

Tekla Structures Open API

Model API

Use Cases & Scenarios

General Design,
Project Management,
Workflows,
Data exchange,
Integration

Main Services

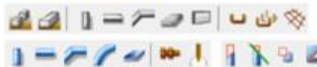
Structure of the Model API



Model

Model Info, GetObjects, Project Info,
Workplane, GetPhases,
CommitChanges

Model Objects



Assemblies, Parts, Bolts, Rebar, Welds,
Grids, Reference Models and Objects,
Surfacing, Cuts, Loads



Connections, Details, Seams,
Custom Parts, Plugins



Geometry and Solid

Planes, Intersections, Points,
Coordinate Systems, Matrix,
Part Faces, Edges



Group Objects

Phases, Hierarchic
Objects, Tasks



Operations

Run Macros, Move/Copy, Split, Combine,
CNC, MIS, Web Model, Report, Check
Numbering, Status Message



User Interface

Picker, Highlighter, GetSelected,
Views, Clipping Planes, Object Rep,
Graphics Drawer (text, lines)



History



Events



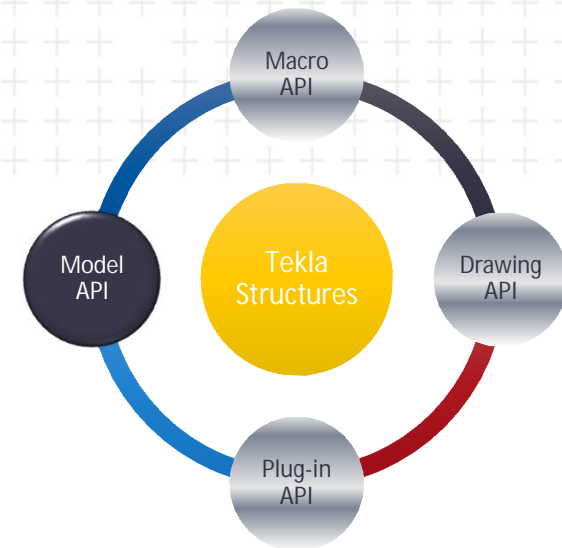
Clash Checking

Model API

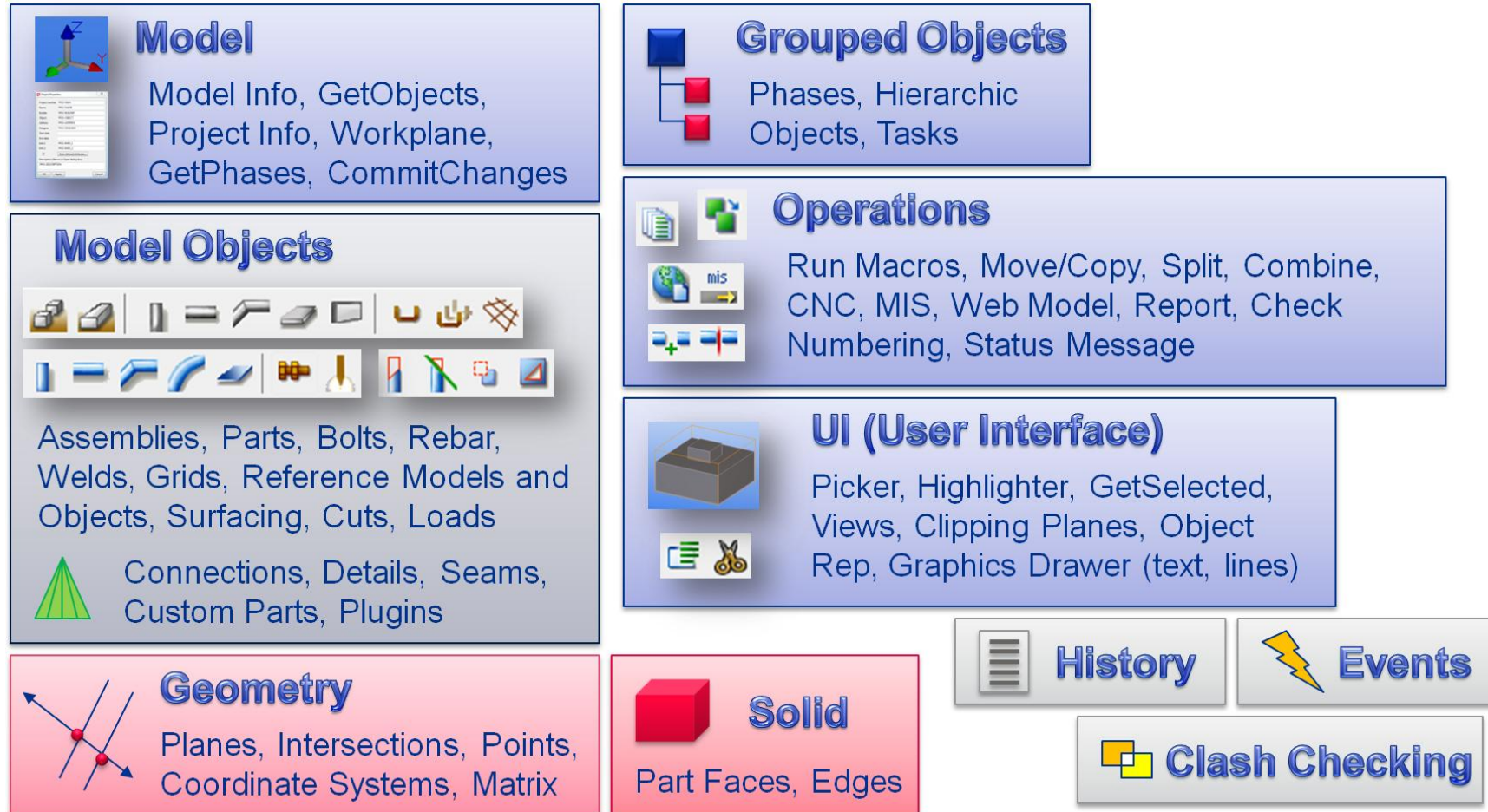
Tekla Open API - Model

§ Model API

- Connect to a running Tekla Structures model
- Create, modify, and delete model objects
 - § Read and write object attributes
 - § Read and write user defined attributes
 - § Get report properties for objects
- Interact with the user
 - § Get currently selected objects
 - § Prompt user to pick objects and locations
 - § Select and highlight objects for the user
- Access catalogs (material, bolt, profile, etc.)
- Create and manipulate model views

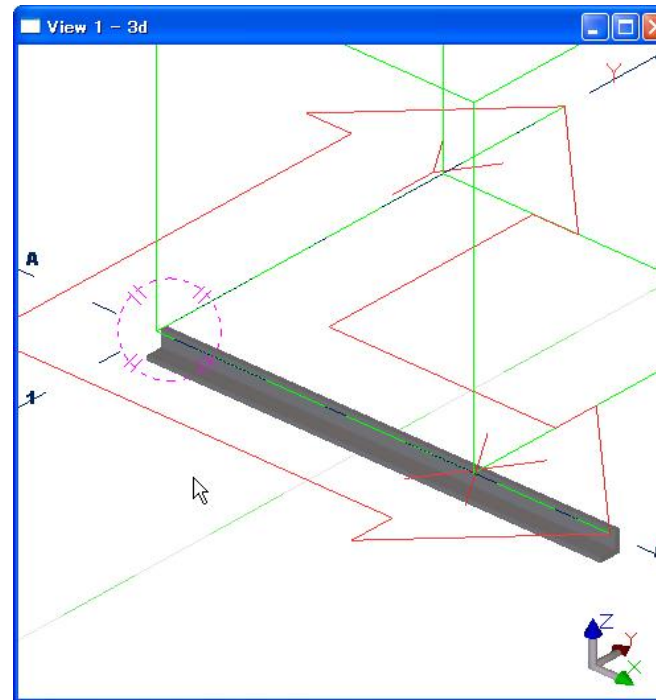
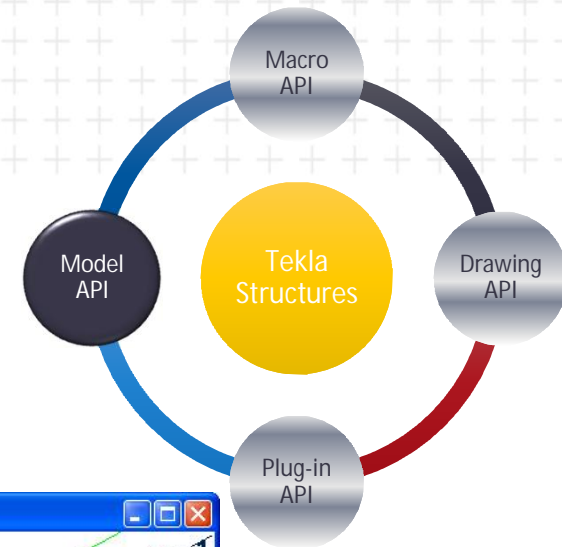


Structure of the Model API



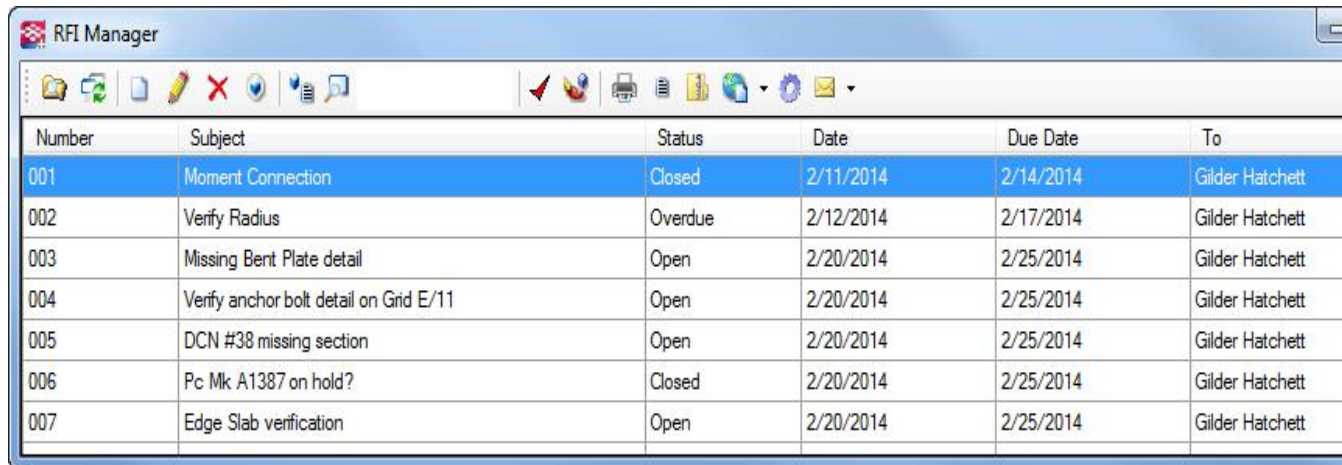
Model API – Sample program

```
using System;
using Tekla.Structures.Model;
using Tekla.Structures.Geometry3d;
namespace ConsoleApplication1
{
    class Program
    {
        static void Main(string[] args)
        {
            Model myModel = new Model();
            Beam myBeam = new Beam();
            myBeam.StartPoint = new Point( 0.0, 0.0, 0.0);
            myBeam.EndPoint = new Point( 1000.0, 0.0, 0.0);
            myBeam.Profile.ProfileString = "L45*45*9";
            myBeam.Insert();
            myModel.CommitChanges();
        }
    }
}
```



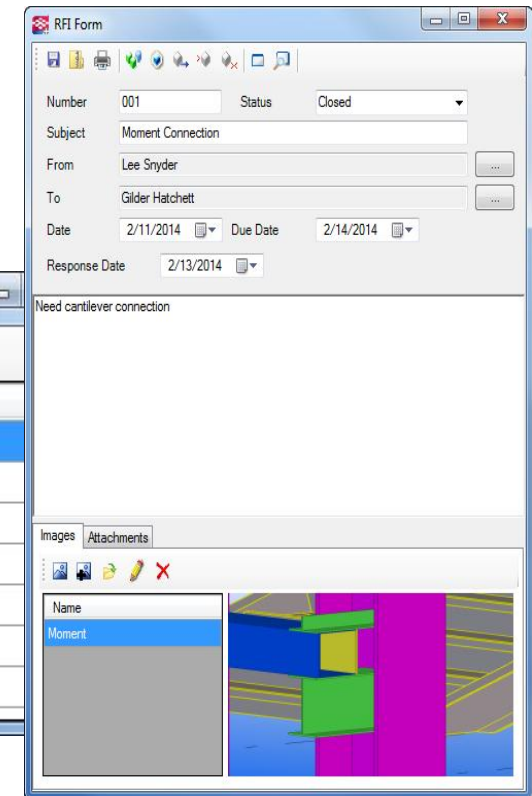
RFI Manager

- § 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



The screenshot shows the 'RFI Manager' application window. It features a toolbar with various icons for file operations and a table listing RFIs. The table has columns for Number, Subject, Status, Date, Due Date, and To. The data is as follows:

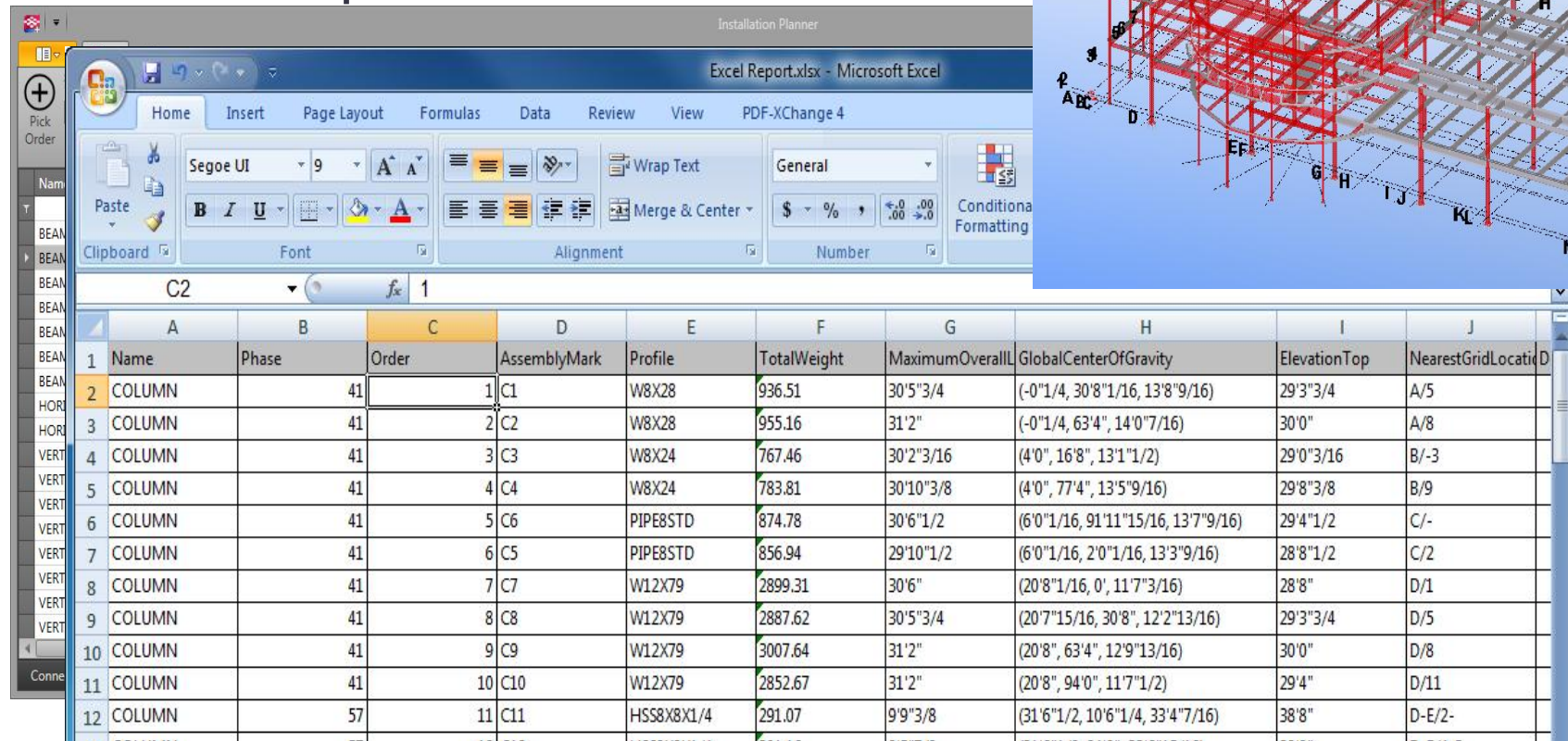
Number	Subject	Status	Date	Due Date	To
001	Moment Connection	Closed	2/11/2014	2/14/2014	Gilder Hatchett
002	Verify Radius	Overdue	2/12/2014	2/17/2014	Gilder Hatchett
003	Missing Bent Plate detail	Open	2/20/2014	2/25/2014	Gilder Hatchett
004	Verify anchor bolt detail on Grid E/11	Open	2/20/2014	2/25/2014	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



The screenshot shows the 'RFI Form' dialog box. It contains fields for Number (001), Status (Closed), Subject (Moment Connection), From (Lee Snyder), To (Gilder Hatchett), Date (2/11/2014), Due Date (2/14/2014), and Response Date (2/13/2014). Below these fields is a text area with the text 'Need cantilever connection'. At the bottom, there are tabs for 'Images' and 'Attachments'. The 'Images' tab is active, showing a small thumbnail of a structural model with a moment connection highlighted in green and yellow.

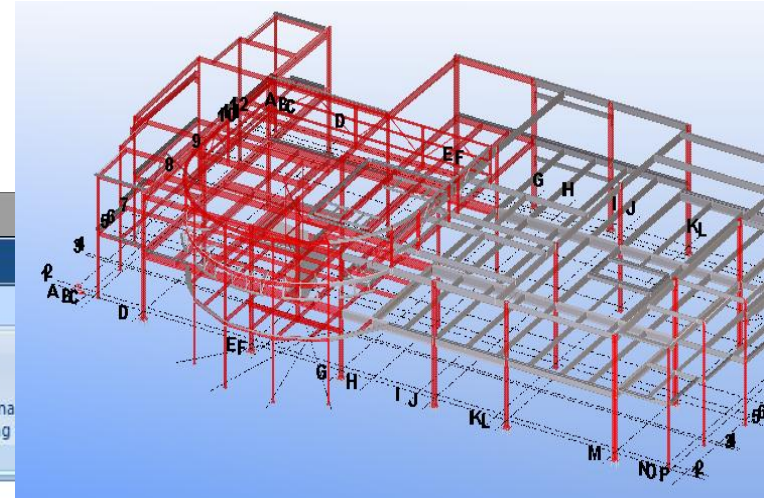
Construction Sequencer

- § Define erection order
- § Create reports and animations

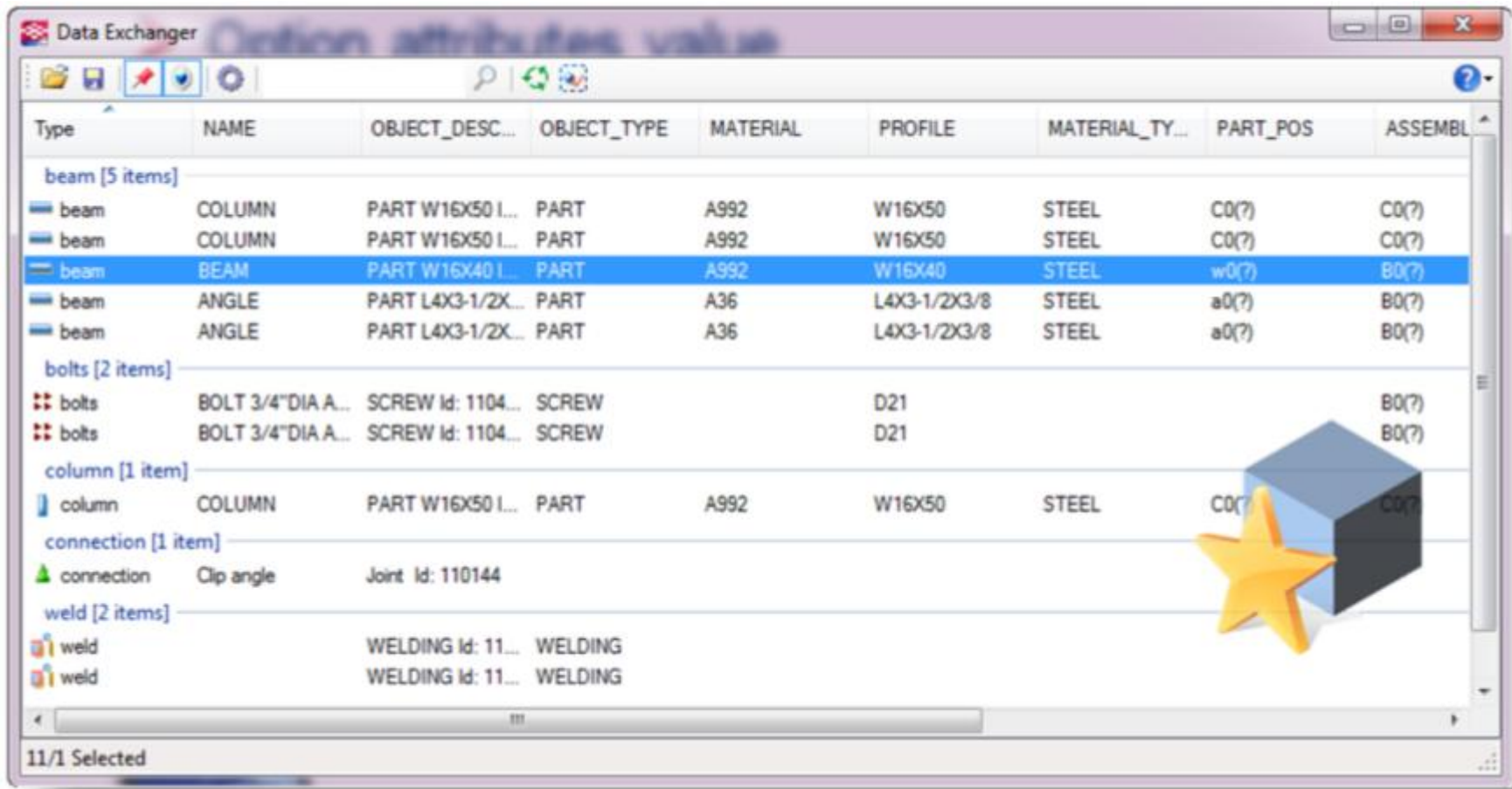


The screenshot displays the Construction Sequencer software interface. On the left, a sidebar shows a tree view of the project structure. The main window is divided into two panes. The top pane shows the Microsoft Excel ribbon with tabs for Home, Insert, Page Layout, Formulas, Data, Review, View, and PDF-XChange 4. The bottom pane displays an Excel spreadsheet titled 'Excel Report.xlsx - Microsoft Excel'. The spreadsheet contains a table with columns for Name, Phase, Order, AssemblyMark, Profile, TotalWeight, MaximumOverall, GlobalCenterOfGravity, ElevationTop, and NearestGridLocation. The table lists 12 columns, each with a unique erection order and associated data.

	A	B	C	D	E	F	G	H	I	J
	Name	Phase	Order	AssemblyMark	Profile	TotalWeight	MaximumOverall	GlobalCenterOfGravity	ElevationTop	NearestGridLocation
1	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
2	COLUMN		41	2 C2	W8X28	955.16	31'2"	(-0'1/4, 63'4", 14'0"7/16)	30'0"	A/8
3	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
4	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
5	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/-
6	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
7	COLUMN		41	7 C7	W12X79	2899.31	30'6"	(20'8"1/16, 0', 11'7"3/16)	28'8"	D/1
8	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
9	COLUMN		41	9 C9	W12X79	3007.64	31'2"	(20'8", 63'4", 12'9"13/16)	30'0"	D/8
10	COLUMN		41	10 C10	W12X79	2852.67	31'2"	(20'8", 94'0", 11'7"1/2)	29'4"	D/11
11	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-
12	COLUMN									



Data Exchanger



Data Exchanger

Type	NAME	OBJECT_DESC...	OBJECT_TYPE	MATERIAL	PROFILE	MATERIAL_TY...	PART_POS	ASSEMBL
beam [5 items]								
beam	COLUMN	PART W16X50 I...	PART	A992	W16X50	STEEL	C0(?)	C0(?)
beam	COLUMN	PART W16X50 I...	PART	A992	W16X50	STEEL	C0(?)	C0(?)
beam	BEAM	PART W16X40 I...	PART	A992	W16X40	STEEL	w0(?)	B0(?)
beam	ANGLE	PART L4X3-1/2X...	PART	A36	L4X3-1/2X3/8	STEEL	a0(?)	B0(?)
beam	ANGLE	PART L4X3-1/2X...	PART	A36	L4X3-1/2X3/8	STEEL	a0(?)	B0(?)
bolts [2 items]								
bolts	BOLT 3/4"DIA A...	SCREW Id: 1104...	SCREW		D21			B0(?)
bolts	BOLT 3/4"DIA A...	SCREW Id: 1104...	SCREW		D21			B0(?)
column [1 item]								
column	COLUMN	PART W16X50 I...	PART	A992	W16X50	STEEL	C0(?)	C0(?)
connection [1 item]								
connection	Clip angle	Joint Id: 110144						
weld [2 items]								
weld		WELDING Id: 11...	WELDING					
weld		WELDING Id: 11...	WELDING					

11/1 Selected

Compare Objects

- § Deep object comparison
- § Compare and highlight

