance reporting across US and Canadian jurisdictions
- Real-time operational performance visibility
- Commercial analytics within planning workflows
- 60+ governed, consistent automated reports
- Full auditability across all outputs

## Why BermudAir's Experience Matters

BermudAir's journey is instructive precisely because the airline is not encumbered by legacy systems or historical technical debt. It is a modern carrier, built on contemporary infrastructure, with forward-thinking technology strategy.

And yet it encountered the same fundamental challenge that older carriers face: that growth introduces operational complexity that standard reporting approaches cannot accommodate.

- ☑ This demonstrates that the problem is not legacy systems. It is structural.

The complexity of airline operations, combined with the need for real-time decision-making, regulatory compliance, and scalability, creates demands that fragmented, manual, or disconnected analytics approaches cannot meet regardless of how modern the underlying infrastructure is.

## The Answer for Heads of Product

For Heads of Product, the BermudAir case study answers a critical question:

If even a modern airline built from scratch encounters these challenges, where should investment focus?

### Not More Tools

Adding more analytics layers or building additional reporting tools does not resolve the structural challenge. It compounds it.

### Not More Layers

Stacking analytics on top of existing complexity without addressing governance and workflow alignment produces diminishing returns.

### Embedded Decision Intelligence

Embedding decision-ready intelligence directly into the platforms where work actually happens, governed centrally to ensure consistency and scalability.

## BermudAir's Transformation Is Not Unique

### What BermudAir Achieved

- Manual to embedded analytics in 8 weeks
- 60+ automated governed reports
- Compliance reporting: days to minutes
- Real-time operational visibility
- No new systems required

### What This Represents

It is representative of what becomes possible when analytics is approached as a core platform capability rather than as a separate reporting function.

This is the pace at which operational intelligence can be delivered within the real constraints of airline operations.



## CONCLUSION

# Closing the Intelligence Gap

Airlines operate in one of the most data-rich, time-sensitive, margin-constrained industries in the world. Yet across the sector, a consistent challenge persists:

The gap between having insight and being able to act upon it at scale.

This gap is not because airlines lack data. It is not because they have failed to invest in technology. It is because the operating model for how analytics is delivered has not evolved at the pace that operational complexity demands.

## The Operational Intelligence Shift

Operational intelligence represents a shift in how this model works.

- From analytics as a separate layer to analytics as an integral part of operational platforms
- From reporting as output to insight as an operational input
- From data access to decision capability

For Heads of Product, this is both a challenge and an opportunity.

### The Challenge

To fundamentally rethink how platforms are designed and how analytics is embedded

### The Opportunity

To build systems that meaningfully improve decision-making across the operation at scale, without introducing additional complexity

## Who Is Leading in Aviation Today

The organisations leading in aviation today are not those with the most data or the most advanced technology. They are those that have recognised this shift early and acted on it, building platforms where insight is:

- Embedded
- Governed
- Aligned to how decisions are actually made

### Embedded, Not Separate

Analytics is an integral part of operational platforms, not a separate layer that users must navigate to independently.

### Governed, Not Duplicated

Data is defined once, governed centrally, and reused consistently, eliminating fragmentation and building trust.

### Delivered, Not Retrieved

Insight is proactively delivered at the point of need, rather than requiring users to seek it out.

📌 In aviation, performance is ultimately not defined by what you know. It is defined by how effectively, consistently, and quickly you can act on it.

# Ready to Explore Operational Intelligence?

Operational intelligence is not theoretical. It is being delivered in practice today, within operational constraints and timescales that are far shorter than most organisations expect.

## Embedding Intelligence More Effectively

If you are seeking to embed intelligence more effectively into your platforms and reduce the gap between insight and action

## Facing the Challenges in This Report

If your airline is experiencing fragmented reporting, inconsistent definitions, or analytics disconnected from operational workflows

## Bridging the Gap Between Insight and Action

If you are exploring how to move from manual, retrospective reporting to automated, governed, embedded analytics

Panintelligence has worked with airlines across multiple regions and operational scales to deliver this capability. We would welcome the opportunity to discuss your specific needs.

[Request a Demo](#)