

# An overview Of BIM Implementation

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HKIBIM Vice Chairman  
HKUSPACE, Lecturer*

# **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**

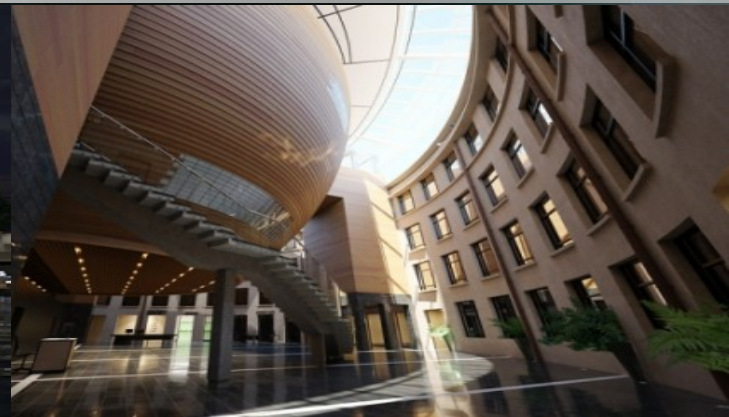
= Modelling

模型/ 模擬

# Fake BIM

M + ?

JUST 3D MODEL – NOT BIM



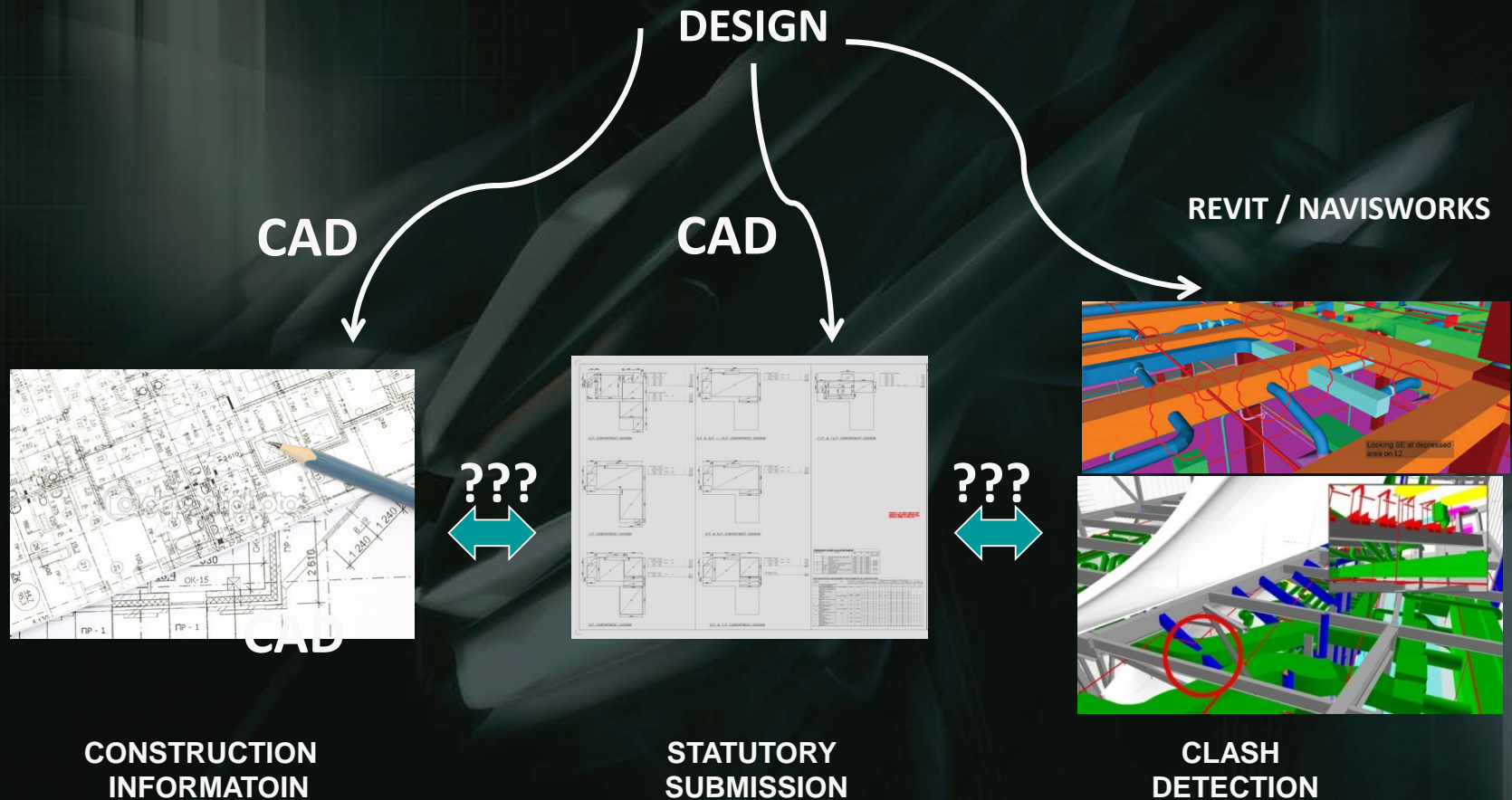


# HALF-BIM

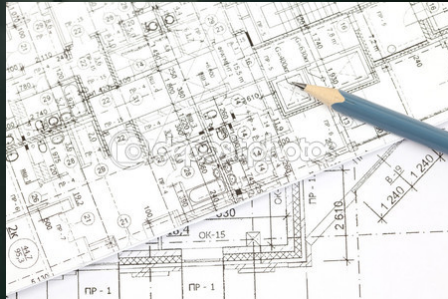
I <> M

3D MODEL >> QTO , CLASH ANALYSIS

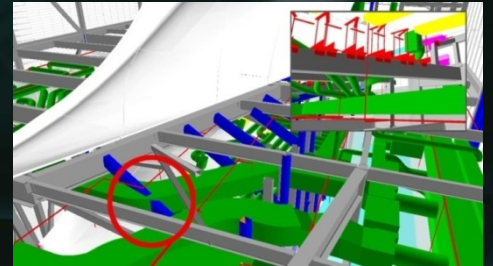
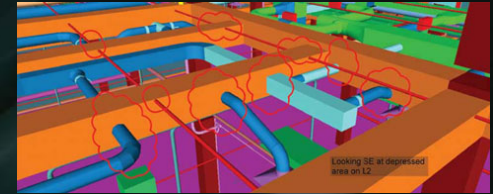
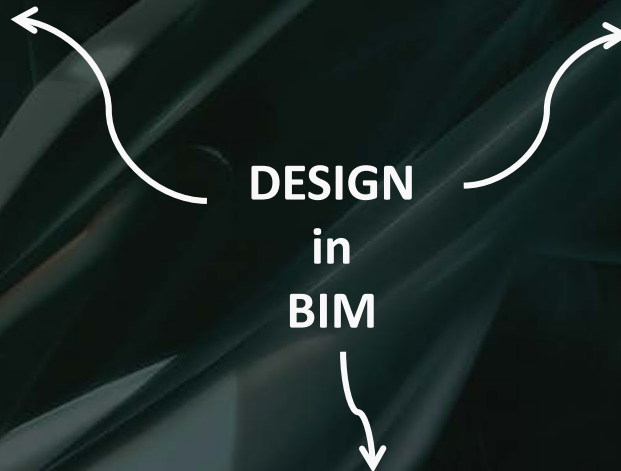
# HALF BIM



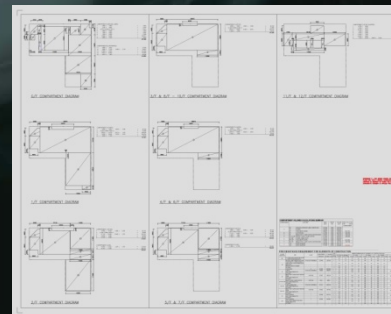
# REAL BIM



CONSTRUCTION  
INFORMATOIN



CLASH  
DETECTION



STATUTORY  
SUBMISSION

# REAL BIM

I = M

I > M

INFORMATION FROM MODEL,  
INFORMATION MORE IMPORTANT

# B I M



**Modelling**

**Information**

**Business**

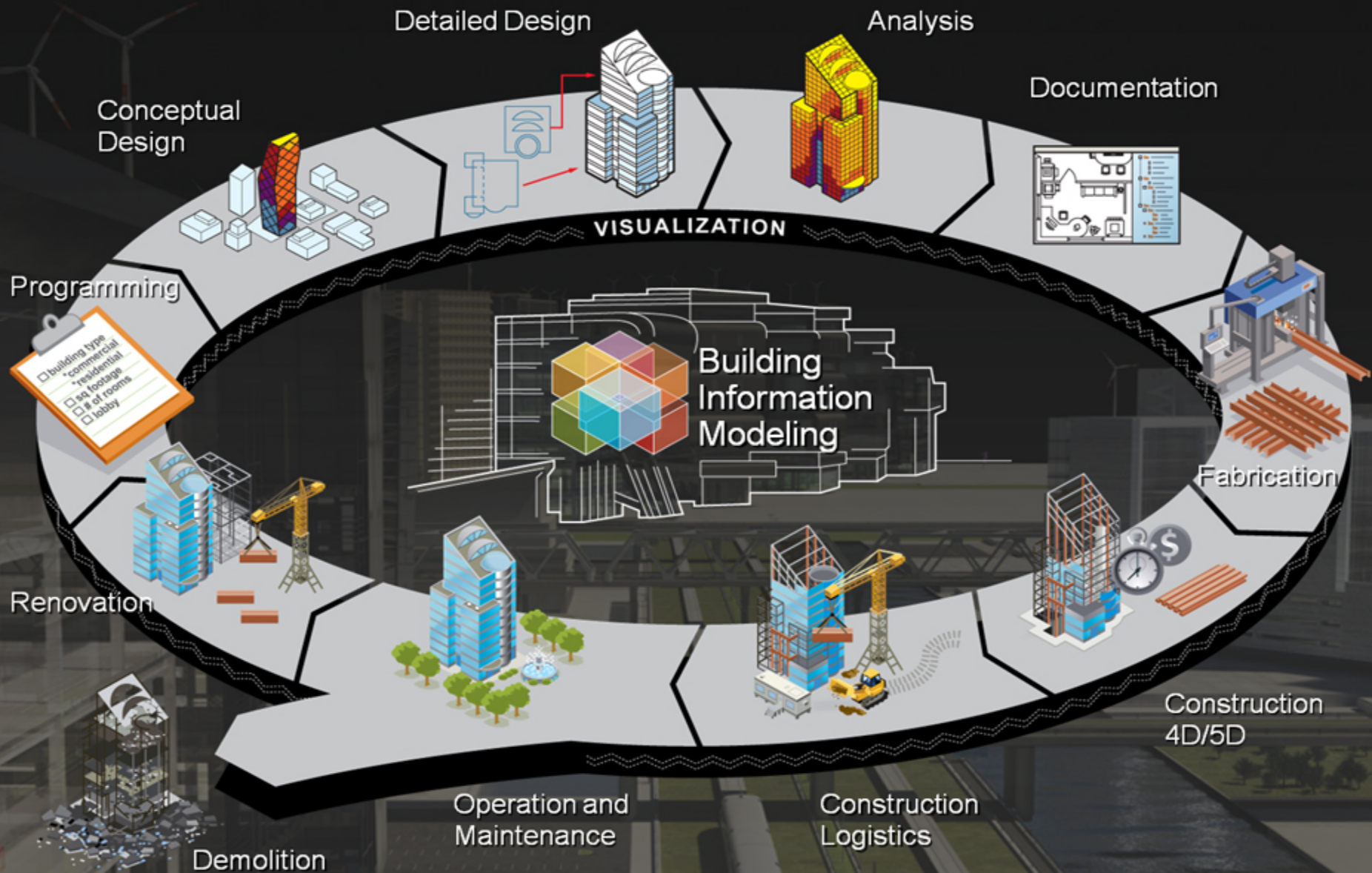


## REAL BIM

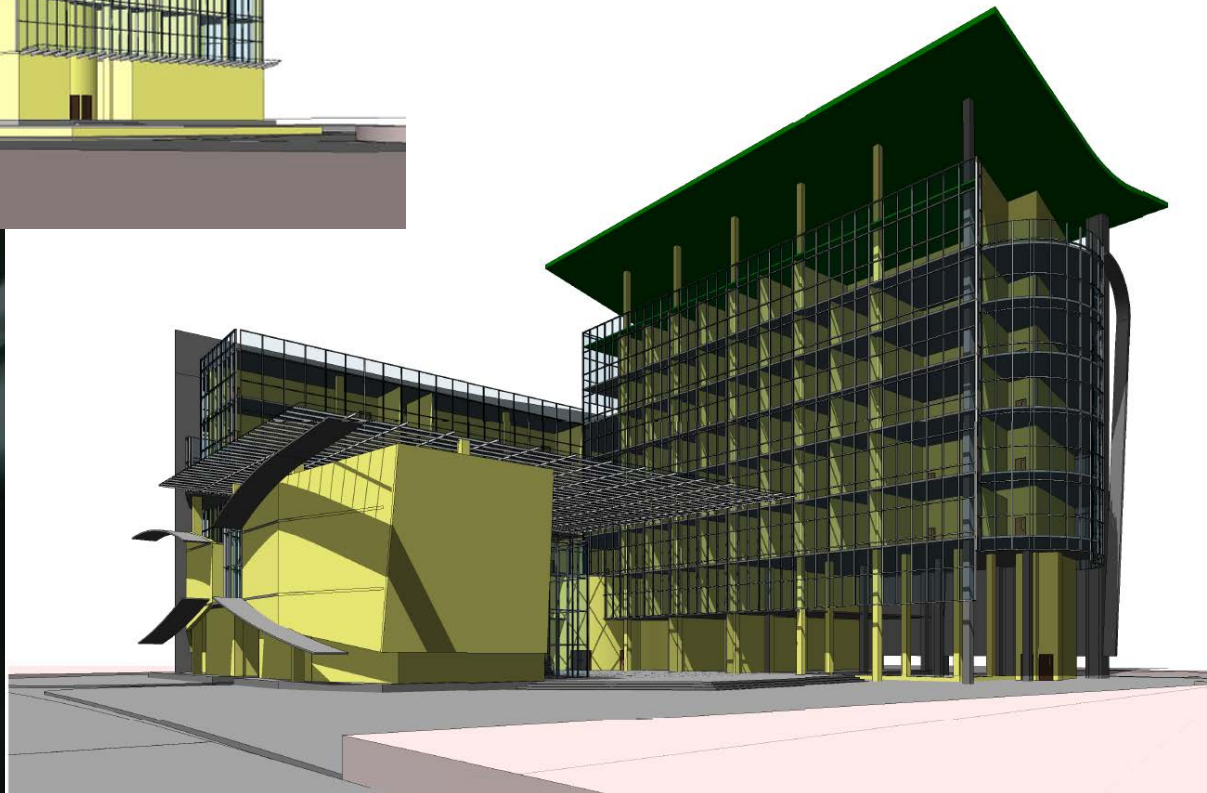
$$M + I = B$$

BIM is a process, Business is the objective

# Use of Building Information Modeling (BIM)



# EARLY DESIGN IDEAS





# DEVELOPING DESIGN IDEAS



# DEVELOPED DESIGN IDEAS

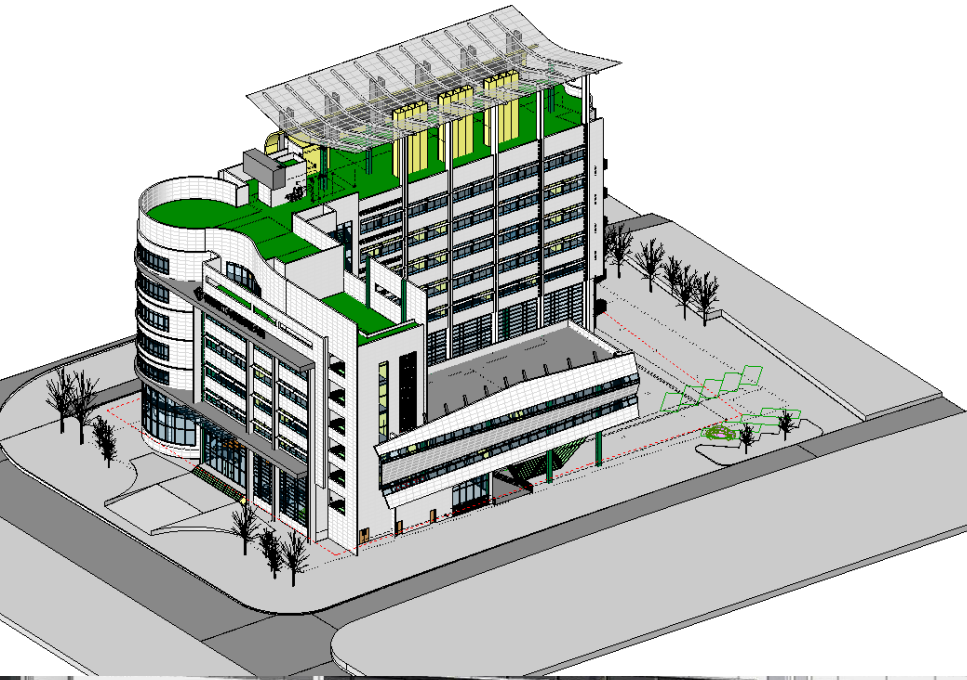




# TESTING MASSING IN GOOGLE EARTH



# PRESENTING DESIGN IDEAS



**LIFT LOBBY**  
DESIGN CONCEPT

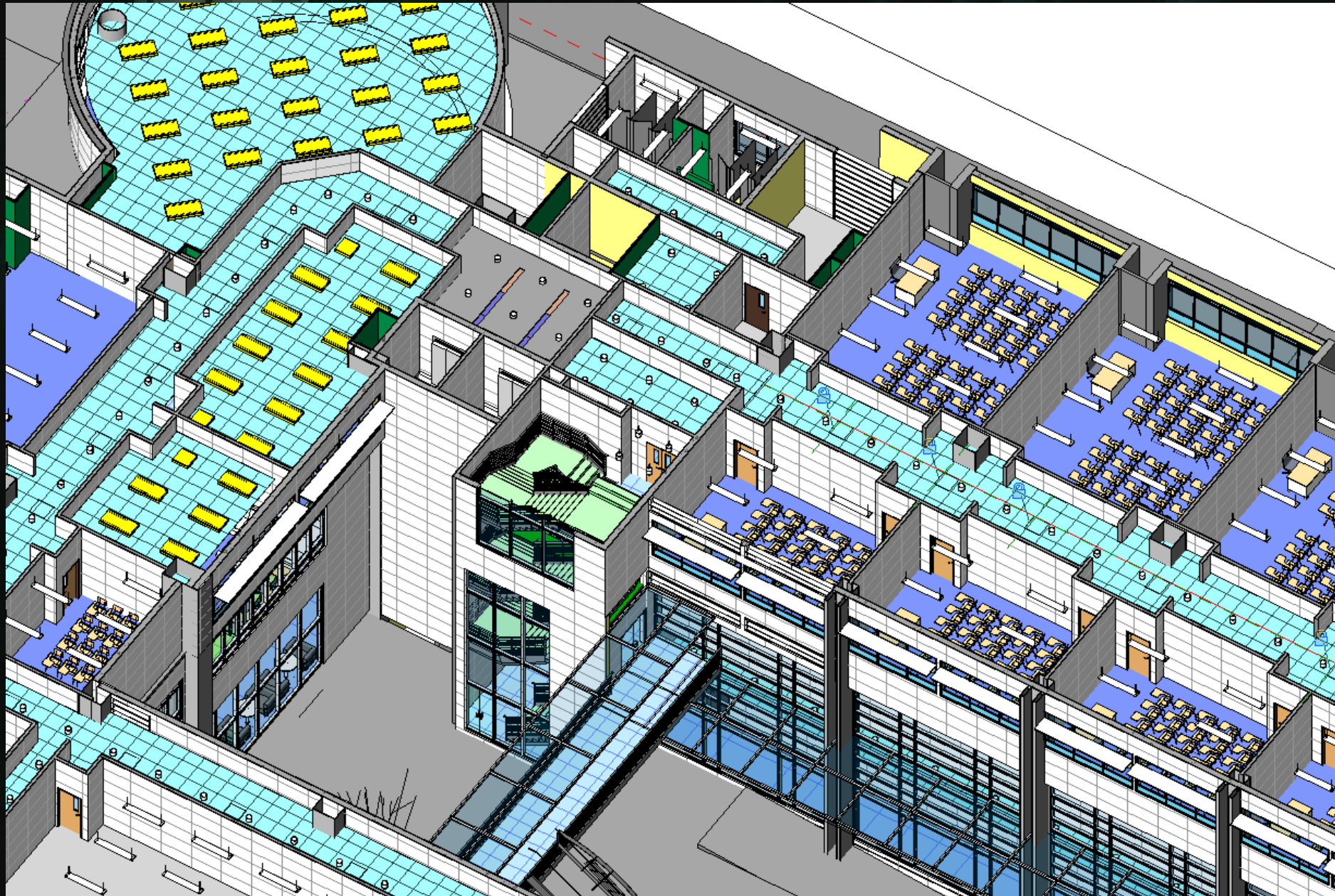


# DETAILED DESIGN

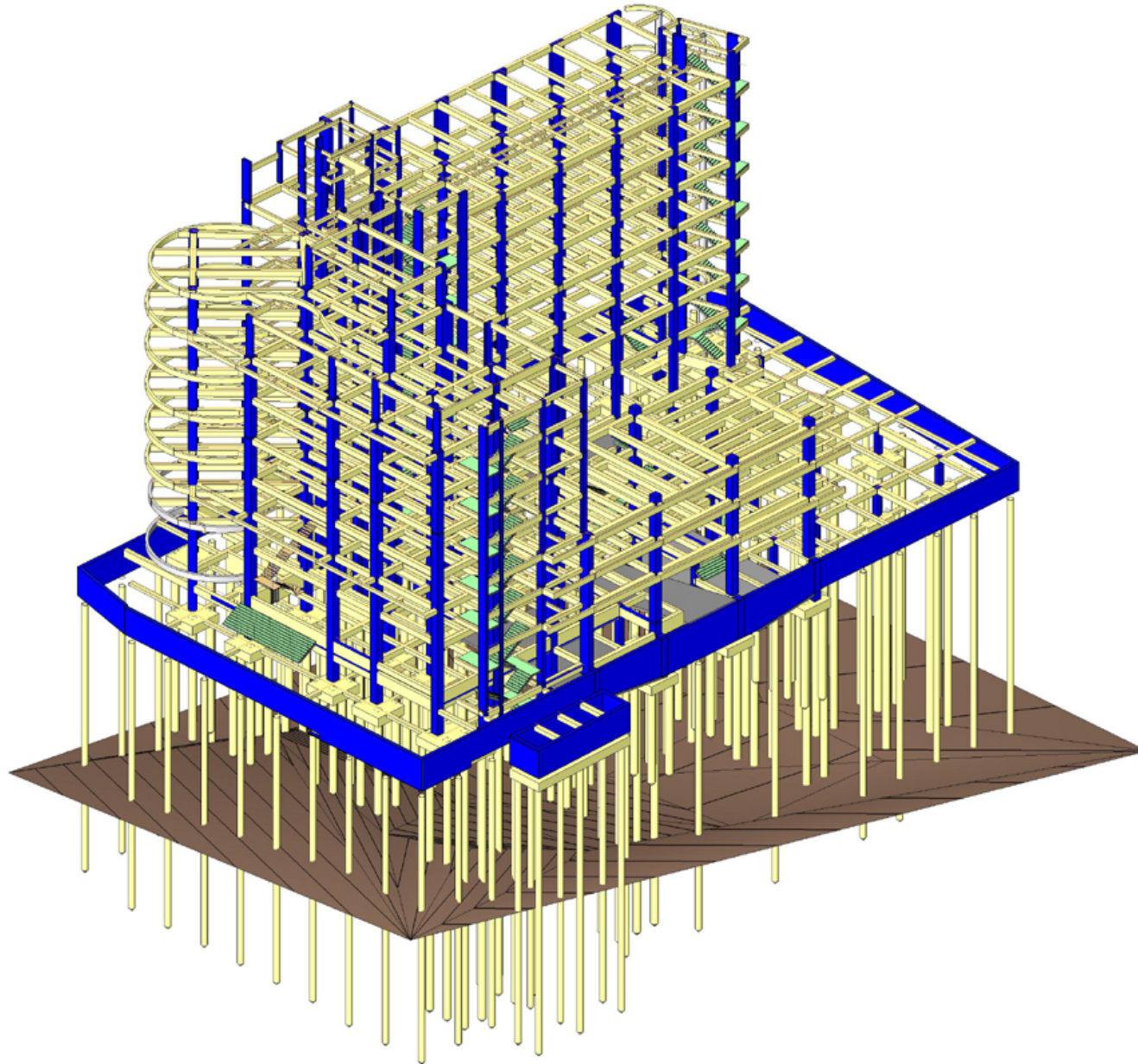




# ARCHITECTURAL CO-ORDINATION



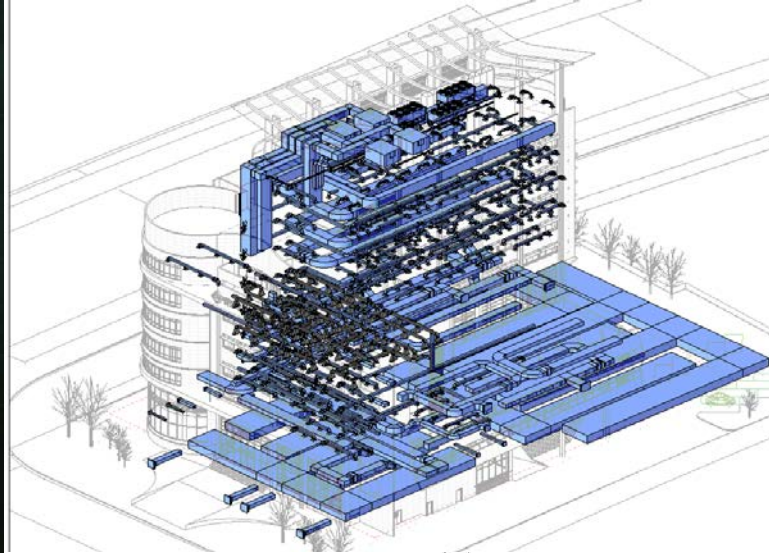
# STRUCTURAL DESIGN MODEL



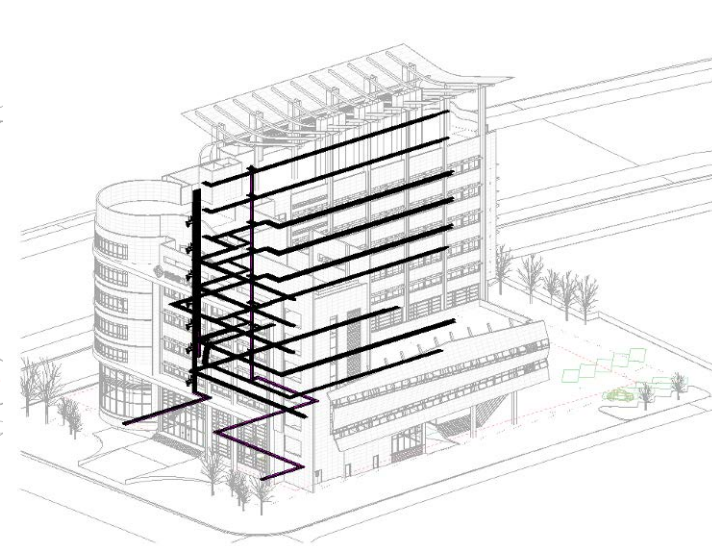
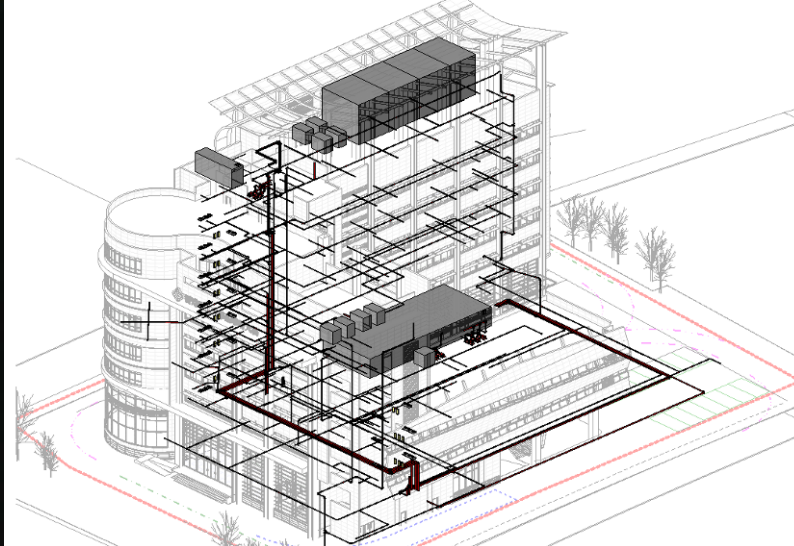
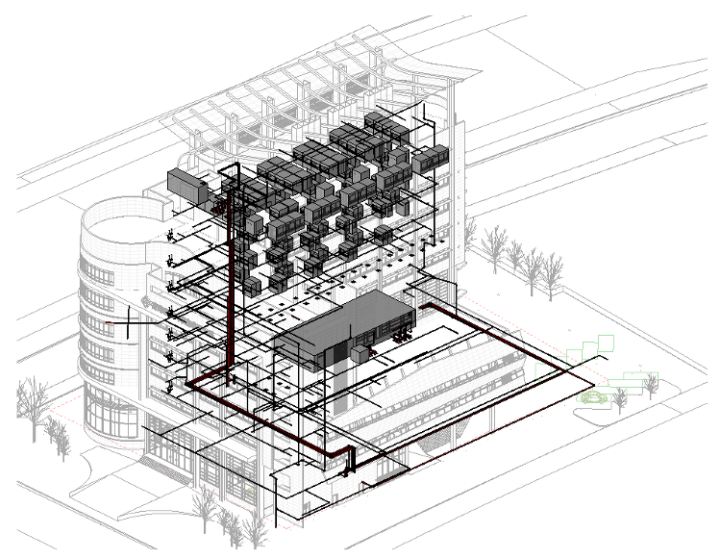


# BUILDING SERVICES CO-ORDINATION

## HVAC Installation



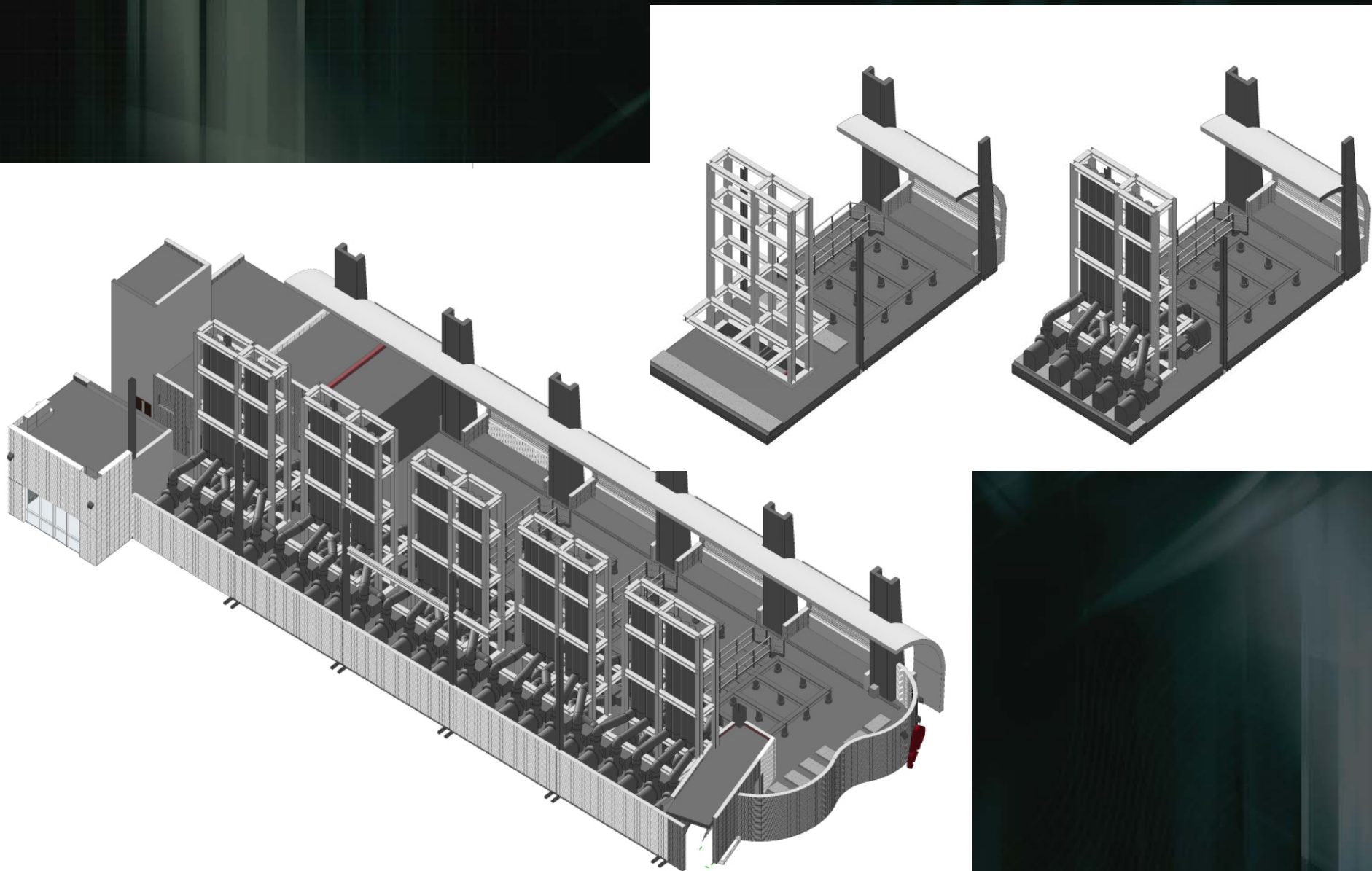
## Fire Services Installation



## P/D Installation

## Electricity Installation

# SPECIAL CO-ORDINATION - LABORATORIES

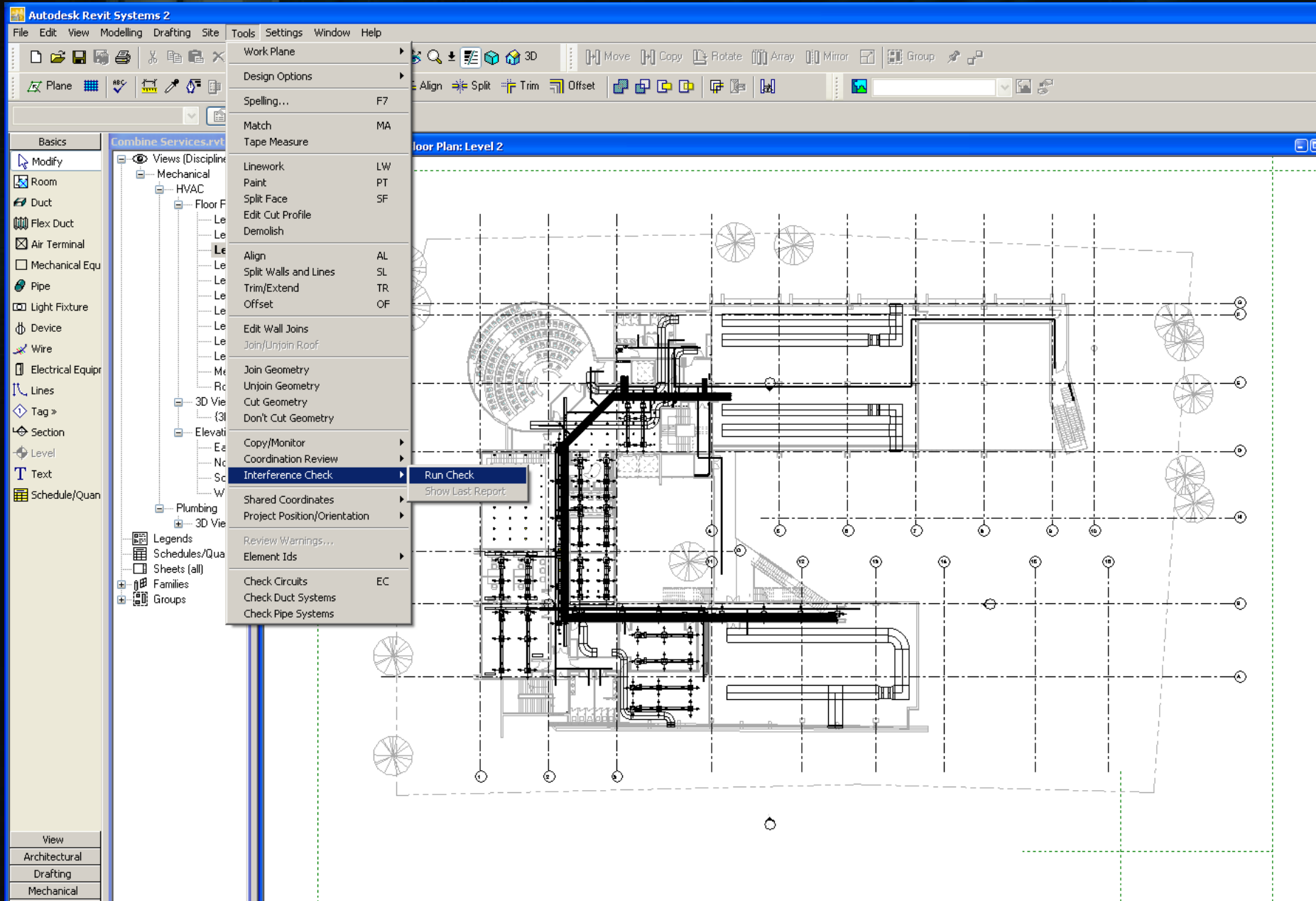




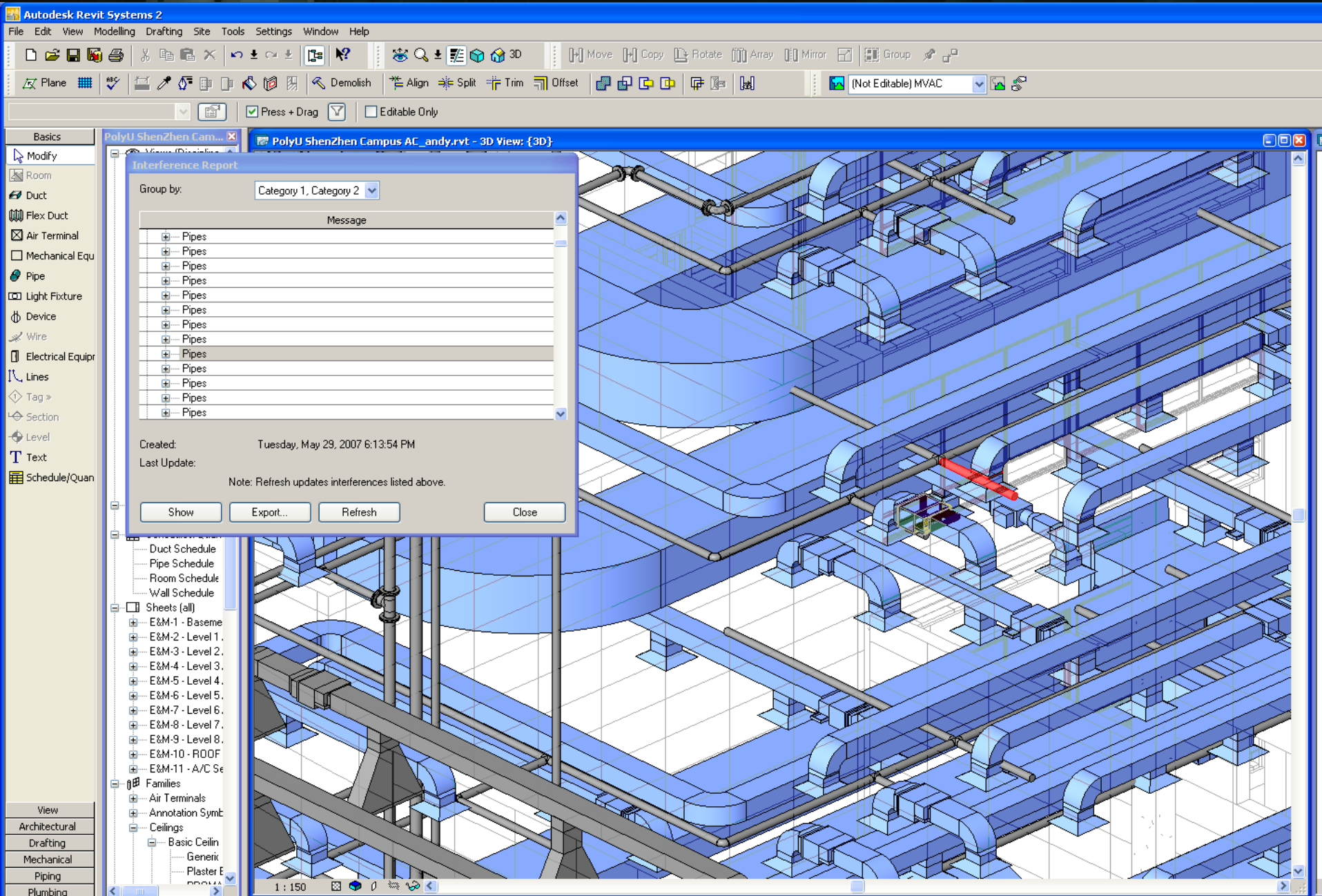
# CO-ORDINATED DETAILED DESIGN



# CLASH ANALYSIS

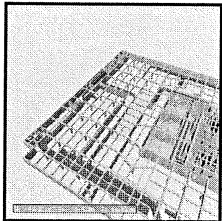
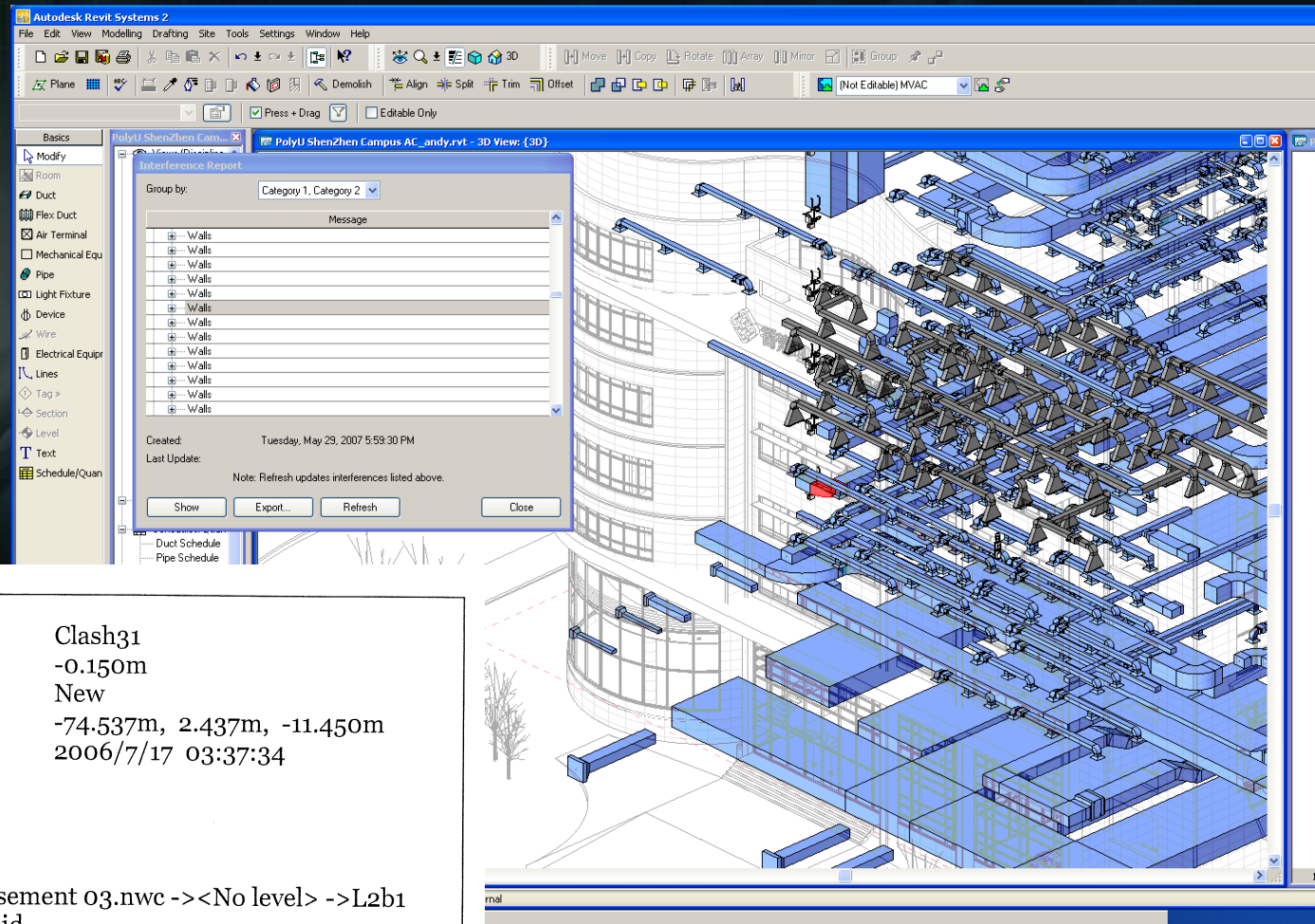


# CLASH ANALYSIS





# 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, and there is a doorway in the background. A small glass display case is visible in the bottom left corner.

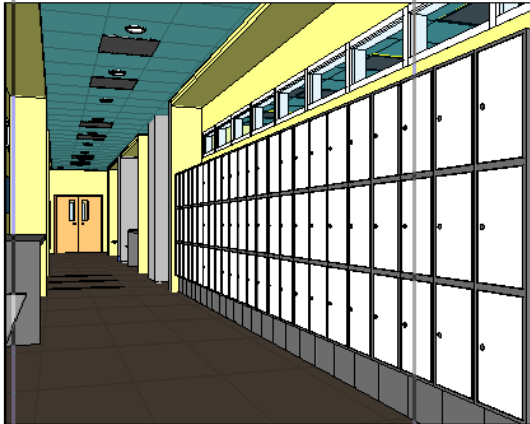
A 3D perspective view of a classroom layout. The room features a blue floor, yellow walls, and a whiteboard. A teacher's desk is positioned at the front, and rows of student desks are arranged in the center. A blue partition wall is visible on the left side.

A 3D perspective rendering of a modern, empty lecture hall or classroom. The room features a grid-patterned ceiling with recessed lighting, large windows on the left wall, and a whiteboard at the front. Rows of grey chairs and dark tables are arranged in the space.

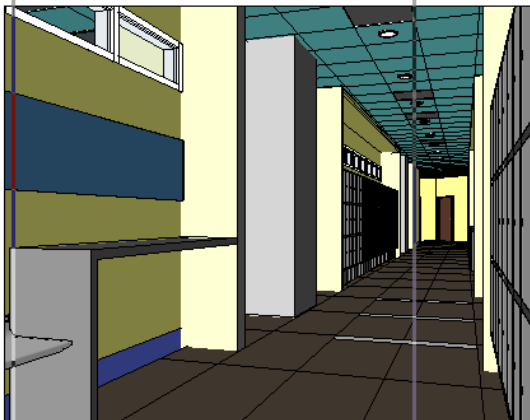
A 3D perspective view of a lecture hall. The room features a stage area at the front with a yellow wall and a wooden podium. The seating area is filled with rows of blue chairs and light blue tables, arranged in a semi-circular fashion. A blue carpet covers the floor, and a white railing separates the stage from the audience.

[illegible][illegible]

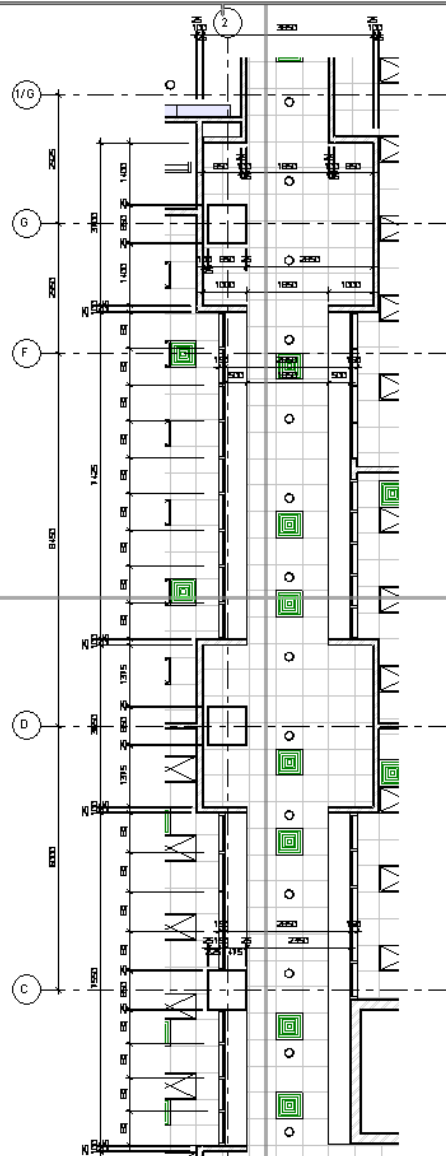
# PRODUCTION OF CONSTRUCTION DRAWINGS



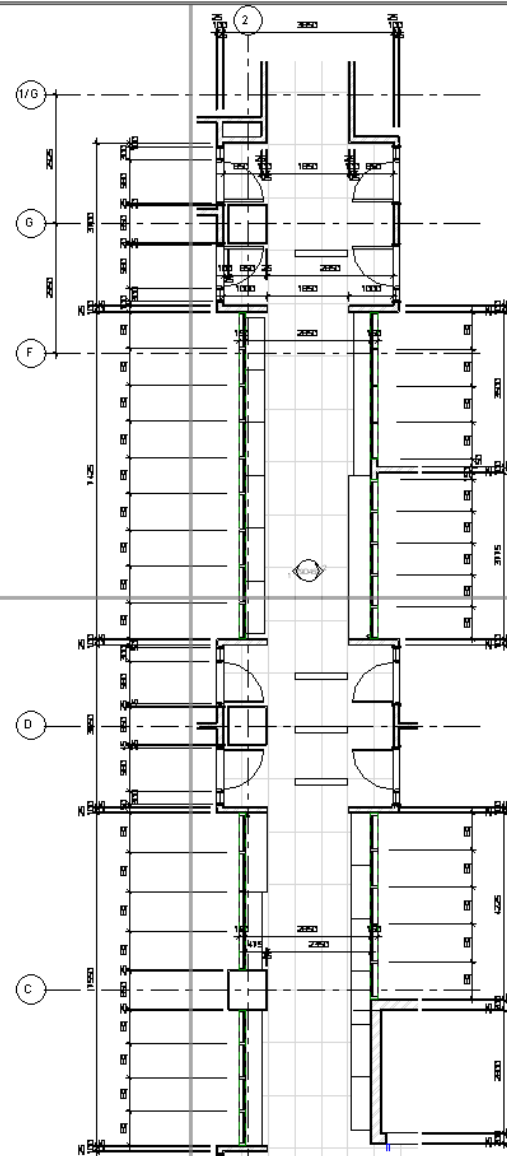
4 走廊立体示意图(低楼三至四层)2



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



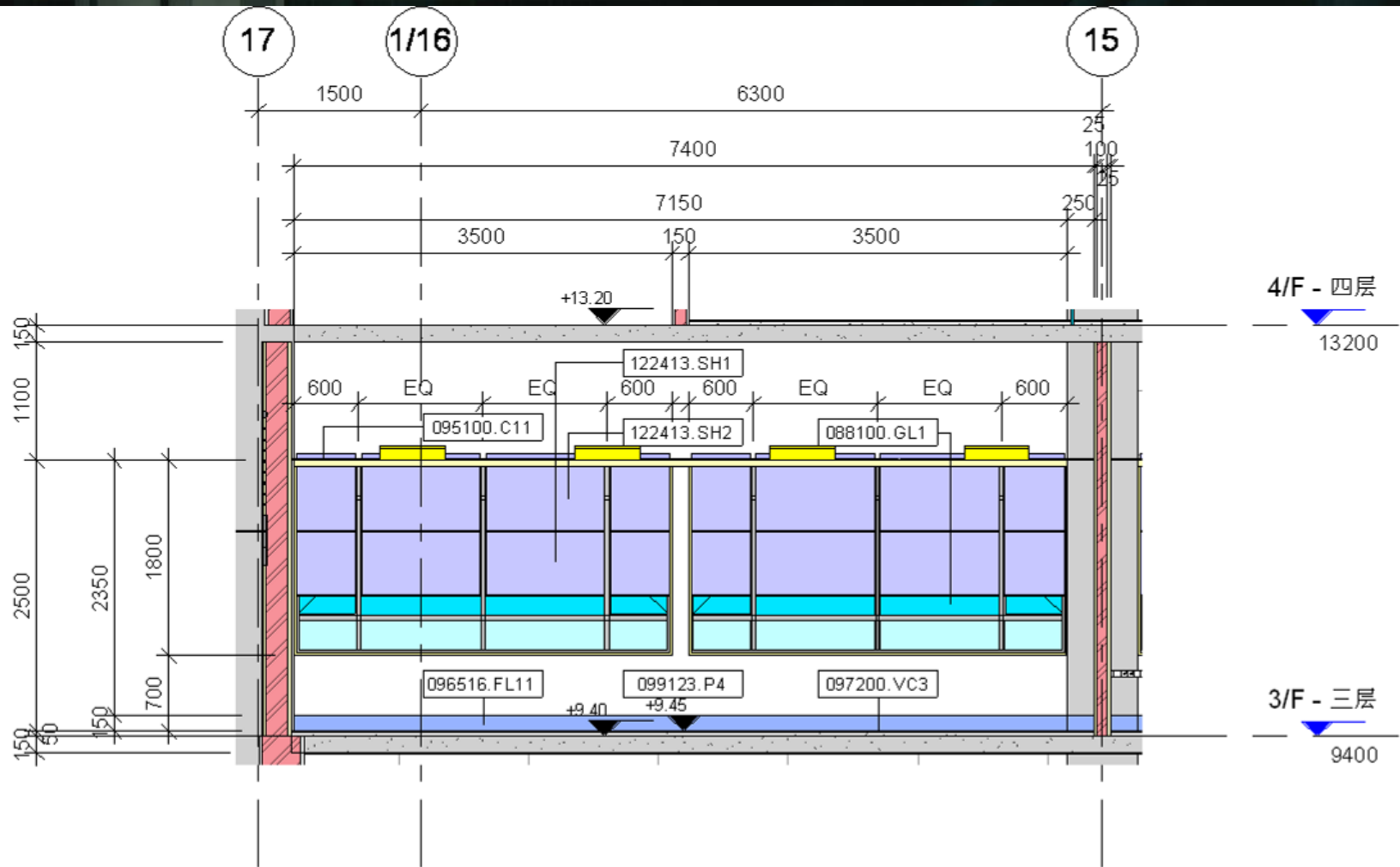
1 走廊平面图(低楼三至四层)  
1:50

A vertical strip of various logos and brand names, arranged in a column. The logos include:

- Top: A series of small, partially visible logos at the very top.
- Below: A large, empty rectangular box.
- Below: A grid of small, empty rectangular boxes.
- Below: A row of logos including "benam" and a red circular logo.
- Below: A row of logos including "利比 RLB Rider Levett Bucknall" and "BENTON & BOWLES".
- Below: The "Aedas" logo and a blue chevron logo.
- Below: The "THE HONG KONG POLYTECHNIC UNIVERSITY" logo and name in English and Chinese.
- Below: A row of logos including "AIA" and "AIA (ASIA) AIA".
- Bottom: A row of logos including "AIA", "AIA", "AIA", "AIA", and "AIA".



# PRODUCTION OF DRAWINGS



2

行政人员培训室立面图(高楼三层)6

1:50

# CONSTRUCTION



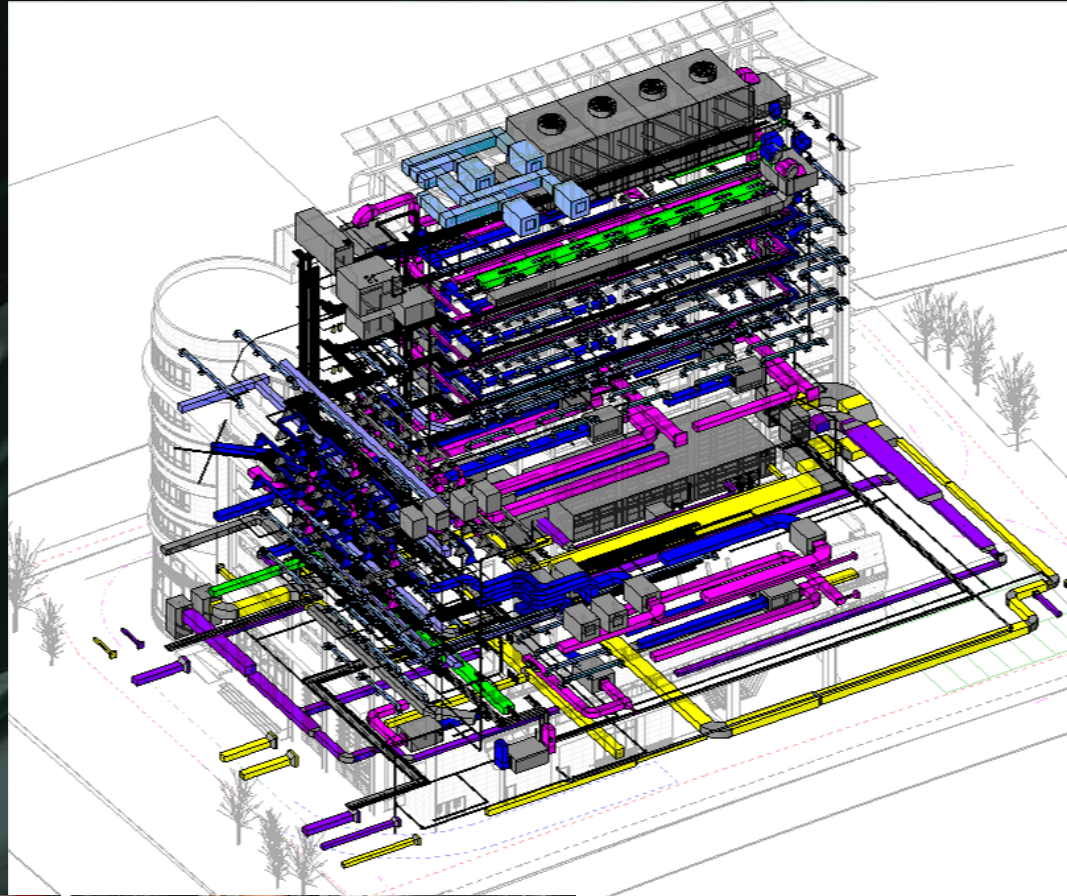


# CONSTRUCTION





# 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

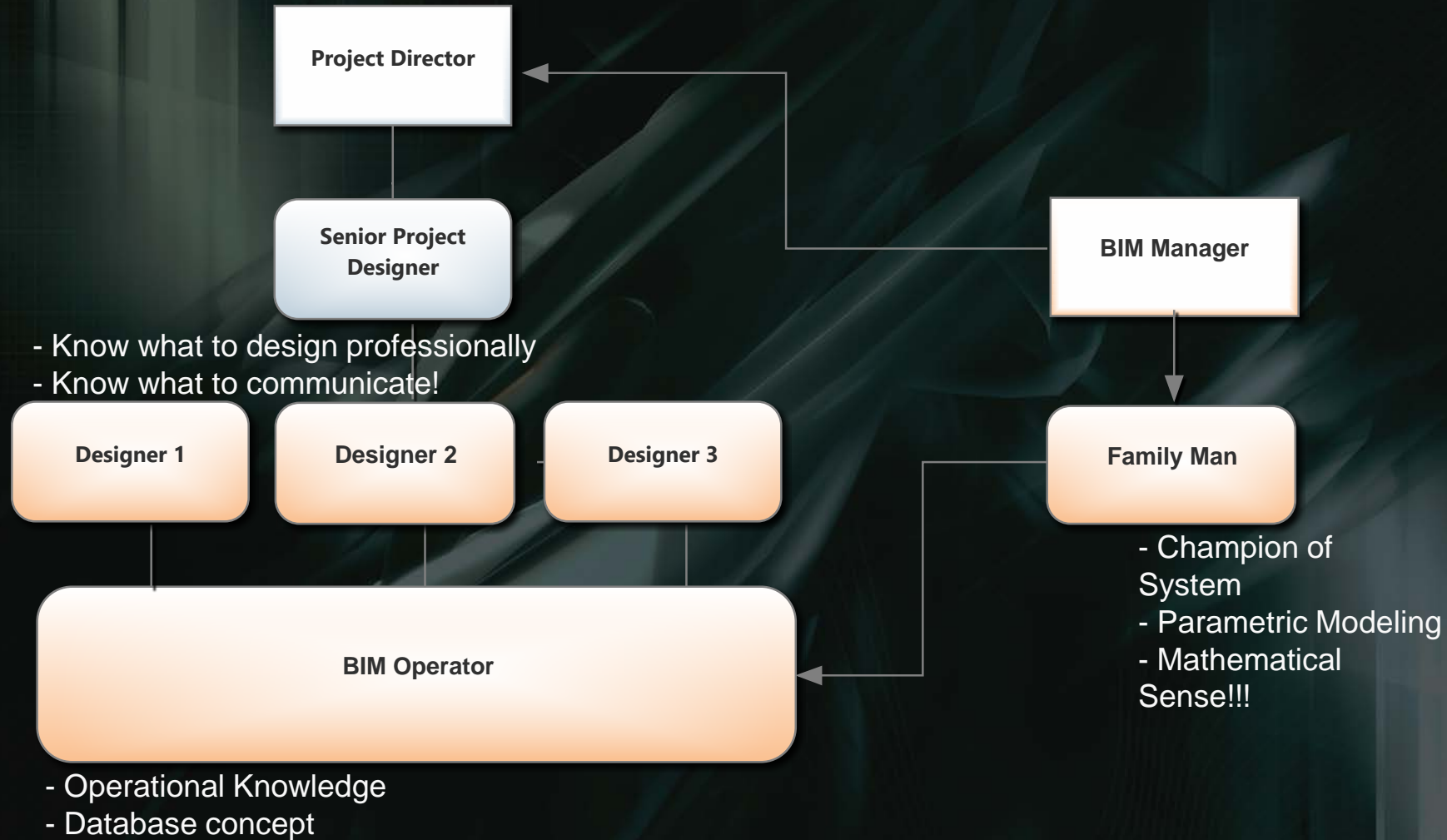
## INTERNET

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

# BIM Practices

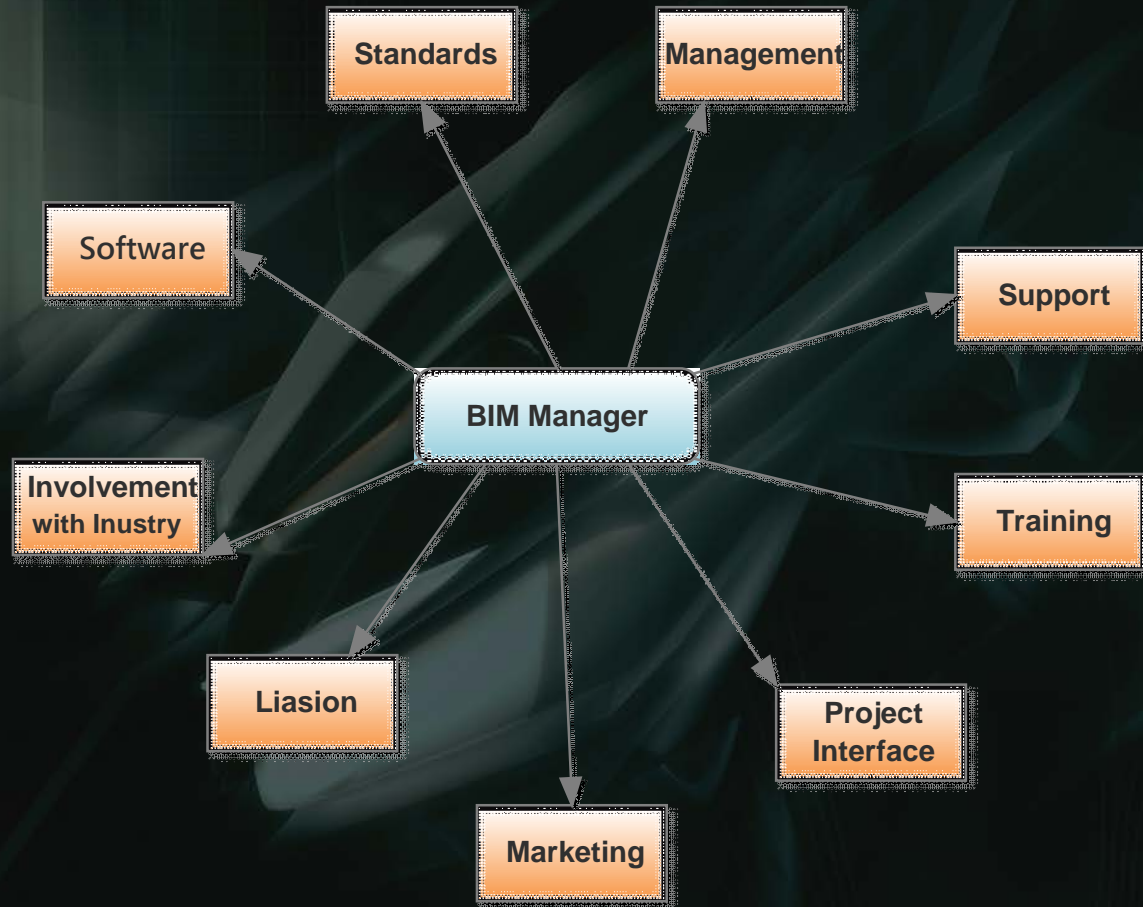
1. BIM office infrastructure
2. In-house Setup - Local Office > International offices
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# In House Local Office Organization chart





# Organization chart – BIM Manager

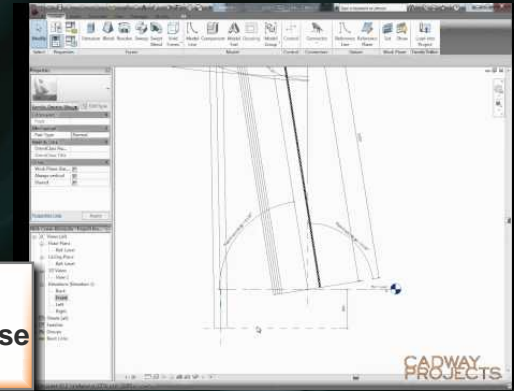


# BIM Family Creations – Family Man



**Strict control to Standards**

**Parametric, Mathematic sense**

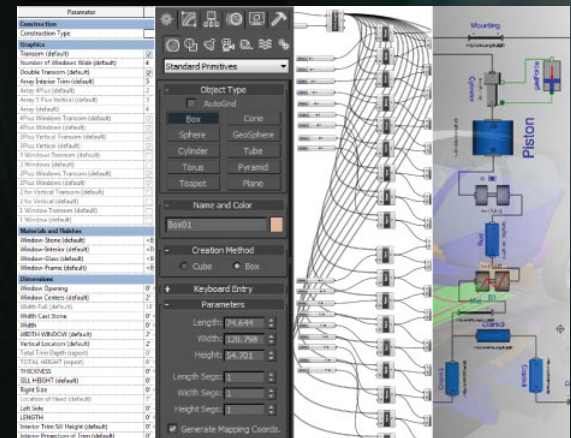
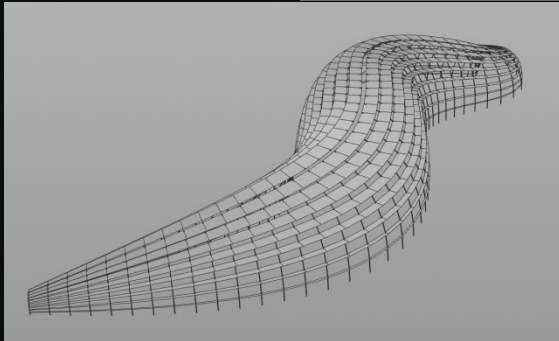


**Family Man**

**Research Based**

**Organizational Skill / Librarian**

**Industry Knowledge**

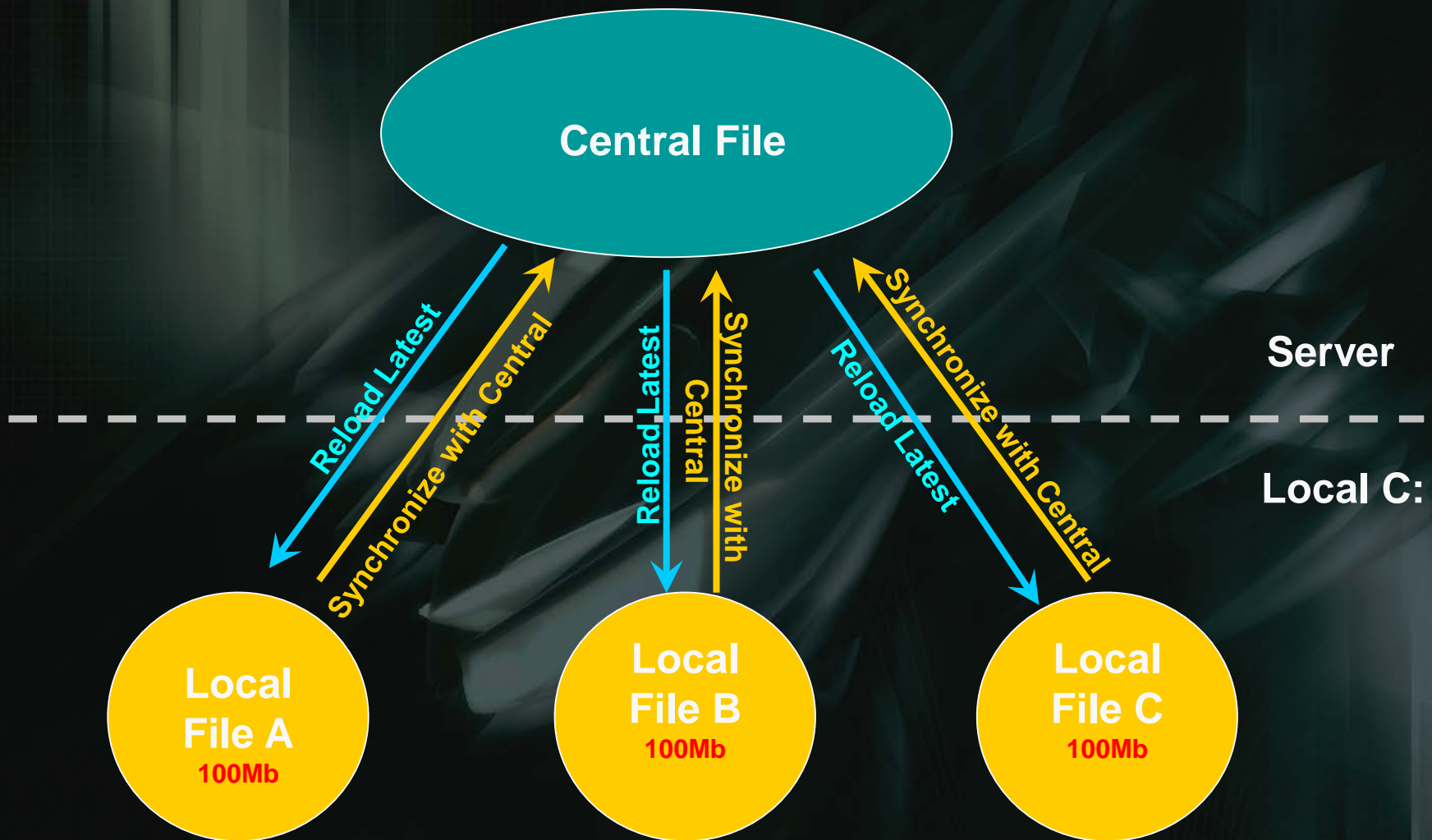


# In-House Design – Local Office

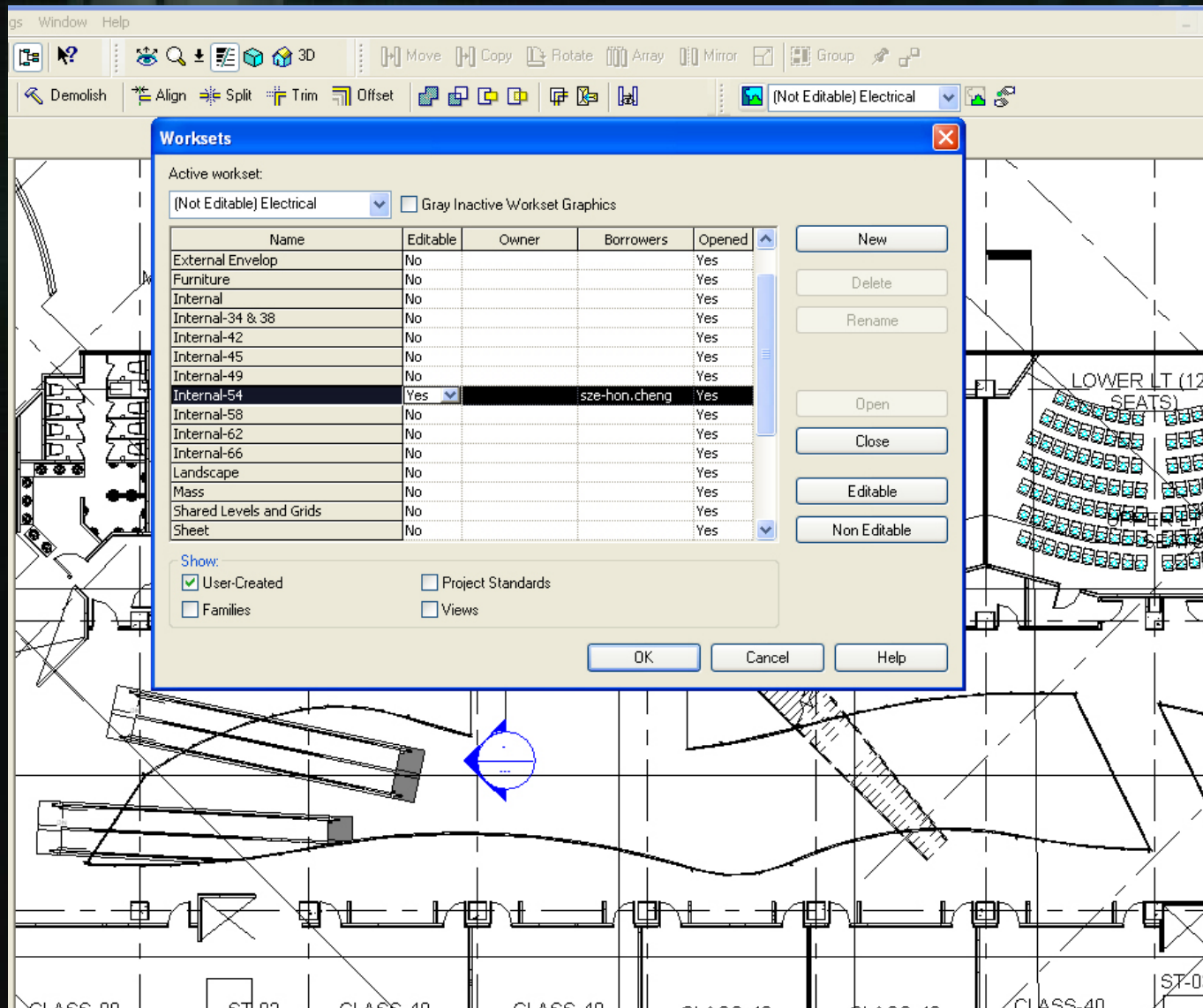
- Same Reference System
- Same Co-ordinates, same Height
- Complex model broken into pieces
- Physical Communication
- Same BIM Project Standard – naming etc



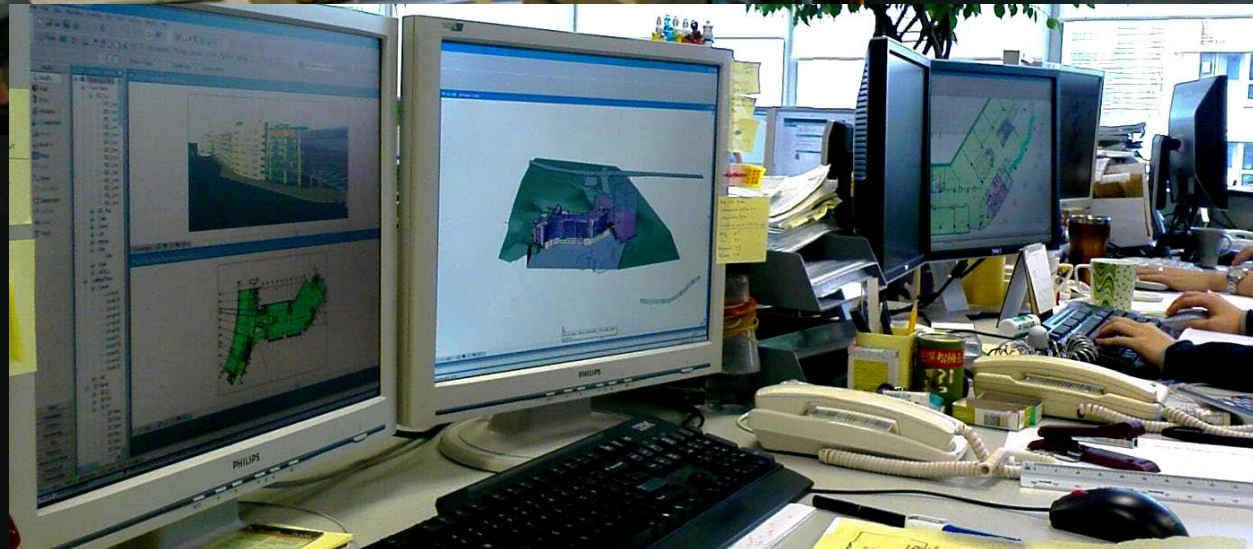
# In House Local Office - Data Synchronization



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



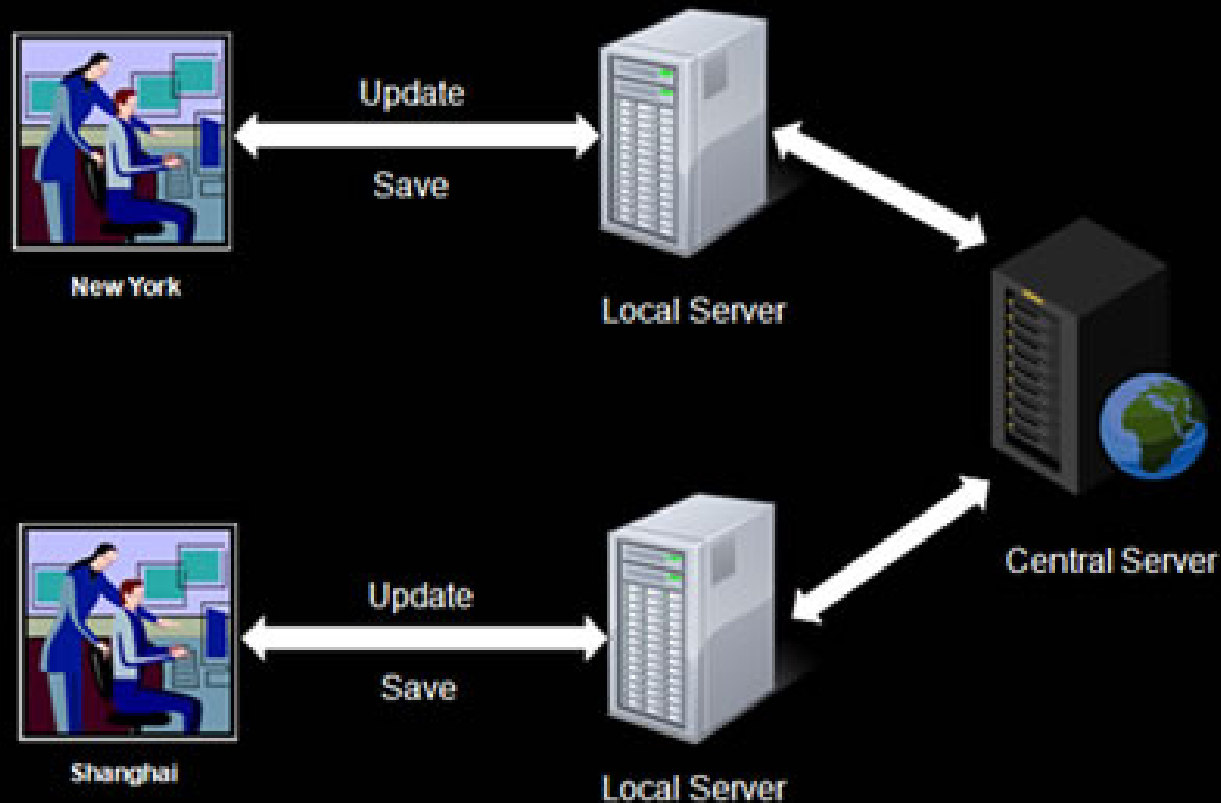
# In-House Design & Production Team Structure





# In-house Setup - International offices

## Revit Server



- Maximize resources
- Round the clock operation

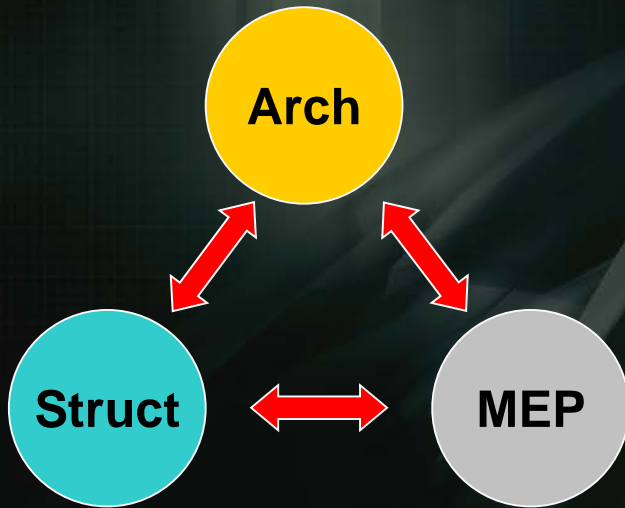
# BIM Practices

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**

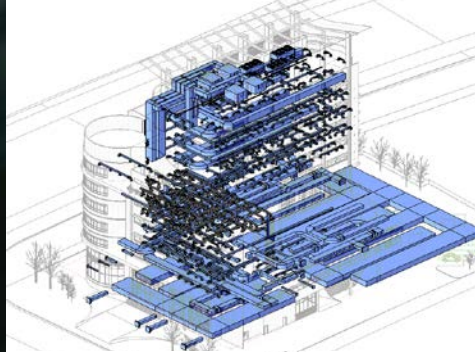
# External Collaboration Setup

## Full BIM Project Team Structure

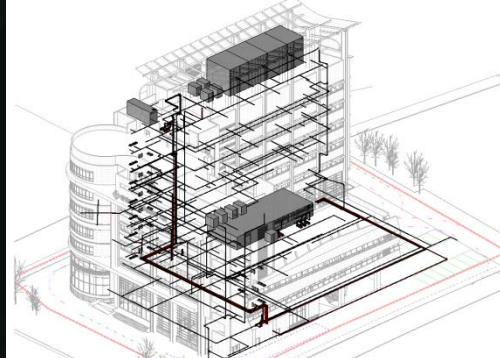
Architecture  
+ Structure



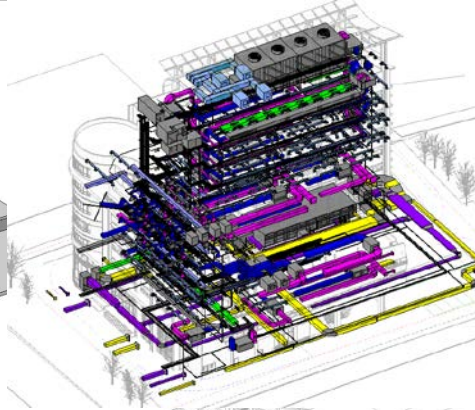
HVAC Installation



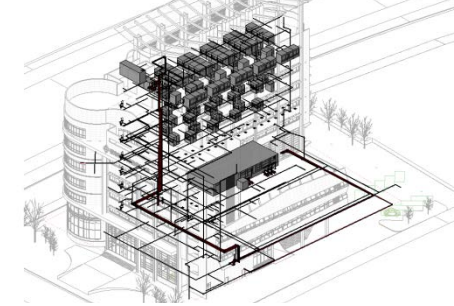
P/D Installation



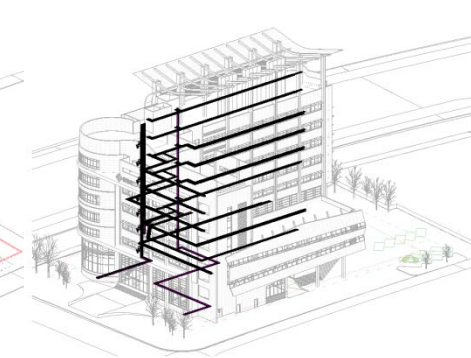
MEP



Fire Services Installation

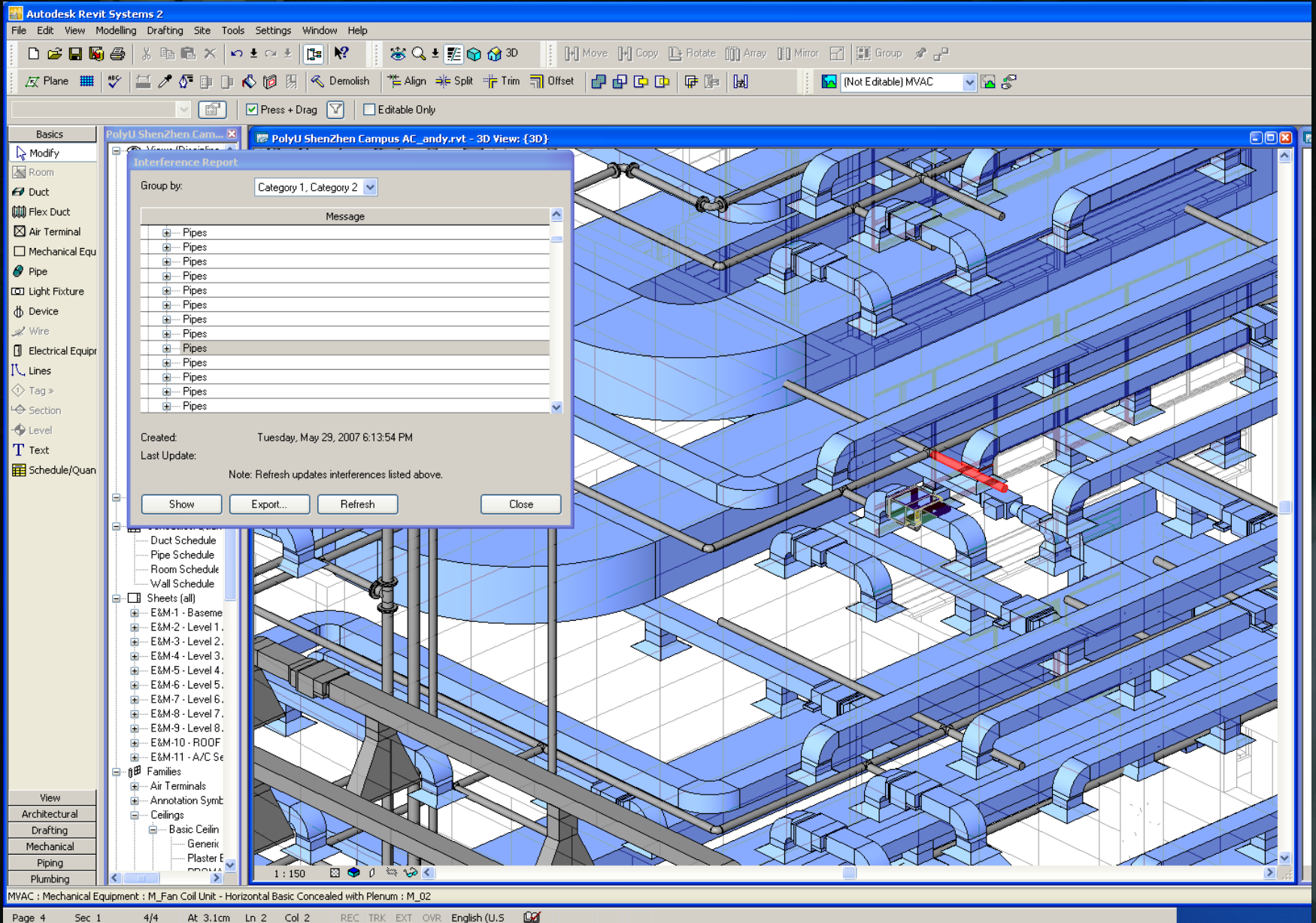


Electricity Installation





# Clash Analysis



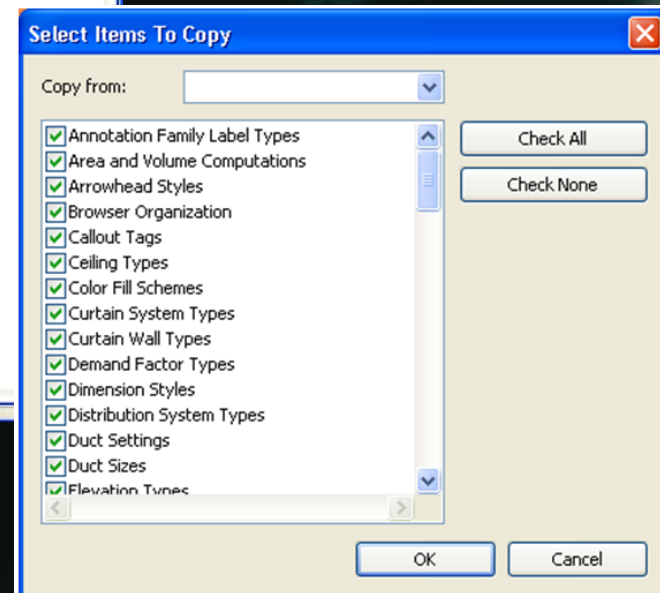
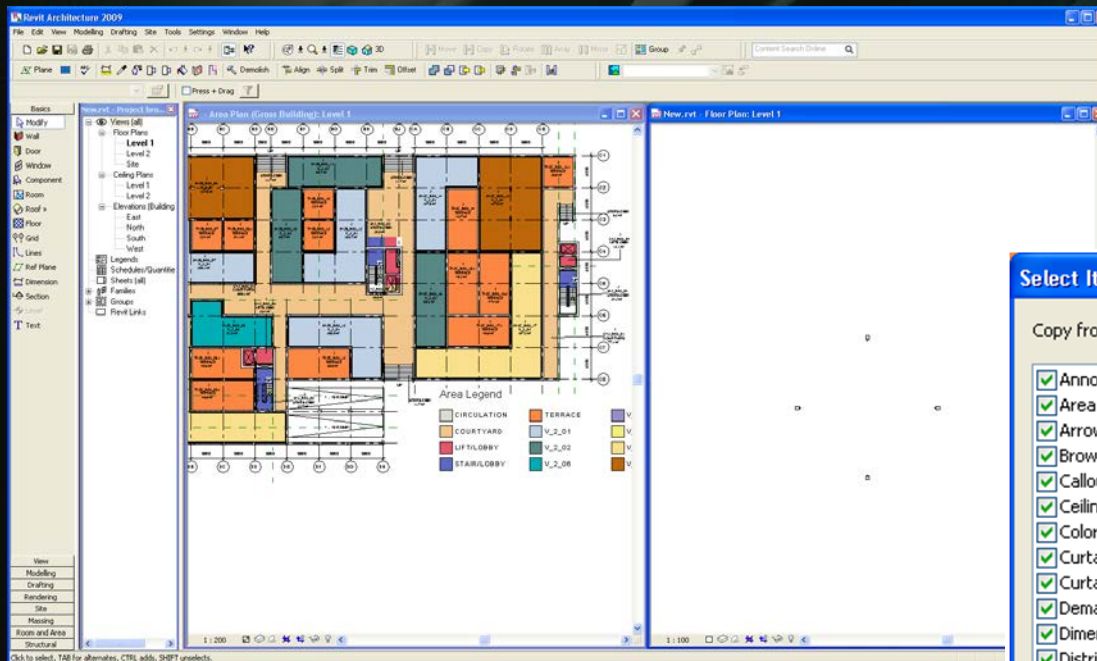


# Partial BIM Project Team Structure



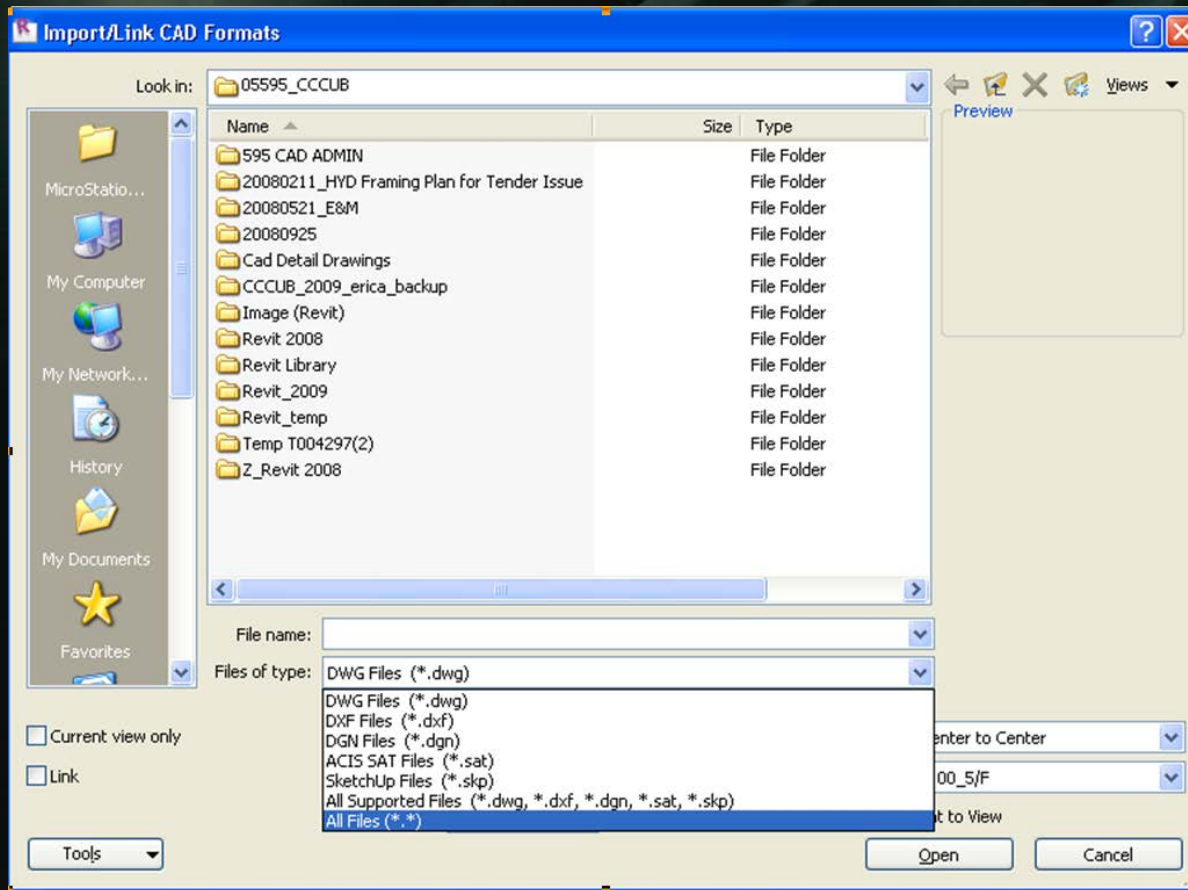
# Partial BIM Project Team Structure

- 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

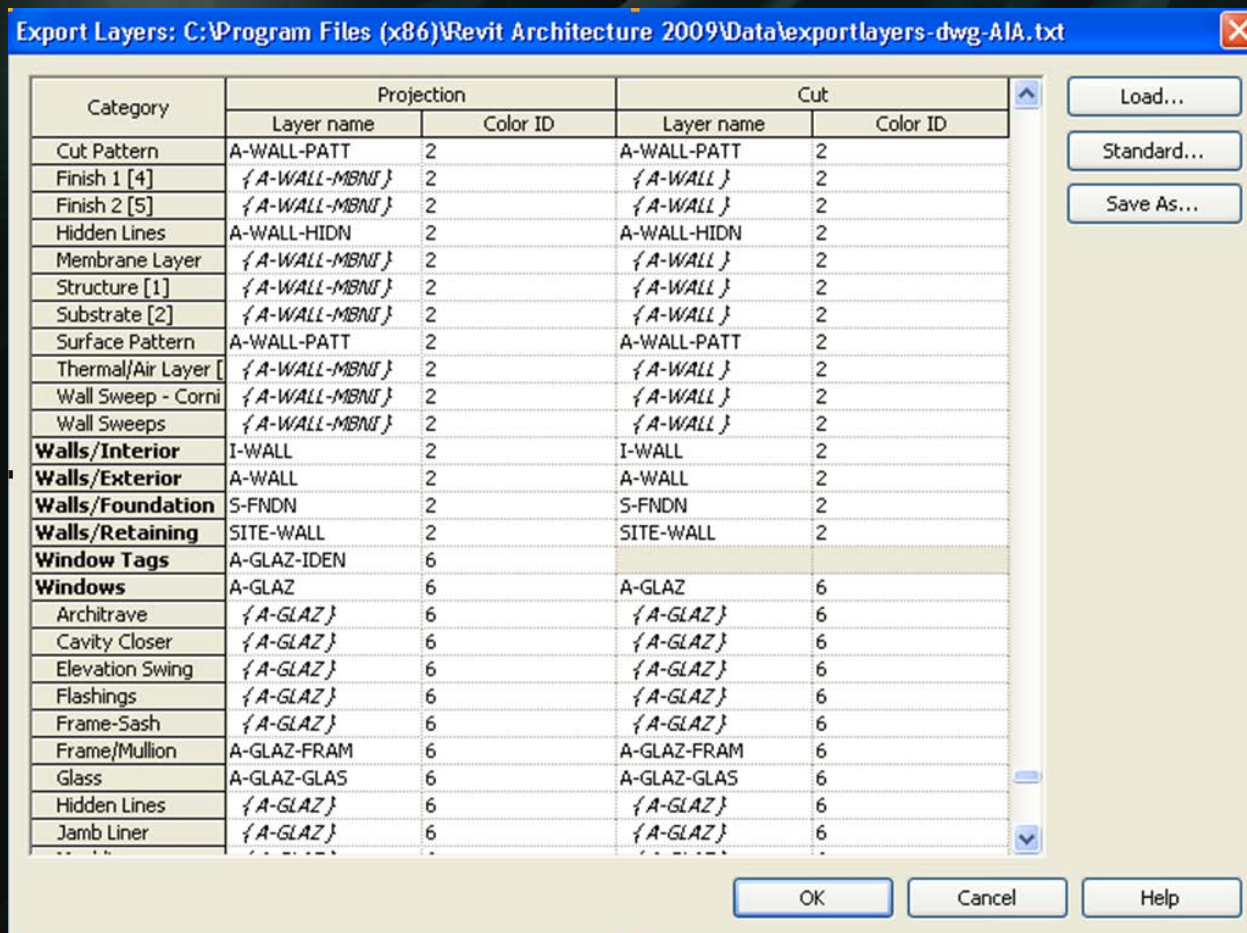




# Partial BIM Project Team Structure

- 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

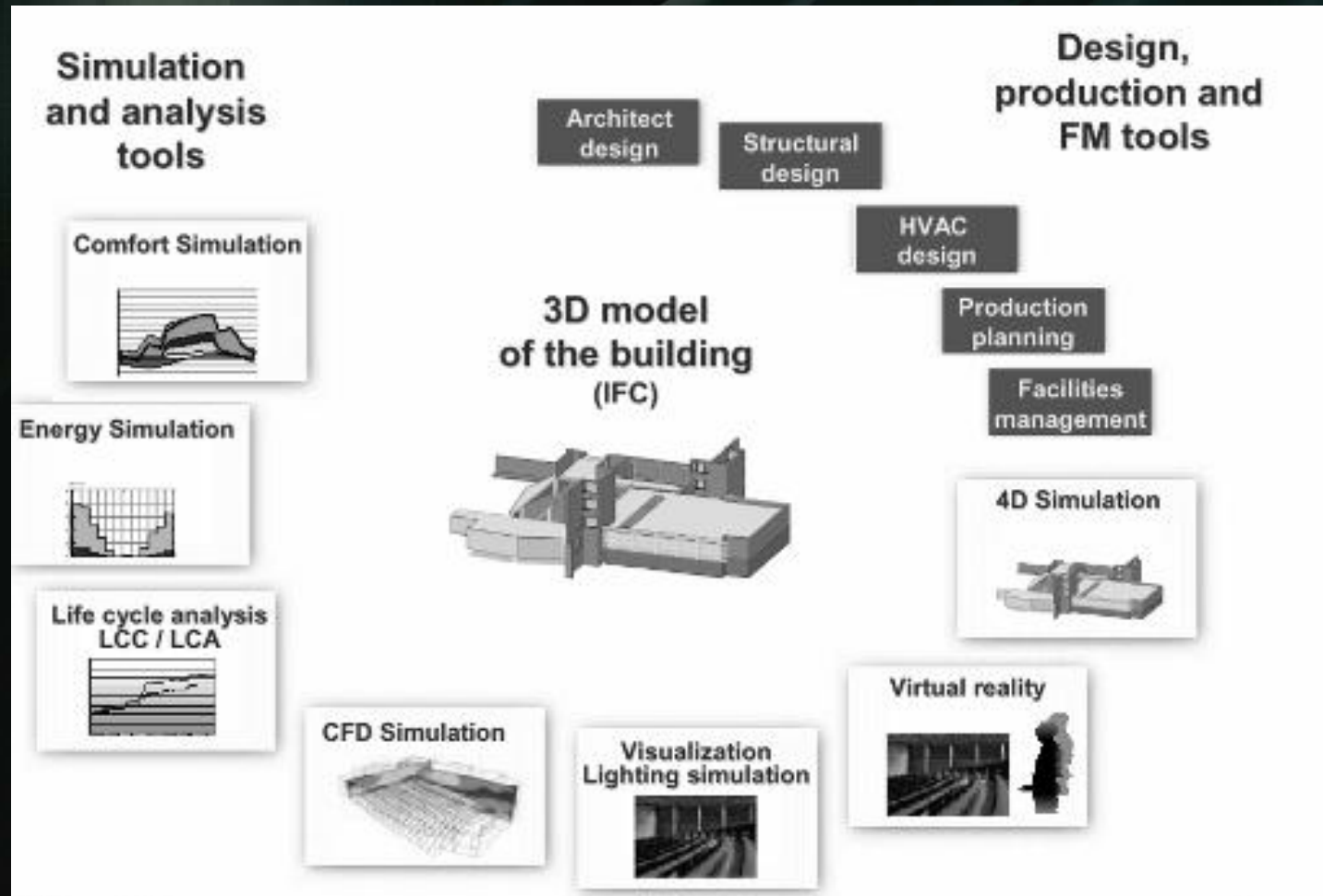
Professional Knowledge  
No BIM Operation Knowledge

## 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



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



Virtual Asset



Physical Asset



Physical Asset

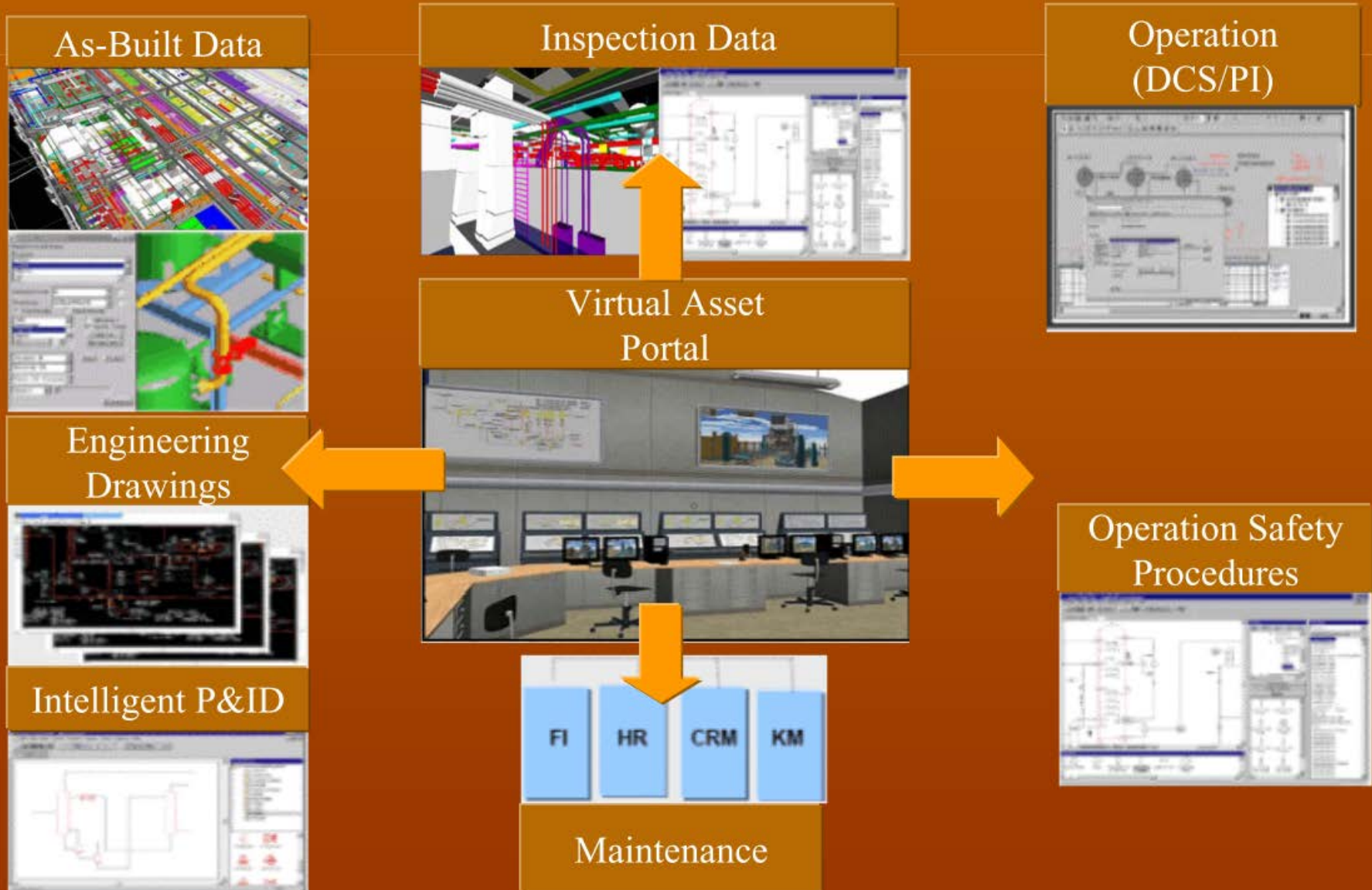


Virtual Asset

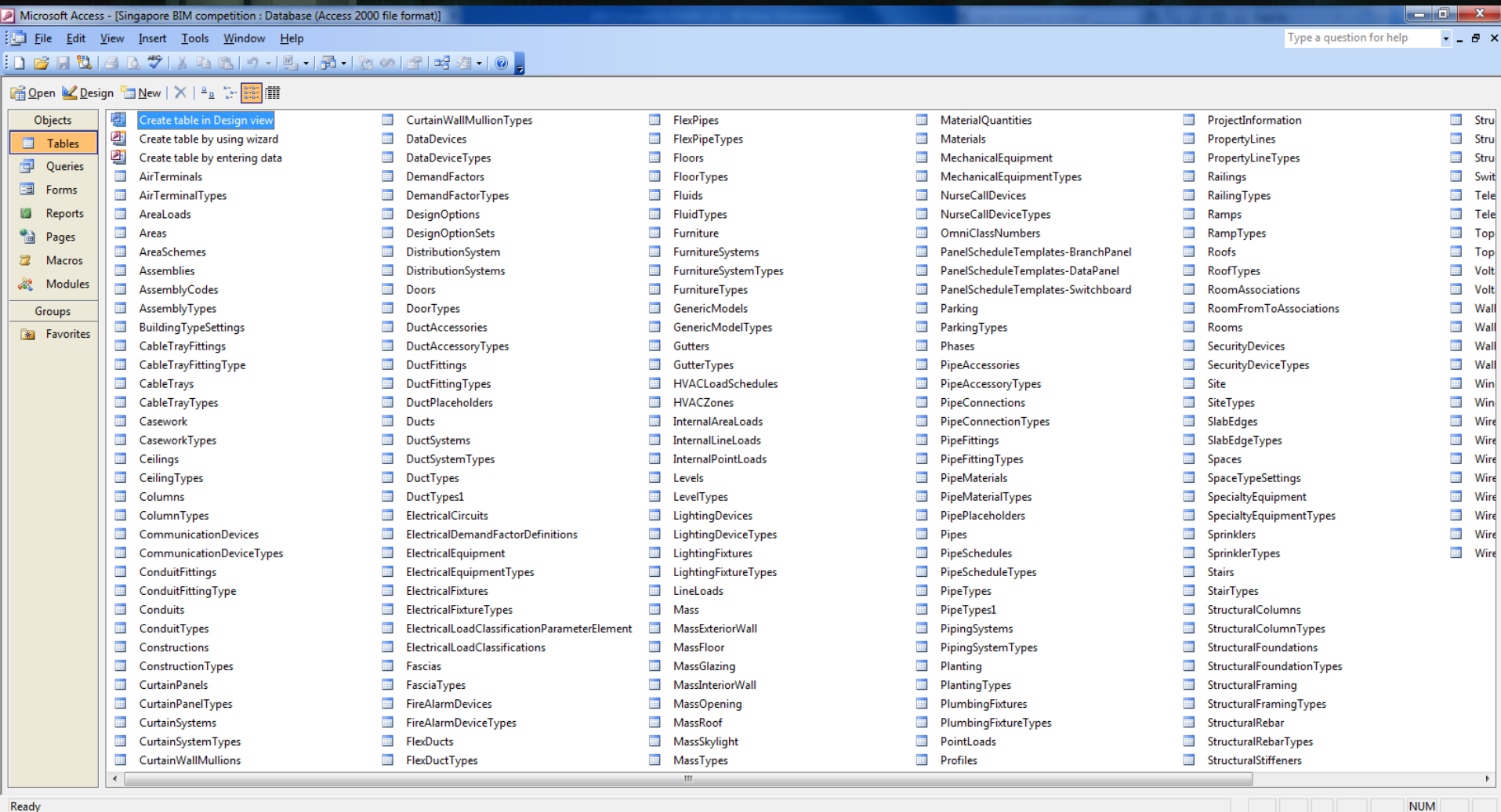


# As-built BIM Field Checking





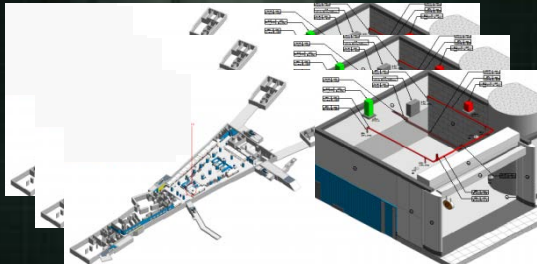




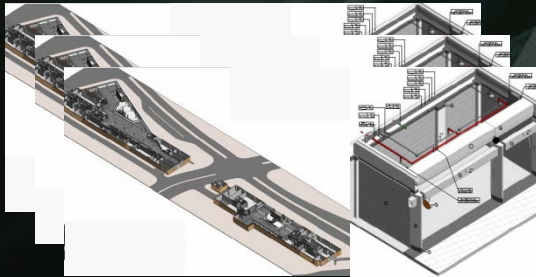


## MODELLING + INDIVIDUAL DATABASE

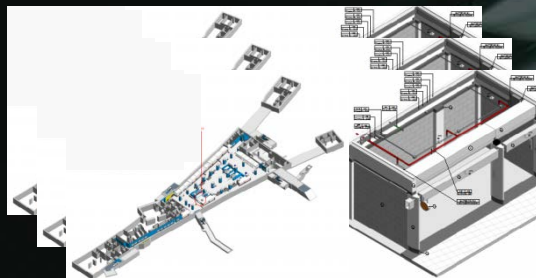
S1



S2



S3



## FLEET WIDE DATABASE

**MEGA  
DATABASE**

**OTHER  
DATABASES**

## APPLICATIONS

**APP 1**

E.G. CCTV  
MONITORING

**APP 2**

E.G. RETAIL

**APP 3**

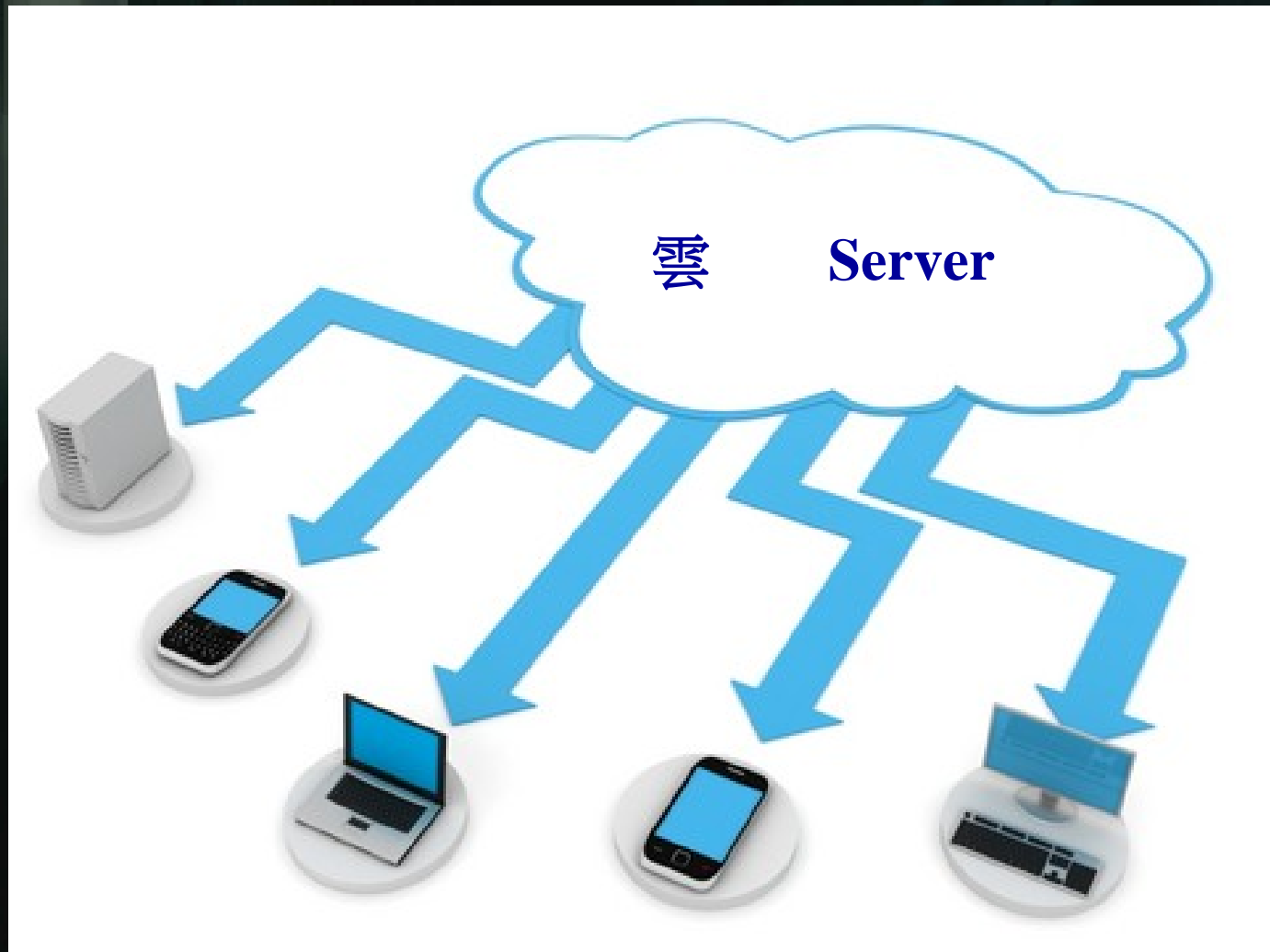


# CLOUD



- 1 Storage
- 2 High Speed Performance
- 3 Collaboration

# Accessibility / Mobility



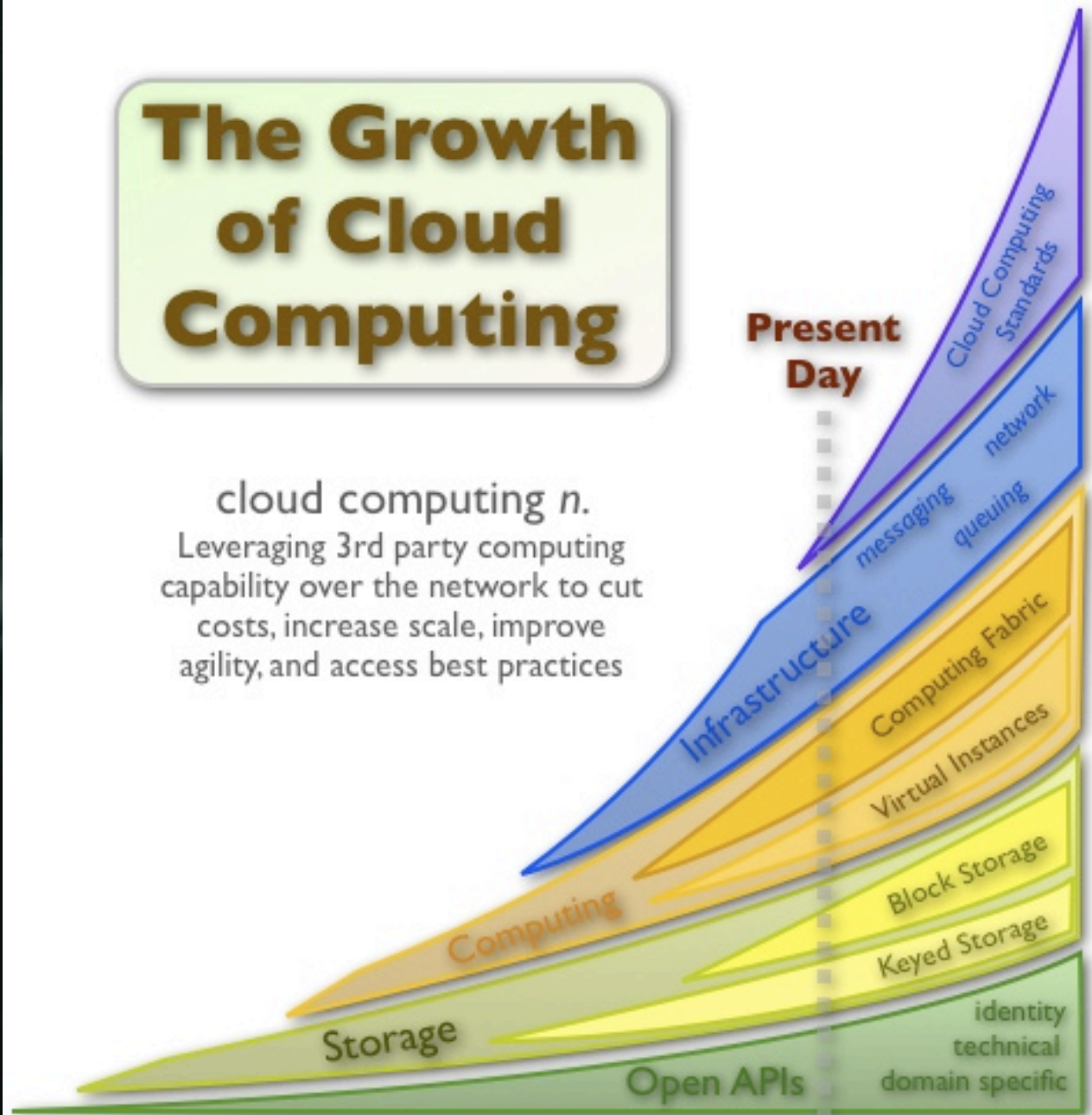
端 Terminal



# CLOUD

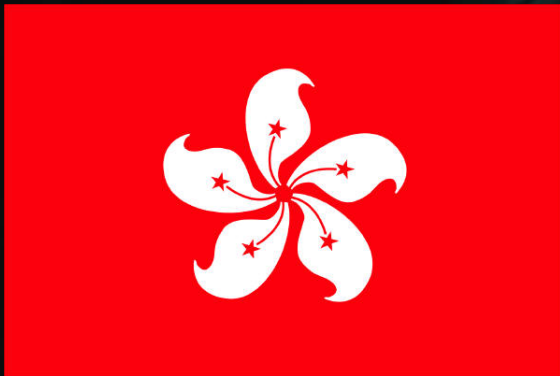
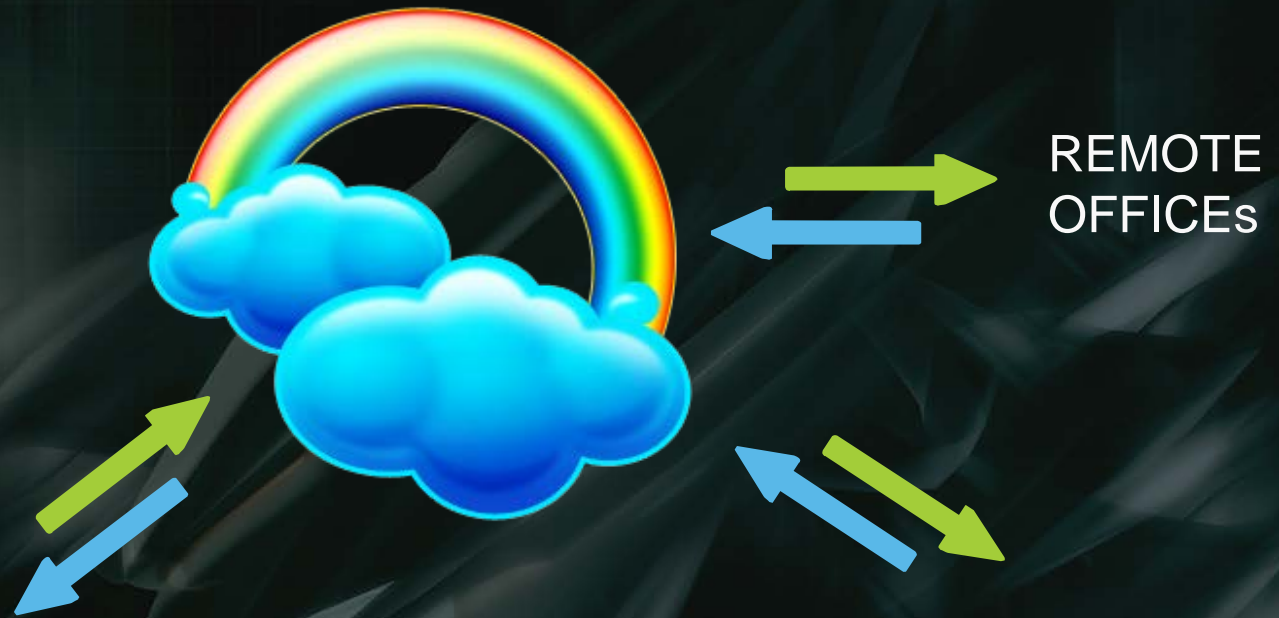
## The Growth of Cloud Computing

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...