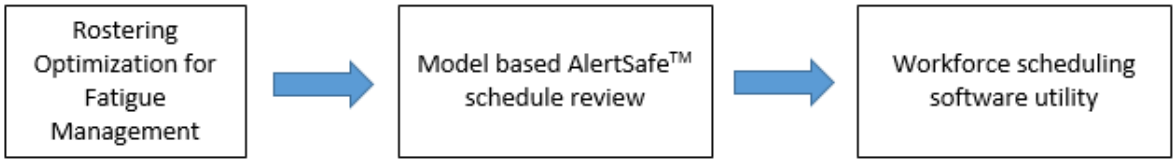
Project Output Profile: Group Work Scheduling

The Alertness CRC can now assist work schedulers adjust their rosters according to their constraints and optimization requirements which are then automatically classified from a fatigue risk perspective on an individual, team and enterprise basis. In partnership with Australian optimization company, Opturion Pty Ltd, the CRC has integrated model based alertness calculation methods and best practice rostering rules with successful trials in the health and transport sectors. As a result, the fatigue level and risk can be calculated for any sequence of shifts.



Software Developer Kit

This technology has been encapsulated in a flexible software developer kit (SDK) that enables software providers to offer sophisticated fatigue management in roster building, roster management, human capital management and time and attendance systems.

The SDK creates and integrates a custom module that calculates fatigue levels and warnings/maximum limits based on staff member, shift type(s), start time(s) and length(s). The warnings and maximum limits are configurable (with industry standard defaults available).

SDK Invocation

The SDK module is invoked for each allocation (or proposed allocation) of a shift to a staff member. The fatigue level is calculated for that staff member throughout the shift, and a warning or prohibition is calculated on the basis of a configured fatigue measure (maximum fatigue, fatigue over worst hour or average fatigue).

Each shift has a “work type” reflecting three aspects of the work: its intensity, safety criticality and the attention levels required from the staff member.

The staff member’s fatigue is calculated based on their age, and the previous shifts to which they were allocated: including their work type, start times and lengths, and the proposed shift.

The prohibition or warning is based on the staff member’s fatigue, the safety criticality of the proposed shift and the required attention level.

Inputs

The configuration of SDK comprises:

- Work types
- Fatigue measure
- Warning fatigue level
- Prohibited fatigue level

Each work type is associated with its:

- Intensity
- Safety Criticality
- Attention level

The fatigue measure is based on:

- Maximum fatigue
- Fatigue over worst hour
- Average fatigue

The inputs to the SDK calculation module include:

- Staff member information
- Proposed shift

The staff member input comprises:

- Age
- Roster pattern of previous shifts
    - Start time
    - Length
    - Work type

The proposed shift details for the staff member comprise:

    - Start time
    - Length
    - Work type

Outputs

The outputs are:

- Alertness measures (at all point of the shift)
- Warning based on calculation and rules (binary)
- Prohibition based on calculation and rules (binary)

Use Cases

The SDK can be used for:

- Roster building - The module can be called as rosters are built to determine alertness levels at any point in a roster.
- Roster optimization - The module generates alertness levels and these can be compared against constraints to create feasible rosters.

- Roster analysis - Pre-existing rosters can be analyzed to determine individual, overall and average levels of alertness. Master rosters, proposed rosters and worked rosters can all be analyzed.

- Change management - Demonstrating alertness levels on existing rosters has proven to be a powerful change management tool.

Integration

The SDK creates a customized module that can run in the cloud, on premises or as a component within an existing roster system. The module uses REST technology for reliability, simplicity and scalability. The user configurable parameters are stored in the host application and can be changed subject to the security environment of the host application. Data is deliberately not replicated or stored in more than one place. Execution time is measured in milliseconds, making the module suitable for interactive use and for embedding within an optimization algorithm or similar roster building technology.

Alertness CRC is exploring a range of options to further the use of its research, technology and products and is open to speaking with a range of interested entities from investors to licensees and commercialization partners. Additional public information is available at: https://mjkpartners.com/opportunities/alertnesscrc/ or contact Myron Kassaraba, MJK Partners, LLC, Tel. 617-902-0639, myron@mjkpartners.com.