EUROCONTROL

# SAF

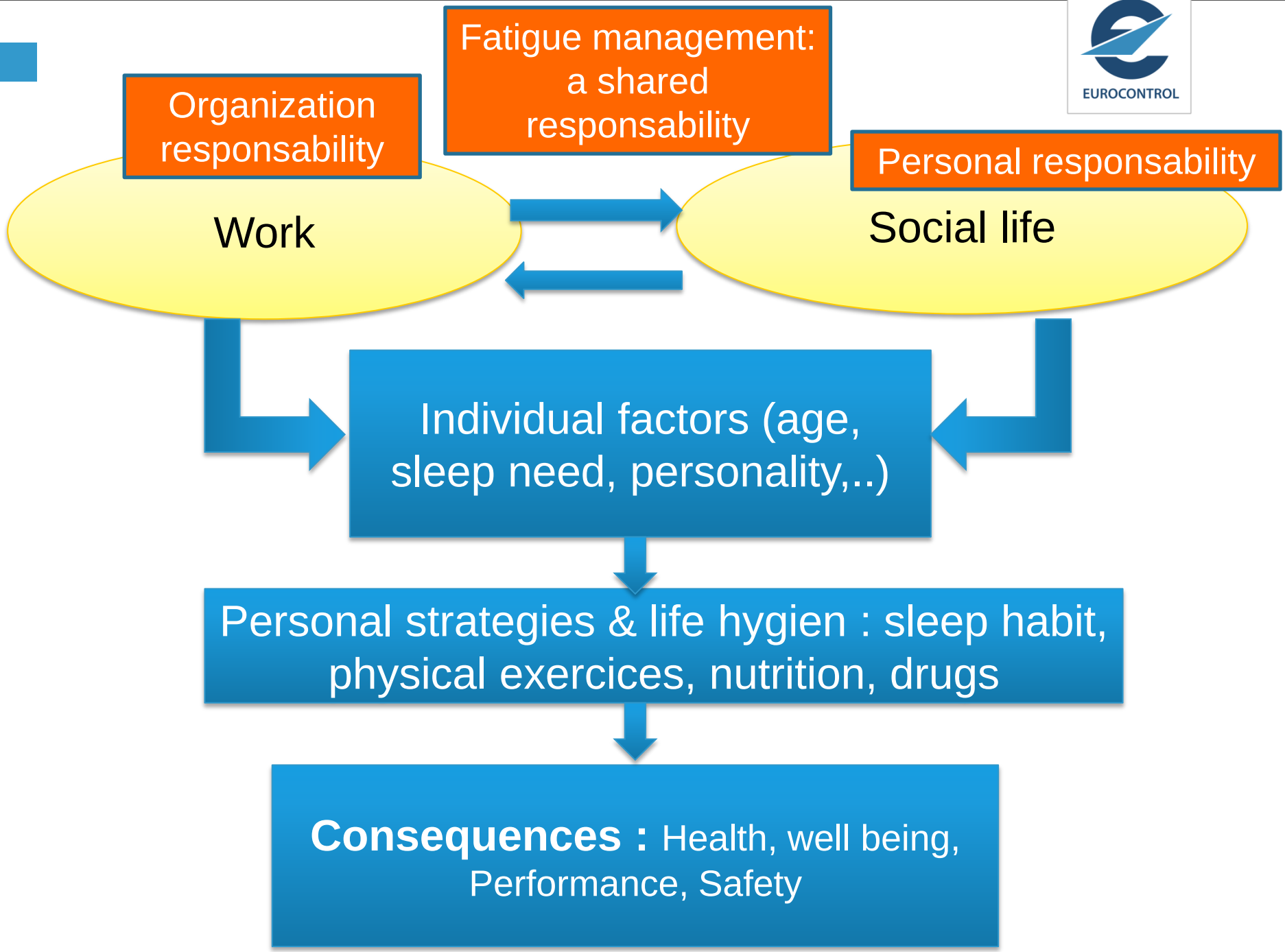
## ROSTERING: fatigue constraints and guidelines

# Why fatigue is important?

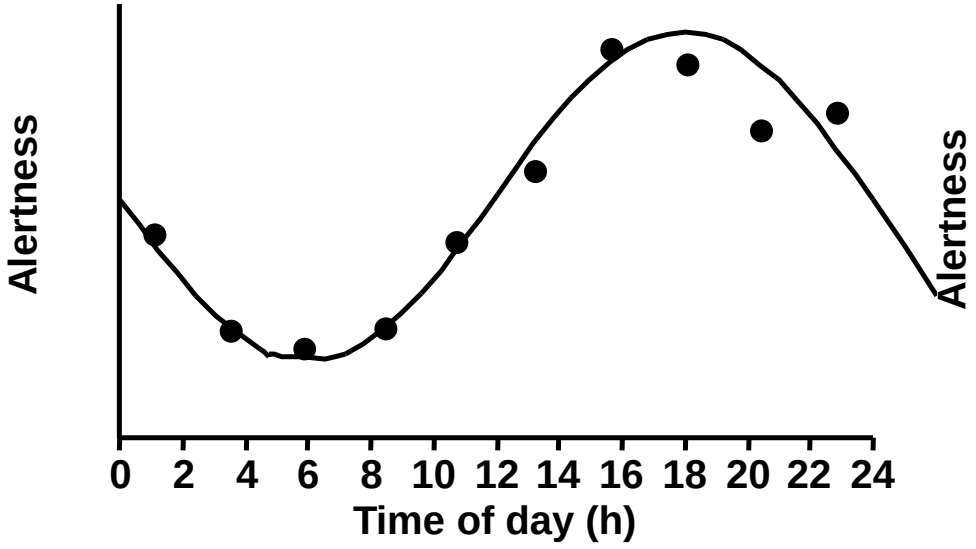
- Fatigue risk is an important aspect of the ATM work (shift work, night work, increase traffic, increased complexity…) and new regulations required this risk to be managed.

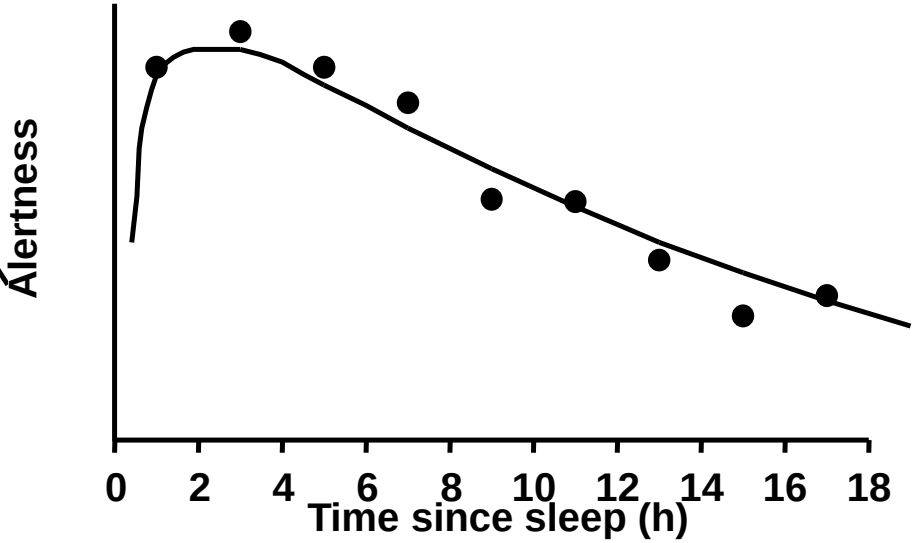
- Health: It is recognised that fatigue impacts people health (immunity, cancer, depression …)

- Fatigue is linked to stress and social connectedness


Fatigue management: a shared responsability
Organization responsability
Personal responsability
Work
Social life
Individual factors (age, sleep need, personality,..)
Personal strategies & life hygien : sleep habit, physical exercices, nutrition, drugs
Consequences : Health, well being, Performance, Safety

# Sleep-wake cycle regulation



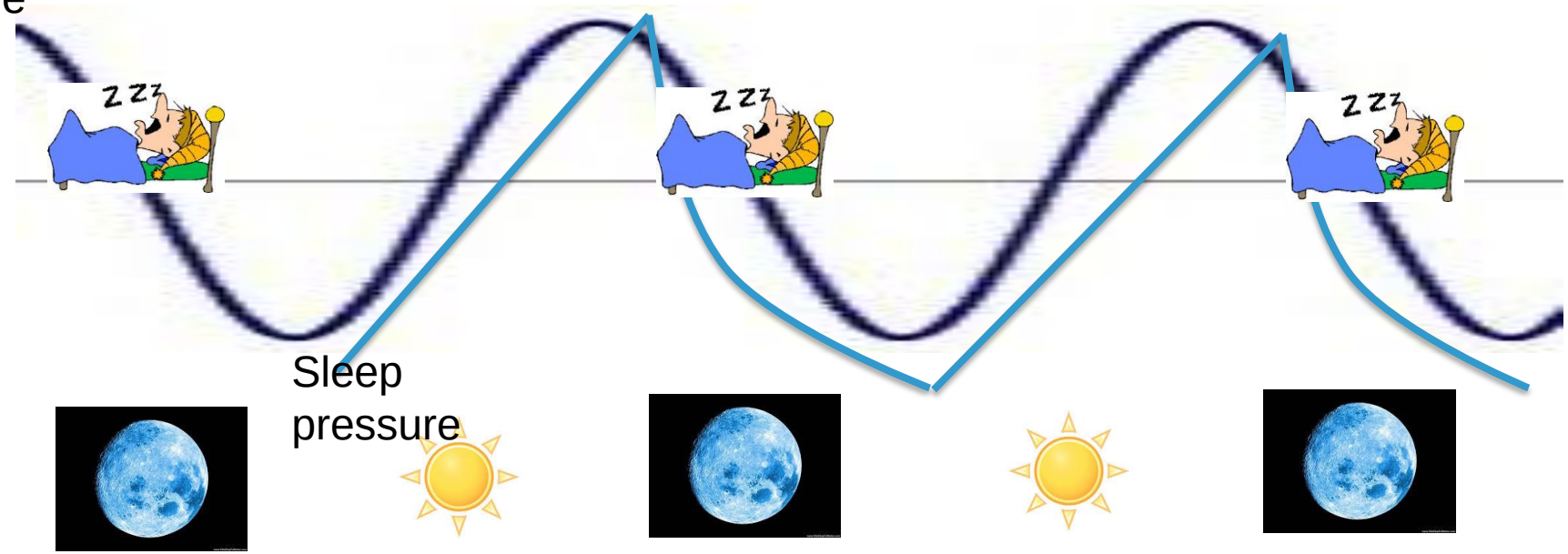



# Daytime work, night sleep

**Process C and S are synchronized**

- **Good nightime sleep the night**
- **High daytime alertness**

Circadian cycle

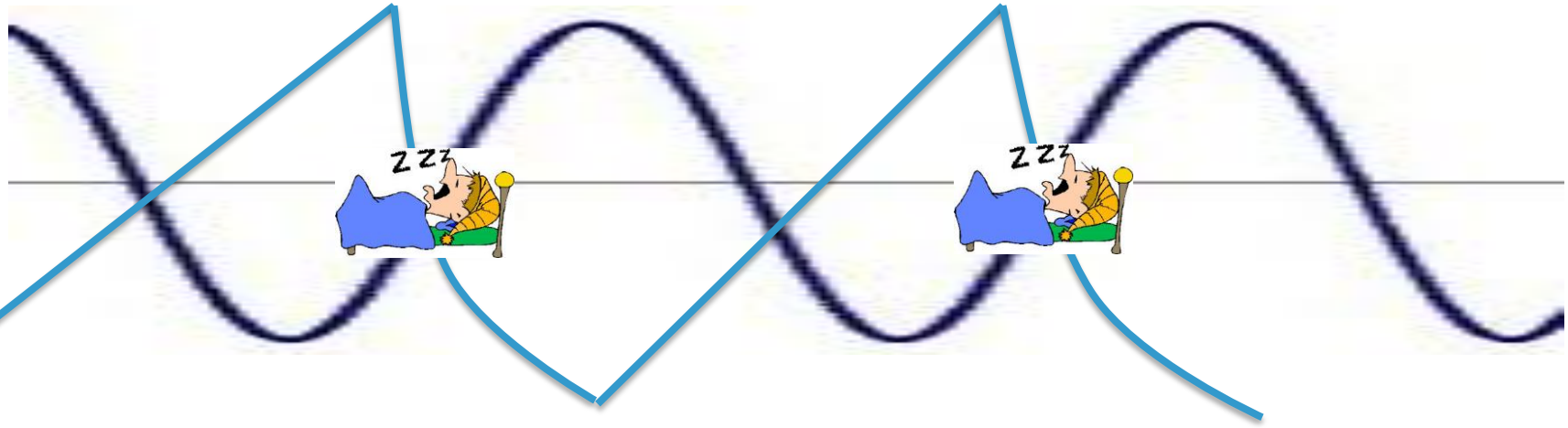


# Night work, day sleep

**Process C and S are desynchronized**

- **Poor daytime sleep**
- **Low nightime alertness**

Circadian cycle



Sleep pressure

# Specificities of ATM

- ✓ Critical Safety  importance.
- ✓ ATCOs always have to sustain a high level of performance.
- ✓ High Complexity and dynamics
- ✓ Overload (stress) as well as underload (boredom)
- ✓ Workload varies substantially daily, weekly, seasonally
- ✓ The handover of ATCO positions is critical
- ✓ Cultural differences: What works in one area may not work in another area.
- ✓ Labour relations: Unions/social dialogue partners are involved with any changes to the shift system, which requires negotiation with the social partners.
- ✓ European countries have various labour laws in place on working time, to which ANSPs need to subject their rostering rules.

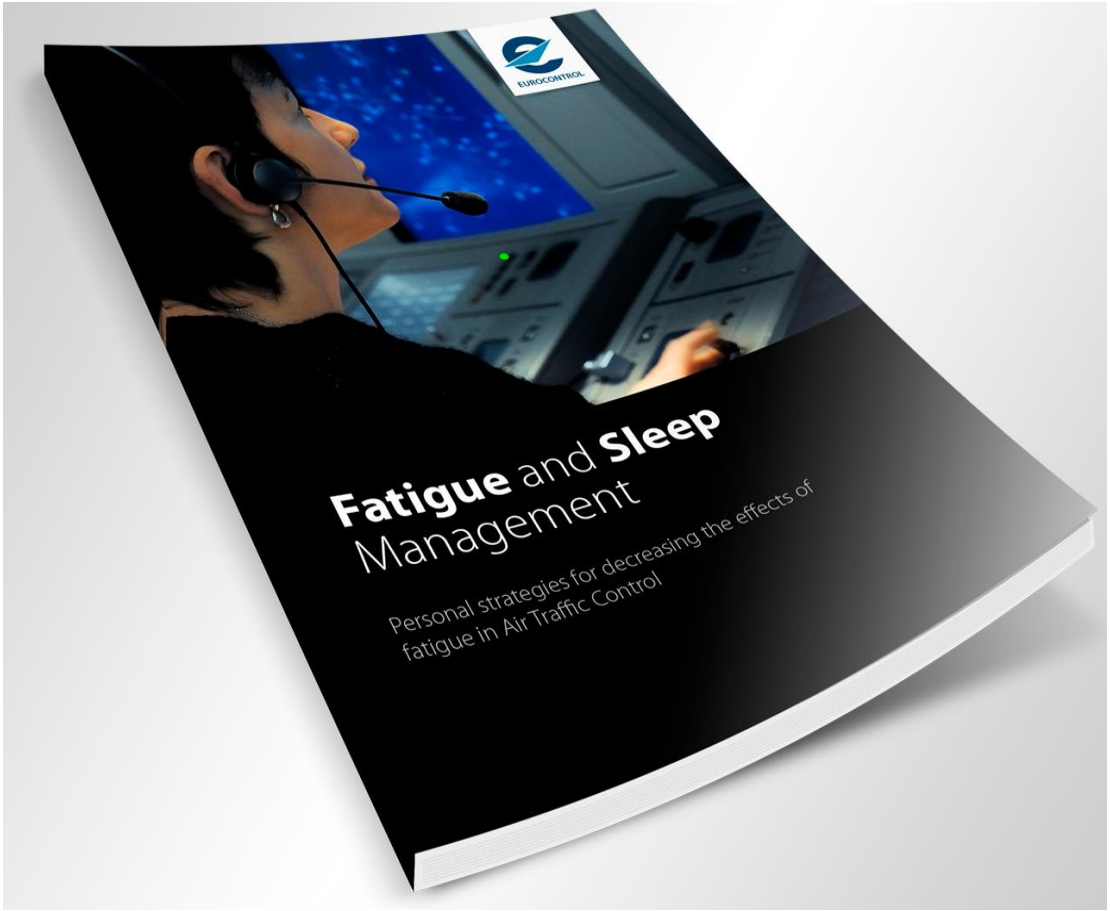
# 1st INITIATIVE:

**Course in IANS: HUM-SFM**
**Stress and Fatigue management in ATM**

Break some misconceptions
Bring required level of knowledge on fatigue science
Provide a set of tools

# 2nd INTIATIVE: guides and guidance

- New guide for fatigue management
  - available in glossy.




http://www.eurocontrol.int/sites/default/files/publication/files/sleep-mgnt-online-13032018.pdf

# 3rd INITIATIVE: fatigue study in the OPS room

- Fatigue requires a systemic and combined approach

- A first benchmarking of practices that impact fatigue has started among several European ANSP's

- A toolbox setup by EUROCONTROL (adapted from Airlines FRMS) is used during this study

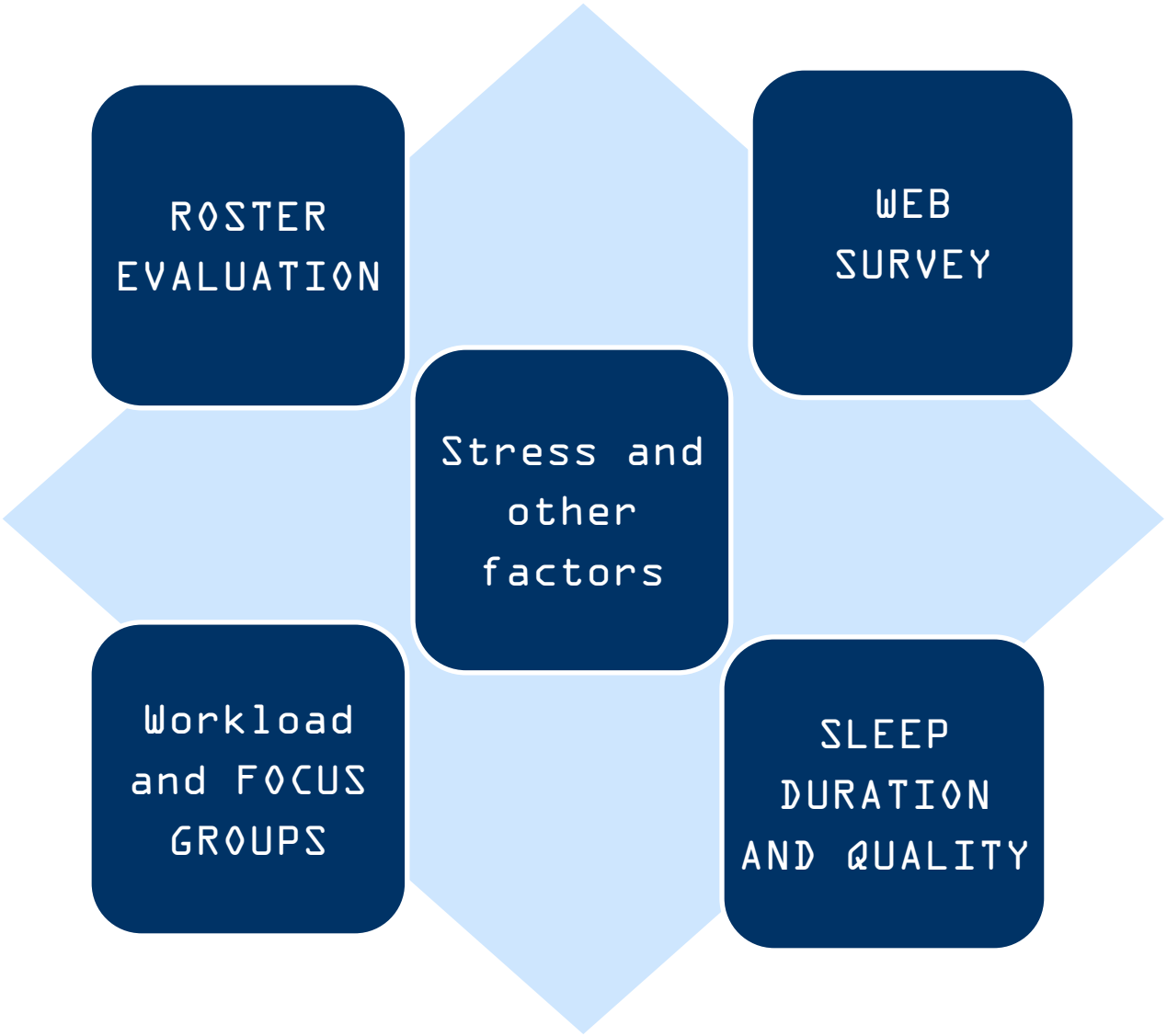
# Methodology

In an operational context, fatigue assessment (and prediction) should be undertaken considering multiple factors:

- Physiology
- Behaviour
- Perceptions and feelings
- Performance
- Environmental exposure
- Sleep history

Expert analysis are required to understand the balance of factors that need to be considered.

# TOOLBOX


ROSTER EVALUATION
WEB SURVEY
Stress and other factors
Workload and FOCUS GROUPS
SLEEP DURATION AND QUALITY

# Guidelines for fatigue

Three guidelines for the “ideal shift solution” were identified as particularly important:

- forward rotation,
- need for extended free time after night shift,
- reduction in the number of successive nights.

# Other important aspects

- Adapt rest and working conditions during WOCL
- Accommodate ageing population
- Build a regular free WE into the shift schedule
- Restrict early morning shifts to 2 consecutive shifts.
- Ensure enough luminosity in the OPS room
- Allow 2 nights full sleep when switching from day to night shift
- Max consecutive days with duties should not exceed 5

….

# Development needed

rostering of Air Traffic Controllers is a complex and under researched area of the personnel scheduling literature.

If we aim for an effective (in terms of fatigue, staffing usage, demand matching…)process of rostering the only feasible method to produce real world rosters for controllers requires development of a support tool.

> We need the ability to model shifts, breaks, multiple tasks and demand, while maintaining different qualifications, rotating staff through all sectors for which they are qualified … We need to build flexibility to train, react to last minute change, sickness etc… All that is far too complex to be done by hand integrating new requirements for fatigue, stress, etc…

# Questions