MRO IT: Defining and Setting Priorities to Harmonize Reliability Data

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Advancements in modern aircraft and technology systems enable the aviation MRO (maintenance, repair, overhaul) industry to quickly capture, process and analyze critical information to ensure safe, efficient and uneventful flight operations.

The accelerated increase of data sources and formats creates a staggering quantity of data that is constantly managed and processed. Because safety and reliability is crucial in time and cost to operators, these data sets need to be harmonized and easily accessible to all stakeholders (airlines, manufacturers, third-party MRO providers, aftermarket suppliers) in the MRO lifecycle. Because MRO stakeholders are inter-dependent, better data harmonization would result in enhanced reliability predictive modeling and aircraft health monitoring.

Determining the next approaches towards data harmonization, and defining the framework to a collaborative data-sharing environment, was the focus of an April 16 Aviation Week Executive Roundtable held at the Georgia World Congress Center in Atlanta, GA. The goal of the roundtable was to assess key findings from previous meetings and establish next steps.

The roundtable was hosted by Alan Butterfield, VP maintenance & engineering at Air Canada. The meeting was sponsored by The Boeing Company.

This was the fourth MRO IT roundtable, and the third for the Americas region*. The previous meetings determined safety and reliability data should be the first to be harmonized, because safety is the ultimate priority and mutual benefit that directly influences all airlines. However, clear definitions on accessibility, parameters on sharing, information, and format are not determined.

Organizations participating in the April 16 roundtable were ATA e-Business Program; AAR Corp.; Air Canada; Air Livery Ltd/Air Works; Airbus Americas Customer Services, Inc.; Aircraft Inventory Management & Services; AirWatch; American Airlines; American Eagle Airlines; ASCO Group; Atlas Air; Azul Linhas Aereas; BAE Systems; Bombardier; Carol E. Giles & Associates, Inc.; CIT Aerospace; Copa Airlines; Delta Air Lines; D-SIMLAB; FedEx Express; GE Aviation; Gulfstream - Advanced Aircraft Programs; HEICO Parts Group, Technology Services; IBM; InfoTrust Group; Oracle; PIA Engineering; PricewaterhouseCoopers; Rockwell Collins; Sanad; Southwest Airlines; StandardAero; TAP Maintenance & Engineering; TAP Portugal; Technology Solutions; Thales Avionics; TIMCO Aviation Services; Turkish Technic; United Airlines; UPS Airlines; US Airways; and Virgin America.

Roundtable participants divided into six work groups that were challenged to respond to a set of questions that focused on following topics:

- Determine next approaches and applications, based on key findings from previous MRO IT meetings*.
- Prioritize and define data formats and parameters to achieve a collaborative data-sharing environment.
    - — Current state – What is being shared, and what is willing to be shared? Parameters for sharing, and considerations for standardization.
    - — Technology – Business priorities and phased approach to moving forward.
    - — Framework of Data Repository – Content, parameters and format of a shared repository of safety and reliability data.

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The 2013 Aviation Week MRO IT Executive Roundtable participants affirmed the need for an international repository for safety and reliability data, especially a centralized, open SDR (Service Difficulty Reports) database, which is maintained, regulated and mandated by an international body (i.e. IATA) or regulator (i.e. ICAO). Successful mobility projects have created the benchmarking template for IT business cases on data harmonization and investment justifications.

KEY FINDINGS:

- An international repository for safety and reliability data should and needs to be created, however the data elements required for an international database have yet to be defined.
- Mobility has become the catalyst on moving technology projects forward. The successes from these implementations and integrations can be the benchmarking template for IT business cases and justifications for investment, including data harmonization.
- A centralized, open database for SDRs (Service Difficulty Reports) was identified as the next step towards data harmonization because safety is the uniting goal for all operators. Definitions for data fields to be collected, minimal quality standards, and standards for those data fields must be driven by regulators, such as ICAO, and mandated.
- Focus on solving business problems, such as cost reduction and configuration management, to find areas of applicability for new technologies. Take advantage of what is already available to solve business needs.
- "Stop talking, and move into action." To accelerate sharing data, we must determine an approach to bring together the right group to start harmonizing and using standards in an economically-viable way. The industry must move from reactive state to a predictive and proactive behavior for optimal results.

Details of topical conversations in the work groups follow.

DETERMINING NEXT APPROACHES BASED ON PREVIOUS ROUNDTABLES*

- Centralized, open database for SDRs (Service Difficulty Reports).
  - Key point – Link it to safety (SMS) → uniting goal for all airlines.
  - Driven by IATA or ICAO on definitions for data minimal quality and standards (starting threshold) – Has to be a mandatory process.
  - Start with small data sets that are non-competitive and advantageous to all.
- Electronic 8130.
- Move from talking to action.
  - Determine a way to bring together the right group to do things around harmonization and standards that are economically viable.
  - Move from reactive state to a predictive and proactive behavior for optimal results.
  - Lessors could write their IT standard in their leasing contract to drive it forward.
- Innovative approaches to apply new techniques to solve the business problems.
  - Minimal standard for today's technology – Use technology that is already available, such as consumer or newly -developed technologies. (Lower costs to utilize than creating something new.)
- Harmonize the data.
  - Build the business case with a standard ROI template.
    - o Solve the business problems (e.g. cost management, reducing turnaround time) instead of broad industry harmonization.
    - o Refine the business case we already use, instead of creating a new one.
- Cloud computing – good potential but there are variables that still need to be defined.
  - Well-defined business process for capturing reliability data.
  - Multi-tenant.

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- Where to store and access? (data sharing)
- Security!

• Moving forward but making limited progress (incremental process).

DEFINING THE FRAMEWORK FOR A COLLABORATIVE DATA-SHARING ENVIRONMENT

Current state – What is being shared, and what is willing to be shared? Parameters for sharing, and considerations for standardization.

•Currently shared:
- Specific data are being shared from airline to OEM.
  - o Not a lot of sharing across airlines or OEM-to-OEM.
  - o Anonymous – Operator wants OEM to send the data back anonymously. They send data to OEM, but wants data to come back with comparison to other users.
- Reliability.
- Squawk data.
- IATA pools.
- Heavy maintenance check information.

• Considerations (Finding data sets that are easy to start):
- Trace data, including maintenance performed, AD status, SB compliance, hours/cycles on-wing.
- Traceability for parts. But what does traceability mean to everyone?
- FAR 121.380 tech summaries - Learn from current problems, and apply lessons to new aircraft or processes.
- Understand the purpose of the data to be provided – Each stakeholder may have different uses for the shared data.
- Incentives to share data:
  - o Defining clear benefits for the sharer and receiver.
  - o Speed of business transaction or shop visit.
  - o Drive additional value to transaction.

• Concerns:
- Security / Trust - How will it be used by others or competitors?
- The time and investment to make the data available are not there, which is why solutions are failing.

Technology – Business priorities and phased approach to moving forward.

• Fact: The gap between new and legacy technologies is becoming wider.
- Airlines will not upgrade until the aircraft forces them to.
- There are tools currently available, but they do not address the core need of MRO.
- How can 30-40 year-old legacy systems catch up? If achieved, how do you know?

• Focus on the business problems to find areas of applicability for the new technologies, such as operational cost reduction, configuration management, etc.
- It is not about the technology – Use what is at hand to solve business needs.
- Taking advantage of new innovations, e.g. Big Data, cloud, e-enabled aircraft.

• Finding tactical ways to share information.
- Refine and focus business cases on common key parameters.
- Sustainability model for business case.

• Make IT a part of the operation, not a back-office function.

• Data harmonization.
- Mobility has become the catalyst on moving forward. Mobility projects are becoming the benchmarking template for IT business cases and justifications.
- Segregating differentiators – Younger workforce using new technology and staying connected.

AVIATION WEEK EXECUTIVE ROUNDTABLE

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- M&A (mergers and acquisitions) activities drive new requirements, making it difficult to set priorities. Realistically prioritize your integration projects.
- Learn from consumer experience – Innovate. Adopt. Share.
  - Airlines – Innovate. Adopt. Compete.
    - How do we move mentally to share rather than compete? We all have the same problems.

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Framework of Data Repository – Content, parameters and format of a shared repository of safety and reliability data.

What Data?	• Component-centric maintenance – times, cycles, mtbr (Mean Time Between Removal), installation and removal history. • Corrective and technical services actions taken back to MRO/OEM (tied to the part). • Component modification status and configuration and aircraft from which removed. • Rich data – back-to-birth data, removals, installs, shop TD (technical directives), modifications. • Accident/incident history.
Parameters / Format?	• "De-identify" the data after the next similar maintenance event (records retention). - Potential solution to database security and storage. • International registry – what are the data elements required for an international database?
Who gets access?	• Need data to go across all parties (OEM/MRO/Operators/Lessors) involved, but access rules need to be defined.

* For reports on past meetings, please go to http://mediakit.aviationweek.com/ExecutiveRoundtable/