

FLIGHT CREW RELATED ISSUES



AIRCRAFT CABIN AIR CONFERENCE 2019



ABOUT HUMAN FACTORS

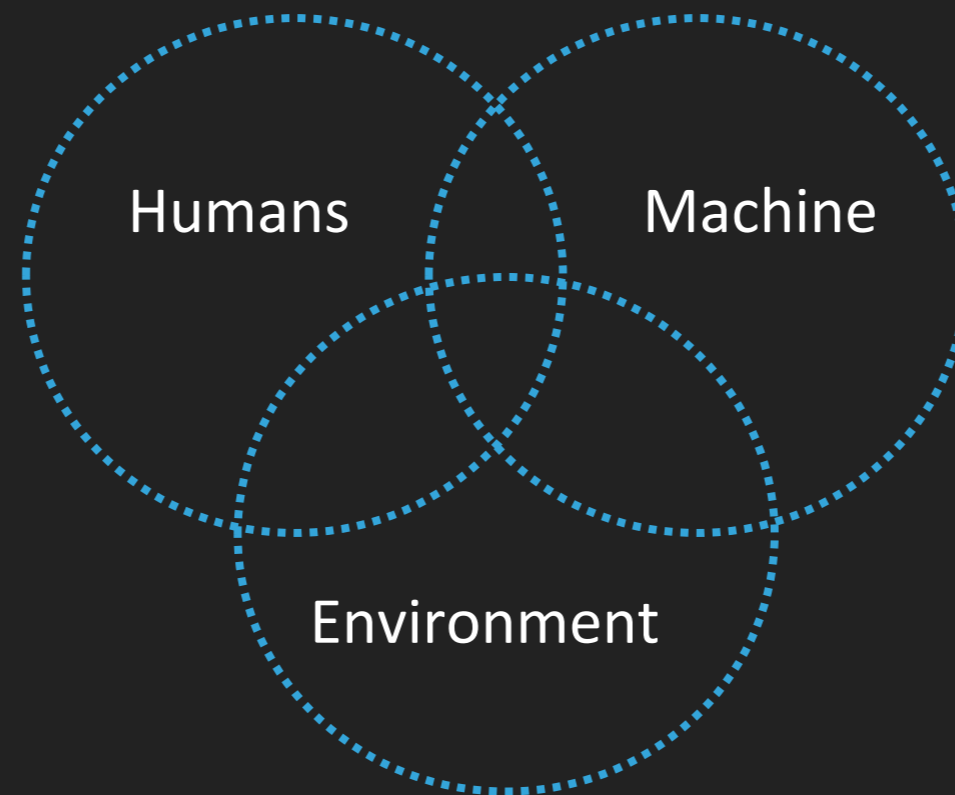
Gitte Furdal Damm

GITTE FURDAL DAMM

- ▶ Danish Aviation College 1997
- ▶ Aviation Assistance 1998-1999
- ▶ Cimber Air 2000-2012
- ▶ Jetttime 2014-2016
- ▶ About Human Factors 2016 - Now
- ▶ Human Factors and System Safety 2019 -2020 Lund University



“Human Factors is the scientific discipline concerned with the *understanding of interactions among humans and other elements* of a system, and the profession that applies theory, principles, data and methods to design in order *to optimise human well-being and overall system performance*” (Human Factors & Ergonomics Society).



Reykjavik Flight Symposium 2018



ABOUT HUMAN FACTORS

WHY DID I NOT KNOW OF THIS?

- ▶ General knowledge about contaminated cabin air?
- ▶ Investigations reports methods?
- ▶ Training and tools provided?
- ▶ When things become the norm?
- ▶ Political interests?



From the Flight Crew:

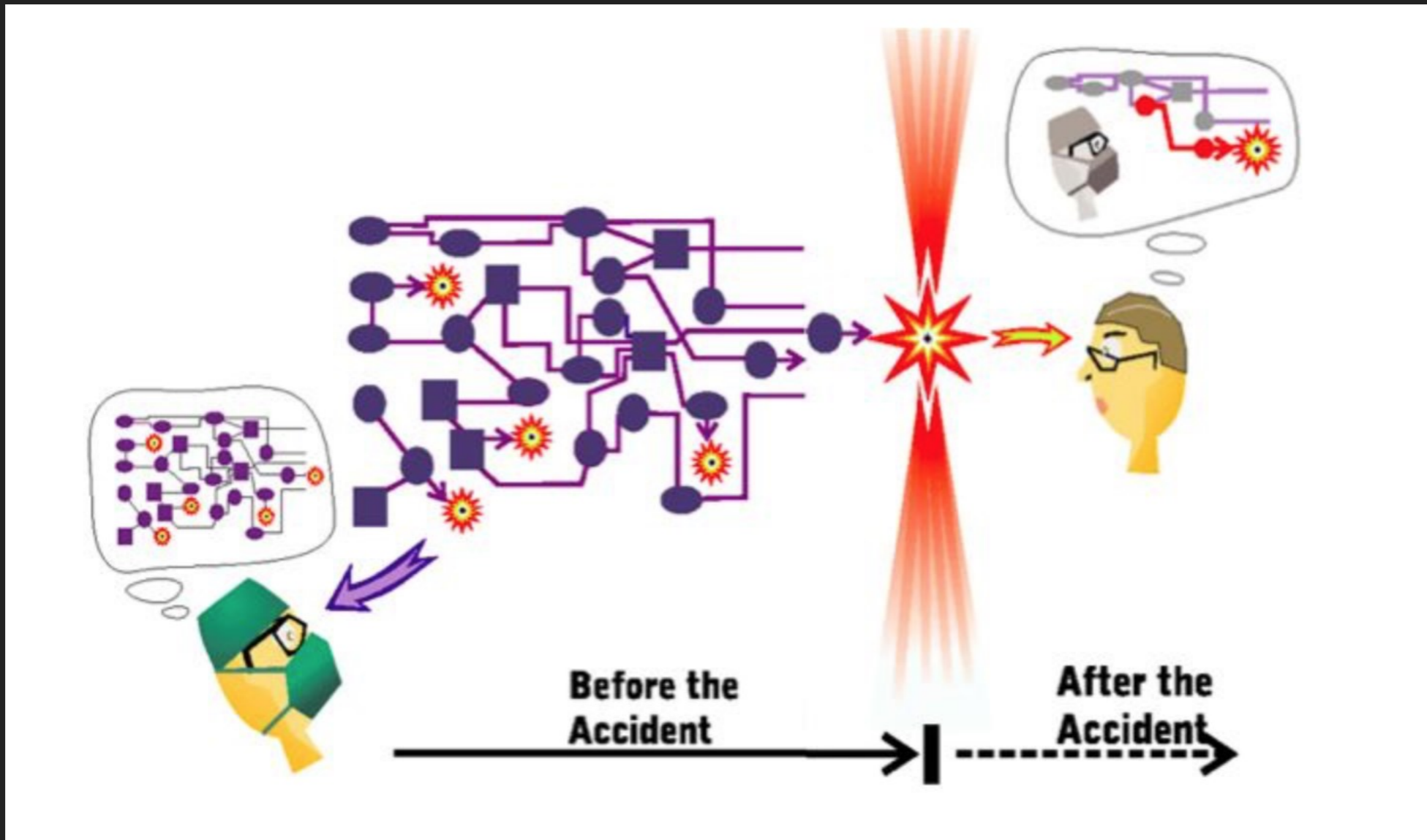


From Investigation Report:



ABOUT HUMAN FACTORS

Hindsight Bias



Richard Cook



ABOUT HUMAN FACTORS

SMOKE OR FUMES – AIR CONDITIONING

Condition: A concentration of air conditioning system smoke or fumes is identified.

OXYGEN MASKS AND SMOKE GOGGLES

(If required)..... ON

CREW COMMUNICATION (if required)..... ESTABLISH

RECIRCULATION FAN SWITCHES (Both)..... OFF

[Removes fans as possible source of smoke or fumes.
Stops recirculation of smoke or fumes and increases fresh air flow.]

APU BLEED AIR SWITCH..... OFF

If smoke or fumes continue:

ISOLATION SWITCH..... OFF

[Isolates left and right sides of bleed air system.]

RIGHT PACK CONTROL SELECTOR..... OFF

[Removes right side of air conditioning system as possible source of smoke or fumes.]

If smoke or fumes continue:

RIGHT PACK CONTROL SELECTOR..... AUTO

[Restores right side of air conditioning system.]

LEFT PACK CONTROL SELECTOR..... OFF

[Removes left side of air conditioning system as possible source of smoke or fumes.]

Do not accomplish the following checklists:

PACK OFF
RECIRCULATION FAN

If smoke or fumes are persistent:

Declare an emergency and plan to land at the nearest suitable airport.

Accomplish SMOKE or FUMES REMOVAL checklist on page 757.11.10.

CHECKLIST..... COMPLETE

The ‘*FUSELAGE FIRE OR SMOKE – SMOKE*’ checklist in the operator’s FCOM had the following memory items:

- ◆ *Oxygen Masks..... On + 100%*
- ◆ *Smoke Goggles On*
- ◆ *Mic switch..... MASK*
- ◆ *Hot Mic OFF*
- ◆ *Headset On*
- ◆ *Recirc Fans OFF*
- ◆ *Emergency Lights ON*
- ◆ *Passenger Signs ON*
- ◆ *Descend ASAP - Check MSA*
- ◆ *Land immediately at nearest suitable airport*



Smoke, Fire or Fumes

Condition: Smoke, fire or fumes occur.

- 1 Diversion may be needed.
- 2 Don oxygen masks and set regulators to 100%, as needed.
- 3 Don smoke goggles, as needed.
- 4 Establish crew and cabin communications.
- 5 BUS TRANSFER switch OFF
- 6 CAB/UTIL switch. OFF
- 7 IFE/PASS SEAT switch OFF
- 8 RECIRC FAN switches (both) OFF
- 9 APU BLEED air switch OFF
- 10 Anytime the smoke or fumes become the greatest threat:

▶▶ Go to the Smoke or Fumes Removal checklist on page 8.16

▼ Continued on next page ▼

SMOKE/FUMES/AVNCS SMOKE

LAND ASAP

IF PERCEPTIBLE SMOKE APPLY IMMEDIATELY:

- **IF REQUIRED:**
 CREW OXY MASKS..... USE/100%/EMERG
 BLOWER..... OVRD
 EXTRACT.....OVRD
 CAB FANS..... OFF

✓ *A320 (all ex. -A1QT, -A1QU, -A1QW)*

GALLEY..... OFF

END

✓ *A320 (-A1QT to -A1QW)*

GALY & CAB..... OFF

END

SIGNS..... ON
 CKPT/ CAB COM..... ESTABLISH

- **IF SMOKE SOURCE IMMEDIATELY OBVIOUS, ACCESSIBLE, AND EXTINGUISHABLE:**
 FAULTY EQPT..... ISOLATE
- **IF SMOKE SOURCE NOT IMMEDIATELY ISOLATED:**
 DIVERSION..... INITIATE
 DESCENT..... INITIATE
 Descent to FL 100, or MEA-MORA, or minimum obstacle clearance altitude

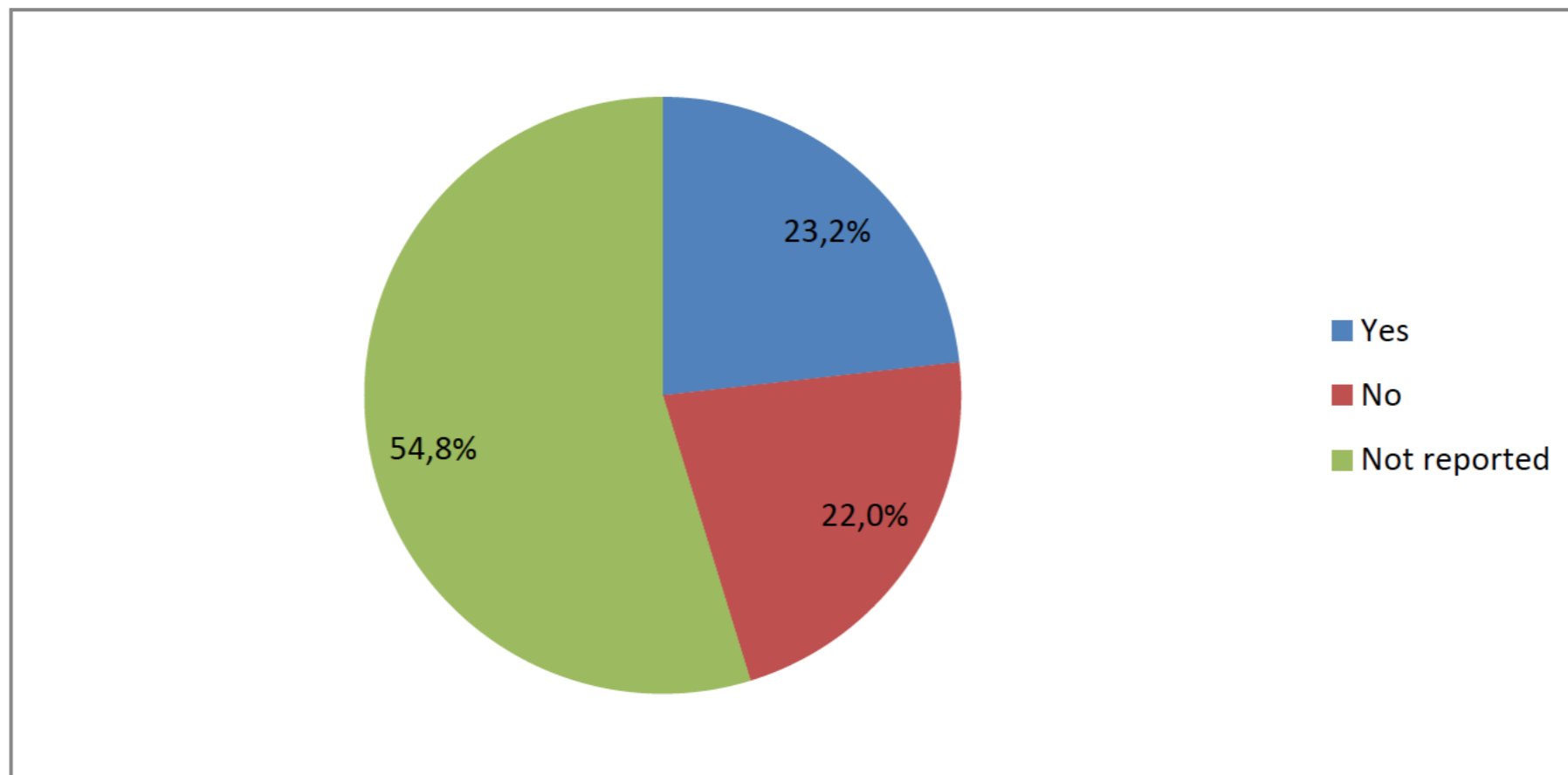
- **AT ANY TIME of the procedure, if SMOKE/ FUMES becomes the GREATEST THREAT:**
 REMOVAL OF SMOKE/FUMES.... CONSIDER
 ELEC EMER CONFIG..... CONSIDER
 Refer to the end of the procedure to Set
 ELEC EMER CONFIG.

- **At ANY TIME of the procedure, if situation becomes UNMANAGEABLE:**
 IMMEDIATE LANDING..... CONSIDER
 AIR COND SMOKE/CAB EQUIPMENT SMOKE



Use of Oxygen Masks

The 663 reports (between 2006 and 2013) were analysed in regard to the flight crew donning their oxygen masks. The results are: in 154 cases the masks were donned and in 146 they were not. In 363 cases the reports did not include any information regarding oxygen masks. Break down in percent:



Analysis of the reports regarding the use of oxygen masks in the cockpit



NUISANCE OR FLIGHT SAFETY?

- ▶ “ In the past, oil leaks and cabin/flight deck odours and fumes may have come to be regarded as a nuisance rather than a potential flight safety issue”



The Local Rationality Principle

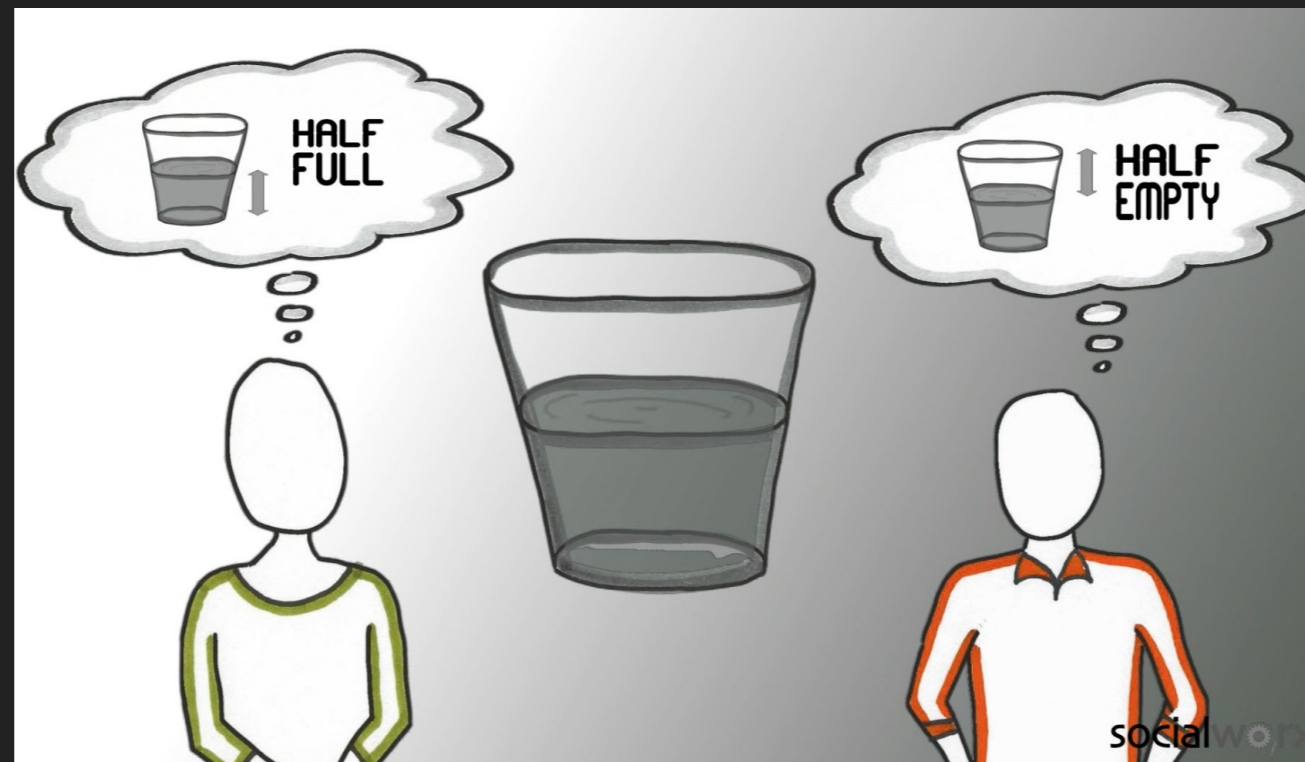


“ People are doing reasonable things given their point of view and focus of attention; their knowledge of the situation; their objective and the objectives of the larger organisation that they work for. In the end, what they do makes sense to them at that time. You have to assume that nobody comes to work to do a bad job”.

(Sidney Dekker, Field Guide to Understanding Human Error).



Perception is individual



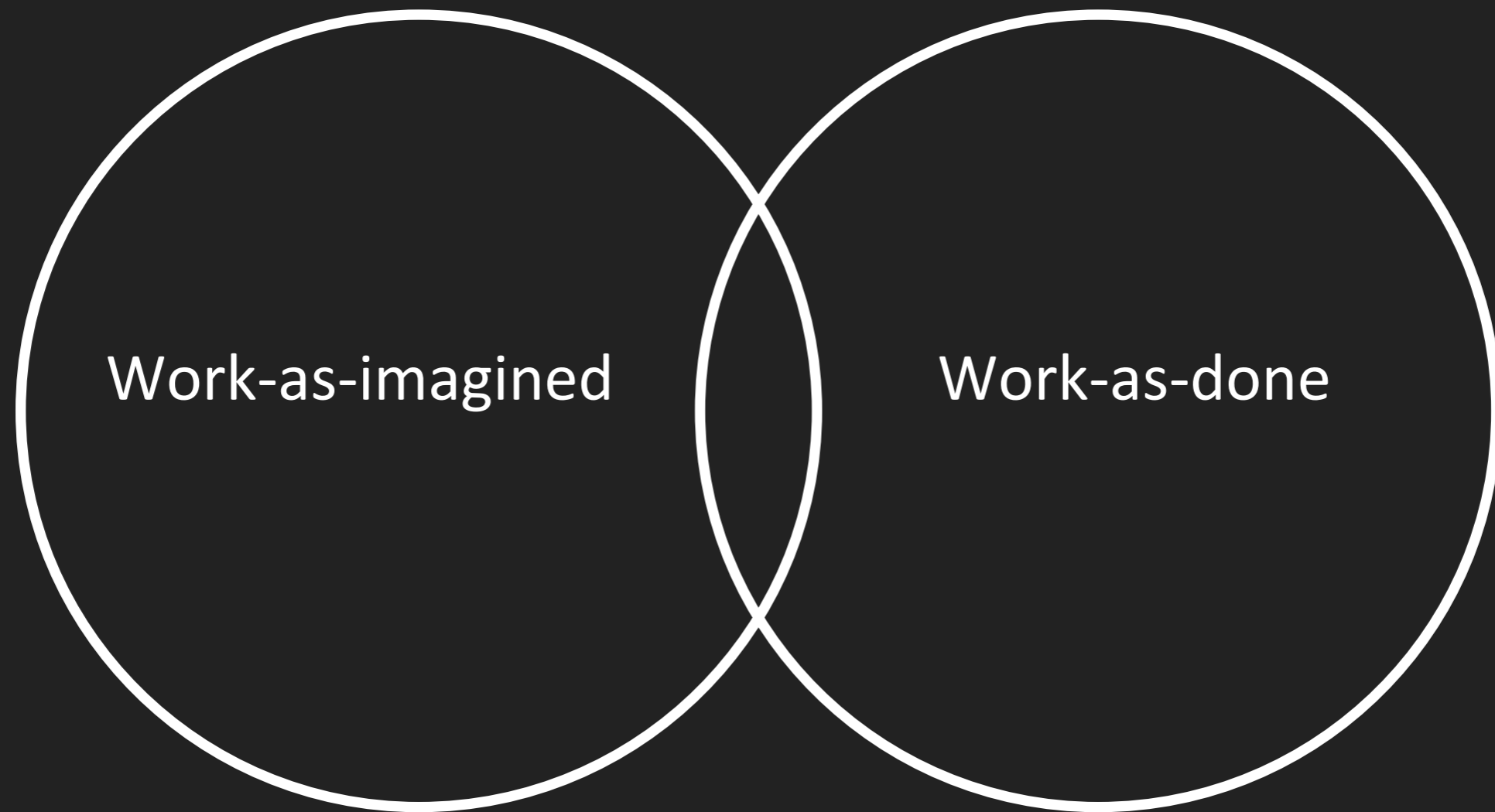
The ability to see, hear or become aware of something through our senses, and the way in which something is regarded, understood or interpreted shaped by learning, memory, expectation and attention.



CHALLENGES IN CURRENT THINKING

- ▶ Lack of education/ training
- ▶ Nuisance vs. flight safety
- ▶ Tools provided
- ▶ The human aspect





Erik Hollnagel





NORMALISATION OF DEVIANCE

The gradual process through which unacceptable practice or standards become acceptable

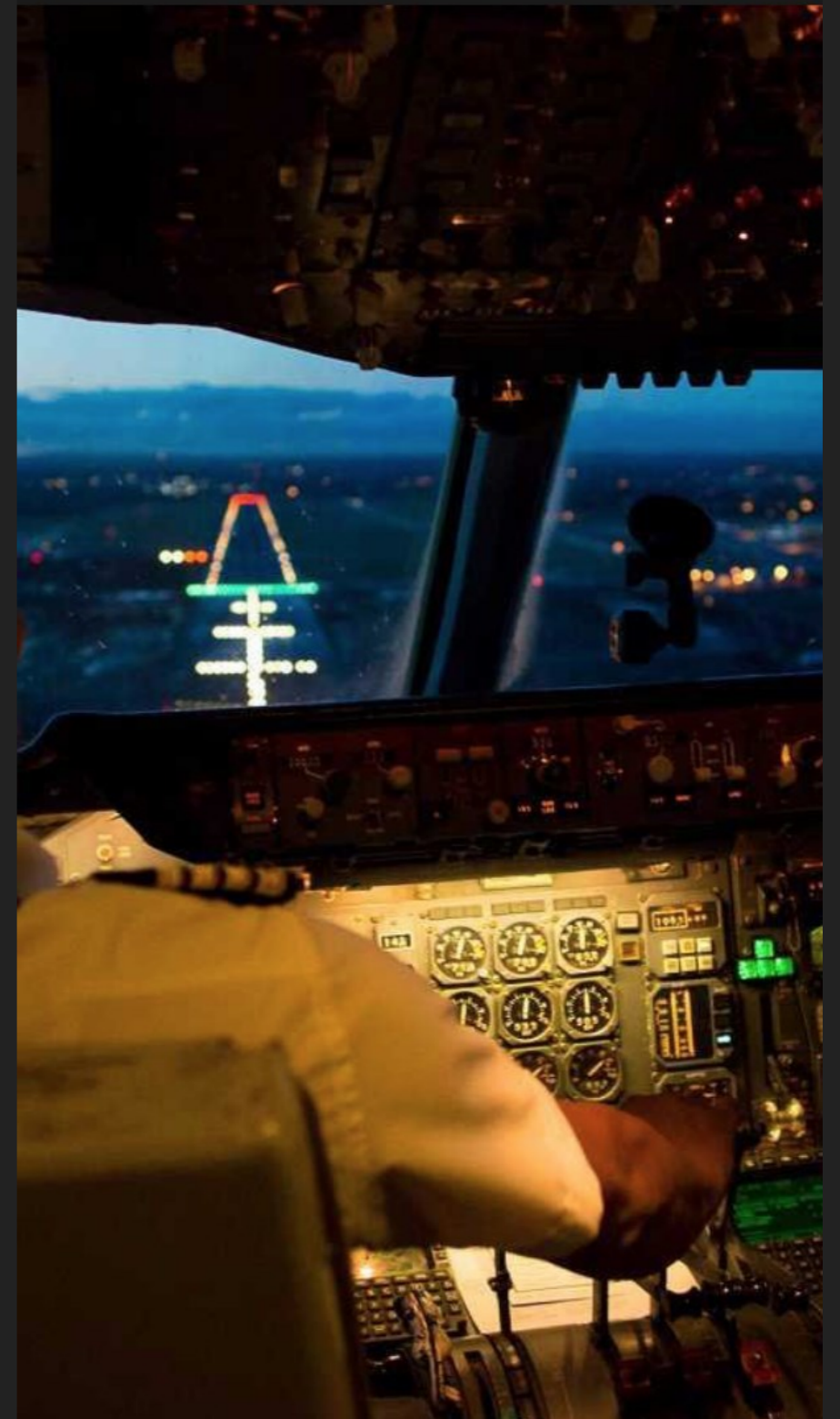


ABOUT HUMAN FACTORS

Considering the human aspect

“ If professionals consider one thing “unjust” it is often this: split-second operational decisions that get evaluated, turned over, examined, picked apart, and analysed for months - by people who were not there when decisions was taken, and whose daily work does not even involve such decisions”

Sidney Dekker, Just Culture.

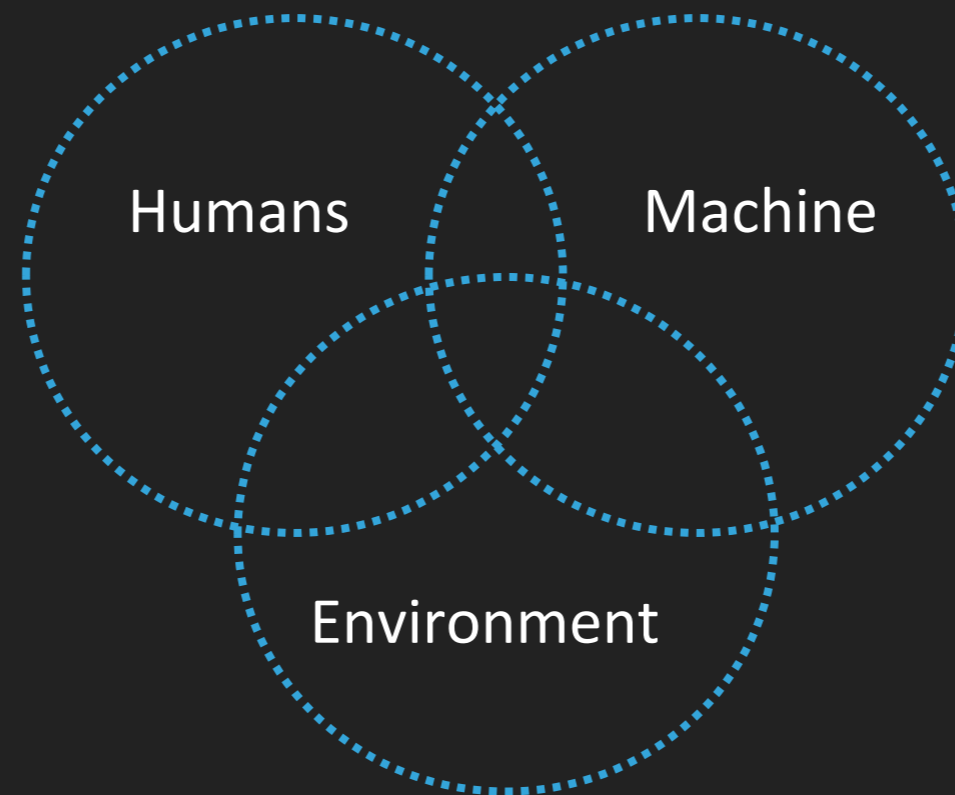


WHAT TO DO?

- ▶ Think differently
- ▶ Educate the practitioners
- ▶ Incorporate knowledge in training
- ▶ Encourage inputs from practitioners
- ▶ Consider the human aspect



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THANK YOU FOR YOUR
ATTENTION

