

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



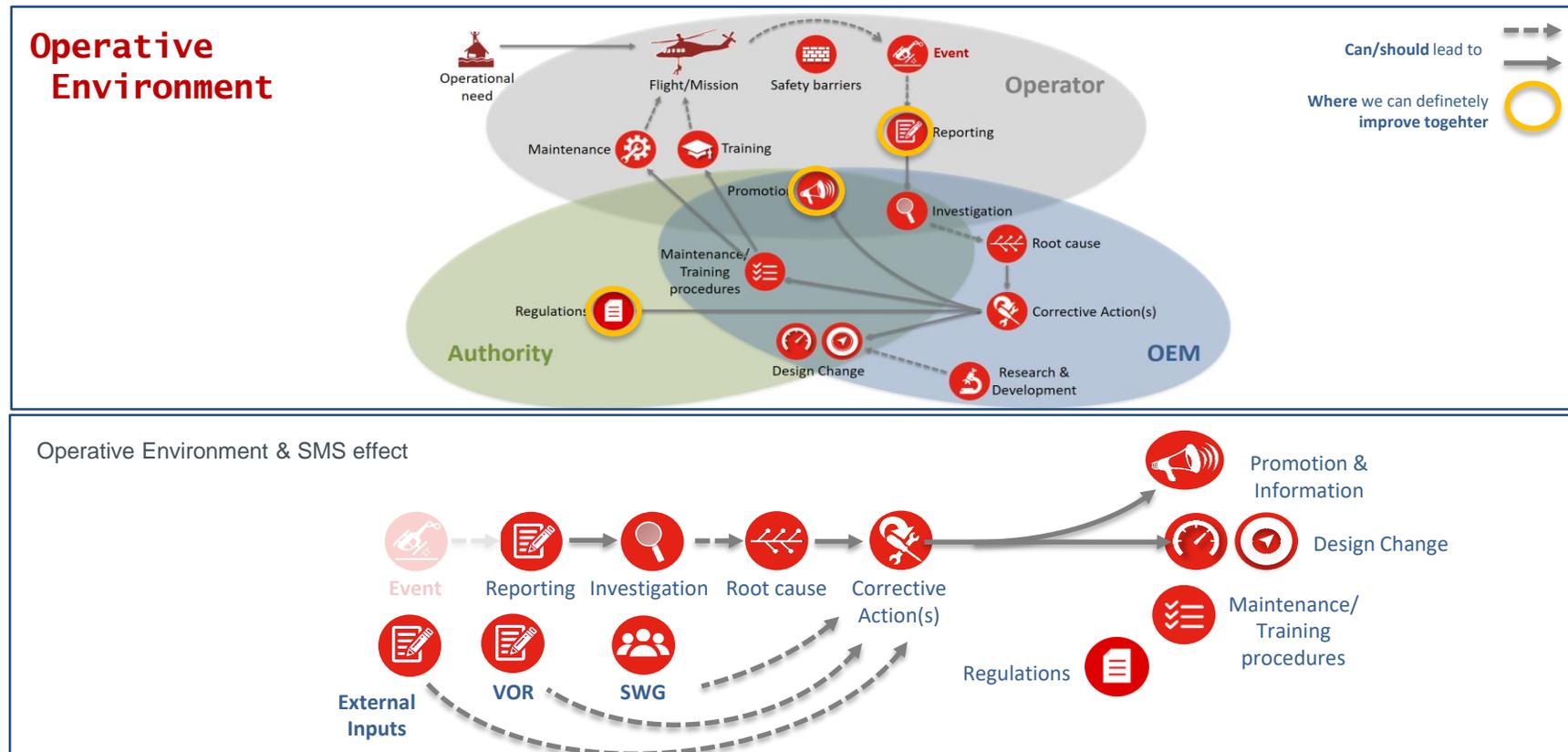
AW169





SMS Background ...

1 of 2





SMS Background ...

2 of 2

ICAO Annex 19 (first issue: 2013, 2nd 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

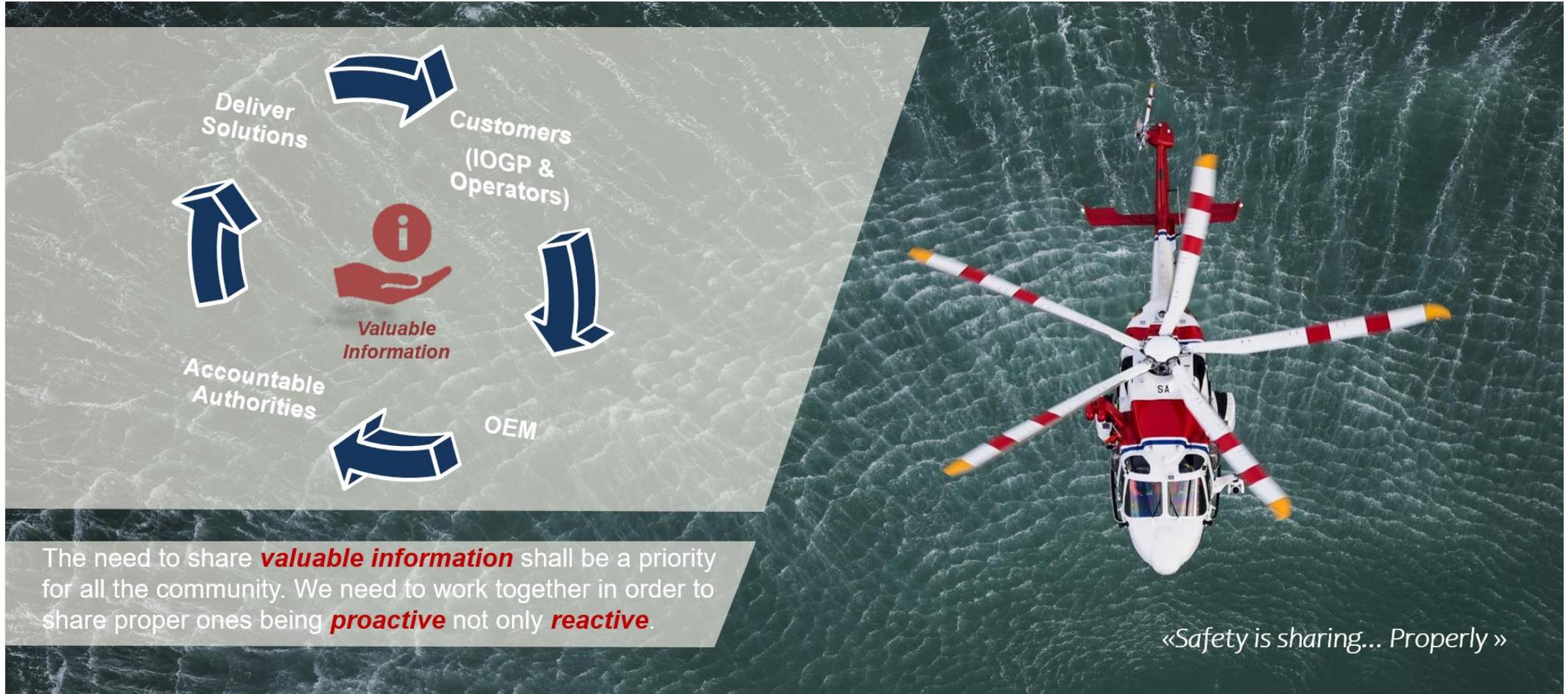
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Leonardo Helicopters Future Scenario

2 of 2



Deliver Solutions → **Customers (IOGP & Operators)**

Accountable Authorities → **OEM**

Valuable Information

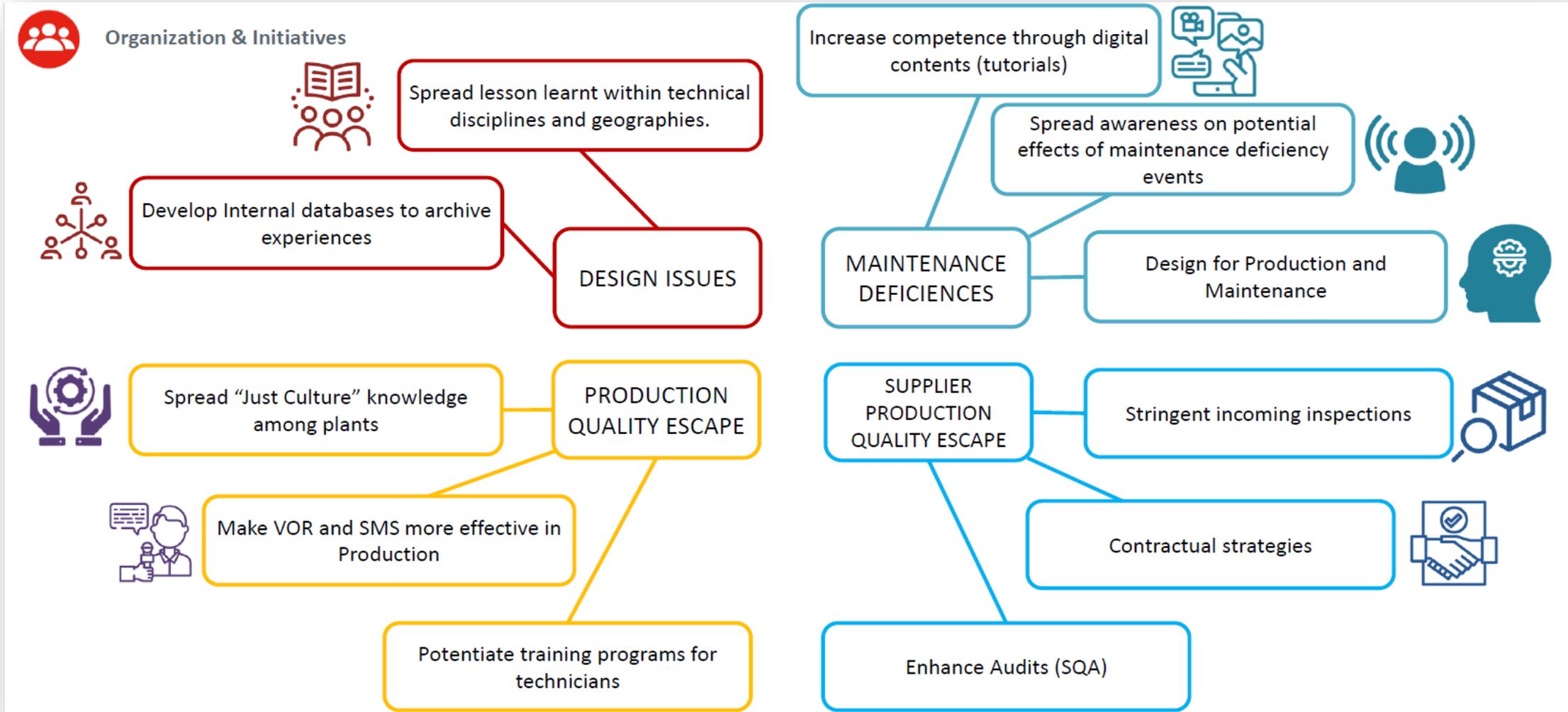
The need to share **valuable information** shall be a priority for all the community. We need to work together in order to share proper ones being **proactive** not only **reactive**.

«Safety is sharing... Properly»





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

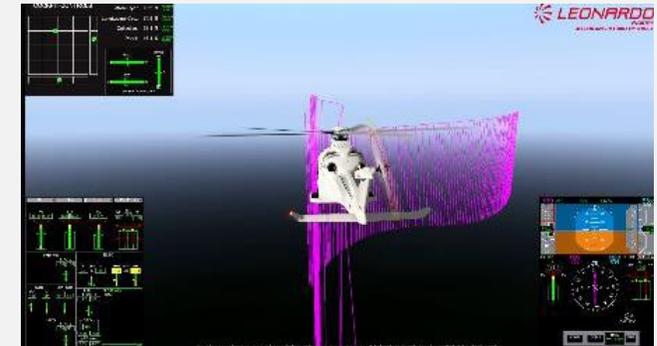
Flight Operating Group

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



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.

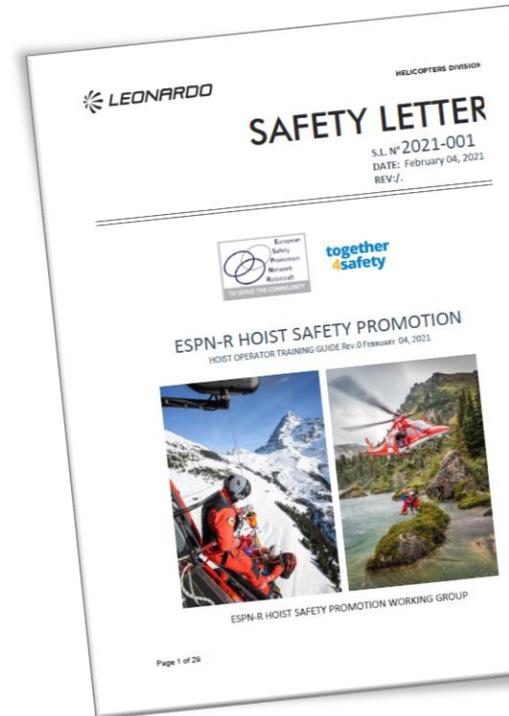


Safety Promotion Initiatives

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





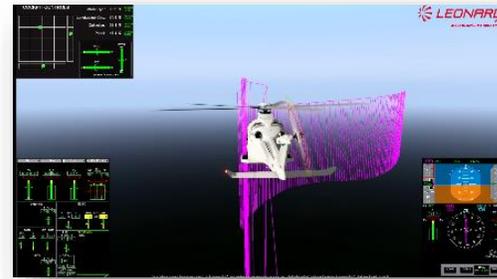
New tools & Technologies will definitely change the helicopter Industry and give a great opportunity to guarantee a solid safe future.





New Design Solutions

FDR/FDM & **DATA Lake Analysis**



Additive Layer Manufacturing & more...



Automatic **Target Recognition**



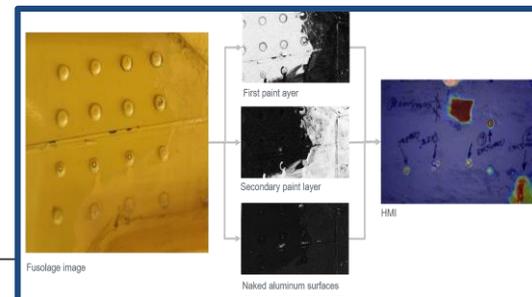
Automatic **Take Off and Landing Guidance**

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 2nd 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.

