The Boeing Alertness Model

Scientific Basis

BAM is based on research published by Folkard/Åkerstedt on the Three Process Model of Alertness – also known as the Sleep Wake Predictor. Most relevant references include:


BAM Prediction Capability

Output
Sleepiness mapped to the Common Alertness Scale\(^1\) ranging from 0 to 10,000.

Output mode
Continuous predictions + discrete mode per flight for optimization.

Prediction type for opt.
Predicts by default the lowest point on a flight. Configurable to e.g. top-of-descent.

Sleep prediction
Open – fully visible start/end.

Individualization
Configurable diurnal type and habitual sleep length per chain.

Improvement method
Closed loop improvement from collected data. Self-tuning algorithm.

Applicability

Transfer time handling
BAM respects configurable transfer times allowing for modeling of commuting and variation in hotel locations.

Initial state pairing\(^2\)
A start-state is customizable to ensure for best rosterability.

Augmentation
Up to three in-flight rests.

Acclimatization
Time zone driven.

Sleep adjustment
Configurable to enable airline specific strategy – both in-flight and in turn-arounds.

Performance\(^3\)
>150,000 flight predictions/second, scaling further via multi-core execution.

Interface
Complies fully with proposed industry technology standard CAPI 2.0 for performance, connectivity and interchangeability.

Deployment
Available stand-alone as well as through CrewAlert (iOS), CFAS (web service) and integrated in the Jeppesen Crew Solution Suite.

Support and Training

Support
BAM is supported for mission-critical applications out of Denver, Gothenburg and Singapore. SLA is available on two levels: office hours or 24/7.

Systematic regression testing and service pack process for new releases.

Architectures
RHEL4 and above (64bit), AIX, Solaris, HP-UX, and iOS.

Training
Training courses are offered in Denver, Montreal, Gothenburg and Singapore.

Sales/Contact
BAM is sold and supported worldwide by Jeppesen. For more information please visit www.jeppesen.com/frm or contact a sales representative through frm@jeppesen.com.

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1) A by Boeing/Jeppesen proposed common scale for all fatigue models.
2) Pairing construction requires control over assumptions for the final roster context.
3) Single core performance measured on P9400 2.53GHz with chains averaging 70 legs.