Digital Data and NOTAM Concept

21 June 2023

States Responsibility

"Ensure that aeronautical data and aeronautical information necessary for the safety, regularity and efficiency of air navigation are made available in a form suitable for the operational requirements of the air traffic management (ATM) community"

Aeronautical Digital Data Sets

AIP (ref PANS-AIM 5.2.1.1.3 -- e.g., NAVAIDs, FIR, ATS Routes, etc.)

Terrain

Obstacles

Aerodrome Mapping

Instrument Flight Procedures

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Interoperability

Interoperability in AIM refers to the ability of different systems, applications, and organizations involved in the aviation industry to **seamlessly exchange** and **use** aeronautical information

Interoperability

- Standards and Regulations
- Data Exchange Format/Model (citing AIXM)
- Communication protocols
- Systems Integration (FIXM, WIIXM…)
- Metadata management (provide a common vocabulary)
- Data Quality Validation
- Collaboration and Cooperation

How to validate?

https://faiva.aero

Before validation:

1. Create a free user account
2. Verify your email address
3. Login
4. Maximum file size 1 GB

Why the need to login?

- Keep history of previous validations
- System security

Enabling AIXM interoperability

What can be validated?

- AIXM 5.1+ datasets
- ICAO PANS AIM/EASA datasets
    - AIP
    - Obstacles
    - Aerodrome Mapping incl. ASRN extension
    - Instrument Flight Procedures
- aixm.aero coding guidelines
- AIXM business rules

Project Outcome

AIXM SBVR rules not immediately applicable

- FAIVA uses Schematron rules only

- Small issues found in AIXM coding guidelines
  - Reported in AIXM Confluence

- Seeking users' feedback on business rules
  - Are the existing rules adequate?
  - Are more interoperability rules needed?
  - How can we reduce the misinterpretation of data?

High-Level Concept NOTAM Replacement

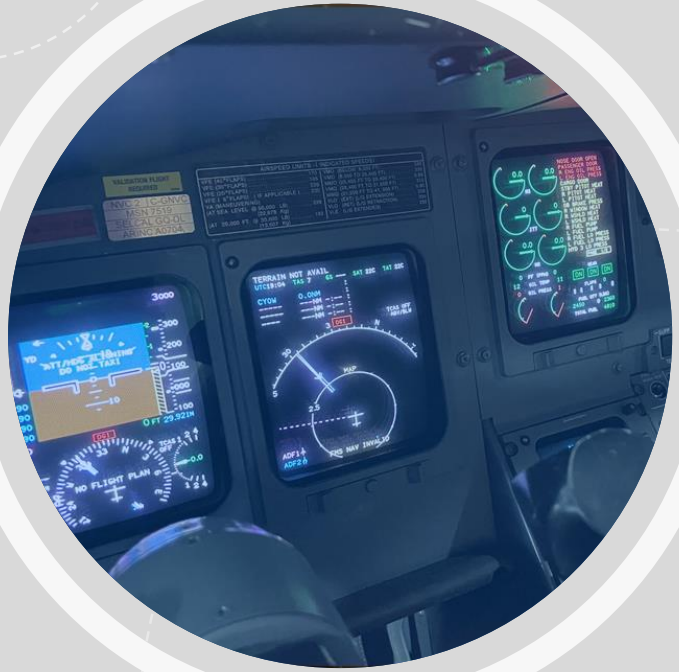
caveat

Why Change?

- The NOTAM product is old, confined to AFTN/AFS; limited filtering/sorting, cryptic, uses upper case letters, there are many quality issues worldwide.
- The NOTAM product as we know it today doesn’t lend itself to data manipulation to enable solutions such as “graphical NOTAM”
- The NOTAM product as we know it today cannot update the DDS directly. It only amends published information through a manual process.

Objectives of new concept

- Introducing a more efficient mechanism to exchange aeronautical information;
- Providing new capabilities to airspace users to tailor the aeronautical data/information changes to their operational needs as well as subscribe to airspace constraints alerts so that this information is immediately available;
- Increasing safety and improving situational awareness;
- Finding/receiving information *when* it is needed (efficiency) potentially during various phases of the flight;
- Increasing usability of the information, both from a system and human point of view;
- Associate the “find” parameters to aircraft performance or type of operations or flight plan or trajectory;
- Graphical representation of information where possible. (e.g. instead of list of coordinates, show a “volume of airspace” on a display).
- Support collaborative decision making.



Foundational Principles of New Concept

Digital Data Coding

Data Model

Data Coding Specs

Digital data Service Specs

Appropriate Level of Digitization

Not all scenarios promulgated with a legacy NOTAM are worth coding. E.g., COVID. Text possible

Modifies/ Complements AIS Digital Data Sets

1 digital NOTAM per 1 DDS element

Structuring & Filtering Capabilities

Based on pre-defined scenarios – more granularity possible

What is relevant is known by the user, not the provider

Backwards compatibility

Digital NOTAM is a small DDS conforming to predefined scenario that can convert back to NOTAM – NOTAM simplified, autogenerated

Foundational Principles of New Concept

Transition in Phases

No need to go all digital on day one. Concept allows for iterative approach to adopting Digital NOTAM

AIRAC Compatible

AIRAC procedures followed for permanent changes to digital baseline; Digital NOTAM complements these updates

Encompasses all temporary information

Regardless of duration. Simplify and improve user experience.

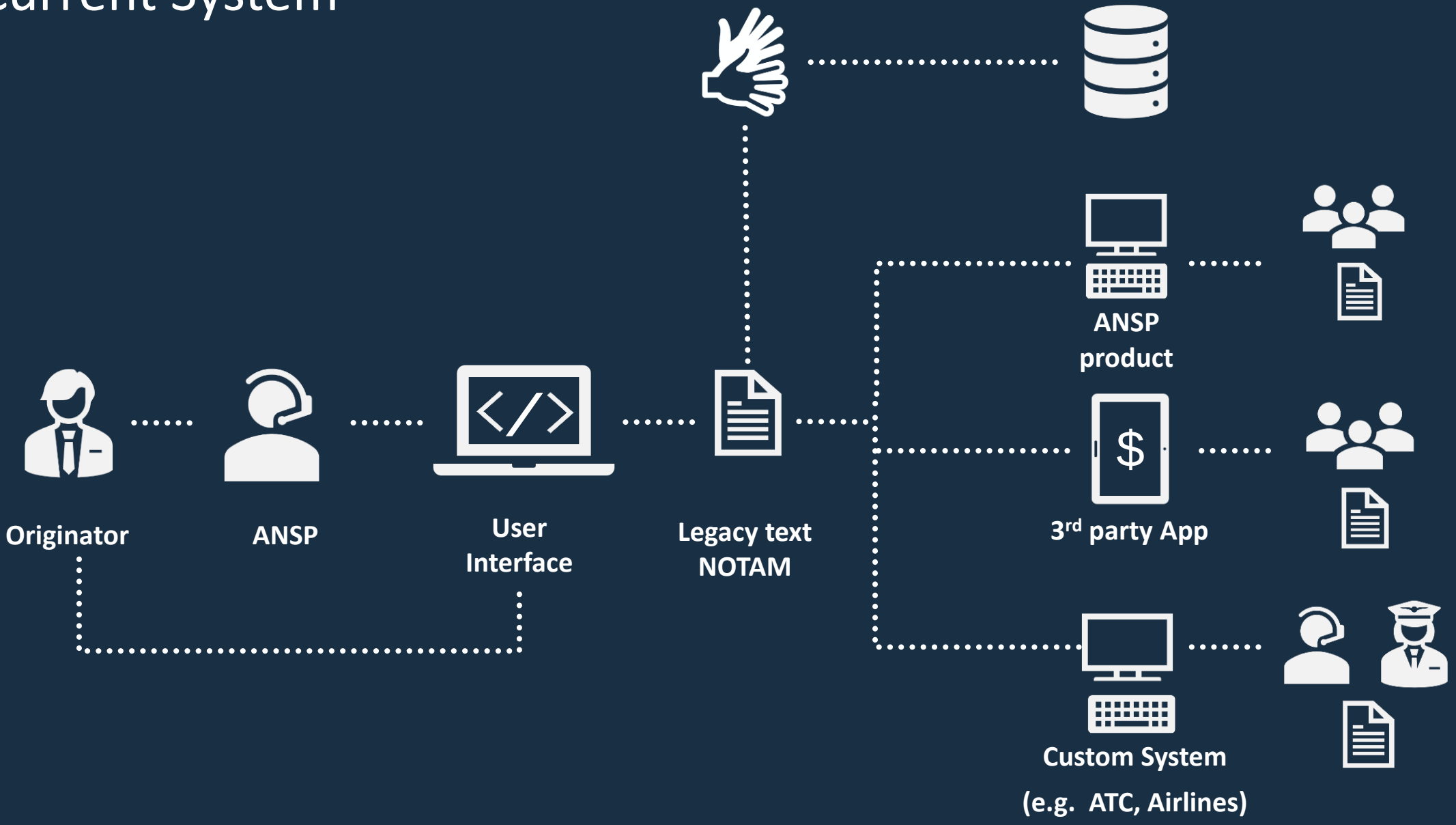
Data completeness / Self-contained

Digital NOTAM consumer doesn't need to consume both Legacy and Digital NOTAM. No need to cross-check for same data set

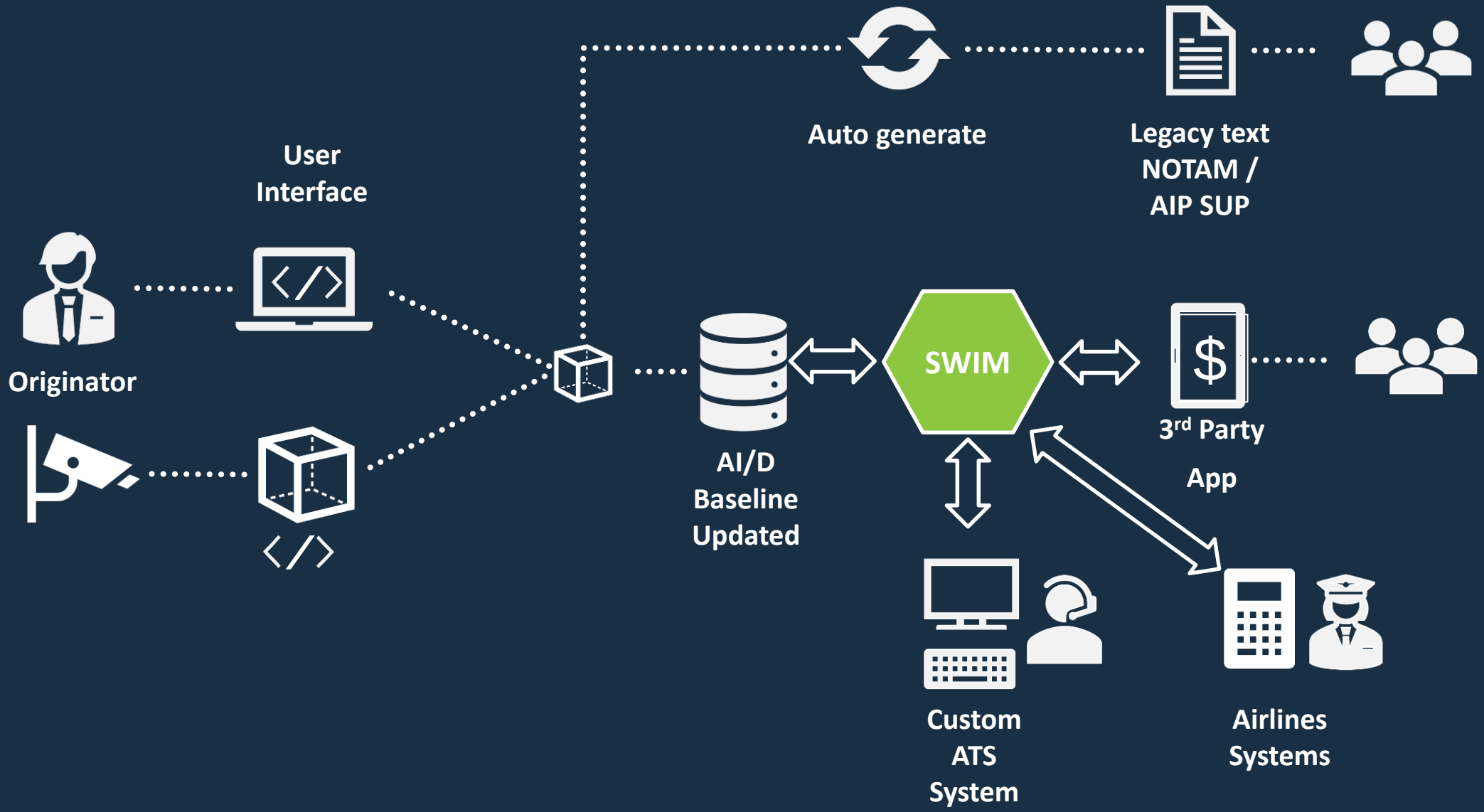
Enabler

Its next intended user is a machine. Developers can use the data to create solutions. (app, displays, briefing packages)

Current System



Future Concept



Conclusions

- This change will occur – we should be ready!
- Not only a Technology change: Paradigm shift, affects all of Ops & systems, how we do business, roles & skill sets needed
- It’s no small project; it requires thorough planning and close collaboration, alignment, a big picture strategy, etc.