



企業營運安全之健康檢查

The Perspective of Operations-Centered
(LOSA / IOSA-like) Model as Safety Roadmap

國家運輸安全調查委員會
運輸安全組 正研究員
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16 June 2020

講者簡歷：劉東明

- 現任國家運輸安全調查委員會運輸安全組正研究員
- 主要協助人為因素與安全管理相關議題之調查與研究工作、以及安全調查方法之推動與系統開發。

經歷：

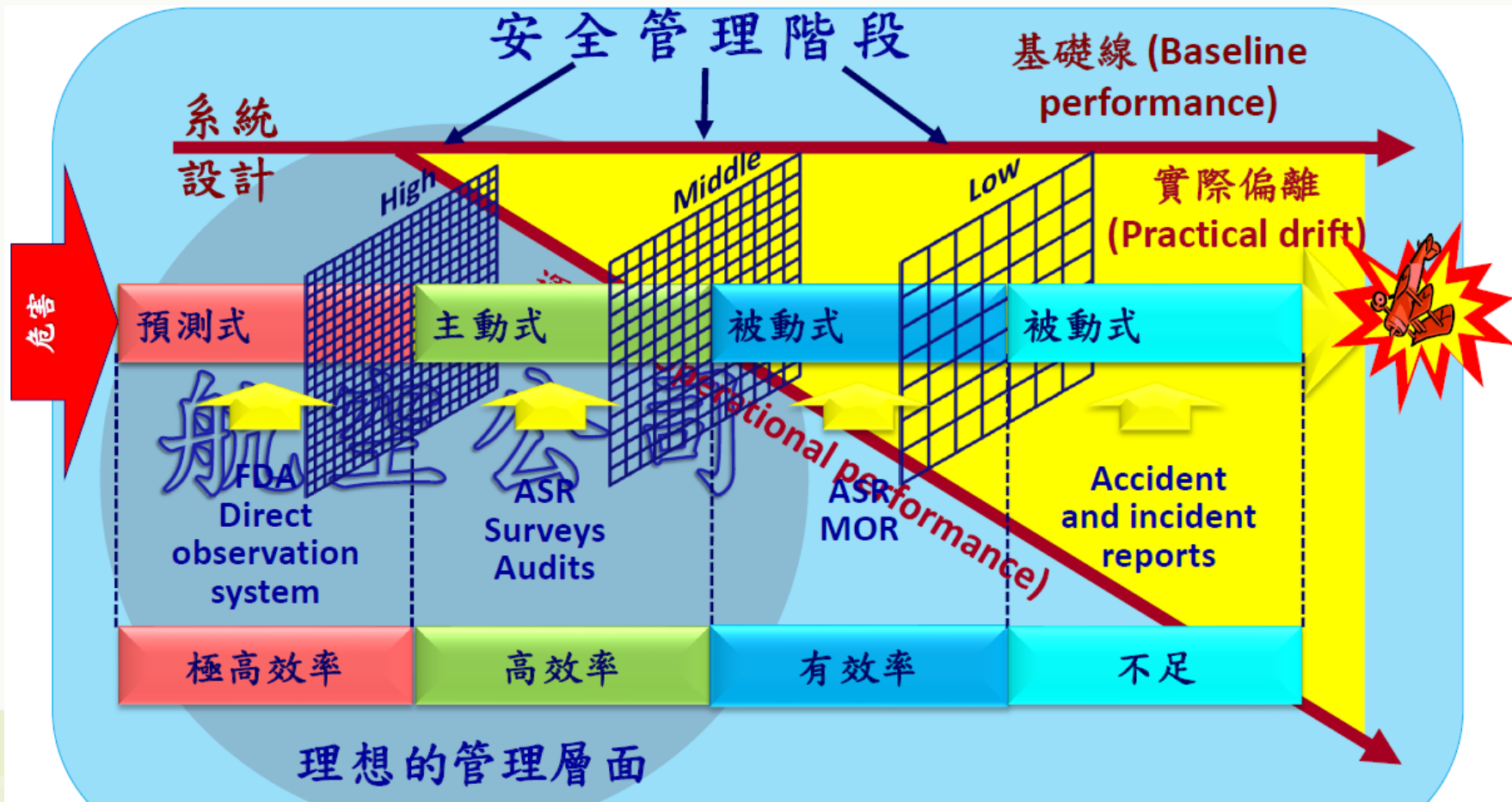
- ✓ 30年飛行資歷，經歷機型包含波音737、747，空中巴士320、330、340及380的測試飛行，另外也俱備S-76B直升機公務資歷。
- ✓ 安全管理：曾於業界擔任大型機隊主管、標準考核部總經理、企業安全室協理以及香港企業之副首席營運官等一線工作。也主辦、協辦過兩次業界LOSA，以及IOSA的實際執行工作，也是AQS認證合格的IOSA Auditor.

提 報 內 容

- 企業運行安全管理的” 三明治” 與” 冰山”
- 健康檢查工具： LOSA & IOSA Spirit- What and How
- 妳/你的企業運行健檢Roadmap、資料應用與未來塑/健身計劃

“三明治”

無危為安、無損為全



大多數管理者只關注變革冰山的頂層（水面以上部分），即所牽涉的成本、質量和時間等問題（問題管理），這些看得見的冰山其實只是整個冰山的八分之一，另外的八分之七在水平面以下的問題卻很容易被忽略。



意外事故只是浮出水面的事件(incidents)

事故背後的原因是當事人行為模式

公司組織結構、權責劃分影響和塑造員工行為模式

底層的root cause則是高層或整個公司的思維和價值觀

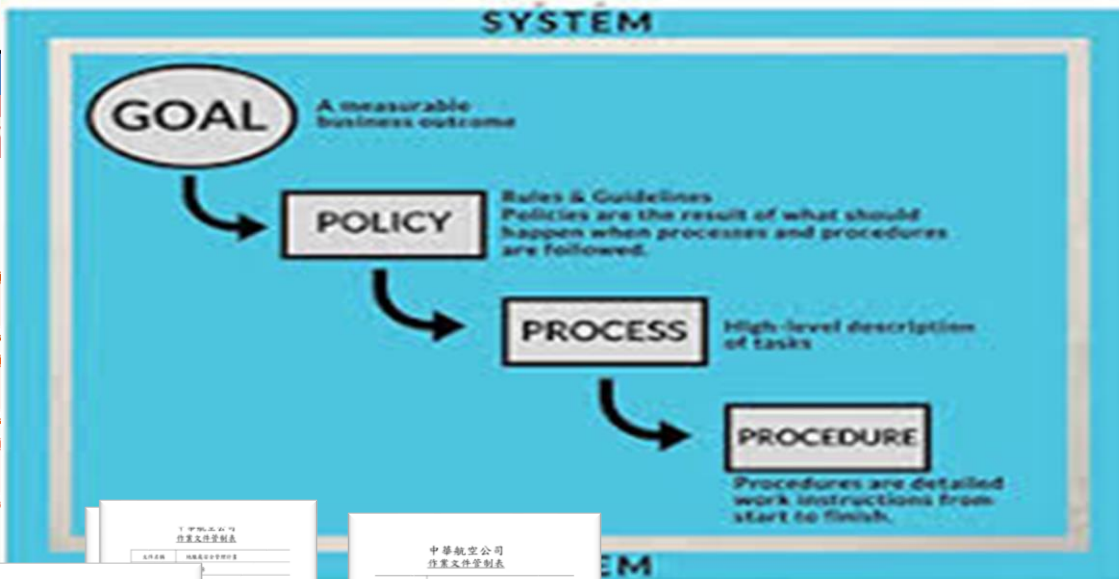
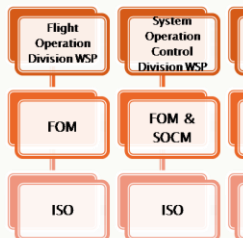


運輸業運行安全體系

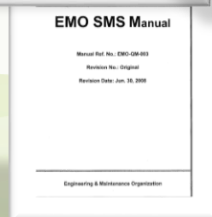
a case in Air Mode



Not necessary in R



FAA、A等相A航企安全管。據企業安全管理系統內部



- 外站安全管理系統由企安處訂定外站安全管理作業辦法納入Station Operation Guide內據以要求之。

鐵路法之“安全”敘述

Taiwan



1. <https://law.moj.gov.tw/LawClass/LawAll.aspx?pcode=K0030001>

2. http://www.wunan.com.tw/www2/download/2Q59_2%E7%89%88%E5%88%B7_%E8%A9%A6%E9%96%B1_102.11.PDF

故本分析架構，係以法秩序位階為基礎，整合《鐵路法》及相關子法，藉以有效掌握「鐵路法規」之相關概念，俾利窺見「鐵路法規」全貌。

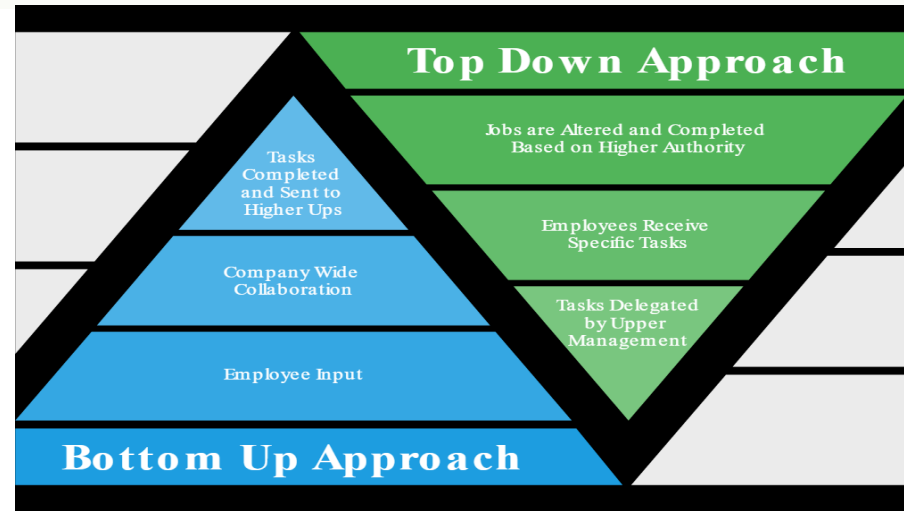
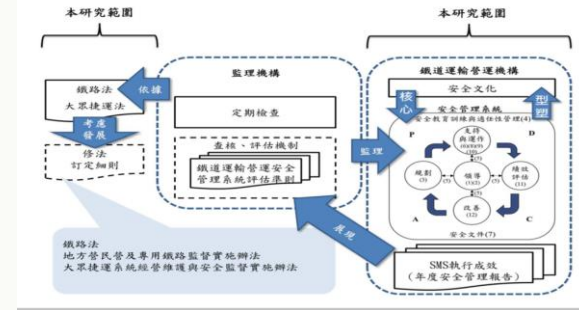
可行的做法包括管理階層是否關心：

- (1) 組織的行為與資源的分配，包括員工比例、技術新舊、時間多寡。
- (2) 推廣安全訓練至各級主管。
- (3) 訂定並持續檢討相關規章、目標。
- (4) 從工作執行者的觀點思考安全。 ←
- (5) 定期的安全宣導。
- (6) 定期的安全溝通並對員工提出的安全議題提出因應。
- (7) 發展管理階層的作為時與安全目標一致。 ←
- (8) 訂定組織的安全目標。
- (9) 依據安全目標安排管理架構。
- (10) 釐清安全權責與所屬。
- (11) 管理階層與員工間雙向的溝通。

鐵路法 第62條：

鐵路機構因行車及其他事故致人死亡、傷害或財物毀損喪失時，負損害賠償責任。

鐵路運輸安全管理系統(SMS) 制度化策略之研擬

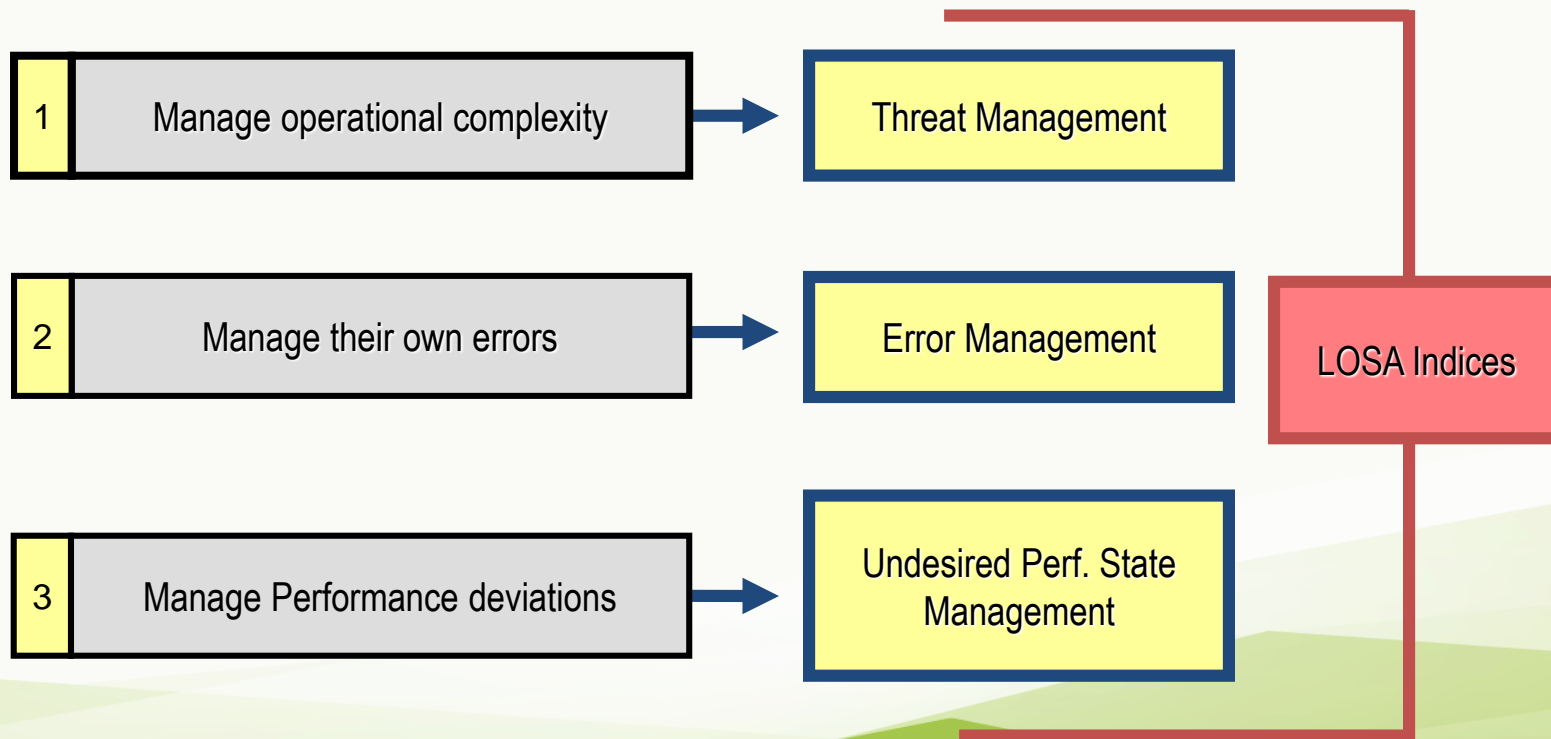


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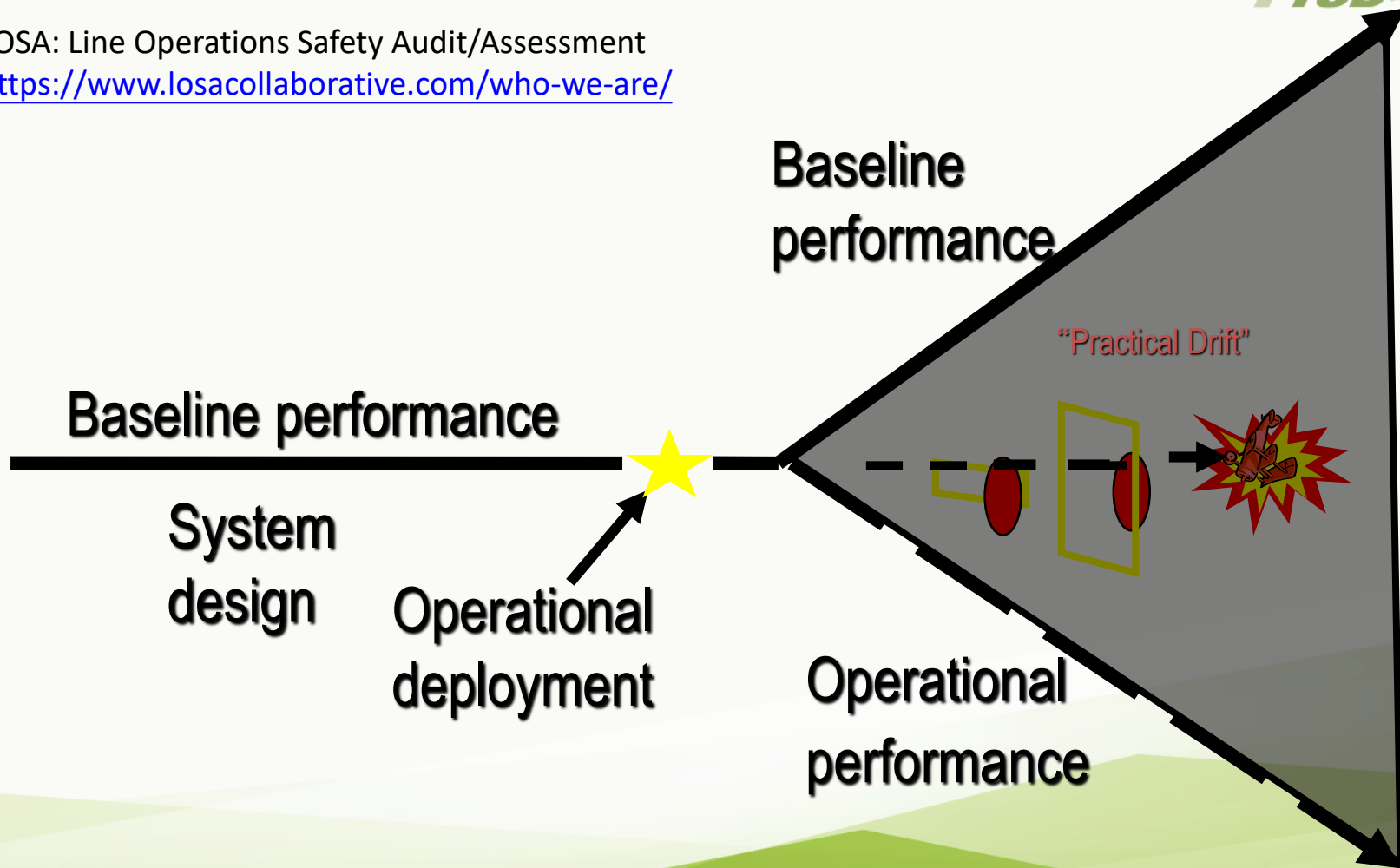
辦公室開燈的每一天…

- 為達到安全(P)與生產業績(P), 各階層員工都必須…

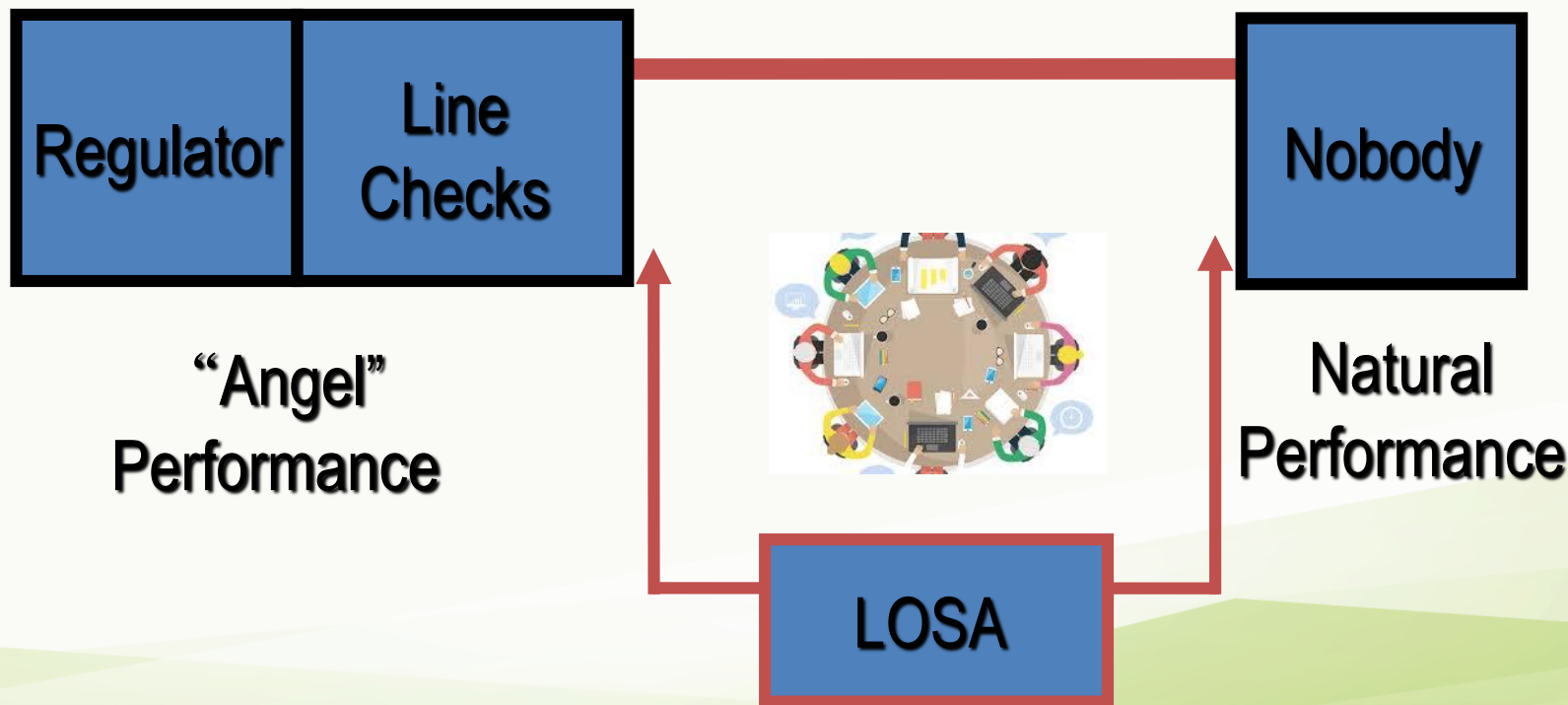


當下課了, 訓練課本不隨身的時候...

LOSA: Line Operations Safety Audit/Assessment
<https://www.losacollaborative.com/who-we-are/>



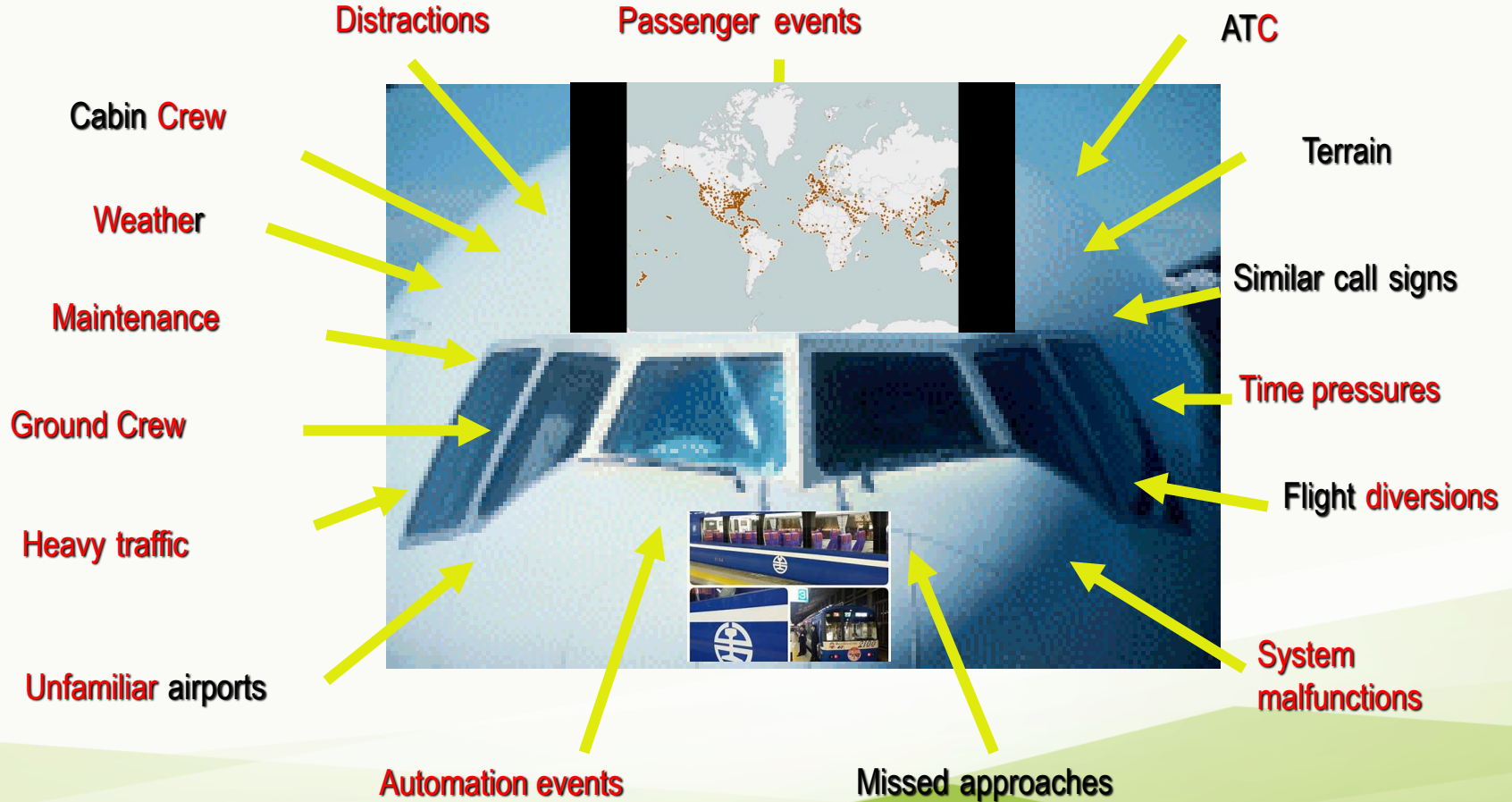
天使 與 探照燈 都暫時休息 ..



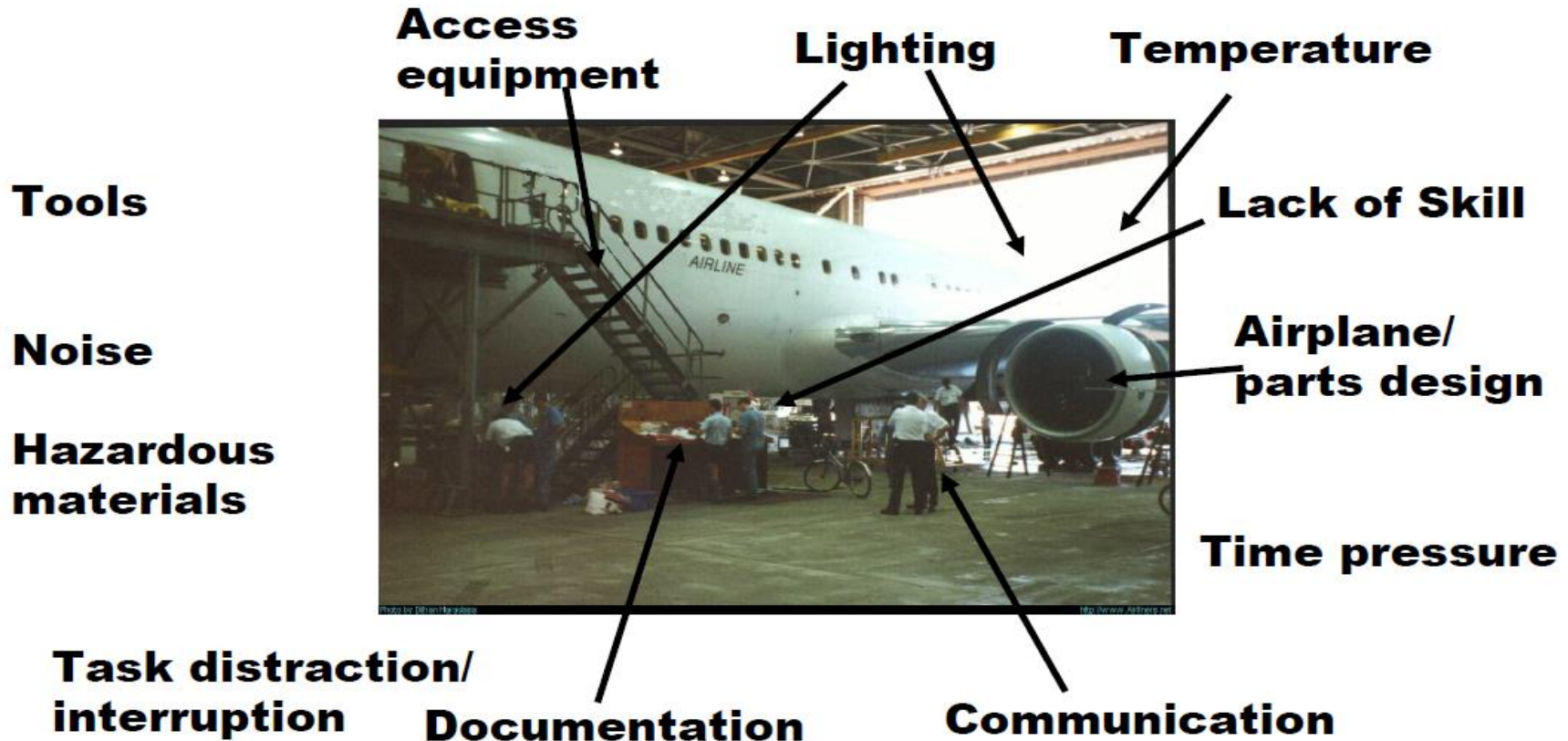
Threat & Error Management Model



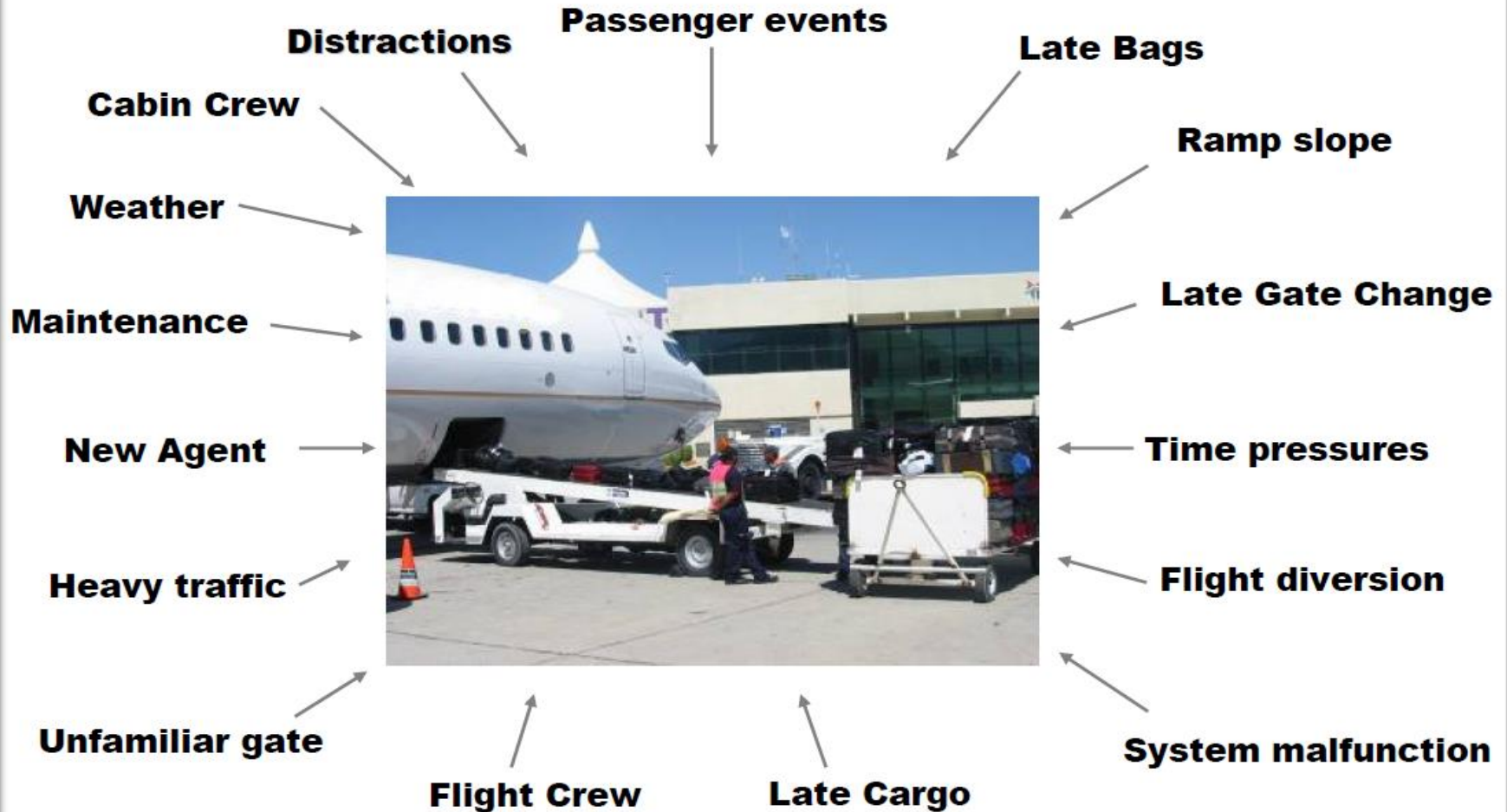
Threats Are the Context



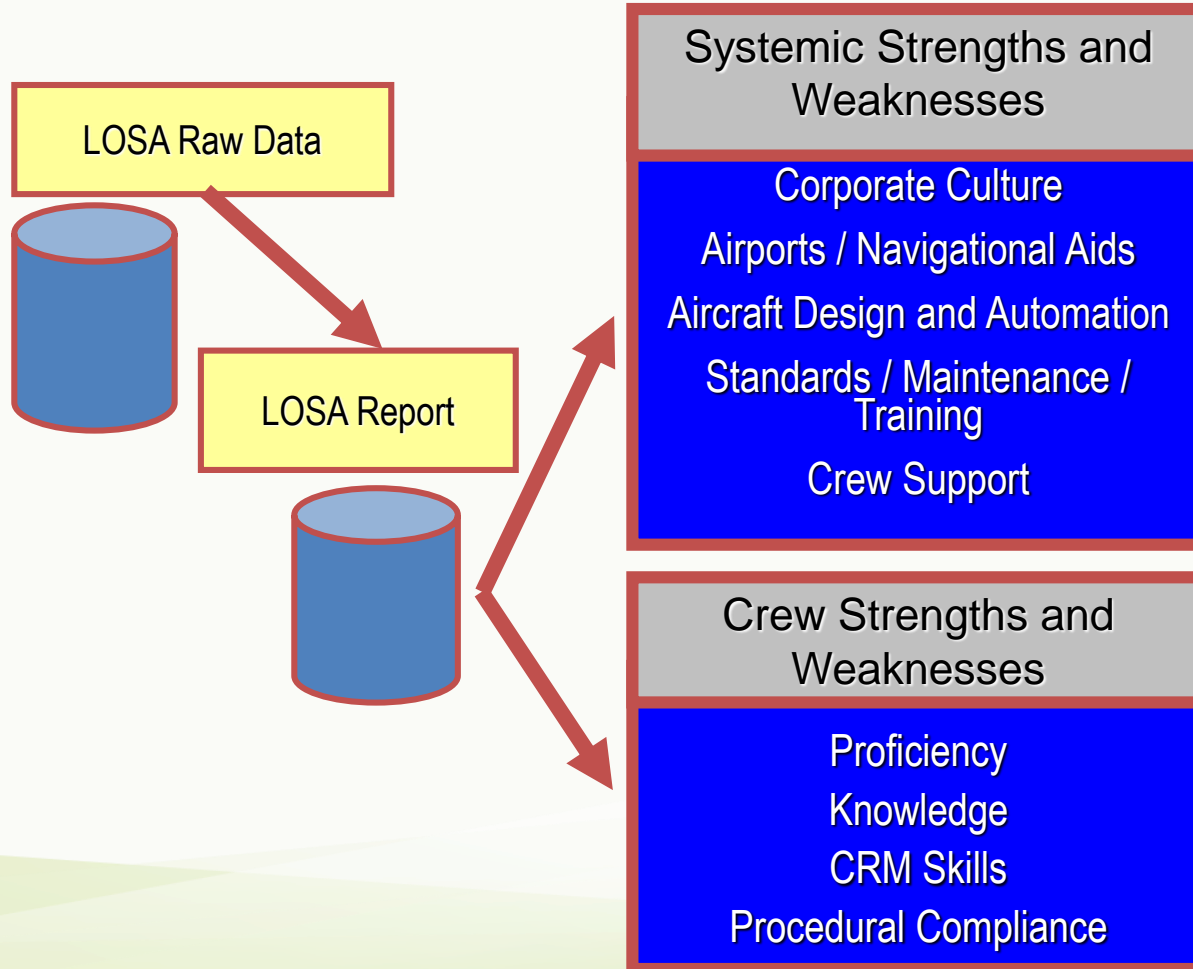
Threats That Can Lead to Mechanic Error



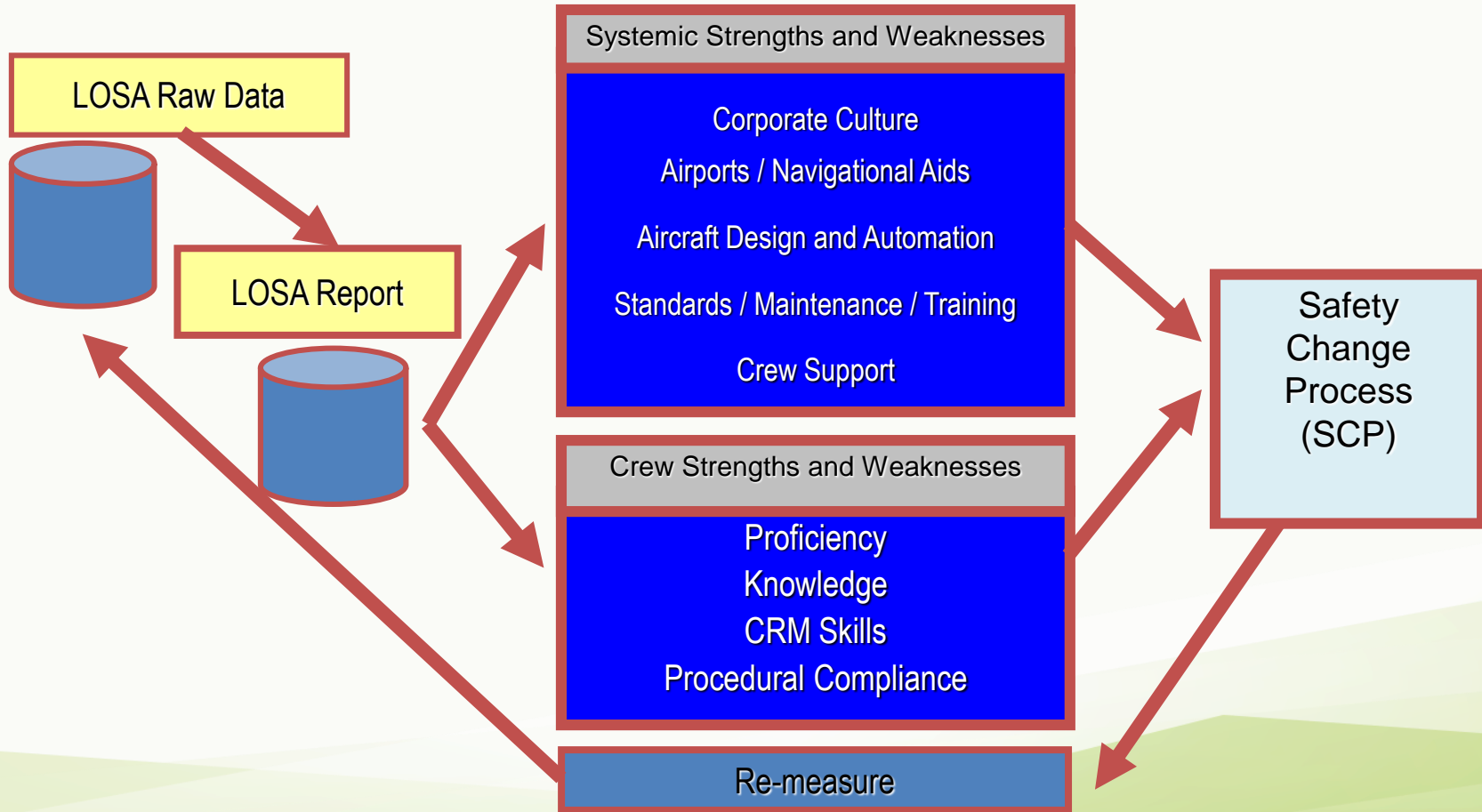
Threats That Can Lead to Ramp Agent Error



LOSA Provides Data Only



SCP: Data Develops Into Information





Threat Types (Total = 300 LOSA flights)

Threat Prevalence (Percentage of LOSA flights with a threat)

10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

All Threats

97%

Adverse Weather

58%

ATC

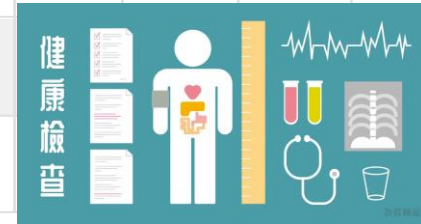
57%

Airline Operational Pressure

31%

Aircraft Malfunction
MEL Items

22%



Threat Types

(Total = 300 LOSA flights)

Threat Mismanagement (Percentage of LOSA flights with a mismanaged threat)

10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

All Threats

41%

Adverse Weather

13%

ATC

13%

Airline Operational Pressure

5%

Aircraft Malfunctions
MEL Items

3%





Error Types

(Total = 300 LOSA flights)

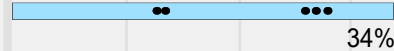
Error Prevalence (Percentage of LOSA flights with an error)

10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

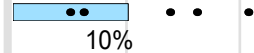
All Errors



Manual Aircraft Handling



Checklists



Callout



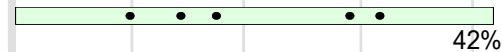
Error Types

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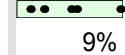
All Errors



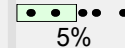
Manual Aircraft Handling



Checklists



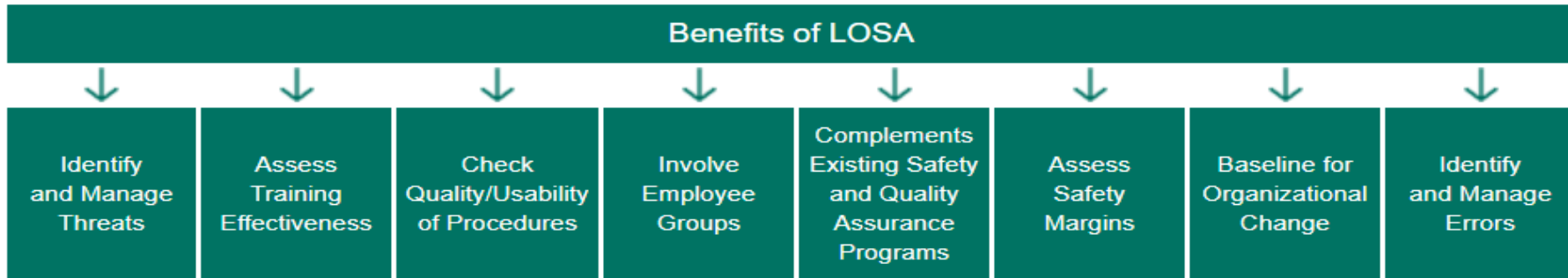
Callout



https://www.boeing.com/commercial/aeromagazine/articles/2012_q2/3/

Figure 1: Benefits of line operations safety assessments (LOSA)

Ramp LOSA and maintenance LOSA offer airlines a number of benefits that can improve safety and enhance existing procedures.

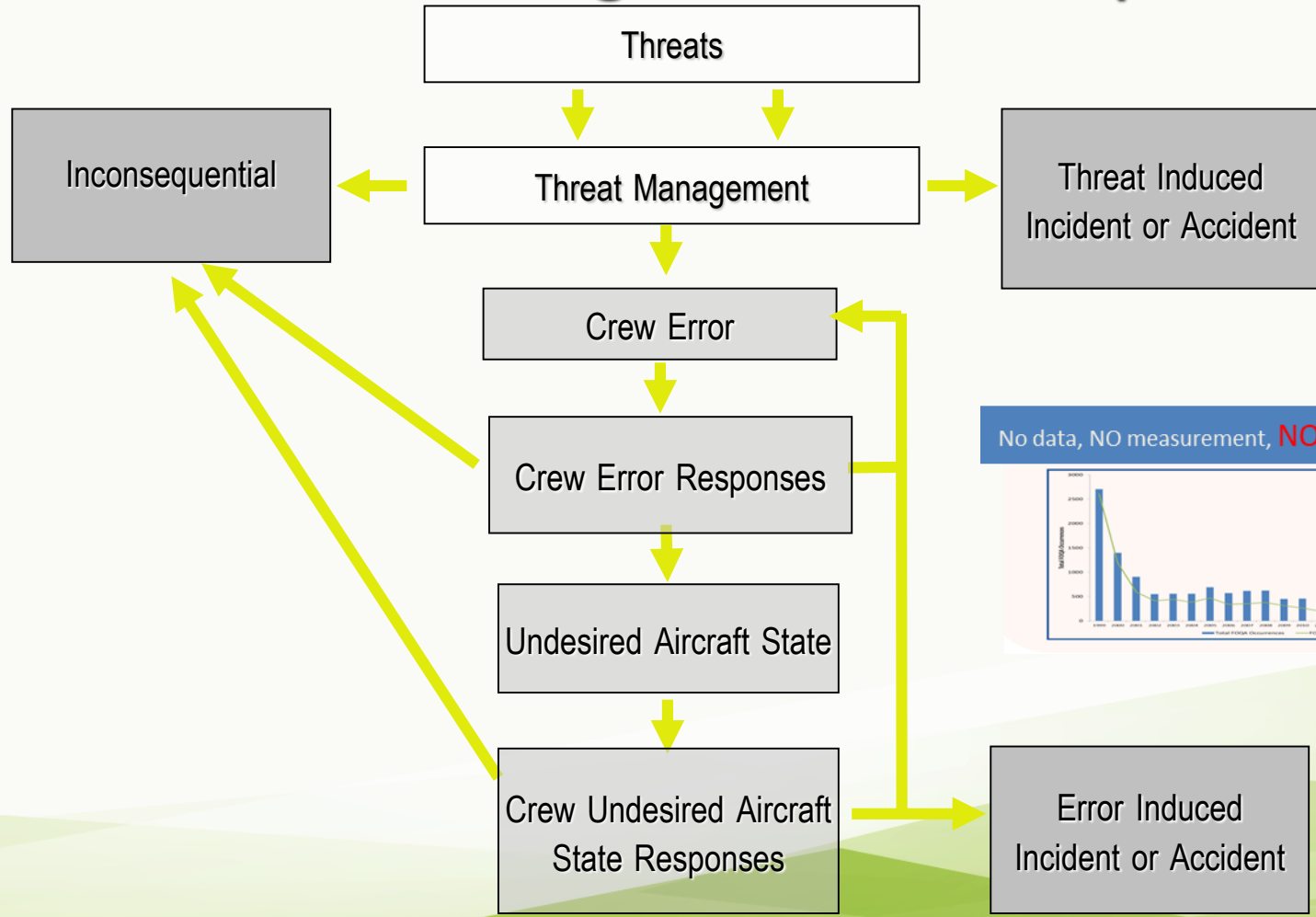


Observations of ramp and maintenance activities enable the airline to acquire data about actual day-to-day safe and at-risk behaviors in real-time, normal operations; discover procedural or systemic flaws that might lower safety margins; determine good practices that are in place; and provide baseline data that can be used to assess the effectiveness of safety interventions that were implemented to correct the at-risk behaviors.

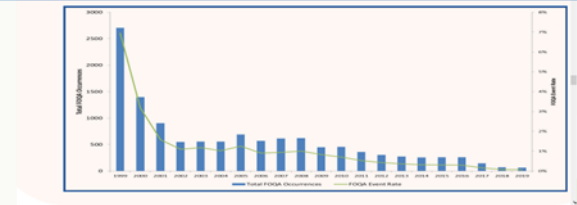
KEY LOSA CHARACTERISTICS

LOSA is characterized by observations made during normal ramp operations or normal maintenance operations. Data are collected anonymously and confidentially by trusted and trained observers from the ramp or maintenance staff, respectively. The effort is sponsored jointly by management and ramp or maintenance staff, and participation is voluntary.

Threat & Error Management Model (Doc 9803)



No data, NO measurement, **NO Management**



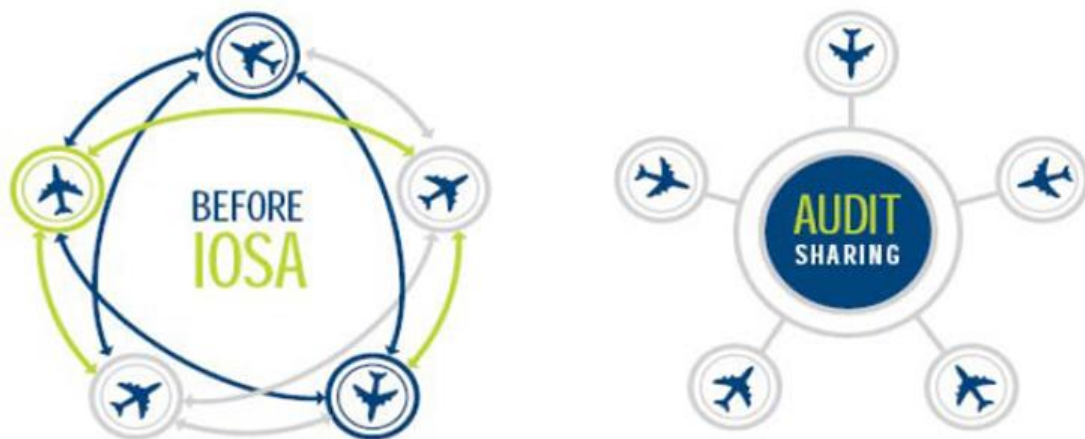


IATA Operational Safety Audit Program

- Global Aviation Safety audit program managed and controlled by IATA.
- Audit standards include ICAO safety and security provisions and **industry best practices** from ICAO Annexes 1, 2, 6, 8, 17, 18 and 19.
- Available to all commercial passenger & cargo airlines, **regardless of IATA membership status.**

IOSA Program – Purpose

- Improve worldwide airline safety levels
- Reduce the number of audits in the airline industry



IOSA Audit Scope

ORG – *Organization & Management System*

FLT – *Flight Operations*

DSP – *Operational Control and Flight Dispatch*

MNT – *Aircraft Engineering & Maintenance*

CAB – *Cabin Operations*

GRH – *Ground Handling Operations*

CGO – *Cargo Operations*

SEC – *Security Management*



IOSA Audit Report

- Owned by the operator.
- **IATA is the custodian of all reports.**
- Access to interested parties only with operator approval. (and per non-disclosure agreement)

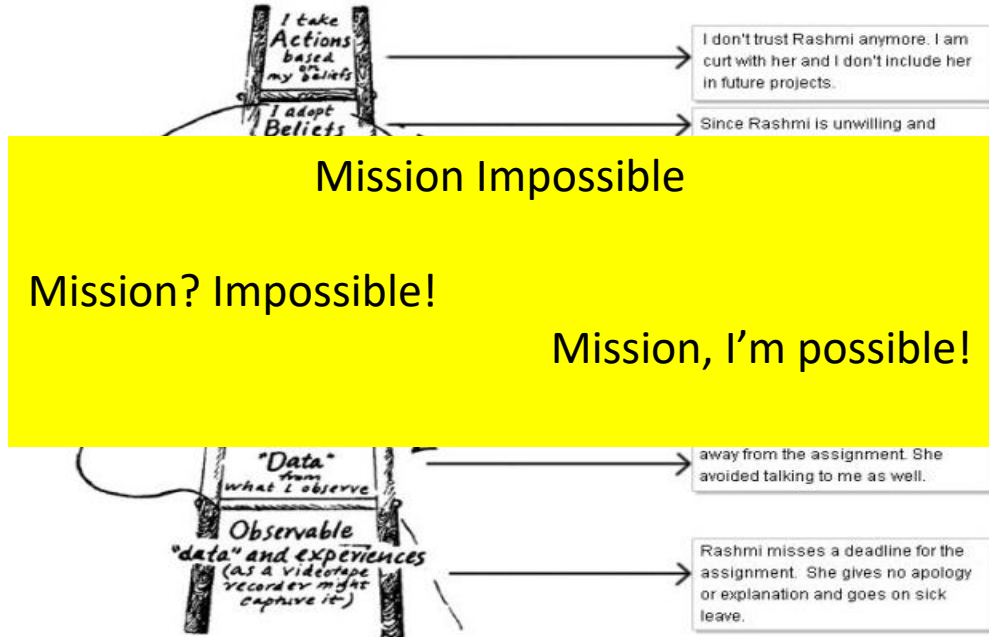
IOSA		SAMPLE			
Audit Report					
AIRCRAFT ENGINEERING AND MAINTENANCE (MNT)					
Management and Control					
4-1-1	MNT 1.1.1	The Operator shall have a management system for maintenance operations that ensures: i) management of safety and quality in maintenance operations; ii) supervision and control of maintenance operations, maintenance operations functions and other associated activities; iii) compliance with standards of the Operator and requirements of the State and other applicable authorities. (OM) <			
		Documented and Implemented (Conformity) § (b) (i) GAME 0.3.0.4			
4-1-2	MNT 1.1.2	The Operator shall have a management system for maintenance operations, comprising a staff of personnel suitably matched to the scale and scope of maintenance operations, to ensure maintenance of all aircraft is performed in accordance with the Maintenance Programme and all maintenance is carried out in accordance with policies and procedures contained in the Maintenance Management Manual (MMB). (OM)			
		Documented and Implemented (Conformity) GAME 0.3			
4-1-3	MNT 1.1.3	The Operator shall have a manager with appropriate qualifications who: i) has the authority and responsibility for the management and supervision of the maintenance operations organisation; ii) is accountable to senior management for ensuring the safety of maintenance operations. (OM) <			
		Documented and Implemented (Conformity) § (i) GAME 0.3.0.3, § 0.3.0.4			
4-1-4	MNT 1.2.1	The Operator shall ensure authorities and responsibilities within the management system for maintenance operations are defined and communicated throughout the organisation. (OM) <			
		Documented and Implemented (Conformity) GAME 0.3.0.9			
4-1-5	MNT 1.2.2	The Operator shall have a process for the delegation of duties, within the management system for maintenance operations, that ensures managerial continuity is maintained when operational managers, including any nominated post holder(s), are absent from the workplace. (OM) <			
		Documented and Implemented (Conformity) GAME 0.3.0.4			
4-1-6	MNT 1.2.3	The Operator shall ensure an assignment of authority and responsibility within the management system for maintenance operations for liaison with regulatory authorities, original equipment manufacturers (OEM) and other operationally relevant external entities. (OM) <			
		Documented and Implemented (Conformity) GAME 0.3.0.0.3.d JPMMSD 1.3			
4-1-7	MNT 1.2.4	The Operator shall assign responsibility within the management system for maintenance operations for maintaining compliance with: i) conditions and restrictions of the AOC; ii) applicable regulatory requirements; iii) standards established by the Operator. (OM) <			
		Documented and Implemented (Conformity) § (b) (i) GAME 0.3.0			
4-1-8	MNT 1.3.1	The Operator shall provide, for the use and guidance of relevant maintenance and operational personnel, a Maintenance Programme and maintenance data, approved by the Authority, that contains information for each aircraft, in accordance with specifications in Table 4.1. The Maintenance Programme shall satisfy requirements of: i) the State of Registry; ii) the State of Design; iii) the Operator; iv) aircraft, engine and component OEMs. (OM)			
		Documented and Implemented (Conformity) § (b) (i) GAME 1.2			
4-1-9	MNT 1.3.2	The Operator shall ensure the design and application of the Maintenance Programme observes human factors principles. (OM)			
		Documented and Implemented (Conformity)			
IATA Operations (MNT) Audit					
Page: 60 / 118					
(Revision: 20051030 (08))					

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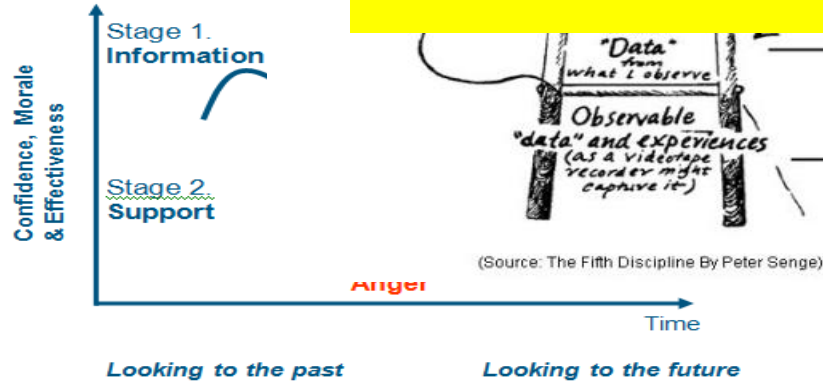
LOSA? IOSA? 康樂股長? 學藝股長?

企 - 人 (Operational Behaviors) = ? /!/, ..



SWOT and Synergy in....

The Change C



事) (地) (物)

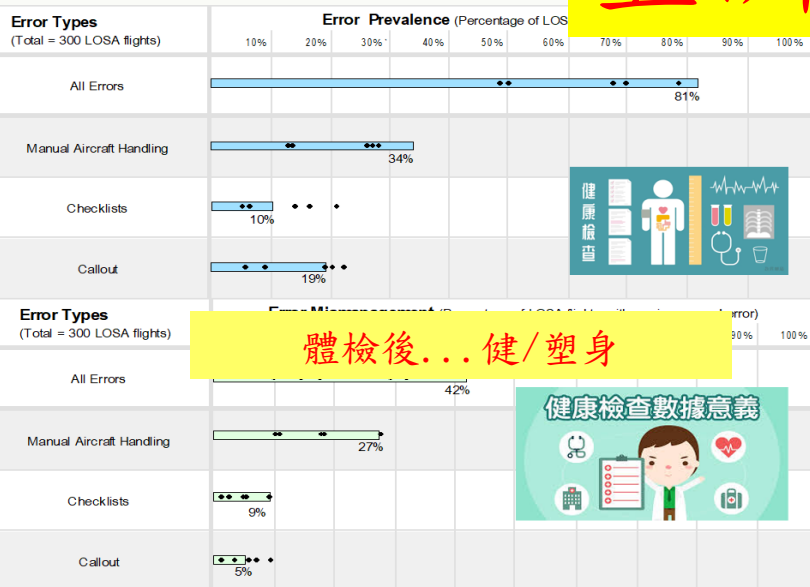
what why how how

事? 為何? 如何? 怎樣

七何分析法 (5W2H)

健檢資料應用與未來健/塑身計畫

亞洲盃... and Beyond



體檢後... 健/塑身

健康檢查數據意義

Safety guideline

國際標準

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國家隊

謝 謝 聆 聽

Mission , I'm Possible!