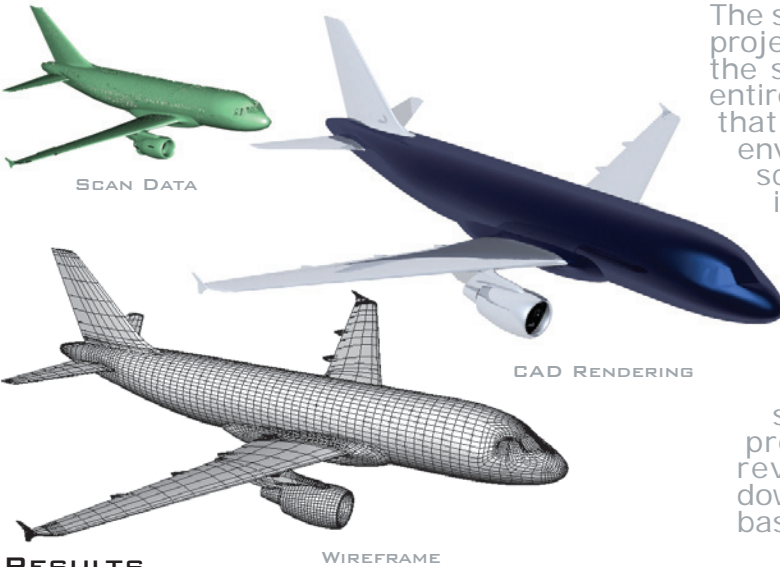


SITUATION

Only recently has modern 3D scanning technologies been able to catch up with the demand for accurate scanning of large physical objects. Digital models of massive aircraft such as the Airbus A319 can be tested via computational fluid dynamics (CFD) if the model is accurate enough to the actual physical shape. 3D scanning technology is the most effective way to ensure this accuracy. Computational Methods, an aerodynamic analysis company, needed surface data of the Airbus A319 to model and test the airworthiness of custom components that would be fit to the aircraft.

CAD data was not available to use for design purposes, therefore Computational Methods would need experts in the field of 3D scanning and reverse engineering.

SOLUTION



RESULTS

The resulting CAD data of the Airbus A319 generated by 3DScanCo's reverse engineering process proved to be an invaluable tool for aerodynamic testing. Using this CAD data, CFD analysis was performed on the jet with the custom-built parts to test how the plane will perform in the air. Impressed with the results, Computational Methods continues to work with 3DScanCo to perform services on other large model aircraft.






SCANNING THE AIRCRAFT



The sheer size of the Airbus A319 made it a unique project in terms of the technical requirements of the scanning equipment. 3DScanCo scanned the entire aircraft with the Trimble GS200 - a scanner that excels at capturing large-scale objects and environments. 3DScanCo's engineers used this scan data to register and merge the aircraft into a complete scan model.

3DScanCo performed reverse engineering on the critical features, such as the wings and fuselage, with curvature continuous surfaces by using a combination of Rhinoceros and Rapidform software. These CAD programs ensured a high level of surface control for the reverse engineering process. The CAD data generated from the reverse modeling process could be used downstream for aerodynamic testing and as the base for custom-built parts.

TECHNOLOGY

-  Trimble GS200
-  Rapidform
-  Rhinoceros

TECHNIQUES

-  Class A Surfacing
-  Reverse Engineering

APPLICATIONS

- Aerospace Industry
- Fit Engineering
- Computational Fluid Dynamics