



Increasing the lifetime of infrastructure with Digital Inspection Reports

Infrastructure has always been a necessary part of life, but for some time, until recently it was not at the forefront of the general public's mind. Now with the newly passed infrastructure bill and the heightened concerns of safety of buildings, bridges and rail, infrastructure inspection processes are being closely scrutinized.

In addition, with the public eye on infrastructure inspections, inspectors are challenged with working individually, remotely and having digital data. By having

efficient, safe, and accurate inspections infrastructure can ensure continuity of the supply chain, and safety of the lives of civilians who use the assets.

Digital Inspection Reports are necessary for accurately, and efficiently capturing and documenting information during an inspection of infrastructure. They also optimize costs and help companies meet regulatory, health, safety, quality, and environmental needs.

The importance of inspecting infrastructure

The aging infrastructure in the US is about to get an overhaul. With the new infrastructure bill, states will be focusing on assessing what assets need repairs, replaced, or are safe to continue use. It is clear from the recent tragedies of infrastructure failure that not having the correct inspections or maintenance of buildings, roads, bridges, and rail can cost not only money but lives.

The lives that utilize the infrastructure every day need it to be reliable, safe, and well-maintained to avoid potential disastrous events. Inspection professionals are a vital part of sustainable infrastructure. To improve the work process for inspectors, digital inspection reports with reliable, user-friendly, and intelligent software are needed.

*According to a study by the **National Institute of Building Sciences**, around \$1 spent on pre-disaster mitigation, saves around \$6 on covering the cost of a destructive event.*



What is a digital inspection?

A digital inspection includes multiple elements like photos, notes, videos, georeferences, reports and additional evidence. Digital inspections can be done on any mobile technology (tablet, smart phone, head-mounted device).

Digital Work Instructions

Step-by-step visual work instructions, digital checklists, diagrams, videos, and pictures provide critical support for infrastructure inspectors. Augmented and assisted reality work instructions can be created easily by supervisors and then assigned to inspectors. The documentation is a great benefit of using AR because it ensures that the inspectors meticulously keep track of what work has been done, and who conducted that work.

Remote Support

If an inspector gets stuck on a particular challenge while inspecting an asset, they can call an expert off-site, whether in another location or country to get real-time feedback. Remote support also helps field inspectors troubleshoot, ensuring they have access to a wider network of knowledge utilizing their colleagues and supervisors as needed.

Virtual Repository

AR applications also provide a repository for collecting videos, pictures, diagrams, and other media for knowledge sharing. Inspectors can carry out tasks with any infrastructure asset they encounter if there is information in the repository. The support of information is also accessible through voice activation (on head mounted devices) and can be viewed hands-free to help inspectors continue their job in any weather condition while maneuvering around assets, like rappelling under a bridge.

Record Work Process

AR-based tools allow workers to record their whole work process, verbally narrating what actions they are taking, as a training tutorial or for quality assurance. These work process videos can then be turned into step-by-step guides as mentioned above by utilizing AI tools that recognize visuals and suggest tags, to identify specific tasks within the video. These tools also provide transcription and suggest how to create sections and segments of the content so that it is easy to follow. Experienced workers can carry out their tasks and use the AR tool and recording features to capture their knowledge and skills in an immersive and engaging way.

Fields in which inspections are vital

Buildings

With recent tragedies at the top of our mind, it is clear the impact that building infrastructure safety has. Inspections for buildings encompass onsite construction to ongoing maintenance. Each building requires different methods for full check-ups, the difficult and hard to reach areas can require streaming technology available in remote inspections.

Bridges

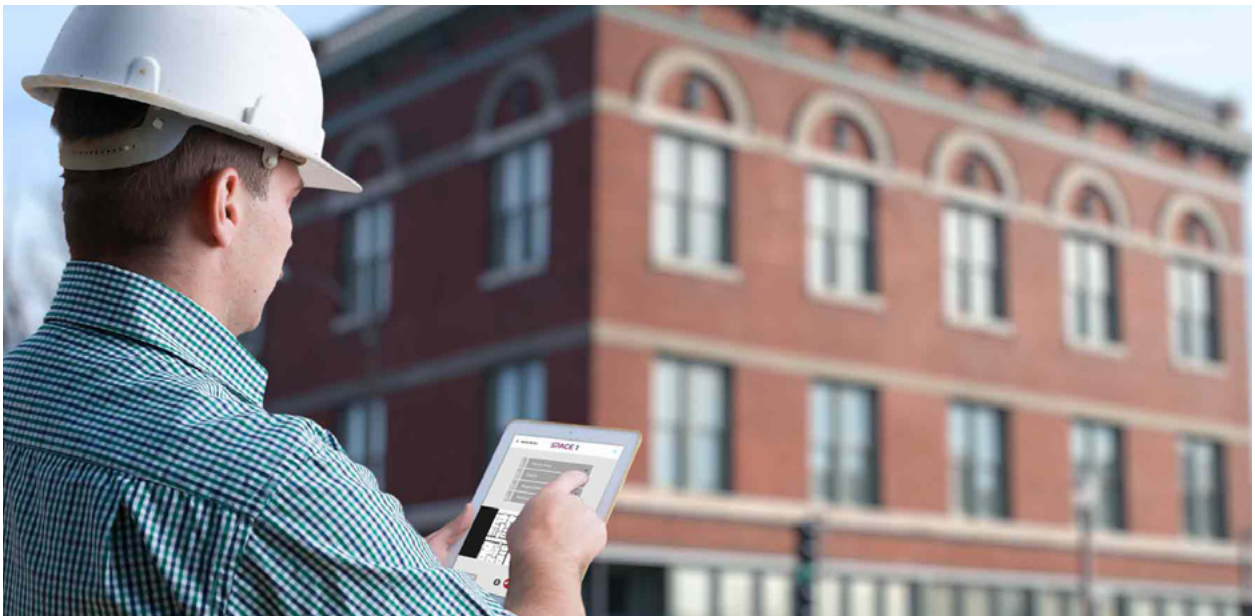
The elements take their toll on bridges far quicker than other infrastructure assets due to the nature of their construction. Inspections are vital for the safety of all who utilize bridges. Regular inspections must be conducted and require unique methods to view all the angles of the asset. Large machinery, rappelling of inspectors, and drones are all a part of viewing above and below bridges. To streamline the process, digital remote inspection software can be used by all involved to document through photo, video, and text.

Roads

Roads continue to need upkeep as impact, wear, and weather all cause deterioration over time. To deal with the vast amount of roadworks and locations, inspection groups can utilize the digital inspection reports to spread out their labor, and limit travel time, and costs while improving safety.

Railways

Railway infrastructure, much like roads and bridges, requires constant inspection. A damaged railway can have significant consequences for lives, as well as supply chain. To prevent accidents or delays with railway infrastructure issues, inspections must be conducted regularly. Digital inspection reports allow railway inspectors to send concerns through detailed documentation quickly and efficiently like pictures and video.



In Summary

Virtual collaboration tools can not only turn your less experienced adjuster into an industry veteran, but these tools can also enable your customers to perform their own self-triage and support them in receiving quicker claim settlement and service while also helping to reduce the loss adjustment expense. A win-win for both customer and the insurance company!

Benefits

Start Small

Digital inspection reports are helpful for multiple groups including the inspectors, citizens, city or property owners and third parties. For any of these groups the following benefits can be found:

- Reduced costs by limiting travel
 - Improved project efficiency through digitization
 - Increased safety and accountability
 - Enhanced knowledge capture and sharing
 - Decreased downtime of infrastructure assets
 - Optimize digital data to have transparent reporting with all stake holders
 - Increase coverage area per inspector
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Conclusion

Digital Inspection Reports are extremely useful for infrastructure inspection of multiple assets. The digital tools that can document hands-free not only make workers jobs safer, but are able to carry out tasks quicker, while covering more distance. This saved time results in significant savings from both downtime of assets as well as liability insurance. Digital inspection reports also enhance the visual information collected to be used for future knowledge management within inspection teams.