ES9949: Design-driven 3D reinforcement generation in Revit®

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Comfort and Safety

- Emergency Exits
- Mobile / Cell Phones ➔ silent!
- 1 Hour Session

- Enjoy ☺

Class summary

- Structural engineers use many object-level design tools to effectively perform their designs.
- These tools can range from off-the-shelf structural design software to simple spreadsheets.
- As Building Information Modeling (BIM) adoption grows and general-purpose structural frame analysis software is being integrated with BIM workflows, connecting object-level design tools are not.
- There is an opportunity to drive BIM design information from these design tools in order to better streamline the engineer to BIM workflows.
- GRAITEC's Revit-based software will bridge this gap between engineers and designers to get real benefit from BIM for RC structures

Key learning objectives

At the end of this class, you will be able to:

- Start from an Autodesk Revit® model and see how to import and manage FEM results
- Complete structural design assumptions in Revit®!
- Design reinforced concrete members in Revit®
- Get the 3D structural rebar, drawings and reports automatically produced in Revit®
- See how we can handle the design outside Revit® but still connected
- Publish all the information in A360

Introducing…

GRAITEC

- **30 years** expertise developing CAD, BIM and Design solutions for **structural engineers and designers**
- **25 offices in** USA, Canada, UK, France, Germany, Italy, Czech Republic, Romania, Russia, Poland
- **Global coverage** with authorized reseller network
- One of the **biggest worldwide Autodesk partners**

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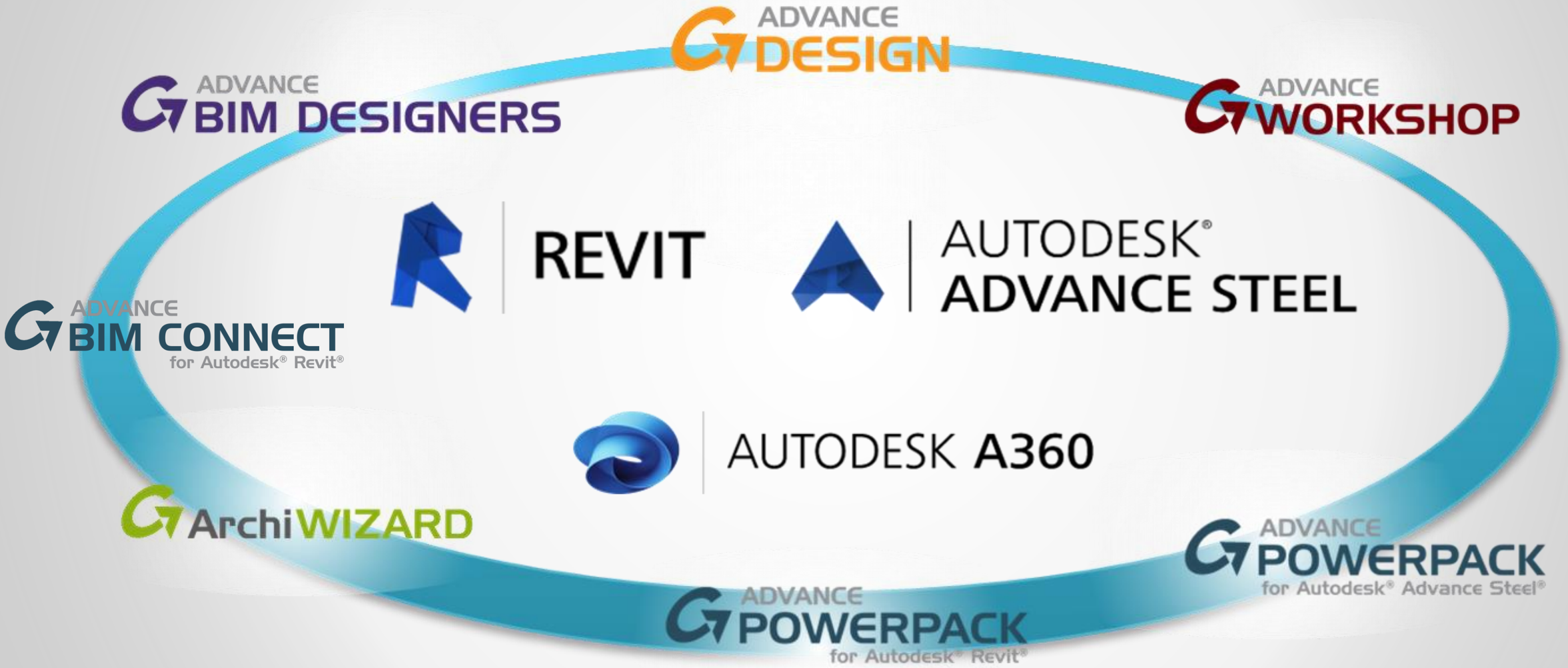
AUTODESK
Authorized Developer

AUTODESK
Platinum Partner

AUTODESK
Authorised ISV Partner

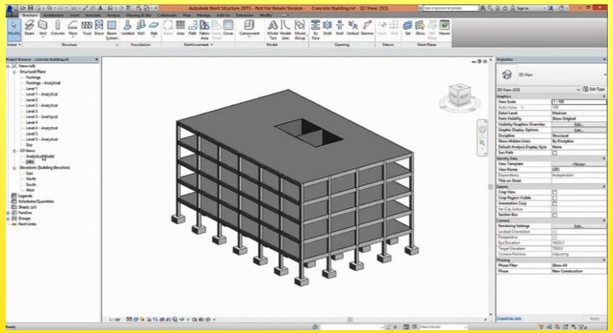
Workflows

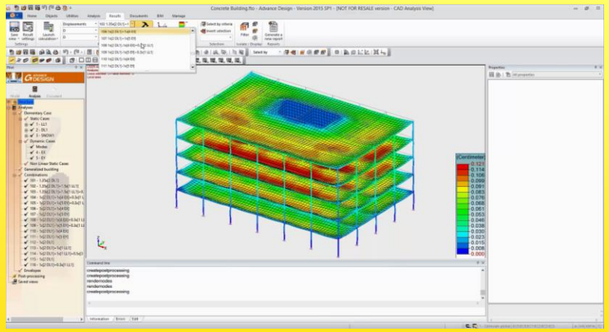
Connected BIM Workflows



Revit® ⇔ Engineer

A





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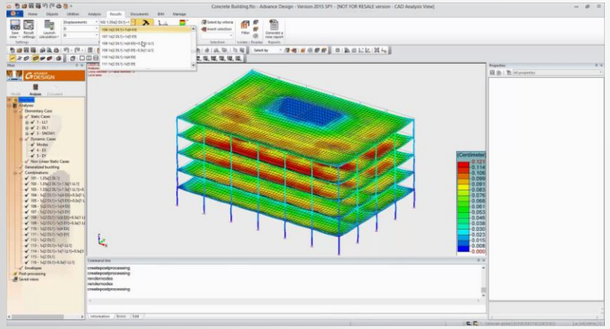
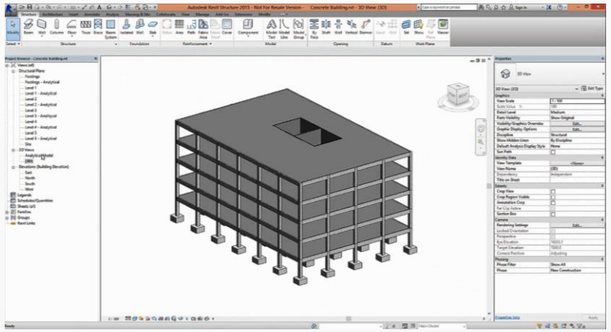
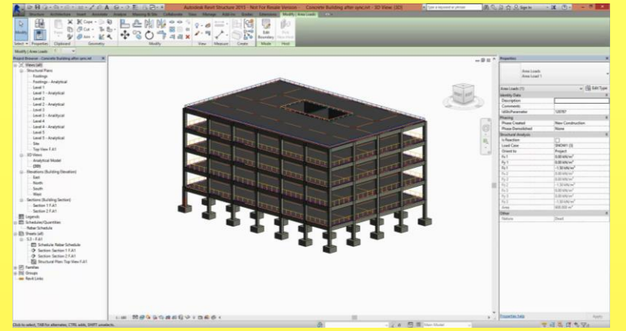
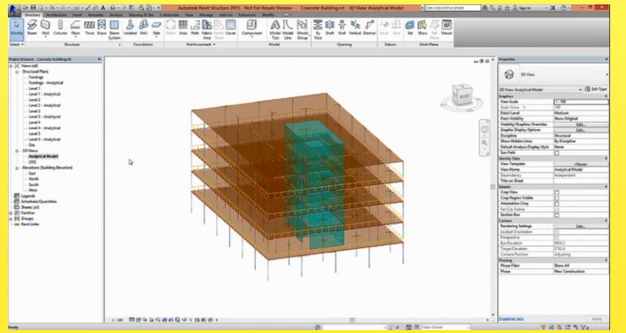
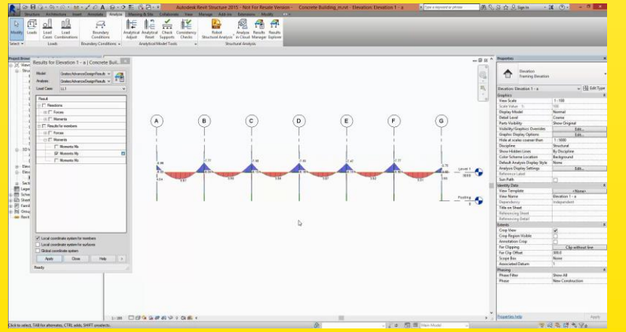




BIM

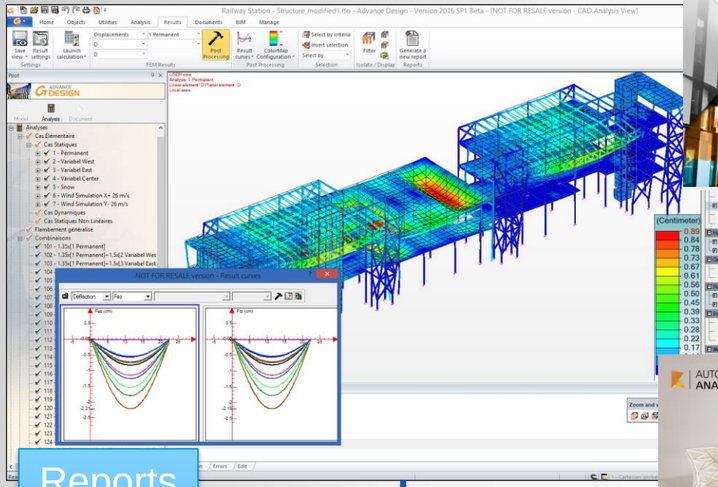


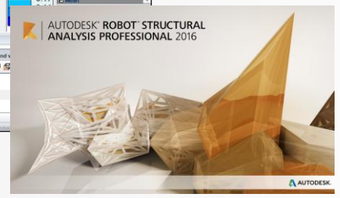




Get FEM results in Revit®

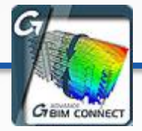
Get the FEM results in Revit®

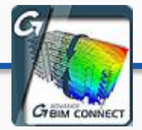


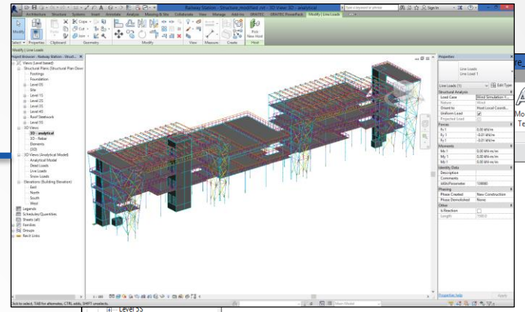


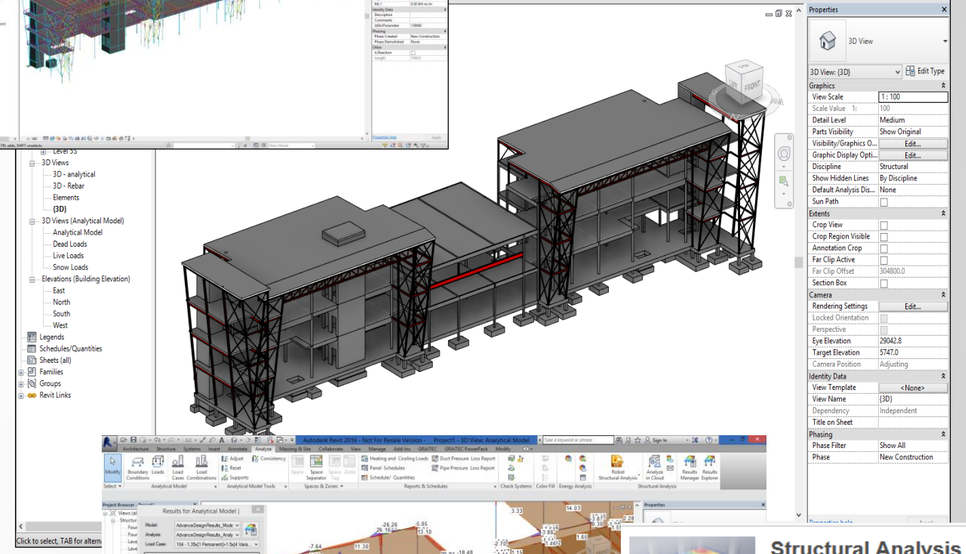
Reports

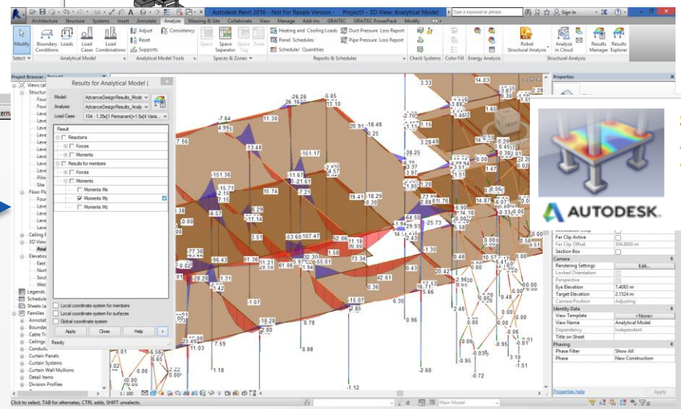
FEM Results









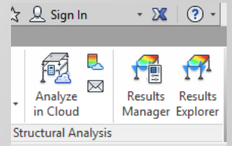


Structural Analysis Toolkit

Autodesk, Inc.

(1 review)

AUTODESK.

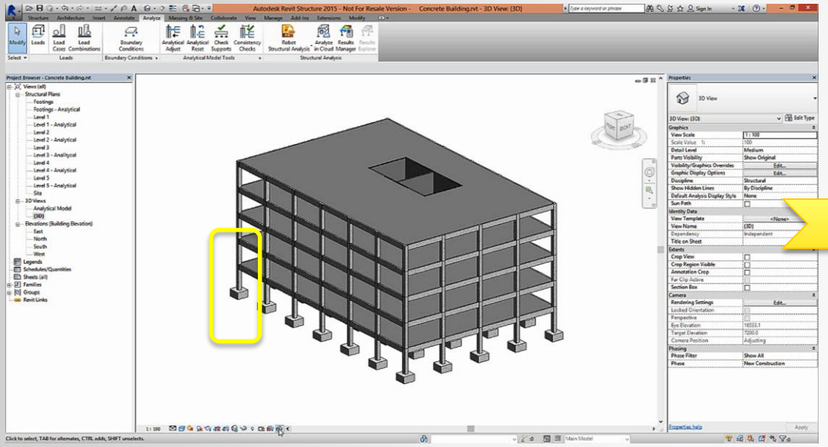


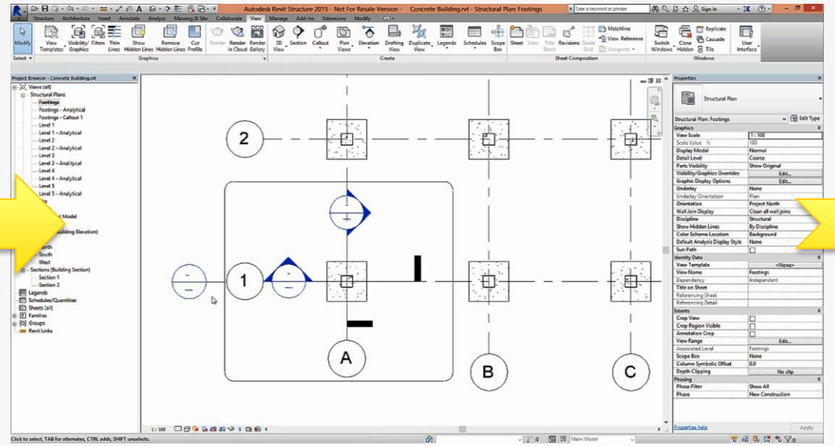
Getting FEM Results in Revit®

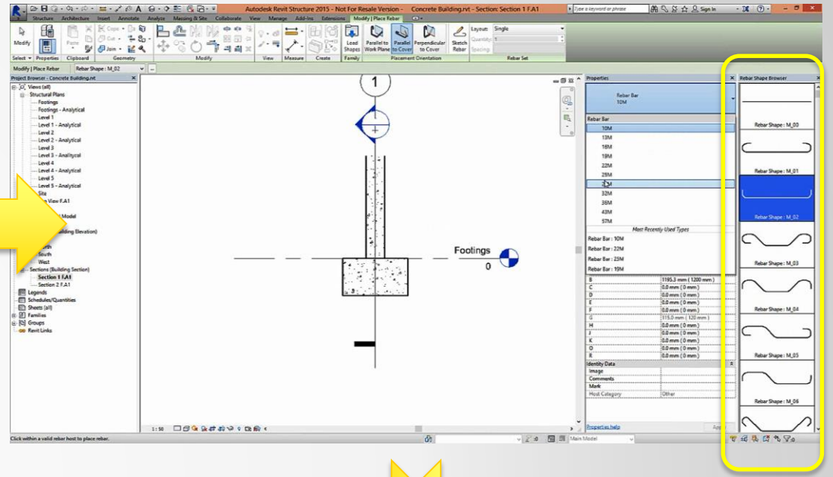
- Manually apply loads to Revit model
- Manage the analytical model within Revit®!
- Synchronization of model, loads & design changes
- Benefit from Autodesk Cloud services
- Connected and intelligent ‘BIM Workflow’ is already possible

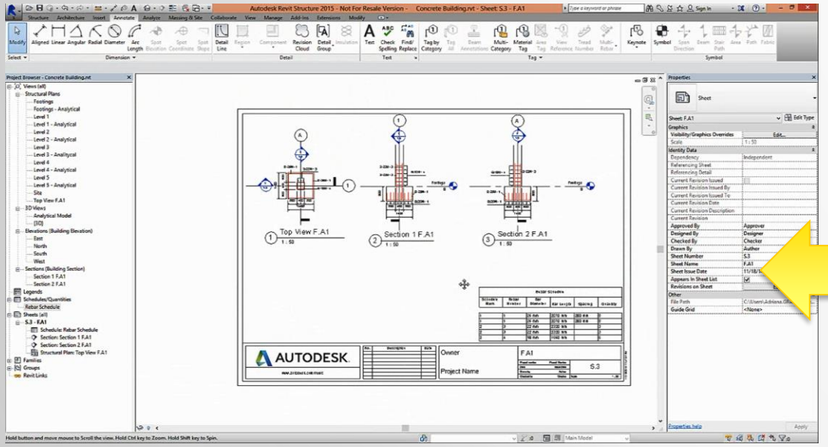
Creating 3D rebar using out-of-box tools

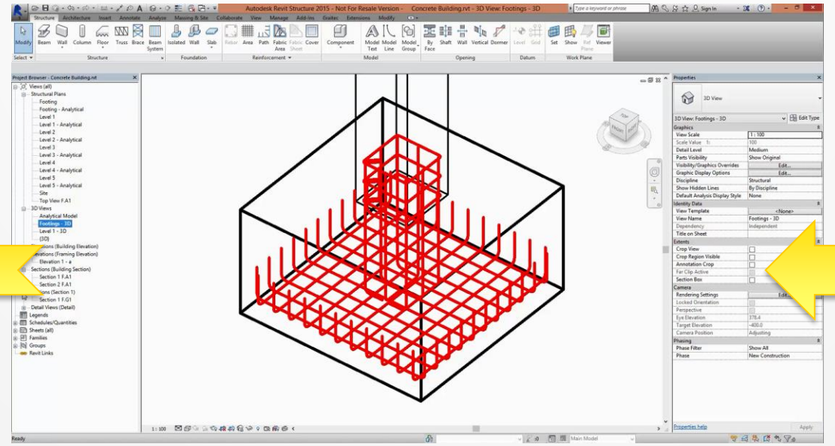
Creating 3D rebar & drawings in Revit

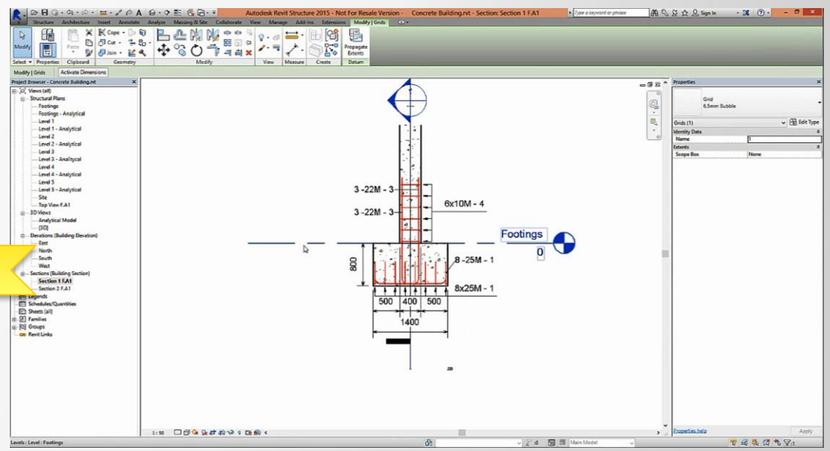












Creating 3D rebar & drawings in Revit

- Revit is a powerful tool for managing the analytical model (manually or automatically)
- New in 2015/2016 tools facilitate creation of 3D rebar
- Repetitive process for creating:
  - 3D rebar model
  - Drawing views
  - Sheet layouts
  - (even with 3rd Party Apps)
- Rebar results are independent of the engineers design!

Introducing GRAITEC RC BIM Designers…

Multiple Platforms ⇔ Multiple Workflows

ADVANCE BIM Designers

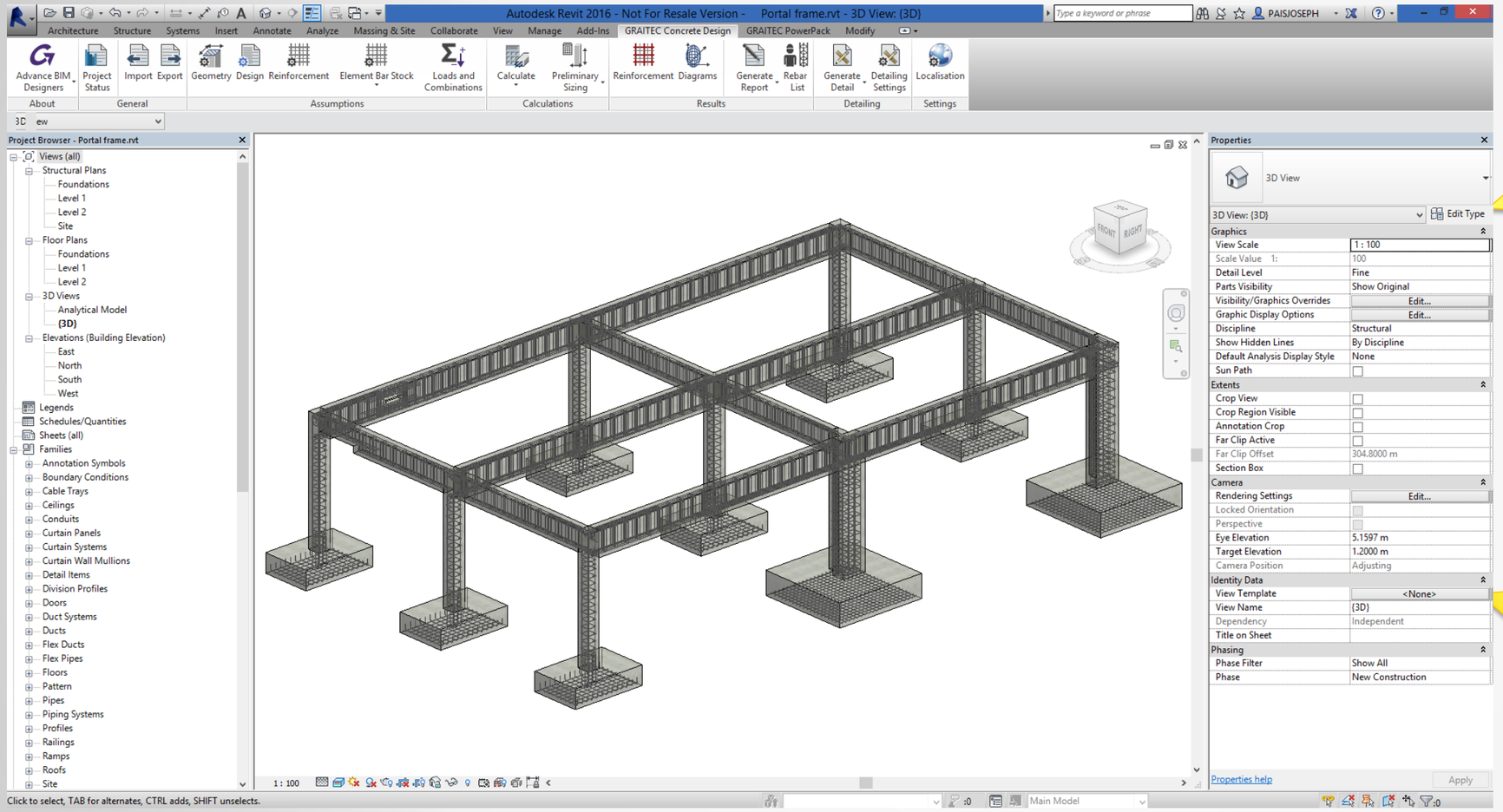
AUTODESK® REVIT®

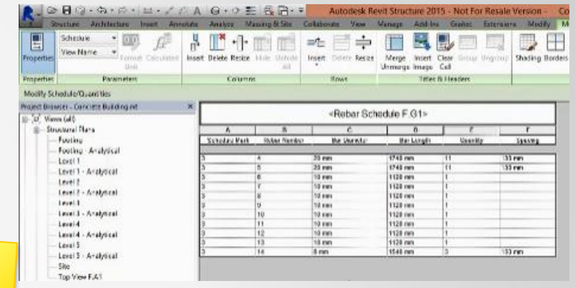
AUTODESK® ADVANCE STEEL

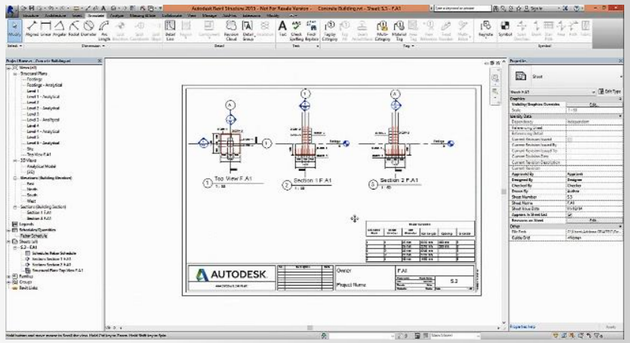
ADVANCE DESIGN

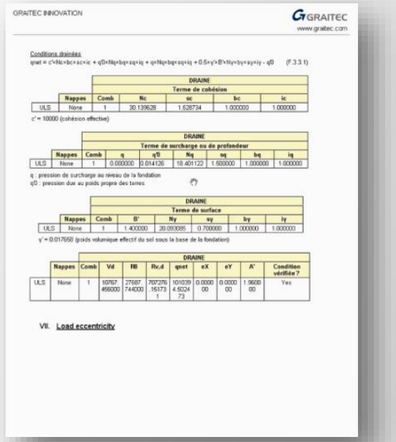
SHOW TIME

Recap GRAITEC RC BIM Designers…







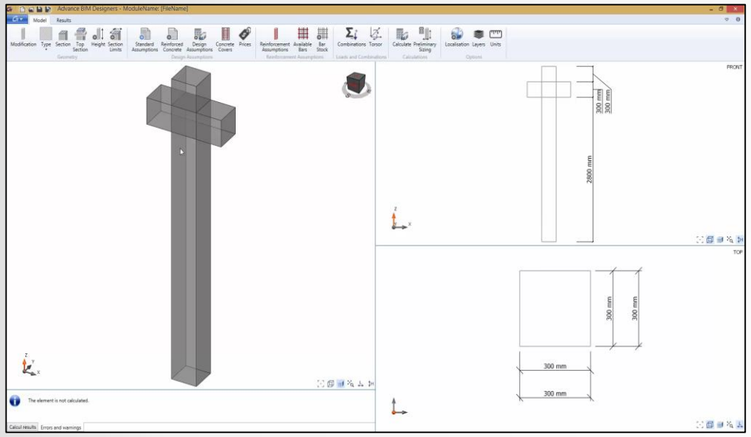


Recap - GRAITEC RC BIM Designers…

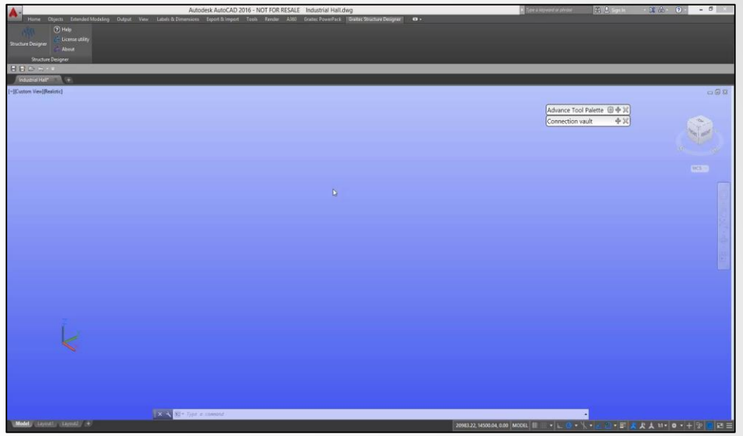
- Multiple Platform ⇔ Multiple Workflow ⇔ Multiple User scenarios
- Design capability integrated with Revit
- Local Design Codes and standards
  - Eurocodes + National Annex / US Codes / Canadian Codes / …
- Automated design and creation of 3D Rebar based on ‘actual’ loads saved in the model for each element
- Standard & Customizable Design Reports
- Customizable Country Specific Defaults & Templates for Drawing Views and Sheet Layouts

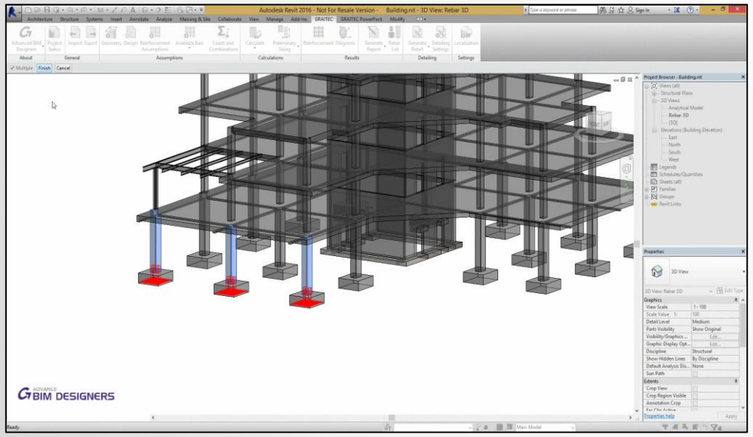
Multiple Platforms ⇔ Multiple Workflows

ADVANCE BIM Designers

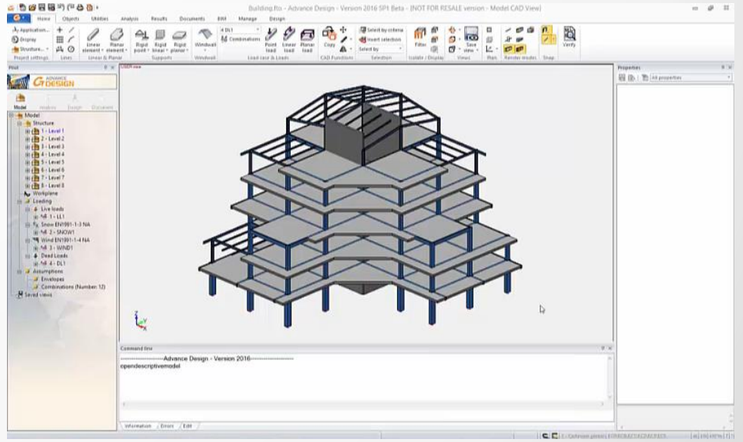


AUTODESK® ADVANCE STEEL





AUTODESK® REVIT®



ADVANCE DESIGN

Harness the potential of A360!

A360® platforms (just the beginning)

Solutions	A360 VIEWER	A360 DRIVE	A360 TEAM
Customer needs	Visualization, sharing and communication	Individual cloud storage and sharing platform	Project team collaboration platform
Storage		5GB (25GB if existing Subscription)	10 GB / member (pooled at Team level)
Platform (localized)	Web (not localized)	Web (localized)	Web (not localized) and mobile apps (iOS & Android-localized)
Main features	Upload from desktop, Dropbox, Box and Google drive View 3D et 2D models Print Share model (1 month link validity) Discussion	Access from AutoCAD, Inventor, 3DS Max Integrated to AutoCAD 360 Organized data (versioning) Object properties (from the model) Comments on files / models Automatic synchronization desktop – cloud Activity history Update alerts	Collaboration on projects Messages, project calendar, polls, wiki pages Organized data (versioning, tags) Search and comment the objects from the model Manual synchronization with A360 DRIVE Activity history Update alerts Box, Dropbox and Buzzsaw integration for mobile apps
	Professional Viewer (**LMV**: Large Model Viewer for more than 100 file formats (including Revit models).		

A360®


TEAM D
TEAM C
TEAM B
TEAM E
TEAM A
PROJECT MEMBER
PROJECT MEMBER
COMMON MODELS
PROJECT DATA
TEAM ACTIVITY & COMMUNICATION
A360

SHOW TIME

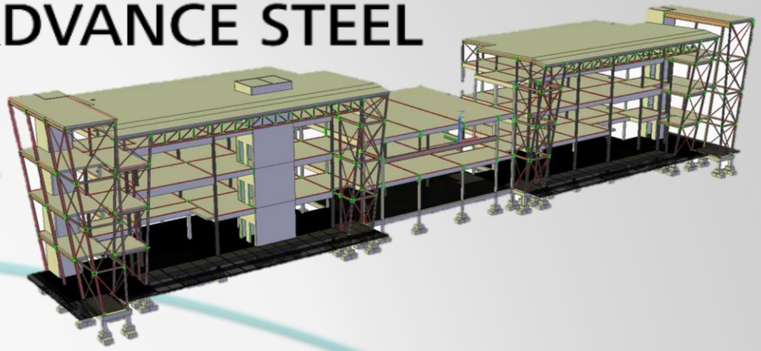
Recap – Harnessing A360®

- Easily store and share your data with all stakeholders with A360 Drive®
- Dedicated functionalities in Revit® to publish in A360®.
- Manage project activity in the cloud with A360 Team®
- Access your data from different devices: computer, mobile, tablet…
- Streamlined intelligent BIM workflow
- Automate downstream processes… document creation

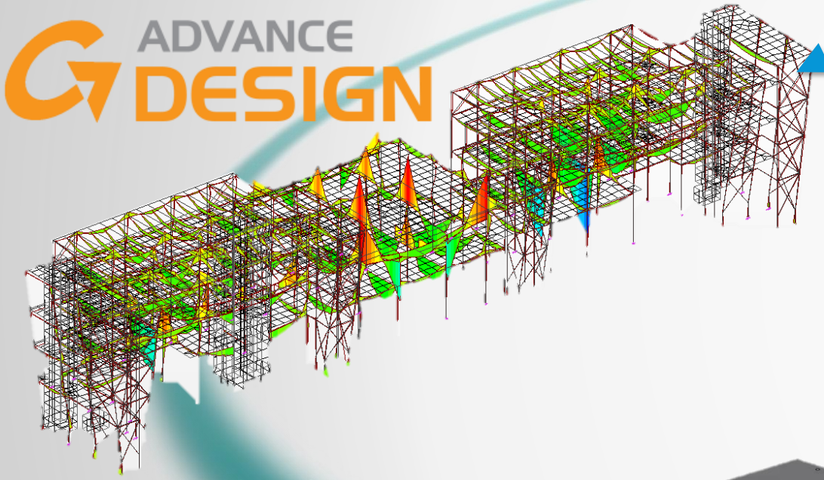
Connected BIM Workflows
Data(bases) linked to Models

- In the near future…

AUTODESK® ADVANCE STEEL



ADVANCE DESIGN

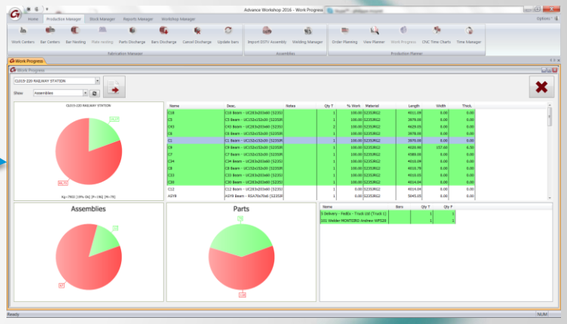


AUTODESK A360

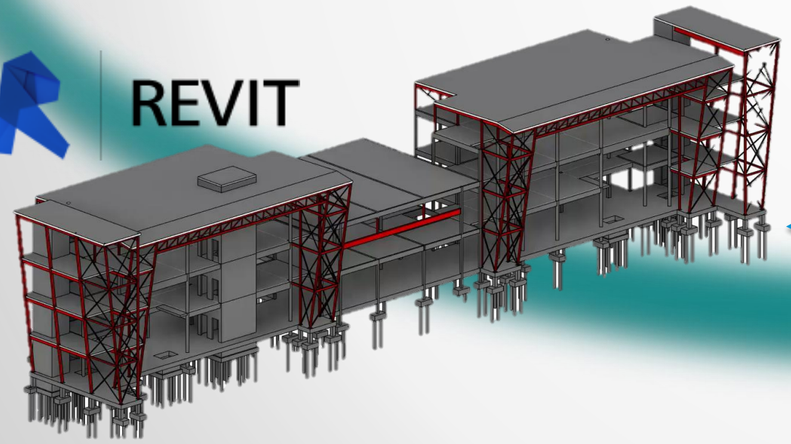
Data

{IFC, XML, XLS…}

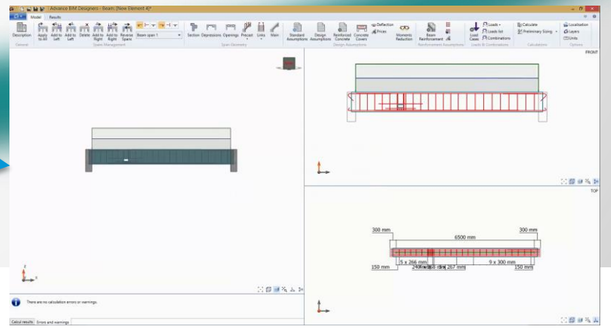
ADVANCE WORKSHOP

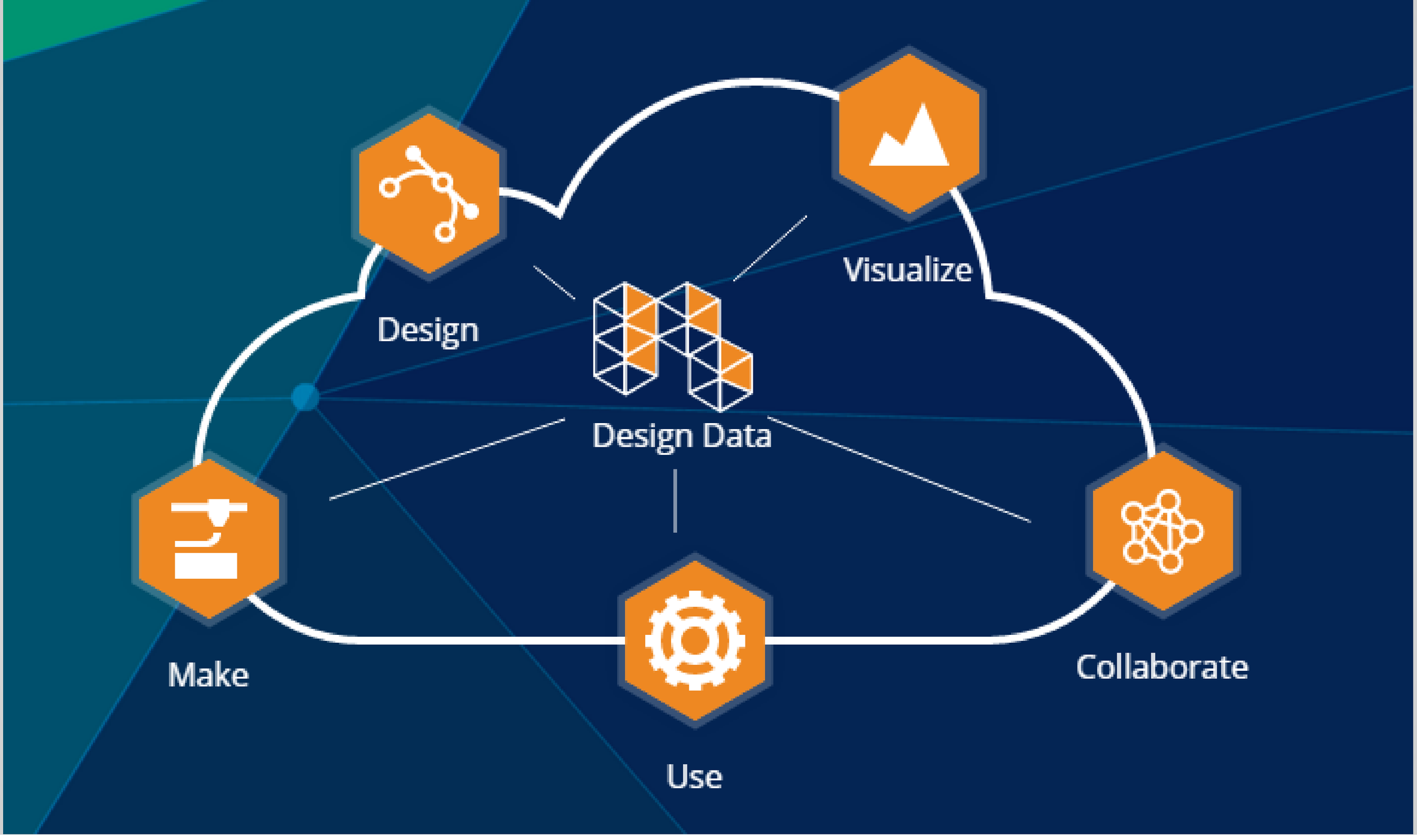


REVIT



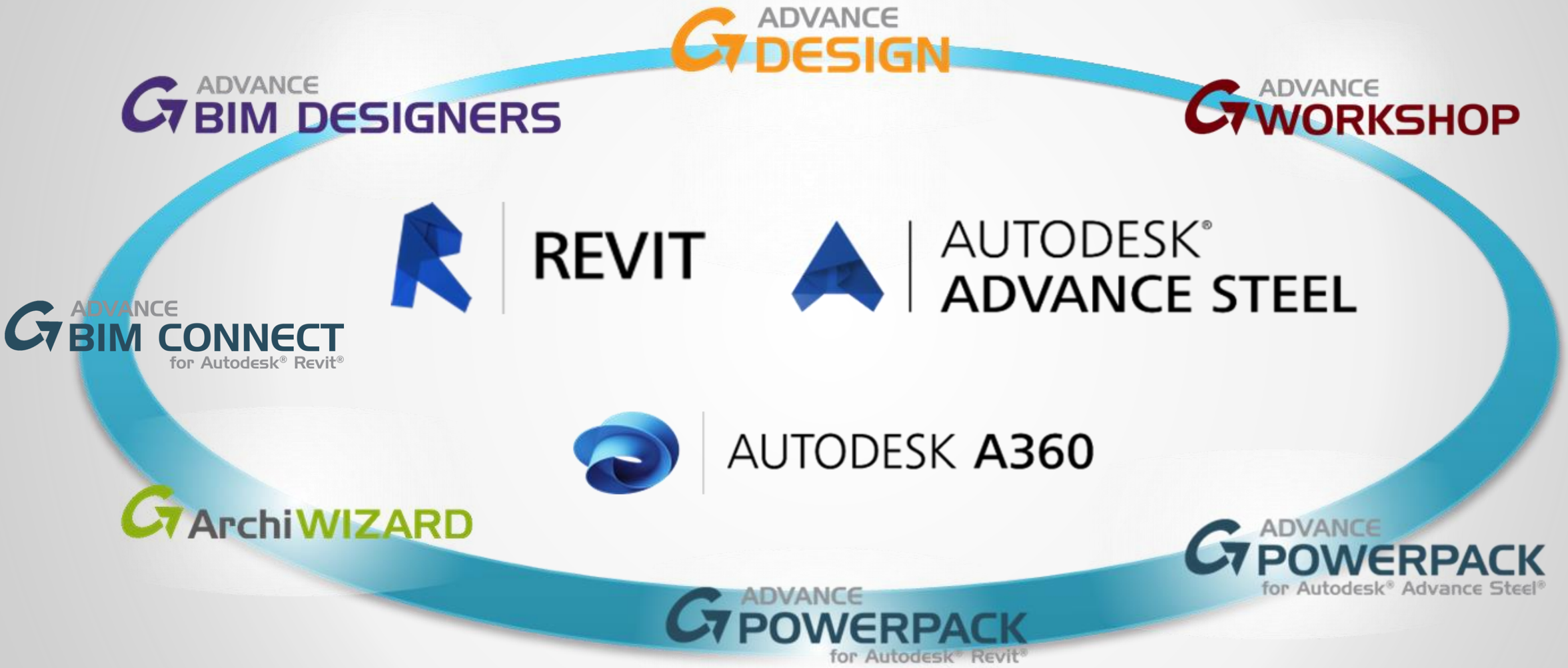
ADVANCE BIM Designers




Design
Visualize
Design Data
Make
Collaborate
Use

Conclusion

Take advantage of connected BIM Workflows



GRAITEC BIM Designers promote disruptive changes to the industry: intelligent BIM workflows

- Analysis results are part of the BIM model
- Engineers can take design decisions (Country code driven) in the Design environment (Revit)
- Engineers and Detailers communicate via a Model, not drawings (thanks to BIM Designer 3D rebar)
- You can apply different BIM workflows
- Take advantage of Cloud services for documents, models (also for revision to support traditional 2D review/approval workflow)

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Q&A

Session Feedback

- Via the Survey Stations, email or mobile device
- Best to do it right after the session
- Instructors see results in real-time