



Digital Pathfinder

The Digital Pathfinder project is revolutionizing the way Northrop Grumman does business. It leverages existing digital tools and adopts innovative technologies to enable strategic decision-making. Northrop Grumman has improved and streamlined processes, increased efficiency, and created a cultural shift that is reshaping how the organization will work in the future.

The Digital Pathfinder effort leveraged the company's comprehensive digital ecosystem to design, manufacture, deliver and test wings for Scaled Composites' Model 437 aircraft. The effort utilized modeling techniques and performance validation from other advanced programs to increase connectivity between models into a single digital thread.

Taking The Digital Thread Beyond the Design Process

Northrop Grumman created a comprehensive digital thread connecting all functions and individual phases of the product's lifecycle. This enabled efficiencies in manufacturing and sustainment by breaking down silos and increasing collaboration across the entire project team. Increased collaboration between Northrop Grumman, customers, and suppliers drives streamlined communication and efficient decision making through live, digital traceability.

Key Findings

Digital Pathfinder yielded significant outcomes of this fully connected digital thread with game-changing implications for future advanced programs. These include:

- The digital ecosystem cut **engineering rework** to address inconsistencies to less than one percent compared to the 15-20 percent experienced using traditional processes.
- Utilized fully-digital information with the company's patented **Scalable Composite Robotic Additive Manufacturing (SCRAM)** capability, which uses an in-situ deposited wash away tool, eliminating all hard tooling and requiring no secondary cures or autoclaves to greatly reduce cost and schedule timelines.
- Employed the **Plasma Arc Directed Energy Deposition (PA-DED)** Titanium structural bracket to carry the loads from the wingtip to the rest of the wing, which is believed to be the first to fly in a defense application and is providing 30 percent cost and schedule savings compared to traditional manufacturing methods.