Organisational Safety Performance
An integrated SMARRT® approach to safety performance

[Diagram showing the SMARRT® approach: Active Leadership, Managed Competence, Robust Assurance, Proactive Culture, Supportive Capability, Effective Management Systems, Human Factors & Error Management, Compliance Monitoring, Regulatory Compliance, Safety Risk Management]
What do you think Human Factors is all about?
The start of Human Factors in aviation

“Making a real and lasting impact on aviation safety”
Human factors is the interaction between:

- People and Procedures
- People and Machines
- People and People
- People and Environment

"Human Factors in Engineering - the Next Generation"
Error management is 'the discipline of maximising human performance by optimising the workplace'
Preventing accidents from happening

Safety dependence has shifted from ...

Individual knowledge and competence to The system approach

Diagram showing levels from Ind (Individual) to Environment, Department, Organisation, Manufacturer, Regulator.
The System approach

Anything that affects how a person does his/her job can be seen as a Performance Influencing Factor.

Requirements, safety promotion, regulatory style

Instructions and data
Tooling costs, in-service support

Management - philosophy, policies, procedures, Operations, HR, Finance, Training, Quality, Support Services

Planning, prioritising, delegating, instructing, performance management, communication

Facilities, stores, weather, aircraft design, equipment/tools/parts, documentation, tasks, time pressure, teamwork, communication

Skills, knowledge, abilities, attributes, aptitude

Individual

Immediate environment

Department

Organisation

Manufacturer

Regulator

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The bad news

We work in an industry that is almost guaranteed to produce an abundance of errors:

- We frequently remove and replace many parts
- Sometimes with less than adequate tooling, equipment, parts, knowledge or time
- People who write the manuals, work instructions and procedures hardly ever do the job for real
- People who start on a job are not necessarily the ones to finish it
- Our system requires many people to do their job to enable the last person touching the aircraft/component to do theirs
The good news

- Maintenance-related errors are not random events
- They fall into recurrent patterns
- Different people in different organisations keep on making the same errors
- We can manage error…
Our Error Zone

Mental
- Memory
- Stress
- Knowledge
- Perception
- Communication
- Awareness
- Motivation
- Fatigue
- Hearing
- Medication

Physical
- General health
- Vision
- Substance abuse
- Size/agility
- Skills
- Clothing
- Tools
- Environment

Organisational
- Complexity
- Teamwork
- Training
- Team
- Workload
- Management
- Distraction
- Multi-tasking
- Climatic conditions
- Temperature
- Norms
- Commercial pressure

Operational activities
- Confusing data
- Unavailable or inaccurate procedures
- Poor access equipment
- Bad lighting
- Noise

Our Error Zone - Mental, Physical, Organisational

Human Factors in Engineering - the Next Generation

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It’s part of the human condition to err...

The Human Reliability Curve

Factors Affecting Human Performance

100%

Human Reliability

Error Zone

Normal Operation

0%
What is Error Management?

- An Error Management System which embraces all the elements designed to address the human factors aspects of aviation operations
- It’s the **practical application** of Human Factors theory
- Provides essential knowledge, tools and a **framework**
- Enables organisations to understand what type of errors are occurring and so be able to manage the risk accordingly
- It is all about:
  - Learning from low-consequence / high probability events
  - Behaviours and cultures
Discussion point

What would an error management framework look like?

- What would you need?
The EASA Part-145 Error Management ‘System’

- 145.A.30 - Safety culture
- 145.A.30 - Competence and Human Factors training
- 145.A.45 - Design / Maintenance Interface
- 145.A.47 - Shift and task handover
- 145.A.47 - Fatigue
- 145.A.47 - Poor planning of tasks, equipment and spares
- 145.A.60 – Near miss, hazard and occurrence reporting
- 145.A.65 - Procedural Non-compliance
- 145.A.65 - Signing off tasks not seen or checked
- 145.A.65 - Error Capturing
What is human error?

Error

- An action that does not go according to plan
- Unintentional

Maintenance error

- The engineering system (which includes people) fails to perform in the manner expected
How violations differ from errors

Errors are:

- Unintentional acts

Violations are:

- Intentional acts
- Deliberate deviations from rules, procedures, instructions and regulations

In the context of aviation engineering, violations constitute at risk behaviour…
Tuninter Flight 1153

FINAL REPORT

ACCIDENT INvolving ATr 72 AIRCRAFT REGISTRATION MARKS TS-LBB ditching off the coast of Capo Gallo (Palermo - Sicily) August 6th, 2005
Was the system optimised for the human?

Which tiers of the system were flawed?

Can you identify the accident chain?

What opportunities were missed?
Everyone involved in civil aviation understands the importance of human performance in aviation safety.

HF understanding is visibly demonstrated through appropriate attitudes and behaviours which result in a reduction of human error in the system.

Co-operation between design, manufacture, operations, training, reporting, investigation and analysis to trap and mitigate adverse HF.

Reduce the risk of potential mismatches between the required level and actual level of human performance within the working environment.
Date for your diary

4th European Aviation Safety Management Symposium

3rd – 4th November 2015 | London Heathrow Marriott Hotel

“Making a real and lasting impact on aviation safety”
Thank you for your participation

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