Implementing a Modern NDT Inspection Program Utilizing Connected Instruments and Cloud Software Solutions

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Overview

- NDT Inspection for Quality Assurance
- Current “Real-Time” Inspection Process
- Advances Through Connectivity
- Cloud Computing and Connected NDT Instrumentation
- Cloud-driven NDT Software Features
- Benefits for the NDT Industry
- Cloud Security
- Conclusion
NDT Inspection for Quality Assurance

Why we perform non-destructive tests in manufacturing and maintenance:

- To detect defects that may require expensive repair or early replacement
- To mitigate unsafe conditions or catastrophic failures
- To avoid loss of revenue due to unplanned shutdowns and maintenance
- To monitor the integrity of components, structures and systems throughout their life cycle.

All of the Above Require Quick Decision-making!

https://www.worldspec.org/What-is-NDT-and-its-Benefits/

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NDT Inspection for Quality Assurance

It’s tough to make quick, effective decisions…

- when reports take weeks or months to compile for review.
- if reports contain inaccurate data due to human error.
Current Real-Time Reporting Process

1. Readings taken during 8-12 hour shift.
2. Readings downloaded from NDT instrument at end of shift.
3. Readings sent to data analyst or data processor for report compilation.
What If You Could Make Real-Time Decisions Without Ever Leaving The Inspection Site

- Send data for review to make immediate actionable decisions
  - Re-inspect before closing up a pressure vessel, removing scaffolding, re-applying for permitting, etc.
  - Monitor for accuracy and human error
  - Better collaboration between supervisor/advanced user and field inspectors

- Instrumentation can send/receive set-up and inspection files
  - Better job monitoring and eliminate workflow issues
  - Reduce human error

Real-Time reporting allows actionable decisions increasing productivity, cost savings and profitability.
NDTMA 2019 Annual Conference

Advances Through Connectivity

- In-Field Decisions
- Integrated Inspections
- IoT
- Modern Inspection Program
- Bluetooth®
- Wireless LAN
- Cloud Connectivity

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Cloud Computing or Serverless Computing

- Yawn….

  The cloud is just someone else’s computer…

- In reality….

  Cloud uptake is only at about 20 per cent for enterprise/industry, even though last year, spend grew by almost 50%
Cloud Computing

*It’s NOT just someone else’s computer…*

- Cloud Benefits
  - Your business doesn’t spend money on purchasing and maintaining server hardware
  - Automates labor-intensive business processes
  - Advanced security features
  - Scalability without investing in physical infrastructure
  - Data and applications available anywhere, any device and by many users

https://www.globaldots.com/cloud-computing-benefits/
Connected NDT Instrumentation

- Information flow when the instrument is wirelessly connected to a network with internet access
- Secure data transmission between the cloud and the instrument, mobile devices, and computers.
  - End to end security, comply with local regulations.
  - Focused approach required for minimizing Cyber security risk and local compliance.
Connected NDT Instrumentation
Cloud Software - NDT Project Manager

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Cloud Software – Inspection Surveys
Cloud Software – Survey Summaries
Cloud Software - Real-Time Screen Sharing
Cloud - Live, Remote, Global Data Access

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### DATA

**Source**: Vanta data

**Devices**: 800132

**Date Range**: 10/08/2018 - 10/15/2018

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Fleet/Asset Management

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Cloud Computing and the NDT Industry

- Most maintenance or manufacturing operations use cloud computing some form corporately – MS Office365, Salesforce, Amazon Web Services (AWS), Concur…
- Cloud technologies are already freeing employees to work more efficiently, remotely, and with smart assistance.
- The next logical step is to move quality and reliability data to a cloud platform through connected NDT instrumentation.

https://searchcloudcomputing.techtarget.com/opinion/Clouds-are-more-secure-than-traditional-IT-systems-and-heres-why
Image from https://www.newgenapps.com/blog/top-10-cloud-computing-examples-and-uses
Benefits for NDT Inspection

Real-Time Data

- Review by remote Senior NDT Technician or Reliability Engineer for timely decision making or to automatically trigger action
- Trigger immediate re-measure or additional measurement while inspector is in location (esp. if scaffolding, insulation removal, special permitting, other time sensitive considerations)
Benefits for NDT Inspection

In Field Training, Monitoring & Assistance

- OJT training hours can be easily monitored by Senior NDT tech for guidance and testing
- Live steaming of actual measurement to better understand variables affecting measurement
- For an inspection company, would it allow you to expand your work globally without the expense of a full office and physical infrastructure?
Benefits for NDT Inspection

Data Processing via Cloud

- Processing of NDT data with advanced tools/algorithms that cannot be deployed onboard device
- Partnering with third party software to process inspection data and automatically analyze the data for defects, anomalies, retests, etc.
Benefits for NDT Inspection

Fleet/User Management

- Secure registration of inspection equipment
- Account administrator controls invitations and user access
- Equipment and users are available for assignment to Projects, Jobs & Tasks
- Devices can be managed from the Cloud to ensure they have proper firmware, calibration docs, etc. prior to job
Cloud Security…one more time

- Security concerns?

Our government and military utilize cloud computing.
Conclusion

- Cloud Software provides a Single Platform for all NDT data
- Optimizes inspection by creating projects, jobs and tasks
- Instantaneous data export which can be shared globally by multiple users
- Fleet and user management allows for maximum return on equipment investment
- Real-time data allows actionable decisions increasing productivity and profitability

Where will your company invest the cost savings?
Thank you for your attention
Please contact me for further discussion:
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