ACCIDENT INVESTIGATION

WHAT HAPPENS TO AN AIRCRAFT FOLLOWING A BIRD STRIKE? HOW CONTROLLABLE IS THE AIRCRAFT WHEN THERE IS A SYSTMS FAILURE? CAN IT RECOVER FROM AN ATTITUDE UPSET? WITH THE J2 UNIVERSAL TOOL-KIT, FAILURES, COLLISIONS AND ORIENTATIONS CAN BE EVALUATED AND THE POSSIBILITIES THOROUGHLY CONSIDERED.

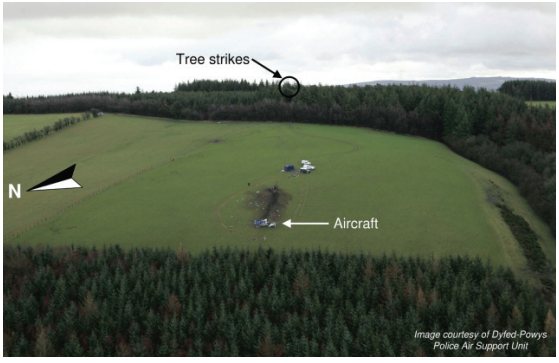
BENEFITS

- Understand exactly what happens following events
- Rapid model build capability
- Identify possible scenarios that fits all evidence
- Virtual chase plane from real flight data
- Assess the human factor in the scenario

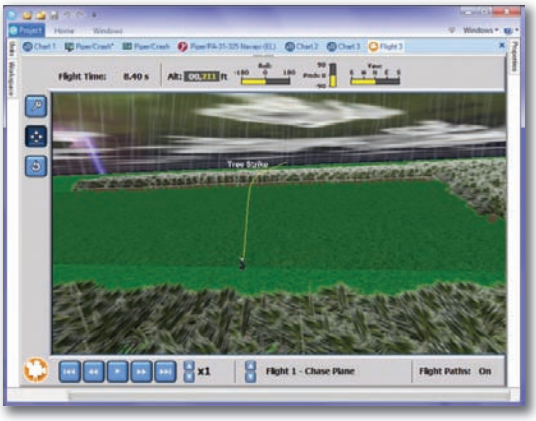
FEATURES

- 3-D Visualisation
- Does not rely on OEM data
- Compare different cases
- Read and Reconstruct flight data
- Direct integration into real-time simulation

When looking at the results of an accident, it is not always possible to fully understand what happened. A trail of debris can tell a story, but to fully understand the events that took place it's beneficial to reproduce the accident.



To do this requires a dynamic model that is capable of experiencing all the forces and events that have happened on the real aircraft and dynamically reproduce the resulting behaviour. What's more, alternative scenarios need to be evaluated and all options considered to uncover the final answer.



AIRCRAFT MODELLING

All of this is possible when using the j2 Universal Tool-Kit. It's possible to very rapidly build a dynamic model of the complete aircraft from whatever data is available. This can be from the built in modelling tools, using the manufacturers own data or any combination. This model can be tested and correlated against the pilots' manual, OEM performance data and any other data sources.

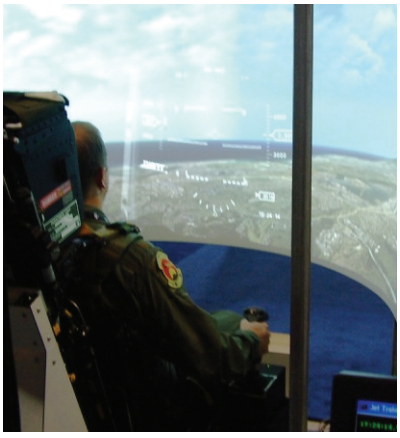
SCENARIO MODELLING

Once the model has been built and qualified, several variants can be constructed. Each variant can look at the impact of different failures or different conditions to help determine the most likely scenario. As different scenarios are run through so each can be compared to additional findings for cross checking and reference. In this way, the j2 Universal Tool-Kit can offer further physics based evidence to support experience and evidence based theories.

j2 AIRCRAFT DYNAMICS
Predicting Performance

COMPARISON TO REAL FLIGHT DATA

When there is crash data available from a recorder, there may be further clues as to what happened. This data can be loaded into the j2 Universal Tool-Kit and give an instant charting and playback capability. The incomplete data from the flight data recorder can be automatically reconstructed and smoothed to provide information relating to all the states of the aircraft. Predictive techniques can then match the model to the real data.



ASSESSING CONTROLLABILITY

With the j2 Universal Tool-Kit the system failure, loss of control surface, bird strike can all be simulated. The complete set of control characteristics can be identified to establish the change in the handling qualities and controllability of the aircraft. Analysts can construct numerous pilot inputs and the aircraft response to these can be evaluated.

What's more, these failures can be automatically used with a real-time manned simulator to introduce the human factor into the scenario, looking at pilot reaction to the series of events.

PROVEN CAPABILITY

The j2 Universal Tool-Kit is already being used by the OEMs to support their design process and has been proven to add value and understanding in crash scenarios:

- Correlate findings following accidents and to demonstrate possible alternatives.
- Comparisons to real events and matching to Accident Investigators findings.
- Generate "real" crash scenarios for crew training.

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