iAircraft 2.0.3.0 Update Summary

1 Fixes / Minor Enhancements

These items are:

- iAircraft is now available with a QNX 6.4.0 compiler compatible library in addition to the QNX 6.2 compatible library for real-time simulation on an rtX.
- The iaAdiSixdof block previously omitted a unit conversion for the gear force on the aircraft body. The block was reworked so internal computations use SI units.
- For supporting enhanced trim capability an input was added to the iaAdiSixdof block:
  - The initial aircraft rotation rates, previously these were assumed to be zero but non-zero rotation rates may be set for various trimmed maneuvers.
- For supporting enhanced trim capability an output was added to the iaAdiSixdof block:
  - The derivative taken in the body frame of the aircraft velocity with respect to the Earth centered Earth frame. This output vector is passed to the trim block for minimization during a trim procedure.
- The iaAdiSixdof block has been enhanced to include these additional outputs: aircraft flight path angle; direction cosine matrix translating the body-carried NED geographic frame to the body frame; and aircraft lift-to-weight ratio (load.)
- Incorrect computation of rate of change of angle of attack has been corrected in the iaAdiSixdof block.
- A few changes were made to the integrated example for the small jet:
  - The project now includes the enhanced trim block providing an application example of the trim block with an aircraft model.
  - The ADvantage setup files for the integrated small jet example are separated into several maneuver-based setup files for ease of use and clarity.
  - An ADEPT panel for controlling the trim procedure and enabling the various autopilots is now available with the small jet integrated example.
- The iaAdiFlightPathAngleHold block inputs, angle of attack and pitch angle, are removed and replaced with the flight path angle.
- Several ECS blocks, iaAdiECSACMSingleHx, iaAdiECSTurbine, iaAdiECSCompressor, and iaAdiECSVolume, were updated to include a previously missing mass derivative term.

2 Major Enhancements

The trim block, iaAdiTrim has several enhancements:

- In addition to trimming the aircraft in the longitudinal frame for straight and level flight, iaAdiTrim now supports trimming the aircraft in a steady level turn and in pull-up and push-over maneuvers.
- Previously the trim block only supported three specific controls for trimming in the longitudinal plane; now the user can select controls (up to eight in addition to the aircraft aerodynamic angles) for trimming the aircraft. This enhancement allows applying the trim procedure to an expanded number of aircraft and additional maneuvers than what was previously supported.
- Previously the number of controls applied for trimming the aircraft had to be equal to the number of accelerations to be minimized; now the trim block supports both more or less controls than the number of accelerations to be minimized.