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.

Turner City 2018

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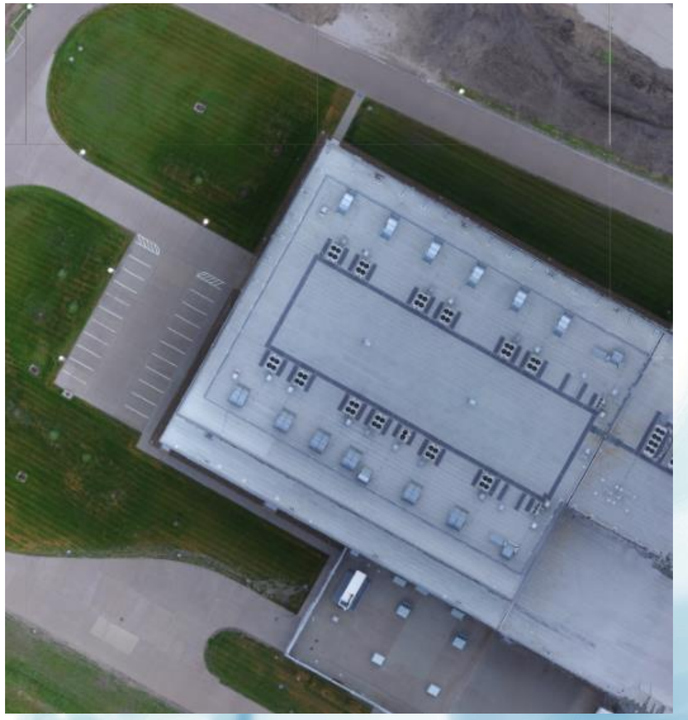
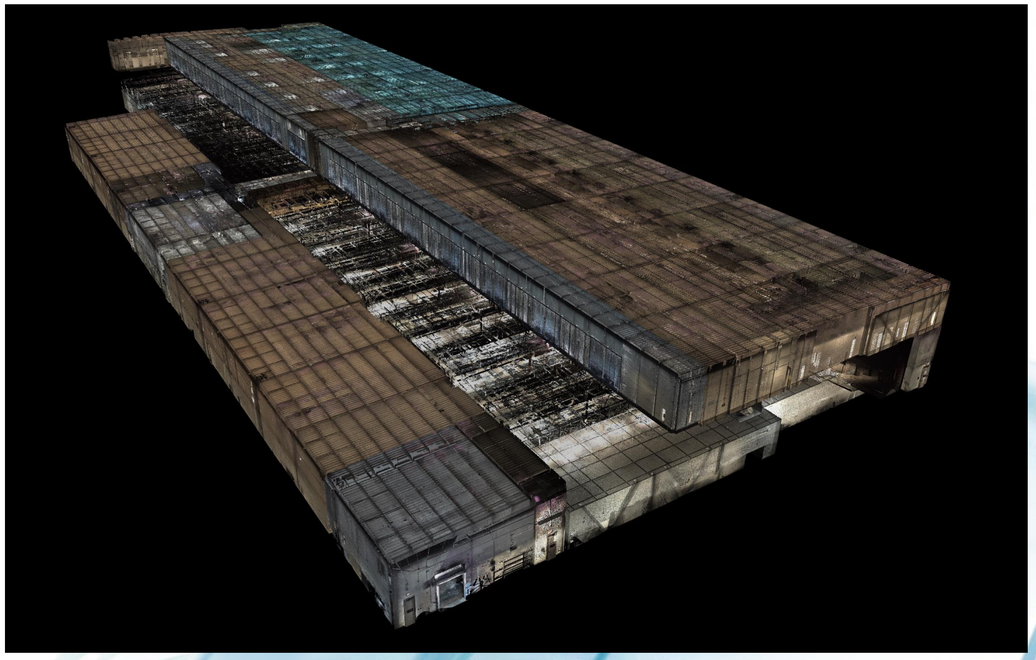
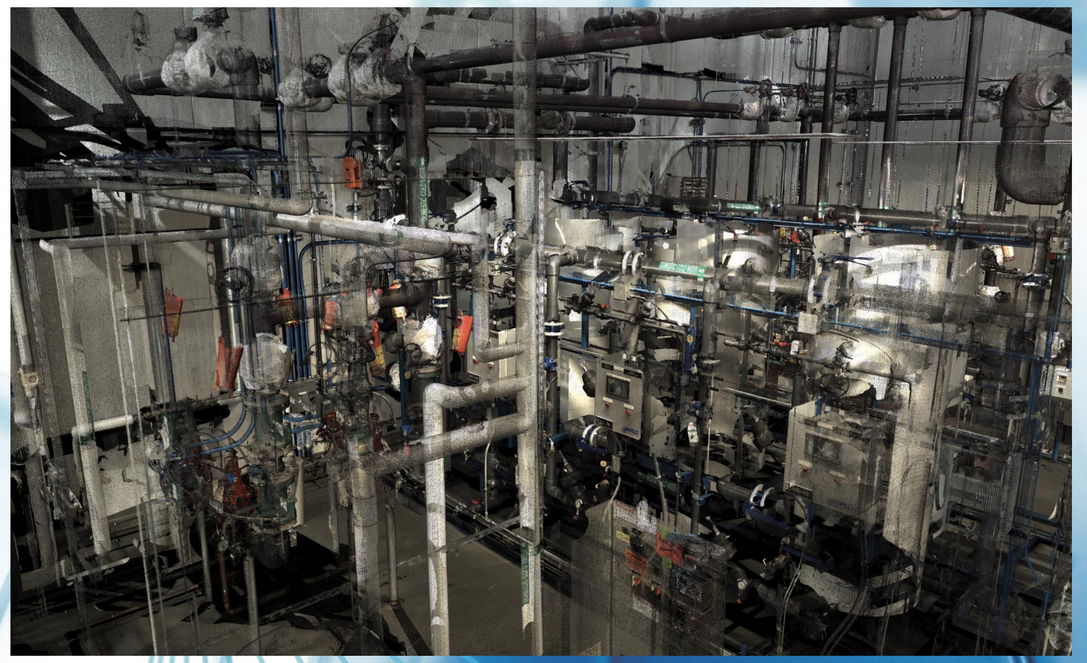
Introduction

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*

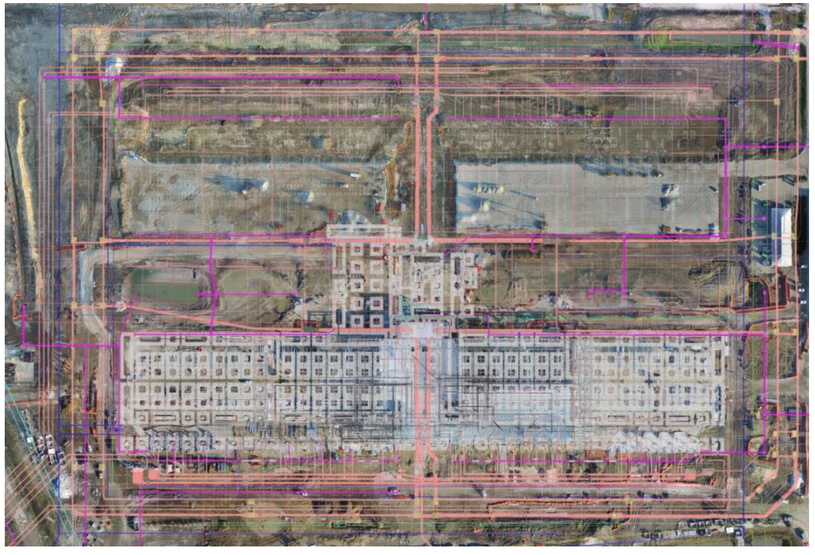
Initial cost: ~$35k+*
Yearly cost: ~$7k+*

*Assuming a team of 20 active software users

So, how do we pitch this?

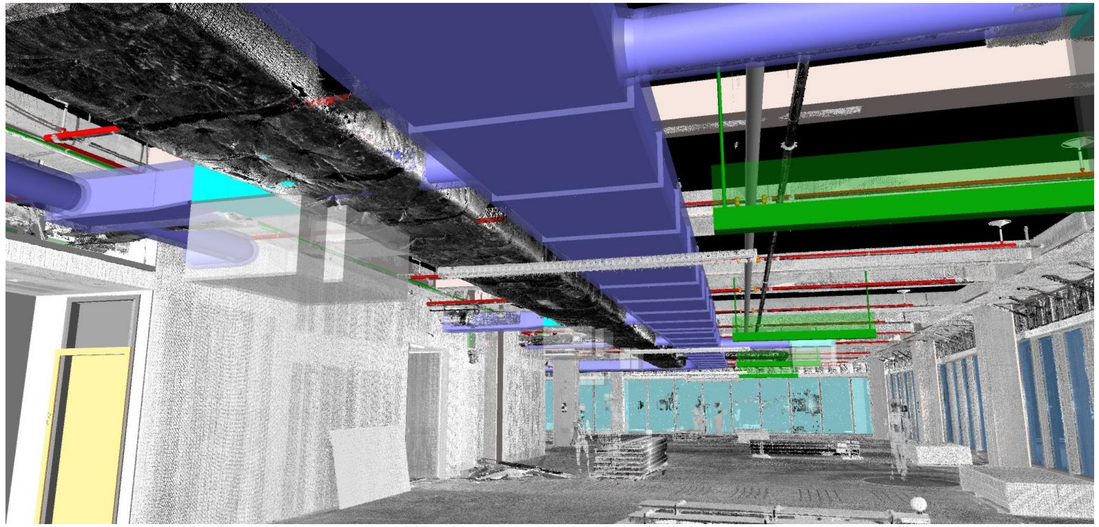
- Scanning an area for renovation or re-do
  - What’s in place that is missing from an existing model? Does “as-built condition” actually mean as-built condition? Is there even a model?

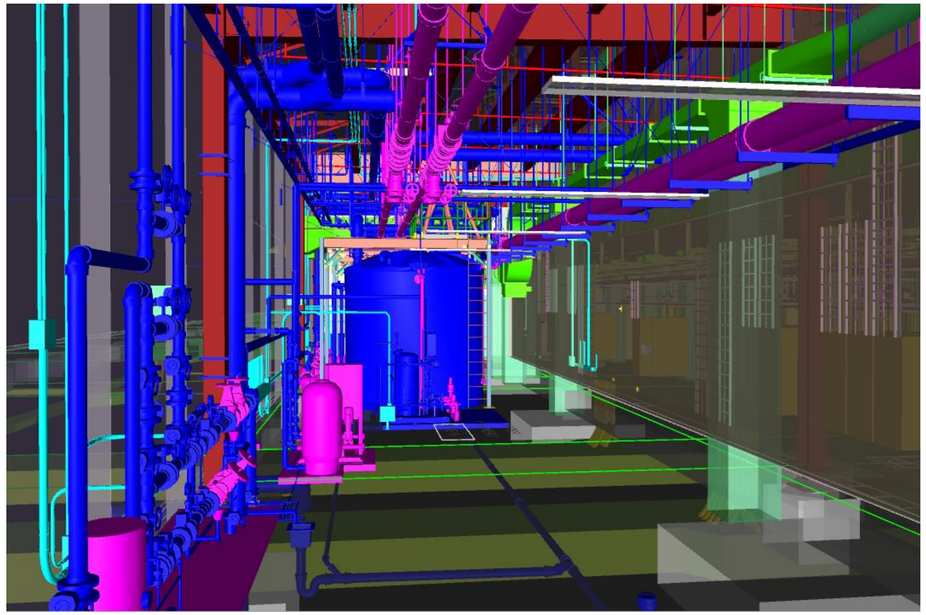
- Drone footage for logistics and dig permit assistance
  - Keep in mind, the precision of drone info isn’t quite that of laser scans, but the overall content is data-rich and beneficial



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



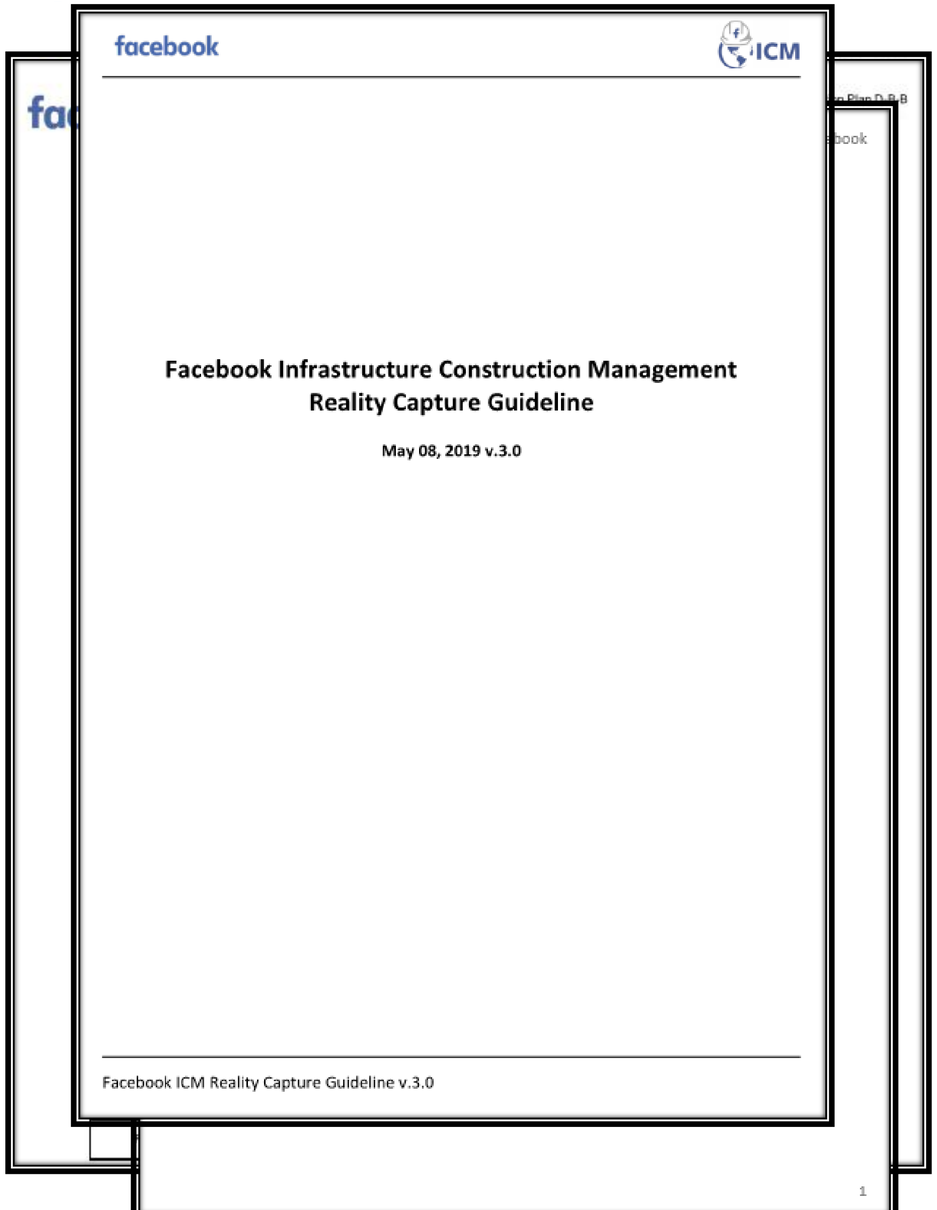


- Scan vs BIM: this will quickly become your “bread and butter” and vital to your project’s success
  - Installation verification and adjustment
  - Floor flatness/floor levelness testing
  - Deviation info
  - As-built coordination

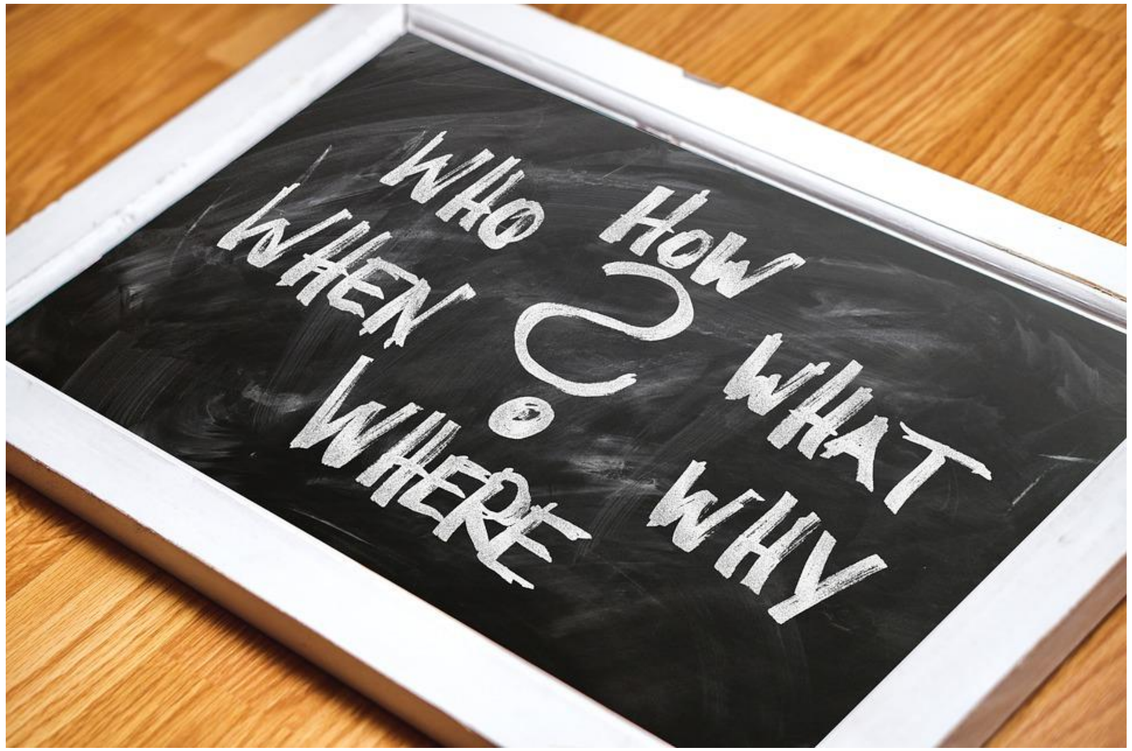
Reality Capture Plans and You

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



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

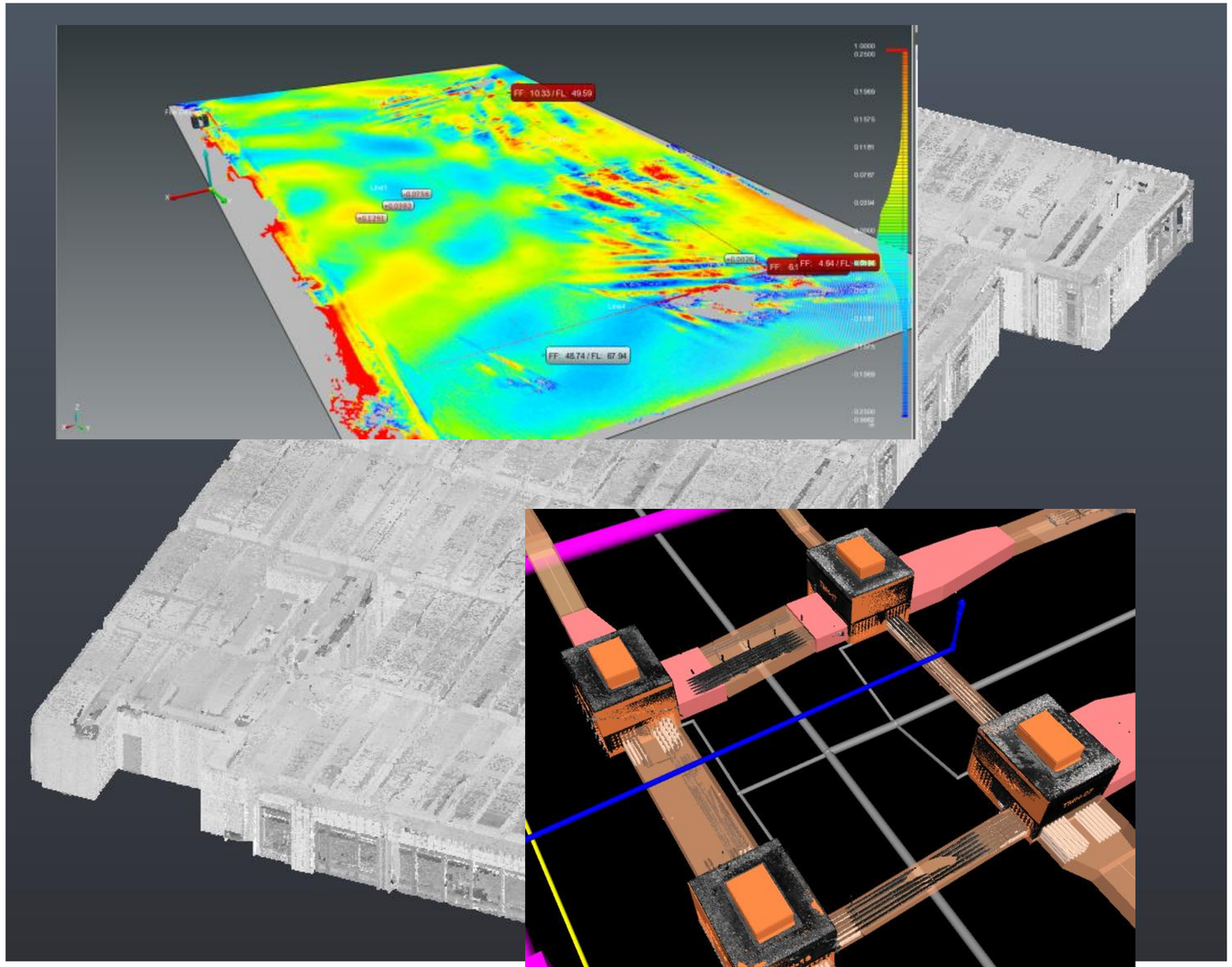
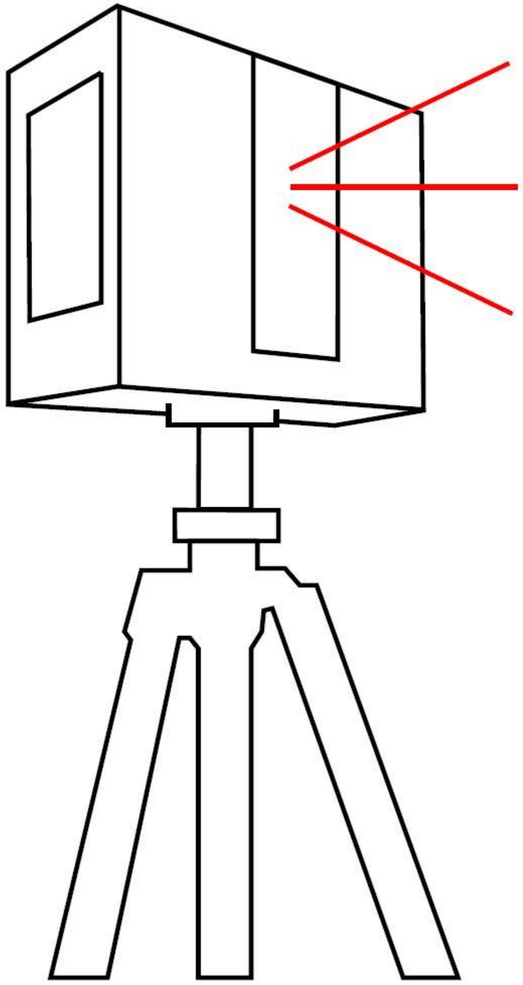


Image credits:
Faro for ConcreteConstruction.net

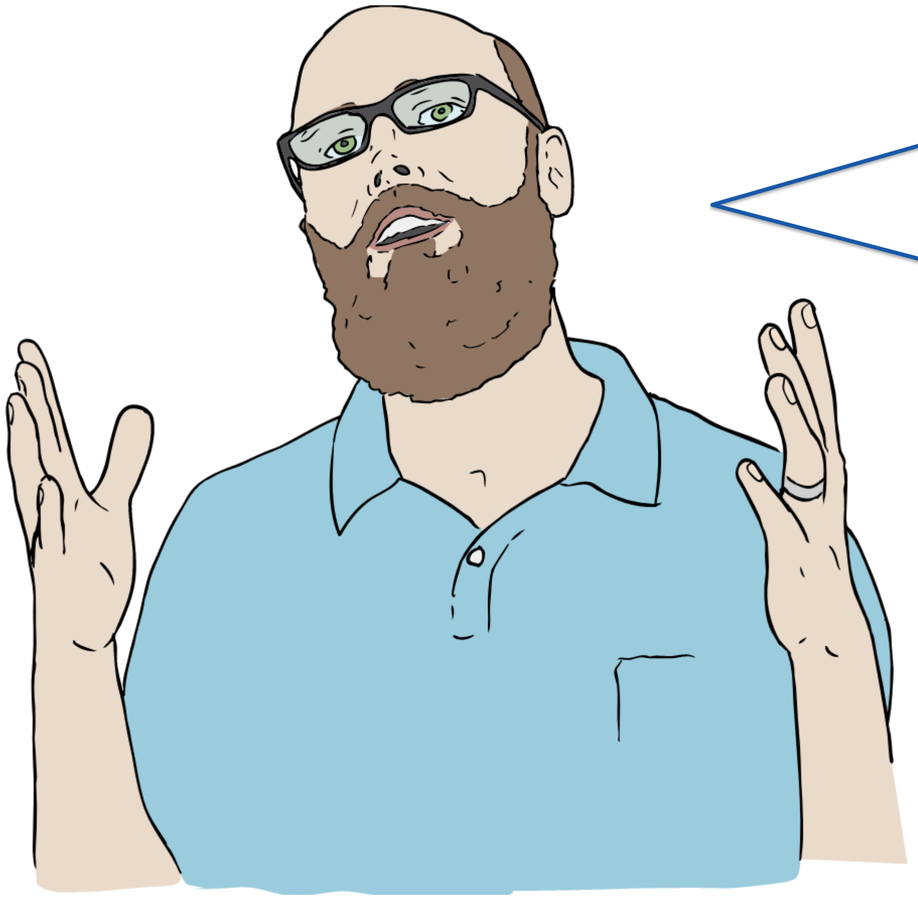
Trade partner expectations



“We Never Talk Anymore”:

Keeping Communication Alive

Who and what is driving communication?

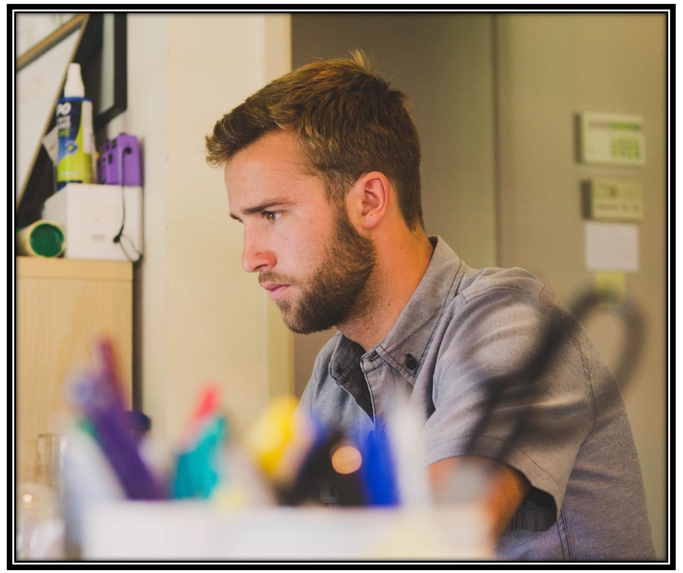


Construction

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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