Reality Capture: What Turner’s $600 Million Project Can Teach You

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About the speakers

Jonathan Evans, Turner Construction

Jonathan enjoys being on the cutting edge and loves a good proof-of-concept. He is a Mechanical Engineer turned VDC Engineer with Turner Construction and has been in the AEC industry for two years. He started his career in 2017 as a Technical Management Associate for a steel mill in Texas, then found himself in Iowa working as a VDC Engineer for Turner. Though his job description concerns the management of the reality capture process and BIM coordination, he also enjoys championing VDC innovations that can be applied across jobsites and regions.

Suman Paneru, Turner Construction

Suman Paneru has a passion and dedication for the practice of virtual design and construction in the AEC industry. He has over five years of experience in the implementation of cutting-edge technology, especially on industrial and commercial buildings in the US and abroad. He holds a Bachelor’s in Architecture and a Master’s in Construction Management. He is currently working as a VDC Engineer at Turner Construction where he is pushing for the “build virtually first” approach, specializing in BIM Coordination.
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Introduction
Perception vs Reality
Perception vs Reality
Breaking the Taboo:
Money and Reality Capture
Laser scanning workflow

SCAN
SCAN YOUR SCOPE
Laser scanner:
• $25k - $100K+

PROCESS
ALIGN AND COORDINATE
Processing PC
• $3k - $10k+
Software
• ReCap Pro: $310/yr

ARCHIVE
MAKE IT ACCESSIBLE
Storage and sharing solution
• Dropbox for 20 ppl: ~$5k/yr

RESOLVE
TACKLE ISSUES
Track your issues and assign
• Navisworks: ~$2k/yr
• BIMTrack: $83.40/yr/user

Initial cost: ~$35k+*
Yearly cost: ~$7k+*

*Assuming a team of 20 active software users
So, how do we pitch this?

- Scanning an area for renovation or re-do
  - What’s in place that is missing from an existing model? Does “as-built condition” actually mean as-built condition? Is there even a model?

- Drone footage for logistics and dig permit assistance
  - Keep in mind, the precision of drone info isn’t quite that of laser scans, but the overall content is data-rich and beneficial
So, how do we pitch this?

• The “supply chain” of coordination in this area showcases how heavily each trade affects the ones around it
  • You can have a perfect BIM model, but scanning smartly allows for better field coordination

• Scan vs BIM: this will quickly become your “bread and butter” and vital to your project’s success
  • Installation verification and adjustment
  • Floor flatness/floor levelness testing
  • Deviation info
  • As-built coordination
Reality Capture Plans and You
Features of a successful plan

• Be realistic
  • How much scanning?
  • Why scan this and not that?
  • Are you being mindful of resources?
• Can you meet the expectations of all parties?
  • You can’t scan 24/7
  • 100% scan coverage is not possible
• Always ask yourself: Is there a leaner way to do this?
  • This shows that you care about the underlying schedule, budget, and everyone’s time
What to look out for

Be on the lookout for:

• Vague wording
• Unrealistic expectations
  - Especially effective to relay the cost associated
• Rapid desired turnaround times
• Strict hardware, software, or workflow practices
  - Technology changes all the time
Managing Expectations:
We’re All In This Together
When we’re aligned, we all win

Where we benefit:

• Safety – logistics, underground utilities, access
• Superintendents/field team – measurements
• QA/QC – quality checks, FF/FL, heatmaps, etc.
• BIM – as-built updates, shops, renovations, etc.
• Design – see what is installed vs what was designed and why
• Client – as-built model turnover for verification and future renovations
• Upper management – room build-out; nice graphics for presentations
Trade partner expectations
“We Never Talk Anymore”: Keeping Communication Alive
Who and what is driving communication?

Construction
During the course of construction, a laser scan update should be presented in every OAC meeting. This update should allow all stakeholders to understand and visualize any field construction and installation that deviates from coordinated BIM models. The status update will include at a minimum the following items:

- Number of scans in the previous week
- Area of scans covered in the previous week
- Focus (ACS, MEP, finishes, etc.) of scans in the previous week
- Number of field conditions and changes that are beyond allowable tolerances
- Coordinated BIM model status according to accepted field deviations
- Percentage of the building that has been final scanned versus overall program (percentage is measured by square feet covered by as built models divided by square feet of the total building)
- Heat map to confirm poured concrete slab and equipment pad level flatness
- Two-week scan area look-ahead
Buy-in, at all levels
In Conclusion…
Any Questions?

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