The definition of an XML Schema, JSON and API-REST for flight inspection reporting.

As flight inspection service providers, we may be confronted with having several different Flight Inspection Systems. This can be the result of mergers and acquisition of different entities which were using different providers for their flight inspection system, specific requirements from a Civil Aviation or Air Navigation Service Provider imposing a certain type of equipment, or a deliberate management decision to have multiple providers for what is a key and critical component of our service.

Having multiple systems generates several problems, including staff training on the different platforms, spares, calibration processes and aircraft cabling compatibilities. But one of the biggest problem our company has faced was on report generation. For the different countries we operate in, we have different reports formats in different languages, which means that if the report is generated from the flight inspection platform, each formats need to be implemented in each equipment reporting system which varies from platform to platform.

The reports our company issue, based on DOC 8071 sample reports, also include data such as equipment model and manufacturer, OACI airport codes or airport full names which rarely varies year on year, but would need to be fed into each equipment databases if we rely on the Flight Inspection System to generate the reports.

We also want to provide statistics to our customers on equipment evolution, comparing key measurements between inspections. We generate reports on specific equipment models across multiple airports within the same country as our customers operate different types of VOR and ILS, with different ages. These reports are critical to analyze equipment behaviors if the CIVIL AVIATION/ANSP wishes to change the periodicity of the flight inspection.

Some flight inspection systems allow comparing different inspection, but what happens if one inspection was performed with one flight inspection system and the next one with the other flight inspection system?

In order to overcome this problem, we have developed a web-based reporting system which collects data from the Flight Inspection System and maintains a database of all the airports we inspect, all the graphs and all the values in all the reports we generate. The system allows us to issue multiple type of statistics and incorporates all our report formats in the different languages for automatic generation. In order to avoid manual capture of the data, we have developed interfaces allowing to import files generated by the flight inspection system and interpret the data. The database also contains all the reference points for each of the airports which can also be extracted to feed the database of the flight inspection system, a two-way interfacing.

The initial interface was developed using a parsing engine, but to improve the interfaces we have developed an XML Schema and also proposed to our providers API Rest and JSON interfaces. An XML schema is basically a document structure reference defining the type of data and the name of the label of each of the data so that two systems can interchange data and understand what each data is about and in which format.

The XML schema also allows us to exchange the report data with our customers, so that they can create their own databases of their navigational aids and their behaviors

We are also now using this XML schema to import data into our flight inspection system from our database. This allows us to update the geographical references within our systems and ensure that all our flight inspection systems use the same referential. This will also allow us to upload this information into, drones when time comes to use them

But a true XML schema is only valid if it is accepted by all the providers within a specific industry, thus we would like to propose that within ICASC a subgroup be created to approve an XML schema – as well as JSON and API REST - for the exchange of flight inspection data, and offer to provide the schema we have already developed as a reference or a starting point to build an industry wide data interchange model.

Olivier Layly

Olivier Layly - Bio

Olivier has spent the last 30 years working in the IT sector for civil aviation, airlines and airports and has worked in areas as diverse as reservation systems, civil aviation management systems and airport common-use systems. A graduate of the University of London in England and a postgraduate of the Business Institute of Reims, France, he started his career at IER - the flight strip printer supplier - where he participated in the conversion of OPTAT to ATB, enabling the first airport gate automations. Later, as Marketing Director for Viisage Technology (now L1), he developed specific strategies based on biometric techniques to streamline the immigration process at entry points. In 2002, Olivier joined SITA to develop the Technology Master Plan for Lima Airport and then became the Regional Vice President for Latin America and the Caribbean until November 2009. In 2010, Olivier founded with two other partners International Flight Services S.A. in Santiago Chile for flight inspection in Latin America and the Caribbean. Olivier also owns a software development company in Argentina, Performance Sistemas SRL, and provides consulting services to Airports, Airlines and Civil Aviation.