



ASIP Conference 2022

NLign Software Suite for Data Capture and Fleet Management

Chris O'Connell

About Me

Chris O'Connell
Senior Application Engineer



Resident of Las
Cruces, NM



Graduate of Ohio
University



Spent the last 5 years
in the Software
Industry



Extensive knowledge and
experience with Software
Implementation & Solution
Development



Passionate about
advanced technology
and the benefits it
brings to industry.

- NLign Software At A Glance
- Recent Software Advances
- Intended Outcomes
- ASIP Applicability

Who is NLign Analytics

- Founded in 2009 by Dr. Thomas Sharp as an independent division of Etegent Technologies devoted to the development of data management software and related services.
- Rooted in the SBIR program where NLign got its start.
- Headquartered in Cincinnati, OH.



**Better Data
Better Decisions
Warfighter Returns**

What Does **NLign** Do?

Enable Digital Transformation

- Digital Documentation of Uniqueness of each Aircraft
- Archive data in Spatial Database
- Provide 3D environment to improve decisions throughout lifecycle

Throughout the entire Lifecycle

What Does NLIgn Do?

Building the digital twin for manufacturing, sustainment and design

Collects Data



Digital Data Entry



NDX & MDX Data



Inspection Data

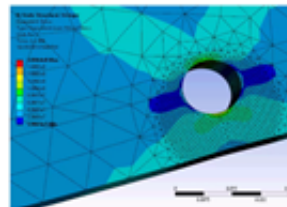


HoloLens



Disposition, Analysis & Historical Data

Maps Data onto Models



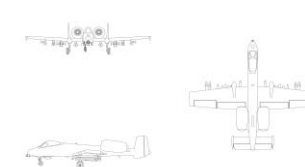
FEM Models



3D Models



3D Models

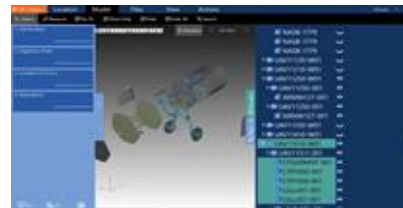


2D Drawings

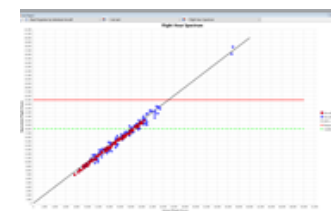
To Get Results



Clustering allows users to rapidly spot problem areas on an aircraft



Quickly find the right information to make decision



Prognostics Charts can aid in scheduling and budgeting decisions



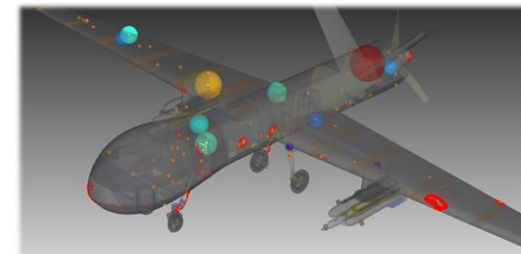
Sync Data between NLIgn and other systems

Completes the Structural Digital Thread

- From manufacturing to sustainment
- Acquires and stores the data that makes every aircraft unique
 - Allows user to tie discrepancies/nonconformances to exact X,Y,Z locations.
- Integrate with your PLM, MES and MRO systems.
- Interactive 3D environment to aid in decision making

Better Data – Better Decisions

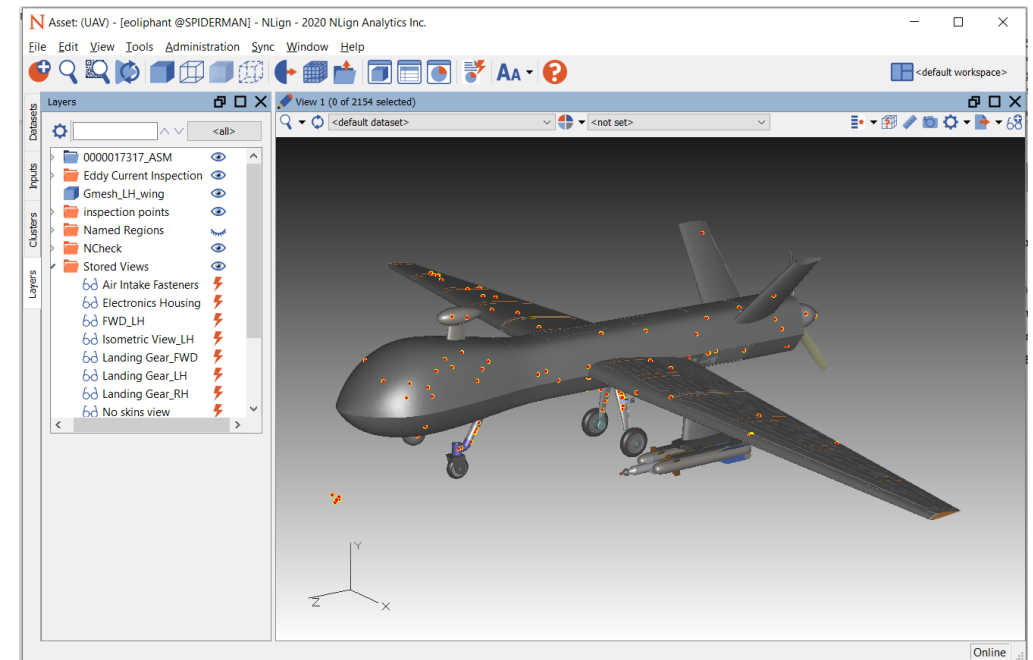
Completing the Digital Thread



NLign Software At A Glance

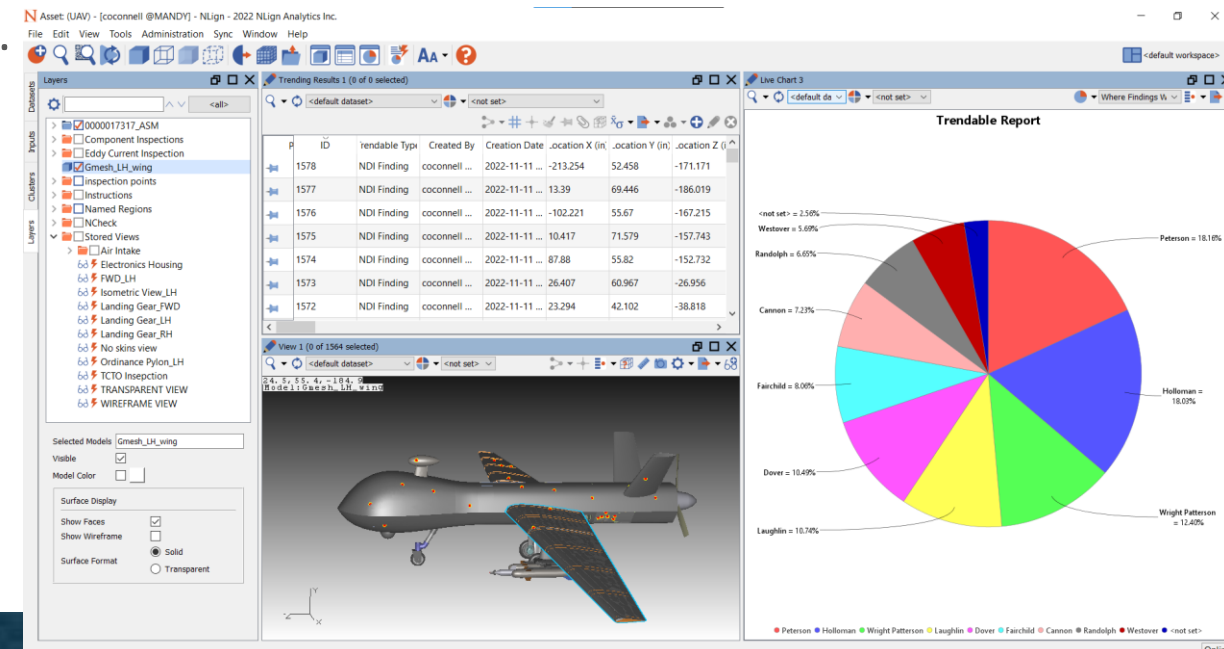
Traditionally described as a 3D database.

- Used to log and store information for specific aircraft or the entire fleet.
- Able to model or annotate various defects or damages.
- Can be used for any aircraft or component information whether from the depot, field or OEM.



NLIgn is also a very useful analysis and reporting tool.

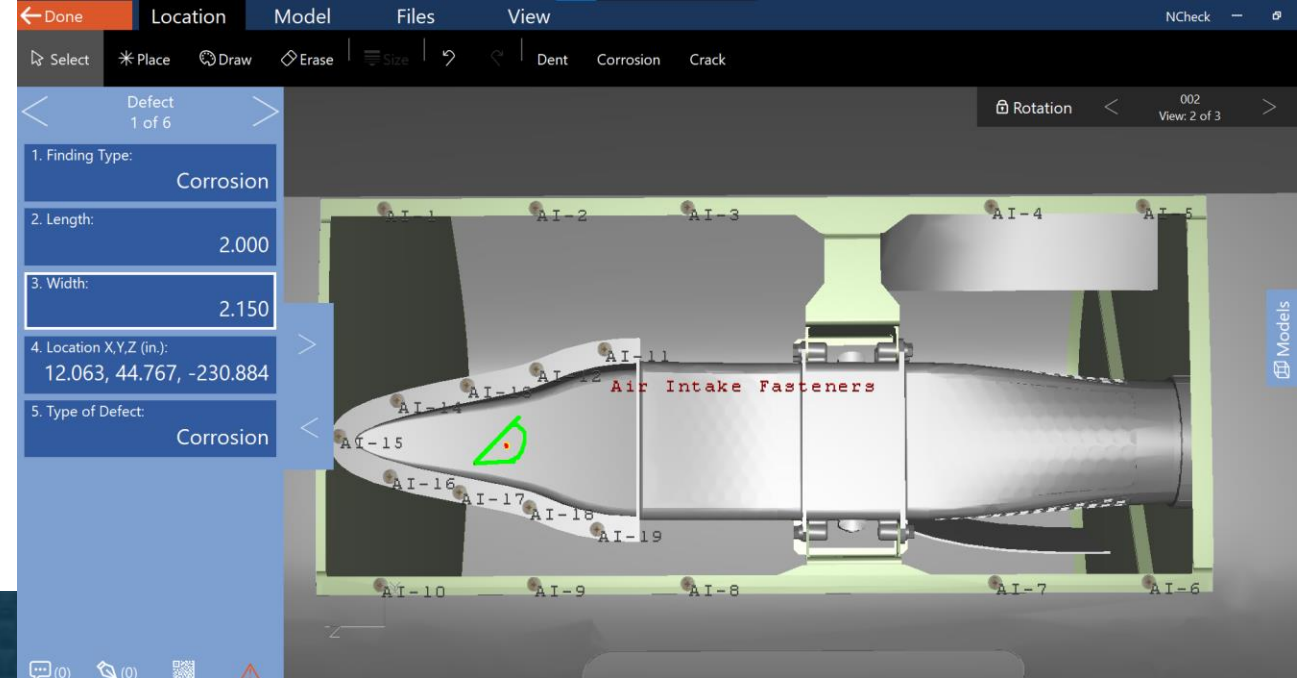
- Ability to build datasets helps analyze prior defects across the fleet, build precedence for repairs.
- Clustering tools to perform Hot Spot analysis.
- Report templates are a built-in reporting tool to automatically populate data, charts and images within a given document.
- Workspaces can improve speed and usability of Tool.



NLign Software At A Glance

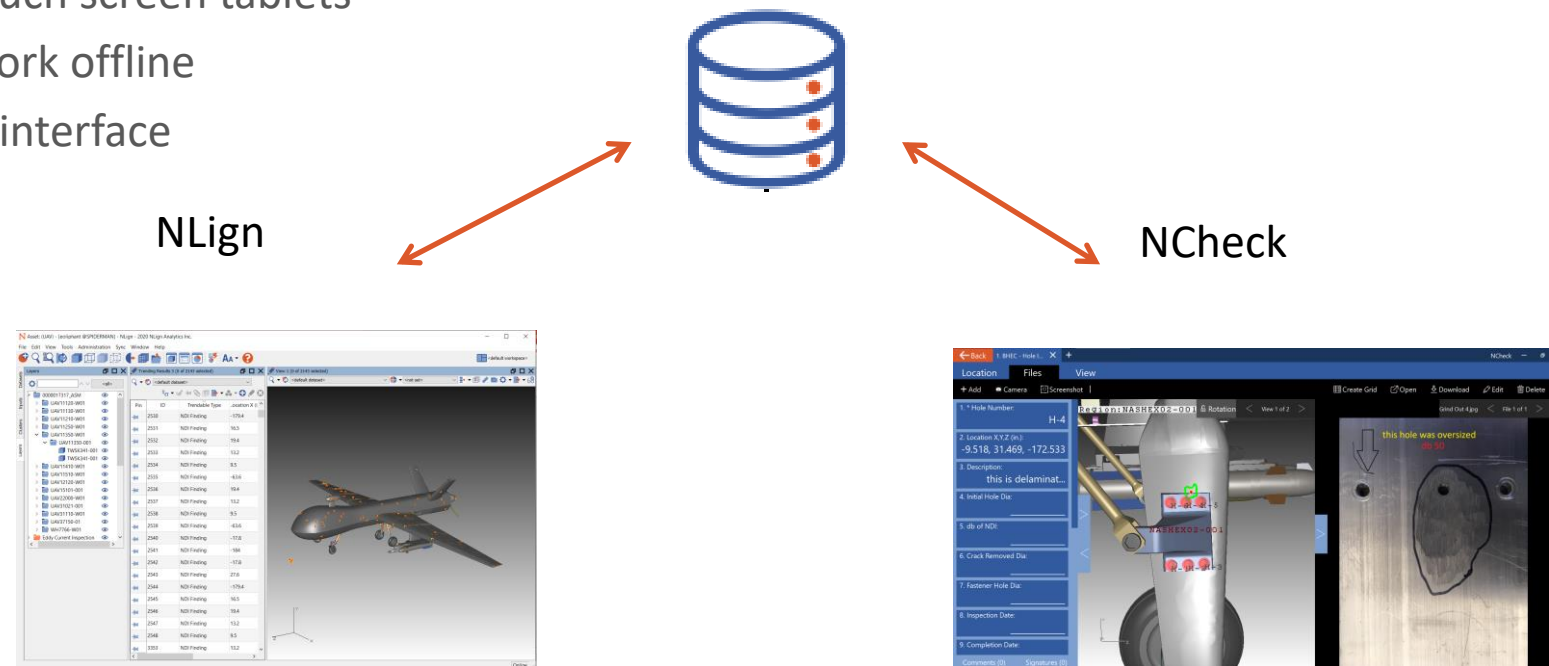
NLign has several methods for intaking data.

- Entering trendable records in NLign one at a time.
- .csv file import allows bulk data to be uploaded.
- NCheck is a companion software tool to capture data at the point of inspection or creation.
 - NCheck has been the subject of numerous upgrades over the last year.



NCheck Purpose

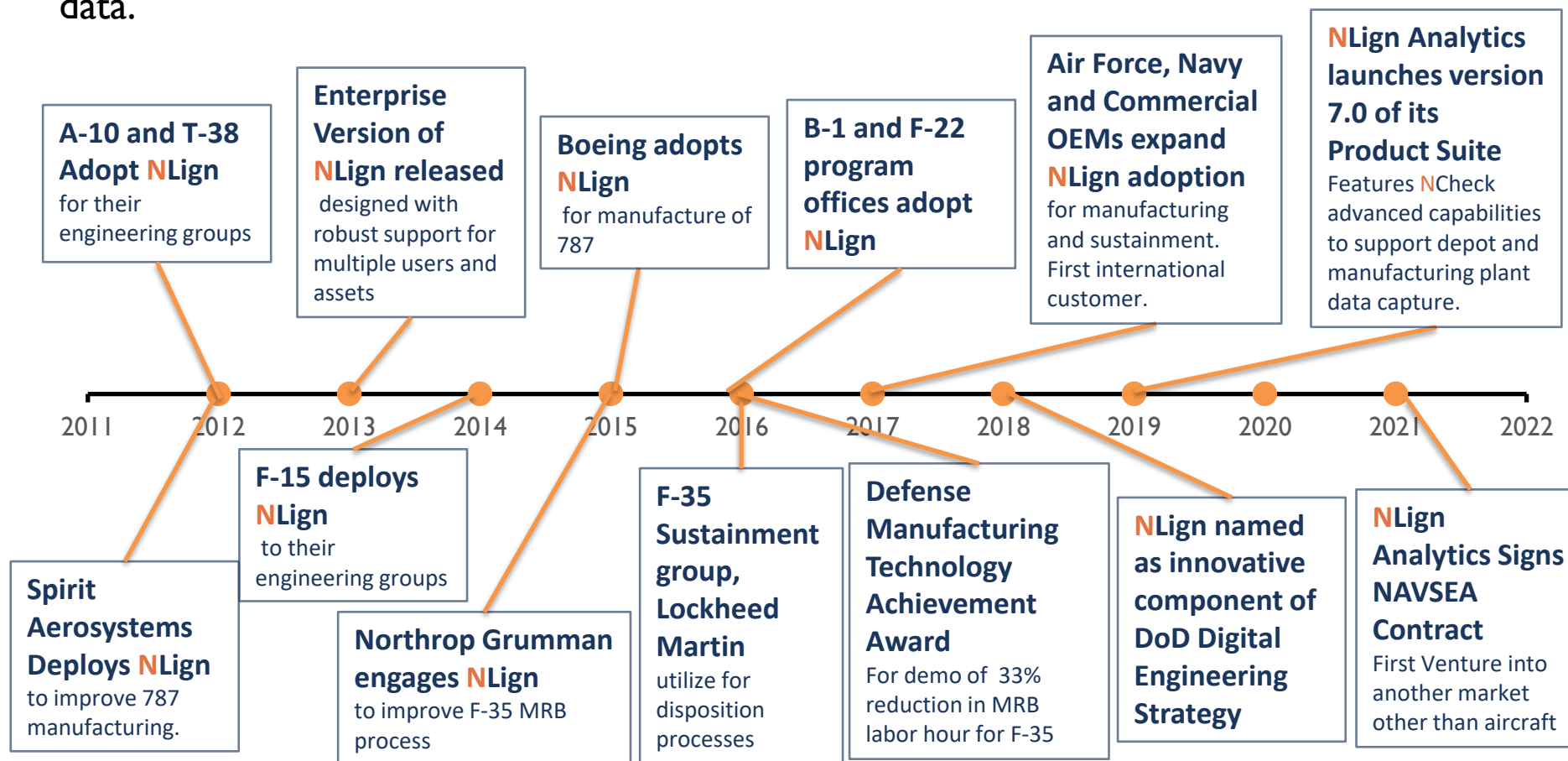
- NCheck is a companion application to NLogn
 - Accesses the same database that NLogn does
 - Setup must be done in NLogn before NCheck can be used
 - Streamlined to use for inspections
 - Designed for touch screen tablets
 - Optimized to work offline
 - Simplified user interface



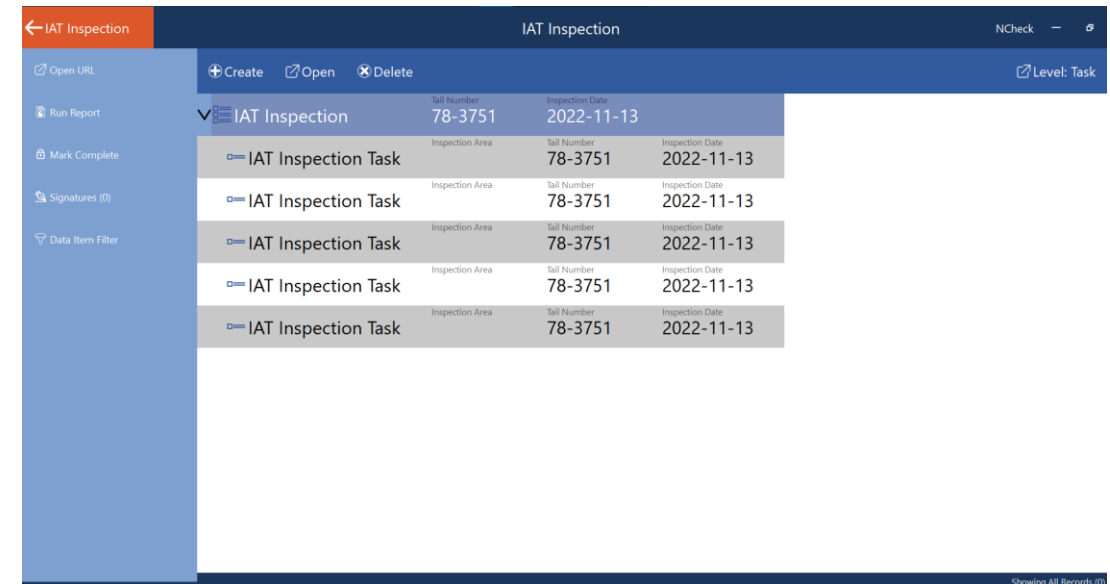
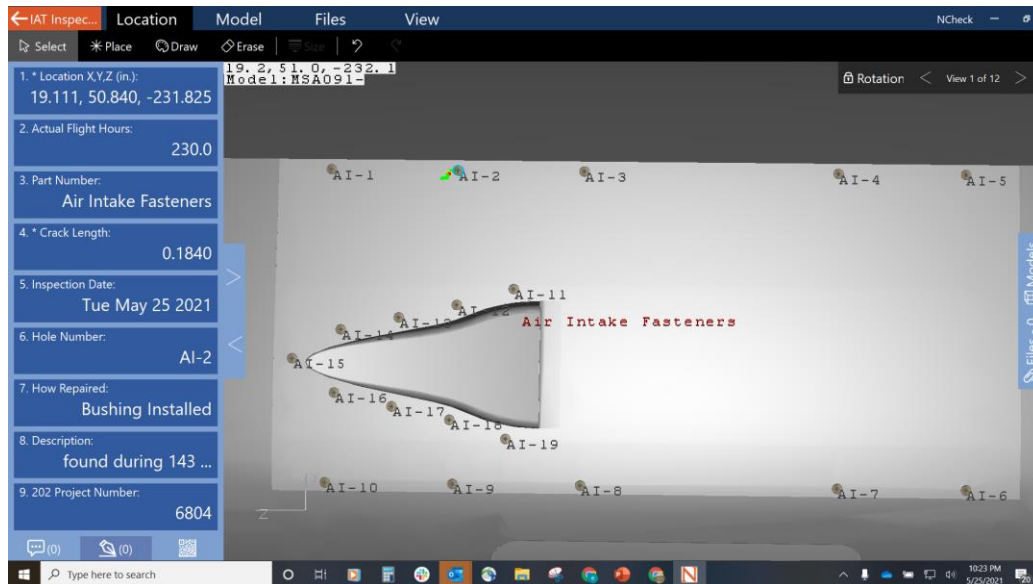
OK great! Why is this important to ASIP???

ASIP Applicability

NLign is already being used by several programs within the US Air Force, US Navy as well as various OEM's. Many of these programs use NLign as an ASIP tool to view and report data.

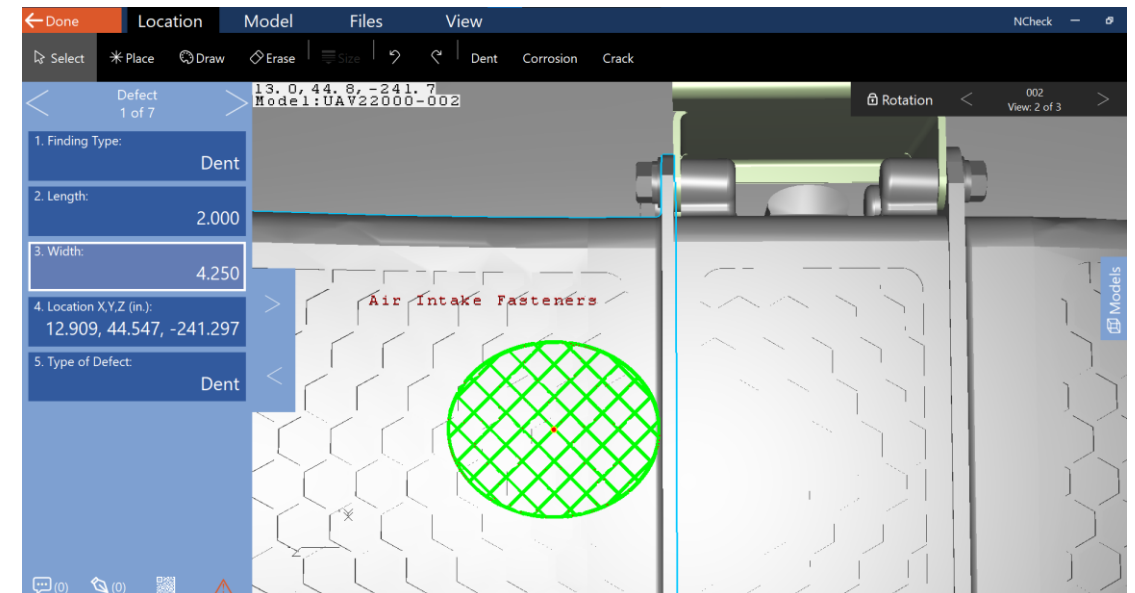
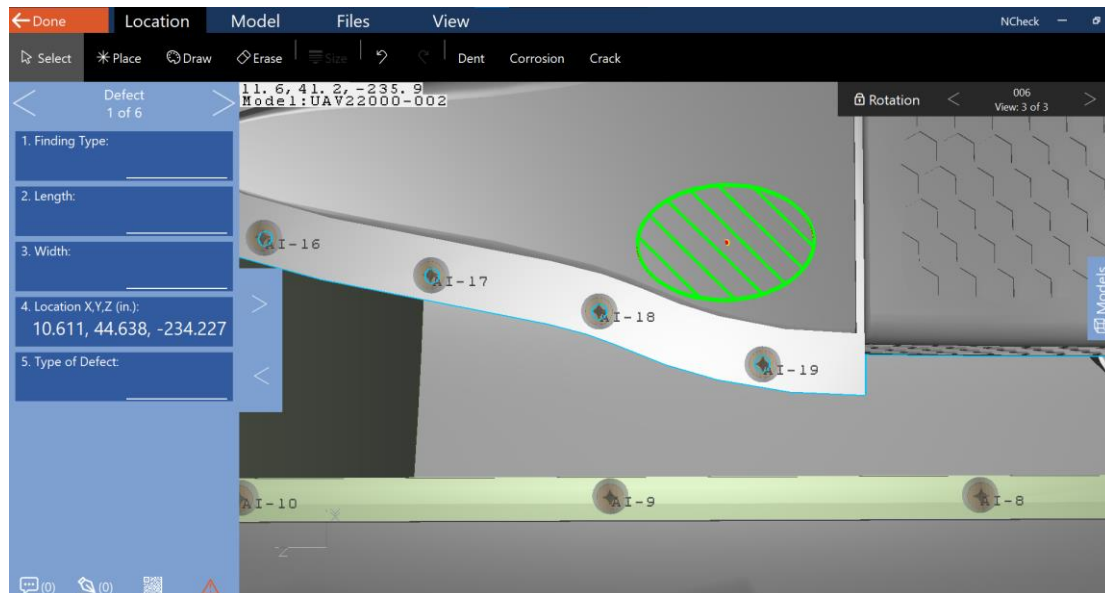


- With feedback from these programs, we have developed new tools for capturing data directly in the NLIgN environment.
- The driving elements of these enhancements were to increase the speed and accuracy of data being captured on shop floors.
 - The following slides outline some of these enhancements as well as the intended outcomes.



Defects from Legend:

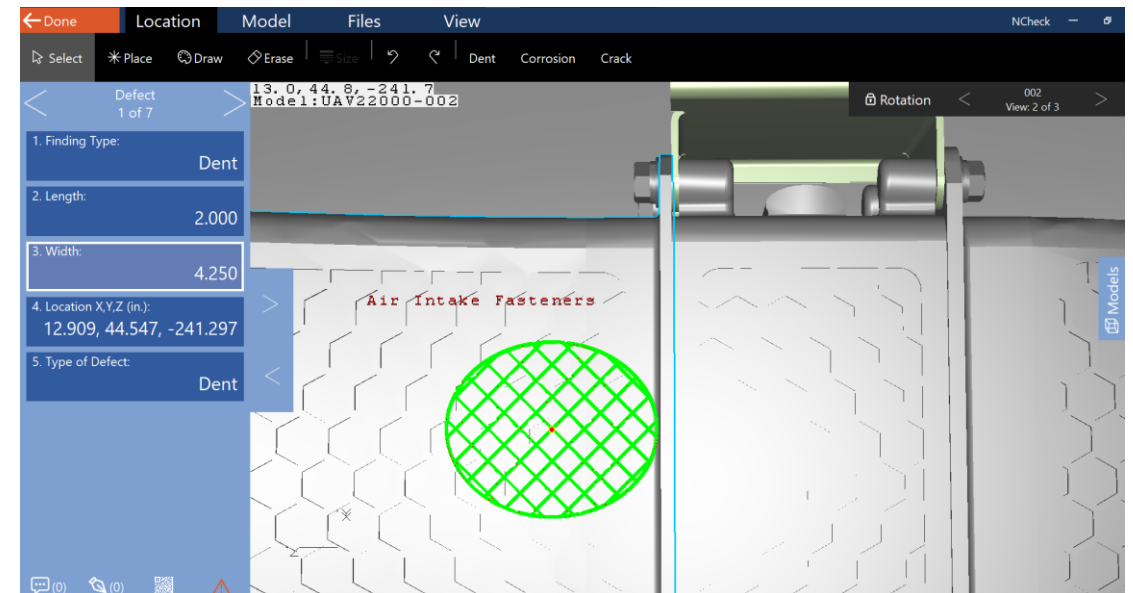
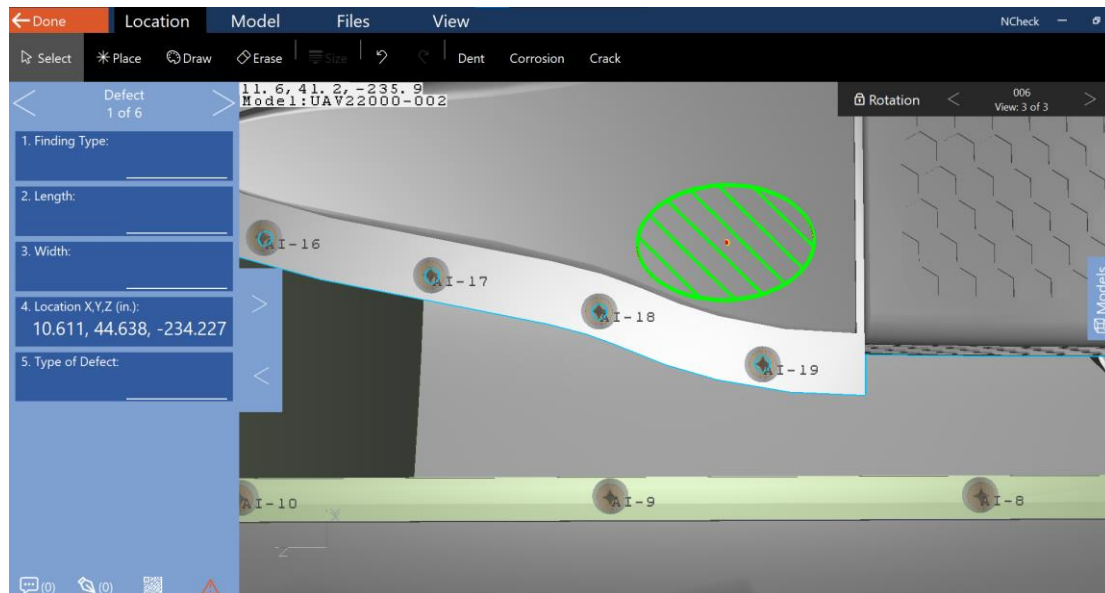
This feature enables a user to “draw” a defect on a model using a predefined symbols for corresponding defects. The selection is picked from a newly developed legend.



Defects from Legend:

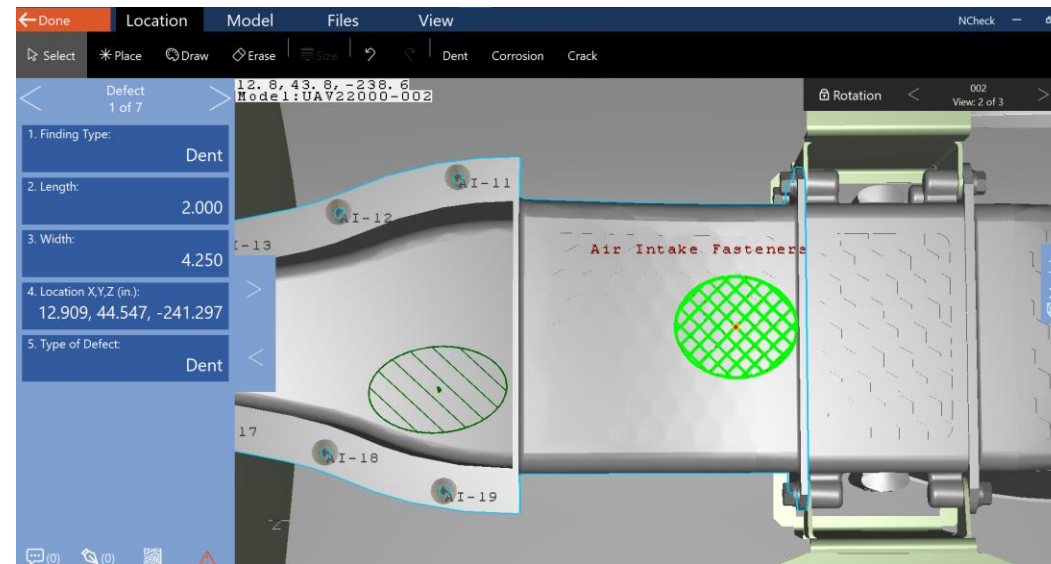
Benefits of this feature:

- Increased speed of Data Entry
- Better/Clearer Visualizations
- Process Improvements – NOT Process Changes



Multiple Defects in View:

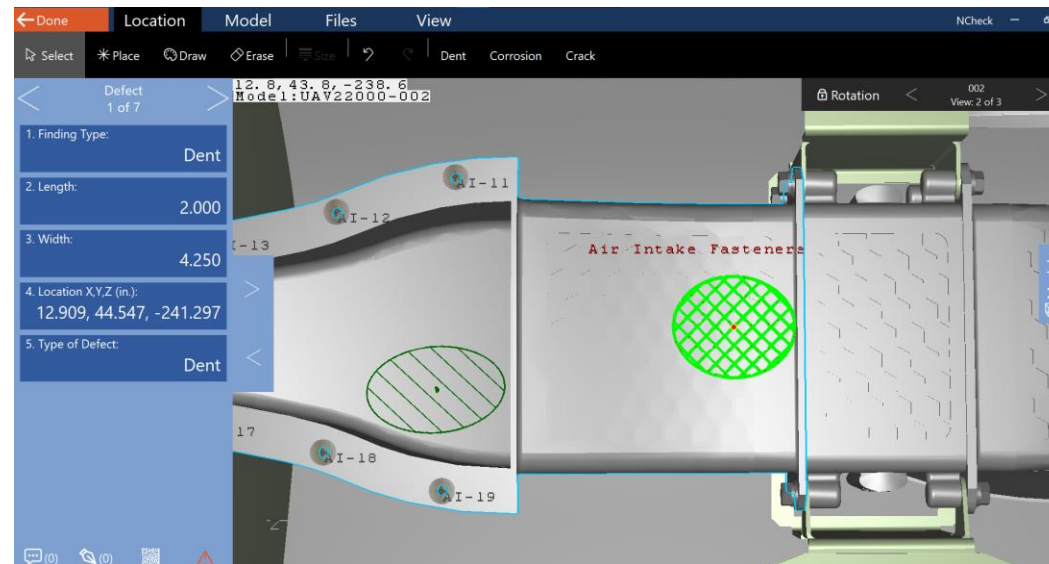
This feature enables users to view multiple defects from the same job on a single model view in NCheck. This was not possible in legacy versions of NCheck.



Defects from Legend:

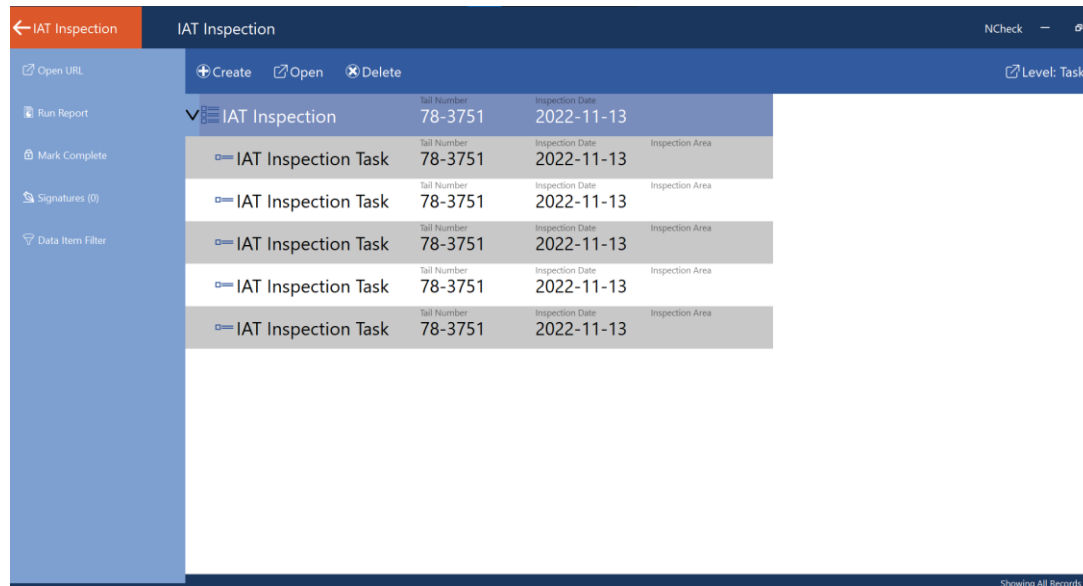
Benefits of this feature:

- Eliminates dual entry risk
- Reduces time wasted.
- Better/Clearer Visualizations

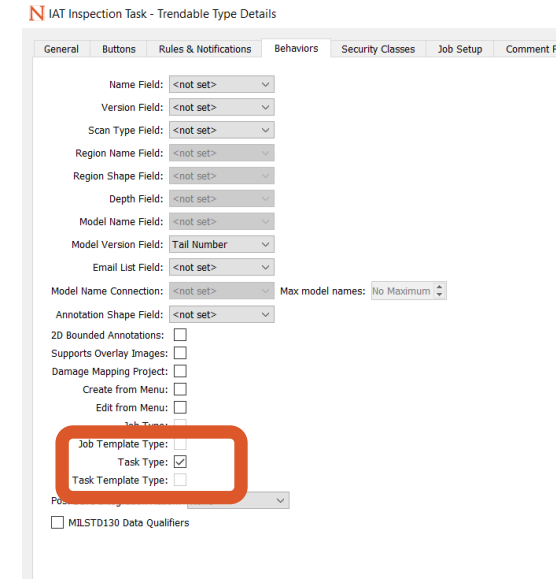


Task System:

This feature enables an engineer to create a defined process of various tasks within NCheck. Each task could be an inspection or work required work that need to be completed prior to a job being marked complete.



IAT Inspection			
	Tail Number	Inspection Date	Inspection Area
IAT Inspection	78-3751	2022-11-13	
IAT Inspection Task	78-3751	2022-11-13	
IAT Inspection Task	78-3751	2022-11-13	
IAT Inspection Task	78-3751	2022-11-13	
IAT Inspection Task	78-3751	2022-11-13	
IAT Inspection Task	78-3751	2022-11-13	



N IAT Inspection Task - Trendable Type Details

General Buttons Rules & Notifications Behaviors Security Classes Job Setup Comment F

Name Field: <not set>

Version Field: <not set>

Scan Type Field: <not set>

Region Name Field: <not set>

Region Shape Field: <not set>

Depth Field: <not set>

Model Name Field: <not set>

Model Version Field: Tail Number

Email List Field: <not set>

Model Name Connection: <not set> Max model names: No Maximum

Annotation Shape Field: <not set>

2D Bounded Annotations: ☐

Supports Overlay Images: ☐

Damage Mapping Project: ☐

Create from Menu: ☐

Edit from Menu: ☐

Job Template Type: ☐

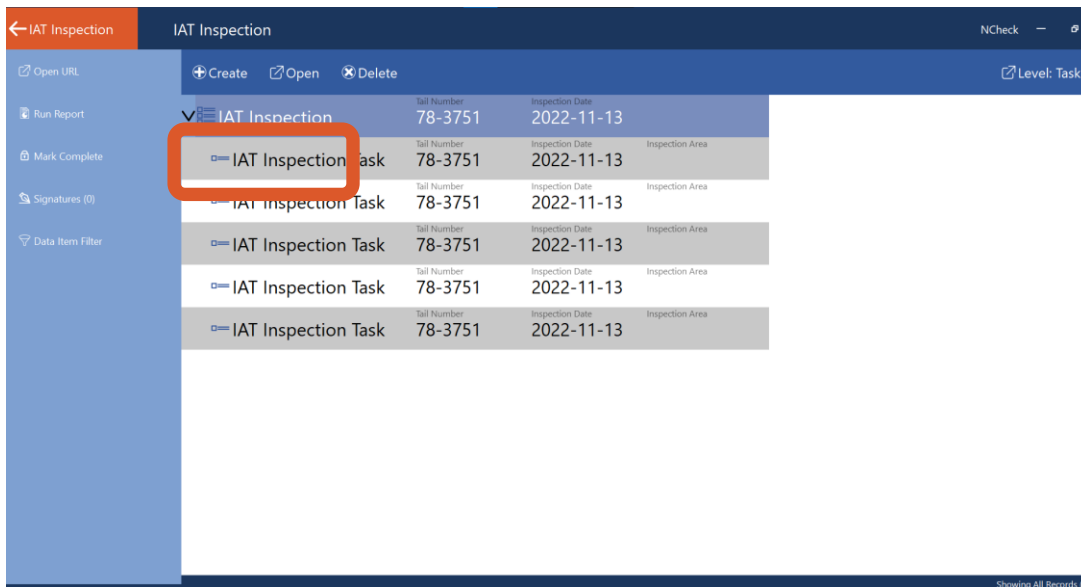
Task Type: ☒

Task Template Type: ☐

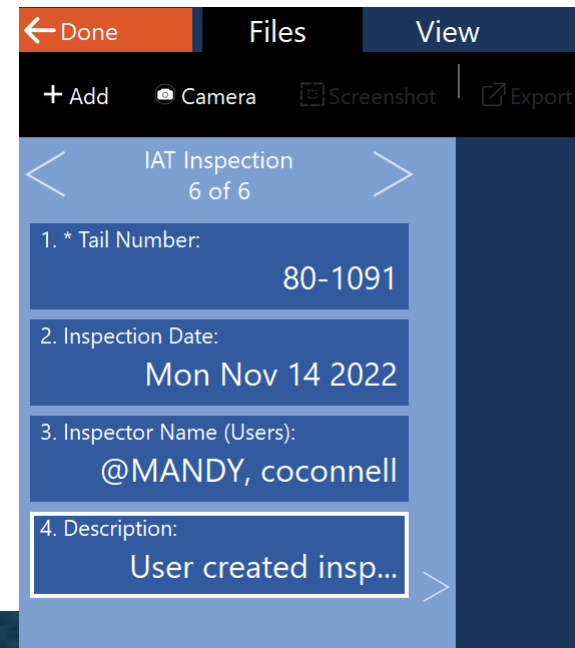
MLSTD130 Data Qualifiers: ☐

Task System:

This capability effectively lets NCheck run on a continuous basis for all routine work across a shop floor. Enables all production maintenance from depots to be available in NLink.

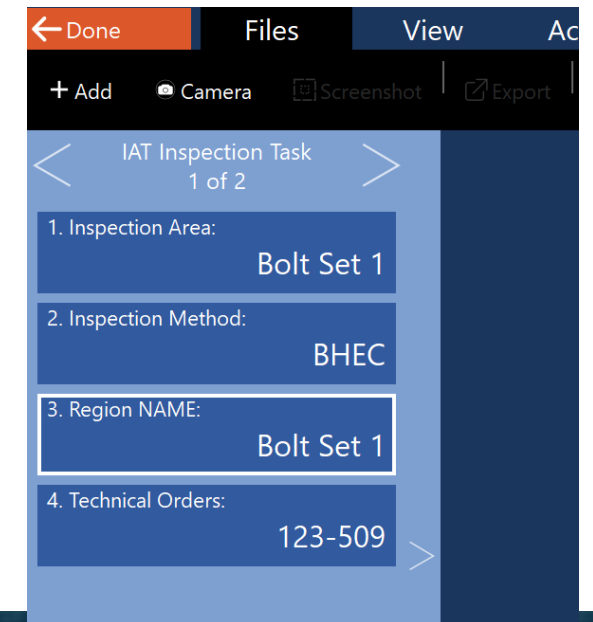


IAT Inspection			
	Tail Number	Inspection Date	Inspection Area
IAT Inspection	78-3751	2022-11-13	
IAT Inspection Task	78-3751	2022-11-13	
IAT Inspection Task	78-3751	2022-11-13	
IAT Inspection Task	78-3751	2022-11-13	
IAT Inspection Task	78-3751	2022-11-13	
IAT Inspection Task	78-3751	2022-11-13	



IAT Inspection
6 of 6

- * Tail Number: 80-1091
- Inspection Date: Mon Nov 14 2022
- Inspector Name (Users): @MANDY, coconnell
- Description: User created insp...

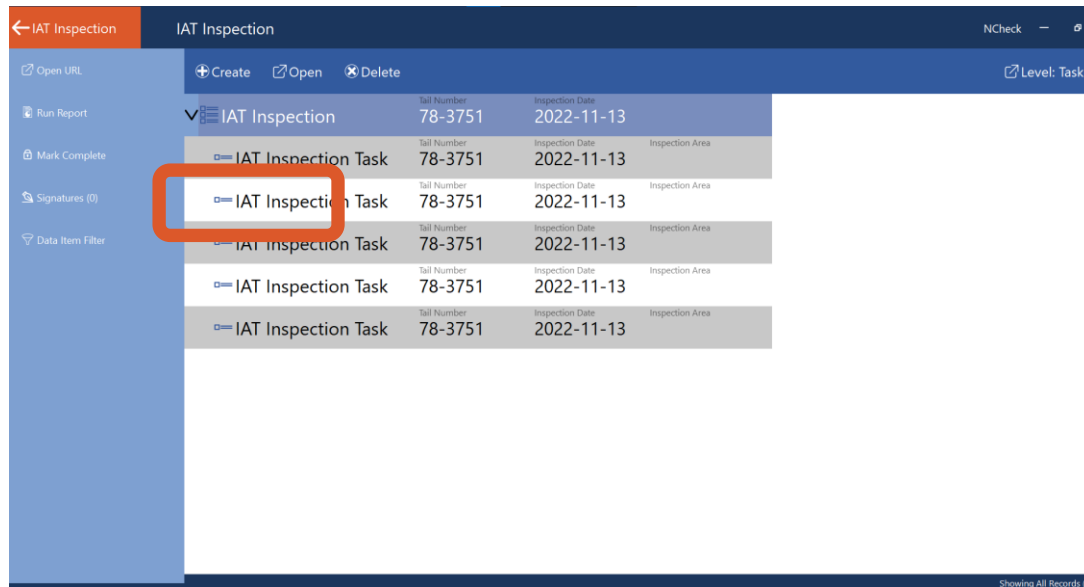


IAT Inspection Task
1 of 2

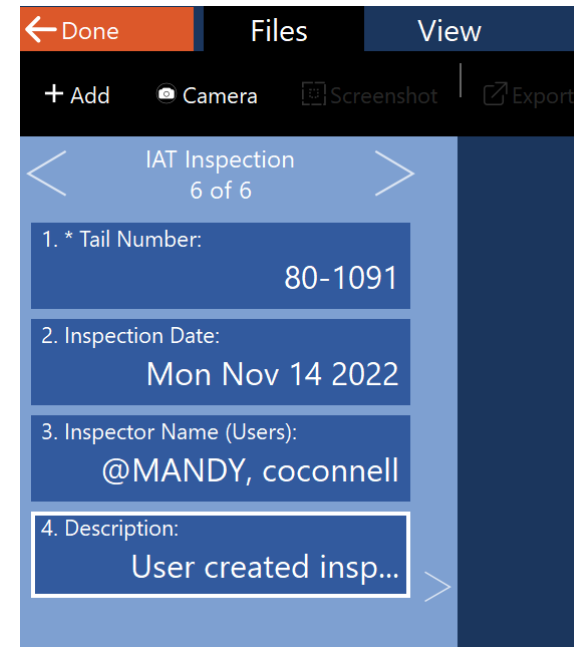
- Inspection Area: Bolt Set 1
- Inspection Method: BHEC
- Region NAME: Bolt Set 1
- Technical Orders: 123-509

Task System:

The Job level inspection allows “overhead” data to be captured one time and applied to all inspections and findings.



	Tail Number	Inspection Date	Inspection Area
✓ IAT Inspection	78-3751	2022-11-13	
✖ IAT Inspection Task	78-3751	2022-11-13	
✖ IAT Inspection Task	78-3751	2022-11-13	
✖ IAT Inspection Task	78-3751	2022-11-13	
✖ IAT Inspection Task	78-3751	2022-11-13	
✖ IAT Inspection Task	78-3751	2022-11-13	



← Done | Files | View

+ Add | Camera | Screenshot | Export

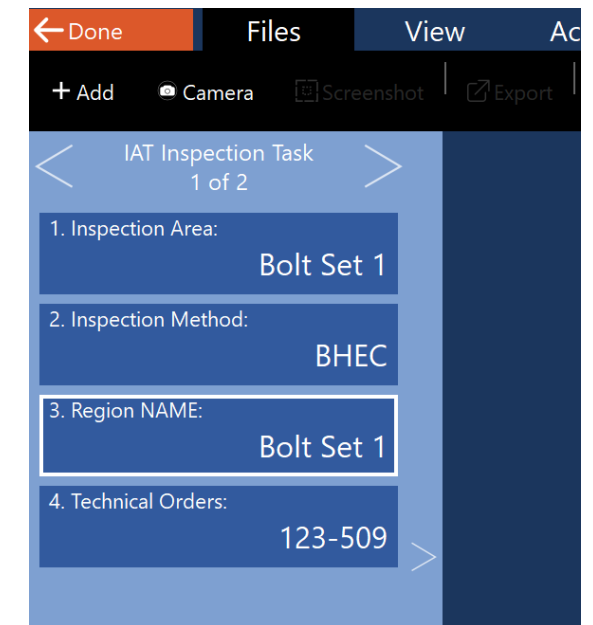
< IAT Inspection 6 of 6 >

1. * Tail Number: 80-1091

2. Inspection Date: Mon Nov 14 2022

3. Inspector Name (Users): @MANDY, coconnell

4. Description: User created insp...



← Done | Files | View | Ac

+ Add | Camera | Screenshot | Export

< IAT Inspection Task 1 of 2 >

1. Inspection Area: Bolt Set 1

2. Inspection Method: BHEC

3. Region NAME: Bolt Set 1

4. Technical Orders: 123-509 >

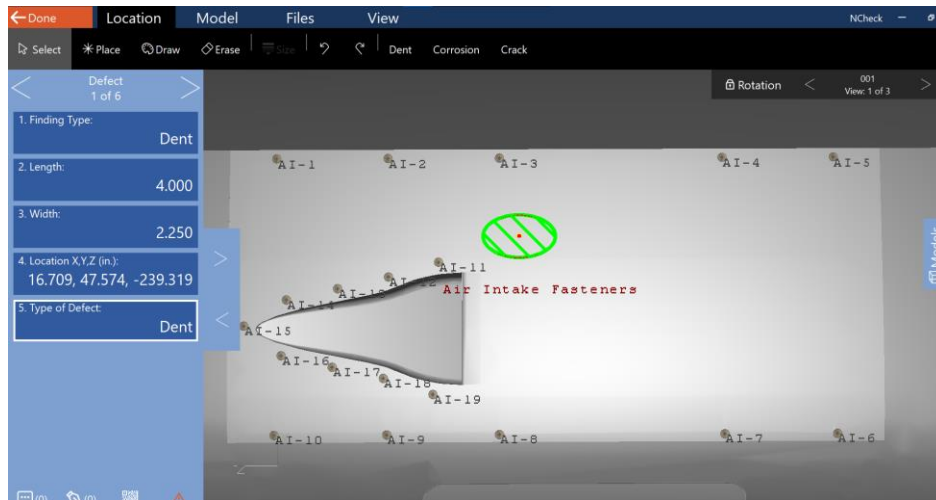
Task System:

Benefits of this feature:

- **Time saved by inspectors recording only defect information, not AC or Overhead info.**
- **Better flow of products across the shop floor.**
- **With defined tasks, inspectors know exactly what work is already done and what work remains. More information is being given directly to them without the need to hunt in various systems.**

Intended Outcomes

Intended to save time, reduce effort and increase efficiency for the data capture process. All features are in addition to the existing NCheck, product that has proven to be a successful data capture solution for various platforms.



← IAT Inspection

Open URL

Run Report

Mark Complete

Signatures (0)

Data Item Filter

IAT Inspection

NCheck

+

Create

↗

Open

✕

Delete

Level: Task

▼ IAT Inspection

Tail Number

80-1091

Inspection Date

2022-11-14

▼ IAT Inspection Task

Tail Number

80-1091

Inspection Date

2022-11-14

Inspection Area

Bolt Set 1

○ Defect

Inspection Date

2022-11-14

Tail Number

80-1091

▼ IAT Inspection Task

Tail Number

80-1091

Inspection Date

2022-11-14

Inspection Area

Bolt Set 2

○ Defect

Inspection Date

2022-11-14

Tail Number

80-1091

○ Defect

Inspection Date

2022-11-14

Tail Number

80-1091

○ Defect

Inspection Date

2022-11-14

Tail Number

80-1091

▼ IAT Inspection Task

Tail Number

80-1091

Inspection Date

2022-11-14

Inspection Area

Bolt Set 3

○ Defect

Inspection Date

2022-11-14

Tail Number

80-1091

○ IAT Inspection Task

Tail Number

80-1091

Inspection Date

2022-11-14

Inspection Area

Bolt Set 4

○ IAT Inspection Task

Tail Number

80-1091

Inspection Date

2022-11-14

Inspection Area

Intake Fas...

Showing All Records

- Questions?
- Contact info:
 - Chris O'Connell
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- Nlign Analytics
 - Nlign Analytics on YouTube: youtube.com/user/NLIGN3D
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 - nlig.com
 - 513-631-0579
 - info@nlig.com