



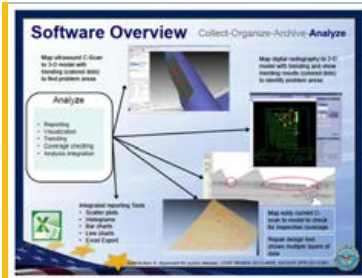
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DEPARTMENT OF THE NAVY

NAVY SBIR/STTR SUCCESS STORY



NLIgn DAMAGE MAPPING SYSTEM

A Visual Database for Improved Repair Dispositioning

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THE CHALLENGE

As an aircraft component goes through its lifespan, from production through operational use, events occur that make a part unique from all others, including manufacturing defects, operational damage, depot repair findings, etc. Nlign replaces a cumbersome, error prone analog system with a system capable of mapping a picture of a damage area to a digital model.

THE TECHNOLOGY

Nlign is an automated tool for reporting aircraft damage by combining a database with a digital model of an aircraft. It was developed to accurately map damage photos, digital Non Destructive Inspection files, blueprints, Finite Element Analysis grids, and authorized repair zoning as layers on 3D models to accelerate engineering evaluation and repair disposition of composites and metallic airframe structures. This enables the intuitive analysis of information as it relates to airframe location and the effective storage of that information across a broad enterprise.

THE TRANSITION

Both the Navy and the Air Force initially developed Etegent's Nlign through Small Business Innovation Research (SBIR) contracts. NAVAIR interest in Nlign initially took off when COMFRC's Advanced Technology & Innovation (ATI) IPT at Fleet Readiness Center, Southwest (FRC-SW) recognized the potential this software had to enhance the sustainment engineering process on the F/A-18 program. Since that time, Etegent has been the recipient of several Navy and USAF Phase II, II.5, and Rapid Innovation Fund (RIF) enhancements centered on the F/A-18 and A-10, with both platforms funding portions of Nlign that best fit their needs. Both USAF and Navy are transitioning Nlign to other platforms. Current Navy efforts involve MQ-4C, V-22, and P-8A.

THE NAVAL BENEFIT

Nlign improves data quality and decreases engineering analysis time, which in turn improves response time to the fleet. With the aggregated data, engineers can provide solutions in a proactive rather than a reactive manner for fleet and sustainment issues, revolutionizing the ability of fleet support engineering to support both fleet and depot maintainers by improving communication and leveraging institutional knowledge. Nlign has also improved the storage and retention of engineering data, so that the newest engineer has access to the entire history of repairs eliminating the need to duplicate detailed analysis. New standard repairs developed through an understanding of repetitive damage events' allows sailors and depot artisans improved repair capability without requiring further engineering support.

THE FUTURE

Efforts are being initiated to make Nlign an "Enterprise" solution, which will operate effectively within the upcoming TeamCenter deployments. Current uses for Nlign have been confined to the fleet support realm, but could readily be applied to Material Review Board activity, fatigue test data storage, NDI data storage, life expended/extension decisions, fleet analytics, and many other applications. The tool is in various stages of deployment with many USAF platforms and commercial applications include Spirit Aero systems (787 forward fuselage), Boeing, and Northrop Grumman.

"THE CULMINATION OF THE DIFFERENT DATA SETS INTO ONE GRAPHIC IMAGE LITERALLY GIVES US LAYERS OF DAMAGES, INSPECTIONS, AND ANALYSIS TO LOOK AT. YOU CAN SEE IT ALL AT ONE TIME AND GET A COMPREHENSIVE UNDERSTANDING OF WHAT YOUR REPAIR MIGHT IMPACT, OR WHAT THE DAMAGE IMPACTED, AND GET A BETTER, MORE COMPLETE REPAIR."

Gabe Dragucevich

Engineering Technologist

NAVAIR Fleet Readiness Center Southwest