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Tekla BIM workflow

optimizing the total process

PORTUGAL STEEL

Vakis P. Kokorelis
Director Geral
Construsoft Portugal

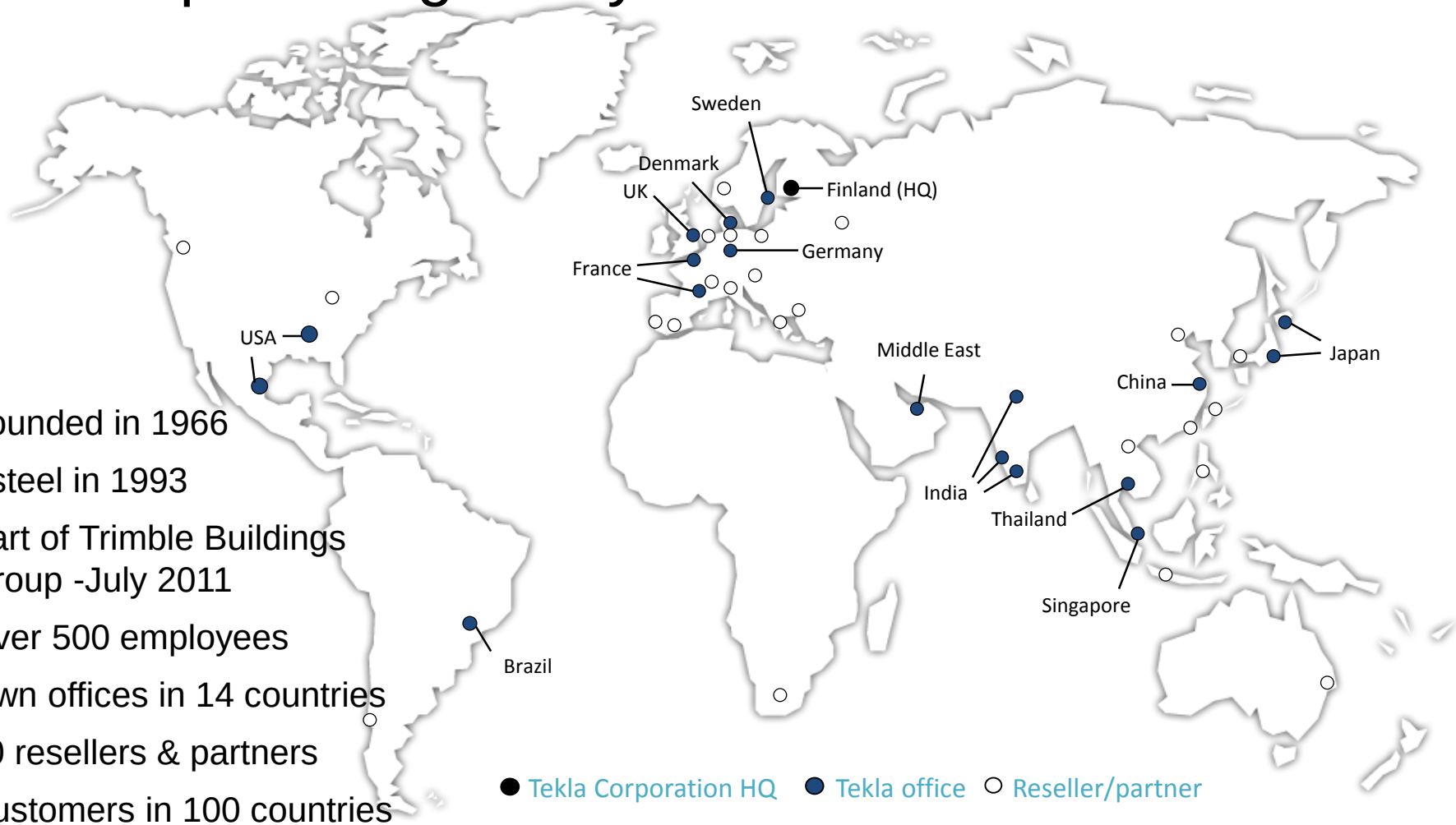
Agenda

- Tekla - Global Software Company
- How to make working more efficient and productive?
- Tekla BIM Solution
  - Design and documentation
  - Structural analysis
  - Engineering the details
- Reference cases
- Conclusion

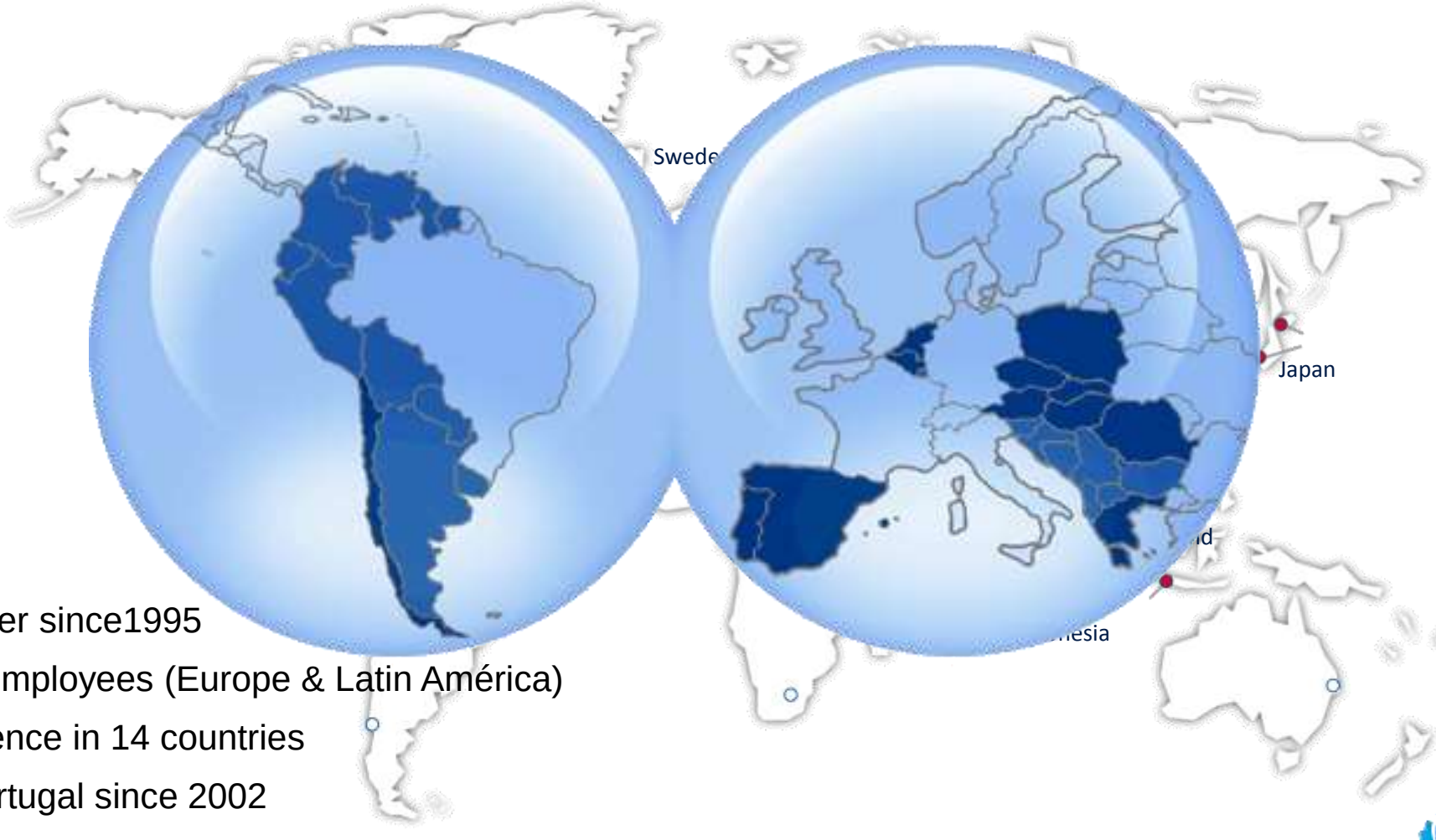
- **Tekla - Global Software Company**
- How to make working more efficient and productive?
- Tekla BIM Solution
  - Design and documentation
  - Structural analysis
  - Engineering the details
- Reference cases
- Conclusion

Tekla operates globally

- Founded in 1966
- Xsteel in 1993
- Part of Trimble Buildings Group -July 2011
- Over 500 employees
- Own offices in 14 countries
- 30 resellers & partners
- Customers in 100 countries



Construsoft part of the Global Network



- Partner since1995
- 100 employees (Europe & Latin América)
- Presence in 14 countries
- In Portugal since 2002

● Tekla Corporation HQ ● Tekla Office ○ **Reseller/Partner**

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Tekla software solutions

- Tekla BIM solutions are developed for multiple stakeholders involved in building and construction projects

Concrete Contractors

Structural Engineers

General Contractors

Steel Fabricators

Precast Fabricators

Rebar Fabricators

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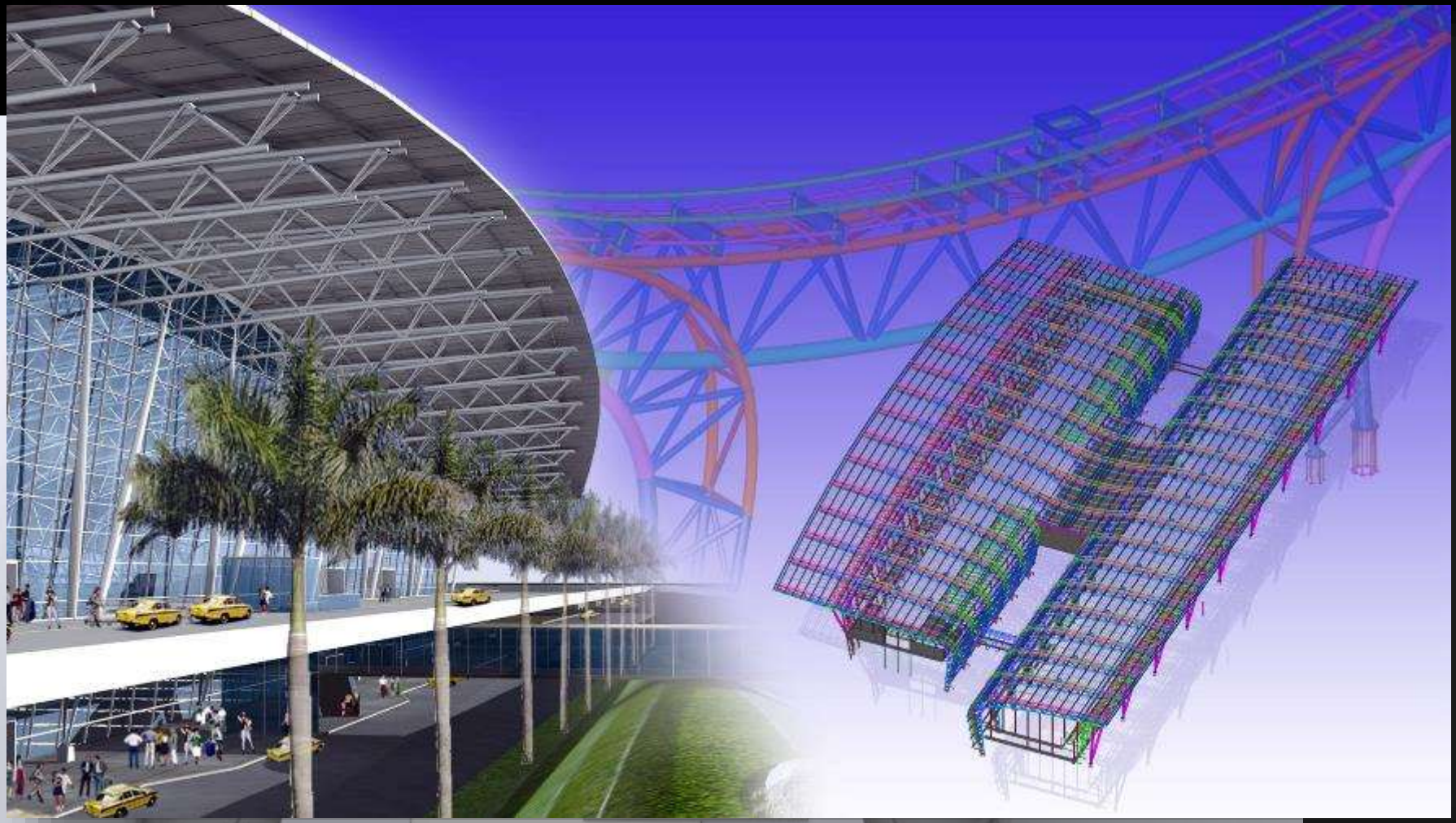
- Tekla - Global Software Company
- **How to make working more efficient and productive?**
- Tekla BIM Solution
  - Design and documentation
  - Structural analysis
  - Engineering the details
- Reference cases
- Conclusion



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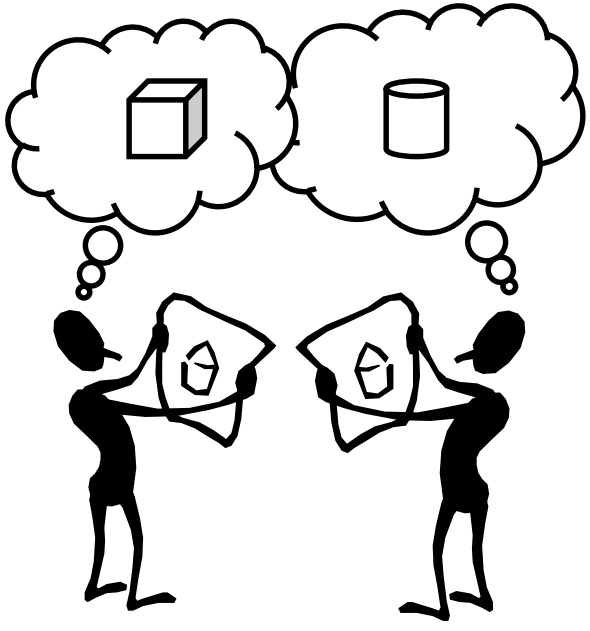
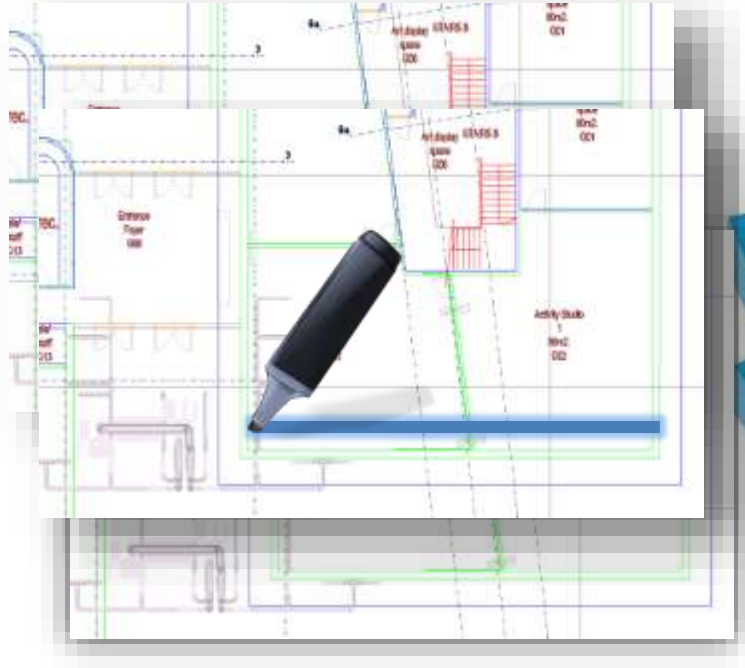
Challenges



- *Communication*

- *Information management*



- *Change coordination*

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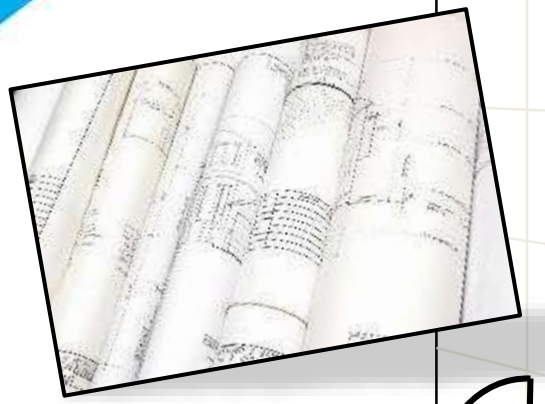
Inefficient process spends project resources



Accumulation of information

Strategic Definition

Preparation and Brief

Concept Design

Developed Design

Technical Design

Construction

Handover and Close Out

In Use

Time

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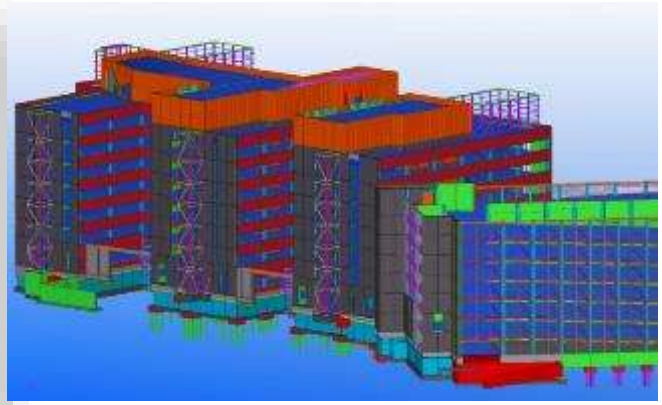
Solution: From 2D to 3D to BIM

- *Paper drawings*

- *3D model*



- *BIM model*

- BIM (Building Information Modeling) process, intelligent and data rich 3D Modeling

BIM process increases productivity…

Return On Investment

The highly detailed as built structural Tekla BIM models enable the highest level of constructability and production control ***for the business****.*

- What are the benefits for the company?
- How much will save and earn?
- Why should invest?

TEKLA® potential 3

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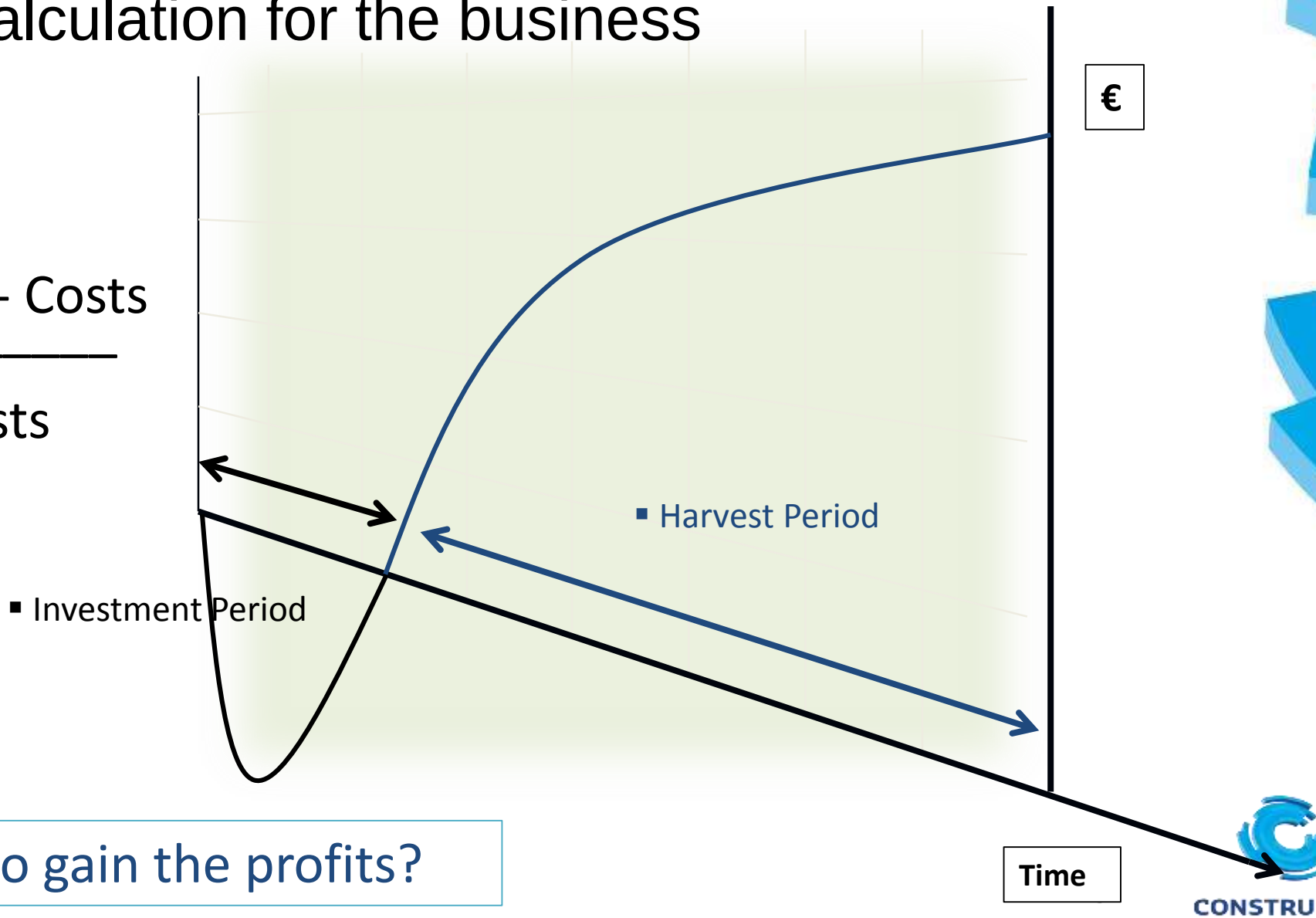
ROI calculation for the business

ROI=

Profits - Costs

Costs



> How to gain the profits?

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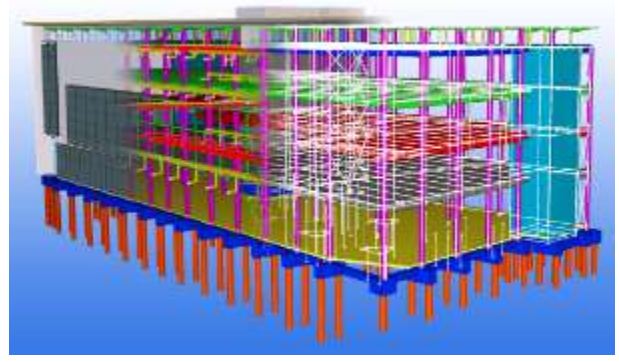
ROI calculation for the business

Multiple factors will influence the amount of the ROI such as:

- The existing processes and the level of productivity
- Quality of services offered

<u>But also…</u>

- Utilization of the information that is in the model
- The services offered today vs. potential services tomorrow
- How much we win more work



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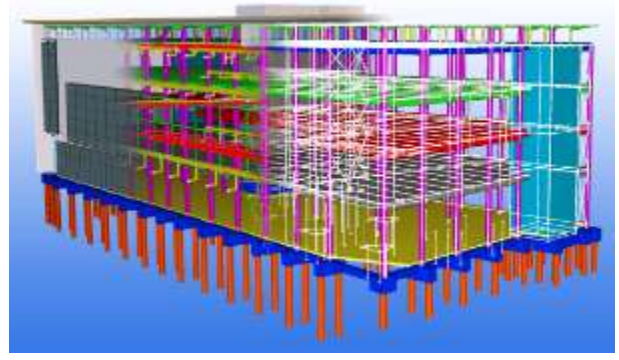
ROI calculation for the business

Multiple factors will influence the amount of the ROI such as:

- **Your existing processes and the level of productivity**
- Quality of services offered



But also…

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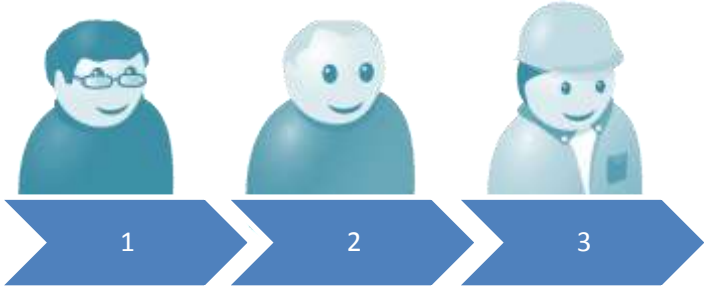
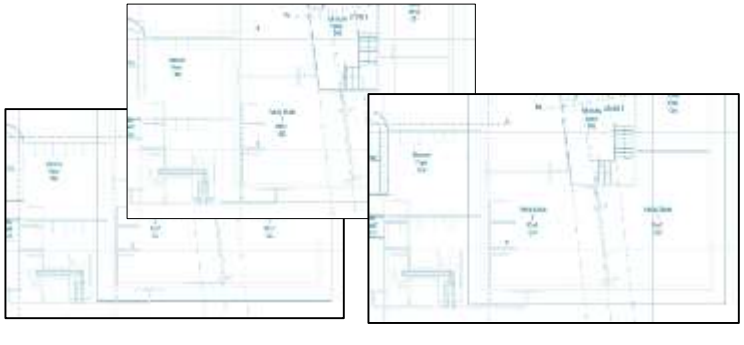
Existing processes and level of productivity



- *Workflow*

- *Collaboration*



- *Production of drawings*

- *Lead times*

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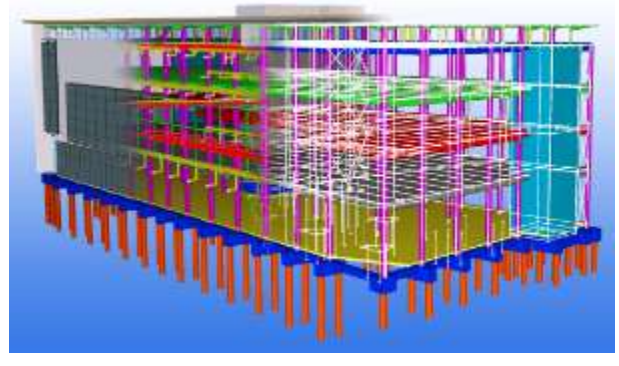
ROI calculation for the business

Multiple factors will influence the amount of the ROI such as:

- Your existing processes and the level of productivity
- **Quality of services offered**



But also…

- Utilization of the information that is in the model
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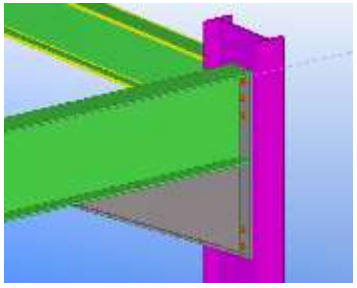
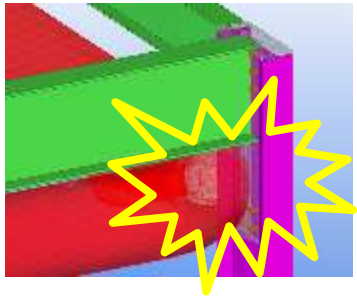
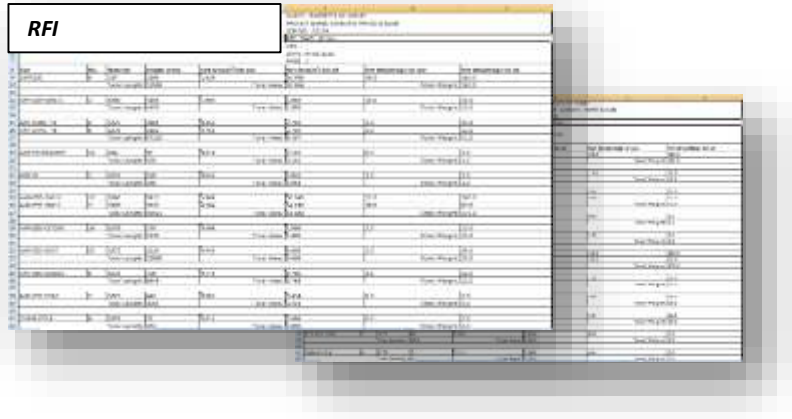
Quality of services offered





> *Clash detection*

> *Reduced errors on site*



- *Management of RFI's*

> *Model to site*

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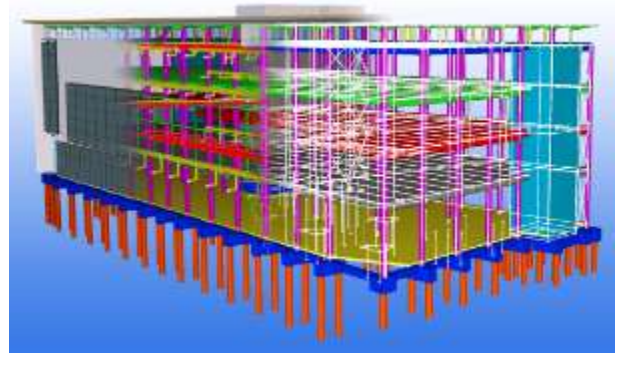
ROI calculation for your business

Multiple factors will influence the amount of your ROI such as:

- Your existing processes and the level of productivity
- Quality of services offered



<u>But also…</u>

- **Utilization of the information that is in the model**
- The services you offer today vs. potential services tomorrow
- How much you win more work

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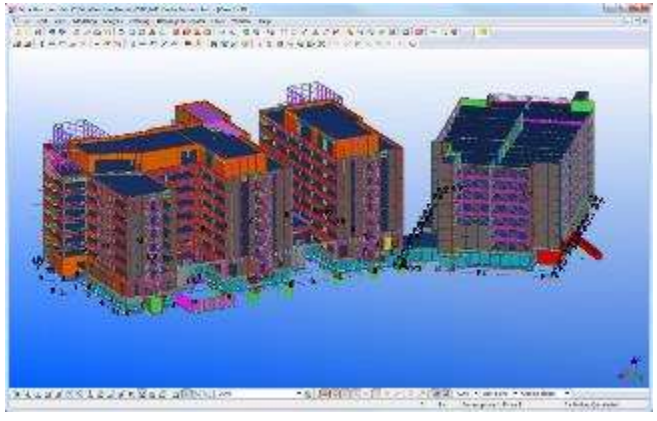
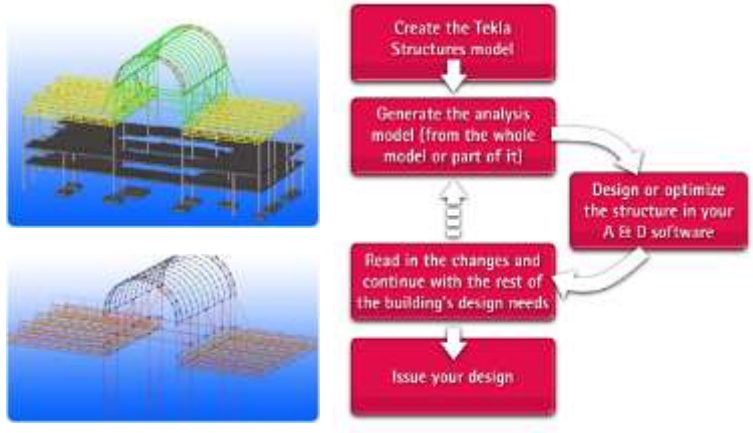
Information management

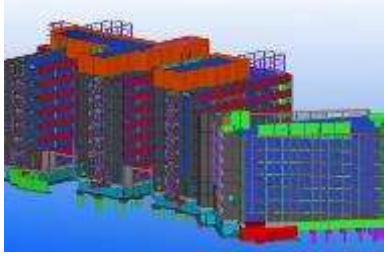


- *Constructability*
  - *Precast, cast in place, steel etc.*



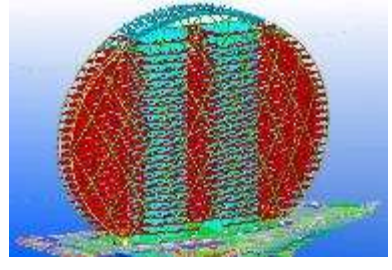
> *Interoperability*

i.e. A&D packages SDNF, IFC and CIS/2, SAP2000, Staad.Pro, S-FRAME, GTStrudl, Dlubal RFEM and RSTAB, MidasIT Robot™ Structural Analysis Professional software



3107 Drawings
6700 reinforced concrete elements
630 ton rebar (267 000 rebar groups)
157 ton steel
4226 bolts groups
15658 Welds

In total, over 1 million objects
Model database 73 MB



> *Large file size handling*

> *Flexible design*

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ROI calculation for the business

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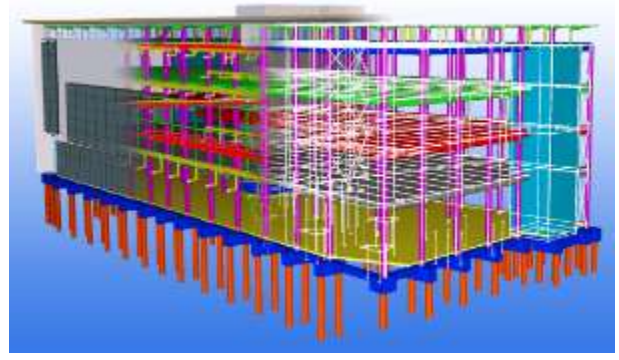

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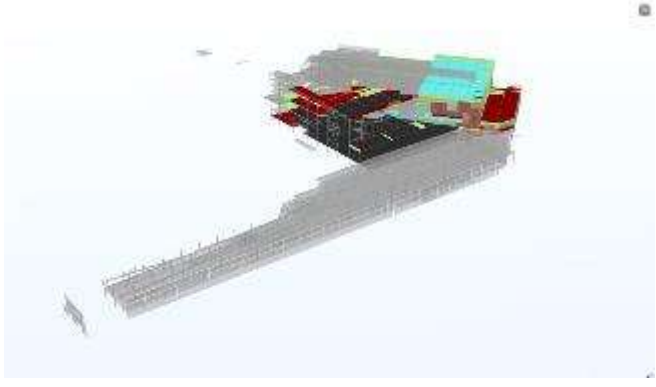
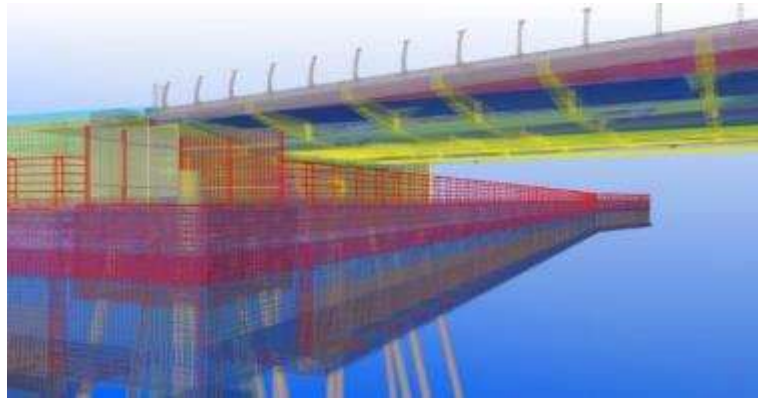
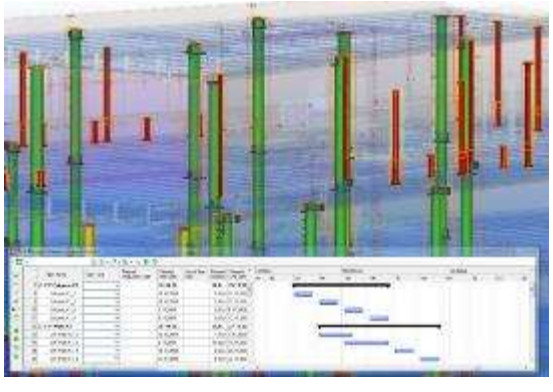
Service offering



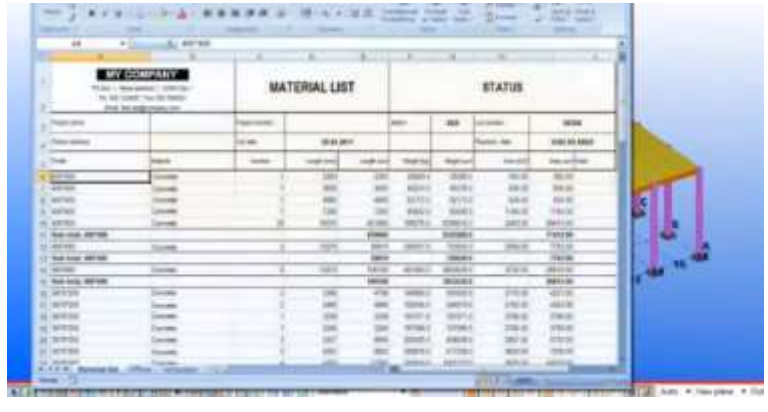
> *Construction management*



> *Production control*



- *Scheduling*



> *Cost estimation*

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ROI calculation for the business

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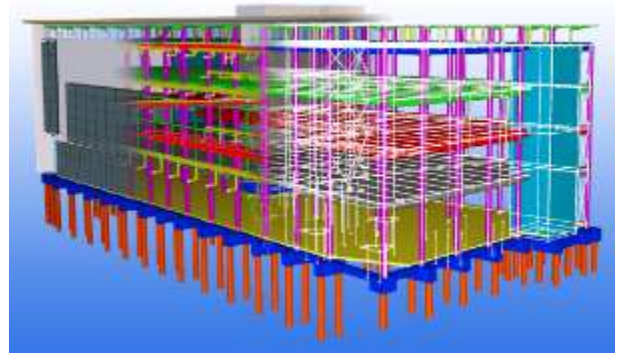

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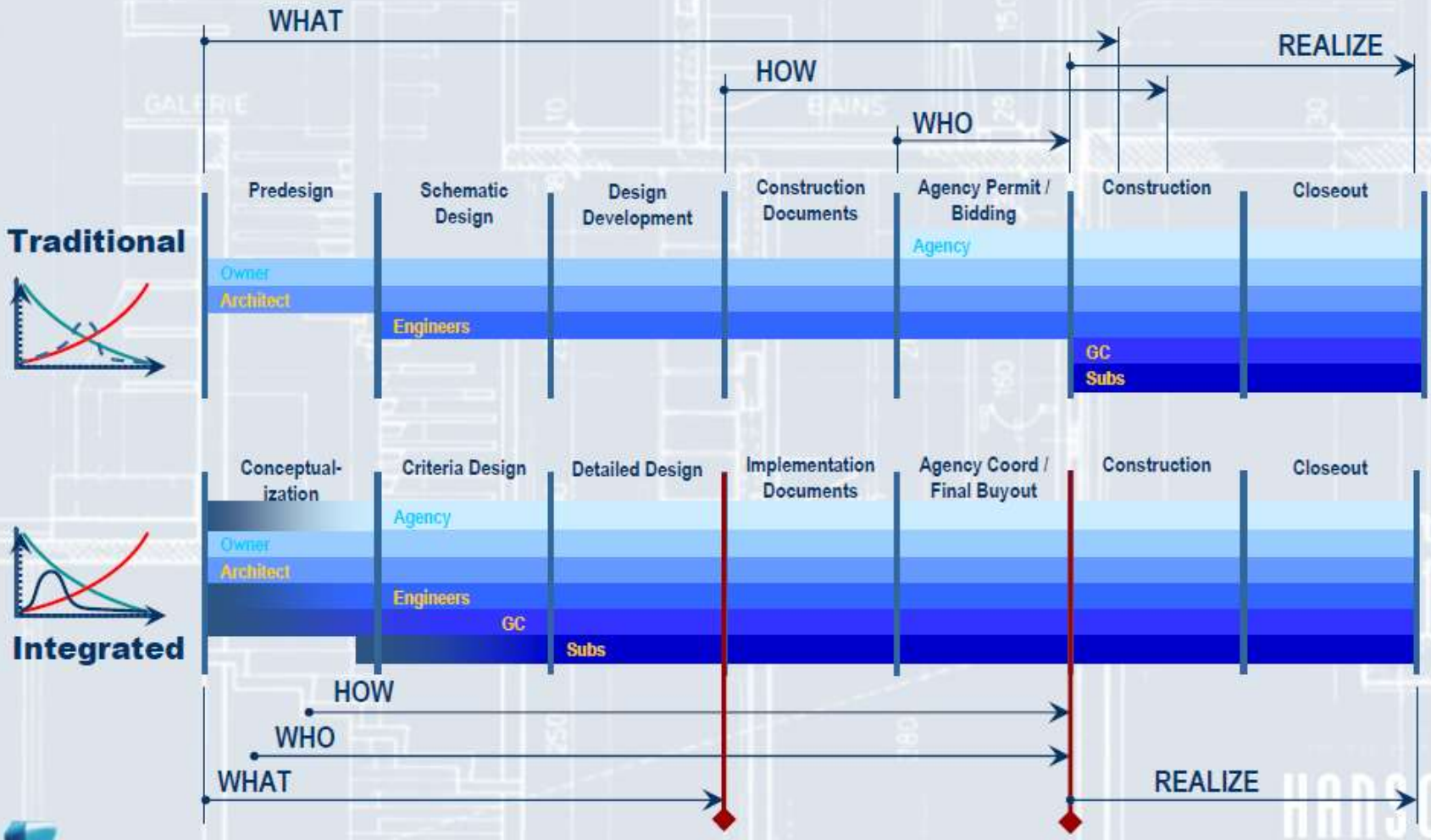
Delivery Process



Gehry Technologies

HANSON BRIDGETT

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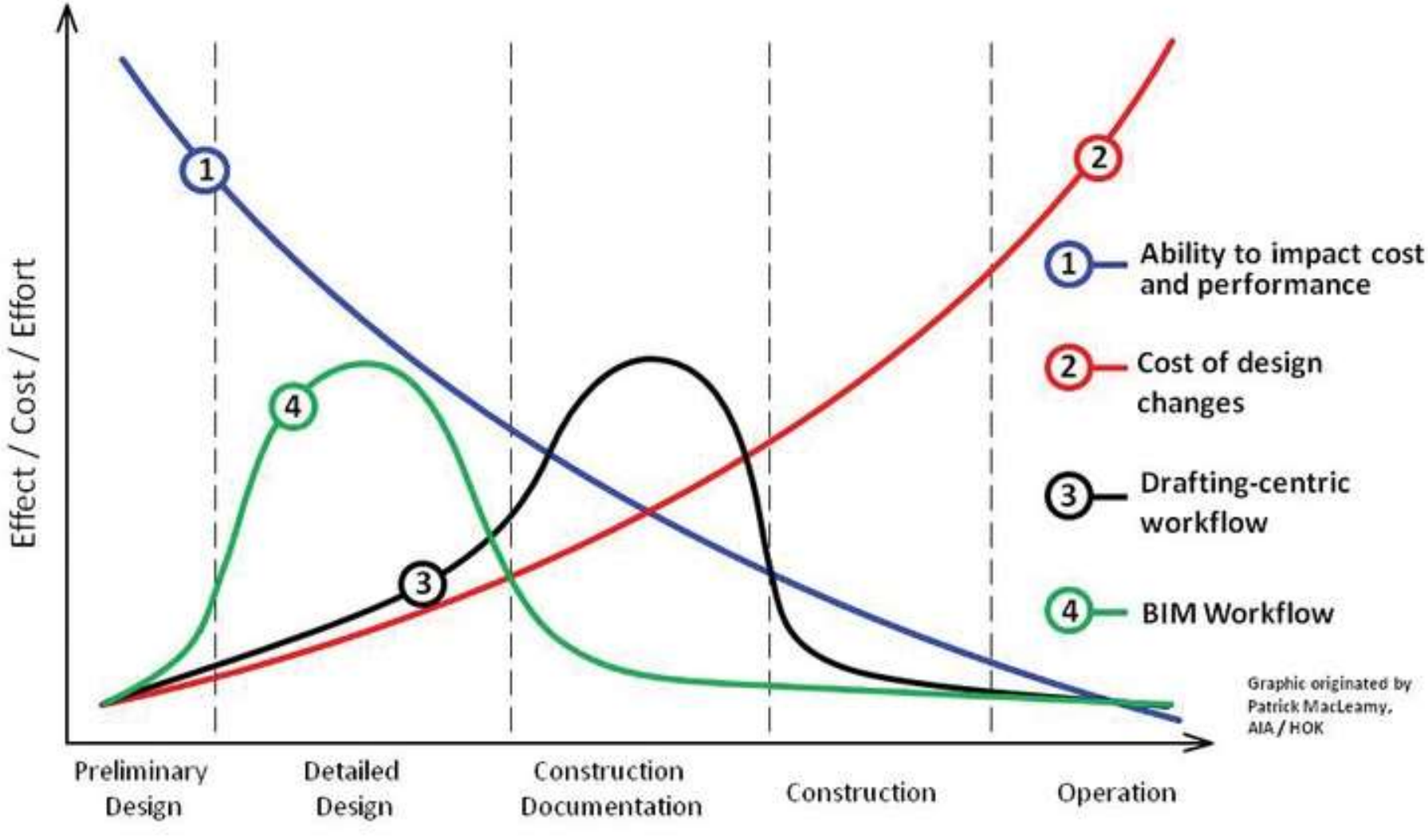
Project Progress



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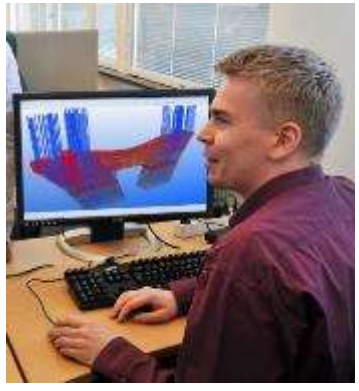
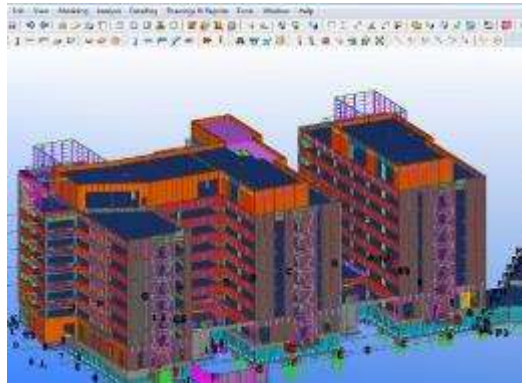
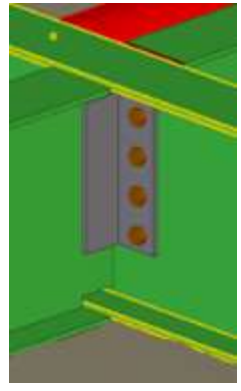
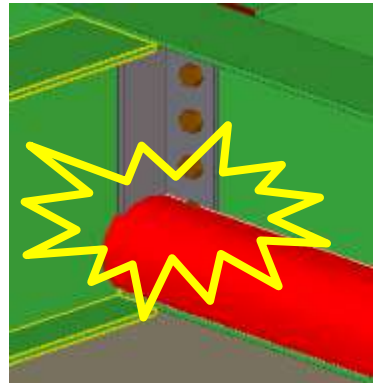
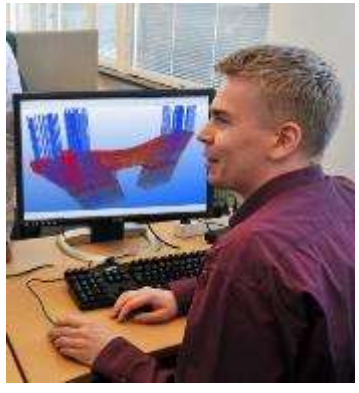
BIM process makes working easier

- *Enhanced collaboration*
- *Effective information management*
- *Improved change coordination*

- BIM - technologies and processes integrating building information through attributed 3D geometry

BIM process makes working easier



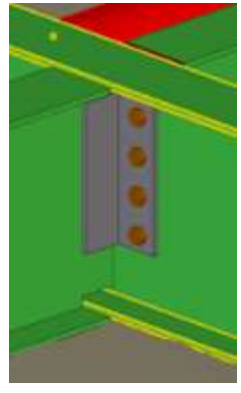
Data
Technologies
Work methods
Scope
Deliverables
Contractual procedures

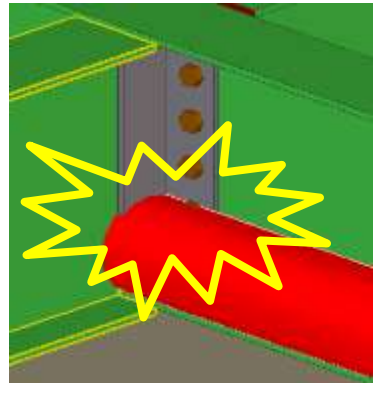
- *Enhanced collaboration*
- *Effect* *mana* *ange*

- BIM - **technologies** and **processes** integrating building information through attributed 3D geometry

BIM process makes working easier

Design
Engineering
Owner & planning
Cost
Construction
Logistics
Fabrication & submittals
Facilities management
…





- *Enhanced collaboration*
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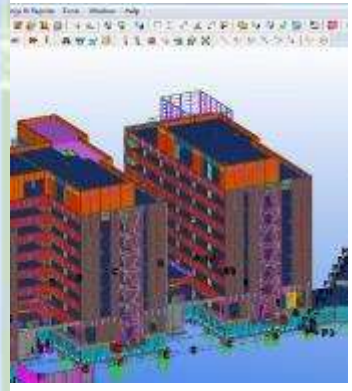
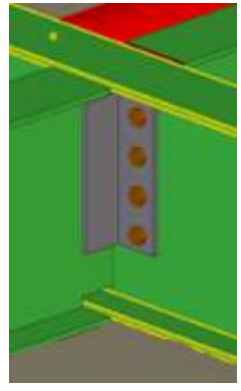
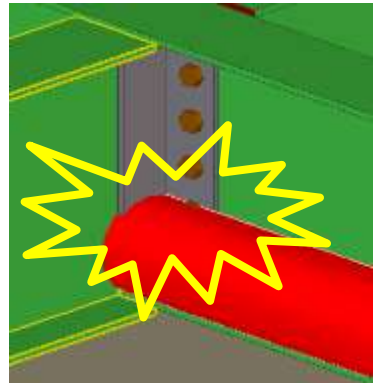
BIM process makes working easier







- *Enh… colla… …ctive information …agement*
- *Improved change coordination*

- BIM - technologies and processes integrating building information through **attributed 3D geometry**

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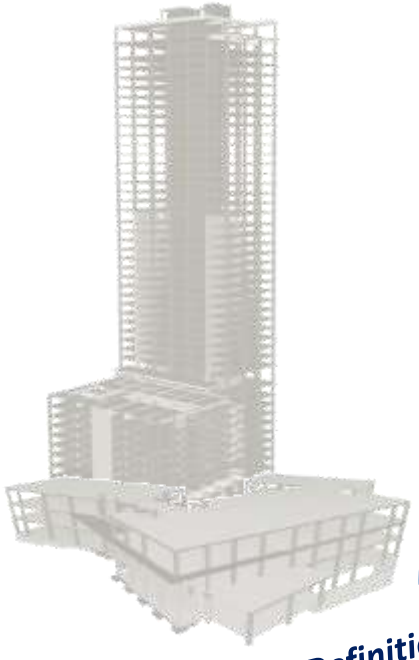
Can we afford not to invest?



Accumulation of information

- Enhanced processes and improved productivity
- High quality of services offered
- Efficient utilization of the information that is in the model
- More services offered tomorrow
- New projects and business opportunities

Strategic Definition
Preparation and Brief
Concept Design
Developed Design
Technical Design
Construction
Handover and Close Out
In Use

Time

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- Tekla - Global Software Company
- How to make working more efficient and productive?
- **Tekla BIM Solution**
  - **Design and documentation**
  - **Structural analysis**
  - **Engineering the details**
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Tekla BIM solution

From conceptual design stage to execution stage

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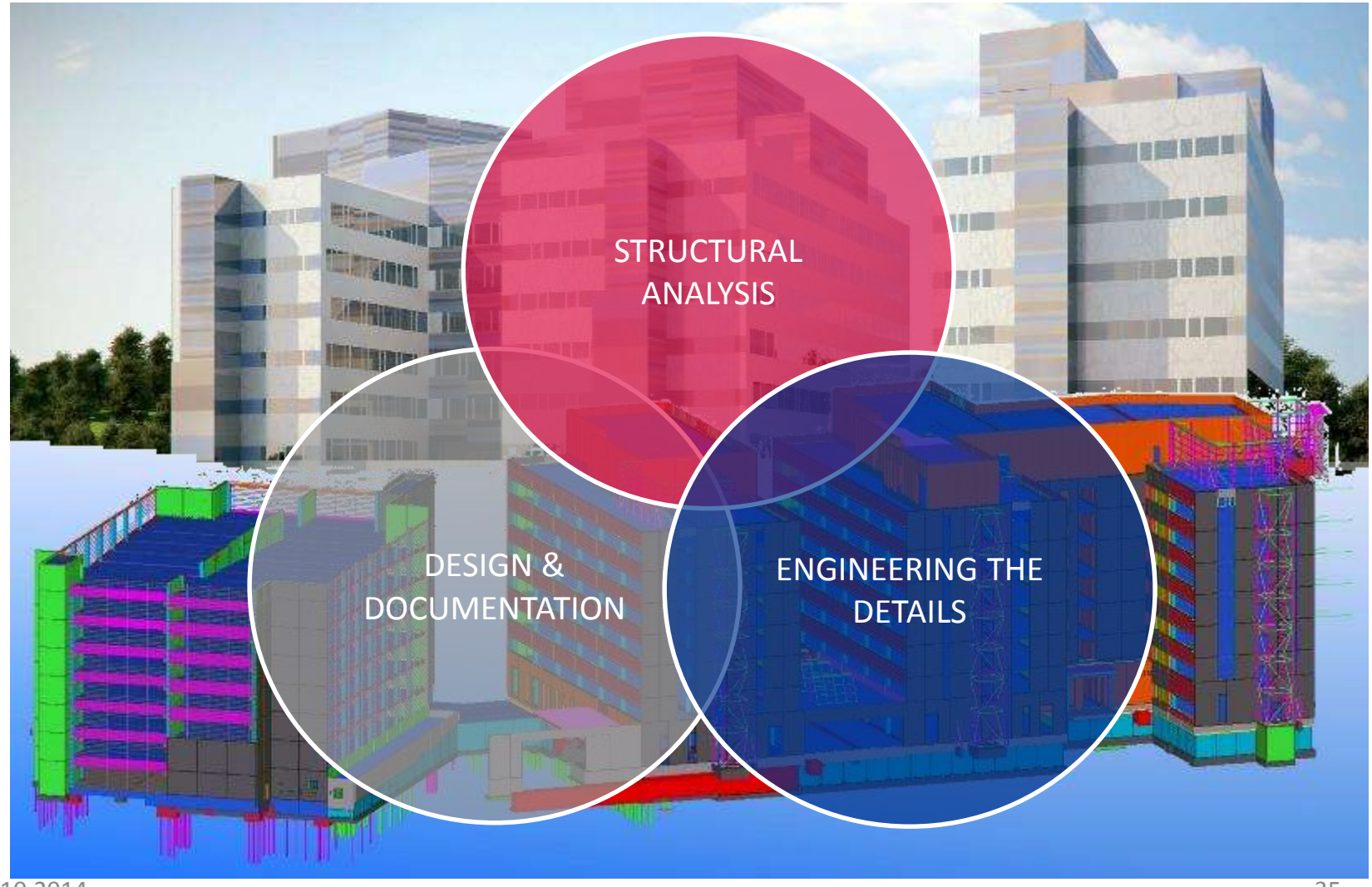
Tekla BIM Solution



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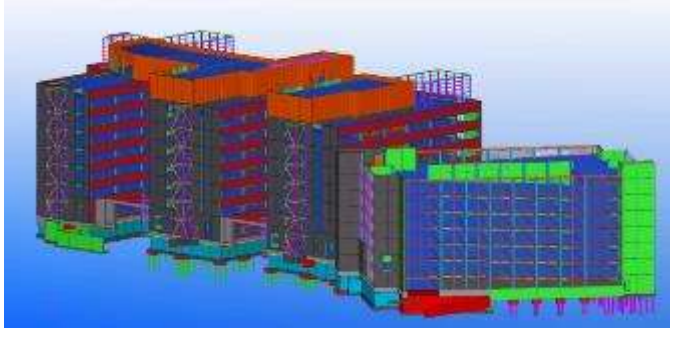
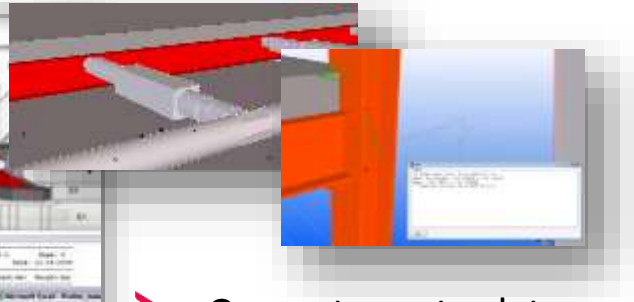
Design and documentation

- Create an accurate, dynamic and intelligent 3D model





- Generate up-to-date documentation and coordinate design changes reliably

- Benefit from interoperability between different software applications

- Deliver an as-built model to other project disciplines

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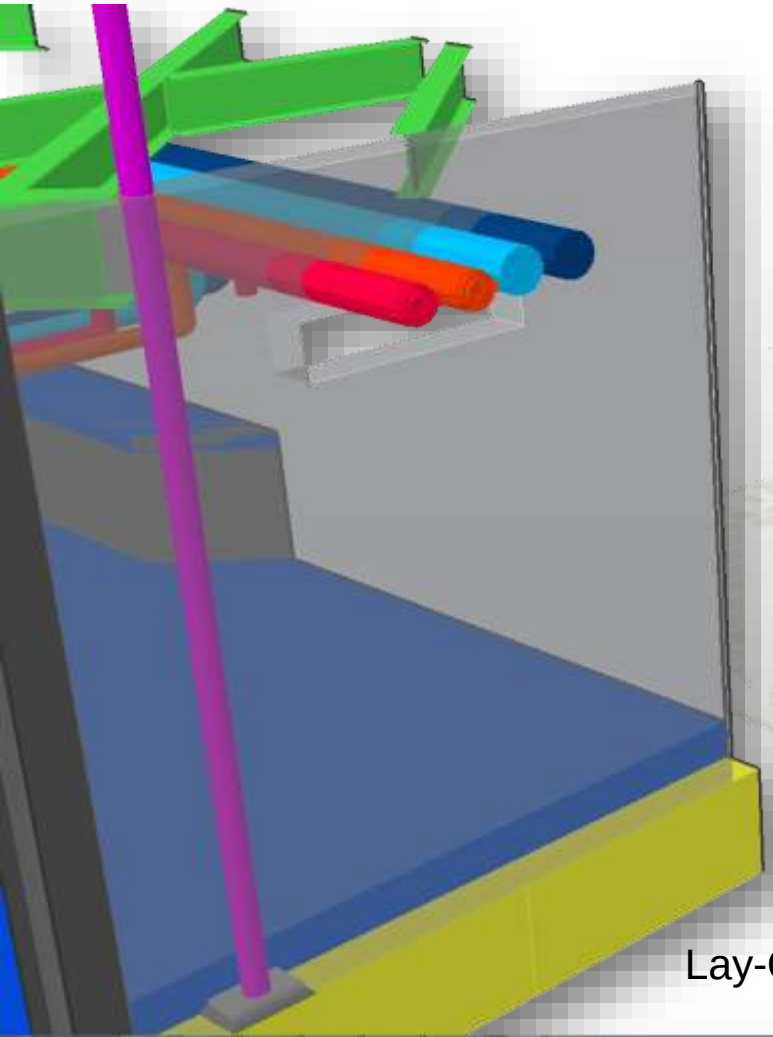
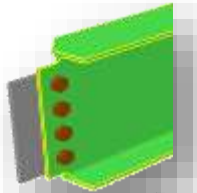
Design model

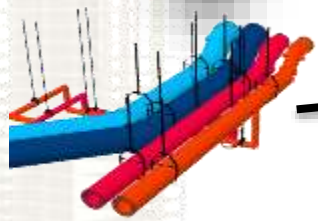


Plates, Bolts & Welds



Tekla BIM Construction model

Embeds

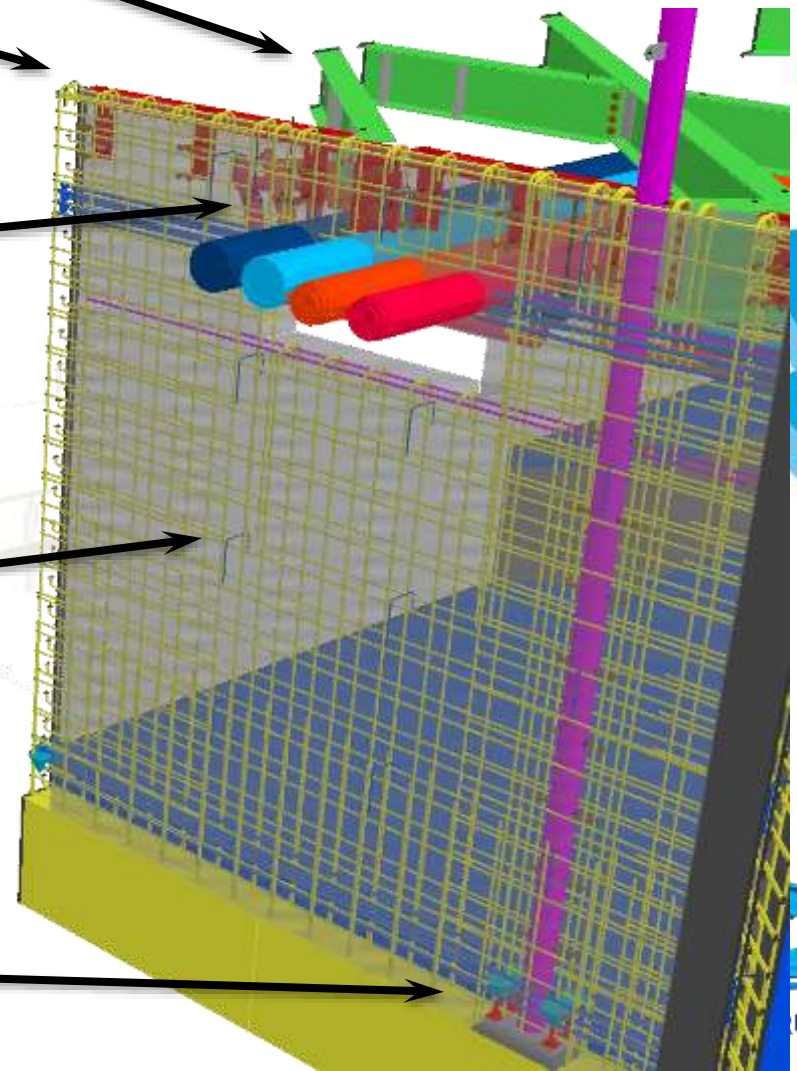


MEP/FP

Reinforcing

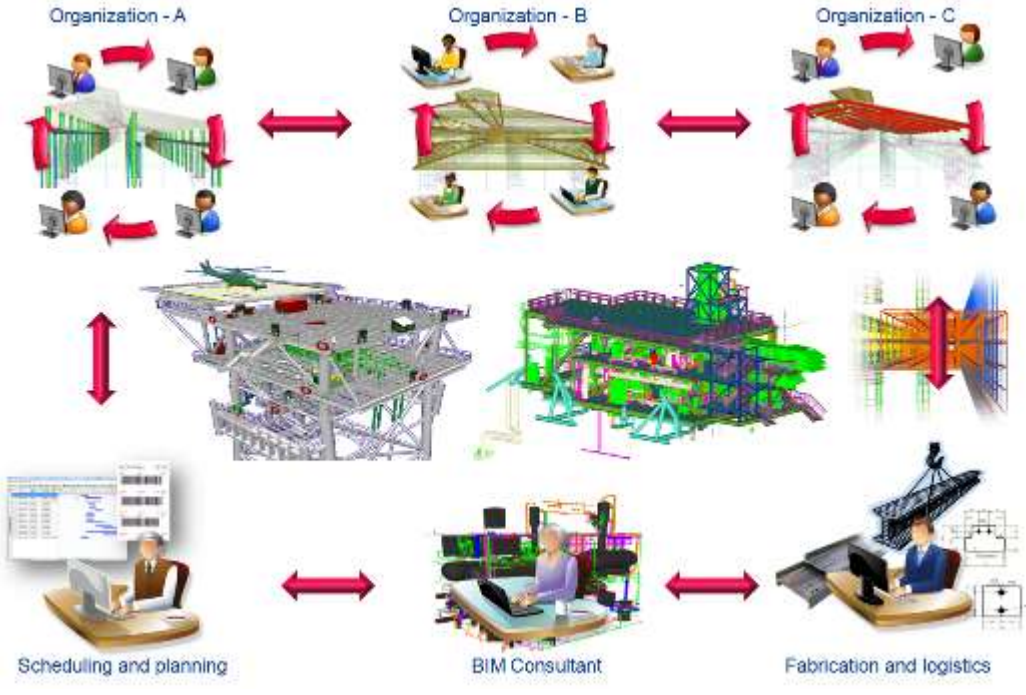
Bolts

Lay-Out Points

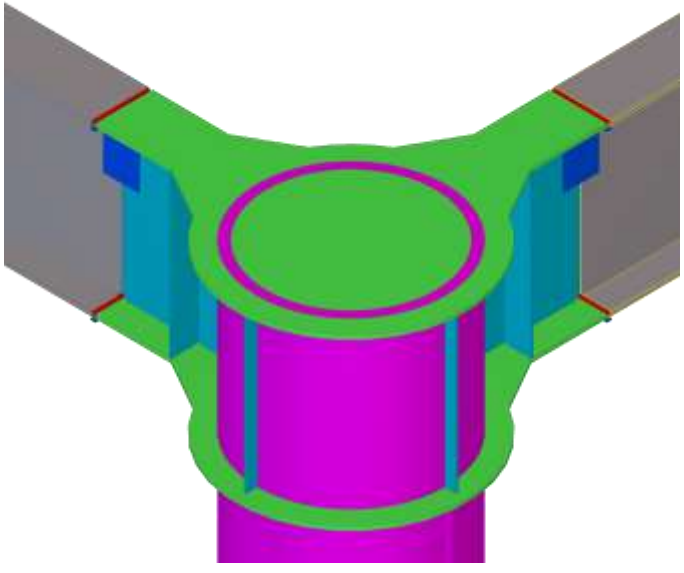


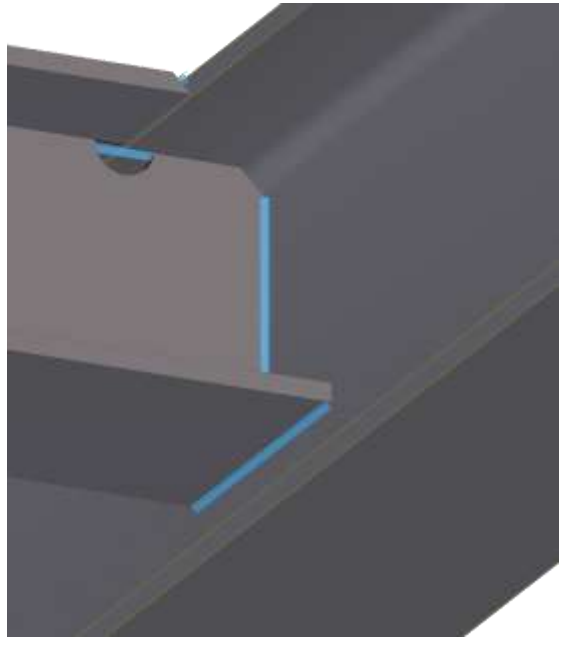
Tekla Structures modelling

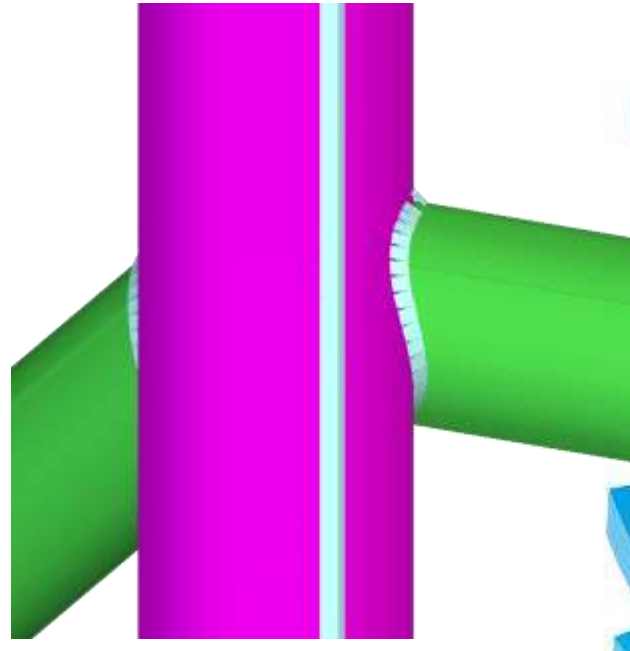
- Work simultaneously
  - Engineers, project managers, detailers or any other party who wishes to view or control the model
  - Window to reliable project information during the fabrication process
- Quality control assured
  - Information such as engineering drawings easy to access and always up to-date
- Model the whole project
  - from initial concept studies including 4D visualisation to the design of structures, safety systems and sustainability
  - all the way from commissioning, modifications to eventual decommissioning

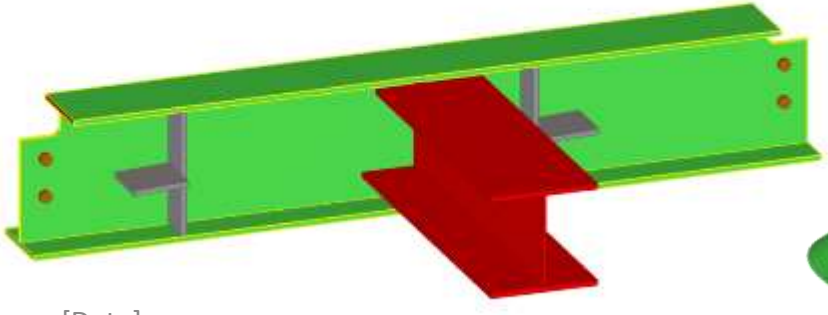


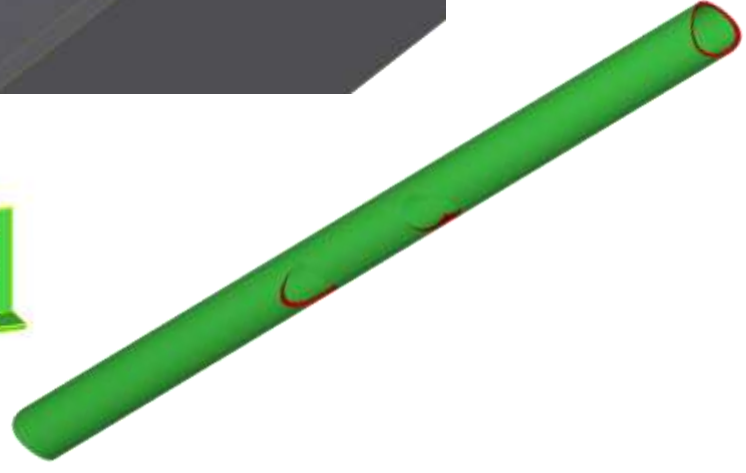
Tekla Structures modelling











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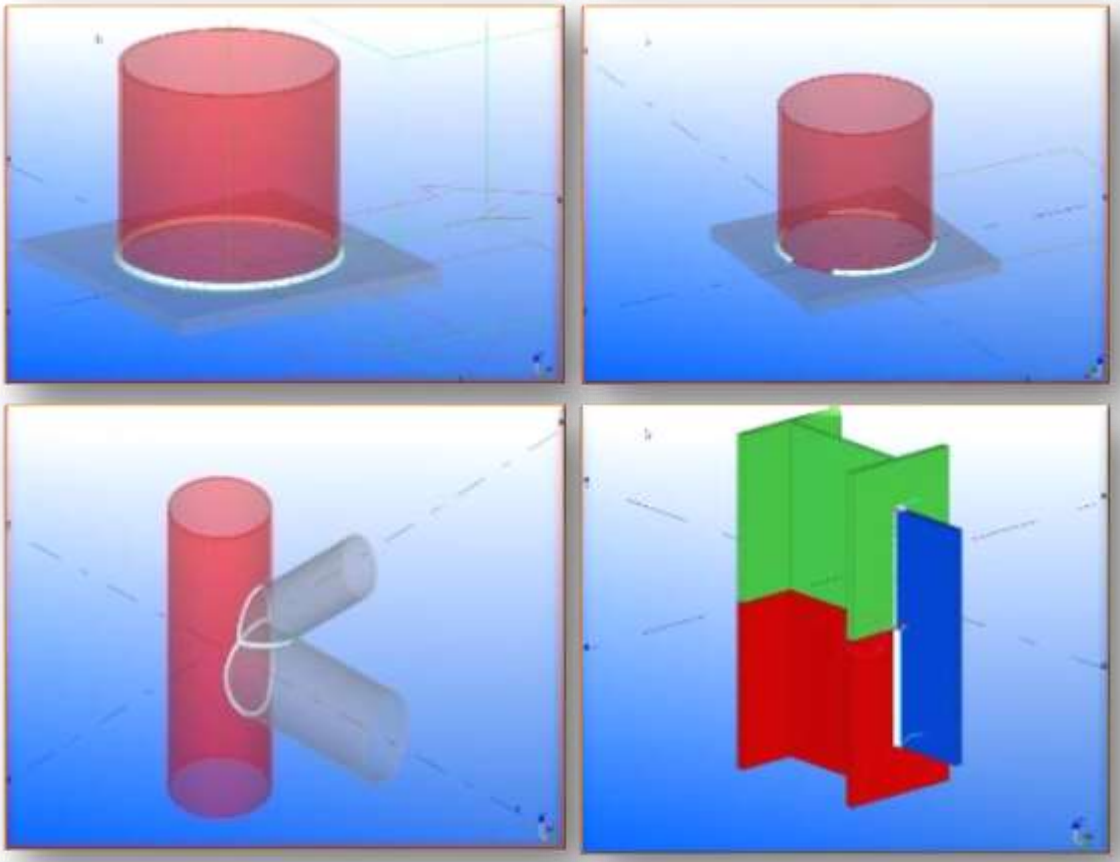
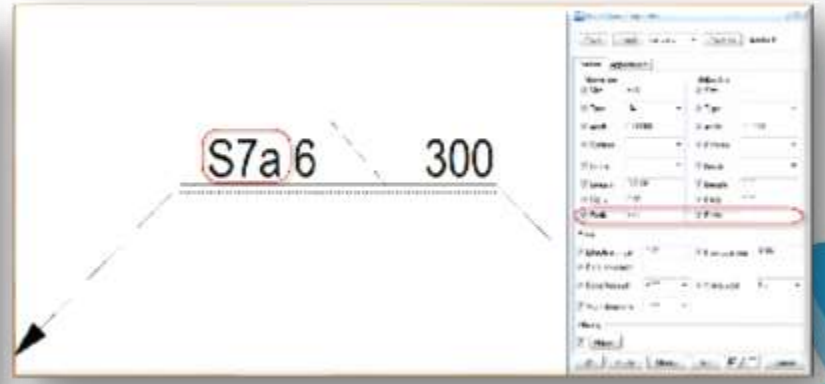
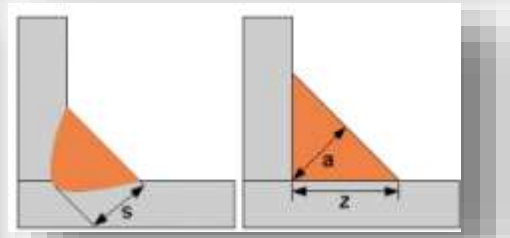
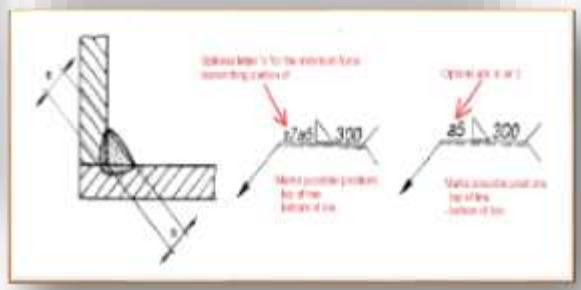
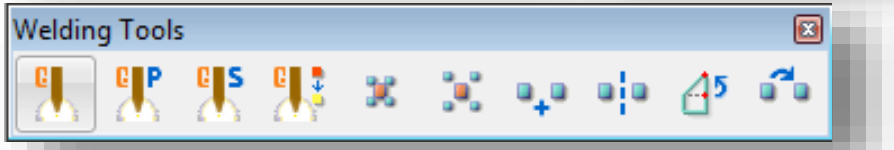
Weld tools





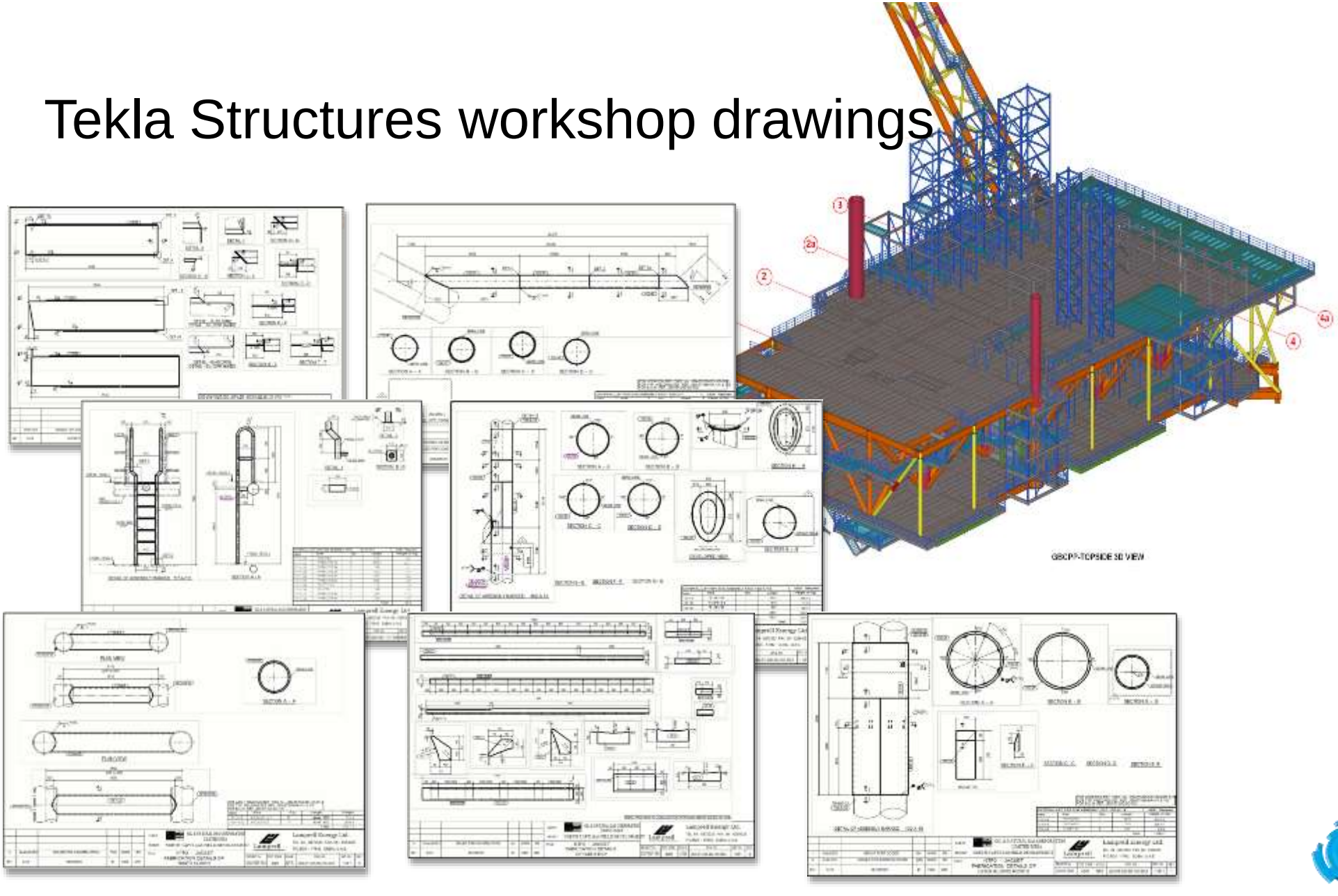






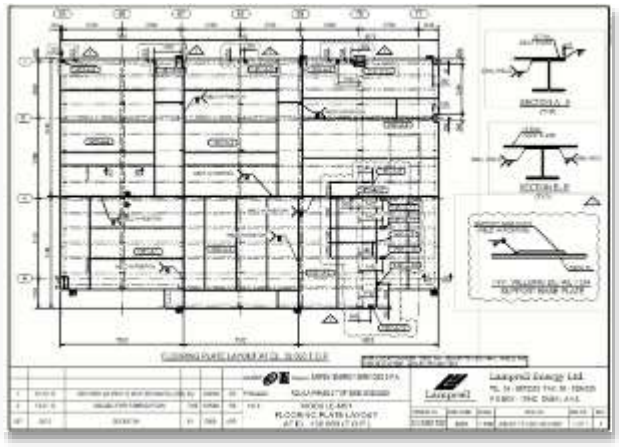
CONSTRUSOFT

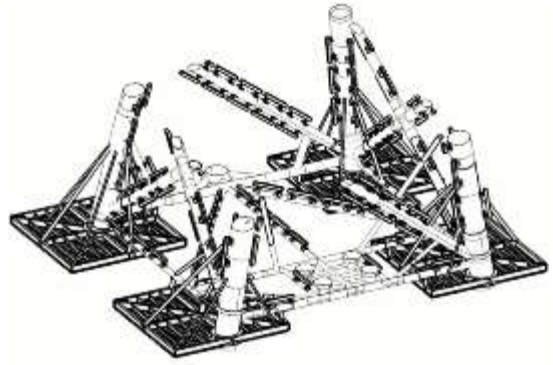
Tekla Structures workshop drawings

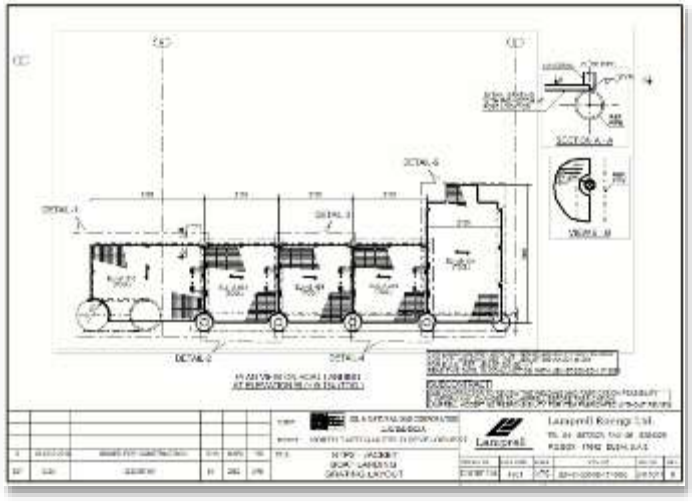


CONSTRUSOFT

Tekla Structures engineering drawings

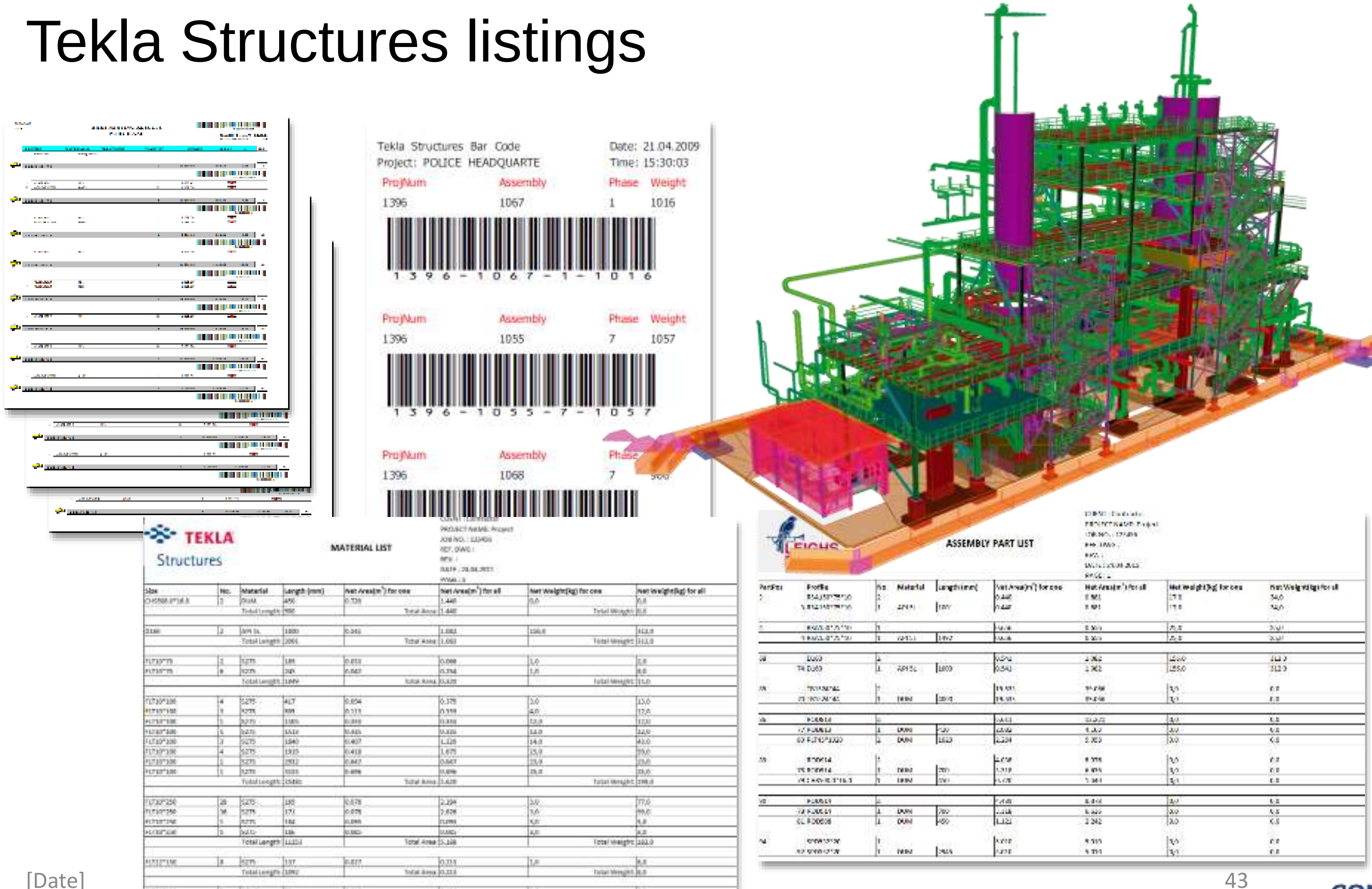






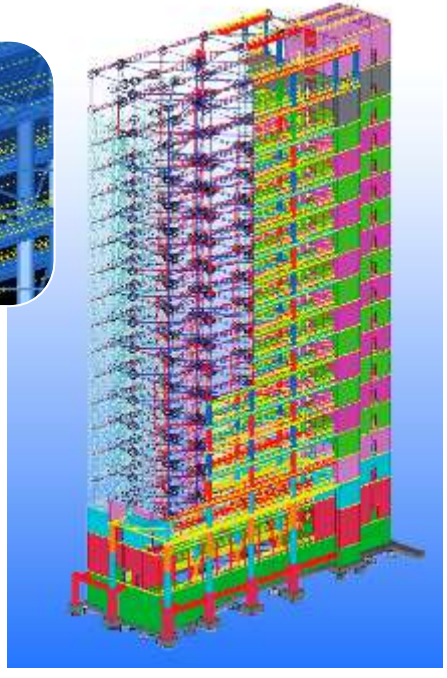
CONSTRUSOFT

Tekla Structures listings

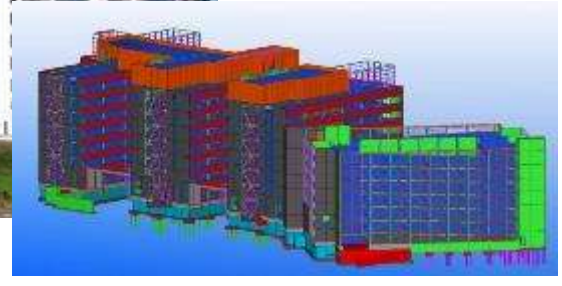


Structural analysis

- Integrate modeling and design with analysis



- Manage big amounts of information in small formats



3107 Drawings
6700 reinforced concrete elements
630 ton rebar (267 000 rebar groups)
157 ton steel
4226 bolts groups
15658 Welds

In total, over 1 million objects

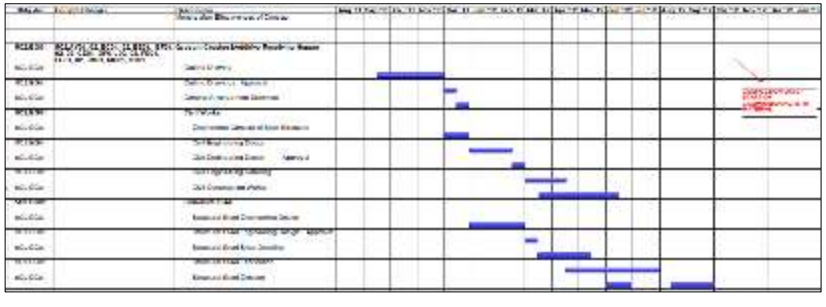
Model database 73 MB

SAP2000 S-FRAME SOFTWARE GT STRUDL

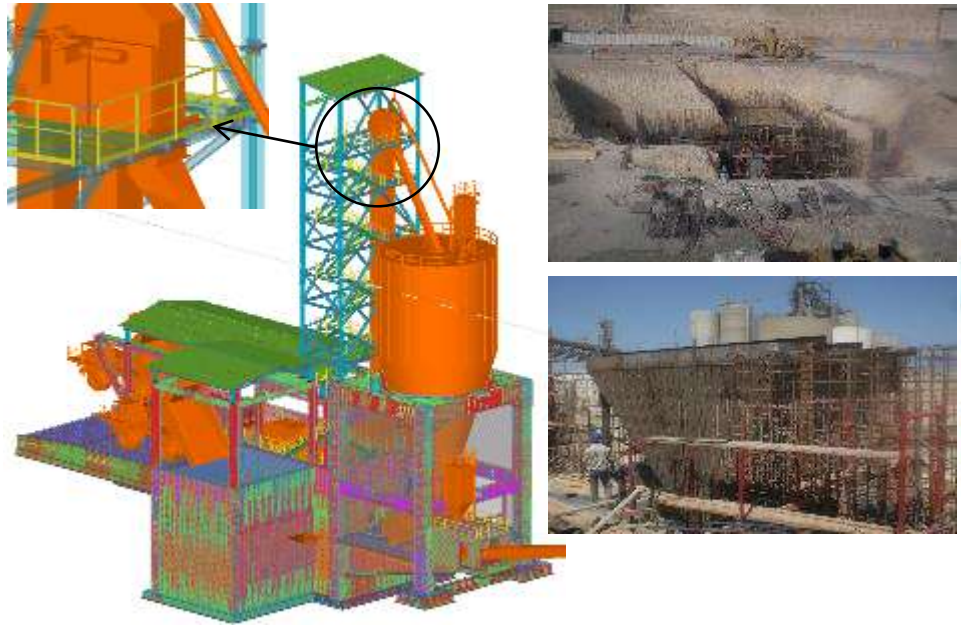
STAAD Pro 2007 Dlubal RFEM 5 RSTAB 8 MIDAS

Engineering the details

- Create better engineered buildable design solutions



- Make earlier construction based planning



- Benefit from improved accuracy, reduced site errors and minimized rework

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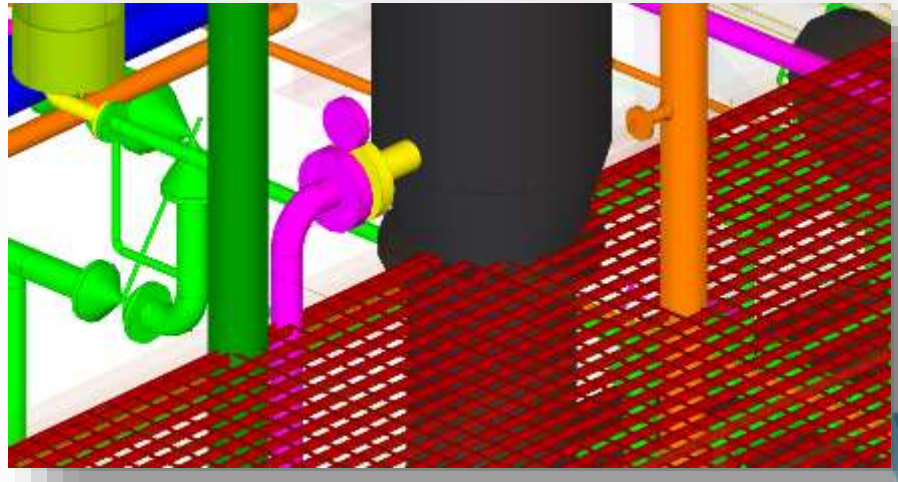
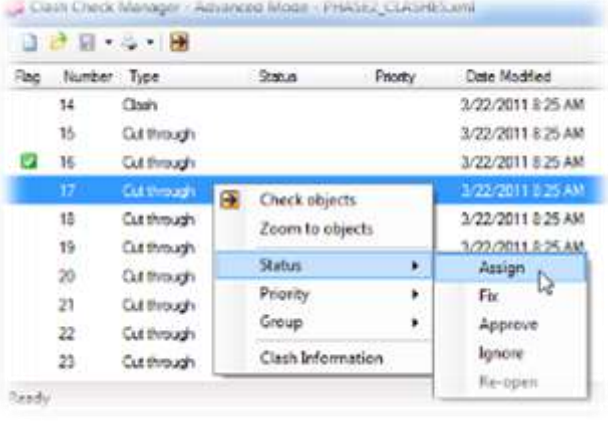
Clash Check Manager

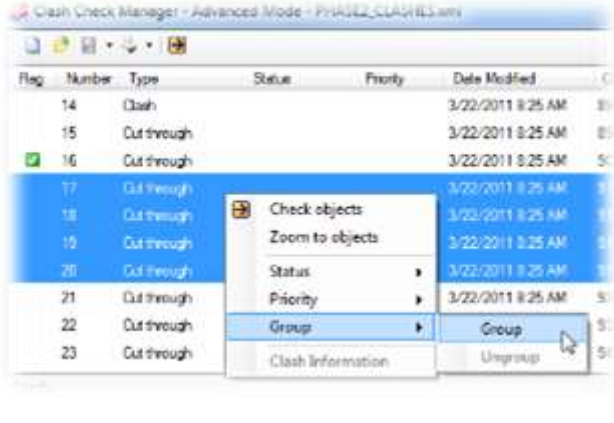
- Identify conflicts within model
- Organize and assign clashes
- Manage collaborative BIM workflow





STATUS

PRIORITIZE

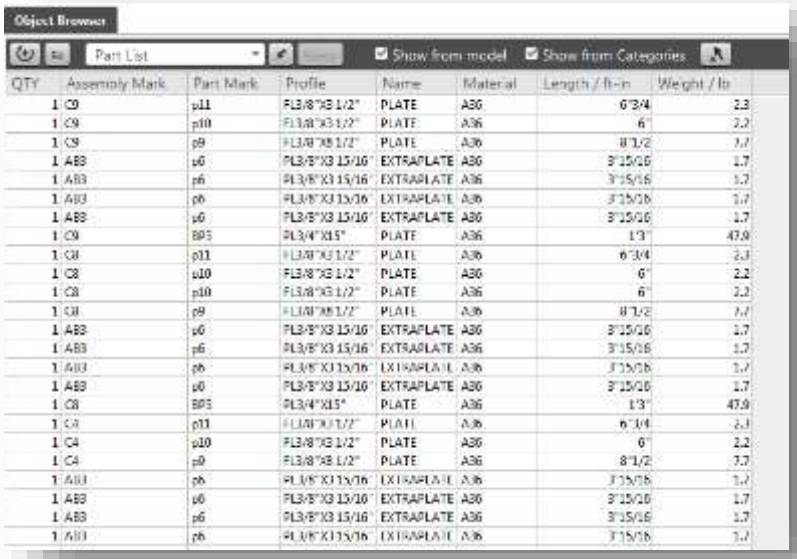


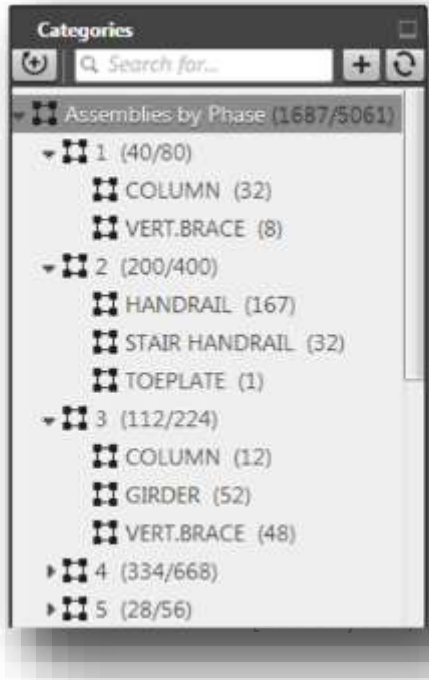
GROUP

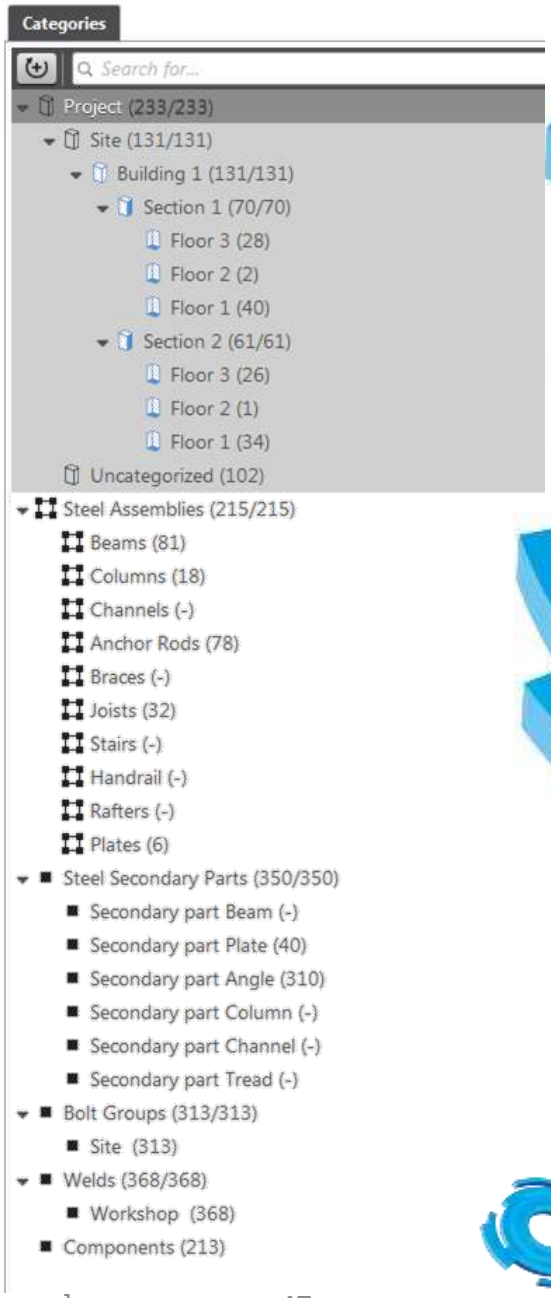
CONSTRUSOFT

Organizer

- Browse properties by model or categories
- Get instant insight into project quantities
- Quickly build estimates
- Manage deliveries and track quantities
- Export to Excel







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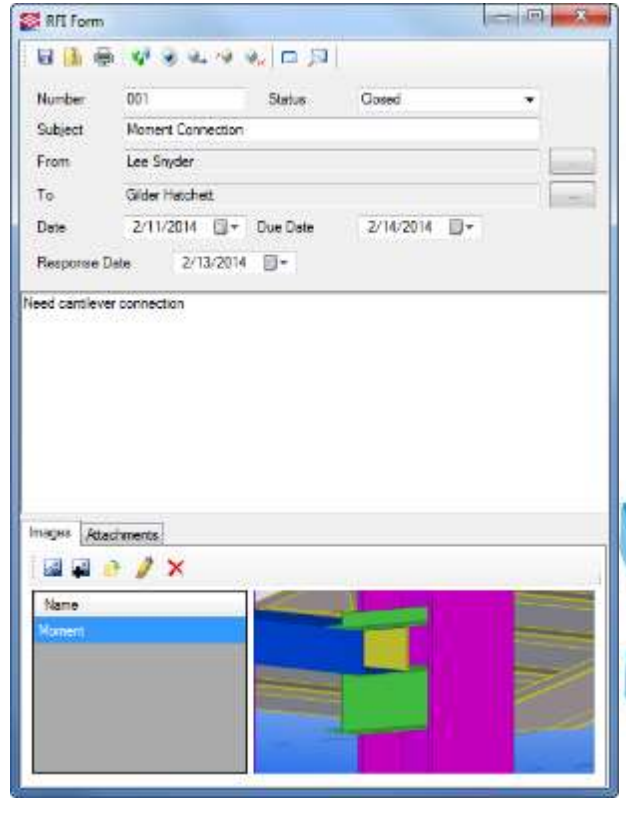
RFI Manager

- Manage RFI's and link them with the model.
  - Link to IFC reference model objects as well as native objects
  - Colorize model based of RFI status
  - Automatically check for overdue status
  - Publish to HTML or FTP site or zip up and email



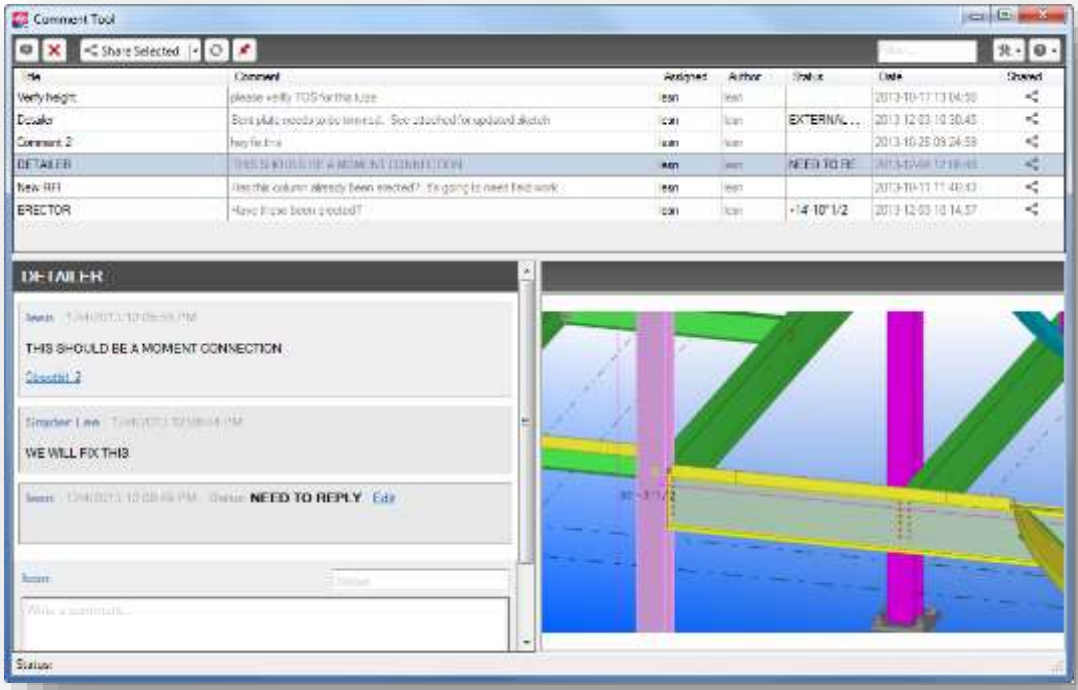
RFI Manager

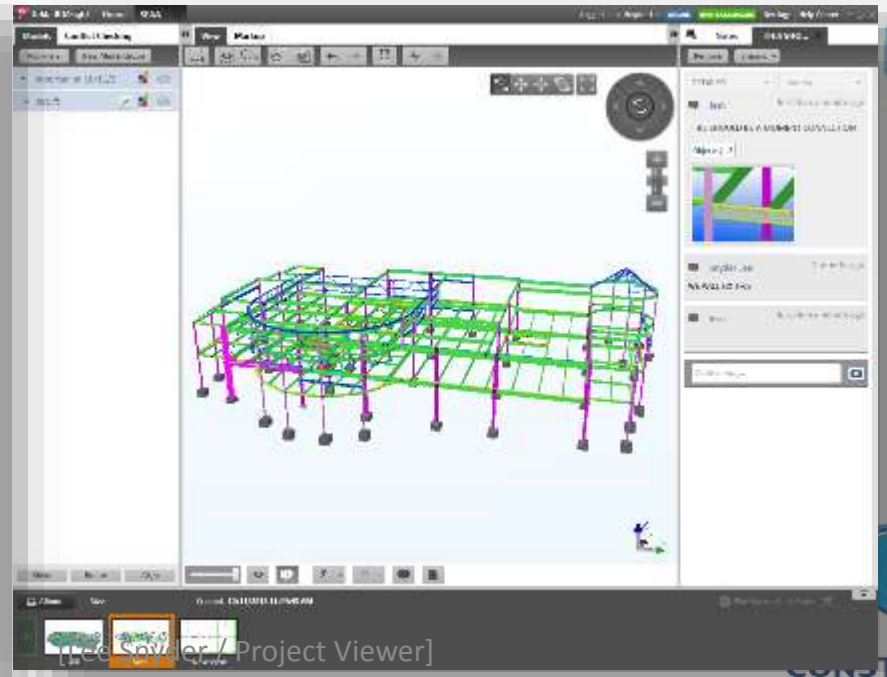
Number	Subject	Status	Date	Due Date	To
001	Moment Connection	Closed	2/11/2014	2/14/2014	Gilder Hatchett
002	Verify Radius	Overdue	2/12/2014	2/17/2014	Gilder Hatchett
003	Missing Bent Plate detail	Open	2/20/2014	2/25/2014	Gilder Hatchett
004	Verify anchor bolt detail on Grid E/11	Open	2/20/2014	2/25/2014	Gilder Hatchett
005	DCN #38 missing section	Open	2/20/2014	2/25/2014	Gilder Hatchett
006	Pc Mk A1387 on hold?	Closed	2/20/2014	2/25/2014	Gilder Hatchett
007	Edge Slab verification	Open	2/20/2014	2/25/2014	Gilder Hatchett

CONSTRUSOFT

Comment Tool

- Communicate changes, questions, and work assignments directly into the model
- Live link between Tekla Structures and Tekla BIMsight





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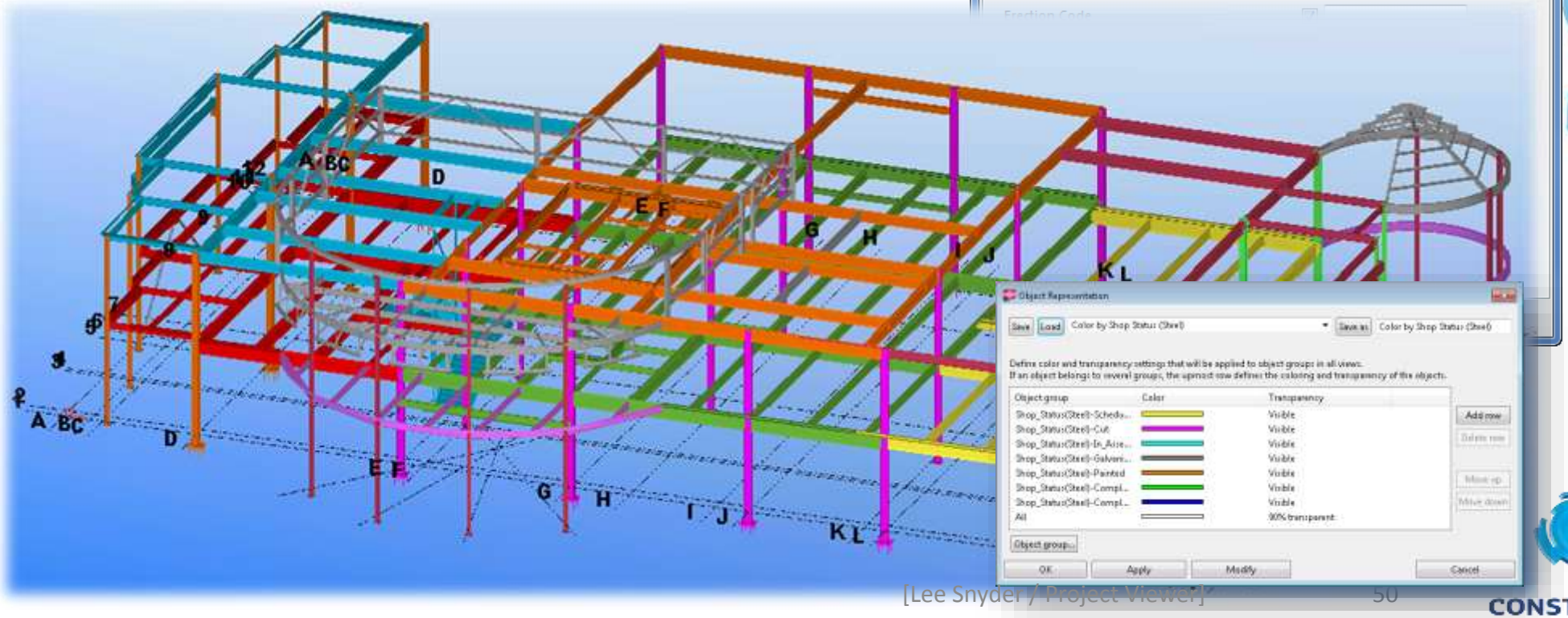
Add User-Defined Attributes

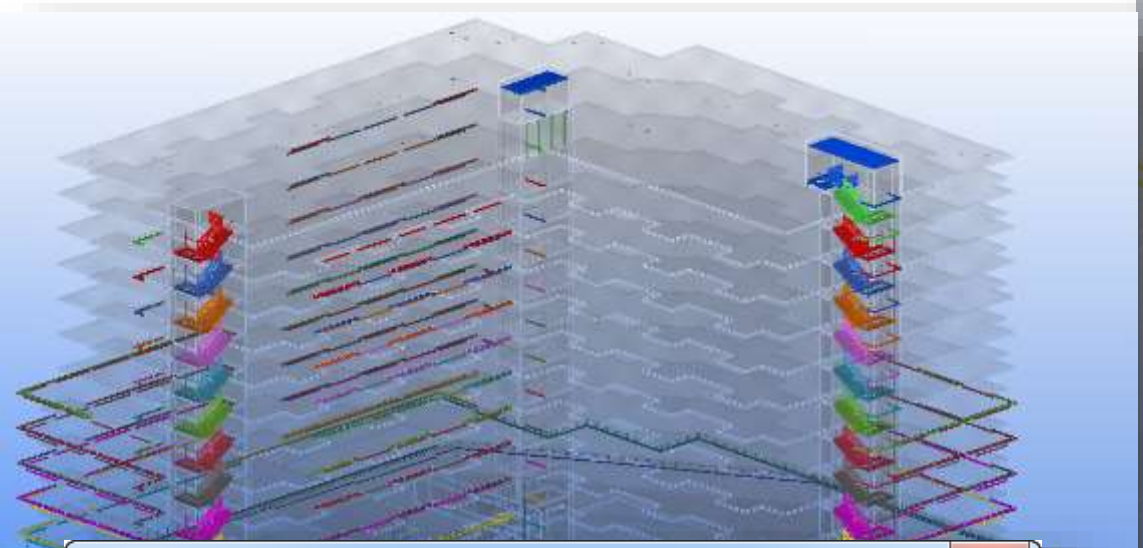
- Example: Shop Status

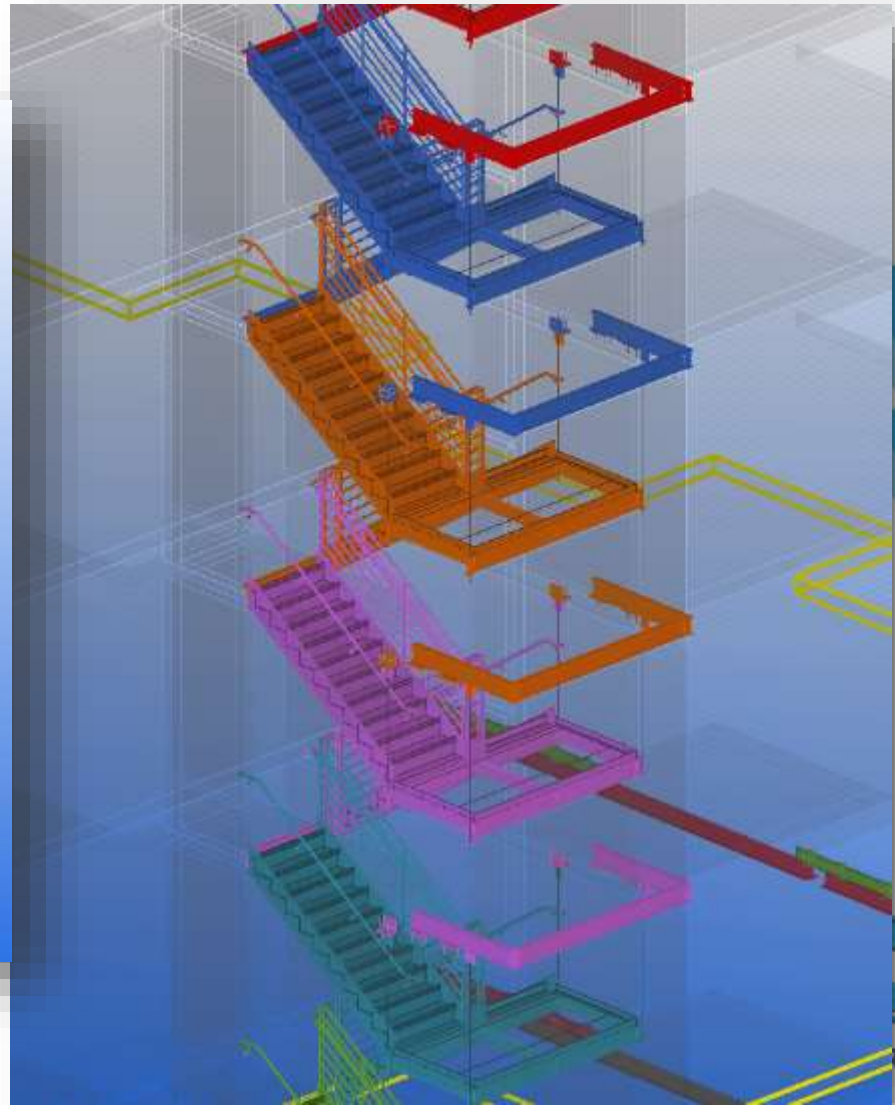


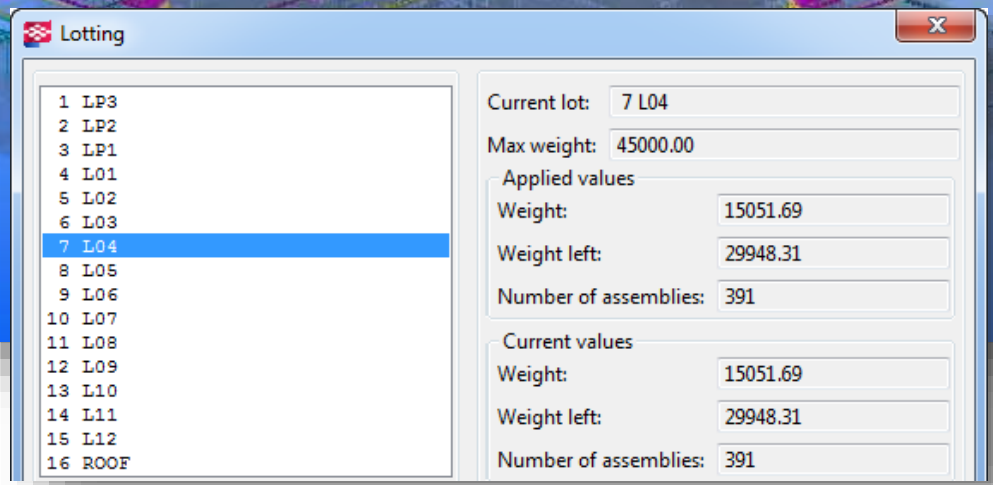
CONSTRUSOFT

Add/View Truck Lotting

- Standard Iron & Wire Works

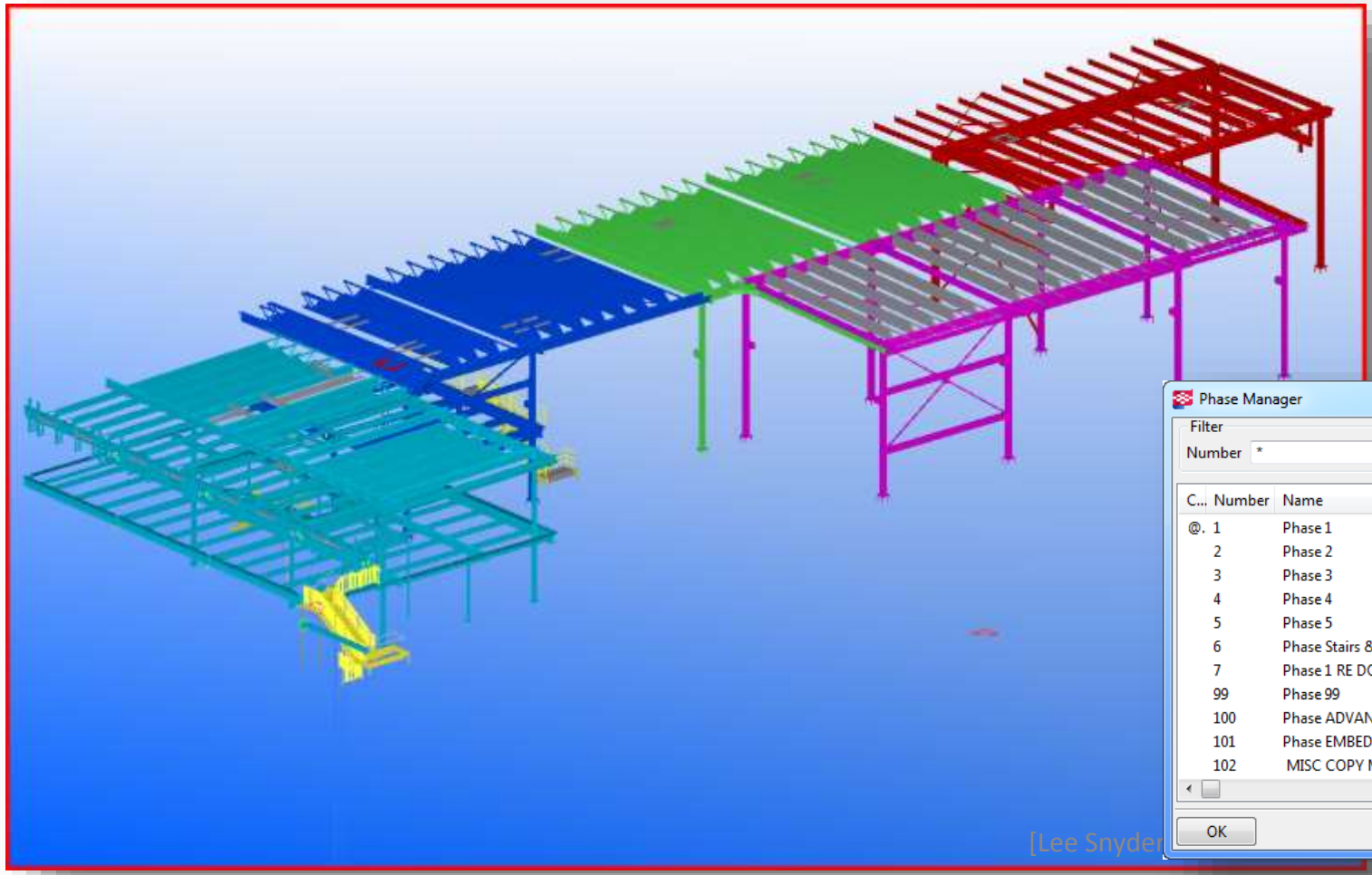


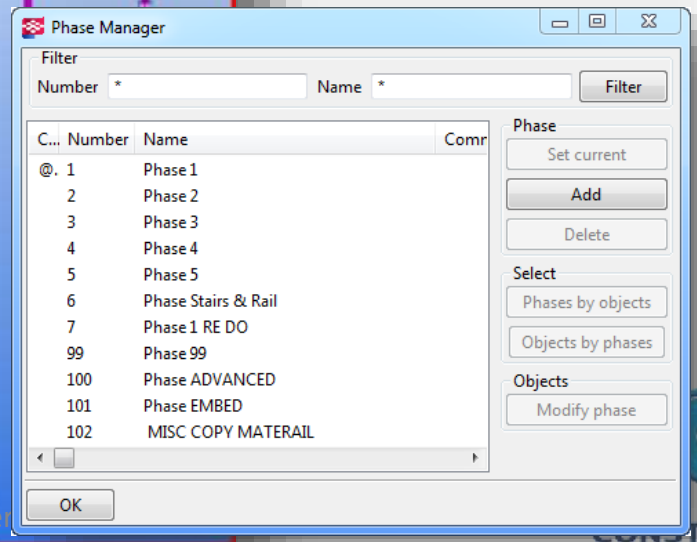




Add/View Phase or Sequence

- Seech Industries Inc

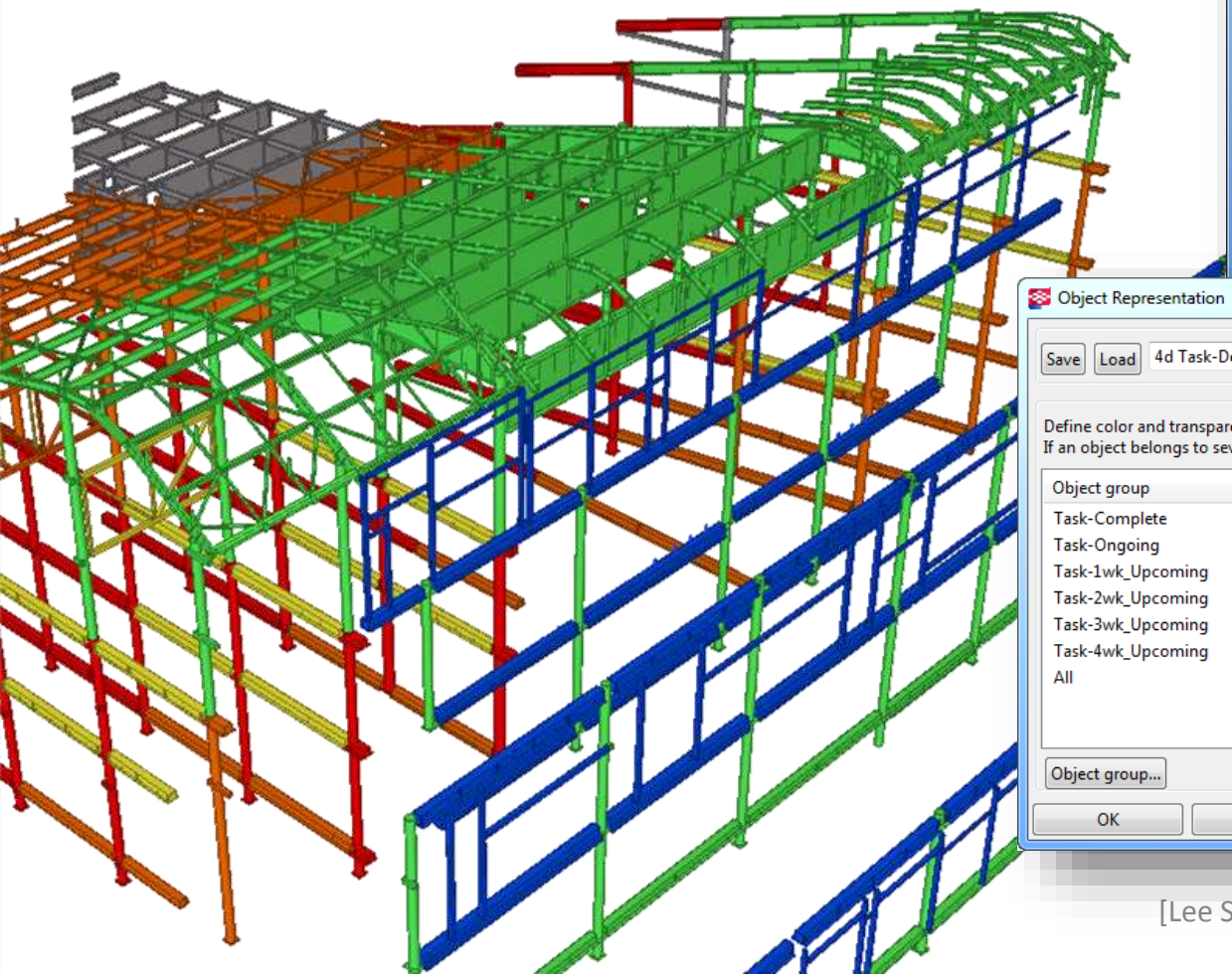


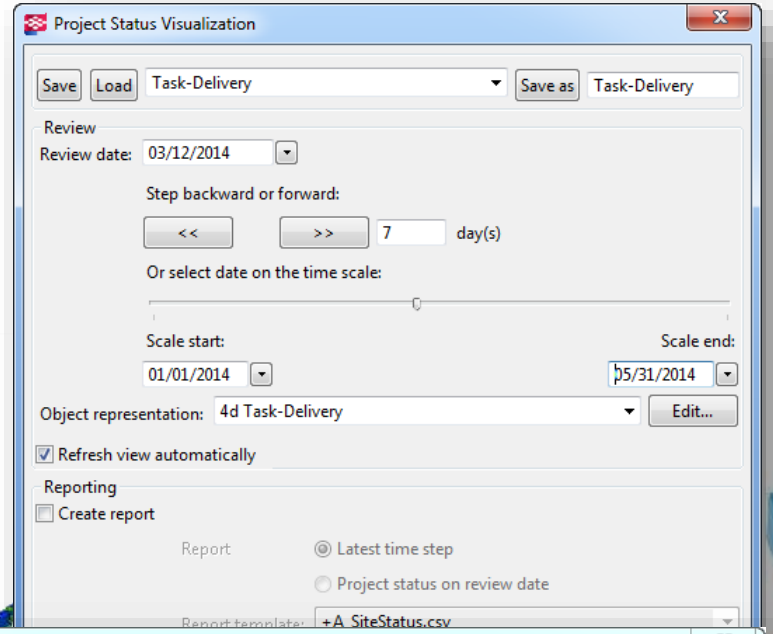


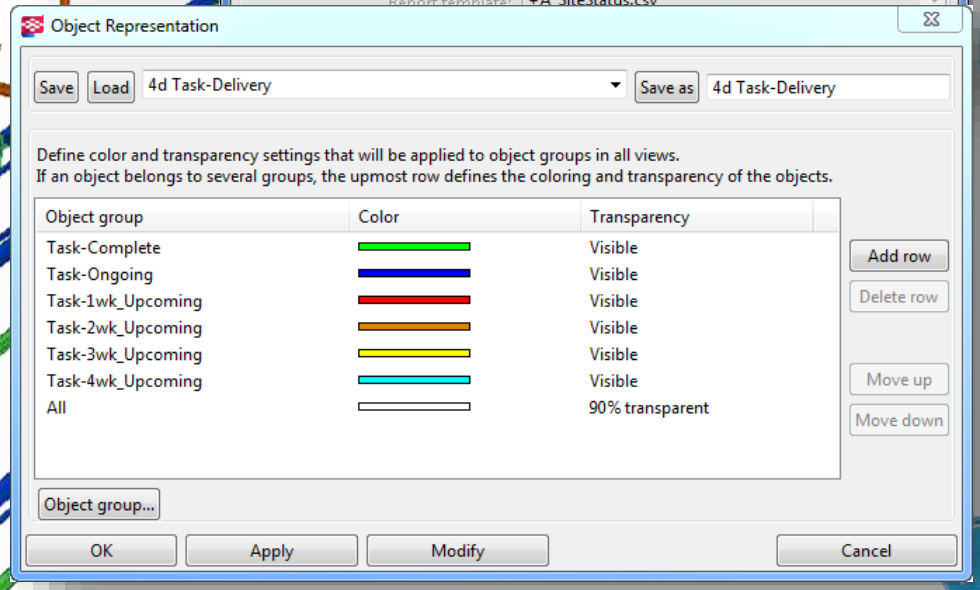
[Lee Snyder]

Project Status Visualization

- Time frame specific review

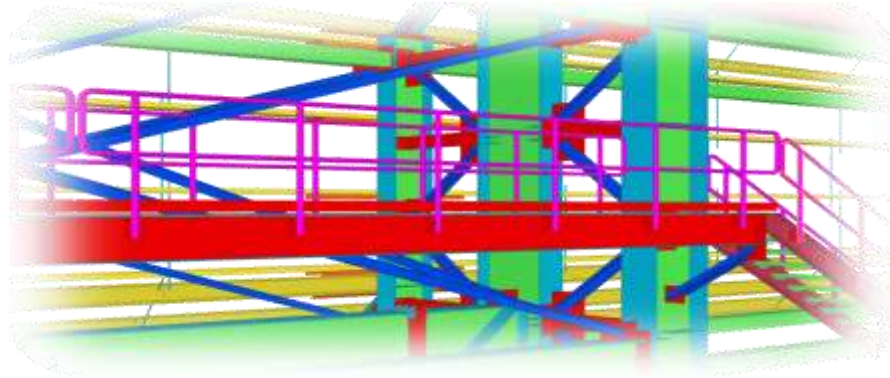






CONSTRUSOFT

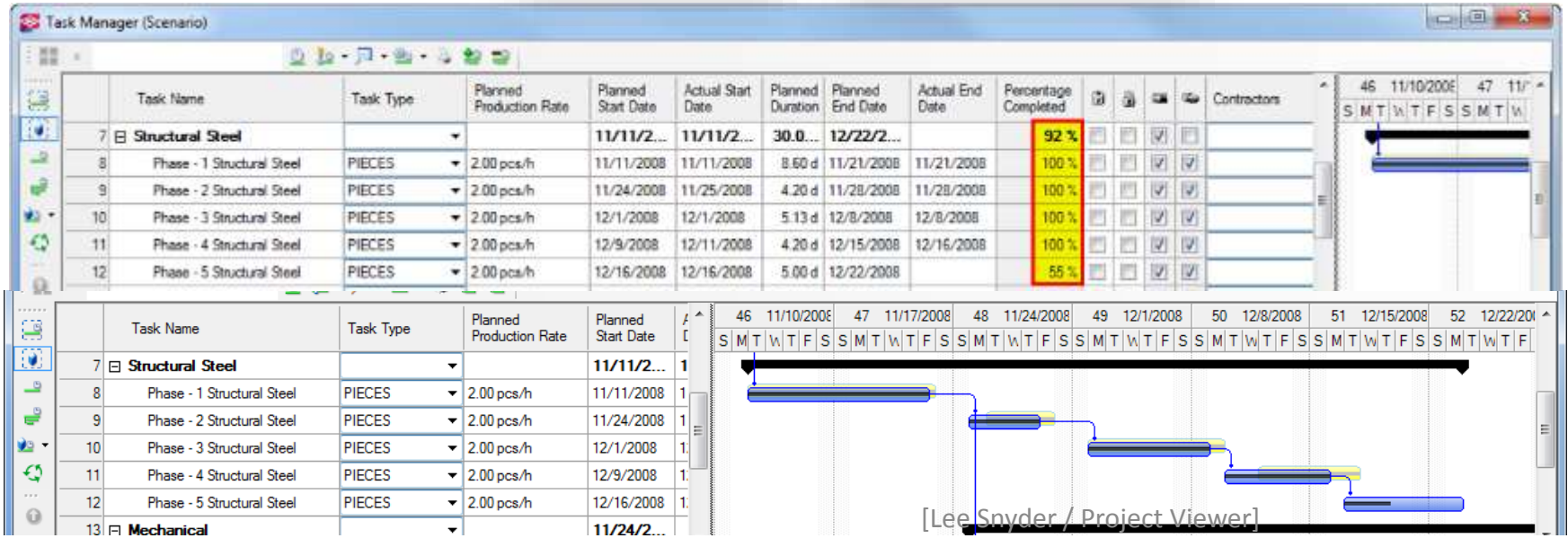
Task Manager



- Quantity Based Scheduling
- Establish Production Rates
- Provide Accurate and Reliable Planning

Microsoft Office Project

PRIMAVERA



[Lee Snyder / Project Viewer]

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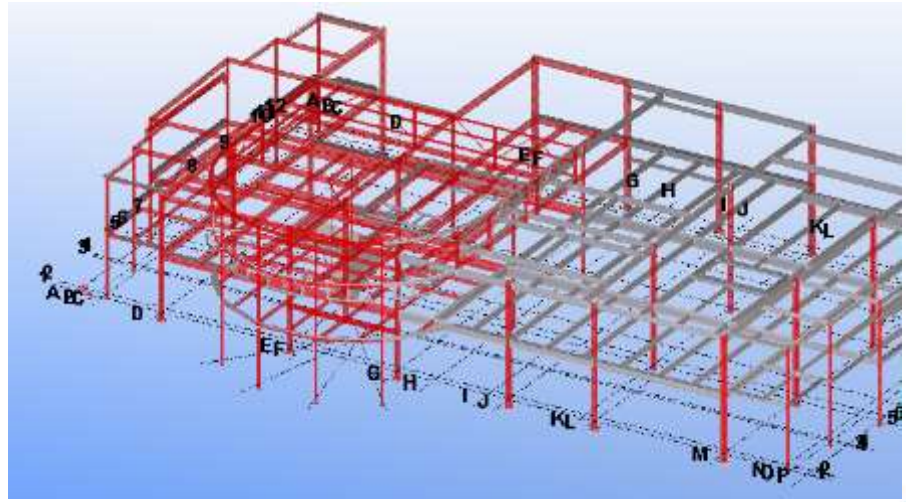
Construction Sequencer

- Define erection order
- Create reports and animations



Excel Report.xlsx - Microsoft Excel

Home | Insert | Page Layout | Formulas | Data | Review | View | PDF-XChange 4

C2: 1

	A	B	C	D	E	F	G	H	I	J
1	Name	Phase	Order	AssemblyMark	Profile	TotalWeight	MaximumOverallL	GlobalCenterOfGravity	ElevationTop	NearestGridLocatio
2	COLUMN	41	1	C1	W8X28	936.51	30'5"3/4	(-0"1/4, 30'8"1/16, 13'8"9/16)	29'3"3/4	A/5
3	COLUMN	41	2	C2	W8X28	955.16	31'2"	(-0"1/4, 63'4", 14'0"7/16)	30'0"	A/8
4	COLUMN	41	3	C3	W8X24	767.46	30'2"3/16	(4'0", 16'8", 13'1"1/2)	29'0"3/16	B/-3
5	COLUMN	41	4	C4	W8X24	783.81	30'10"3/8	(4'0", 77'4", 13'5"9/16)	29'8"3/8	B/9
6	COLUMN	41	5	C6	PIPE8STD	874.78	30'6"1/2	(6'0"1/16, 91'11"15/16, 13'7"9/16)	29'4"1/2	C/-
7	COLUMN	41	6	C5	PIPE8STD	856.94	29'10"1/2	(6'0"1/16, 2'0"1/16, 13'3"9/16)	28'8"1/2	C/2
8	COLUMN	41	7	C7	W12X79	2899.31	30'6"	(20'8"1/16, 0', 11'7"3/16)	28'8"	D/1
9	COLUMN	41	8	C8	W12X79	2887.62	30'5"3/4	(20'7"15/16, 30'8", 12'2"13/16)	29'3"3/4	D/5
10	COLUMN	41	9	C9	W12X79	3007.64	31'2"	(20'8", 63'4", 12'9"13/16)	30'0"	D/8
11	COLUMN	41	10	C10	W12X79	2852.67	31'2"	(20'8", 94'0", 11'7"1/2)	29'4"	D/11
12	COLUMN	57	11	C11	HSS8X8X1/4	291.07	9'9"3/8	(31'6"1/2, 10'6"1/4, 33'4"7/16)	38'8"	D-E/2-

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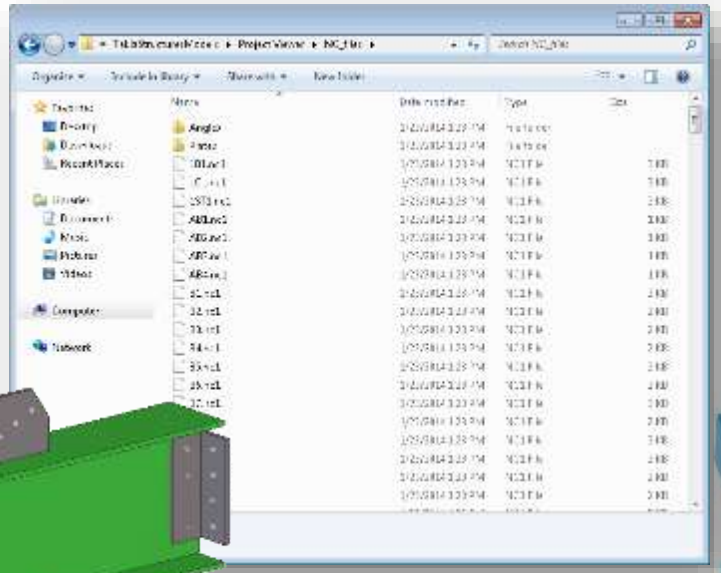
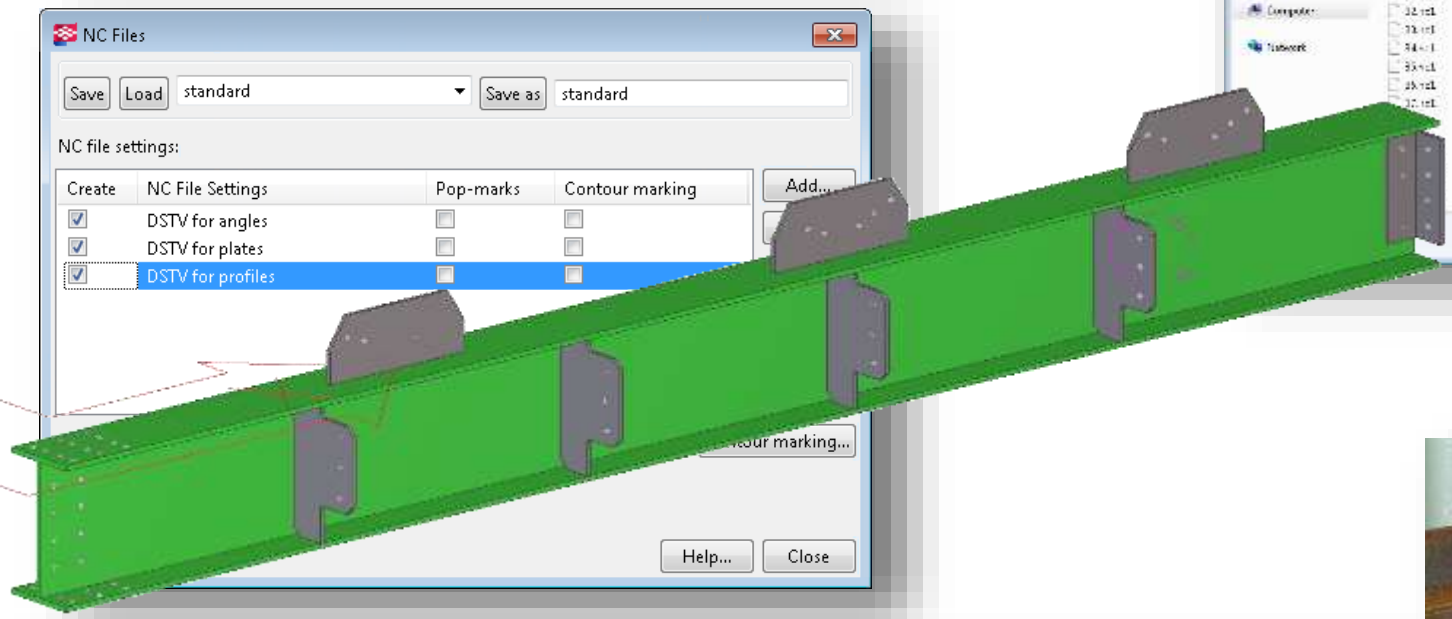
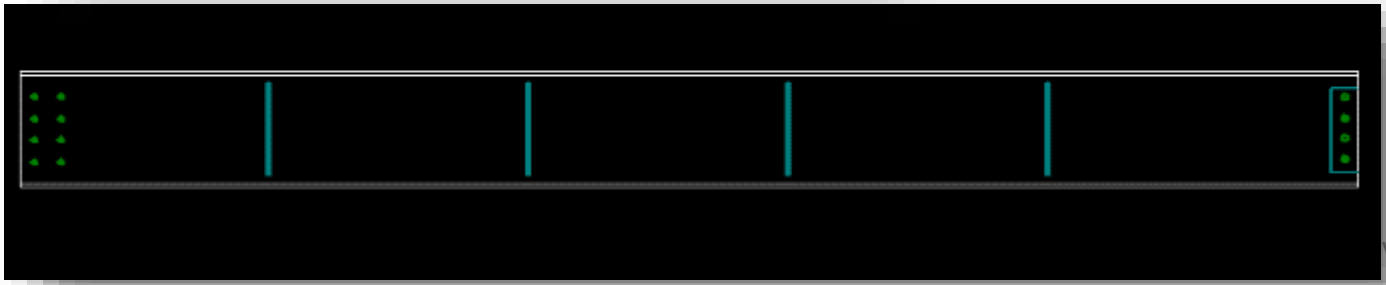
Create Steel Fabrication Data

- DSTV, DXF, etc.







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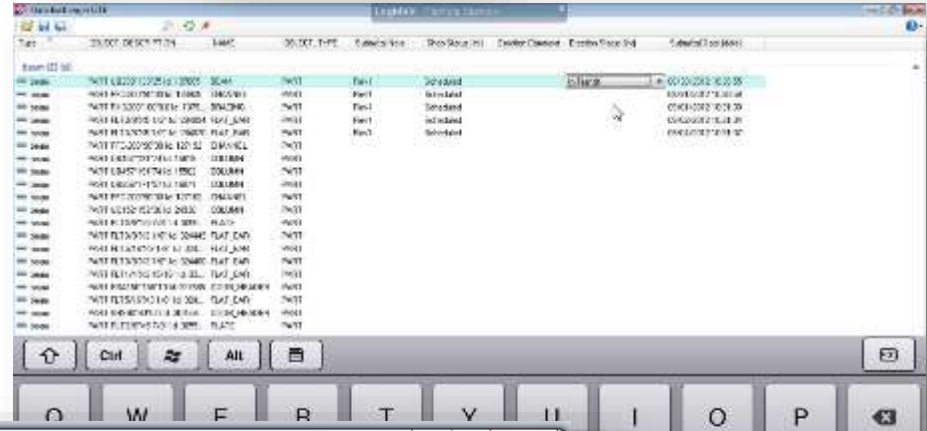
Attribute Import

- Cloud based information exchange
- Remote status reporting



Data Exchanger LITE

Type	OBJECT_DESC...	NAME	OBJECT_TYPE	Submittal Note	Shop Status (int)	Erection Comment	Erection Status (int)	Submittal Date (date)
beam (23 (s))								
beam	PART UB203*13...	BEAM	PART					
beam	PART PFC-200*9...	CHANNEL	PART					
beam	PART RHS200*1...	BRACING	PART					
beam	PART FLT3/8"X...	FLAT_BAR	PART					
beam	PART FLT3/8"X...	FLAT_BAR	PART					
beam	PART PFC-200*9...	CHANNEL	PART					
beam	PART UB457*19...	COLUMN	PART					
beam	PART UB457*19...	COLUMN	PART					
beam	PART UB356*17...	COLUMN	PART					
beam	PART PFC-200*9...	CHANNEL	PART					
beam	PART UC152*15...	COLUMN	PART					

10:35:19 AM

August, 2012

Sun	Mon	Tue	Wed	Thu	Fri	Sat
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1
2	3	4	5	6	7	8

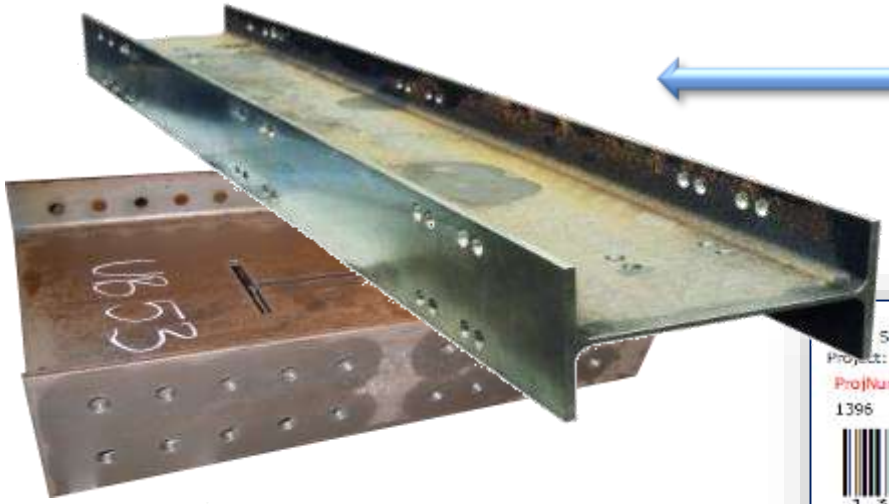
Today: 8/27/2012

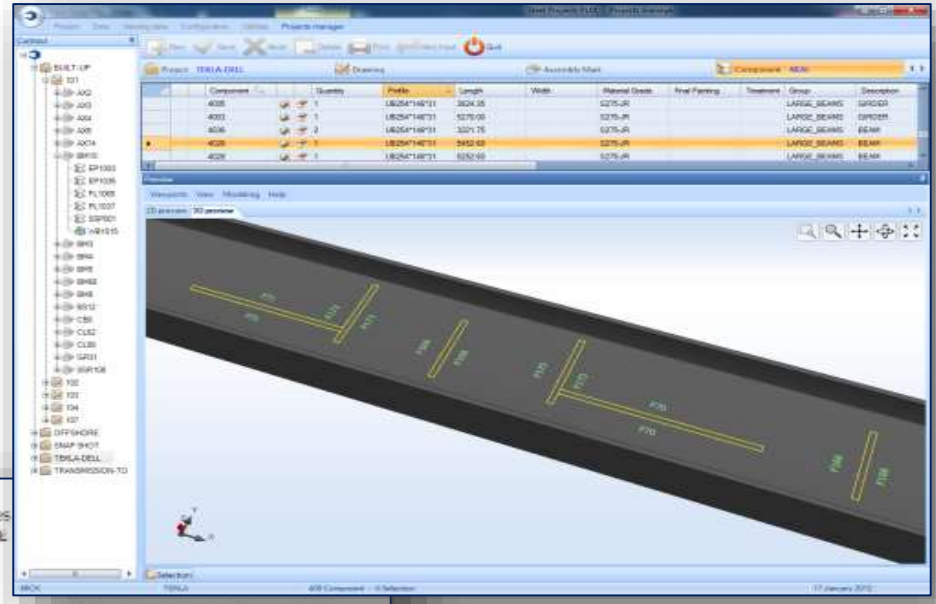
CONSTRUSOFT

- Tekla - a Global Software Company
- BIM makes working more efficient & productive
- Tekla BIM Solution
  - **Design and documentation**
  - **Structural analysis**
  - **Engineering the details**
- **Reference cases**
- Conclusion

Steel Projects PLM CNC Production / Planning

Steel Projects





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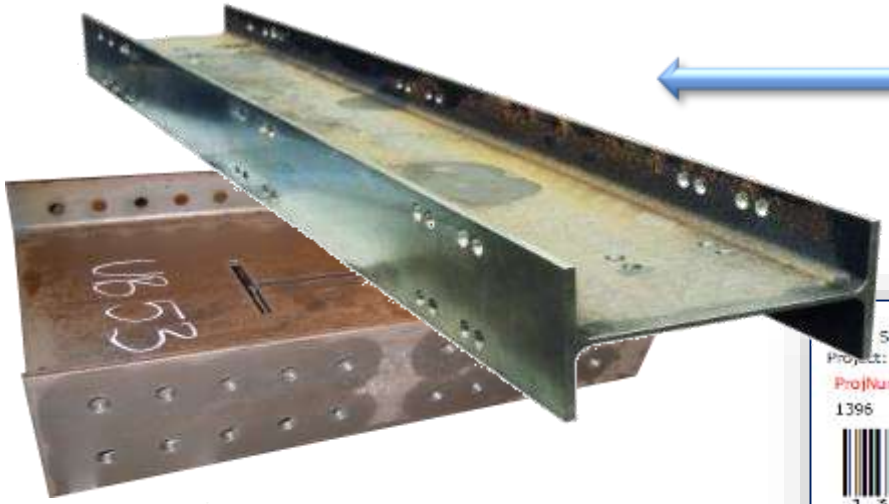
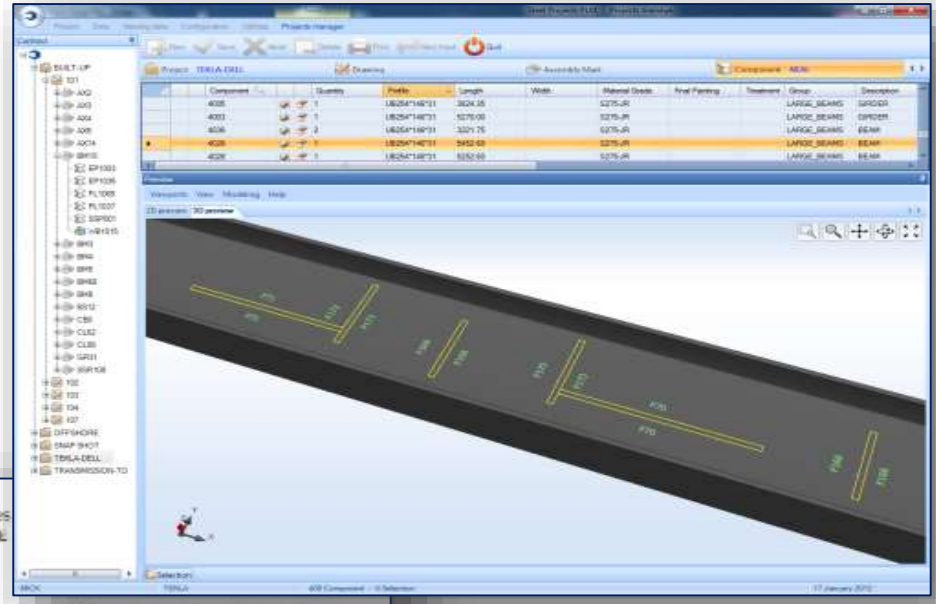
Steel Projects PLM CNC Production / Planning

Steel Projects





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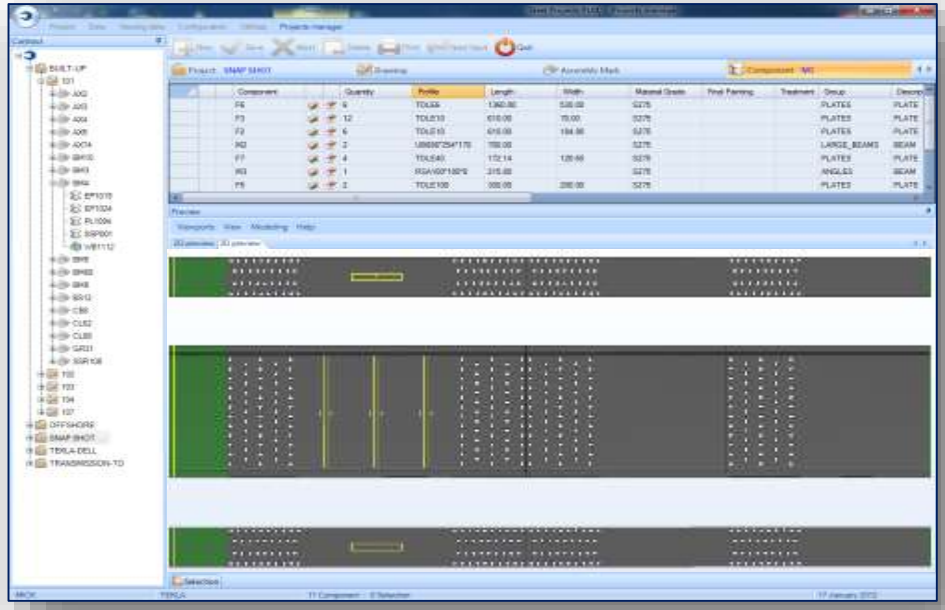
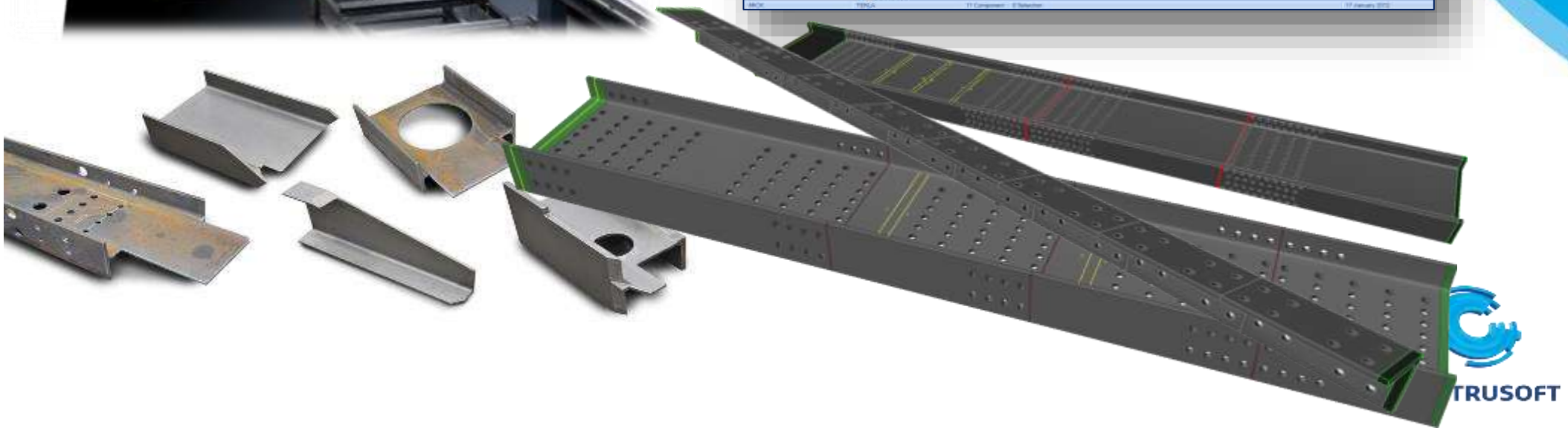
Steel Projects PLM Section Nesting

Steel Projects





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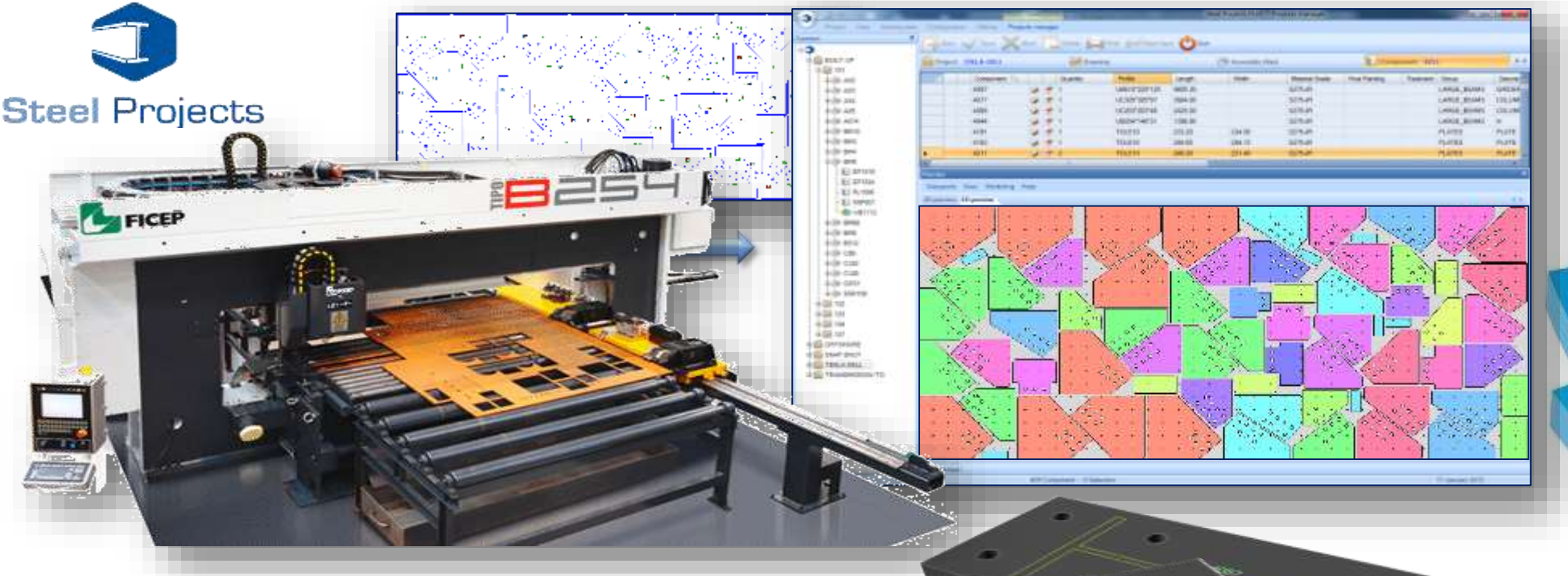
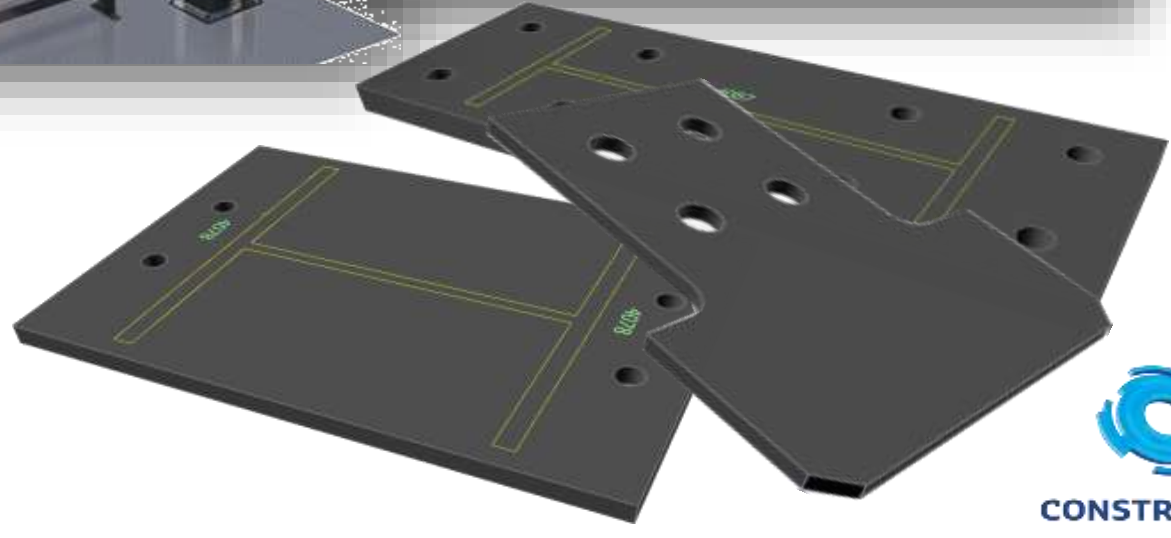
Steel Projects PLM Plate Nesting

Steel Projects





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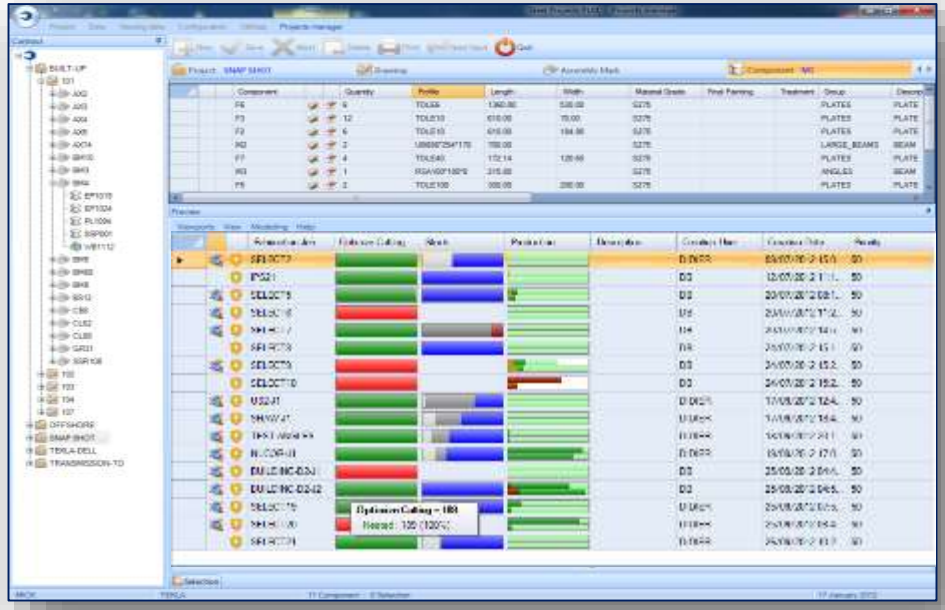
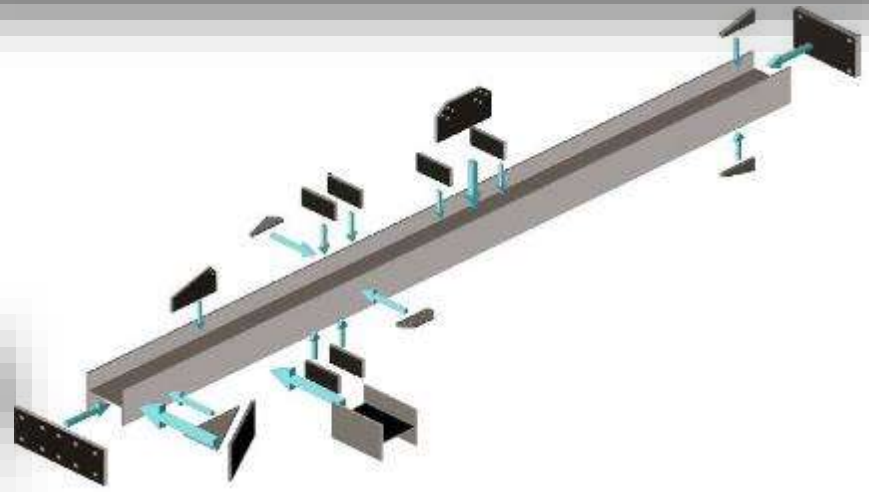
Steel Projects PLM CNC Planning and Time Calculation

Steel Projects





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Automated workshop

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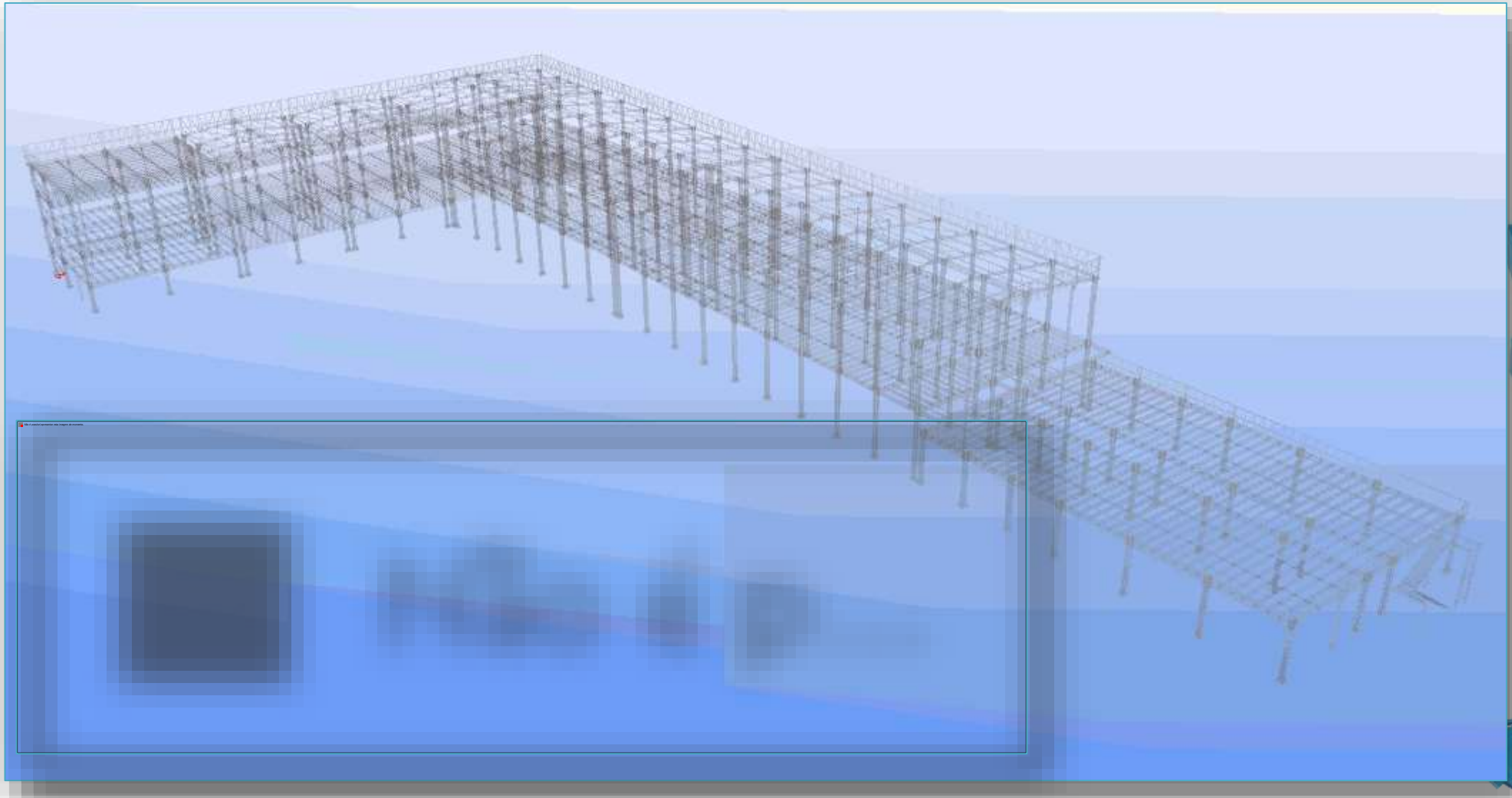
Production Feedback

TEKLA
A TRIMBLE COMPANY

Steel Projects

FICEP S.p.A.



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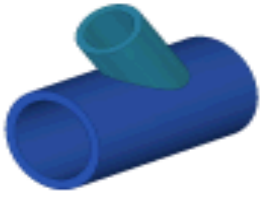
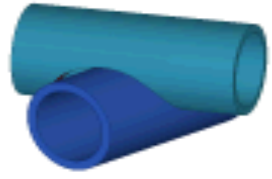
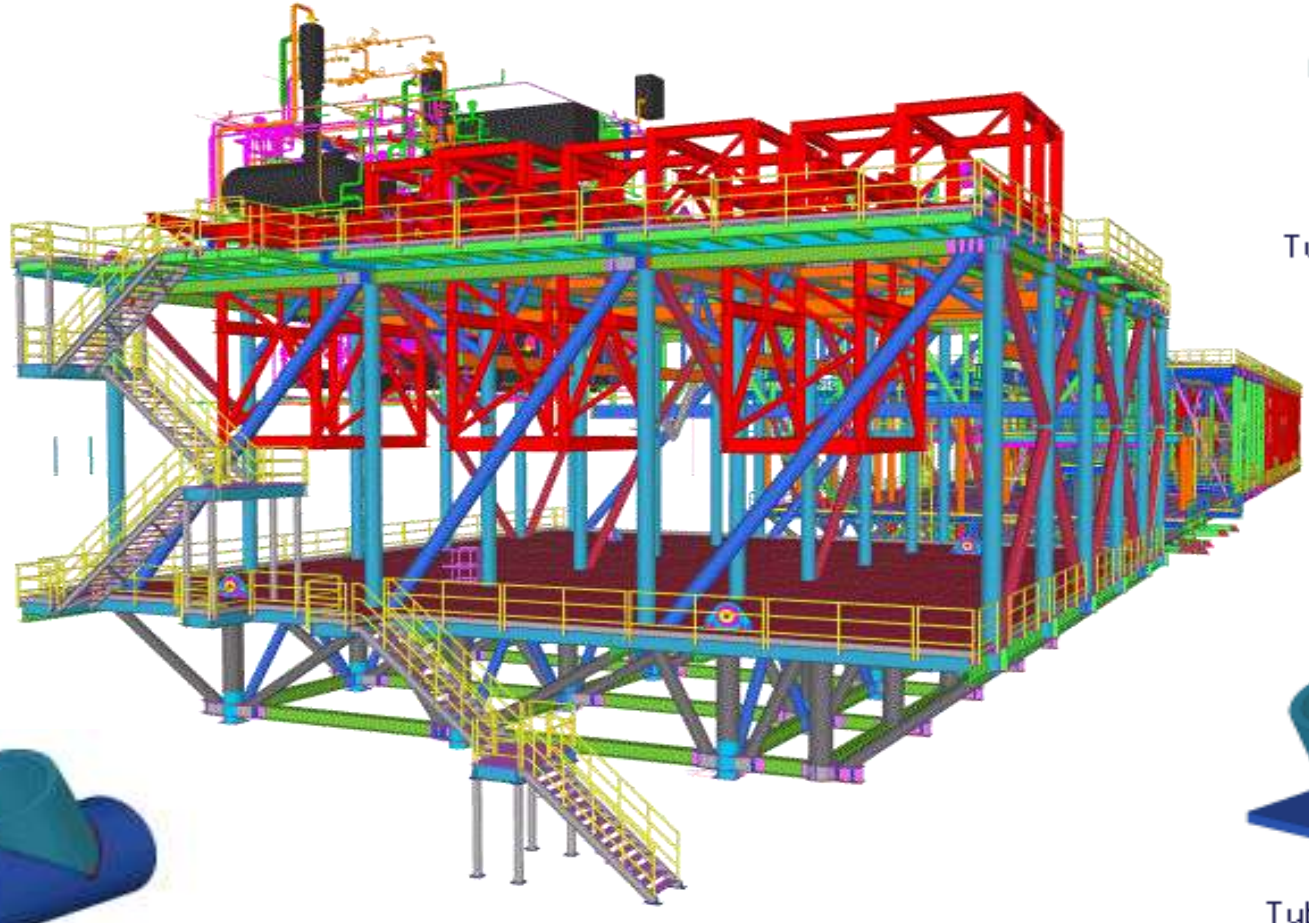
New range of specialised HGG tube to tube components in Tekla

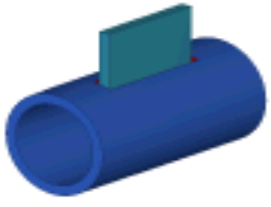


Tube-Saddle+Hole



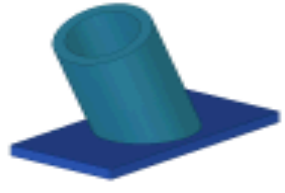
Tube-CrossingSa...





Tube-SlottedHole

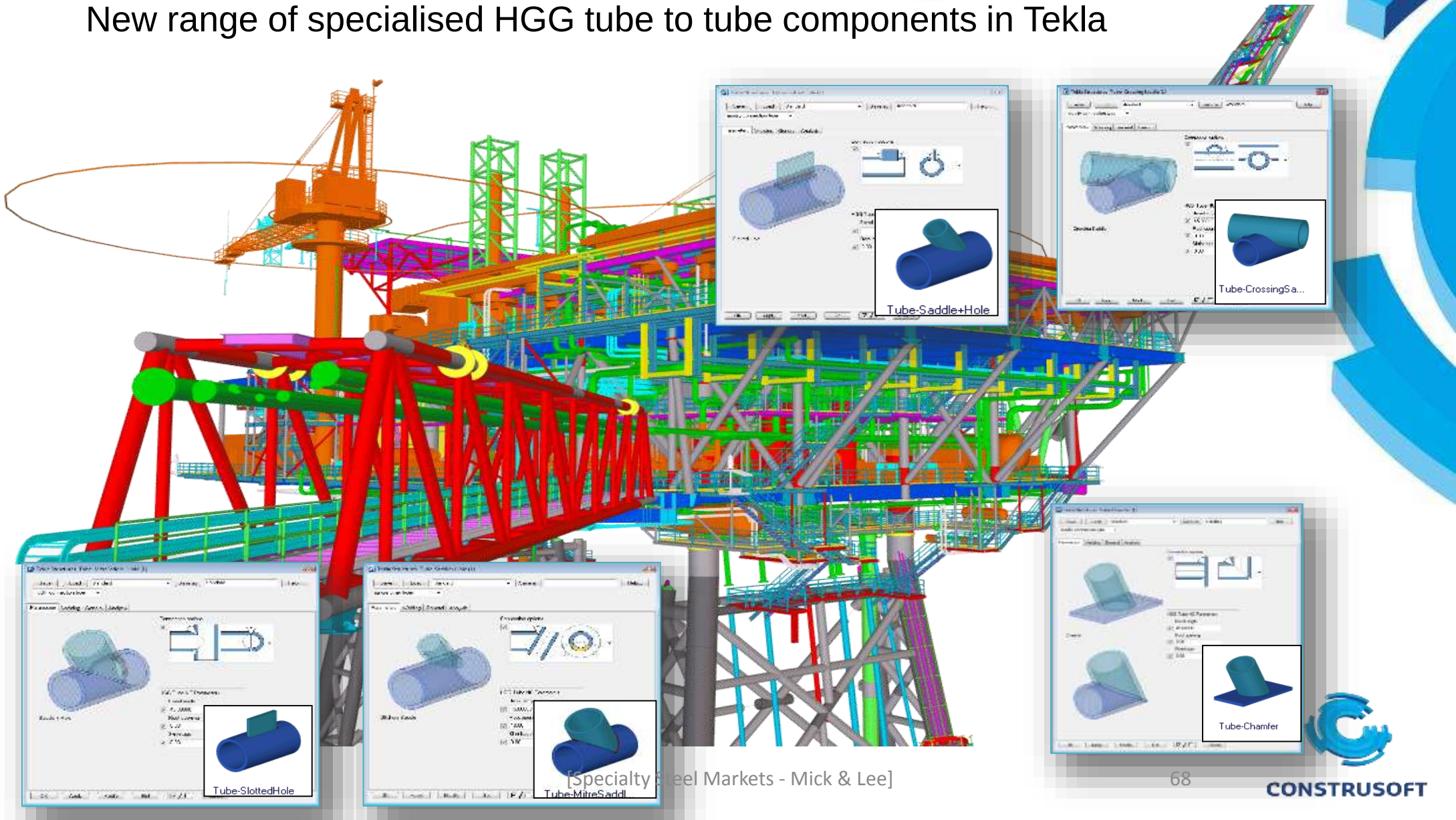
Tube-MitreSaddl...



Tube-Chamfer

CONSTRUSOFT

New range of specialised HGG tube to tube components in Tekla



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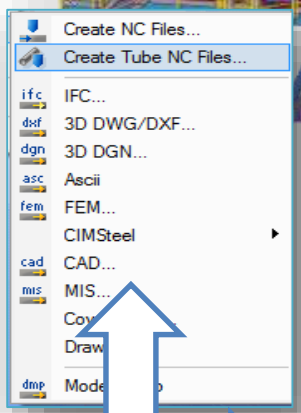
HGG Specialists in 3D Profiling

3D profiling machines & Cutting services

Export the profiling data from Tekla model direct to HGG interface



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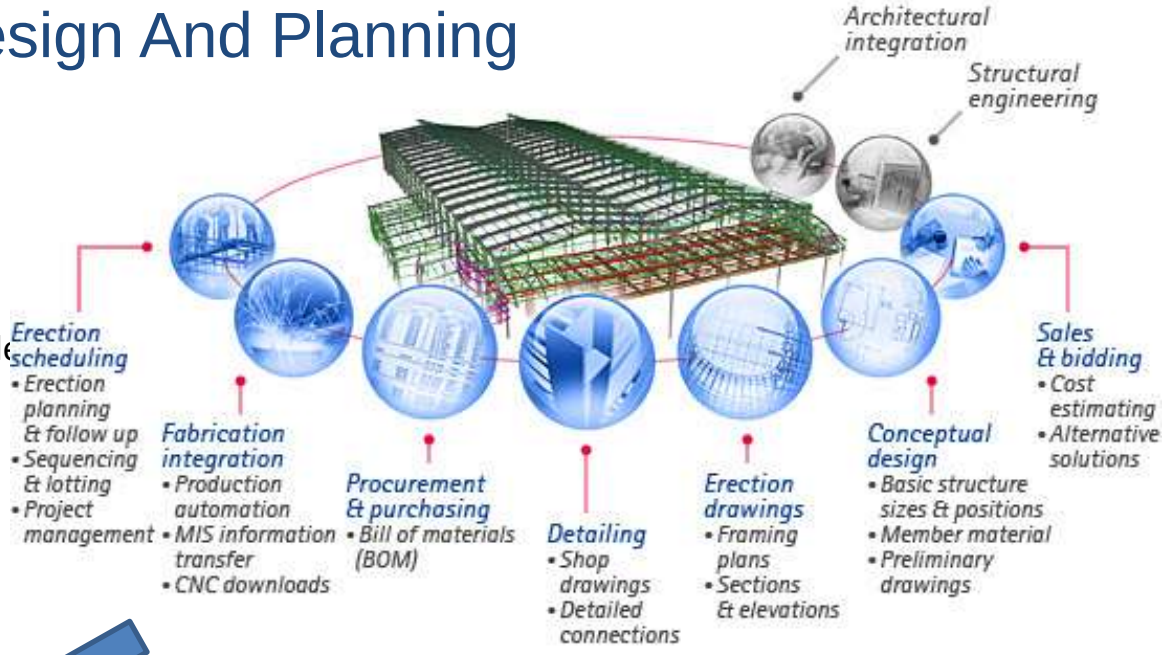
Links direct to all HGG profiling CNC machines

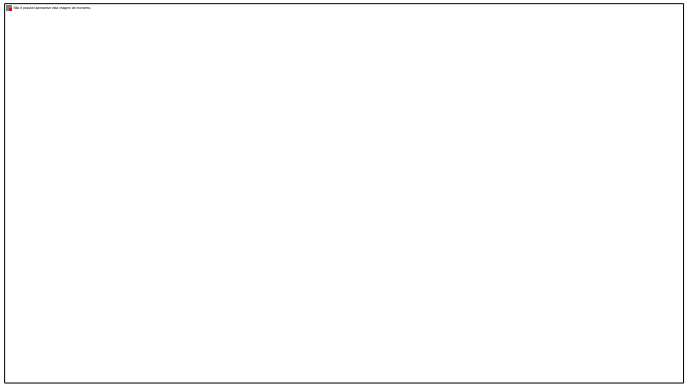
Tekla to Pemamek :- Design And Planning

- Using the Tekla Open API:
- Take the weld data from the Tekla mode



pema
WELDING AUTOMATION

From Model to production



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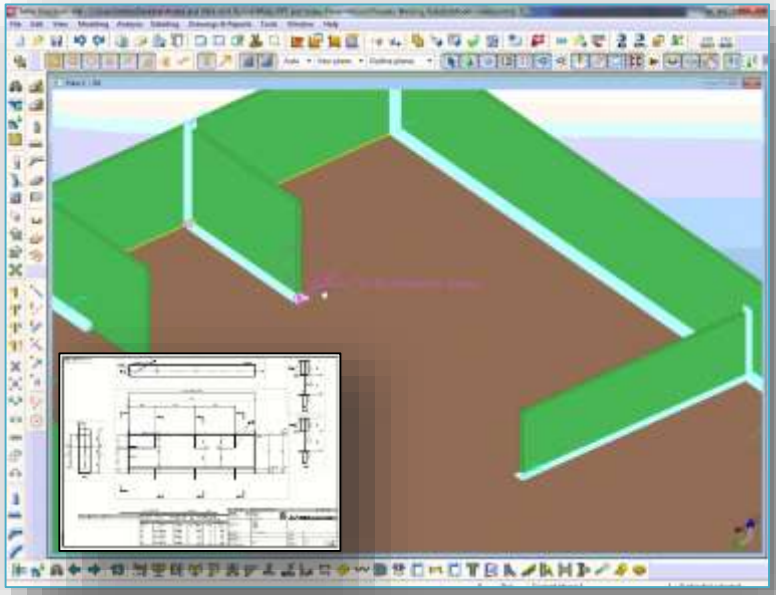
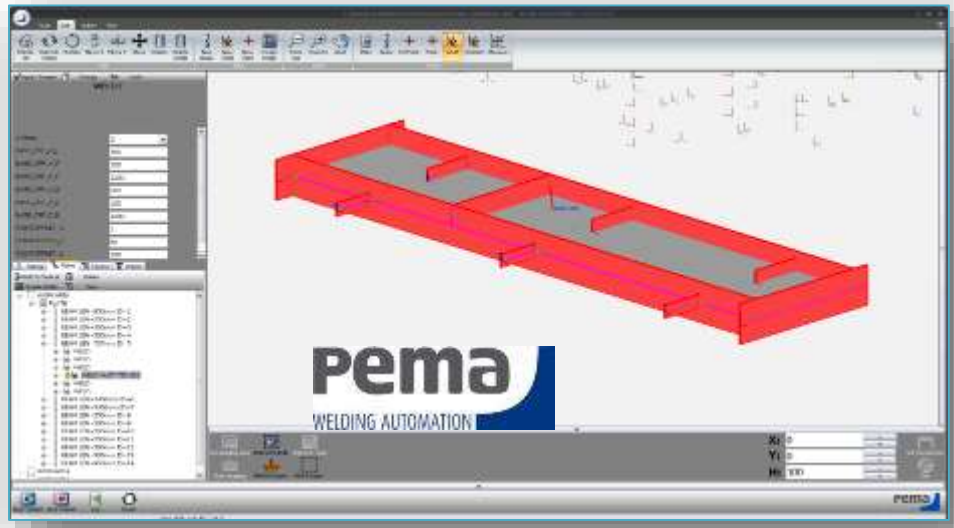
Creating welds in Tekla

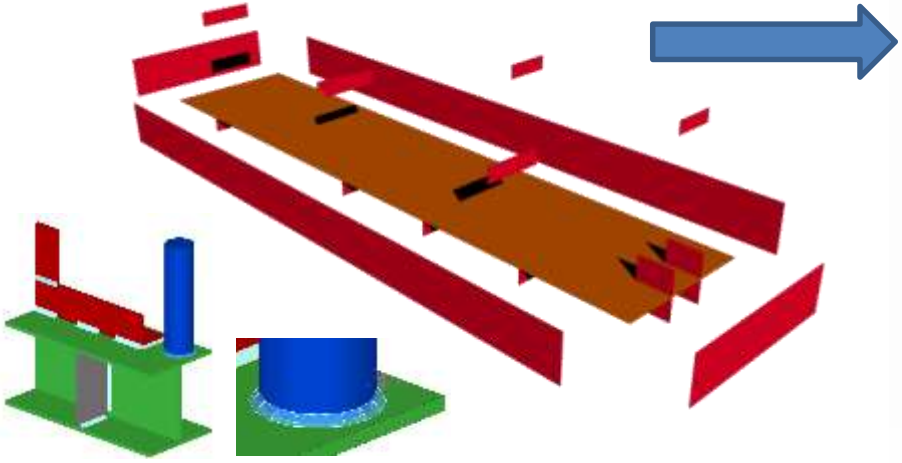
CONSTRUSOFT

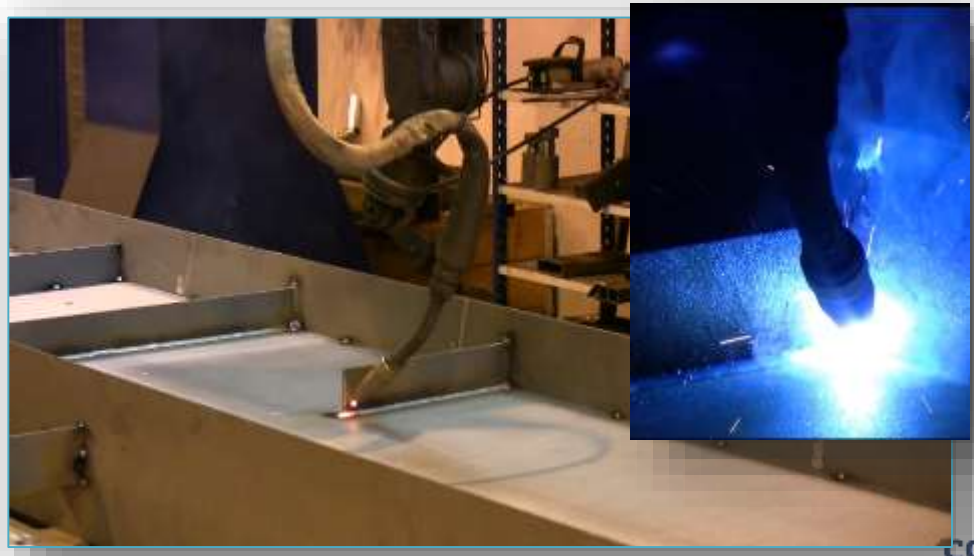
Tekla Structures is active, select assembly to download





From Tekla Model To Weld Automation





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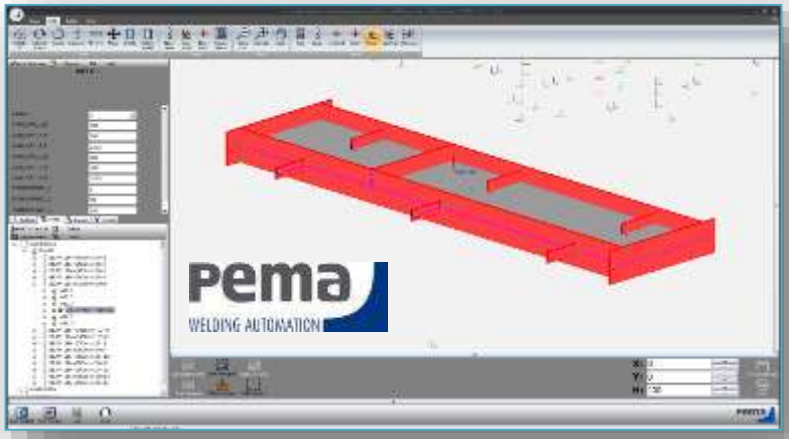
Robot programming: PEMA TEKLA Modeller
Weld-Control programming system



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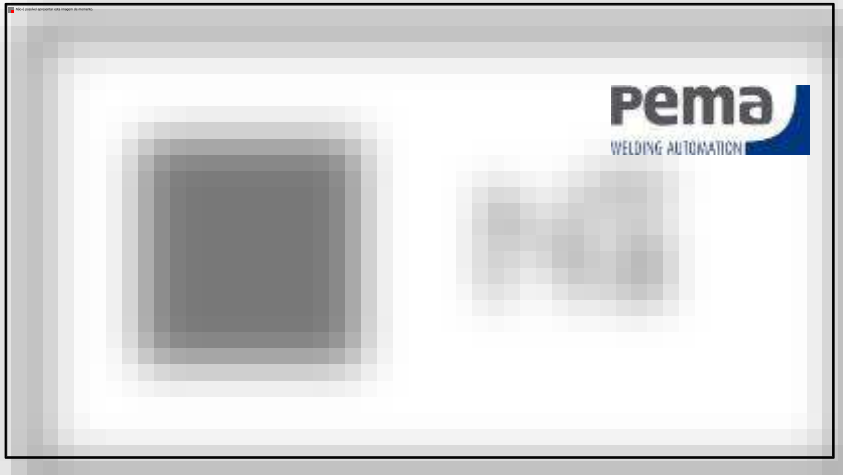
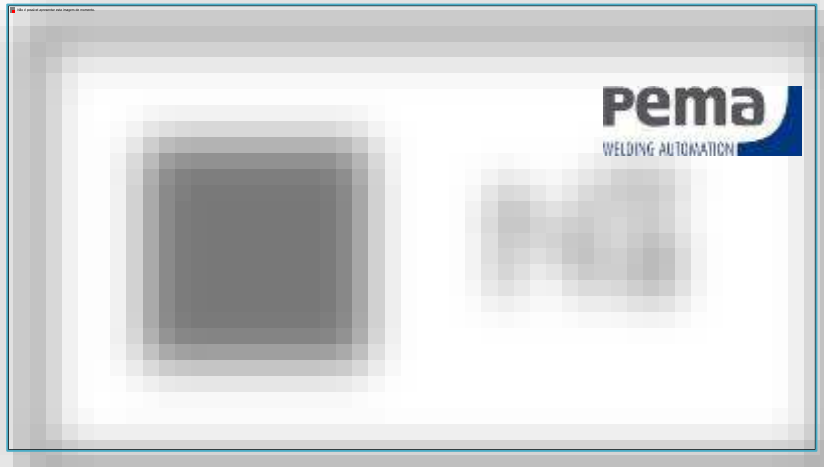
PEMA - Tekla Weld-Control programming system



Load assembly from Tekla into PEMA weld-control software



Create 3D view of downloaded assembly

Assign downloaded subassembly to a welding station

Create / edit weld paths

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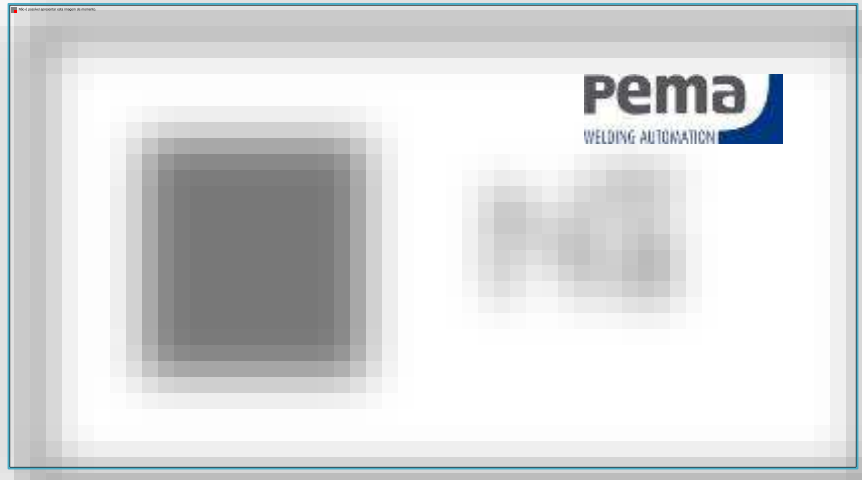
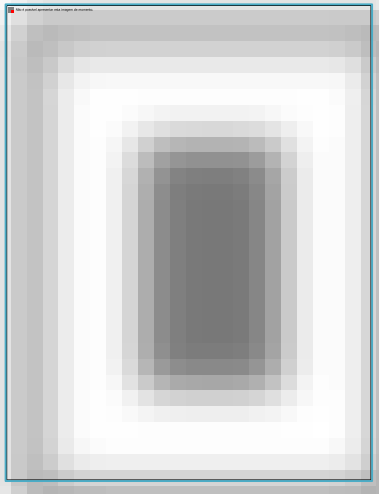
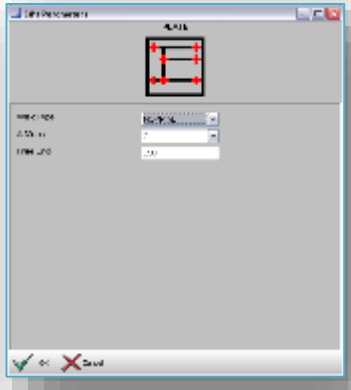
PEMA - Tekla Weld-Control programming system

Create weld lines 3D visualization



Download welds to robot => Start welding





Modify welds if needed

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H-beams welding example

Two Stargate type positioned stations

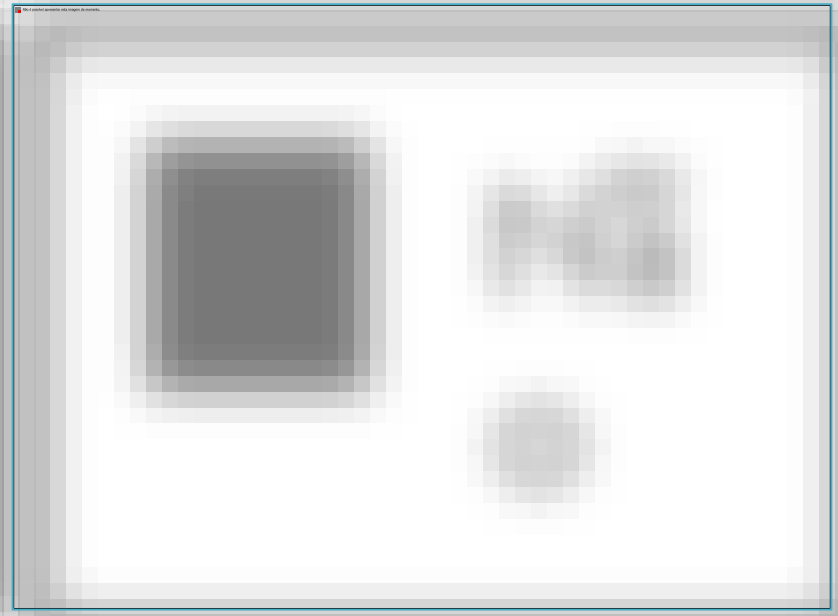
2 pcs of Motoman UP20MN welding robots

26m long robot floor track

Lincoln Power-Wave MAG welding power sources

Binzel torches and hoses

CONSTRUSOFT



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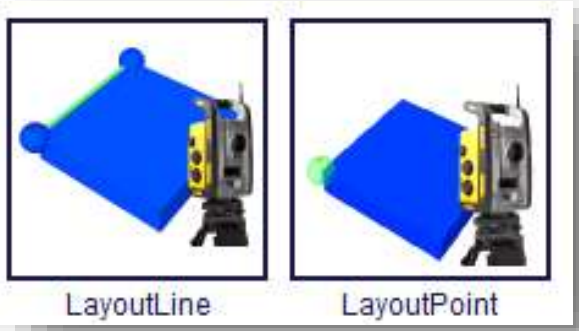
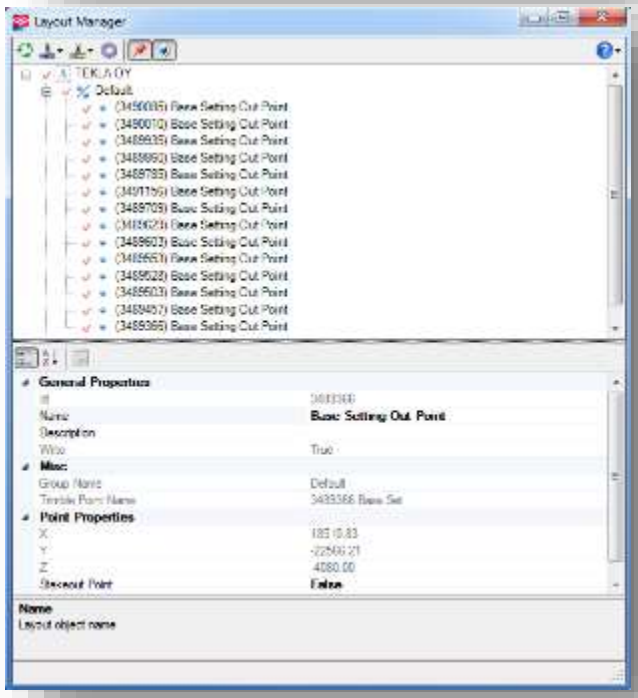
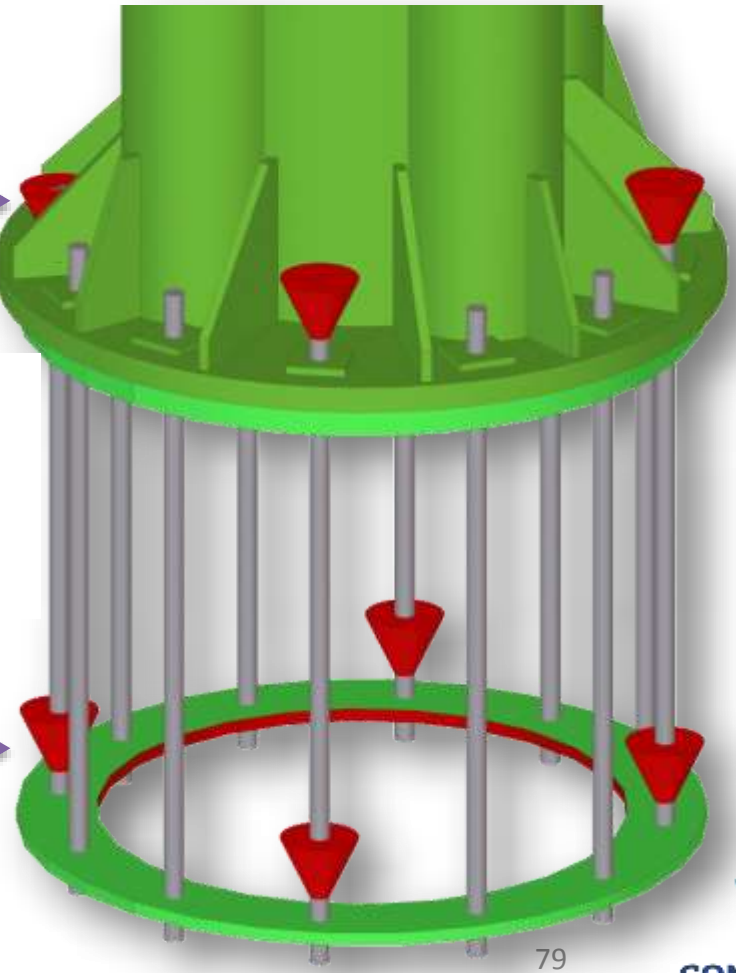
Tools in Tekla to integrate with Trimble





- Create Layout Points
- Create Layout Files
- Create DWG / DXF



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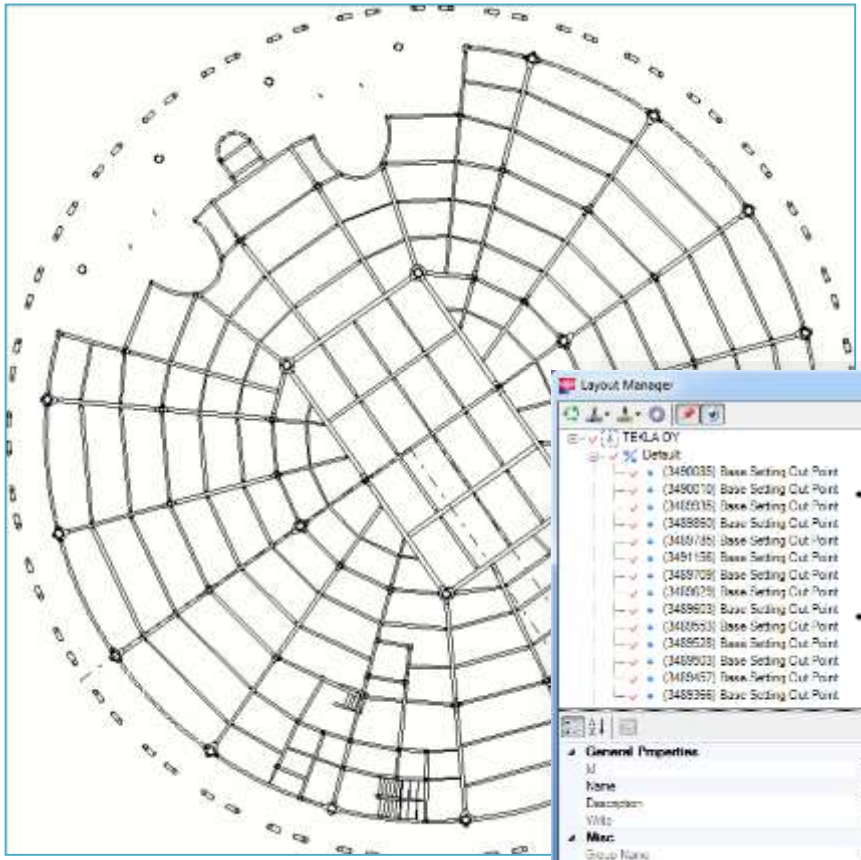
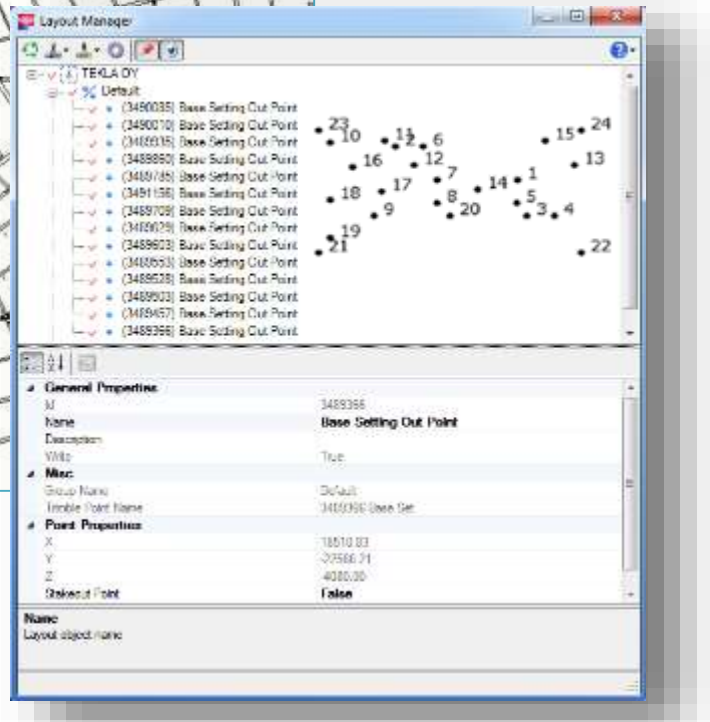
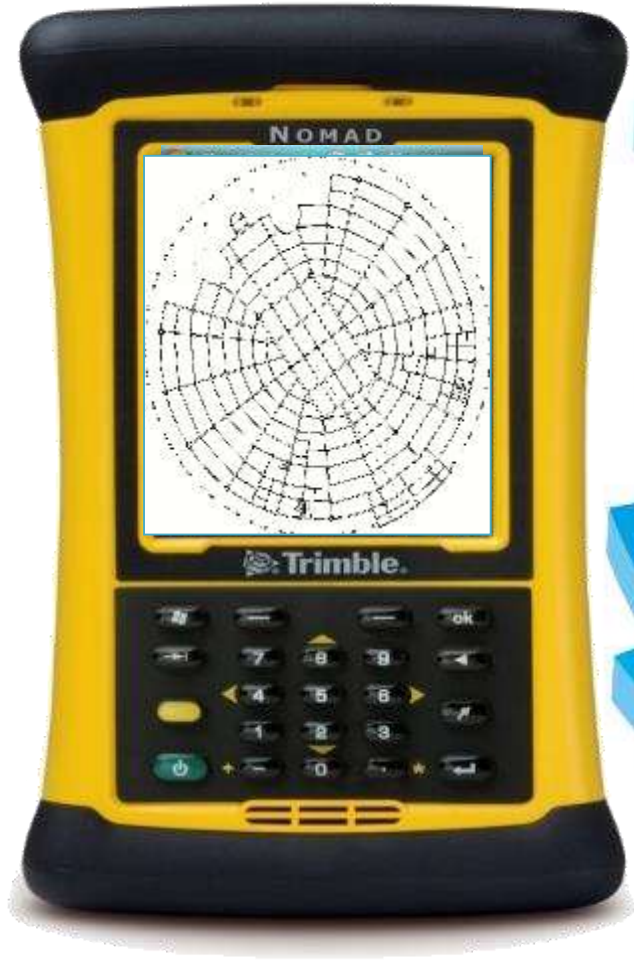
Pass files over to Nomad



- DXF DWG
- Point data
- Layout Files





Windows Mobile

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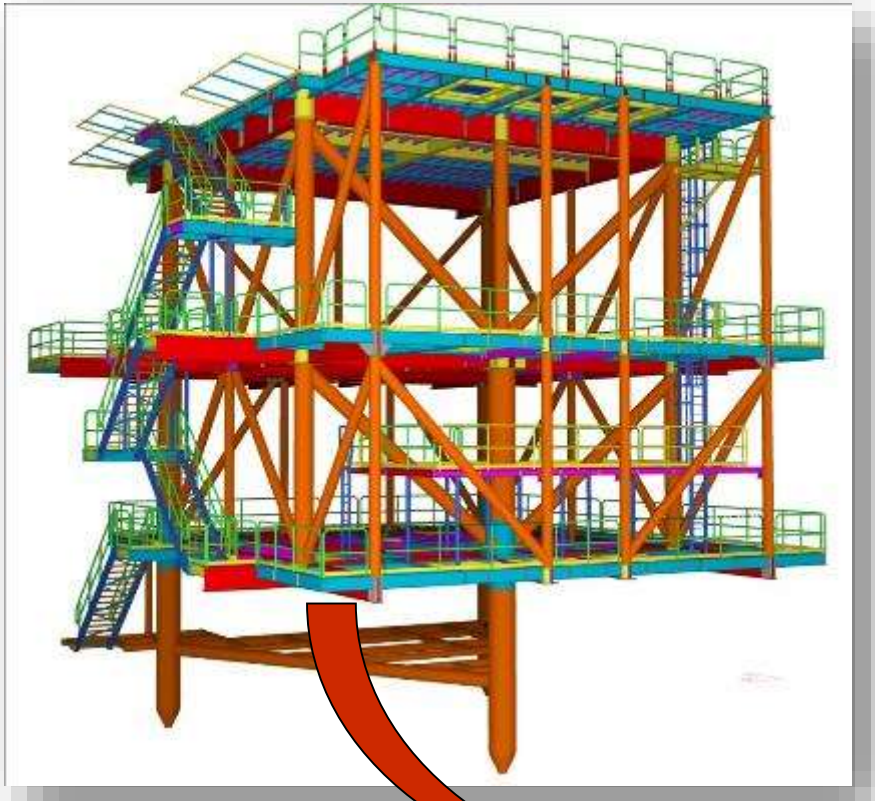
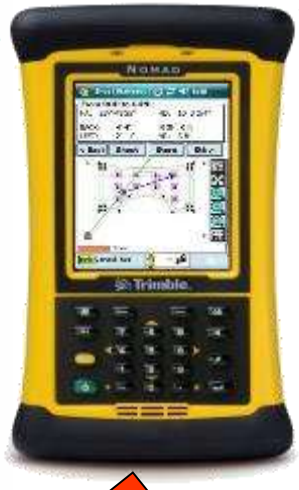
Increasing productivity with model-based layout

Accurate model data





Used directly in the field

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Also used for fabrication set out applications

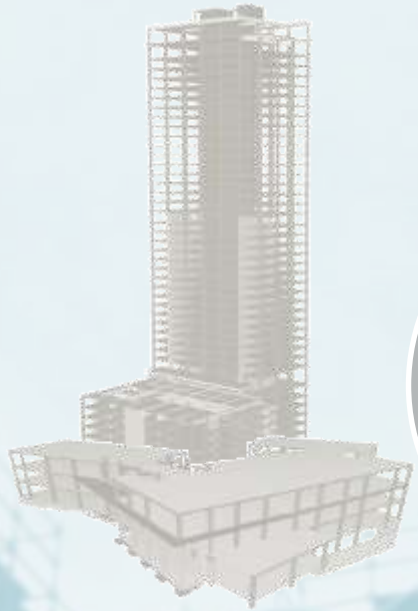
CONSTRUSOFT

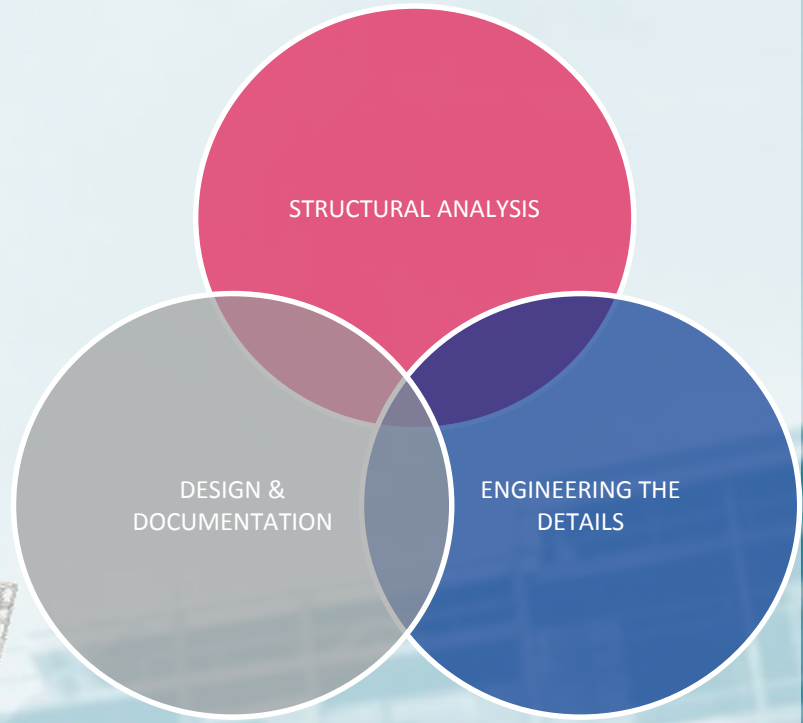
- Tekla - a Global Software Company
- BIM makes working more efficient & productive
- Tekla BIM Solution
  - **Design and documentation**
  - **Structural analysis**
  - **Engineering the details**
- Reference cases
- **Conclusion**

Tekla BIM Solution

Improved Project Performance from Design to Construction

- ✓ **Increased efficiency and productivity**
- ✓ **Management of risk and quality**
- ✓ **Competitive advantage and new business opportunities**





Obrigado!

Vakis P. Kokorelis
vkokorelis@construsoft.pt
+351 967 084 807

CONSTRUSOFT

- Tekla - a Global Software Company
- BIM makes working more efficient & productive
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  - **Design and documentation**
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Existing processes and level of productivity

Yas Marina F1 Circuit

"Using Tekla Structures in the Yas Marina project increased our productivity by more than 30%."

[na
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nes,
tures,
dels.
To make work faster, at peak times, more than 12 detailers worked on the same server, using the software in multi-user-mode. *We*

"We estimate a cost reduction of approximately 20% by using and implementing BIM in this project."

Regional Manager of ICW in the Middle East

ArtScience Museum

"If we didn't have Tekla, the drawings would have taken five times longer."

model
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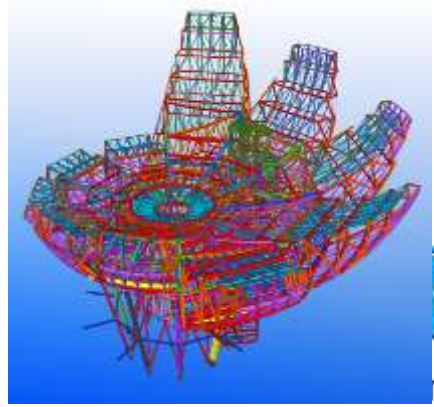
- Arnold C. Hipolito,
the Deputy Engineering Manager at Yognam



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Existing processes and level of productivity

Pinnacle Tower

"I would ... to save 10% in internal ef... es model review and check ... an hour for an engineer t... whereas with our previous p...

We have managed to save 10% in internal efficiency savings working together with the structural engineers.

- Jon Lock, structural CAD manager
Arup's Building Engineering London Group 4

London City Hall

ARUP

Tekla geometric model was first produced by Arup and then passed directly to steel contractor Wescol. Steel contractor worked up all connections and no translation or re-drafting was required.

Big time saving of 8 – 10 weeks.

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Quality of services offered

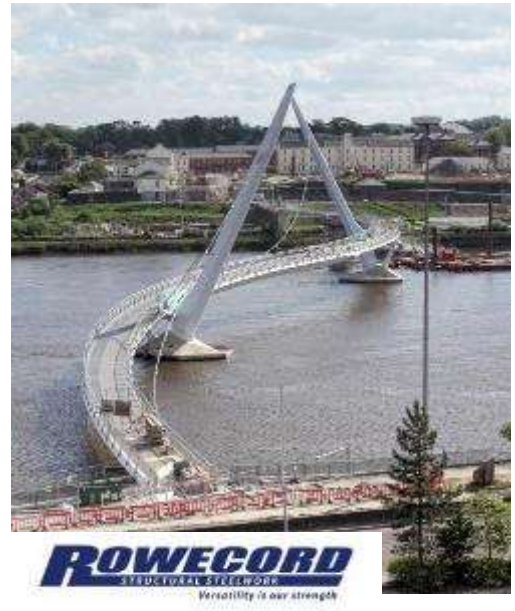
Peace Bridge

During the project the Tekla model worked as the source of general arrangement and fabrication drawings. As Ro ed to export information from Tekla to e ffeners onto box girder plates. Althoug mbly in the workshop considerably eas

"Although it is d nt reduced errors which was a significant benefit. Being able to see that everything fits together is a real advantage."

- **Jeremy Masters**, Drawing Office Manager of Rowecord

> ***"Creating the model in Tekla environment reduced errors which was a significant benefit."***



Manitoba Hydro Spillway

"Ma
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we c

> ***"Many issues were resolved very early in the design stage instead of construction site."***

- **James Tapper**, Tekla Administrator, KGS Group

CONSTRUSOFT

Quality of services offered

Finnforest

"We'd already been using Tekla Structures to model all our steel structures for some years and we're also using the same system to an increasing extent for concrete structures. This was the first time we used Tekla Structures for wood."

Altogether, designir was also successfully utilized to produce eports to enhance production.

"We were able to significantly cut down on errors by using 3D modeling and certainly improved the quality of building."

"I believe we were c inly improved the quality of building compared to the alternative of designing in a traditional 2D environment. Even though there were truly difficult structures and complex details, I never heard of a single problem on site."

-Ville Jaatinen, the design project's project engineer, WSP Finland

Skanska and Turner

Engineer can see impact of changes on sequencing.
Information in same Tekla model used for site co-ordinatio and RFID tagging (Barcoding) used to track pieces. In addition, easy management of information via

Est
$1r

"Estimated saving: Gain of 10 days on project schedule @ $100000/day benefit = $1million saved"

Quality of services offered

Central Park Tower

Quantifying the impact of problems that are resolved is always a difficult task to do. How do you determine the cost of something that never happened?

In the case of Central Park Tower, Weitz used a control project to benchmark coordination performance. When compared to a similar CIP core structure using tradition design and delivery the costs associated with RfI and their ultimate impact to what the owner would be assessed in addition to the agreed GMP is made apparent.

Project Highlights

- Cast-in-place concrete fabricator used 21.6% less reinforcing material than originally budgeted, saving the owner $113,000

- No RFIs
- Construction schedule reduced by two weeks
- Zero change orders

- Zero change orders

BENCHMARK COMPARISON OF CENTRAL PARK TOWER COORDINATION PROCESS

WEITZ SIMILAR COMPARISON PROJECT
April 2008
9 stories
CIP core
On schedule
44 RFIs for CIP core walls
14.7% of total RFI's on project
Range of costs for RFIs (includes direct and indirect project costs:
$97,549 – $161,549

CENTRAL PARK TOWER
April 2009
11 stories
CIP core
Two weeks ahead of schedule
0 RFIs for CIP core walls

WEITZ · Martine & Lafk Inc. · AXIS STEEL DETAILING INC. · STRUCTURAL CONSULTANTS INCORPORATED

CONSTRUSOFT

Information management

Aldar Headquarters

"In initial engineering, a 5% time saving was achieved by utilizing the architect/ consultant's model with similar levels of accuracy."

rchitect/ in nich formation of the

- **Andy Gleaves,** Engineering Director at William Hare

Castle House Tower

"We l drafti we w the a Addit effect Tekla.

"We believe that this project could not have been completed with traditional 2D drafting methods due to the geometry of the turbines, and therefore without Tekla we would not have taken the job."

- Daniel Leech, Commercial director at TDS

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Information Management

Panorama Tower

The structural engineering of the Panorama Tower business center was largely based on 3D modeling. Pöyry Civil Oy used the Tekla Structures software for structural engineering, and Ruukki, the supplier of the steel frame par…e. The model was also util… Structures, was used to per…ccelerations to support oth…

"Staad software, integrated into Tekla Structures, was used to perform design analyses related to the building's stability and horizontal displacement accelerations to support other design calculations."

"Th…t as the measurement env…ibility to combine models ma…dinate the design work throughout the project. The greatest benefit was gained in data transfer between project parties, as Ruukki, for instance, designed the structural steel components by modeling. In addition, model-based design helped us to stay on the challenging schedule."

- Kari Lassila, Project Manager at Pöyry Civil Oy

Bella Hotel

"Using the model on site has been a big advantage for us in this project. Communication with the …aving little room for …

"Bella Hotel was a very big model with a lot of information, and it is highly important to us to be able to work with the models in a quick and reliable way."

-Bo Johansen
…tractor NCC

…tant to us to be able to work with the models in a quick and reliable way."

- Kaare K. B. Dahl
Project Manager, Ramboll Finland

Service offering

Mall of Scandinavia

From Ruukki's point of view, Building Information Modeling is necessary for projects like the Mall of Scandinavia. It is a large project with numerous project parties, and Ruukki has had to coordinate their actions with the other contractors. Overcoming logistic and information sharing challenges is a part of project management's daily work, and to Ruukki's experience it is vital for any successful project.

Tekla software f[illegible] and for managing the constant change[illegible]mponent belongs to and when a change [illegible]

"Tekla is an excellent tool that is significant for successful projects leading to successful business."

"I have led a nu[illegible]as been available, no other design software has been used in my projects. Tekla is an excellent tool that is significant for successful projects leading to successful business."

- **Minna Kuusela-Opas**,
Project Director, Ruukki

Crusell Bridge

Extensive use was made of the building information model for the fabrication of steel girders and concrete reinforcement, for monitoring and management of the supply chain of fabricated components, for formwork[illegible] scanning, and for [construct][illegible] practices during the projec[illegible] System™.

"Modeling supported lean construction practices during the project, such as production management on-site."

CONSTRUSOFT

Service offering

Manskun rasti

The structural components of the model were grouped using Tekla model organizer, and the grouping has been maintained throughout the project. With the help of the grouping, 4D sim struction sch ite office.

"W veekly 4D-sch the schedules."

> ***"The weekly 4D-schedules were of great assistance for the foremen in planning the work and monitoring the schedules."***

-**Pentti Holm**, General Foreman, Skanska

Ramboll

"The benefits p much more data — in term ontractors, precast concre tomers as well. We have e of a framework agr

> ***"The benefits provided by the software mean that we can provide a better product and much more data."***

- Bent Feddersen, Chief of Expertise Development at Ramboll Denmark

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