

J2 Aircraft Dynamics Ltd

J2 Aircraft Dynamics is a UK Small/Medium sized Enterprise (SME) who, since its commercial launch in January 2010, is successfully growing in the field of fixed and rotary wing modelling and the application and exploitation of its own proprietary software tool set, j2 Universal Tool-Kit, to find and deliver value for its end user clients.

In the world of aircraft design, evaluation and modelling, j2, with the j2 Universal Tool-Kit, has remained focused on accelerating the adoption of technology and ideas by unlocking innovation in aircraft design, analysis, and simulation techniques. The unique application of the integrated flight physics engine within the j2 Universal Tool-Kit used in aircraft design has also opened further high value application areas in flight test and flight test data analysis including flight test data matching and PID, flight test planning and risk/accident evaluation and analysis and a more efficient route to high fidelity simulator model build and certification on both fixed wing and rotary wing platforms. The capabilities summarised above are underpinned by j2 being awarded two ITAR licenses for Dept of Defence work in the US with the sponsors being L3 Harris (previously L3T) and TRU Simulation + Training.

Company Highlights and Chronology

The chronology below is very much a summary but seeks to identify those events which have shaped and continue to shape this small business to develop and extend its already proven International reach.

2005 -2009 j2 Aircraft Dynamics Ltd. (j2) wins a Smart Award grant and begins the development of the j2 Universal Tool-Kit. Continued capability and expansion through Venture Capital funded product development process via the Merseyside Special Investment Fund.

2010 j2 Aircraft Dynamics completes the software development programme for the initial j2 Universal Tool-Kit capability for aircraft design and transitions to a fully commercial, self-sustaining company led by Mr Victor Kaminski (Chairman).

j2's first aircraft manufacturer business with Embraer. This included software sale, training and knowledge transfer to be used on a large aircraft development project, the Embraer KC390.

2011 Sales of software and training into Airbus Defence and Space to be used for advanced flight dynamics work on Eurofighter Typhoon and Tornado. Integration with old FORTRAN based model code provided protection for legacy systems.

First integration project bringing the j2 Universal Tool-Kit direct integration to an engineering simulator for Embraer. Replaces cumbersome system with j2 Pilot integrating engineering design and modelling with simulator for early pilot evaluation.

2012 Won a major tendered contract with Iraqi Ministry of Science and Technology, Baghdad. Developed and supplied a full aircraft design lab and simulation capability including full training and knowledge transfer activity hosted in the UK.

UK Air Accidents Investigation Branch accepted j2 Universal Tool-Kit as a significant technical advance in the quality of discovery and analysis of air accidents and their causes. (White Paper produced)

2013 Won a tendered contract for extensive evaluation project with L-3 Link Simulation and Training on flight test data flight matching. Demonstrated major time and effort savings on flight data matching as part of trial and demonstration test case.

- 2013** Made first move to China market to present capabilities to AVIC and COMAC
- 2014** Won an extended contract with L-3 Link Simulation and Training (now L3T) under full ITAR approvals on a major US military project RC-135, expanding the use of j2 software. Consulted with L3T to develop a flight matching process that delivered a robust, reliable, repeatable and fully teachable process. This process further delivered a flight test risk assessment and flight test data acquisition planning capability. This expanded out into the qualification of Air-Air Refuelling models.
- 2014** Instructed by Clyde & Co to represent pilot in the Rogers v Hoyle (Tiger Moth) case and subsequent case Crown v Hoyle which was heard in Mar 2015. The pilot was acquitted on j2 evidence.
- Appointed Jesse Technology Company as sole agent in China. Undertook further introductions of the j2 Universal Tool-Kit capabilities into AVIC. This has promoted further visits to China continuing to build relationships with key players.
- 2015** Developed first high-fidelity flight matched rotary modelling and model to simulator capability with j2 Rotary.
- J2 Selected to develop rotary Flight Dynamics and Engine Model (FDEM) build of an EC-145. This was to be integrated into F2Si hardware and software through j2 Host. F2Si also selected the j2 Universal Tool-Kit to further tune the model and adapt to the military variant UH-72a. This was supporting a tender won by F2Si to build 8 x Level 6 flight training simulators for US Air National Guard.
- 2016** Provided a 3-week workshop and information share with China's Flight Test Institute, COMAC, and China's Wind Tunnel Facility focusing on flight test data, flight matching and risk assessment capabilities. This prompted a purchasing process from the China Wind Tunnel facility.
- At the request of the President of AVIC, TAN Ruisong, j2 presented their vision of the capability and knowledge transfer process to develop and support the Flight Test, and Flight Data Analysis

and Matching for all AVIC projects and flight test programs. This has continued with ongoing discussions looking to the best approach for implementation.

2017 Instructed by Global Aviation to act for them in an air accident case involving the total loss of a Falcon 50 Business jet in an accident at Vnukovo, Russia. This was an extremely high value case involving the death of the CEO of Total Oil, Mr C Demargerie. J2 evaluated over 1,200 scenarios to establish possible preventative action and alternatives

2018 Awarded a 4-year ITAR licence by US State Dept (sponsored by L3T) to provide aircraft modelling, analysis and simulation software tools and consulting input for all flight test data handling and corrective work for high fidelity defence simulator certification purposes on 7 fixed wing and 4 rotary wing platforms. Participated in bid for C17 simulator upgrade for US Airforce, primed by L3T.

Shoreham air disaster manslaughter case. Appointed as expert witness for the defence.

Jesse Technology start negotiations with China's Wind Tunnel Administration to for j2 Universal Tool-Kit software sale and extensive Knowledge Transfer activity to enable WT to develop the capability for FDEM and flight data matching.

Completed first commercial deal with China for j2 Universal Tool-Kit software sale and extensive Knowledge Transfer activity, proving the business model for China.

2019 Won a substantial contract with TRU Simulation + Training in S Carolina for j2 software and knowledge transfer in support of a US DOD simulator project on T-6C Texan aircraft. This work includes process development consultancy and a move to j2 tools from older legacy code systems, already proven with L3T. TRU have also now granted a further ITAR license to work with j2 on US DOD contracts.

Shoreham air accident trial at The Old Bailey. The j2 defence evidence was accepted by both sides and not cross examined. The trial found the pilot not guilty of manslaughter.

Participated in a Liverpool City Region Trade Delegation to Shanghai to attend the Shanghai Technology Fair. Won a prize for one of the best technical presentations to the auditorium. Quite a big deal in helping j2 reinforce its credentials in China.

Won an initial contract with Cole Engineering Services Inc (CESi) in the US who are a defence support contractor. CESi have been appointed to support the UH-72A simulators previously mentioned in the F2Si commentary. The initial purchase is a replica simulator Test Laboratory. Further expansion of this contract may follow.