

SAFETY FOCUS

Fatigue Risk Management in ANS

Human Performance Management WorkGroup (HPMWG)

June 9th 2022 – Time

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Lea - Sophie Vink

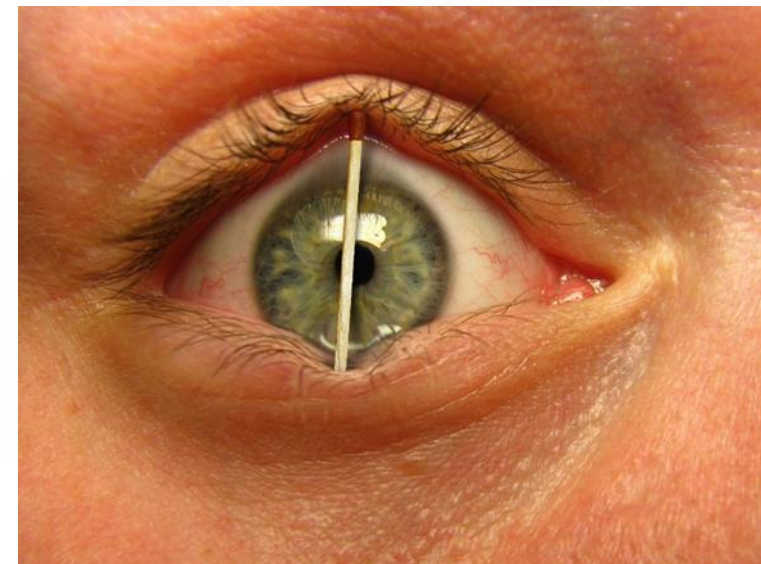


Aim of today / Agenda

1. Overview of FRMS guidance for ANSPs including critique and limitations of current ICAO standards for ANS (CANSO)
2. Comparison of ANSPs in Europe for the application of Rostering rules (Austro Control)
3. How fatigue is measured in ATC and amongst operational Engineers (NATS)
4. How fatigue is measured in ATC and the integrated FRMS at Austro Control (Austro Control)
5. CANSO HPM Team approach and on-going research: Fatigue meets Well-being (CANSO)
6. NATS Case study: Steering group, Operational Fatigue Policy and in-practice schedules

Definition of fatigue

A physiological state of reduced mental or physical performance capability resulting from sleep loss, extended wakefulness, circadian phase, and/or workload (mental and/or physical activity) that can impair a person's alertness and ability to adequately perform safety related operational duties



Overview of ANSP Guidance in Europe...

EU 2017/373

ICAO 9966 – Annex D

National Laws (including Occupational Health and Safety)

Local ANSPs

ATS.OR.300 Scope

This section establishes the requirements to be met by the air traffic control service provider with regard to human performance in order to:

- (a) prevent and mitigate the risk that air traffic control service is provided by air traffic controllers with problematic use of psychoactive substances;
- (b) prevent and mitigate the negative effects of stress on air traffic controllers to ensure the safety of air traffic;
- (c) prevent and mitigate the negative effects of fatigue on air traffic controllers to ensure the safety of air traffic.

ATS.OR.315 Fatigue

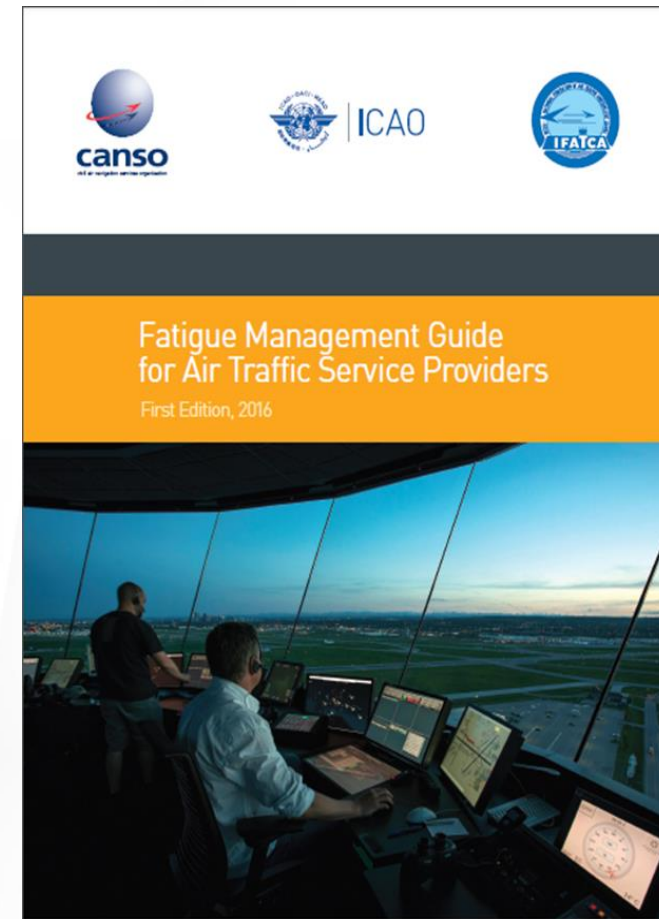
In accordance with point ATS.OR.200, an air traffic control service provider shall:

- (a) develop and maintain a policy for the management of air traffic controllers' fatigue;
- (b) provide air traffic controllers with information programmes on the prevention of fatigue, complementing human factors training provided in accordance with Sections 3 and 4 of Subpart D of Annex I to Regulation (EU) 2015/340.

Fatigue Risk Management Responsibilities

Fatigue risk management has to be a shared responsibility between:

- The Regulator
- The Air Navigation Service Provider (or the airline)
- The Controller (or the pilot)



ANSP Responsibilities



Implement work schedules that enable Air Traffic Controllers to perform their duties safely



Provide a working environment that has appropriate emphasis on controls and / or mitigations for fatigue-related risks



Provide adequate opportunities for rest and sleep



Provide fatigue management education and awareness training for all stakeholders



Have a process for monitoring and managing fatigue

Doc 9966 – Annex D for ATCOs

Doc 9966

Manual for the Oversight
of Fatigue Management Approaches
Second Edition - 2016

D3. DUTY LIMITATION PARAMETERS

D3.1. DUTY PERIOD

- The duty period may not exceed (*) [12] hours
- The aggregate of duty period hours may not exceed (*) [200] hours within a defined period of (*) [720] consecutive hours or (*) [30] consecutive days
- There must be at least (*) [12] hours between the end of one duty period and the beginning of the next
- No more than (*) [6] consecutive days of duty shall be worked
- If the maximum number of consecutive days of duty is rostered, there shall be a minimum interval of (*) [60] hours between the end of one consecutive period of duty days and the next

Scientific and operational factors for consideration: There may be variable limits of duty period throughout the day which reflect task complexity and workload requirements as well as time of day and circadian disruption. There must be sufficient time between duty periods for suitable sleep. The cumulative effects of fatigue over a period of days should be considered.

D3.2. OPERATIONAL DUTY

- No period of operational duty shall exceed (*) [2] hours
- No operational duty shall exceed (*) [2] hours without there being a break taken during or at the end of that period
- A break should total not less than (*) [30] minutes

Scientific and operational factors for consideration: Time in the controlling position should be limited based on complexity of task and workload. Breaks should provide sufficient time away from tasks to allow individuals to resume work with a sufficient level of performance. Breaks could be structured to allow napping or sleeping opportunities if appropriate.

D3.3. NIGHT DUTIES

- A period of night duty shall be defined as starting at (*) [0130 local] and ending at (*) [0529 local]
- A duty which covers all or part of the period of night duty shall not exceed (*) [10] hours
- No more than (*) [3] consecutive duties shall be worked which cover all or part of the period of night duty.
- A minimum period of (*) [54] hours shall occur between the end of duties which cover all or part of the period of night duty and the commencement of the next period of duty

Scientific and operational factors for consideration: A night duty shall be wholly or partly between the window of circadian low. Consideration should be given to the research with regard to shift length and night work. Recovery time from night duties should allow recovery from any sleep debt accumulated and reversion to normal sleep cycle rhythms.

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INTERNATIONAL CIVIL AVIATION ORGANIZATION

The room for interpretation is very wide... what happens ,within' the 12 hours or 2 hours is also not defined...

Fatigue in ATC and Engineering

Managing Fatigue

- Fatigue Policy
- Fatigue training
- Investigators trained
- Internal 'audits'
- Adhere to CAA Regulator's Working time limitations
- 'Local modifications' for busier operations (terminal control)
- Rest facilities



Measuring Fatigue

- Engineering: Self-report surveys – including workload and fatigue (Sam-Perelli and Karolinska sleepiness scales both used).
- ATC: existing reporting system (STAR).
- Managers fatigue training module – spot signs of fatigue and how to deal with it.
- Review reports where fatigue was identified as contributing factor

How is Fatigue measured at Austro Control?

ATCO surveys

Engineering surveys

Existing reporting systems

Analysis of reports (MORs and observations)

Time in Position vs Complexity vs Monitor Values

Thinking ahead...

- Unique fatigue reporting form?
- Integration of FRMS with IMS
- Change the language around fatigue?
- Fatigue + Boredom + Monotony?

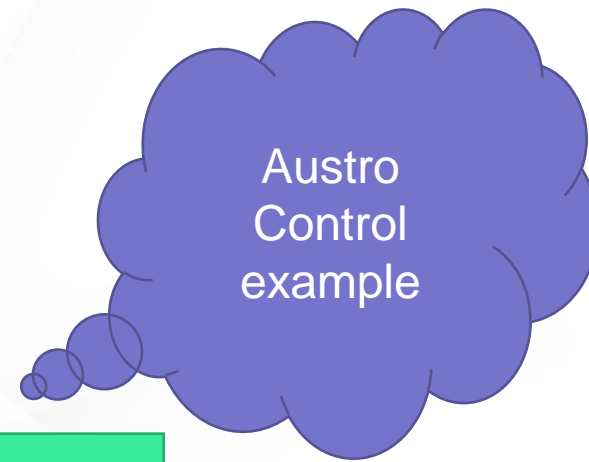


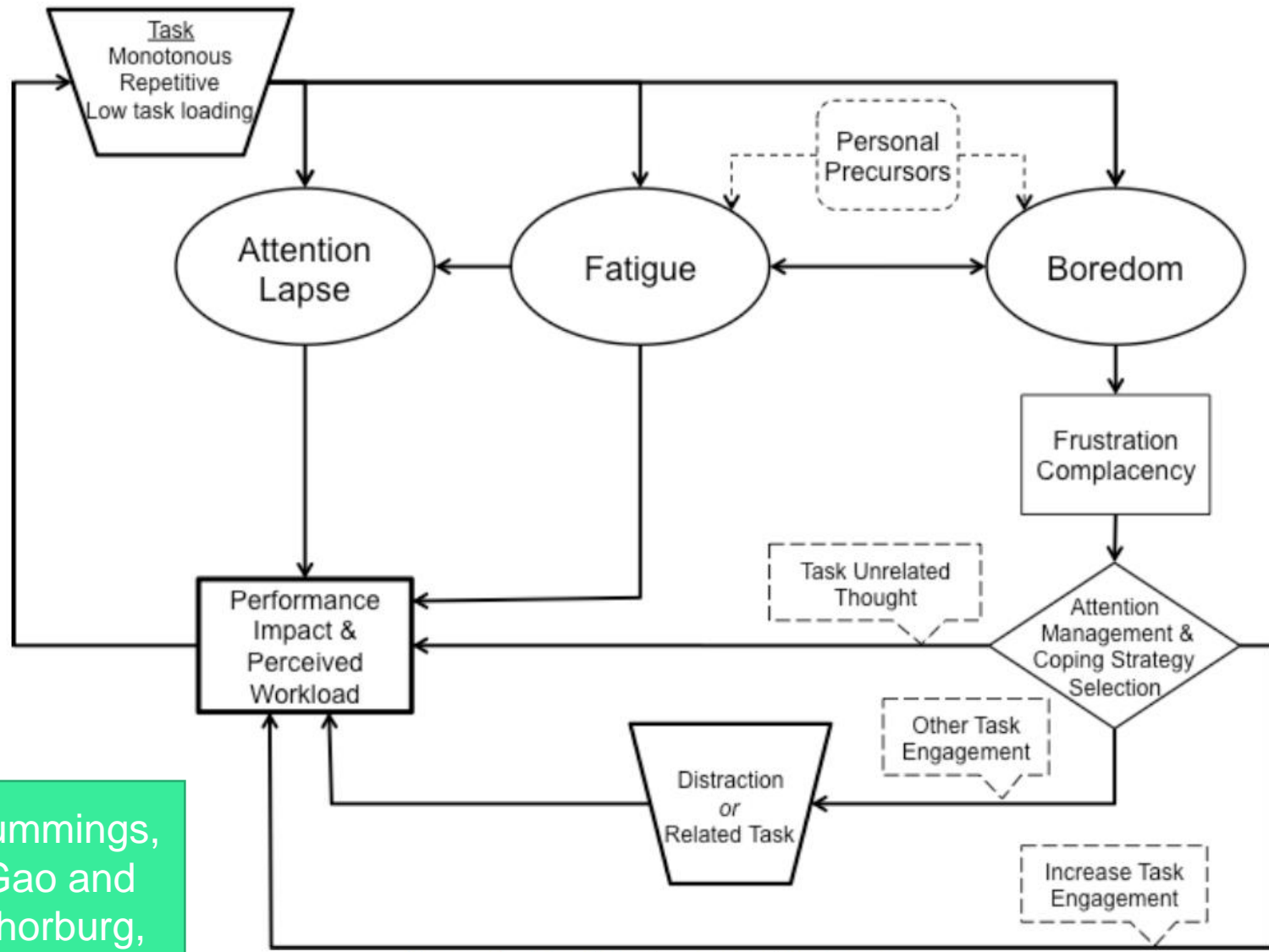
1. Rostering = High level monthly plan

2. Time-in-Position = day to day variation

3. TiP compared with Traffic and Complexity

4. Results compared with Feedback, Wellbeing and Leave balances





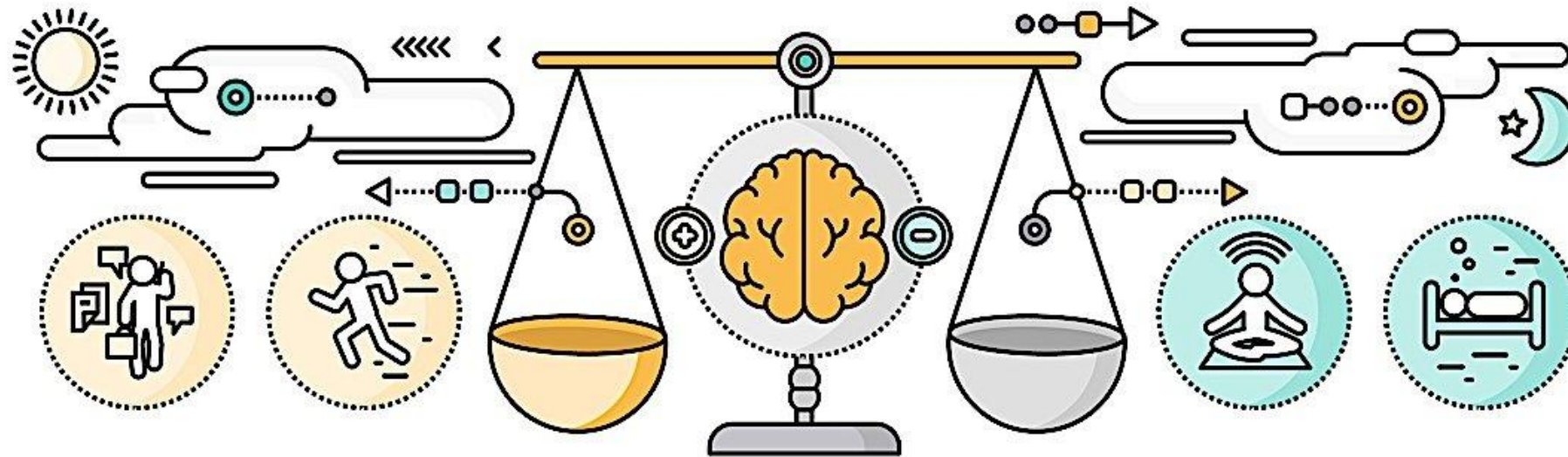
Fatigue within the context of Human Performance, Human Error and Well-being

Cummings, Gao and Thorburg, 2016

Figure 1: Boredom Influence Diagram

Fatigue, Distraction, Well-being...

The future is integrated



- Mental Health is having an effect on Safety and Performance already... Covid showed us that human performance and safety issues have shifted and are affected by well-being

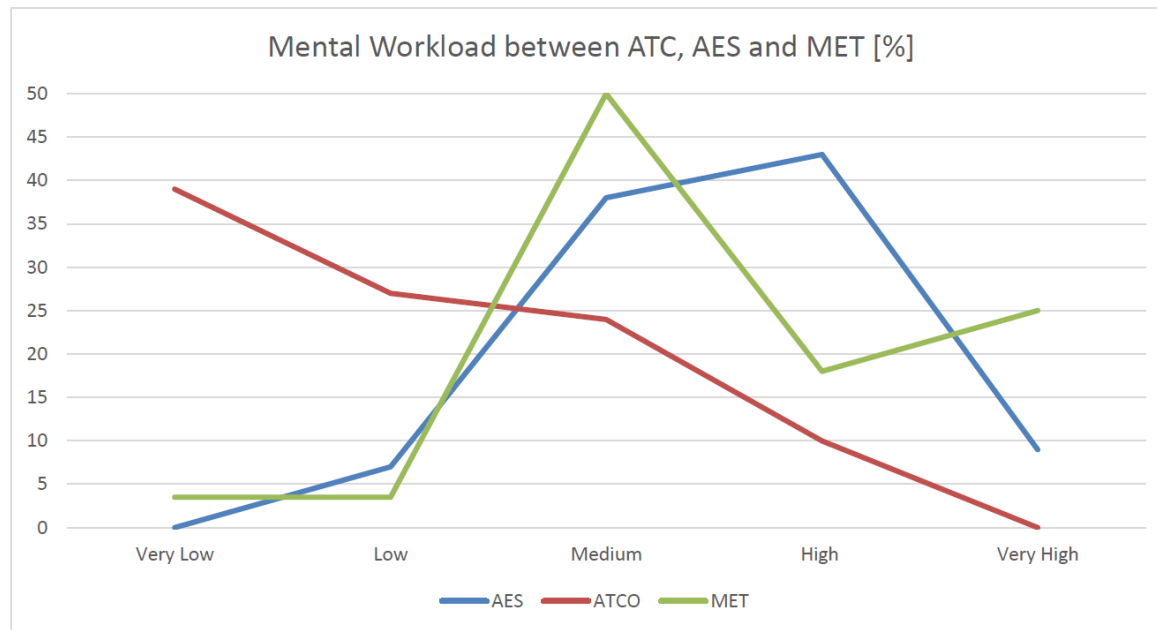


Figure 6 - Workload Comparison between ATCOs, AES and MET

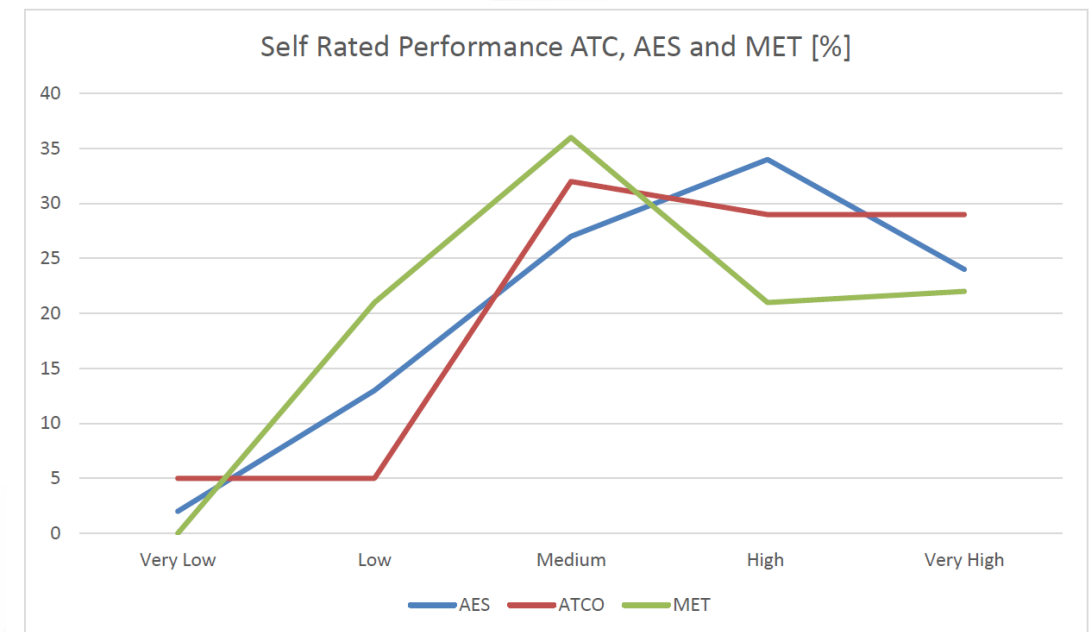
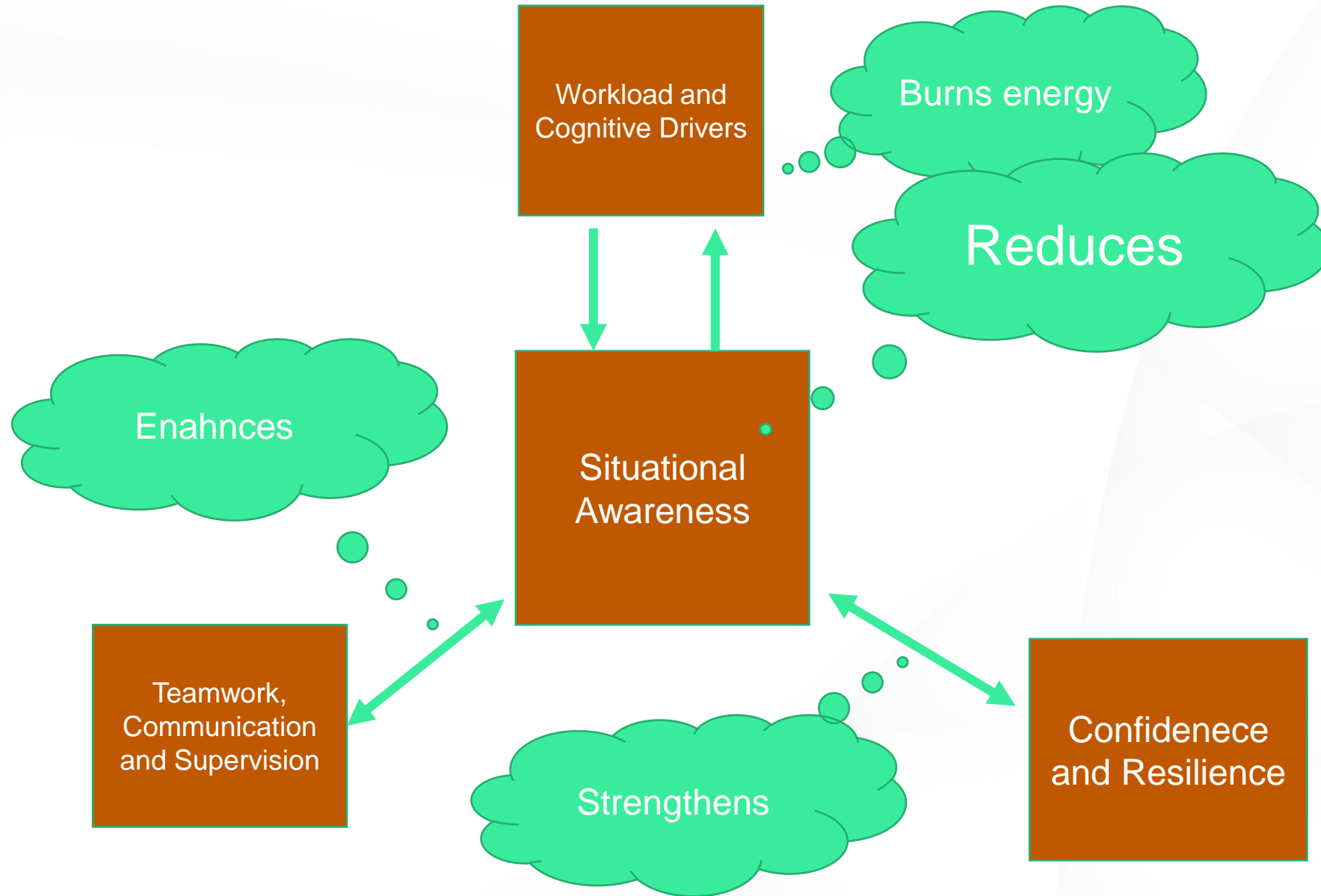
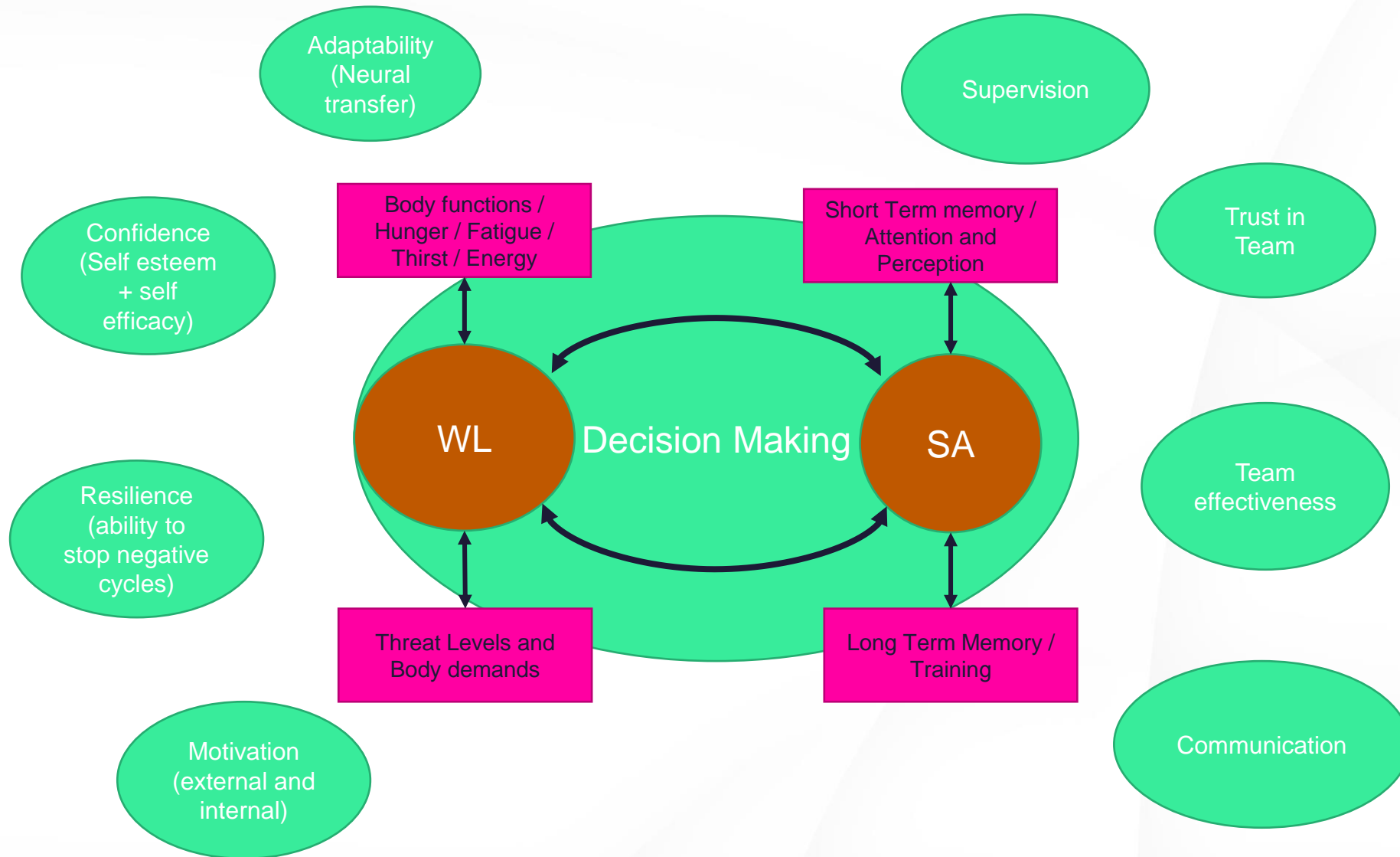


Figure 7 - Self-rated Performance between ATCOs, AES and MET



Internal Psychological Support

External Psychological Support



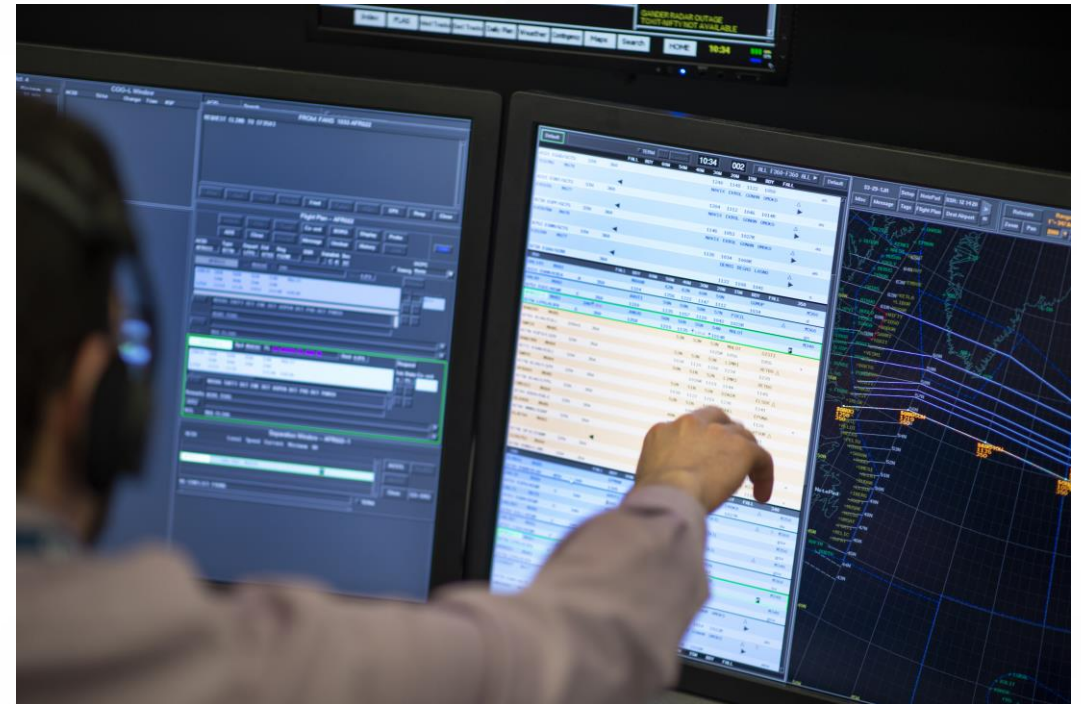
NATS Case Study

Managing risk of fatigue in Engineering

- Engineering changed shift pattern to align with ATC shift pattern
- Self-report data from engineers, every 3 months over the last 18 months since implementation
- Human Factors Specialists (owner of the Fatigue Policy) ensures policy is adhered to and assess fatigue controls in place.
- Evidence gathered and recommendations made.

NATS blog on working night shifts:

<https://nats.aero/blog/2020/03/shift-survivors-how-air-traffic-controllers-cope-with-night-working/>



Discussion points as required

Fatigue Management

- Are we managing Fatigue correctly?
- Is rostering all there is? Can technology help us?
- Is our work becoming 'more boring' and 'more monotonous' ?
- Should Fatigue be 'managed' or just eradicated?

What is the impact to selection / recruitment and competencies in the future?

Mental Health

- How much focus is given to maintaining Mental Health amongst ATCOs and Operational Engineer
- Do organisations take a proactive approach to training Resilience and Confidence?
- Do organisations have facilities (other than CISM) to react to mental health issues?
- Aside from HR, is Mental Health discussed and kept an eye on at your organisation?
- Will there be a 'burnout creep' in the coming years?

THANK YOU

CANSO

SHAPING OUR FUTURE SKIES

