

HOW COULD WE TURN EACH FLIGHT INTO A TRAINING OPPORTUNITY?



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Instructor
Senior Advisor for CEFA Aviation



- ✈ Levels of **safety** required → meet **growth** demand?
- ✈ Maintain sustainable **quantity** & **quality** of pilots?
- ✈ Technology + data + experience → maximize **efficiency**?

NO... BUT THERE IS A SOLUTION!

RESILIENCE

=

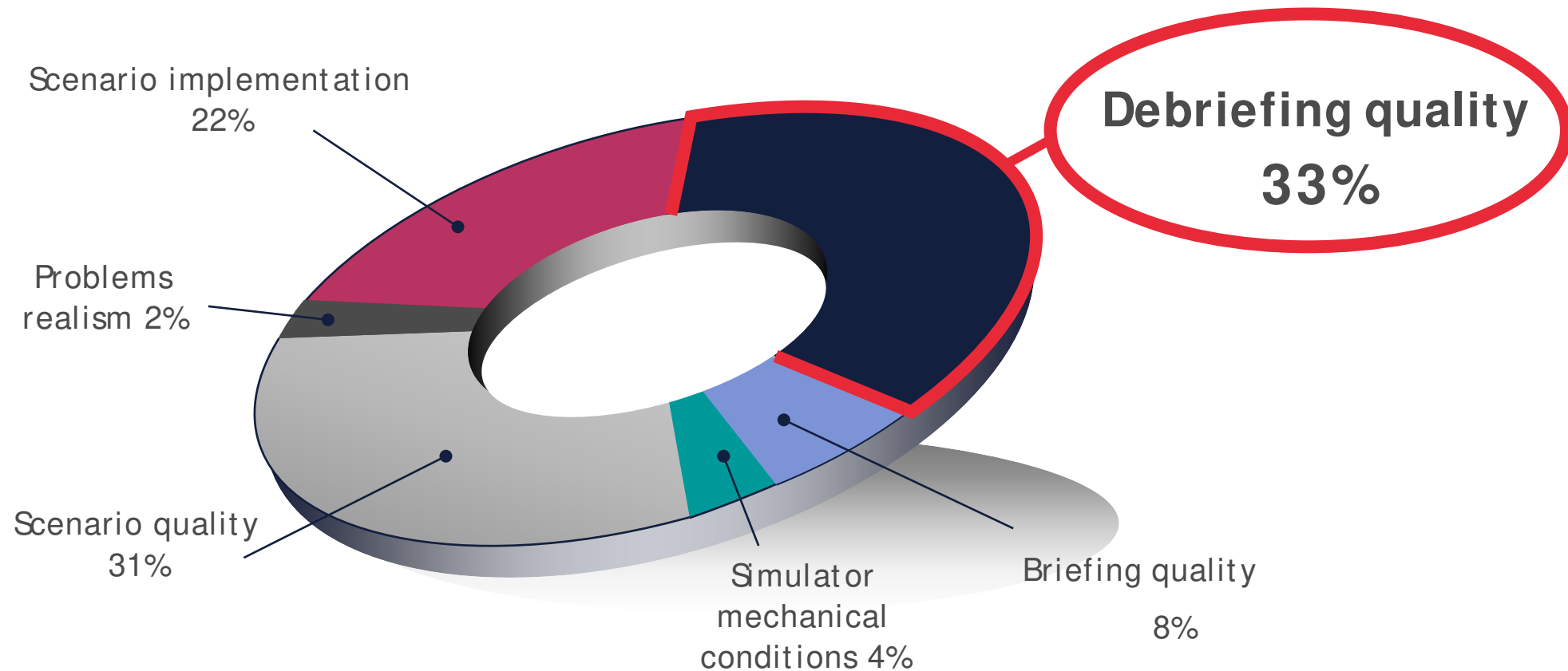
CONFIDENCE x COMPETENCE

HARD LANDING SALZBURG

29th OCTOBER 2017

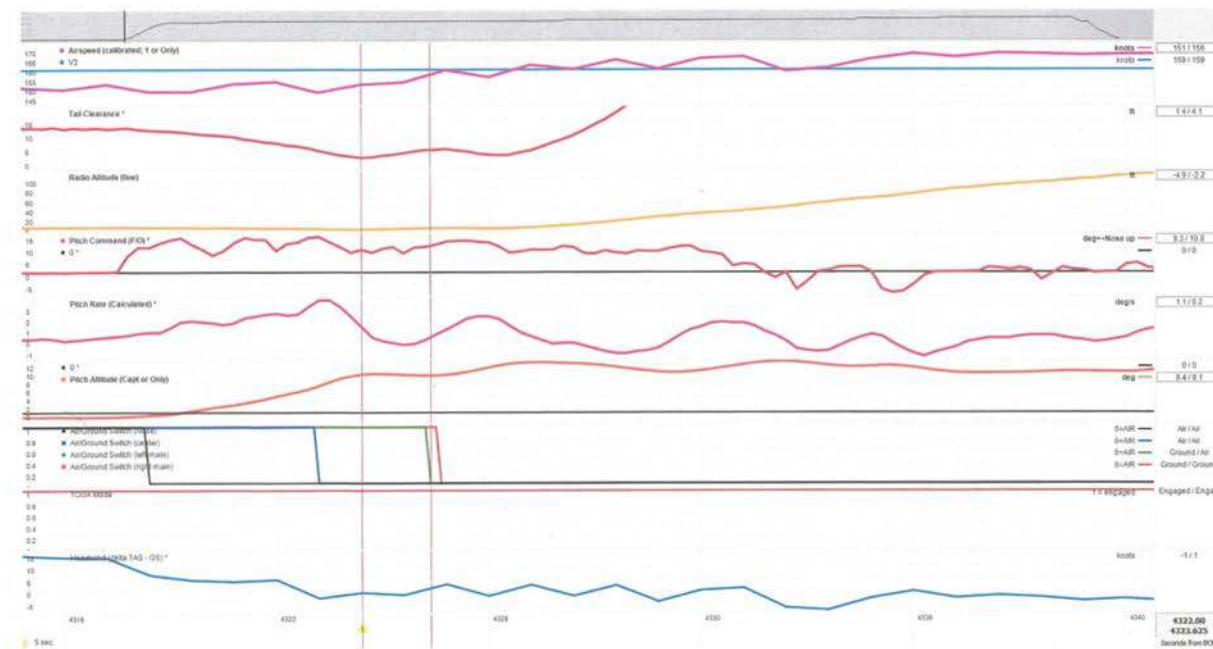
<https://www.youtube.com/watch?v=zbUbl9ufDiM>

WHAT DO EXPERTS SAY ABOUT DEBRIEFING?



Source: NASA/ AMES study

	UTC [hh:mm:ss]	Event	Wire [° / ′ / ″]	HWC / XCVC	Calculated Airspeed [kts]	Vis [kts]	Groundspeed [kts]	Bare Connected Altitude [ft]	Vertical Speed (vertical) [fpm]	Flight Path Angle [°]	Radio Altitude [ft]	Pitch Attitude [°]	Roll Attitude [°]	Heading (magnetic) [°]	Track Angle (magnetic) [°]	Draft Angle [°]	Localizer Deviation [cdd]	Glide Slope Deviation [cdd]	N1 Engine 1 [%]	N1 Engine 2 [%]	N1 Engine 3 [%]	N1 Engine 4 [%]	Landing Gear -UP +DOWN Flap Handle Position [°]	Flaps [°] Slats [°] Elevator [°]	Aileron [°] + RWD - LWD	COR Pitch [°] Sidestick In/out	COR Roll [°]	FO Pitch [°]	FO Roll [°]	Rudder +25[°] left +right Stabilizer +13.5 / -4 [°]	Spoller R.O. 3550Ground [°]	Spoller L.O. 3550Ground [°]	Brake Pedal R.O. 75 [°]	Brake Pedal R.O. 75 [°]	Z-Air Ground Switch Left Right	Vertical Acceleration [g]	Lateral Acceleration [g]	Longitudinal Acceleration [g]	Airspeed Australia VHMT	12								
12:50:19	000/0	0/0	0	130	27	385	12	0.0	-1	-0.8	-0.5	334.2	334.2	0.0	3.9	0.925	25	25	25	+2	22	24	0	0	0	0	1	0	0	0	2	0	0	1	3.3	0	0	2126	++	+1	1.0	0.0	-0.1	-	-	-	-	
12:50:20	000/0	0/0	0	130	28	386	8	0.0	-1	-0.7	-0.6	334.2	334.2	0.0	3.7	3.025	25	25	25	+2	22	24	0	0	0	0	1	0	0	0	2	0	0	1	3.3	0	0	2126	++	+	0.9	0.0	-0.1	-	-	-	-	
12:50:21	000/0	0/0	0	130	25	386	8	0.0	-1	-0.7	-0.6	334.2	334.2	0.0	3.8	3.025	25	25	25	+2	22	24	0	0	0	0	1	0	0	0	2	0	0	1	3.3	0	0	2125	++	+	1.0	0.0	-0.1	-	-	-	-	
12:50:22	000/0	0/0	0	130	24	386	12	0.0	-1	-0.7	-0.5	334.2	334.2	0.0	3.8	3.125	25	25	25	+2	22	24	0	0	0	0	1	0	0	0	2	0	0	1	3.3	0	0	2021	++	+	0.9	0.0	-0.1	-	-	-	-	
12:50:23	000/0	0/0	0	130	23	387	16	0.0	-1	-0.7	-0.6	333.9	333.9	0.0	3.8	3.1925	25	25	25	+2	22	24	0	0	0	0	1	0	0	0	2	0	0	1	3.3	0	0	0	0	0	0	0	0	-0.1	-	-	-	-
12:50:24	000/0	0/0	0	130	23	387	12	0.0	-1	-0.6	-0.5	333.6	333.6	0.0	3.8	3.025	25	25	25	+2	22	24	0	0	0	0	1	0	0	0	2	0	0	1	3.3	0	0	0	0	0	0	0	0	-0.1	-	-	-	-
12:50:25	000/0	0/0	0	130	23	387	16	0.0	-1	-0.6	-0.6	333.5	333.5	0.0	4.1	1.925	25	25	25	+2	22	24	0	0	0	0	1	0	0	0	2	0	0	1	3.3	0	0	0	0	0	0	0	0	-0.1	-	-	-	-
12:50:26	000/0	0/0	0	130	23	387	8	0.0	-1	-0.6	-0.6	333.4	333.4	0.0	4.0	2.025	25	25	25	+2	22	24	0	0	0	0	1	0	0	0	2	0	0	1	3.3	0	0	0	0	0	0	0	0	-0.1	-	-	-	-
12:50:27	000/0	0/0	0	130	23	388	12	0.0	-1	-0.6	-0.5	333.4	333.4	0.0	4.2	1.825	25	25	25	+2	22	24	0	0	0	0	1	0	0	0	2	0	0	1	3.3	0	0	0	0	0	0	0	0	-0.1	-	-	-	-
12:50:28	000/0	0/0	0	130	23	388	12	0.0	-1	-0.6	-0.6	333.3	333.5	0.0	4.0	2.225	25	25	25	+2	22	24	0	0	0	0	1	0	0	0	2	0	0	1	3.3	0	0	0	0	0	0	0	0	-0.1	-	-	-	-
12:50:29	000/0	0/0	0	130	23	388	8	0.0	-1	-0.6	-0.6	333.3	333.5	0.0	3.8	3.725																																



Flight Date Departure:	12.01.17
Flight Number:	1658018
Record # (EMS DB)	
Tail Number:	XY-DMF
Fleet	A340-300
Departure Location:	LFPG / CDG Paris

Risk of Tail Strike during Takeoff

Takeoff

12:50:45 00:00:01

Comment by FDM: Tail Clr 1.8 ft at 10.9°, max rate 3.7°/sec.

3-4 simulator sessions (12-20 hours) a year



BUT

- ✗ predefined program (reducing the startle effect)
- ✗ not all flight encountered situations are addressed
- ✗ expensive (instructor needed/ unproductive day/ travel...)

➔ **Offer a relative LOW training potential improvement
at HIGH COST/ BENEFIT**



70 (LH) to 850 (SH) flights/ year in real life,
offering numerous & various situations...



ACTUAL ISSUES/ DIFFICULTIES

- ✈ global understanding in a dynamic environment
- ✈ debriefings based on pilot memory

ACTUAL POTENTIAL

- ➔ **HIGHEST** potential for training
- ➔ **HIGHEST** potential for safety improvement

at **LOW COST/BENEFIT** with the right **TOOL...**
EACH FLIGHT OFFERS A TRAINING OPPORTUNITY

**Video1: how
does it work?**

**Video 2: landing
animation**



FOR TRAINEES AS A DEBRIEFING SOLUTION



1. **Understanding support** for dynamic/ difficult situations as the crew is **still together**
2. **An analysis tool:**
 - ✕ for trainees and a **solid foundation** for a Crew Centered Debriefing
 - ✕ for **novice pilots**
 - help them to **understand own performance** using the tools (tablets) that the young generation already use everyday !

FOR PILOTS / CHIEF PILOTS / FLIGHT INSTRUCTION



1. **Confidential access** to own flight data only, each pilot being his own **gatekeeper**
2. Flight debriefings based on holistic **factual** evidences
 → lower risk of developing **individual techniques**
 → **EBT** brought to individual level
3. **Better global understanding** of occurrences and root causes → eliminate self-doubt → build self-confidence
4. Easier **knowledge transfer** and **sharing of experience** between crew members

FOR PILOTS / CHIEF PILOTS / FLIGHT INSTRUCTION

“ We do not learn from experience only.
We learn from reflecting on experience...”


Training performances

+20%

if **self-reflection**



FOR SAFETY TEAMS

A man in a blue shirt is seen from the side, pointing towards a presentation screen. In the background, other people are seated at a table in a meeting room.

1. Simple occurrence not flagged as FDM events can be shown to FDM → CEFA AMS used as a **collaborative tool** for flight safety!

NEW BENEFIT:

2. FDM can provide Big Data statistics for own evaluation vs fleet performance!

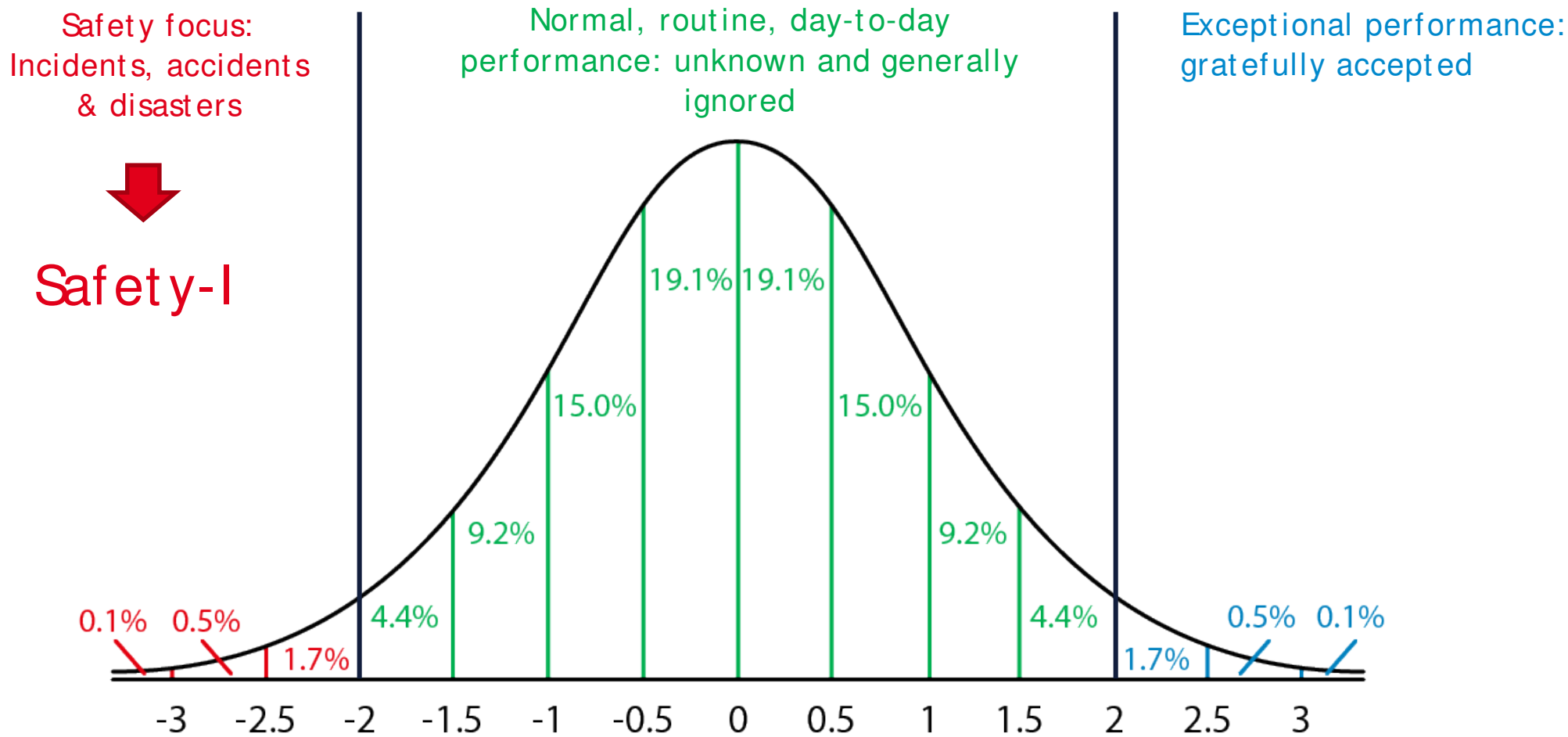
3. Trend monitoring of situations before a serious event occurs

“ It has revolutionized the company culture regarding the debriefings and flight data.

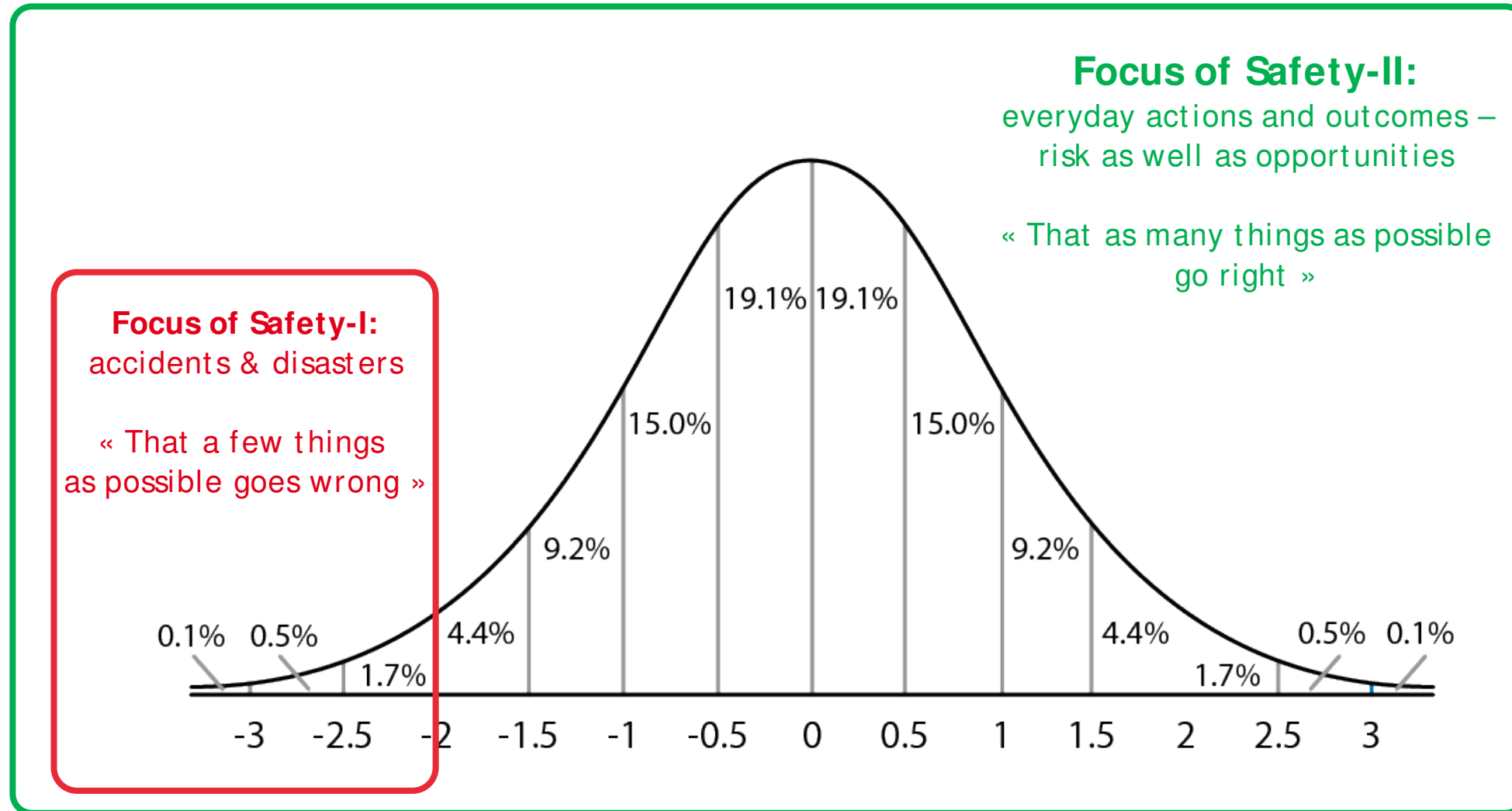
It has freed pilots’ speech!”

Hideo Morioka, Senior Director at Safety promotion and Flight Data Analysis





Event probability and safety focus – Erik Hollnagel



Focus of Safety-I and Safety-II – Erik Hollnagel

Investigation AF 447

RAPPORT DE CONTRE-EXPERTISE VOL AF 447

Sur l'ordonnance de commission d'expert de
Madame Sylvia Zimmermann, Vice-Président chargé de l'instruction
Madame Sabine Kheris, Vice-Président chargé de l'instruction

M. Claude NICOLLIER

Expert ayant prêté serment

Mme Claudine OOSTERLINCK

Expert agréé par la Cour de Cassation

M. Jean-Charles FOUCHÉ

Expert ayant prêté serment

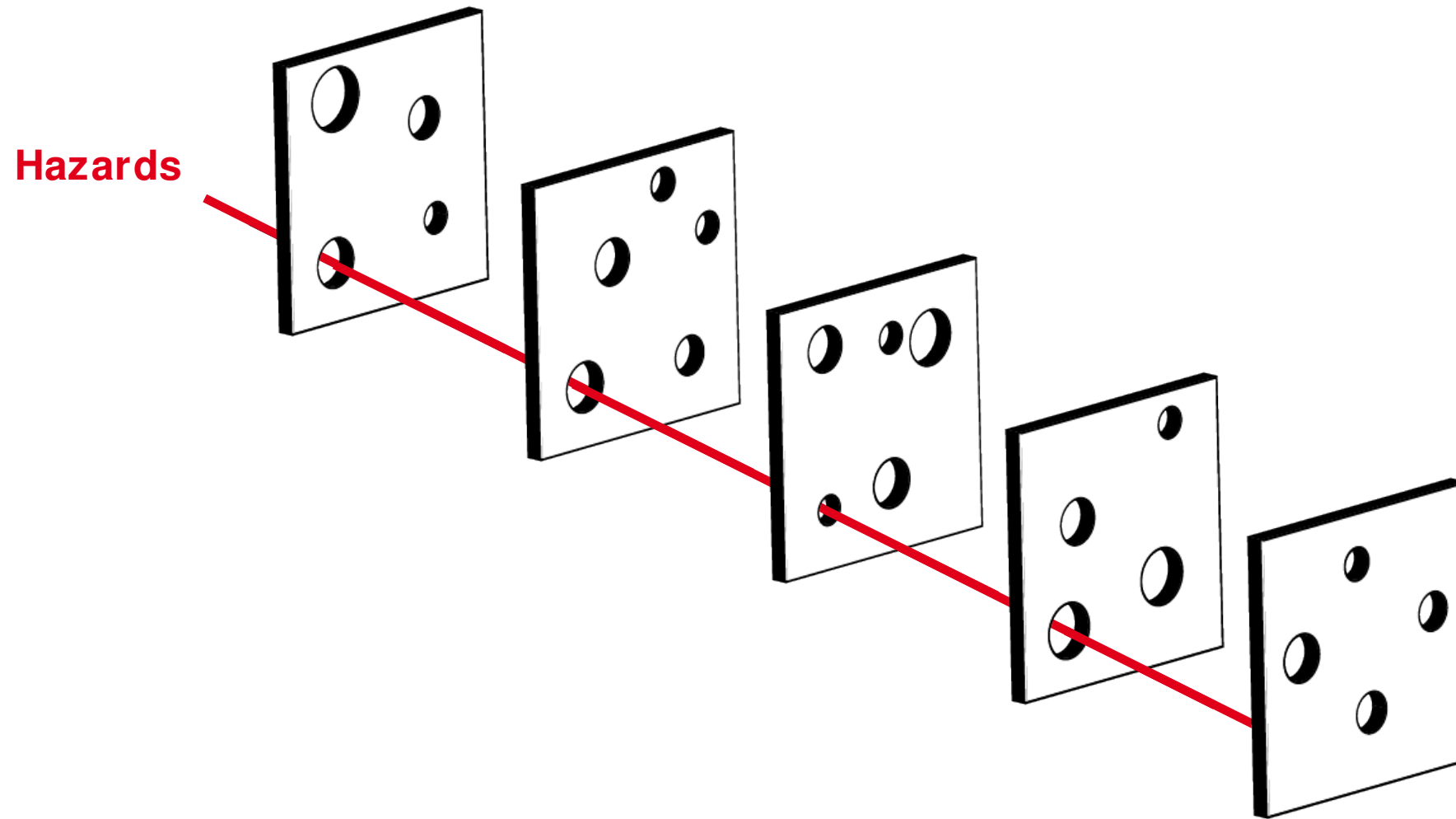
M. Pierre WANNAZ

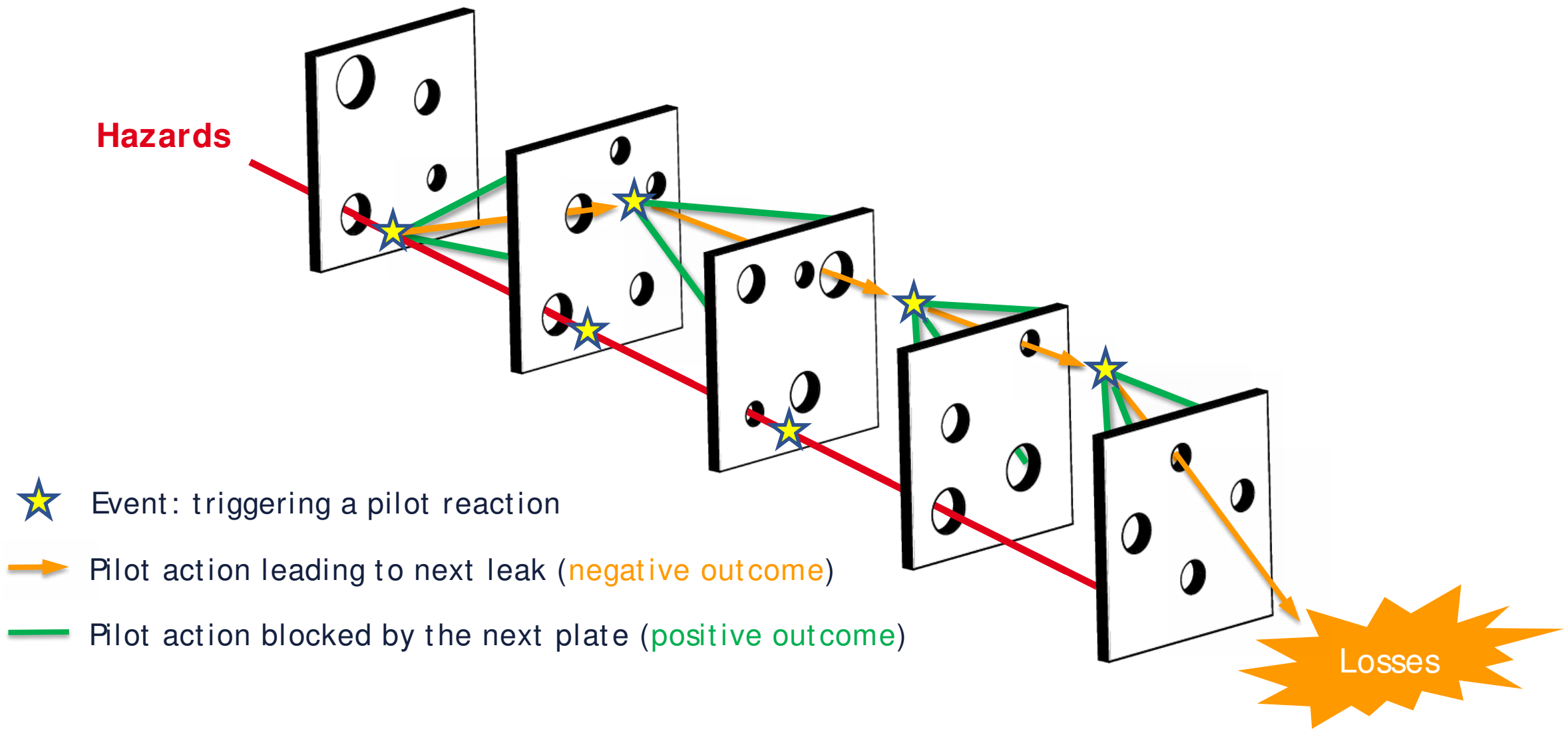
Expert ayant prêté serment

M. François KELLER

Expert ayant prêté serment

Le 30 avril 2014






KLF	501	996.0405/09	TAM	869	A330	26-May-09	Jun-09	ADR DISAGREE + F/CTL ALTN LAW + AP&ATHR LOSS + STALL AURAL WARNING	GiG (Rio de Janeiro, Brésil) - CDG (Paris) (Atlantic Ocean, about 200 NM north of	Cruise	Airspeed discrepancy on PFDs + AF
IWA	663										
AFR	245	996.0411/09	QTR	996.0625/09	TAP						
QTR		996.0410/09	QTR								

38 OCCURENCES

NO USEFUL LESSON LEARNED FROM THESE INCIDENTS !

ISRO Ref.	Operator	A/C MSN	A/C Type	Event	Location	Phase	Symptoms	Pilot	Count	Action
996.0411/09	QTR	996.0625/09	TAP					Pitot Thales C16195AA	2	Pitot obstruction
996.0410/09	QTR							Pitot Thales C16195BA		Pitot obstruction
	</									

A portrait of Captain Sully Sullenberger, an older man with white hair, wearing a dark jacket, looking slightly to the side. The background is a blurred image of an airplane's tail section with the word "EXIT" visible.

“There are no shortcuts to experience. There is no shortcut to safety. The standards are the standards because they are necessary. Throughout the entire 114-year history of powered flight, one thing has been true. The most important safety device in any airliner is a well-trained, experienced pilot.”

- Captain Sully Sullenberger

But how can we acquire this training and this experience in a shorter time ?



STAND #408