Laserscanning within the building lifecycle

FIG workshop "BIM for Surveyors"

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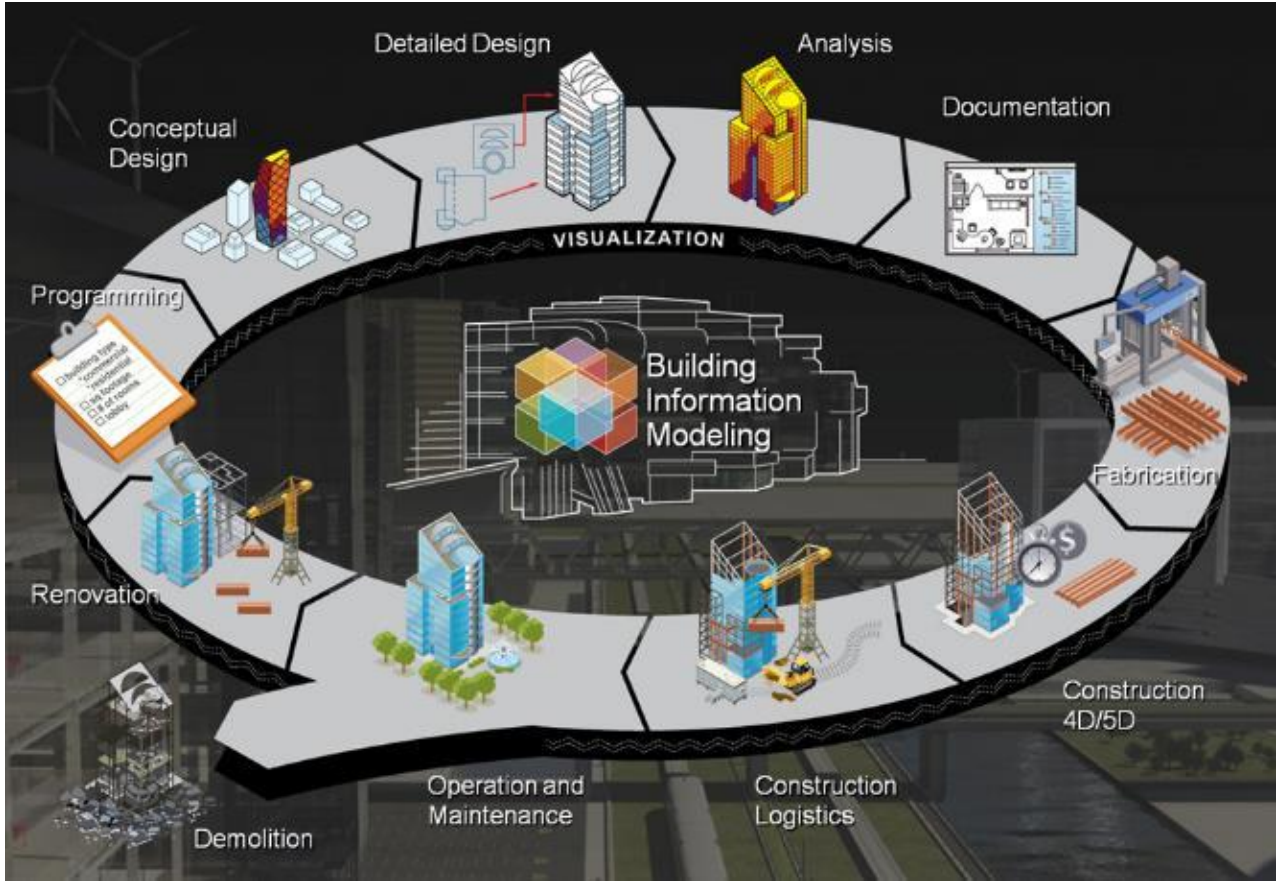
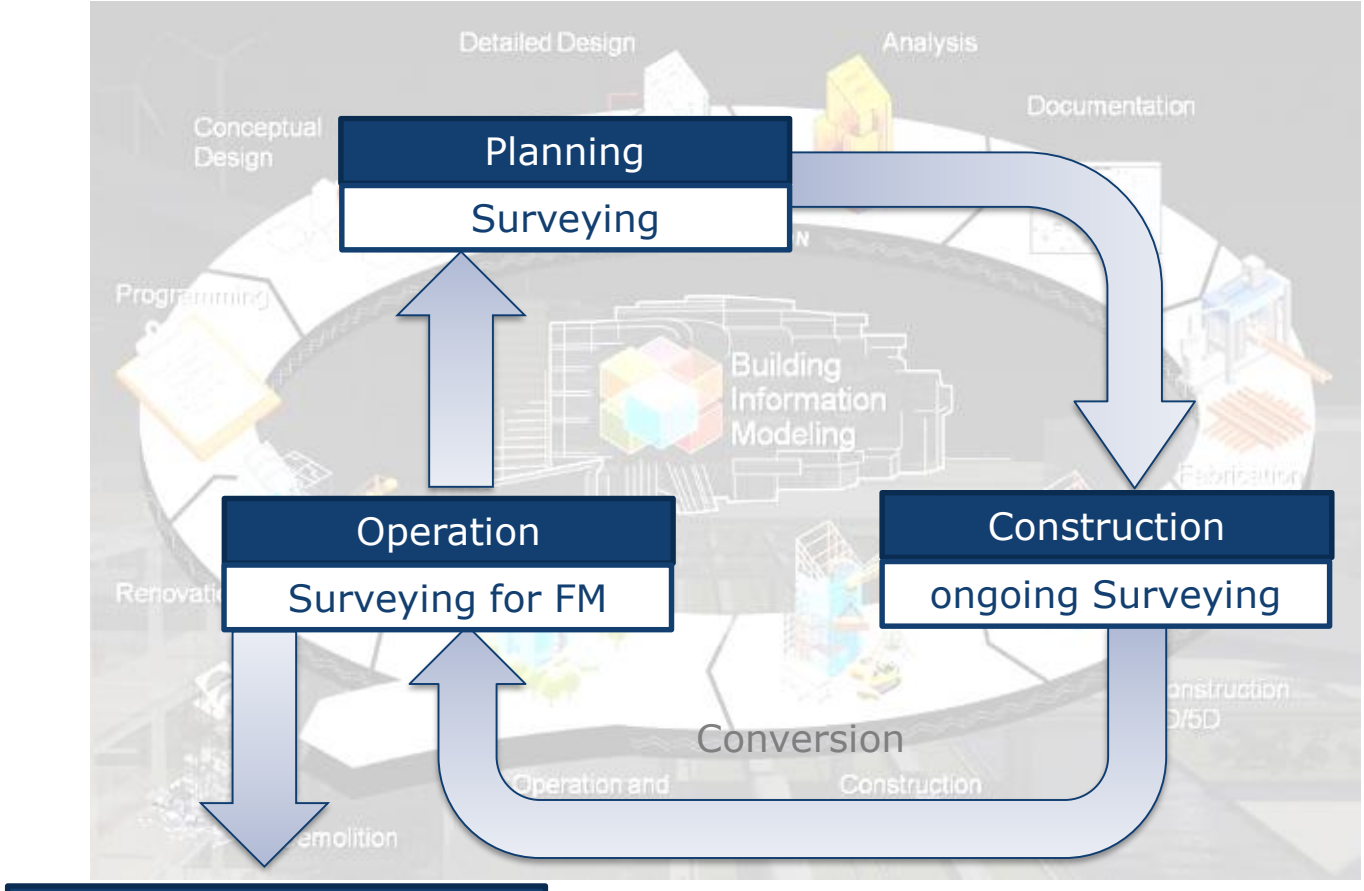
What is the building lifecycle?



http://www.climatetechwiki.org/technology/building-life-cycle-and-integrated-design-process

When do I need reality capture?



Planning

Surveying

Capture

Process

"consolidate the captured data to make them useable"

Registration

Data Fusion

Data Management

Data Distribution

Data Conversion

Integrate + Value

AUTODESK.

Bentley

ALLPLAN

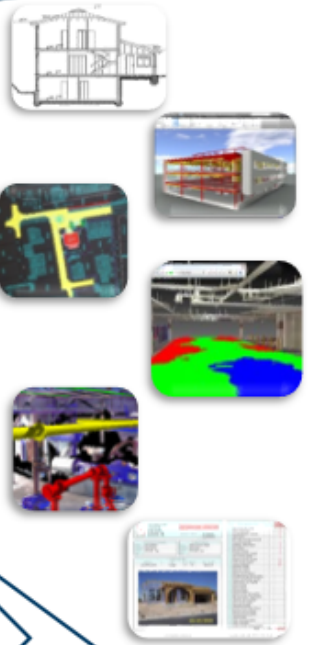
GRAPHISOFT

Tekla

Trimble.

Workflow if no full BIM package is needed to create the final result

Deliver



Planning

Surveying

Scan-To-BIM

Turning point clouds into an as-built BIM model

But:

As-built capturing is quick and easy, detailed modelling can be very time consuming

Planning

Surveying

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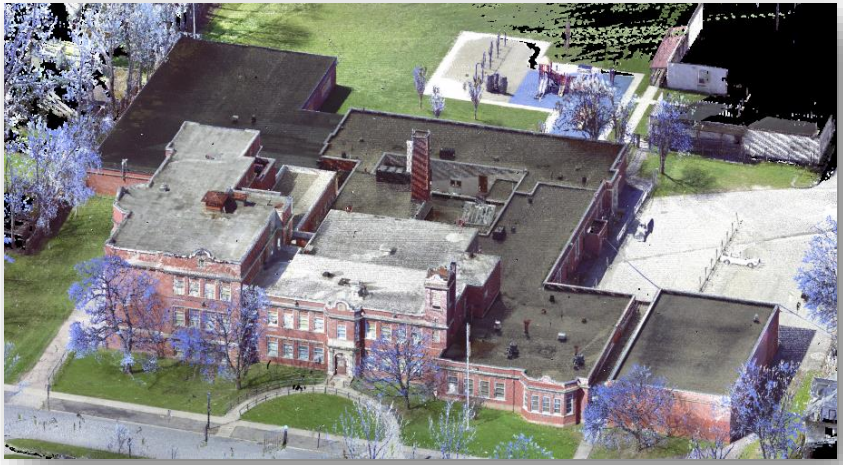
Rochester School 16

Scan-To-BIM

Turning point clouds into an as-built BIM model

Rochester School 16



Facts:

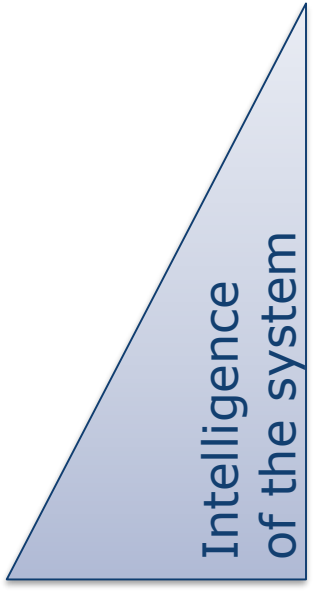
- Scans: 470
- On-site measurement: 5 days
- Modelling: 5 weeks for 2 persons

Scan-To-BIM

Turning point clouds into an as-built BIM model

How can we reduce the time consuming and expensive modelling?

Automation



- Use the point cloud as model reference
- Fitting of basic geometry
- Fitting of complex model objects
- Object recognition and parameter adjustment

Planning

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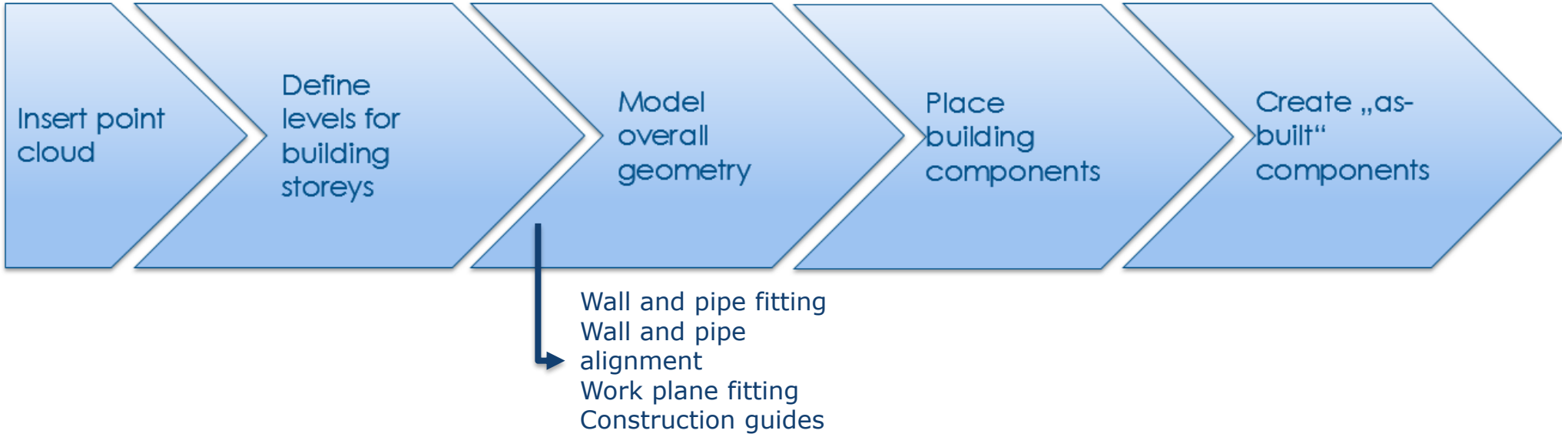
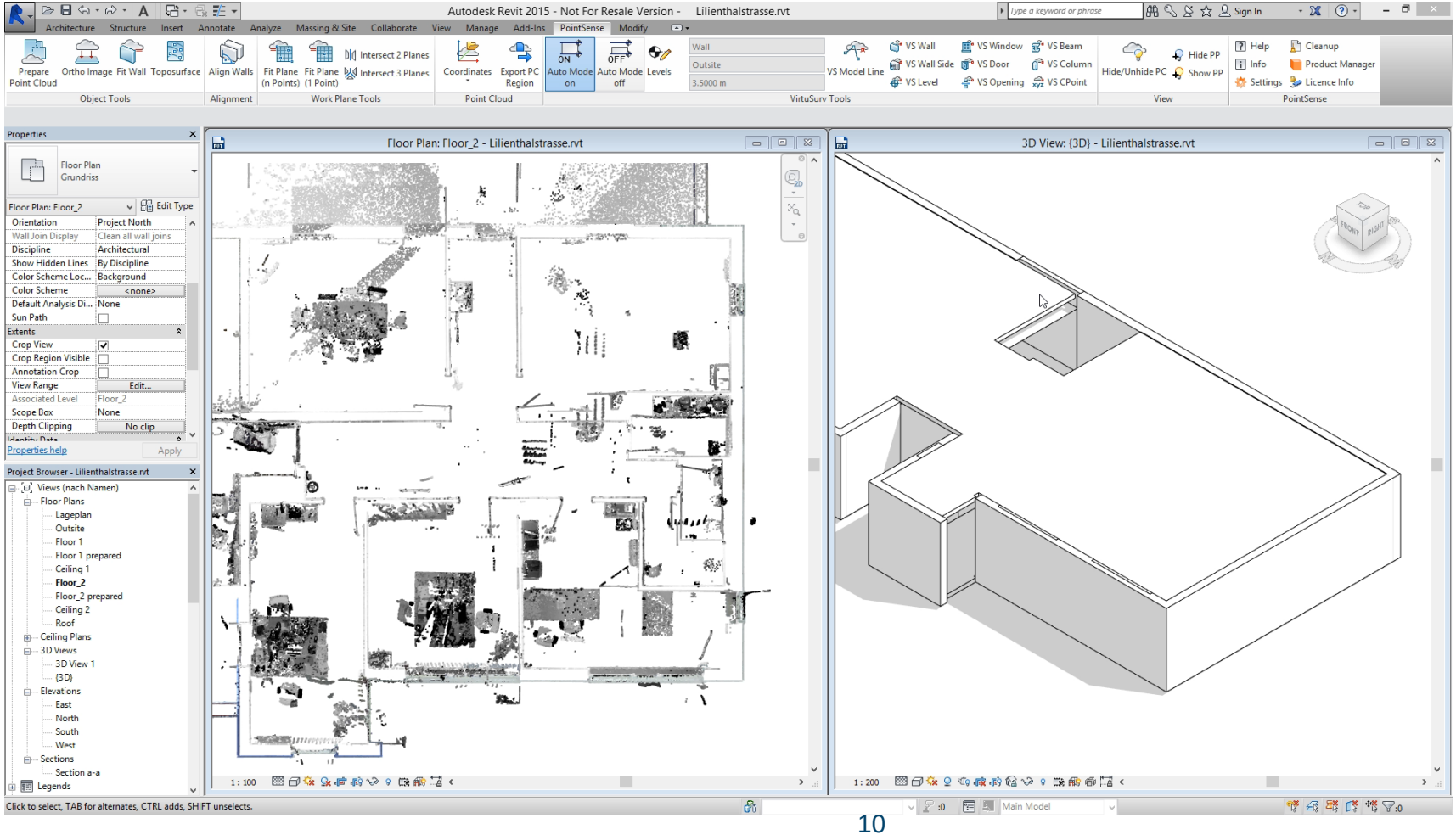


Planning

Surveying

Scan-To-BIM

Turning point clouds into an As-build BIM model



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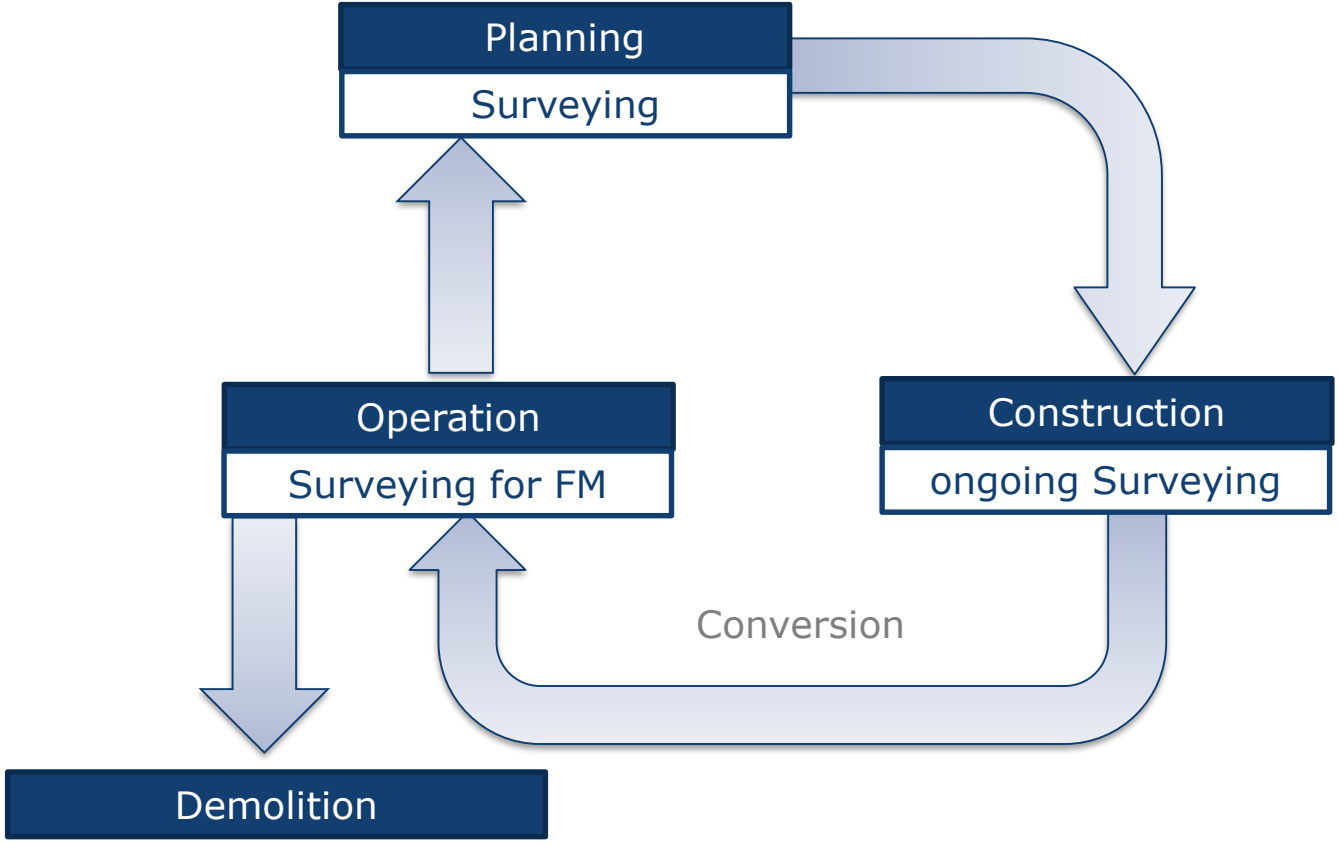


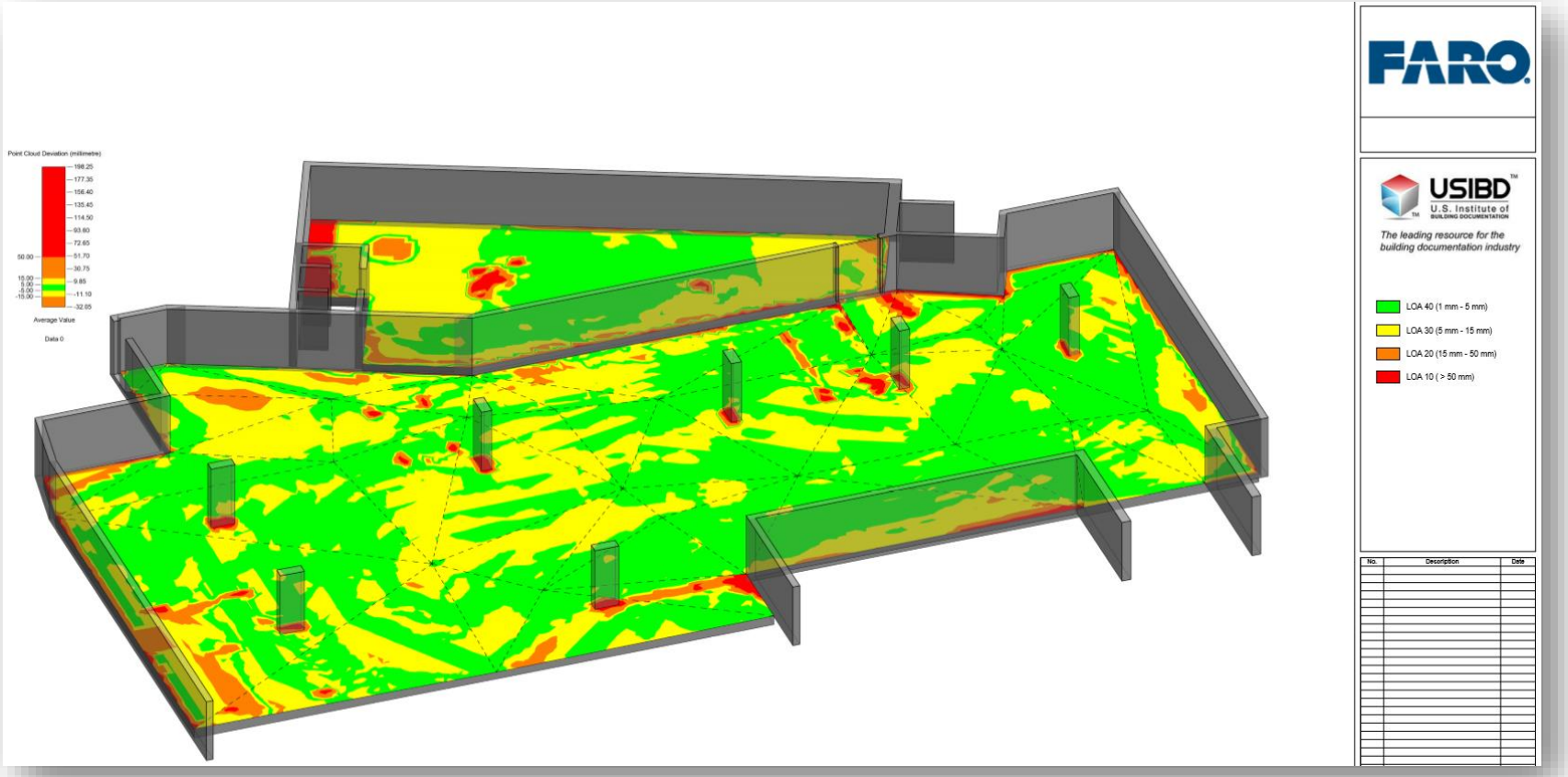
Applications:

- Model quality check
- Live analysis for construction processes
- Construction process verification

Construction

ongoing Surveying

Application:
Check for differences between the model and the as-built situation

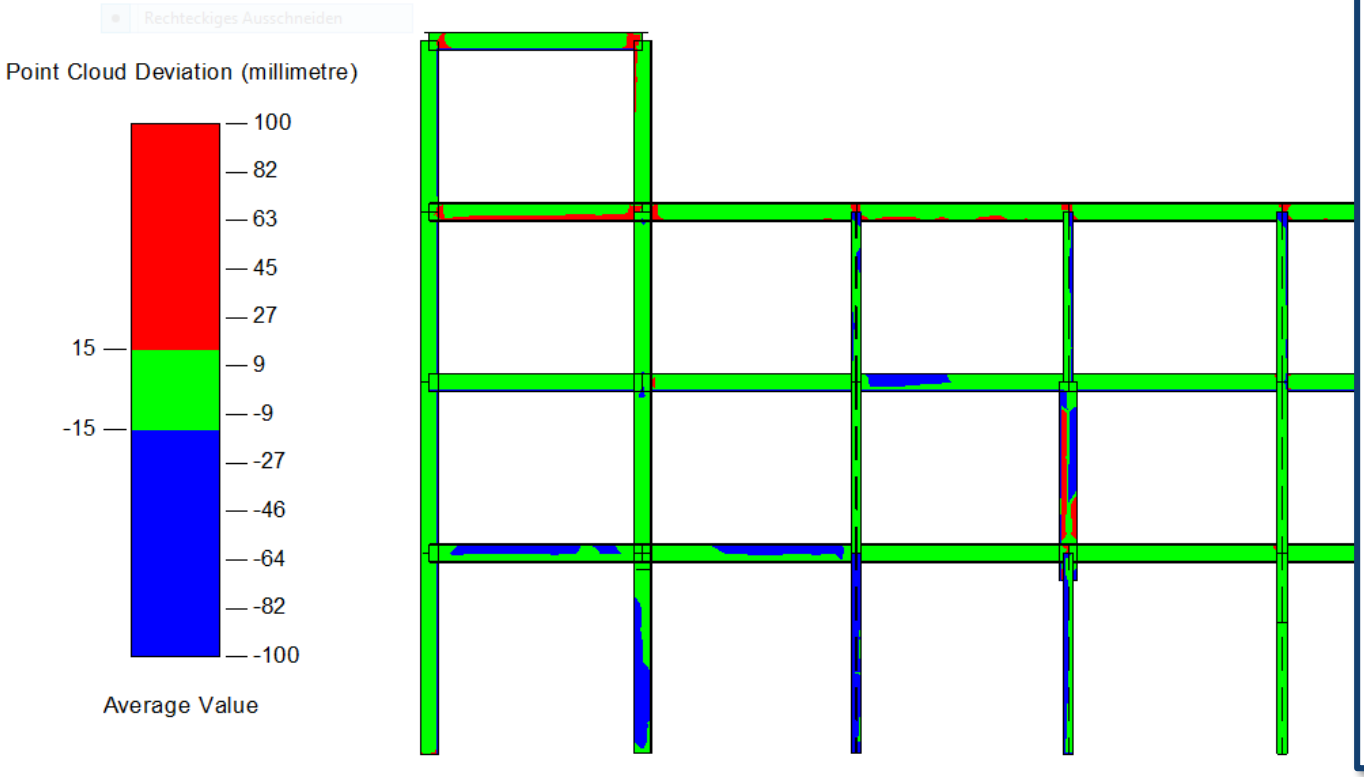


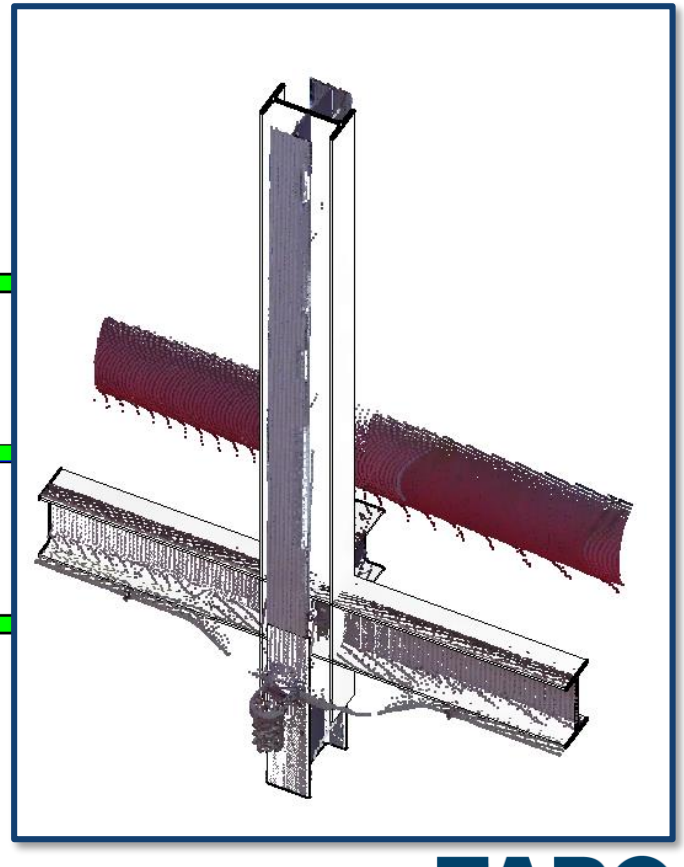
Floor flatness analysis using toleances of the USIBD Standard

Construction

ongoing Surveying

Application:
Check for differences between the model and the as-built situation

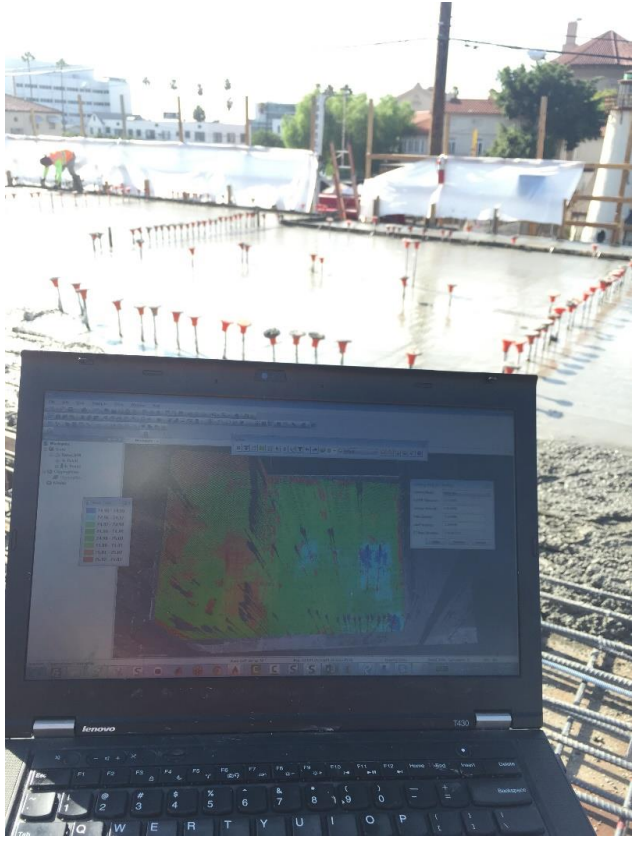


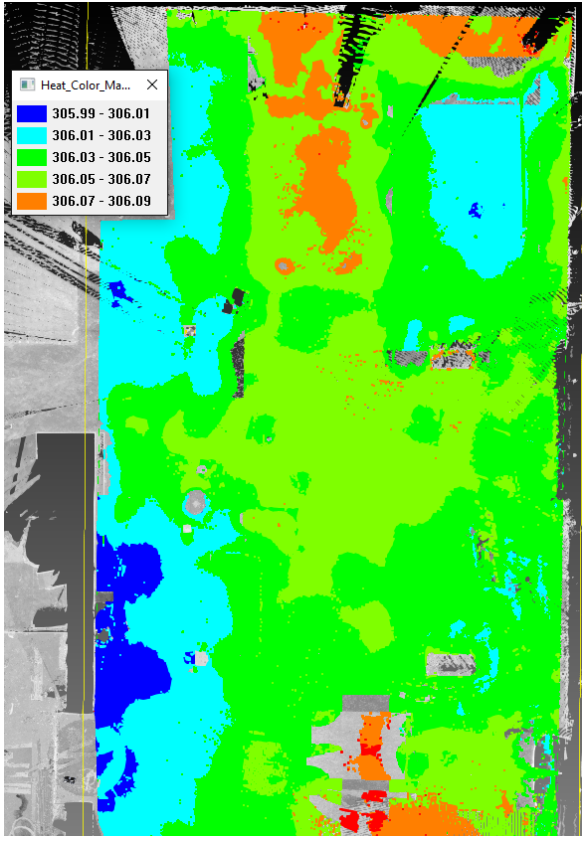


Construction

ongoing Surveying

Application:
Live analysis for construction processes





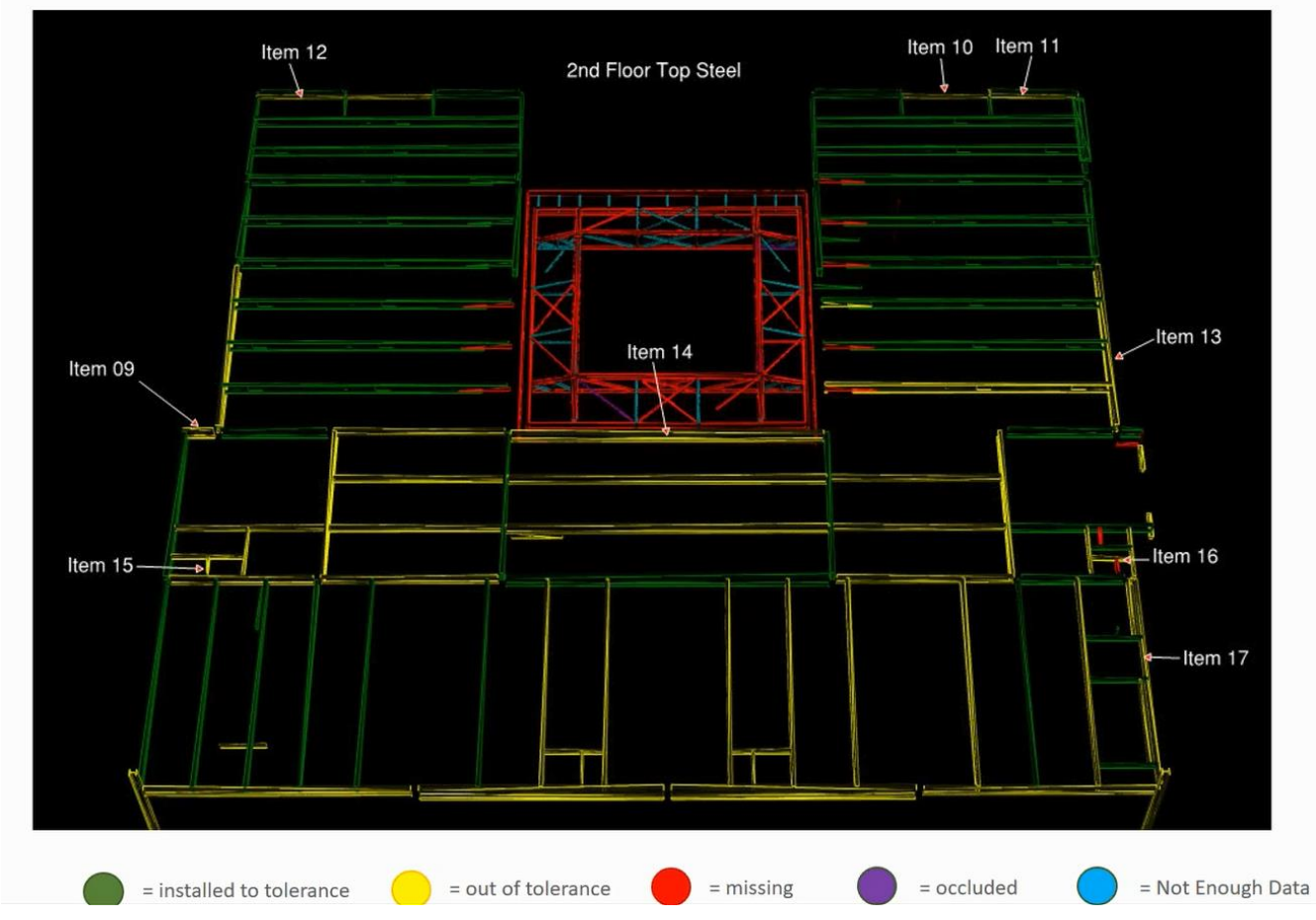
Wet concrete scanning:

Live feedback on-site as long the concrete is changeable

Construction

ongoing Surveying

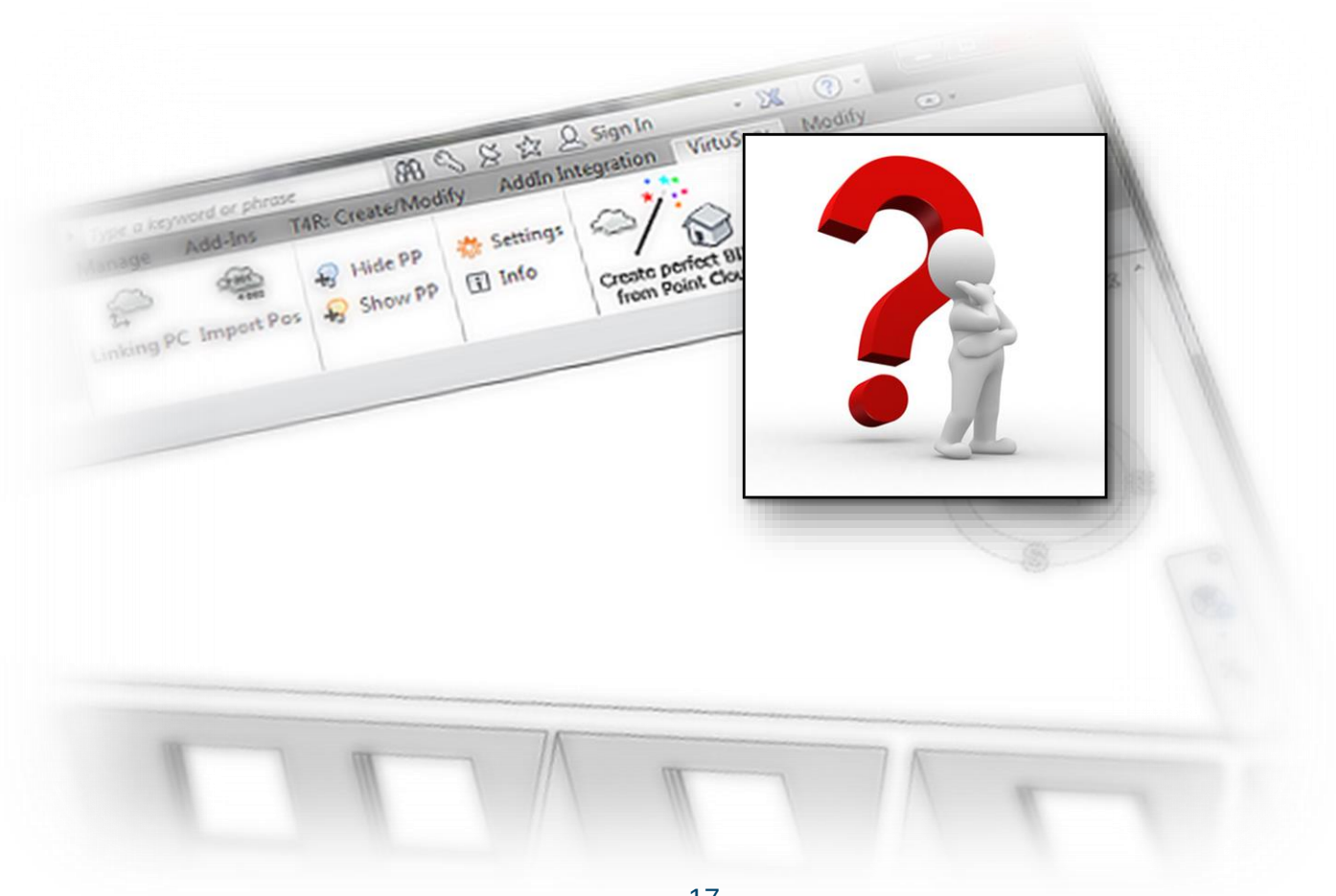
Application: Construction process verification



How does structure compare to the design model?

Where is it off or missing?

What can we expect in the future?



What can we expect in the future?

- Sensor integration and faster data acquisition (walk and fly)
- Automated modelling embedded in user workflows with quality control toolsets
- Almost instant on-site feedback if construction meets design specifications

Questions?