FRMS: Progress and Future

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To represent, lead and serve the airline industry

Where is the world headed?

Three examples:

- ↗ European Union
- ↗ Australia
- ↗ United States

70 YEARS 1945—2015 Flying better. Together.

Annex 6, Part 1
Fatigue Management

- *The State of the Operator shall establish regulations for the purpose of managing fatigue. These regulations shall be based upon scientific principles and knowledge, with the aim of ensuring that flight and cabin crew members are performing at an adequate level of alertness. Accordingly, the State of the Operator shall establish:*
- *a) regulations for flight time, flight duty period, duty period and rest period limitations; and*
- *b) where authorizing an operator to use a Fatigue Risk Management System (FRMS) to manage fatigue, FRMS regulations*

European Aviation Regulations

European Parliament

- **Legal requirement under Regulation 216/2008 (EASA Basic Regulation Annex IV 8.f.**

- The prevention of fatigue must be managed through a rostering system. For a flight, or series of flights, such a rostering system needs to address flight time, flight-duty periods, duty and adapted rest periods. Limitations established within the rostering system must take into account all relevant factors contributing to fatigue such as, in particular, number of sectors flown, time-zone crossing, sleep deprivation, disruption of circadian cycles, night hours, positioning, cumulative duty time for given periods of time, sharing of allocated tasks between crew members, and also the provision of augmented crews.

ORO.FTL.125
Flight Time Specification Schemes

Operators shall establish, implement and maintain flight time specification schemes that are appropriate for the type(s) of operation performed and that comply with Regulation (EC) No. 216/2008, this Subpart and other applicable legislation, including Directive 2000/79/EC.

Before being implemented, flight time specification schemes, including any related FRM where required, shall be approved by the competent authority.

ORO.FTL.110 Operator Responsibilities

(b) ensure that flight duty periods are planned in a way that enables crew members to remain sufficiently free from fatigue so that they can operate to a satisfactory level of safety under all circumstances

(d) take into account the relationship between the frequency and the pattern of flight duty periods and rest periods and give consideration to the cumulative effects of working long duty hours combined with minimum rest periods

ORO.FTL.110 Operator Responsibilities

e) allocate duty patterns which avoid practices that cause a serious disruption of an established sleep/work pattern, such as alternating day/night duties

(g) provide rest periods of sufficient time to enable crew members to overcome the effects of the previous duties and to be rested by the start of the following flight duty period

Demonstration of Compliance

Successful use of Management System (ORO.GEN.200) to demonstrate fatigue management within the boundaries of prescriptive limits of
CS-FTL.1

Pre-condition for and to be demonstrated before approaching CA for FRM approval

FRMS Approval Process:

Regulatory Oversight

- Assess agreed performance indicators and mitigation measures using information from the assurance process
- Work with the operator to adjust mitigations and/or limits, if required
- Set up continuous review audit program

Summary of EU Approach

High level legal requirement to manage fatigue through a scheme approved by the Regulatory Authority

Specific requirements developed by the Regulatory Authority using a risk assessment supported by science and industry wide consultation

Flexibility provisions permitted in the law to be managed by the National Aviation Authority

The last 70 years - changes in the wind

- In 1999, the Australian House of Representatives Standing Committee on Communication, Transport and the Arts conducted an inquiry into managing fatigue in the transport industries in Australia.
- The resulting report, titled “Beyond the Midnight Oil: Managing Fatigue in the Transport Industry” (2000) noted that **fatigue in transport is a problem that must be addressed by governments, by transport companies and by workers in the transport industry**.
- The report identified a lack of operator obligations regarding management of fatigue and relevantly stated: ‘*We are alarmed at the state of the current system of regulating flight and duty times for air crew. The current system, as provided for by Civil Aviation Order Part 48, is universally regarded as being anachronistic and deeply flawed*.’

The last 70 years – changes in the wind

- The report included aviation industry-specific recommendations, including that fatigue management should be a basic requirement for air operators, including aircraft maintenance activities, and that the management of fatigue should be a component of safety audits.

- The report also recommended that "*The Civil Aviation Safety Authority should implement Fatigue Risk Management Systems to regulate flight and duty times for aircrew as soon as it is feasible to do so*".

Time for a Sweeping Change

- The new rules were timed to follow ICAO amendment to Annex 6
- They followed a comprehensive review of existing rules and standard exemptions
- Available science as well as national and international experience was considered
- **Goal was for no exemptions, just:**
  - **Prescriptive limits; or**
  - **FRMS**

Three Tiers of Compliance

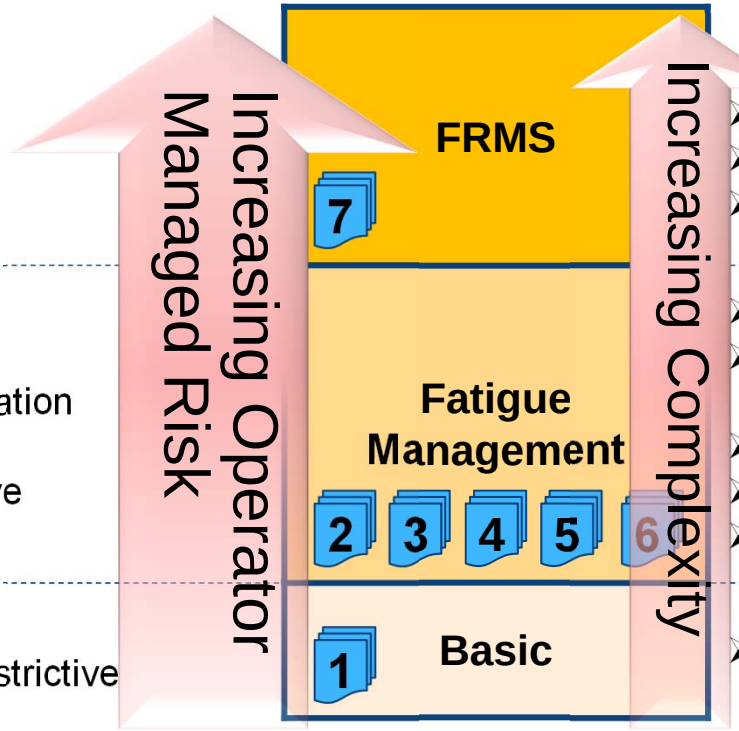
Limitations

Operator Obligations

- Customisable
- Data-driven
- Closed-loop

- Prescriptive
- Type-of-Operation
- More flexible
- Less restrictive

- Prescriptive
- Somewhat restrictive



- Policy and documentation
- Risk management processes
- Safety assurance processes
- Safety promotion processes

- Hazard identification
- Limitations taking into account identified hazards
- Continuous monitoring
- Transitional procedures
- Training for FCMs

- No additional obligations

FAA Background

Legal Requirement:

"…the FAA Administrator to issue regulations to limit the number of flight and duty time hours allowed for pilots to address pilot fatigue"

Regulator responsibility: To determine specific limits and numbers

- Physiological differences of individual pilots
- Unique aspects of different business models
- Transportation needs of the flying public

100+ scientific studies referenced

Federal Aviation Administration

What is an FRMP?

- A FRMP is an air carrier's management plan outlining policies and procedures for reducing the risks of flightcrew member fatigue and improving flightcrew member alertness.

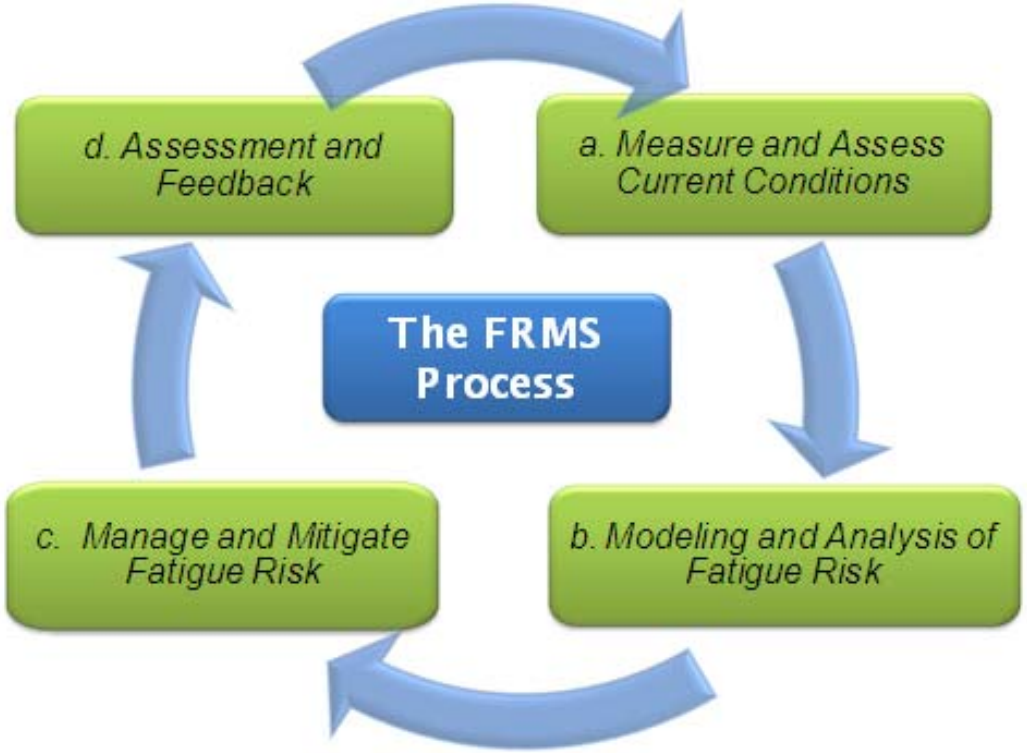
- The FRMP policies and procedures focus on the air carrier's specific kind of operations (e.g., domestic, flag, and supplemental) and the type operations (e.g., multiple segments, continuous duty overnights, night vs. day operations, cargo vs. passenger operations, short-haul vs. long-haul, etc.).

- Manages the effects of flightcrew member fatigue associated with day-to-day operations within a regulatory structure.

What is an FRMS?

- An alternative to a prescriptive rule
- Must establish an equivalent level of safety
- A fatigue mitigation tool that minimizes the acute and chronic sources of fatigue and manages the potential risks associated with fatigue associated with a specific operation.
- A management system operators use for mitigating the effects of fatigue in their operations.

FRMS Process



FRMP & FRMS Overview and Application
22 July 2011

Federal Aviation Administration

Fatigue Models

- A biomathematical fatigue model **is one tool of many** that can be used to help identify and manage fatigue related risk
- A fatigue model by itself is NOT an FRMS
- A fatigue model with scheduling software is NOT an FRMS

Thank you for your attention