

# Fatigue Risk Management (FRM) Solutions



## KEY FEATURES:

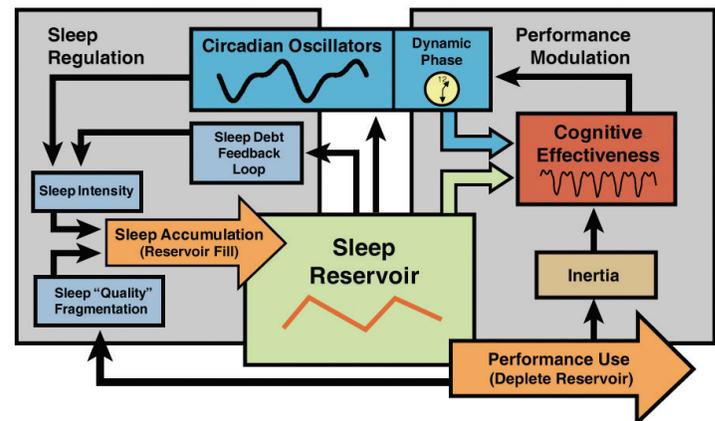
- Industry leading FRM solution provider
- Model used by the US FAA and dozens of airlines around the world
- Integration with airline scheduling and crew planning systems
- FRM support from renowned fatigue scientist with industry expertise
- User-friendly, intuitive solution easily implemented at each stage in scheduling process
- SaaS model that includes a continual product enhancement philosophy

**Institutes for Behavior Resources (IBR)** is an internationally recognized provider of technologies and services to support FRM. The organization has a 50-year history as an innovative research, service, and educational organization focused on operational risk assessment and implementation of fatigue risk management systems in compliance with international guidelines. IBR specializes in analysis of scheduling policies and procedures and collection of sleep and performance data to support a continuous performance improvement process using:

- Tools to forecast and mitigate fatigue risks associated with duty schedules
- SAFTE®-FAST biomathematical modeling of duty schedules to support FRM
- Expertise of SAFTE inventor, Dr. Steven Hursh, and staff of fatigue scientists and scheduling specialists
- Experience with airlines around the world to proactively assess and mitigate fatigue hazards
- User-friendly, economical, and effective implementation of FRM processes

**Proven Robust Solution** The SAFTE model is validated and used by the US Department of Defense, US Federal Aviation and Federal Railroad Administrations, 24 airlines, and a dozen railroads. Features include:

- Batch processing of data from any point in the crew scheduling process
- Fully configurable program to adapt to airline requirements and operational conditions
- Clear, intuitive, verifiable, and actionable information for effective fatigue mitigation, relied on by users from both airlines and pilot groups



**Multiple Scenario Analysis** – SAFTE-FAST FRM tool enables users to compare multiple scenarios for fatigue analysis. The tool highlights potential fatigue factors for proactive mitigation, providing explicit and verifiable fatigue management advice.

**Fatigue Risk Management** – SAFTE-FAST helps airlines identify and develop their ideal balance between airline efficiency and a fully rested crew. An approved FRM, supported by modeling, can be used to justify exceptions to specific flight and duty time limitations, which can increase operational flexibility.

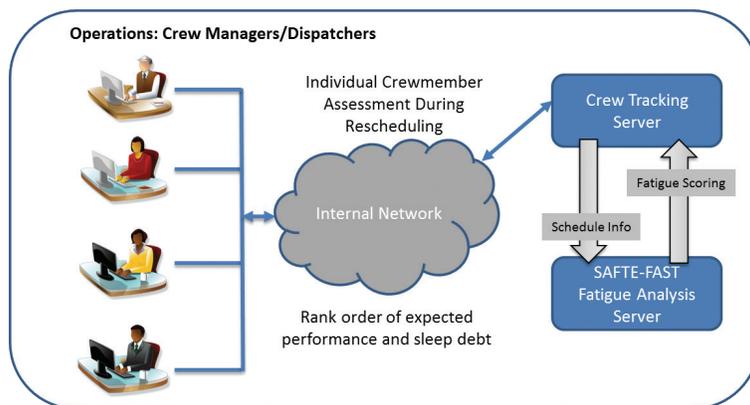
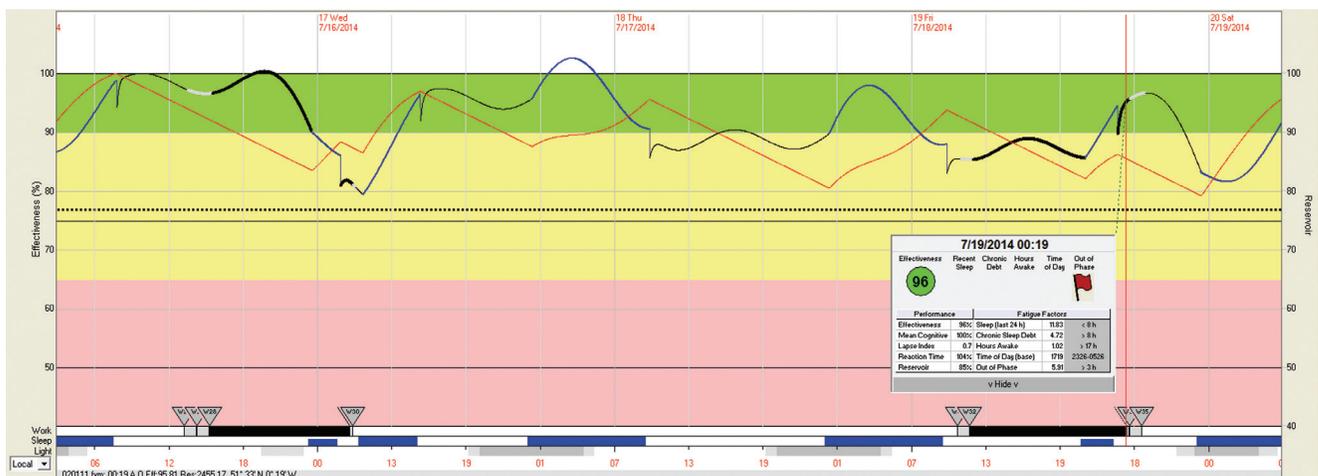
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**SAFTE-FAST** is a Windows program consisting of two modules: the **Modeler** and **Manager**. The Modeler reads a standard xml file of multiple schedules, estimates the pattern of sleep, and processes the pattern of work and sleep through the SAFTE® model. The results are immediately ported to the Manager which provides a rank ordering of all schedules according to any of an assortment of fatigue metrics. The Manager helps the operator rapidly isolate “outliers” – schedules that might create excessive fatigue risk. Any schedule in the Manager can be visualized in detail in Visual FAST. SAFTE-FAST also generates a Summary file useful for aggregate fatigue assessment, comparison of fleets or work groups, planned versus actual, and trending over time using the Reporting Tool. SAFTE-FAST is capable of reading and converting data from any scheduling system.

**Visual FAST** is the graphical fatigue assessment tool originally developed for the US Air Force and is now the gold standard for graphical analysis of fatigue-related variations in predicted performance. Based on over 10 years of experience, Visual FAST is unsurpassed for performing root cause analysis of fatigue factors and cumulative fatigue effects. It displays an intuitive graph of predicted performance (**Effectiveness**) that is validated to predict changes in actual worker performance and increases in accident risk. Events on the graph are easily edited to reflect the performance effects of schedule changes or “what if” scenarios. The Effectiveness values from FAST are highly correlated with the factors that cause fatigue reports. The Dashboard shows fatigue factors at any point in the schedule, the same factors that would be evaluated by the US National Transportation Safety Board. The Visual FAST graph also displays other useful metrics, like **Sleep Reservoir** – a measure of cumulative sleep debt – and **Lapse Likelihood** – a measure of the chances of a lapse in attention reflective of fatigue.



**Real FAST** is the real-time version of SAFTE-FAST, which provides rapid assessment of potential fatigue that can result from rescheduling during actual operations. As a server-based version of SAFTE-FAST, RealFAST operates in the background providing immediate fatigue forecasts that can be displayed in the tracking system to support real-time decision-making. Using the same modeling engine as SAFTE-FAST, RealFAST provides immediate feedback to dispatchers and crew managers of any

crew change that might lead to an unacceptable fatigue risk. RealFAST is the ultimate reactive tool for avoiding fatigue during actual operations.

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