Digitalising additive manufacturing production control to unlock scalability

Company Profile

Airbus is a global leader in aeronautics, space, and related services. In 2016, it generated revenues of €67 billion and employed a workforce of around 134,000. Airbus offers the most comprehensive range of passenger airliners from 100 to more than 600 seats and business aviation products. It is also a European leader; providing tanker, combat, transport and mission aircraft, as well as one of the world's leading space companies. In helicopters, Airbus provides the most efficient civil and military rotorcraft solutions worldwide.

Prior to DNA^am

While Airbus has been using 3D printed parts for quite some time (largely for components inside the cabin), equipping airframes with metal parts produced via Additive Manufacturing (AM) is new, and requires a new supply chain with proven, repeatable processes and controls.

Airbus required specific business process automation, build management and data capture that was not available at the required granularity within their existing ERP system. Their additive manufacturing teams had previously relied on manual systems to provide the comprehensive traceability required for aerospace additive manufacturing.

However, Airbus recognised the need to standardise and digitalise additive manufacturing processes that met these stringent requirements, in order to provide repeatable and scalable best practices throughout their supply chain.

The Selection Process

There were several fragmented solutions on the market that could meet some of Airbus' requirements. However, there was no single solution that could integrate with their existing systems, and manage the full complexities of additive manufacturing. Airbus UK approached Valuechain, due to their experience in developing end-to-end production control software for complex aerospace special processes; and a successful track record of supporting hundreds of advanced manufacturing companies.

Implementation Process

Airbus provided a comprehensive functional requirements specification with valuable insights into best practice additive manufacturing technologies, production control and traceability. Valuechain's innovation team used an agile development approach to iteratively innovate their ground breaking DNA^{am} solution.

Finally, Valuechain incorporated all requested innovations and delivered a solution on time, and on budget, so Airbus could go live on their planned date.
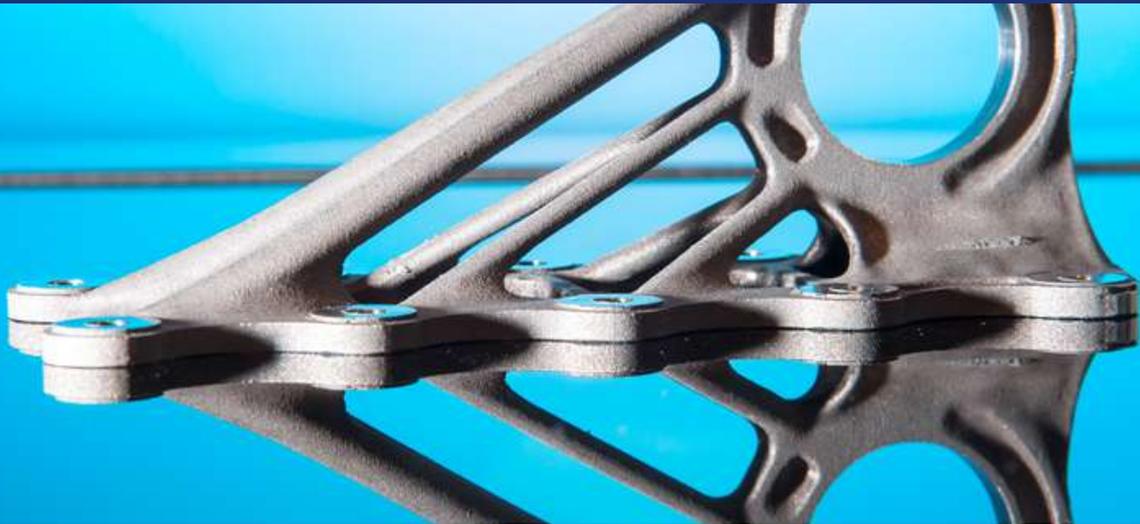
Impact of Valuechain's DNA^{am}

DNA^{am} has digitalised complex additive manufacturing production control processes for Airbus, ensuring compliance with stringent Aerospace regulations such as AS9100 and NADCAP. With features such as the highly visual and intuitive DNA^{am} powder traceability module, it dynamically monitors powder utilisation to provide important transparency and control.

By integrating with existing Airbus' systems as a turn-key solution, DNA^{am} manages the complexities of additive manufacturing from one comprehensive system; streamlining the entire process, including build file management, shop floor data capture, chemical analysis and powder test analysis. Finally, DNA^{am} has improved key resource and plant efficiencies, providing a vital building block for scaling up additive manufacturing processes throughout the global aerospace supply chain. This digitalised solution will enable established and emerging AM suppliers to efficiently embed best practice compliance, production control and productivity.