

Smart Data Hub HANDBOOK

2023





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FOREWORD



The outlook for aviation is very promising. The forecast for passenger numbers in 2023 will be at 92% of 2019 traffic levels by the end of the year. This represents significant improvement compared to the last few years and shows that global air travel is rapidly recovering, taking advantage of the pent-up demand.

As passenger numbers increase, we cannot go back to how airports were managed before. Building more infrastructure is not a sustainable way to manage the expected level of growth. Airports need to become smarter, making use of digital transformation to become more efficient and making journeys as seamless, safe, and secure as possible, while utilizing undervalued opportunities such as enhanced non-aeronautical revenues.

Data has been seen as the new oil: The most valuable asset in the world. Airports are becoming more advanced in how they set up and manage Smart Data Hubs (SDHs). An SDH takes a holistic approach to delivering tangible business benefits from investments in enterprise data capabilities. With multiple aviation stakeholders currently experiencing shortages in the workforce, airports should capitalize on strategic data hubs in order to improve efficiency across the operation, as well as reducing costs and improving the planning of the operation. The deployment of an SDH is the protagonist for driving performance forward.



ACI World is pleased to announce the release of the first Smart Data Hub Handbook. This handbook was developed by Chief Information Officers from the World Airport IT Standing Committee and explains the core principles about setting up a data culture in each airport, as well as implementation, management, and improvements to the airport SDH, knowing that there is no “one size fits all” approach.

This handbook also contains a data maturity self-assessment tool for airports, to evaluate where they are on the journey to becoming data pioneers and supports airports through useful recommendations and insights into improving and embarking on their data journey.

Luis Felipe de Oliveira
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1 INTRODUCTION

1.1 EXECUTIVE SUMMARY

Airports of all types and sizes across the world recognize the fundamental need to treat data as a strategic asset to the organization. This is necessary to achieve tangible business and operational benefits such as increasing revenue, efficiency, passenger experience and driving down costs, delays, and carbon emissions. However, many airports lack the knowledge of how to achieve this with their data. Some have tried and failed, while others simply do not know where to start.

For those who have tried and failed, the common factor is the tendency to be primarily focused on creating a large data repository (warehouse or data lake), centred on the belief that by ingesting data across many systems into a single data lake or warehouse, analysts will be able to deliver value and business impact. Many of these repositories turn into data swamps, with the organization questioning their return on investment and ultimately may be unable to move forward.

This handbook introduces a concept called Smart Data Hub (SDH), which takes a holistic approach to delivering business value from investments in enterprise data capabilities for an airport, helping airports become truly smart airports and deliver tangible business benefits.

The SDH is:

- A strategic business capability for airports to realize the full potential of their data.
- An enabler for all airport stakeholders to connect, share data, and drive confident decision-making.
- Designed to allow its users to extract meaningful insight into airport performance and its key drivers, and empowers users from sharing off transactional data between processes, to provisioning data for operational reporting, analytics, and artificial intelligence/machine learning (AI/ML) use cases.
- Flexible and does not have to be expensive since the capability can be implemented as basic capability or scaled based on the airport data maturity level and business needs.

Data has become a critical asset in the age of data-driven business. Data management is a modern strategic imperative that is at least as critical as financial management; however, it has become unnecessarily complex and challenging. New sources and ever-expanding volumes lead to increasingly scattered data. At the same time, continuous technology evolution has created a world of fragmented data management tools. Connecting the dots, breaking down barriers, and reducing fragmentation—these are today's pressing data management challenges.

1.2 INTENDED AUDIENCE

This reference guide is intended for all types and sizes of airports and for all members of the airport community who are interested in driving business benefits by using data as a strategic asset. This includes, but is not limited to, airport executives, business managers across all departments and technology leaders. This document also includes some technical information, which is more suited to information and system architects.



1 INTRODUCTION

1.3 HOW TO USE THIS DOCUMENT

This document is intended for airport business leaders and non-technical readers, except for Sections 5.2 and 5.3 that are for information and system architects who will be implementing or managing data systems.

The document is structured as follows:

- What is an SDH.
- Why is an SDH important.
- SDH maturity model.
- How to design, build, and run an SDH.
- Best practices/lessons learned/recommendations.

From the very beginning, the working group's goal was to deliver a document as hands-on as possible. To this end, the "Best Actions by Maturity Stage for all Core Capabilities" table is included; this can be considered the blueprint of this handbook.

A Note on Other ACI Resources

The SDH is just one of many ways airports of all sizes are using technology and data to transform how they do business and, in some cases, transforming their business. ACI is an excellent source for airports looking for additional resources to guide them on their digitalization journey. For example, the *ACI Digital Transformation Handbook* introduces the concept of Digital Transformation, discusses why it is important, and provides a maturity model that airports can use to assess the digital maturity of their organization. The *Digital Transformation Handbook* also shares several case studies of successful digitalization initiatives, ranging from the digitalization of airport shopping and dining to the passenger's biometric journey.

Another example of an ACI digital transformation resource is *ACRIS—ACI Airport Community Recommended Information Services Best Practice*. The purpose of this document is to introduce the ACRIS standard for facilitating data exchange among members of the airport community. It also provides a framework for defining airport web services and outlines specific examples of real-life applications of the ACRIS standards. Finally, the ACI whitepaper *Blockchain Application—Fundamentals and Use Cases at Airports* discusses how blockchain has the potential to enable airports and their partners to share data in a secure tamperproof way that enhances transparency, enables traceability, and makes such transactions more efficient. Examples of how blockchain can be used include the tracking of payments, baggage, cargo as well as enabling identity verification.

1 INTRODUCTION

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