



NIRICSON

Automated Data Driven  
Asset Condition Surveys

# CONDITION SURVEY

DATA DRIVEN



MAKING INFRASTRUCTURE SAFER





Niricson is leading the digital revolution for infrastructure condition assessment and risk management by specializing in automated and data driven condition surveys. Using UAVs (commonly known as drones) Niricson enables asset teams to deploy detailed inspection for large inaccessible concrete infrastructures; including dams, bridges, tunnels and airfields.

### DRONIC™ Multilayer Data Collection Technology

Niricson's patented multi-layered data collection and fusion architecture, collects visual and thermal imagery, acoustic signature, positional information and reference distance measurements. Acoustic signature identifies the depth and significance of defects. This equipment can be mounted on any commercial drone to perform hammer tests on inaccessible or difficult to reach areas of the structure.

### AUTOSPEX™ Defect Detection Platform

Niricson's patent-pending AI-backed defect detection, quantification, and tracking solution for digital infrastructure condition surveys fuses the four layers of data collected through DRONIC. It applies automatic defect detection and quantification using machine learning and AI to detect and quantify cracks, delaminations, voids, corrosion and other surface and sub-surface data.



By combining these technologies, we have a non-invasive way to safely inspect and monitor concrete structures and improve performance through targeted maintenance programs. Ultimately, automating inspections will make the maintenance process more efficient while reducing the potential injuries for safety engineers.

#### Improved accuracy and efficiency

Automated inspections are faster, more efficient and more reliable. With three layers of data to inform structural conditions, our analysts can assess under the surface delamination that is impossible to see with the naked eye.

#### Quality assured assets

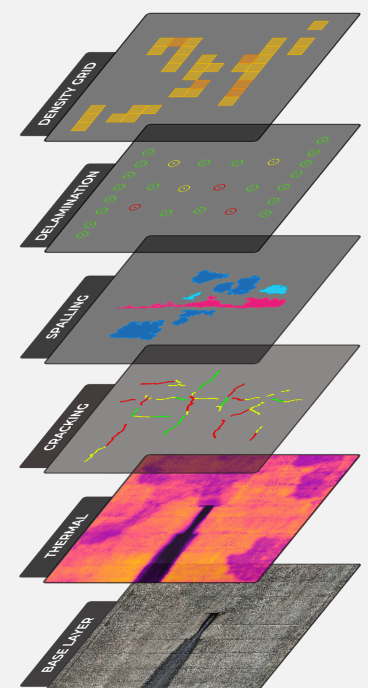
Removes inconsistencies associated with manual inspections, provides change monitoring certainty through digital mapping and quantification of defects, minimizes downtime risks and material variations in reparation contracts with accurate measurement of delamination, comprehensive structural verification provides assurance of build quality at final handover.

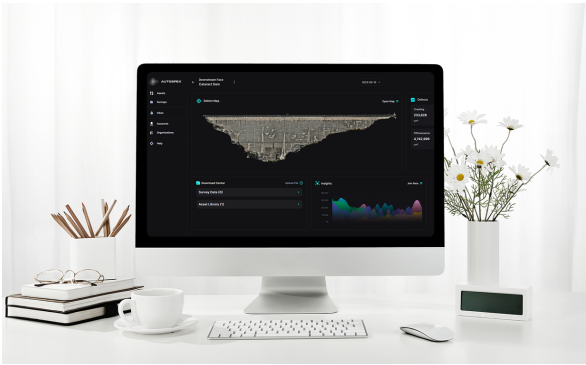
#### Reduced risk for people and assets

Automated inspection techniques provide a safer approach, with fewer people exposed to site hazards. Greater asset intelligence drives data-driven performance and safety decisions, minimizing the risks for people and assets.

#### Sustainable, predictive asset management

Predictive, data informed decision making pre-empts degradation. The removal of unnecessary interventions reduces CO2 emissions, while decreased asset downtime during inspections minimizes emissions caused by traffic congestion.



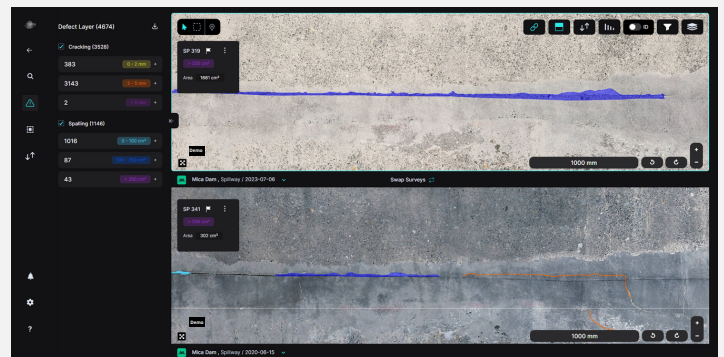
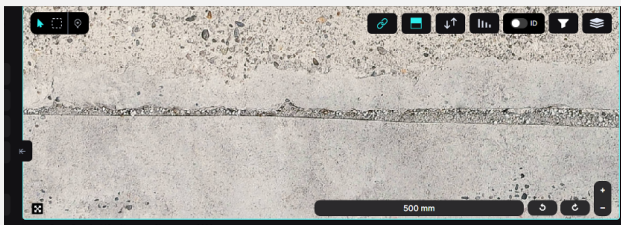


## INDICATIVE DELIVERABLES For a Detailed Condition Survey

- High res 3-D Digital Twin of the asset visualized in AUTOSPEX™
- Optical map (for visual defects), crack map, spall map and delamination map of the structures, visualized on AUTOSPEX™, which ensures all defects and damages are identified and captured for further analysis
- Log-in access to AUTOSPEX™ platform to monitor baseline defects
- Report detailing methodology and summary of data results (observed defects, identification of damages and cracks, and limitations)
- Training, technical support and maintenance with AUTOSPEX™

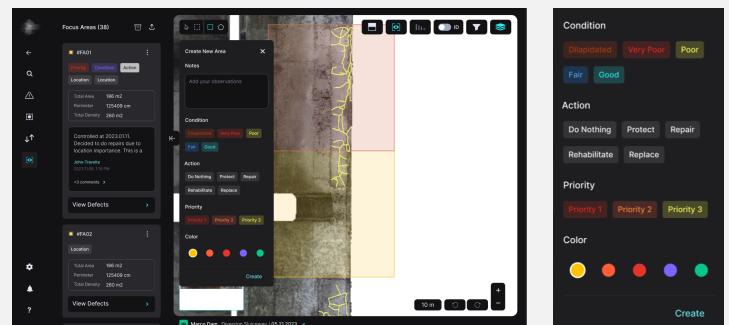

## CHANGE DETECTION BY AUTOSPEX™ | Mapping Changes Across all Structures

Multiple periodic surveys allow for a change detection and identify new quantities of defects (either increment or new) on their structures, thereby helping asset teams understand and monitor deterioration rates over time. Asset owners can estimate current maintenance work by deploying multiple surveys and having each defect change accurately quantified and prioritized.




## NEXT STEPS: MAINTENANCE AND WORK ORDERS | Digital Framework for Defect Specific Decision Making

While not all concrete defects are important and not all asset safety concerns are concrete-related, some potential failure modes and asset safety risks are associated with concrete. Even if known defects, such as cracks, do not currently present structural risks, susceptibility to weathering and deterioration can exacerbate these defects over time, eventually posing safety concerns. AUTOSPEX™ provides the necessary digital tools for asset teams to collaborate over priority definition and decide on the next steps for capital planning and maintenance works orders.

- More Accurate and Detailed Inspections due to Methodology
- Improving Personnel Safety for Condition Assessment



- Shifting from Reactive to Proactive Maintenance
- Predict Potential Failure Modes, Predictive Maintenance



- Efficient Capital Investment Management, Extending Asset Life Span



- Standardized and Consistent Inspection which is Comparable Year Over Year

*"By deploying this periodically and across multiple assets, the asset teams can track changes through time, helping prioritize O&M and rehabilitations over highest-risk assets."*

**Harsh Rathod, Ph.D. | CEO & Co-founder | Niricson**



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WaterNSW



ARCADIS



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