

PROACTIVE FATIGUE MANAGEMENT

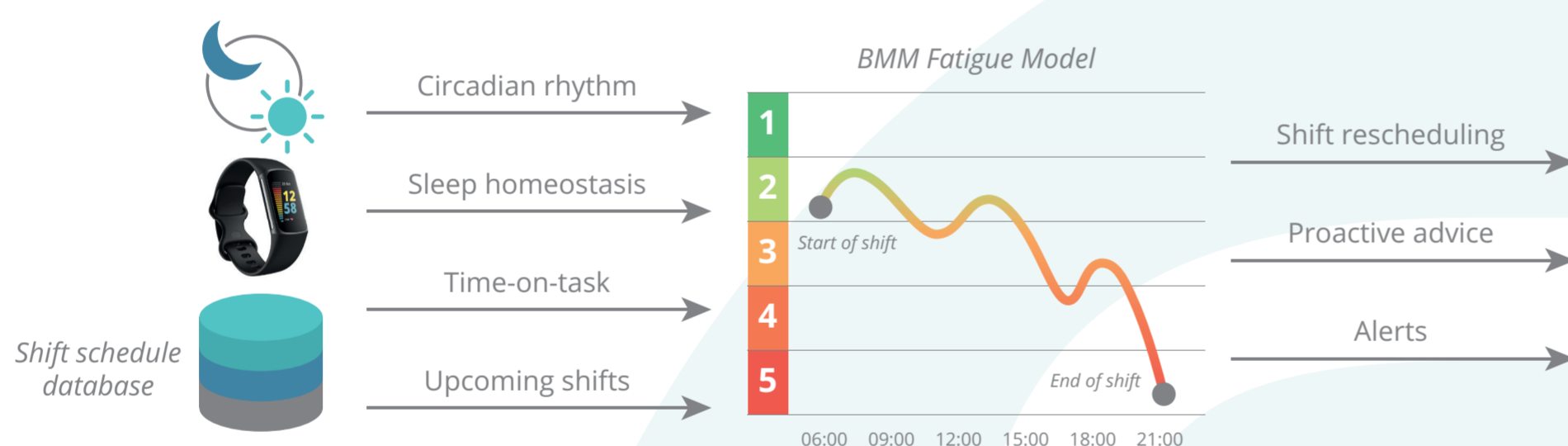
with predictive biomathematical models in autonomous shuttle operations

CHALLENGES

- Driver fatigue poses significant risks in public transportation due to tight scheduling, stress, split shifts, troublesome passengers, poor sleep, etc.
- In automated shuttles, fatigue is mainly caused by tiresome supervision of the automated systems.
- Driver monitoring systems provides a last resort, a proactive warning would be more useful.



APPROACH



Biomathematical modelling (BMM) can estimate and predict upcoming episodes with elevated fatigue risks.

The models fuse information from:

- sleep and wake patterns measured with a wearable device
- time of day and circadian effects
- roster and shift patterns
- time on task.

Based on the BMM output, both drivers and operators are alerted well in advance when there is high risk of fatigue in the upcoming shift.

INNOVATION



Fatigue estimation/prediction can be used to:

- alert drivers already in the evening if they are in danger of insufficient sleep
- adapt shift schedules and call-in replacement drivers well in advance
- tailor fatigue countermeasures (by separating sleepiness from task-related fatigue).