

TEKLA BASECAMP

AUG. 27 - 29

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Power of the Tekla API

Mark Allphin
Business Manager



What in the world is an 'API'?

Dictionary.com says...

– Application Programming Interface

“a set of protocols used by programmers to create applications for a specific operating system or to interface between the different modules of an application.”

– *Layman's Terms*

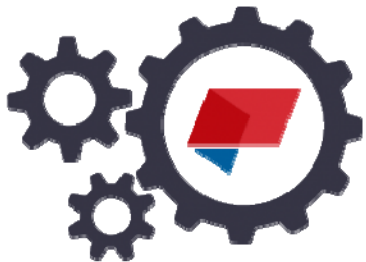
a Programming Toolkit that gives Customizable Access to functions of a software program



Portfolio of Tekla (& Trimble) APIs



 **Tekla**[®]
Open API



Tekla[®] EPM
Open API



Trimble[®]
Connect API

Our 'Expert' Presenters



Chris Keyack
President / Founder
CMK BIM Consultants



Eric Torola
Chief Technology Officer
Steel Tek Unlimited, LLC



Przemek Olesinski
Co-Founder
IPROBLUE Technologies

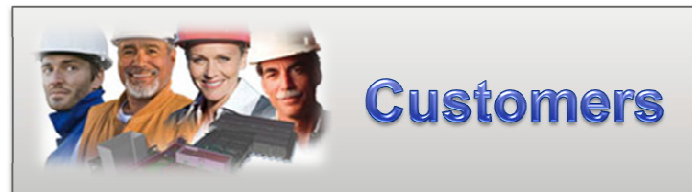
So, let's get started...



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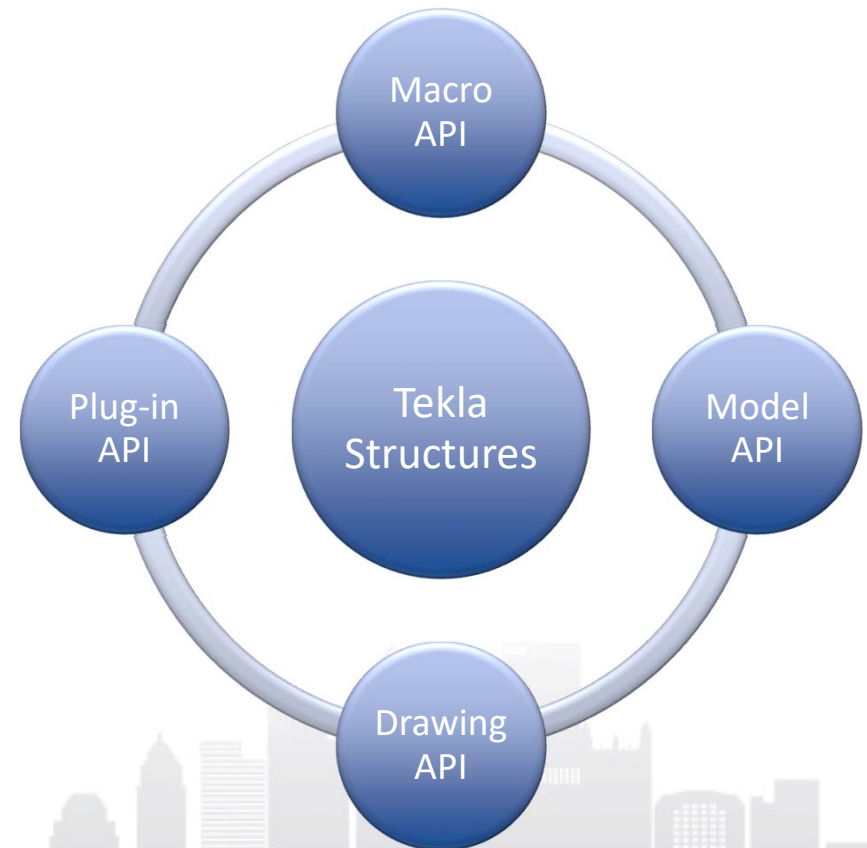
Instead... Let's Start w/ a Basic Overview

- Creates a Competitive Advantage
- Customization of Tekla Structures
...without changing the 'Core'
- Utilizing Microsoft .NET Technology



Major 'Elements' of the API

- **Macro API**
Record and play commands and dialog actions
- **Model API**
Create and modify model objects and info
- **Drawing API**
Create and modify drawings and drawing objects
- **Plug-in API**
Create intelligent parametric components



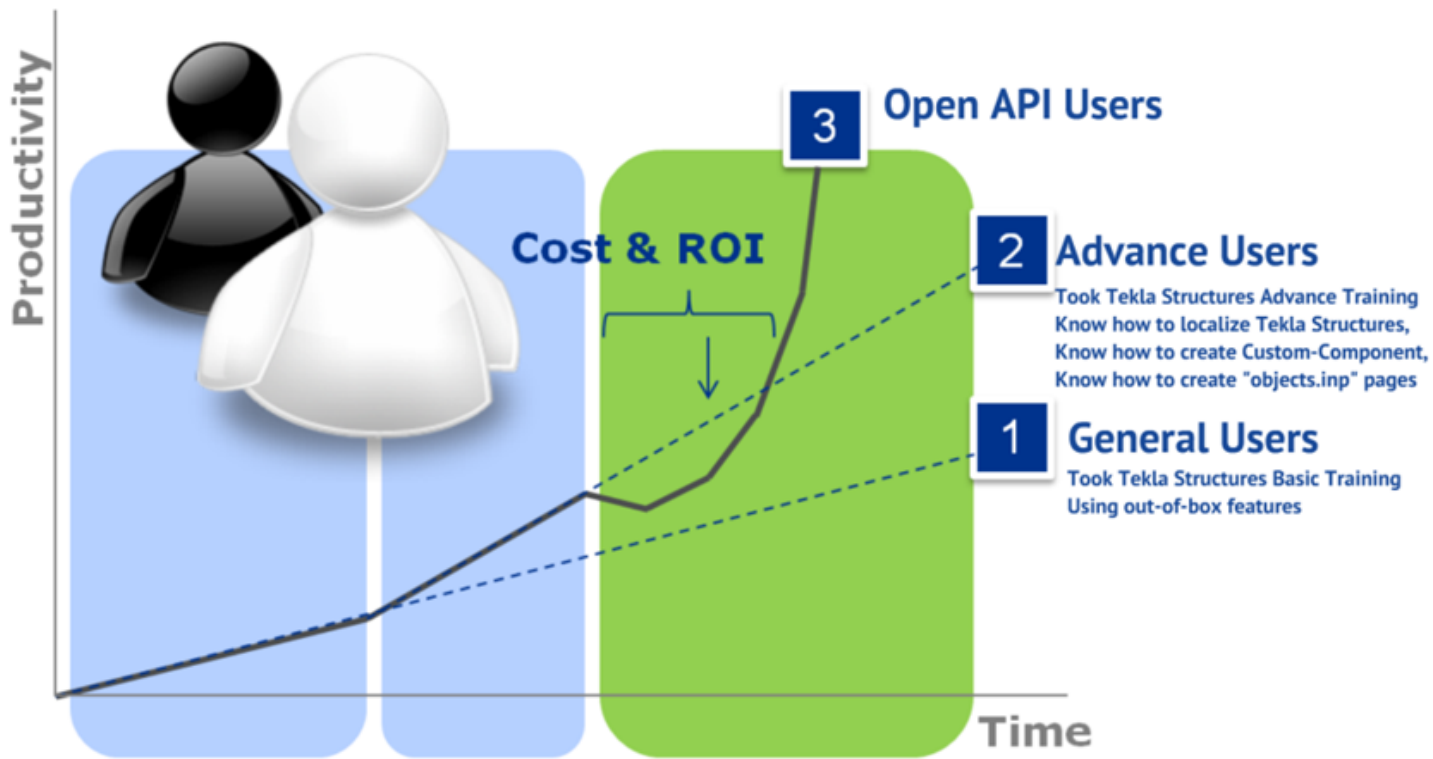
Why Use the API?

- Customize Functionality to Fit YOUR Needs
- Speed Up Repetitive Tasks
- Increase Productivity
- Integrate with Other Software/Systems
- Create & Market Intelligent 3D Products



Value Beyond the 'Box'

Increase Your Productivity in 3 levels

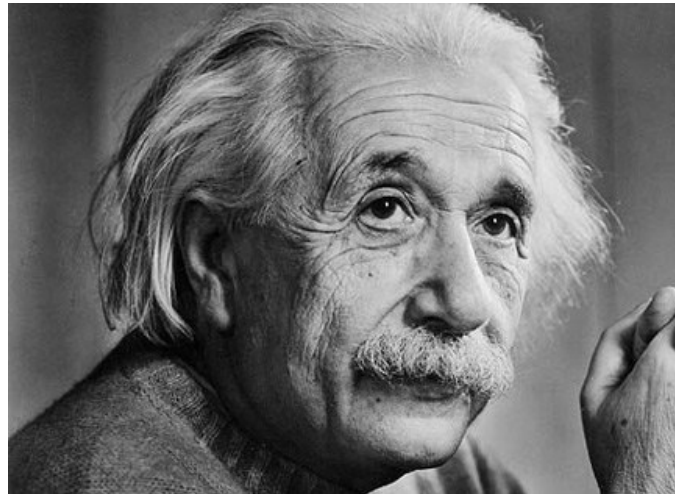


Crawl...Walk...Run...



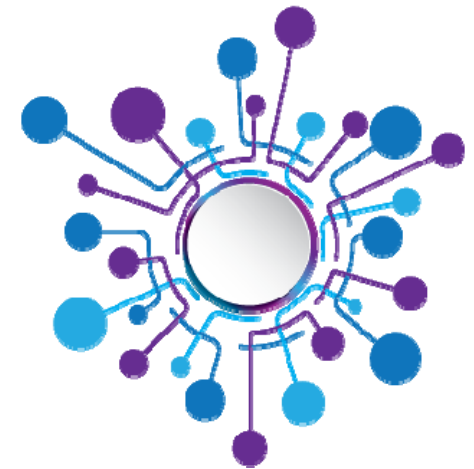
POWER TOOLS

“Click Savers”



SYSTEM TOOLS

“Expert User Systems”



DELIVERABLES

“Quality Output”



POWER TOOLS – “CLICK SAVERS”

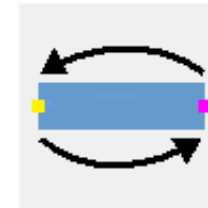


POWER TOOLS – “CLICK SAVERS”

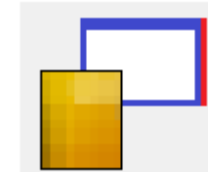
- Seen These Before?
- Everyday Productivity Boost
- Does a Specific Task
- Beyond Custom Components & Recorded Macros



Extend-Adjust Elevations



Swap handles



Create surface view wEdge



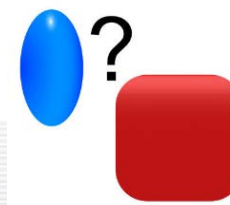
Find Number



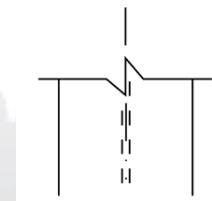
UDA List



Phase Numbering



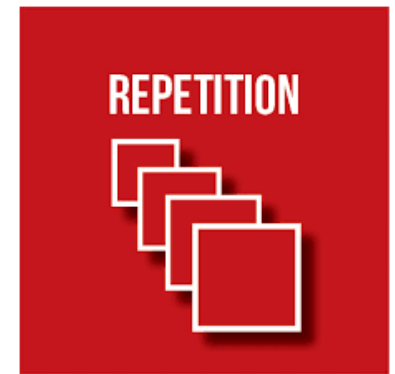
Compare Objects



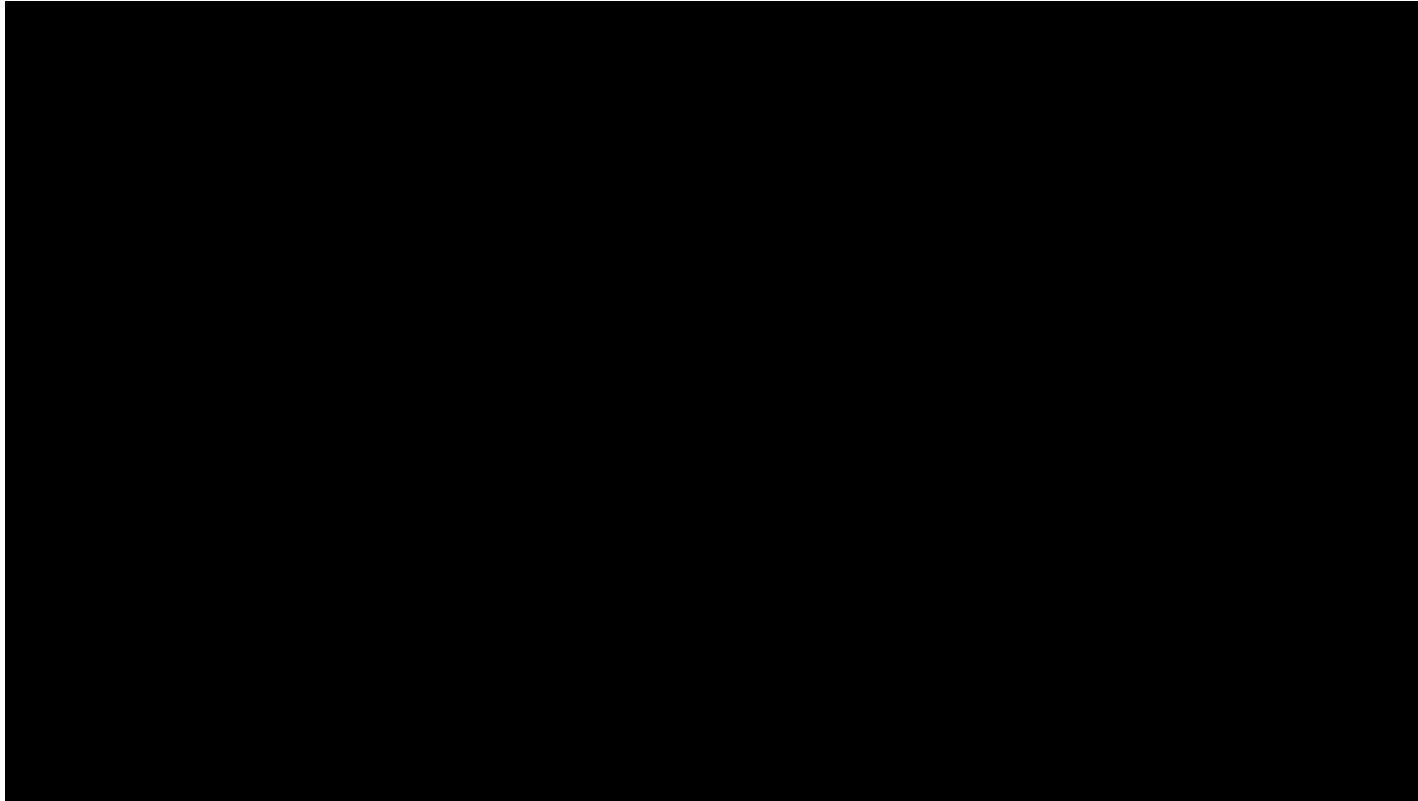
Break Lines

POWER TOOLS – ESTIMODELING CONCRETE

- Estimator NOT a Detailer
- Tedious Manual Tasks
- Get More Estimates Done

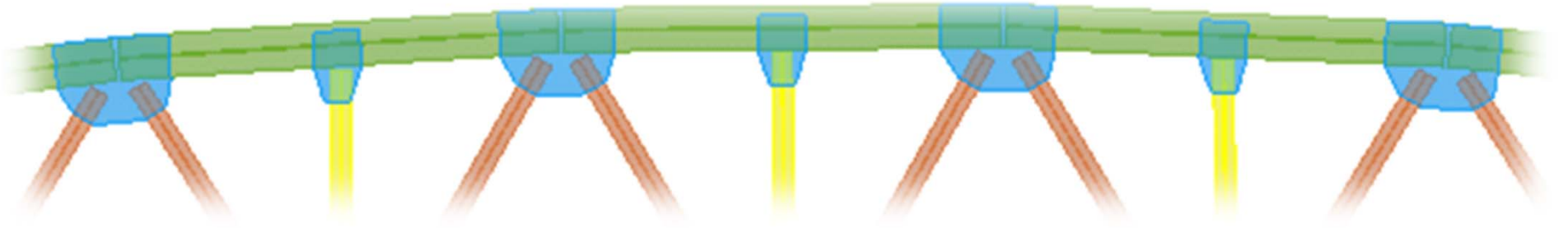


POWER TOOLS – ESTIMODELING CONCRETE



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POWER TOOLS – “CLICK SAVERS”

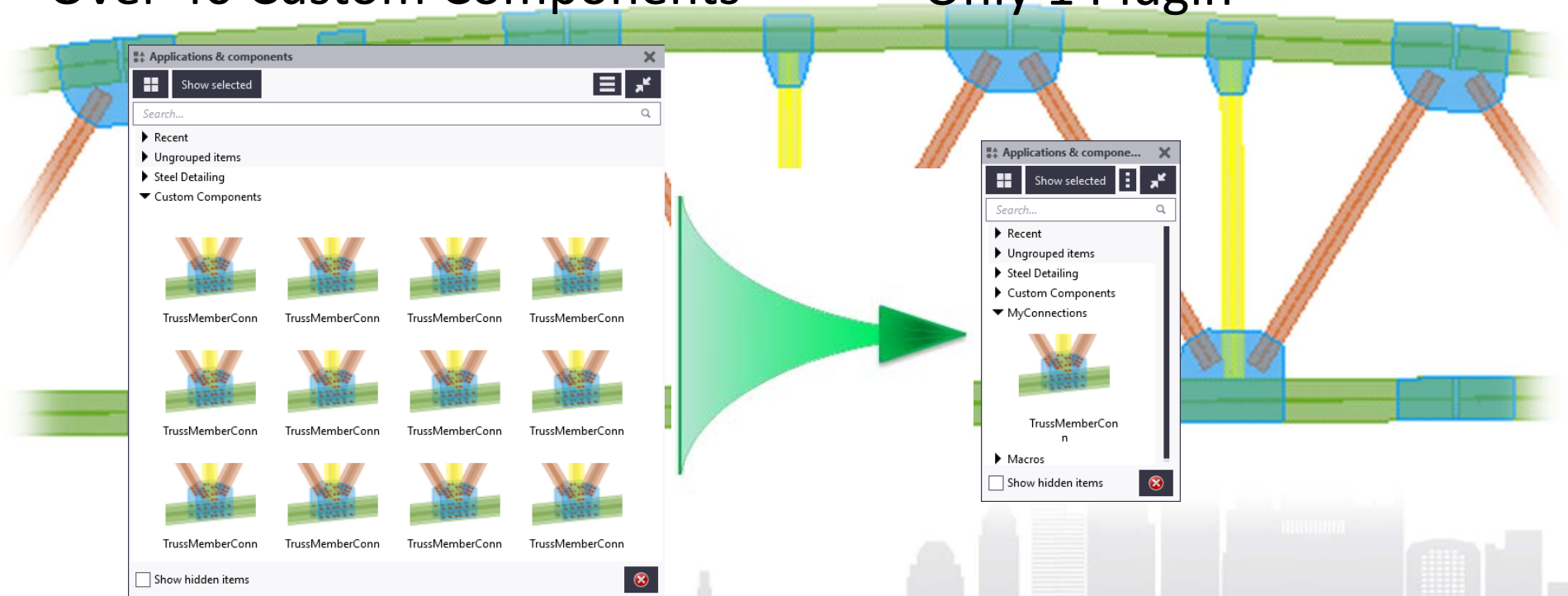


- Why API instead of Custom Component?

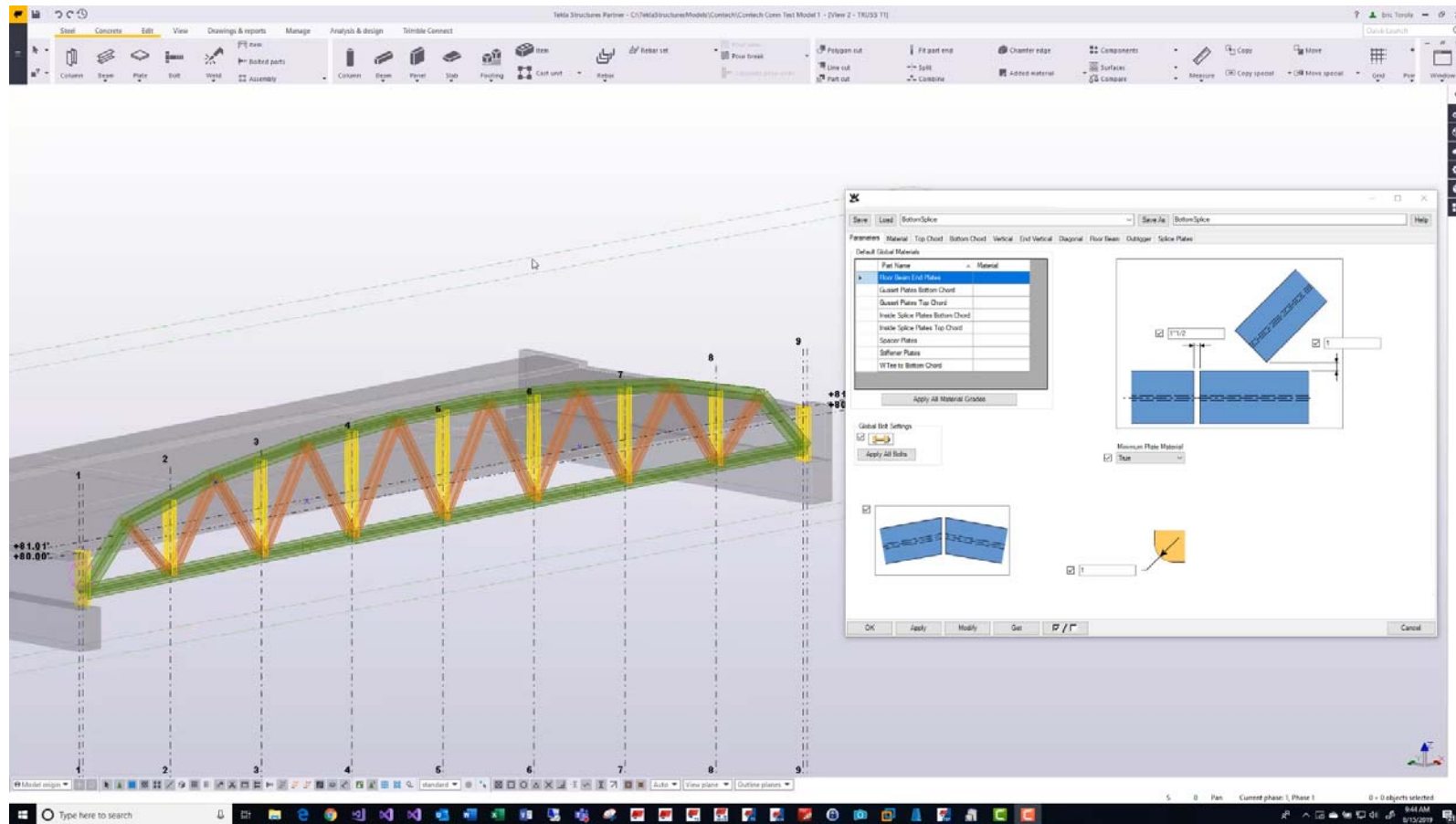
POWER TOOLS – Truss Gusset Plate Conn.

Over 40 Custom Components

Only 1 Plugin



POWER TOOLS – Truss Gusset Plate Conn.

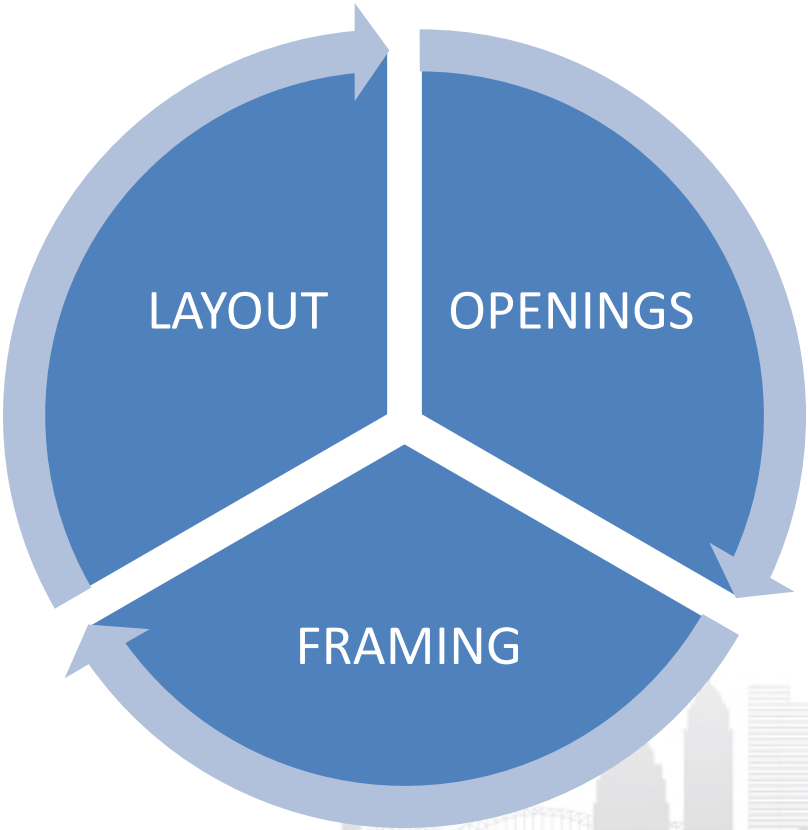


POWER TOOLS – start small ...

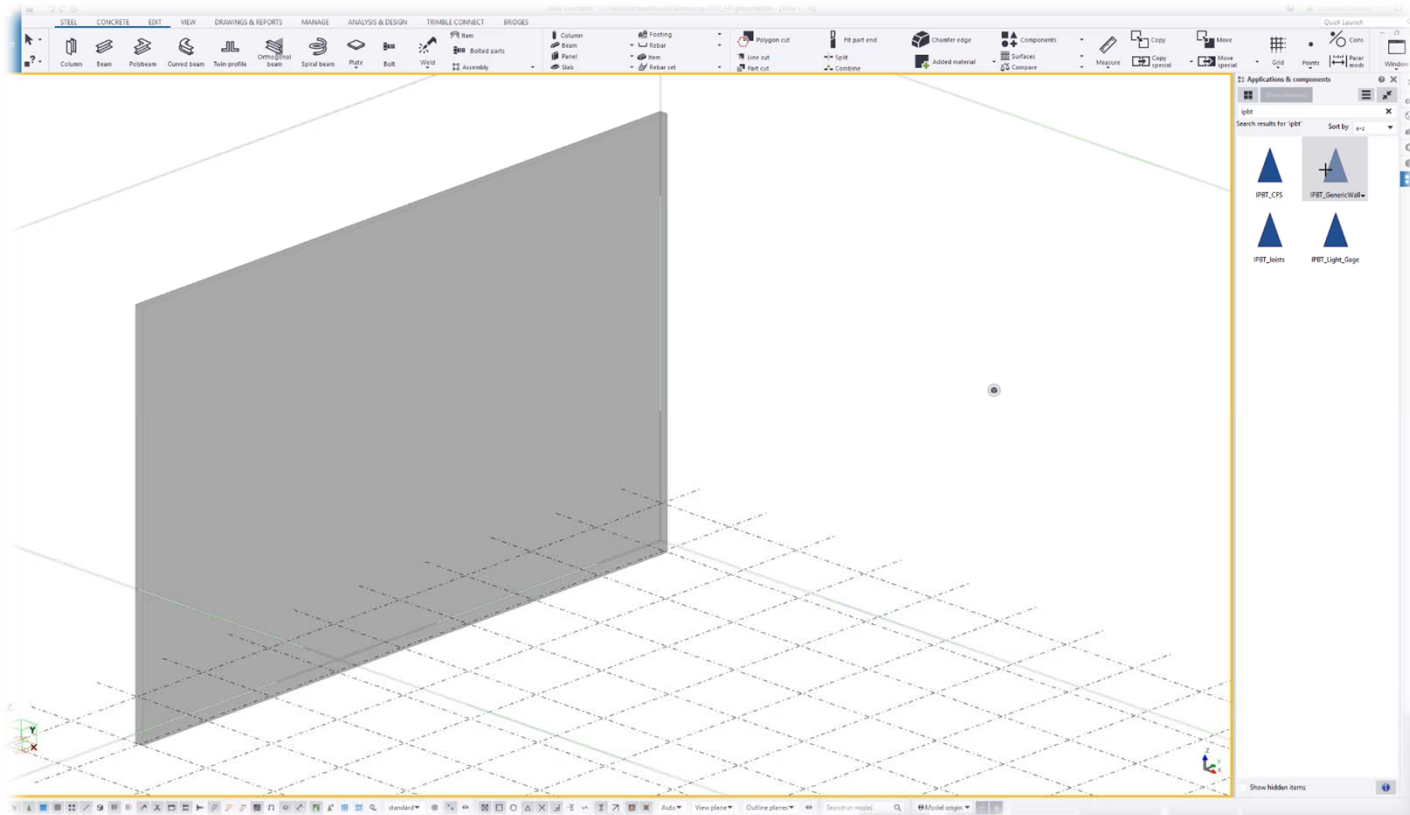


**WITH
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PURPOSE**

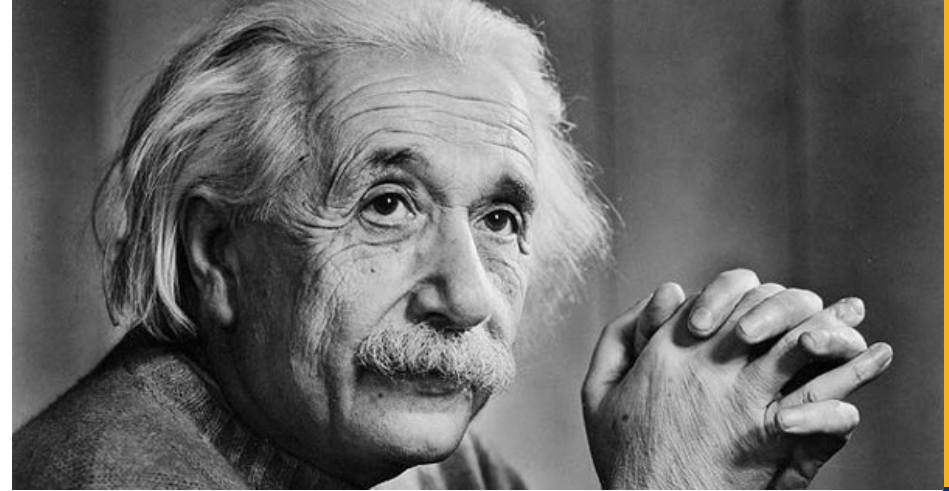
POWER TOOLS – LIGHT GAUGE STEEL FRAMING



POWER TOOLS – LIGHT GAUGE STEEL FRAMING



2019



SYSTEM TOOLS – “EXPERT USER SYSTEMS”



SYSTEM TOOLS – “EXPERT USER SYSTEMS”

What is an Expert User system?

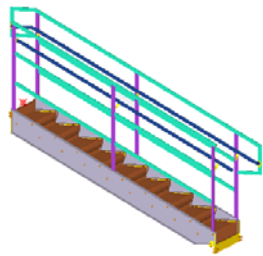
A system or collection of plugins and applications that work together to create your products.

Examples:

- Stair towers
- Pre-engineered buildings
- Bridge components
- Precast or panelized buildings

SYSTEM TOOLS – “EXPERT USER SYSTEMS”

Power Tools



Stair and Rail

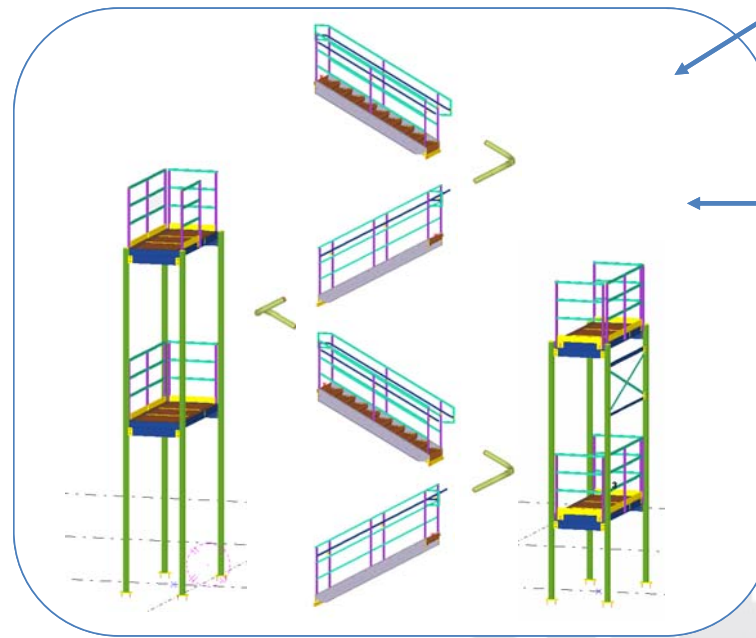


Handrail Connector



Landing Tower

System Tools



Stair Tower Tool



Eng. Calc.'s

IBC

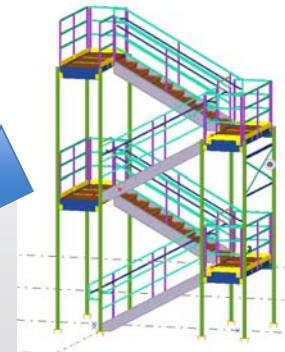


OSHA



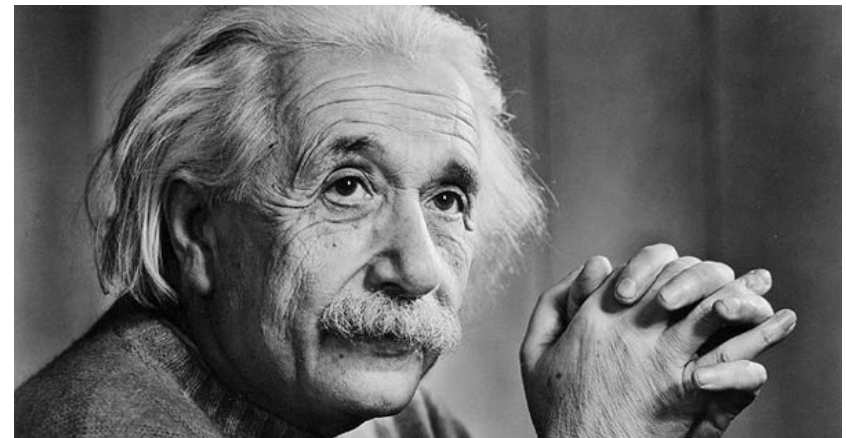
Design
Standards

Fabrication
Standards



SYSTEM TOOLS – “EXPERT USER SYSTEMS”

- Why create an Expert User system?
- Embed your expert users...
 - Engineering knowledge
 - Design standards
 - Fabrication standards
 - Industry standards and codes
 - Building codes
 - Other business data



... in your modeling tools before they retire

SYSTEM TOOLS – “EXPERT USER SYSTEMS”

Compare how far your shop processes
Have evolved...

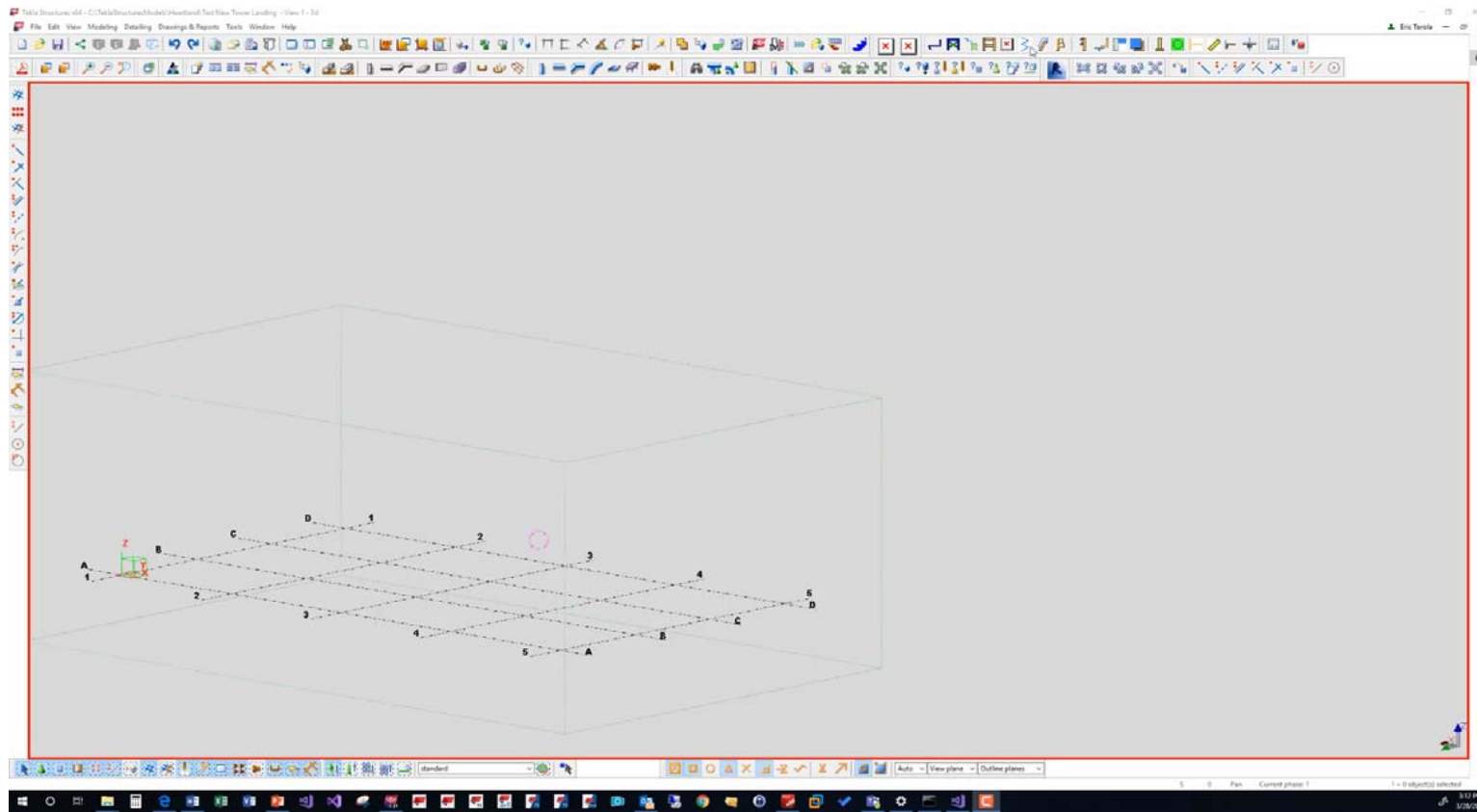


... to how far your drafting,
and engineering processes
have evolved.

Maybe it's time to address
these processes.



SYSTEM TOOLS – Stair Tower Example



SYSTEM TOOLS – “EXPERT USER SYSTEMS”



DREAM
BIG

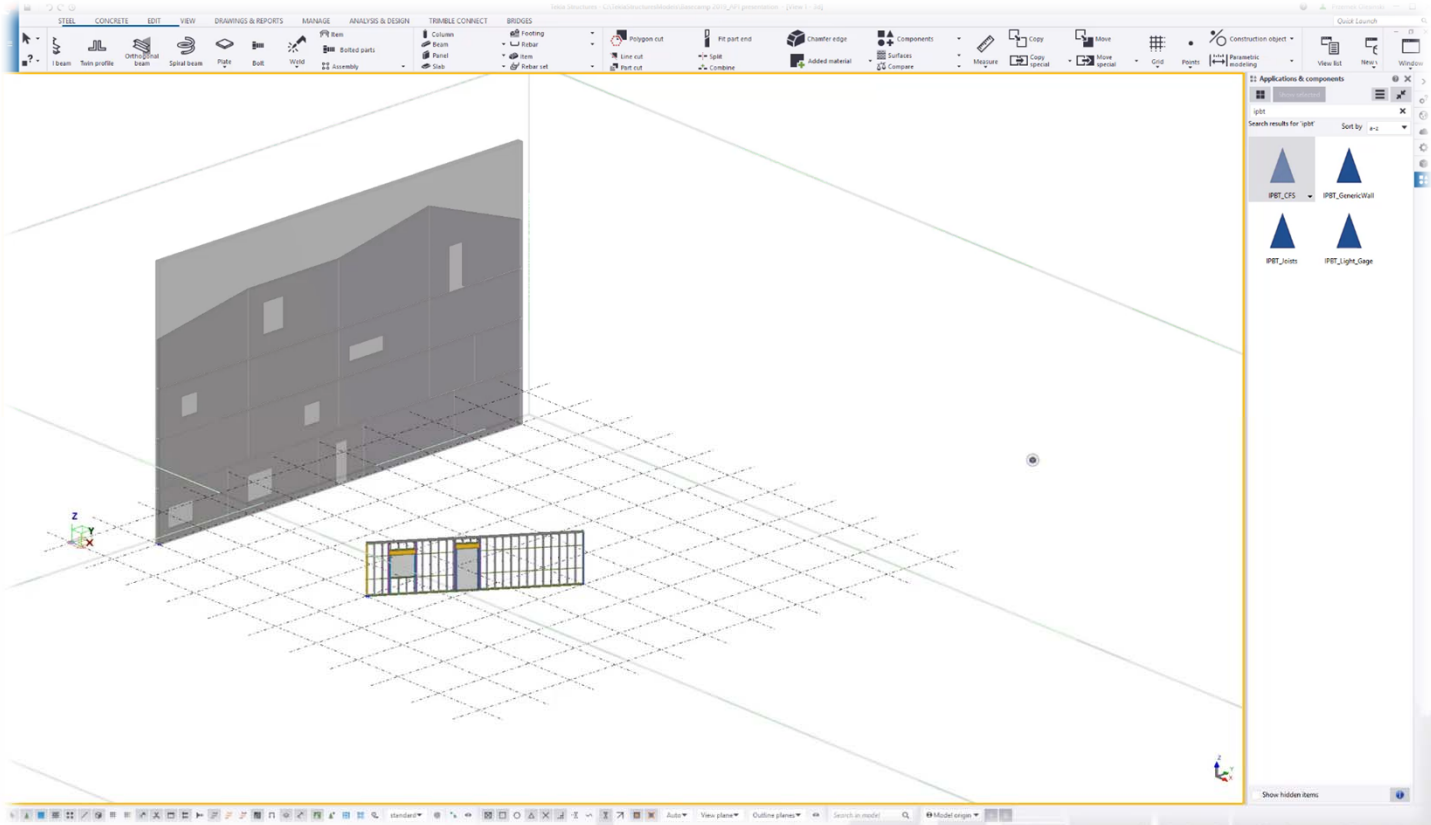


SYSTEM TOOLS – “EXPERT USER SYSTEMS”



EXPERTS ON DEMAND

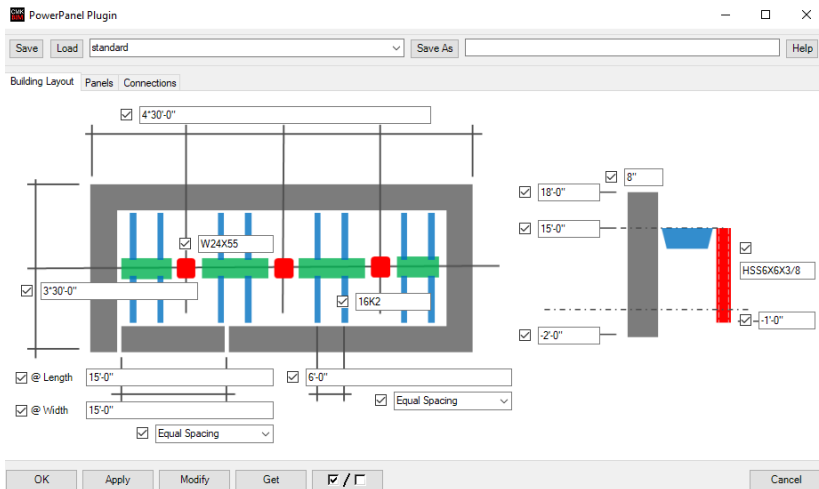
SYSTEM TOOLS – LGSF cont.



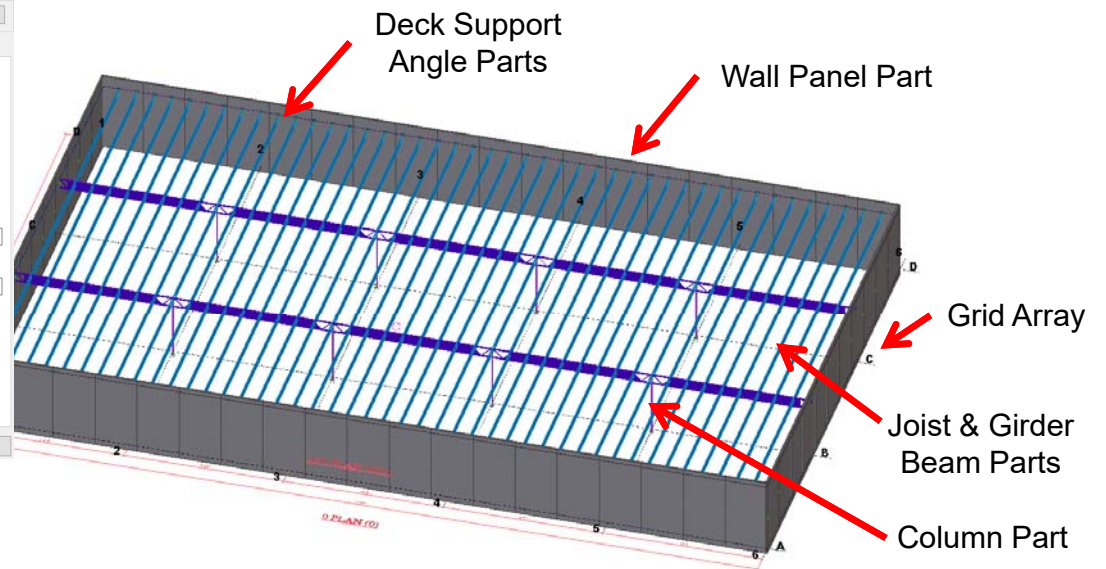
SYSTEM TOOLS – TILTUP PROJECTS



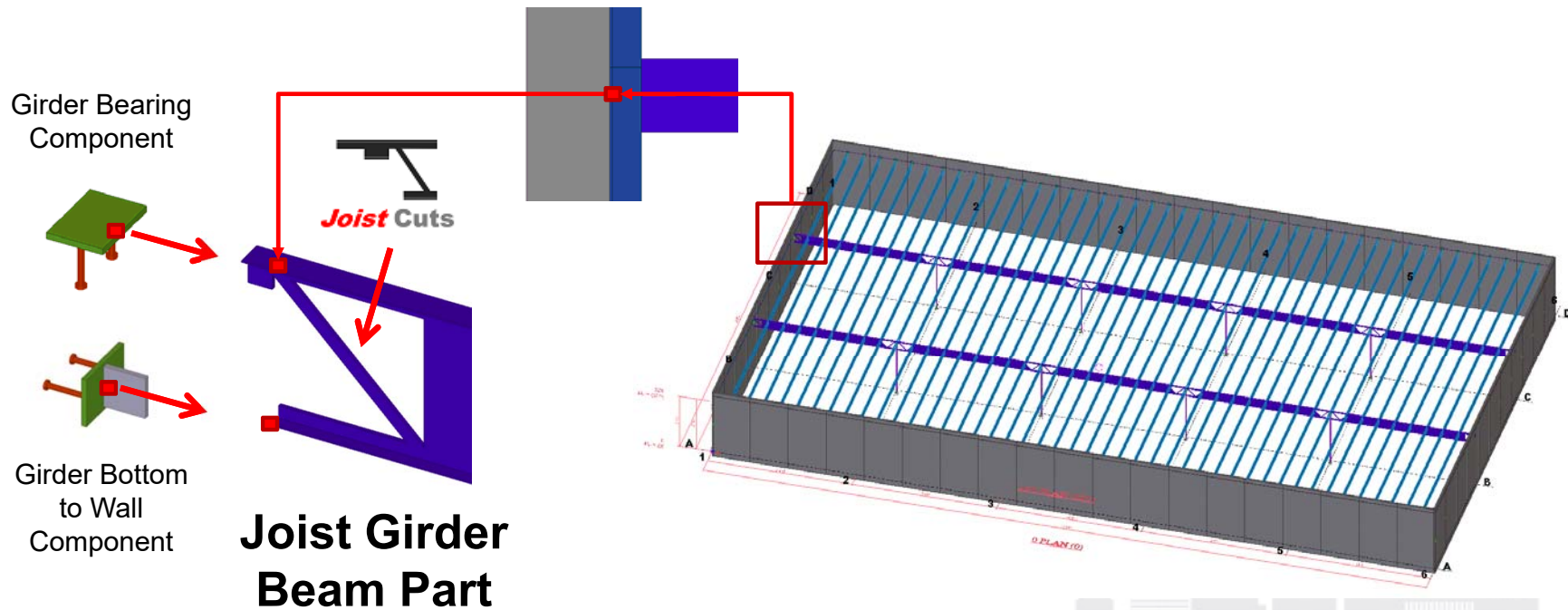
SYSTEM TOOLS – TILTUP PROJECTS



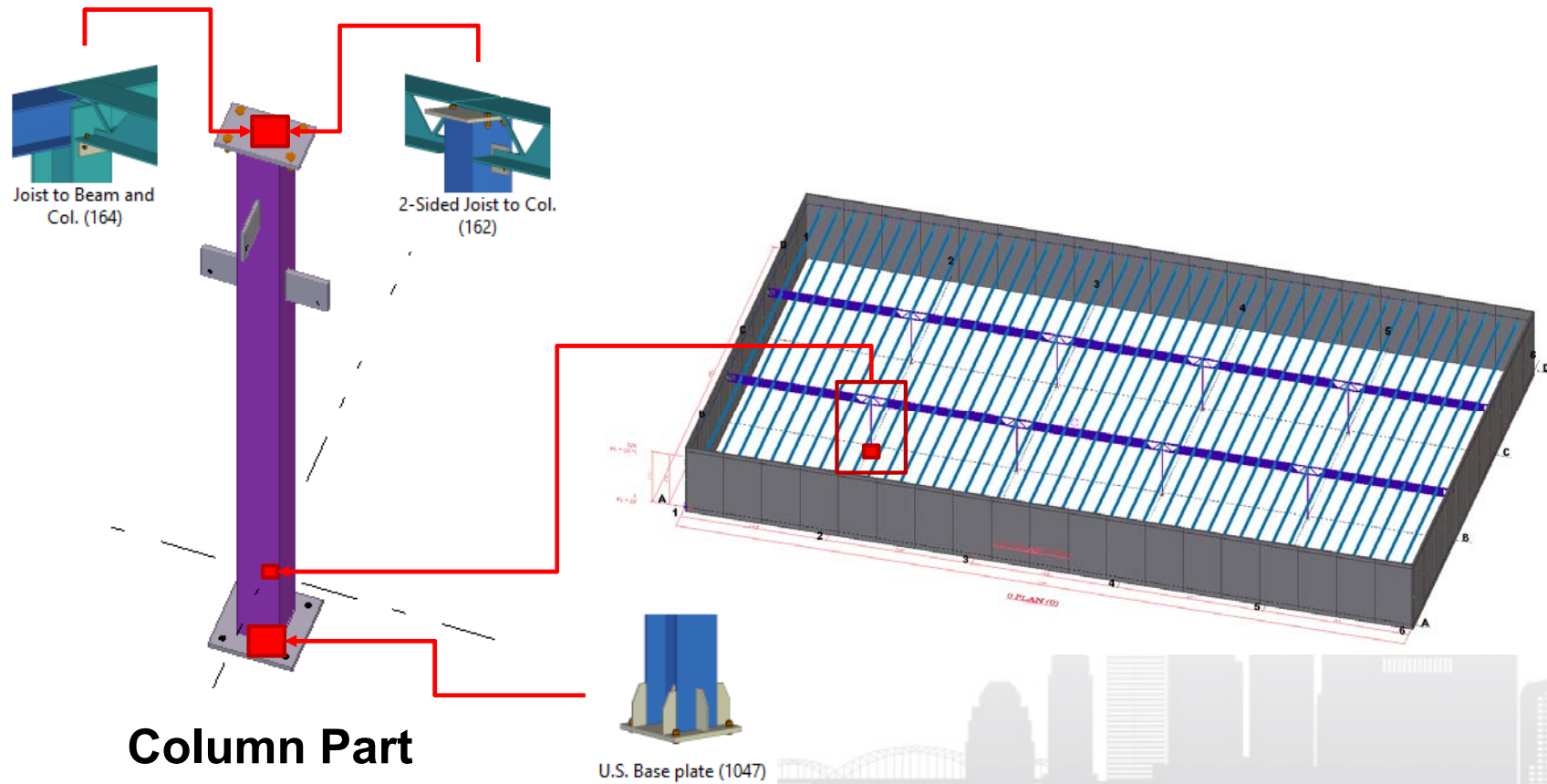
Configurator



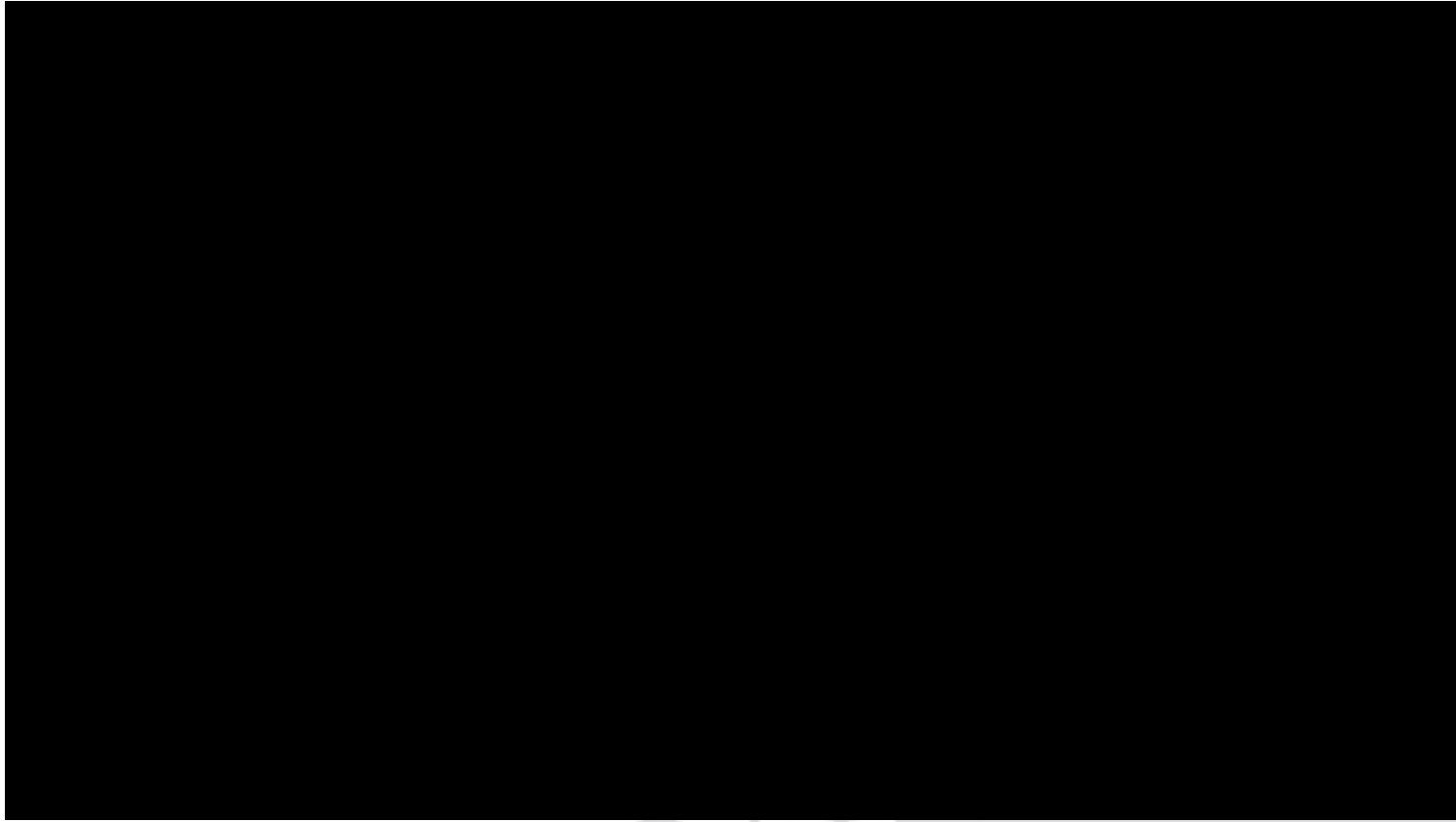
SYSTEM TOOLS – TILTUP PROJECTS



SYSTEM TOOLS – TILTUP PROJECTS



SYSTEM TOOLS – TILTUP PROJECTS



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DELIVERABLES – “QUALITY OUTPUT”



DELIVERABLES – QUALITY OUTPUT IN ANY FORMAT

- “DESCRIBES” THE PROJECT
- ACCESS ON DEMAND
- FULLY DISTRIBUTABLE

DELIVERABLES – QUALITY OUTPUT IN ANY FORMAT



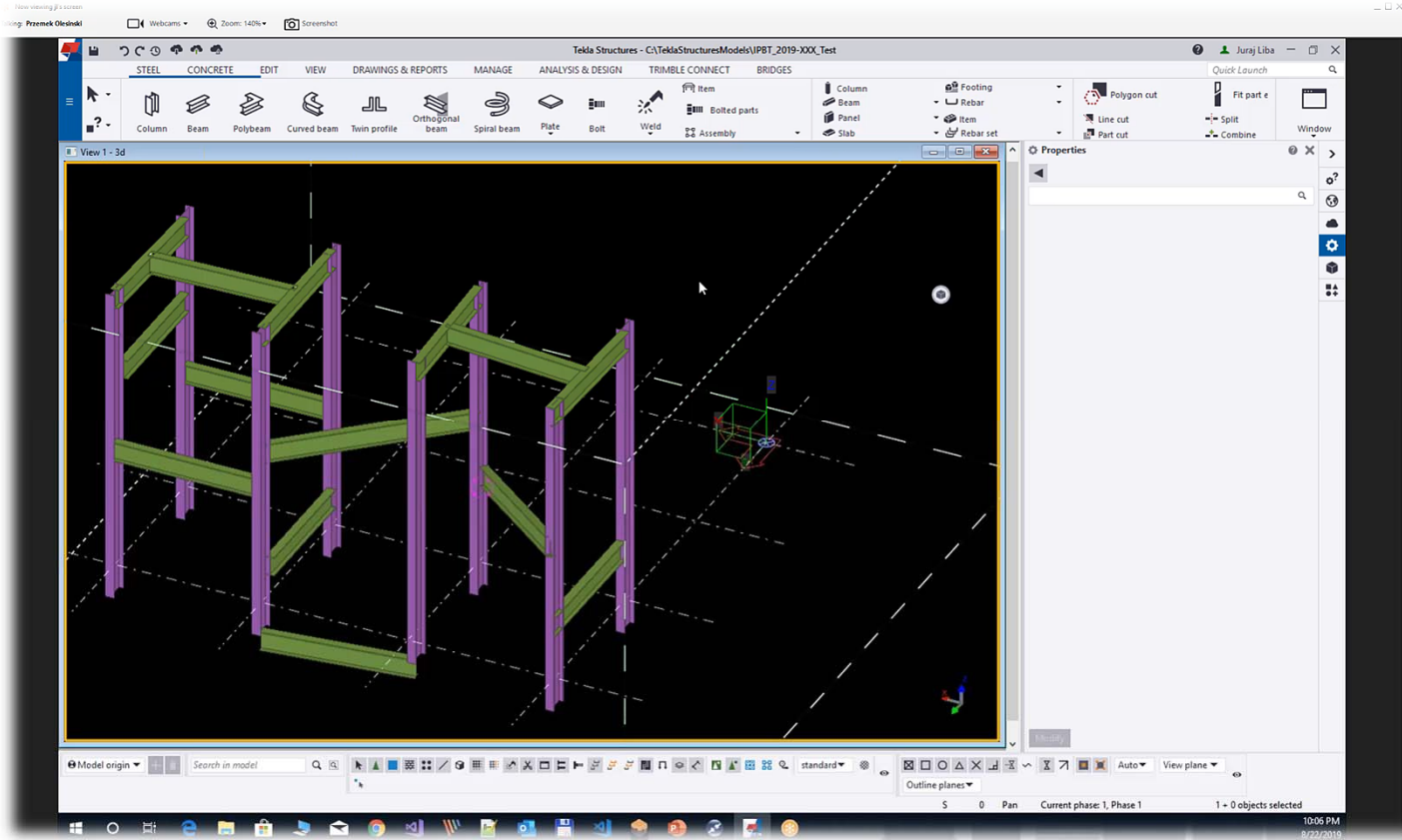
A composite image showcasing engineering deliverables. On the left is a 3D architectural model of a building. In the center is a 2D structural drawing showing reinforcement details. On the right is a detailed reinforcement bending schedule table.

BENDING TYPES OF REINFORCEMENT
Main bars

| Bar No. | Grade | Length | A | B | C | D | E | F | G | H | I | J | K | L | M | N |
|---------|--------|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 6 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 7 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 8 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 9 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 10 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 11 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 12 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 13 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 14 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 15 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 16 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 17 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 18 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 19 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 20 | Fe 415 | 3.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

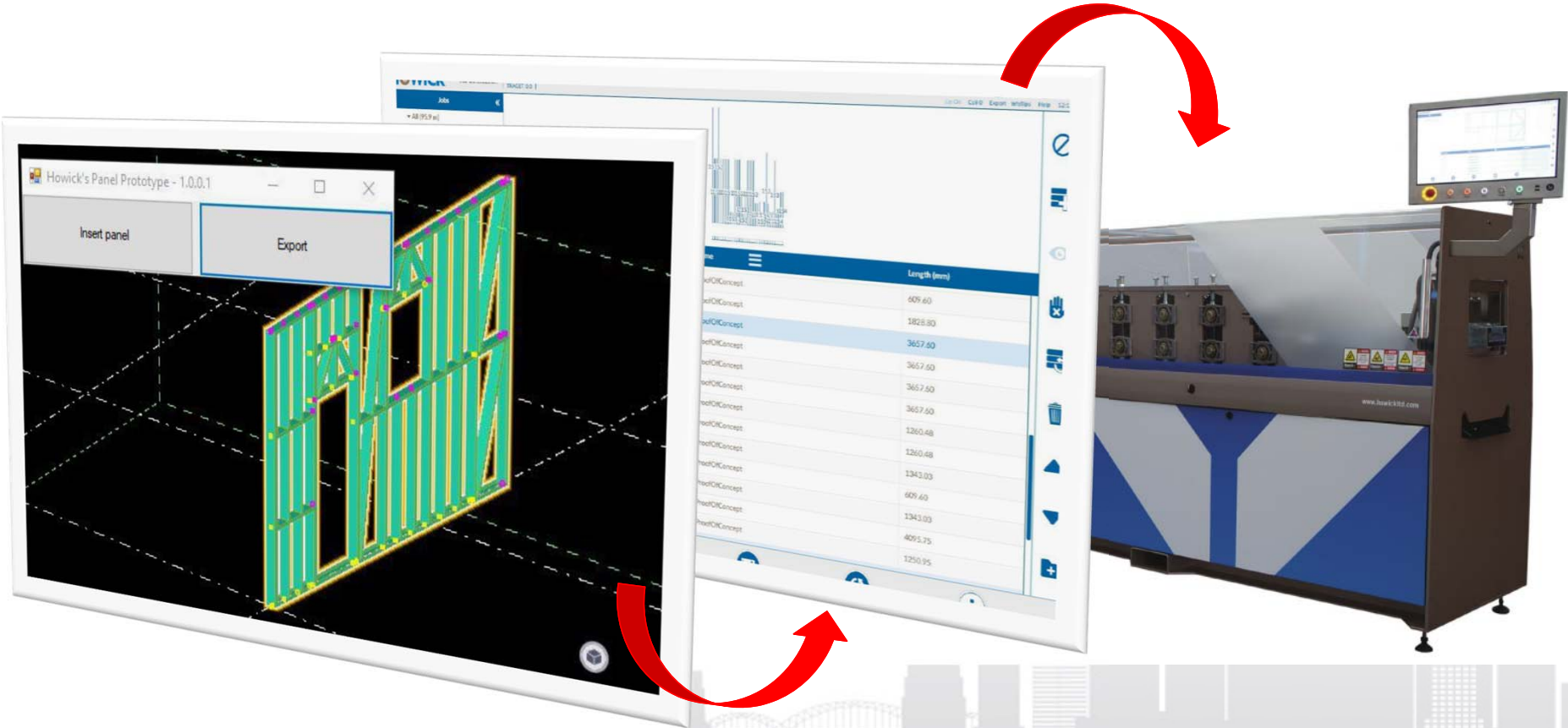
DATE: 08/12/2017

DELIVERABLES – SOFTWARE INTEROPERABILITY



2019

DELIVERABLES – DATA INTEGRATION



DELIVERABLES – QUALITY OUTPUT IN ANY FORMAT

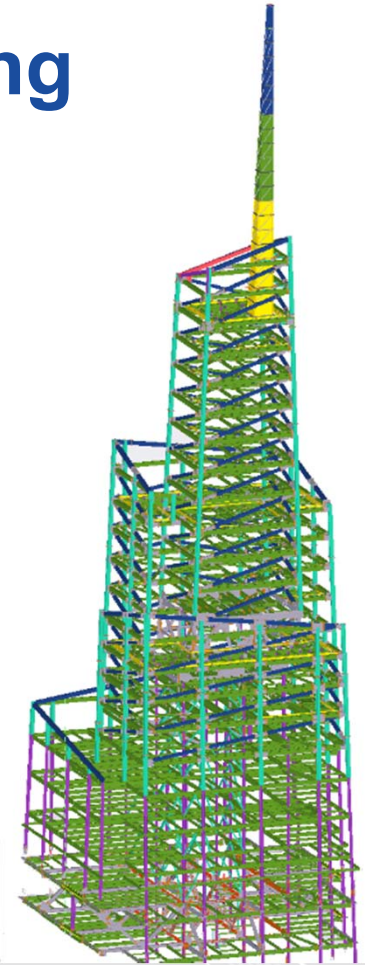


THE SKY
IS
THE LIMIT



DELIVERABLES – HSS Unwrap Drawing

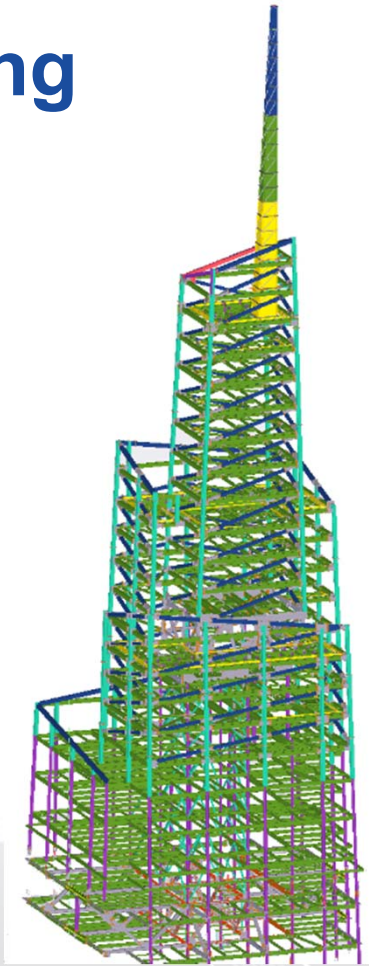
- Automating Drawing Creation



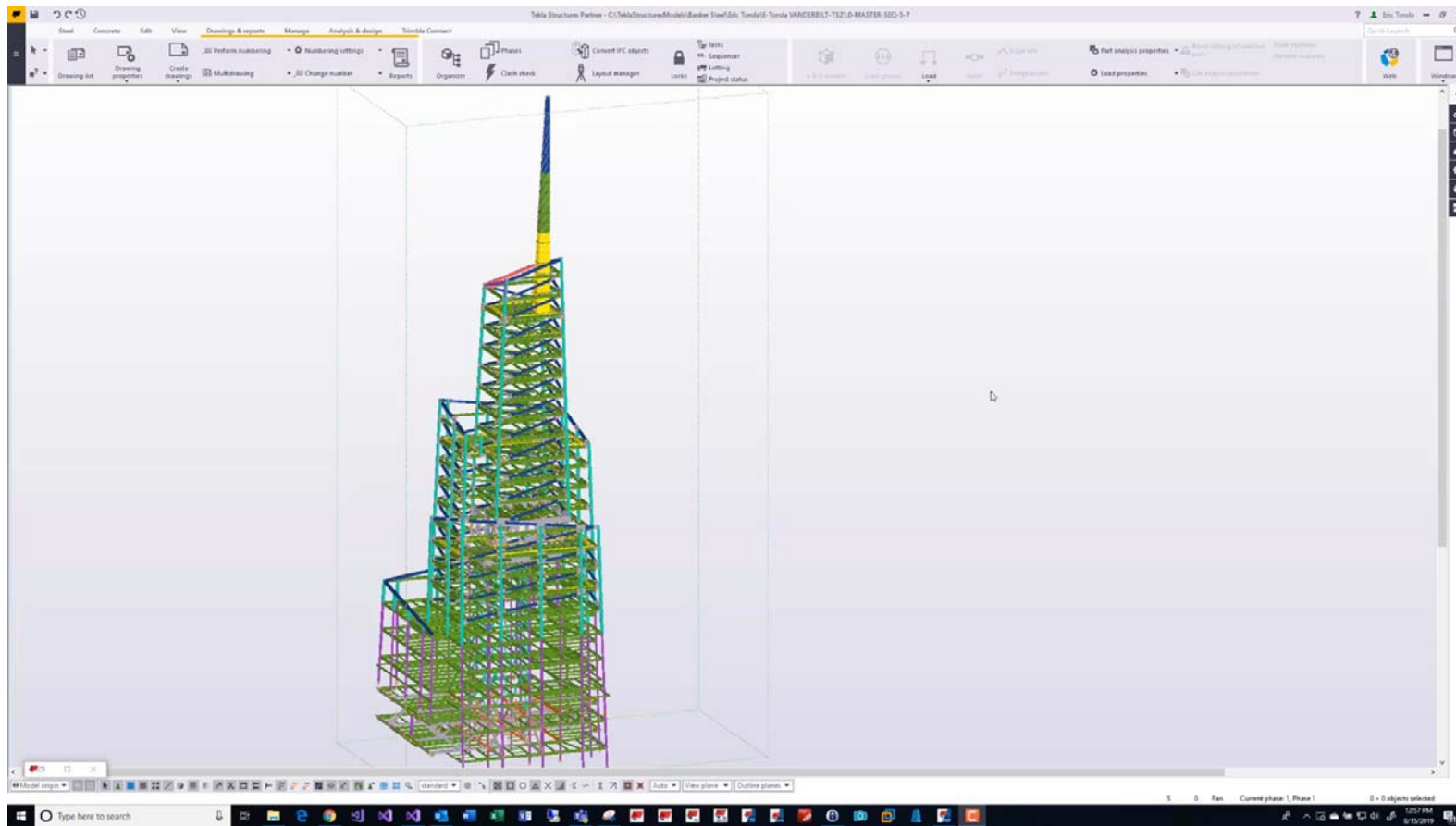
DELIVERABLES – HSS Unwrap Drawing

Problem to solve

- 1000's of HSS Beams
- 6 Week delivery of material
- Large liquidated damages for delays
 - Can't have any shop errors on cutting of parts

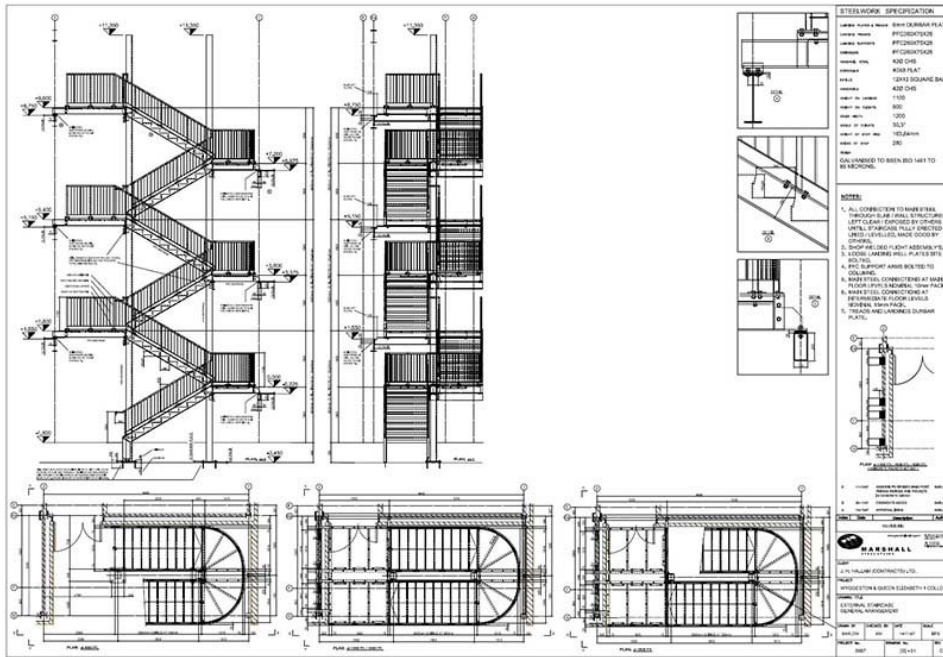


DELIVERABLES – HSS Unwrap Drawing

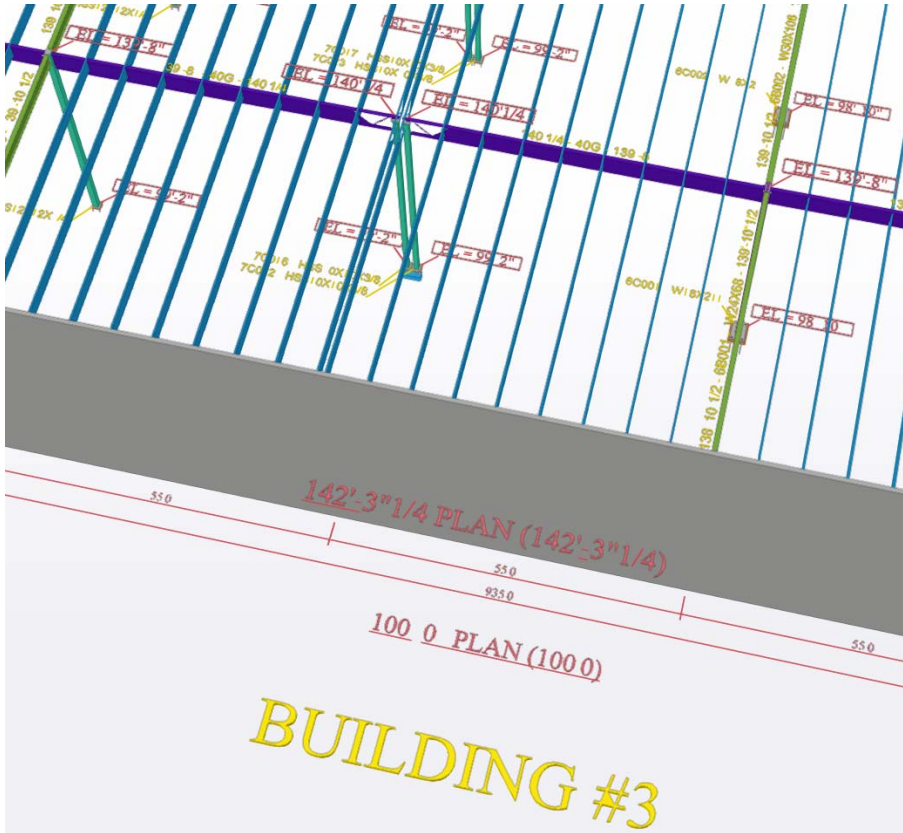


DELIVERABLES – MODEL ANNOTATIONS

2019



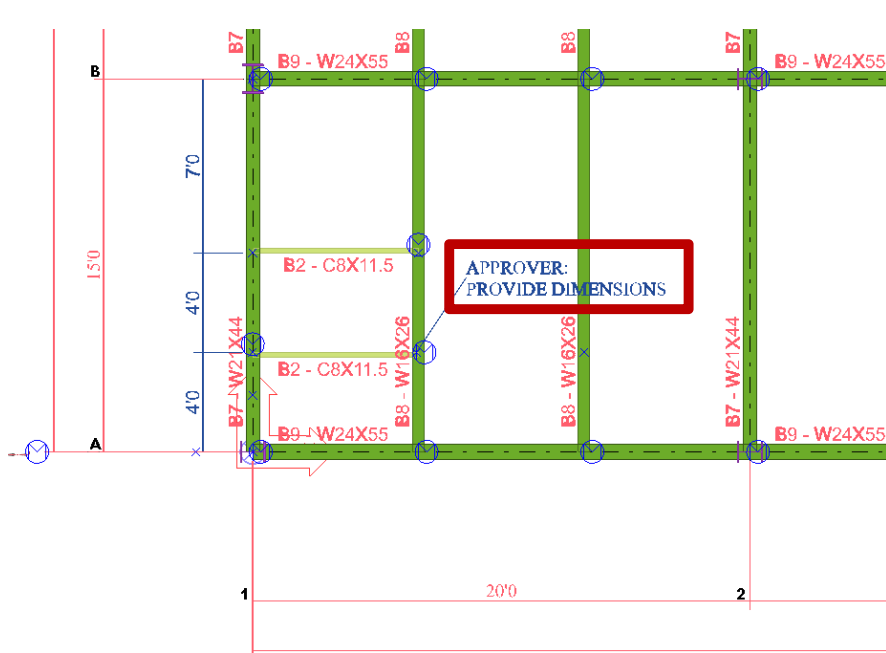
DELIVERABLES – MODEL ANNOTATIONS



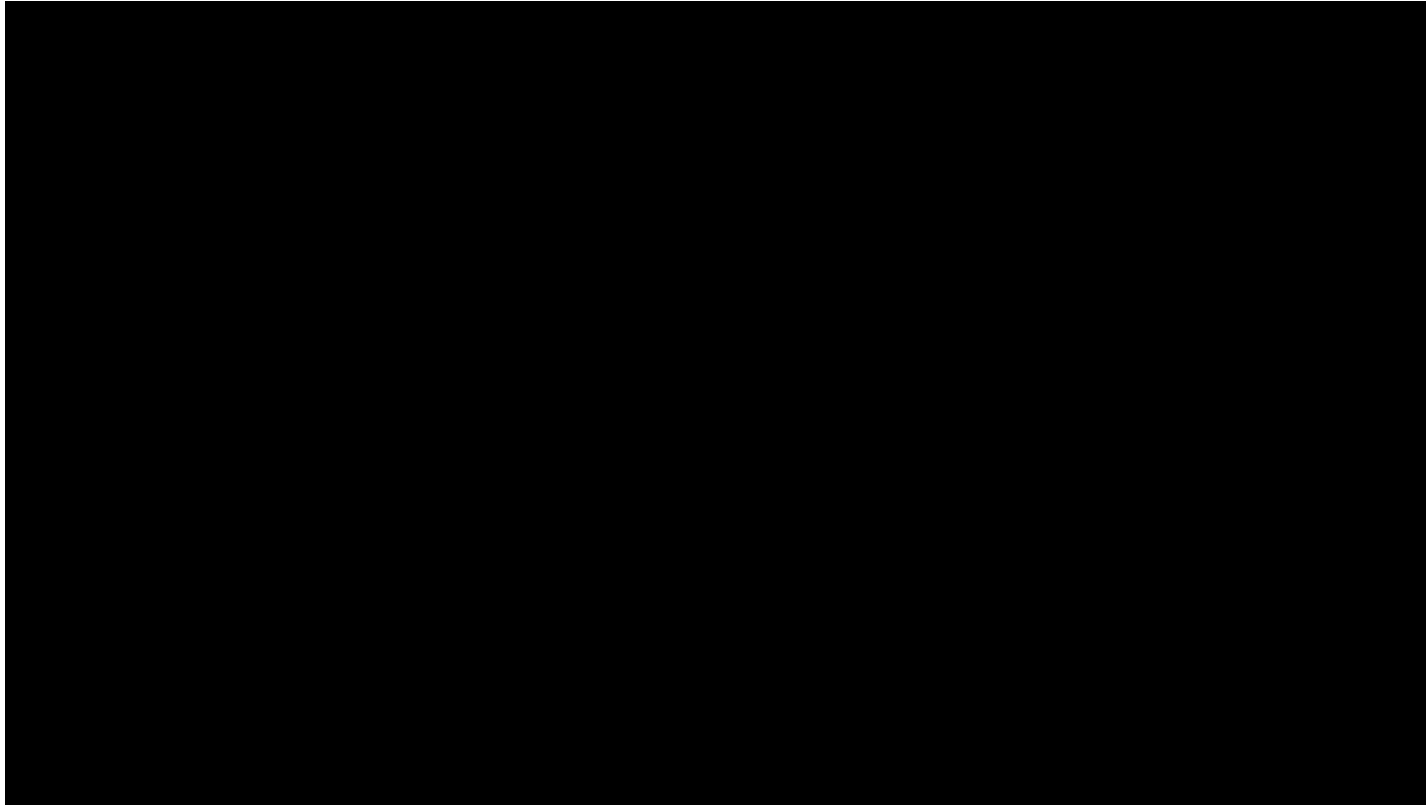
McCombs
STEEL

TEKLA
BASECAMP

DELIVERABLES – MODEL ANNOTATIONS



DELIVERABLES – MODEL ANNOTATIONS



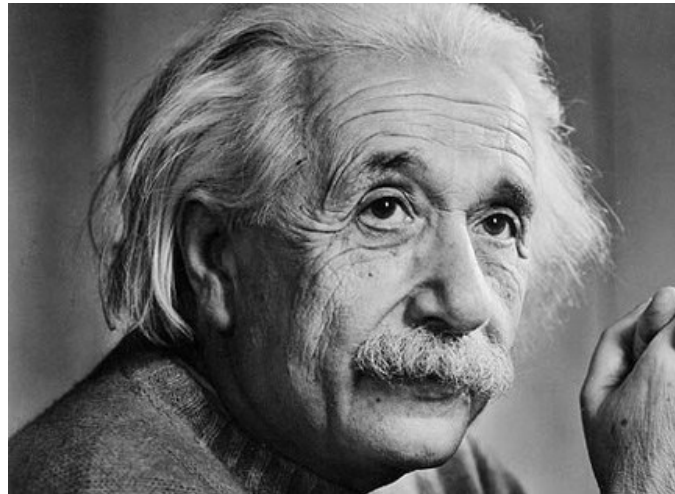
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Crawl...Walk...Run...



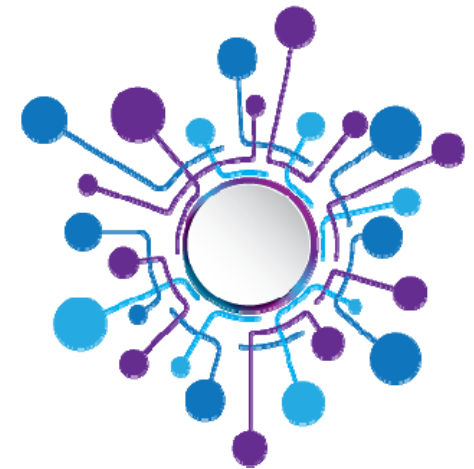
POWER TOOLS

“Click Savers”



SYSTEM TOOLS

“Expert User Systems”



DELIVERABLES

“Quality Output”

So...How do you get started?



- developer.tekla.com
- Get API references, programming guides & exercises, code examples, and more
- Post questions and share best practices
- Find development experts like...



Also...Get with the program!

- Join the Tekla Partner Program



- Tekla Partners Program Suite
- Access to full support
- Permission to sell your Tekla apps
- Possibility to reach Tekla users around the world



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Questions for the 'Stooges'?

