

Intelligent Inspection of Concrete

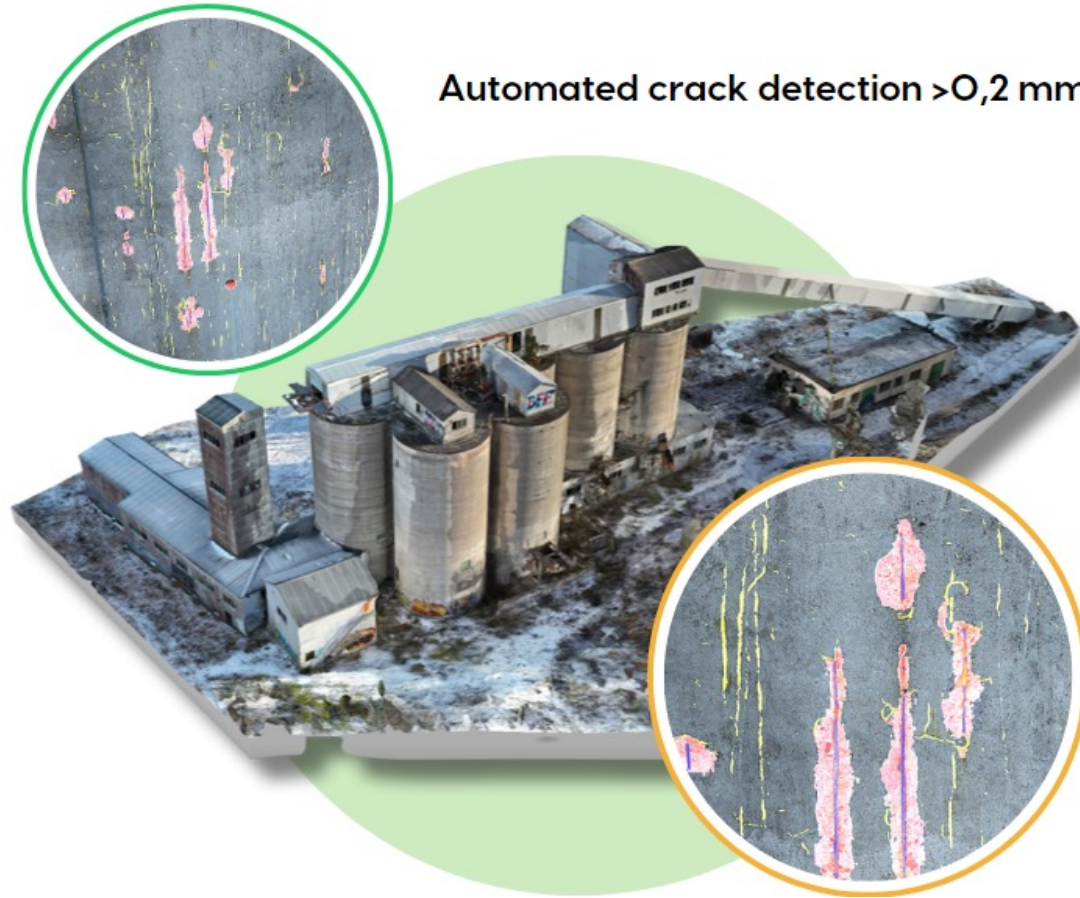
Concrete inspection based on inspection twins

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**Partner
for
Progress**

Automated crack detection >0,2 mm



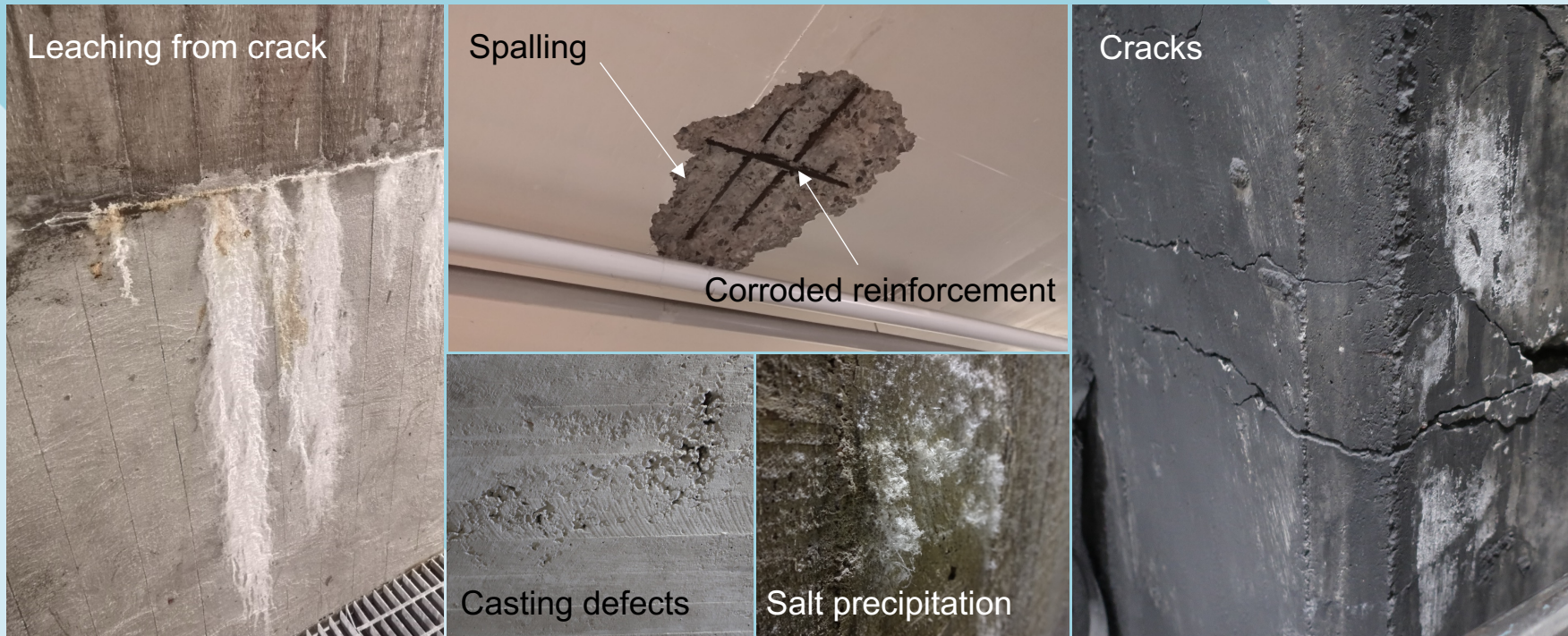
A simplified evaluation of AI detection capability

- A 5x5 m square was selected on heavily cracked object
- The total crack length in the square was detected and measured by human
- Total AI-detected crack length was computed in the same square
- Result: 98.6% AI-detected crack length vs ground truth given a detection target of 0.2 mm crack width



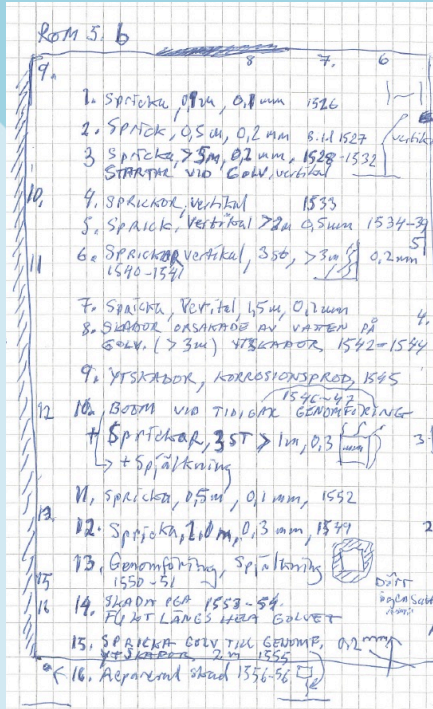


Common Concrete Damage Mechanisms



Manual Visual Inspection – Methodology

Detection target crack width: 0.2 mm (Swedish Transport Administration - concrete bridges)

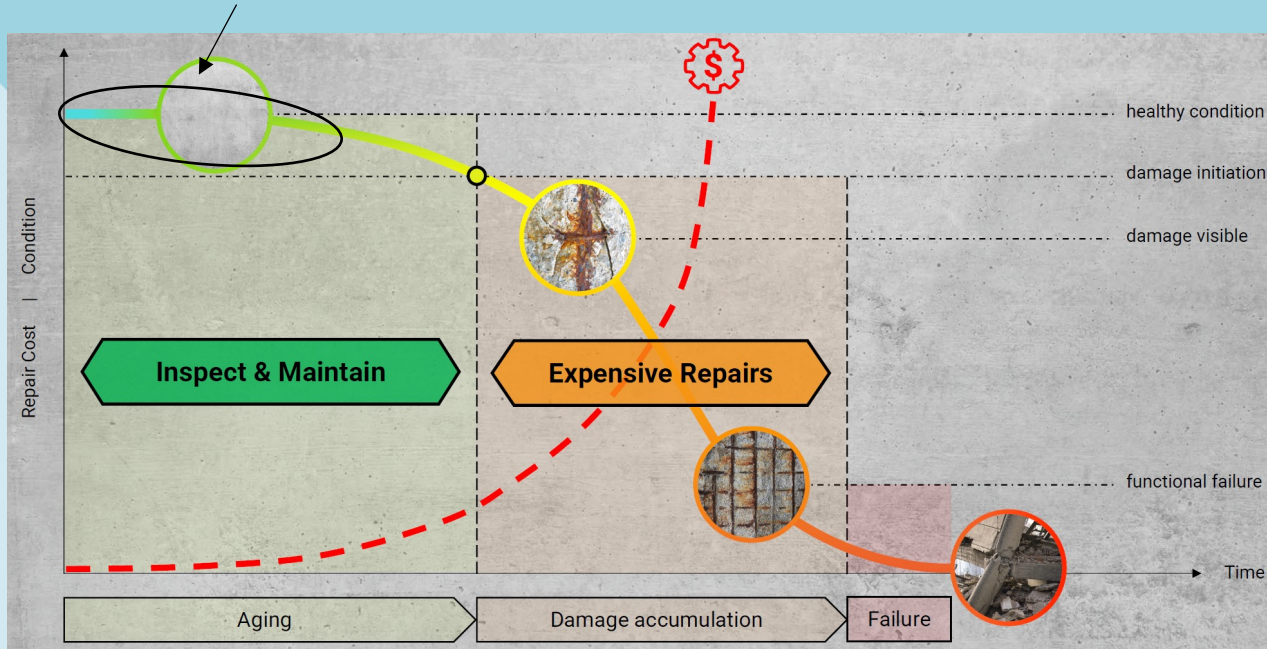


Manual vs Automated Concrete Inspection

	Manual	Automated
Detection target 0.2 mm	Yes	Yes
Work environmental risks	Yes	Yes, but lower
Speed @ sqm/hr (high density damage)	1x	> 10-100x (after route planned and 3D built)
Automated defect positioning and archiving	No	Yes
Automated defect growth tracking	No	Yes
Damage growth prediction	No	Yes
Inspector dependent quality	Yes	No

Detection Targets

Non-tension reinforcement, crack width 0.2-0.4 mm, EuroCode 2



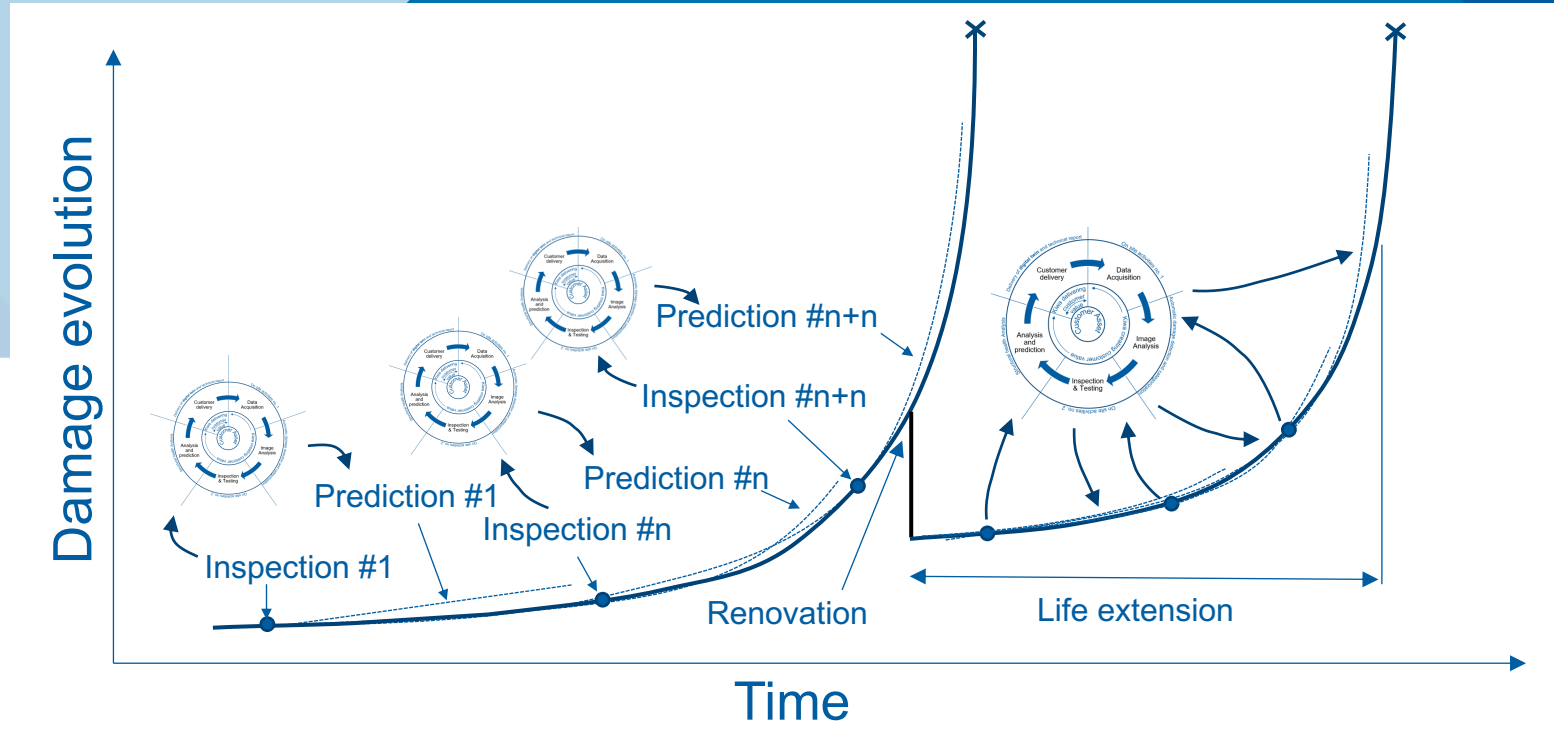
- Purpose with the inspection?
 - Continued operation for a *specified number of years*?
 - Continued operation for *an infinite life*?
- Original design life known?
 - Continued operation until end of design life?
 - Lifetime extension?

Preventive to Predictive Maintenance

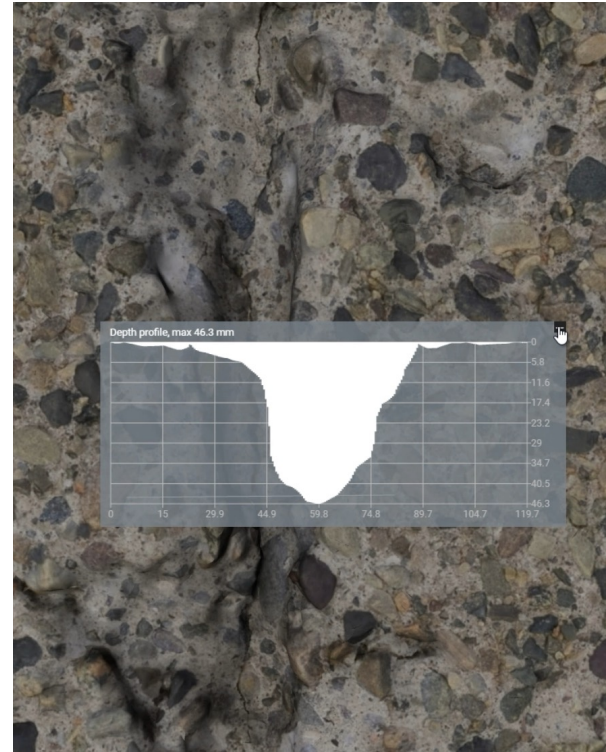
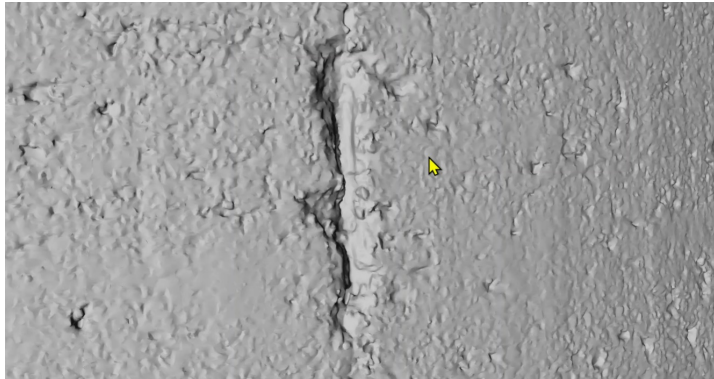


Predictive Maintenance Workflow

Workflow for structural health assessment (of concrete/steel/composites etc)



Spalling Depth Profile Tool



Stay in touch

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