Airbus UK

**Data driven research to develop new software tools
to be used in manufacturing process and planning for Airbus.**

Airbus is a leader in the global aerospace sector. Airbus designs, produces and delivers innovative solutions along with being a commercial aircraft manufacturer, with Space and Defence as well as Helicopters Divisions, Airbus is the largest aeronautics and space company in Europe and a worldwide leader. Airbus has roughly 180 locations around the world and 12,000 direct suppliers globally. The company has aircraft and helicopter final assembly lines across Asia, Europe and the Americas. More than 140 nationalities make up the Airbus workforce and over 20 languages are spoken in the company. In the UK, Airbus has a 14,000-strong workforce spread across more than 25 sites.

The Challenge

In 2014, as part of an Innovate UK research and development fund, Factories of the Future initiative focused on Airbus' commitment to streamlining and innovating production processes by utilising smart tools.

EventMAP partnered with the Northern Ireland Technology Centre (NITC) to develop a cloud-based, user-friendly simulation and data visualisation system to integrate with Airbus UK's (AUK) in-house 3D event simulation package,

Delmia QUEST. Our involvement was in the Work Package for Digital Manufacturing Simulation. Airbus were in the process of digitising many of their existing manual operations throughout various internal departments. The major drawback of their existing process for managing simulation activities was that it can be a laborious task to prepare and execute new simulations and generate work content trackers based on the output of scenario models. This was identified as our main area of focus to deliver a solution that would optimise their workflows and provide both time and cost savings.

The objective was to develop a web-based simulation tool to assess industrial system concept and analyse the impact of potential improvements to build philosophy and industrial change. The principal areas of focus for the application were to ensure there was an intuitive user interface and experience to ensure ease-of-use for non-expert users which required minimal training to operate. The system had to integrate with Airbus' event simulation package, Delmia QUEST, with the ability to schedule and execute multiple background simulations to increase output for a greater detailed analysis. In addition, an advanced reporting engine was required to utilise data visualisation techniques to analyse Key Performance Indicators (KPIs) to aid senior managers in understanding the underlying data.

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The Solution

EventMAP were tasked with delivering a software solution over a 3-year period, with a mandatory quarterly meeting (PRM) to provide a progress update, and a roadmap for the upcoming period with any concerns or problems that we were facing.

A phased approach to delivery was developed using an agile methodology with input from AUK and NITC. Firstly, focusing on the research and planning stage to identify the most applicable and beneficial features for the software.

There was a clear need to establish a standard for data input without sacrificing capability, as it was clear from the beginning that the current process within AUK used different formats of data which added unnecessary confusion and complexity to the process. We designed a collection of templates for data entry and adapted a version of our existing software to build a prototype named "OptimeMachine". This desktop application accepted input files and rendered results in a Work

Content Tracker (PERT) to analyse the flow of parts through different bays and analysed resource usage.

With the proof of concept validated, we utilised the latest development frameworks available in order to provide the most performant and adaptable software package for cloud-based use.

Over the following 18 months, the web-based application was implemented to include all the requirements outlined during the initial research period, along with additions and changes that were identified throughout the duration of the project. The functionality was then migrated from the desktop application to the cloud, followed by integration with Delmia QUEST to allow for complex number-crunching and simulation visualisation. This created the most intuitive user interface possible to ensure a simplified workflow.

The final phase was the development of the advanced reporting engine to analyse the results from the simulation engine and reporting on the most critical KPIs.

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The Benefits

Using our expertise of software reporting we developed a robust system that was capable of analysing millions of rows of data in seconds, generating results that were viewable in a wide range of formats, accompanied by smart features for compiling and sharing reports to other users.

The project concluded with all the objectives set out in the original specification being achieved, and in many places, exceeded the original expectations. The software has been used to demonstrate the now-digitised process of planning and executing simulations to various internal departments within Airbus UK. Initial feedback from these demonstrations was that the application will deliver significant cost and time savings for Airbus, through reducing the complexity of the process and minimal training required to operate.

Our advanced reporting engine enables users to analyse different KPI metrics using various data visualisation techniques, in the form of a Work Content Tracker (or event timeline) which plots each process completed by an operator across various bays and shifts, Gantt charts and other graph formats. All reports include complex filtering options and include mechanisms for saving, comparing and sharing reports to distribute amongst staff and senior managers.

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If you'd like to find out more about what EventMAP can do for you, if you'd like to request a demo, or to chat through your needs with one of our people, please get in touch – we'd be happy to help.

Click here to enter your contact details and we'll be in touch with you shortly.

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