

# Enhancing Safety Example Applications

## Leonardo Helicopters



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*2023 Safety Trends*



*Leonardo Helicopters DO SMS so far*



*The New Tools & Technologies*



*Next Generation*



*Winding Up*





## How was 2023?

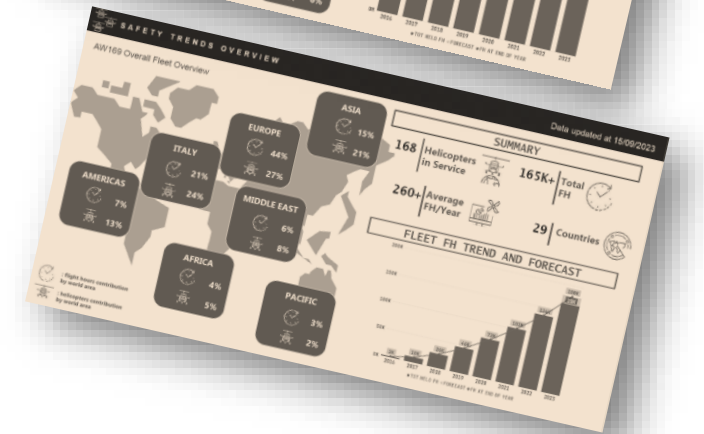
-  **700.000+ Flight Hours** logged in civil market in 2023.
-  Issues with **Supply Chain** are going to be improved in 2024.
-  **Less reporting** from the field has been noted.
-  New technologies and design improvements are really coming to **enhance safe operations?**



AW189



AW139



AW169



## How was 2023?

**Regulatory Framework & In-service Fleets Experience** are the Inputs to pursue a constant **safety improvement**.



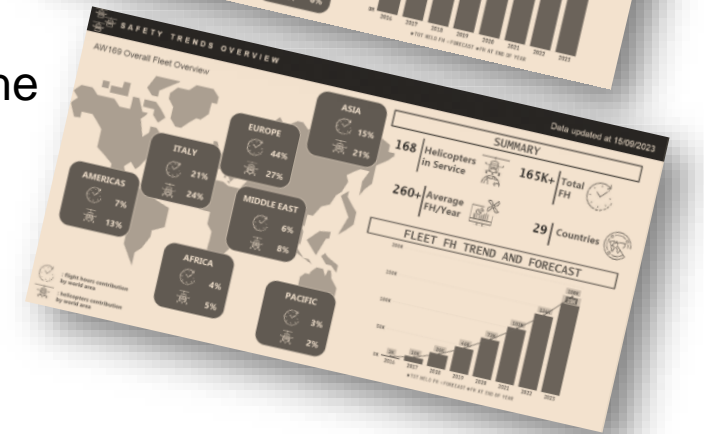
**Safety promotion initiatives**  & **design improvements**  are the main pillars of Leonardo Helicopters Design Organization SMS.



AW189



AW139

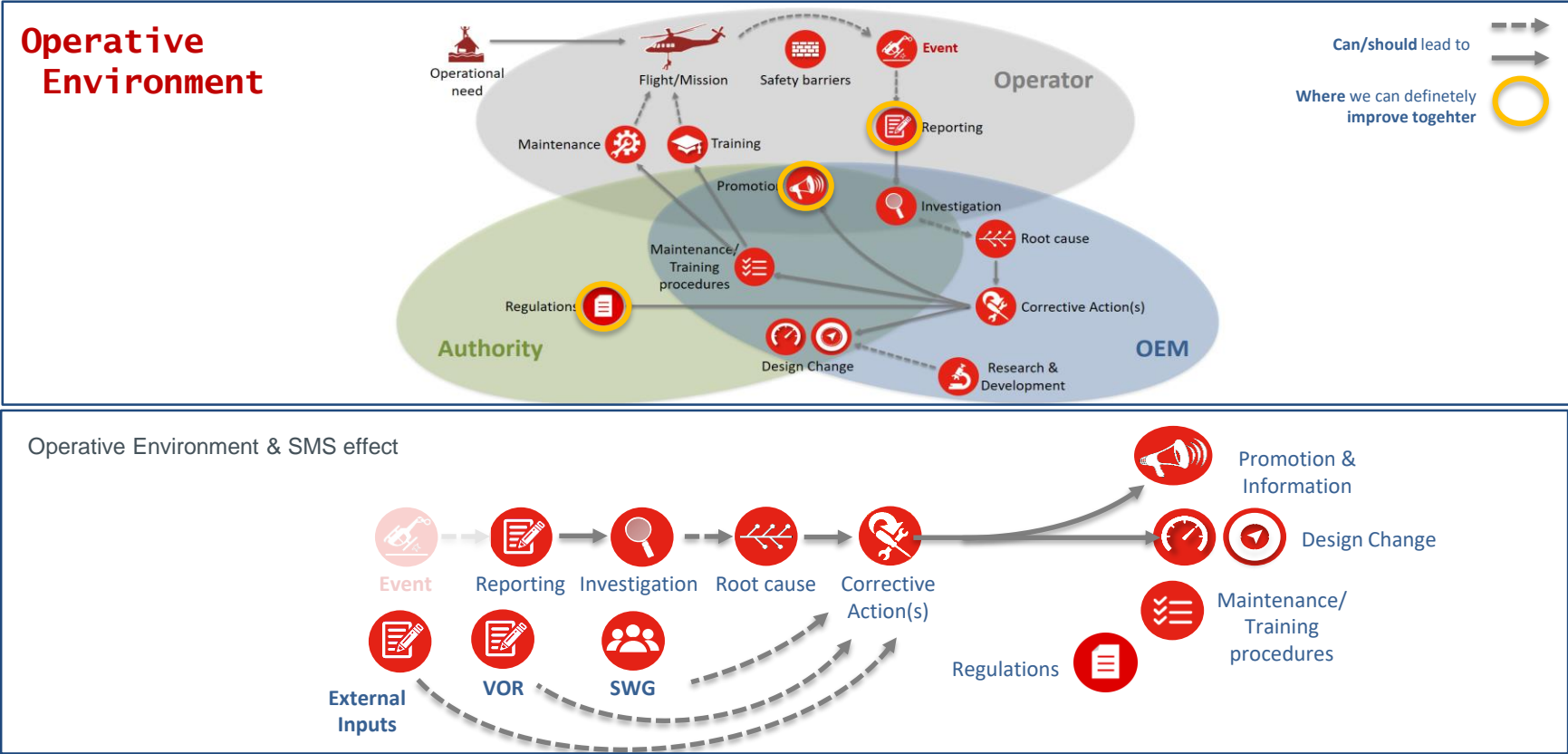


AW169



SMS Background ...

1 of 2





## SMS Background ...

2 of 2

**ICAO Annex 19** (first issue: 2013, 2<sup>nd</sup> Edition: 2016)

European Plan for Aviation Safety (**EPAS**):

RMT.0251, Embodiment of **Safety Management System** requirements into Commission [Regulations (EU) No. 1321/2014 (Part-145) and 748/2012 (Part-21)] with the introduction of **Design Management System** in lieu of current **DAS**.

RMT.0262 Embodiment of Level of Involvement (LOI) and **Safety Management System (SMS)** requirements into Part-21.

**LH Aviation Safety Management Systems** has been **established in 2020** and the Design Organization set up a proper internal system in 2021.

**LH DO Safety Management Systems** has been selected by **EASA** as **Rotorcraft OEM Project Pilot in 2022**.

**LH DO Safety Management Systems** has been **EASA approved** on **September 2022**.







## Leonardo Helicopters Future Scenario

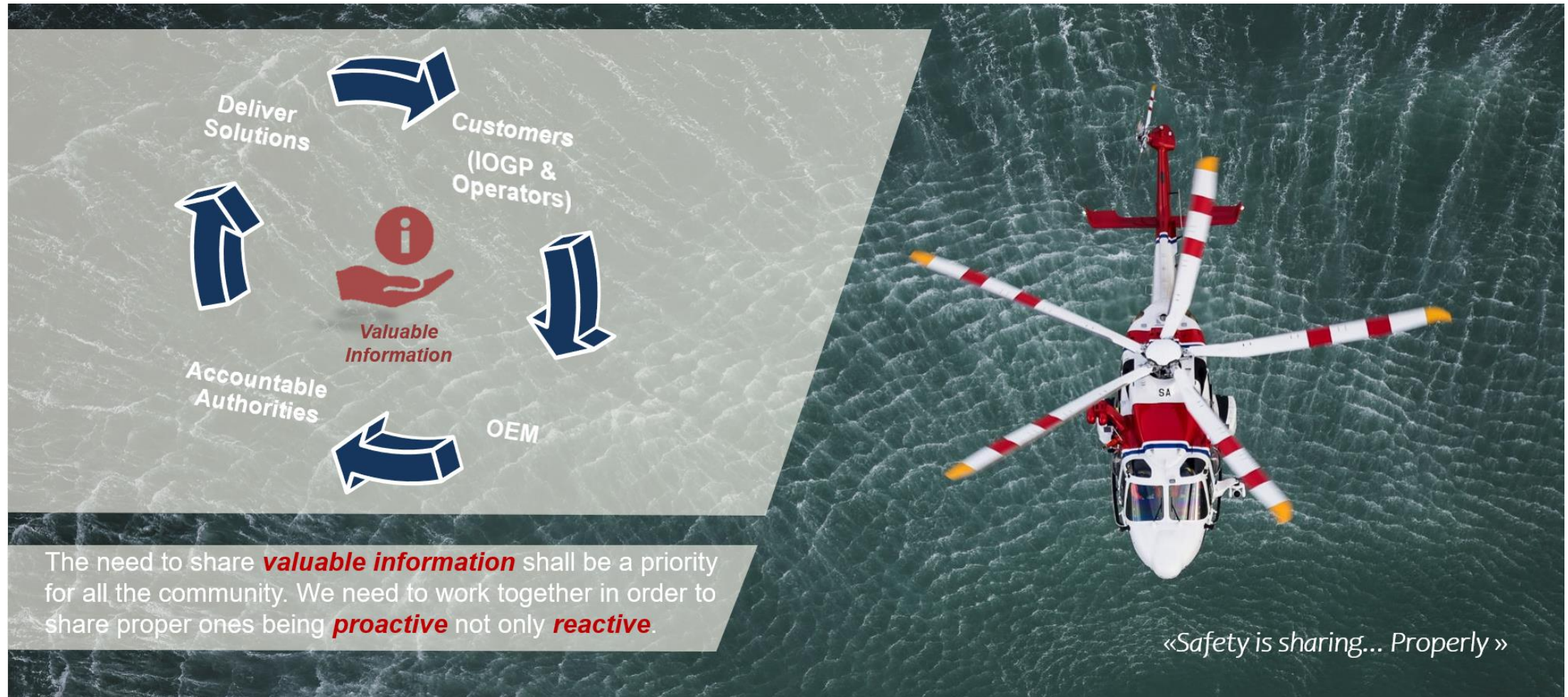
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## Leonardo Helicopters Future Scenario

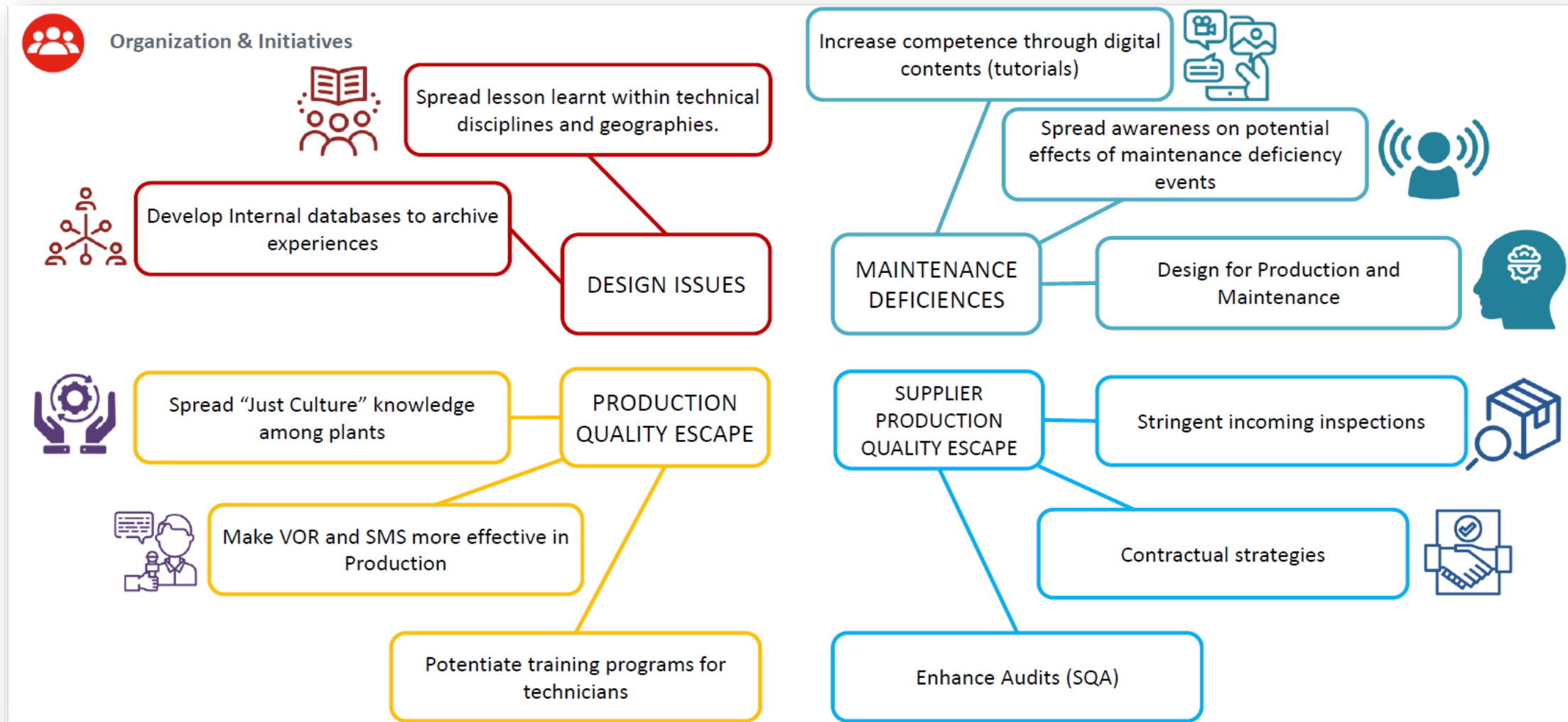
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## Leonardo Helicopters Safety Governance 2023 survey





## Design Improvements according EASA EPAS latest issue.

- ✓ AW119 MKII **Crashworthy Seats**  
(EASA and FAA Certified - Applicable for newly produced H/C)
- ✓ AW119 MKII **Crashworthy Fuel System**  
(STC FAA Certified and EASA Validated - Applicable for newly produced H/C  
Retrofit SB available upon demand)
- ✓ AW119 MKII/AW109 **Lightweight flight data recorders**
- ✓ AW139 **Synthetic Vision System (SVS)**
- ✓ AW169/AW189 HUMS 2.0: **Real Time Data Transmission/Download**
- ✓ Full IOGP 690 v1.3 Compliance for all Platforms
- ⚠ AW109/119 AFCS **4 Axis**
- ⚠ AW Family **HTAWS Mod. 7**
- ⚠ **Single Engine IFR** installation kit EASA Validation STC





## Safety Promotion Initiatives

### Flight Operating Group

Recurrent **workshops** where LH **Customer Crews** are updated about fleets' status and **safety trends** and product improvements. Customer are supported **to share experiences** and to propose suggestions /questions during **open** discussion sessions

### Webinar

Recurrent **reviews** with LH **Training Academy** to share **results of investigation of in-service events** to Instructors to identify standardization messages for training sessions

### Internal & External Communication

DO SMS newsletters are issued periodically to internally promote **Safety initiatives**.

Safety Information Documents are released **to support safe operations** and **to disseminate** valuable information to Customers through the web portal



## Safety Promotion Initiatives

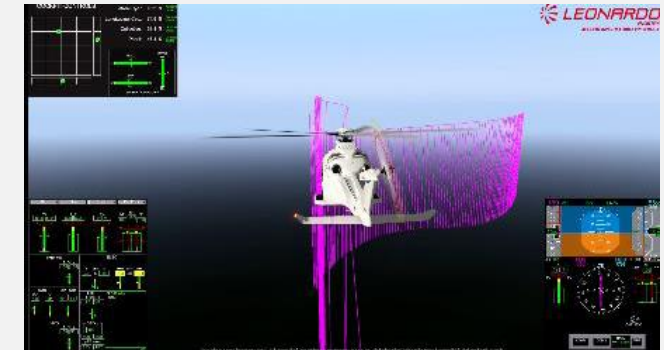
Flight Operating Group

Webinar

Internal & External  
Communication

### One Example

An in flight floats deployment occurred on 2022 on an AW139 H/C. The event was classified as Operational.



The results of investigation have been presented and discussed during the webinar to provide feedback on in-service event resulting in an A/C abnormal attitude, which led to -160deg roll attitude and +30/-40deg pitch attitude before crew was able to regain a controlled flight.

### Outcome

Two messages launched to the Flight Training Academy:

1. Do not touch the Flight Controls, let the autopilot work
2. Do not lift the FLOAT switch guard, except in emergency

### Standardization Notice

#### WARNING

Two risks highlighted by LH Training Pilots:

1. usually the tablet is put on the interseat console with the risk of inadvertent switch activation;
2. some guards are lifted «for fun» during long flights with autopilot engaged.







## Safety Promotion Initiatives

Flight Operating Group

Webinar

Internal & External  
Communication

NEXT  
Webinar for PO

Periodic reviews between **Leonardo Helicopters Continued Airworthiness dept. & Training Academy** are in place to present in-service events whose causes have been determined as **operational** or due to **maintenance deficiencies**.

Outcomes of the **investigation of these events** are translate in messages to the **Training Academy** and briefed to Pilots and Maintainer during Standardization sessions with the Instructors.



## Safety Promotion Initiatives

Flight Operating Group

Webinar

Internal & External  
Communication



A group of **senior matter experts** has developed an industry guide for Hoist Operators which is a recommended **guideline to create a competence based training** scenario from ab initio to senior HHO trainer and clearly define the duties and responsibilities of the Hoist Operator Technical Crew Member.

SMS-DO Newsletter within the Leonardo to improve the **safety culture** at all levels of the organizations and geographies





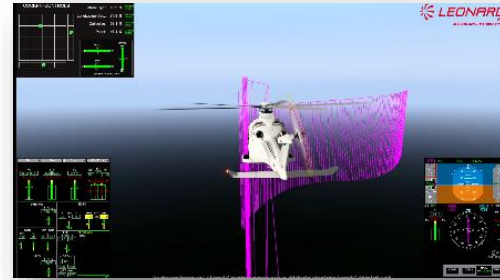
*New tools & Technologies will definitely **change** the **helicopter Industry** and give a great opportunity to guarantee a solid **safe future**.*



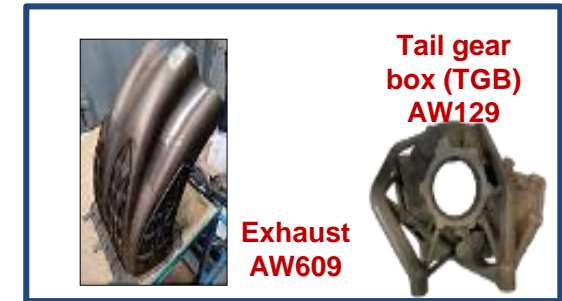


## New Design Solutions

FDR/FDM & **DATA Lake Analysis**



**Additive Layer Manufacturing** & more...



Automatic **Target Recognition**



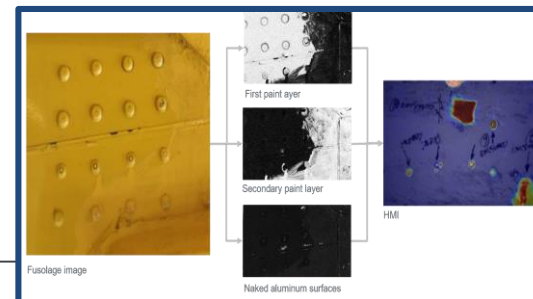
Automatic Take Off and Landing **Guidance**

To detect collaborative and non collaborative traffic,  
providing helicopter positioning and attitudes & detect landing spot



Automatic **Maintenance Inspection**

To detect damages on fuselage and Main & Tail Rotor Blade







How an helicopter Industry can get onboard  
*next generation* and *young talents*, taking care  
of proper *safety mindset* in the next future ...





1

A collaboration with **Sapienza University of Rome** in Aviation Management SMS and Continuous Airworthiness 2<sup>nd</sup> level Master'S Degree (start in 2024).

2

Several University **research projects**, in multiple disciplines, have been started in 2022 and 2023. **Leonardo LABs** already attracted different excellences of young employees.

3

Leonardo Helicopters already started in providing dedicated **Training Course** to many **Air Safety Investigators**.

4

An innovative project based on the identification of specific marker in the flight crew voice, has been started with the **Università Cattolica del Sacro Cuore of Milan**; with the aim of identifying the **crew physical, cognitive and emotional conditions**.





Multiple **stakeholders** shall collaborate **together** on same initiatives to attract **young people** to the aviation industries.

**AI & Digitalization** process shall be used to provide **better working** conditions and **attractive Jobs** in aviation.

Be prepared to a **new era of aviation** where **new players** will act differently.





Future starts *Today*, not Tomorrow.

Get now *next generation* and *young talents*  
prepared with a proper safety mindset.

