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The CPD Certification Service

Associations

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BuildIT CONSTRUCTION

Continuous Construction Verification

Asim Lehri | Europe Sales Engineer

What is BuildIT CONSTRUCTION?

BuildIT Construction by FARO® is a construction verification software platform that enables AEC professionals to facilitate and accelerate validation to design specifications, tolerance evaluation with high accuracy, part positioning and building monitoring

Continuous Construction Verification

As much as 30% of construction cost is rework

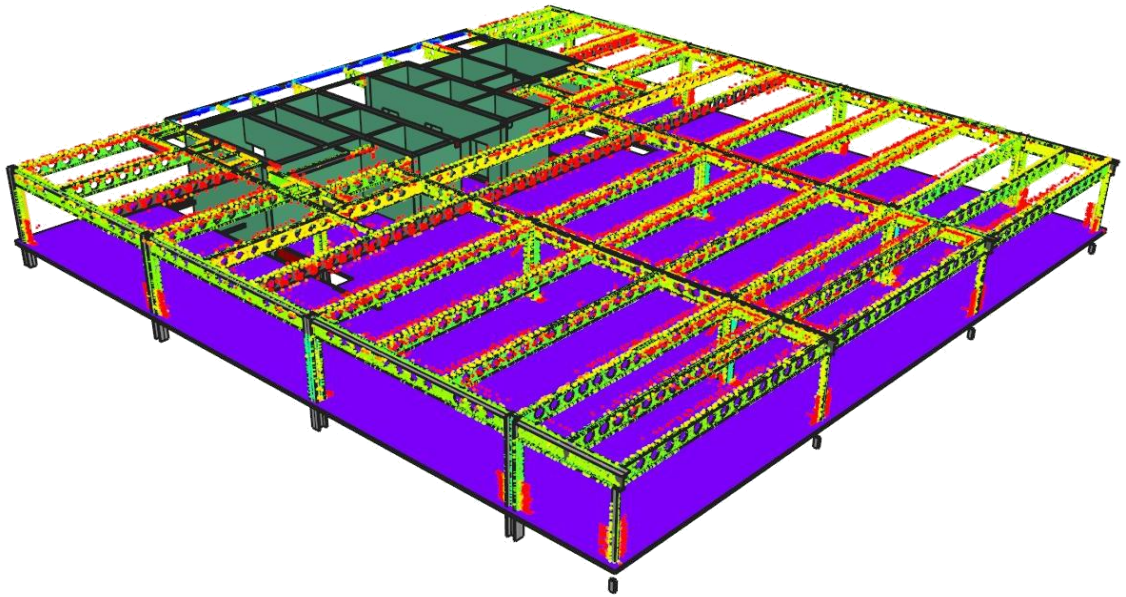
(On average 5-6% of total cost)

10% of materials are completely wasted

Growing shortage of experienced labor

Our Ambition

- Turn the construction site into the “build and verify” factory floor
- Providing quality assurance and adherence to design intent through all building processes
- Smart data capture, analysis and industry standard reporting
- FAST, ONSITE



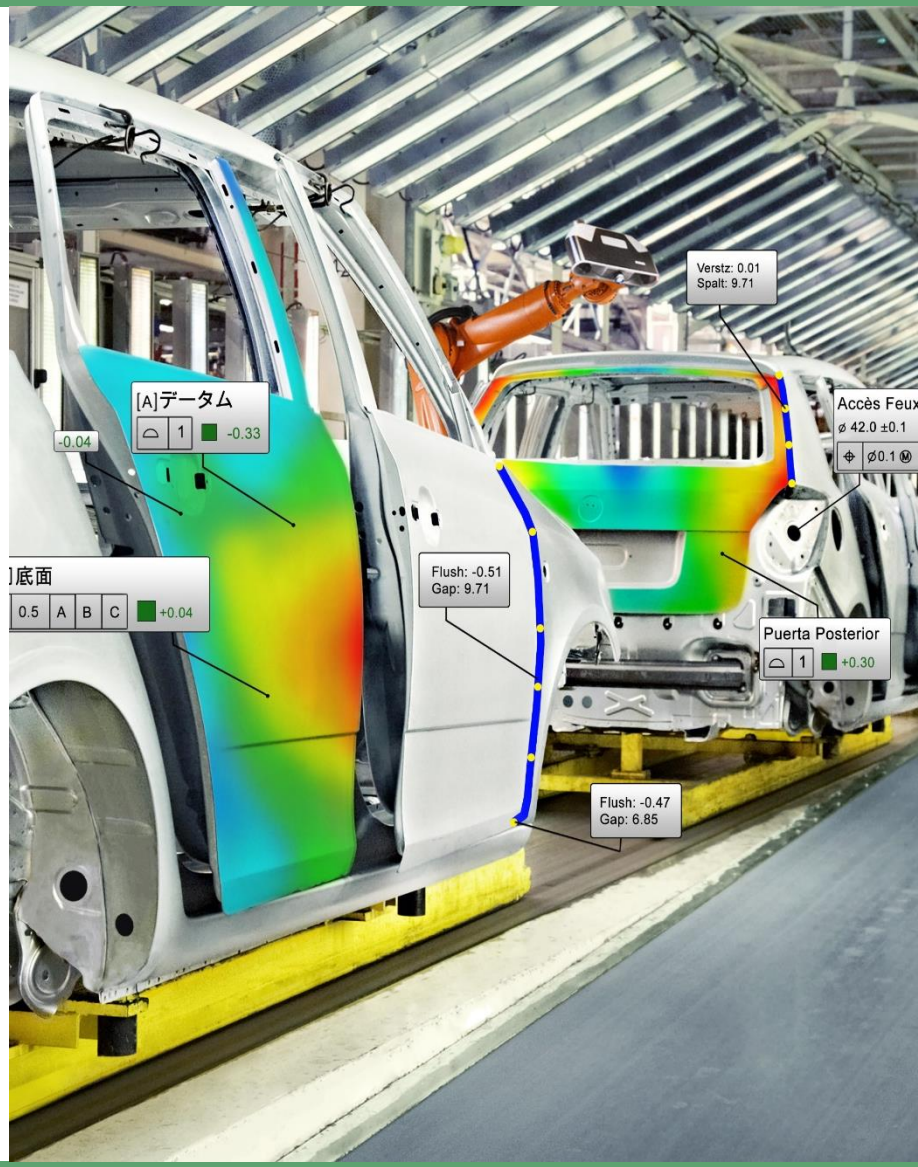
BuildIT's Expertise

Since the early 90s, BuildIT has been dedicated to high precision dimensional manufacturing quality control, assembly and tool building.

BOEING

AIRBUS

BAE SYSTEMS

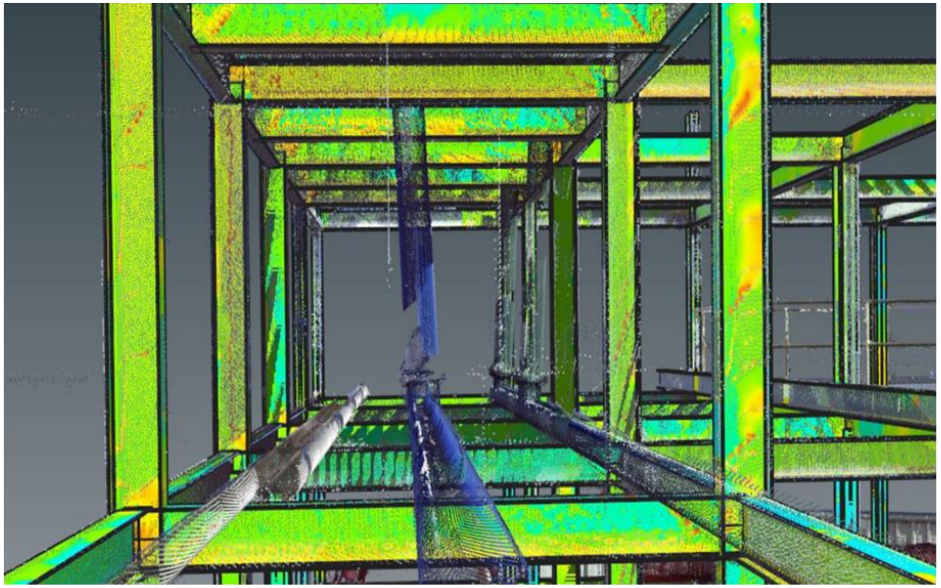


V1 Core Features

- **Validation to Design:** Verify accuracy of scan data to design models; ensure adherence to design
  - Built to BIM (surface analysis)
  - Beam Camber/Deflection
- **Tolerance Evaluation: Accurate inspections of existing conditions**
  - Floor Flatness/Levelness
  - Wall Flatness/Plumbness
  - Volume Computation
- **Positioning/Monitoring: Risk mitigation, quality pre-fabrication, asset mgmt**
  - 4D Analysis (Cloud to Cloud Comparison)
  - Real Time Positioning of pre-fab parts
  - Project analysis to Field (Beta)

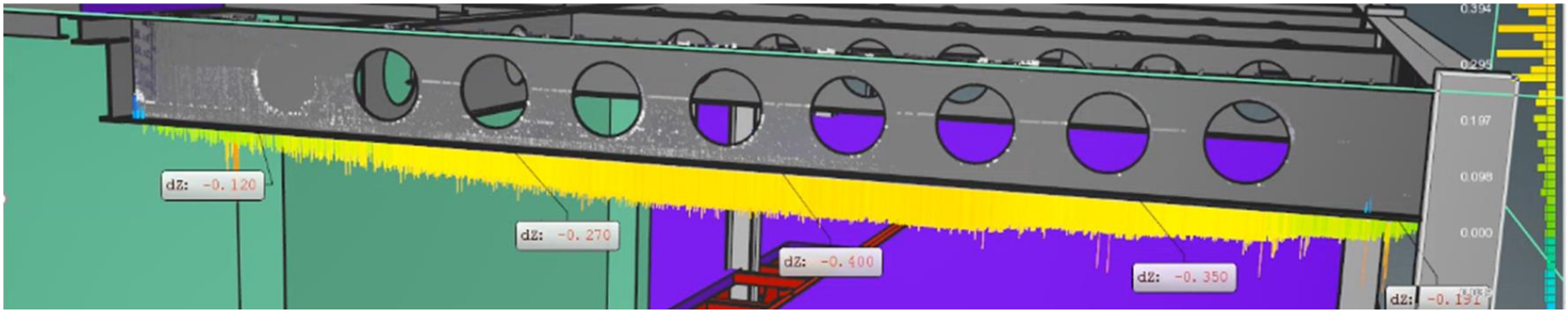
Built to BIM (Surface analysis)

- Purpose: Ensure construction is adhering to design model intent by comparing point cloud to model
- Traditional Method: Spot checks using total stations
- Process: Scan with Focus, import model and scan in BuildIT, measure distance between objects via surface analysis tools
- Benefits:
  - Enormous time savings (minutes vs. hours)
  - All points analyzed at one time
  - Determine out of tolerance areas
  - Pre-fab: check for errors before leaving site
  - Avoid import of data to 3rd party software

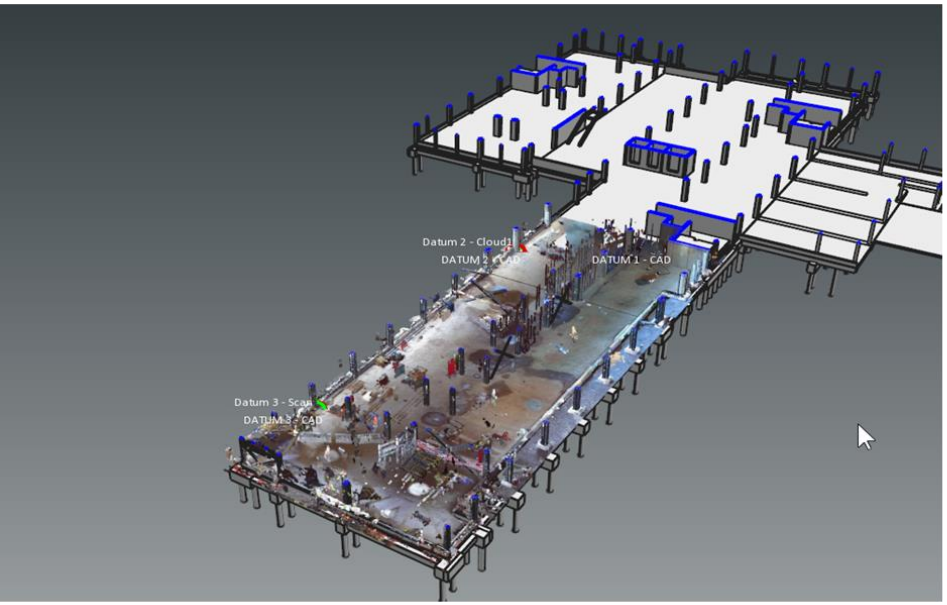


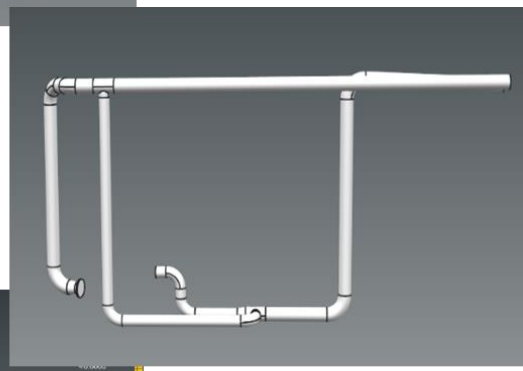
Beam Camber / Deflection

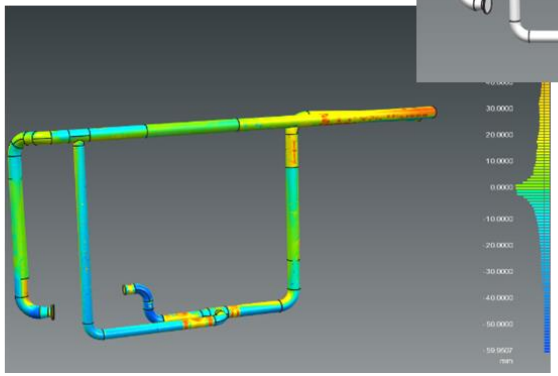
- Purpose: Determine bend/deflection in objects
- Traditional Method: Individual measurements: plumb-bob, total station
- Process: Scan with Focus, open model and scan in BuildIT, perform local surface analysis on object of choice, annotate specific areas as needed
- Benefits:
  - Measure any beam, even hard to reach places
  - Safe, repeatable measurement: No climbing, objective data
  - Determine stress pre-post concrete pour for risk mitigation and tolerance evaluation



Cloud to Model Alignment







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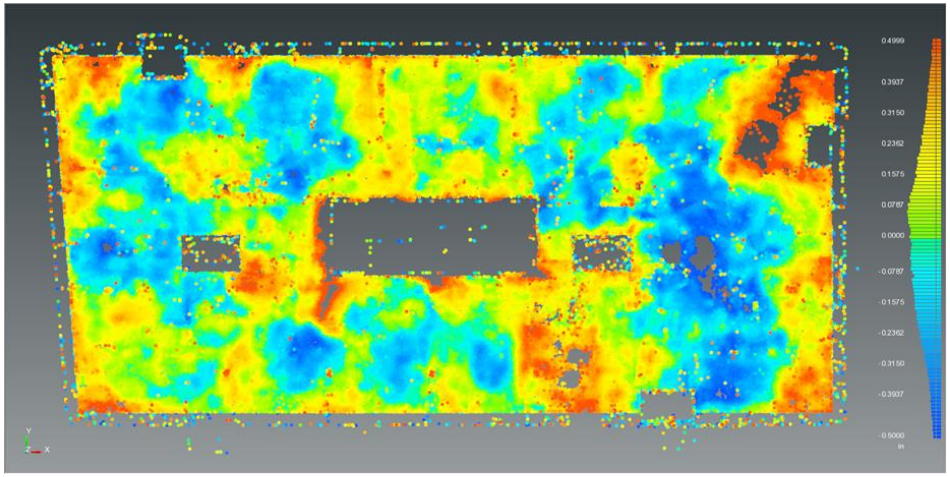
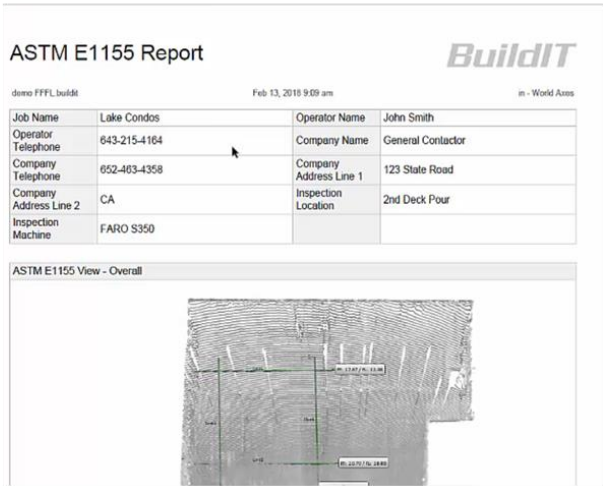
Floor Flatness / Levelness

- Purpose: Ensure floors are installed to desired tolerance
- Traditional Method: Dipstick, floor profiler
- Process:
  - Scan with Focus (via BuildIT or SCENE),
  - Perform FF/FL ASTM E1155 or…
  - Extract floor heatmap and/or topo lines
- Benefits:
  - Enormous time savings (minutes vs. hours)
  - Possible to measure while cement is wet
  - Perform industry standard ASTM reports
  - Analyze entire surface, not just spot checks
  - Project findings to field via Tracer





ASTM E1155 Report

BuildIT

demo FFFL.buildit — Feb 13, 2018 9:09 am — in - World Axes

Job Name	Lake Condos	Operator Name	John Smith
Operator Telephone	643-215-4164	Company Name	General Contactor
Company Telephone	652-463-4358	Company Address Line 1	123 State Road
Company Address Line 2	CA	Inspection Location	2nd Deck Pour
Inspection Machine	FARO S350		

ASTM E1155 View - Overall

Pepper Construction

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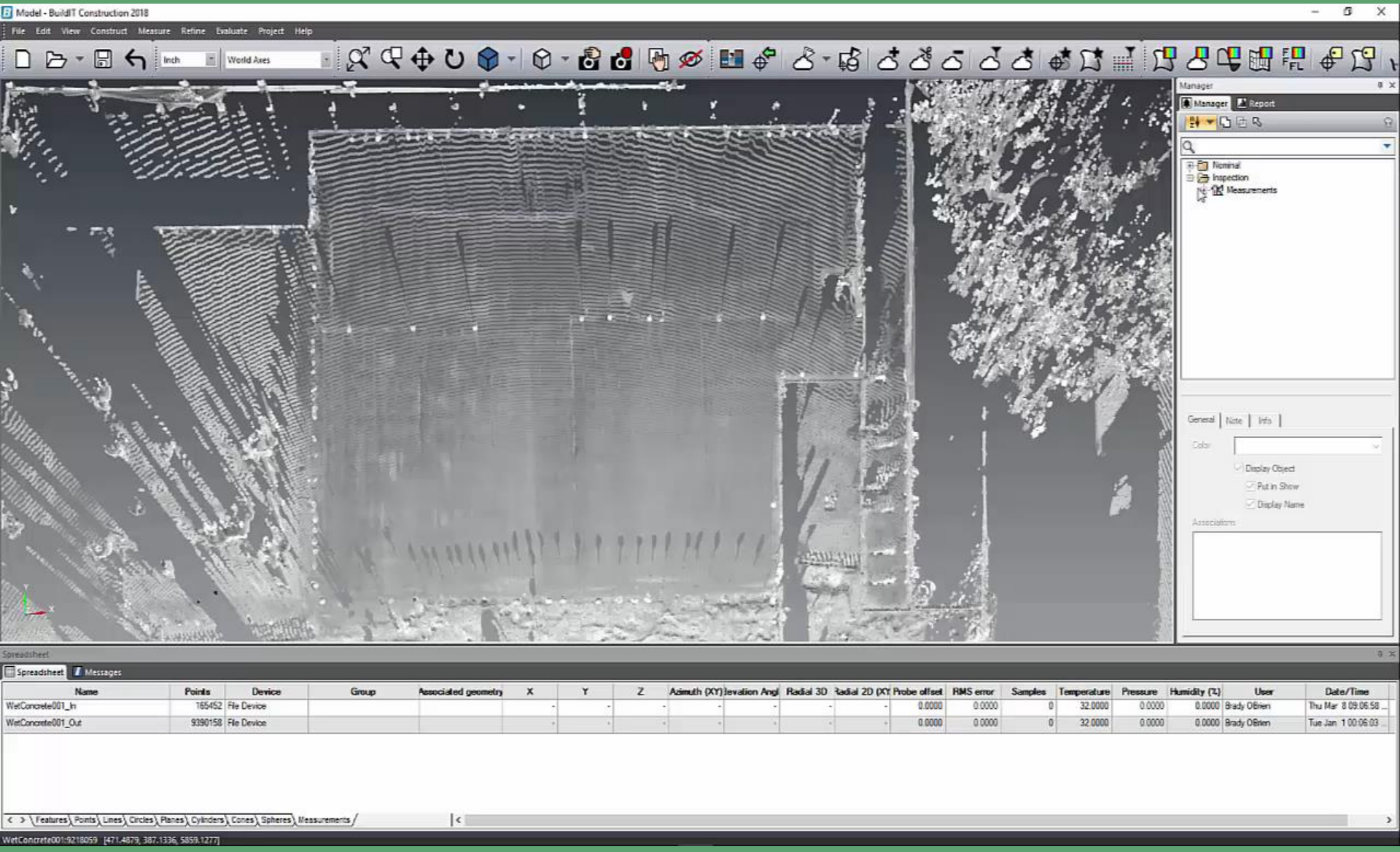

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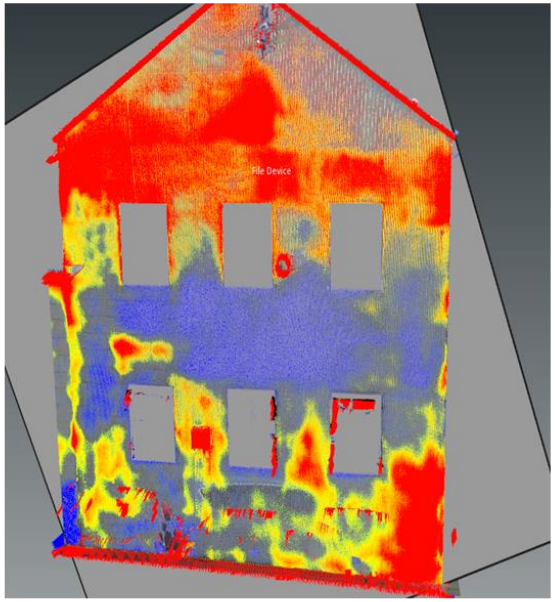
Wall Flatness/Plumbness

- Purpose: Determine wall or façade deformation
- Traditional Method: Spot checks using total stations, plumb bob
- Process:
  - Scan with Focus
  - Surface analysis in BuildIT
- Benefits:
  - Locate tolerance errors during construction
  - Determine degradation of older buildings for risk analysis
  - Avoid slow spot checking, measure entire surface at once
  - Pre-fab: check for errors before leaving site
  - No need to import to additional CAD/BIM products



Volume Computation

- Purpose: Calculate volume of area to determine material needs
- Traditional Method: Approximation based on manual measurement, spot checking or calculation from design model
- Process:
  - Scan with Focus
  - Volume Analysis in BuildIT
- Benefits:
  - Reduce waste with precise volume of concrete/number of trucks needed
  - Determine current assets onsite (stockpiles, etc.)
  - Determine tank/vessel volumes

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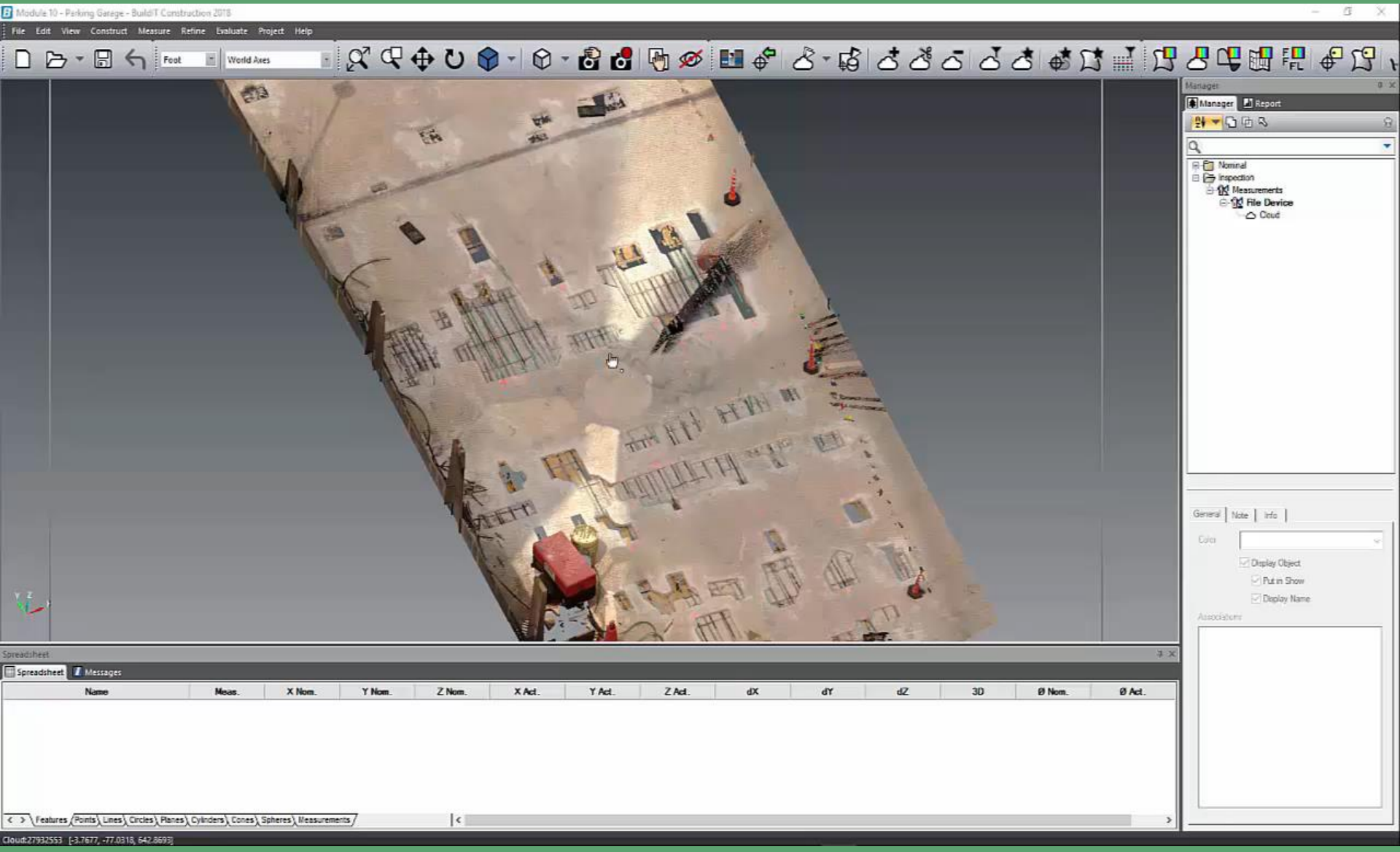

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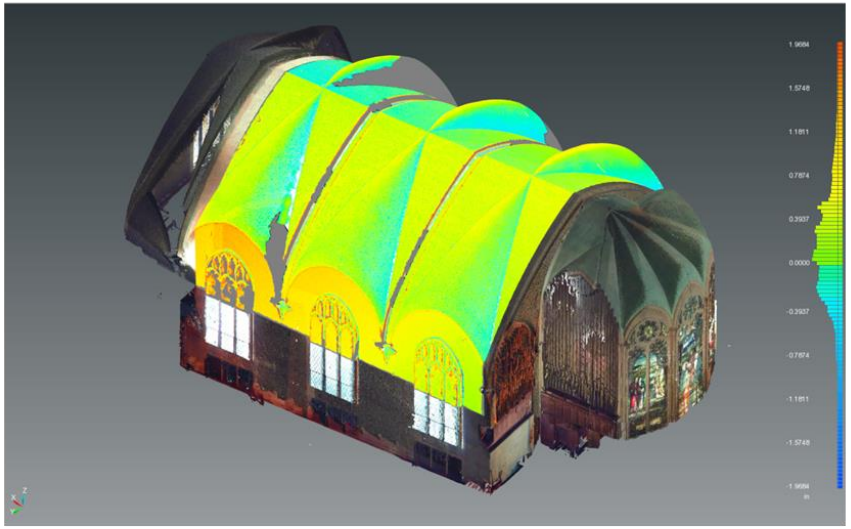
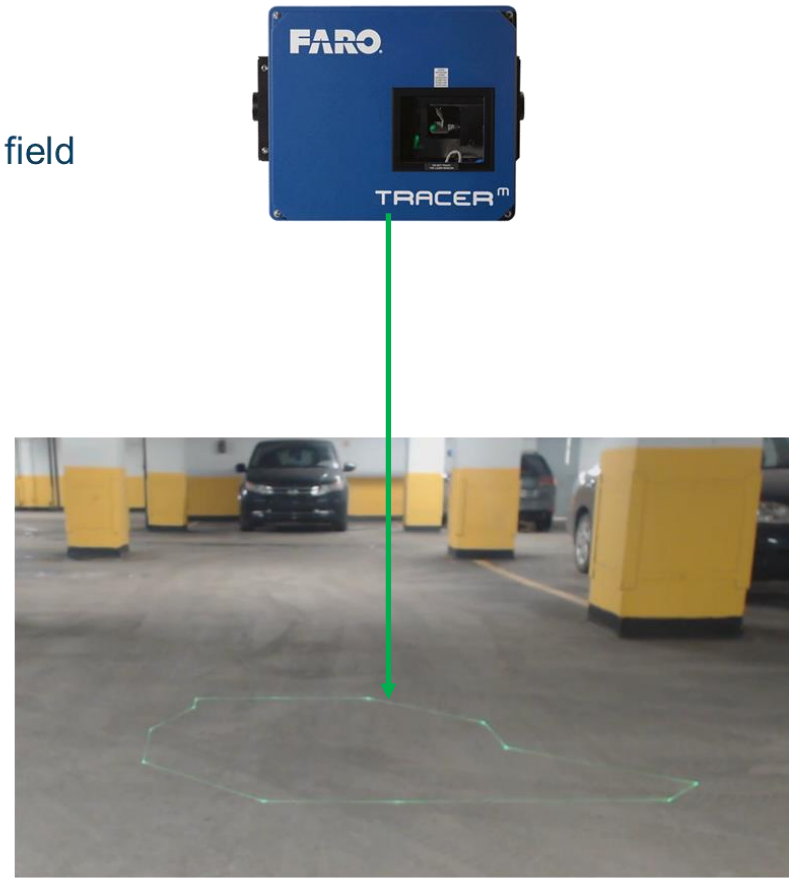
4D Analysis / Cloud to Cloud

- Purpose: Analyze change to structure over time
- Traditional Method: Total station spot check
- Process:
  - Import each data set (with identical control)
  - Run cloud to cloud analysis between selected clouds
  - Visualize deformation and export report
- Benefits:
  - Adjacent building monitoring during construction
  - Change management
  - Risk mitigation
  - Determine deformation of structures over time



Project Analysis to Field

- Purpose: Visualize design layout in field or project analysis to field
- Traditional Method
  - Total station point by point layout
- Process:
  - Analysis: Scan with Focus/BuildIT, run topo-line analysis, project to field via Tracer
  - Design: import design files to BuildIT, project via Tracer
- Benefits:
  - Project corrective actions onsite (cut/fill concrete locations)
  - Factory/facility planning and layout of equipment
  - Visualize CAD/BIM object placement onsite prior to installation (walls/beams, anchors)
  - Project templates for design of pre-fabricated elements offsite

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THANK YOU FOR LISTENING!
WANT TO KNOW MORE?

Kris Atkinson
kristopher.atkinson@faro.com
T: 07800523610

Asim Lehri
asim.lehri@builditsoftware.com
T: 07980941447