IATA SIRM (2024)
ENHANCING RUNWAY SAFETY: A PREDICTIVE APPROACH THROUGH LOSA

INTRODUCTION

Runway safety has consistently ranked as a high-risk area in both ICAO's and IATA's safety strategy plans over the years. The unprecedented growth of the aviation industry, particularly post-COVID, has resulted in a global increase in runway incursions. In 2023, the U.S witnessed a surge in runway incursions, and the recent incident at Haneda, Japan, further underscores the critical nature of this issue.

At IndiGo, we have encountered a few runway incursions, prompting us to implement various measures through safety promotion, training, and policy changes. In response to the evolving aviation landscape and recent global events, this presentation outlines a predictive approach to address the runway incursion risk using data from our Line Operations Safety Audit (LOSA) program.

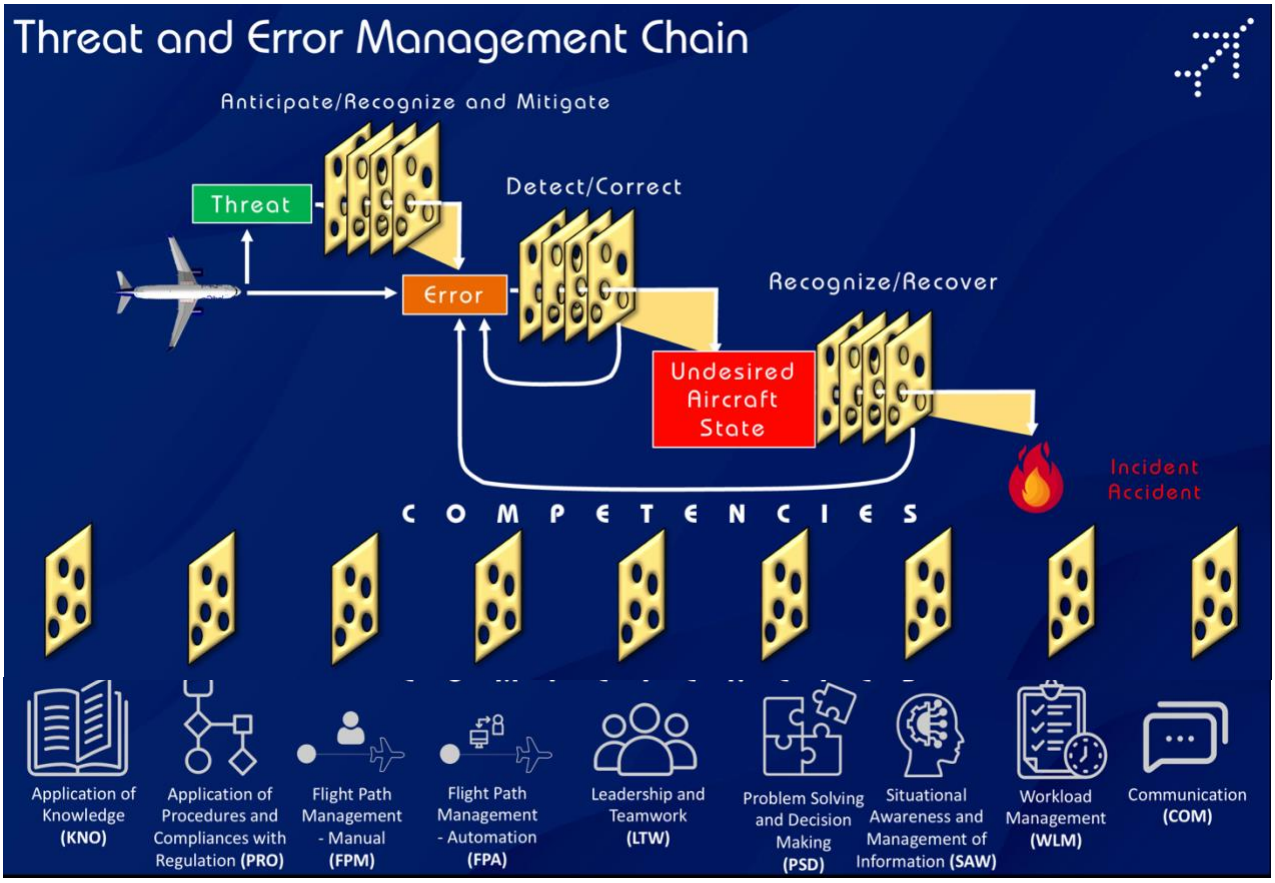
LOSA PROGRAM OVERVIEW

IndiGo's LOSA journey began with The LOSA Collaborative (TLC) in 2013, leading to significant policy developments and cultural changes. In 2016-17, we launched our 'internal' LOSA program and introduced FOSA (Flight Operations Safety Audit (FOSA) in 2022. This is a continuous, on-going program with the major change including the incorporation of current day Airline needs – mapping competencies with the incorporation of CBTA (Competency Based Training and Assessment) both worldwide and at IndiGo to enhance the program's overall effectiveness. Our ongoing Program is a de-identified, non-jeopardy, voluntary initiative based on line observations from the jumpseat. Aligned with ICAO Doc 9803 and FAA AC-190, the program incorporates all operating characteristics, ensuring its integrity.

Refer image below for all the operating characteristics:

COMPETENCY BASED APPROACH (REACTIVE DATA)

In 2022, we introduced a methodology to investigate all ‘reactive’ events within our purview, such as FDM events, incidents etc, and identified specific competencies using the TEM model. Our approach incorporates enabled us to comprehensively capture both negative and positive outcomes in Threat and Error Management (TEM) performance. The integration of competencies serves as a standardized language, facilitating the seamless flow of data to our training programs. This shift ensures that our training interventions focus not solely on outcomes but rather on the root causes, specifically in terms of competencies. To further illustrate this approach, we utilize a TEM diagram during internal training sessions, adapted from established literature available in IATA documentation.Refer the TEM diagram (which we use for internal training) and has been adapted from similar literature that exist in IATA



documentation:

CBTA EXPANSION FOR ALL SAFETY DATA AND STANDARDISED TAXONOMIES

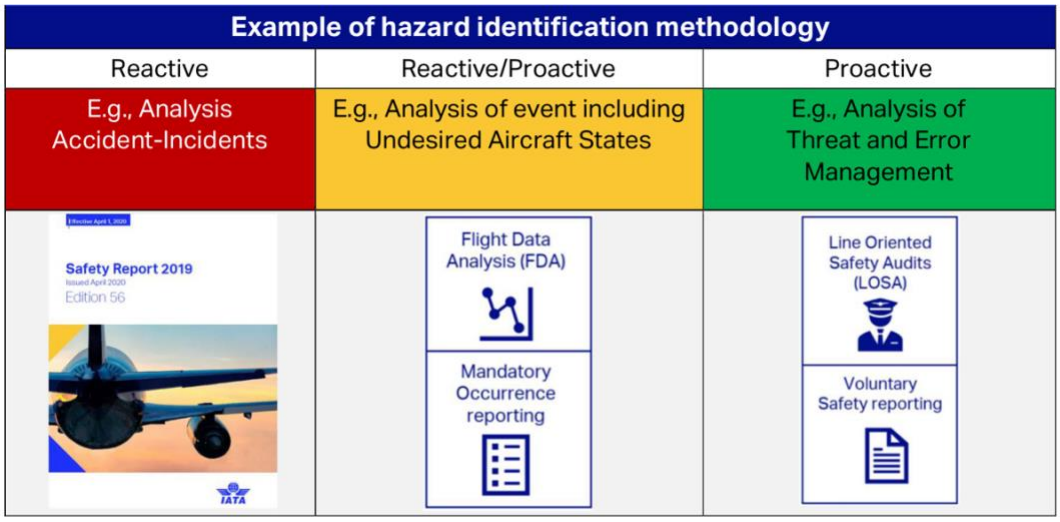
Our aim with this approach is to systematically gather and analyze Competency Based Training and Assessment (CBTA) metrics within the global Safety Management System. This facilitates a more proactive approach to hazard identification by offering insights into competencies essential for efficiently managing

encountered threats and addressing errors within the operational context, as outlined in IATA's whitepaper on CBTA expansion within the aviation system.

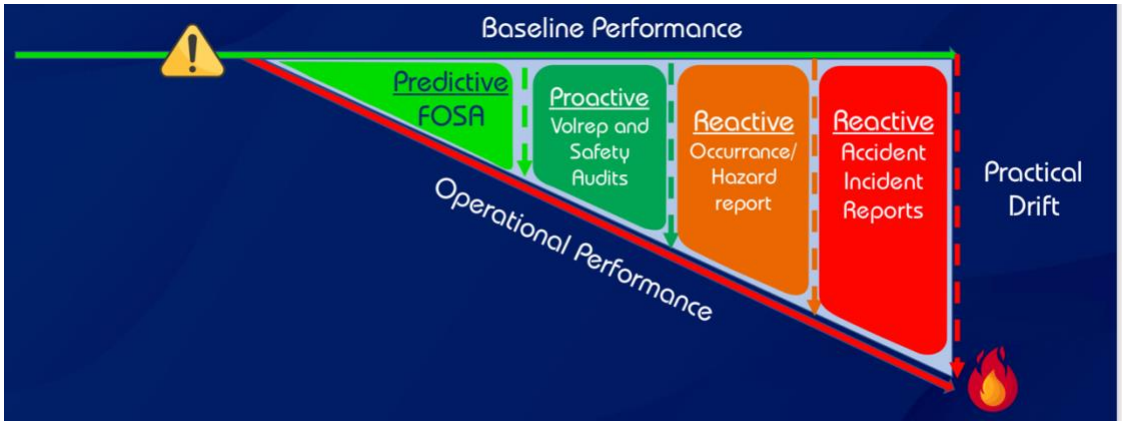
Adopting common taxonomies and definitions establishes a standardized language, elevating the quality of information and communication. A shared language within the aviation community significantly enhances the ability to identify and address safety issues. Taxonomies not only enable systematic analysis but also facilitate the seamless exchange and sharing of information.

Therefore, it is imperative that the safety data taxonomy aligns with the training data taxonomy, specifically concerning flight crew countermeasures, by incorporating pilot and instructor competencies.

This collaborative effort ensures a cohesive and standardized approach to safety and training data, enhancing the overall effectiveness of our safety management processes.Therefore, the training data taxonomy should be aligned with the safety data taxonomy as it relates to the threats, errors, undesired aircraft states and end states codification, while safety taxonomy should be aligned with the training data taxonomy as it relates to the flight crew countermeasures codification, represented by the observable behaviors (OBs) of the core competencies. The below image from the IATA white paper explains this further:



Extract from the IATA whitepaper on "CBTA expansion within the aviation system"



An adaptation of 'Practical Drift' as outlined in ICAO SMS documentation.

ADDRESSING RUNWAY SAFETY (RUNWAY INCURSIONS)

Employing taxonomies as outlined in the IATA Annual Safety Report, we classify runway incursions as 'end states.' An end state is not ‘recoverable’ as opposed to Threats, Errors and Undesired States that can still be managed. An investigation of these events enables us to trace back Threat and Error Management (TEM) links, shedding light on competencies that were not effectively demonstrated between each link. Given the infrequency of runway excursions, we also use the same approach and get data from similar events like taxiway errors and 'wrong surface events' to extract valuable insights. The analysis of TEM links in both runway incursions and similar incidents affords a holistic understanding of flight crew competencies and their pivotal role in threat and error management.

HOW DO WE USE LOSA DATA TO ADDRESS RUNWAY SAFETY?

Through a comprehensive examination of predictive Flight Operations Safety Audit (FOSA) data, wherein no adverse events transpired but similar Threat-Error-Management (T-E-M) links were evident, we can assess the frequency of these links and analyze their management, along with identifying the competencies at play. The utilization of FOSA data broadens our analysis beyond the taxi phase, traditionally associated with runway incursions, to explore T-E-M links across all flight phases. This approach enables us to evaluate crew resilience and accurately anticipate the potential occurrence of runway incursions.

Aligning with a 'Safety 2' methodology, our analysis extends beyond scrutinizing instances of negative T-E-M link management. By leveraging FOSA data, we gain valuable insights into how flight crews ‘positively’ managed Threats and Errors, allowing us to learn from positive outcomes. This approach ensures that our focus is not solely on addressing shortcomings but also on replicating successful strategies, thereby enhancing our safety protocols without the need for reinvention.

CONCLUSION

In conclusion, this presentation underscores our predictive strategy for enhancing runway safety by leveraging FOSA data. Through the integration of Threat-Error-Management (TEM) analysis and competencies with both reactive and predictive data, we gain a thorough insight into the risk landscape. This holistic approach enables us to address runway incursions at the airline level, identifying and mitigating competencies, threats, and errors specific and unique to our operations.