

FAID[®] Quantum

Moving Over to FAID Quantum
and What's New

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1. Moving over to FAID Quantum

1.1. A new biomathematical model option

FAID Quantum is a quantum leap forward in biomathematical modelling for fatigue risk management. FAID Quantum offers highly accurate sleep-wake prediction with outputs in two scales, Karolinska Sleepiness Scale (KSS) and FAID Scores. The biomathematical modelling is based on real-world data, is peer-reviewed and are documented scientific models.

Not all biomathematical models (BMM) are the same and will differ in their sensitivity to different work patterns and other parameters. The user of a biomathematical model should be familiar with how it works, what it is sensitive to, its strengths and weaknesses and suitability for evaluating the work context in question. Our product, FAID Quantum, has two BMMs in the software and each is based on good science but are also sensitive to different aspects of the work schedule. The FAID Standard BMM (FAID Score result) is particularly sensitive to accumulated hours of work over multiple days and the FAID Quantum BMM (KSS result) is sensitive to disruptive sleep patterns.

1.2. An updated user interface

To align all users to a similar product interface; current FAID Standard Licenses will be moved over to FAID Quantum Licenses, but only the FAID Score analysis and output results will be available.

1.3. Upgrading to Sleep and KSS prediction

FAID Quantum with FAID and KSS scores provides a richer fatigue analysis of a wider range of work schedules and supports the option of supplying a sleep schedule if it is available.

If a client would like to upgrade to receive the KSS analysis and outputs, then an upgrade fee is required. NOTE: InterDynamics will recognise the initial license fee paid for the FAID Standard License and will credit this, and any current annual support fees, when upgrading to FAID Quantum (with both KSS and FAID Score results).

1.4. More information

For more information on the products and prices, go to our website www.interdynamics.com, or contact InterDynamics directly.

For more information on the characteristics of our two BMMs please read [BMM Warning](#) available from our website to download.

2. Updated Naming Convention

The naming convention for InterDynamics' FAID suite of products is now:

FAID Quantum - Business (previously known as *FAID Standard*)

FAID Quantum - Small Business (previously known as *FAID 330*)

FAID Quantum - Personal (previously known as *FAID 101*)

FAID Quantum - Enterprise (previously known as *FAID Business Wide*)

FAID Quantum - Rosterer (previously known as *FAID Roster Tool*)

FAID Quantum - Shared Object Library (previously known as *FAID DLL*)

These are available with the following options:

- FAID Score only;
- FAID Score + KSS and Sleep Prediction;
- Time Zone functionality

For more information on the features of each product, go to our website www.interdynamics.com, or contact InterDynamics directly.

3. FAID Quantum What's New

Below are some brief notes on FAID Quantum's latest features / screens / setups which will be new to current users of FAID.

FAID Quantum software can be customised according to the users' needs to include:

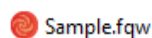
- FAID Score - using the FAID original BMM
- Optional Sleep Prediction and KSS Score - using the FAID Quantum BMM
- Optional time zone adaption (for adjustments when travelling over multiple time zones)
- Optional crew augmentation (for resting pilots on long flights)

The following document includes details of the two Biomathematical Models and all the software options. Please disregard information that does not apply to your needs and software options.

3.1. Starting FAID Quantum



When starting FAID Quantum users can start from the Start Program option, or via desktop shortcut.



Also available is starting via a .fqw file format which is associated with the FAID Quantum program.

3.2. Supporting Information



In the INPUTS there is an information area which provides details about:

- Karolinska Sleepiness Scale (KSS)
- FAID Score
- Conditions
- Hazard Analysis

3.3. INPUTS Tolerance Level



In the INPUTS the Tolerance Levels (TL) can be set in the Tolerance Thresholds area.

Tolerance Levels that can be set are:

- Karolinska Sleepiness Scale (KSS)
- FAID Score
- Sleep in Past 24 / 48 Hours

3.4. INPUTS Schedule



In the INPUTS there three types of schedules that can be entered:

- Work Schedules (1 and 2) – a work schedule must be supplied for FAID and KSS to be calculated.
- Sleep Schedules (1 and 2) – a sleep schedule will be predicted by FAID Quantum or optionally supplied by the user and is used in the calculation of KSS.
- External Results Schedule (1 and 2) – a external result schedule can be an occurrence at a specific time and detail (text or value) to review with result outputs (FAID Score or KSS).

3.4.1. Work Schedule data

The work schedule is the data for the work performed by the individual. The minimum fields required (when no time zone details are used [see Settings - Inputs]) are:

- Identification number / name
- Start Time
- End Time

If the Time Zone details are used, then the Start and End times will need to be provided via the UTC Time and Local Time (to provide Time Zone information). The minimum fields required when Time Zone details are used [see Settings - Inputs] are:

- Identification number / name
- UTC Start Time
- Origin Start Time
- UTC End Time
- Destination End Time

When Analysis is performed, an additional field 'Post Shift Rest' can be included in the work schedule which influences the calculation of the recovery sleep during the post non-work period. The options are Full, or Partial.

3.4.2. Work Schedule file types

The Work Schedule can be read from different comma separated text file types:

- *.fqw* is the default format which includes column header, time zone and aviation information. When Time Zone details aren't used the Local Times are used for Start and End.
- *.rtq* is the previous FAId Quantum default format which includes time zone and aviation information. When Time Zone details aren't used the Local Times are used for Start and End.
- *.rtz* is the previous FAID Time Zone file format which includes time zone and aviation information. When Time Zone details aren't used the Local Times are used for Start and End.
- *.rtr* is the previous FAID file format which only includes local Start and End Times.
- *.fd1* is the AIMS work schedule exported from the AIMS System
- *.aob* is the specific Aviation One Base Work Schedule
- *.csv* is the specific FAID Spreadsheet file, which is formatted with the first field being the Individual identifier, and all fields to the right represent each day with a Shift Code.

There is an additional option to import the work schedule via the Clipboard function using the button on the control panel.

3.4.3. Add Work Schedule Row

Enhancements have been made to the Add Work Schedule Row feature with an adjustable time of day display as well as minute selection for start and end. Also provided is an option to enter a Single shift, or Repeat for number of Days, and then select the Time Till Next start, or Days Off After the last shift.

The screenshot shows the 'Edit Work Schedule Row(s)' window with the following details:

- ID#**: 1423
- Start Date**: 9 Oct 18
- Start and End Hour of Day**: A horizontal bar chart for Tuesday (Tue) showing a shift from 9:18 to 17:42. The x-axis is labeled with times: 0:00, 3:00, 6:00, 9:00, 12:00, 15:00, 18:00, 21:00.
- Work Over Midnight**: A checkbox that is currently unchecked.
- Use Times**: A section with two buttons: 'D' (green) and 'N' (cyan).
- Start Minutes**: A grid of minutes from 00 to 59. The value '18' is selected in the second row, third column.
- End Minutes**: A grid of minutes from 00 to 59. The value '42' is selected in the second row, fourth column.
- Start Time**: 9 Oct 18 09:18
- End Time**: 9 Oct 18 17:42
- Length**: 8 hr 24 min
- Pattern**: Radio buttons for 'Single' (selected) and 'Repeat For Days' (with a value of 5).
- Then**: Radio buttons for 'Time Till Next' (selected) and 'Days Off After' (with a value of 2).
- ADD SHIFT**: A button at the bottom right.

3.4.4. Sleep Schedule

FAID Quantum will predict the Sleep Schedule during the Analysis process to calculate KSS results and the predicted sleep will be displayed in the Outputs. This occurs by default if the Sleep Schedule is left empty.



Optionally the user may populate the Sleep Schedule with the predicted sleep data by using the Predict Sleep function via the button on the control panel (W to S). This data may then be edited by the user.

Alternatively, a known Sleep Schedule can be read from a comma separated text file. The fields required are:

- Identification number / name
- UTC Start Sleep Onset
- UTC End Sleep Offset
- Sleep Type (Predicted / Actual)

There is an additional option to import the sleep schedule via the Clipboard function using the button on the control panel.

If there is data in the Sleep Schedule FAID Quantum will not predict a sleep schedule but use the provided data when calculating KSS results.

3.4.5. External Result Schedule data

The external result work schedule is the data for the occurrence by the individual at a specific time. The minimum fields required are:

- Identification number / name
- Time
- Result (Value or Text)

For the result detail it can be a value (ie a self reported number like a KSS) or text (ie a description). In Settings the user can change between using Value or Text.

3.5. INPUTS Admin Settings



In the INPUTS the user can change the Settings for:

- Inputs
- Analysis
- Outputs
- View

- Aviation
- Activity Task

3.5.1. Inputs Settings

SCHEDULE

Formatting		Work Schedule Display	
Identification	<input type="text" value="Name (Text)"/>	Include Task Risk	<input type="text" value="No"/>
Date	<input type="text" value="DD MMM YY HHMM"/>	Include Activity	<input type="text" value="No"/>
Read File		Include Locations	<input type="text" value="No"/>
Remove Zero ID	<input type="text" value="No"/>	Include Sleep Buffers	<input type="text" value="No"/>
Remove Zero Times	<input type="text" value="No"/>	Include Post Shift Rest Quality	<input type="text" value="No"/>
Remove Zero Work	<input type="text" value="No"/>	Work Schedule Mode	
Remove One Work Period	<input type="text" value="No"/>	Use Time Zone Details	<input type="text" value="No"/>
Remove Duplicate	<input type="text" value="No"/>	Sleep Schedule Display	
Remove Header Row	<input type="text" value="No"/>	Perform Sleep / KSS Analysis	<input type="text" value="Yes"/>
Option for All Files in Folder	<input type="text" value="No"/>	External Result Display	
.csv for Spreadsheet Style	<input type="text" value="No"/>	Import External Results	<input type="text" value="Yes"/>
		External Results Format	<input type="text" value="Text"/>

Formatting:

- A Work Schedule can use Name (text) or Numbers (value) to identify the individual.

Read File:

- An option to Append when reading in a file into Work Schedule.
- When reading in files there is an option to change the import function to be able to Select a Folder and all .rtq files (or format selected) will be imported and collated together. More for user reviewing individual files.
- The ability to remove pattern duplicates in a work schedule when reading in the file.
- There is a new way to import a work schedule that has been saved as a comma separated file (.csv) and formatted correctly; when reading a Work Schedule file FAID Quantum will be looking for the format of first field, ID# (or Name), then all fields to the right are read as shift codes. If the shift code is not found in the shift code table, then the import stops and the user is informed to update the shift code table.

	A	B	C	D	E	F	G	H	I
1	Controller A	M	M	M	M	M	OFF	M	M
2	Controller B	M	OFF	A	A	A	OFF	A	M
3	Controller C	M	N	OFF	M	M	M	M	A
4	Controller D	OFF	M	A	OFF	A	A	OFF	M

Work Schedule Display:

- The user can also choose to display the extra fields; Post Shift Rest Quality, Task Risk, Activity, and Location details.

Work Schedule Mode:

- The User can change the Mode to use, or not use, Time Zone Details. When Time Zone details are not used, then the fields UTC Times and Local Times are not displayed, and the Local Times are used for Start and End times.

3.5.2. Analysis Settings

The user can select to turn on or off:

- Perform FAID Score Analysis
- Perform Sleep / KSS Analysis

If performing Sleep / KSS Analysis the user can specify the Sleep Buffer for Full and Partial Rest.

3.5.3. Output Settings

The user can select to turn on or off:

- Colour by Peak FAID Score Condition
- Colour by Peak KSS Condition

3.5.4. Aviation Settings

There is an airports list where the user can select to turn on or off specific IATA or FAA codes to be available in the 'Add Shift' function in the Work Schedule section.

There is an Activity Detail table to list the Activities and the user can specify if an activity is to be included when applying the In Flight Rest to a work schedule.

For the In Flight Rest the user can nominate the rules to use, specifying to levels for which a flight/activity is applied depending on the Flight (time one hour into the activity and one hour before the end of the activity) is greater than, and how to 'divide' the shift into two work periods with a rest/non-work period in between.

3.5.5. Activity Task Settings

If the Task Risk is included, the user can select to apply a specific task risk to an Activity during the importing of a Work Schedule. The user can select specific Activity Tasks and the appropriate Task Risk (Low, Moderate, High).

3.6. OUTPUTS Summary

In the OUTPUTS Summary the results are displayed for the FAID Score, Sleep, and Karolinska Sleepiness Scale (KSS).

3.7. OUTPUTS Schedule

The Work, Sleep and External Result Schedules display the results for the FAID Score, Sleep, and Karolinska Sleepiness Scale (KSS). They have the option to display different fields. The user, via the control panel, can change the display of the extra columns by selecting the category:

- FAID
- KSS
- Sleep (Sleep Estimated in prior 24 and 48 hours and sleep type – predicted or actual)
- Other (work or non-work)
- Aviation (Location Codes, Activity Codes, Location Times and Location Time Zones)
- Schedule (show the Sleep or Work Schedule)

Then selecting which columns to display by ticking, or unticking, the appropriate checkbox.

In the Work Schedule, the User can select to 'Show Sleep Schedule', and in the Sleep Schedule the user can select to 'Show Work Schedule'. This will display the appropriate work, or sleep, periods.

3.8. OUTPUTS Individual Score

The Individual Scores display the results for the FAID Score, Sleep, and Karolinska Sleepiness Scale (KSS), and can be viewed either in Plots or Tabular views. For each view result options are:

- Single (KSS / Sleep or FAID Score). Can also include Time Zone movement if Time Zone Mode = Yes.
- Multiple (KSS / Sleep and FAID Score on separate plots)
- Compare (KSS / Sleep or FAID Score)

4. Contact InterDynamics

InterDynamics has a range of FRMS products which can assist your organisation in its journey towards a robust Fatigue Risk Management System.

Please contact us to find out more.

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www.interdynamics.com