Paperless Aircraft Operations
IATA Business Case Support
Recap... last few years

2020
- I’ll make it!
- I can’t make it

2019
- I need Help!!!

2018
- OEM Differences
- Cyber Security

2017
- What Standards?
- Regulatory Void

2016
- Contract Ts & Cs
- Lessor wants PAPER

The ‘Twists & Turns’
Cross-Functional Working Groups

Monthly conference calls organised by time zones...

You too can participate & contribute to the industry’s PAO:TO development...
Consider these four questions.

Do you want to save costs in the longer term?

Do you want to efficiently transfer assets – aircraft, engines, components?

Do you want to facilitate 100% configuration and airworthiness compliance?

Do you want to build & optimize your organization’s knowledge management?

**Paperless Operations can facilitate these...**

**Regulatory-based “Checklist”**

Assists you in gaining your CAA’s approval for your PAO:TO

Adapted from FAA, TC, CASA, & EASA advisory material
This Year...

Business Case Support Template
Template development

Principles

- To develop PAO:TO Business Case support material for use by industry
- To utilize precedent material and to engage with key stakeholders via the PAO:TO working groups
- To identify Business Case key elements
- To finalize the approach and publish initial release
Template development

Informed by precedent ‘Guidance Material’

Stakeholder working group members provided input

Each Stakeholder viewed the requirements from a slightly different perspective
The ‘Perspectives’ were many and varied

Captured within a comprehensive MindMap...
MindMap – Primary Nodes

Business Cases

Safety, Quality & Compliance

OEM

Stakeholders

Production Control

Warranty

Legacy Paper Records

Operational Performance

Leasing

Issues to be considered

Looking one of these in more detail...
MindMap Node – Issues to be considered

- Organization’s Requirement
  - EOL Cost
  - New Gen A/C Cost (of paper-based systems)
  - Cost of Duplicate Systems
  - Lobbying Costs
    - NAA Policy Makers
    - NAA Field Officers
- IT Systems
  - Hardware Costs
  - Software Costs
  - Legacy Record Digitization Costs
  - Software
  - Hardware
  - Secure Data Transfer
  - Secure Data Maintenance
  - Conversion of older records to new formats
- Upgrade Costs
  - Phased Approach (Step by Step)
  - Keep endgame in sight
  - How to manage legacy paper
  - Require Digital Competencies
  - Require Analytical Competencies
  - Easy
    - To physically attach paper
  - Most parts unserialized
  - To uniquely associate electronic data
  - Difficult
  - Cost in creating link between eRecord & paper
  - Different parts require different solutions
  - Technological Cost?
  - RFID?
  - Barcoding?
- Training & Education Costs
  - Training Competencies
  - Aircraft Parts
  - Release Documents
    - Authority Requirements
    - eForm-1
    - e810-3
  - Standards Organizations
    - Standards Compliance Costs
  - Cyber Security Costs
    - Can originate with Vendor/ OEM: ie: transposed part or serial numbers
    - If not rectified then problem perpetuated
    - Human Intervention in paper system can identify & rectify
    - How to identify in a Paperless System
  - Membership Costs
  - Regulatory Policy Change
    - ICAO Harmonization
  - Cost of deciding not to comply
An all-encompassing business case would be very complex - so...

An Airline/MRO perspective was adopted

However... Other stakeholders from within the working groups have said they can make good use of the template...

The MindMap is available for download should you wish to consider other elements within your business case.
Overview
Business Case Support Template
<table>
<thead>
<tr>
<th><strong>Overview Business Case Support Template</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Developed</strong> to assist you in the building of your business case for PAO:TO implementation</td>
</tr>
<tr>
<td><strong>A comprehensive excel workbook</strong></td>
</tr>
<tr>
<td><strong>Input</strong> of your data and your assumptions is required</td>
</tr>
<tr>
<td><strong>It calculates</strong> the cost and the FTE numbers within various categories - based on <strong>your inputs</strong></td>
</tr>
<tr>
<td><strong>Guidance</strong> notes are provided throughout the template</td>
</tr>
<tr>
<td><strong>Output</strong> tables and sample graphs are generated for you to apply within your business case</td>
</tr>
</tbody>
</table>
Systems-Based scenarios were used in the Template development

<table>
<thead>
<tr>
<th>pSystems (Paper)</th>
<th>Paper-based systems <em>(assumed baseline)</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>hSystems (Hybrid)</td>
<td>Hybrid Systems <em>(smart digitizing in use)</em></td>
</tr>
<tr>
<td>eSystems (Paperless)</td>
<td>Paperless Systems <em>(e-Business)</em></td>
</tr>
</tbody>
</table>

Any of these systems - regardless of aircraft generation (age)?

The baseline case in the template is assumed to be pSystems

If progressing towards eSystems, hSystems *could be* your baseline case
Template Tabs & Colour Coding

How to Use

IATA Disclaimer

Inputs - Setup
Inputs - Salaries
Inputs - M&E Locations
Inputs - Fleet Mix
Inputs - Records Generation

Costs - IT
Costs - Training
FTE & Systems Efficiencies

Costs - Records Other
Costs - Records Archive & Retrieval
Costs - Labor Record Error Rework
Costs - Labor Aircraft Lessee
Costs - Labor Warranty

Outputs - Cashflow Tables; pSystems, hSystems & eSystems
Outputs - Systems Cost Graphs
Outputs - FTE Summary Graphs
Outputs - Systems Efficiency Costs

Excel Name Manager Guide
The Blue data entry cells are the important ones for you. This is where you enter your data and from which the Template calculations are derived.
Column A - Information

Guidance notes are provided throughout the Template workbook

**Note**

Column A throughout this "example" Template provides explanatory information.

You may choose to delete this column in your working template

**Typical Business Units**

If you change the names of these business units then you need to change names within Name Manager (see 'Excel Name Manager Guidance' tab and note caution within).

If you outsource HM, EM, CM, etc., you may consider data entry for these business units as zeros

**Paid Hour Calculations**

Enter normal hours per FTE. The 2080 in this example is comprised of 40hrs pw x 52wks pa.

Adjust for each Business Unit (BU) in your analysis. Eg; the standard working week may vary between 35 and 40 hrs pw.
How to proceed

**Download** and save your own version

**Start** at the left-hand tab and work to the right

**Replace** example data with **your data**

**Category not applicable?** - leave it blank or enter zeros

**Experiment** – to begin use ROM data and use assumptions

**Don’t underestimate** the effort required

**Outputs don’t look right** - review your data and assumptions *(you may get an ‘aha’ moment!)*

**Determine outputs** required for calculation of DCF/NPV etc for your business case, and which supporting graphs are needed
Template category examples

**Records Generation**
- Per aircraft
- Per fleet
- Per department
- % paper records

**Records – Non Labor**
- Outsource processing
- Paper stock purchase
- Paper book purchase
- MFD leasing
- MFD printing
- Print room space
- Filing cabinet space
- Compactus space

**Archive & Retrieval**
- Archive costs
- Retrieval costs
- Record shred rates
- Per department

**Rework Labor Cost**
- Error rates
- Rework labor hours
- Rework labor cost
- Rework FTEs

**Lessee Costs Labor**
- Lessor hosting
- Disputed records
- Record search
- Due diligence
- Printing & Collation
- Related labor costs
- Related FTEs

**Warranty Labor Cost**
- Claim preparation
- Claim follow-up
- Claim disputes
- Record loss
- Related labor costs
- Related FTEs
Template category examples

**IT Systems (your data)**

*Example systems*
- Maintenance Information
- Document Management
- SCL Management
- Mobility
- eTechLog

*Cost Categories*
- Annual Operating
- Annual Licence
- Annual Software
- Annual Upgrade
- Annual Customization

**Training Costs**

*For system used*
- Training cost per FTE
- Per department
- % FTEs trained per annum
- Implementation
- Continuation
- Worst case
- Best case
- Most likely

**System Efficiencies**

*Your assumptions*
- FTE % reductions
- p, to h, to eSystems
- Per department
- Worst case
- Best case
- Most likely
### Data Input & Calculation

**Enter Data in Blue Cells**

**Derived Results in Yellow Cells**

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#### Scenario 1: Paper-Based (pSystems) Lessee Cost Summary

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>pSystems Lease Return Total Cost pa</td>
<td>$1,578,826</td>
</tr>
<tr>
<td>pSystems Lease Lessor Visit Total Cost pa</td>
<td>$194,817</td>
</tr>
<tr>
<td>pSystems Lease Disputed Record Total Cost pa</td>
<td>$202,934</td>
</tr>
<tr>
<td>pSystems Lease Record Search Total Cost pa</td>
<td>$366,281</td>
</tr>
<tr>
<td>pSystems Lease Due Diligence Total Cost pa</td>
<td>$1,217,603</td>
</tr>
<tr>
<td>pSystems Lease Paper Print Cost</td>
<td>$48,900</td>
</tr>
<tr>
<td>pSystems Lease Printing &amp; Collation Total Costs pa</td>
<td>$135,289</td>
</tr>
<tr>
<td><strong>pSystems Induced Cost - Lessee Related</strong></td>
<td>$(3,743,650)</td>
</tr>
</tbody>
</table>

---

#### FTE Summary per sheet

<table>
<thead>
<tr>
<th>Description</th>
<th>FTEs</th>
</tr>
</thead>
<tbody>
<tr>
<td>pSystems Lease Return Total FTEs</td>
<td>14</td>
</tr>
<tr>
<td>pSystems Lease Lessor Visit Total FTEs</td>
<td>2</td>
</tr>
<tr>
<td>pSystems Lease Disputed Record Total FTEs</td>
<td>2</td>
</tr>
<tr>
<td>pSystems Lease Record Search Total FTEs</td>
<td>4</td>
</tr>
<tr>
<td>pSystems Lease Due Diligence Total FTEs</td>
<td>12</td>
</tr>
<tr>
<td>pSystems Lease Return Print &amp; Collate Total FTEs</td>
<td>2</td>
</tr>
<tr>
<td><strong>pSystems Lease Related FTEs TOTAL</strong></td>
<td>35</td>
</tr>
</tbody>
</table>
Output Examples – Cost Tables & Graphs

### Cost Summary per Sheet

<table>
<thead>
<tr>
<th>Description</th>
<th>Yr 1 ending 31 Dec 2019</th>
<th>Yr 2 ending 31 Dec 2020</th>
<th>Yr 3 ending 31 Dec 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>pSystems Cost of Labor - Base Case</strong></td>
<td>$ (379,378,750)</td>
<td>$ (386,966,326)</td>
<td>$ (394,742,860)</td>
</tr>
</tbody>
</table>

### Total Induced Labor Cost Comparisons - Base Case to hSystems & eSystems

<table>
<thead>
<tr>
<th>Year</th>
<th>pSystem Induced Labor Costs - Total</th>
<th>$ (52,632,024)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2021</td>
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<tr>
<td>2022</td>
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<td>2024</td>
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<td>2025</td>
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<td></td>
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<tr>
<td>2026</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2027</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2028</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend:
- **pSystem Induced Labor Costs - Total**
- **hSystem Induced Labor Costs - Total**
- **eSystem Induced Labor Costs - Total**
Output Examples – FTE Graphs

Systems "Induced" Total FTE Comparisons

- pSystems Induced FTEs Total (Base Case)
- hSystems Induced FTEs Total
- eSystems Induced FTEs Total
Your next steps

• The next steps are in **YOUR** hands as the end-user of this Template

• There are **many** formats & requirements for Business Cases

• **Determine** how your Template results are utilized

• Your **finance department** may need to apply DCF or NPV calculations to output tables for your business case

• **FTE** Summary Tables & Sample Graphs are provided. You may choose to use these to support your business case

• **Other Material** - Consider using or referencing precedent IATA material and the business case development mind map
In Summary

IATA is developing a suite of tools to assist you in your PAO:TO journey

- Business Case Support Template
- Business Case Development MindMap
- Guidelines for Implementation of PAO:TO
- Regulatory-based Checklist
Where to get it...


Scroll down page to Downloads, and click to download:

## Template
- Paperless Aircraft Operations: Business Case Support Template,
- Airlines Business Requirements for Original Equipment Manufacturers on Radio Frequency Identification (RFID) and 2D Barcode Tagging for Aircraft Cabin Equipment, June 2018 (pdf)

## MindMap
- Paperless Aircraft Operations: Business Case Support Mindmap,
- Airlines Business Requirements for Original Equipment Manufacturers on Radio Frequency Identification (RFID) and 2D Barcode Tagging for Aircraft Cabin Equipment, June 2018 (pdf)

## Guidance
- IATA Guidance Material for the implementation of Paperless Aircraft Operations,
  - IATA Master Engine Maintenance Agreement (fillable Annexes) (doc)
  - IATA Master Airframe Maintenance Agreement (main section, rev. 2014) (pdf)
  - IATA Master Airframe Maintenance Agreement (fillable Annexes) (doc)

## Checklist
- Electronic signature & recordkeeping Regulatory Checklist (FAA, T
  - Aviation Identification and Authorisation System - White Paper (pdf)
Now you have some tools

GET STARTED

&

Good Luck
And one last thing...
You can assist IATA in the PAO:TO Initiative

Get Involved...

*Industry collaboration is critical...*

• **Whilst at this conference** – come and see me or the IATA team and tell us:
  • Your area of involvement, expertise, or interest
  • Your view on what needs to be done
  • What is important to you in terms of sequencing priorities and key milestone dates
  • What the key inter-dependencies are with other stakeholder groups

& Consider joining a Working Group as an active participant