

An overview of BIM Implementation

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BIM Practices

1. BIM office infrastructure
2. In-house Setup - Local Office > International Office
3. External Collaboration Setup
4. Cloud Base Project Collaboration Setup

B

= Building

建築

I

= Information

資訊

M

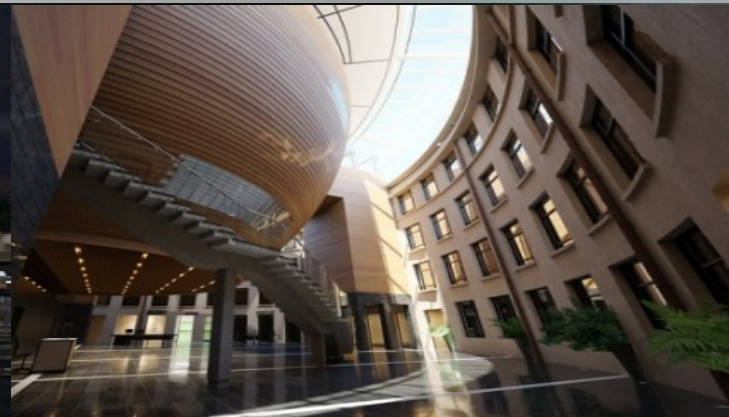
= Modelling

模型/ 模擬

Fake BIM

M + ?

JUST 3D MODEL – NOT BIM

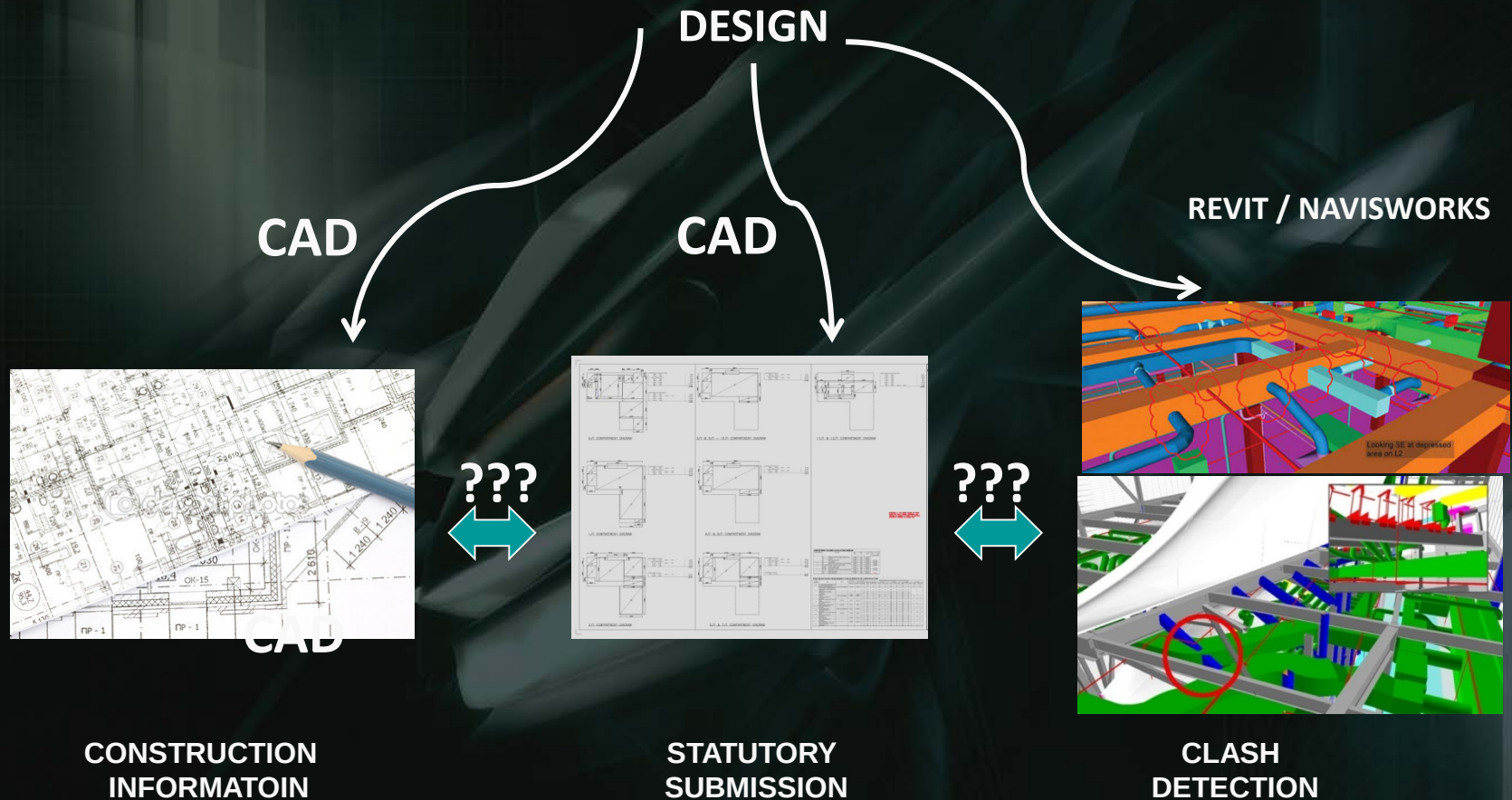


HALF-BIM

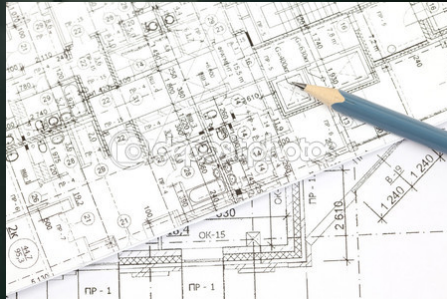
I <> M

3D MODEL >> QTO , CLASH ANALYSIS

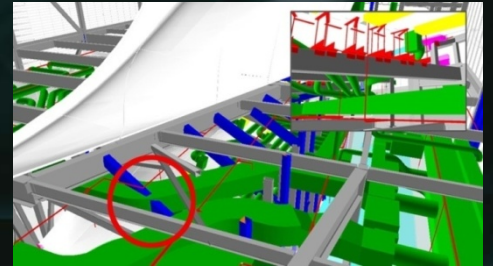
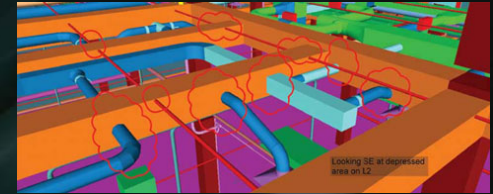
HALF BIM



REAL BIM

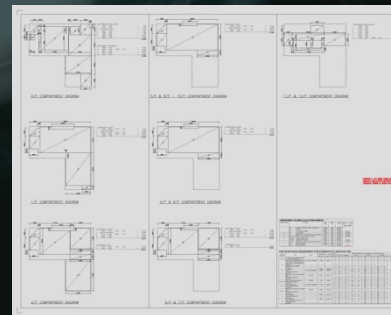


CONSTRUCTION
INFORMATOIN



CLASH
DETECTION

DESIGN
in
BIM



STATUTORY
SUBMISSION

REAL BIM

I = M

I > M

INFORMATION FROM MODEL,
INFORMATION MORE IMPORTANT

B I M



Modelling

Information

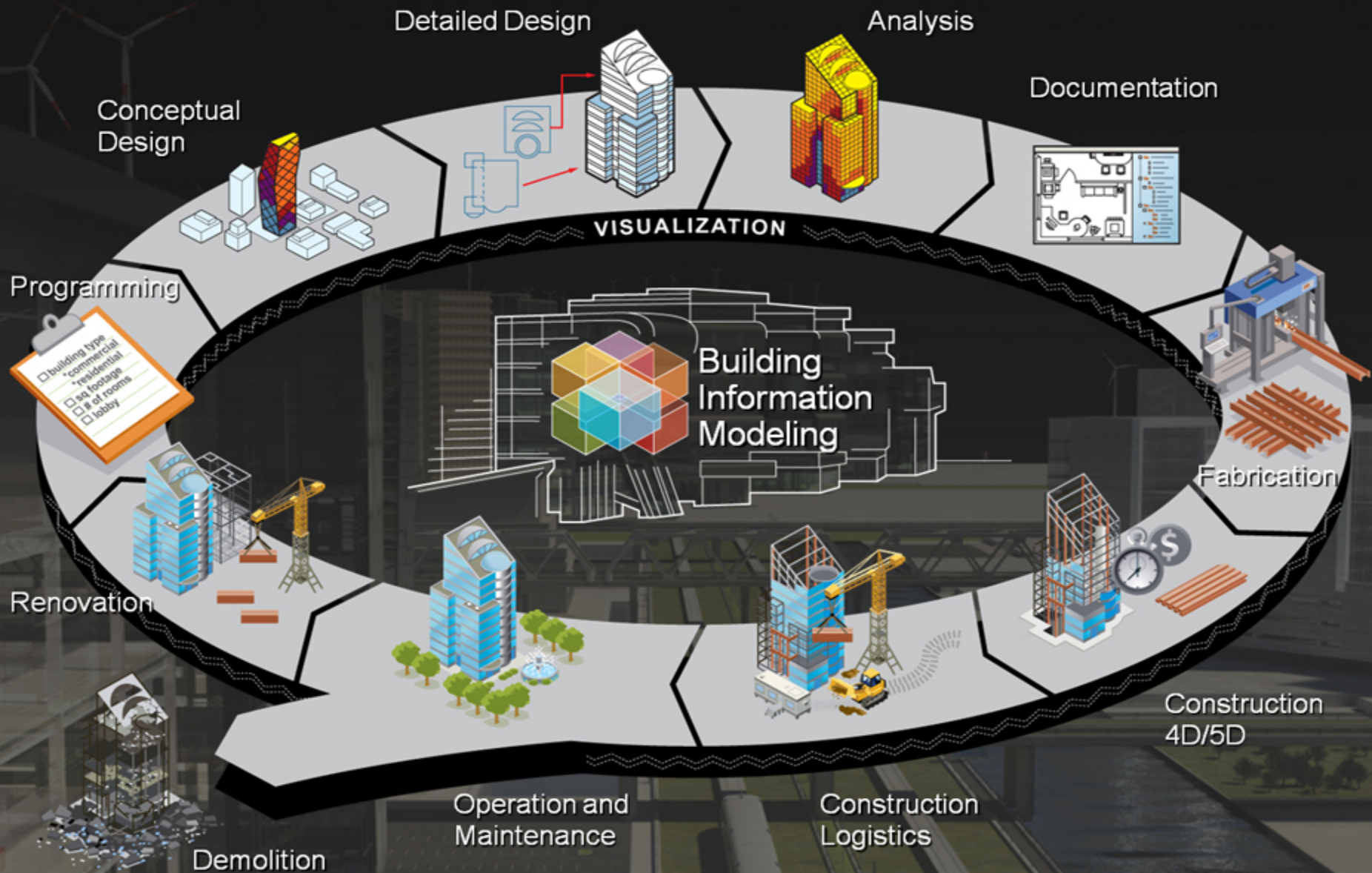
Business

REAL BIM

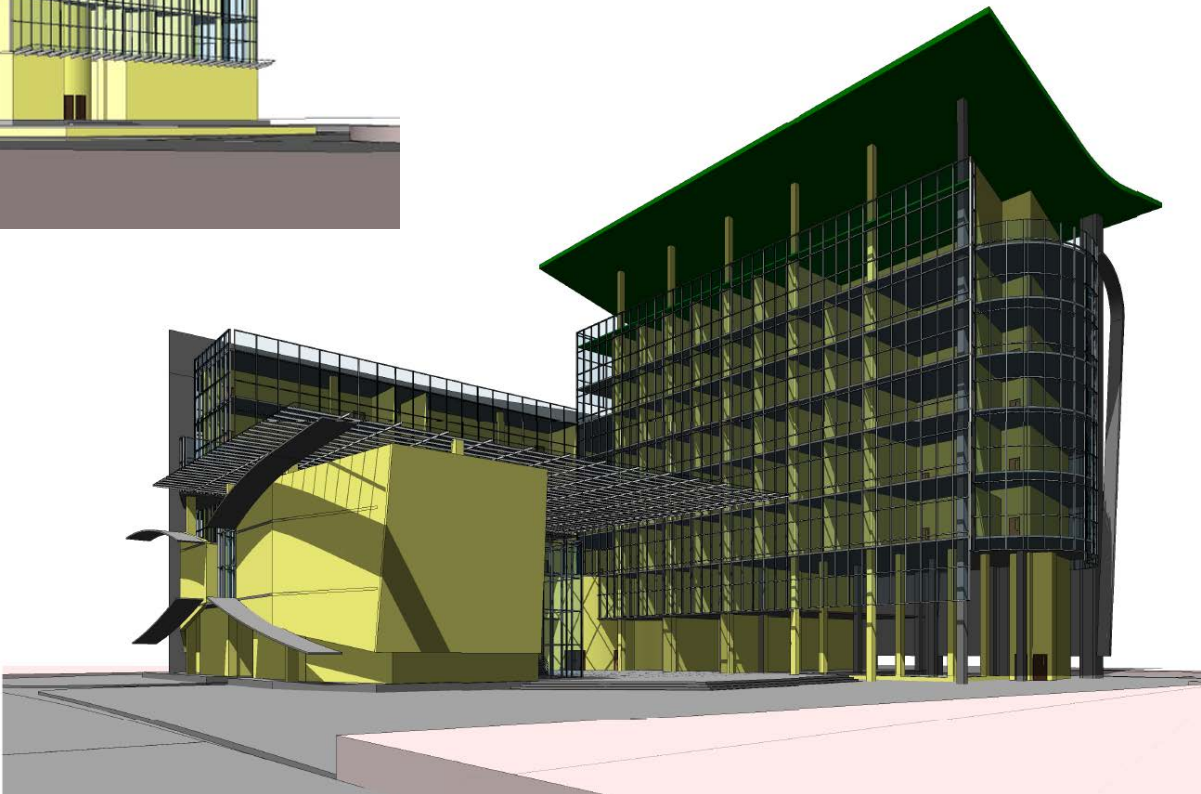
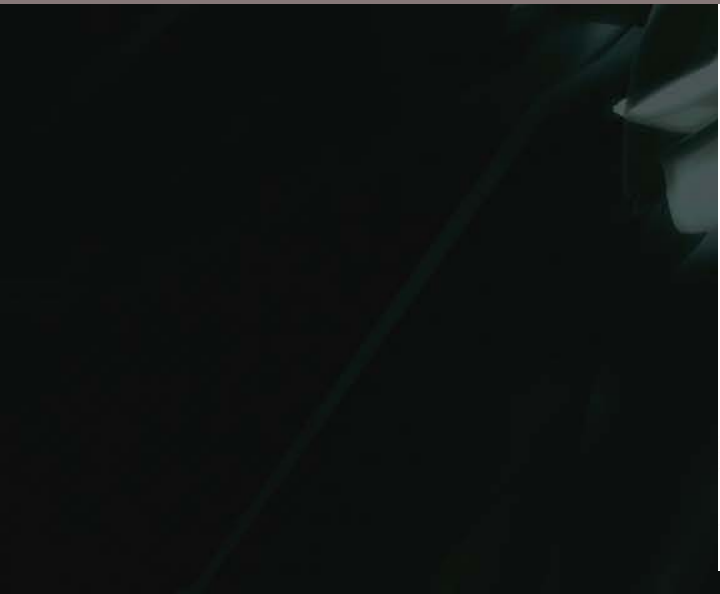
$$M + I = B$$

BIM is a process, Business is the objective

Use of Building Information Modeling (BIM)



EARLY DESIGN IDEAS



DEVELOPING DESIGN IDEAS



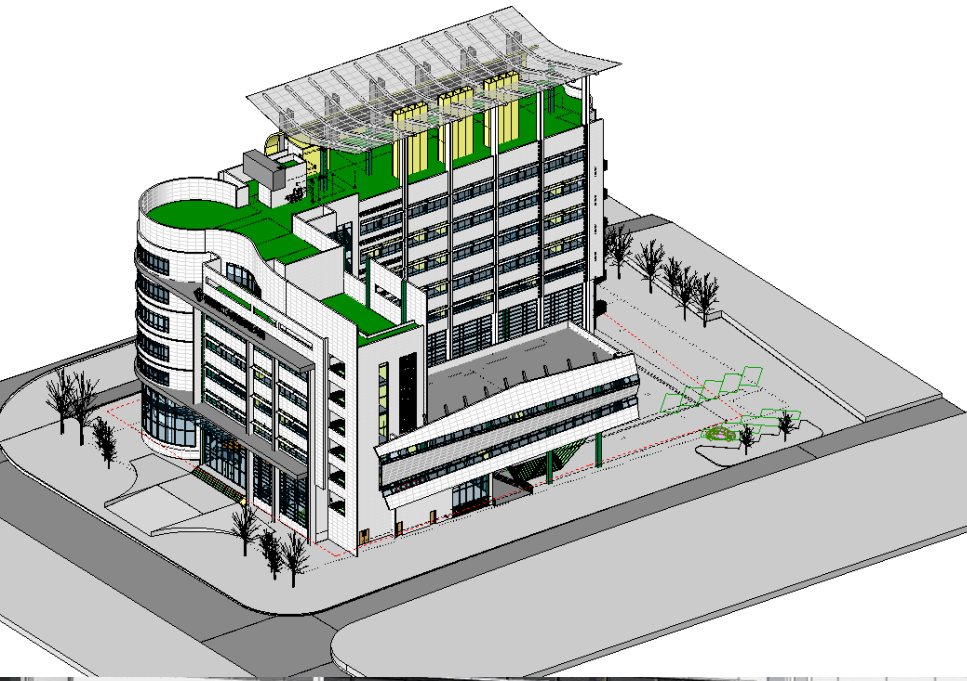
DEVELOPED DESIGN IDEAS



TESTING MASSING IN GOOGLE EARTH



PRESENTING DESIGN IDEAS

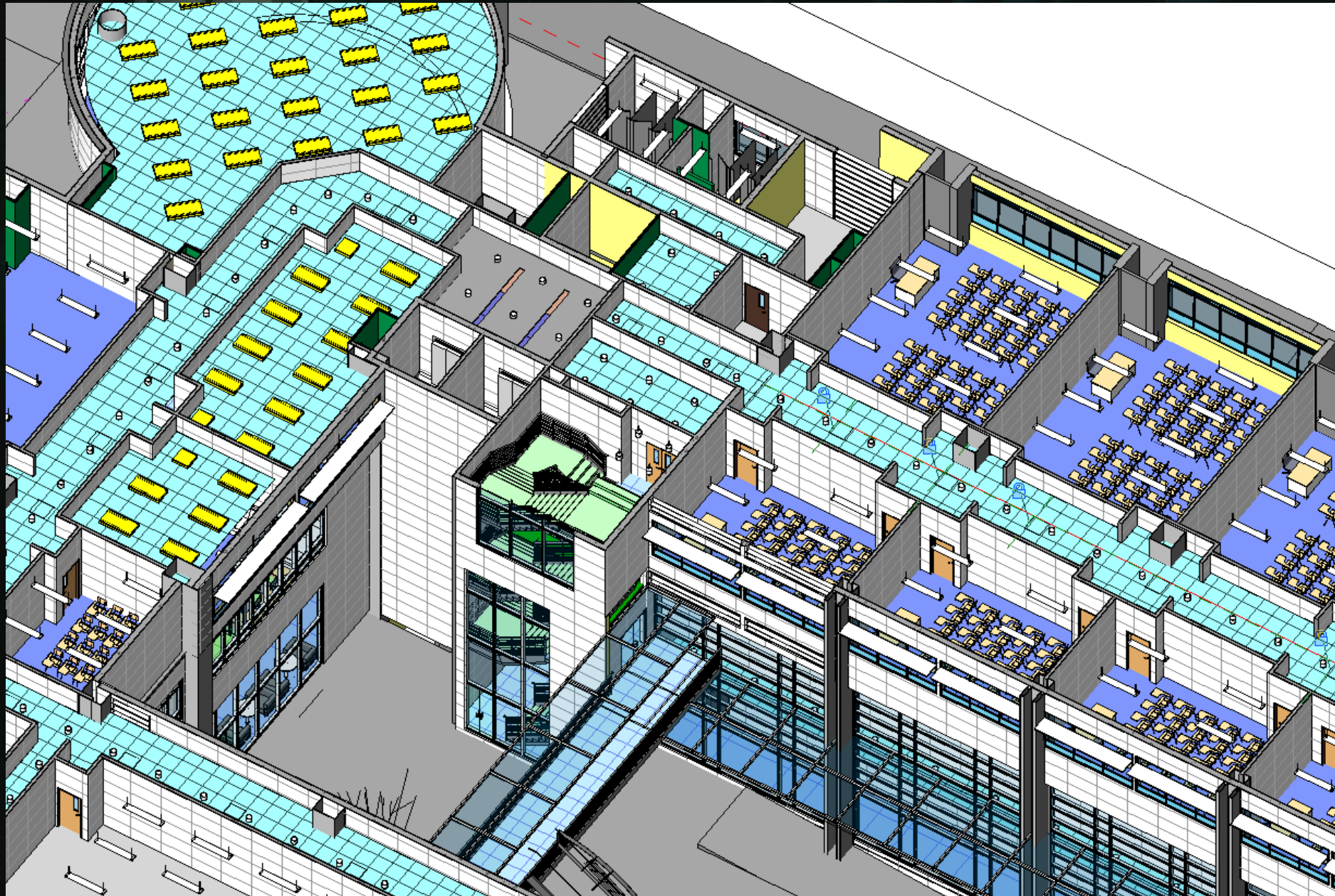


LIFT LOBBY
DESIGN CONCEPT

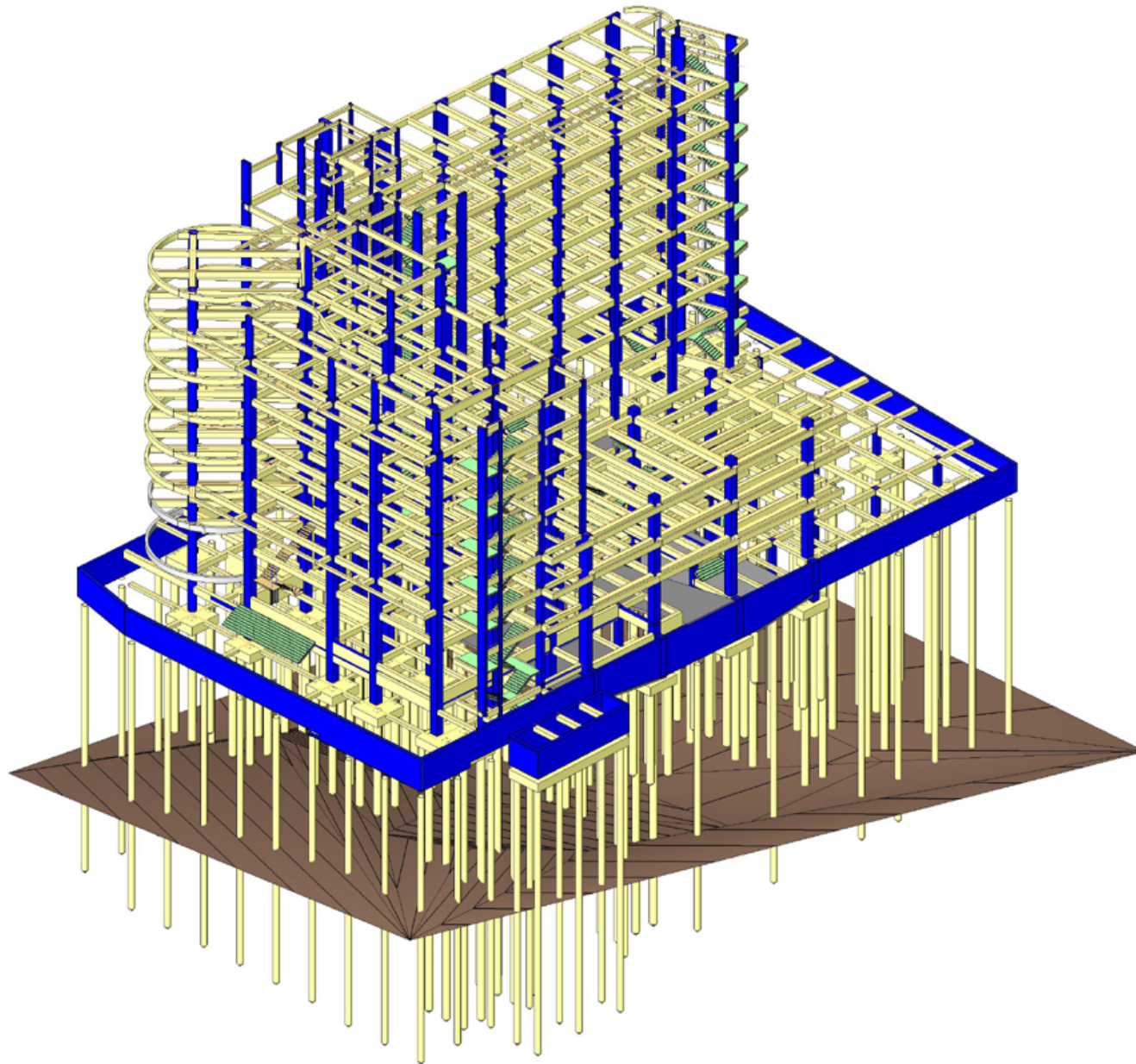
DETAILED DESIGN



ARCHITECTURAL CO-ORDINATION

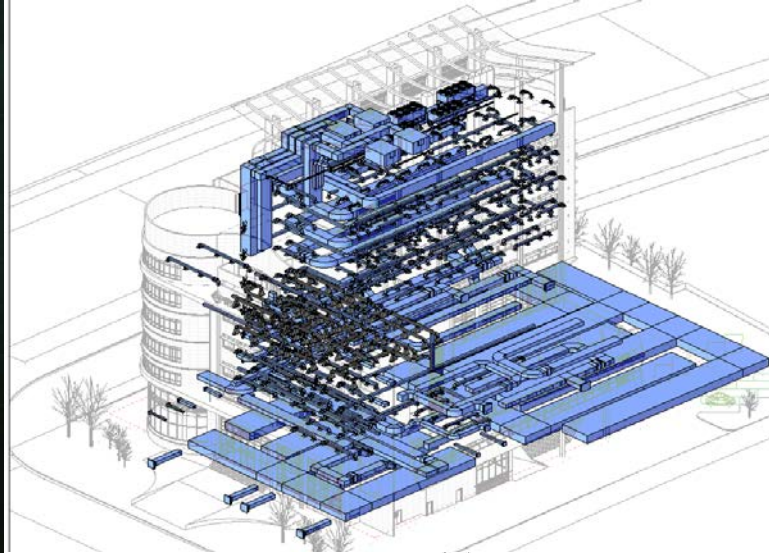


STRUCTURAL DESIGN MODEL

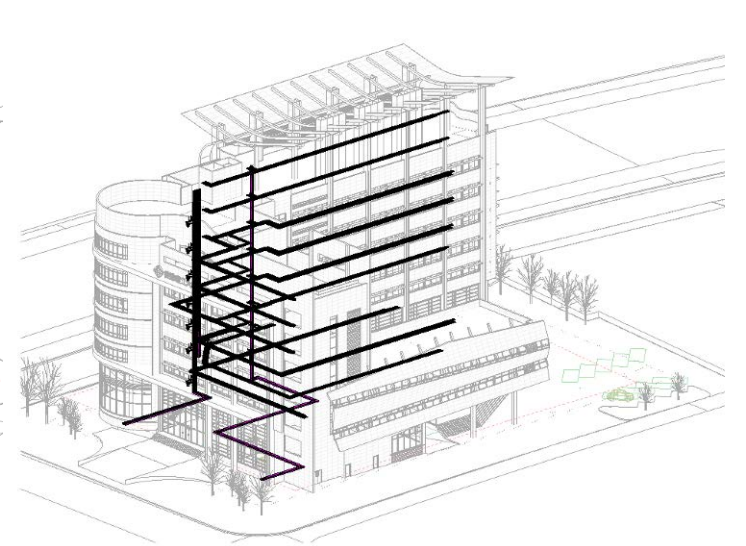
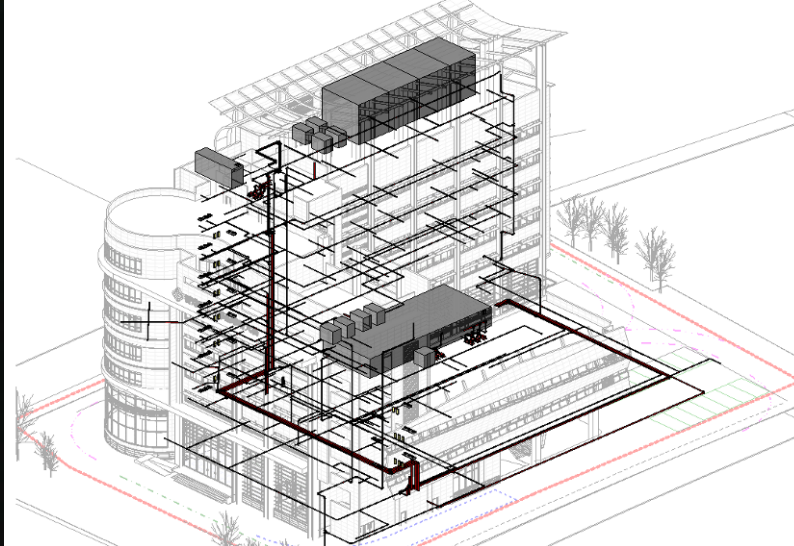
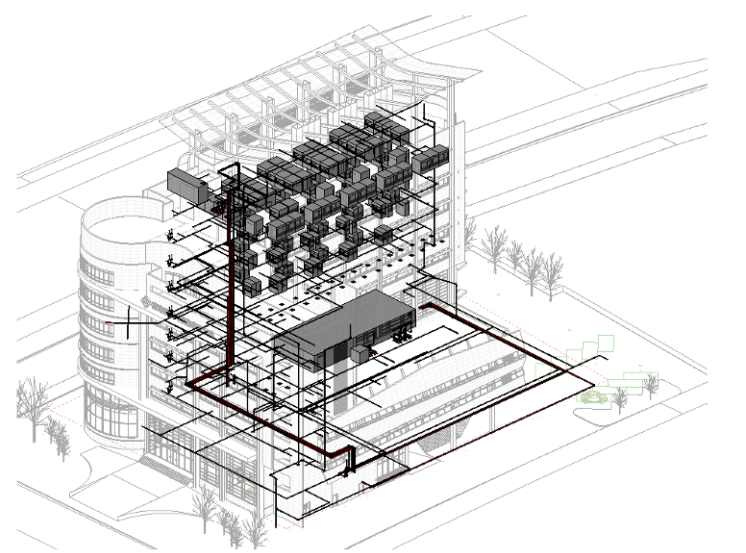


BUILDING SERVICES CO-ORDINATION

HVAC Installation



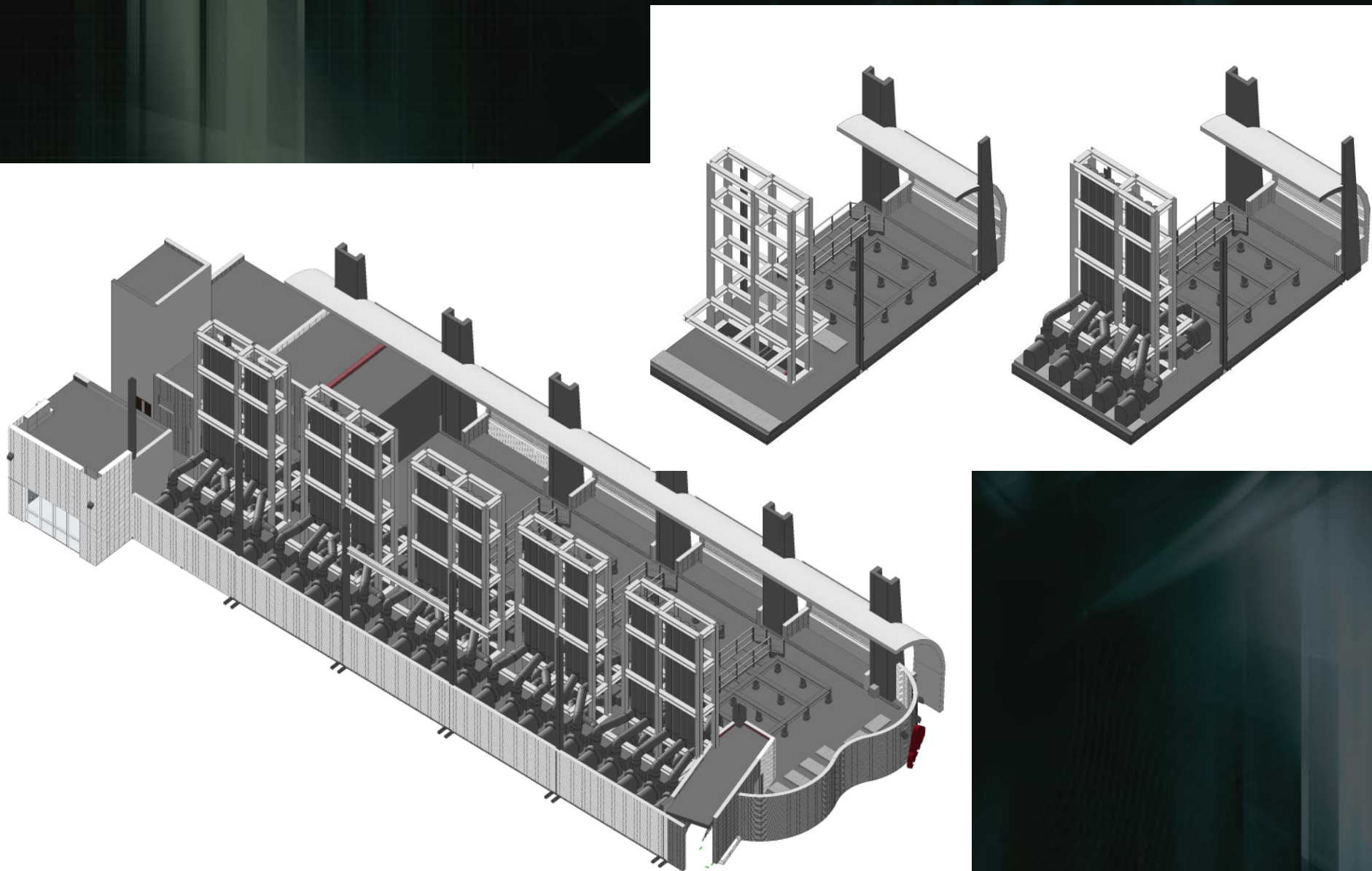
Fire Services Installation



P/D Installation

Electricity Installation

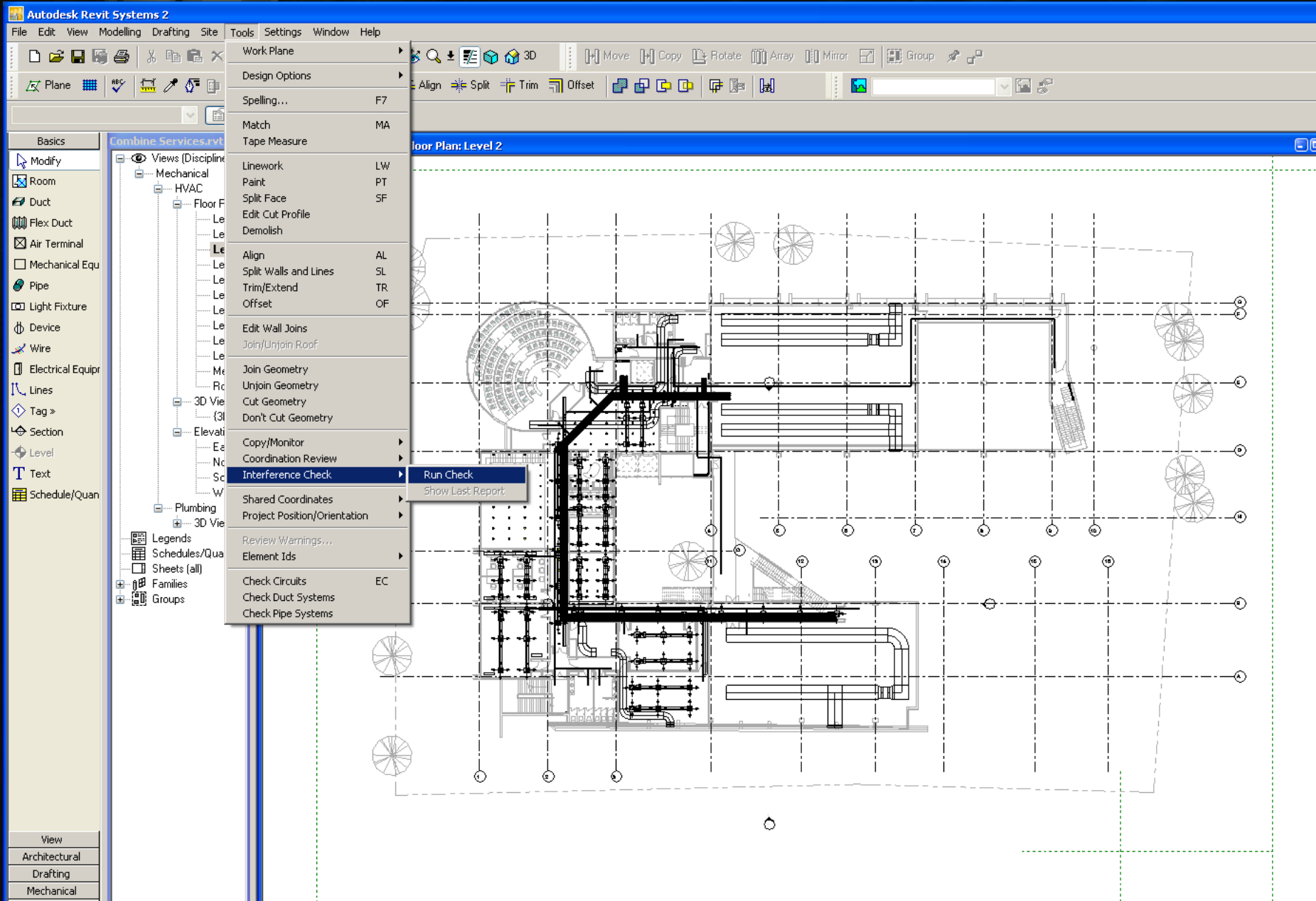
SPECIAL CO-ORDINATION - LABORATORIES



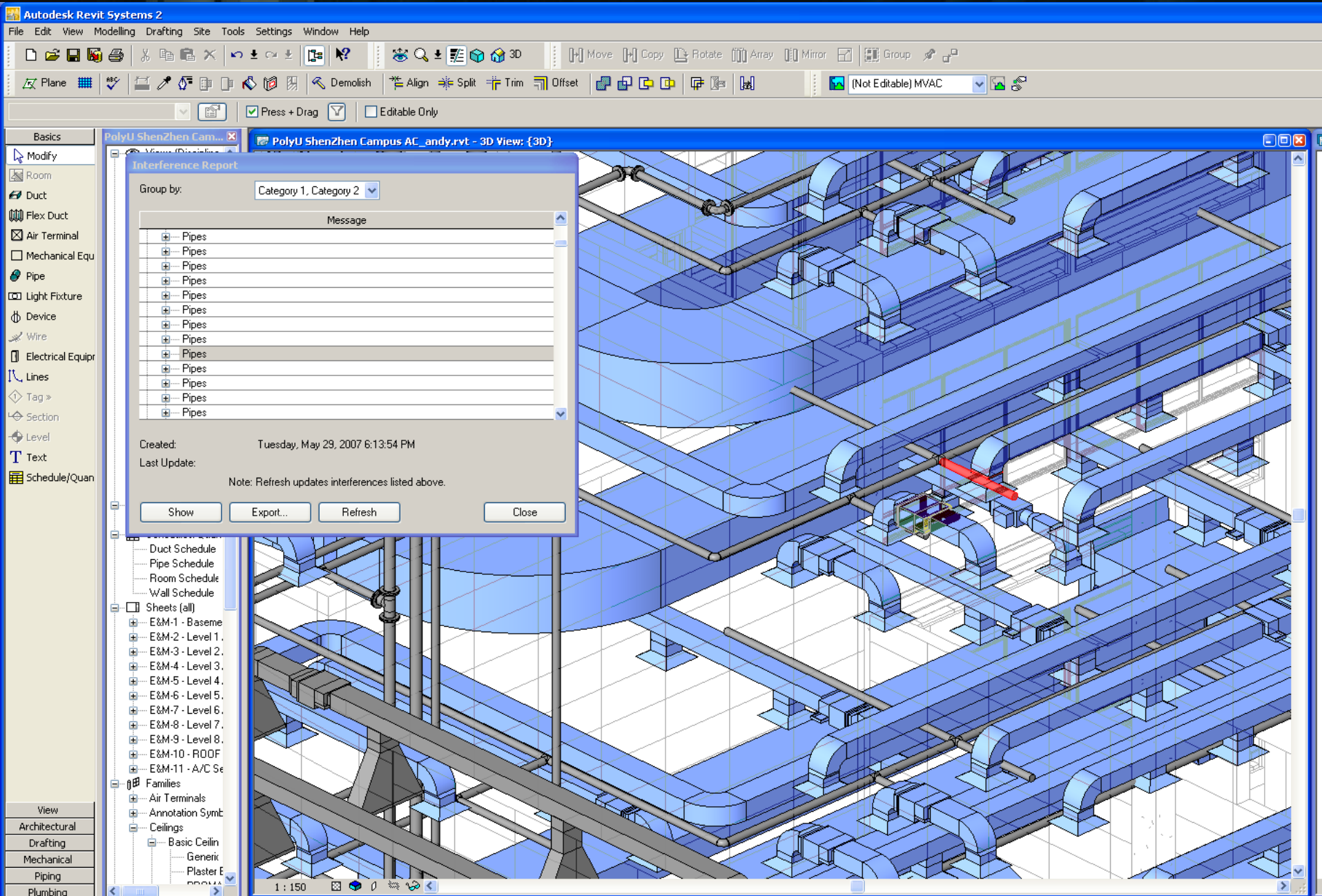
CO-ORDINATED DETAILED DESIGN



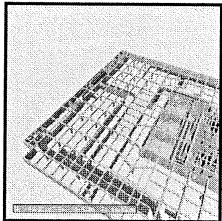
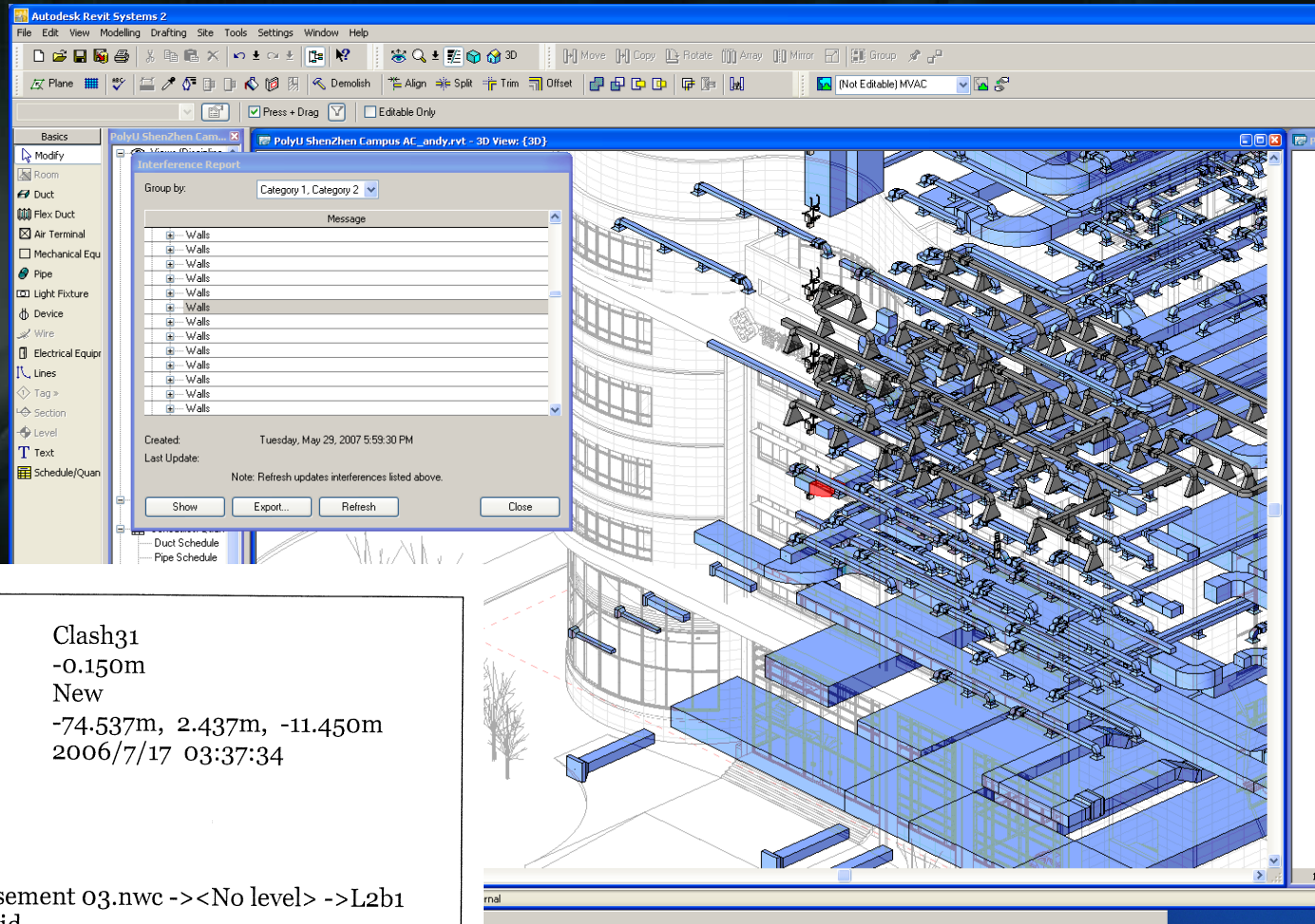
CLASH ANALYSIS



CLASH ANALYSIS



CLASH ANALYSIS REPORT



Name Clash31
 Distance -0.150m
 Status New
 Clash Point -74.537m, 2.437m, -11.450m
 Date Created 2006/7/17 03:37:34
 Approved By

Item 1

Path File ->File ->Basement 03.nwc -><No level> ->L2b1
 500 x 700 ->L2b1 500 x 700 ->Solid

Item 2

Entity Handle 2AD6
 Path File ->File ->B3HVAC_Duct.nwd ->H-Ductwork-G -
 >Duct

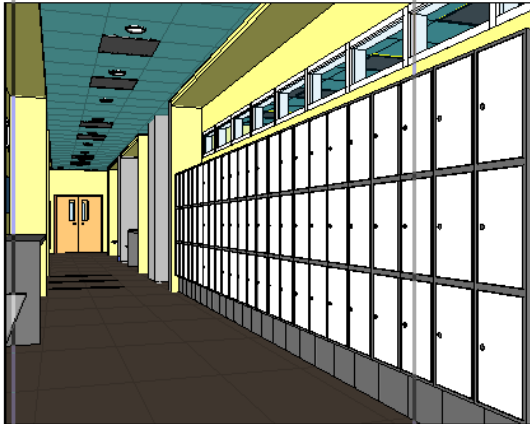
A 3D perspective view of a lecture hall. The room features rows of grey desks and blue chairs. The ceiling is blue with square acoustic tiles. The walls are yellow. A doorway is visible in the background. The floor is light grey.

A 3D perspective view of a classroom layout. The room features a blue floor, yellow walls, and a brown ceiling. A large whiteboard is mounted on the back wall. A teacher's desk with a computer monitor is positioned in front of the whiteboard. Rows of blue desks and black chairs are arranged in the center of the room. A wooden bench is located along the right wall. A doorway is visible on the right side of the room.

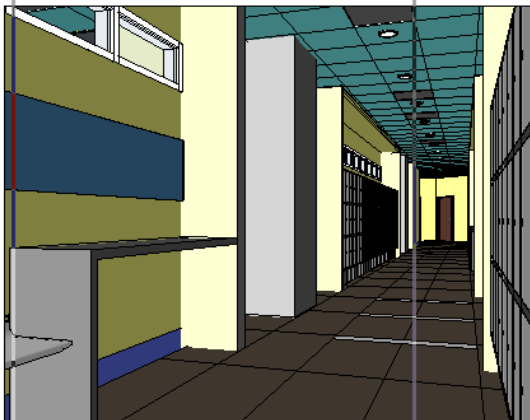
A 3D perspective view of a lecture hall. The stage area at the front features a yellow wall and a wooden desk with a chair. The seating area is filled with rows of light blue chairs facing the stage. The floor is blue, and the walls are yellow and white.

[illegible][illegible]

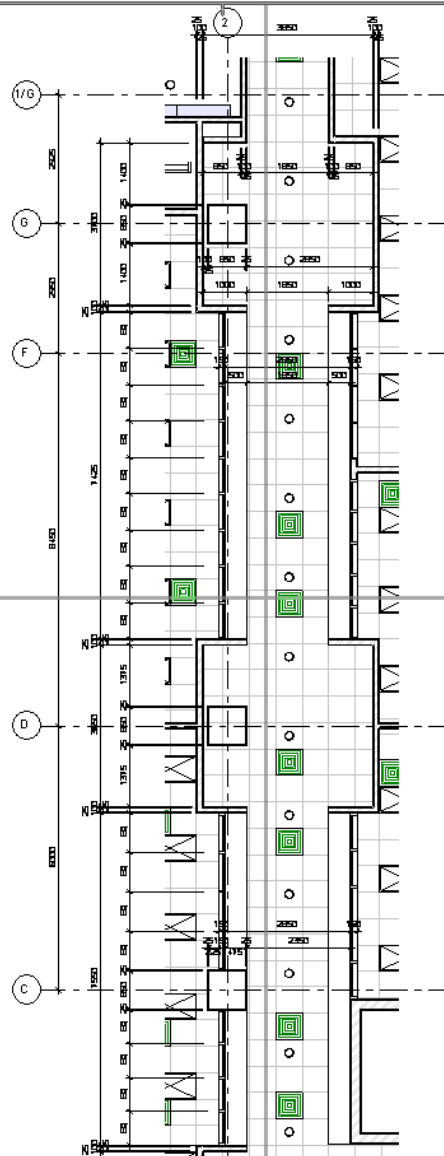
PRODUCTION OF CONSTRUCTION DRAWINGS



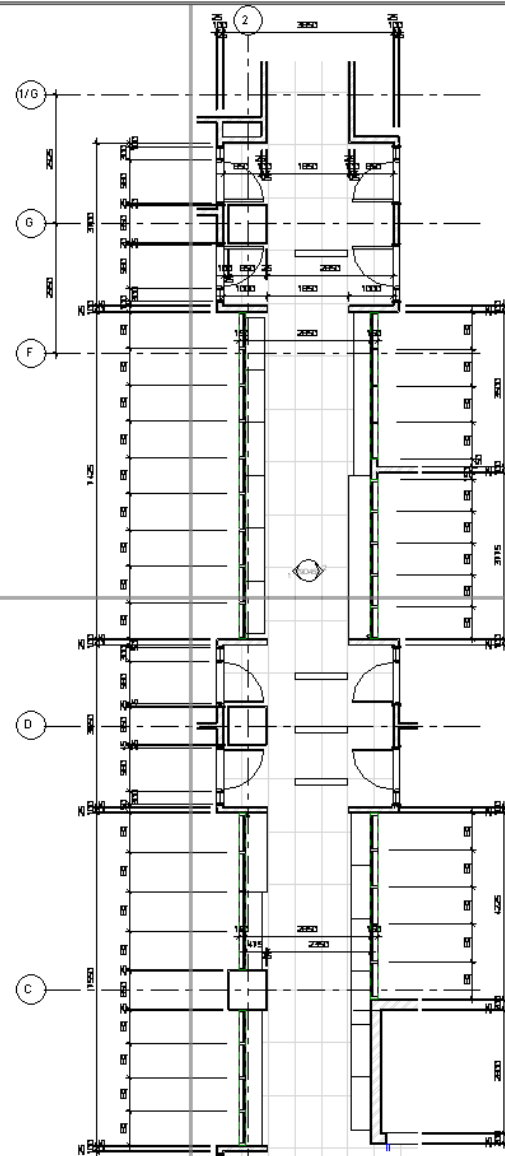
4 走廊立体示意图(低楼三至四层)2



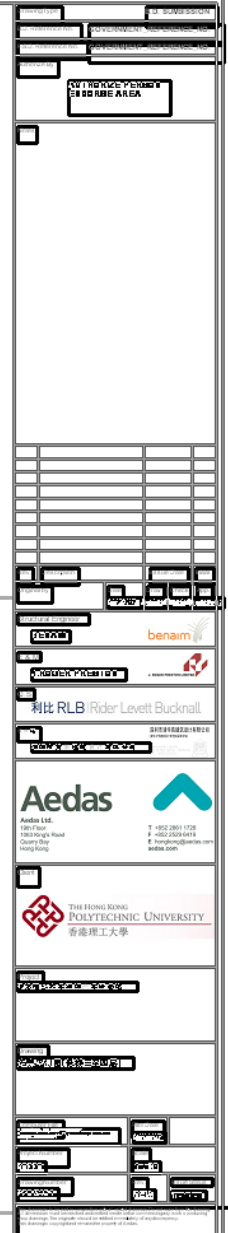
3 走廊立体示意图(低楼三至四层)1



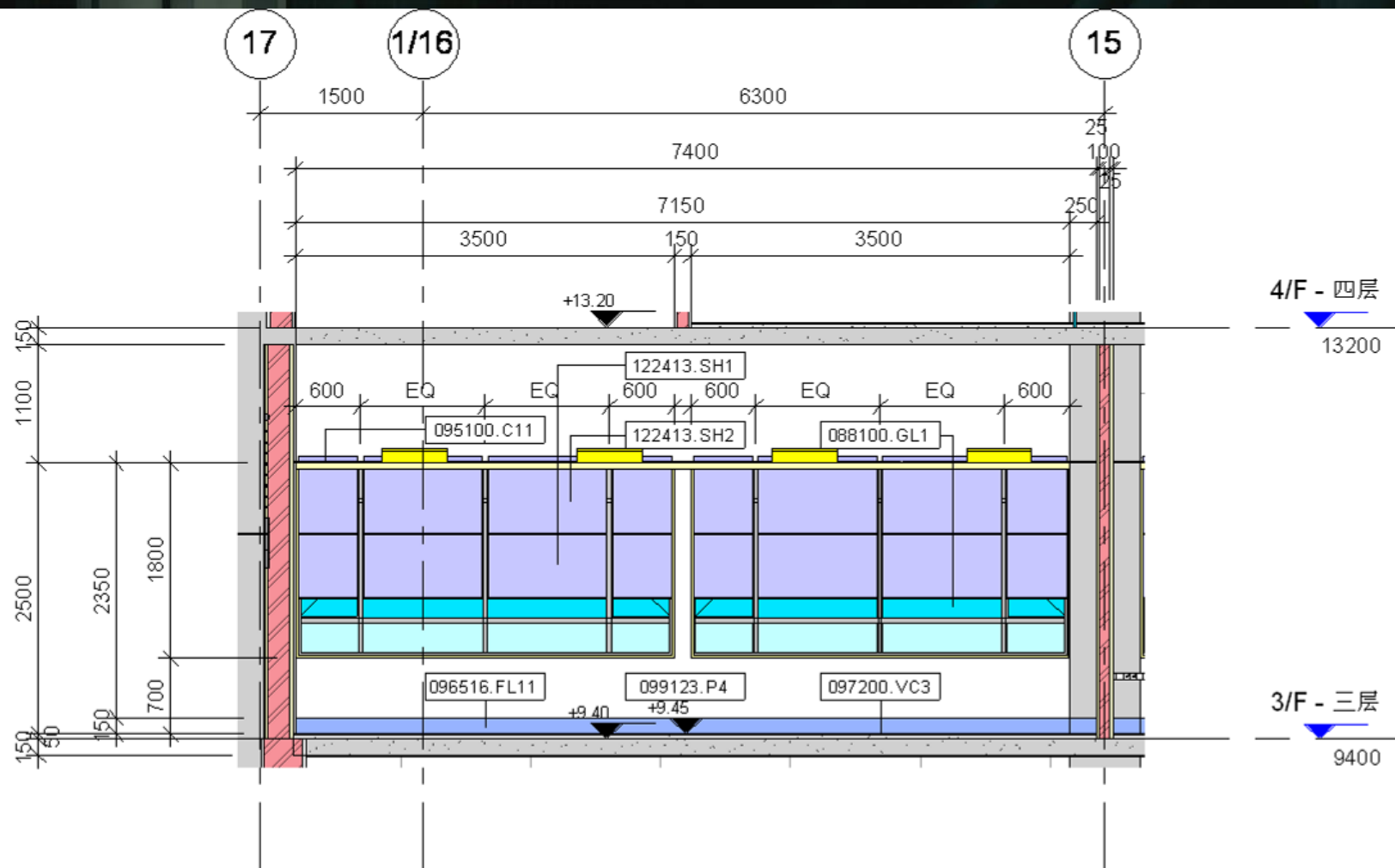
2 走廊天花平面图(低楼三至四层)
1:50



① 走廊平面图(低楼三至四层)



PRODUCTION OF DRAWINGS



2

行政人员培训室立面图(高楼三层)6

1:50

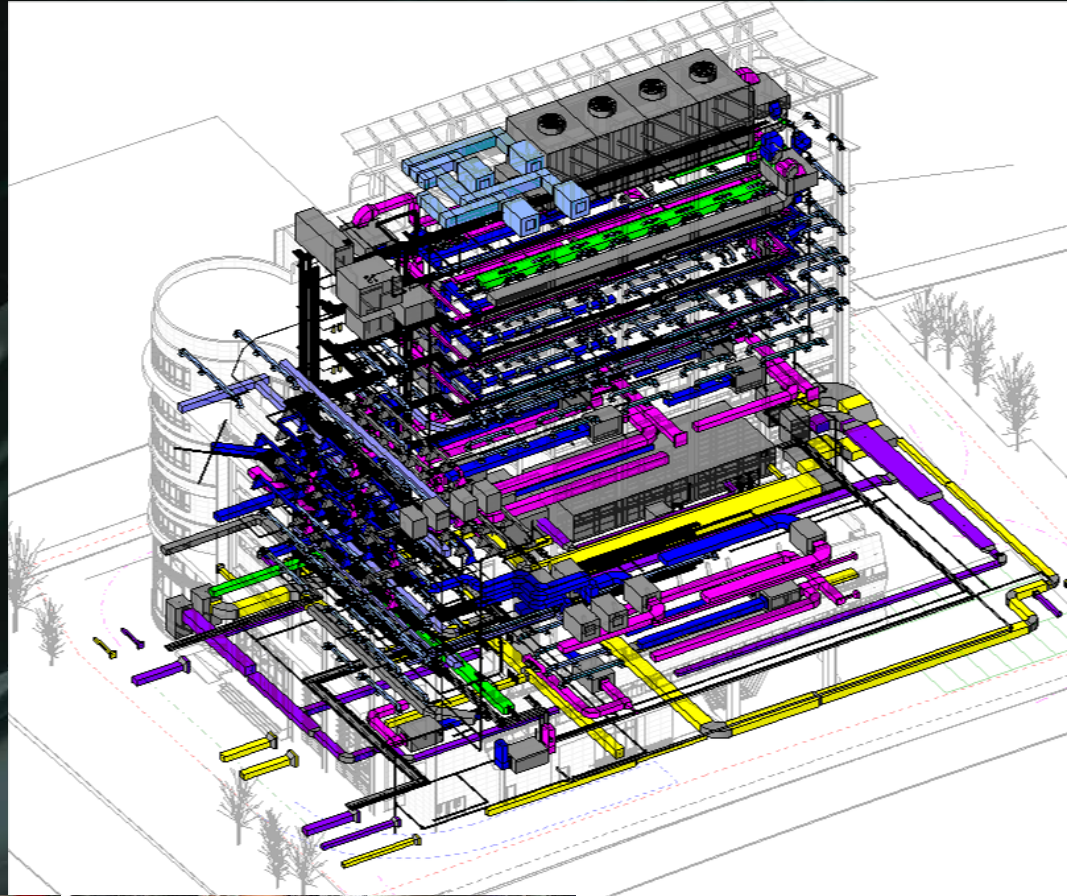
CONSTRUCTION



CONSTRUCTION



BUILDING SERVICES CONSTRUCTION



CONSTRUCTION







DEVELOPMENT



BIM Practices

1. **BIM office infrastructure**
2. In-house Setup - Local Office > International offices
3. External Collaboration Setup
4. Cloud Base Project Collaboration Setup

BIM Office Infrastructure

- Yearly Upgrade
- **NOT backward compatible!!**
- Interoperability among different platforms
- External Plug-ins
- APIs

HARDWARE

- RAM = 20 x file size
- **RAM = Bottle neck, at least 8Gb, Preferably 24+ Gb**
- **OS = 64 bit, Win 7 64 Bit**
- CPU = High performance
- Video Card = High performance

SOFTWARE

- **High Speed network, Gbit**
- Separate LAN network
- Different filing strategy
- Different Drawing Management System
- Different Archive/ Backup strategy

NETWORK

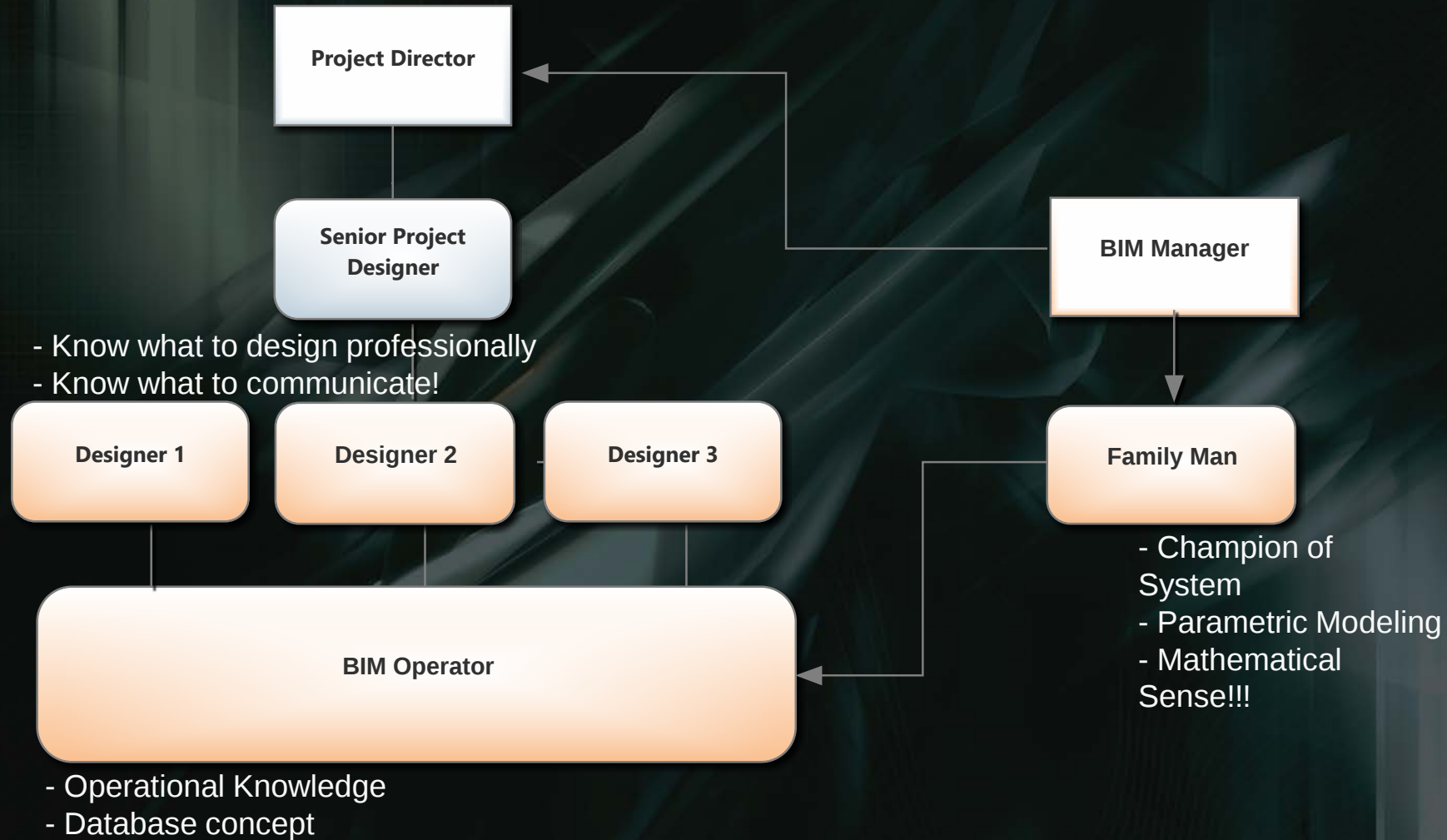
INTERNET

-
- High connectivity,
 - **Gbit network**, Optical fibre network
 - Constant Accessibility
 - Cloud Technology

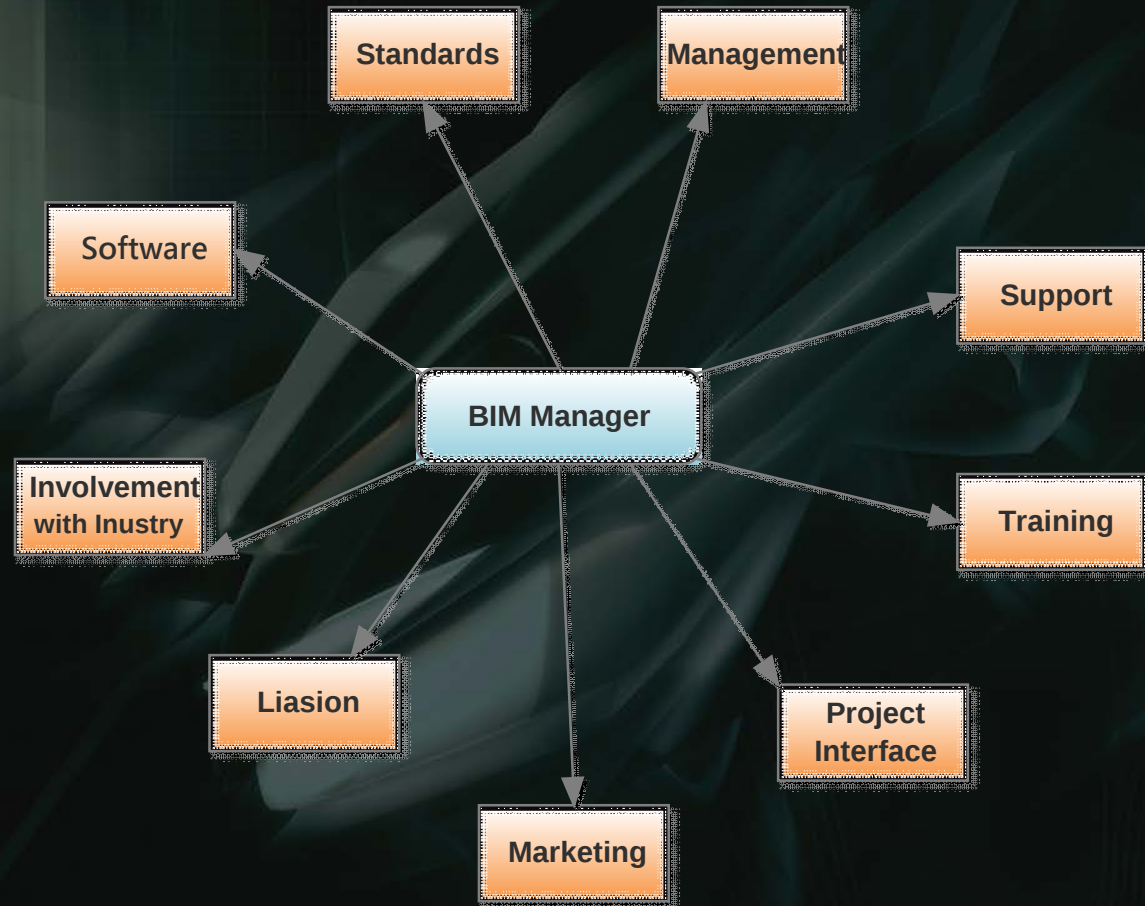
BIM Practices

1. BIM office infrastructure
2. In-house Setup - Local Office > International offices
3. External Collaboration Setup
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In House Local Office Organization chart



Organization chart – BIM Manager

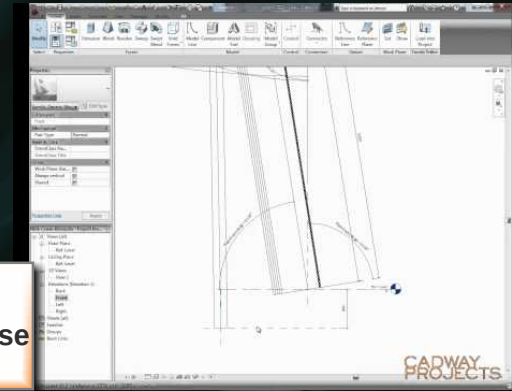


BIM Family Creations – Family Man



Strict control to Standards

Parametric, Mathematic sense

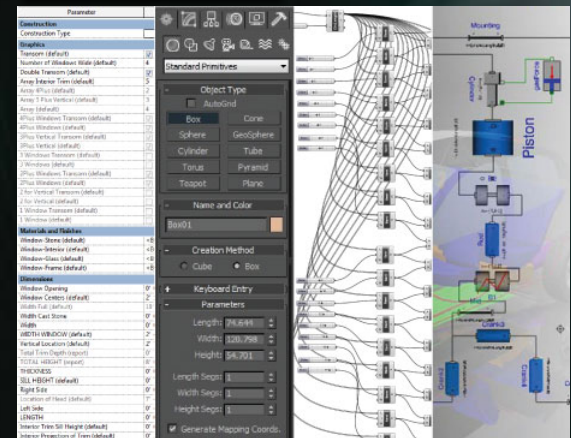
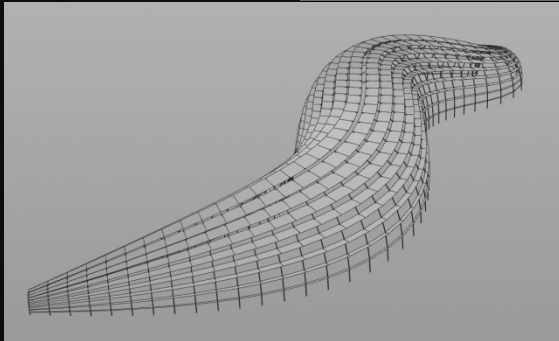


Family Man

Research Based

Organizational Skill / Librarian

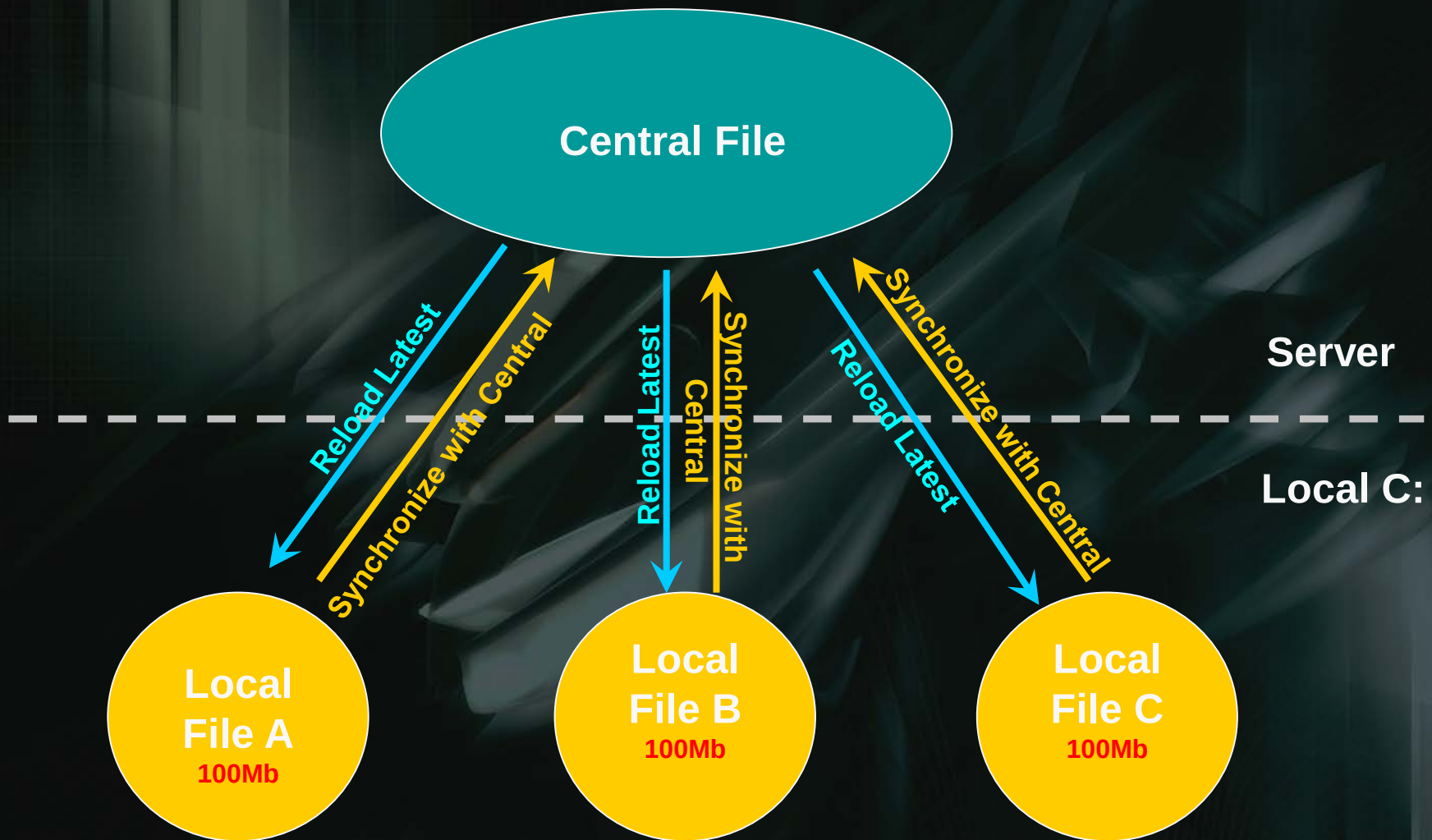
Industry Knowledge



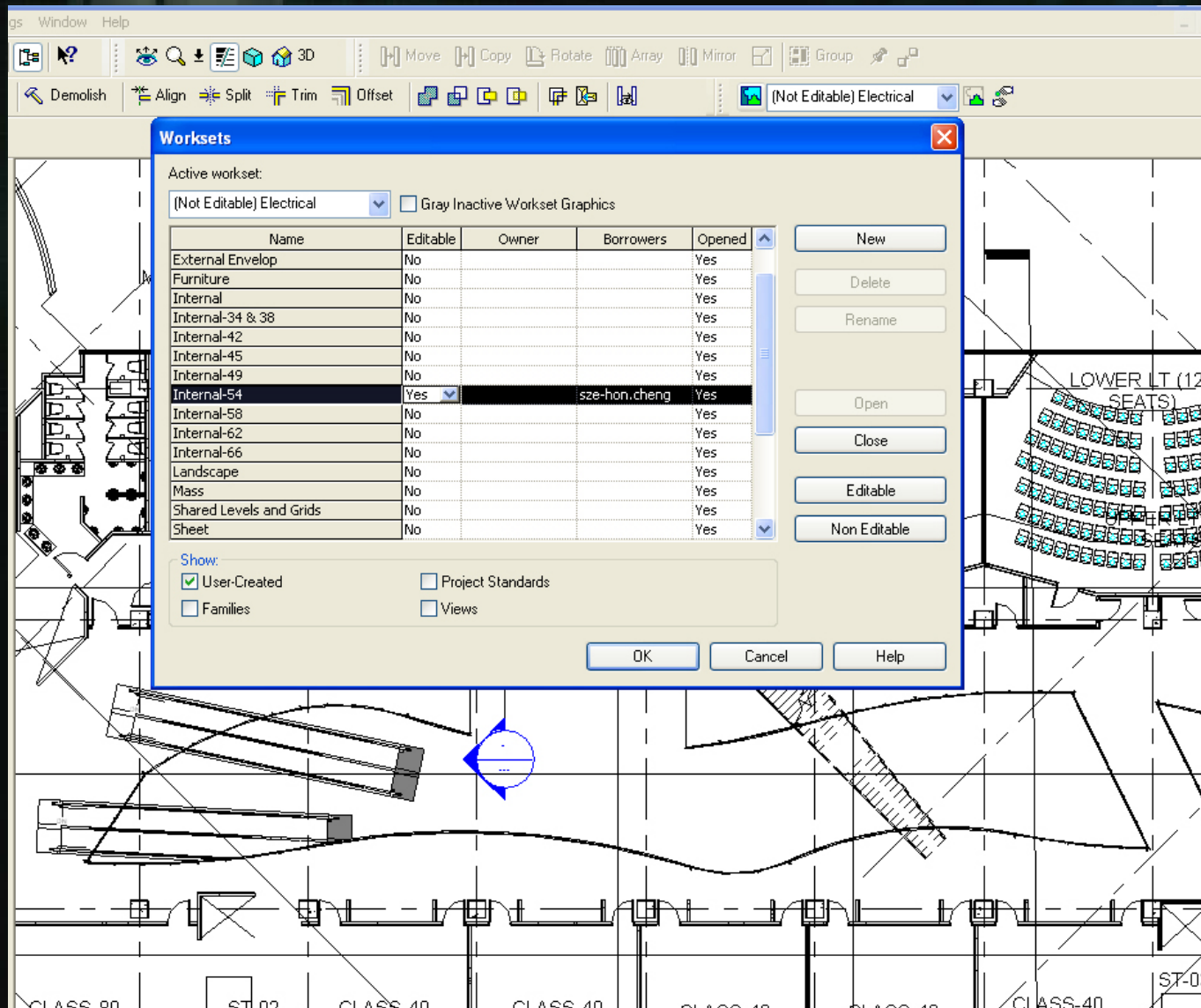
In-House Design – Local Office

- Same Reference System
- Same Co-ordinates, same Height
- Complex model broken into pieces
- Physical Communication
- Same BIM Project Standard – naming etc

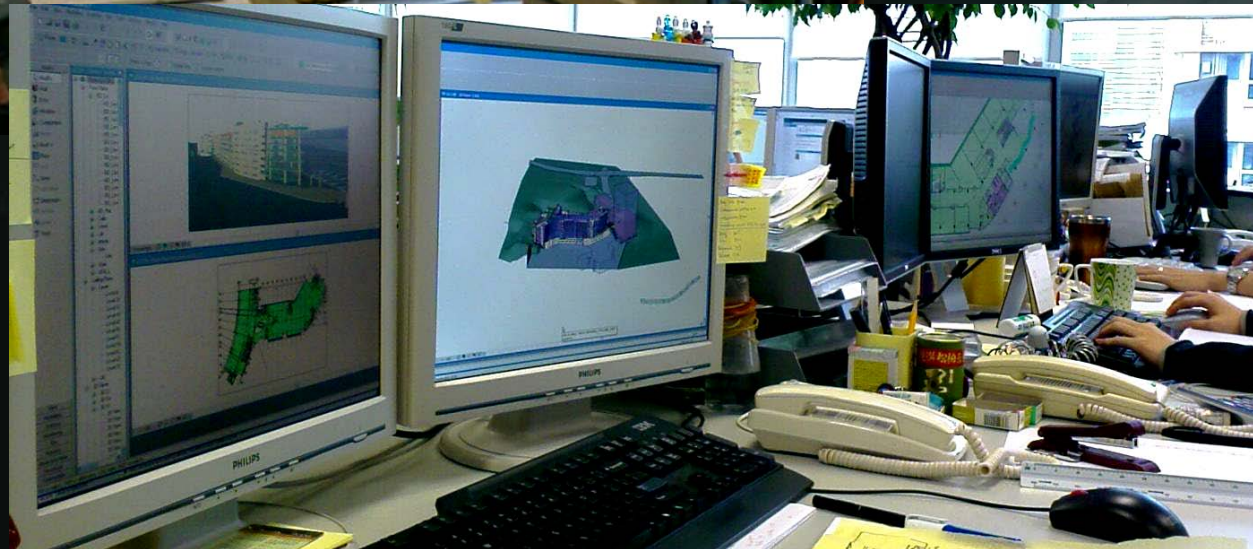
In House Local Office - Data Synchronization



In-house – Workset defines Responsibilities and Organizing of data for design/ production

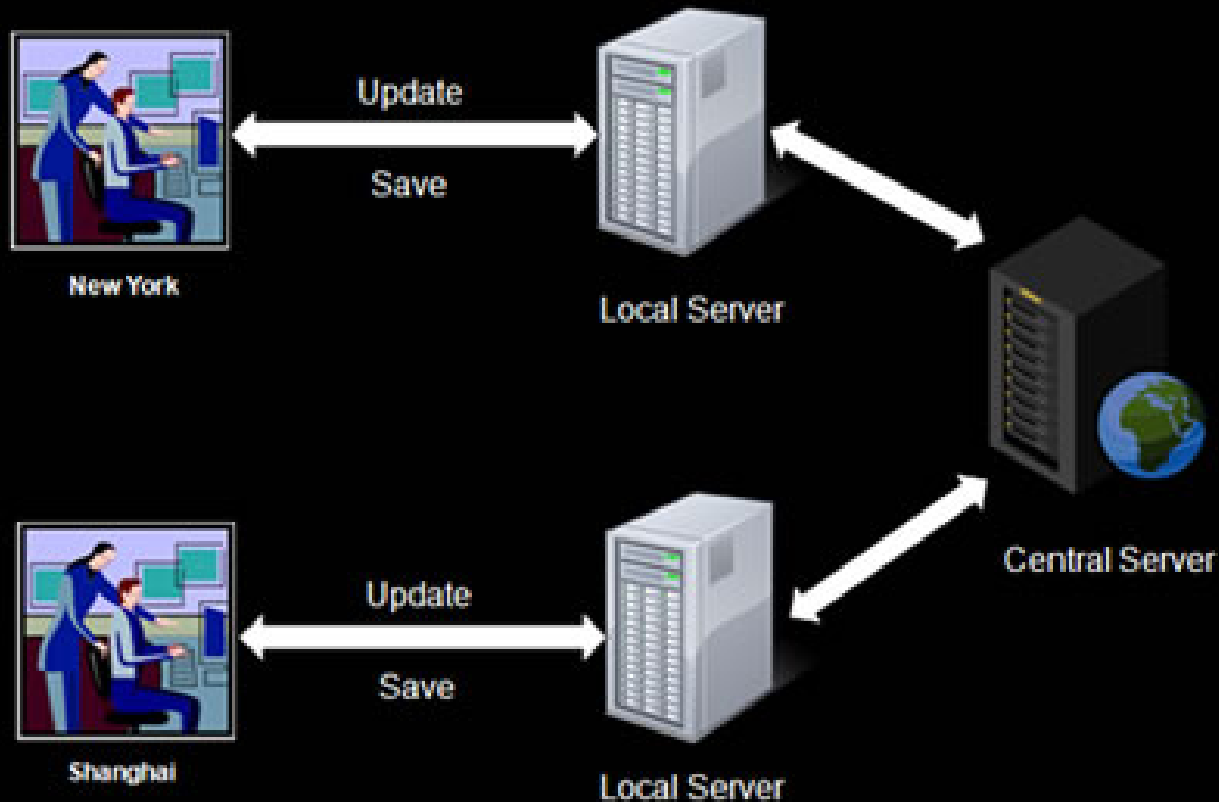


In-House Design & Production Team Structure



In-house Setup - International offices

Revit Server



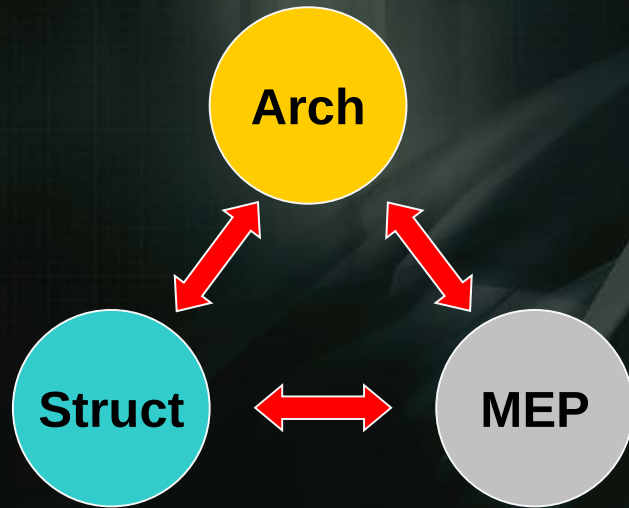
- Maximize resources
- Round the clock operation

BIM Practices

1. BIM office infrastructure
2. In-house Setup - Local Office > International offices
- 3. External Collaboration Setup**
4. Cloud Base Project Collaboration Setup

External Collaboration Setup

Full BIM Project Team Structure



Best Practice: Office with All Disciplines

Second Best: Efficient Communication

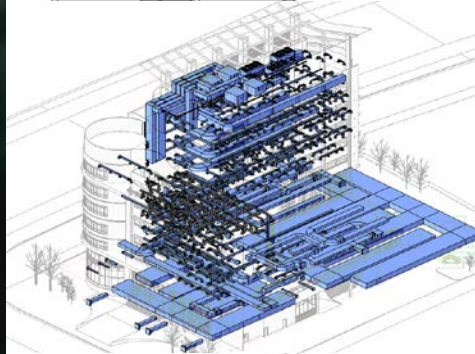
External Collaboration Setup

Full BIM Project Team Structure

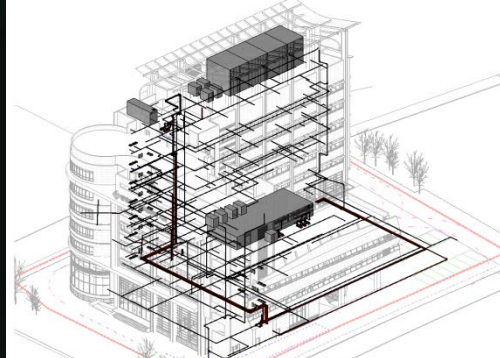
Architecture
+ Structure



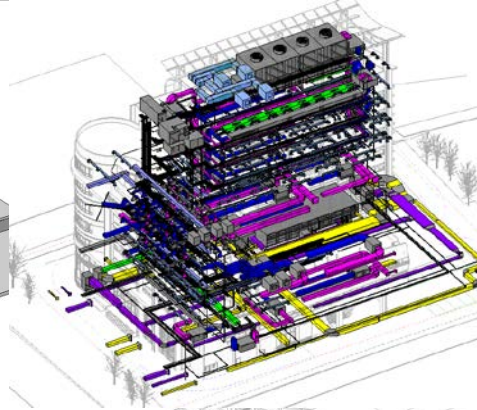
HVAC Installation



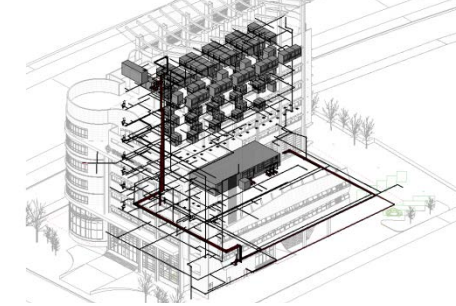
P/D Installation



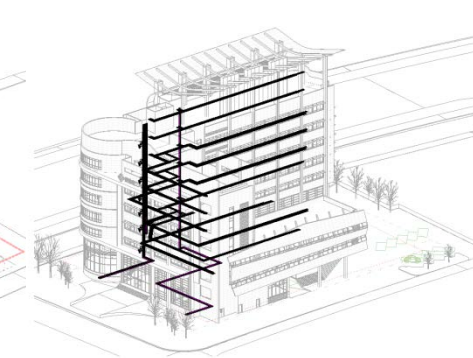
MEP



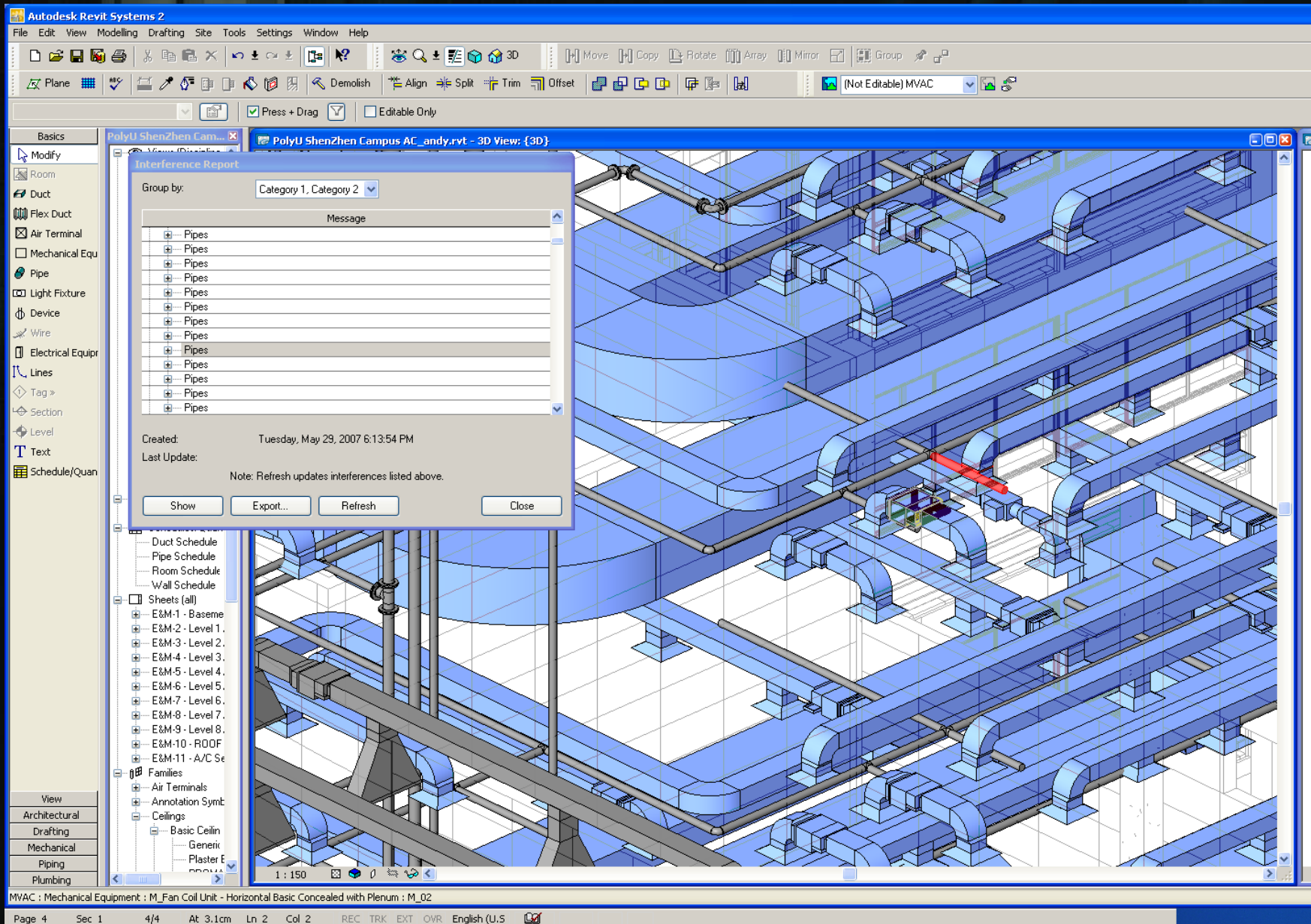
Fire Services Installation



Electricity Installation



Clash Analysis

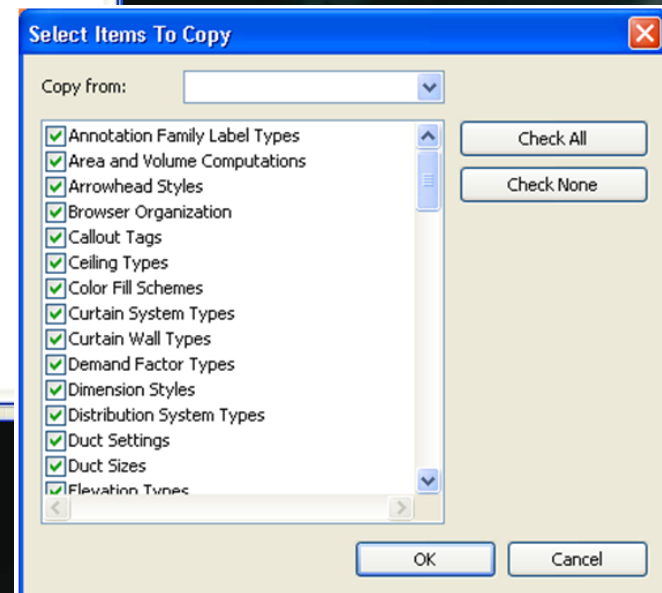
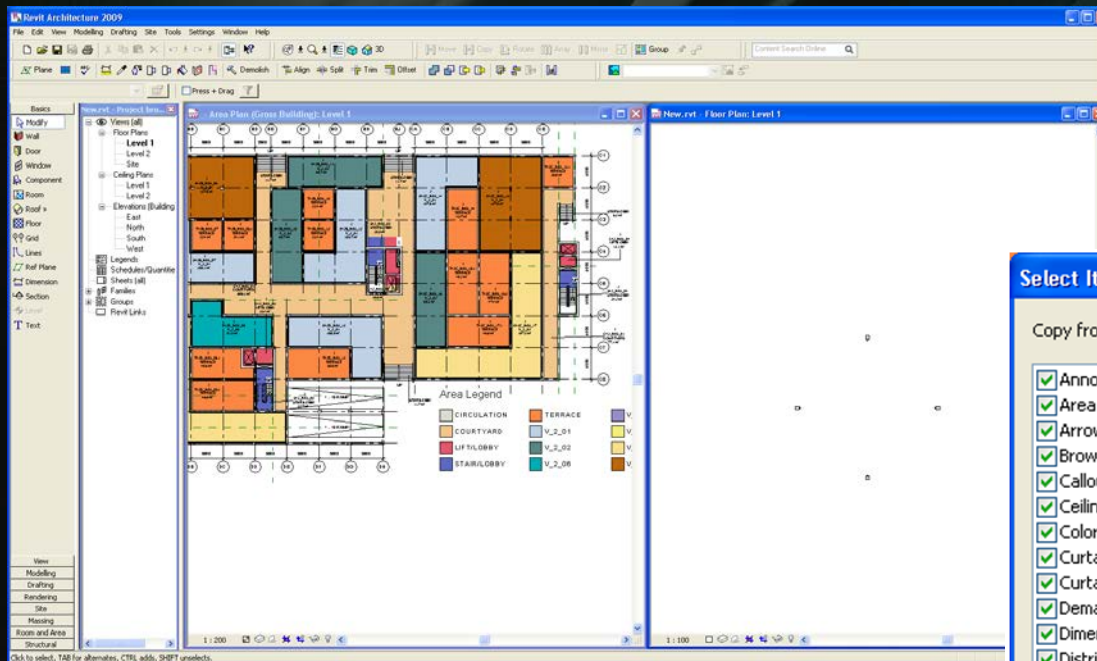


Partial BIM Project Team Structure



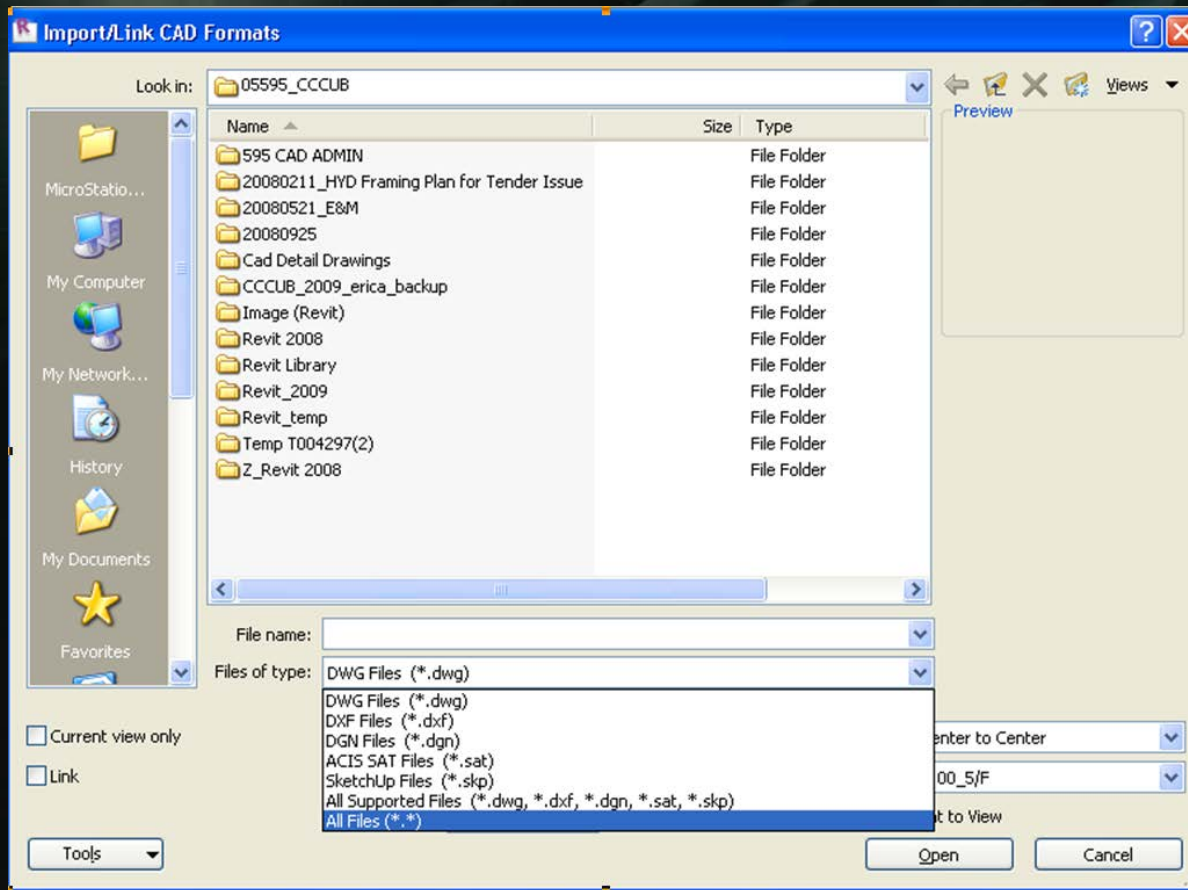
Partial BIM Project Team Structure

- Communication
 - Email (?) / FTP
 - Time Lag
 - Same Co-ordinate, Height
 - Different Project Standard



Partial BIM Project Team Structure

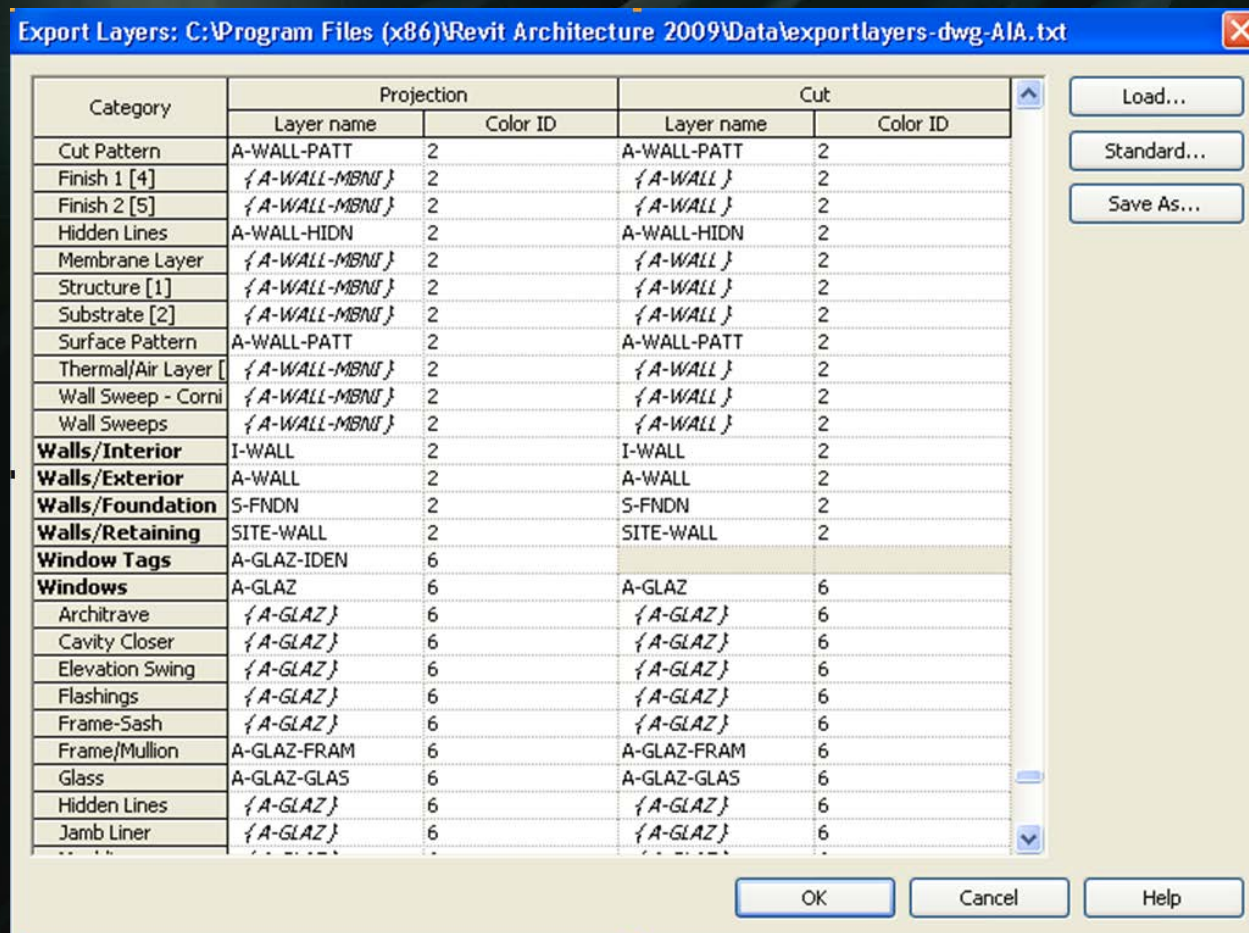
- Filing Conversion
 - Receive information – Rebuild from traditional 2D to 3D presentation



Partial BIM Project Team Structure

- Filing Conversion

- Release Information – Convert back to other 2D information, lost of information, CAD standard



BIM Consultant Team Structure

Professional Knowledge
No BIM Operation Knowledge



BIM Operation Knowledge
Professional Knowledge???
– Rely on input of Professionals



Professional Knowledge
No BIM Operation Knowledge

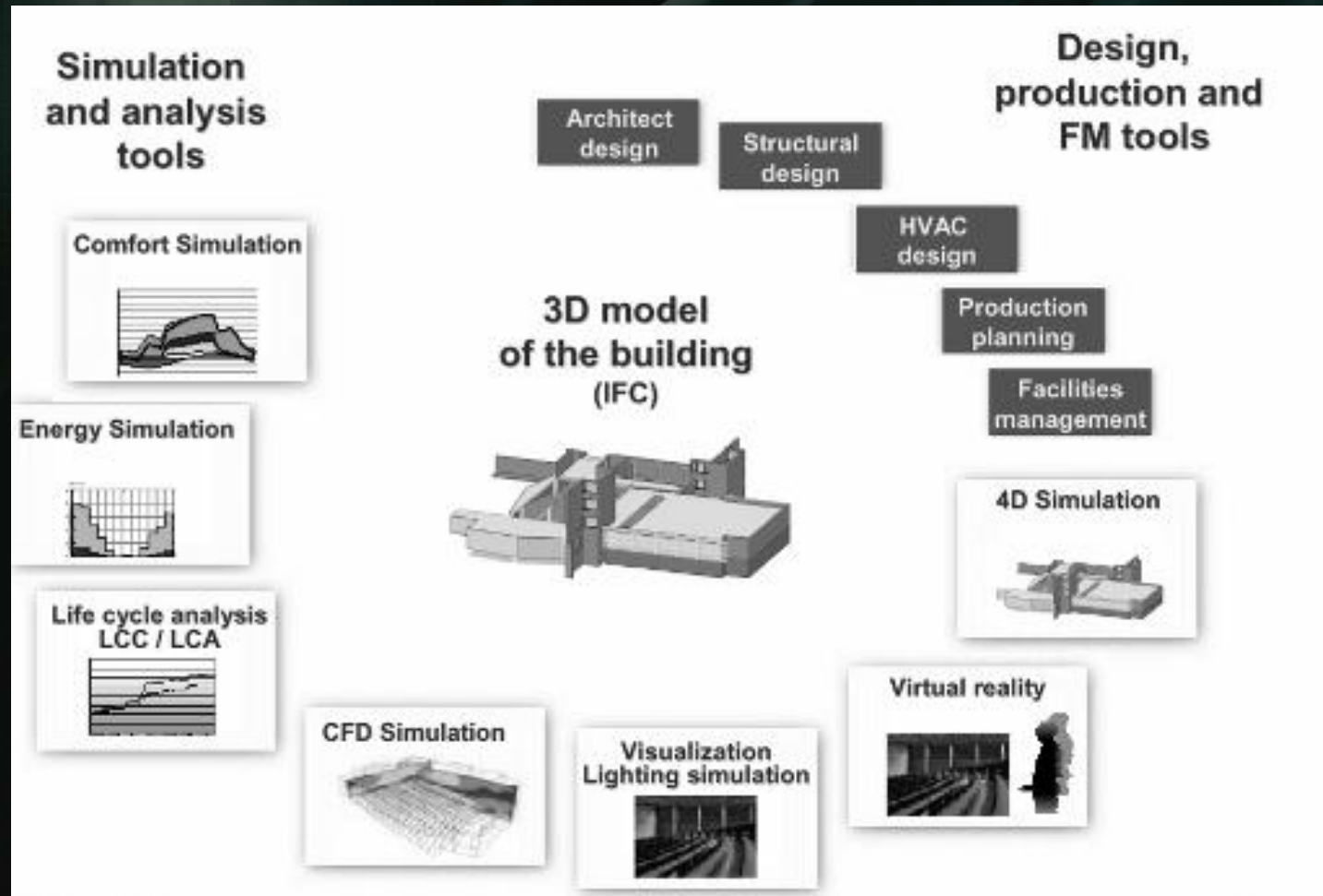
Professional Knowledge
No BIM Operation Knowledge

BIM Consultant

- Roles
- Professional Liability?
- Responsibility
- Training
- Knowledge Transfer

Other Consultants Team

- QS, Environmental Consultants
- Specialist...



BIM Practices

1. BIM office infrastructure
2. In-house Setup - Local Office > Project Office > International offices
3. External Collaboration Setup
4. **Cloud Base Project Collaboration Setup**

The Real Estate Cash Flow-25 years



**Building Entire Life-Cycle Management
(3D Information Technology and Platform)**

❑ Setting realistic expectations of BIM from the facility maintenance operation team's perspectives.



Virtual Asset



Physical Asset

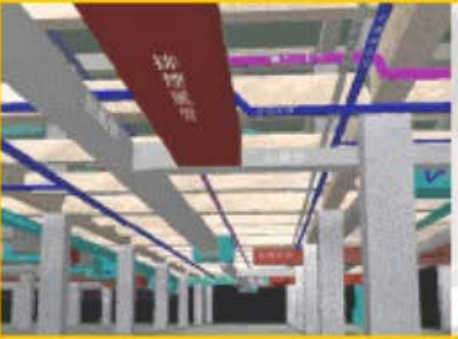
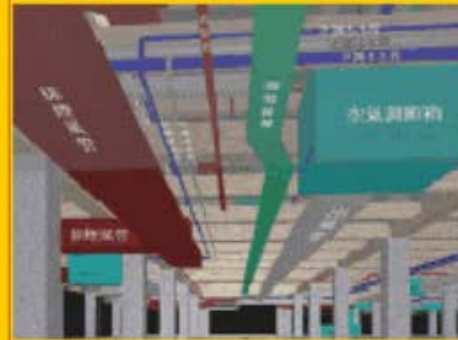


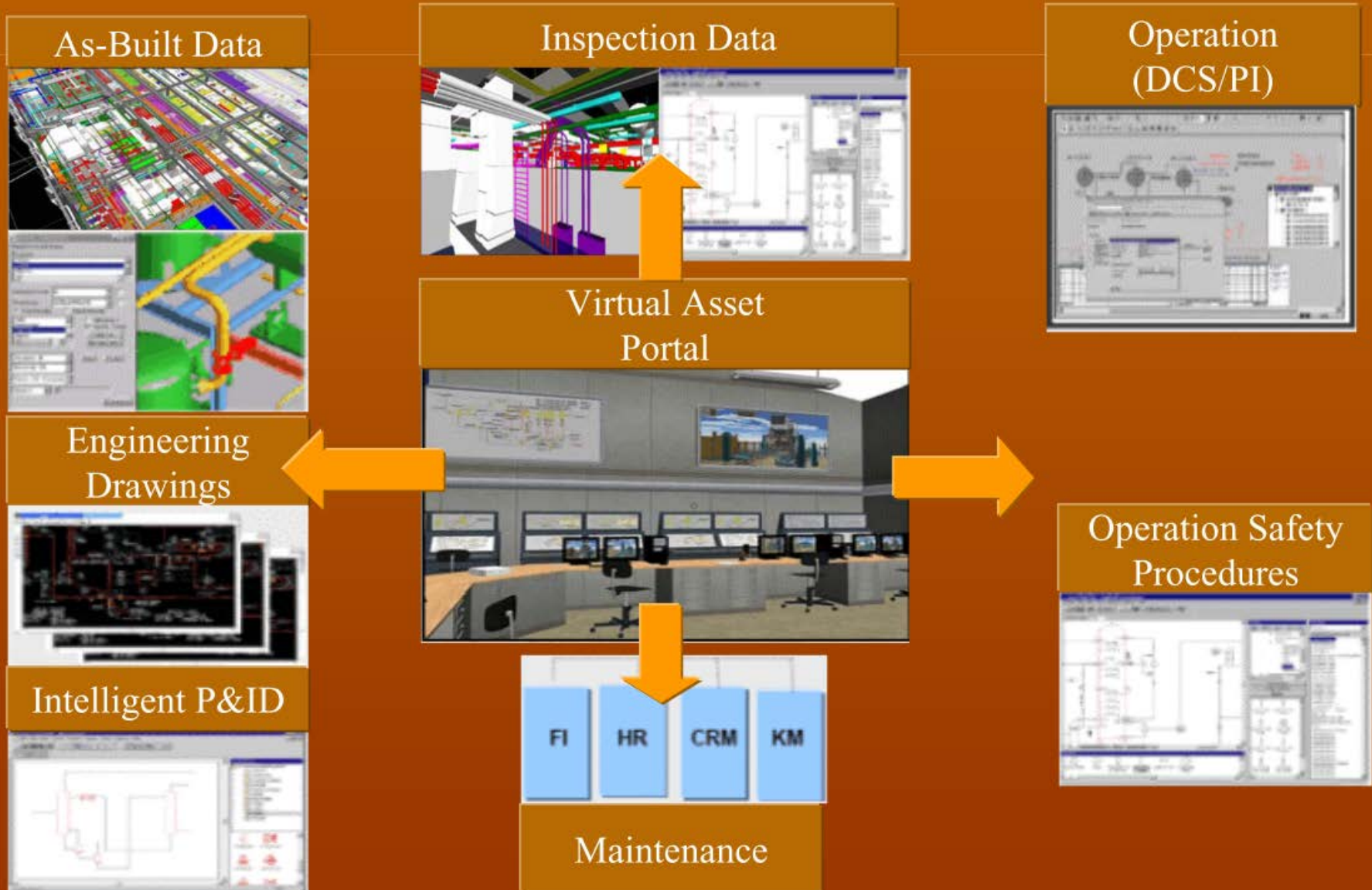
Physical Asset

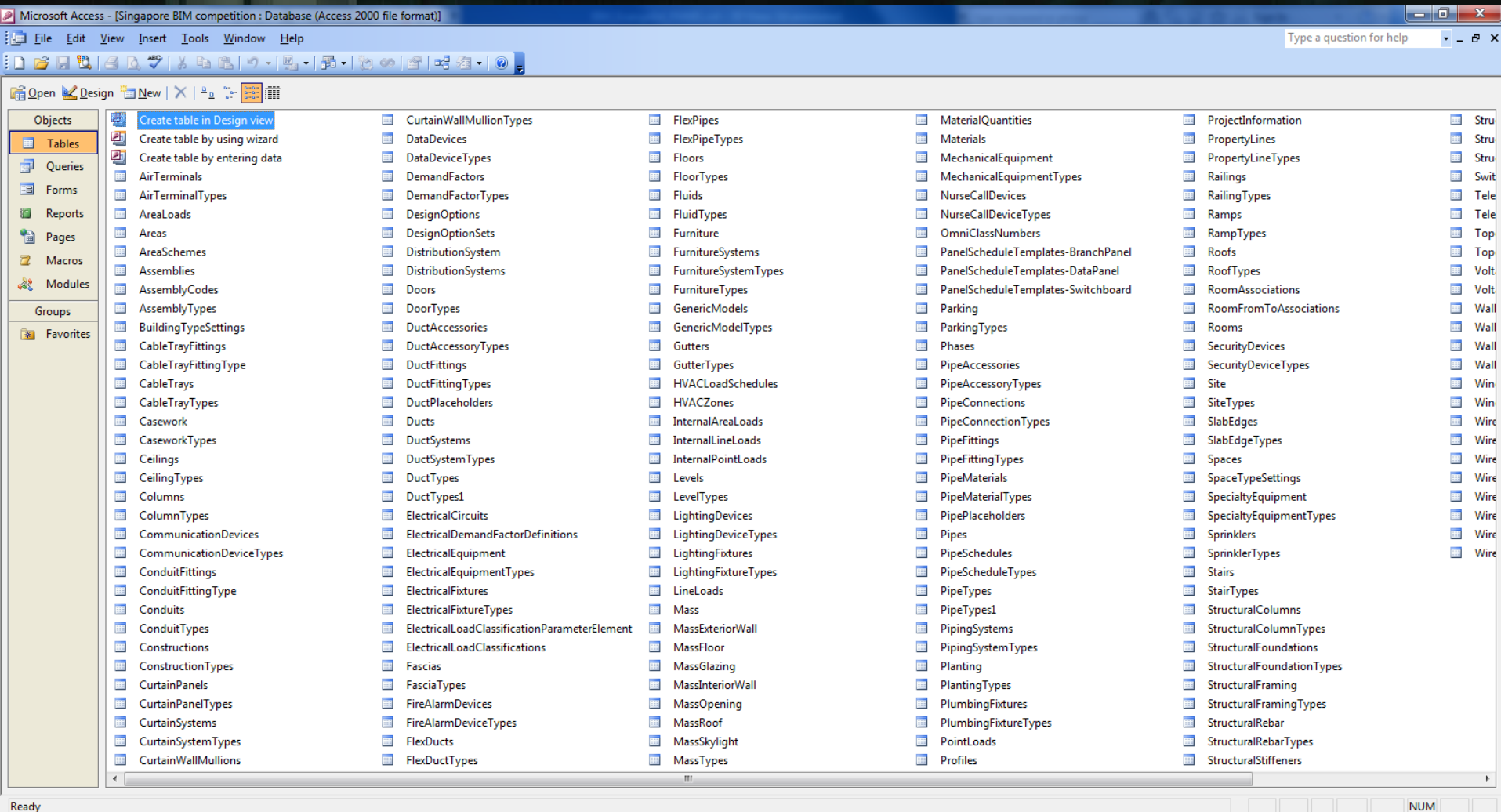


Virtual Asset

As-built BIM Field Checking

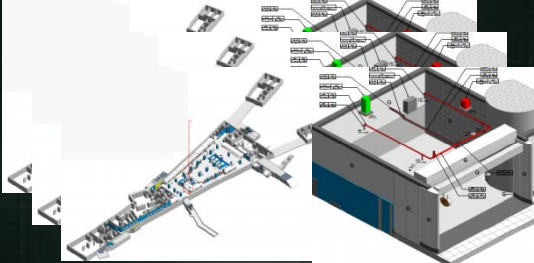




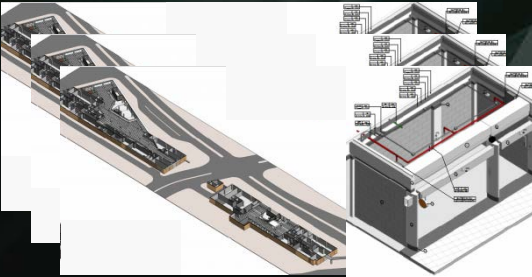


MODELLING + INDIVIDUAL DATABASE

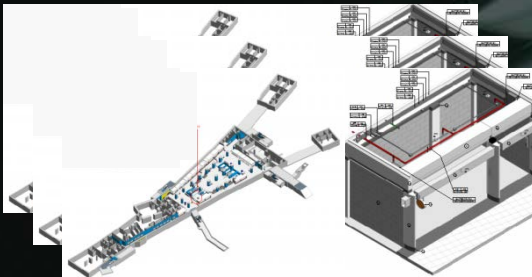
S1



S2



S3



⋮

FLEET WIDE DATABASE

MEGA
DATABASE

OTHER
DATABASES

APPLICATIONS

APP 1

E.G. CCTV
MONITORING

APP 2

E.G. RETAIL

APP 3

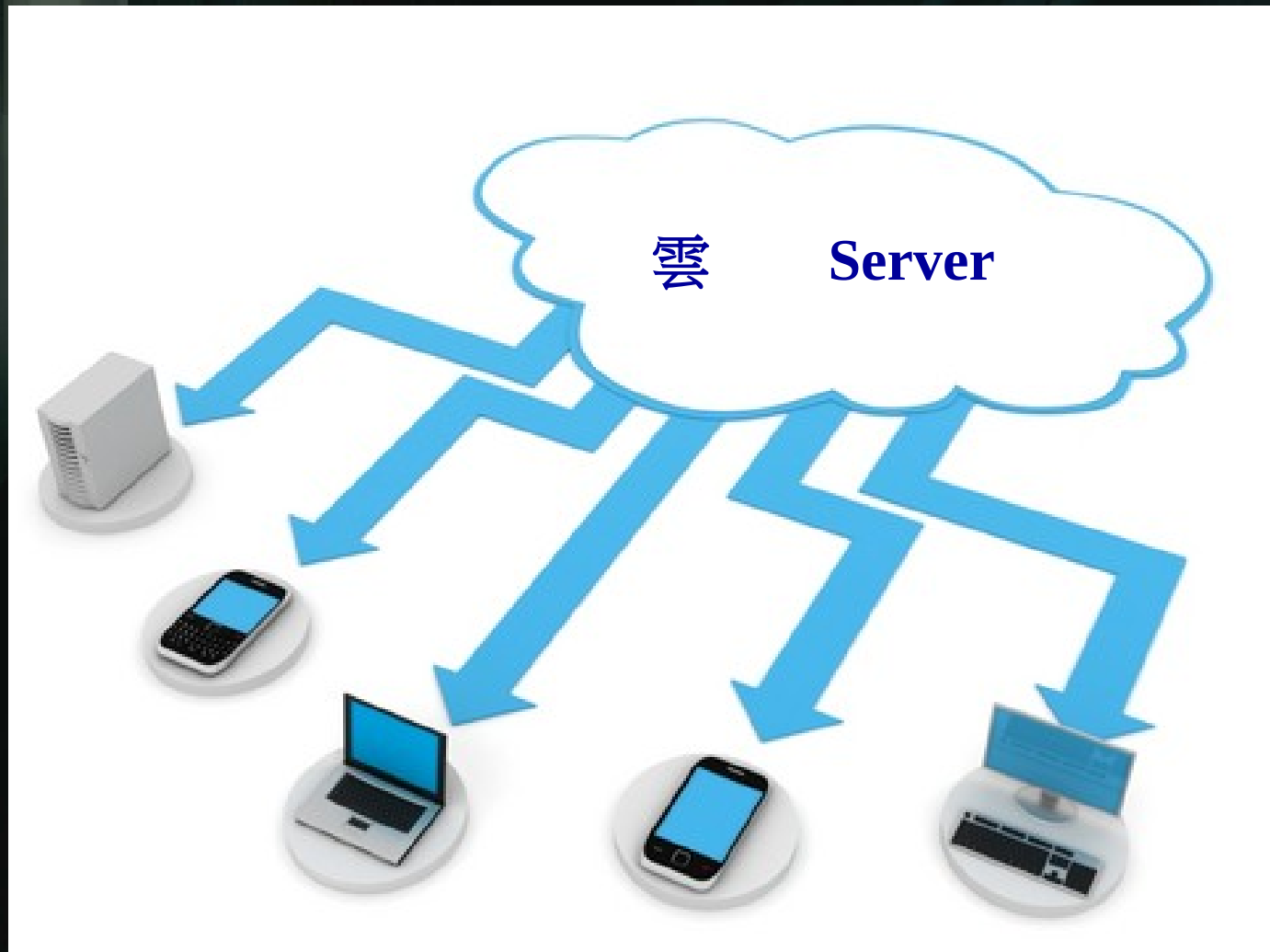
⋮

CLOUD



- 1 Storage
- 2 High Speed Performance
- 3 Collaboration

Accessibility / Mobility

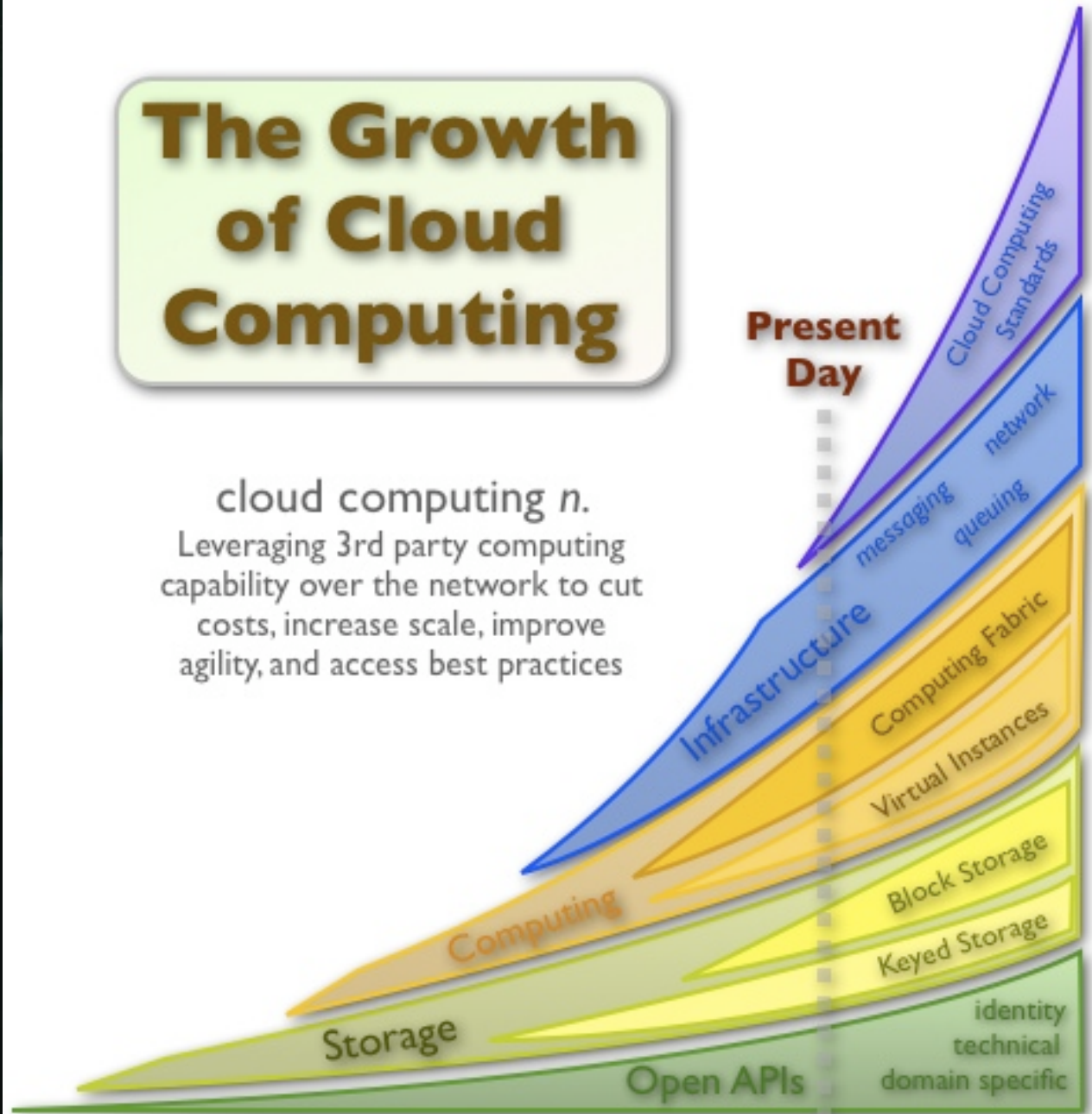


端 Terminal

CLOUD

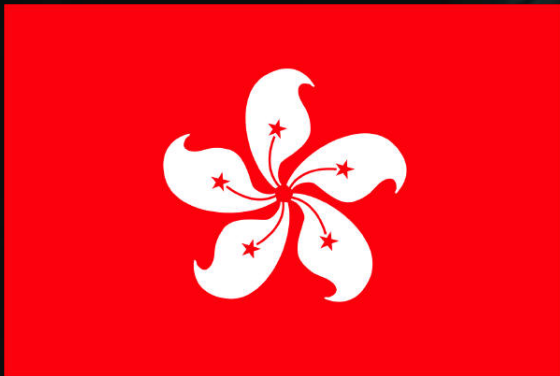
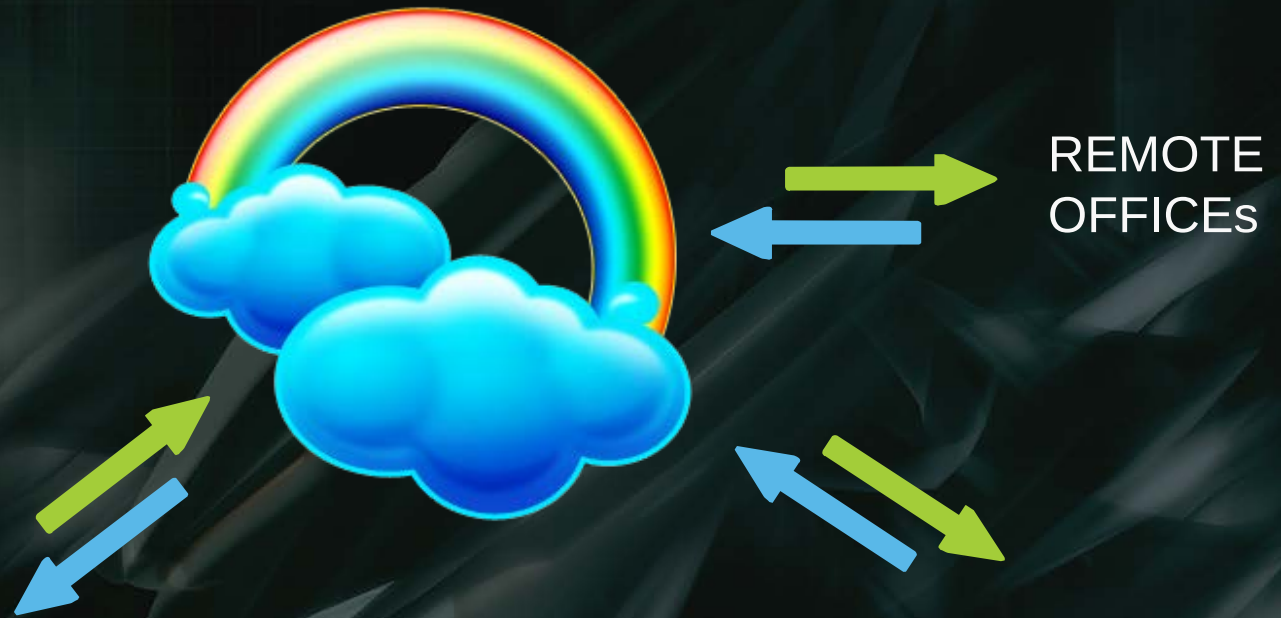
The Growth of Cloud Computing

cloud computing n .
Leveraging 3rd party computing capability over the network to cut costs, increase scale, improve agility, and access best practices



From <http://blogs.zdnet.com/Hinchcliffe>

Accessibility - NO TIME/ LOCATION BARRIER



LOCAL OFFICE



REMOTE
OFFICE

Autodesk 360 Mobile !

您現在可以在 [iOS](#) 和 [Android](#) 裝置上享受到隨處存取 Autodesk 360 的便利。

登入

建立帳戶

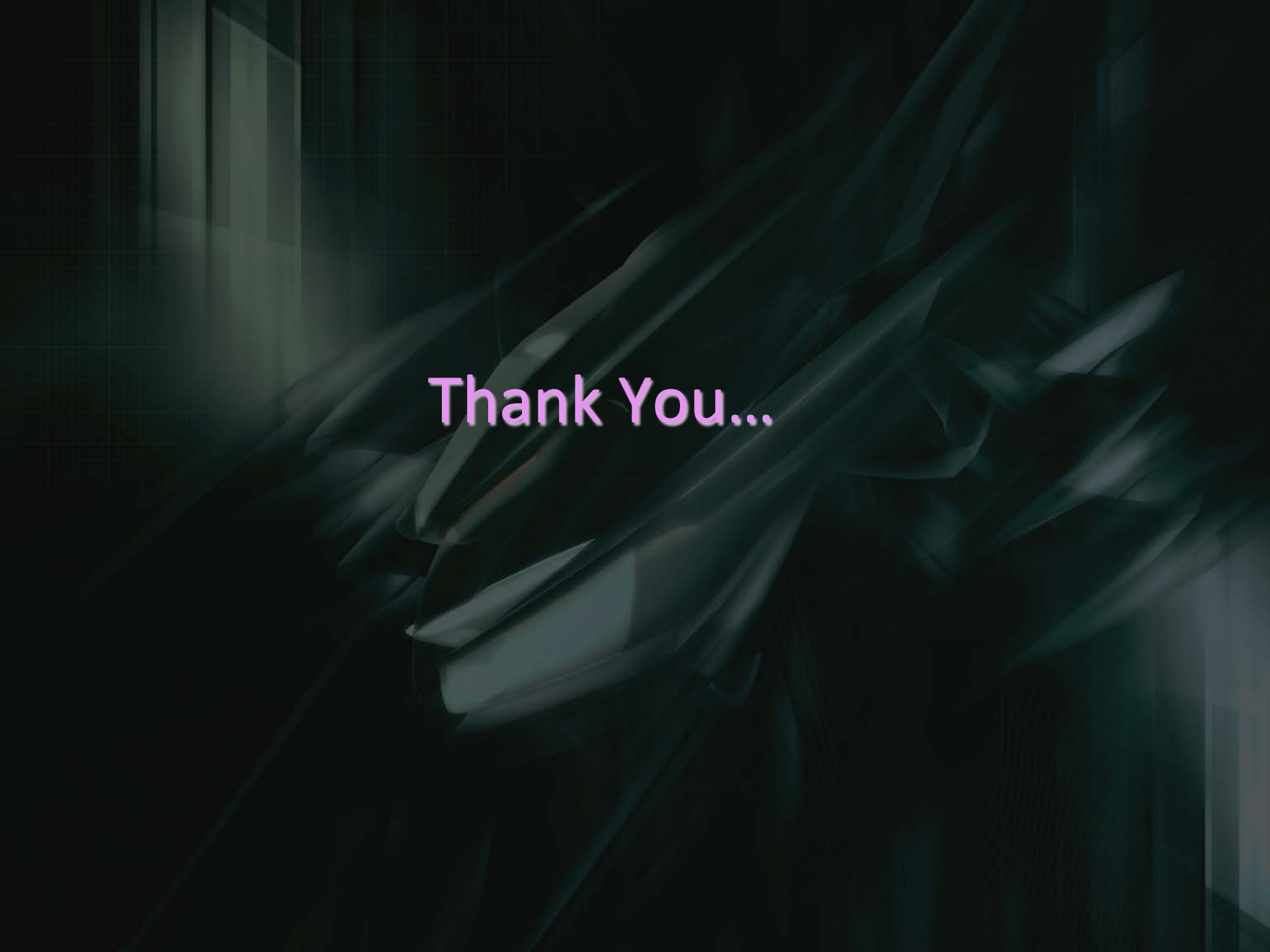


CLOUD BASE PROJECT COLLABORATION – Augmented Reality

CLOUD BASE PROJECT COLLABORATION

BIM Practices

1. BIM office infrastructure is available and affordable
2. BIM facilities In-house and External Collaboration end up better design quality
3. Cloud Base Project Collaboration is the next generation of BIM



Thank You...