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INTERNATIONAL CIVIL AVIATION ORGANIZATION
A UN SPECIALIZED AGENCY

# *DIGITAL OPERATIONAL REPORTING INFORMATION SERVICE*

DORIS

# Digital Operational Reporting Information Service (DORIS)

01 Why a new concept?

02 The concept

03 Communicating the concept

04 From concept to operations

05 Skillsets and roles

06 Key takeaways

Digital Operational Reporting Information Service (DORIS)

# WHY A NEW CONCEPT?

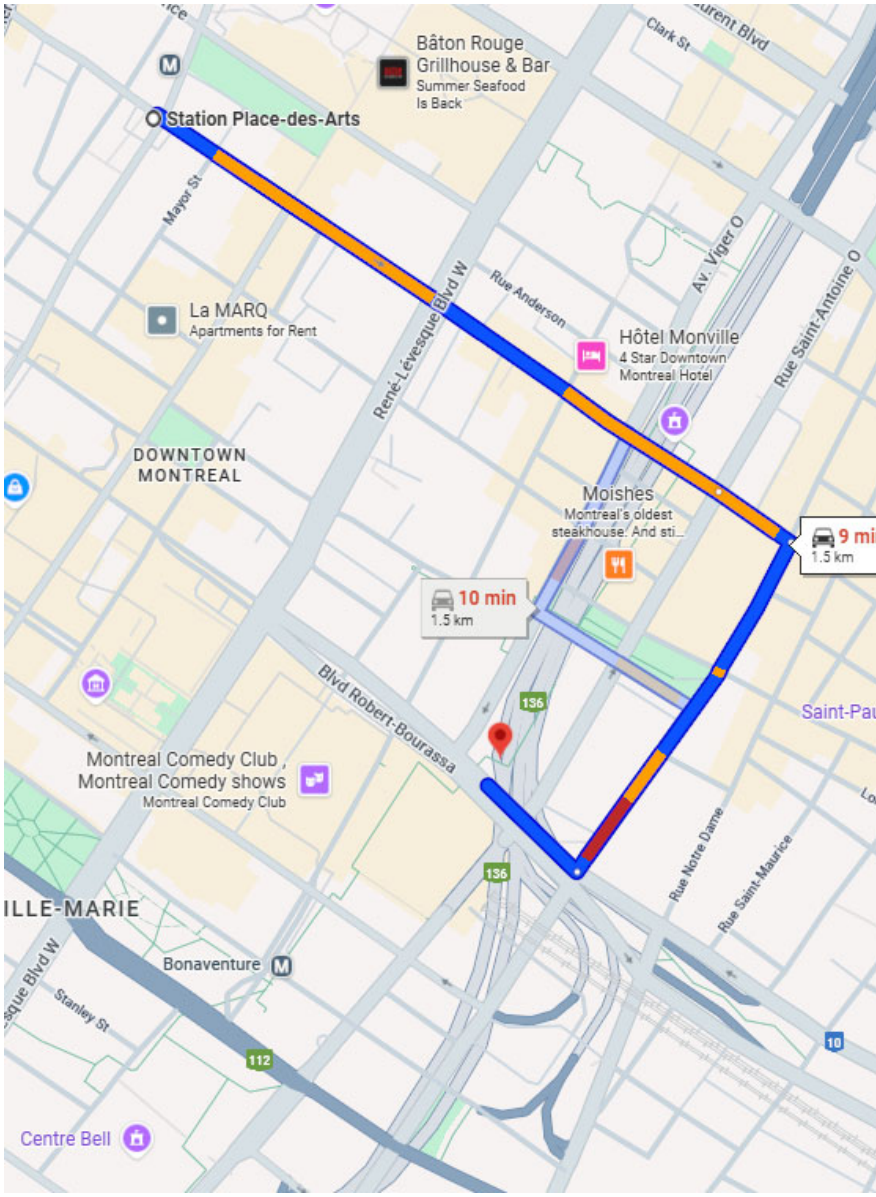
# Making Operational Decisions in Real Time

Many of us are familiar with the navigation applications. We use them for more than finding our way:

- avoid road closures, anticipate delays, speed limits, check the ETA, add stops, etc.

When we do this, we use data to make decisions in real-time.

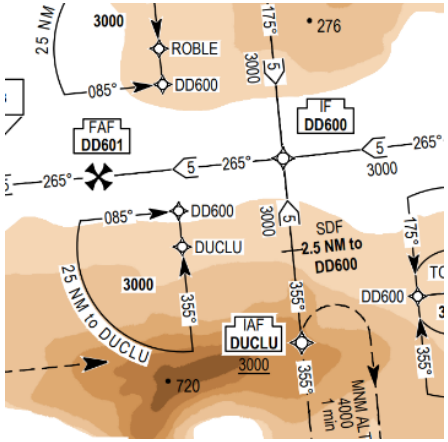
These Apps integrate digital data from various sources and present to the human in a manner that optimizes situational awareness.



# Making Operational Decisions in Real Time

For these navigation applications to work on any device:

- Digital Data is structured and based on common coding specifications, definitions, etc.
- Digital data is kept up to date, is complete and accurate
- Digital data is obtained/shared based on common service architecture
- The user chooses aspect of the portrayal (e.g., overlay on satellite image, on terrain features, etc.)

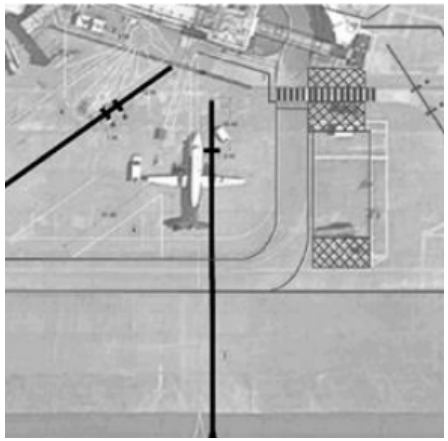



A0623/20 NOTAMN
Q) EAXX/QRDCA/IV/BO/W/000/400/
A) EACC EABB B) 2004030730 C) 2
D) 03 07 12 21 24 28 0730-1500
E) DANGER AREA EAD4 ACTIVATE
F) GND G) FL400

A0624/20 NOTAMN
Q) EAXX/QRDCA/IV/BO/W/000/300/
A) EACC EABB B) 2004190730 C)
D) 19 20 0730-1500
E) DANGER AREA EAD4 ACTIVATE
F) GND G) FL300

**ENR 3.6 EN-ROUTE HOLDING**

| *HLDG ID/FIX/WPT Coordinates* | *INBD TR (°MAG)* | *Direction of PTN* |
|---|---|---|
| 1 | 2 | 3 |
| BOORSPIJK/BOR<br>Boorspijk VOR/DME<br>522206N 0322230W | 090<br>090<br>090<br>090 | Right<br>Right<br>Right<br>Right |
| JUSTINE/JUS<br>Justine VOR<br>511648N 0310930W | 329 | Left |
| WOODBANK/WOB<br>Woodbank<br>VOR/DME<br>424324N 0361148W | 015<br>015<br>015<br>015 | Right<br>Right<br>Right<br>Right |



# Making Operational Decisions in Real Time with today's AIS:

Personnel involved in flight operations constantly use aeronautical information and data to make decisions.

This is challenging when the information is in different products and not always in the format best suited for humans.

Up until now, aeronautical information and data is created directly for the human user, and it is the human who must mentally integrate this information to form a picture of the situation

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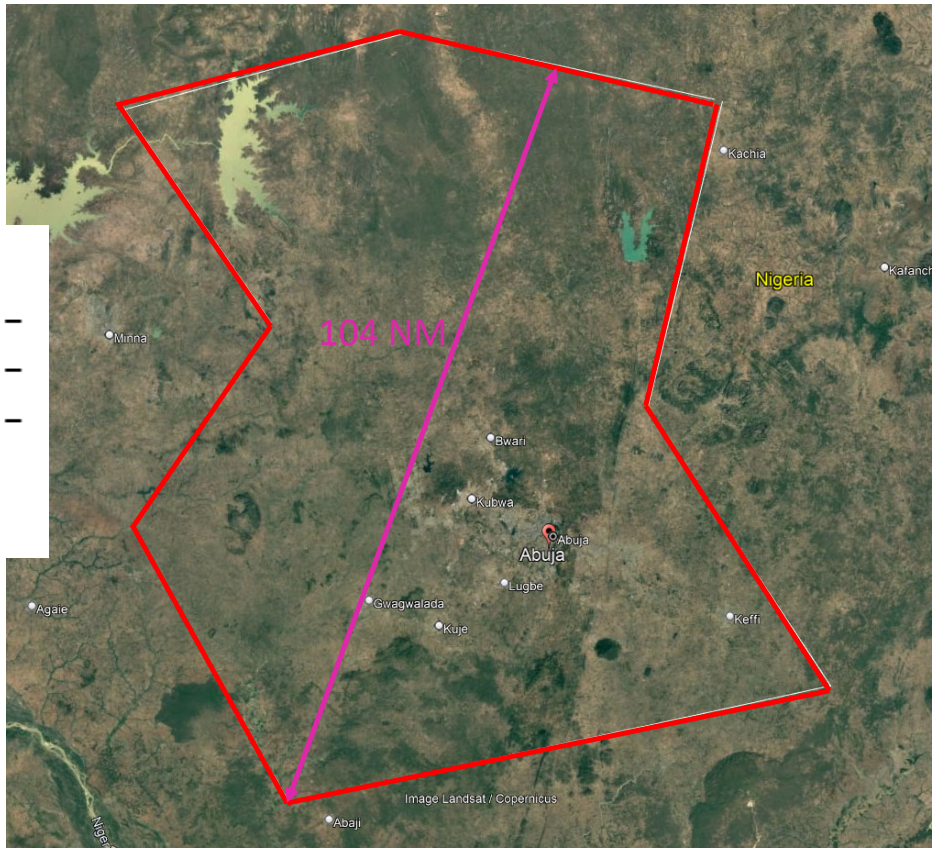
# Making Operational Decisions in Real Time with today's AIS



```
E) RESTRICTED AIRSPACE WITHIN
101129N 0071626E - 095839N 0075751E -
091907N 0074438E - 084022N 0080552E -
083048N 0065207E - 090925N 0063426E -
093447N 0065504E - 100430N 0063749E
F) 12500FT AMSL G) FL180
```

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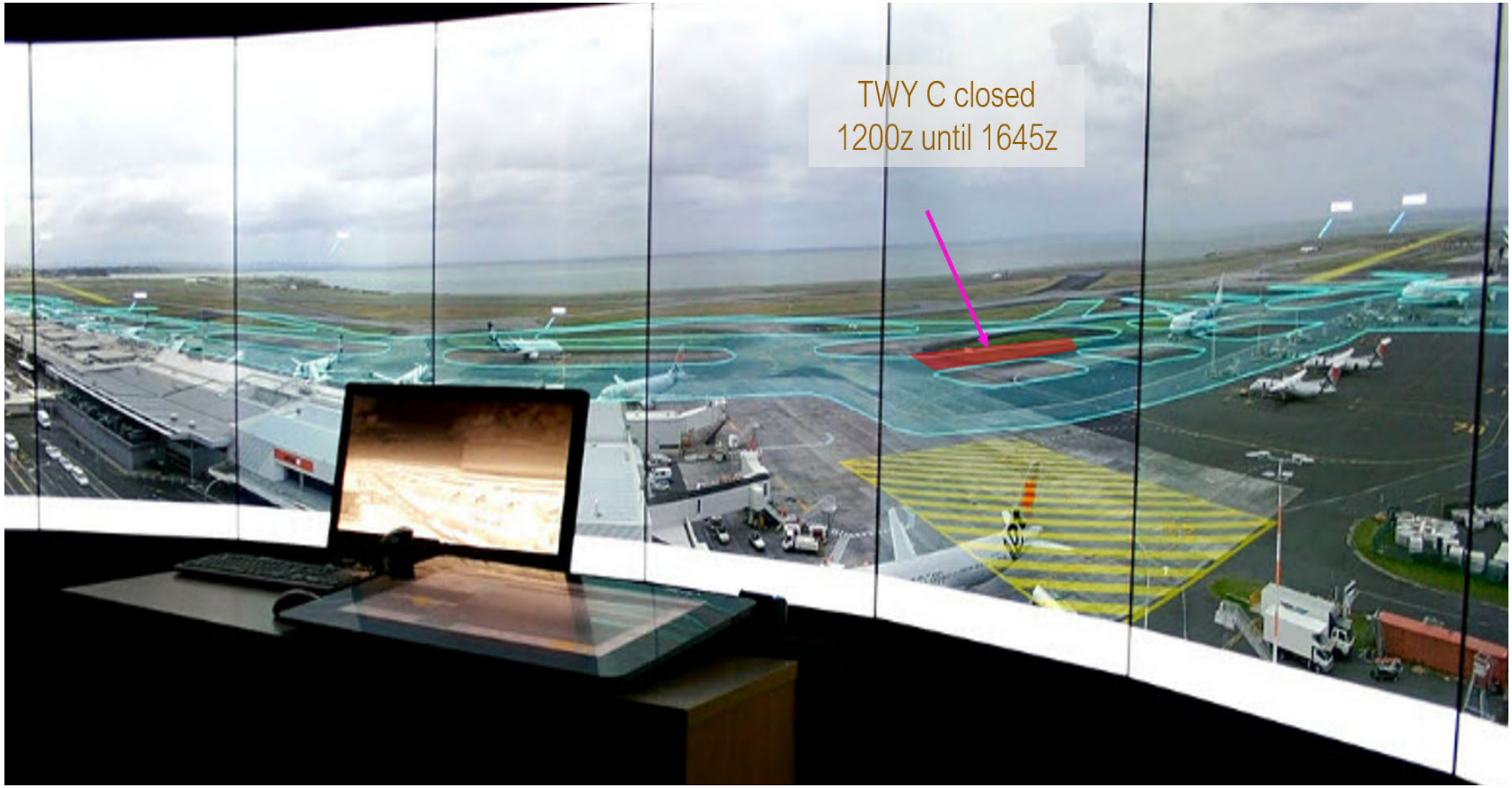

TWY C closed
1200z until 1645z

# Integration of Aeronautical Information and Data

When static and dynamic aeronautical data and information is integrated with other relevant data domains, it can optimize situational awareness and promote better decision-making, which in turn promotes safety and efficiency

- Aeronautical Data must be digital
- Aeronautical Data exchange model interoperable
- Digital data must be of high quality and complete

Digital Operational Reporting Information Service (DORIS)

# THE CONCEPT

# Today: Aeronautical Information Publication (AIP)

How is the AIP kept up to date?

NOTAM modify or complement the AIP with temporary changes of short duration but are short text only.

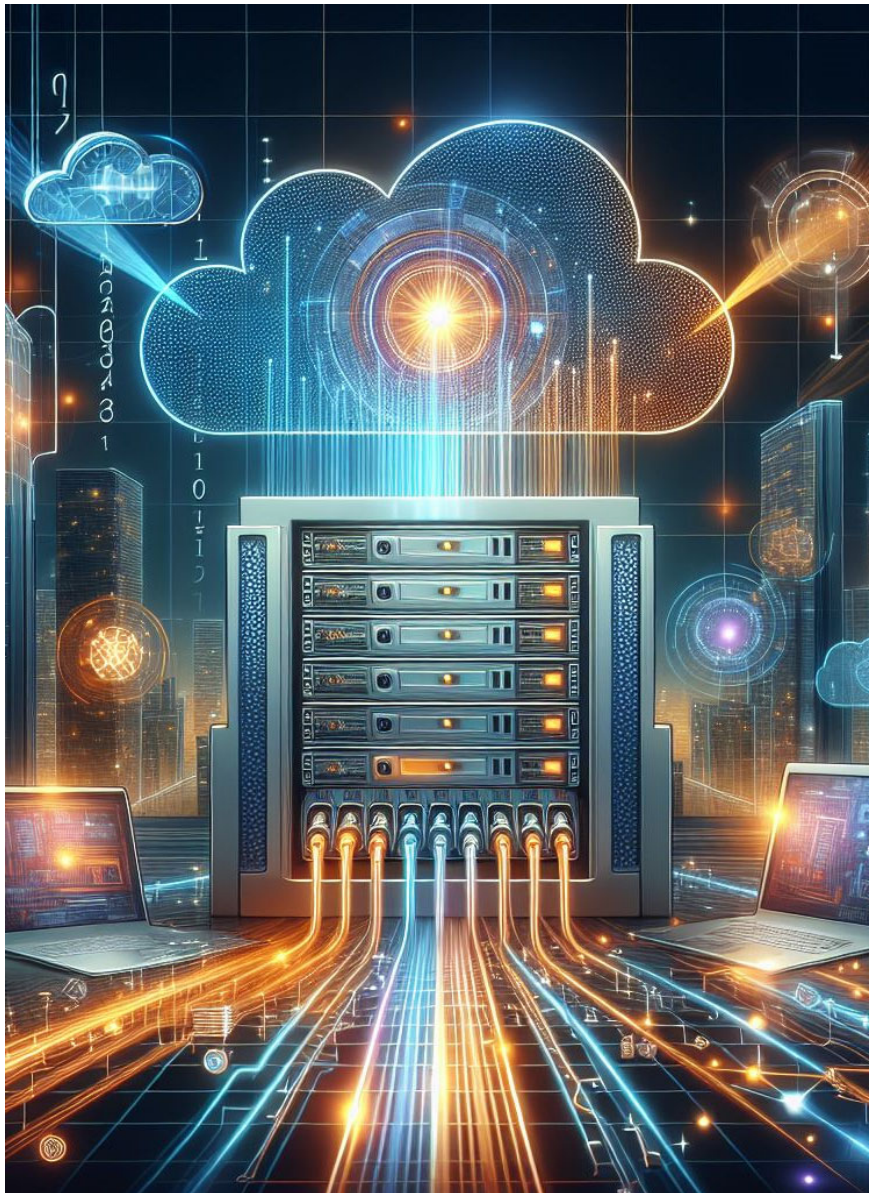
AIP Supplements (SUP) modify or complement the AIP with temporary changes of long duration. AIP SUP can be used whenever there is a need for portrayal

AIP Amendments (AMDT) are amending the AIP data and information of lasting character. These changes are considered permanent.

# What is ‘DORIS’ ?

Digital Operational Reporting Information Service

- A small digital data set that complements the aeronautical digital data set of “lasting character” (baseline) by indicating that certain data elements are temporarily changed
- The DORIS ‘payload’ is available through SWIM services, which uses IP or data links



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# Difference between Digital NOTAM and DORIS

| | Digital NOTAM | DORIS |
|---|---|---|
| Complement the digital data sets | ✗ | ✓ |
| AIXM 5.x | ✓ | ✓ |
| Constrained by AIRAC rules | ✓ | ✓ |
| Constrained by NOTAM rules (format, short notice, duration, abbreviations) | ✓ | ✗ |
| Coding scenarios organized based on desired Q-code | ✓ | ✗ |
| Constrained by AIP SUP rules (duration) | ✓ | ✗ |
| Support complex scenarios driven by users' needs | ✗ | ✓ |

# ‘DORIS’ Concept - Temporality

A single mechanism to promulgate temporary changes

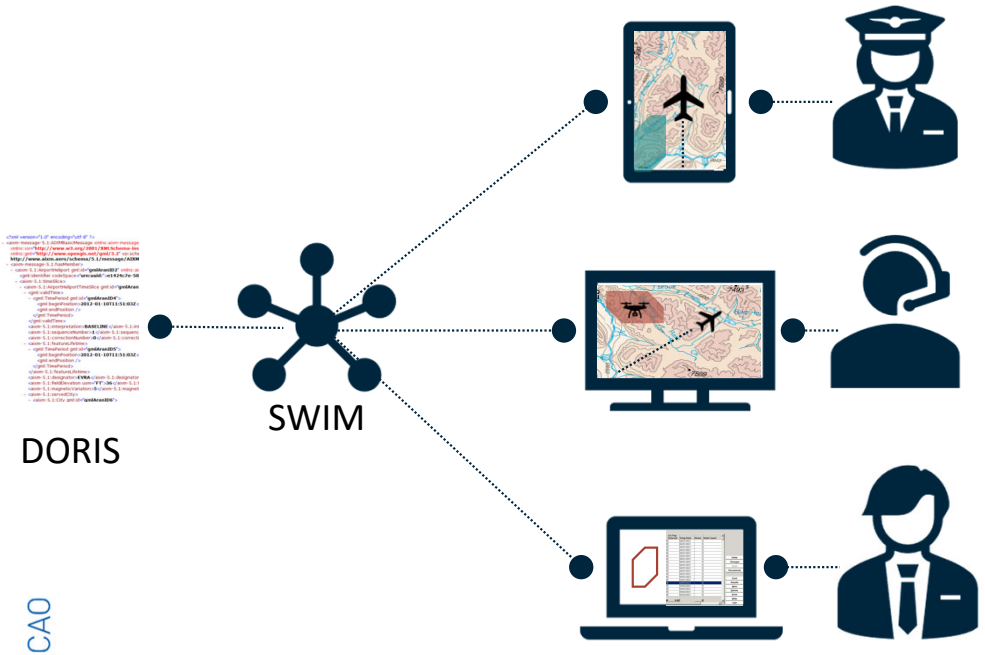

Replaces NOTAM **and** AIP Supplements

The use of ‘DORIS’ is not predicated on ‘short-notice’ or ‘short duration’

Trigger NOTAM and Checklist will disappear in the end. Subscription to ‘DORIS’ makes it possible to subscribe to updates.

# Key principles – Next Intended Users, End Users and Portrayal






The **next intended user** must be a technology system

The **end user** may be a human who will use a technology system

**Portrayal of the same DORIS payload** can be different. The next intended user system hosts the instructions for customized portrayal

Digital Operational Reporting Information Service (DORIS)

# COMMUNICATING THE CONCEPT

ICAO CAPACITY AND EFFICIENCY

About ICAO | Global Priorities | Events | Information Resources | Careers | Featured articles

ICAO / Air Navigation / Aeronautical Information Management

- AIM
- AIRAC
- Specimen AIP
- WG-A
- DDS and DORIS
- Reducing Old NOTAM
- Upcoming Events
- Contact us

# Aeronautical Information Management

According to *Annex 15 — Aeronautica*
defined as the "dynamic, integrated m
exchange of quality-assured digital ai
Definitions).

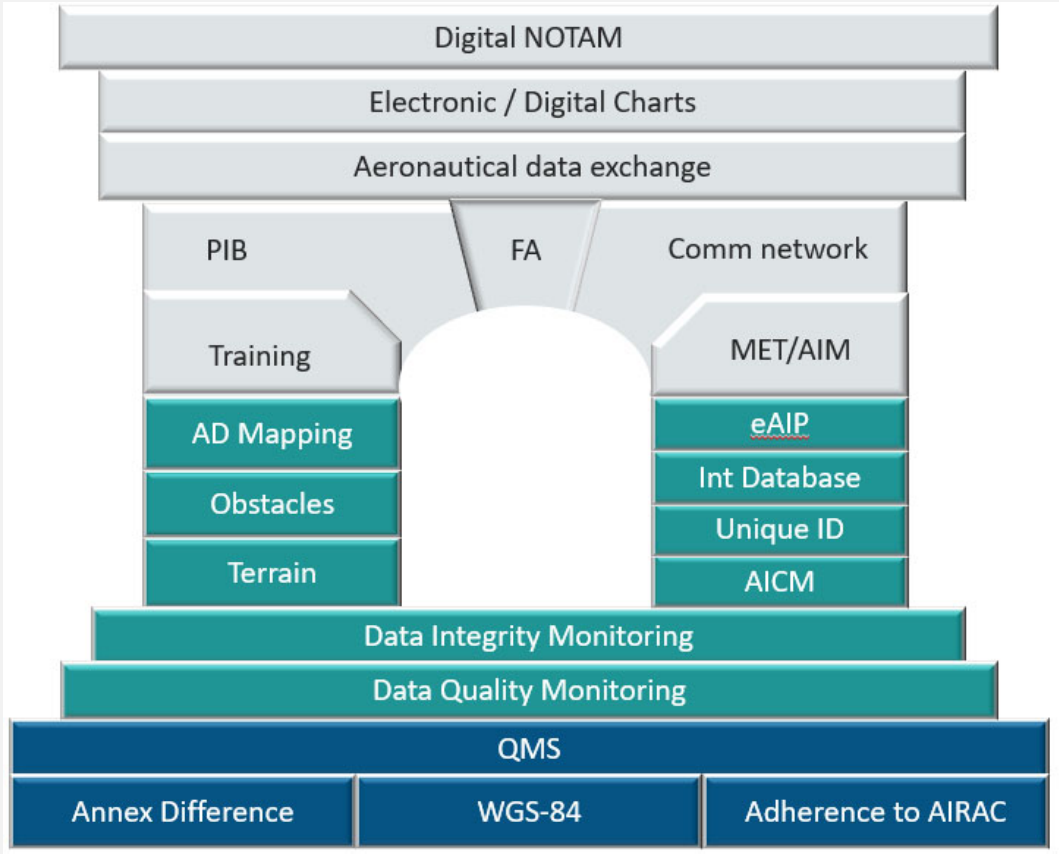
The annex contains standards and rec
service. It describes the State's respor
information necessary for the safety, re
suitable for the operational requirements of the air traffic manageme

**>> Background**
**>> Key messages**
**>> Key milestones (implementation & ICAO provisions)**
**>> Link to Concept**
**>> Implementation information (& graphical timeline)**
**>> FAQ**
**>> Link to download brochures**
**>> Contact us ***

Digital Operational Reporting Information Service (DORIS)

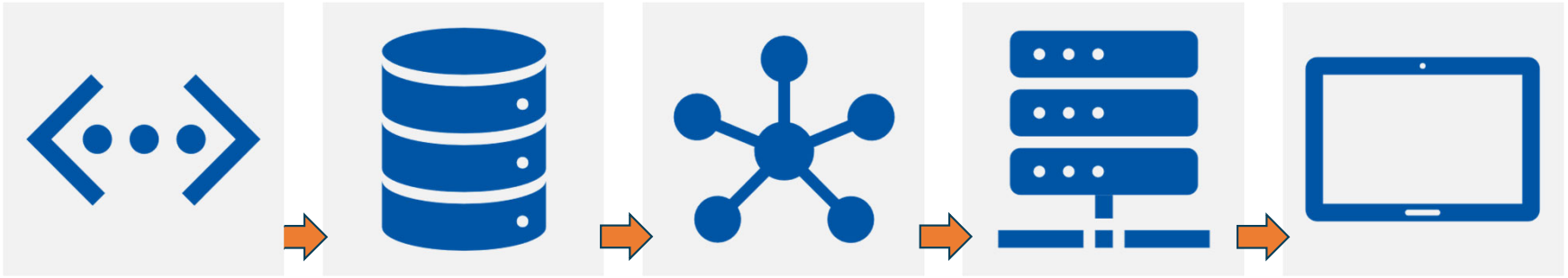
# FROM CONCEPT TO OPERATIONS

# The Foundation



# Prerequisites to Implementing DORIS

## All parts are necessary



Adoption of common data and information model, coding specifications are key in creating digital data sets that can be shared

Digital Data Sets are the foundation. **Static** and **dynamic** data are provided as an information service through SWIM

SWIM and digital data services must be established in accordance with the PANS-IM.

Next Intended User Systems subscribe to data and data updates.

Web viewers or viewing services or applications are necessary for the end user to consume this data and information and apply within their operation.

# What is System Wide Information Management (SWIM)?

"SWIM consists of **standards**, **infrastructure** and **governance**, enabling the management of ATM-related information and its exchange between qualified parties using interoperable information services."

It's not a system per se.

*DORIS is the aeronautical information representing temporary changes*

- **Information** is what the ATM community depends on: aeronautical information, weather, flight information; "payload".
- **Information Services** is how information is made available, replacing the current message-based distribution (e.g., AFTN); overview, registries, descriptions.
- **Technical Infrastructure** provides capabilities such as messaging and security. Services based on mainstream ICT
- **Governance** addresses topics such as the rights regarding information use and quality of service

Doc.10039 Manual on SWIM Concept (1st ed 2024)
Doc.10203 Manual on SWIM Implementation (1st ed 2024)


Sign In
Ottawa
Home
Data
Maps
Dashboards
Data Stories
Developers
Feedback
License and Standards
Other Data Catalogues
Francais
Open Ottawa
Explore the City of Ottawa through open data, maps, and dashboards
Search

# Example of a Digital Data Service

(follow the link for example)

https://open.Ottawa.ca

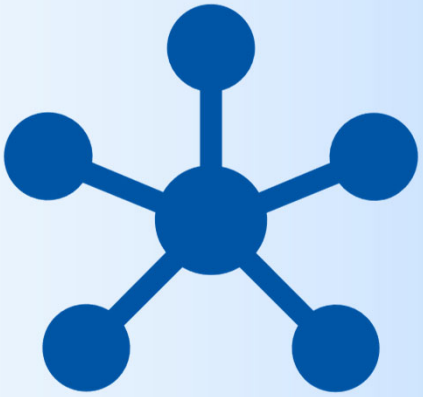
Click on data: note that data is “discoverable” : the user can scroll, use the search engine.

The data attributes are visible, for the whole data set or for individual pieces of data

The data service also has a viewer, the means for portrayal.

As a next intended user system developer, there is a space for these individuals to know how to subscribe to the data.

# Examples of Digital Data Service



Feature Layer

**July 8, 2024**
Info Updated

**July 8, 2024**
Data Updated

**May 17, 2018**
Published Date

**Records: 40**
View data table

**Public**
Anyone can see this content

**Custom License**
View license details

**Relevant Area**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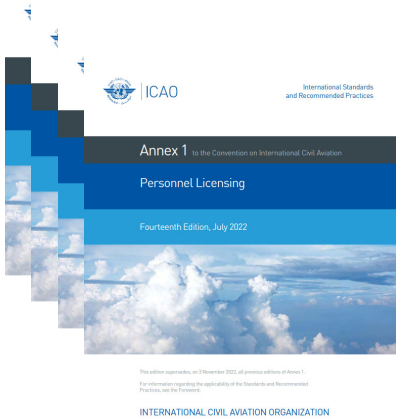
# Dependence on Technology and culture change

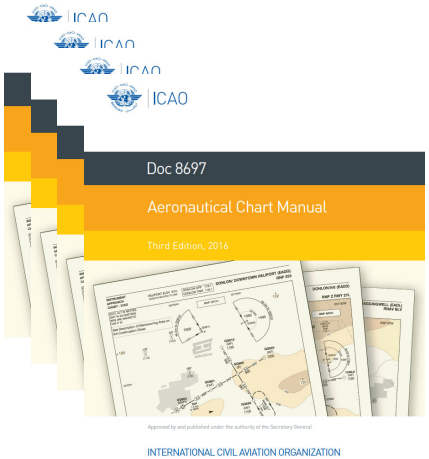
Every actor within the data chain will interact with technology: from the originator, to AIS/AIM officers processing the data, to the end users viewing the portrayal

- Technology must be **maintained** to avoid reverting to manual processes and paper / PDF products
- Interoperability is **necessary.** Foster the adoption of AIXM and foster collaboration to **minimize regional differences**
- Make it difficult and complex to adopt different models to accelerate implementation
- Foster collaboration and sharing of expertise so that no country is left behind

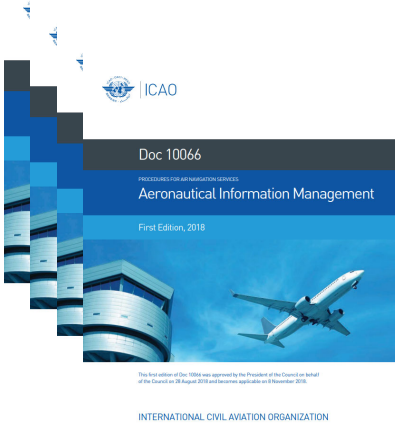
# Multiple Amendments will be required




13 Annexes and volumes of annexes contain reference to NOTAM and /or AIP, AIP SUP, PIB, etc. In most cases changes are minor




29 documents and manuals contain references – Analysis is ongoing




All PANS except PANS-IM are affected by the change, including the new PANS-MET.

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# Key Milestones

## 2025

Publication of the concept, development of communication material; Publication of volume 4 – Doc 8126. States to obtain and review coding guidelines and specifications; Review of requirements and prerequisites; Stakeholder Identification, engagement and communication plans developed by States and Industry

## 2026-2028

States and Industry to conduct inventory of systems used to manage, disseminate, consume and display aeronautical data and information; Conduct gap analysis of skills and expertise required to support the change

## 2028-2030

SARPs approved and State Letters published. States and Industry make decisions regarding systems, plan for implementation and develop training strategies. Identification of the rule making process to transpose ICAO provisions into National Regulations

## 2032

SARPs are applicable. Foundation and prerequisites must be in place. SWIM is implemented and stakeholders are ready to obtain data through digital data services

## 2032-2038

Limited transition period during which implementation is finalized, and sunset plans are developed

## ~ 2038

NOTAM and AIP SUP are discontinued; other products have evolved (AIP, charts)

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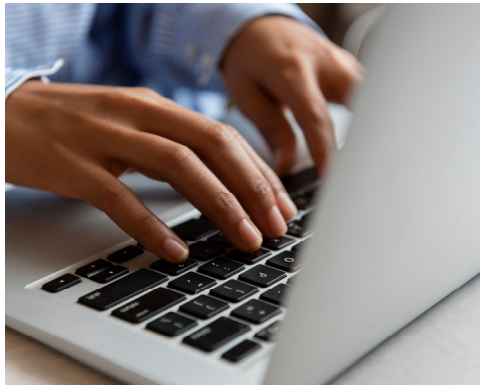
# SKILLSETS AND ROLES

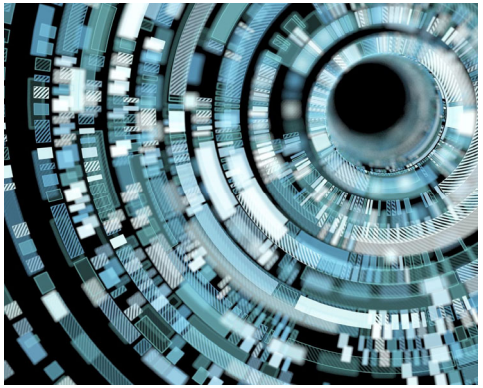
# Skills and Roles

Roles remain more or less the same... *how* the work is done will be different



Dependent on technology: learning to use interfaces. The complexity of the data coding is hidden. AIS/AIM Personnel are not expected to be coding experts

Subject Matter Expertise shifts away **from** application of the right abbreviation or Q-code, formatting or rules around duration and timing

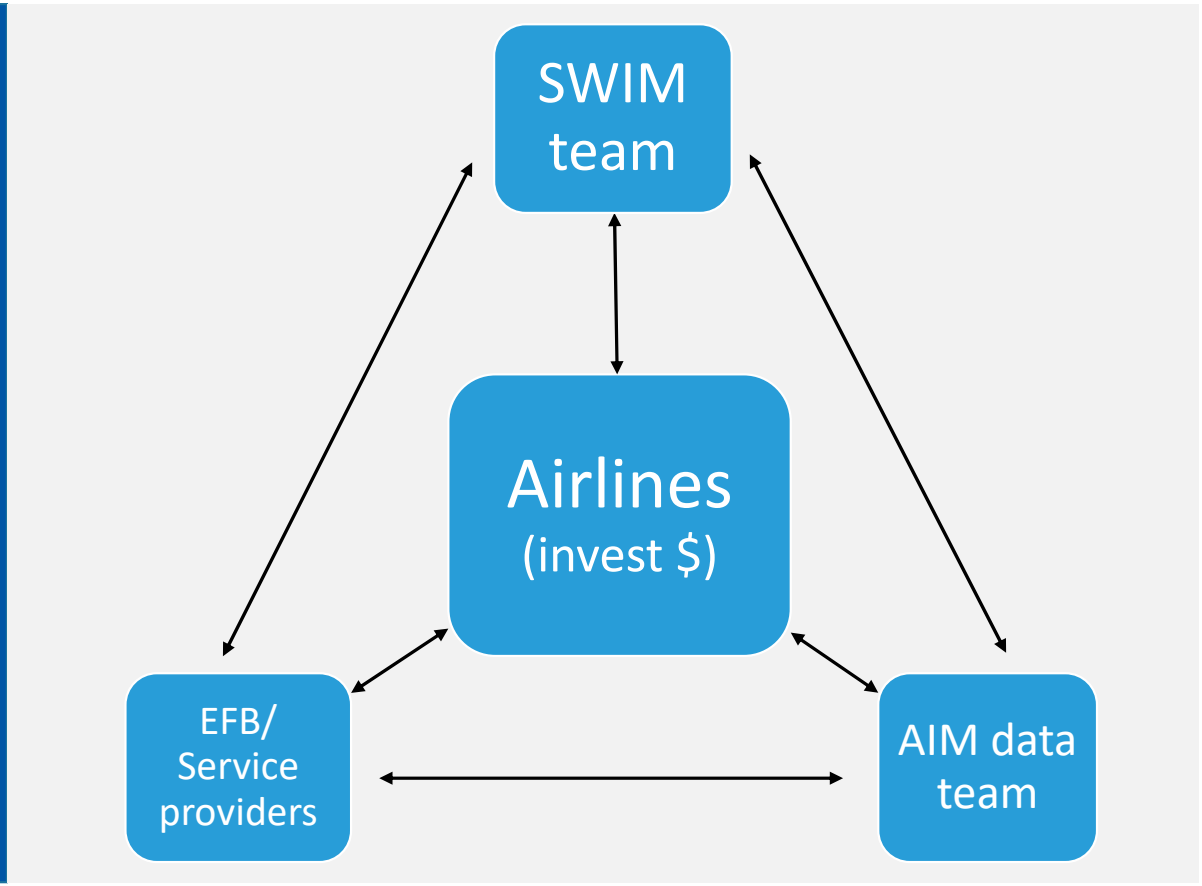


The focus shifts **to** data exchange principles, data validation techniques and integrity monitoring

Digital Operational Reporting Information Service (DORIS)

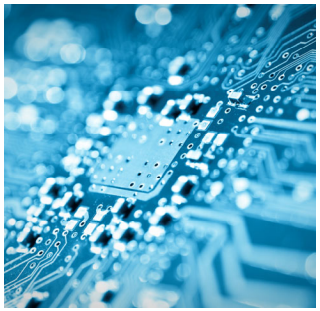
# KEY TAKEAWAYS

# Collaboration Within the Industry

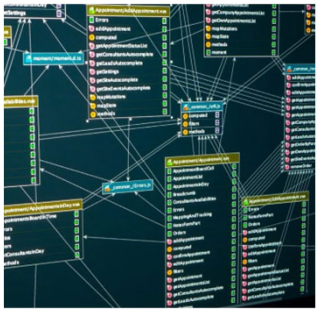


# Key takeaways

DORIS is a small data set made available through SWIM services. The data being digital enables integration of temporary (dynamic) aeronautical digital data with static data and other data domains



The next intended users is a technology system. This system host the instruction for portrayal, making it possible to customize. This represents an investment by the industry



The data assets are the foundation. Digital Data Services and SWIM, as well as data viewing services must be available in order to subscribe to then use DORIS. Access to digital data through IP and or datalink, not AFTN.

DORIS will replace NOTAM and AIP SUP; mechanisms such as Trigger NOTAM and checklists are no longer required. AIRAC remains

After a defined and short transition period, NOTAM and AIP SUP must be discontinued. The AIP and charts will have also evolved. The delivery of AIS will be drastically different


# Thank You!

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