Real-time Monitoring and Progress Tracking

Marnix van der Wolk
Senior Account Manager, FARO Technologies
Agenda

1. Traceable Construction
2. On-site Construction
   - BuildIT Construction
   - Core features of BuildIT Construction
   - ScanPlan for Construction BIM
   - Main features of ScanPlan
3. Off-site Construction
   - Tracer SI
   - Applications of Tracer SI
FARO Traceable Construction™
On-Site Construction
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.
Core Analysis Tools

**Validation to BIM**

Close the building lifecycle loop by incorporating your validation. Import digital building plans and compare your actual measurements:

- Position to design
- Identify missing objects
- Adjust original BIM to as-built position

**Tolerance Evaluation**

Perform Quality Assurance checks to ensure all work is compliant with building code specifications. Quickly and easily evaluate:

- Floor Flatness
- Floor Levelness
- Beam Camber
- Position
- Wall Plumbness
- Wall Flatness
- Volume Computations
- Tank Volume Analysis

**Part Positioning/Monitoring**

Use BuildIT Construction’s Real-Time device interface to build and position parts precisely and accurately, and monitor movement over time.

- Real-time positioning of Pre-Fab Parts
- Laser Projector Interface
- Adjacent Building Monitoring
- 4D analysis to verify shifts over time
What is the ScanPlan™?
What is the ScanPlan™?

FARO ScanPlan™ is a lightweight, handheld mapper that enables AEC professionals to quickly and easily capture and visualize 2D floor plans.

FARO® ScanPlan™ = Fast 2D Mapping
What are the main features of the ScanPlan™?

- Capture 2D floor plans as you walk
- Document critical details with photographs, text and documents and add to the plan
- Visualize the plan in real time on a smartphone (Android or iPhone)
- Map floor plans on multiple floors
- Portable and Lightweight – Hold it with one hand, walk and point to capture
- Register & Optimize directly on the device
- Export to PDF, SCENE2go, WebShare Cloud
- Includes FARO Zone 2D – easy to use 2D CAD software
## Applications for ScanPlan™ in C-BIM

<table>
<thead>
<tr>
<th>Main Task</th>
<th>2D As-Built Documentation</th>
<th>Monitor Construction Progress</th>
<th>Project Planning for Scan Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used for</td>
<td>Conceptual Design</td>
<td>Construction Project Management</td>
<td>Pre-planning of scan positions</td>
</tr>
<tr>
<td></td>
<td>Quantity Estimation for Quotation</td>
<td></td>
<td>Quotation of scan jobs</td>
</tr>
<tr>
<td></td>
<td>Facility Management</td>
<td></td>
<td>Scan localization</td>
</tr>
<tr>
<td></td>
<td>Real Estate Market</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Workflows for ScanPlan™ in C-BIM

- 2D map as image reference in the CAD file
- 2D vector lines

→ Useable in any CAD system for further modelling
Workflows for ScanPlanTM in C-BIM

Adding Images + 360° Images to 2D map

- Add panoramic images with correct position and orientation to the floor plan
- Export as VR Suite project

→ Result is a localized visual VR documentation of the as-built situation
Workflows for ScanPlanTM in C-BIM

Adding Images +
360° Images to 2D map

- The 2D overview map is augmented with 360 degree pictures
- POI can be marked in the 2D plan and augmented with
  - Image, video, audio, file annotations
  - Descriptions
- Dataset is streamed/uploaded to WebShare / SCENE2go

→ Result is a localized visual documentation of the construction progress on a daily/weekly base.
Workflows for ScanPlanTM in C-BIM

Automatic definition of Scan positions

Scan Assist
After the recording of a 2D floor plan, the system calculates automatically the best positions to place a Focus 3D scanner:
- Estimate Scan Project Effort
- Use ScanPlan to navigate to next scan position

Optional: Scan Localizer functionality
- Navigate with ScanPlan to a pre-planned scan position and send this position to the Focus 3D scanner
- Scans are already pre-positioned after import into SCENE; no need for Top-View registration before C2C registration
Key Benefits of the ScanPlan™

**Saves Time**
Document more buildings in less time. Walk and point the ScanPlan at the walls to capture nearly 29,000 points/sec.

**Easy to Use**
Use the familiar interface of a smartphone app to control it.

**Complete Solution**
Export results directly to PDF, SCENE 2go or WebShare Cloud or use FARO Zone 2D to finalize the floor plan by adding doors, stairs, notes, dimensions, and more.

**Confidence in the Results**
Visualize and save your projects using the smartphone app so you are sure you have mapped the entire building before you leave.

**Portable and Lightweight**
Only 1.5 kg (3.3 lb.), easily carried with one hand.

*What will customers be most excited about?*

*The FARO ScanPlan™ is the fastest way to map floor plans!*
Off-Site Construction
FARO® TracerSI Laser Projector
3D Laser Projector with Advanced Laser Imaging for Guided Assembly and In-Process Verification

Streamlining Production and Assembly

TracerSI represents a first-of-its-kind advanced laser imager and high-accuracy projection system, with superior scanning capabilities throughout its entire projection volume. The combination of high-contrast imaging, accurate and repeatable projection, and powerful yet easy-to-use BuildIT Projector software establishes a new industry standard for repeatable laser-guided assembly.
The C-BIM vision for projecting devices

FARO technology will be used in workshops to present BIM design content, helping tradesmen easily assembling the deliverables without construction drawings.

This process will be faster than actual workflows, reducing project costs by avoiding template creation and rework, minimizing material costs leading to higher quality outputs.
Off-Site Construction – Applications

Digital Design Transfer To Workbench
Steel Production

Assembly Layout - Trusses, Joists, Girders, Complex Assemblies
Steel Production

Assembly Layout - Trusses, Joists, Girders, Complex Assemblies
Timber Production
Timber Production

Assembly Layout - Trusses, Roofs, Walls, Slabs
Layout steps - Individual Beam Positions, Connector material
Saved time by – Accurate Angles & Positions
<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replace Templates &amp; Manual Instructions / Blueprints</td>
<td>Cost and capital expenditure savings versus building, storing &amp; maintaining physical templates and tooling</td>
</tr>
<tr>
<td>Universal Sequencing Tool</td>
<td>• Brings all operators up to a higher skill &amp; knowledge base</td>
</tr>
<tr>
<td></td>
<td>• Ensures proper sequences are followed</td>
</tr>
<tr>
<td></td>
<td>• Reduces legacy knowledge dependency</td>
</tr>
<tr>
<td>All Work Instructions are Digital</td>
<td>• Ensures that only the proper/current ECO’s or work package instructions are utilized</td>
</tr>
<tr>
<td></td>
<td>• Reduces scrap and rework</td>
</tr>
<tr>
<td></td>
<td>• Improves quality and throughput to minimize rejects and non-conformances</td>
</tr>
<tr>
<td>Reduce:</td>
<td>Multiple cost and time savings elements:</td>
</tr>
<tr>
<td>- Layout / setup time</td>
<td>• Fast setup</td>
</tr>
<tr>
<td>- Defects / scrap</td>
<td>• No need to reconfigure tooling work cells</td>
</tr>
<tr>
<td>- Labor / staff hours</td>
<td>• Move immediately from CAD model to virtual template on the production floor</td>
</tr>
<tr>
<td>- Costly re-work time</td>
<td></td>
</tr>
</tbody>
</table>
Thank you