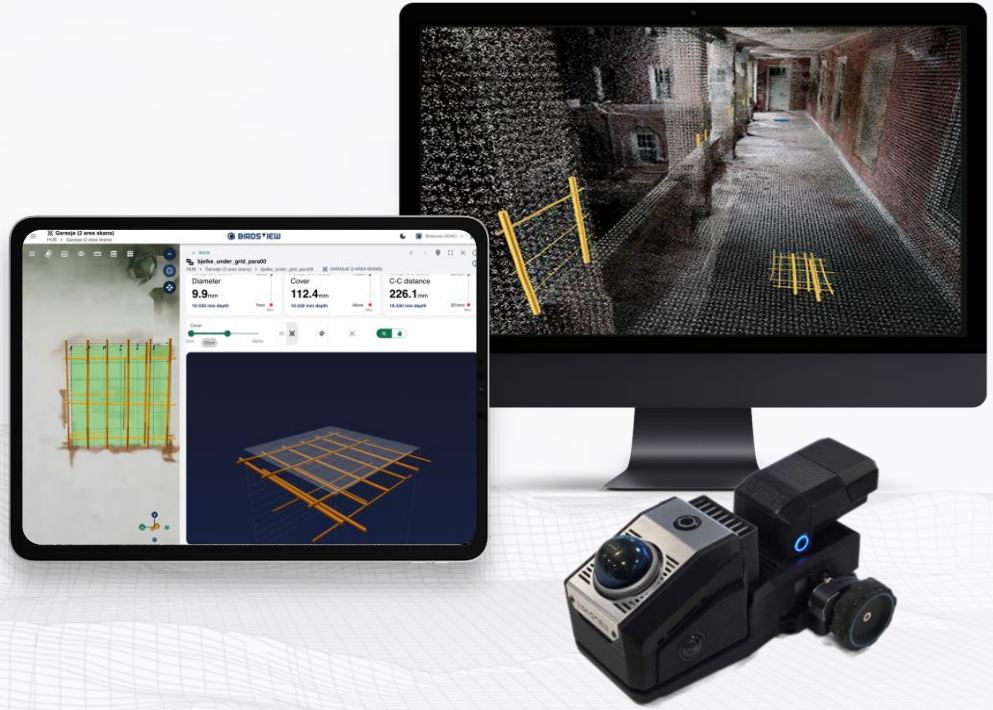
Birdsview Concrete

Scan first, decide better: non-destructive concrete insight as a tool for Nordic circular cities



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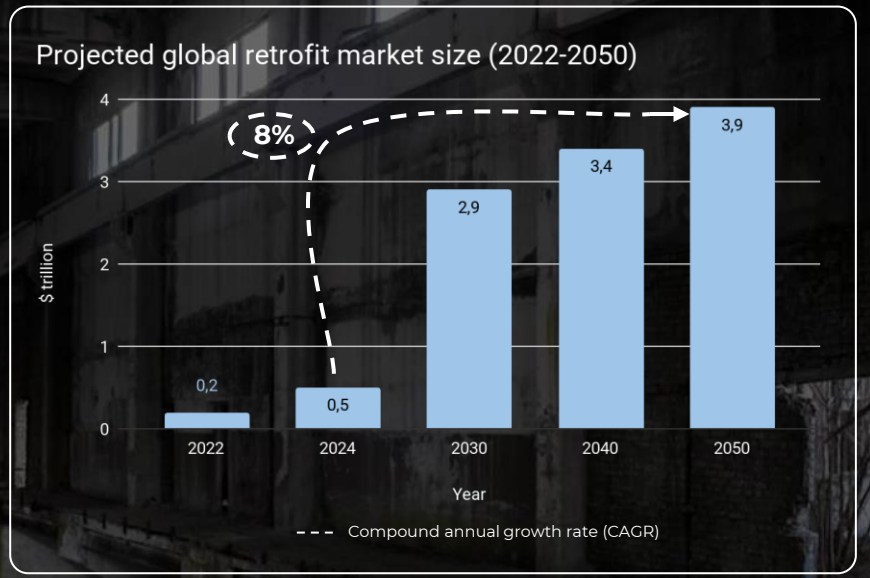
Concrete structures are aging.

Nordic cities share a common challenge: aging concrete building and infrastructure, growing circularity ambitions, and limited structural knowledge about existing assets

50%+ of European concrete structures built before 1980

26% of European buildings to be renovated by 2030-2033 due to EPBD requirements

100% Eurocodes (EU/EEA), IBC & ACI 562 (US) regulations says that no rehab without assessment.



Source: Circularity in the Built, Environment:, Unlocking Opportunities, in Retrofits, Whitepaper January 2025

Nordic Smart City Circular Fast Track

Can non-destructive scanning close the information gap
— and enable smarter, more circular decisions in retrofit and reuse projects?

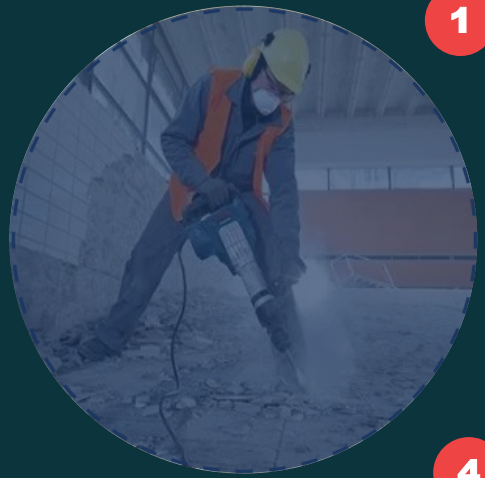
PILOT ASSETS - FIELD WORK AND STAKEHOLDER INTERVIEWS

Töölö Sports Hall
Rebar structure, beam localisation

Etelä-Haaga Library
Cover depth, load capacity for retrofit

Kuutamon Päiväkoti
Prestressing strands for slab reuse

Managing uncertainty is expensive. Eliminating it is smarter.



1. **The cities**
   A growing need to retrofit ageing concrete buildings — but decisions are made with little knowledge of what's inside
2. **Structural uncertainty**
   Leads to over-dimensioned interventions, unforeseen findings, higher costs, delays — worst case unnecessary demolition
3. **Standard response**
   Contingency budgets, risk premiums, and conservative assumptions — not better data
4. **Higher rework costs**
   ~52% of total cost growth in construction projects, typically 5–20% of contract value — higher still in retrofit*

SOURCE: *Love, P. E. D. (2002). Influence of project type and procurement method on rework costs in building construction projects. Journal of Construction Engineering and Management, 128(1), 18–29.

Four reasons projects fail

Concrete retrofit and maintenance projects can run 3x over budget - largely due to poor upfront inspection.

1. **No drawings**
   As-built documentation missing or outdated for most older structures
2. **Subjective Inspections**
   Visual assessments give no information about rebars and the inside of concrete
3. **Slow Tools**
   Current NDT methods take weeks for what should take hours and give little insight
4. **Destructive Testing**
   Core drilling damages structures and provides only point data

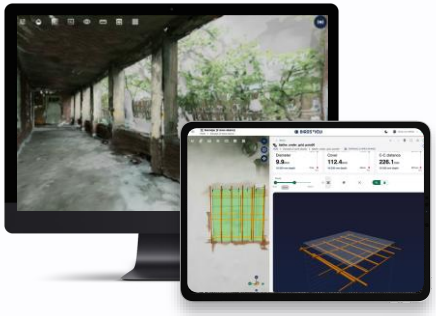
3x

over budget

Fat-tail risk on concrete retrofit and maintenance projects

Turning project risk into competitive advantage.

See inside concrete — without breaking it. Powered by groundbreaking technology.
Birdsview gives you full visibility — so you plan right, avoid surprises, and stay on budget.



01 SCAN

- **Sensor Fusion** combining GPR radar, lidar and camera
- Captures data with **millimeter precision across large areas**
- **Only company globally** that combines this for concrete.

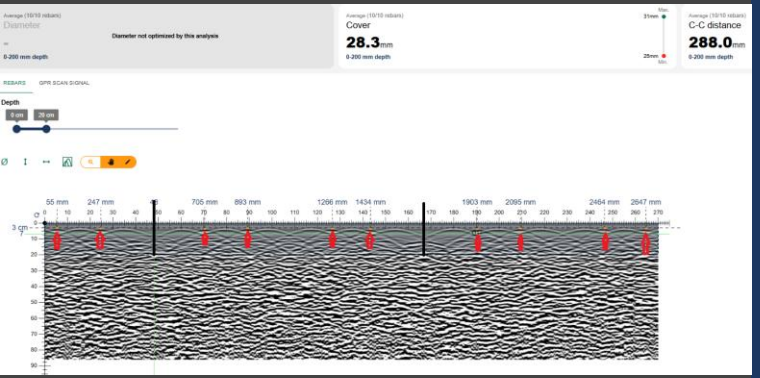
02 ANALYSE

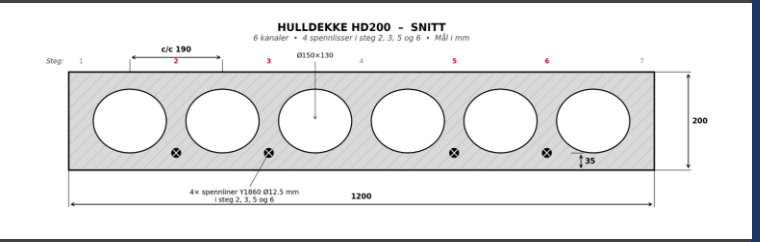
- **AI-powered analysis** combines signals using Full Waveform Inversion.
- Automatically detects rebar, diameter, cover & key information about the structure with **millimeter accuracy**.

03 REVEAL

- **Complete digital 3D model** of the structures outside and inside
- **Data accessible anywhere, anytime**

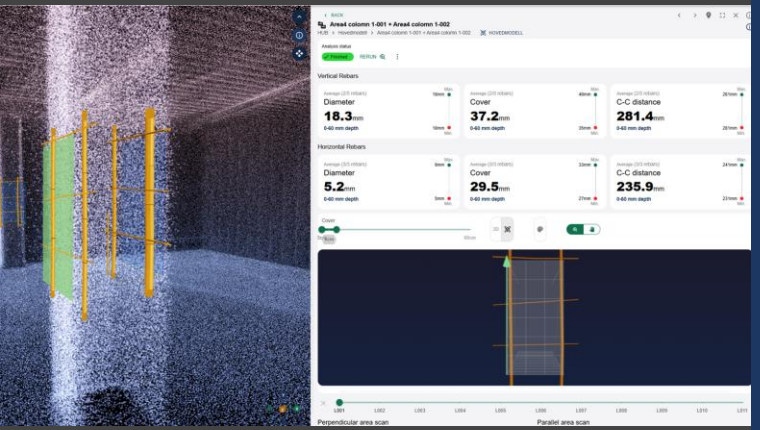

Product video (click to play)





Case 1:
Kuutamon Päiväkoti, Espoo

- Kuutamon Päiväkoti is a low-rise brick and concrete daycare centre in Espoo, representative of a generation of smaller-scale municipal structure built during the rapid urbanisation of Finnish cities in the latter half of the twentieth century.
- The building is planned for conversion or decommissioning, and **hollow core slabs** from the structure have been identified as candidates for reuse in another project.
- To carry out structural calculations for reuse, documented knowledge of the number of **prestressing strands in the slabs** was needed — information not available in existing drawings.
- **Results:** A direct link between structural knowledge and circular economy outcomes: GPR scanning of the hollow core slabs are necessary — without it, neither the load-bearing capacity calculations nor the reuse decision itself could have been made on a sound basis.
- The findings are consistent with production drawings found for both slab types (HD265 and HD200 cross-sections)

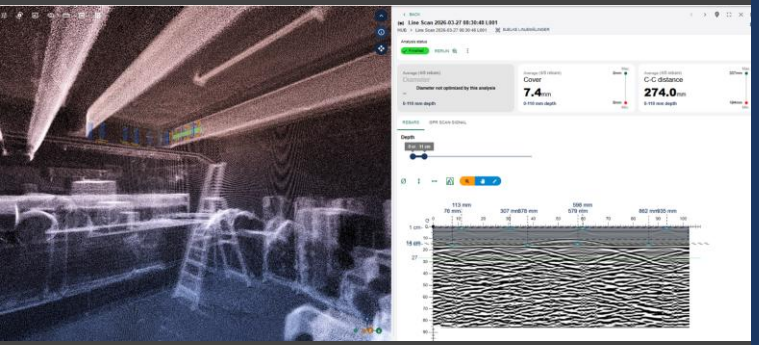


Case 2:
Etelä-Haaga Library, Helsinki

- Etelä-Haaga Library is a public library in the Etelä-Haaga district of Helsinki, managed by the City of Helsinki. The building is part of Helsinki's broader public building portfolio, where upcoming maintenance and retrofit decisions are planned.

- The scanning focused on mapping the reinforcement structure in load-bearing beams and columns — information that is critical for fire engineering assessments and for evaluating the structural capacity of the elements ahead of any planned retrofit or maintenance work.

- The focus areas were agreed on site: reinforcement cover in beams and columns . showing Bracing/stirrups in some locations: as little as 10 mm from the surface, and general rebar structure, with diameter estimations.



Case 3:
Töölö Sports Hall, Helsinki

- Investigation of the reinforcement structure in the basement beams, and localization of beams above the ceiling slab from underneath.
- The primary objective was to investigate the reinforcement structure in the basement beams, and in particular to test the hypothesis that some rebars are bent upwards near the beam support — a configuration used to handle shear forces rather than bending moment
- The sports hall scanning presented the most geometrically challenging conditions of the three pilot assets, due to beams built in this era being less standardised than today's solutions. . The tight clearance between the beam and the surrounding slab required a more tricky scanning approach.
- Despite these constraints, the scanning delivered useful structural information: probable beam positions above the ceiling were identified, column reinforcement was mapped with good confidence, and the investigation of basement beam behaviour near supports produced data consistent with the hypothesis of shear reinforcement.

Key Findings - Interviews with stakeholders

- Previous experience with existing NDT technologies: f ex covermeter is described as disappointing — producing many false readings and low-quality data.
- Cost and schedule implications of unknown conditions: The team described how unknown structural conditions are typically managed through additional budget reserves, and how unforeseen findings during construction can cause delays of several weeks.
- It was also noted that solutions sometimes need to be revised mid-project when assumptions about the existing structure turn out to be incorrect.
- All stakeholders aligned: better structural documentation early in the process is considered valuable, particularly for reducing the uncertainty priced into tenders.
- Engineers would have a more reliable basis to work from, and that this could potentially reduce costs already in the design phase. The value was considered even greater in the context of reuse
- Reuse is becoming a genuine priority, and then knowledge of existing structures is becoming considerably more important.

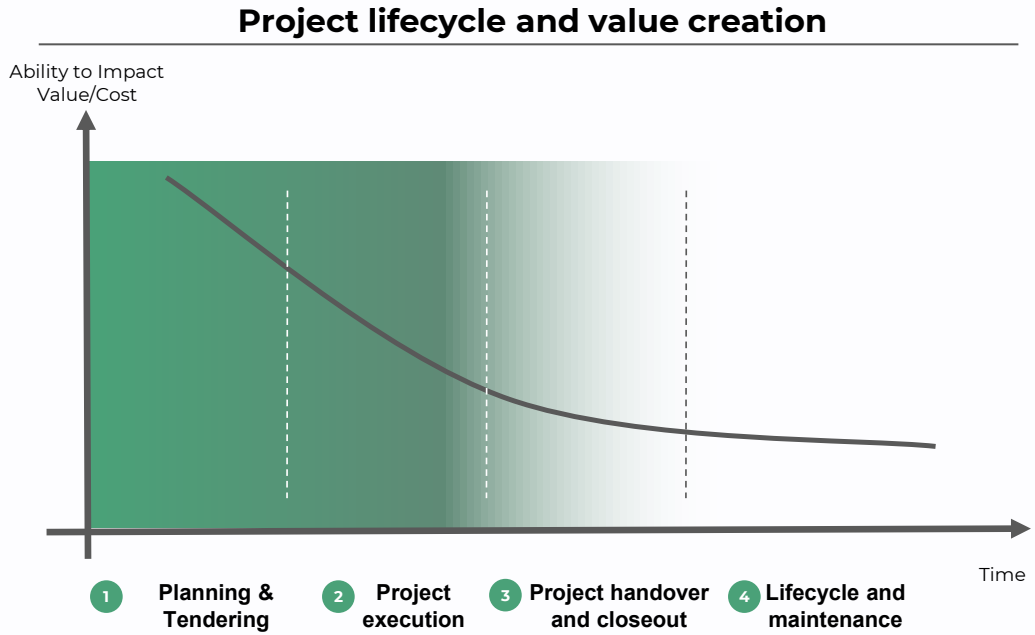
Value Potential through project lifecycle

- Early analysis gives greater value
- Reduced project cost and risk
- Increase reusable potential of the asset

A new standard for BKK

"Birdsview's technology has set a new benchmark for how we plan and execute upgrades to existing infrastructure."

- Nordås, BKK



Key Findings:

- Early structural knowledge changes the basis for design and procurement — engineers plan from a verified baseline, reducing over-dimensioning, parallel design workstreams, and contingency reserves
- For reuse projects, structural data is not merely useful — it is the prerequisite for making a reuse decision at all.
- Highest-priority use cases confirmed: reinforcement mapping, load-bearing capacity verification, room reconfiguration, mapping of embedded installations

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