



icon

intelligent
construction



C.R. Kennedy

BUILDING CONSTRUCTION

- when it has to be **right**

Leica
Geosystems

PART OF
HEXAGON





C.R.Kennedy

BUILDING CONSTRUCTION

Capture | Locate | Measure



CR Kennedy Building Construction



Product Search



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BUILDING CONSTRUCTION

Our advanced solutions in building construction have transformed work practices and processes industry-wide.



Fast and precise construction layout helps projects stay on-budget and on-track



Home builders and owners richly benefit from our precise and accurate solutions for residential buildings

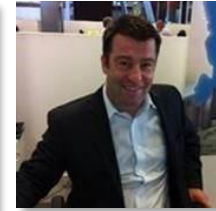
<http://building.crkennedy.com.au>



CRKENNEDYBUILDINGCONSTRUCTION



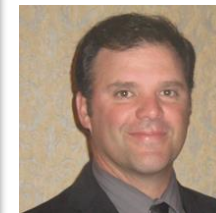
Building Construction Team



BERNIE EDMONDS
Building Construction Manager
Surveyor



MATT RUMBELOW
Technical Sales Consultant
Architecture / BIM Collaboration



CHRIS JOHNSON
Technical Sales Consultant
MEP layout specialist



RUSTY WEBB
Technical Sales Consultant

Today's Reality Capture Speakers



Matt Rumbelow
Technical Consultant, CR Kennedy
Building Construction

Having worked with global BIM software providers such as Autodesk, Leica, Solibri and Newforma, Matt is uniquely placed to identify partnerships and develop strategies that leverages the potential of BIM. Matt has taught Digital Design Technologies at the University of South Australia following his graduation from architecture in 2000.



Gregg Franz
Scanning Segment Manager
Leica Geosystems Australia

A trained surveyor, Gregg's 20 years of scanning experience commenced in aviation and automotive, before seeing him work on scanning projects internationally with a range of vendors. In 2012 Gregg joined Vekta, one of Australia's leading scanning service providers, then worked with both Leica and Faro equipment before joining Leica Geosystems.

The Shift to Digital Construction – Digital Engineering

Digital Construction

Building Information Modelling (BIM) is applied at every stage of the construction and infrastructure process



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The BLK360 - A Year in Review



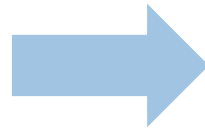
The BLK360 - A Year in Review

Leica BLK360 Imaging Scanner



The BLK360 - A Year in Review

Out of the Box Autodesk BIM Integration



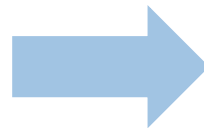
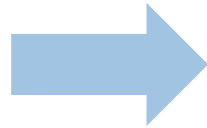
Recap 360 pro App



Recap 360 pro

The BLK360 - A Year in Review

Deep integration with Best in Class Leica software solutions



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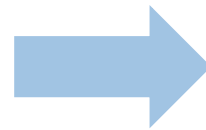
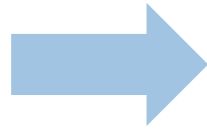
BLK360 Ipad APP



Register360

The BLK360 - A Year in Review

Ground breaking collaboration with 3RD party consumer products



Matterport
Capture APP



The BLK360 - A Year in Review

AUTODESK RECAP PRO

Andrew Bro... connect

new project

what's new?

Combine Terrestrial Laser Scans with Unstructured Points

Interact with CAD Models in RealView

Join the Autodesk Research Program

Influence the future of ReCap Pro by participating in user research!

[Learn More >](#)

Introducing ReCap Photo™!

Enjoy expanded photogrammetry capabilities of ReCap Photo, our new desktop and cloud solution built for drone and UAV workflows. ReCap Photo is available now and comes bundled with ReCap Pro.

To access, [sign in to your Autodesk Account](#), select the latest ReCap Pro version in the management tab, and re-install. You'll have the option to install recap photo through this single installation process.

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WGA
WALLBRIDGE GILBERT
AZTEC

testing rotate

123123

current project

asc tilt

[open](#)

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The BLK360 - A Year in Review



And now ...



The RTC360 – Fast, Agile, Precise



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The RTC360 – Fast, Agile, Precise



The RTC360 – Fast, Agile, Precise



The RTC360 – Taking its place within a complete solution



	BLK360	RTC360	P-Series
Type/class of device	Imaging Scanner Documentation «image first»	3D Laser Scanner Reality Capture «scan first»	Survey-grade Scanner «High Definition Surveying»
Target users	AEC professionals	3D data experts	Surveyors
Skill level	Low	Medium	High
Main use	Indoor	indoor/outdoor	outdoor
Typical project sizes	Small	Medium/Large	Large
Main Characteristic	Simplicity & Portability	Performance & Productivity	Versatility & Precision

The RTC360 – Taking its place within a complete solution



	BLK360	RTC360	P-Series
Imaging Speed	< 1min	< 1min	> 6min
ScanSpeed	360'000 pts/sec	2'000'000 pts/sec	1'000'000 pts sec
Level of Detail (Max Resolution)	Low (6mm @ 10m)	Medium (3mm @ 10m)	High (0.8mm @ 10m)
Env. Robustness	IP54 / open mirror	IP54 / closed mirror	IP54 / closed mirror
Temp Range	+5 to +40	-5 to +40	-20 to +50
Range (typical/max)	Short (20/60m)	Medium (40/130m)	Long (70-270/1000m)
3D data quality	Good	Better	Best
Field Registration	SW based	VIS based	Surveying Procedures

The RTC360 – Taking its place within a complete solution



The RTC360 – Taking its place within a complete solution



The RTC360 – Taking its place within a complete solution

- Aimed primarily at non-surveying market
 - Workflows that require no prior surveying/scanning knowledge
 - High level of automation and checks in the field
 - Spherical images / TruViews as natural entry into 3D documentation
- Consider images at the same level of importance as point clouds
 - As a deliverable
 - As a component of workflow automation
- Overall System Approach rather than standalone Scanner
 - Consider workflows from start (data acquisition) to finish (final deliverable)
 - Consider consequences for dataflow in field & office SW

The RTC360 – Taking its place within a complete solution

RTC360
Fastest
3D laser scanner
in the
market



**Cyclone
FIELD 360**

Simple
automatic
alignment of
scans in the
field

**Cyclone
REGISTER 360**

fully automated
registration in the
office

The RTC360 – Cyclone Field 360



- **VIEW**
- **CHECK**
- **ADD**

The RTC360 – Cyclone Register 360



- DRAG
- DROP
- DONE

The RTC360 – Visual Inertial System



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The RTC360 – Ground breaking Double Scan routine



The RTC360 – Demonstration



The RTC360 – Cyclone Register360



The LGS file format – a new way to scan and share



- A **single file format** for all your digital reality data
- **Publish once** and use all in the products
- **Replaces** disparate formats such as *.tvg and *.jsv

The LGS file format – one size does suit all



PROJECT METADATA

- Name
- Thumbnail
- Coordinate system
- Publish date
- Creator/Company info
- # of SiteMaps
- # of points
- # of setups
- Imagery metadata and #s



PROJECT SITEMAPS + METADATA

- SiteMap image(s)
- Hyperlinks (between SiteMaps)
- Setups



PROJECT SETUPS + METADATA

- Name
- Timestamp
- Targets + metadata
- RGB pano imagery
- HDR pano imagery
- Intensity Hue pano imagery
- Intensity Grayscale pano imagery
- Modelled Geometry pano imagery
- IR pano imagery
- IR temperature scale
- Depth map



POINT CLOUD + METADATA

- RGB colours
- HDR colours
- Intensity Hue colours
- Intensity Grayscale colours
- UCS
- Clips



GEOTAGS + METADATA

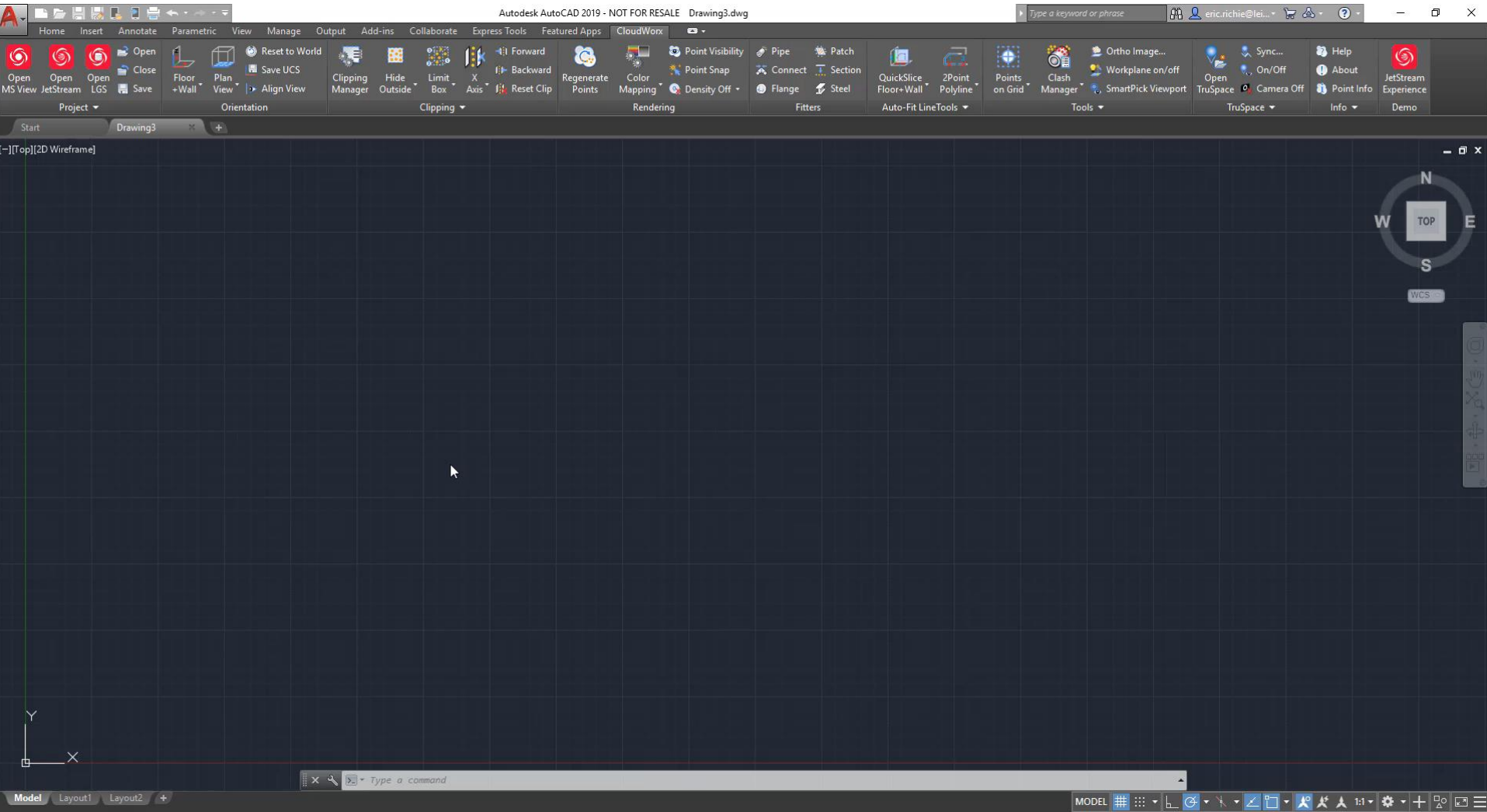
- 3D position
- Type
- Category
- Label
- URL
- Timestamp
- Associated assets (e.g., images, PDFs, videos, audio, etc.)

And more to come ... 2019

The LGS file format – one size does suit all

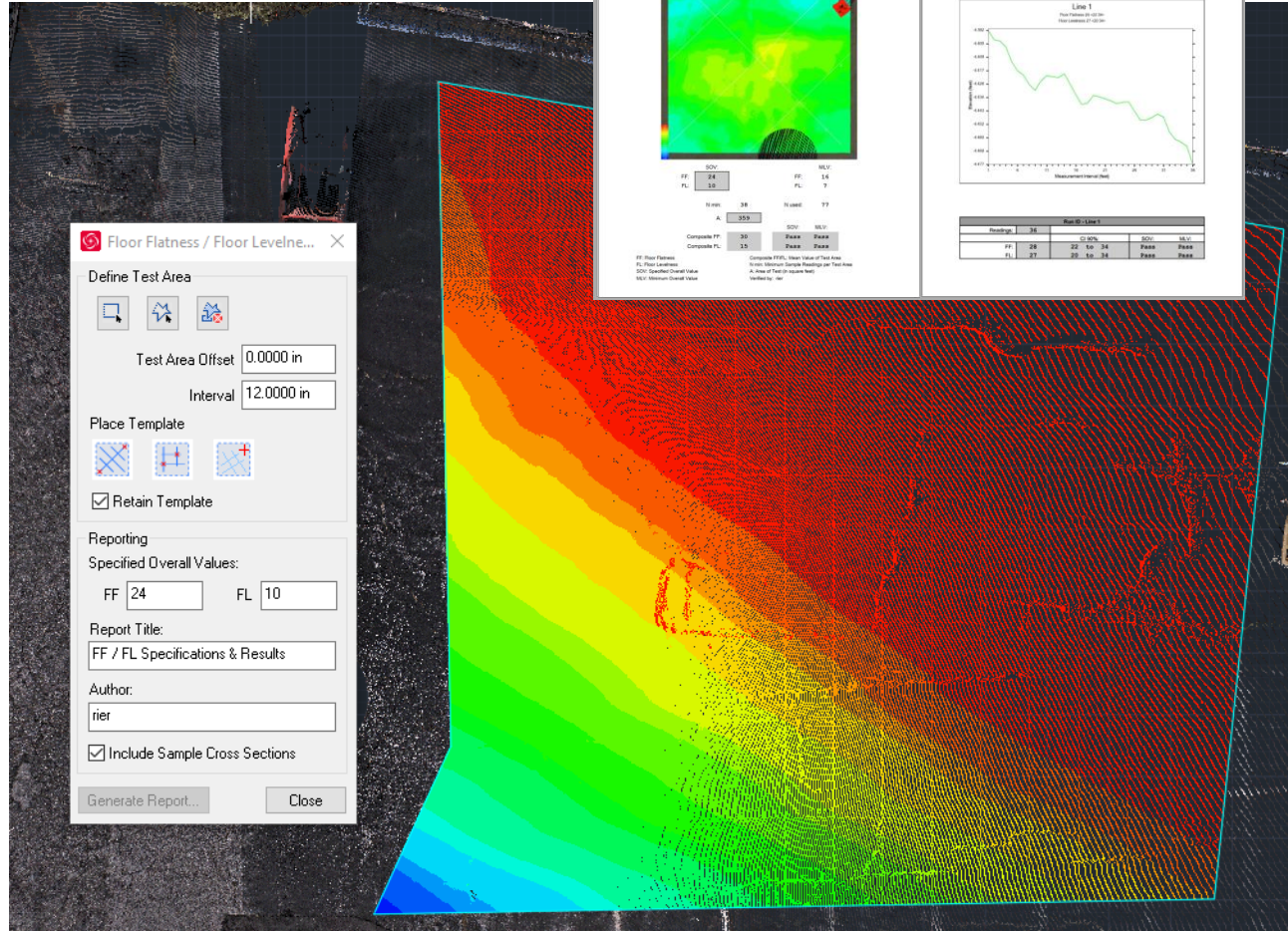


The LGS file format – Cloudworx Integration with AutoCAD



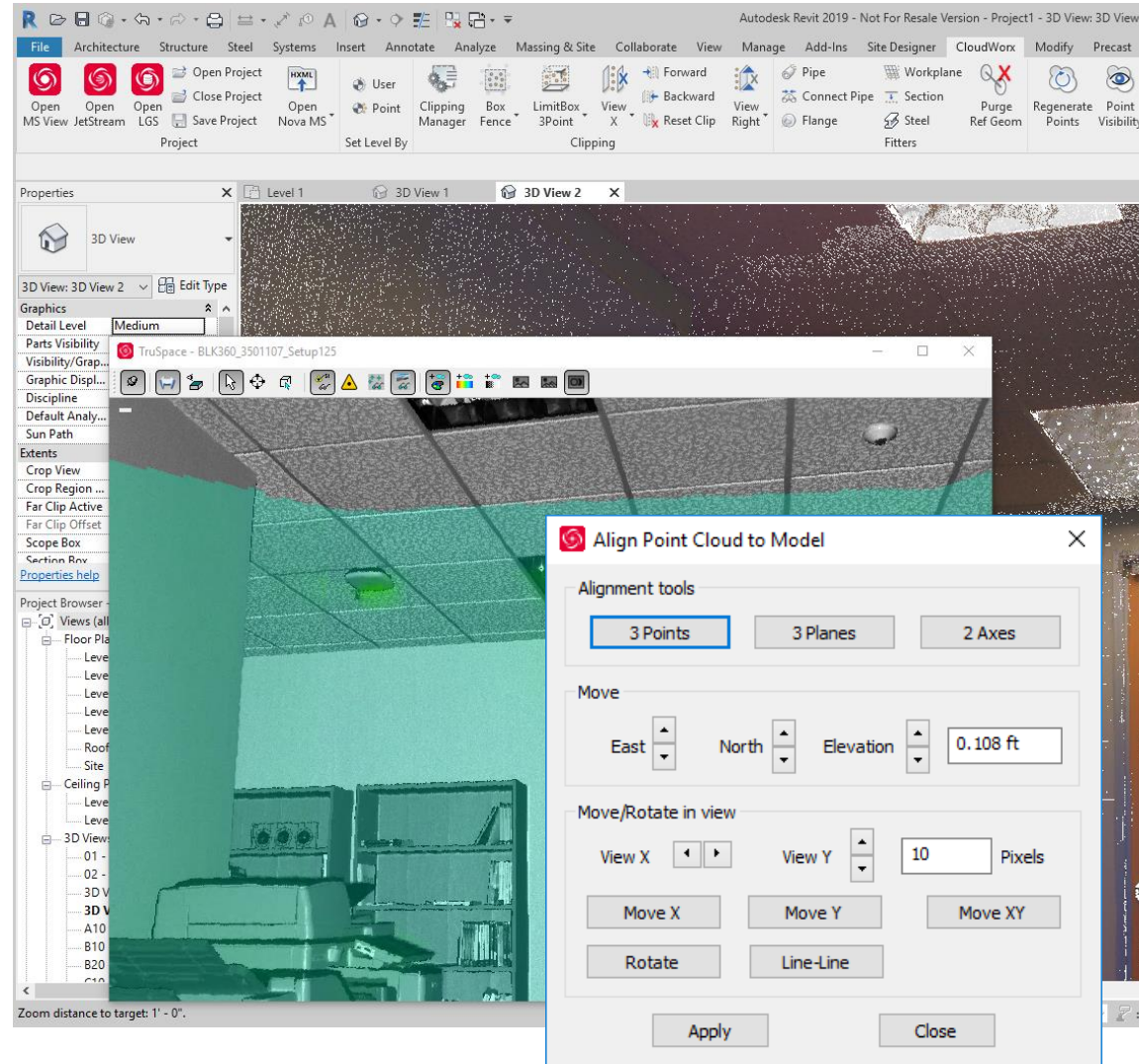
The LGS file format – Cloudworx Integration with AutoCAD

- New FF/FL tools:
- Elevation map to easily spot high and low points
- 2 new template options – Square and Manual
- Report now includes a coloured elevation map and section profiles
- Templates are now labeled and can be retained in your drawing for later re-use
- **Smarter reporting with visual guides to results**

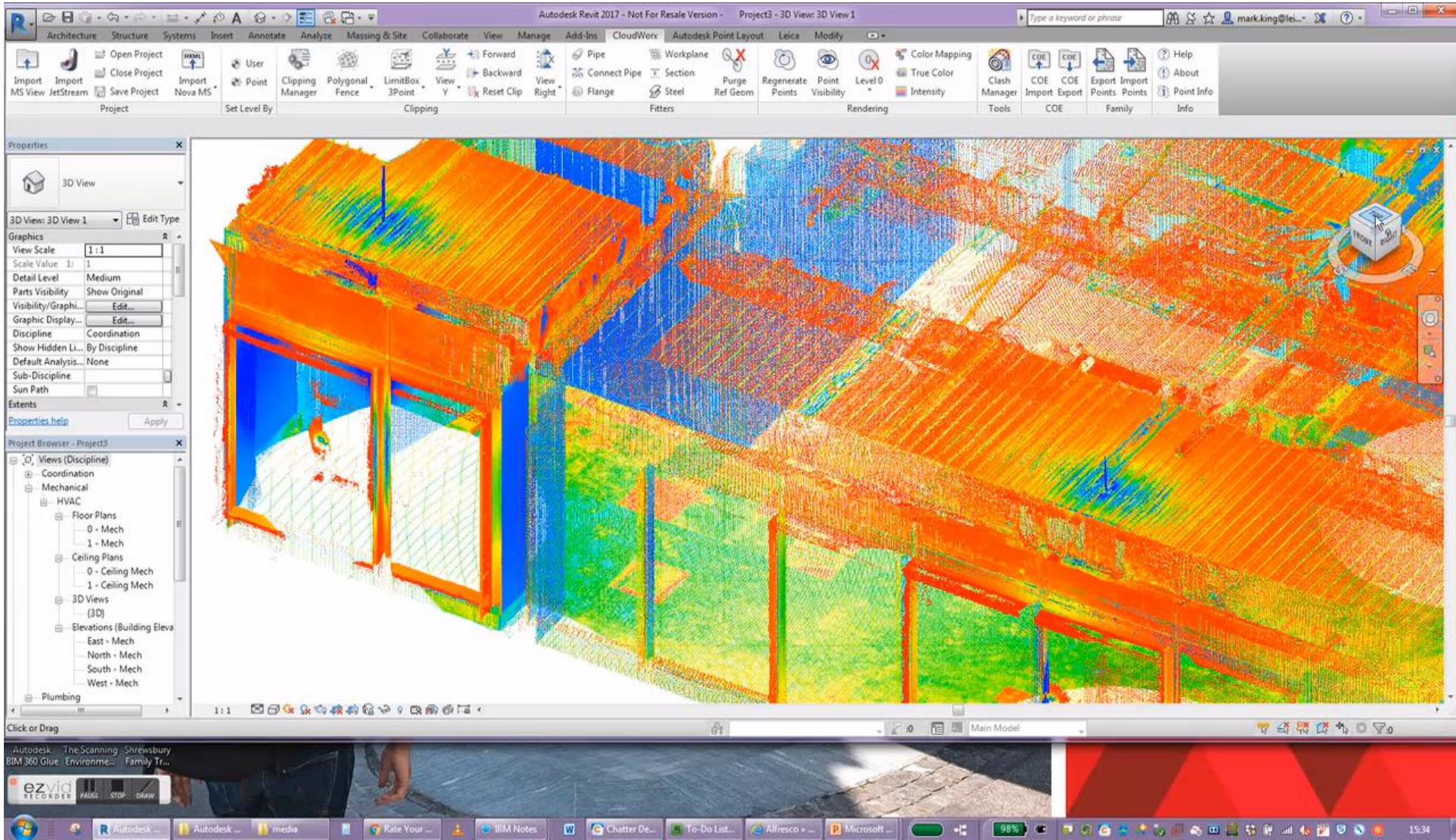


The LGS file format – Cloudworx Integration with Revit

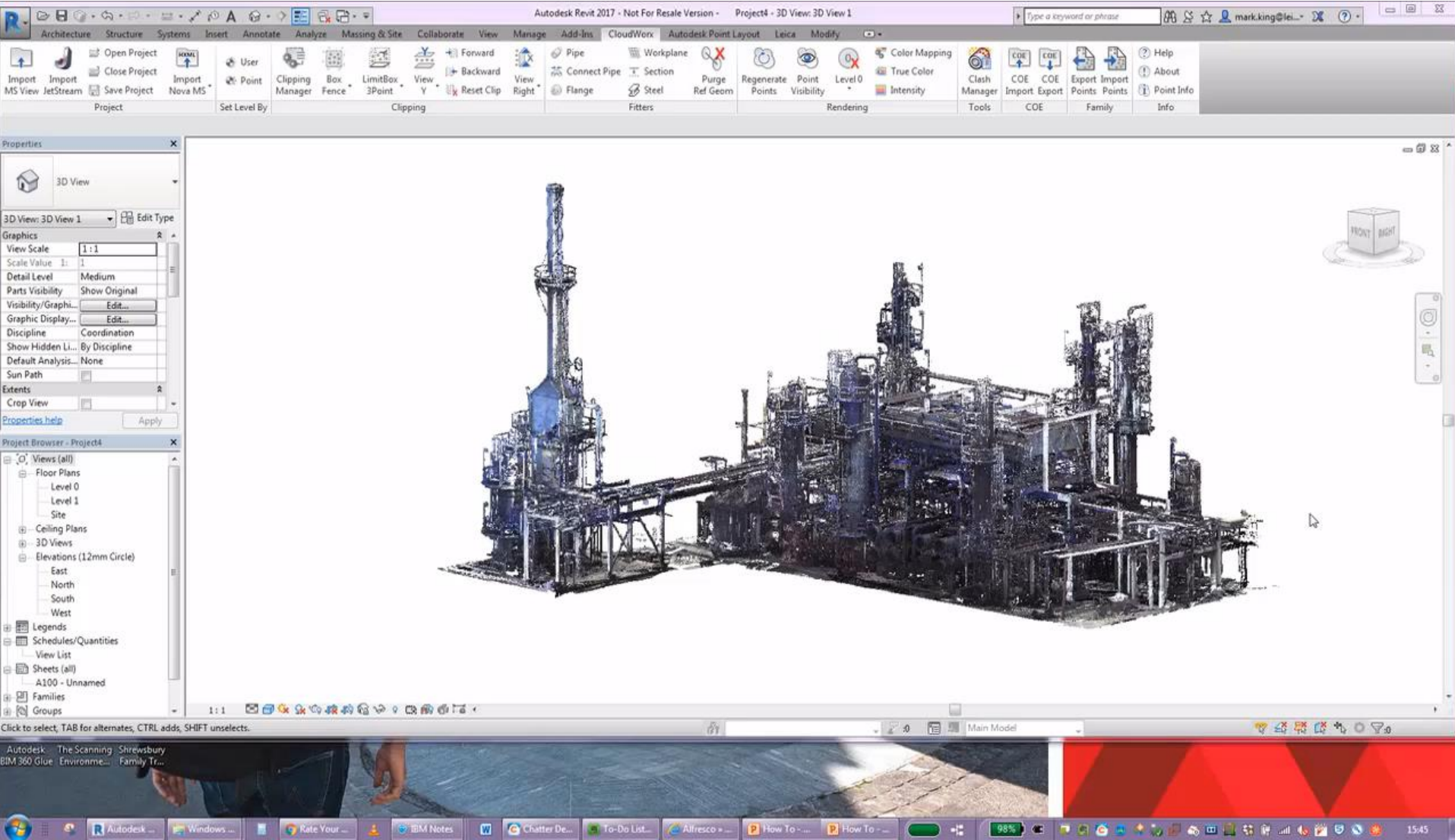
- TruSpace now supports Revit 2018 and 2019 and includes support for layers
- CloudWorks for Revit now supports Revit 2019
- Supports LGS files
- New: Align Point Cloud to Model functionality
 - No more coordinate system expertise needed! Easy alignment tool for 3D modellers.
- Support for Russian steel catalog
 - Greater utility to more users/customers
- Now fully localized
 - Greater accessibility for more users/customers



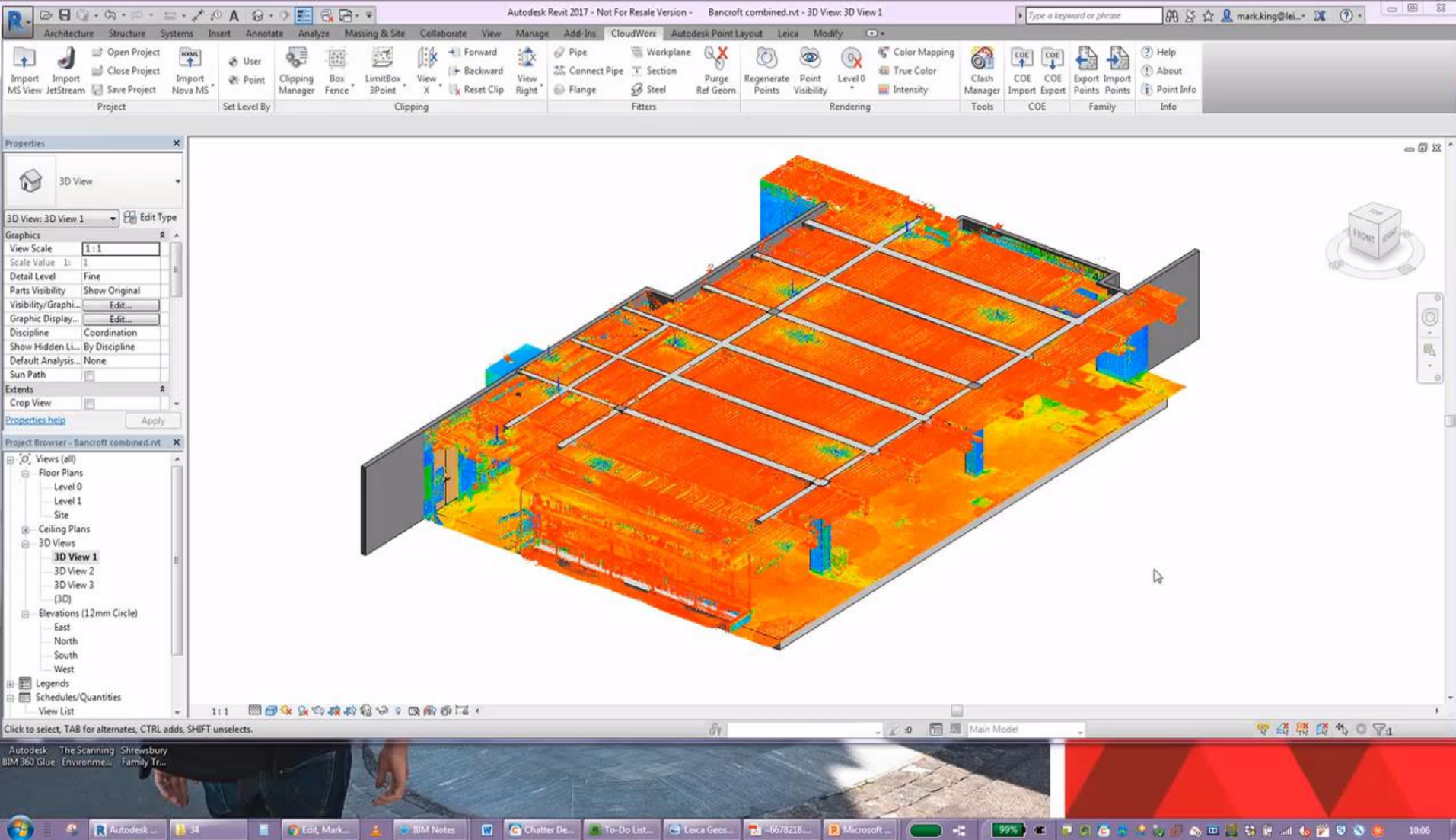
The LGS file format – Cloudworx Integration with Revit



The LGS file format – Cloudworx Integration with Revit



The LGS file format – Cloudworx Integration with Revit



The LGS file format – Cloudworx Integration with Revit

The screenshot displays the Autodesk Navisworks Manage 2018 interface. The main window shows a 3D point cloud model of a building interior, with various elements highlighted in red and yellow, indicating clashes. The 'Interference Check' dialog box is open, showing a table with the following data:

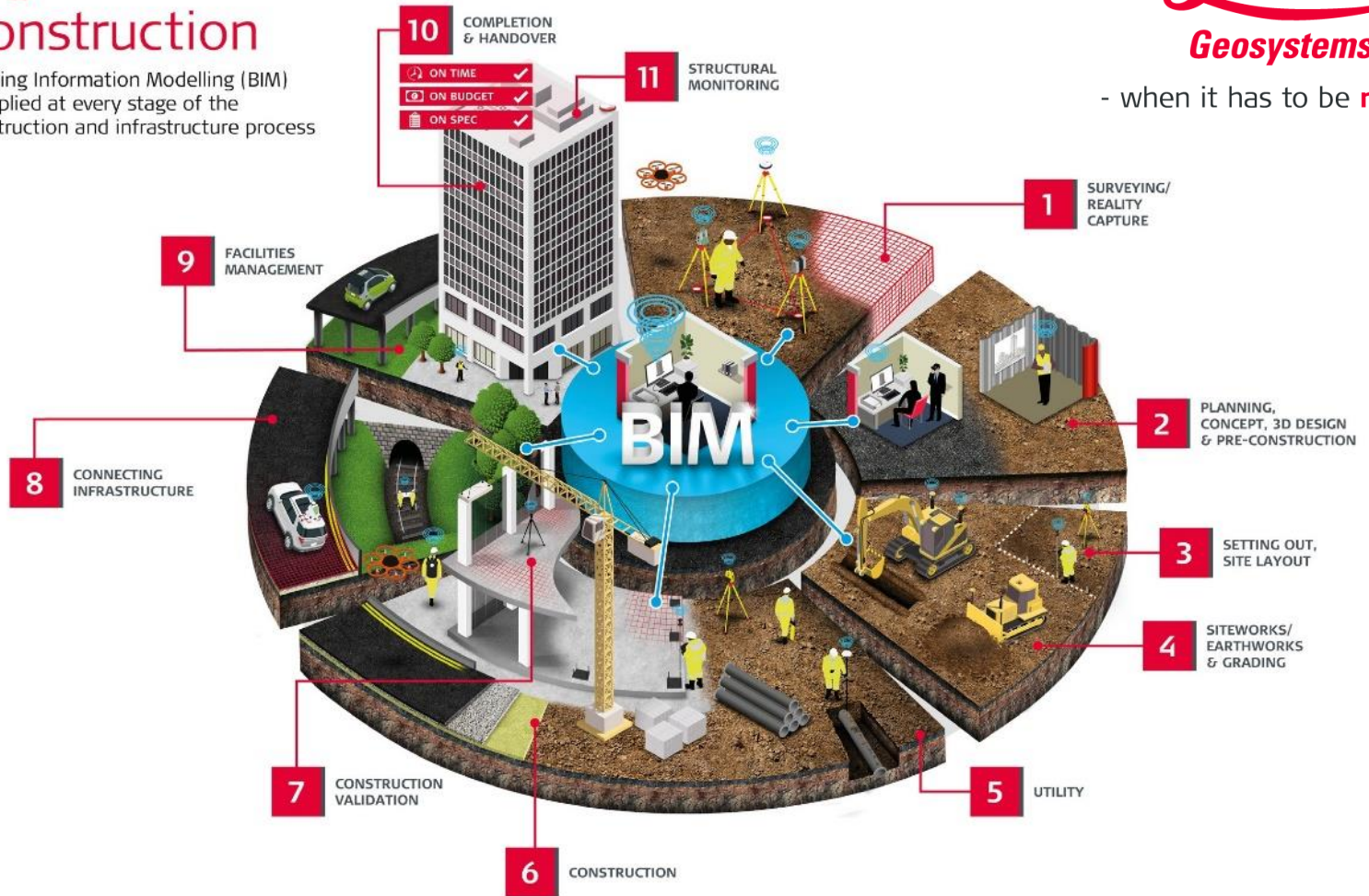
Name	Status	Clashes	New	Active	Reviewed	Approved	Resolved
Test 1	New	0	0	0	0	0	0

The dialog box also includes a 'Setting' section with a 'Clash Type' dropdown set to 'Anti-clash' and a 'Threshold' input field set to '0.010'. The 'Run' button is visible at the bottom of the dialog box.

The Shift to Digital Construction – Digital Engineering

Digital Construction

Building Information Modelling (BIM) is applied at every stage of the construction and infrastructure process



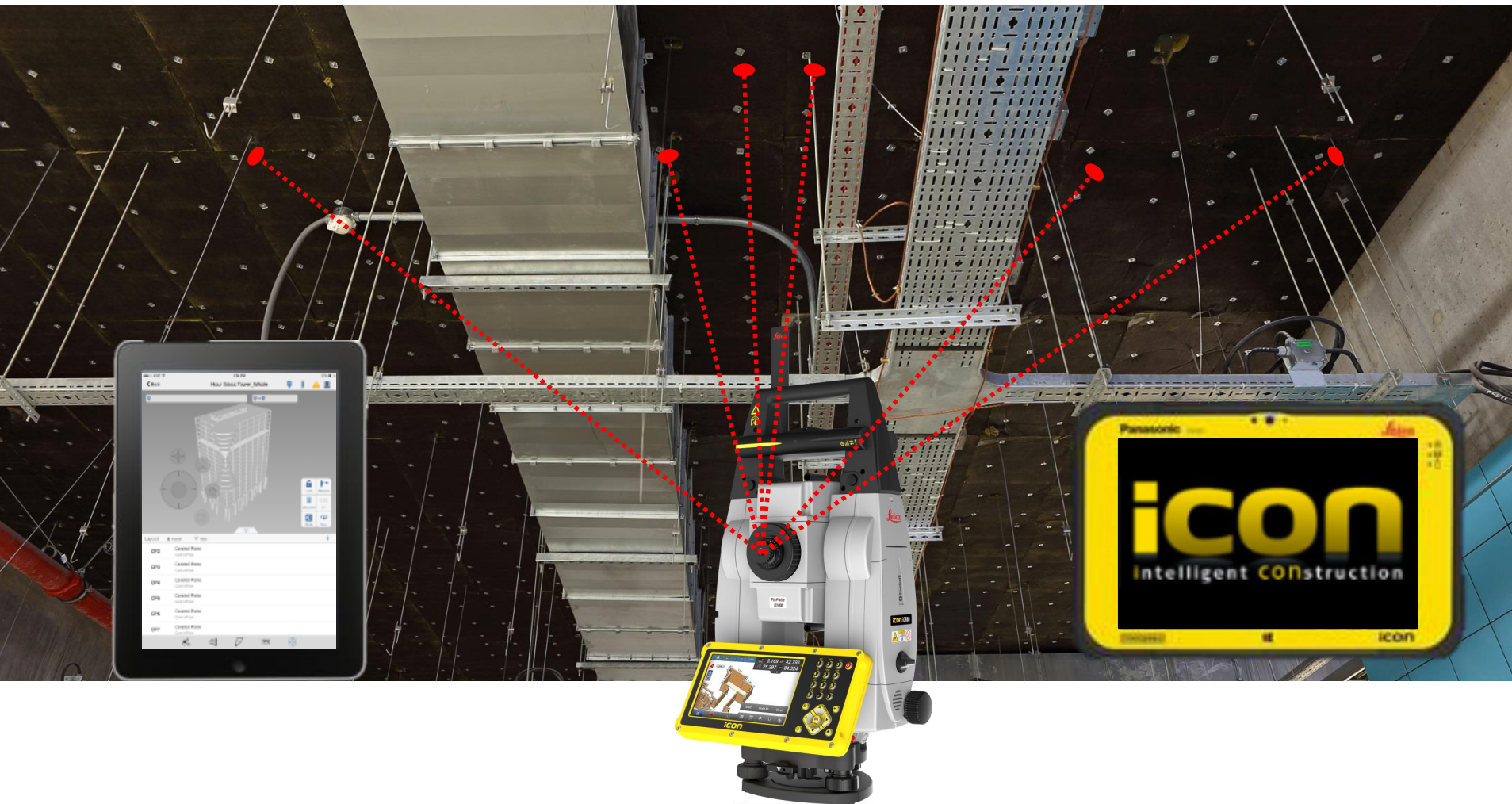
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The Shift to Digital Construction – ICON Intelligent Construction



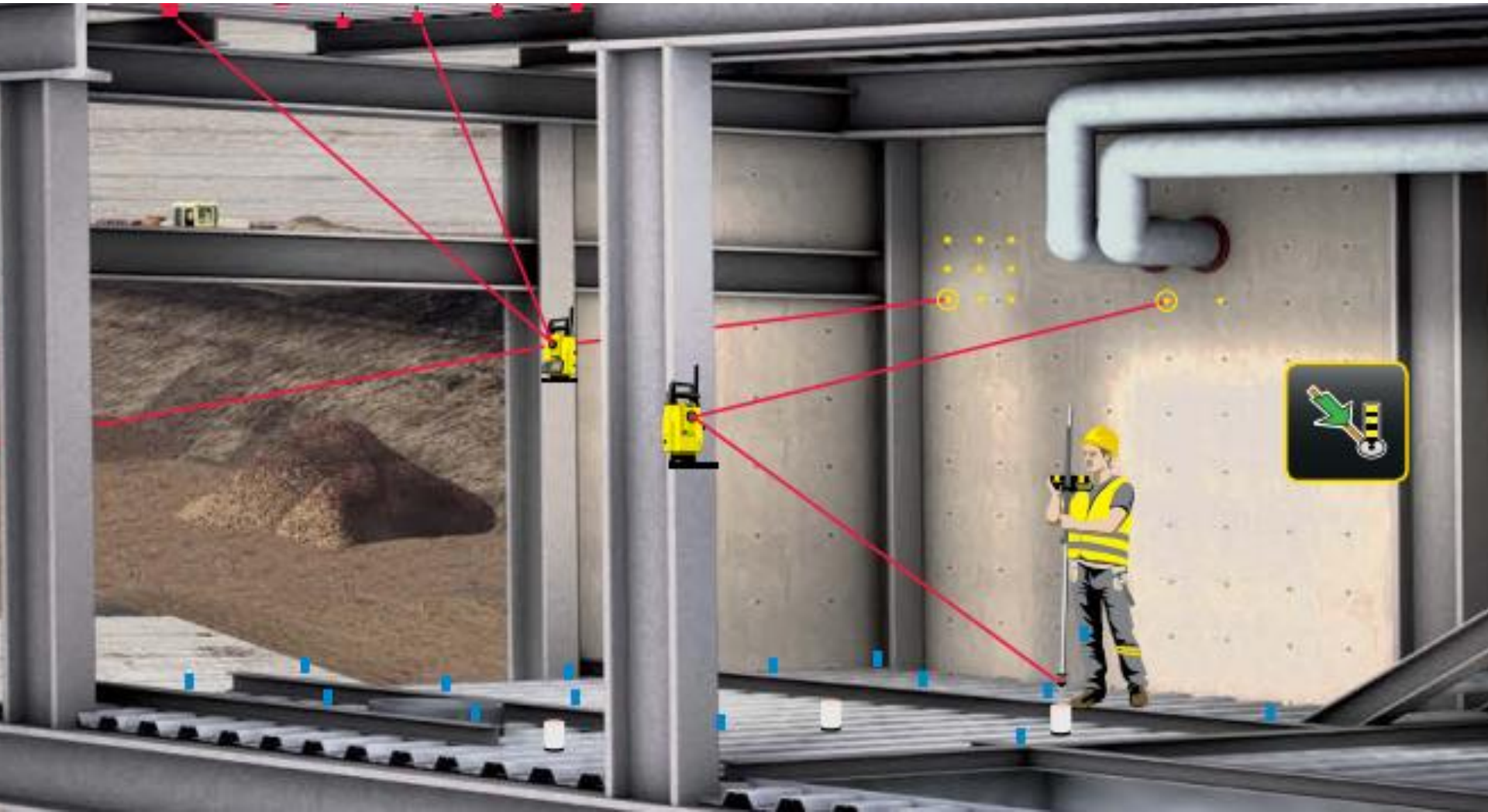
The Shift to Digital Construction – ICON Intelligent Construction



The Shift to Digital Construction – ICON Intelligent Construction

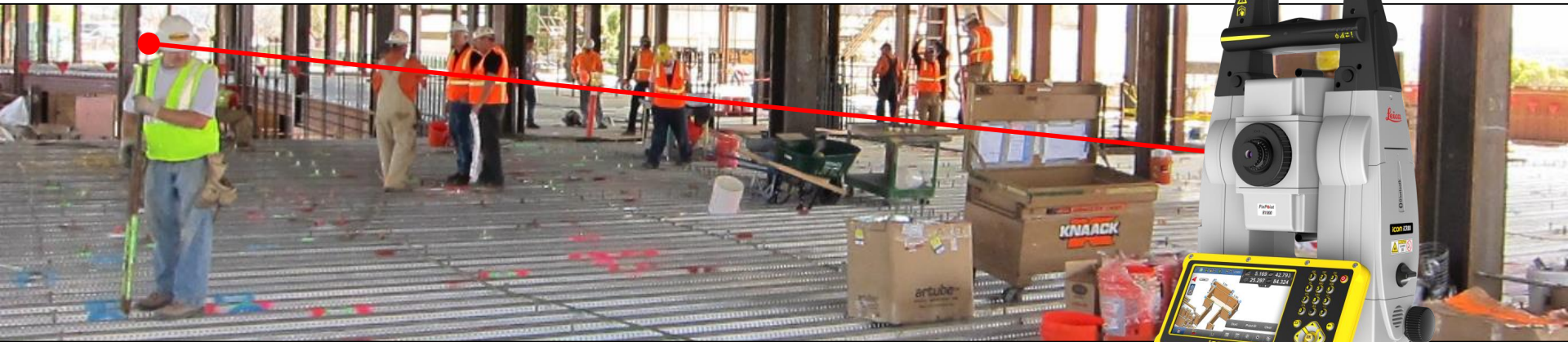


The Shift to Digital Construction – ICON Intelligent Construction

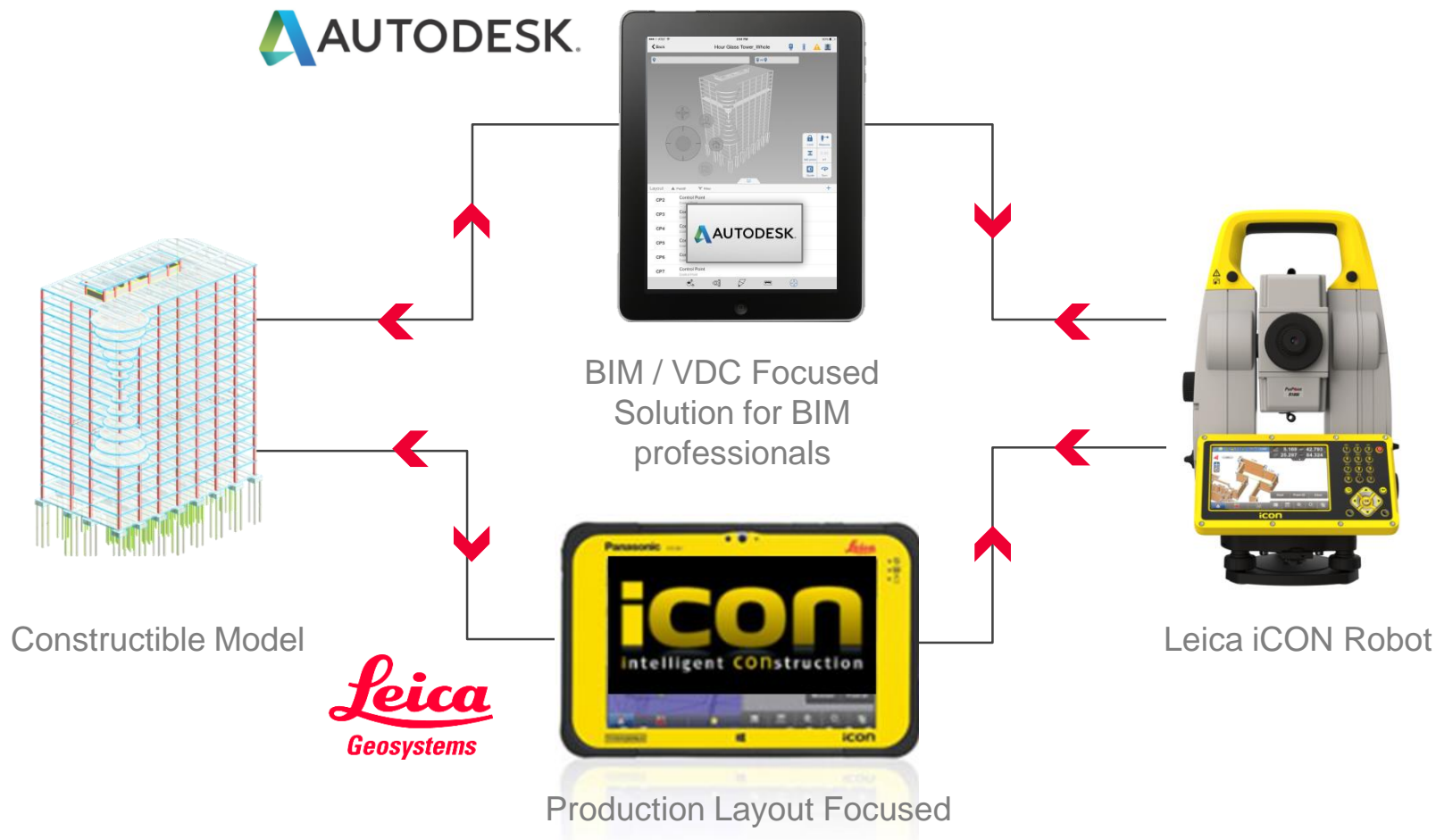


The Shift to Digital Construction – ICON Intelligent Construction

- Much faster & easier to layout from top of deck (no lifts) and to inspect for correct hanger type and spacing
- Avoid drilling from a lift (bottom of deck) after slab poured – labor intensive and dangerous, messy work
- Bottom of deck work reduced to screwing in / inserting hangers into sleeves



The Shift to Digital Construction – BIM Workflows



ADD LAYOUT POINTS TO MODELS USING LEICA BUILDING LINK FOR AUTODESK REVIT

The Shift to Digital Construction – ICON Intelligent Construction

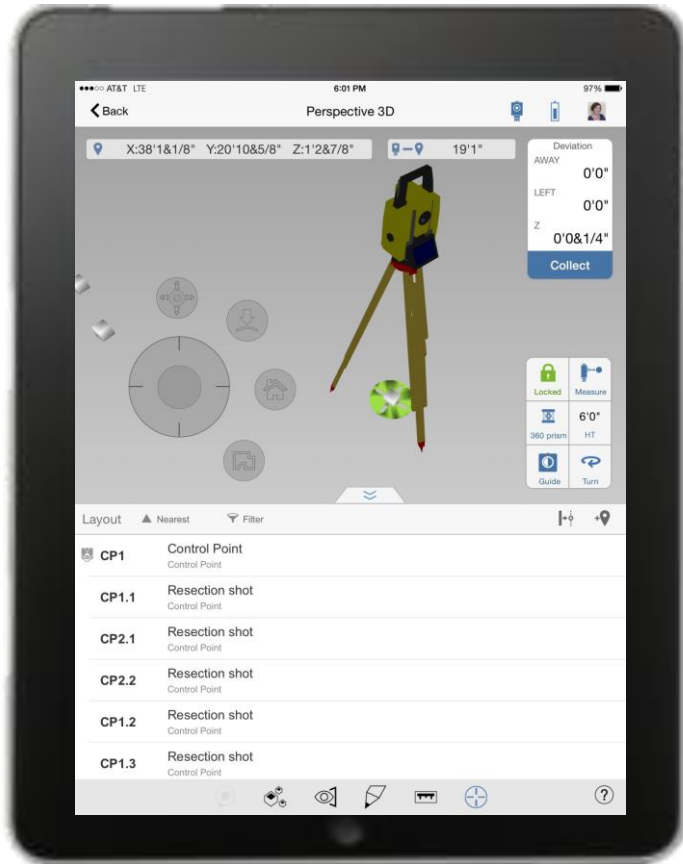


iCON AUTO PILOT SETUP

The Shift to Digital Construction – BIM Workflows



The Shift to Digital Construction – BIM Workflows



iCON robot model will appear in the virtual environment to match the reality.

You are now ready to start laying out or back checking / QA / QC

More information – Upcoming CR Kennedy events

Asset Management for Infrastructure Summit, Sydney, 12-13 September

Future Infrastructure Summit, Brisbane, 22 October

Leica Geosystems Roadshow, Brisbane, 24 October

SSSi Spatial Information Day SIDx, Adelaide, 26th October

Leica Geosystems Roadshow, Sydney, 26 October

Leica Geosystems Roadshow, Melbourne, October 29

Leica Geosystems Roadshow, Adelaide, October 31

Leica Geosystems Roadshow, Perth, November 2

MBA SA Member Event, Adelaide November 22

MELBIM, Melbourne, November 22

<https://survey.crkennedy.com.au/blogs/events>

One more thing



CRKENNEDYBUILDINGCONSTRUCTION





CRKENNEDYBUILDINGCONSTRUCTION









Coming soon ...

<http://building.crkennedy.com.au>

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