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2w · 🌐

What do ICAO regional offices mean by AIXM Interoperability?

What do ICAO regional offices mean by AIXM Interoperability?
antoniolocandro.wordpress.com

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Jan-Philipp Lauer · 1st
Referent AIM-International at DFS / Director at Thrust Vector Ltd 1d ...


Sorry for the number of posts. LinkedIn imposes a very restrictive character limit.

Dear Antonio,

I read your post with great interest and it is wonderful that this discussion is taking place. Having said that, I want to point out some issues that I disagree with. Let us first look at some established facts: ICAO currently has 193 Member States, AIS data are used in a wealth of applications and by a wealth of stakeholders, most end-user systems do not use AIS data directly but need to be supplied by commercial data providers such as Lufthansa Systems, Jeppesen and NAVBLUE. As you correctly point out, there is virtually no interoperability today when it comes to different AIXM implementations even using exactly the same AIXM version, e.g. 5.1.

ICAO is correct in pointing out the lack of AIXM interoperability as a severe problem. For example, Germany is unable to exchange AIXM data with its neighbor Austria due to different AIXM dialects used by each country's AIXM implementation. Interestingly, both countries use AIS software made by the same supplier. (edited)


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Jan-Philipp Lauer · 1st
Referent AIM-International at DFS / Director at Thrust Vector Ltd 1d ...

Trajectory-based air traffic management systems have a traffic horizon, which extends far beyond Germany's national borders. When these systems were introduced several years ago, Germany had an urgent need to ingest AIS data from its neighboring countries. Due to the lack of AIXM interop...see more

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Jan-Philipp Lauer · 1st
Referent AIM-International at DFS / Director at Thrust Vector Ltd 1d ...


Aside from the inherent quality risk, the high level of effort required to process aeronautical data introduces significant additional costs into the data chain, is the cause of long data processing delays and precludes safe further automation.

Imagine our industry continuing to publish national aeronautical information in a variety of AIXM dialects, which are all mutually incompatible. The commercial data providers and other stakeholders will be unwilling to create at least 193 different import routines and interfaces to accommodate every ICAO Member States. Maintaining so many


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Messaging 2

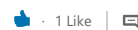
to a lack of extensive validation. This lack of AIXM interoperability also precludes efficient processes for the harmonization of data near national borders, which is a requirement for a globally seamless aeronautical data set.



Jan-Philipp Lauer • 1st
Referent AIM-International at DFS / Director at Thrust Vector Ltd 1d ...

If AIS does not provide such a globally harmonized, digital data set, significant risks exist in system-to-system interactions since there is no guarantee that every participating system uses the same data, e.g. data link clearances in a ground-based / airborne scenario or to issue taxi clearances via data link.

We are way overdue in fixing these interoperability issues since many stakeholders heavily invested in AIXM systems only to realize after the implementation that data exchanges are not possible. This should have been fixed years ago to allow all stakeholders to reap the benefits of digital data.

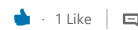


Jan-Philipp Lauer • 1st
Referent AIM-International at DFS / Director at Thrust Vector Ltd 1d ...

Digital NOTAM is another, highly critical use case for a globally harmonized digital data set. Without fully interoperable AIXM data, Digital NOTAM as well as many other applications relying on harmonized data such A-SMGCS routing functionalities, will remain pipe dreams. The very essence of digital data is that they are seamlessly exchangeable and scale extremely well as to enable massive economies of scale and do not require any further modifications to be processed in support of various use cases. Unless we rethink our approach to AIXM data, we will severely limit further automation potentials and negate the benefits of a digitized AIM service. There are many examples on how to do this properly moving forward, but this would be another article.

Please fully support the effort to make AIXM interoperable for the benefit of all aviation stakeholders.

Thanks you,
JP



Antonio Locandro Author
Instrument Flight Procedure Design Specialist, GIS/Charting, AIM... 1d ...

Could I bother you with writing the comment in the blog ;) it will keep for posterity better than here. Besides that I agree with your points I'm not advocating not doing this just not productive at the moment in many countries as they don't have the expertise to analyse it. Let's face it we need to stop ...see more



Antonio Locandro Author
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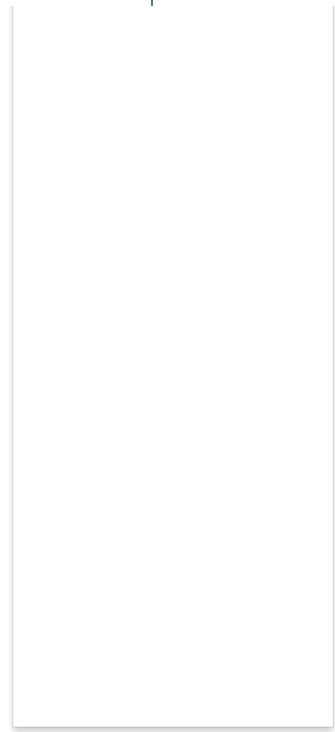
Don't you think AIXM flexible design is its strength but also its most prominent flaw as it allows anything



Jan-Philipp Lauer • 1st
Referent AIM-International at DFS / Director at Thrust Vector Ltd 41m ...

Antonio Locandro I do not think that the current flexibility of the model is an asset since it prevents AIXM from having any real value over a paper AIP. The way things currently are, AIXM data sets are so "special" for each country that other systems simply cannot process them. In relation to properties of digital information Wikipedia states:

"Language: All digital communications require a formal language, which in this context consists of all the information that the sender and receiver of the digital communication must both possess, in advance, in order for the communication to be successful. Languages are generally arbitrary and specify the meaning to be assigned to particular symbol sequences, the allowed range of values, methods to be used for synchronization, etc."





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shared language and meaning, which also precludes successful data exchanges. With AIXM, we in essence just pretend to have digital information, whereas in reality we do not. (edited)



Antonio Locandro • You
Instrument Flight Procedure Design Specialist, GIS/Charting, AIM... now ...

Jan-Philipp Lauer this is not an issue only of aviation, I worked as a GIS person and ETL is common in the domain, we need to just really get to accept that we will extract, transform and then load the data from each dialect.

Having stricter rules will allow it to be easier but honestly you can't think the data the USA needs would be the same that smaller countries like Honduras? Instead of going further and further along with new AIXM versions like 5.2 maybe a full stop should be made reassess and see which parts are core with more strict rules.

Also the eAIP is mostly text as xml rendered, the important bits that are from the DB are very few tables and the aeronautical charts which I'm sure very few if any countries have already as a data-driven process.

Sure the 'core' needs to be the same and for that strict rules should be in place. We have AIP datasets which are what a sub part of the complete AIXM? It seems even after all these years some lessons are still to be learned

BTW I'm not saying no interoperability, but to think every set up will be the same hasn't considered that not 2 AIP or EAIP even supposedly following the SARPs are the same but the core ENR 3.1, 3.2, 3.3, 4.1, 4.4, etc is relatively homogeneous.



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Messaging 2