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**SAFETY FORUM**  
**SAFETY & PROCEDURES**  
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**Safety Forum  
Safety & Procedures  
June 2019  
Brussels:**

***Findings, Strategies and  
Action Opportunities***

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# Executive Summary

This report describes the background, objectives, and outcomes of the Safety Forum: Safety and procedures, initiated by the Flight Safety Foundation, the European Regions Airline Association and EUROCONTROL that took place on June 4<sup>th</sup> and 5<sup>th</sup> 2019 in EUROCONTROL Brussels.

During the Forum three main sessions were held: From drawing board to published regulation, procedural shortcomings and technology & science. Each session comprised four presentations by industry experts. Materials presented in the main sessions were discussed in the break-out sessions.

As a result of the break-out sessions the Forum outlines a number of Findings. Each Finding is one of the following:

- ❑ A current risk or a credible projection of one likely to be encountered in the near future in a given operational environment.
- ❑ A current risk factor or a credible projection of one for any unwanted outcome (both positive and negative influencers) in terms of their relative importance.
- ❑ A risk scenario that describes how risk factors combine in a sequence to create an unwanted outcome.

The Findings were then used to develop safety improvement Strategies which can prevent, contain or mitigate a specific risk illustrated by the 'Findings'.

Considering the Findings the Forum formulated a series of Action Opportunities to respond to the safety improvement strategies.

# Chapter 1

## Introduction

### 1.1 *What is the purpose of this report?*

#### *Documenting and communicating*

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This report describes the background, objectives, and outcomes of the Safety Forum: Safety and procedures, initiated by the Flight Safety Foundation, The European Regions Airline Association and EUROCONTROL. The Forum took place on 4<sup>th</sup> and 5<sup>th</sup> of June 2019 in EUROCONTROL Brussels.

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### 1.2 *The objectives of the Safety Forum: Safety and procedures*

#### *One Day, One Issue, One Co-ordinated Outcome Event*

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The Safety Forum: Safety and procedures targeted operational and safety professionals with the intention to hold a short event, with a clear focus on safety and procedural aspects and to result in the creation of an event report and supporting awareness material.

It is an event from the industry for the industry. A great thank you goes to all participants of the Forum. This is your work.

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### 1.3 *SKYbrary knowledge management*

#### *Promoting the results*

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The speaker briefings and final report of the Forum are published on SKYbrary, shared freely with the global aviation community, in particular pilots and air traffic controllers, but also with managers, regulators and manufacturers.

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## 1.4 Participants

**183 participants to the Safety Forum came from 41 countries.**

Australia 1	Macedonia 1
Austria 3	Malta 6
Belgium 23	Montserrat, British West Indies 1
Canada 1	Morocco 1
China 3	New Zealand 1
Croatia 3	Norway 5
Czech Republic 1	Poland 3
Denmark 7	Portugal 4
Finland 1	Romania 2
France 12	Slovakia 1
Georgia 3	Slovenia 2
Germany 10	South Africa 2
Hungary 3	Spain 3
Iceland 2	Sweden 1
Ireland 3	Switzerland 4
Isle of Man 2	The Netherlands 8
Israel 1	Turkey 1
Italy 1	Ukraine 2
Latvia 5	United Kingdom 29
Lithuania 2	USA 13
Luxembourg 6	

## 1.5 *Outline of the results*

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### *Findings, Strategies and Action Opportunities*

The Forum outlines a number of Findings. Each Finding is one of the following:

- ❑ A current risk or a credible projection of one likely to be encountered in the near future in a given operational environment.
- ❑ A current risk factor or a credible projection of one for any unwanted outcome (both positive and negative influencers) in terms of their relative importance.
- ❑ A risk scenario that describes how risk factors combine in a sequence to create an unwanted outcome.

The Findings were then used to develop safety improvement Strategies which can prevent, contain or mitigate a specific risk illustrated by the 'Findings'.

Considering the Findings and Strategies the Forum formulated a series of Action Opportunities.

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# **Chapter 2**

## **Findings, Strategies and Action Opportunities**

## 2.1 *From drawing board to published regulation*

<b>Main session chair:</b>	Capt. André Vernay
<b>Break-out session co-chairs:</b>	Capt. Harry Nelson Jean-Jacques Speyer
<b>Assistant to chairs:</b>	Sébastien Follet

The findings, strategies and action opportunities in this section are based on the following Safety Forum presentations and the associated break-out session:

- “Data for Safety (D4S)” – Capt. Martin Timmons, Ryanair
- “Procedures for everyone, by everyone” – Capt. Shai Gill, CAL Cargo Airlines
- “A regulator’s perspective: Inspiring curiosity” – Anna Collard-Scruby, UK CAA
- “Re-connecting” – Capt. Rudy Pont, European Cockpit Association



**Finding**

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In the 4P model of Philosophy / Policy / Process / Procedures there is a gap between policy and procedure. Policy is weak and sometimes nonexistent.

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**Strategy**

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Re-emphasize the use of the model Philosophy, Policy, Process and Procedures (4P).

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**Action Opportunity**

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Process needs to be developed to fill the gap.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

**Finding**

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Users are not always included in regulation creation.

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**Strategy**

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Ensure that all stakeholders are included in the Why, and the What of procedure development.

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**Action Opportunity**

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Users must be included in all procedures development.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

Difficulty for end users to communicate their input. They often do not feel “listened to”.

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**Strategy**

There must not be walls or barriers that might isolate. Clear responsibilities and easy, just culture-based communication should be encouraged.

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**Action Opportunity**

- The roles and responsibilities of each stakeholder in the system from ICAO down, to front line operator, should be clearly identified and close communication and understanding should link each stakeholder.
  - Advertise the channels that already exist to make them more functional.
- 

**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

More recent forms of communication are having an impact on the way the legal, political, media and economical worlds are relating and reacting to Aviation. This is having an impact on safety.

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**Strategy**

The aviation community should acknowledge that law, politics, media and economics potentially have a significant impact on the regulatory process and safety. Then develop strategies to deal with it. These should include making sure that the public understand why our investigative process needs time and why a just culture reporting system is important.

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**Action Opportunity**

Develop and then act on an industry wide communication strategy of accurate public information so that understanding is developed. i.e. we write the headlines.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

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Checks on new processes rarely occur.  
Many processes are not updated during their life.  
The learning from processes is rarely captured as useful “knowledge”.  
Many old regulations and processes are still in existence.

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**Strategy**

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Develop a cohesive review process that covers reviews of new procedures to ensure their efficacy and any secondary impacts, regular process reviews for effectivity and usage and closure reviews for learning and cancellation.

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**Action Opportunity**

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Write a process of reviewing, cleaning, learning and removing.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

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A risk focussed oversight and a search for precursors of accidents requires a significant need for data and a serious analytical capacity. This will involve all European aviation safety system stakeholders. Data are different considering their origins, qualities, level of security and use (individual or collective).

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**Strategy**

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IN Europe, D4S (Data for safety) is being designed to share elements, ensure complimentary goals and enhance the stakeholders management of risks. "It must generate a set of outputs that in turn produce actionable safety".

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**Action Opportunity**

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Combining, organizing and understanding data (SME analysis), before its use, is key to its successful integration in collaborative work.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

Precursors of accidents are difficult to identify and risk assessment is hard to organize when every organization develops its own barriers and safety policies.

---

**Strategy**

Standardizing of procedures and using data within an agreed process, (Identify – Assess - Define and Programme - Implement and Monitor – Perform) in a trusting atmosphere, is a potential route to success.

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**Action Opportunity**

The involvement of all stakeholder organizations ensures the adapted level of action and use for the full air safety community. As an example in Europe, D4S (Data for safety), as envisaged, should improve and encourage better integration of stakeholders.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

Procedures can sometimes be ineffective. They sometimes fail to gain acceptance. They can also be badly implemented by actors who only receive the final document and are not involved in its build up and creation.

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**Strategy**

Ensure a collective, full endorsement of the involved stakeholders in the production and acceptance of procedures. Engage everyone.

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**Action Opportunity**

Involve stakeholders in the full procedure development process from concept, through production to feedback from users. All procedures must stand the test of be needed and usable when written. Develop procedure “Trustees” in each area.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies



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**Finding**

The ineffectiveness of some procedures might come from the manner of delivery: Some of them are not adapted to provide messages and can sometimes be misused.

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**Strategy**

Enhance the level of understanding in the messages to touch actors in order to provide the best media support for the most interesting safety data.

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**Action Opportunity**

Using new media and communication technologies gives the opportunity to fully join targets in order to improve the impact and quality of safety messages.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

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Simply implementing regulations and procedures is an ineffective way to manage safety when organizations are dealing with specific situations that are unknown at the authority level. There is a disconnect between work as envisaged (by the regulator) and work as done (by the operator).

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**Strategy**

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Create a strong communicative link between front line operations where the safety is constantly challenged by “real life” and regulators who provide the solid regulatory structures that are intended to stabilize safety.

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**Action Opportunity**

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Create and provide collective safety connections and networks to better share, improve and translate into proposals and actions, the weak signals and front line problems.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

A lack of HF knowledge and organizational understanding might prevent the industry from proceeding further into the collective understanding of occurrences and actions requirements to improve safety.

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**Strategy**

The Human and Organizational Factors (HOF) must be known and shared from any organization side to the authority structures. Aim for a better, deeper, and valuable safety management understanding by introducing a high level of understanding. Inspire curiosity and “translate good science into pragmatic practice”.

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**Action Opportunity**

Develop and integrate an adapted level of HOF knowledge at each level of any organization.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

**Finding**

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Adding new procedures and regulations as a straight answer may not be the right reaction to deal with emerging risks and safety issues. It may cause front-line withdrawal, distrust and self-regulation.

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**Strategy**

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Establishing a balanced process between the level of regulation and the oversight shared by the full air community gives the opportunity to adjust the stakeholder's safety performance at the best adapted level regarding the available resources.

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**Action Opportunity**

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Using every organizations risk assessments and portfolios creates a possibility of weighing the actions needed and provides an early well-balanced stage in the identification of these actions.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

The amount of rules, statements and SOPs increases where the human capacity of understanding is still the same, making the whole regulatory framework impossible to be handled completely by a front-line operator.

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**Strategy**

Ensure that new and existing documentation are designed and published to have a benefit into the process otherwise forgetting the idea of new document or statement implementation.

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**Action Opportunity**

Involve each organization into the process of risk assessment makes the output understandable so that finally a safe community decision may be taken and accepted.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

## 2.2 *Procedural shortcomings*

<b>Main session chair:</b>	Karen Bolton
<b>Break-out session co-chairs:</b>	Capt. Wolfgang Starke Damon Knight
<b>Assistant to chairs:</b>	Ludovic Mieusset

The findings, strategies and action opportunities in this section are based on the following Safety Forum presentations and the associated break-out session:

- “Operations procedures and flight path management” – Kathy Abbot, Federal Aviation Administration
- “Procedures and varieties of human work” – Steve Shorrock, Eurocontrol
- “Procedures in context” – Capt. Ed Pooley, The Air Safety Consultancy
- “Airlines safety procedures – evolution and simplification for global operations” – Geoff Clark Virgin Atlantic and Dragos Munteanu, IATA

**Finding**

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Memory items should be avoided whenever possible and should never include conditional steps.

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**Strategy**

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Memory items should be emphasized in training and regularly practiced. Certain normal and abnormal procedures should also be recognized as memory items where time is critically short.

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**Action Opportunity**

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Memory items should be limited to 3 or less and trained at regular intervals in normal and non-normal situations

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

Most flight path management accidents involve manual flight errors.

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**Strategy**

Pilots need more and better practice on manual flight. Practice and training should include actual flight as well as simulated flight.

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**Action Opportunity**

Operators and authorities should advocate manual flight during line flying when it is appropriate and in accordance with the agreed airline procedures.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies



**Finding**

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Design of procedures does not always account for real life operations.

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**Strategy**

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Procedure designers need to contact front-line operators to receive feedback to know what is needed in the daily business. Connect work as imagined and work as done.

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**Action Opportunity**

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Ensure front-line operators are involved in the development of procedures.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

Work-as-prescribed is necessary to keep variation within acceptable limits, but work can rarely be completely detailed in rules, procedures and regulations.

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**Strategy**

Provide "philosophy" top level guidance in the form of policy and principles (akin to Airbus's 'Golden Rules'), including just-culture policies.

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**Action Opportunity**

Ensure procedures can be completed successfully within a safe envelope but still allowing sufficient room for flexibility within that envelope.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

Standard operating procedure (SOP) compliance is better when crews know the rationale behind the SOP.

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**Strategy**

It is important to explain why procedures were generated and why they are like they are. To be respected procedures need to be trusted.

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**Action Opportunity**

The logic behind all SOPs should be explained to operators to enhance compliance through understanding.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

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Data from simulator sessions are not collected.

Learning from the experience of others is vital but it is not always gathered and used

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**Strategy**

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All perspectives of an event investigation are important.

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**Action Opportunity**

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Findings from investigations should be shared as widely as possible.

Simulator data should also be captured and used.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

Most procedure errors can be avoided by adherence to standard operating procedures (SOP) and existing technology. However, in service experience shows errors will still occur.

---

**Strategy**

Understand where known and new technological barriers can be put in place to provide another safety net.

---

**Action Opportunity**

Develop strategies and implement performance monitoring systems and other appropriate safety nets.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

Errors in take-off performance computation are often caused by distraction and data entry issues.

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**Strategy**

Move important tasks, like take-off and landing performance calculation, into phases of flight preparation and flight that protect them from distraction.

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**Action Opportunity**

Implement a phase of sterile cockpit into pre-flight procedures to allow undistracted calculation and entry of take-off performance.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

A variety of non-operational pressures might prevent operational management from performing as expected.

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**Strategy**

Operational managers should be given new opportunities to perform as expected.

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**Action Opportunity**

Ensure managers are trained and have the capability to fulfil their operational obligations even under pressure.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

## 2.3 *Technology & Science*

**Main session chair:** Capt. Mattias Pak

**Break-out session co-chairs:** Capt. Andrew J Elbert  
Colin Gill

**Assistant to chairs:** Tom Becker

The findings, strategies and action opportunities in this section are based on the following Safety Forum presentations and the associated break-out session:

- “Take off performance monitoring” – Ian Goodwin, Airbus and John Fribbance, UK CAA
- “Safety based evolution of procedures” – Capt. Christof-J. Kemény, Lufthansa
- “Safety-critical procedure development requires high level multi-disciplinary knowledge” – retired Lt-Col Harry Horlings, AvioConsult
- “Ignoring the warnings: Lessons in normalization of deviance from the world of motorsports” – Max Leitschuh, WorldAware



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**Finding**

Crew based error is often linked to changes in the planned operation.

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**Strategy**

Evaluate and be aware of workload and the potential for distraction when any change to the plan occurs. e.g. runway change.

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**Action Opportunity**

All operational stakeholders should be aware of the increase in workload when changes are made. Processes and technological improvements should be implemented in order to maintain acceptable levels of workload.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

Traditional cockpit teamwork methods do not maximize the potential of a multi-pilot crew.

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**Strategy**

Review crew-based accidents and published scientific work to confirm the benefit of increasing the potential of multi-pilot crew teamwork. Consider the change in terminology from “Pilot Monitoring” to “Pilot Supporting”.

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**Action Opportunity**

Standard operating procedures (SOPs) should support inclusive terminology (“we”) in the interactions between pilots. This should encourage more evenly distributed workload between the crew members. This policy should also be reflected by manufacturers in their operational manual.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

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The current definition of Minimum Control Speed (Vmca), and the engine failure emergency procedures as published in Aircraft Flight Manuals might lead to unsafe events and accidents.

Note from the Safety Forum Organizing Committee: Including in the present report this finding, associated strategy and action opportunity is with the purpose of communicating transparently what has been discussed during the Safety Forum. This finding, associated strategy and action opportunity are based on a particular presentation delivered during the Safety Forum. They are of specific technical nature, not possible to be validated during the Forum proceedings and may need further scrutiny.

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**Strategy**

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Safety-critical procedures need the involvement of high level multi-disciplinary SME's, including not only Engineers, Test personnel, and also less experienced pilots who are going to use the procedures

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**Action Opportunity**

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Regulators and manufacturers should convene a revue of Vmca certification criteria.

Investigation bodies should review serious incidents for possible influence of low Vmca on accidents and incidents.

All Aircraft operators should review their training programmes and raise awareness of this issue for pilots.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies

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**Finding**

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Many so called Black Swan events are predictable / foreseeable and therefore identifiable by proper safety risk assessments, SMS-processes.

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**Strategy**

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Improve safety reporting, analysis and promulgation.

Use risk management approach for procedures, SOPs, regulations, treat lucky near misses as if the worst-case scenario had occurred.

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**Action Opportunity**

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Ensure Just Culture is accepted and lived throughout the organization.

Re-calibrate the level of attention for events .

Make frequent use of reporting tools

Ensure thorough analysis for accident precursors.

Focus on "small" lapses, and on your successes as well as on Safety 2.

Find out what truly lies below the water-line (near-misses).

Collaborate with other industry players.

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**Action opportunity for:**

- ICAO
- Authorities / Regulators
- All stakeholders
  - Aircraft Operators
  - ANSPs
  - Aircraft / System Manufacturers
- Accident Investigation Bodies