BIM Forum Chile

Seminario:
Interoperabilidad Open BIM
07 de septiembre 2017

«Administración BIM para Proyectos de Infraestructura»

Rafael Bombardiere – Relaciones Académicas y Capacitación, División de Software

Administración BIM para Infraestructura Mediante AECOsim Building Designer

Rafael Bombardiere

Arquitecto

Relaciones Académicas y Capacitación

GEOCOM Soluciones Geoespaciales

Bentley Advancing Infrastructure

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https://www.youtube.com/watch?v=3wuZNAouRPA

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Filosofía BIM de Bentley

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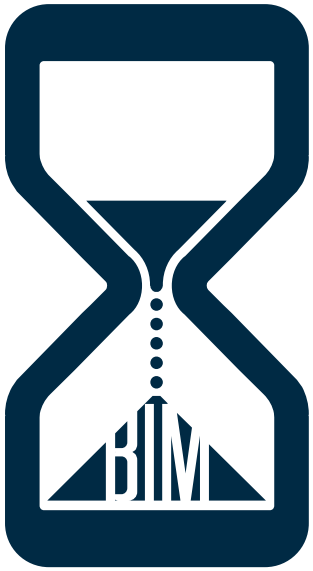

BIM = Proceso

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Incluye y es facilitado
por tecnología, pero
NO ES
una tecnología o un
software en particular

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Building Information Modeling

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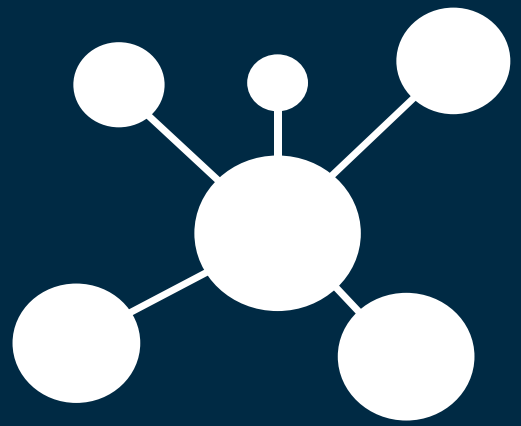
GEOCOM Bentley

Building Information Management



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Building Information Mobility

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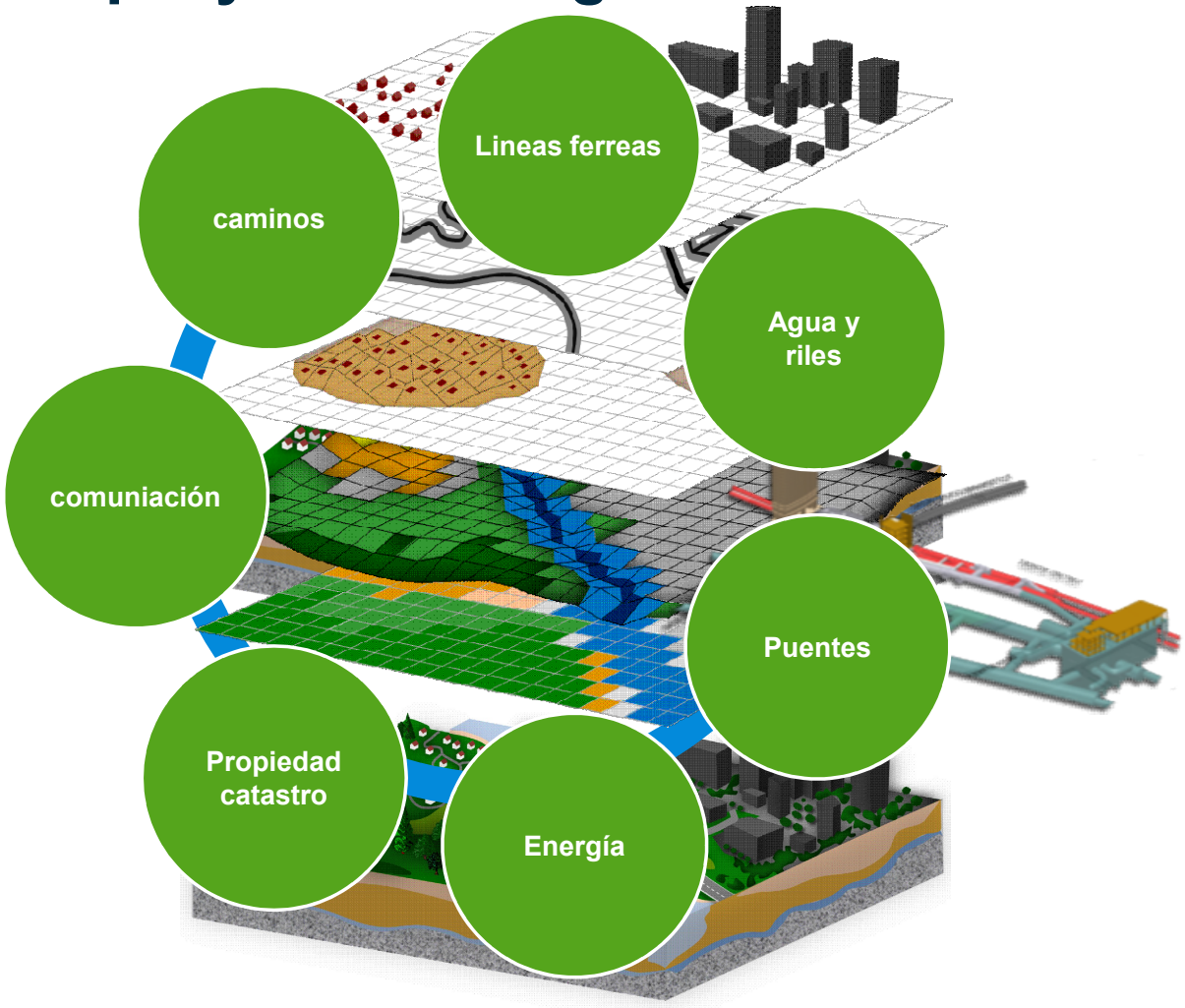
BIM para proyectos integrados



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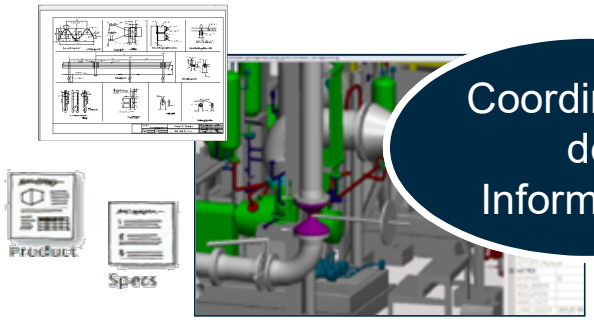
AECOsim : Data Management for Facility Operations



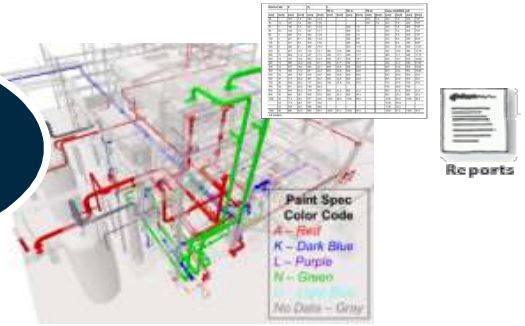
Coordinación de Información

Trimble

SDNF

ISM Enabled

CIS/2



Validación de Información

INTEGRATED PROJECTS

INFORMATION MODELING

INTELLIGENT INFRASTRUCTURE

Desarrollo de Diseño Interoperable

OmniClass™

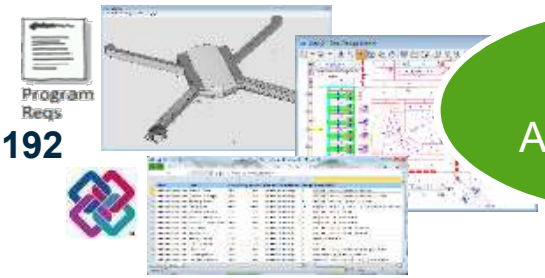
NATSPEC

Publicar Modelos Inteligentes

i-model

Adobe

COBie



BS 1192

Etapa de Anteproyecto

Presentación de Activo Digital

mobile

Bentley Enterprise Solutions

SAP

IBM maximo

COGNOS

GEOCOM

Bentley

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AECOsim Building Designer

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Architecture

Engineering

Construction

Operations

SIMulator

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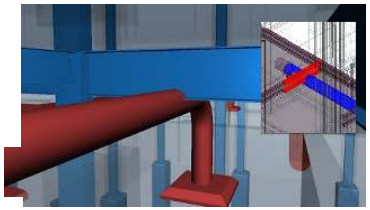
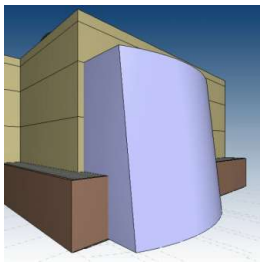
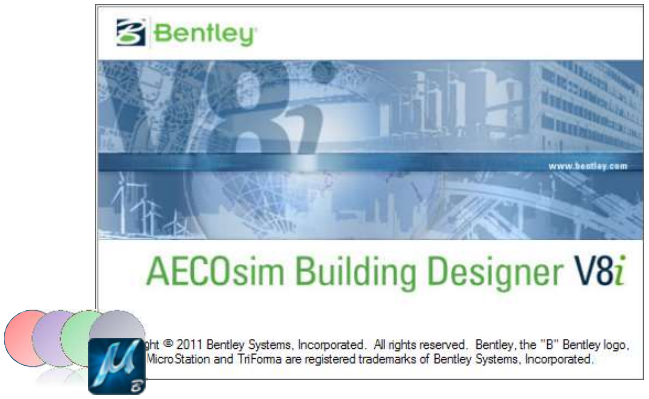
Clash Detection



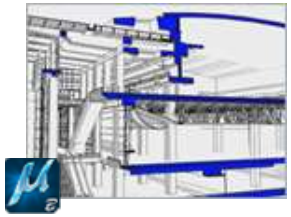
Conceptual Design



Visualization



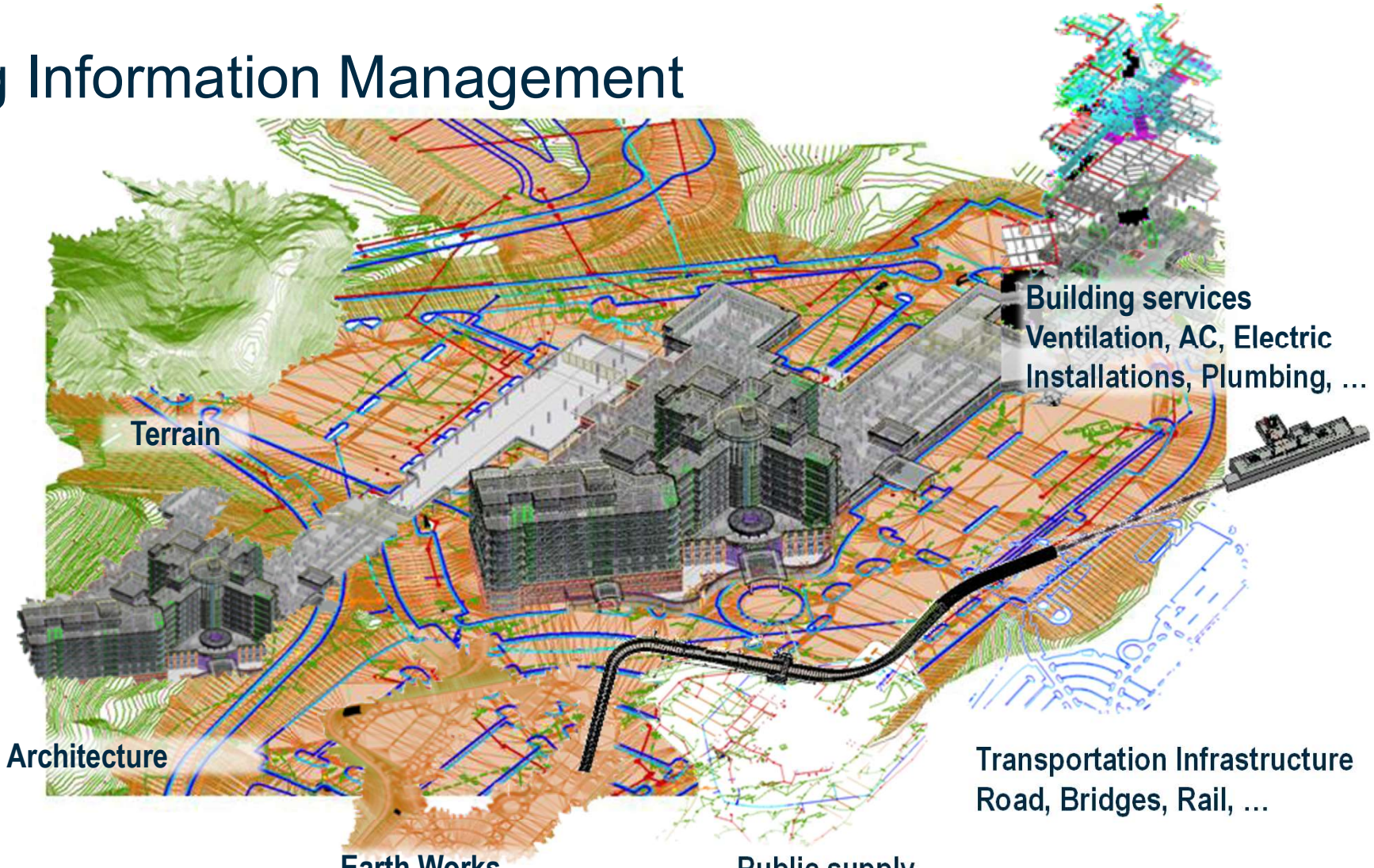
Generative Design



Drawings & Reports

GEOCOM Bentley

Building Information Management



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https://www.youtube.com/watch?v=PJJcE5J3kyk

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Casos de Aplicación

De AECOsim en Infraestructura

 © 2015 Bentley Systems, Incorporated

Renovación Oficina de Geocom

Captura Geoespacial Aplicada al Flujo BIM

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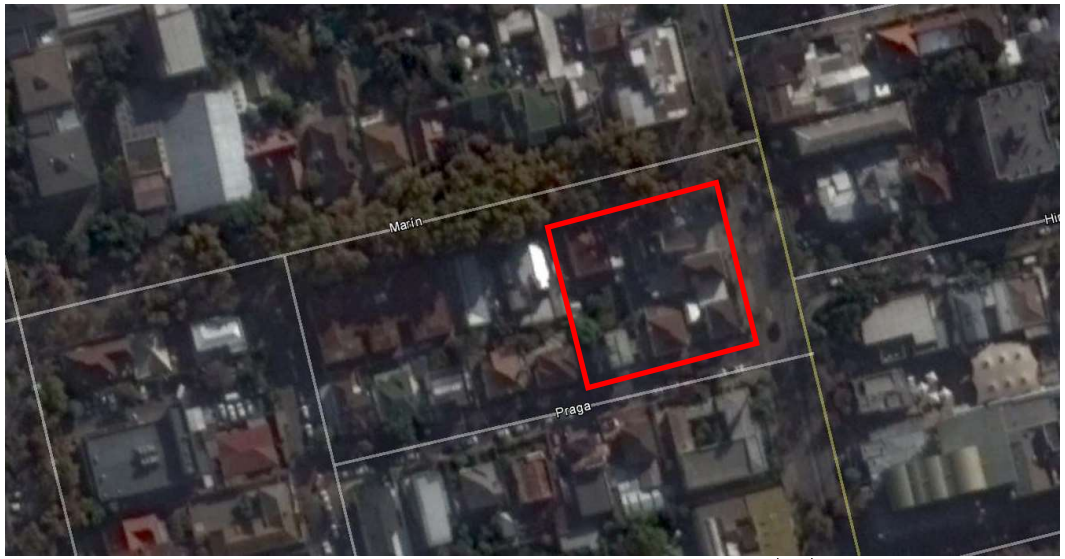
Edificio 6 Instalaciones de Geocom

- *Dirección:* Av. Salvador 1105
- *Superficie Terreno*: 513m²
- *Superficie Util:* 310m²
- *Año de Edificación:* 1937
- *Pisos:* 3 plantas



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Esquema Flujo de Datos

Nube de Puntos

GEO SLAM

Archivo LAS

Fotogrametría

Malla 3mx

Georeferencias

AECOsim
Building Designer

i-models

Lumenrt

Captura | Procesamiento | Modelamiento | Entregables

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Escaner Movil ZEB Revo

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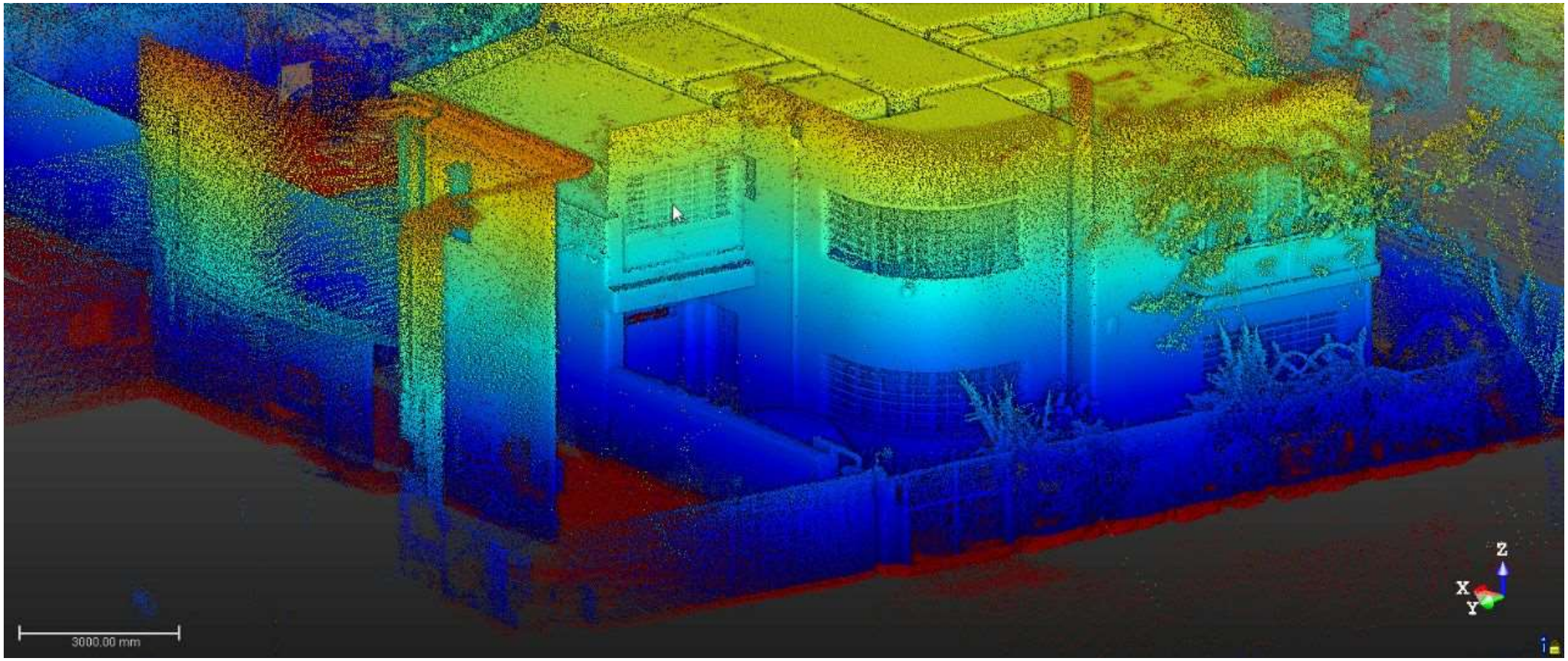
Nube de Puntos Procesada



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https://www.youtube.com/watch?v=GYtORlvdaqs

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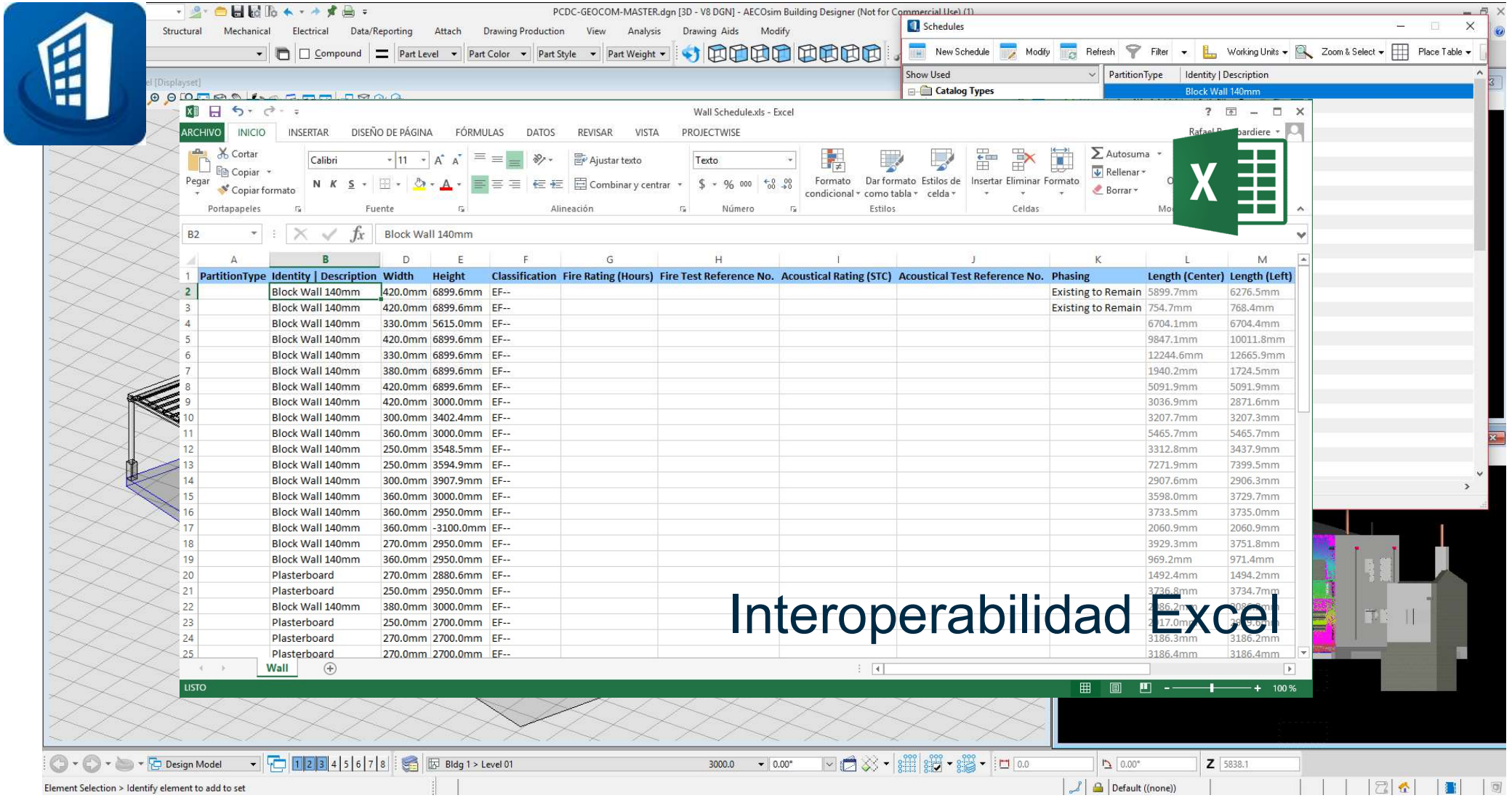

PartitionType	Identity | Description	Width	Height	Classification	Fire Rating (Hours)	Fire Test Reference No.	Acoustical Rating (STC)	Acoustical Test Reference No.	Phasing	Length (Center)	Length (Left)
	Block Wall 140mm	420.0mm	6899.6mm	EF--					Existing to Remain	5899.7mm	6276.5mm
	Block Wall 140mm	420.0mm	6899.6mm	EF--					Existing to Remain	754.7mm	768.4mm
	Block Wall 140mm	330.0mm	5615.0mm	EF--						6704.1mm	6704.4mm
	Block Wall 140mm	420.0mm	6899.6mm	EF--						9847.1mm	10011.8mm
	Block Wall 140mm	330.0mm	6899.6mm	EF--						12244.6mm	12665.9mm
	Block Wall 140mm	380.0mm	6899.6mm	EF--						1940.2mm	1724.5mm
	Block Wall 140mm	420.0mm	6899.6mm	EF--						5091.9mm	5091.9mm
	Block Wall 140mm	420.0mm	3000.0mm	EF--						3036.9mm	2871.6mm
	Block Wall 140mm	300.0mm	3402.4mm	EF--						3207.7mm	3207.3mm
	Block Wall 140mm	360.0mm	3000.0mm	EF--						5465.7mm	5465.7mm
	Block Wall 140mm	250.0mm	3548.5mm	EF--						3312.8mm	3437.9mm
	Block Wall 140mm	250.0mm	3594.9mm	EF--						7271.9mm	7399.5mm
	Block Wall 140mm	300.0mm	3907.9mm	EF--						2907.6mm	2906.3mm
	Block Wall 140mm	360.0mm	3000.0mm	EF--						3598.0mm	3729.7mm
	Block Wall 140mm	360.0mm	2950.0mm	EF--						3733.5mm	3735.0mm
	Block Wall 140mm	360.0mm	-3100.0mm	EF--						2060.9mm	2060.9mm
	Block Wall 140mm	270.0mm	2950.0mm	EF--						3929.3mm	3751.8mm
	Block Wall 140mm	360.0mm	2950.0mm	EF--						969.2mm	971.4mm
	Plasterboard	270.0mm	2880.6mm	EF--						1492.4mm	1494.2mm
	Plasterboard	250.0mm	2950.0mm	EF--						3736.8mm	3734.7mm
	Block Wall 140mm	380.0mm	3000.0mm	EF--						2086.2mm	2088.0mm
	Plasterboard	250.0mm	2700.0mm	EF--						2717.0mm	2716.8mm
	Plasterboard	270.0mm	2700.0mm	EF--						3186.3mm	3186.2mm
	Plasterboard	270.0mm	2700.0mm	EF--						3186.4mm	3186.4mm

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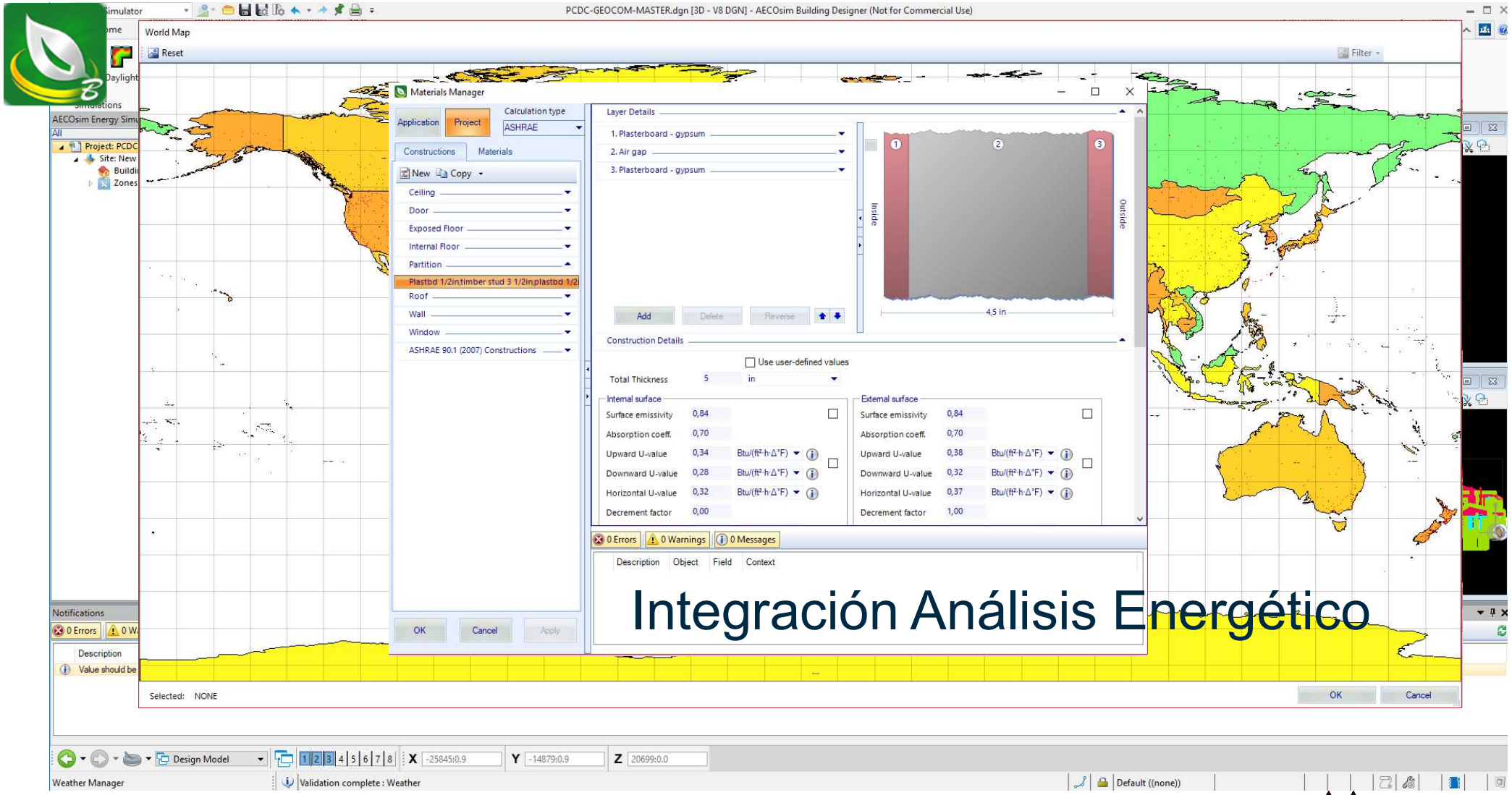

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Ejercicio de Interoperabilidad entre Plataformas

Incorporación de Distintos Formatos
Bajo el Mismo Ambiente BIM

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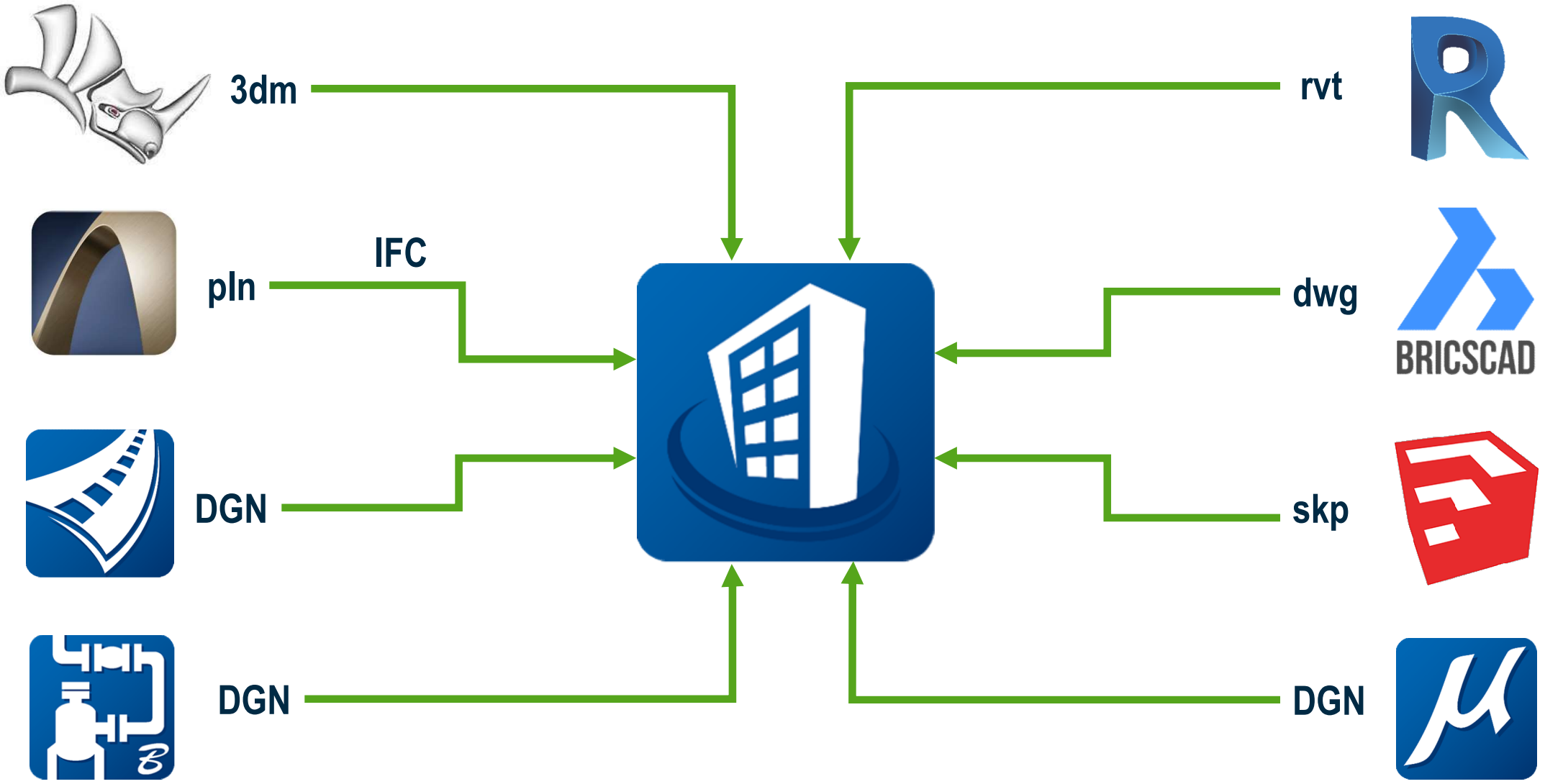

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https://www.youtube.com/watch?v=7xpE7c9JfBk&feature=youtu.be

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Software y formatos – Diseño de Infraestructuras

Civil

TcpMDT

AUTOCAD CIVIL 3D

Edificio

GRAPHISOFT ARCHICAD

AUTODESK REVIT

CAD 2D

ZWCAD

AUTODESK AUTOCAD

Generativo

grasshopper
GENERATIVE MODELING FOR RHINO

Dynamo

Render

MAXWELL RENDER

Autodesk 3ds Max

Revisión

SOLIBRI

NAVISWORKS

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Intercambio de Datos – Diseño de Infraestructuras

Civil

TcpMDT

C3D

AUTOCAD CIVIL 3D

Edificio

PLN

GRAPHISOFT ARCHICAD

RVT

AUTODESK REVIT

CAD 2D

ZWCAD

DWG

AUTODESK AUTOCAD

DGN

Generativo

3DM

grasshopper GENERATIVE MODELING FOR RHINO

Dynamo

Render

MAXWELL RENDER

3DS

Autodesk 3ds Max

Revisión

IFC

SOLIBRI

NWD

NAVISWORKS

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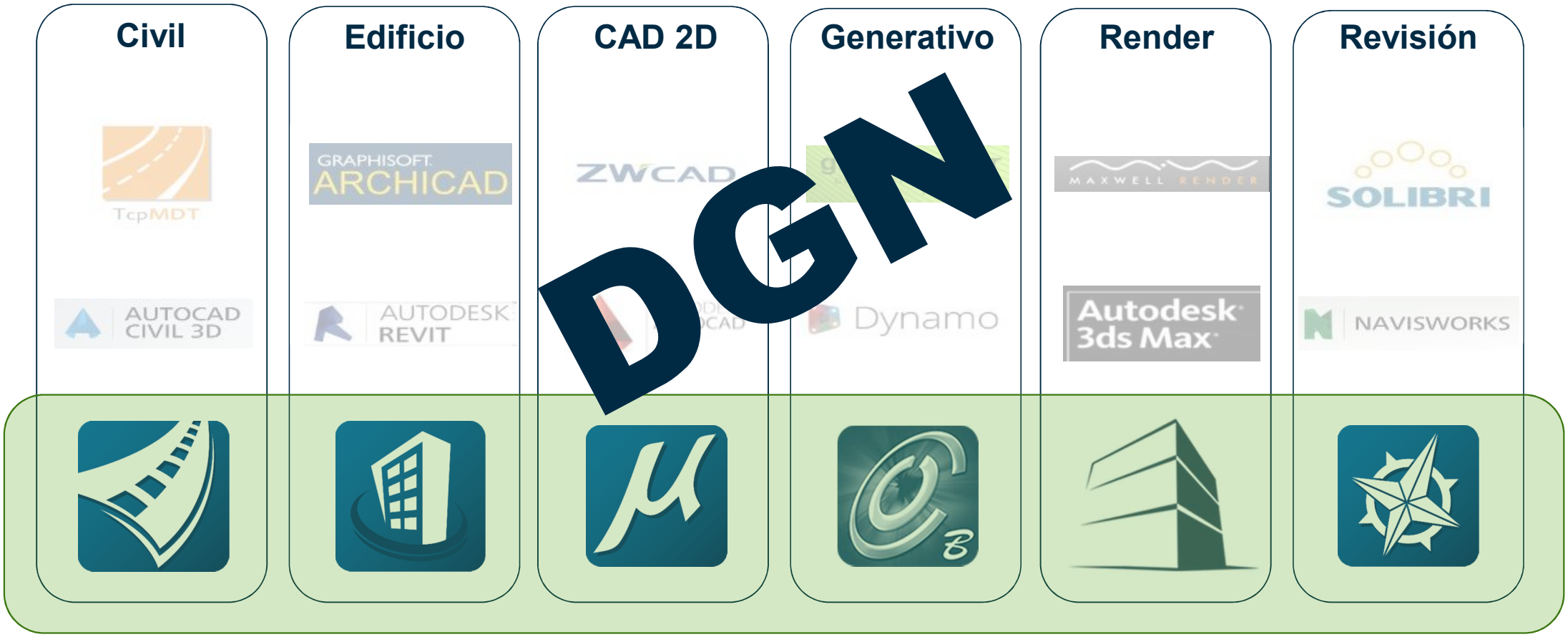
Consistencia de Datos – Diseño de Infraestructuras



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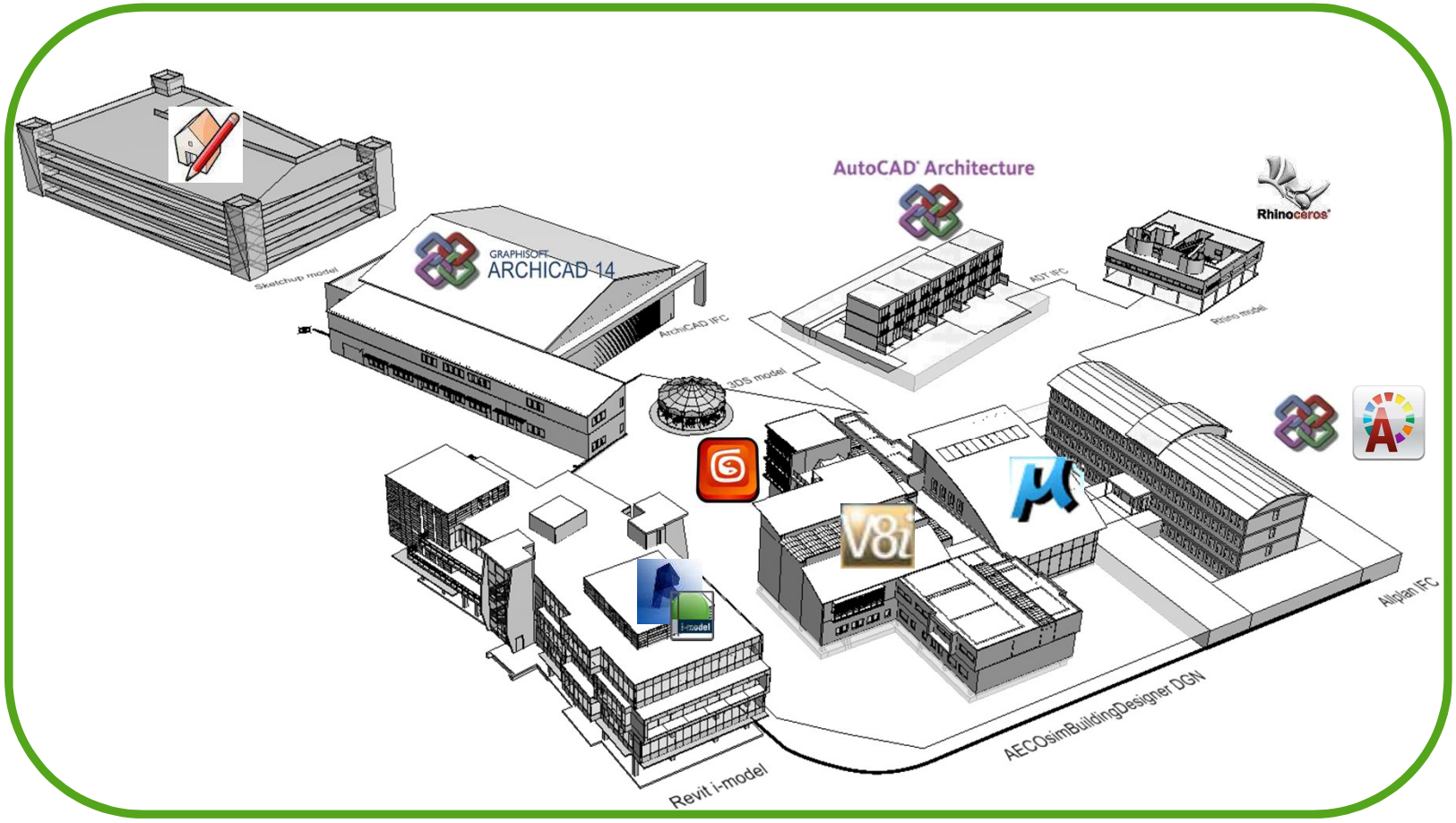

i-model

mobile

PDF

LAND xml

COBie

SHP

Colaboración entre los diferentes software BIM

Interoperabilid Bentley

Acción	Formatos Soportados
Abrir / Guardar Directamente	DGN, DWG , 3DS (3D Studio), SKP (Sketch Up), 3DM (Rhino), Raster, Obj, DXF, IFC, …
Importación Exportación	PDF, IGES, STEP, STL, Raster, Acis, Parasolid, CGM, JT, GbXml, LandXML
Exportación	PDF 3D, Google Earth, Svg, U3D, Collada, AVI
Plug In	RVT (Autodesk Revit™) i-model export

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Interoperabilidad - IFC 2x3

IFC 2x4 (technology preview)

buildingSMART
International home of openBIM

Certified Software

Home Page > Compliance > Certified Software

Participants of the official buildingSMART IFC2x3 Coordination View V2.0 certification process

Software Developer	Software Application	Exchange Requirement	Export/Import	Status
Bentley Systems	AECOsim Building Designer	Architecture, BuildingService, Structural	Import & Export	**Export: certified** **Import: certified**

http://www.buildingsmart-tech.org/certification/ifc-certification-2.0/ifc2x3-cv-v2.0-certification/participants

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Skyline Medical Center

Proyecto de Infraestructura Hospitalaria

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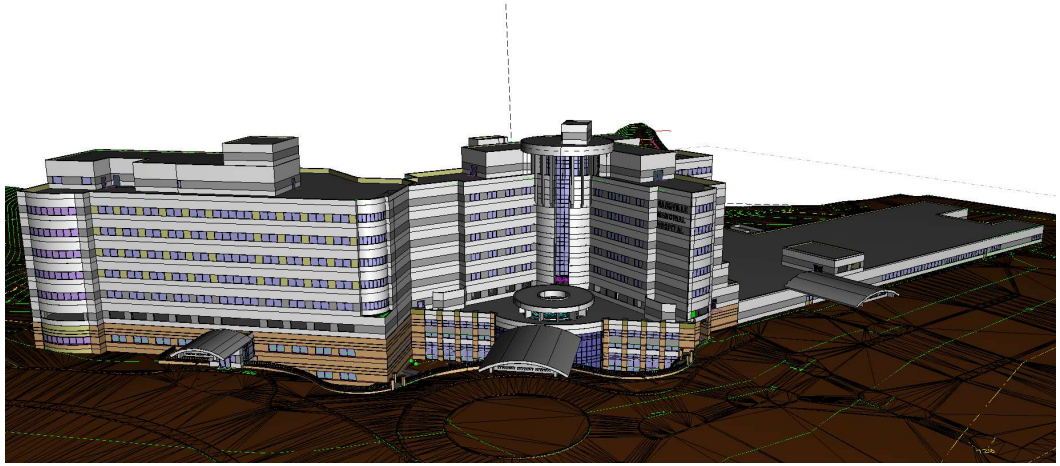
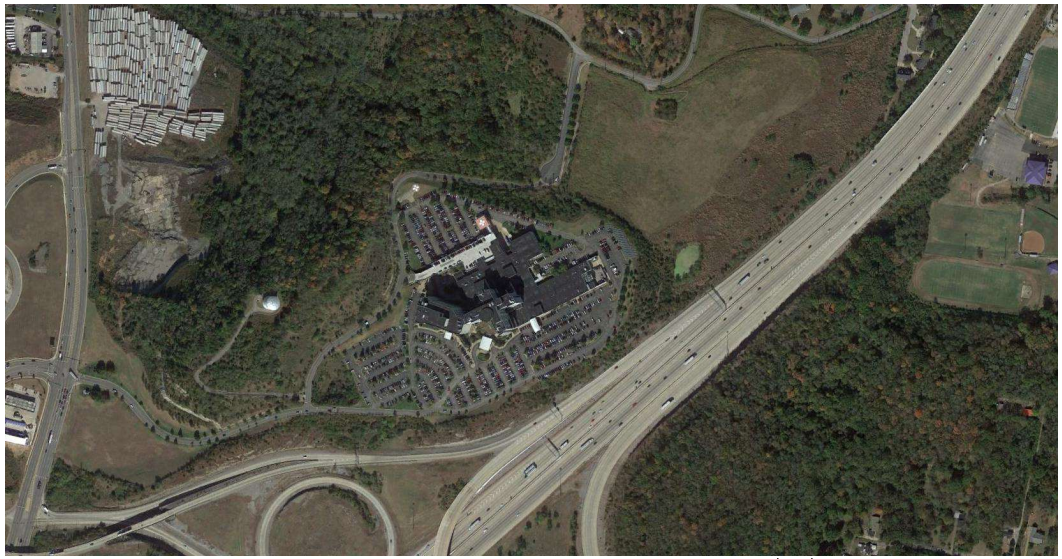
Skyline Medical Center

- *Ubicación:* Nashille, Tennessee, EEUU
- *Cantidad de Archivos*: 313
- *Tamaño Proyecto: 1,14 GB*
- *Plataformas: AECOsim Building Designer , Microstation, OpenRoads*





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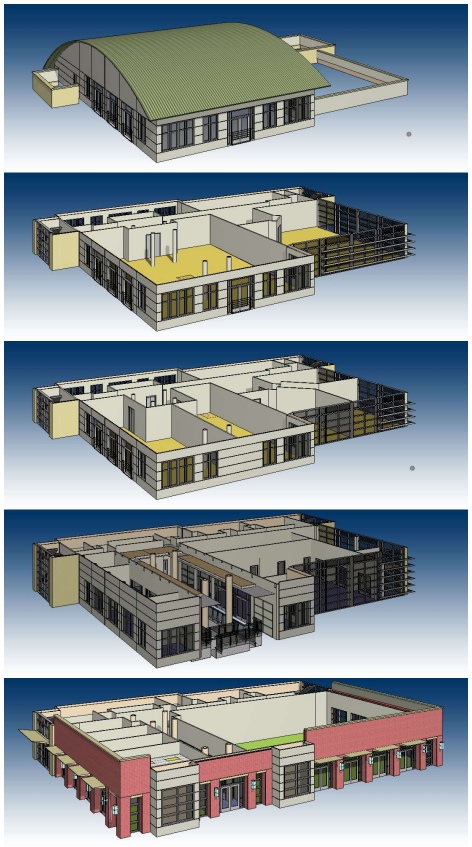
Modelo Federado



Modelos de Trabajo

Modelo - Arquitectura

Modelo Maestro

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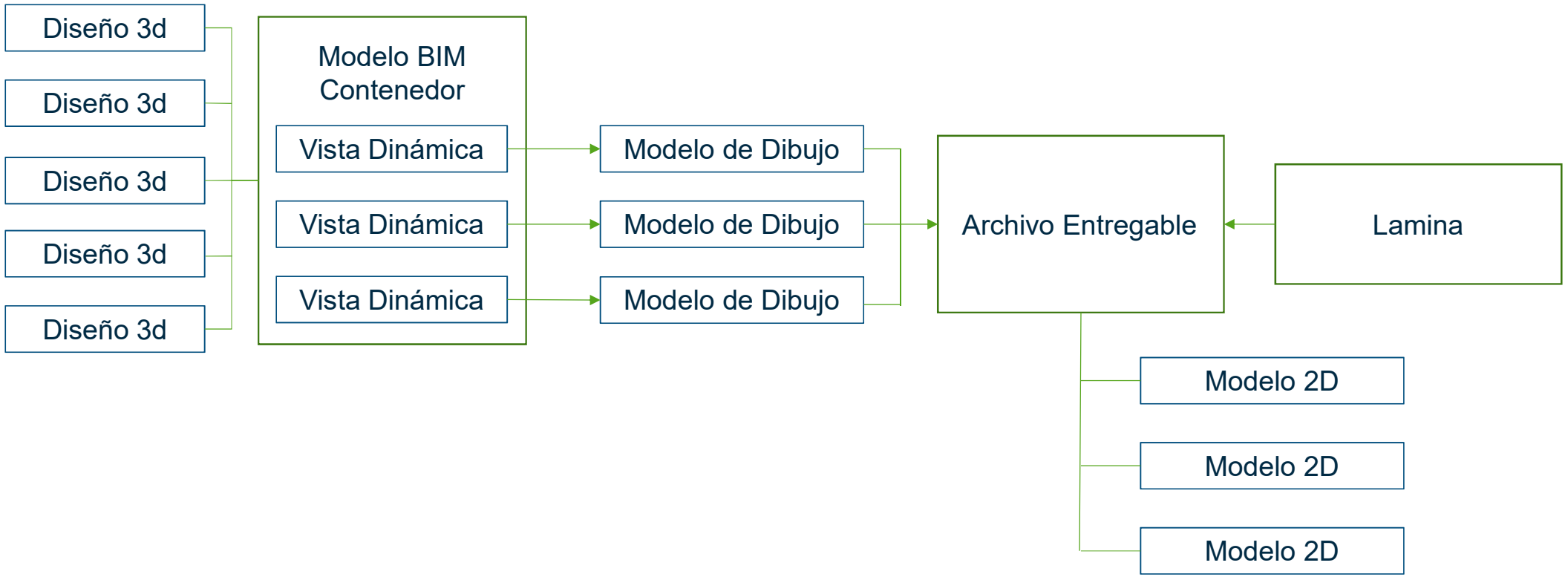
Ejemplo Flujo de Trabajo Federado



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https://www.youtube.com/watch?v=SC4SJN66t9w&feature=youtu.be

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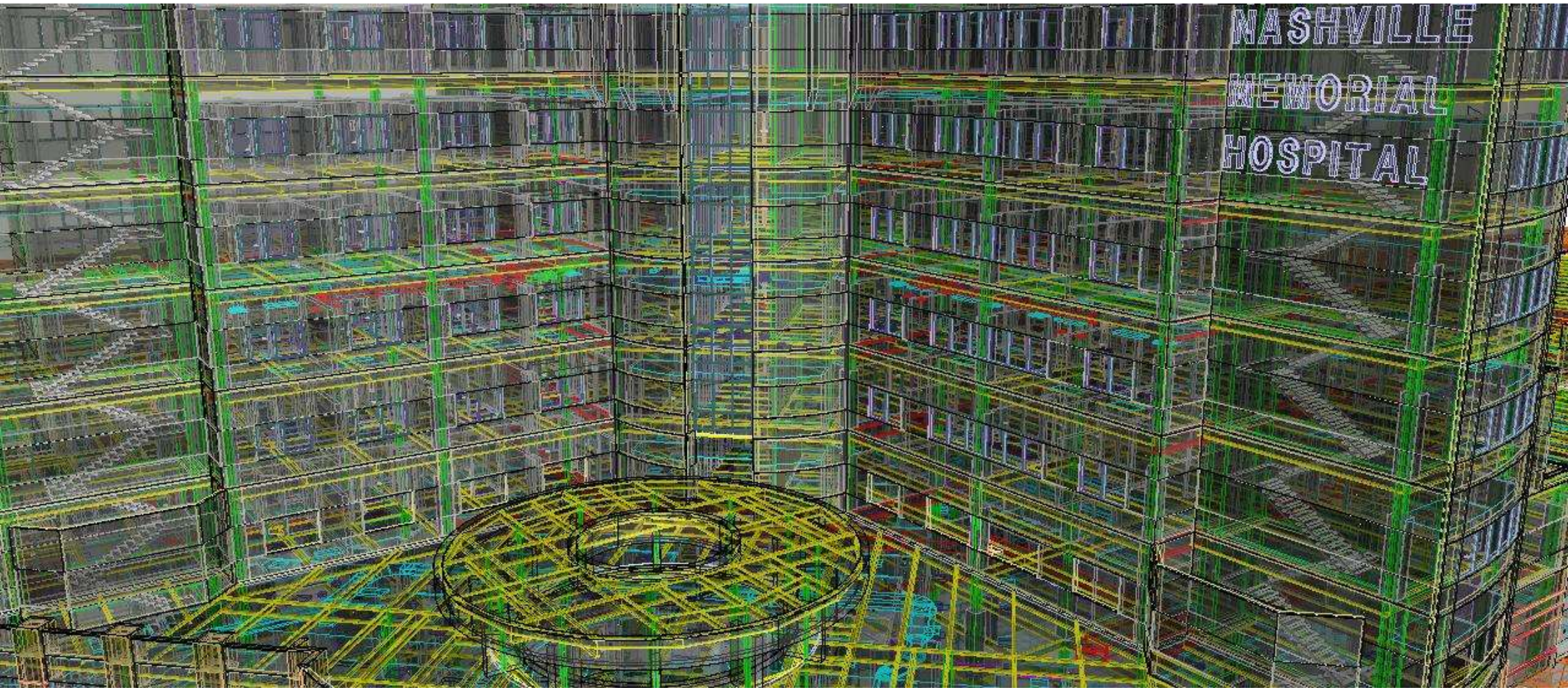

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Qué es ProjectWise

https://www.youtube.com/watch?v=VqyXMng6ho8

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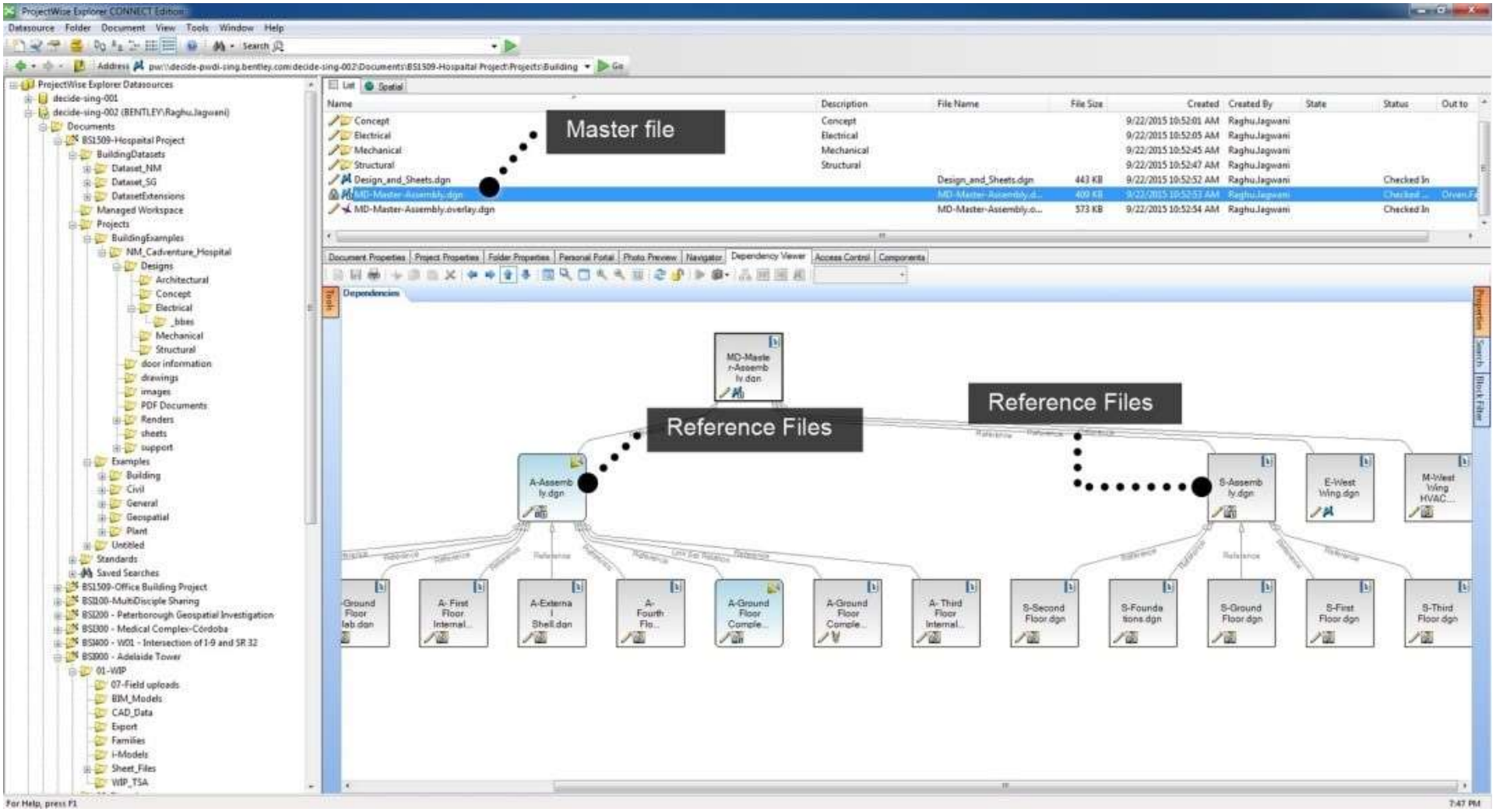

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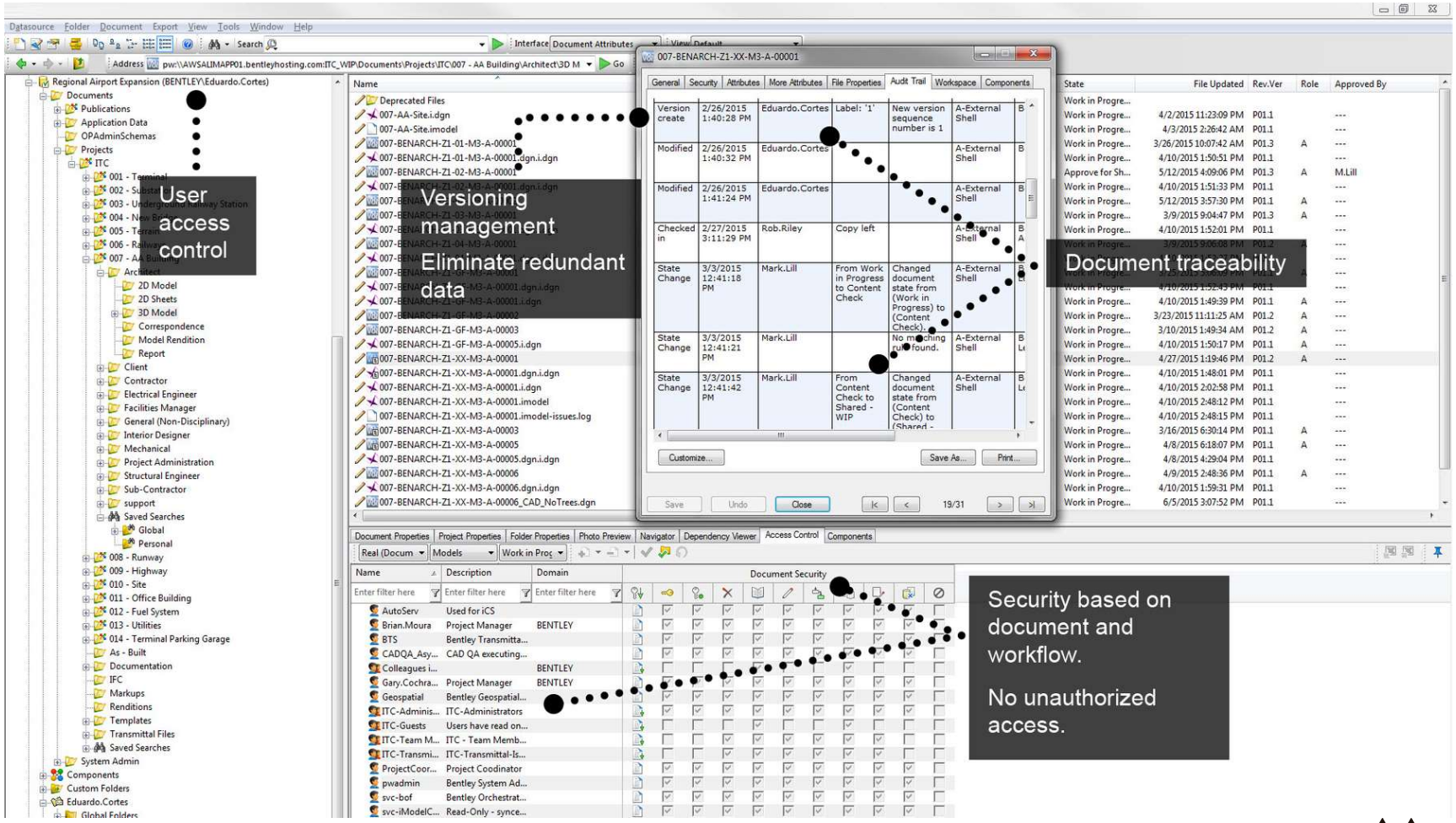
Sistema de gestión documental y de proyectos centralizado



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Algunas estadísticas

- 10% de los usuarios tiene acesso **fácil** a la información.
- 27% del tiempo de trabajo se **pierde** en problemas de informática.
- 70% de la información de una empresa **no** esta en una base de datos.

US National Institute of Standards & Technology
Return on interoperability: the new ROI

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"Se estima que el 40% del tiempo de los proyectos se usa en localizar y validar la información"

US National Institute of Standards & Technology
Return on interoperability: the new ROI

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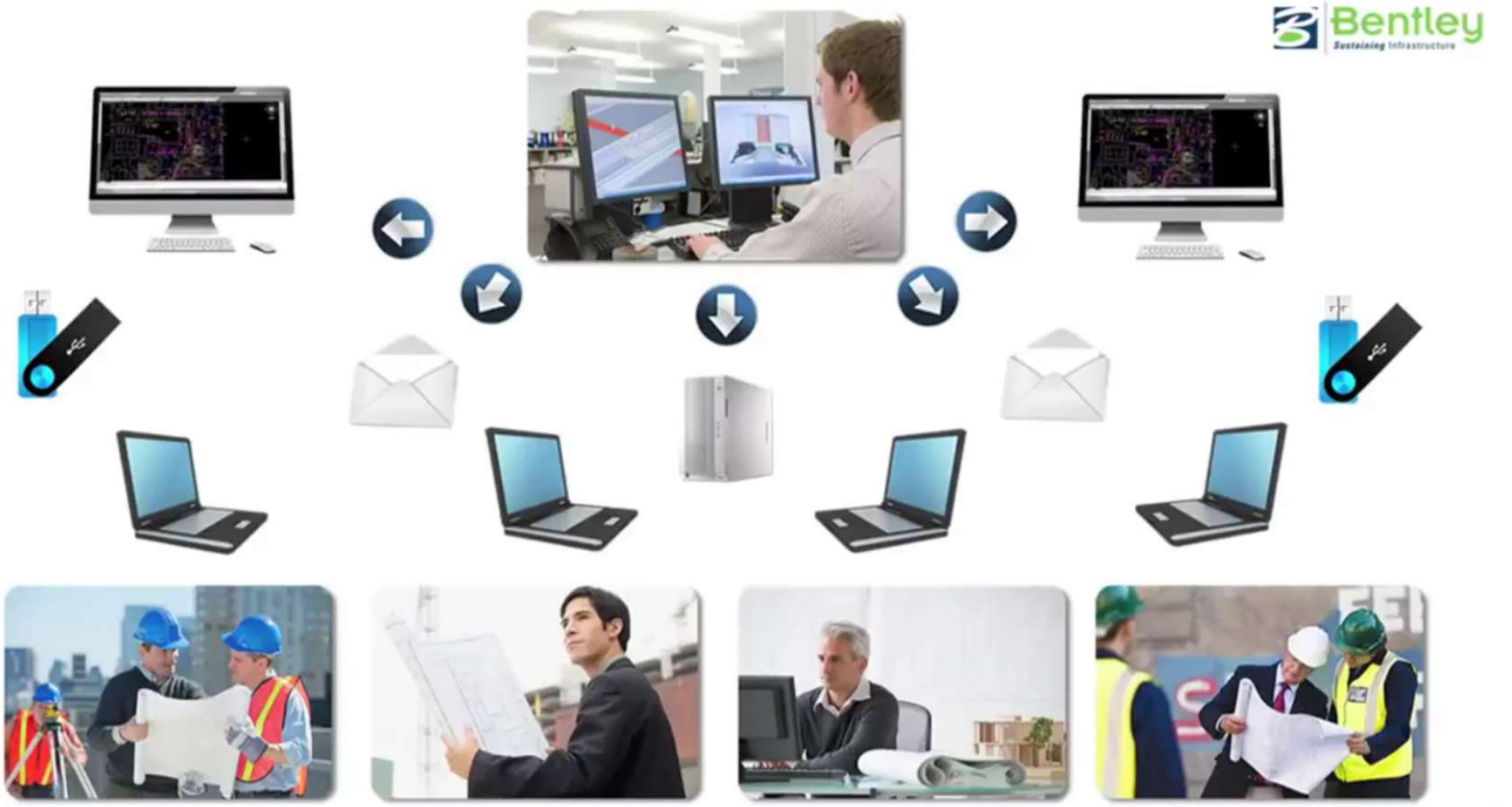
Problemas en la gestión de la información



¿Llevamos realmente un control de la información?

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¿Llevamos realmente un control de la información?

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Administración BIM para Infraestructura Mediante AECOsim Building Designer

- Rafael Bombardiere
- *Arquitecto*
- *Relaciones Académicas y Capacitación*

Rafael.Bombardiere@geocom.cl

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