

ACQUIRE • ARCHIVE • ANALYZE • ALIGN

Providing a complete digital thread of a structure's life

Putting Data To Work

Today's advanced design, manufacturing, and maintenance processes generate a wealth of data. This information is only useful if it can be effectively managed and put to work. The existing manual approaches utilizing paper, spreadsheets, presentations and similar tools simply aren't designed to support today's digital environment. Nlign Analytics develops unique, patented software-based solutions for aircraft manufacturing and maintenance applications. The uniqueness lies in our ability to align data to a specific 3D location on the physical asset and then provide tools to visualize the data in an intuitive 3D environment. Using this 3D environment, a crack on a structure is not just text description in some database. Instead, one can actually visually interact with a specific crack on a 3D model of your individual asset, or even multiple cracks across a fleet of assets. Nlign is a key technology used in strategic cost reduction and aircraft availability initiatives throughout the US Department of Defense and commercial applications.

Data Into Information

Nlign delivers numerous efficiency improvements in multiple manufacturing and maintenance processes. It all begins with improving the non-conformance documentation process. For example, our NCheck software tool allows inspectors to quickly and accurately document findings in a 3D environment. This reduces costs associated with paperwork while improving communication between inspection, quality and engineering departments.

- Ability to directly capture process data from manufacturing and inspection equipment
- Dramatic time savings during preliminary quality review processes
- Drastic reduction in turnback – where quality and/or engineering departments must request additional information from inspectors
- Significant improvement in engineering analysis by improved 3D access to previous inspections and links with simulation tools
- Improved Root Cause Analysis by enabling visual correlation of defects to process parameters
- Improved fleet management capability by providing engineers with quick access to the state of a particular asset and the entire fleet

A Complete Digital Thread

Used throughout aerospace manufacturing and in-service maintenance and repair, Nlign Analytics provides a complete digital thread by linking as-manufactured data with as-maintained data. The integrated Nlign Analytics Platform suite of applications capture, organize and visualize detailed structural inspection and repair data.

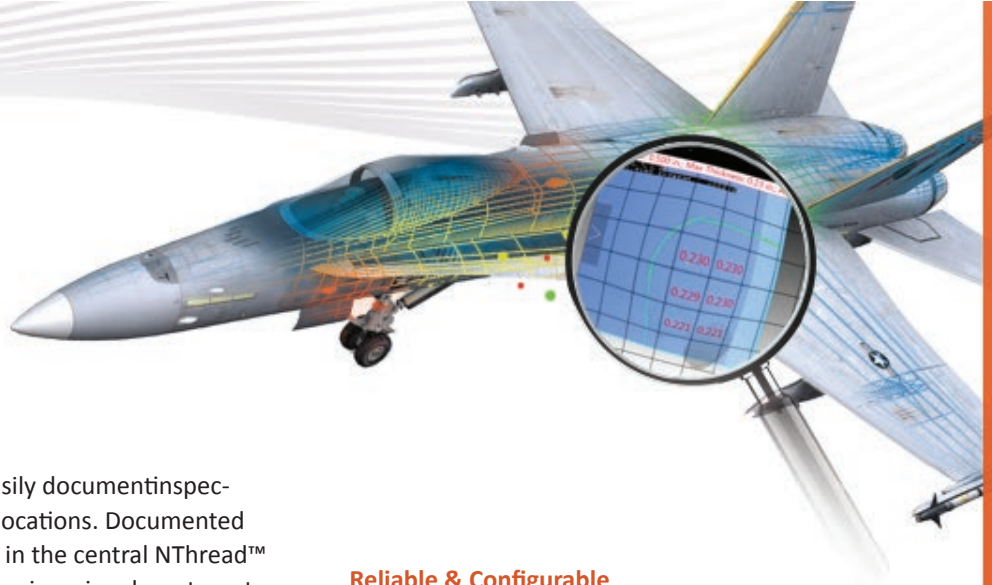
The suite includes:

- NCheck™ – Data Acquisition
- Nlign™ – Engineering Analysis
- NThread™ – Data Archiving

“This software will map those areas very quickly and very accurately so we spend less time manually mapping and correlating data and instead developing and analyzing the repair so the shop can get that part back in service. (Nlign) will drastically reduce engineering turnaround time and non-value added man-hours.”

- Chris Root

*Advanced Technology Team Lead,
NAVAIR Small Business Innovative
Research Program Office*



NCheck™

NCheck provides the ability to easily document inspection findings and tie them to 3D locations. Documented findings are automatically stored in the central NThread™ database for use by quality and engineering departments. A configurable task management feature allows users to view information concerning their assigned tasks. NCheck has the ability to link to detailed work instructions associated with specific tasks.

FEATURES & BENEFITS

Reduces time required to document inspection findings

NCheck reduces time required to document findings. It accomplishes this by auto-populating standard fields, providing a structured data capture customized to each defect type (crack, corrosion, etc.), and supplying multiple means of accurately determining the location of the defect.

Provides Inspector with Single Source for Information

Currently, inspectors must access multiple systems to get all information required to perform an inspection. Typically, they must access one system to get a work card, another to access the detailed inspection procedure, and a third to document their findings. NCheck consolidates information from all of these sources into one convenient interface, drastically reducing the time required to perform the inspection tasks.

Provides Immediate Feedback to Engineering

NCheck can be configured to automatically e-mail engineering departments when an inspection finding is documented. This enables a near real-time interaction between inspectors and engineers.

Reliable & Configurable

- Network connectivity is not required – NCheck will save findings locally until network is available
- NCheck is easily configurable
- NCheck allows users to capture Non-Destructive Inspection (NDI) data

Data Reuse & Part State Awareness

NCheck accelerates the disposition process by reducing the back and forth between quality and engineering departments caused by inaccurate/incomplete documentation.

Reduce Number of Discrepancies & Dispositions

NCheck’s spatial clustering tools highlight problem locations and allow users to drill down into clusters for a better understanding of maintenance issues. The application also provides a list of other discrepancies associated with serialized part.

System Requirements

Requires a Windows based touch screen enabled laptop or tablet.



ACQUIRE • ARCHIVE • ANALYZE • ALIGN

“The procedure took about eight to ten hours before engineers could begin to analyze damage extent and repair options. Now, fleet maintainers will be able to simply take a digital picture of the damages and send them directly to the engineers who can begin working on the repair analysis.”

– Naval Air Systems Command



NLign™

NLign is the analysis tool within the NLign Analytics Platform. It provides an interactive 3D environment to analyze both manufacturing and maintenance data. This intuitive 3D environment enables the user to quickly detect and quantify issues like recurring cracking and/or growing wear, and then aids in root cause analysis efforts to identify the source of the problem. In addition, NLign enables users to quickly find information that is relevant to a specific troublesome location on a structure like, previous repairs and analysis. These capabilities to identify trends and locate relevant data have been used to drive manufacturing improvements that reduce costs and increase production rates. In maintenance applications the NLign tool has even improved aircraft availability.

Benefits

- Perform root cause analysis on large amounts of diverse test data by identifying the variables associated with defects.
- Quickly verify the extent of the growth/severity of a defect over time along with the defect type and location across multiple serial numbers of that same component.
- Efficiently locate information, like historic repairs and analysis across fleets, to accelerate engineering repair processes.
- Accurately determine the size and location of damage. This information can be automatically sent to finite analysis packages to speed repair design.

Features

NLign contains a number of built-in statistical and graphing functions for: Reporting, Visualization, Trending, Root Cause Analysis, Process Improvement, Coverage Checking and Analysis Package Integration. Your data is stored as objects called trendables which are fully customizable and contain a variety of user-defined fields (numbers, dates, text, etc.). NLign offers both manual and automated data filtering and allows trendables to be viewed as a table or displayed against a digital model.

Color Presets

The Color Presets feature allows users to color-code trendable points based on data type and display in a 3D view. An auto-select feature allows color presets to be selected automatically based on the selected parameter. New color presets can be saved for future use.

“Damage and repair details will now be model-based. Saving this data in a 3D environment as opposed to papers, files and PDFs will make us more efficient.”

— **Chris Root**

*Advanced Aircraft Technology Team Lead
Naval Air Systems Command*

Filtering

NLign’s Trending Filter Editor allows users to select the trendable data to display. Filtering can be configured to select specific locations on a structure, damage type, and/or other parameters that are of interest. Filters may be saved in both private and public modes for restricted or shared viewing.

Charts & Graphs

Users have the option to view existing data or create new data charts from trendable data. Data can be displayed in a variety of formats including: Pie Chart, Line Chart, or Instagram display.

Damage Mapping

NLign has the ability to align a photograph of a structure onto a 3D model of the structure. Using this capability, a user can take a picture of a damage structure, use NLign to align the photograph to a 3D model of the structure, and then accurately transfer the damage onto a 3D model of the structure. Once the damage is transferred to the model a trendable element can be added that allows the user to tag the damage with the proper parameters (e.g., crack, corrosion, etc.).

Report Generation

Create reports based on MS Word and Excel templates. A report-generation wizard automatically completes defined fields.

System Requirements

Requires a Windows based touch screen enabled laptop or tablet.

ACQUIRE • ARCHIVE • ANALYZE • ALIGN