

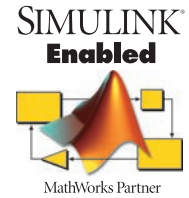


THE BEST OF BOTH WORLDS

When working with Matlab/Simulink® two issues come to mind. First, how can you develop a straightforward way to build aircraft models using different data sources and approaches, vary these models easily and evaluate the impacts of the variations? Second, every time you run a response you must first trim the aircraft and develop read/write routines to save and plot data, which is all very time consuming. But what if you could maintain the power of Matlab/Simulink® and overcome both of these issues? Welcome to the J2 Matlab Toolbox.

The J2 Matlab Toolbox can create Aircraft Models and Variants utilising the easy-to-use GUI with J2 Builder and J2 Elements, and then drop the complete aircraft into your Simulink® System diagram. The system diagram can then be loaded into J2 for batch analysis. The database automatically saves all results, which can be re-used for new manoeuvres or to compare different cases. Data can be plotted and viewed using J2 Visualize and J2 Virtual in the same way as any J2 Universal Tool-Kit analysis.

The J2 Matlab Toolbox has other valuable features. It enables you to take the results out of the J2 Database and Linearize the system at that point. It will then automatically calculate the Modes of Motion, Frequency/Damping and key aircraft characteristics. These can be plotted against standard or user-defined Figures of Merit.



KEY FEATURES AND BENEFITS

1. Simulink® Blockset

- Build Aircraft and Response Models quickly using J2 Builder and J2 Freedom GUI and simply drop them into Simulink® diagrams

2. Run and Save Capability

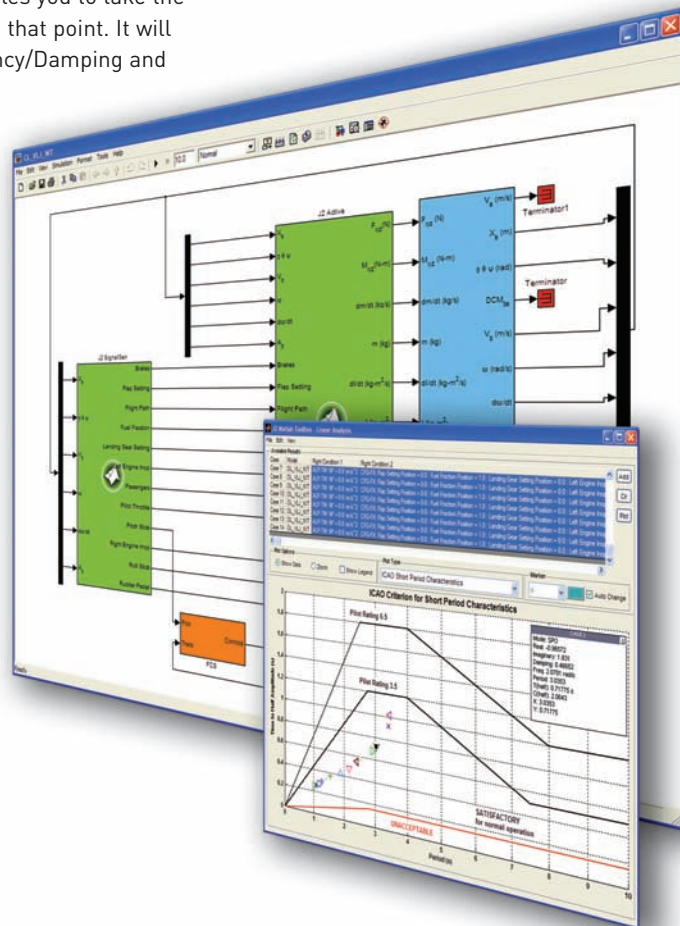
- Run Trims one day and come back the next to run the Responses; no need to write your own save routines

3. Monitor States and Results

- Simply plot results and compare different cases without having to convert data for use with other applications
- Create cross plots across the complete flight envelope automatically

4. Visualise Behaviour

- Take the results of Simulink® Models and view them instantly with J2 Virtual
- See Real-Time the difference between Open and Closed Loop Behaviour



J2 MATLAB TOOLBOX DELIVERS

Features

Advantages and Benefits

Trim Additional States

All states within the model are trimmed when the analysis is performed. All integrators and any additional states are automatically initialized without having to create specific cases

Batch Analyses

Run up to 10,000 cases at a time using the same approach as J2 Freedom. Create multiple system models and multiple test scenarios and perform many to many analyses enabling comparison and reference to take place

Linear Analysis

Take the complete non-linear model and automatically linearize about any trim condition

View modes of motion characteristics and plot against Figures of Merit

Rapidly generate State Space Matrices and Eigenstructure for further analyses

Re-Use Trim/Response Models

All trim and response models built in J2 Universal can be used to drive the Simulink® Model so there is no need to create signal generators in Matlab for each test flight

Comprehensive Non-Linear Root Solver

Use the same award winning Trimming Algorithm as with J2 Freedom, get the benefit of the generic rules based trimming to enable you to investigate ANY aircraft at ANY condition

Data Centric Database

All analyses and results are stored back in a centralised database along with the Aircraft Models and Mapping to Simulink® are stored for use by anyone on the system. Share data and results for efficient collaborative working

Integrated Version Control

All models and results are automatically logged in the Version Control and Configuration Management System. Even the Simulink® Models are logged

When anything changes on the core aircraft or the Simulink® model, simply re-load and re-run the analysis