Remote operations – metaverse tech powered inspections

Tuomas Suominen, Business Development Manager, Kiwa Growth and Innovation Team Finland

17.11.2025

Testing

Inspection

Certification

Training

Digital services

Management system and technical consulting

Elevators and lifting doors

40 000

Measuring devices

16 000

Pressure equipment and NDT

52 000

Certificates

10 500

Cranes and lifting devices

11 000

Fire and electrical safety

9 800

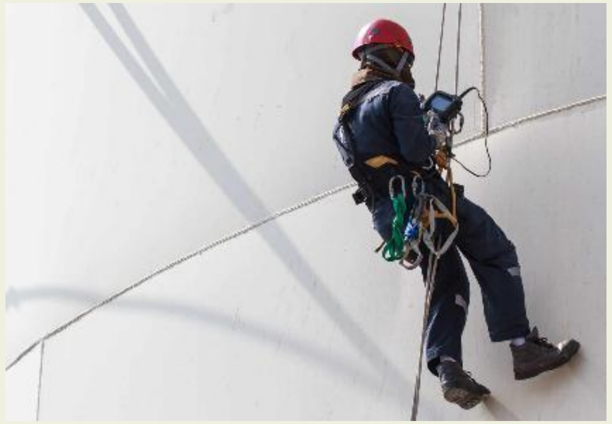
Trained people

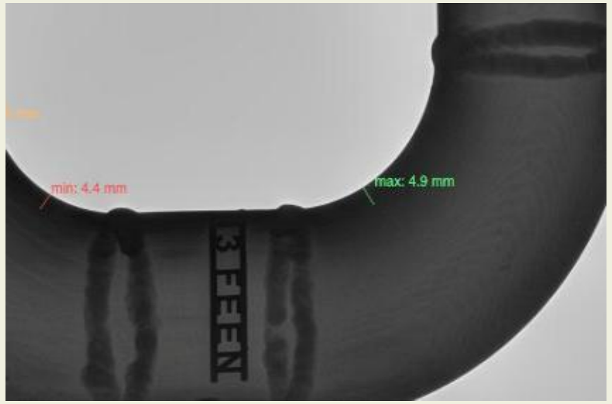
54 000

Digital services users

70 000

Inspection work today





1. **Most inspections are done onsite**
2. **Inspectors, maintenance and customers travel** to the site
3. **Most inspections are periodical (e.g. yearly)**, not risk based or risk monitored
4. **Inspectors are location based**, local expertise vital.
5. **Inspections demand a lot of scheduling**, planning and machine downtime
6. **Inspection work is often dangerous**
7. **In many cases, customer needs to build expensive scaffolding**
8. **Machine plans, building plans on paper or PDF**
9. **Remote technology usage is low**

What if?

1. **Some inspections could be done remotely** or with collaboration with client.
2. **Only critical experts would travel** to site. Others remote.
3. **Extra risk based inspections** would be done remotely or with customer collaboration.
4. **The inspector could be located anywhere** in the world, access to larger expert base.
5. **We could provide almost instant inspections** and support
6. **Some inspection work or tests would be done remotely** reducing safety risks.
7. **There would be no need to build scaffolding** for most inspections.
8. **Plans could be accessed via AR** on site for better understanding.
9. **We could do more remote collaboration, risk based extra inspections and monitoring with the customer.**

Necoverse research pilots

Fire safety inspection

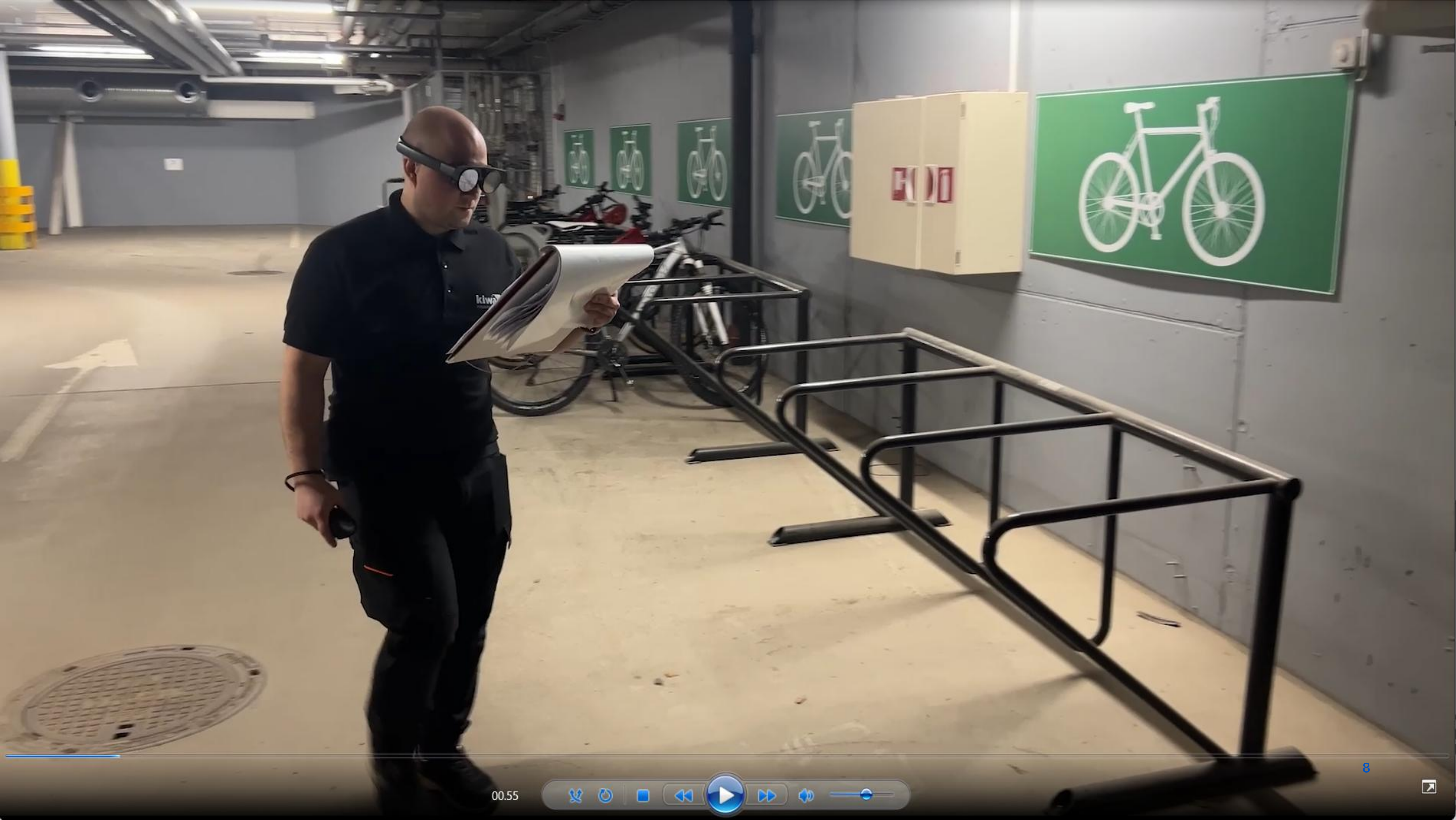
Remote collaboration

Elevator inspection

Crane inspection


frontlineworker.com
Live
Whiteboard
Riccardo_Device

Test 3: Field inspector with smart glasses, 360 camera and Nokia RXRM


00.55

Inspector begins inspection

Learnings

Business Value and Adoption

- Efficiency, cost savings, global reach vs. high upfront costs = **slow adoption**

+

Technology and Infrastructure

- Needs fast, reliable connectivity on sites and connected IOT devices = **current IOT tech still maturing**
- **Wearables evolving fast**, but still not scalable

−

Regulation and Standards

- Legal barriers, slow regulatory change
- **Monitoring and maintenance use cases progressing faster than regulatory inspections**

−

Safety, Reliability and Quality

- **Remote collaboration boosts safety and quality,** but onsite supervision still needed
- **Some hands-on tasks can’t be done remote**

+

Human Factors and UX

- **Some change resistance, but also hope and enthusiasm** for better work life balance
- **We need easy-to-use remote field collaboration software**

+