

The future of inspections is now.



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Introduction

This whitepaper depicts why transitioning to a digital data management system and embracing data mobility will help companies connect their workers while simplifying the inspection process.

More than twenty executives and professionals in the inspection field participated at 'The Inspector of the Future' digital roundtable, organized by Smartflow and Zebra Technologies. Among other topics, the attendees discussed the impact of digital technology on the current processes of performing inspections and operations.

By going paperless, businesses access new opportunities due to updated and accurate information. Data mobility is a game-changer for business leaders looking to create next-level workflows.



Participants in the round table

Mario Rovers	Manager AMtek, Aboma
Frank Van Bockel	Head of New Product Development, Lloyd's Register
Maarten Robers	Director of Innovation & Technology Scouting, DEKRA Industrial Inspections
Ronald de Kok	Vice President Marketing and Sales, Maxgrip
Joost Evenhuis	Senior Adviser, Pelmolten
Fop van der Bie	Manager Division Pressure Equipment, Vincotte
Mark Van der Stelt	Technical Specialist, Oceanco
Hans Minnaard	Principal Consultant, Stork Asset Management Consultancy
Safak Ozmen	Operations Manager, SGS Belgium
Robbert Boer	International Business Development, Kiwa
Patrick Seldeslachts	Global Sales Manager, SGS
Antoine van Eijck	Risicodeskundige Security and Risk Inspections, TÜV Nederland
Jasper Schmeits	Innovation Manager, Tauw
Maarten van Deelen	Global Information Security Compliance Lead, Fugro
Nathan Parmentier	Project Manager Business Solution, Kone
Jacques Duerinck	Owner, Comm-co / Atexshop
Jelle Swanenberg	COO, Smartflow
Aidin Yavari	Business Consultant, Smartflow
Max Huijgen	Business Development, Zebra Technologies
Charles Worm	Senior Sales Engineer, Zebra Technologies
Edwin Gerde	Senior Territory Account Manager, Zebra Technologies

Professionals consulted for the roundtable

Pieter van Moerkerk	Business Unit Manager Process industry, Vincotte
Lodi Tomosowa	Adviser QSHE, BDM Advies
Marius Rodenburg	Manager Inspection and Customer Service Rotterdam, Intertek
Erik van der Graaf	Business Development, Bureau Veritas
Martin Adriaanse	Manager Survey and Inspection CroonWolter&Dross
Jo Coenen	Expert Integrity & Regulations Pressure Equipment and Senior Inspection Office, Sitech
Eric Laan	ICT Business Consultant, Kiwa
Marien van den Hoek	Commercial Director, Terra Inspectioneering
Martijn Geerzten	International standardisation officer, NEN

**Although we appreciated the input of all these experts, this whitepaper is not necessarily a reflection of their individual contributions nor of their companies' views.*

Embrace the future of inspections



Due to an aging workforce, higher demand on first-round inspections, and increased job expectations, worldwide industries are working towards a more digitally connected workforce. Companies want to help field inspectors achieve higher quality, productivity, and job satisfaction.

Keeping physical paperwork updated is a challenge that inspectors face every time they need to share key information internally and externally. Their efforts to keep a tight version management require lots of energy knowing that any misunderstanding or mistake can disrupt operations resulting in extra costs.

There are many different and contextual situations for field inspectors as in:

1. After the inspection, the collected data needs to be shared with several other parties such as the maintenance and operations department.
2. A third party may be performing a periodical inspection and periodical maintenance at the same time. Besides the inspection outcome, information on the used spare parts needs to be shared with a billing department.
3. An inspector from an external party has to verify an asset (integrity inspection) then approve the asset for usage. The inspection data needs to be shared with their organization and the client's company.

What are the implications for inspections?

When the field engineers perform inspections, their top concern is that there is no unscheduled downtime, safety risks, or other problems that could affect regulatory compliance.

A custom dashboard where everyone can visualize all the corrective actions anytime & anywhere improves the quality and timeliness of business decisions.

Replacing the clipboards and binders with rugged and ultra-secure technology simplifies working in rough conditions.

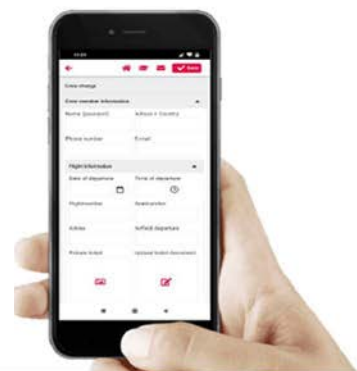
The Smartflow app helps inspectors collect and interpret data. We can easily analyze data and prepare for future events or to predict failure.

*Mario Rovers,
Manager AMTeK at Aboma*

What solves operational problems and data losses?

- Inspection systems that respond to actions in real-time
- Mobile-accessible apps that work online and offline
- Innovative technologies
- Wearables

Equipping inspectors with smart glasses, ruggedized tablets, ring scanners, machine vision, GPS beacons, RFID tags, SCADA, GIS, and augmented reality, helps smarten their work. If the technology they use can support mapping, navigation, and geographic information systems, inspectors can work faster and in a more structured manner



Accessing supervisory control, and data acquisition and having real-time visibility into key-essential indicators will boost efficiency and agility.

Implementing cloud-computing, analytics, and remote monitoring systems, all while storing all data correctly, will help companies meet the demands of the organization as well as legal requirements.

Additionally, collecting extra information, or modifying it in real-time while instantly notifying the other parties involved will create a seamless communication flow.

An inspector who uses digital technology can perform twice, sometimes even three times as many digital inspections as with a paper-based process. Once the data is collected, the parties involved can take immediate actions based on the findings. This process saves time, increases efficiency, and transforms the worksite's productivity.

Equipping inspectors with the right tools to capture, assess, and share critical data in the harshest conditions will help inspectors better deal with today's unique in-the-field challenges. Managing fault reports, and improving preventive maintenance strategies via data-powered mobility solutions ease field workers' efforts.

Today, nearly 50 percent of companies have begun using rugged tablets, and we foresee that number to rise to 80 percent within the next year. In addition, 89 percent of respondents say their mobile strategy will involve using rugged smartphones within the next three years. (*)

Do digital inspections transform businesses?

Regardless of the type of inspections, asset health, or asset integrity, technology like robust mobile devices connects data for optimal usage. It also delivers durability, efficiency, responsiveness, accuracy, increased safety, reliability and true mobility.

All these elements enable field operations to meet the demands of use cases like public safety, customer service, and critical infrastructure maintenance.

Once teamed-up with data sharing solutions, companies will soon experience improvements in their entire work-flow.

* The Future of Field Operations, Zebra whitepaper



Changes expected

Improved Uptime

In the eventuality of any problems, inspectors should be able to easily capture historical data to track, monitor, collect, as well as report key data, alarms, and events. Doing this in real-time leads to better briefed operational and business decisions and assures assets are functional all the time.

The aim when using digital solutions to perform asset inspections is to improve equipment effectiveness by engaging the entire organization. Identifying problems early or being able to predict them is central to enhancing equipment effectiveness.

When inspectors are able to identify issues and deal with alarms, all in one place, they can assure processes run smoothly and without interruption resulting in increased uptime.

Performing preventive maintenance ensures the uptime of the entire worksite. Direct communication through digital solutions allows inspectors to focus on their tasks, avoiding back and forth communication that slows them down.

Increased Productivity

Digital equipment set up with the right data sharing solutions allows inspectors to finish the job on the first visit to the worksite. It is not only faster but consequently more effective, leaving time for other responsibilities.

Data sharing between companies is still a sensitive topic as many companies are protective of their information.

Data sharing allows inspectors to build upon the work of others rather than repeat inspections. Managing and sharing data in and outside of the company increases the ways it is analyzed, increasing its value. The same data set can provide different insights for different people across several organizational departments and third parties.

Cloud computing and collaborative solutions allow inspectors to share reports and data easily with everyone. Inspectors can gather data from multiple sources and aggregate it into one platform. Data sharing also creates a scenario where the data can be partitioned and shared (in a read-only format) through a secure and governed channel in a matter of minutes.





Within and outside of the company, everyone (regardless of geography) will access the same pool of data, the single source of truth. All stakeholders, internally and externally, will be supported by real-time data, each with the granularity they need. All this without the need to access the companies' BI or APIs. Users will always access data in real-time and in the right format. It will always be up to date and most importantly, secure.

Human error is excluded since users get an alert if something is incorrect or missing. This is next to impossible when all data is stored on paper. From illegible handwriting to typos that might result in misunderstanding the full inspection, the inspector of the future is sure to avoid that possibility.

Specifications are converted into an enormous amount of data not knowing the origin of certain requirements. We need to start rationalizing specifications.

*Mark van der Stelt,
Technical Specialist at Oceanco*

Assured Compliance

All the non-profitable tasks such as data entry, tracking, and paperwork affect the companies' ROI with every minute invested in performing these repetitive, time-consuming tasks. Many regulations require companies to self-report their inspections, and the penalties for violations are too high to afford not being compliant.

Digital technology allows companies to correctly perform the inspections by regulatory guidelines with little negative impact on the environment. The execution and the compliance of inspections, permits, and work orders can be accelerated while maintaining the highest security and quality standards.

Solved Knowledge Transfer

There's no safer way to store data than the cloud. If businesses are looking to secure the knowledge transfer, data should be available with a single click, accessible from anywhere, online or offline.

Paper-based inspections are not designed for collaborative work. Most of the inspections require information from multiple sources which need to be shared with various departments and even third parties who might need to validate the data.

Clear Collaboration

The technologies and the algorithms used for inspections will also need to be reviewed, verified and approved.

Critical reviews will ensure that the collected data and the underlying algorithms are correct and accurate.

An inspection is complete only after multiple exchanges of data, ideas, input, comments, files, and approval has been obtained.

There is not one application to replace all. To enable applications to share data, a platform is implemented where all applications are able to communicate with each other.

Equipping inspectors with flexible, scalable, and future-proof tools will bring quick-wins and provide a solid baseline to integrate with smart glasses, drones, and IoT in the future.

In an ideal work situation, if the inspector can't complete an inspection in one visit to the worksite, any other inspector can pick up from where their colleague left it. Continuing the inspection with zero misunderstandings saves precious time.

Paper inspections require the inspectors to regularly commute from the worksite to the office to either scan or file the inspections they have just performed so another inspector can access them. This method requires extra traveling time and extra money, storage space for paper and scanners.

If we refer to integrity inspectors who need site access, we look at a situation where they should complete inspections in one visit to the worksite. After all, productivity improves once multiple visits and the accompanying downtime can be avoided.

We need acceleration on standardization so we can solve the generation gap.

*Safak Ozmen,
Operations Manager Oil, Gas,
Chemicals, at SNG*



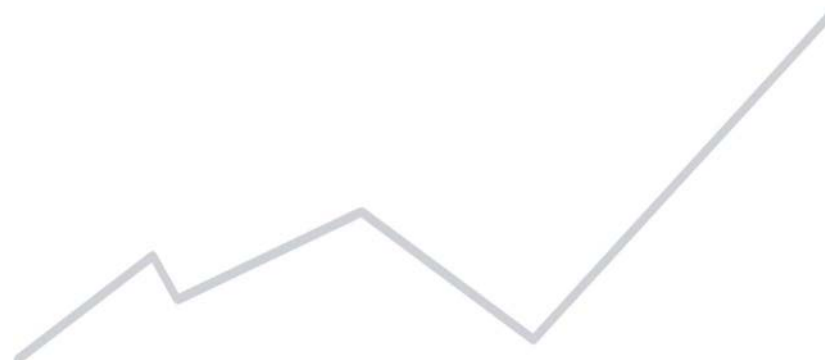
What gains can be achieved?

Adjusting to a more agile work environment is necessary to create a bridge between generations. Present-day employees like millennials or even younger generations are used to working with appified systems, and accessible tools that boost their productivity and shortens the time spent on repetitive tasks.

More experienced generations are still comfortable with the paper-based method, and the reluctance to use new digital tools might come from unfamiliarity. *'It has worked for me so far.'* Once they have seen the advantages and low entry barriers of digital they will no doubt embrace it.

Software and hardware technology is changing the standard for success across the industries by giving workers more options in the field.

- Less human error
- Improved productivity
- Increased uptime
- Fewer costs
- Assured safety & compliance
- Real-time assets' monitoring
- Quick decision making
- Enhanced reliability
- Linear collaboration
- Greater data transparency
- Complete situational awareness
- More operational efficiency
- Reduced costs & higher profitability
- Better worker satisfaction & retention
- Easy to deploy & scale



Rapid changes in the digital world

Technology is rapidly advancing, and sometimes it might trigger a reluctance to follow it. Every day another innovation, another update, or a new feature changes how we perform our jobs or live our lives. This constant movement underlies growth and results in permanent transformations.

But in some cases, these changes can cause stress and slow adaptation to a new working environment. Implementing it in a disruptive manner without proper consultancy can cause a lack of comprehension and commitment. For many businesses, being unable to understand or follow technical or procedural changes can feel like a burden.

Paper-based data collection is not future-proof

Wasting valuable time and unwillingly creating additional issues will always be a risk when performing paper-based or spreadsheet inspections. Companies still running this type of process are not future-proof and are facing challenges that slow them down.

Everyday challenges

- Sharing data with maintenance, safety, and operations personnel
- Alarming amount of data hidden amongst other piles of information
- Inability to trigger work requests
- Incorrect data transferring from paper to spreadsheets
- False data that leads to wrong decision making
- Inability to support data with proof (pictures & videos)
- Lack of procedural control to assist inspectors when they discover anomalies

The Solution

Digital solutions like **Smartflow** accelerate the execution and the compliance of inspections, permits, and work orders. Smartflow maintains the highest security and quality while reducing operational risks, meeting compliance, and collecting real-time insight from the generated data.

Smartflow teamed up with Zebra Technologies, an industry giant with presence in over 100 countries and a 4.5 billion turnover. Already an auto-id market leader in most industries they offer compliant hardware like rugged tablets, RFID and smart glasses for the inspection sector. Backed by 24/7 support contracts and a strong R&D department they will be a reliable partner today and tomorrow.





Hardware solutions transform businesses

Data sharing solutions for custom workflows

A mature solution provider can help businesses by creating custom workflows or building on existing ones. Integrating software and hardware solutions like smart glasses to capture data will ease processes considerably.

Smart-data solutions offer insights into analytics and reports useful for strategic development. They allow access to a central cloud-based dashboard with real-time data. Using such a solution, automated fault alerts can be set, just like automated triggers for schedule adherence, preventive maintenance, and compliance. Moreover, inspectors get easy access to inspection archives.

Furthermore, data entry can be streamlined, automated and even integrated.

Zebra Technologies has a vast portfolio servicing most verticals focusing on asset tracking. Most relevant for the inspection industry are the rugged tablets, RFID devices and head mounted displays.

The rugged tablets are available in many configurations. From fully rugged ATEX devices for use in explosion risk environments to lightweight cost-effective tablets. Available at multiple performance levels and with Windows or Android Enterprise.

RFID is an excellent technology for asset tracking. Know the location, history and compliance of every tool and asset without hunting for serial numbers or physical contact.

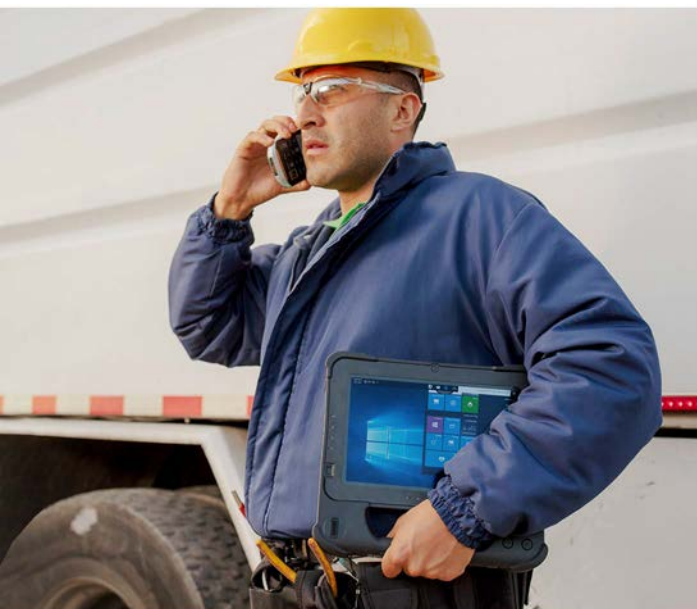
Zebra developed smart glasses for industrial usage. Extremely light, minimal obtrusion of the real world and ready to mount on a safety visor. Ideal for augmented reality inspections and with an integrated camera for remote support.



Final thoughts

We are stepping into a safer, smarter future. With small steps in digitizing like switching from paper-based or spreadsheet-based inspections to cloud-based fully secured digital tools, using drones, smart glasses, and sensors, and investing in remote work, industries are more ready than ever for their transformation.

The transition period where old meets new is in equilibrium—old assets, new technologies, old standards, new possibilities, an aging workforce, new hires. Technologies will not exclude or burden users but work for them and with them.



Smart glasses and augmented reality allow us to pass instructions on to the inspector. We support inspectors remotely as well. The office-based colleagues record the findings, while the person on-site is the hands and eyes.

Maarten Robers,

*Director of Innovation & Technology Scouting at
DEKRA Industrial Inspection.*

AI will be part of the future of inspections so the role of the inspector will change. But they will always have a role to play. The knowledge of the mechanical engineer will always be needed.

Frank van Bockel,

*Head of New Product Development at
Lloyd's Register*

We are looking at applications such as remote monitoring and I think you will find old and new side by side.

Hans Minnaard,

*Principal Consultant at Stork Asset
Management Consultancy*

Choosing a reliable partner that understands the industry and its challenges, as well as its strengths, is a serious matter.



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Digitizing frontline operations



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