



Leonardo Helicopters

European Rotors Rotorcraft and VTOL Symposium 2022

Continued Airworthiness Methods Enhancement
One Digital Solution

Koln, 8th November 2022

Company General Use



Electronics



Helicopters



Aircraft



Cyber &
Security



Space



Unmanned
Systems



Aerostructures

SUMMARY

- LH Data Lake Usage & Management
- LH FDR/FDM Report Management & Analysis/Evaluation
- LH Safety Digital Tool Development
- Digitalization Benefits



LH Data Lake Usage & Management



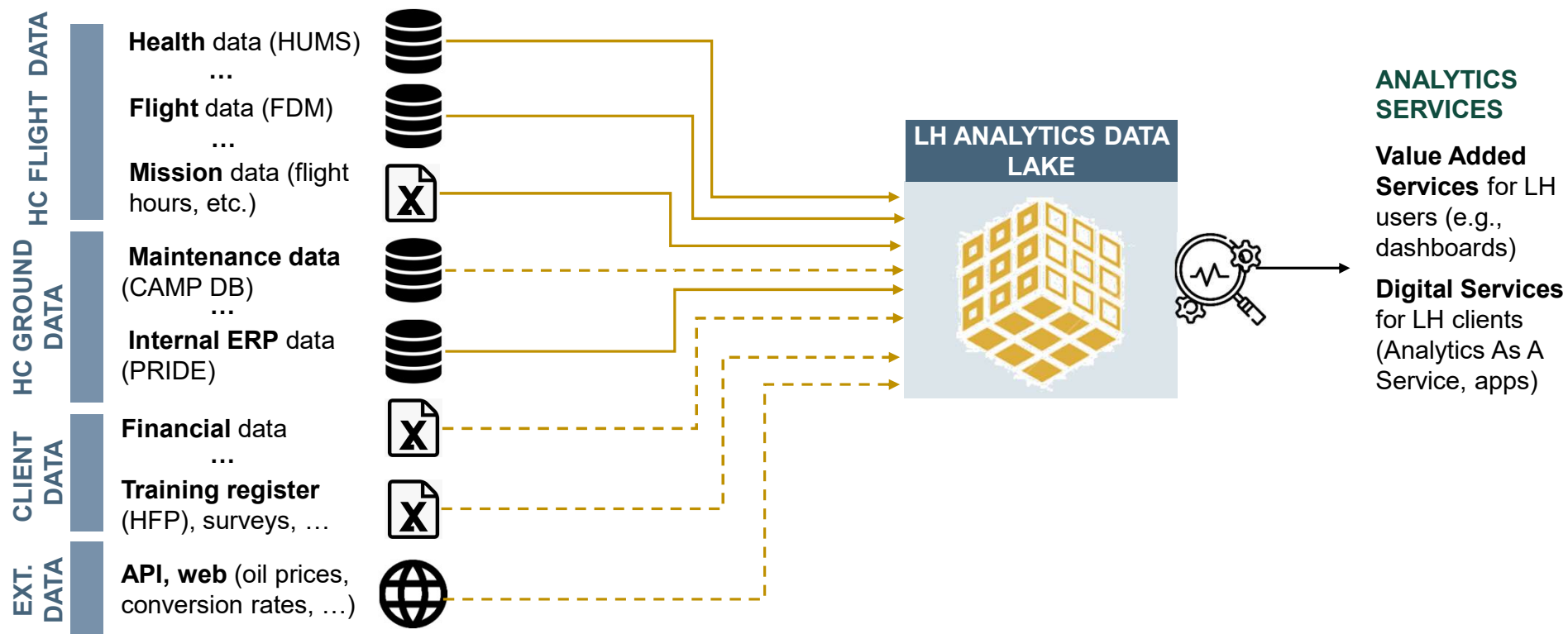
LH Data Lake Management & Usage

LH BUSINESS DRIVEN

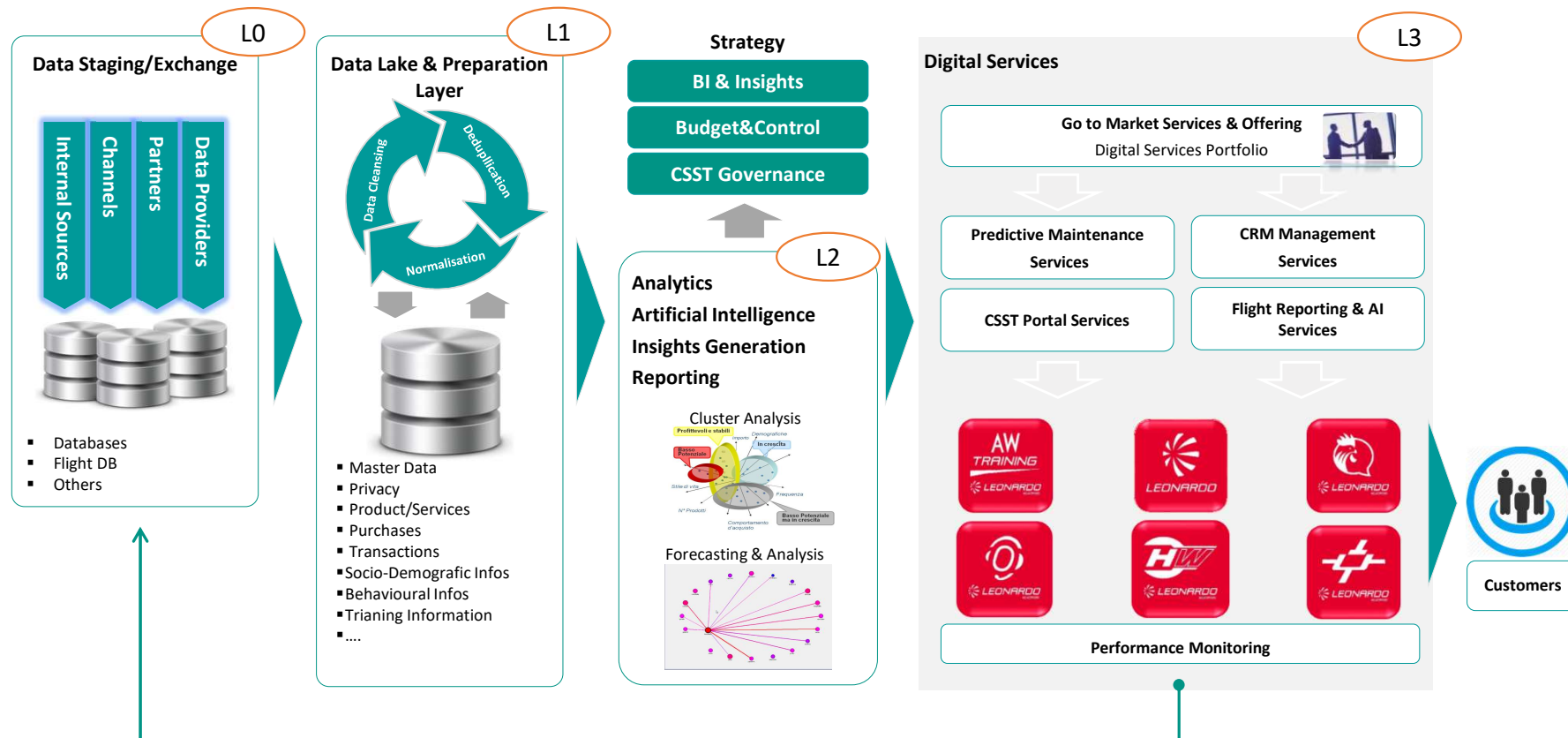
DATA SOURCES & PROCESSES

INFORMATION & DISCOVERY

SOLUTIONS & SERVICES



LH Data Lake Management & Usage



LH FDR/FDM Report Management & Analysis/Evaluation

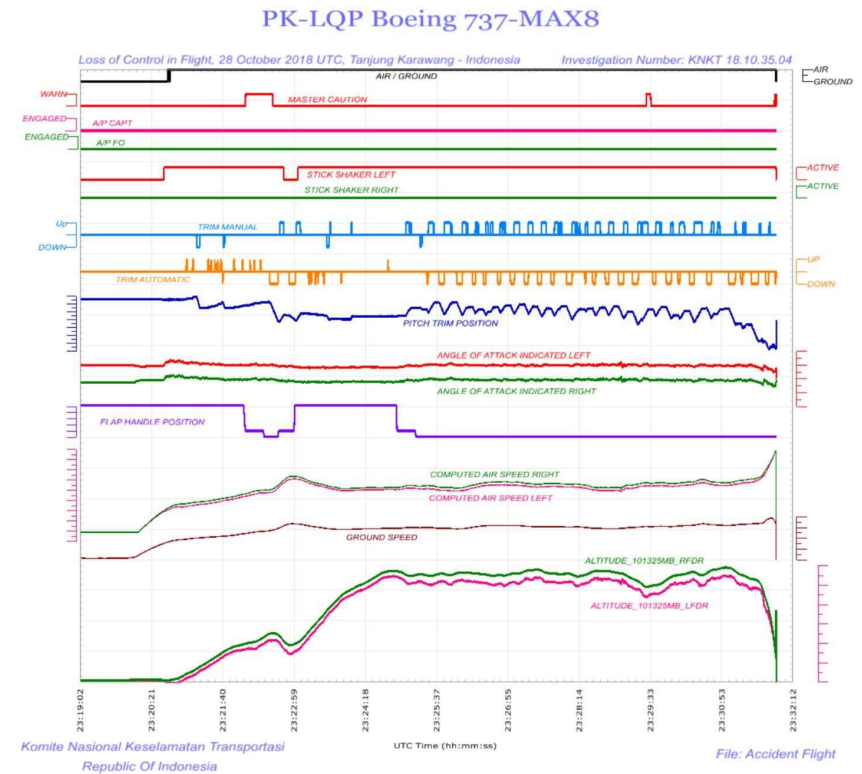
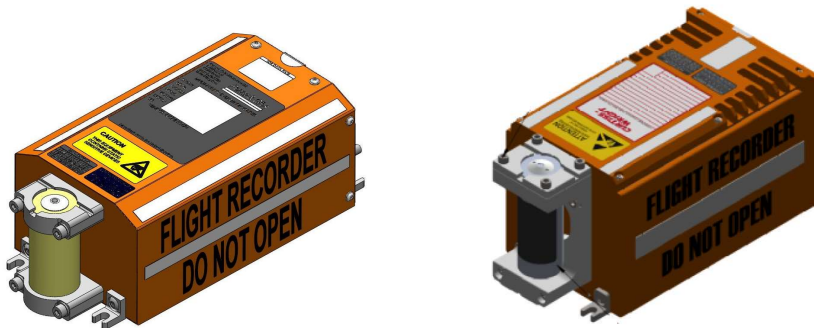


Company General Use

Background

Accident Investigation & Prevention (AI&P) office performs analyses based on available data coming from in service aircraft.

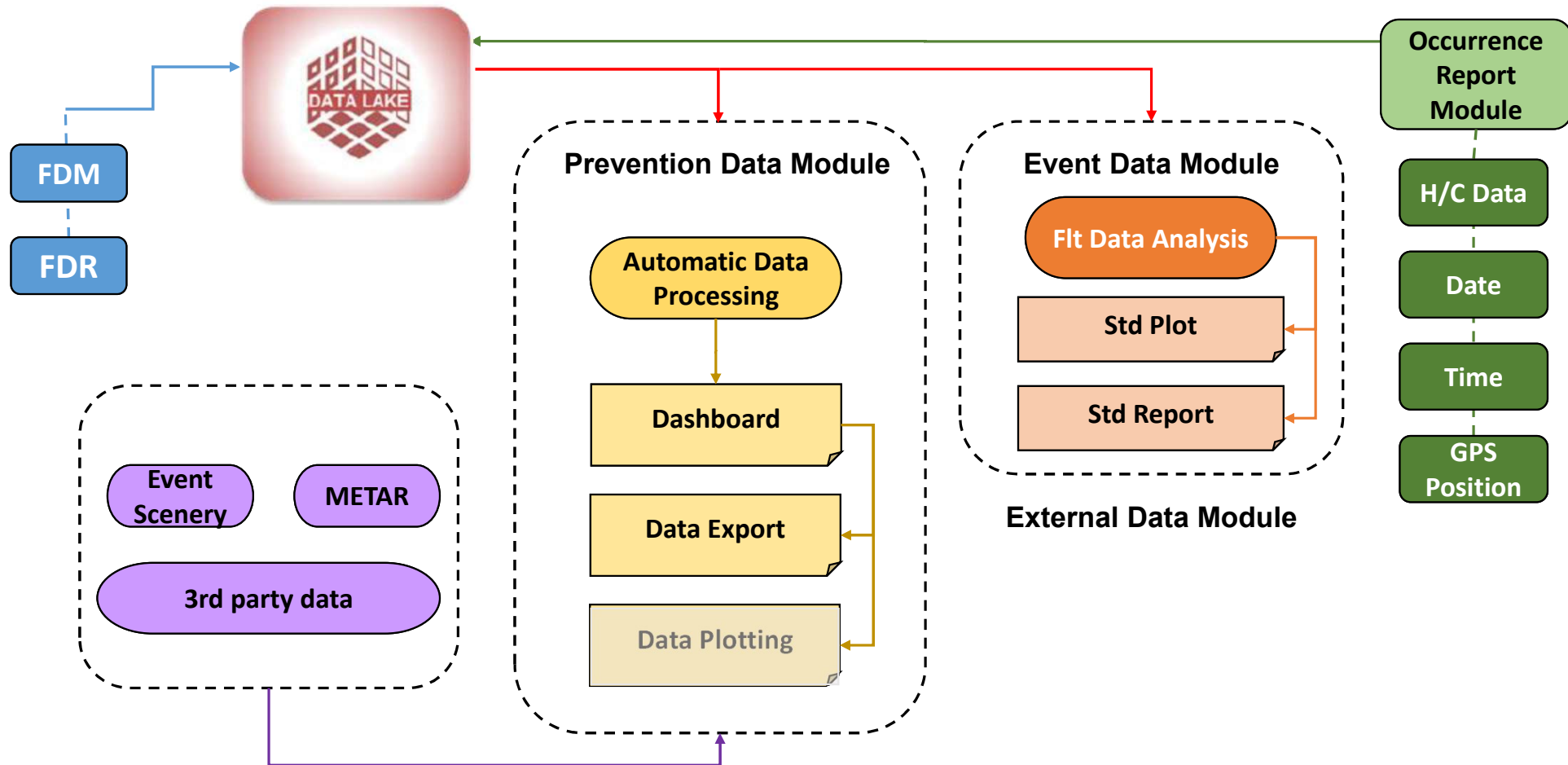
Continued Airworthiness Digitalization is aimed, among several objectives, at a more efficient and extensive management and preparation of Flight Data Recorder (FDR) & Flight Data Monitoring (FDM) data analysis to support the Continued Airworthiness of the LH fleet.



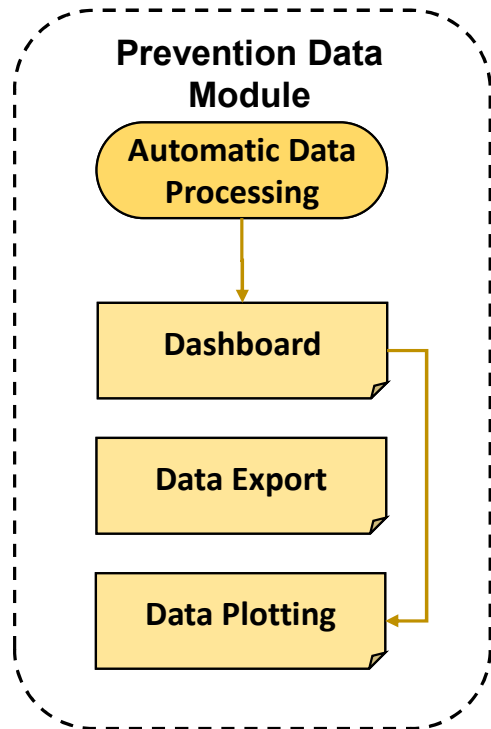
Example of FDR Data plot (Source: [What is a black box and how does it work? | Flightradar24 Blog](#))



Overall Approach

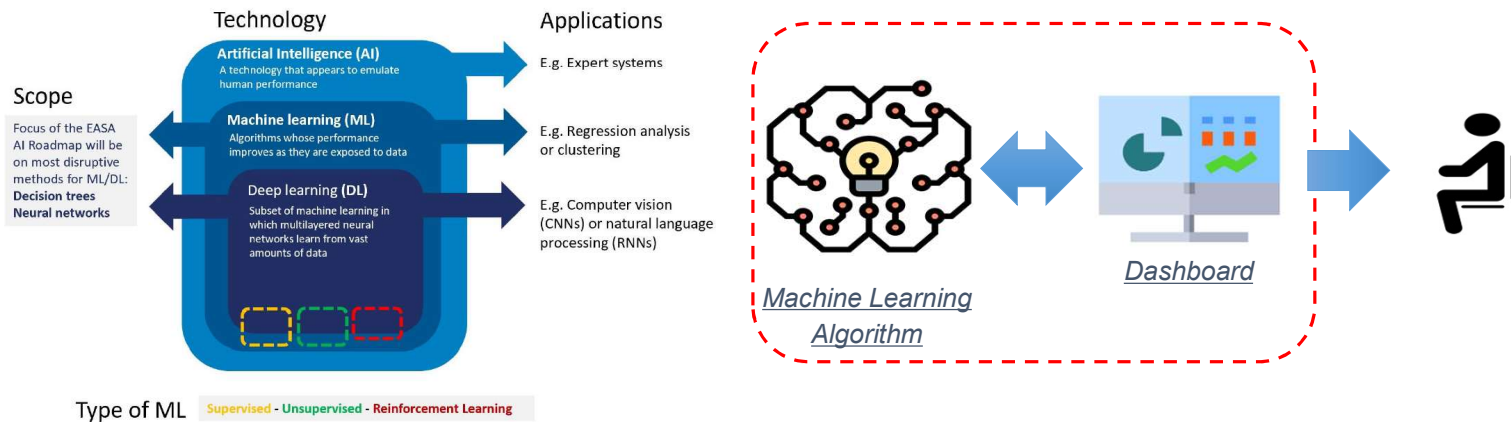


Prevention Data Module

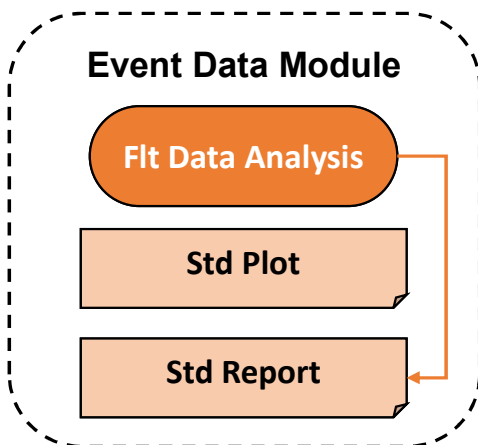


Prevention Data Module is a sw module dedicated to perform recurrent analysis based on different event definitions and thresholds, evolving over-time (MLA).

It has the capability to display information in a logical and user friendly way, to programme a range of alert detection thresholds to generate events when parameters exceed pre-set values, the ability to export data and provide long term trend analysis of events. Plotting and analysis functions are also included.



Event Data Module

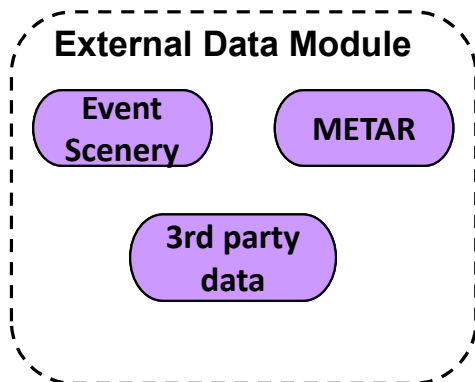


The Event Data Module is a sw module which generates plots and reports automatically based on predefined set of information recovered by the related occurrence report or Product Support input.

Plots and reports are then made available, after V&V, to LH Continued Airworthiness Managers, Technical Areas and CSS&T for supporting relevant activities.



External Data Module



The External Data Module is a sw module dedicated to retrieve from both public available databases a batch of ancillary information in order to supplement the contents of the OR itself and/or the other Data Modules sw.

Example:

- METAR & Weather tools
- Flight Tracking & Traffic tools
- Event Scenery Reconstruction tools
- Public Information



Flight Animation (Example)



LH SAFETY DIGITAL TOOL DEVELOPMENT



The LH Safety Digital Tool

Safety Assessment Data Package

SAFETY ASSESSMENT
USED TO DEFINE
MAINTENANCE AND
MMEL DISPATCH
INSTRUCTIONS

Maintenance Manuals



Master Minimum Equipment Lists

Certification Safety Analyses are based on:

- Entire H/C life utilization
- All the certified capability of a product



Extremely conservative



The LH Safety Digital Tool



In- service Issues



Product Support Engineering



Engineering

Safety Analyses are used to provide Technical Support to manage in-service issues in order to allow return to base / return to flight operations

Examples:

- Maintenance instructions deferral
- Dedicated instructions for flight activities



The LH Safety Digital Tool



H/C MISSION/FLIGHT DATA
H/C Configuration,
H/C and Component(s) Flight
Hours



MAINTENANCE DATA
Applicable maintenance task(s)
accomplishment results,
Component(s) failures



Data collection allows to:

- Determine a more realistic vs conservative utilization
- Optimize the analyses results



The LH Safety Digital Tool

The Safety Digital Tool is a software dedicated to perform an **automatic** re-assessment of the certification's safety data package always connected with the field for:

- **Updated** in-service safety impacts assessments
- **Tailored** evaluations of flight / maintenance instructions



DIGITALIZATION BENEFITS



Benefits

- Single Sources of data and Data Analyses & Statistics resulting in unique dissemination at company level of validated information
- Automatic assessment of input data for timely response to the most demanding requests by civilian and military authorities
- Continuous assessment of the performance of the LH fleets in service which leading to:
 - **H/C AOG reduction**
 - **Reduction of maintenance costs**
 - **Prevention of possible incidents / accidents / serious accidents**
 - **Design Product Improvements**



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THANK YOU
FOR YOUR ATTENTION

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