



# **BIM**

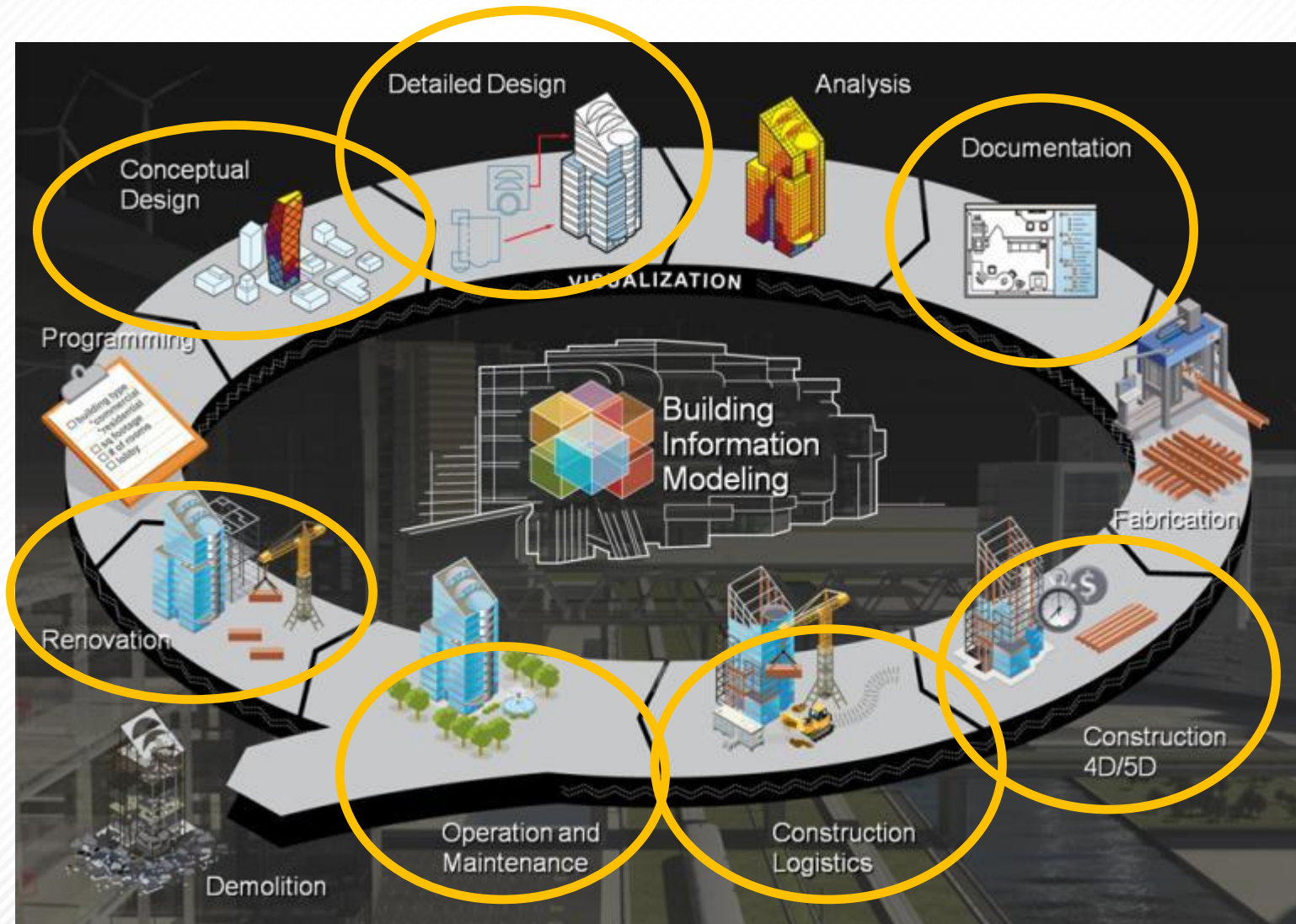
**Building Information Modelling y Topcon By Javier Peñafiel**

**11 th March, 2015**

# Agenda

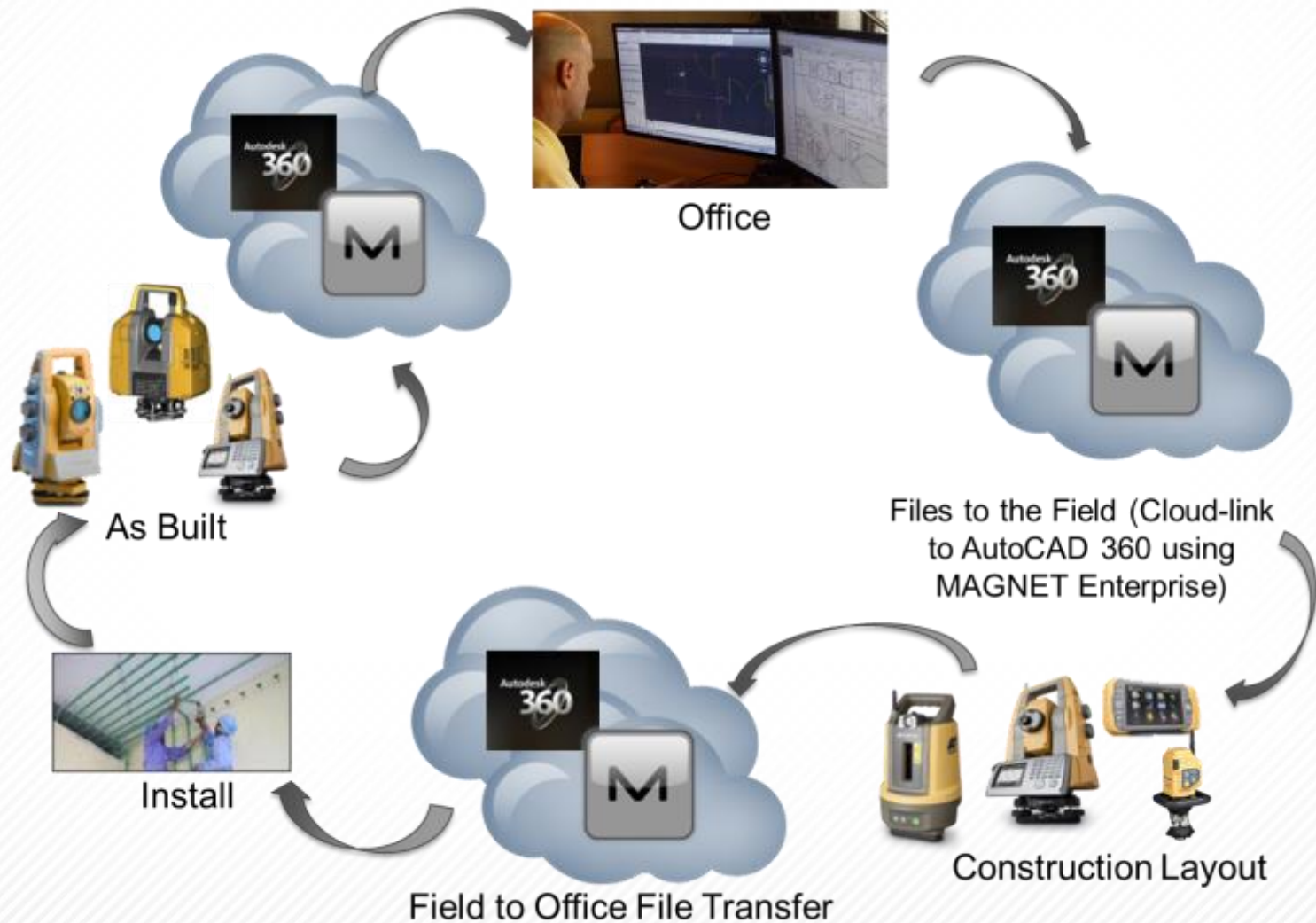
- › **Workflow is key – BIM to field to BIM**
- › **Topcon's BIM portfolio – product introduction**
- › **Our dedication to BIM**

# Our focus





# Workflow is KEY!!



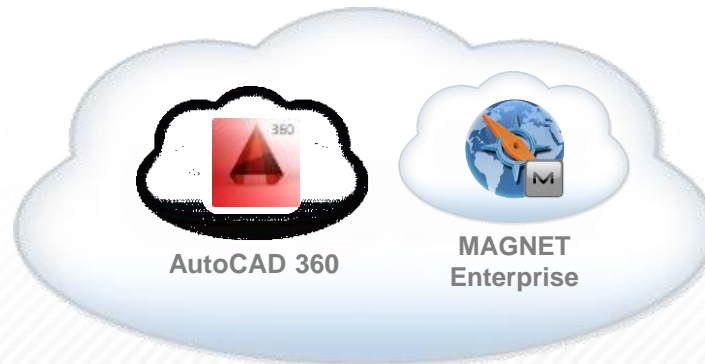
# Today's Opportunities!

## ▸ Integrated Workflow with Autodesk products for

- Layout
- Quality Control
- As-Built



## ▸ Connected clouds between Autodesk and Topcon



# BIM Product Solutions

LN-100, IS-310, GLS-2000, Faro X330



# LN-100





# LN-100

## Professional 3D BIM Layout Tool

- Point setting and measurement – simply and quickly
- 30% faster, more affordable than robotic systems
- Easy to set up anywhere
- Rugged and compact body





# LN-100

## Professional 3D BIM Layout Tool

- **Self-leveling**
- **waterproof IP-65**
- **Coverage: 200m (100m Radius)**
- **Accuracy: equivalent to 3" TS (+/- 3mm)**



# LN-100

## Professional 3D BIM Layout Tool

- ▶ Professional or Android controller options
- ▶ Lightweight All-in-one Package
- ▶ Common battery and charger



# LN-100

**Extremely easy to learn and use**



**Topcon first to market to launch hardware product dedicated to BIM**



# Who will buy the LN-100 Solution?

- **General Contractor**
- **MEP (Mechanical-Electrical-Plumbing) Contractors**
- **Structural Contractors**
- **Data Communication Contractors**
- **Fire / Safety System Contractors**
- **Construction Surveyor**
- **Foundation Layout**





# IS-310

## Professional Imaging Layout System

- Live-video feed
- Photo record
- One-person operation
- Remote measurement capability



# Laser Scanning

Solutions for **ALL** applications

# GLS-2000

- **Greater flexibility**
- **Increased productivity**
- **Best quality data**
- **Enhanced workflow**
- **Full dome scanning**
- **Ultra high-speed**



# Scan Times...

## Competitive Analysis

Interval	Topcon GLS-2000	FARO X330
12.5mm @ 10m	1 min, 48 sec	1 min, 47 sec (¼ quality)



# Faro X330

- ▶ **Lightweight, compact form**
- ▶ **Ideal for indoor scanning**
- ▶ **330 m range**
- ▶ **Integrated GPS**
- ▶ **Class 1 laser**



# GLS-2000 & FARO

Scan Speed



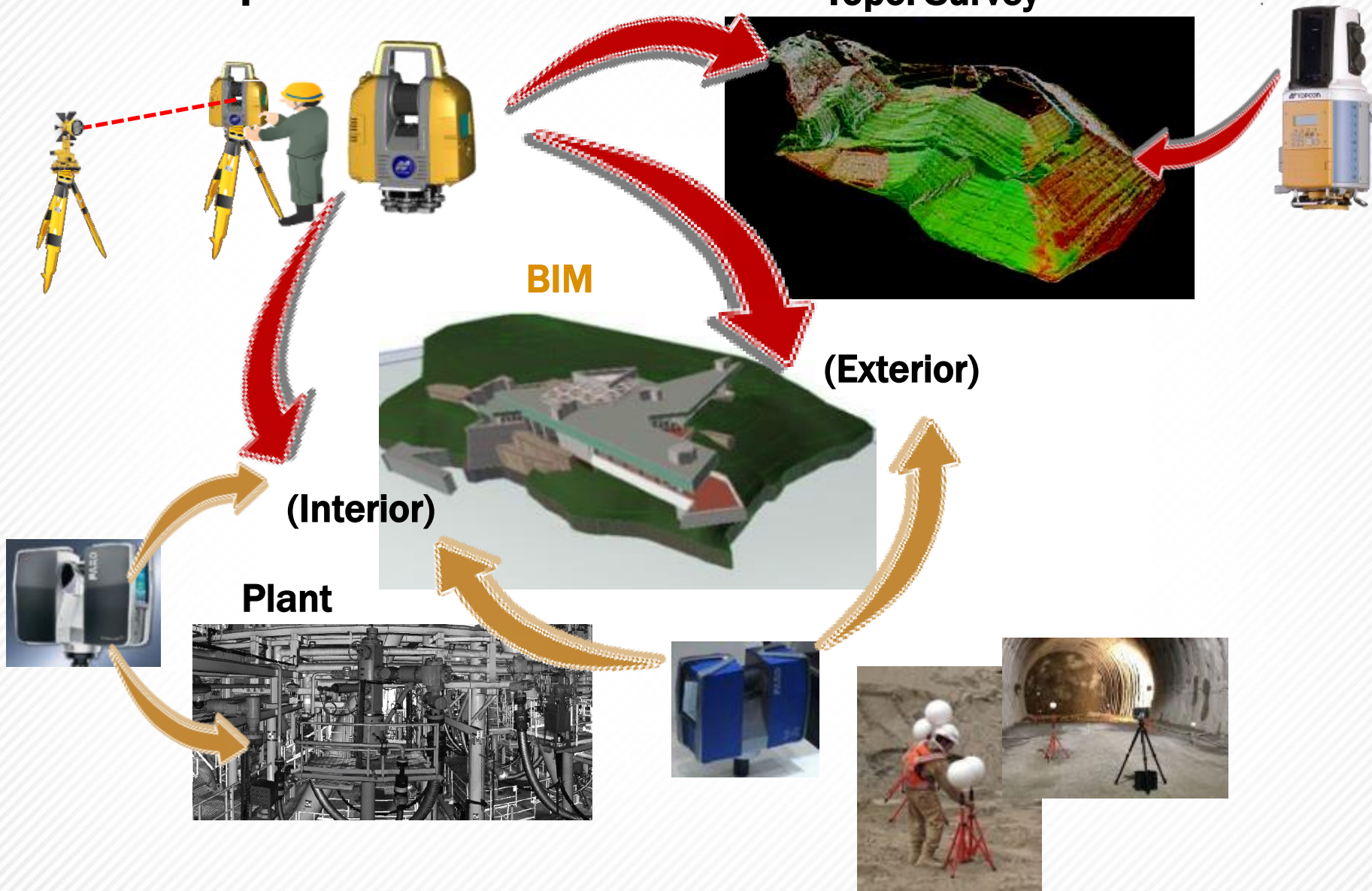
Topo. Survey

BIM

(Exterior)

(Interior)

Plant



# Software Solutions

Field, Cloud, Office



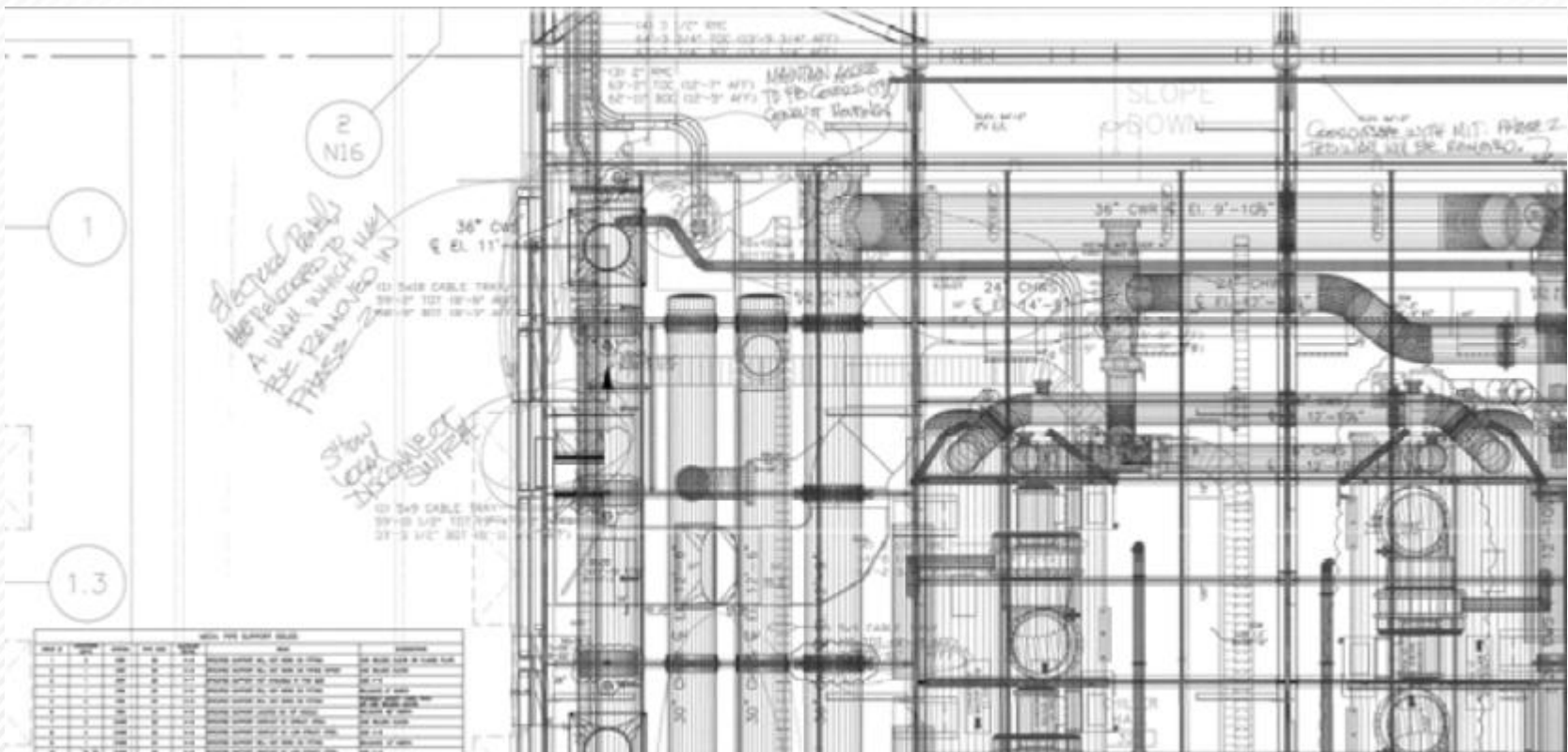
# Software Solutions

- Seamless software workflow is THE critical element of a successful solution



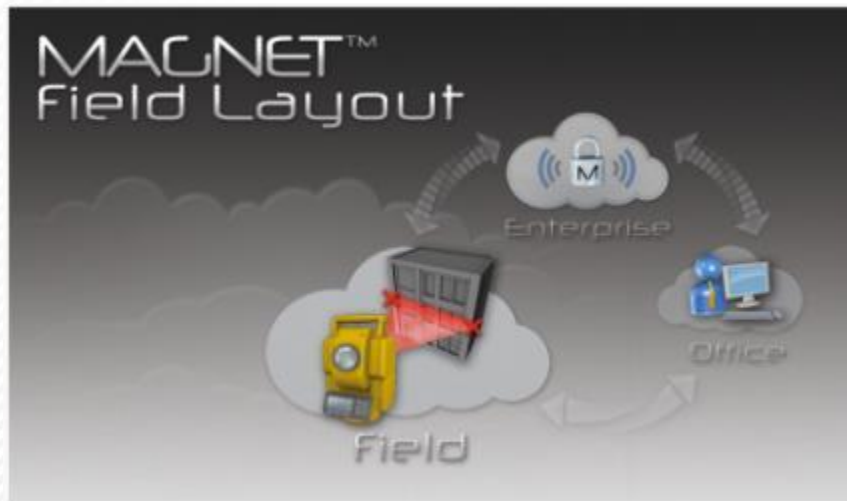


- ▶ **Seamless software workflow is THE critical element of a successful solution**

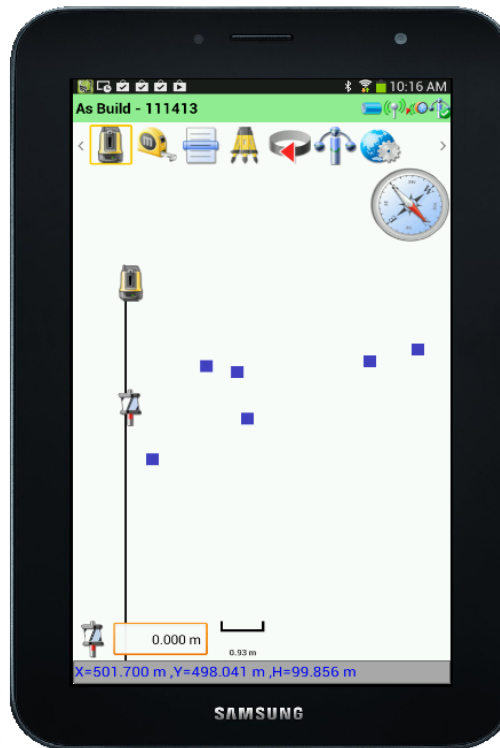
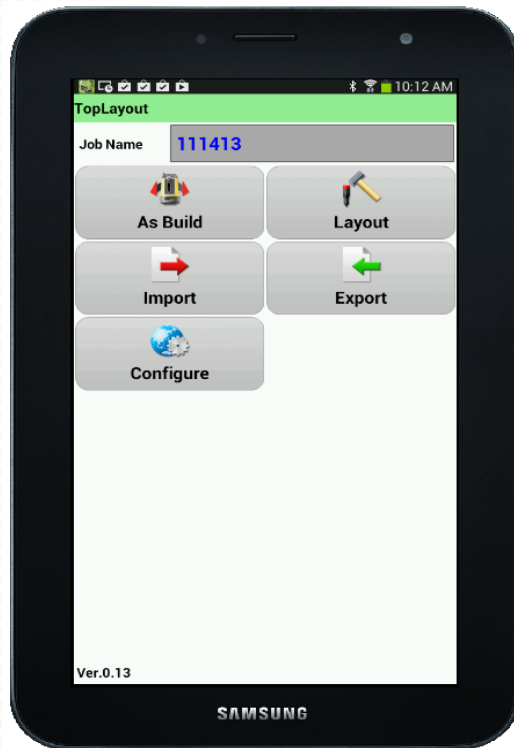


# MAGNET Layout 2.5

- › LN-100, IS-310, GNSS integration
- › Simple to use
- › Cost effective solution



# Topcon Android App





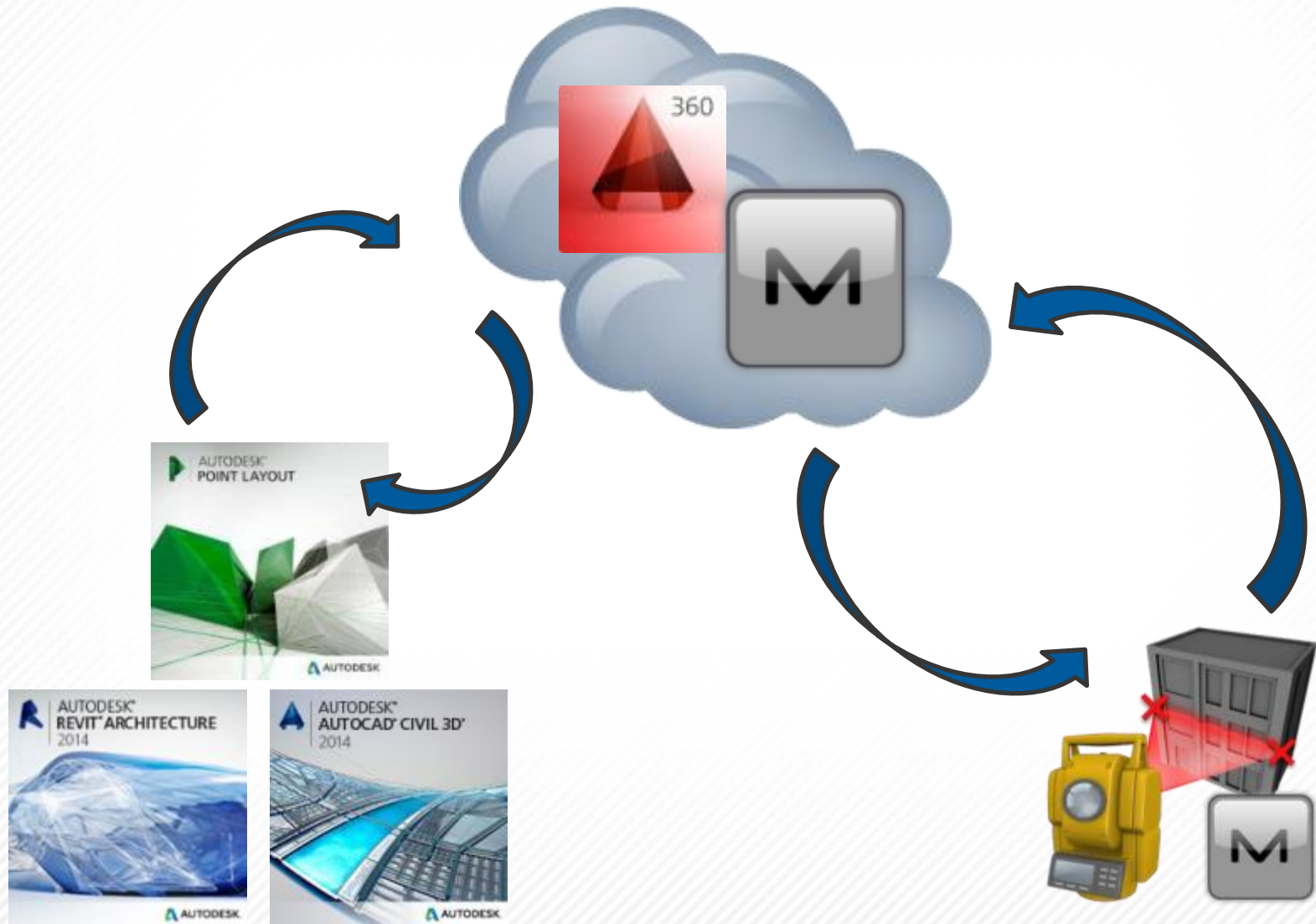
# Autodesk App for iPad



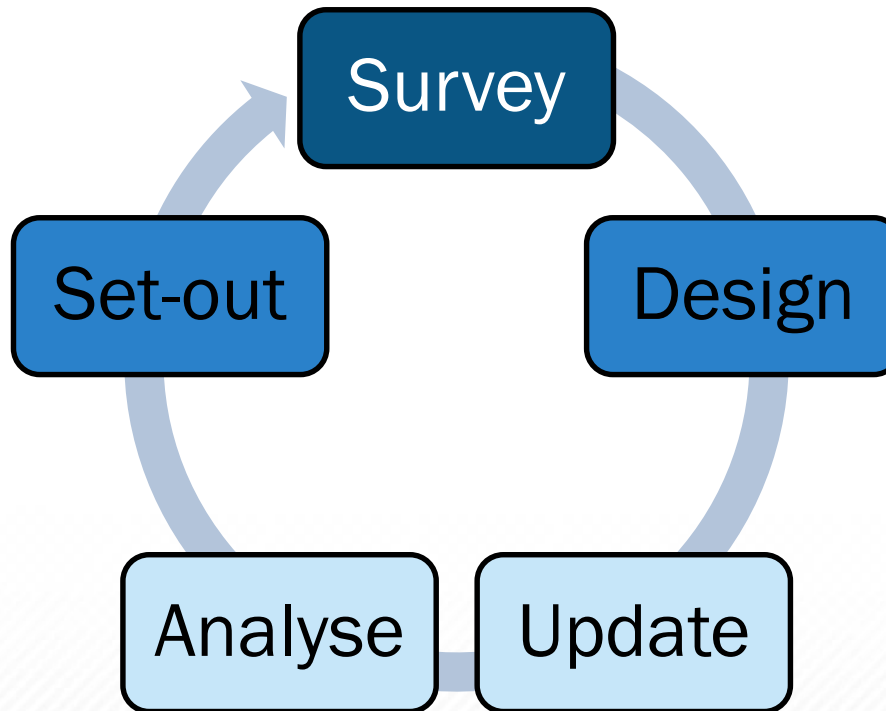


# BIM to Field

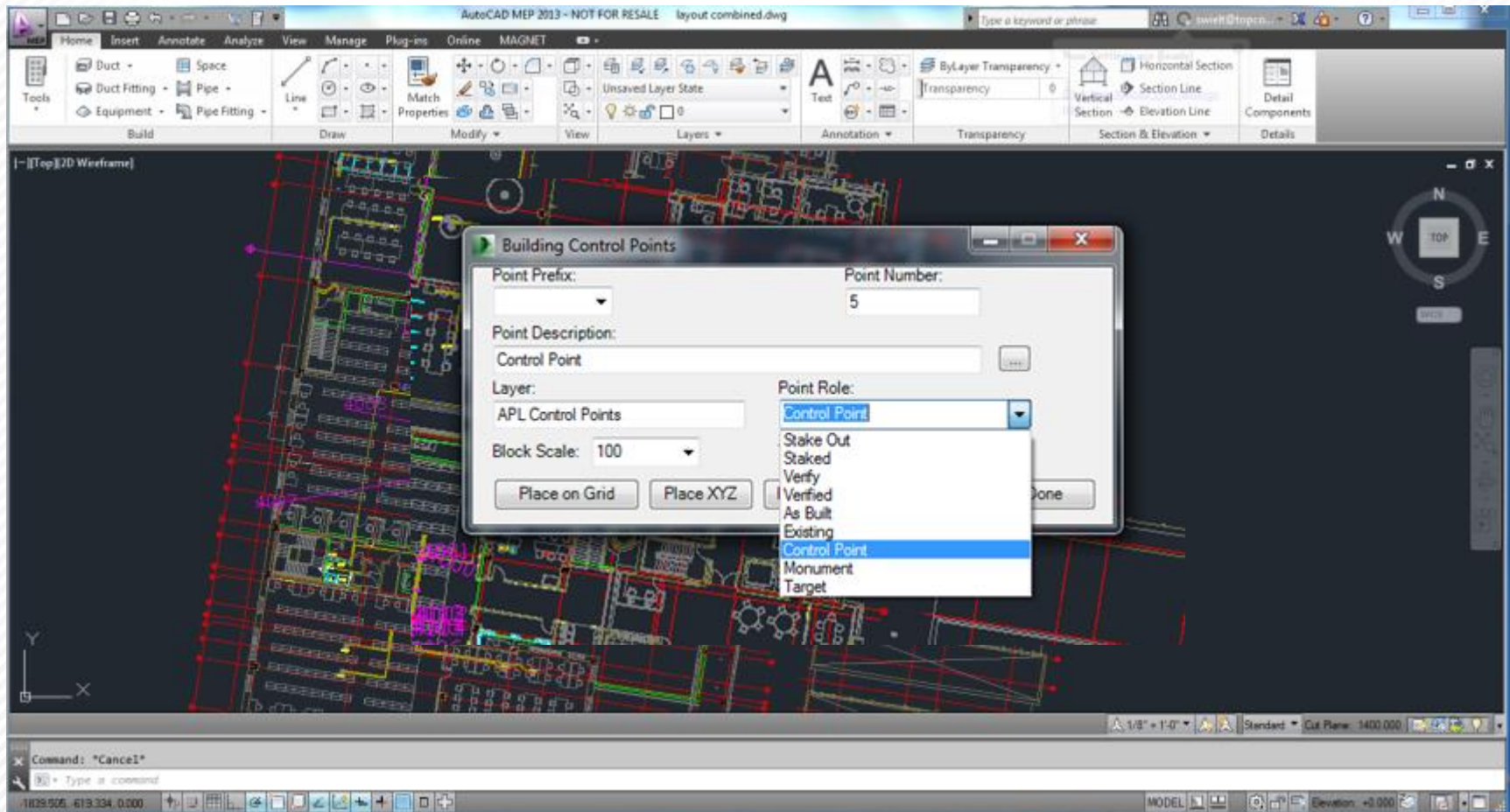
# Data Workflow with the Cloud



# A Quick Example

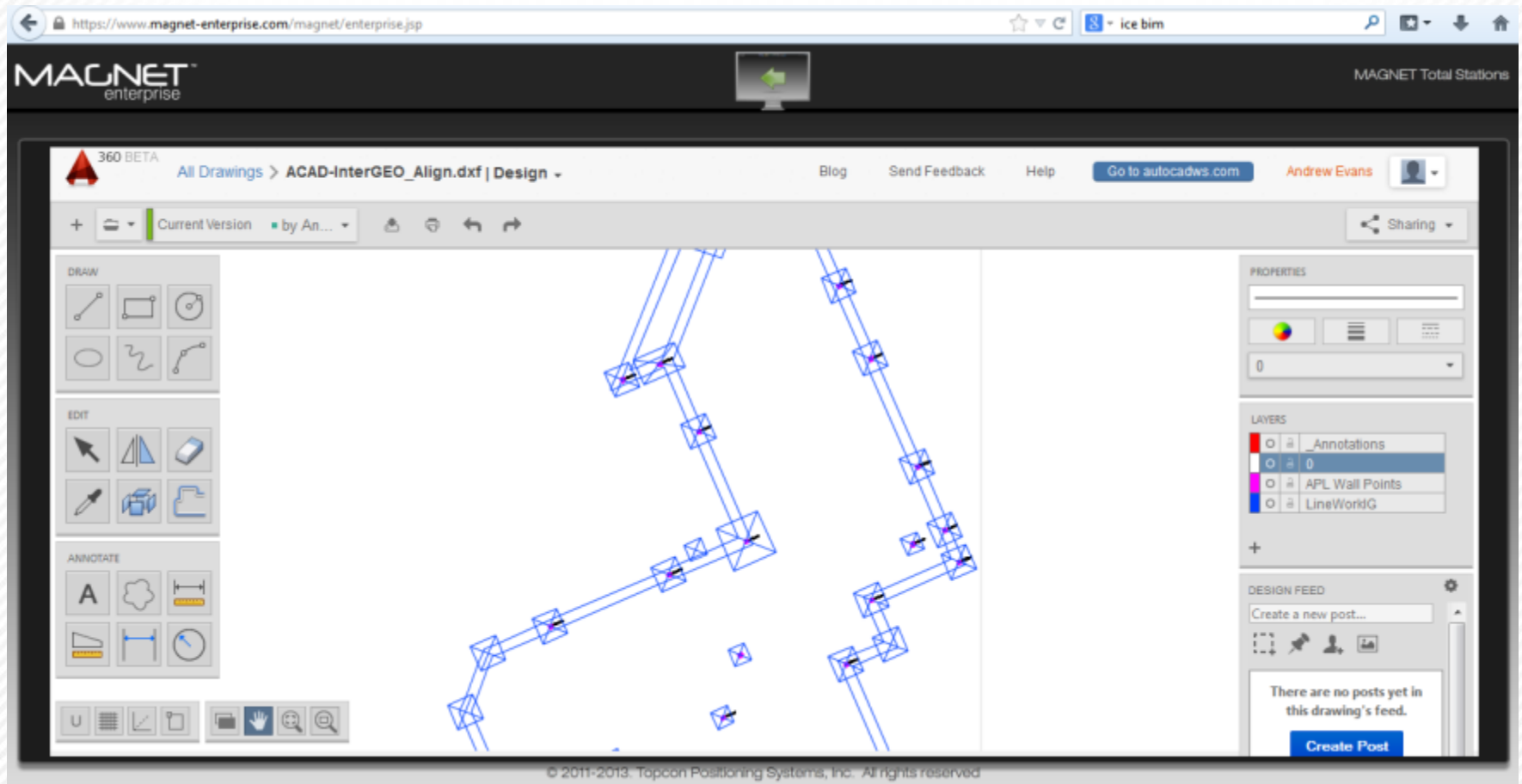


# Select key points and manage export





# Collaborate



The screenshot displays the MAGNET enterprise web application interface. The browser address bar shows the URL <https://www.magnet-enterprise.com/magnet/enterprise.jsp>. The application header includes the MAGNET enterprise logo, a user profile for Andrew Evans, and navigation links for Blog, Send Feedback, and Help. A button labeled "Go to autocadws.com" is also present.

The main workspace shows a CAD drawing titled "ACAD-InterGEO\_Align.dxf" in the "Design" mode. The drawing features a complex structural frame with blue lines and purple markers. The interface includes a left-hand toolbar with sections for DRAW, EDIT, and ANNOTATE. The right-hand sidebar contains a PROPERTIES panel, a LAYERS panel with a list including "Annotations", "APL Wall Points", and "LineWorldG", and a DESIGN FEED section with a "Create a new post..." input field and a "Create Post" button.

At the bottom of the interface, a copyright notice reads: "© 2011-2013. Topcon Positioning Systems, Inc. All rights reserved."

# Sending to the Field



Enterprise Download

Inbox	Type
Magnet Enterprise	Company
Broadway Electric	Project
Scott Wielt	User
Jason Hallett	User

Project
Broadway Electric

Download status: Idle

File	Upload Date
2000 layout combin...	9/9/2013
4TH FLOOR OUT.dwg	8/21/201
ACAD-layout combi...	9/10/201
BUL_FloorPlan-New...	8/21/201
layout combined.dwg	9/9/2013

Refresh

Download

## Data received

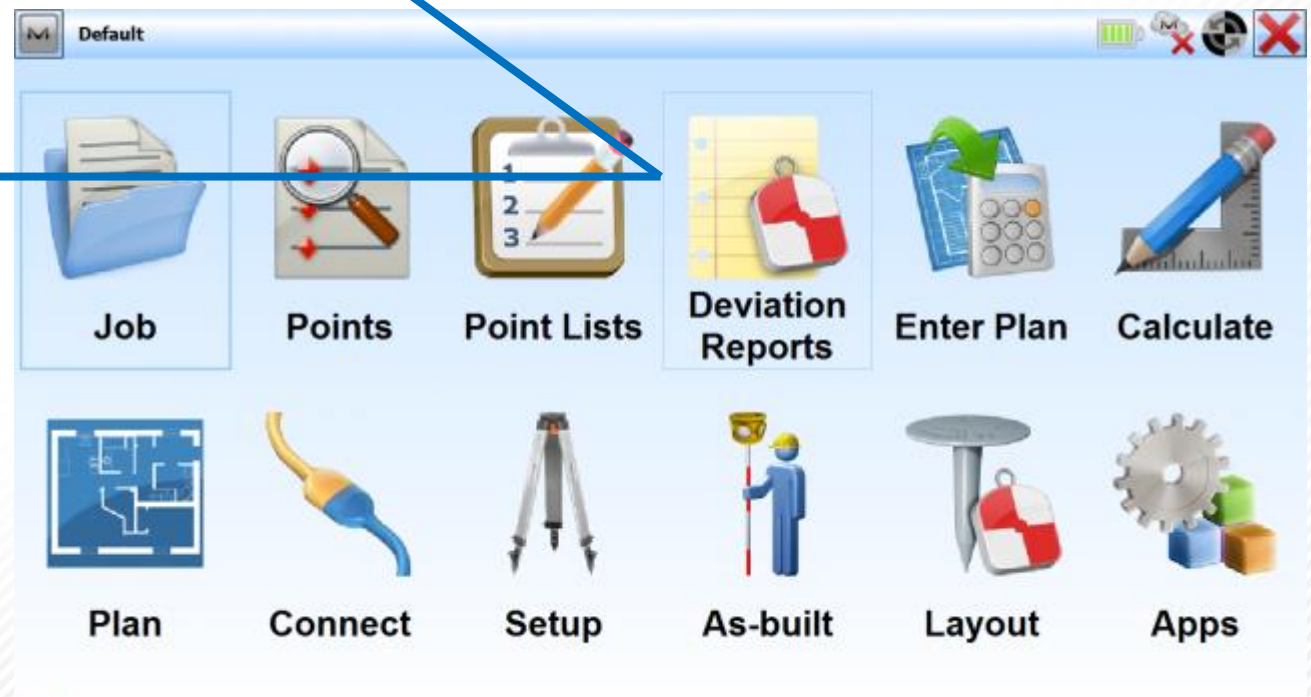


## Set-out



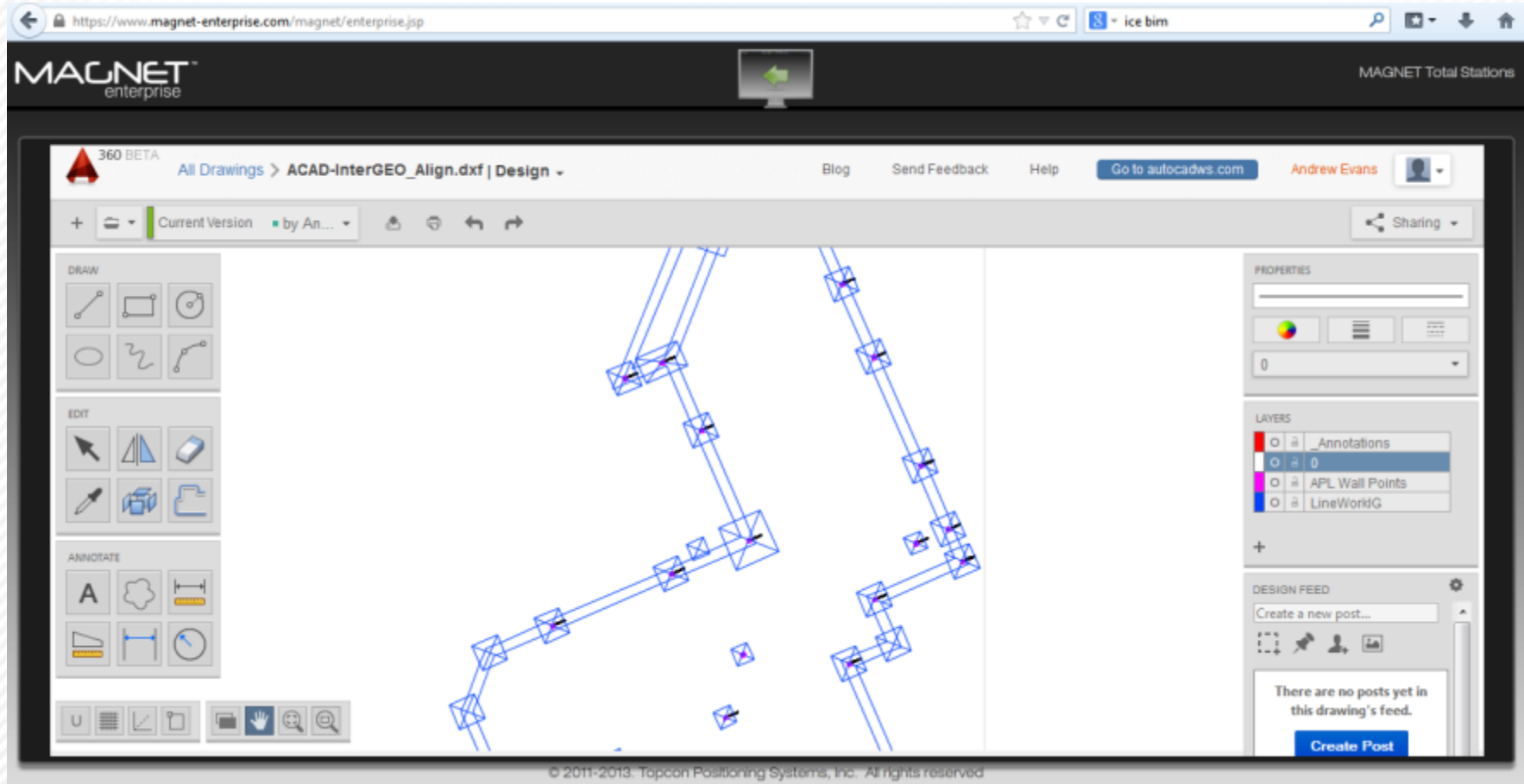


# As-built





# Report back to the office



The screenshot displays the MAGNET enterprise web application interface. The browser address bar shows the URL <https://www.magnet-enterprise.com/magnet/enterprise.jsp>. The application header includes the MAGNET enterprise logo, a user profile for Andrew Evans, and navigation links for Blog, Send Feedback, and Help. A button labeled "Go to autocadws.com" is also present.

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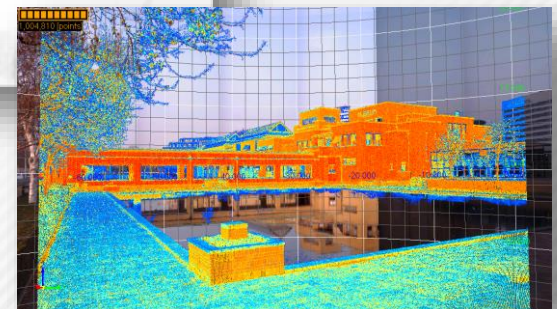
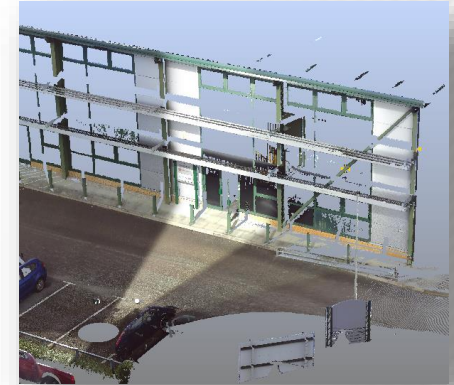
At the bottom of the interface, a copyright notice reads: "© 2011-2013. Topcon Positioning Systems, Inc. All rights reserved."

# Scan to BIM

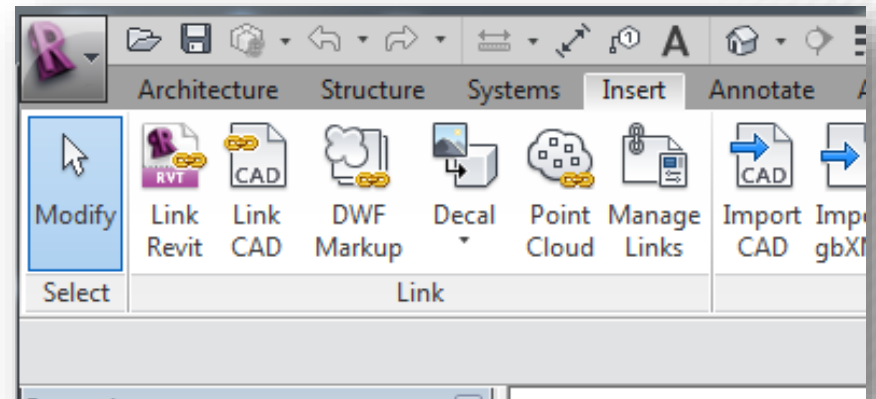
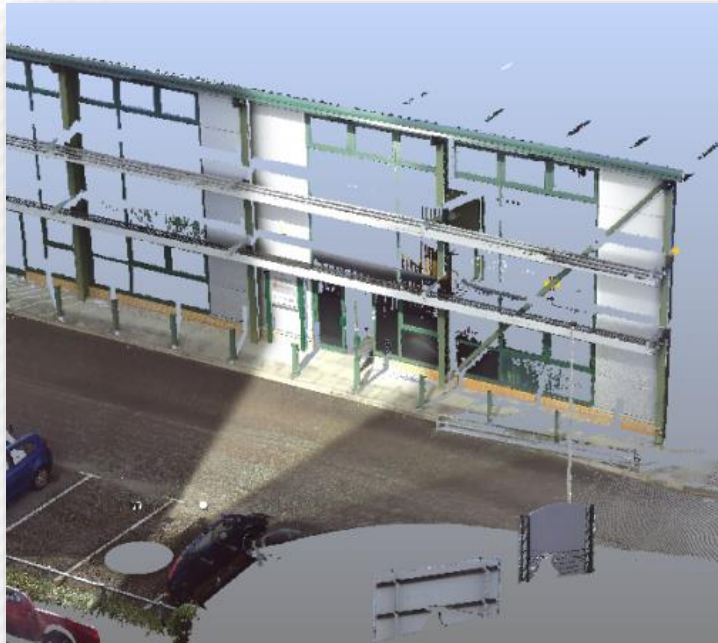
# Hardware



# Scan Data



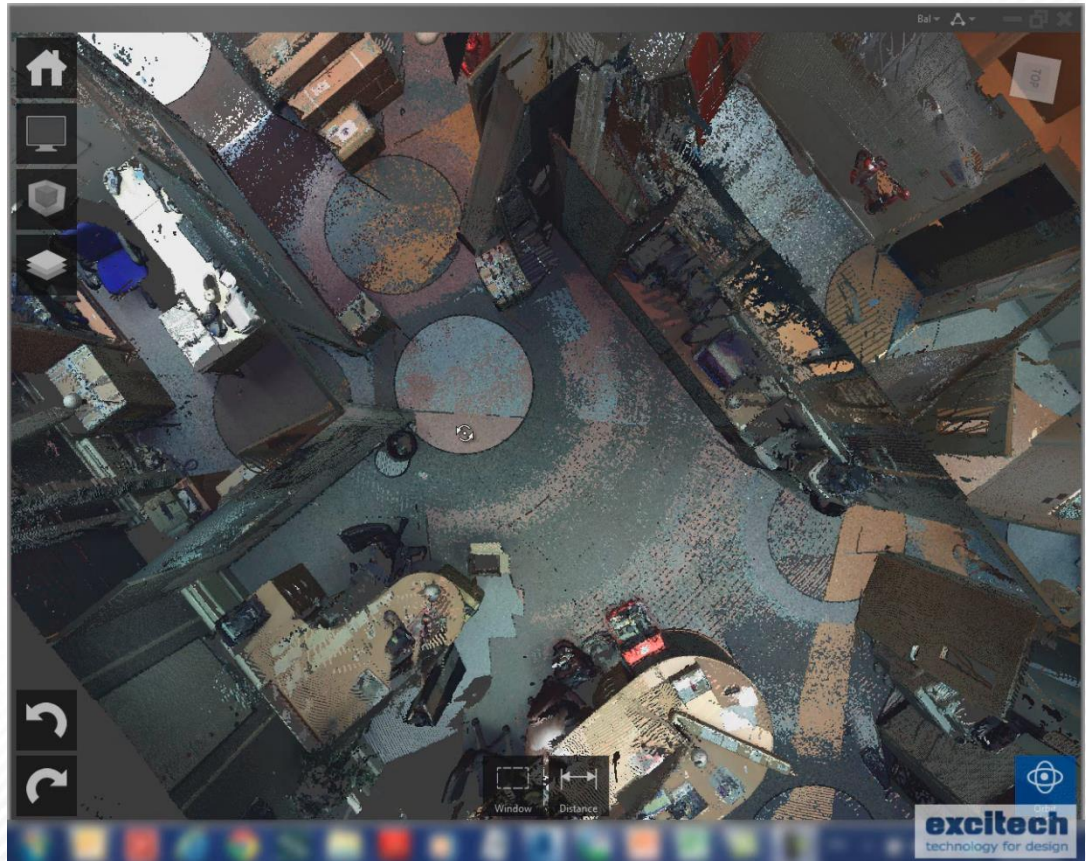
# Prepare Data





# Autodesk ReCap

- Data visualisation
- Design in 3D
- As-built



- 





Topcon Headqu... Type a keyword or phrase Sign In

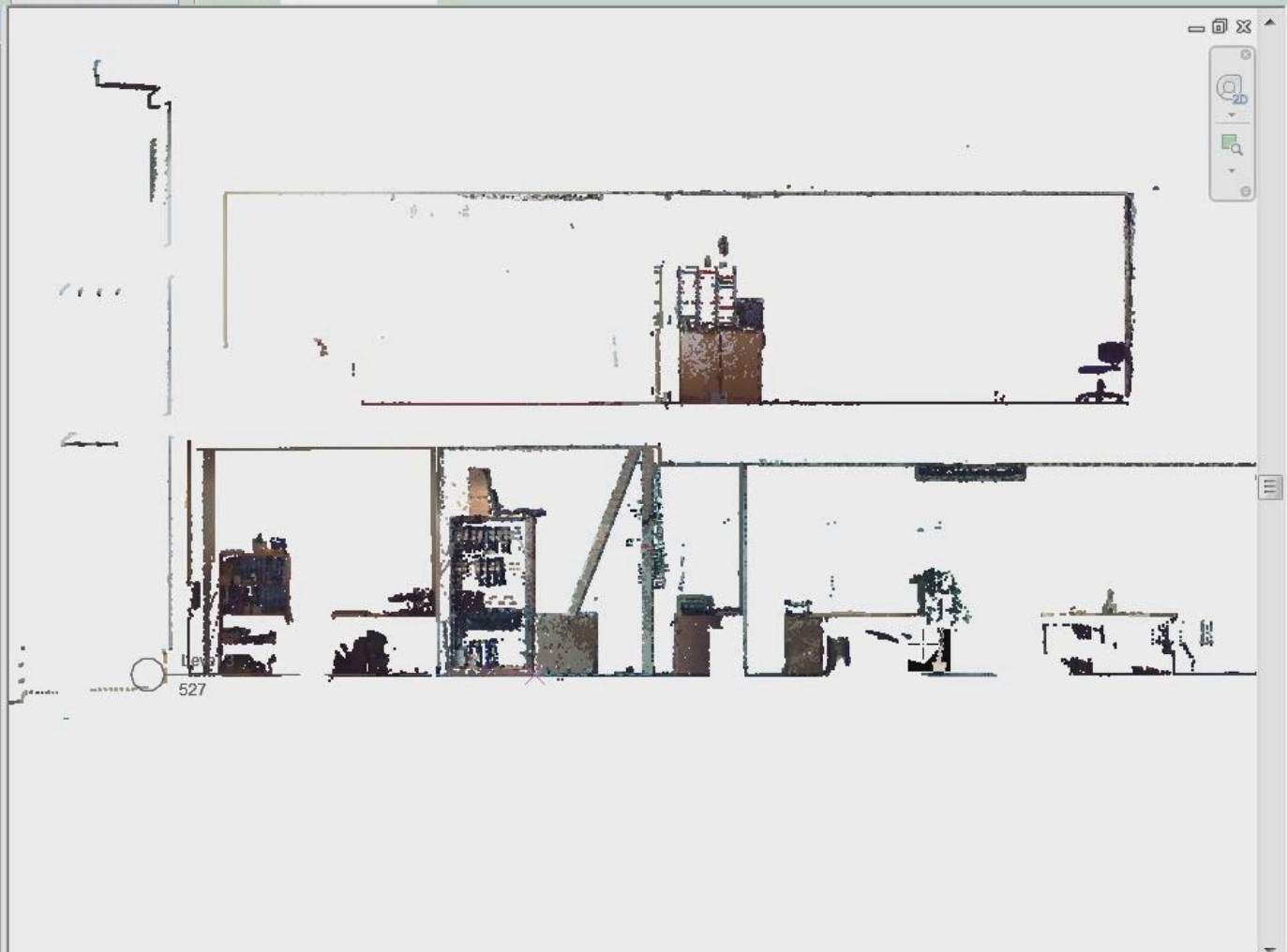
Architecture Structure Systems Insert Annotate Analyze Massing & Site Collaborate View Manage Add-Ins Modify | Place Level

Modify Select Properties Clipboard Geometry Modify View Measure Create Draw

Modify | Place Level ☒ Make Plan View Plan View Types... Offset: 0.0

Project Browser - Topcon Headquarters Ches... X

- Views (all)
  - Floor Plans
    - 00 - Main Building
      - Level 0
      - Level 1
      - Site
  - Ceiling Plans
  - 3D Views
  - Elevations (12mm Circle)
    - East
    - North
    - South
    - West
  - Sections (Building Section)
    - Section 1**
  - Legends
  - Schedules/Quantities
  - Sheets (all)
  - Families
  - Groups
  - Revit Links



# COBie Ready

Compute Schedule and Quantities for project stage

D31 Basic Wall:Generic Ext - 80mm									
Name	CreatedBy	CreatedOn	Type Name	Space	Description	ExtSystem	ExtObject	ExtIdentifier	SerialNumber
1									
2	TFT Monitor:TFT Monitor:TFT Monitor:211812	ijohnston@brydenwood	2012-01-19T12:27:24	TFT Monitor	LO-01A	TFT Monitor:TFT Monitor:TFT Monitor:211812	Autodesk Revit Architecture 20	IfcBuildingElementPro	3c8c7GE n/a
3	Mirror:Mirror:Mirror:211825	ijohnston@brydenwood	2012-01-19T12:27:24	Mirror	LO-01A	Mirror:Mirror:Mirror:211825	Autodesk Revit Architecture 20	IfcBuildingElementPro	3c8c7GE n/a
4	TFT Monitor:TFT Monitor:TFT Monitor:211790	ijohnston@brydenwood	2012-01-19T12:27:24	TFT Monitor	LO-02B	TFT Monitor:TFT Monitor:TFT Monitor:211790	Autodesk Revit Architecture 20	IfcBuildingElementPro	3c8c7GE n/a
5	Mirror:Mirror:Mirror:211826	ijohnston@brydenwood	2012-01-19T12:27:24	Mirror	LO-02B	Mirror:Mirror:Mirror:211826	Autodesk Revit Architecture 20	IfcBuildingElementPro	3c8c7GE n/a
6	Generic Int DD:1810 x 2110mm:1810 x 2110mm:211798	ijohnston@brydenwood	2012-01-19T12:27:24	1810 x 2110mm	LO-C01	Generic Int DD:1810 x 2110mm:1810 x 2110mm:211798	Autodesk Revit Architecture 20	IfcDoor	3c8c7GE n/a
7	Generic Int D Cell Door:790 x 2110mm 3:790 x 2110mm 3:21181	ijohnston@brydenwood	2012-01-19T12:27:24	790 x 2110mm 3	LO-02B	Generic Int D Cell Door:790 x 2110mm 3:790 x 2110mm 3:21181	Autodesk Revit Architecture 20	IfcDoor	3c8c7GE n/a
8	Generic Int D Cell Door:790 x 2110mm 3:790 x 2110mm 3:21181	ijohnston@brydenwood	2012-01-19T12:27:24	790 x 2110mm 3	LO-01A	Generic Int D Cell Door:790 x 2110mm 3:790 x 2110mm 3:21181	Autodesk Revit Architecture 20	IfcDoor	3c8c7GE n/a
9	Plumbing SVP 1:Plumbing SVP 1:Plumbing SVP 1:211824	ijohnston@brydenwood	2012-01-19T12:27:24	Plumbing SVP 1	LO-C01	Plumbing SVP 1:Plumbing SVP 1:Plumbing SVP 1:211824	Autodesk Revit Architecture 20	IfcFlowTerminal	3c8c7GE n/a
10	WC Pan:510 x 510mm:510 x 510mm:211788	ijohnston@brydenwood	2012-01-19T12:27:24	WC Pan 510 x 510mm	LO-01A	WC Pan:510 x 510mm:510 x 510mm:211788	Autodesk Revit Architecture 20	IfcFlowTerminal	3c8c7GE n/a
11	Wallgate ALS180 Basin:470w x 300d:470w x 300d:211813	ijohnston@brydenwood	2012-01-19T12:27:24	Wallgate ALS180 Basin 470w x	LO-01A	Wallgate ALS180 Basin:470w x 300d:470w x 300d:211813	Autodesk Revit Architecture 20	IfcFlowTerminal	3c8c7GE n/a
12	WC Pan:510 x 510mm 2:510 x 510mm 2:211807	ijohnston@brydenwood	2012-01-19T12:27:24	WC Pan 510 x 510mm	LO-02B	WC Pan:510 x 510mm 2:510 x 510mm 2:211807	Autodesk Revit Architecture 20	IfcFlowTerminal	3c8c7GE n/a
13	Wallgate ALS180 Basin:470w x 300d:470w x 300d:211808	ijohnston@brydenwood	2012-01-19T12:27:24	Wallgate ALS180 Basin 470w x	LO-02B	Wallgate ALS180 Basin:470w x 300d:470w x 300d:211808	Autodesk Revit Architecture 20	IfcFlowTerminal	3c8c7GE n/a
14	Cell Bed family:Cell Bed family:Cell Bed family:211786	ijohnston@brydenwood	2012-01-19T12:27:24	Cell Bed family	LO-01A	Cell Bed family:Cell Bed family:Cell Bed family:211786	Autodesk Revit Architecture 20	IfcFurnishingElement	3c8c7GE n/a
15	Cell Desk:Desk Whitewood:Desk Whitewood:211787	ijohnston@brydenwood	2012-01-19T12:27:24	Desk Whitewood	LO-01A	Cell Desk:Desk Whitewood:Desk Whitewood:211787	Autodesk Revit Architecture 20	IfcFurnishingElement	3c8c7GE n/a
16	Cell Locker:Cell Locker:Cell Locker:211789	ijohnston@brydenwood	2012-01-19T12:27:24	Cell Locker	LO-01A	Cell Locker:Cell Locker:Cell Locker:211789	Autodesk Revit Architecture 20	IfcFurnishingElement	3c8c7GE n/a
17	Safer Seat:Safer Seat:Safer Seat:211791	ijohnston@brydenwood	2012-01-19T12:27:24	Safer Seat	LO-01A	Safer Seat:Safer Seat:Safer Seat:211791	Autodesk Revit Architecture 20	IfcFurnishingElement	3c8c7GE n/a
18	Safer Seat:Safer Seat:Safer Seat:211803	ijohnston@brydenwood	2012-01-19T12:27:24	Safer Seat	LO-02B	Safer Seat:Safer Seat:Safer Seat:211803	Autodesk Revit Architecture 20	IfcFurnishingElement	3c8c7GE n/a
19	Cell Bed family:Cell Bed family:Cell Bed family:211804	ijohnston@brydenwood	2012-01-19T12:27:24	Cell Bed family	LO-02B	Cell Bed family:Cell Bed family:Cell Bed family:211804	Autodesk Revit Architecture 20	IfcFurnishingElement	3c8c7GE n/a
20	Cell Desk:Desk Whitewood:Desk Whitewood:211805	ijohnston@brydenwood	2012-01-19T12:27:24	Desk Whitewood	LO-02B	Cell Desk:Desk Whitewood:Desk Whitewood:211805	Autodesk Revit Architecture 20	IfcFurnishingElement	3c8c7GE n/a
21	Cell Locker:Cell Locker:Cell Locker:211806	ijohnston@brydenwood	2012-01-19T12:27:24	Cell Locker	LO-02B	Cell Locker:Cell Locker:Cell Locker:211806	Autodesk Revit Architecture 20	IfcFurnishingElement	3c8c7GE n/a
22	Basic Wall:Generic Ext - 150mm:211792	ijohnston@brydenwood	2012-01-19T12:27:24	Basic Wall:Generic Ext - 150mm	LO-01A, LO-02B	Basic Wall:Generic Ext - 150mm:211792	Autodesk Revit Architecture 20	IfcWallStandardCase	3c8c7GE n/a
23	Basic Wall:Generic Ext - 150mm:211793	ijohnston@brydenwood	2012-01-19T12:27:24	Basic Wall:Generic Ext - 150mm	LO-01A, LO-02B	Basic Wall:Generic Ext - 150mm:211793	Autodesk Revit Architecture 20	IfcWallStandardCase	3c8c7GE n/a
24	Basic Wall:Generic Ext - 150mm:211794	ijohnston@brydenwood	2012-01-19T12:27:24	Basic Wall:Generic Ext - 150mm	LO-01A	Basic Wall:Generic Ext - 150mm:211794	Autodesk Revit Architecture 20	IfcWallStandardCase	3c8c7GE n/a
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26	Basic Wall:Generic Ext - 150mm:211796	ijohnston@brydenwood	2012-01-19T12:27:24	Basic Wall:Generic Ext - 150mm	LO-02B, LO-02B	Basic Wall:Generic Ext - 150mm:211796	Autodesk Revit Architecture 20	IfcWallStandardCase	3c8c7GE n/a
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30	Basic Wall:Generic Ext - 80mm:211801	ijohnston@brydenwood	2012-01-19T12:27:24	Basic Wall:Generic Ext - 80mm	LO-02B	Basic Wall:Generic Ext - 80mm:211801	Autodesk Revit Architecture 20	IfcWallStandardCase	3c8c7GE n/a
31	Basic Wall:Generic Ext - 80mm:211802	ijohnston@brydenwood	2012-01-19T12:27:24	Basic Wall:Generic Ext - 80mm	LO-02B	Basic Wall:Generic Ext - 80mm:211802	Autodesk Revit Architecture 20	IfcWallStandardCase	3c8c7GE n/a
32	Basic Wall:Generic Ext - 340mm 2:211809	ijohnston@brydenwood	2012-01-19T12:27:24	Basic Wall:Generic Ext - 340mm	LO-01A, LO-02B	Basic Wall:Generic Ext - 340mm 2:211809	Autodesk Revit Architecture 20	IfcWallStandardCase	3c8c7GE n/a
33	Basic Wall:Generic Ext - 150mm:211829	ijohnston@brydenwood	2012-01-19T12:27:24	Basic Wall:Generic Ext - 150mm	LO-01A	Basic Wall:Generic Ext - 150mm:211829	Autodesk Revit Architecture 20	IfcWallStandardCase	3c8c7GE n/a
34	Basic Wall:Generic Ext - 150mm:211830	ijohnston@brydenwood	2012-01-19T12:27:24	Basic Wall:Generic Ext - 150mm	LO-02B	Basic Wall:Generic Ext - 150mm:211830	Autodesk Revit Architecture 20	IfcWallStandardCase	3c8c7GE n/a



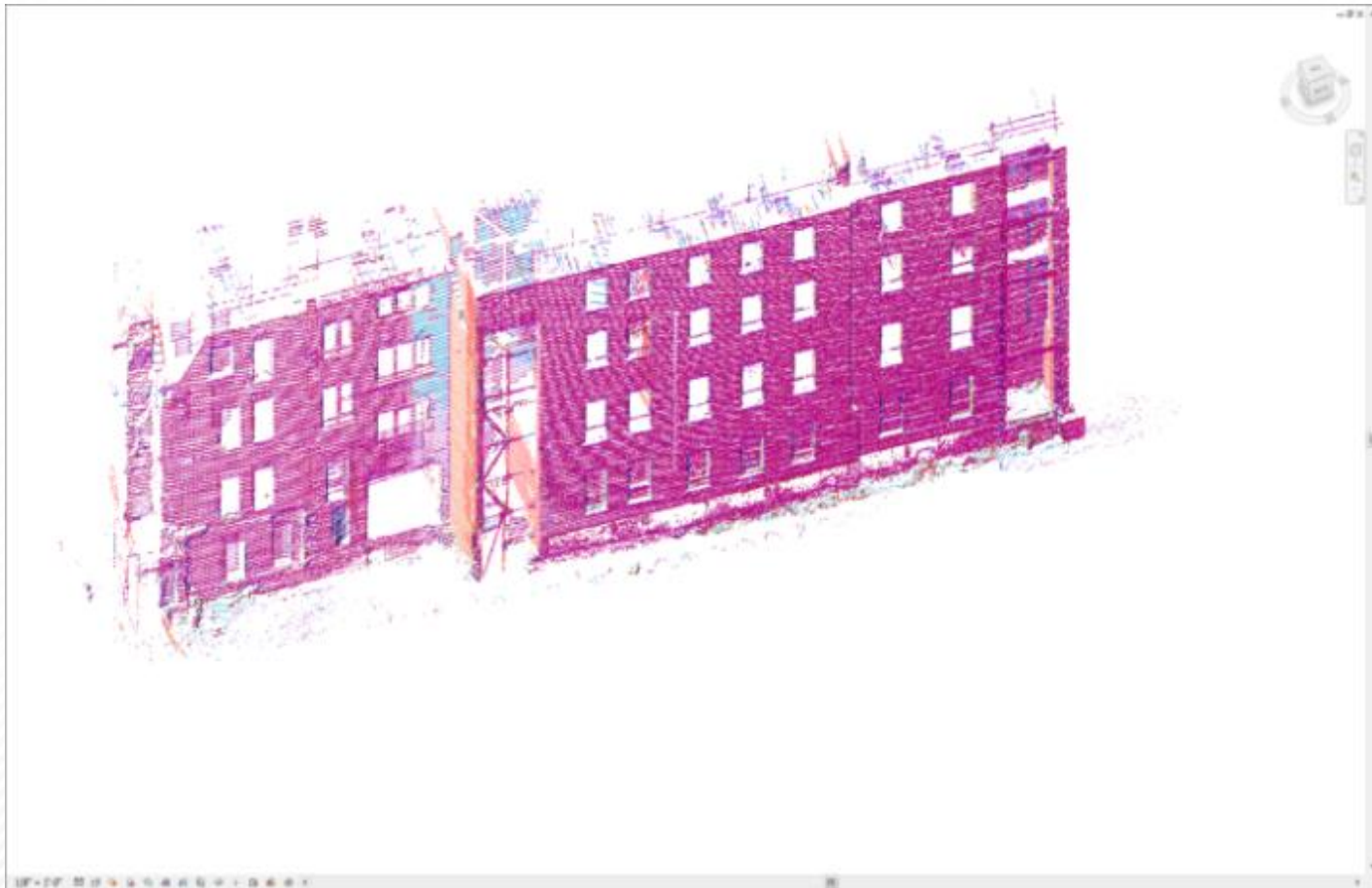
# Working Example

## Scan Data



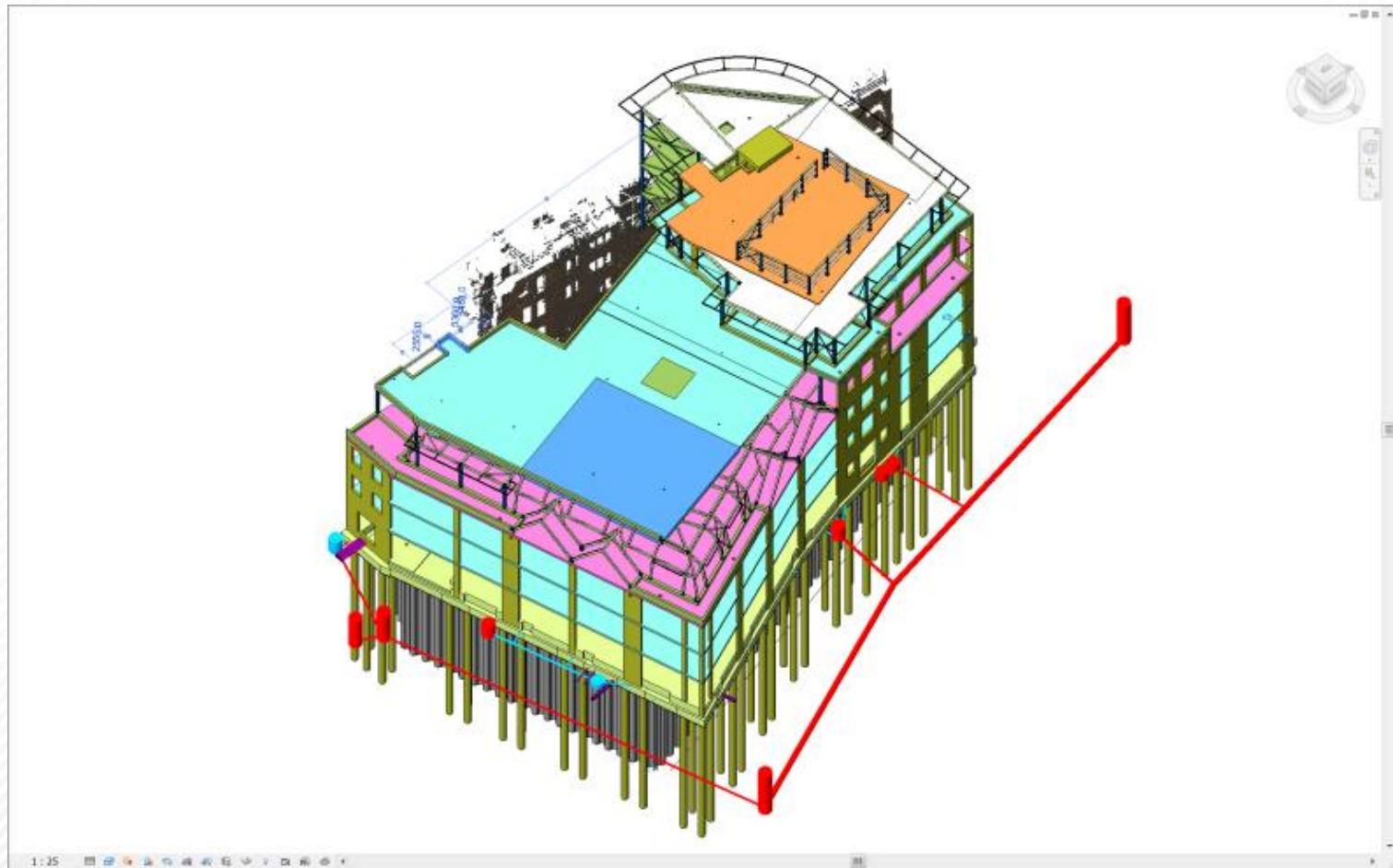
# Working Example

Insert Point Cloud into Revit



# Working Example

## Coordinate Point Cloud with Model





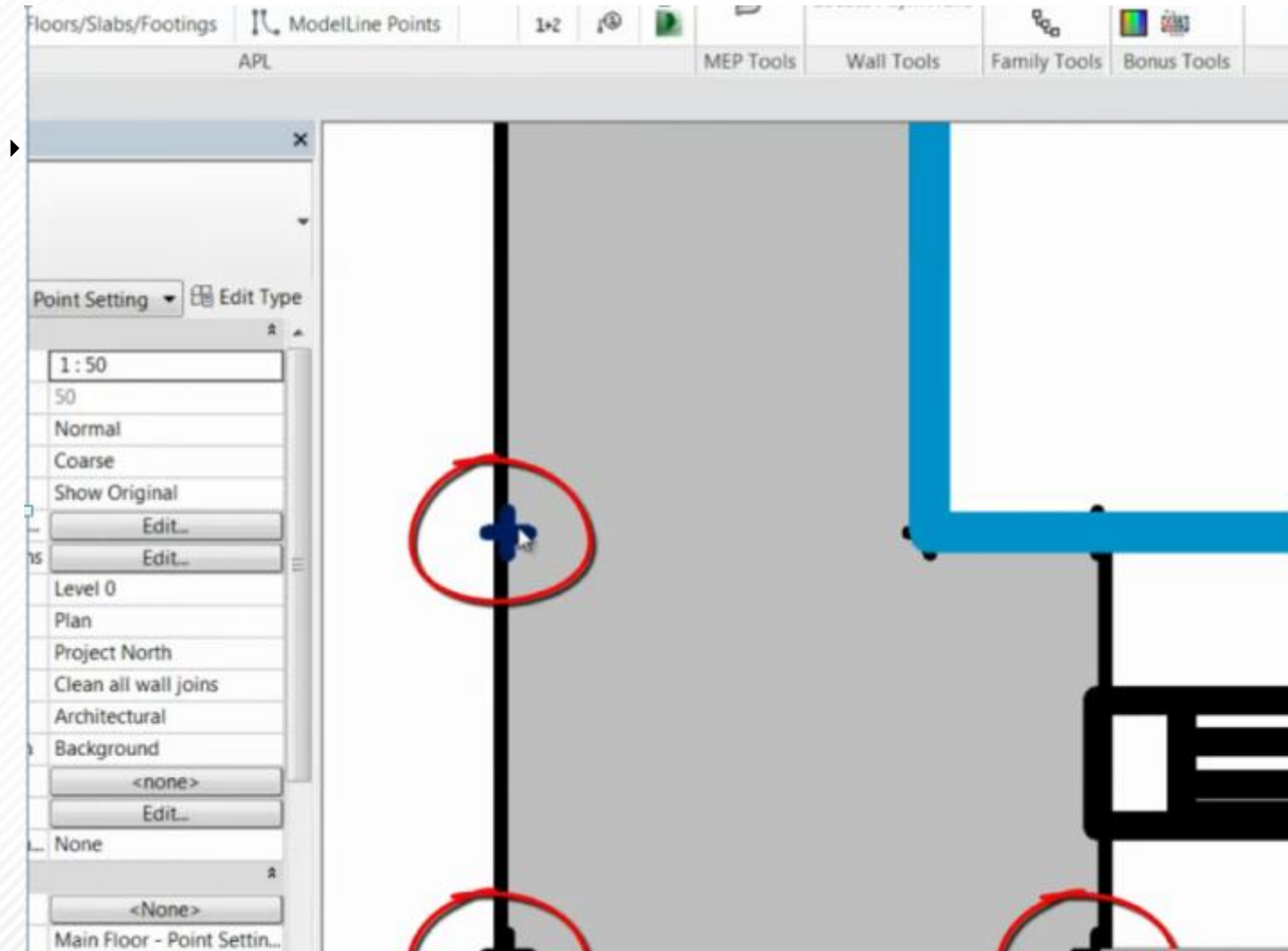
# Working Example

## Coordinate Point Cloud with Model





# Extract Points



# Back to the Field

Manage your BIM Project



**Let's summarise...**

# Remember

## ▸ **BIM is for...**

- Buildings
- Infrastructure
- Civil Engineering
- Construction
- Architecture
- Facilities





# Research

Learn the Language...

- **building.co.uk**
- **bimjournal.com**
- **AECMagazine aecmag.com**
- **Constructech constructech.com (US)**
- **FM World fm-world.co.uk**
- **bygg.no**
- **tungt.no**
- **buildingsmart.kotisivukone.com**
- **BIM Task Group – Client Guide to 3D Scanning and Data Capture**

