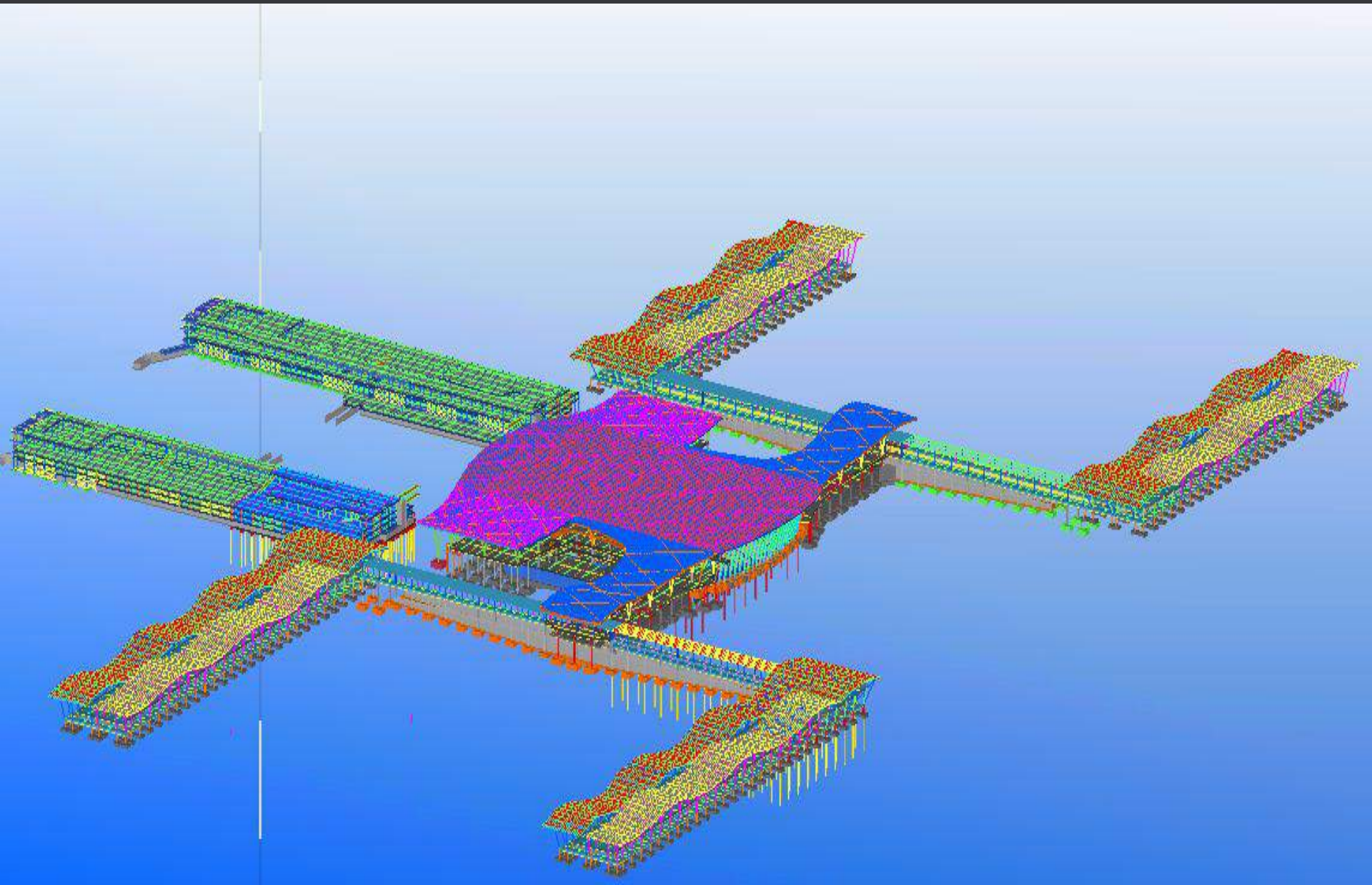
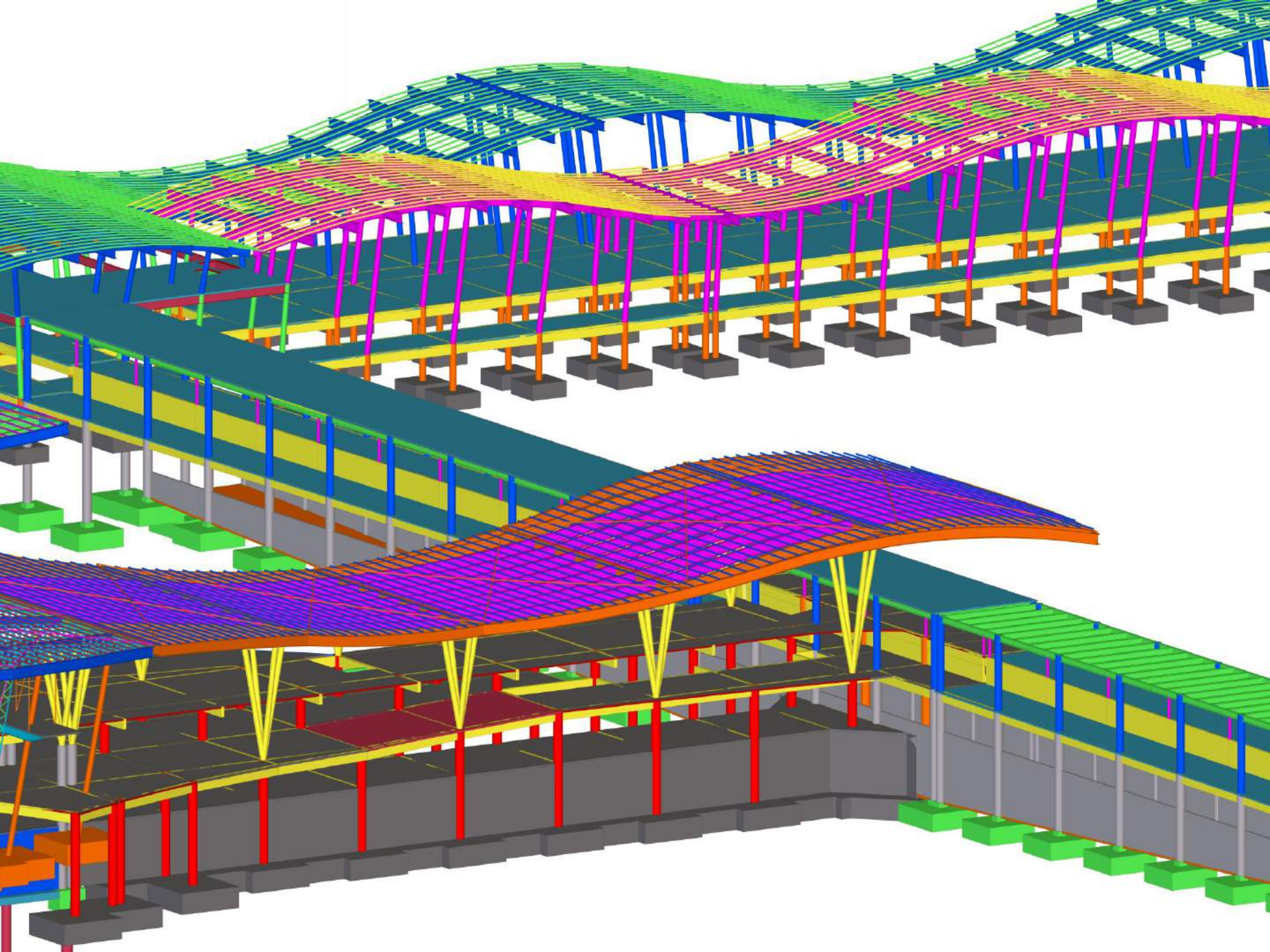
BIM: Prototipos Digitales

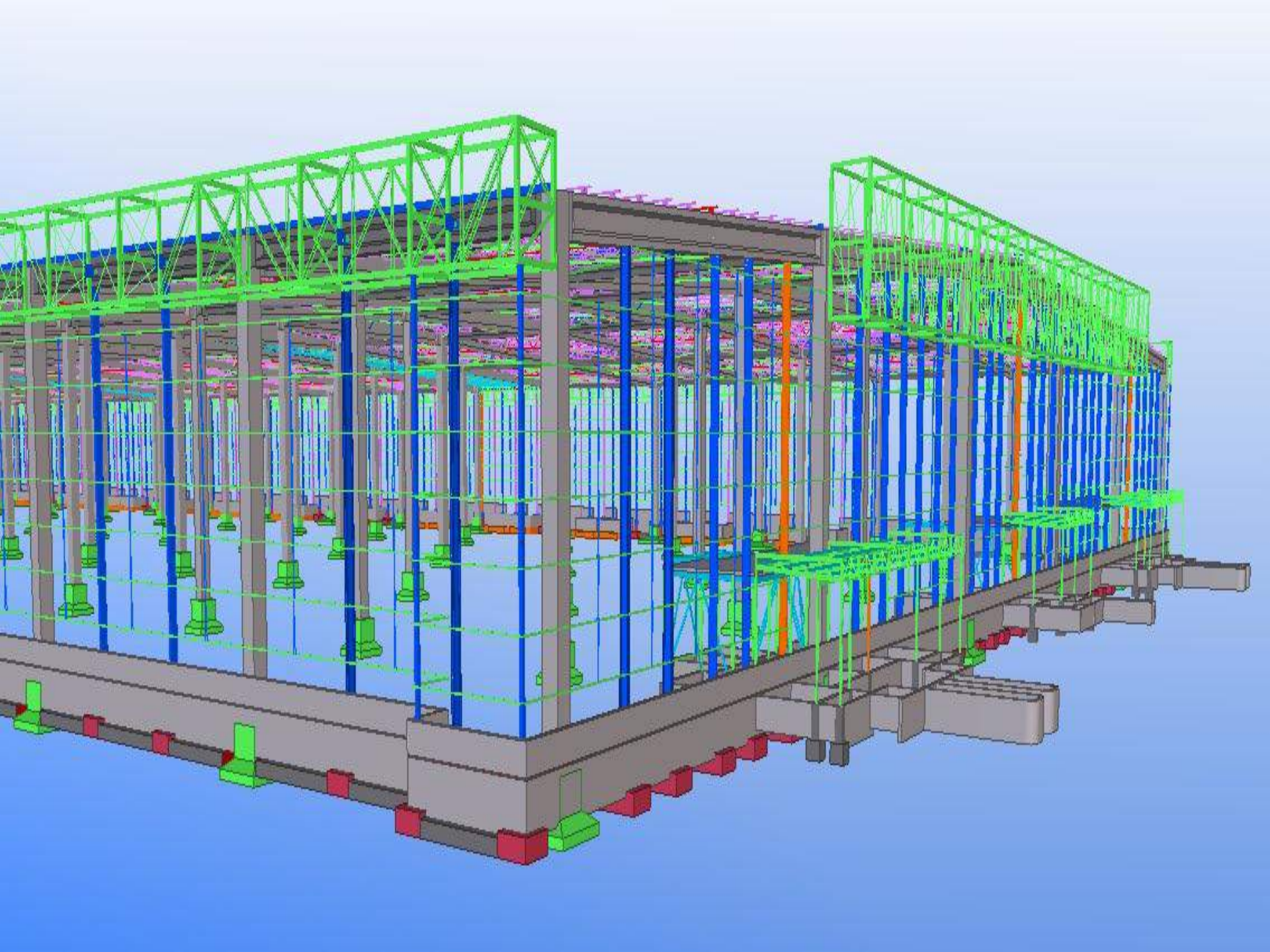
Ing. Ricardo Rojas P.

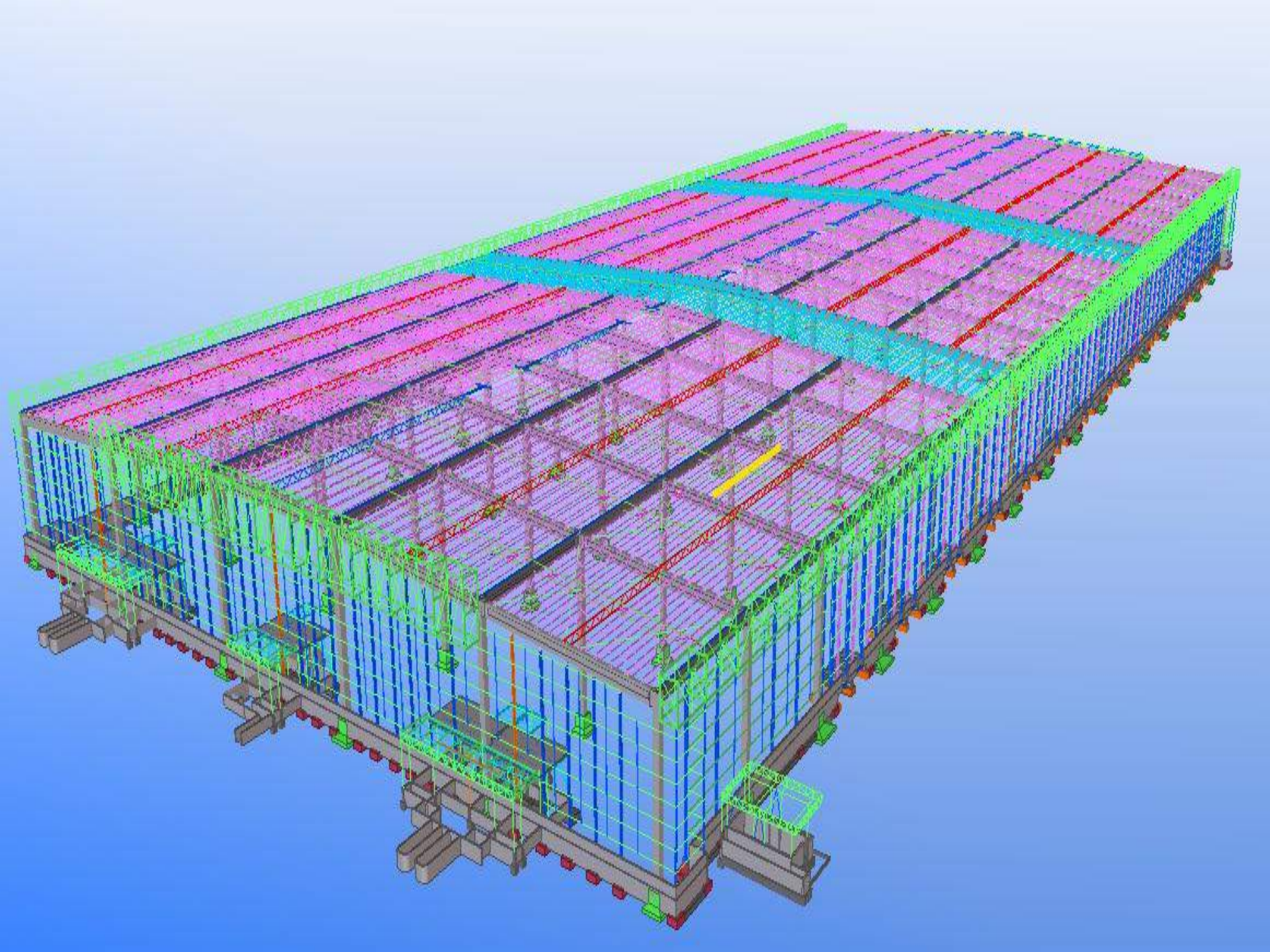
renelagos engineers

Proyectos. Gran Extensión

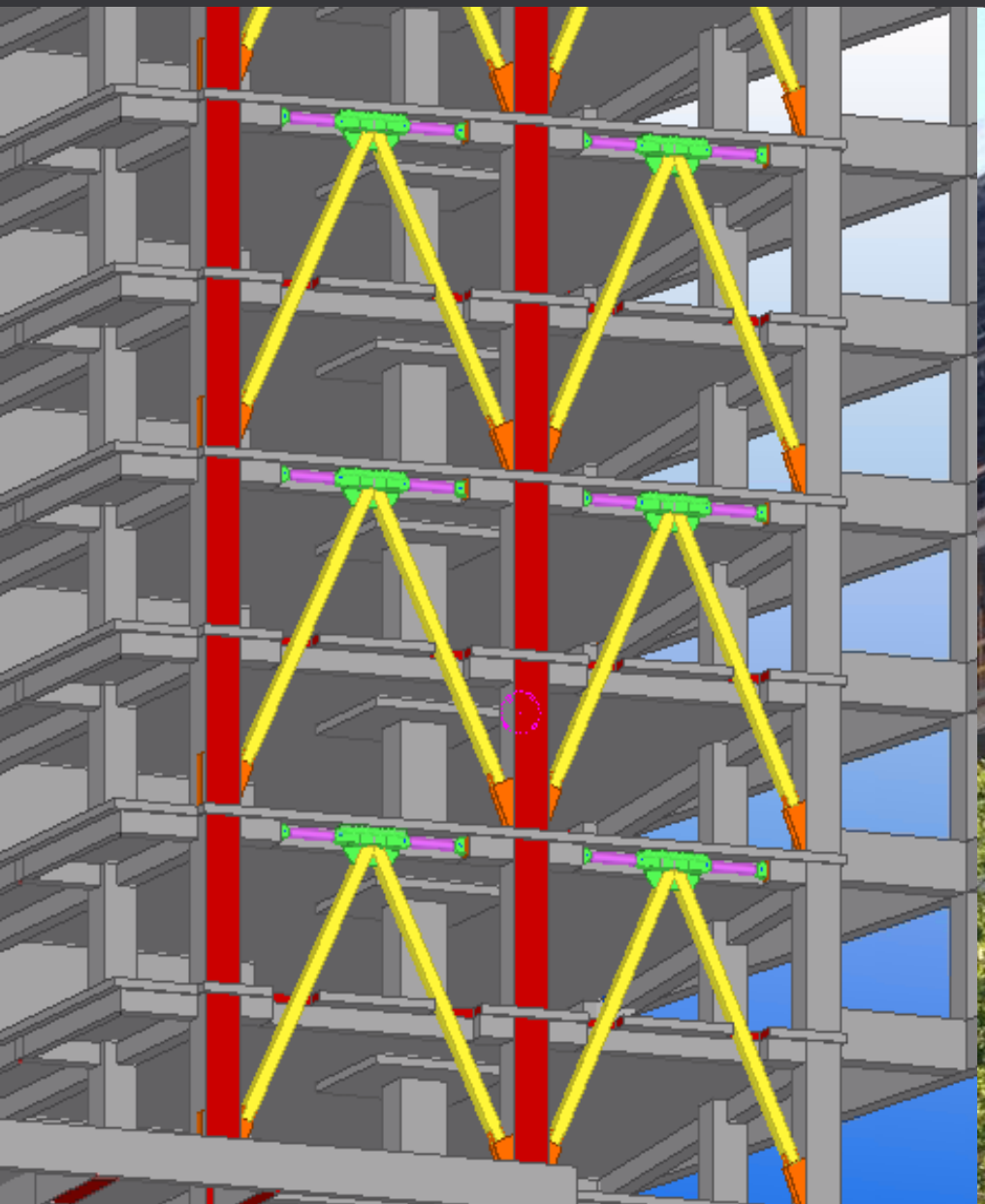


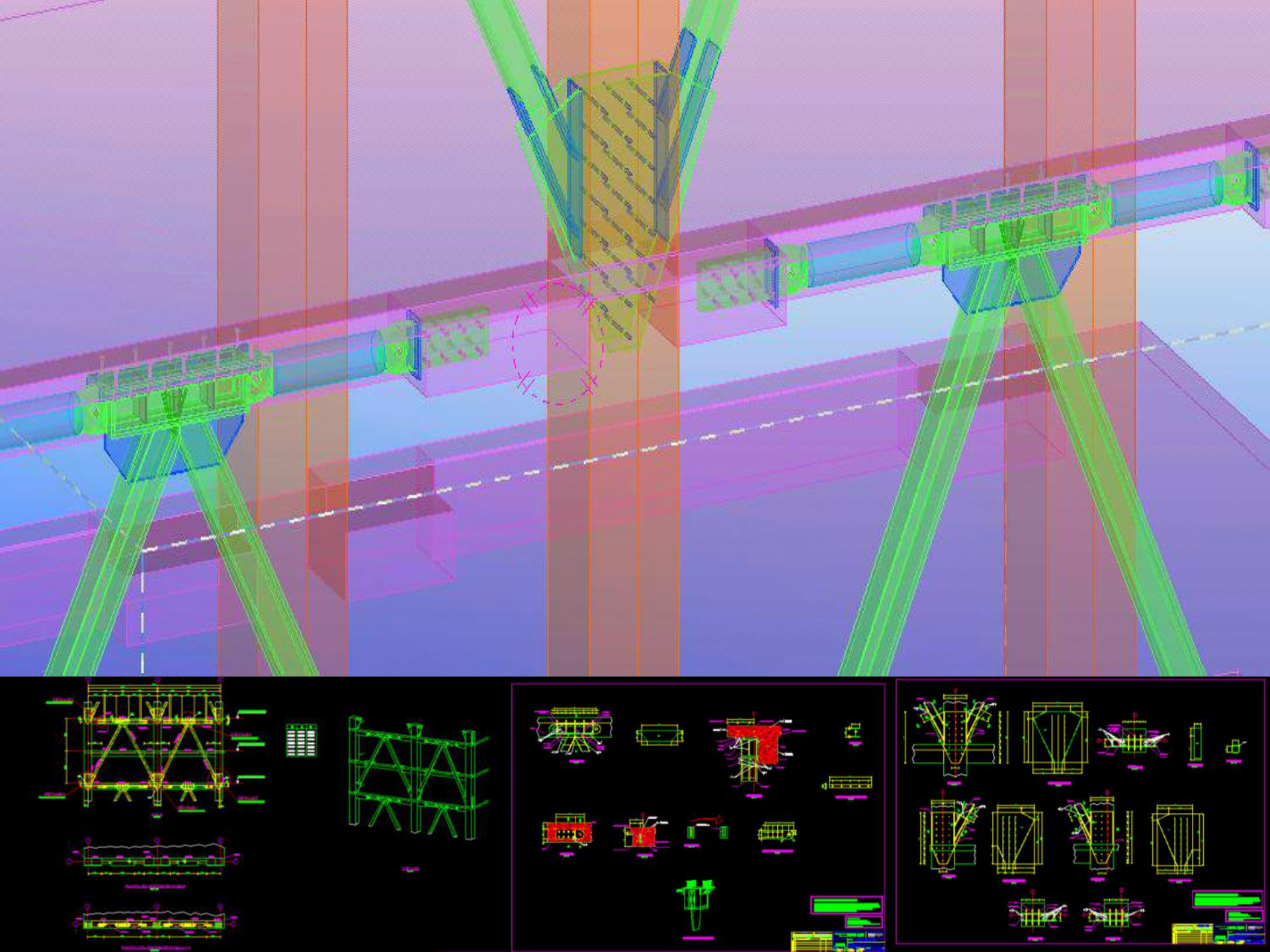


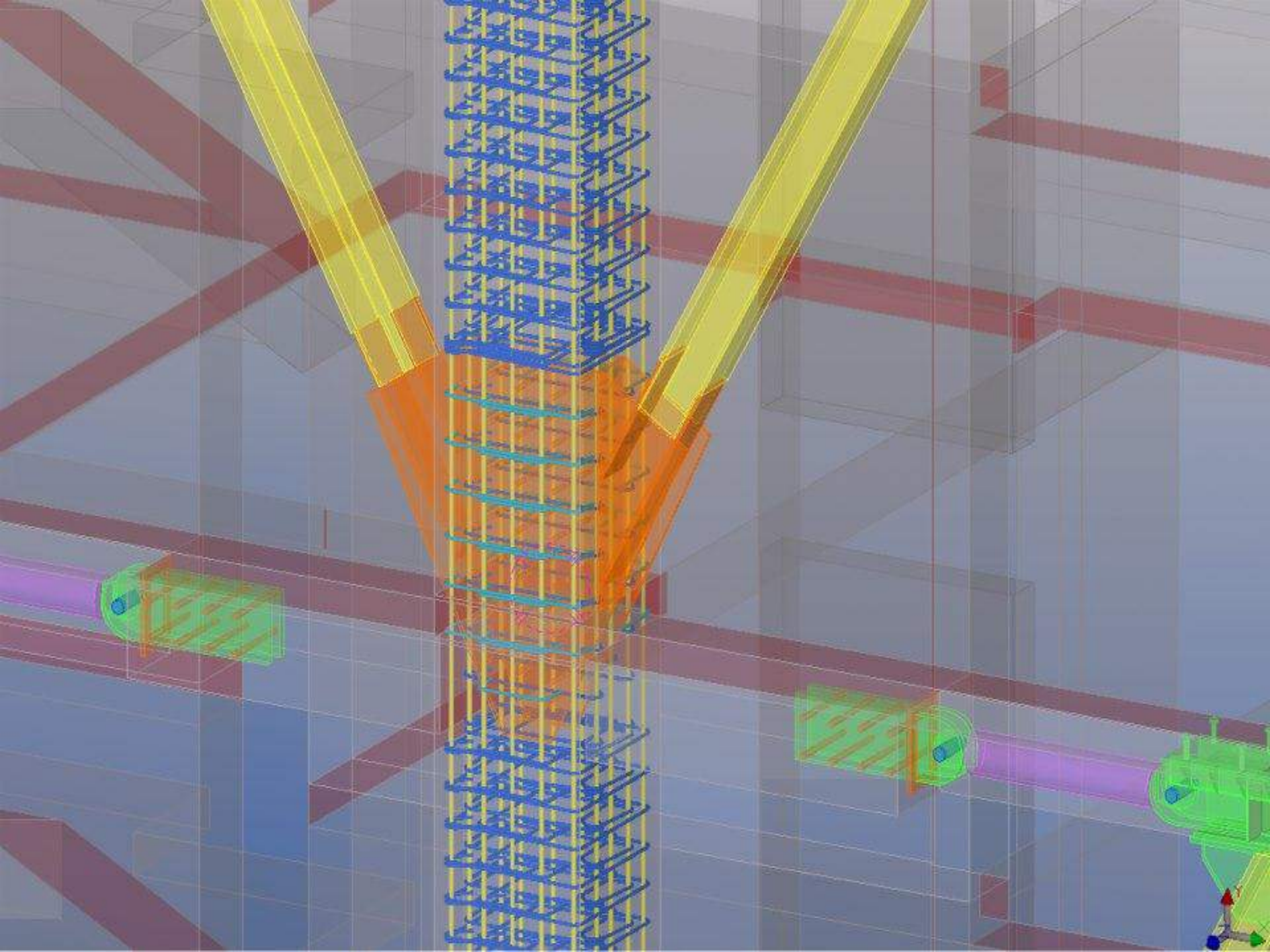




Proyectos. Montajes Complejos





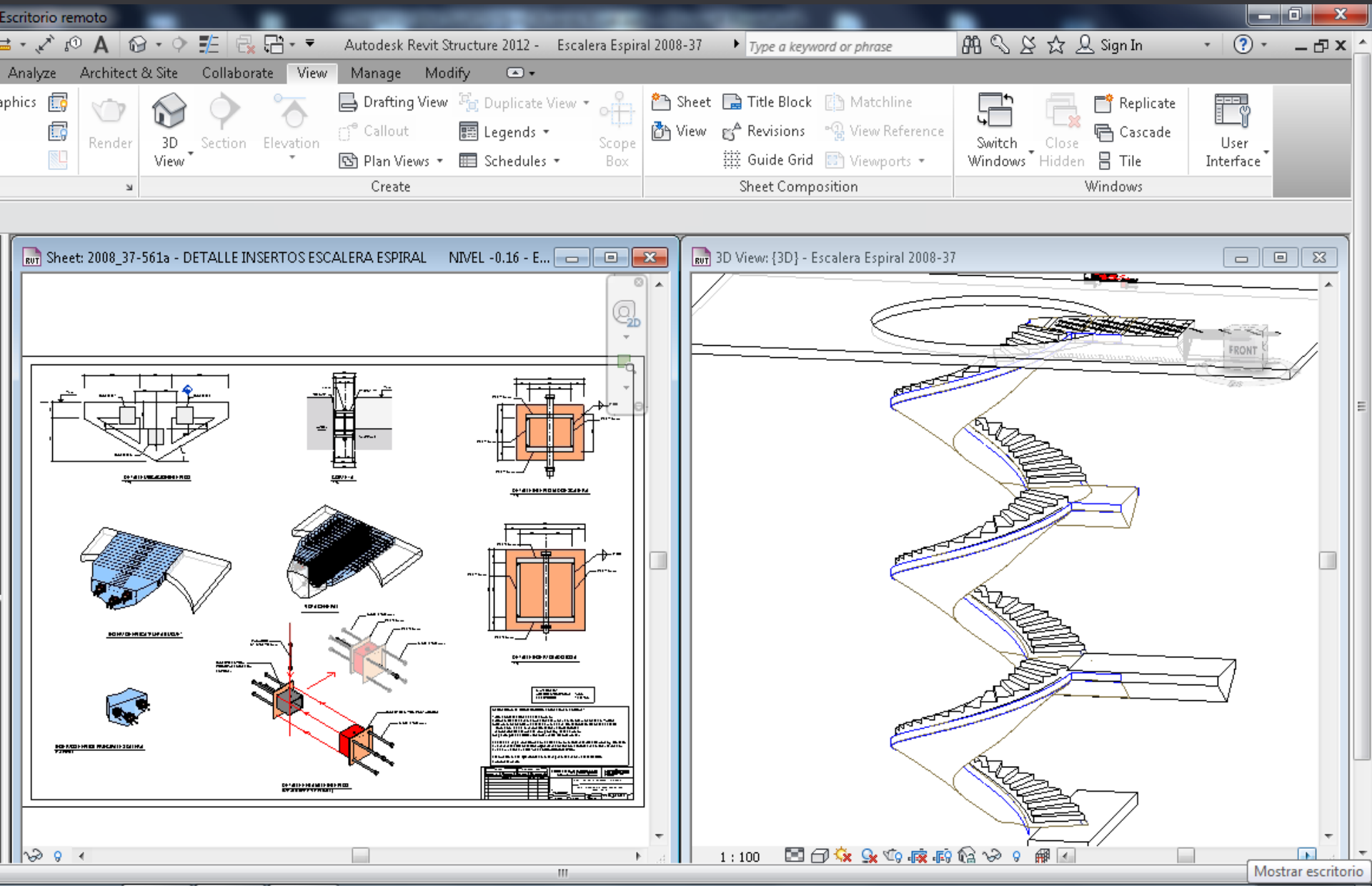


Montaje anclaje estructura disipadores.

Gentileza: COZ Y CIA LTDA.

Gentileza: COZ Y CIA LTDA.

Proyectos. Arquitectura Compleja



30.04.2013 13:04

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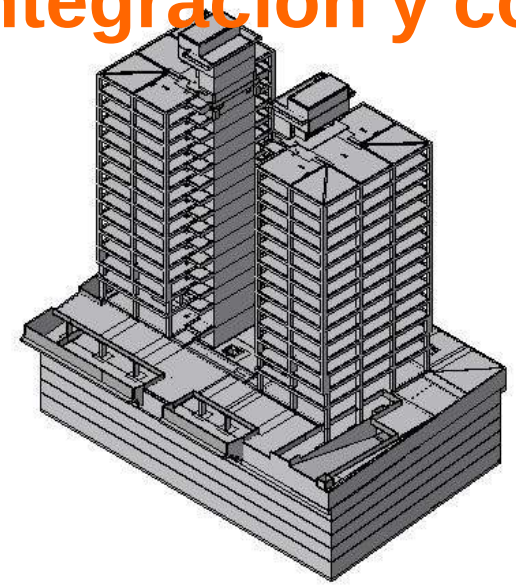
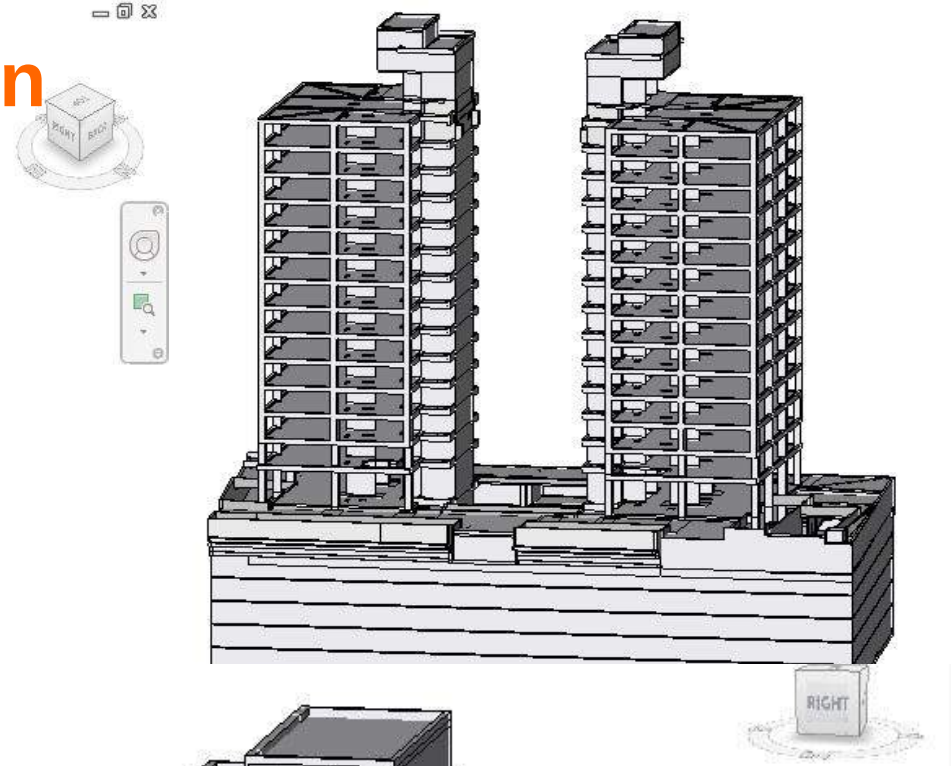
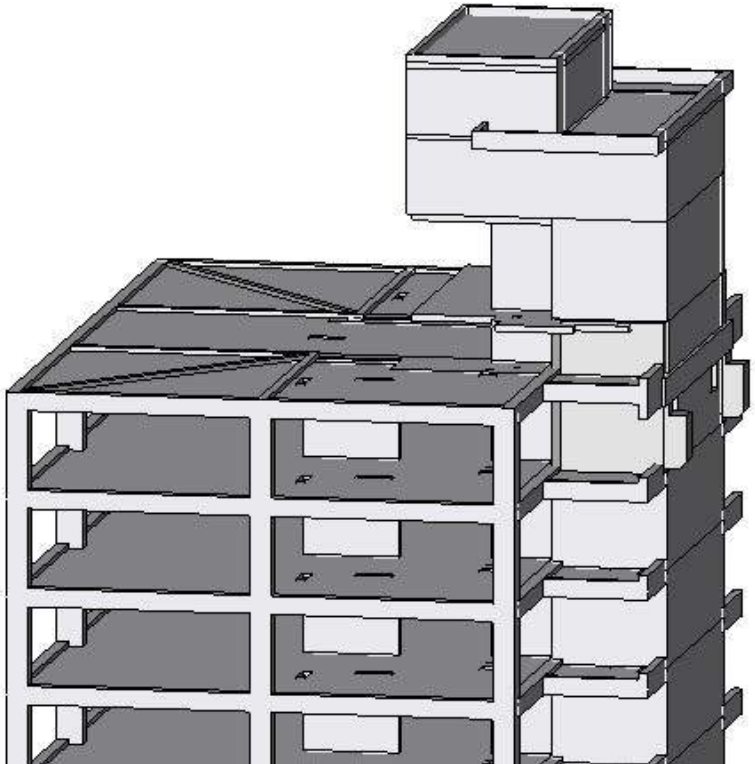
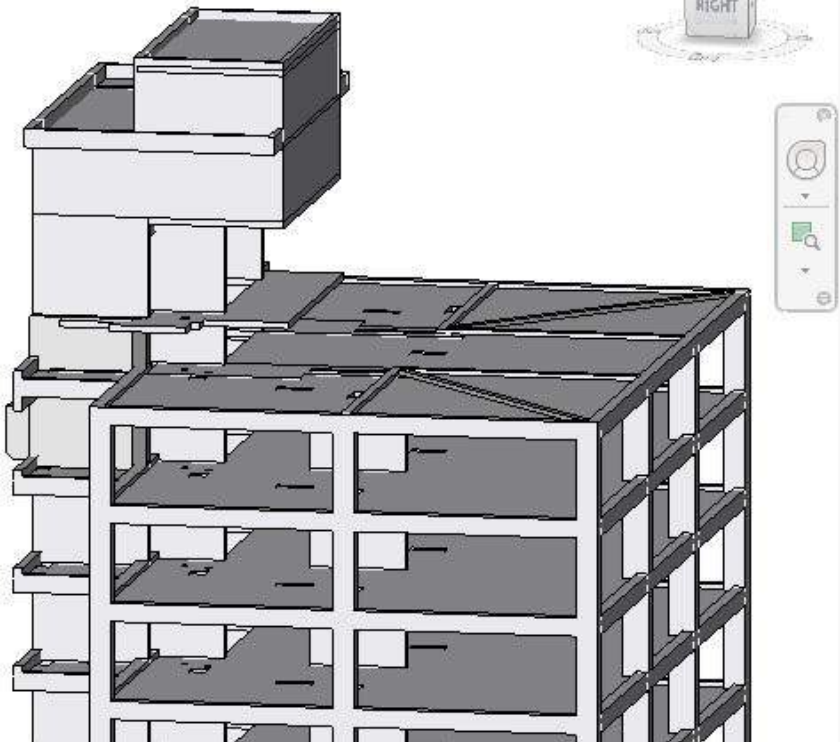
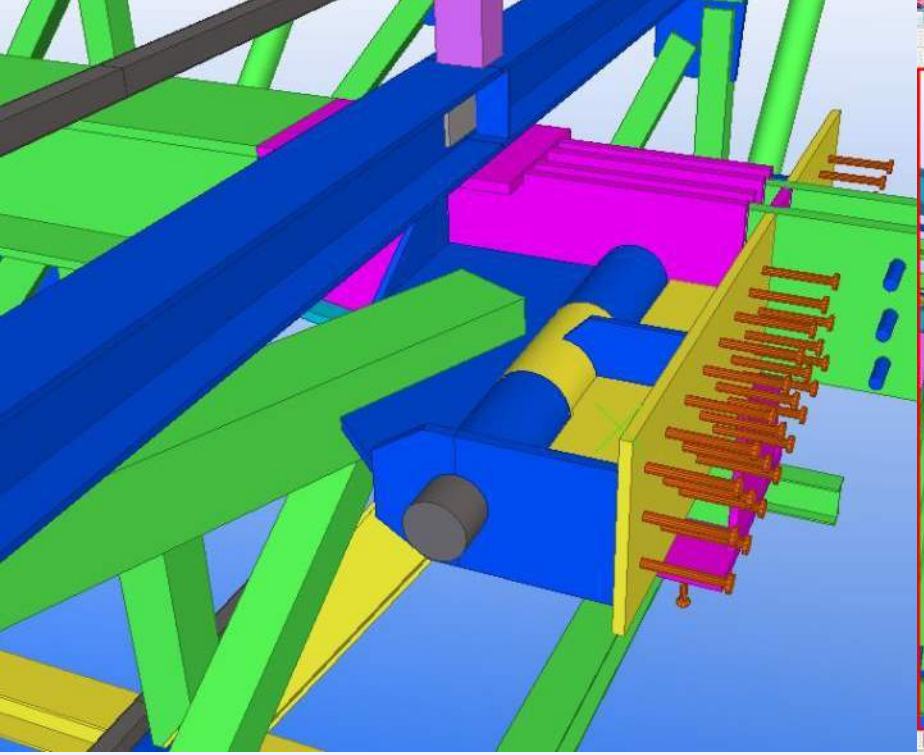
Integración y coordinación

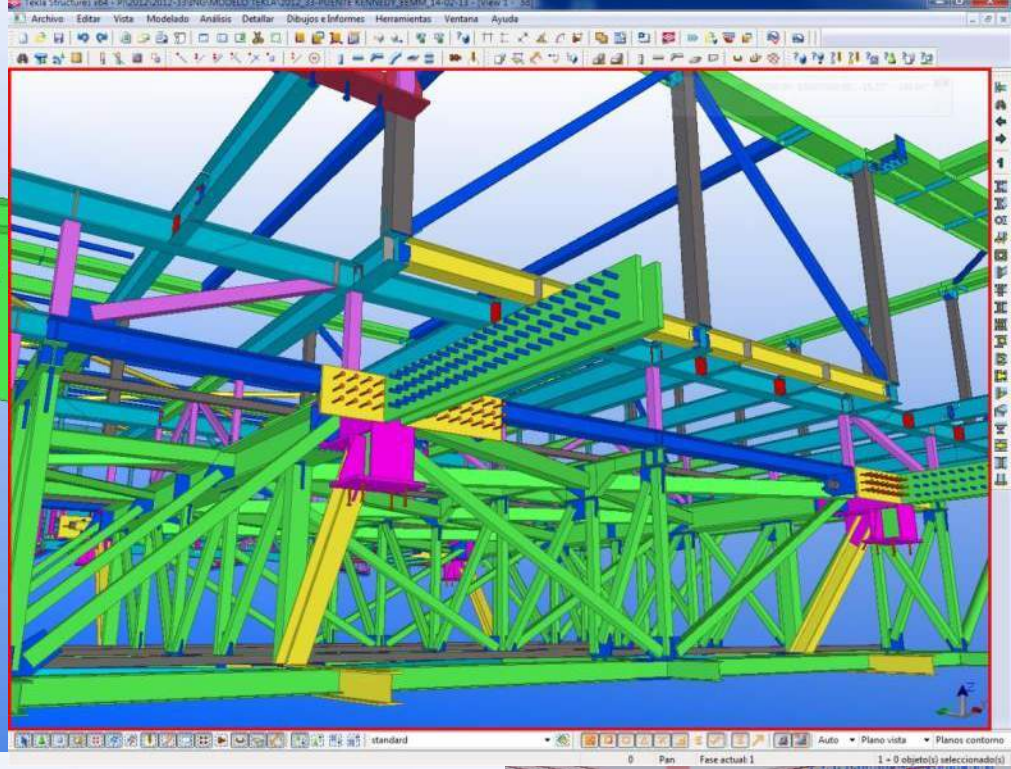


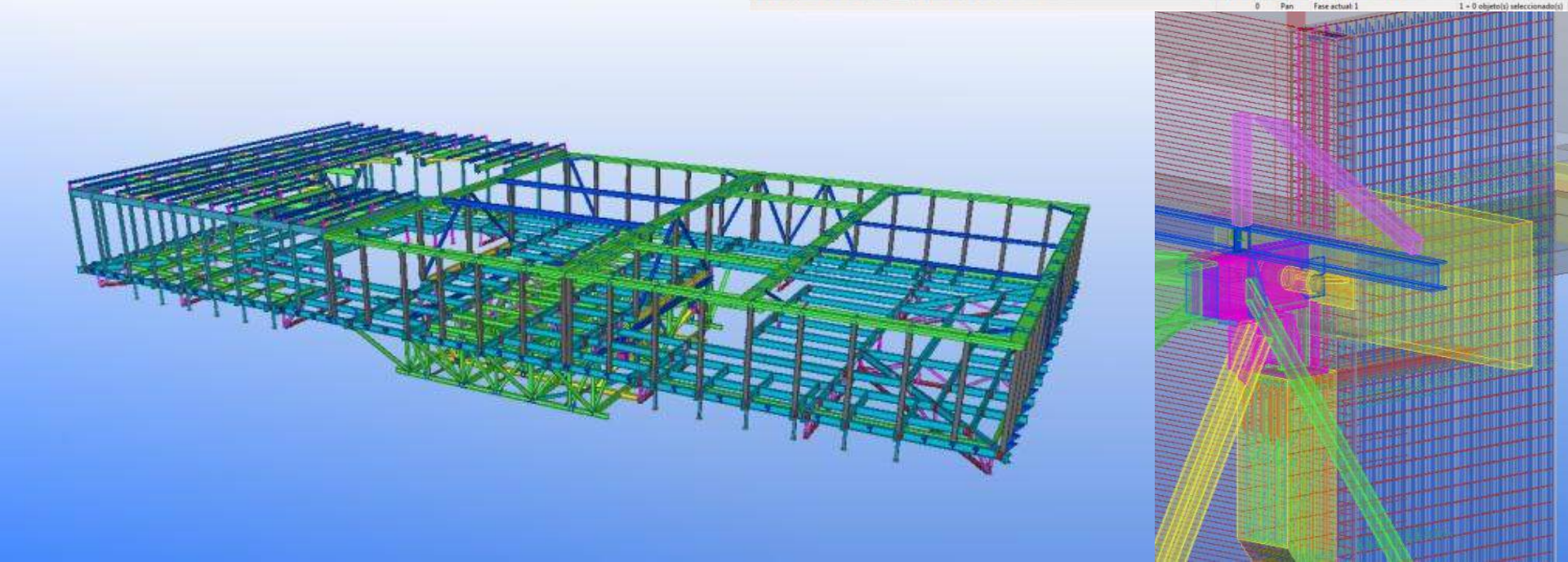


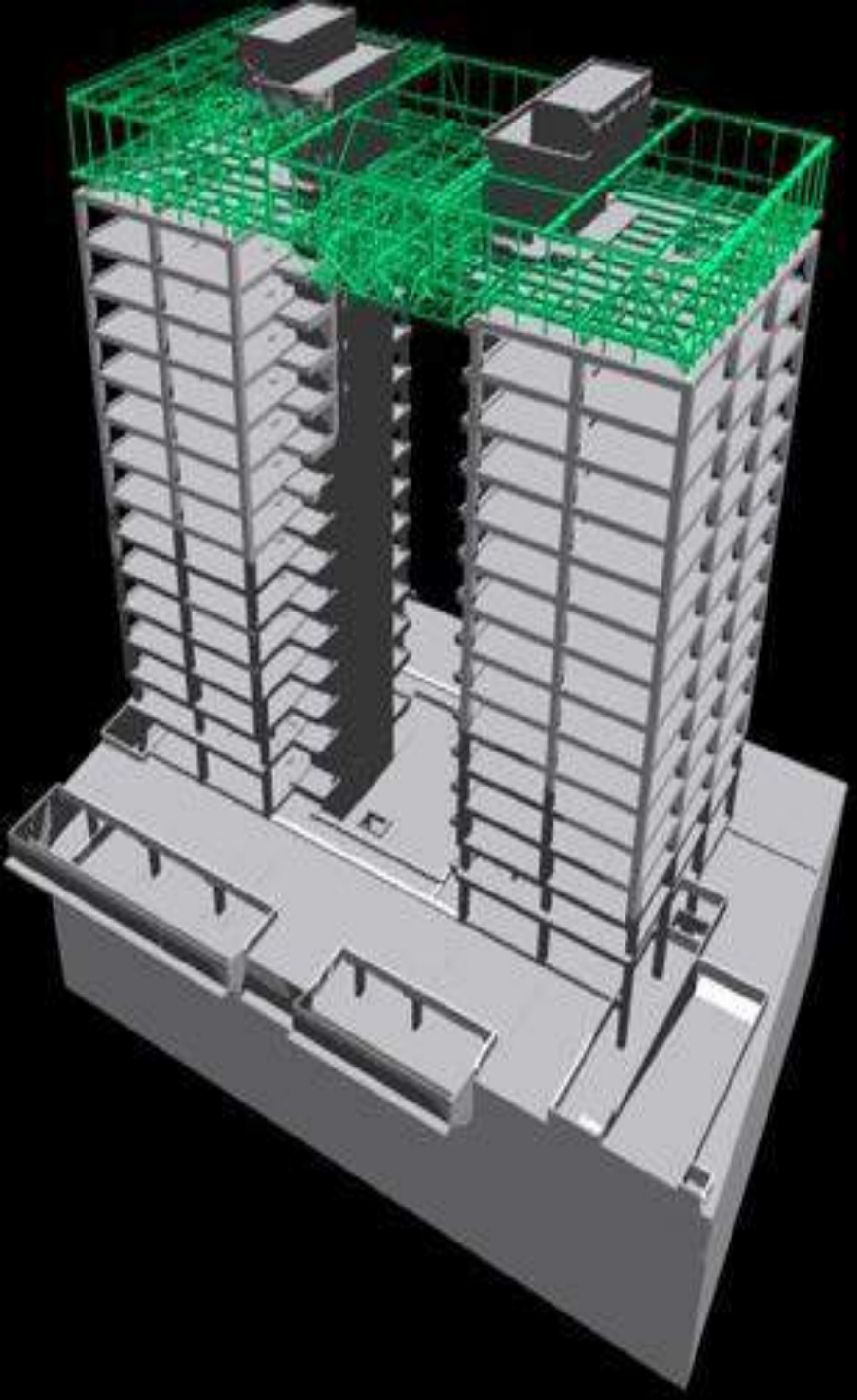


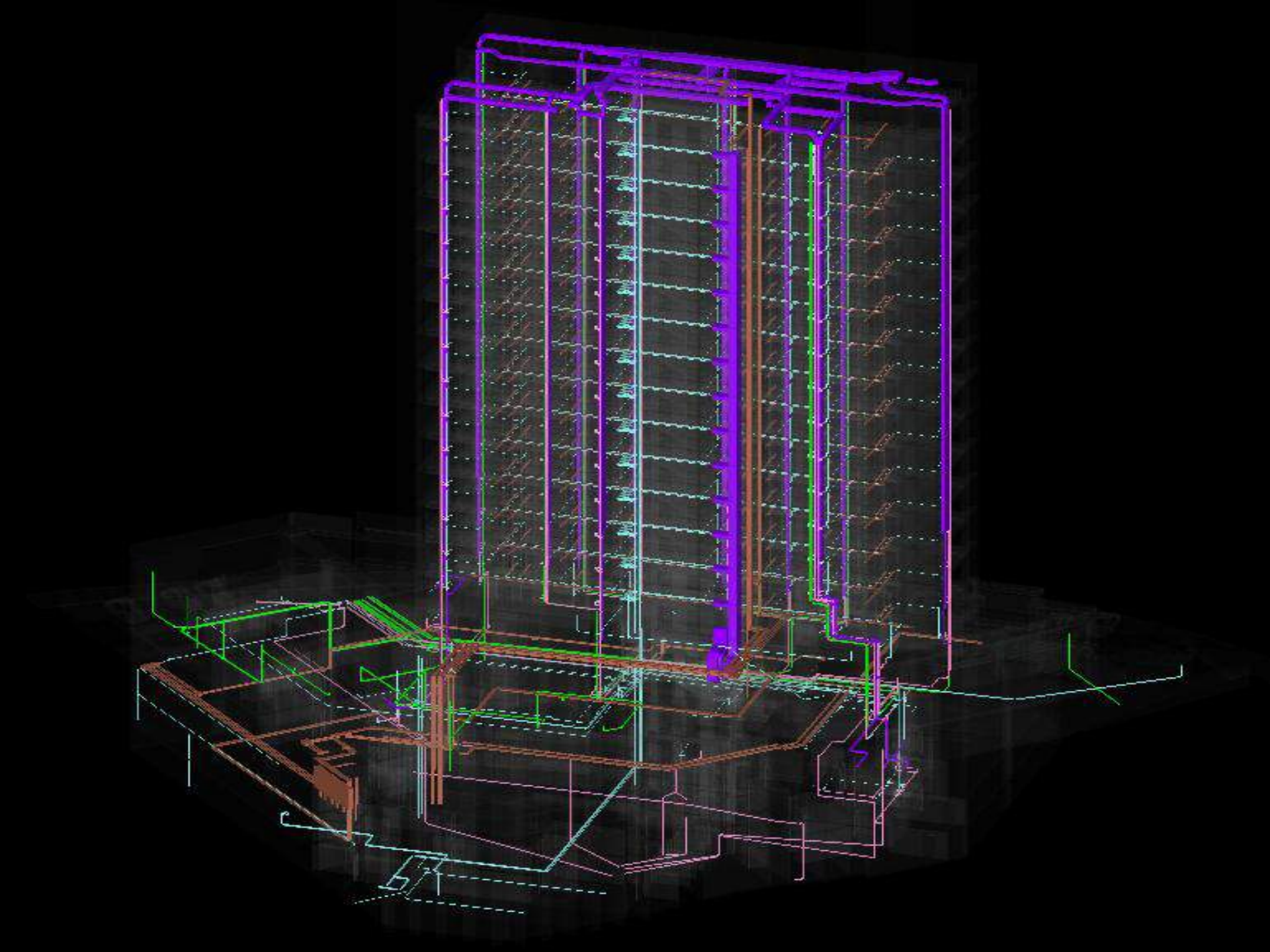





Archivo Editar Vista Modelado Análisis Detallar Dibujos e Informes Herramientas Ventana Ayuda
standard
Auto
Plano vista
Planos contorno
Pan
Fase actual: 1
1 = 0 objeto(s) seleccionado(s)







REN-BIM-COORD.rvt - 3D Vie...

Type a keyword or phrase

Sign In

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

Modify | Wall | Door | Window | Component | Column | Roof | Ceiling | Floor | Curtain System | Curtain Grid | Mullion | Railing | Ramp | Stair | Model Text | Model Line | Model Group | Room | Room Separator | Tag Room | Area | Area Boundary | Tag Area | By Face | Shaft | Wall | Vertical | Dormer | Level | Grid | Set | Show | Ref Plane | Viewer

Select | Build | Circulation | Model | Room & Area | Opening | Datum | Work Plane

Properties

3D View

3D View: {3D} | Edit Type

Graphics	
View Scale	1 : 100
Scale Value 1:	100
Detail Level	Fine
Parts Visibility	Show Original
Visibility/Grap...	Edit...
Graphic Displ...	Edit...
Discipline	Coordination
Default Analy...	None
Sub-Discipline	
Sun Path	
Identity Data	
View Template	<None>
View Name	{3D}
Dependency	Independent

Properties help | Apply

REN-BIM-COORD.rvt - Project Brow...

- Electrical
- Mechanical
  - ???
    - Ceiling Plans
    - 3D Views
    - Sections (Building Se
    - Sections (VISTAS 3D
    - Walkthroughs
  - HVAC
    - Structural Plans
      - C-BIM-1ºP
      - C-BIM-1ºS
      - C-BIM-2ºP
      - C-BIM-2ºS
      - C-BIM-3ºP
      - C-BIM-3ºS
      - C-BIM-4ºP
      - C-BIM-4ºS
      - C-BIM-5ºP
      - C-BIM-5ºS
      - C-BIM-6ºP

1 : 100

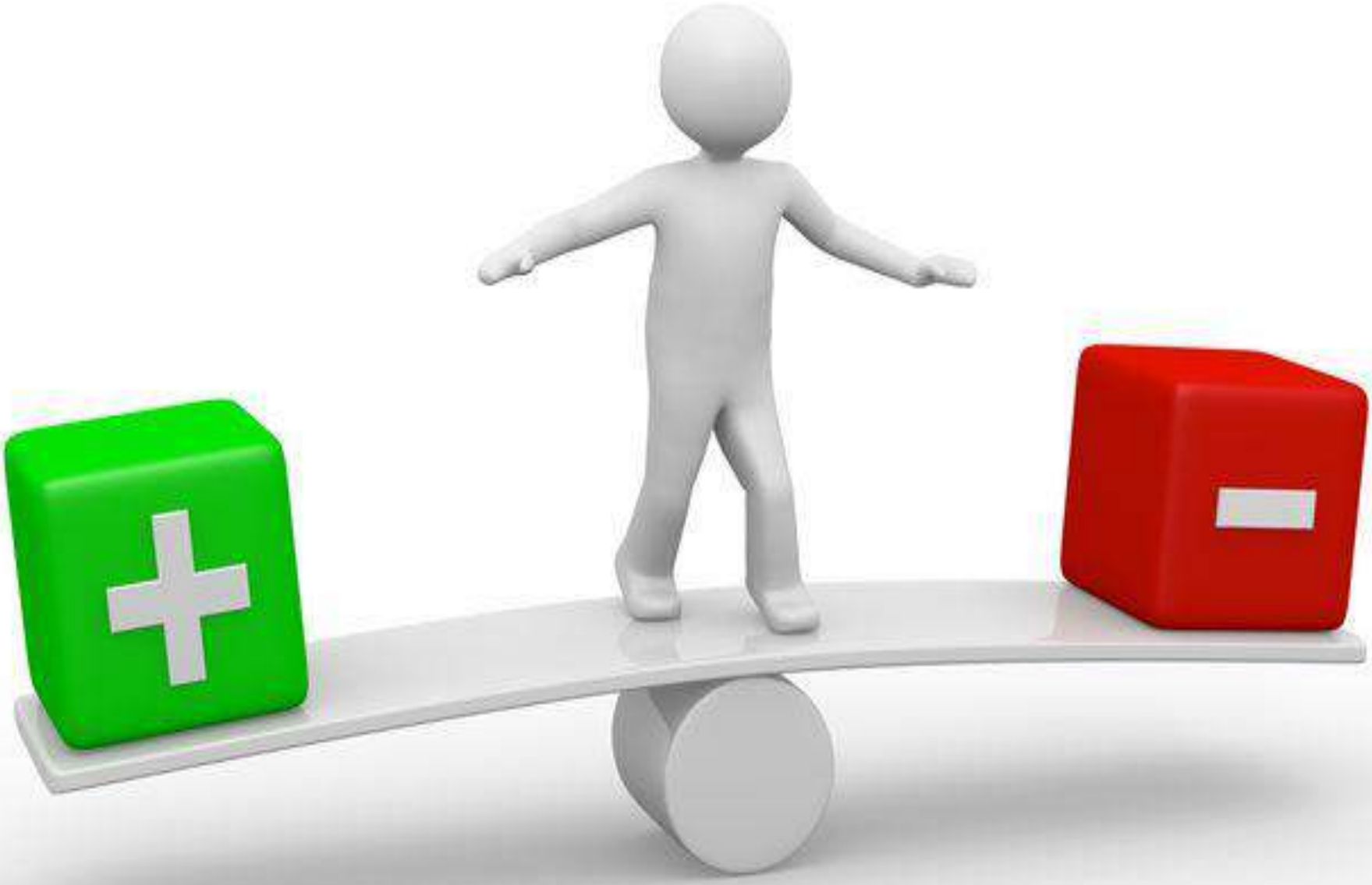
RVT Links : Linked Revit Model : RN-BIM-ALC-REV-A.rvt : 17 : locati

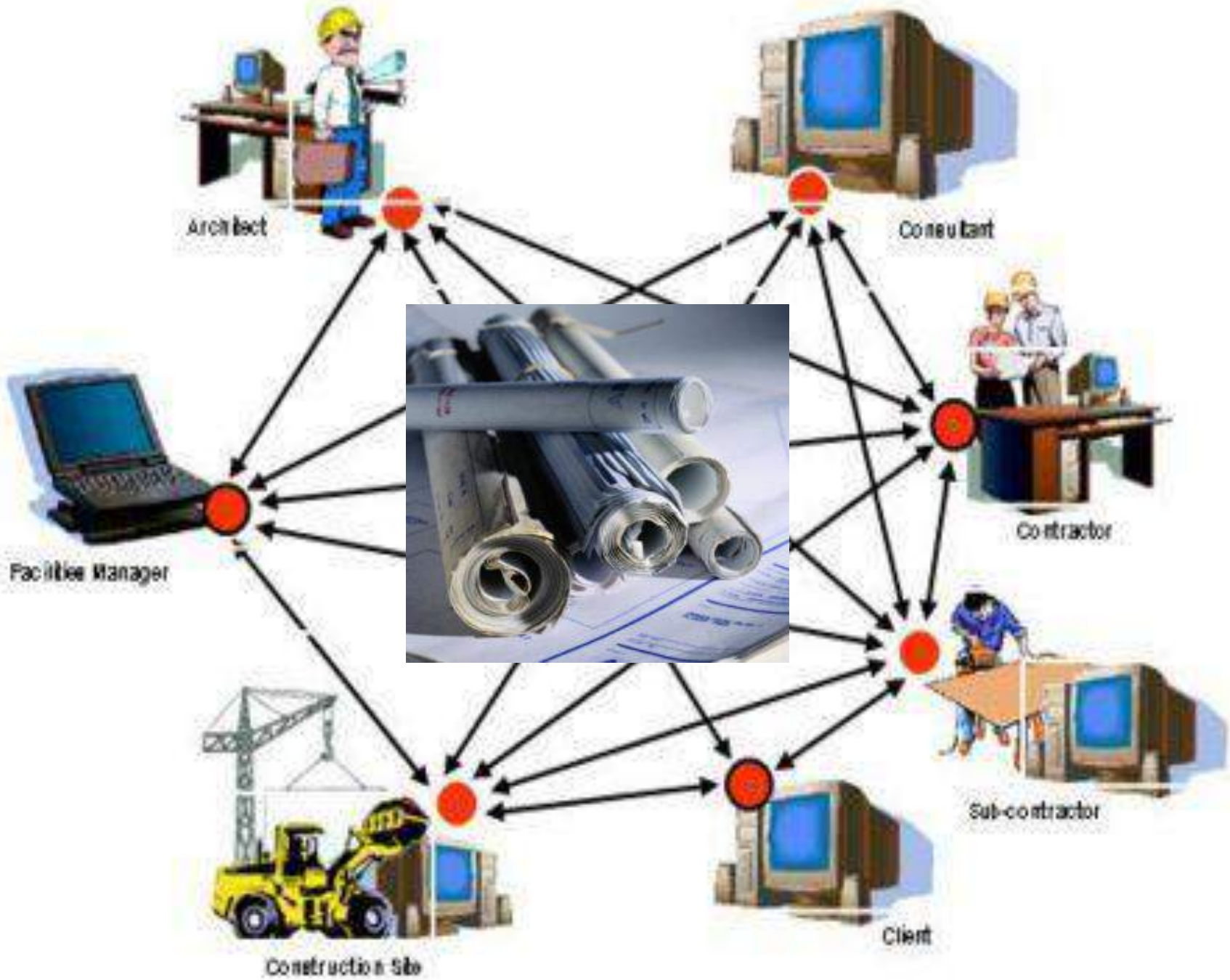
:0

Main Model

Press & Drag

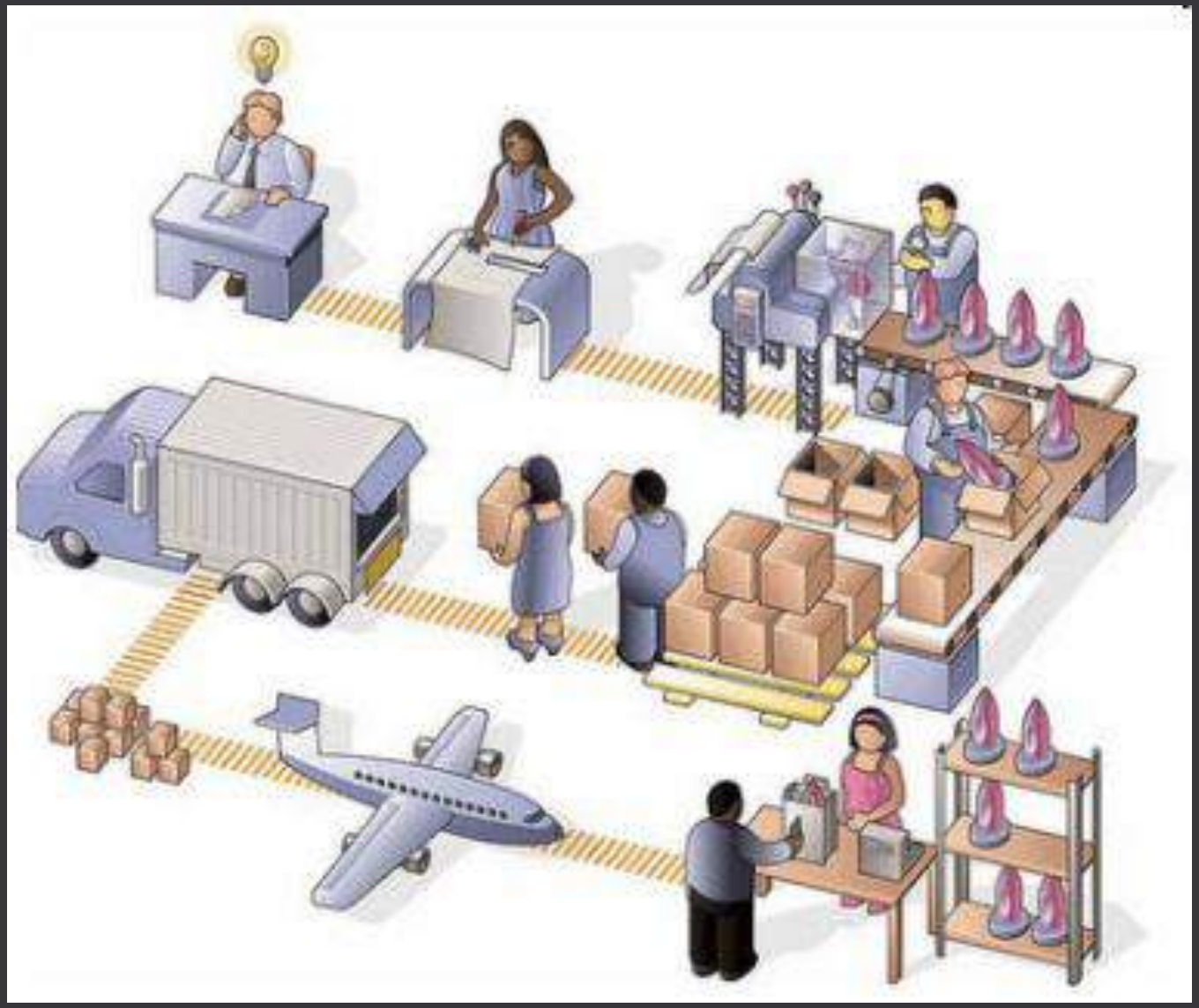
:0




Architect
Consultant
Facilities Manager
Contractor
Sub-contractor
Client
Construction Site

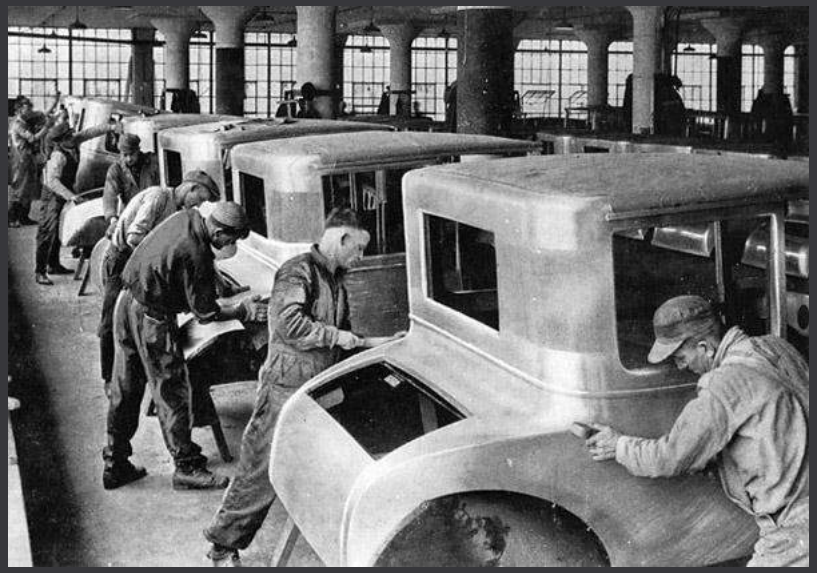
Prototipo Digital

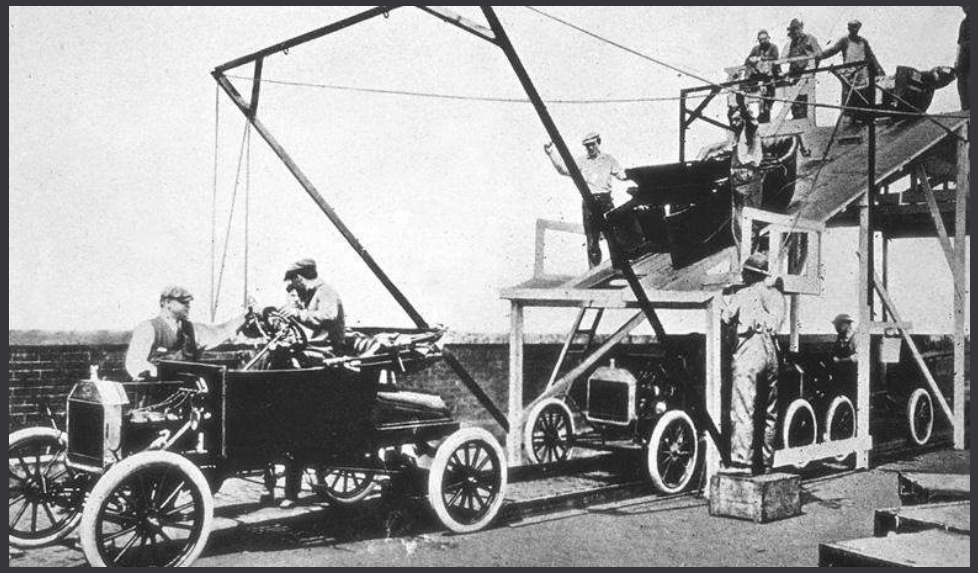
Cadena de Producción



Cadena de producción poco industrializada

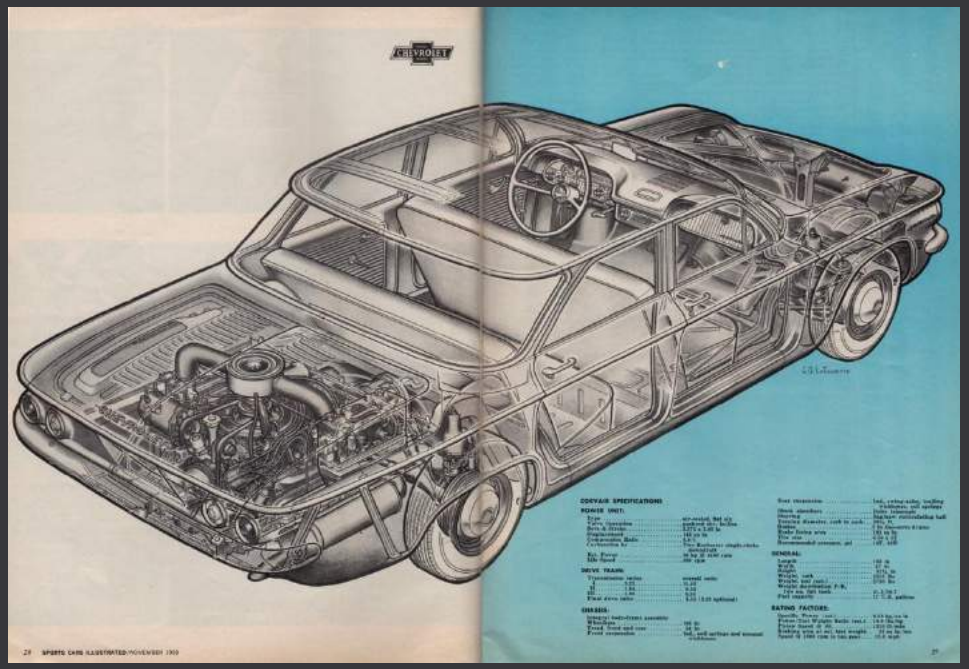
En otras industrias han pasado de construir a fabricar…

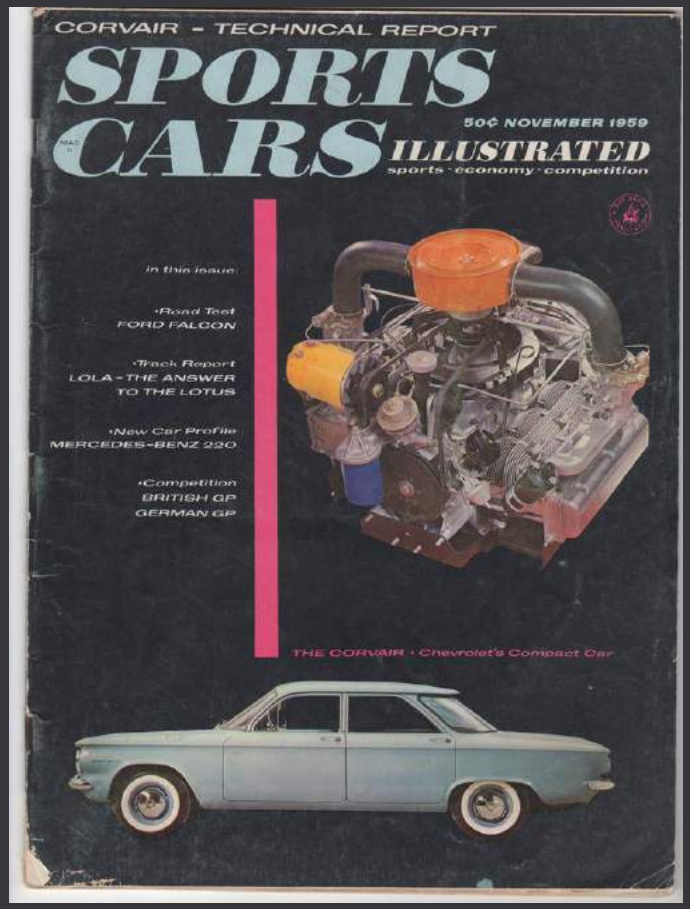




Pero para esto es necesario trabajar los métodos entre el diseño y producción…

Ya que hay que pasar de hacer esto…

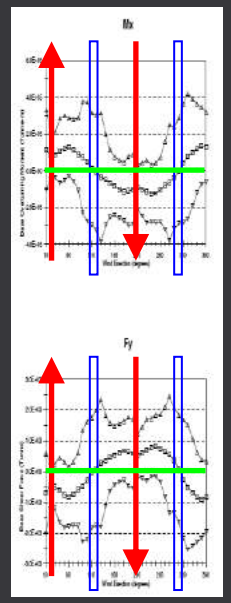




A esto…

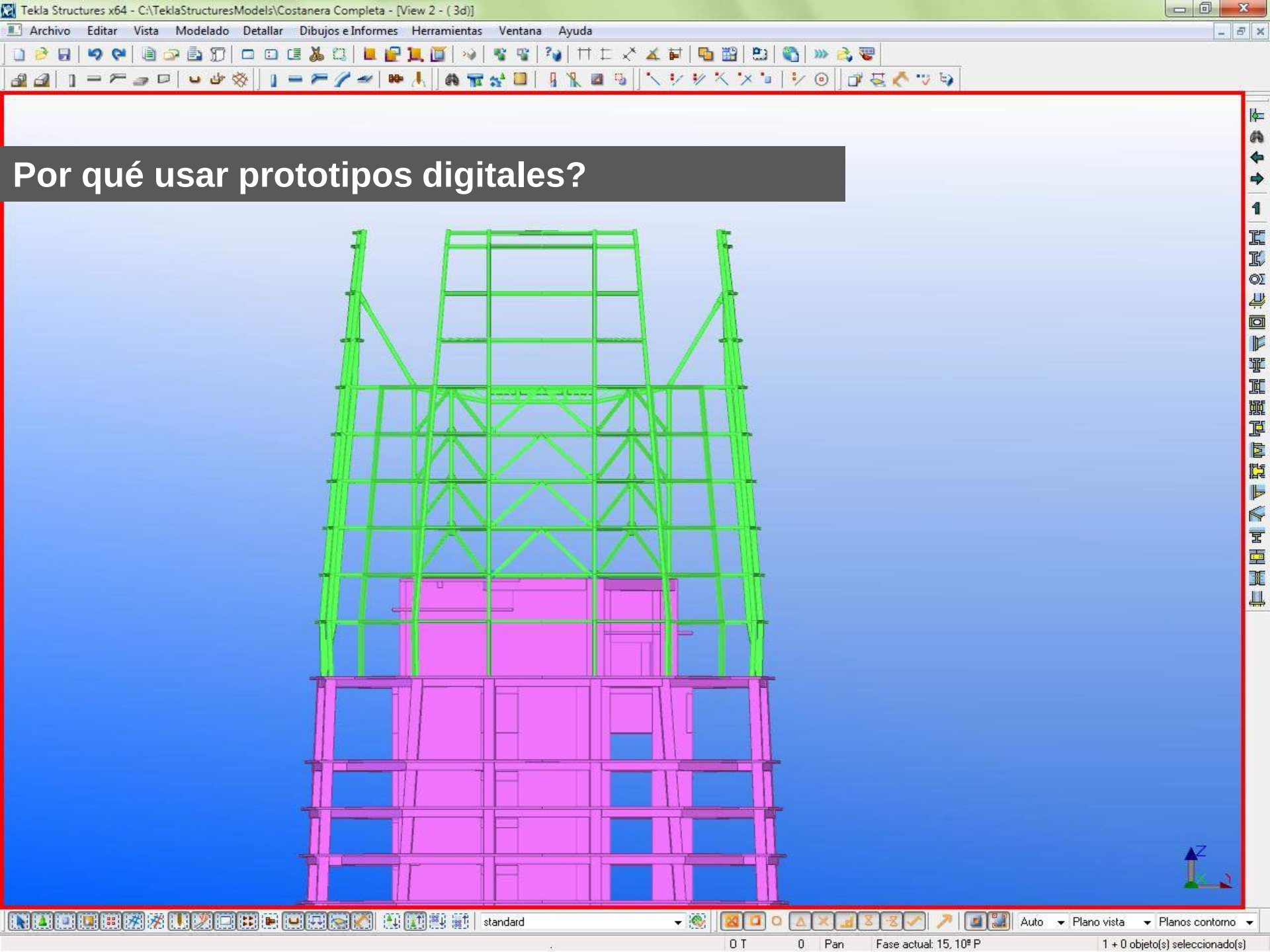
Podemos definir prototipo como la primera versión de algo…

Para que sirven los prototipos…



Principalmente para probar o ensayar su comportamiento.

Por qué usar prototipos digitales?



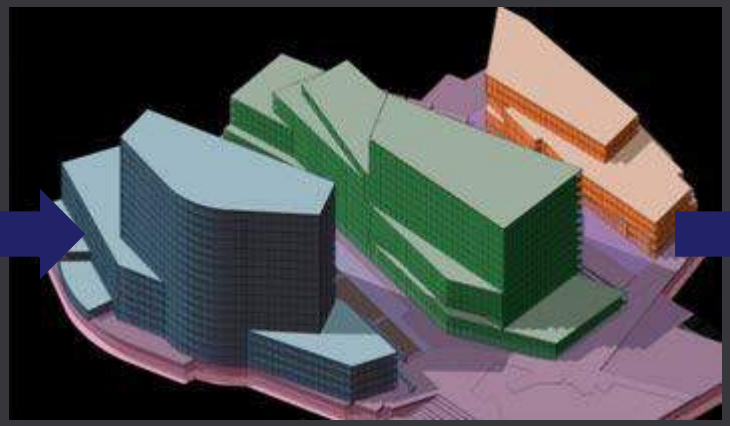
Porque son más rápidos y flexibles a los cambios…

Pero es necesario cambiar nuestra forma de pensar frente a un problema.

Modelo Tradicional de Proyecto

IDEA

Anteproyecto

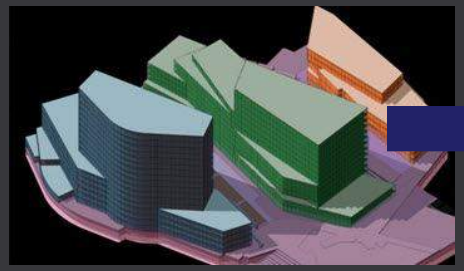


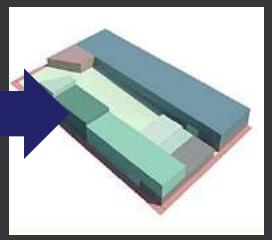
Proyecto Definitivo

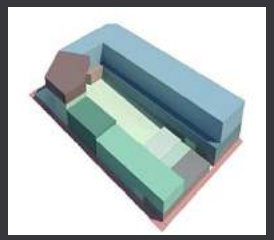
- Problemas de coordinación
- Sobrecosto

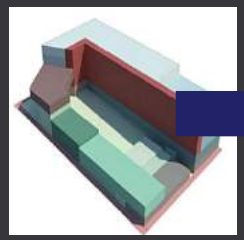
Modelo Propuesto

Anteproyecto





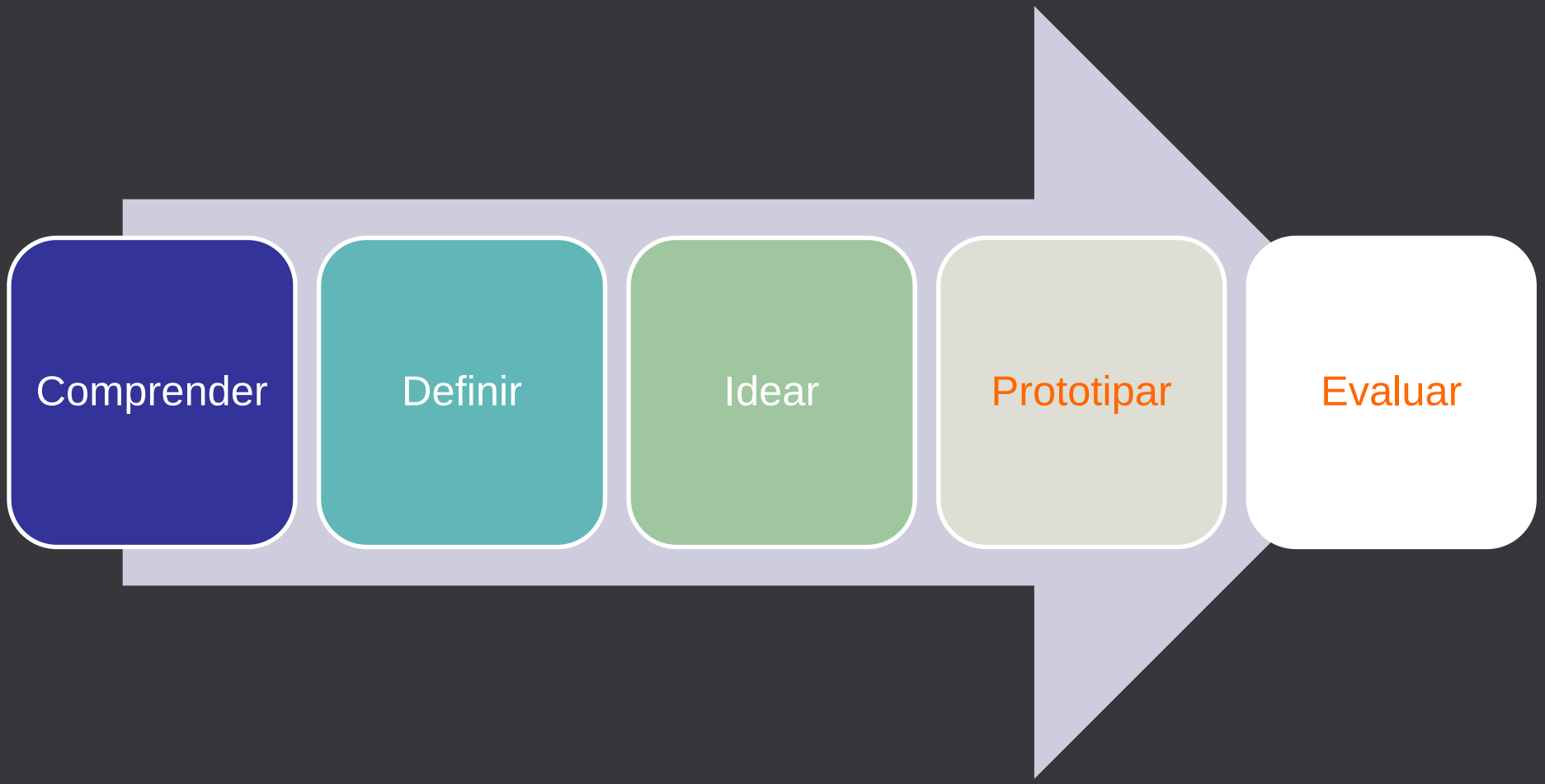




Proyecto Definitivo

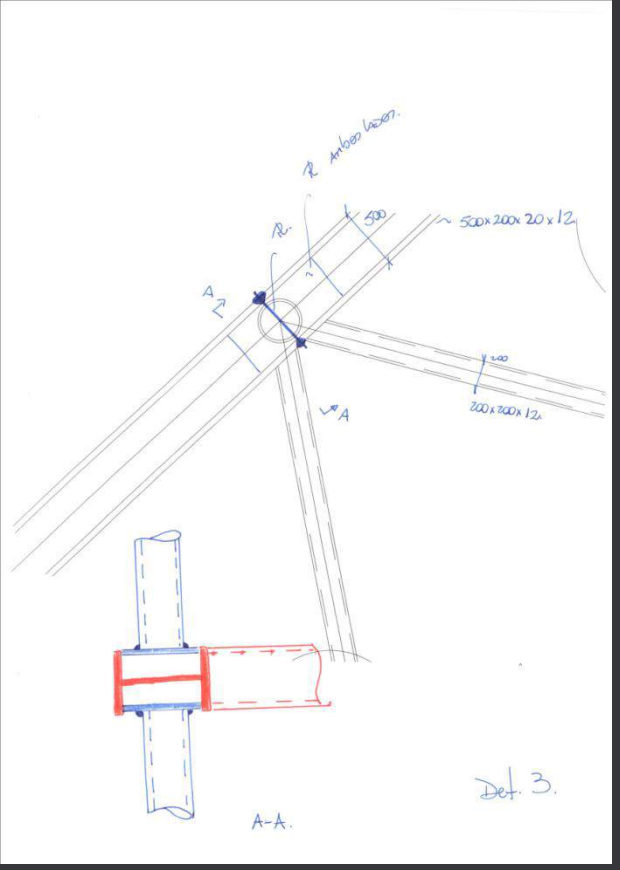
Uso de prototipos digitales que permitan evaluar el nivel de coordinación, costo, constructabilidad de las soluciones, etc.

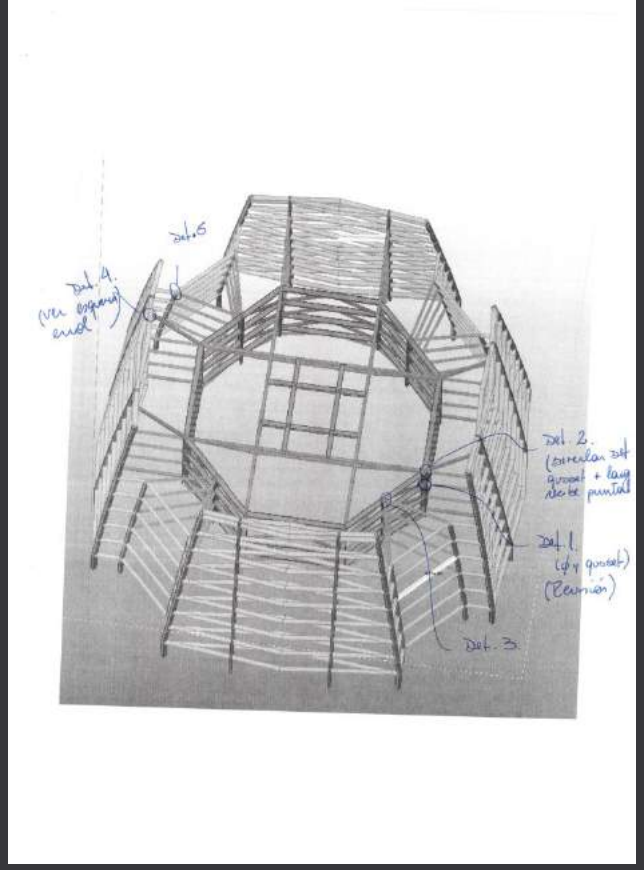
Modelo Design Thinking - Innovación

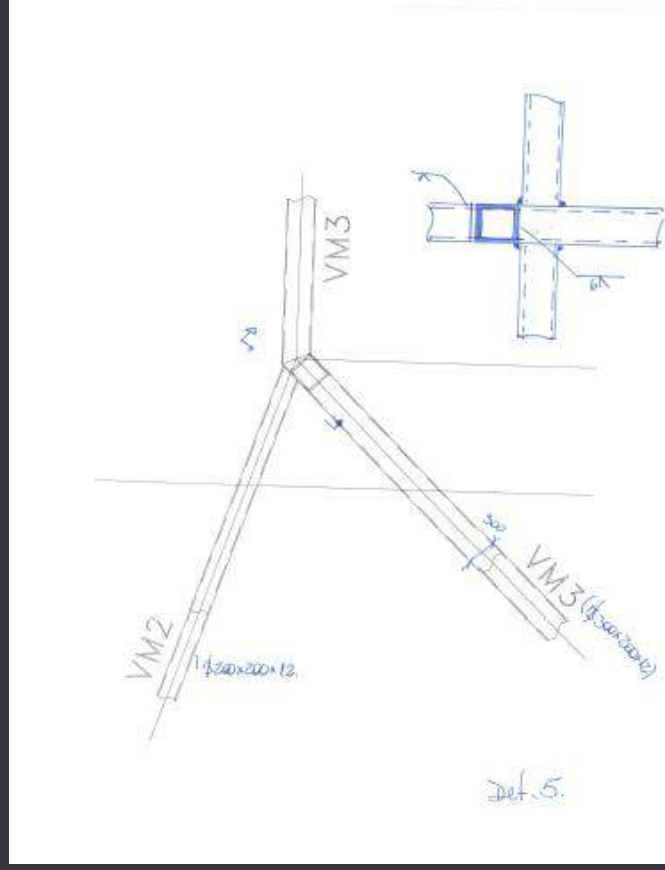


Modelo de trabajo para equipos de diseño de productos.

Cómo llevamos esto a la práctica?







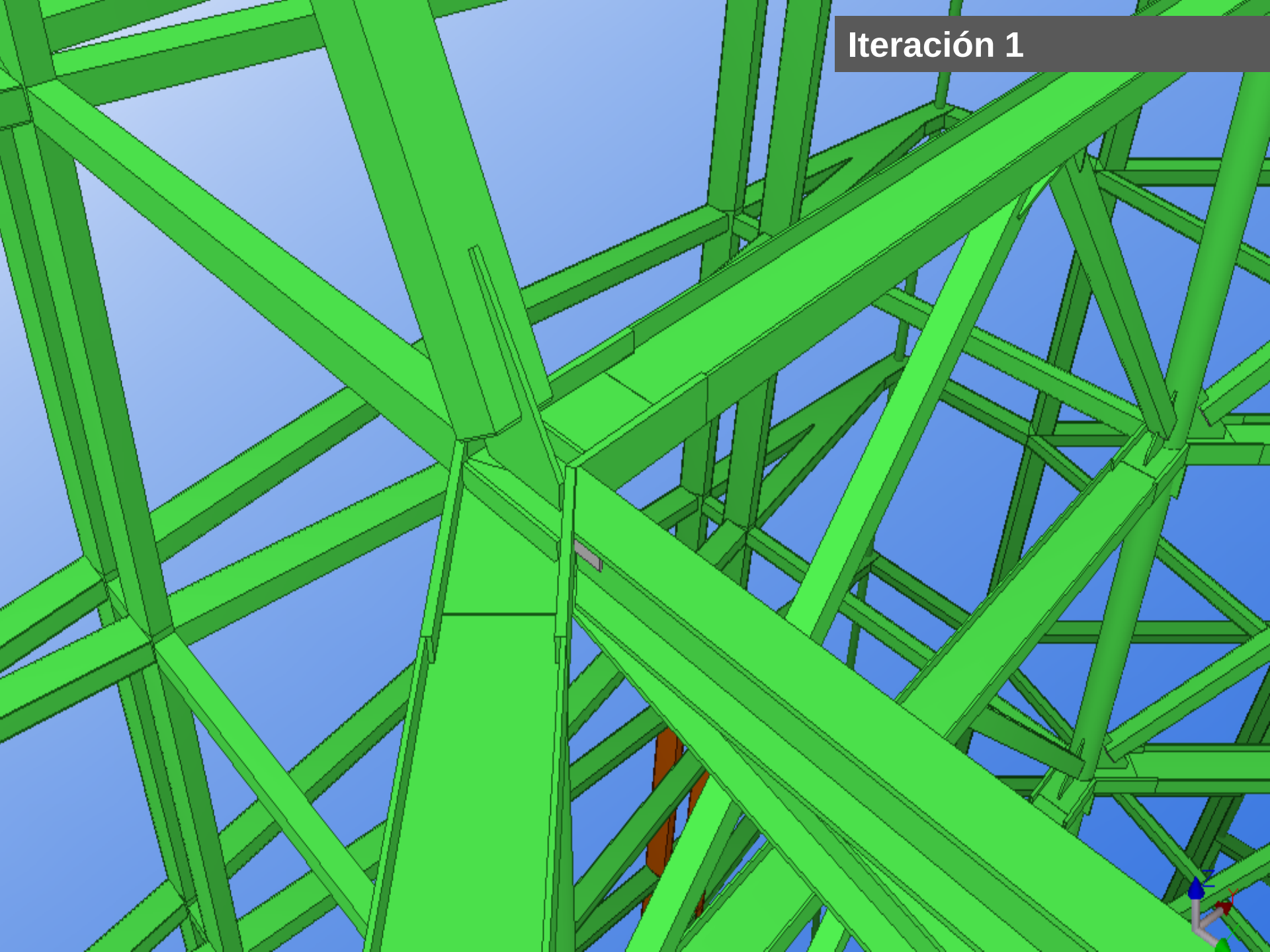
En un comienzo los problemas se tratan de resolver a partir del método tradicional: lápiz y papel…

…Es lento y poco eficaz

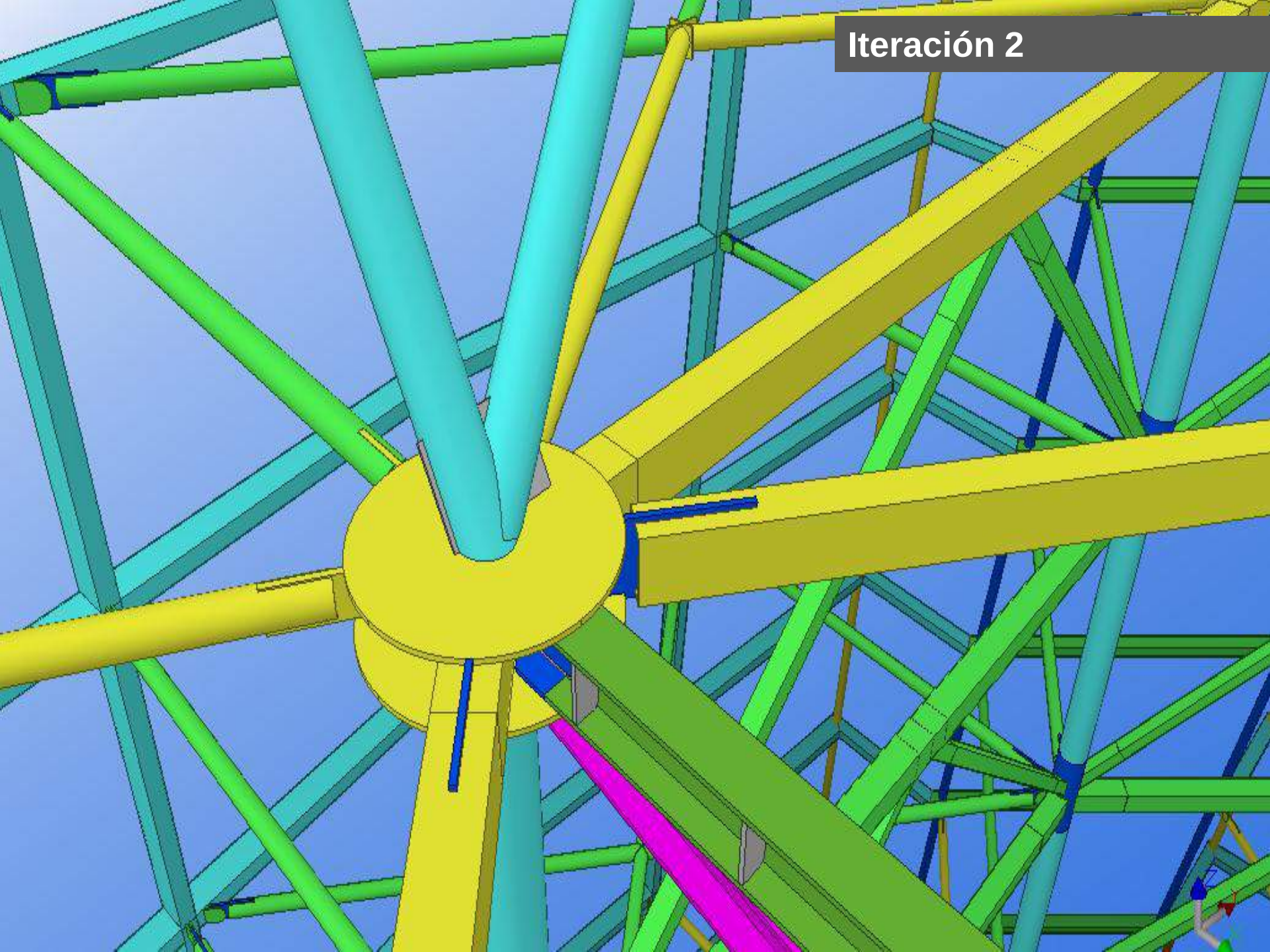
Estándares comunes, lenguaje común, sistemas comunes, plataforma común…lenguaje visual

Reuniones de trabajo utilizando el modelo como pieza clave en la determinación de las decisiones de diseño.

Iteración 1

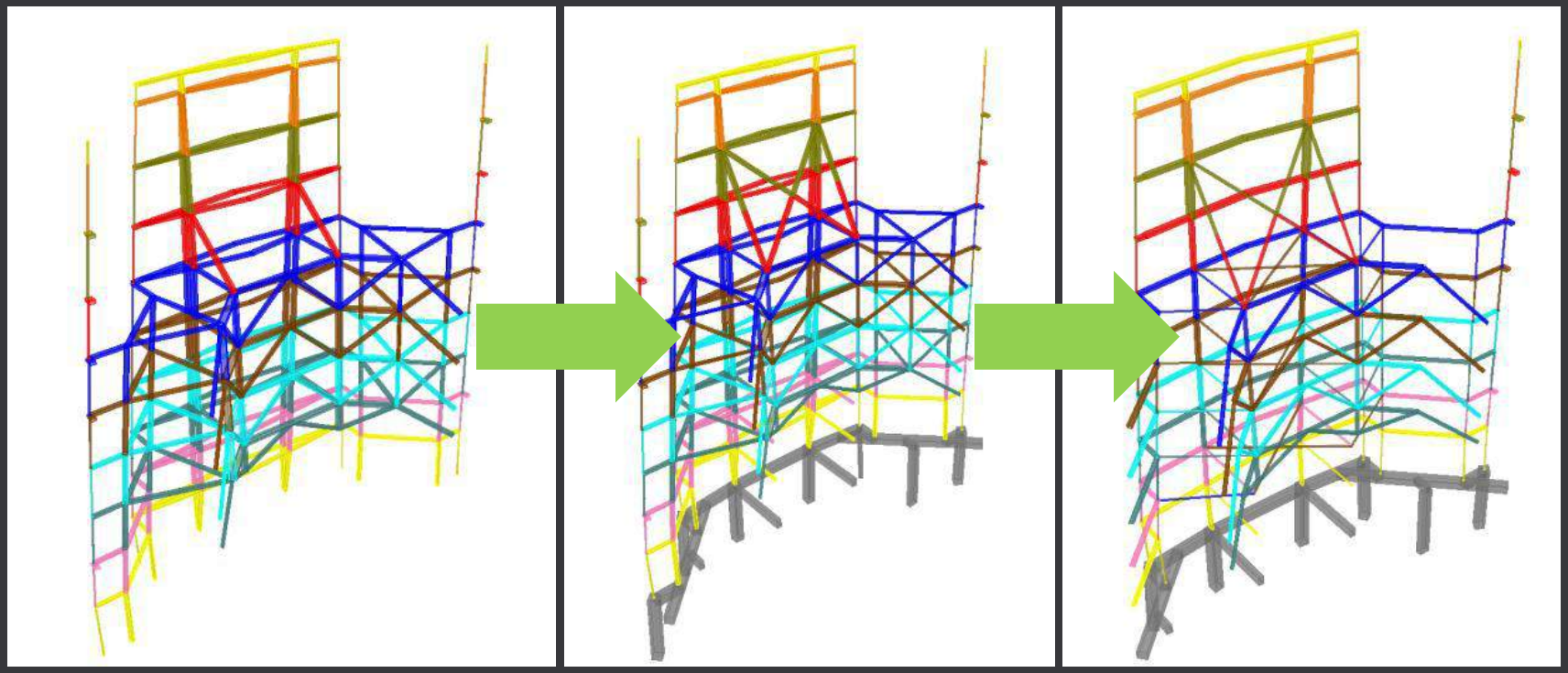


Iteración 2

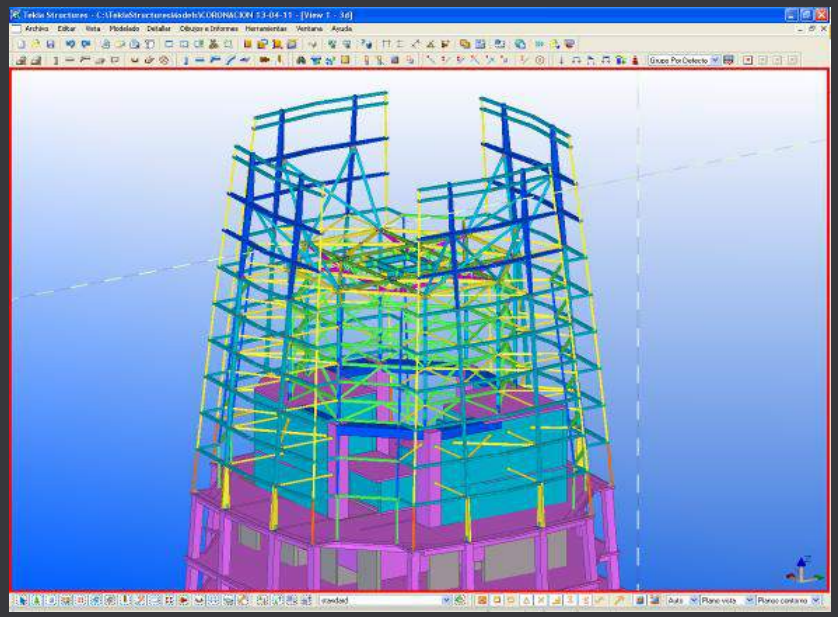


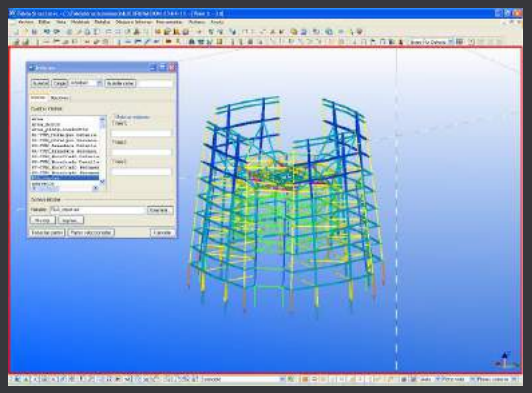
Se prueban los modelos de análisis

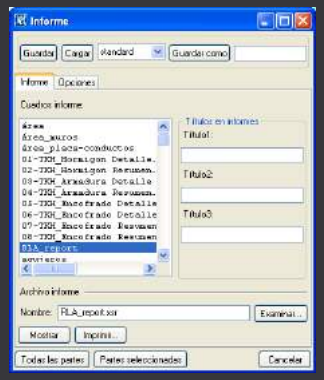
Versión 1 **Versión 2** **Versión 3**

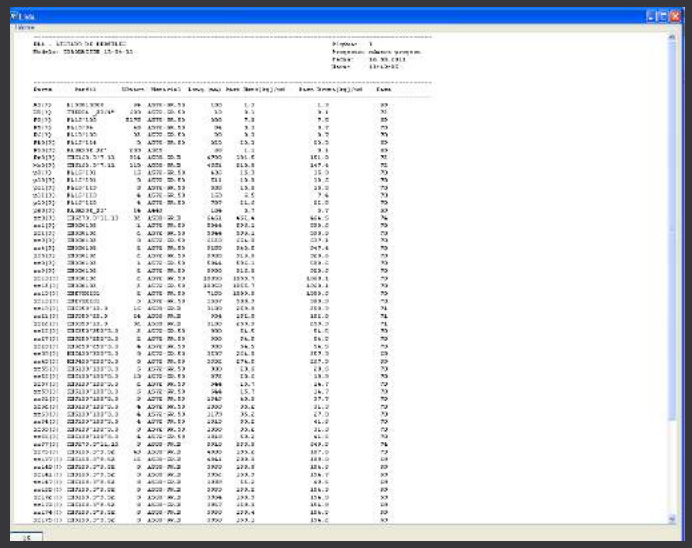


Se evalúa a partir de los modelos BIM

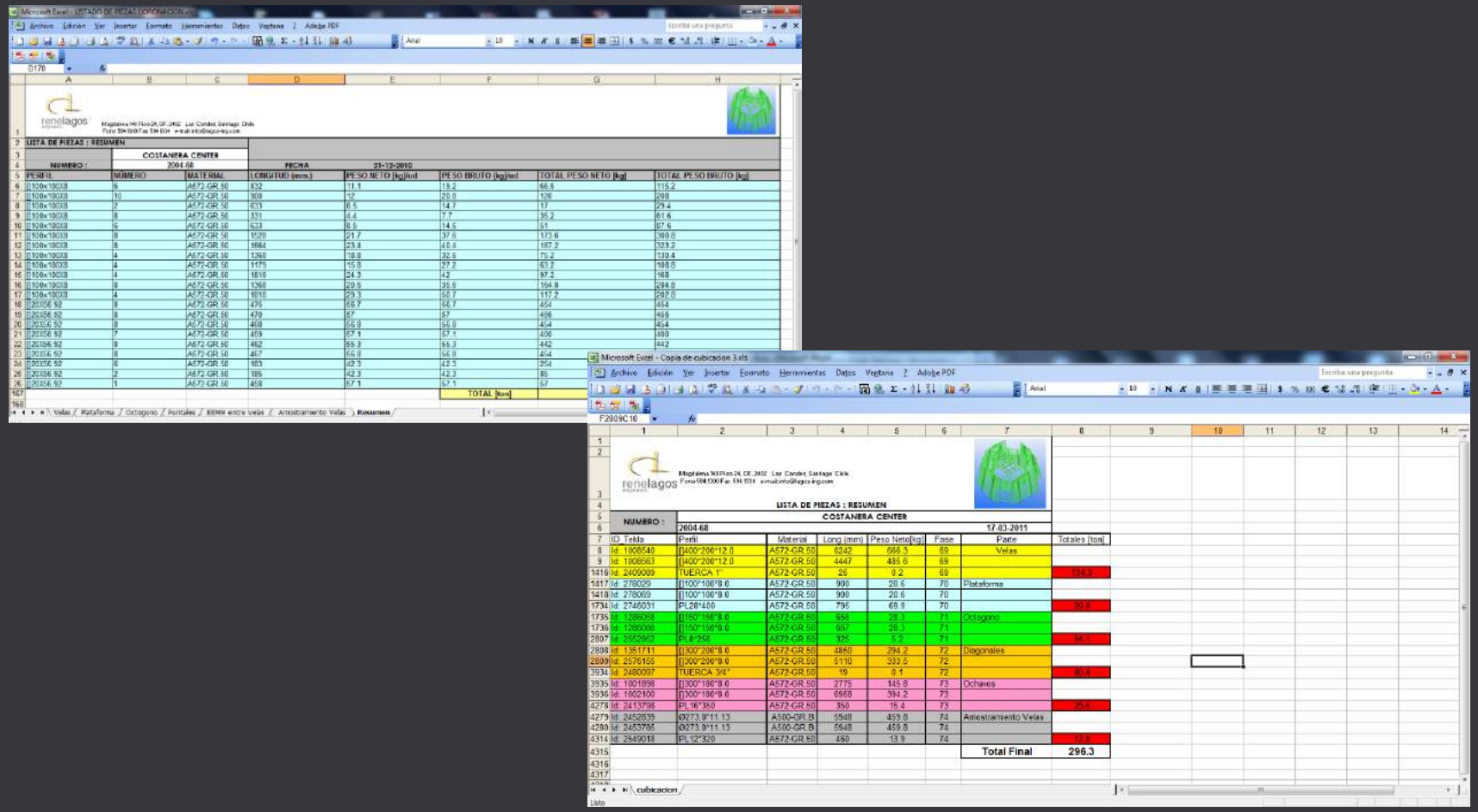








Se toman decisiones sobre la viabilidad de la alternativa



LISTA DE PIEZAS : RESUMEN

NUMERO : 2004-68 — COSTANERA CENTER — FECHA 21-12-2010

PERFIL	NUMERO	MATERIAL	LONGITUD (mm.)	PESO NETO [kg]/ml	PESO BRUTO [kg]/ml	TOTAL PESO NETO [kg]	TOTAL PESO BRUTO [kg]
[100x100X8	6	A572-GR.50	832	11.1	19.2	66.6	115.2
[100x100X8	10	A572-GR.50	300	12	20.8	120	208
[100x100X8	2	A572-GR.50	633	8.5	14.7	17	29.4
[100x100X8	8	A572-GR.50	331	4.4	7.7	35.2	61.6
[100x100X8	5	A572-GR.50	633	8.5	14.6	51	87.6
[100x100X8	8	A572-GR.50	1528	21.7	37.6	173.6	300.8
[100x100X8	8	A572-GR.50	1664	23.8	40.6	187.2	323.2
[100x100X8	4	A572-GR.50	1368	18.8	32.6	75.2	130.4
[100x100X8	4	A572-GR.50	1175	15.8	27.2	63.2	108.8
[100x100X8	4	A572-GR.50	1818	24.3	42	97.2	168
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[20X56.92	8	A572-GR.50	476	56.7	56.7	454	454
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[20X56.92	7	A572-GR.50	469	57.1	57.1	400	400
[20X56.92	8	A572-GR.50	462	55.8	55.3	442	442
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[20X56.92	6	A572-GR.50	183	42.3	42.3	254	254
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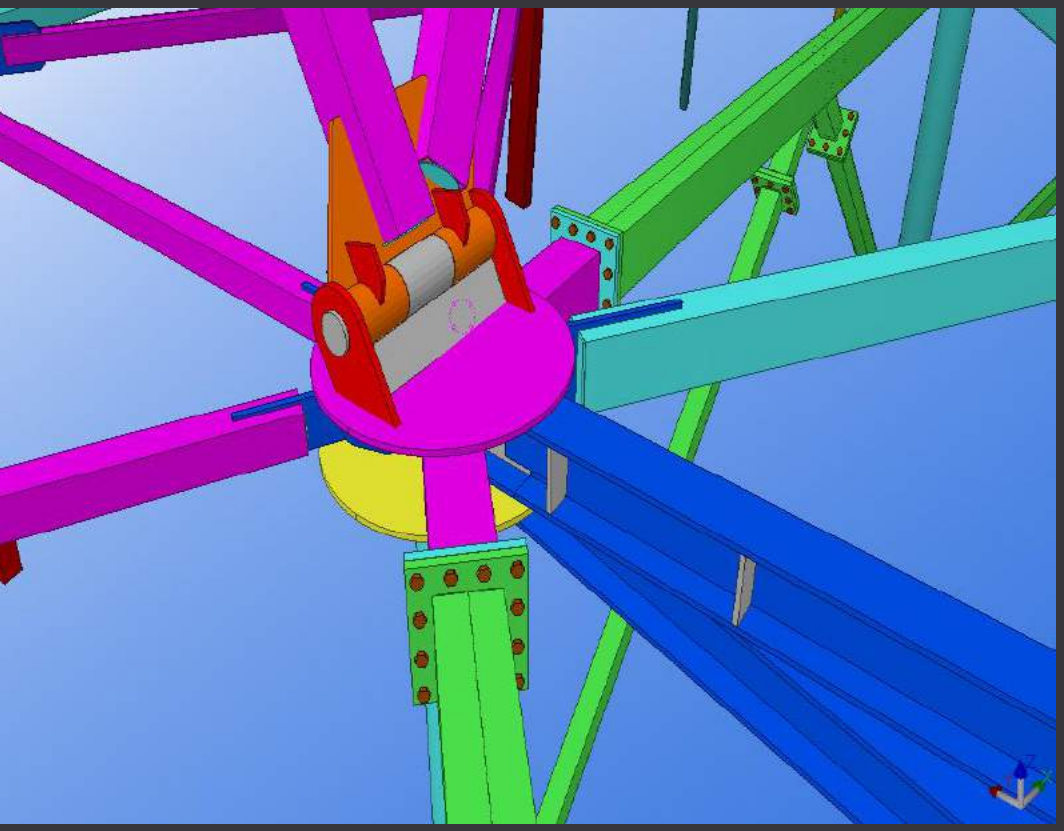
[20X56.92	1	A572-GR.50	458	57.1	57.1	57	57
					TOTAL [ton]		

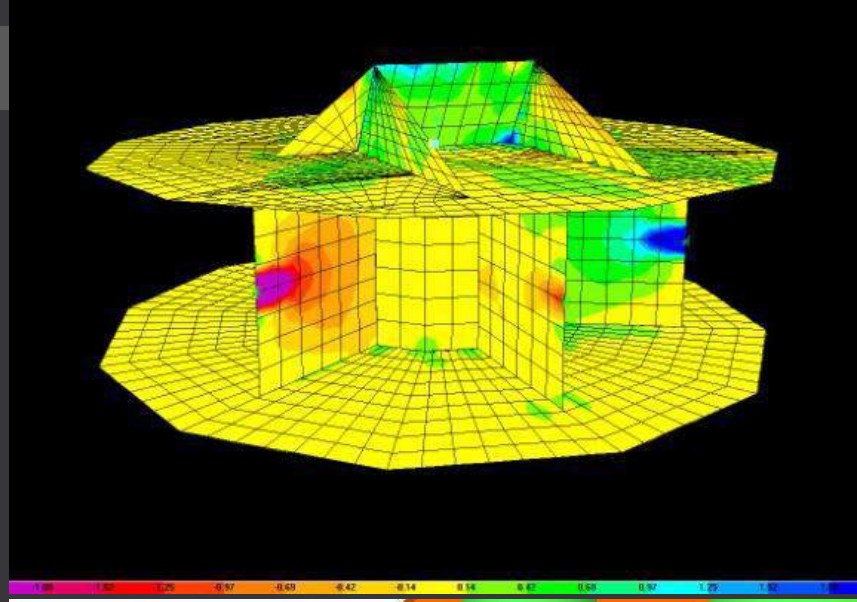
LISTA DE PIEZAS : RESUMEN

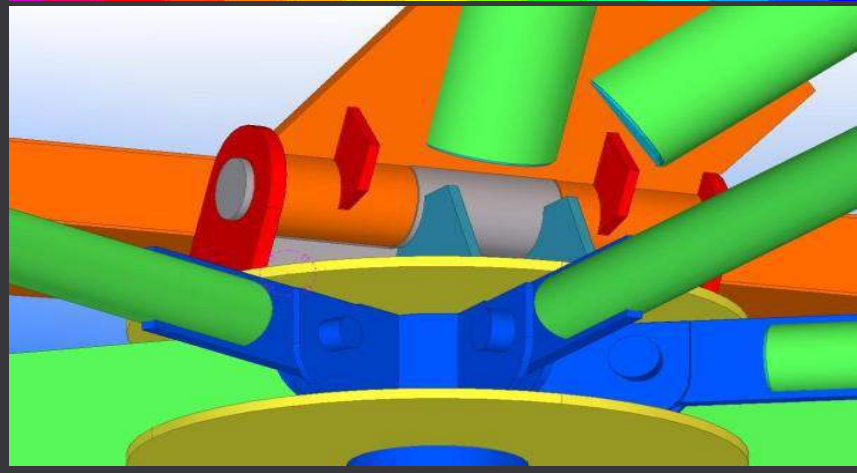
NUMERO : 2004-68 — COSTANERA CENTER — 17-03-2011

ID Tekla	Perfil	Material	Long (mm)	Peso Neto[kg]	Fase	Parte	Totales [ton]
Id 1008540	[400*200*12.0	A572-GR.50	6242	666.3	69	Velas	
Id 1008563	[400*200*12.0	A572-GR.50	4447	485.6	69		
Id 2409009	TUERCA 1"	A572-GR.50	25	9.2	69		124.3
Id 278029	[100*100*8.0	A572-GR.50	900	20.6	70	Plataforma	
Id 278069	[100*100*8.0	A572-GR.50	900	20.6	70		
Id 2746031	PL28*400	A572-GR.50	795	69.9	70		20.3
Id 1288058	[150*150*8.0	A572-GR.50	656	28.1	71	Octagono	
Id 1288088	[150*150*8.0	A572-GR.50	657	28.3	71		
Id 2552952	PL8*256	A572-GR.50	325	5.2	71		54.1
Id 1351711	[300*200*8.0	A572-GR.50	4860	294.2	72	Diagonales	
Id 2576155	[300*200*8.0	A572-GR.50	5110	333.5	72		
Id 2480097	TUERCA 3/4"	A572-GR.50	19	8.1	72		40.8
Id 1001898	[300*180*8.0	A572-GR.50	2775	145.8	73	Ochavos	
Id 1002100	[300*180*8.0	A572-GR.50	6968	394.2	73		
Id 2413798	PL16*350	A572-GR.50	350	15.4	73		25.3
Id 2452839	Ø273.0*11.13	A500-GR.B	5948	453.8	74	Arriostramiento Velas	
Id 2453795	Ø273.0*11.13	A500-GR.B	5948	459.8	74		
Id 2549018	PL12*320	A572-GR.50	460	13.9	74		12.8
						Total Final	296.3

Iteración 3

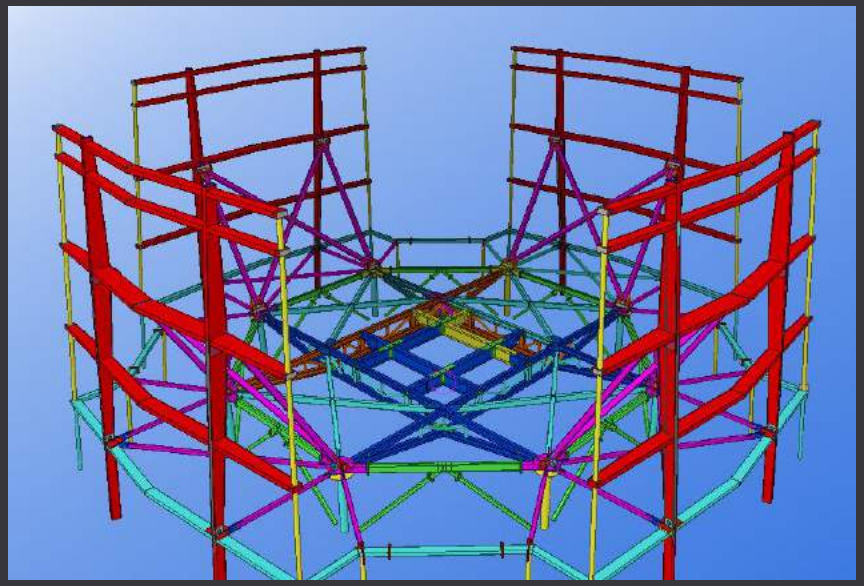


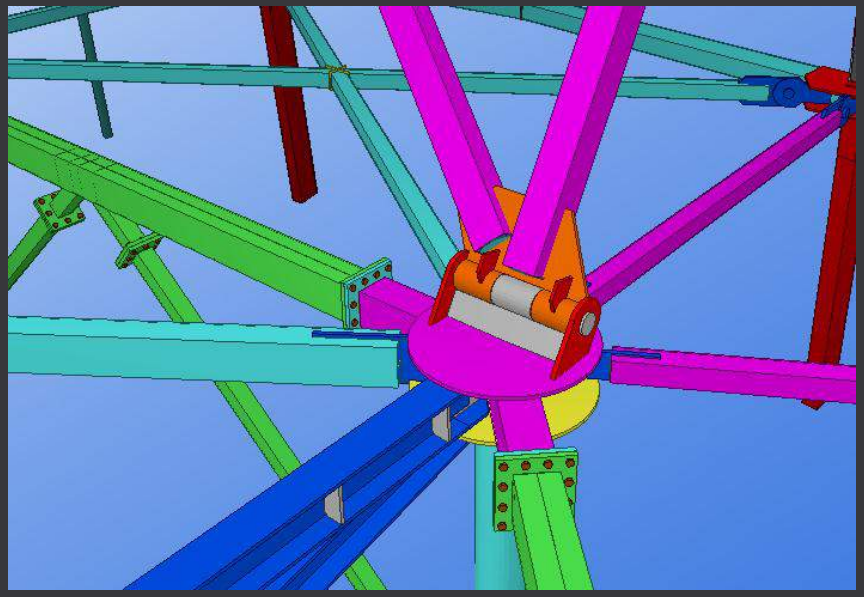




Se logra finalmente que los modelos de análisis vayan a la par con los modelos de diseño.

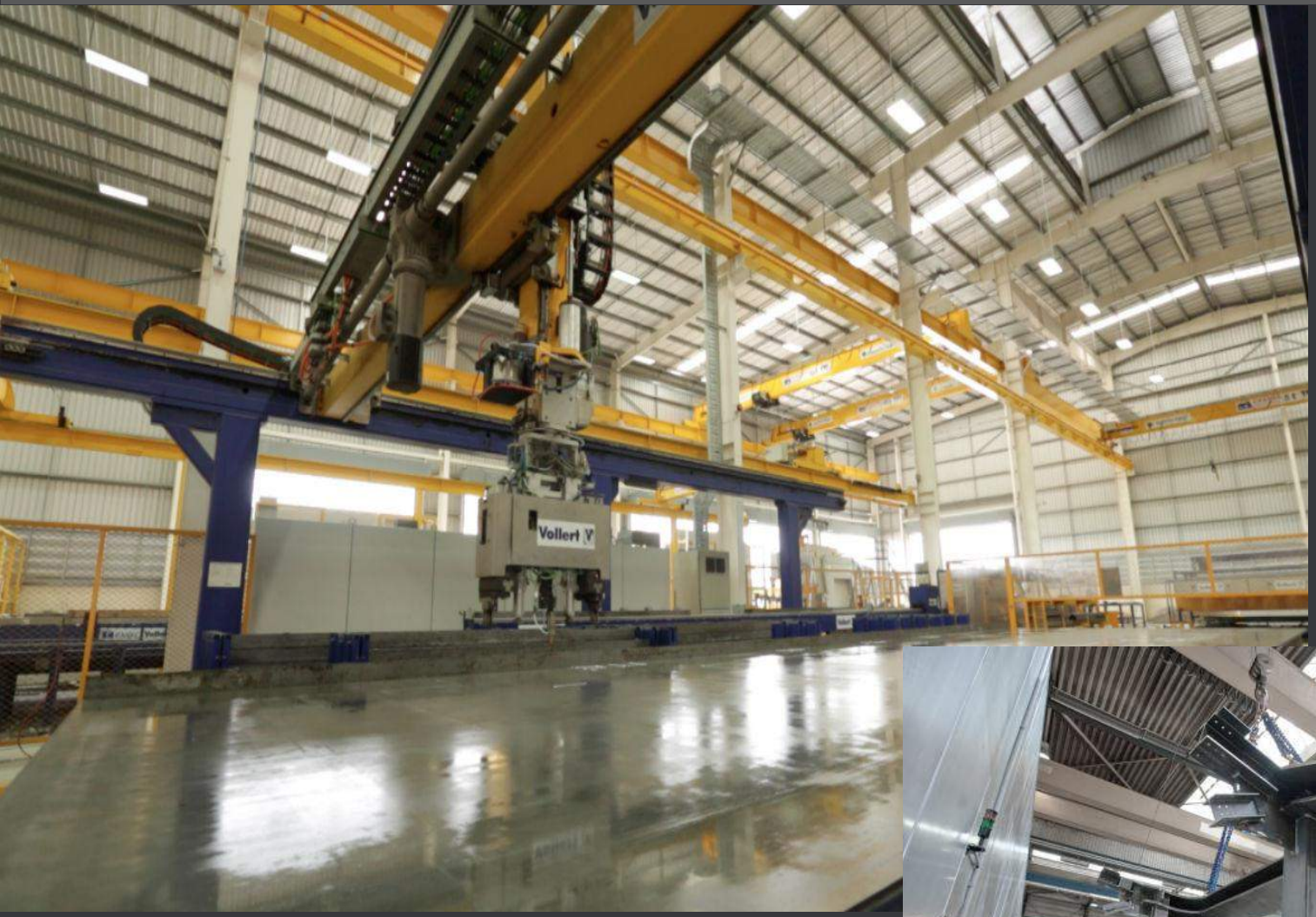
Se logra desarrollar una alternativa que es construible y donde se realizaron todos los análisis necesarios para determinar que era la mejor.





La Fábrica

Industrialización de la construcción…



Uso de CNC

Aumento en el uso de prefabricado…

BAU MAX
QUÉ ES BAUMAX
VENTAJAS
PARTNERS
REFERENTES
CONTACTO
CONSTRUCCIÓN ROBOTIZADA EN HORMIGÓN,
GENERA AHORROS, REDUCE PLAZOS
Y ASEGURA CALIDAD

MOMENTA
INGENIERÍA & CONSTRUCCIÓN
Home | Nosotros | Servicios | Proyectos | Noticias | Contacto
SOLUCIONES INDUSTRIALIZADAS DE INGENIERÍA Y CONSTRUCCIÓN
NOS MUEVE LA INNOVACIÓN Y LA INGENIERÍA QUE APORTA VALOR

Uso de dispositivos móviles en terreno…

1- CONCRETO COMPATIBLE

Compatibilización concreto vs MEP

ID and BIM International

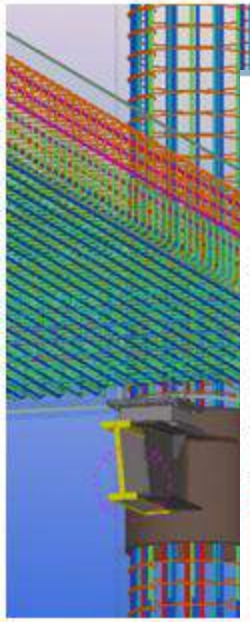
1- CONCRETO COMPATIBLE

2- ARMADURAS CONSTRUIBLE

Constructabilidad

ID and BIM International

AVO



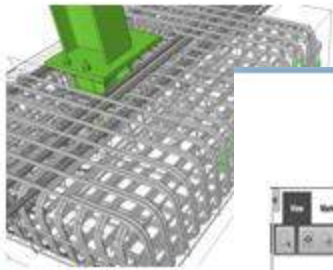
1- CONCRETO COMPATIBLE

2- PRE-CONSTRUCCION

Planificación de montaje

ID and BIM International

ITER



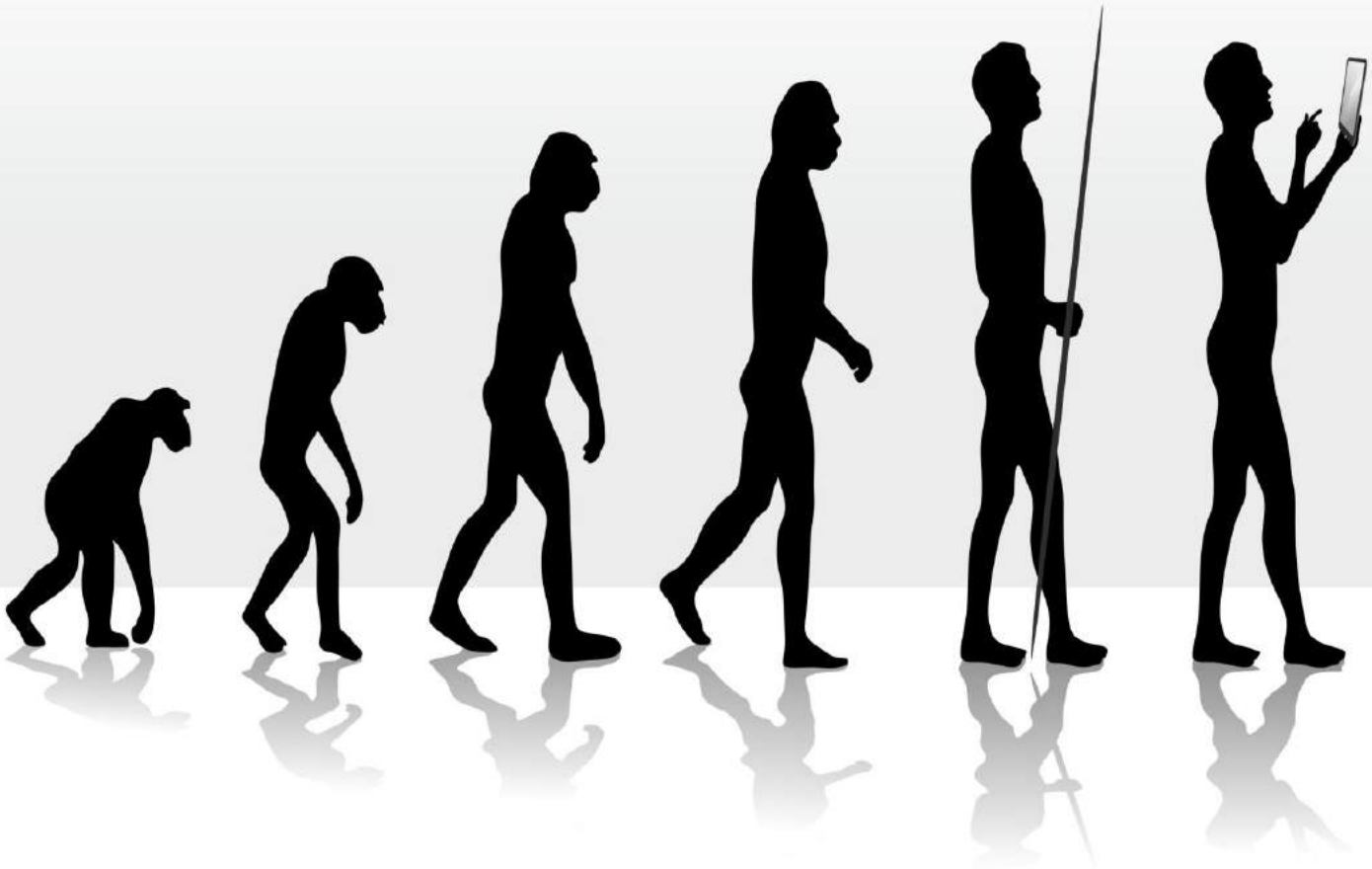
1- CONCRETO COMPATIBLE

5- MONTAJE OPTIMIZADO

Planos desde el modelo

ID and BIM International

1- CONCRETO COMPATIBLE | 2- ARMADURAS CONSTRUIBLE | 3- PLANOS DE DETALLE | 4- FABRICACION AUTOMATIZADA | 5- MONTAJE OPTIMIZADO



Maquinas en la cocina…

Facilitan el trabajo…disminuyen tiempo…

Maquina para construir puentes

Nos concentramos en el producto, no en los procesos…

Diseño en los zapatos…

Aumentan las posibilidades, aumenta la creatividad!

Impresora 3D de muros

Nos concentramos en el diseño, no en los procesos…

renelagos
engineers

Gracias!