

ICAO/ASPA Regional Seminar
TEM, LOSA & NOSS – Essential SMS Tools
Mexico City, Mexico

Line Operations Safety Audit (LOSA): A Practical Overview

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Introduction: James Klinect

- University of Texas (UT) – TEM/LOSA research
 - FAA funded research (AAR-100) (presentations and publications)
 - Director: Robert Helmreich (retired June 2007)
 - Role: TEM / LOSA Project Manager (1996-Present)
- The LOSA Collaborative (TLC) – LOSA implementation
 - Private organization - Home of the LOSA Archive (a.k.a., Archie)
 - Role: Founder and CEO
 - Also present, Stephen Ingham – Project Manager / Expert Observer

LOSA Airlines: 1996-Present

5,647 flights crews on 6,977 observations in 36 airlines

AeroMexico

Asiana

Alaska Airlines

Air Freight NZ

Air New Zealand

Air Transat

ANA

Braathens

Cathay Pacific

China Airlines

Click Mexicana

COPA

Continental

Continental Express

Continental Micronesia

Delta Air Lines

Emirates

EVA Air

Frontier

Horizon Air

Japan Airlines

JetBlue

LACSA

QANTAS

Malaysia Airlines

Mexicana

Mt. Cook

Regional Express

Singapore Airlines

SIA Cargo

Silk Air

TACA

TACA Peru

UNI Air

US Airways

WestJet

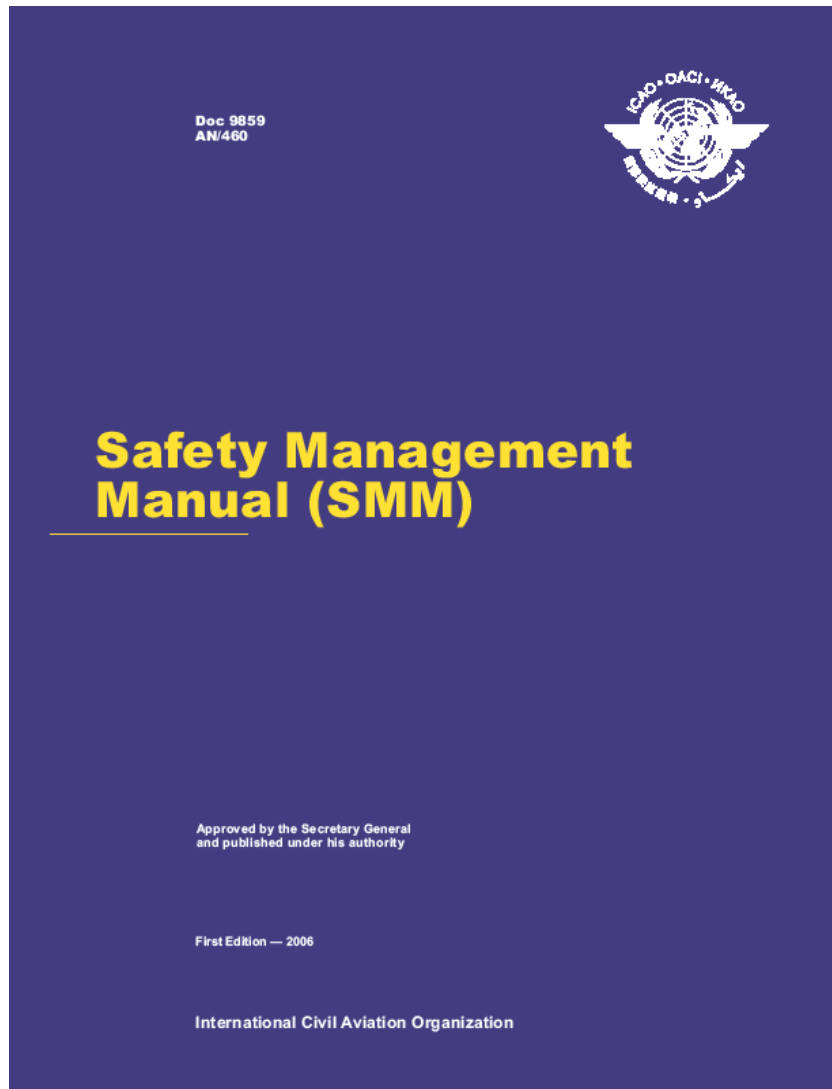
Presentation Outline: Four Questions

- How does LOSA fit within the current SMS guidelines?
- What are the objectives for LOSA?
- What are the defining characteristics of LOSA?
- What are the most frequently asked questions about LOSA?

**How does LOSA fit within the
current SMS guidelines?**

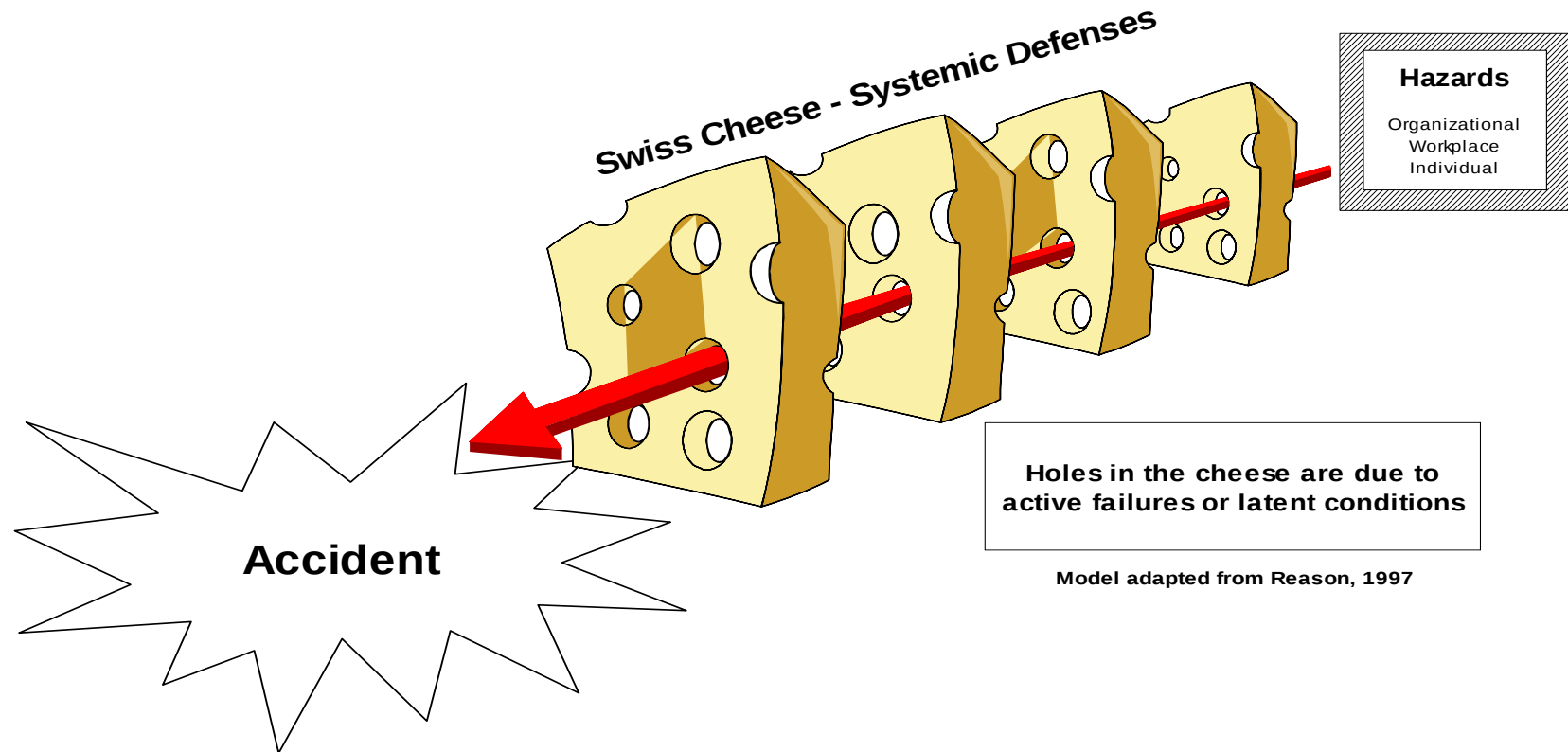
What are the objectives for LOSA ?

Proactive Safety: Easier said than Done



- Proactive (sec 5.1.2)- The adoption of an approach which emphasizes prevention through the identification of hazards and the introduction of risk mitigation measures before the risk-bearing event occurs and adversely affects safety performance.

Translating Safety Concepts to Tools

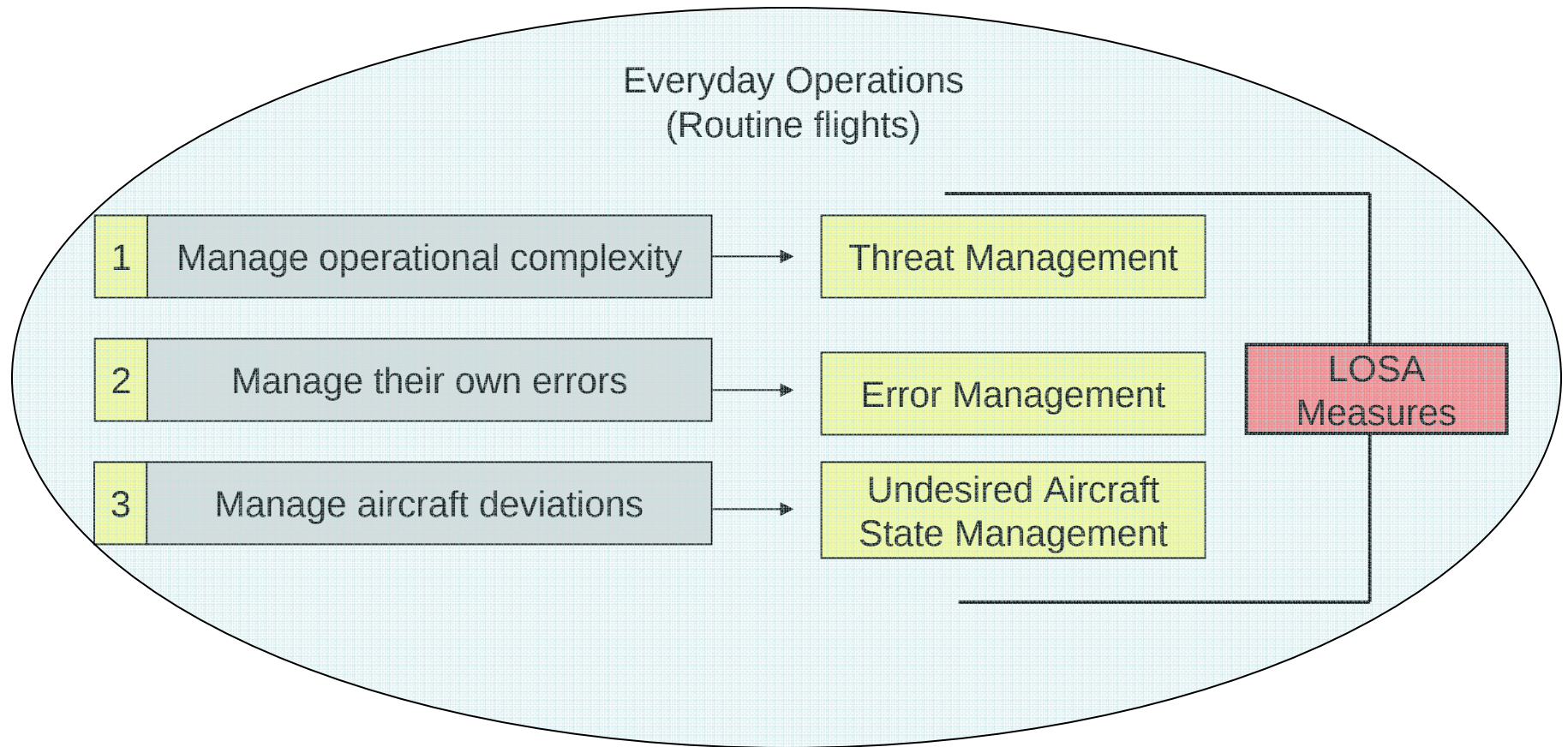


Has anyone wondered what kinds of safety tools can proactively measure the holes in the Swiss Cheese?

Line Operations Safety Audit (LOSA)

- Using the Swiss Cheese safety concept, LOSA is a tool that searches for system safety performance.....
 - **Strengths(+)**: Thick, no-hole cheese slices/sections
 - AND
 - **Weaknesses(-)**: Location and hole sizes in the cheese
- Measure - Flight crew Threat and Error Management (TEM) performance
- Method – Jumpseat observations in regular, everyday flight operations

Threat and Error Management (TEM)

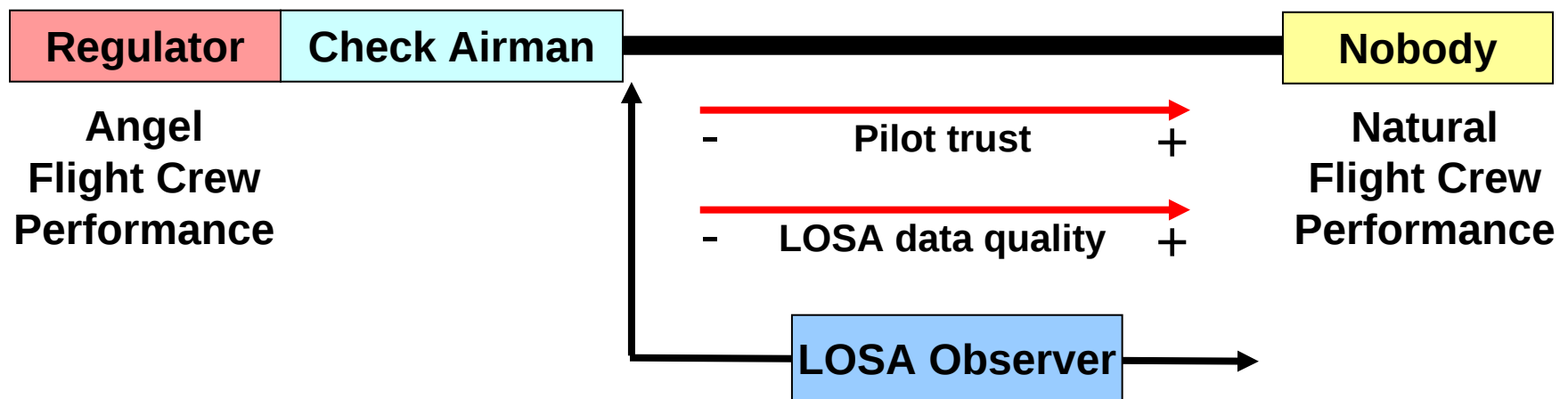


- LOSA “proactively” identifies system safety and flight crew performance **strengths** and **weaknesses** using TEM as its safety measure

**What are the defining
characteristics of LOSA?**

LOSA Data Quality

LOSA data quality is dependent on methodology AND execution



Low pilot trust = Low quality LOSA data

- Objective for LOSA is to get as close as possible to collecting natural flight crew performance data

LOSA: How to Gain Pilot Trust

LOSA is defined by 10 operating characteristics

1. Jumpseat observations during normal operations
2. Anonymous, confidential, and non-punitive data collection
3. Voluntary crew participation
4. Trusted and trained observers
5. Joint management / union sponsorship
6. Systematic observation instrument
7. Secure data collection repository
8. Data verification roundtables
9. Data-derived targets for enhancement
10. Feedback of results to line pilots

LOSA Operating Characteristics

1. Jumpseat observations during normal operations
 - Routine flights only - no line checks or training flights
 - No debriefings or post-flight interviews asking crews why they committed so many errors and/or undesired aircraft states
2. Anonymous, confidential, and non-punitive data collection
 - No names, flight numbers, or other identifying information
 - Observer identity kept anonymous
 - Data used for safety purposes only – no disciplinary action
3. Voluntary crew participation
 - Flight crews have the right to decline a LOSA observation
 - Typical denial rate is very low – 1 per 100 flights

LOSA Operating Characteristics

4. Trusted and trained observers

- Observer selection – management/union list of candidates
- Diverse observer team – Captains, First Officers, Flight Engineers, ground simulator instructors, and retired pilots
- Training length (Five days)
 - Ground school (2), test observations (2) & recalibration (1)

5. Joint management / union sponsorship

- Steering committee – Flight Ops, Training, Safety and Union
- Symbolized with a signed agreement and sent to all pilots

LOSA Operating Characteristics

6. Systematic observation instrument based on TEM
 - Observers record TEM events that they see and/or hear and then write narratives for contextual support
7. Secure data collection repository
 - Third party or pilot association gate keeper
 - Pilots must believe that observations will not be “misplaced”
8. Data verification roundtables
 - TEM data checked for coding accuracy and consistency with SOP
 - On completion, data analysis begins

LOSA Operating Characteristics

9. Data-derived targets for enhancement

- Serve as benchmarks for organizational change
- LOSA adopts a “Measure, change, measure again” approach

10. Feedback of results to line pilots

- LOSA findings and information on how airline management intends to respond to the findings with organizational change
- To ensure standardization, LOSA must have all ten operating characteristics
 - If you have less than ten characteristics, then you have to find another acronym
 - Endorsed by: ICAO, FAA, IATA, IFALPA, and US ALPA

What are the most frequently asked questions about LOSA?

LOSA Cost?

- Depends on a number of factors – indirect and direct costs
 - Number of observations to be collected
 - Number of external and internal observers
 - Depth of data analysis
 - External provider fee – LOSA Collaborative or other providers
 - Insurance discounts?
- Some “misleading” efforts to lower costs
 - Observations only – no roundtables or data analysis
 - Operating crew as their own observers / self report
 - Interviewing crews instead of observing performance
 - These projects might have value but they are not LOSA

Length and Size of LOSA?

- Project Length
 - Average 8 months from planning to a final report
 - Airline – 75% of time spent on planning
 - LOSA Collaborative
 - 30% of time spent on planning, observer training, data collection
 - 70% spent on data verification, analysis and final report
- Project Size – Want to extrapolate to everyday operations
 - Weighted sample to match daily departure rates per fleet
 - Minimum number of observations per fleet: 50 observations
 - Cap observers to no more than 15 observations

Current Sources of Information on LOSA

- FAA LOSA Advisory Circular (120-90) – Published in 2006
 - Best general information source on LOSA
- UT website – www.psy.utexas.edu/humanfactors
 - Research publications on TEM and LOSA
 - LOSA validation source: Klinec Ph.D. dissertation
- LOSA Collaborative Airlines – AeroMexico, Mexicana, Click, COPA, LACSA, TACA, and TACA Peru
- ICAO (Doc 9803) – Published in 2002 - TEM information presented is outdated

Muchas gracias