Getting out of

# BIM Silos

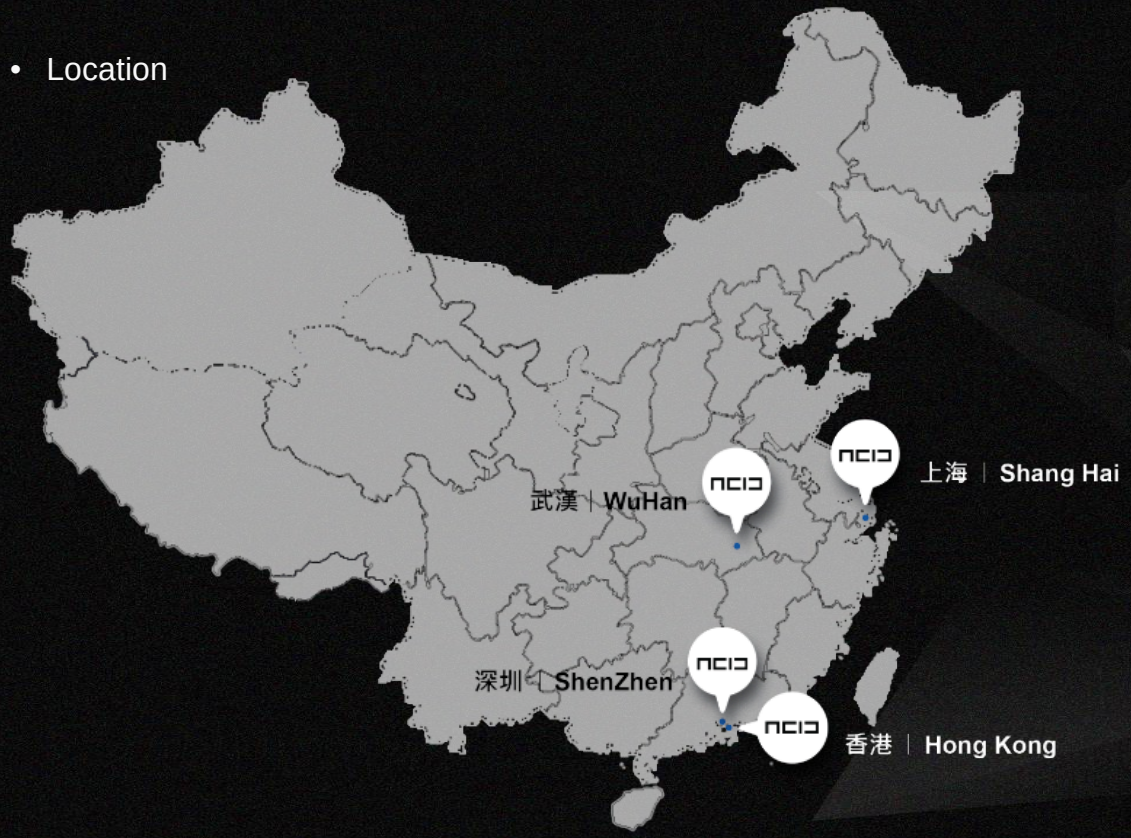
David Fung

*Registered Architect, HKIA*
*Managing Director, A.C.I.D.*
*HKIBIM  Chairman*
*HKUSPACE Department of Architecture, Adjunct Lecturer*

A DVANCED
C ONSTRUCTION
I NFORMATION
D EVELOPMENT

- Hong Kong, Wuhan, Shanghai and Shenzhen Office
- Over 100 qualified Professional and Technical Staff

- Location



我们是

中华人民共和国住建部
《建筑工程设计信息模型交付标准》参编单位
《建筑工程设计信息模型分类和编码标准》参编单位
《建筑工程设计信息模型出图标准》参编单位

buildingSMART中国分部理事单位

香港建筑信息模拟学会（HKIBIM）发起人及现任会长（David Fung）
香港建筑师学会（HKIA）公司会员(ACID-HK)
中国数字建筑设计专业委员会（DADA）联合发起人
香港房屋署、建筑署BIM技术管理顾问及培训导师团队

行业荣誉

设计获奖/Design Award

• 荣获2013国际绿色建筑设计银奖/Award Silver Medal of International Green Architecture 2013
• 荣获2013欧洲设计年TOP50设计/Award TOP50 Design of 2013 European Design Year
• 荣获2012年公民建筑奖提名
• 荣获2014WA中国建筑奖社会公平奖佳作奖/Excellence Award of 2014 WA Social Equality Award
• 荣获2014WA中国建筑奖设计实验奖入围奖

BIM 获奖/BIM Award
• ACID-HK HIM 項目（BIM技术古建保护应用）荣获:
香港2015buildingSMART大奖
香港BIM大奖 2015
• ACID-HK 為香港BIM Award 2014 贊助機構
• ACID-HK香港董事总经理冯树坚先生:
荣获香港建造業議會2014卓越建築信息模擬獎BIM Excellence Award
被选为香港建筑模拟学会（HKIBIM）会长 2015-16
被选为香港建筑师学会( HKIA )BIM 及IT 小組副会长 2015-16
接受亚洲电视台采访發表對香港BIM 發展的意見及討論

香港建築師學會

**The Hong Kong Institute of Architects**

This is to certify that

**Advanced Construction Information Development Limited**

was admitted as **a Corporate Member**
of the Institute on the **Twenty-fifth**
day of **April 2015**

thereby accepting the privileges and responsibility of membership and undertaking to comply with the Rules of the Institute.

*President* *Registrar*

The Hong Kong Society of Architects was founded in the year 1956. It was reconstituted in the year 1972 as the Hong Kong Institute of Architects.

*Date of issue* **29th April 2015** *Serial No.* **CM0200**

*This Certificate Remains the Property of the Hong Kong Institute of Architects.*

B = Building 建築

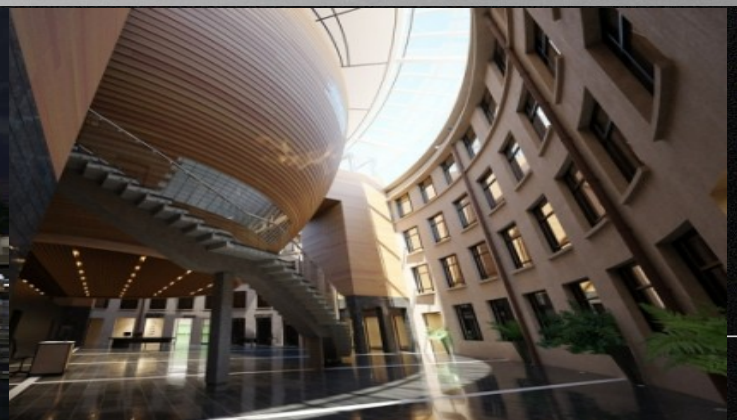
I = Information 資訊

M = Modelling 模型/ 模擬

## Fake BIM

# M + ?

JUST 3D MODEL – NOT BIM

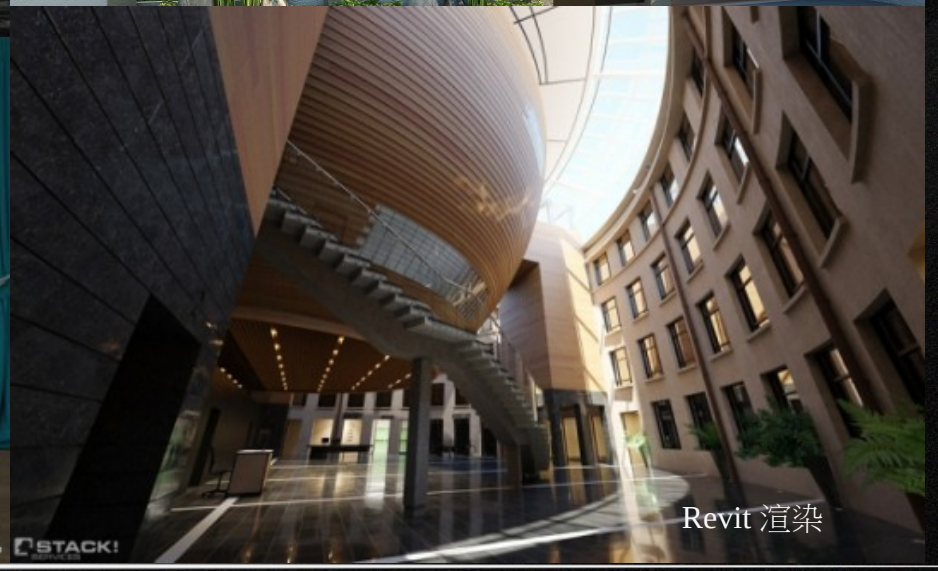


# Fake BIM

AutoCAD 渲染

3D Max 渲染

SketchUp 渲染


Revit 渲染

# Fake BIM

- Rendering
- CG (Computer Graphic)
- Animations
- Interactive  Gaming

Use BIM tools not necessarily means BIM!

## HALF-BIM

# I <> M

3D MODEL >> QTO , CLASH ANALYSIS

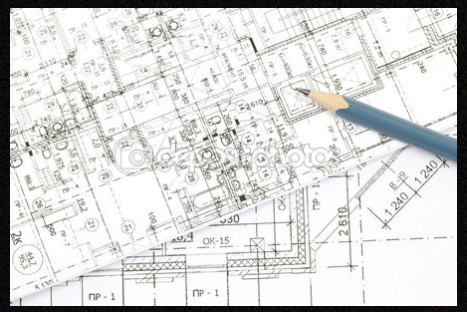
# HALF BIM

DESIGN

CAD

CAD

REVIT / NAVISWORKS



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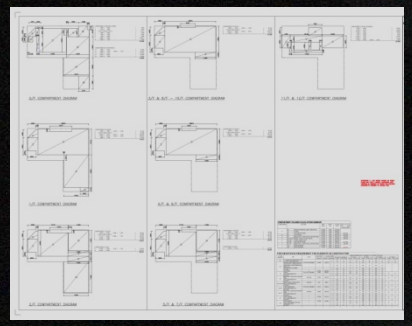

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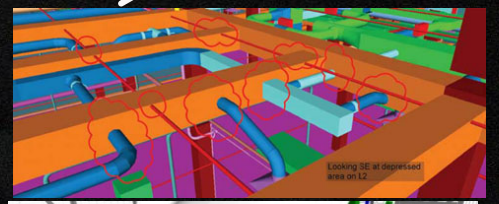
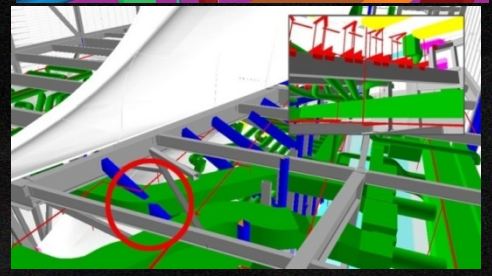




CONSTRUCTION INFORMATION

STATUTORY SUBMISSION

CLASH DETECTION / RENDERING

# REAL BIM

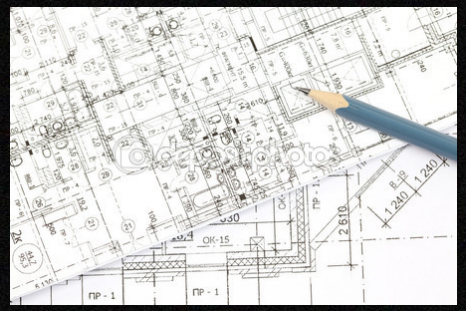
I = M

I > M

INFORMATION FROM MODEL,

INFORMATION MORE IMPORTANT

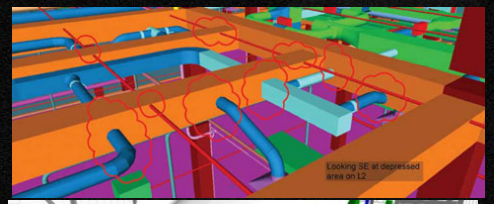
# REAL BIM

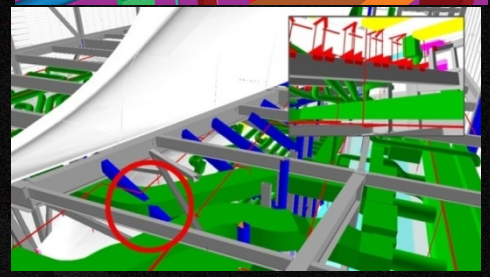


CONSTRUCTION
INFORMATION

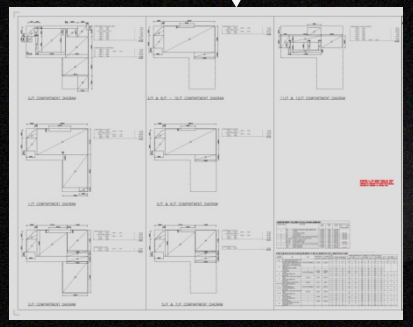
DESIGN
in
BIM

Single Source Database

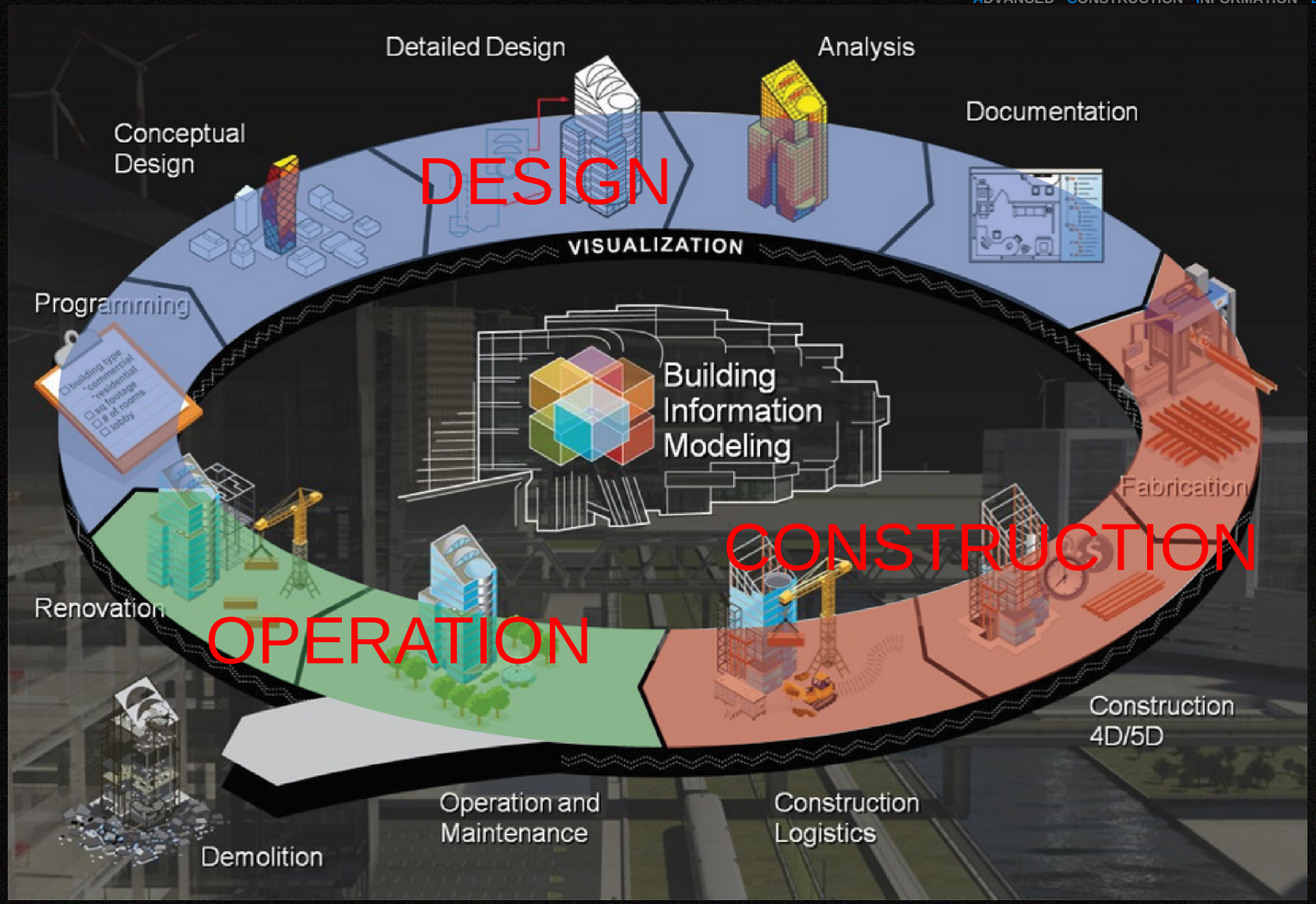




CLASH
DETECTION



STATUTORY
SUBMISSION


Detailed Design
Analysis
Conceptual Design
Documentation
DESIGN
VISUALIZATION
Programming
Building Information Modeling
Fabrication
CONSTRUCTION
Renovation
OPERATION
Construction 4D/5D
Demolition
Operation and Maintenance
Construction Logistics

# What happen to BIM in:

- Design Adoption
- Construction Connectivity
- Authority Support
- BIM Practice and Standard
- BIM Consultancy
- BIM Procurement

# What happen to BIM in:

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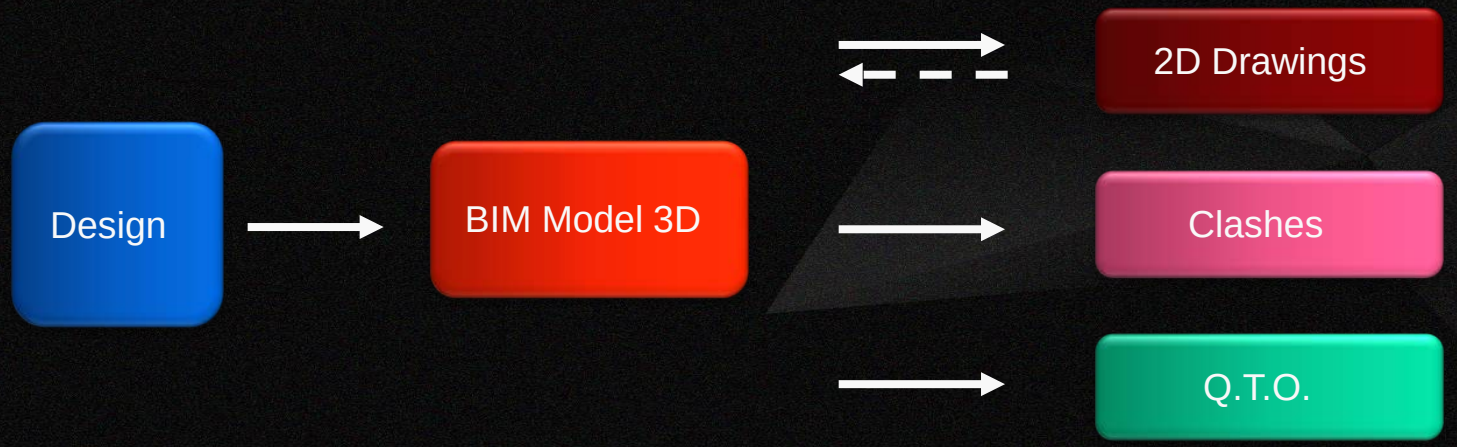
## Perceived BIM Workflow

## True BIM Workflow :



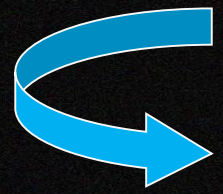
Tool → Design → Presentation → Product

工具 → 设计 → 表达方式 → 完成品

# BIM in a Team

Bible said, “Men do not live on bread alone, but on every word from the mouth of God.”

Project directors said, “Projects are not done by individual alone, but by every contribution coming from each of the TEAM members.”

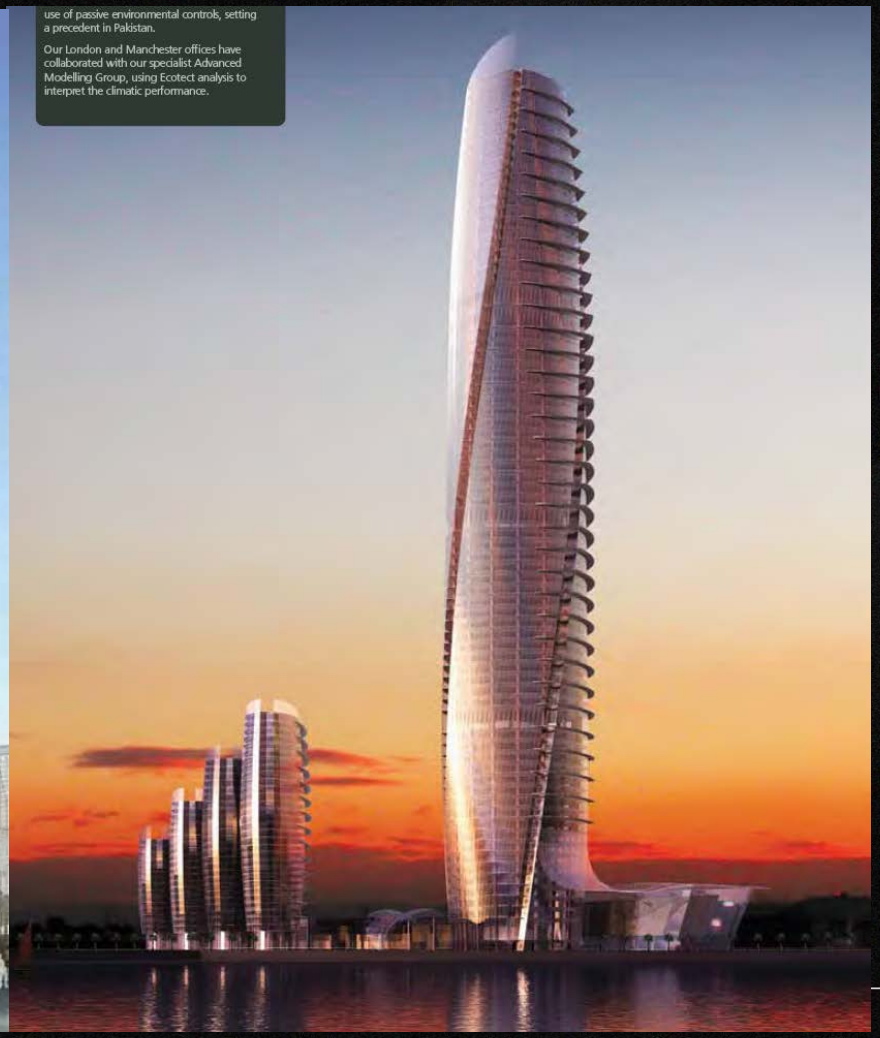


# TEAMS

1. **In - House Design & Production TEAM**
2. **Project TEAM**
3. **Other Consultant TEAM**

use of passive environmental controls, setting a precedent in Pakistan.

Our London and Manchester offices have collaborated with our specialist Advanced Modelling Group, using Ecotect analysis to interpret the climatic performance.



TEAM – Single Building, by elements

## Professional Designers

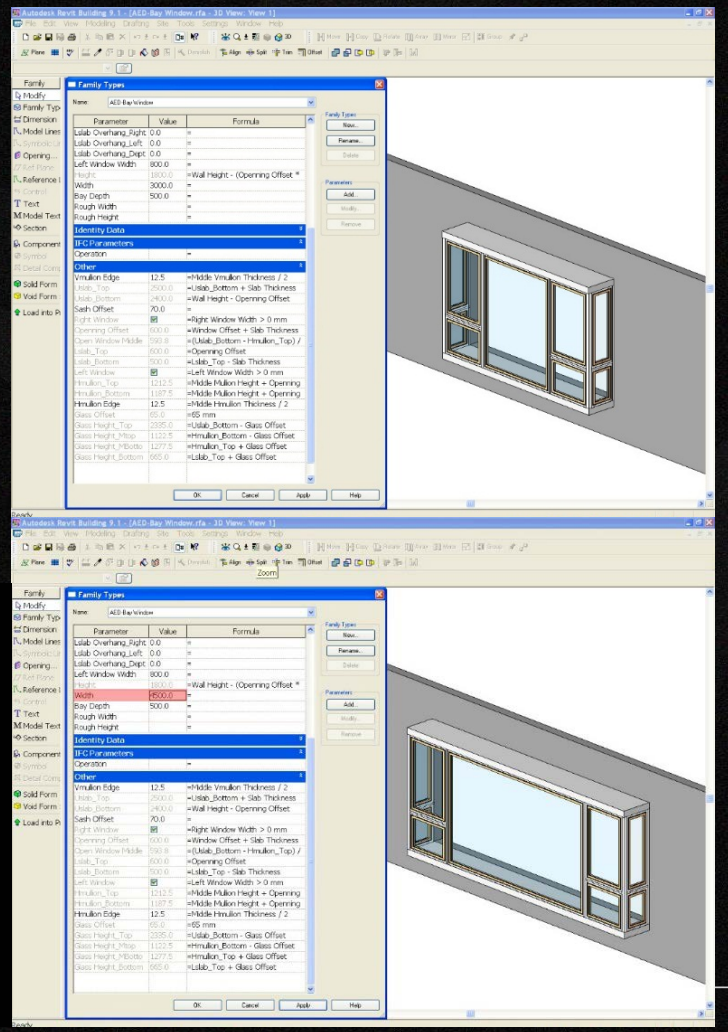
Know what to design professional
Know what to communicate!

## Family Man

Champion of System
Parametric Modeling
Mathematical Sense!!!

## Technicians

Competent BIM operators



## Same Reference System

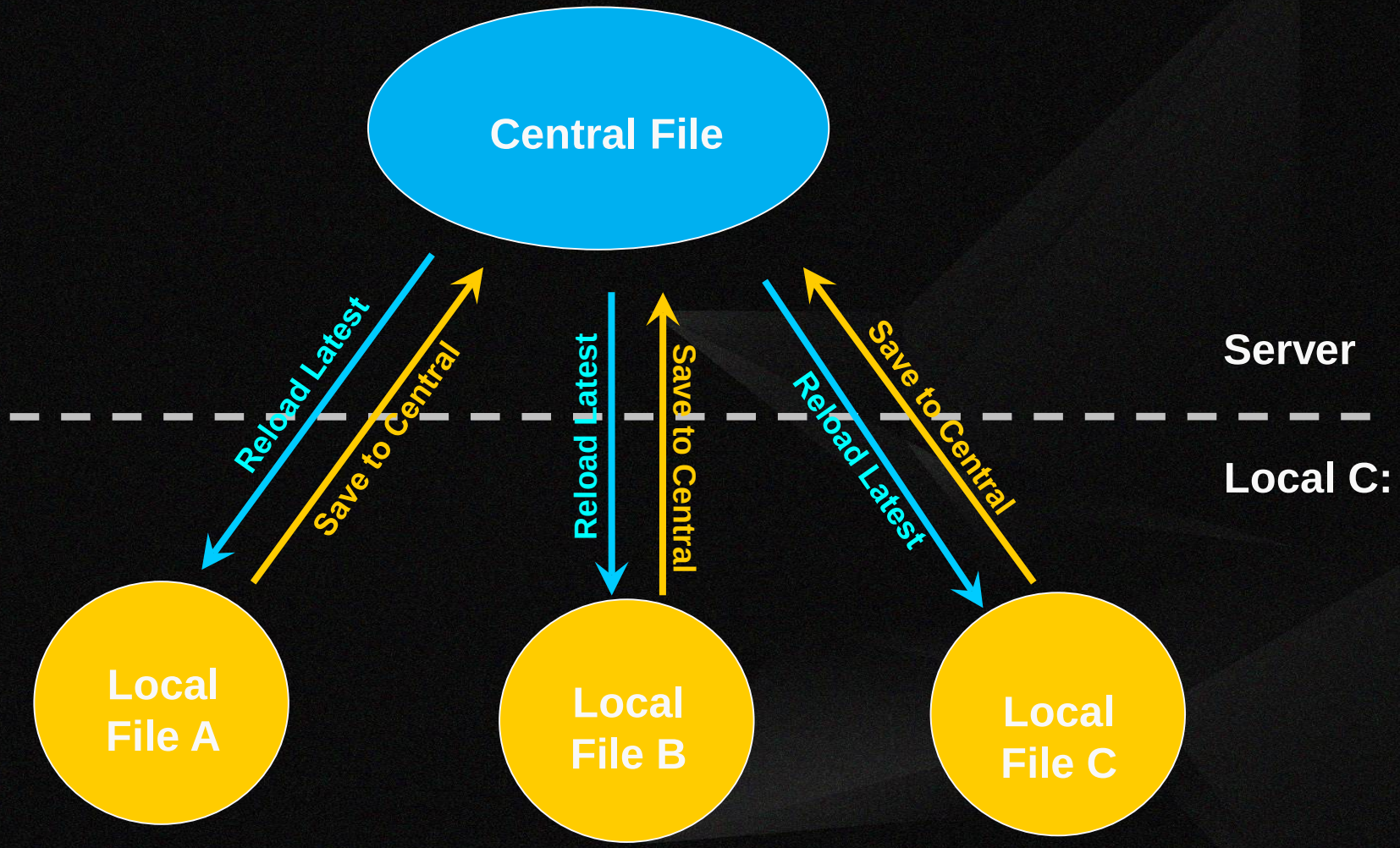
Same Co-ordinates, same Height

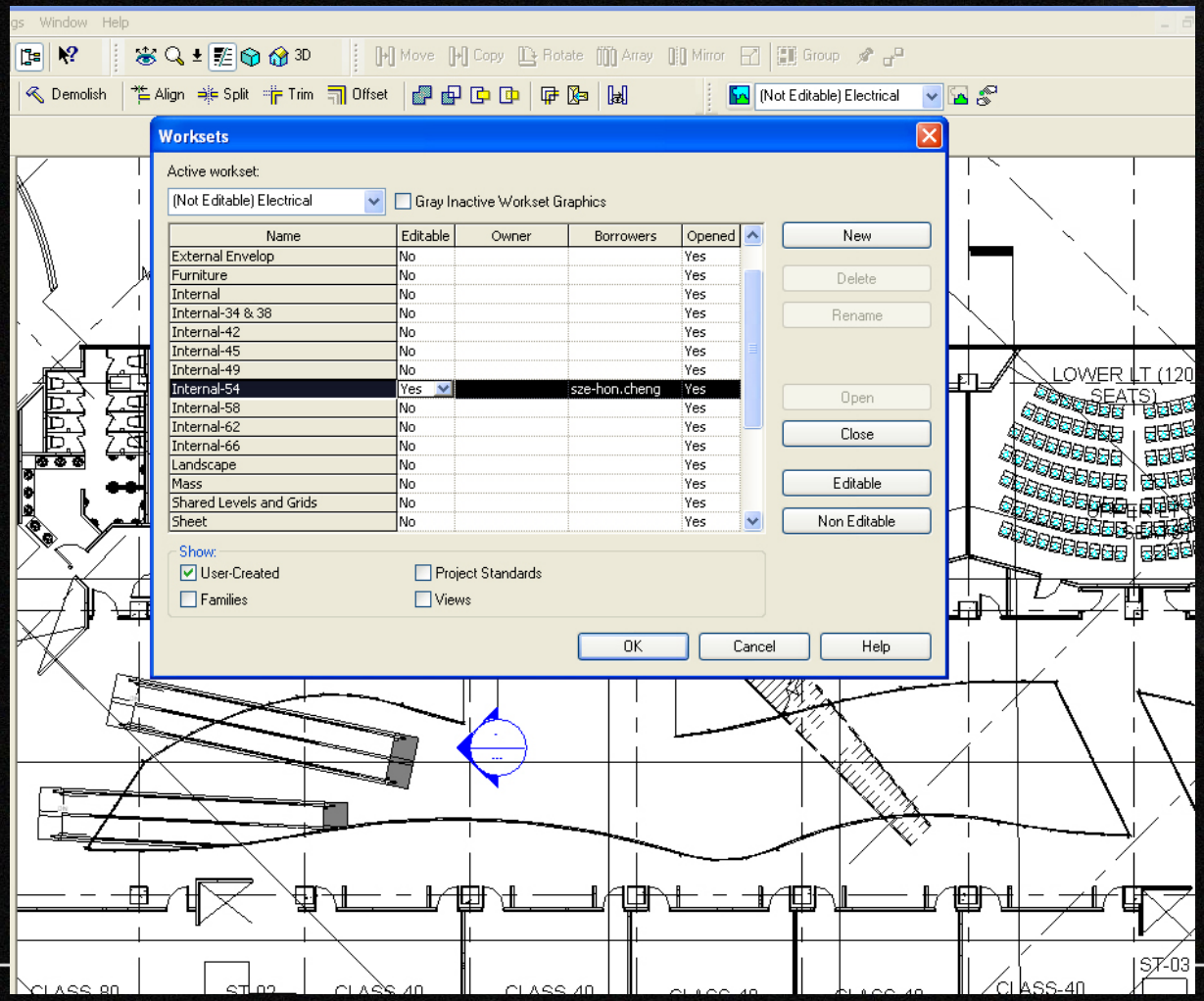
## Complex model broken into pieces

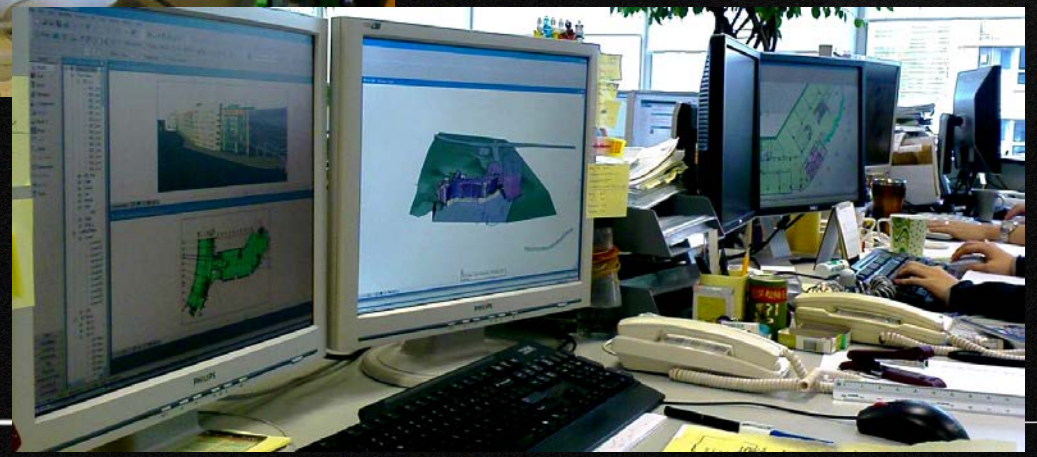
Fast network

## Physical Communication

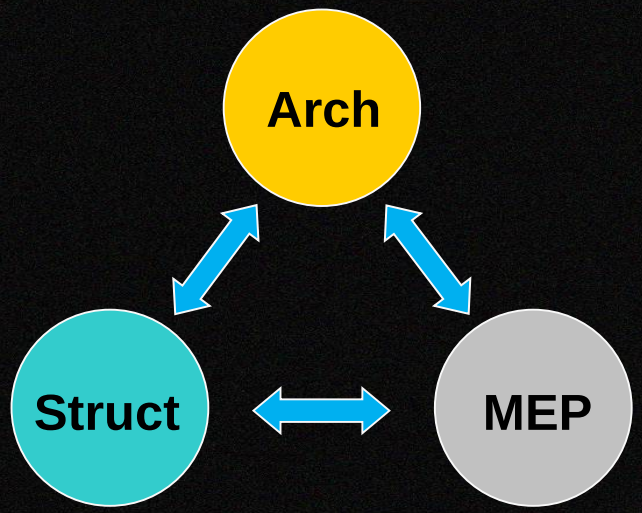
Same BIM Project Standard - naming

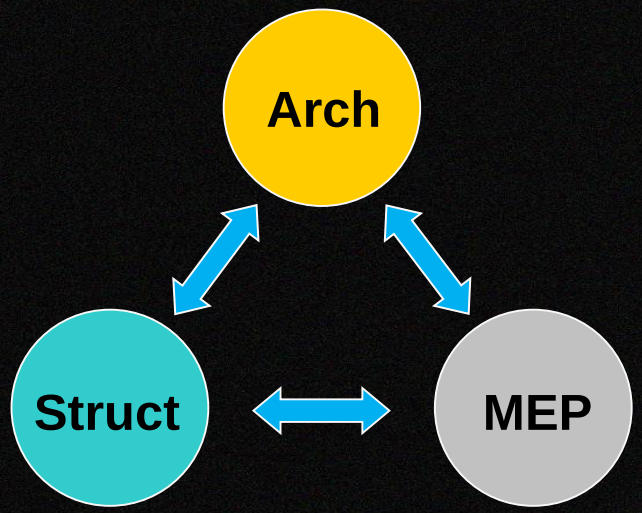

Central File
Server
Local C:
Reload Latest
Save to Central
Reload Latest
Save to Central
Reload Latest
Save to Central
Local File A
Local File B
Local File C


Window Help
3D
Move Copy Rotate Array Mirror Group
Demolish Align Split Trim Offset
(Not Editable) Electrical
Worksets
Active workset:
(Not Editable) Electrical
Gray Inactive Workset Graphics
Name Editable Owner Borrowers Opened
External Envelop No Yes
Furniture No Yes
Internal No Yes
Internal-34 & 38 No Yes
Internal-42 No Yes
Internal-45 No Yes
Internal-49 No Yes
Internal-54 Yes sze-hon.cheng Yes
Internal-58 No Yes
Internal-62 No Yes
Internal-66 No Yes
Landscape No Yes
Mass No Yes
Shared Levels and Grids No Yes
Sheet No Yes
New
Delete
Rename
Open
Close
Editable
Non Editable
Show:
User-Created
Project Standards
Families
Views
OK
Cancel
Help
LOWER LT (120 SEATS)
CLASS-40
ST-03

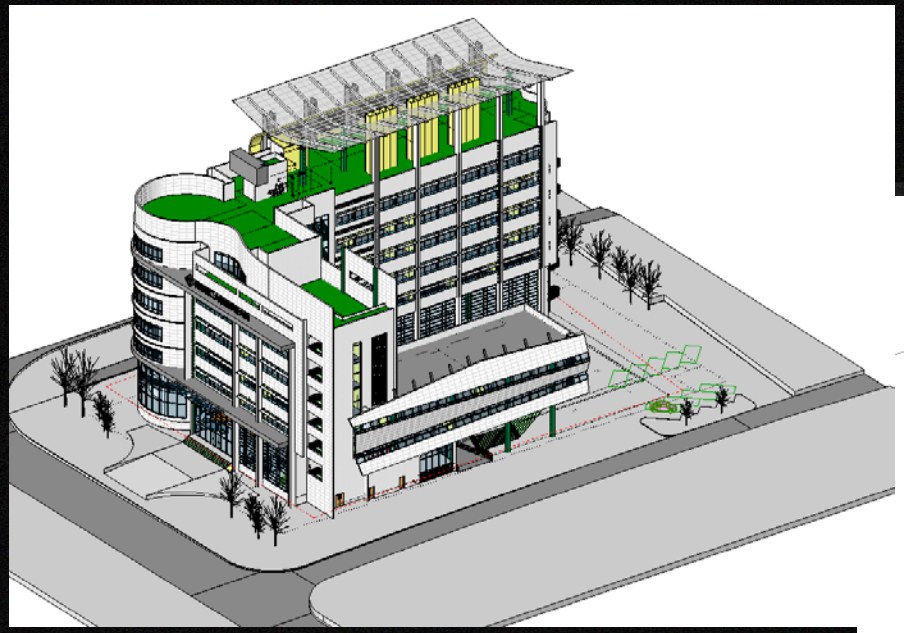


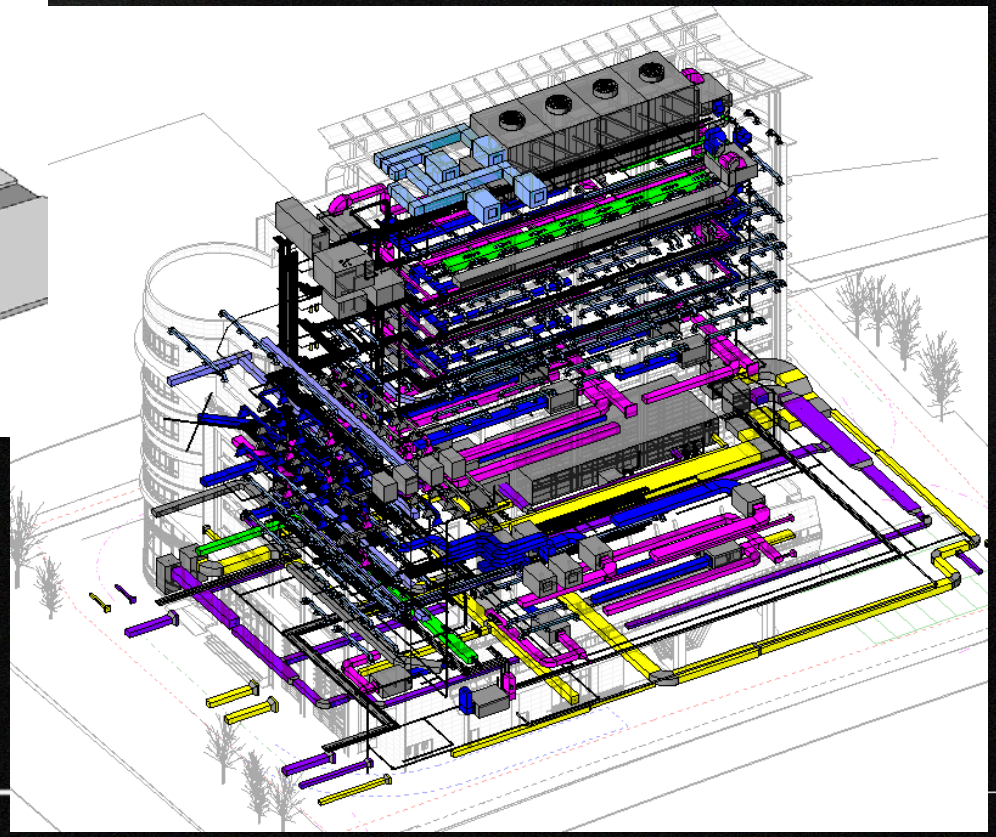
## In-House Design & Production Team Structure


Arch
Struct
MEP

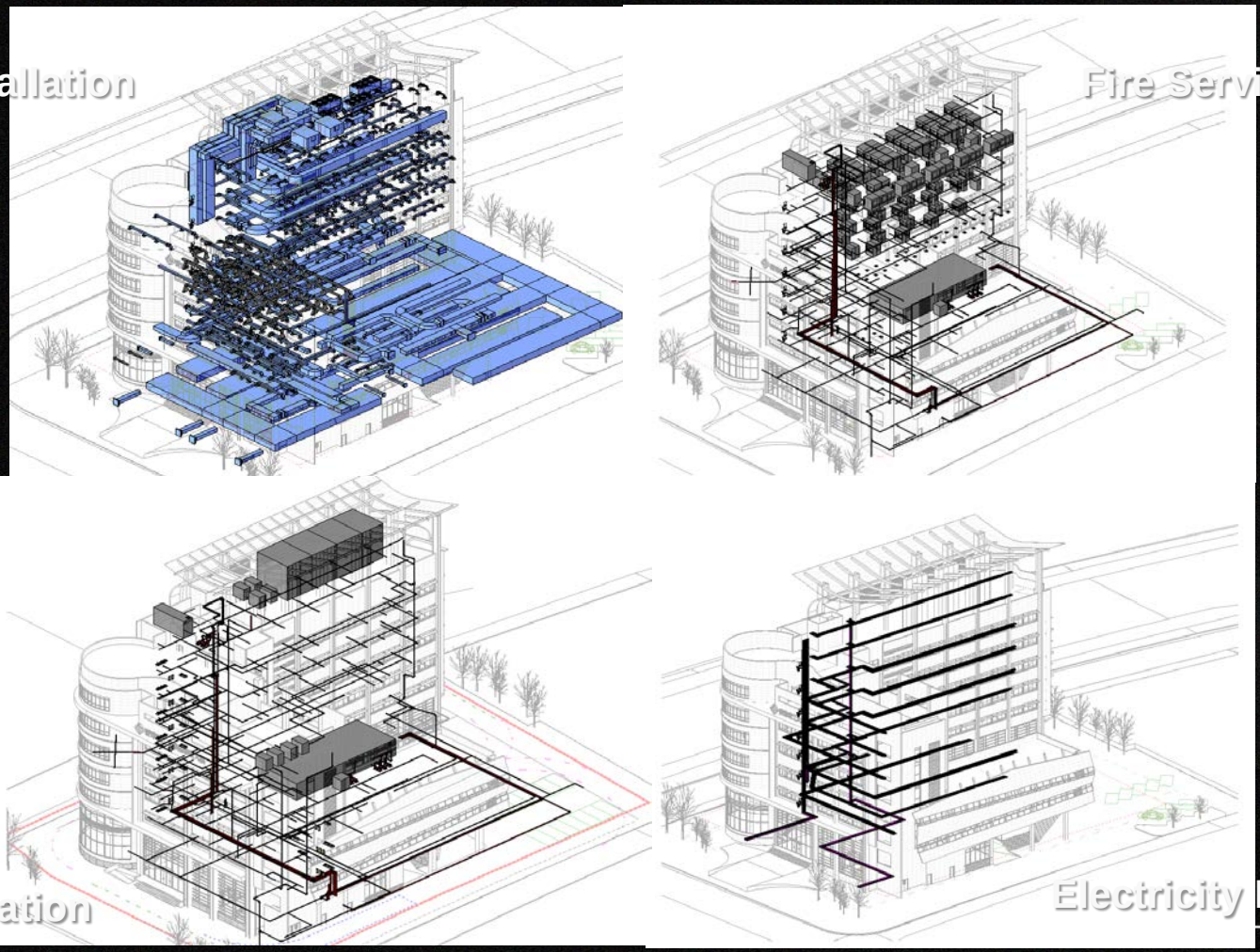


Best Practice: Office with All Disciplines
Second Best: Efficient Communication





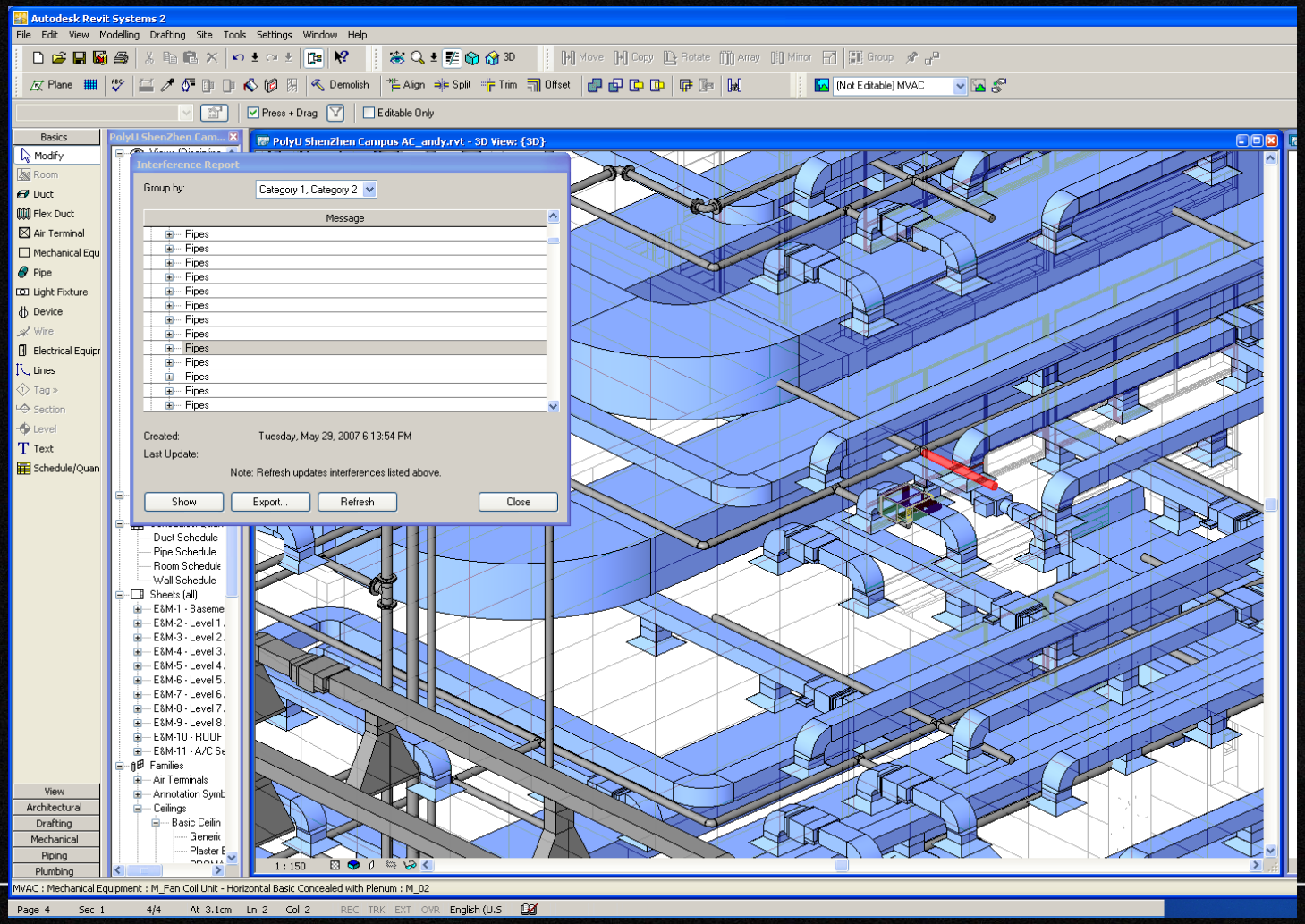
HVAC Installation



Fire Services Installation

P/D Installation

Electricity Installation




## Clash Analysis

Most Common, Efficient

Very Efficient

**Good, Arch has to build Structure**

Very Efficient for Structure

??????

NEVER HAPPEN!!!

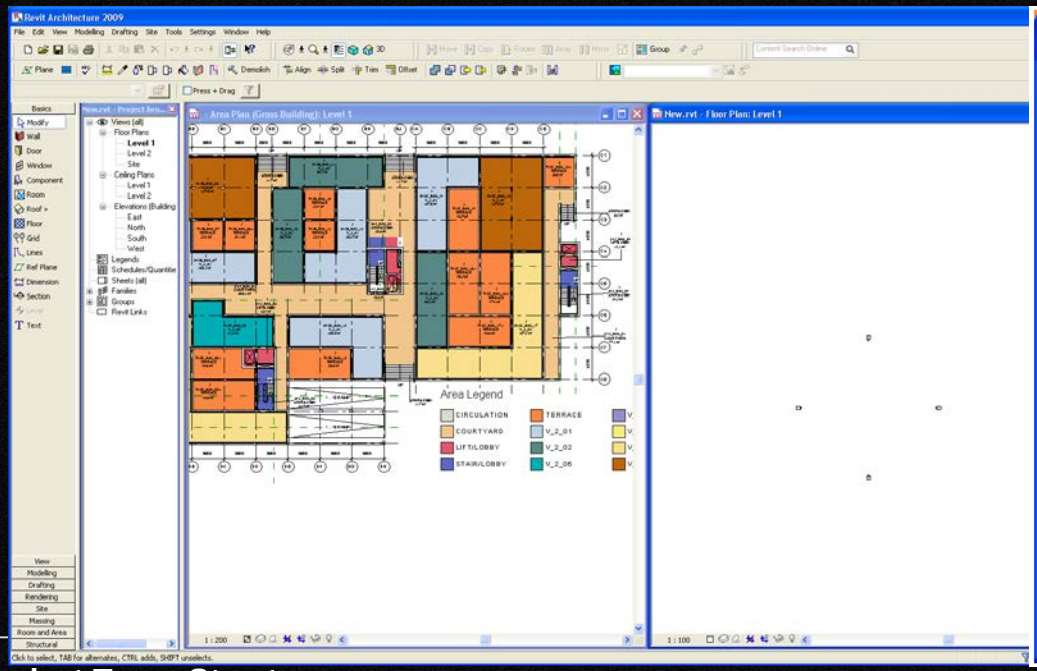
## Communication

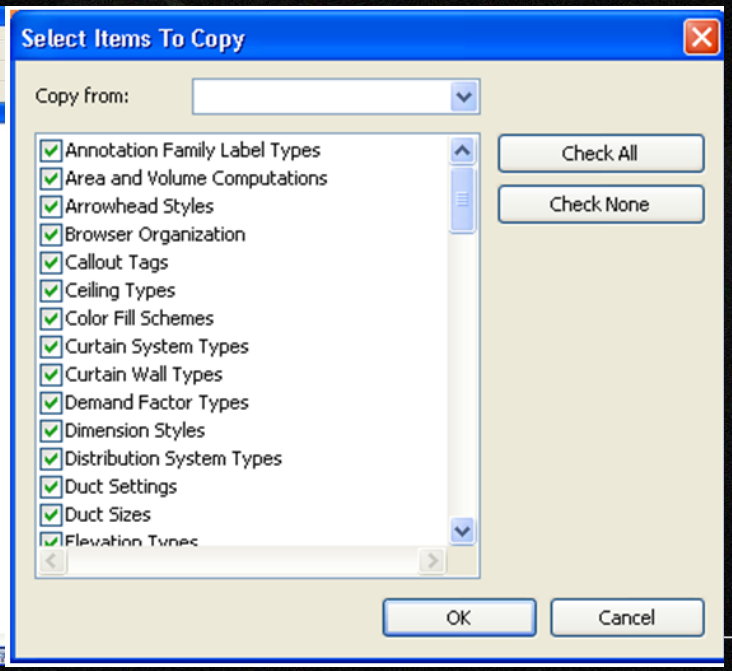
Email (?) / FTP

Time Lag

Same Co-ordinate, Height

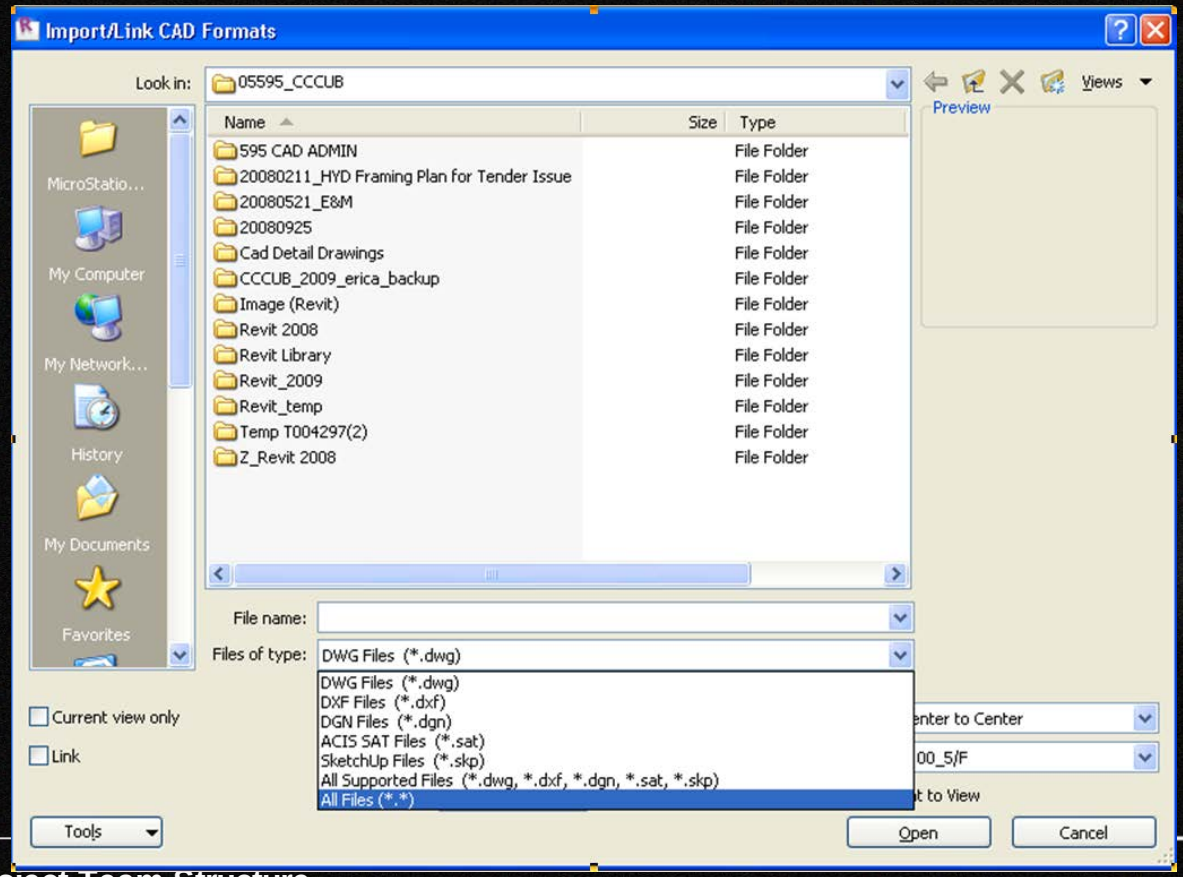
Different Project Standard



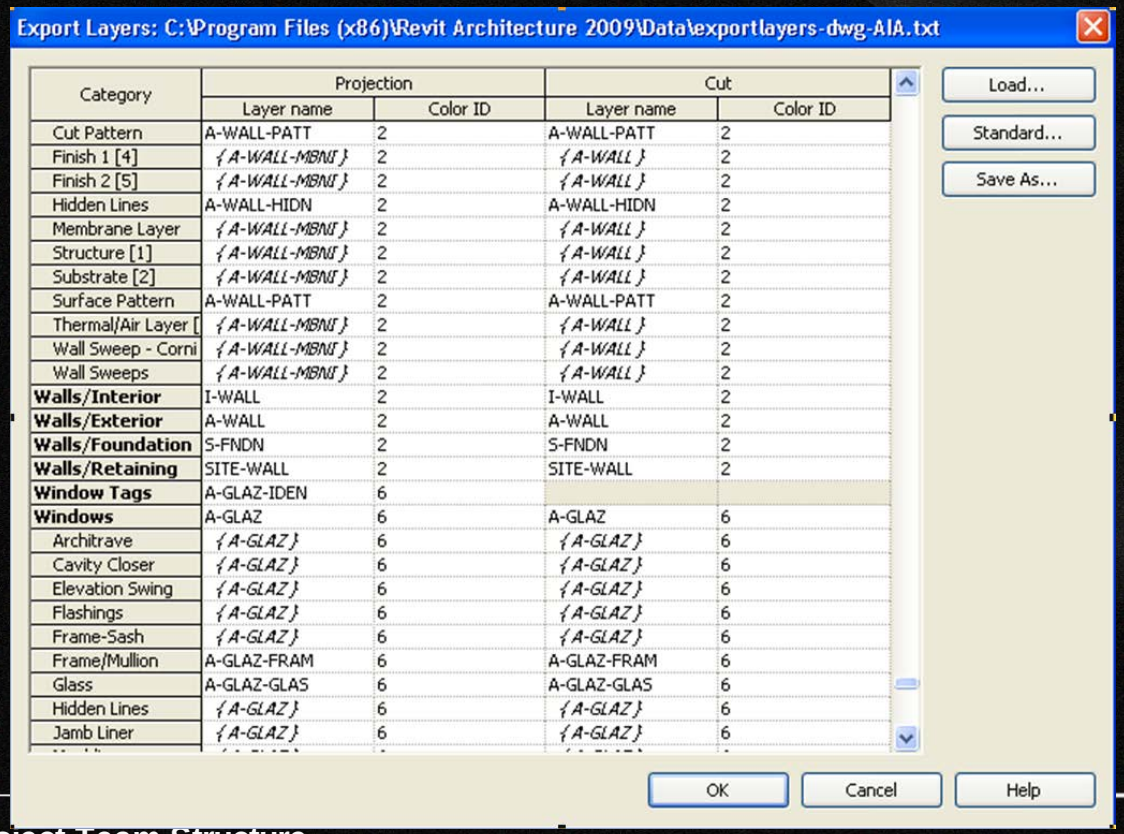
# Filing Conversion

Receive information – Rebuild from traditional 2D to 3D presentation

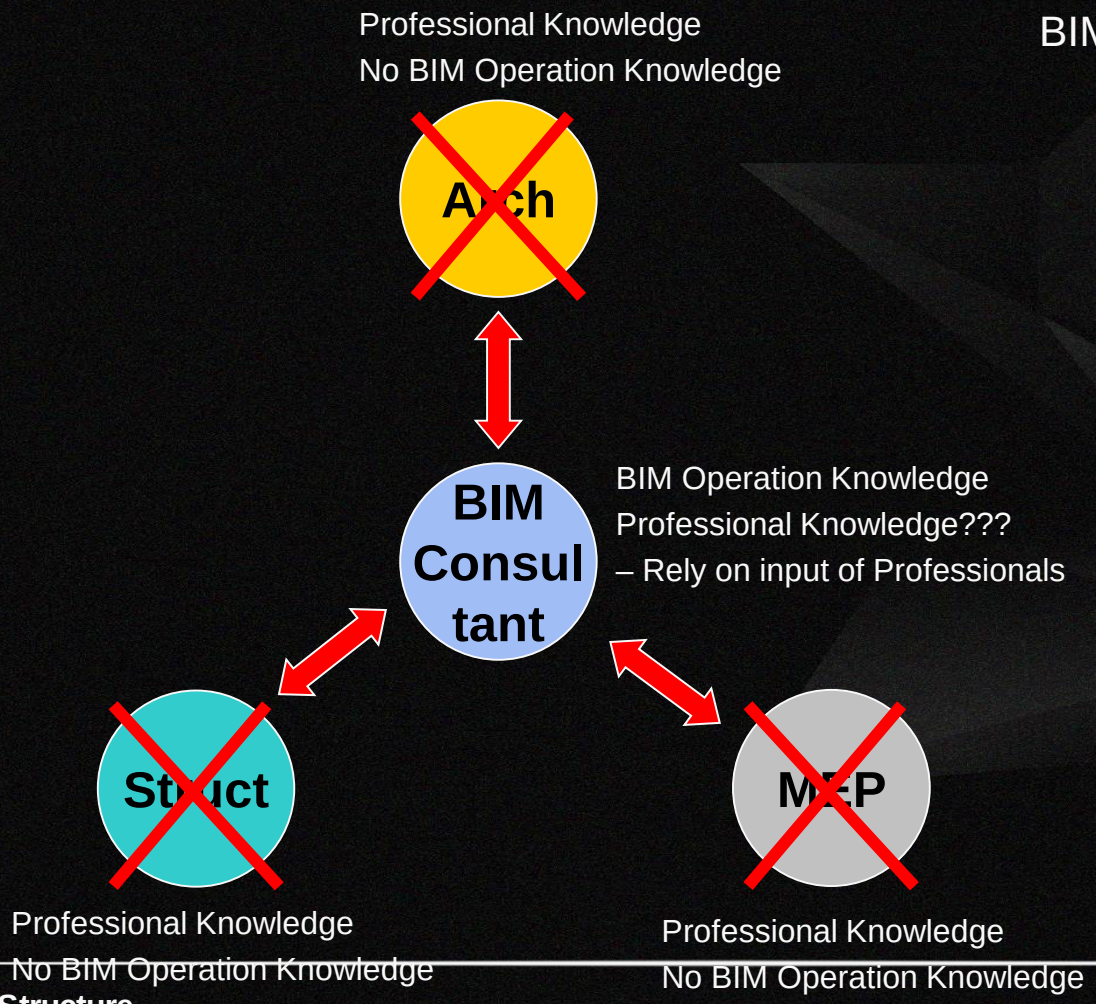


# Filing Conversion

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




| Category | Projection | | Cut | |
|---|---|---|---|---|
| | Layer name | Color ID | Layer name | Color ID |
| Cut Pattern | A-WALL-PATT | 2 | A-WALL-PATT | 2 |
| Finish 1 [4] | {A-WALL-MBNT} | 2 | {A-WALL} | 2 |
| Finish 2 [5] | {A-WALL-MBNT} | 2 | {A-WALL} | 2 |
| Hidden Lines | A-WALL-HIDN | 2 | A-WALL-HIDN | 2 |
| Membrane Layer | {A-WALL-MBNT} | 2 | {A-WALL} | 2 |
| Structure [1] | {A-WALL-MBNT} | 2 | {A-WALL} | 2 |
| Substrate [2] | {A-WALL-MBNT} | 2 | {A-WALL} | 2 |
| Surface Pattern | A-WALL-PATT | 2 | A-WALL-PATT | 2 |
| Thermal/Air Layer [ | {A-WALL-MBNT} | 2 | {A-WALL} | 2 |
| Wall Sweep - Corni | {A-WALL-MBNT} | 2 | {A-WALL} | 2 |
| Wall Sweeps | {A-WALL-MBNT} | 2 | {A-WALL} | 2 |
| **Walls/Interior** | I-WALL | 2 | I-WALL | 2 |
| **Walls/Exterior** | A-WALL | 2 | A-WALL | 2 |
| **Walls/Foundation** | S-FNDN | 2 | S-FNDN | 2 |
| **Walls/Retaining** | SITE-WALL | 2 | SITE-WALL | 2 |
| **Window Tags** | A-GLAZ-IDEN | 6 | | |
| **Windows** | A-GLAZ | 6 | A-GLAZ | 6 |
| Architrave | {A-GLAZ} | 6 | {A-GLAZ} | 6 |
| Cavity Closer | {A-GLAZ} | 6 | {A-GLAZ} | 6 |
| Elevation Swing | {A-GLAZ} | 6 | {A-GLAZ} | 6 |
| Flashings | {A-GLAZ} | 6 | {A-GLAZ} | 6 |
| Frame-Sash | {A-GLAZ} | 6 | {A-GLAZ} | 6 |
| Frame/Mullion | A-GLAZ-FRAM | 6 | A-GLAZ-FRAM | 6 |
| Glass | A-GLAZ-GLAS | 6 | A-GLAZ-GLAS | 6 |
| Hidden Lines | {A-GLAZ} | 6 | {A-GLAZ} | 6 |
| Jamb Liner | {A-GLAZ} | 6 | {A-GLAZ} | 6 |

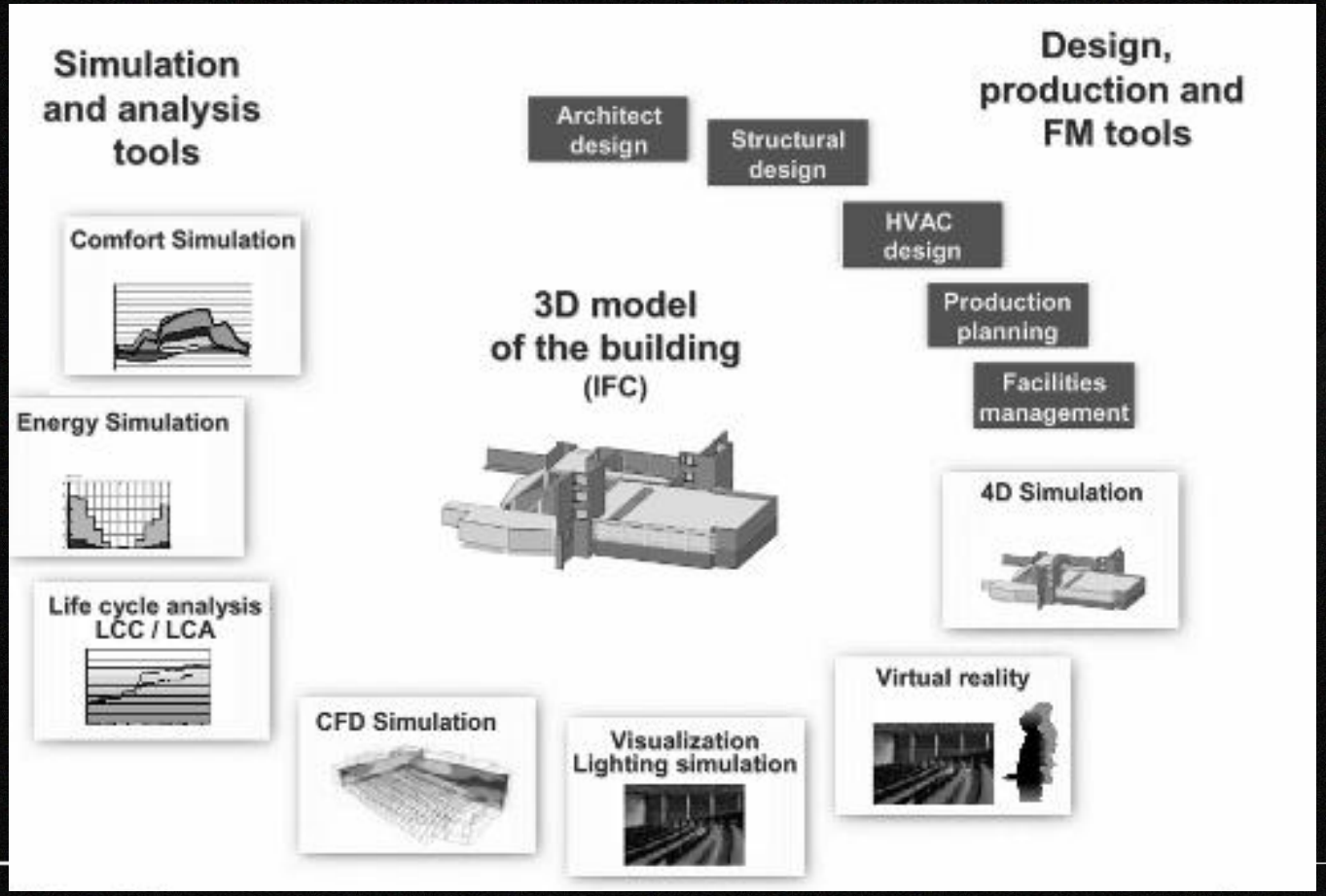


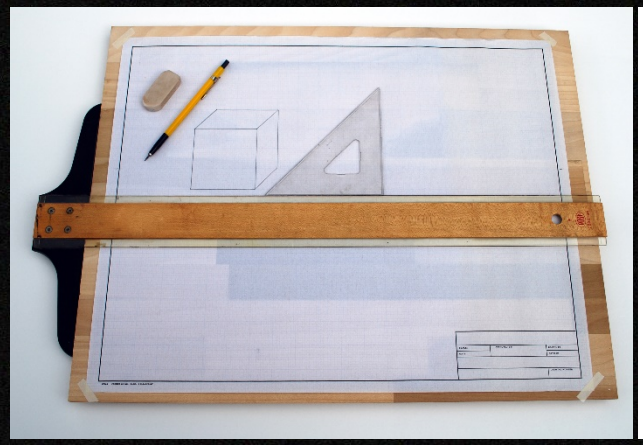

## BIM Consultant

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

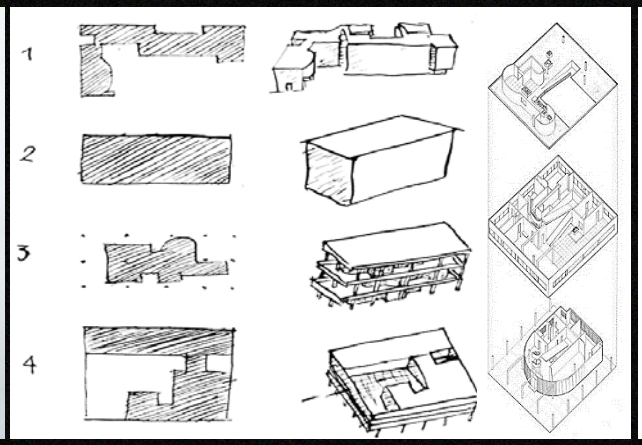
QS, Environmental Consultants

Specialist…

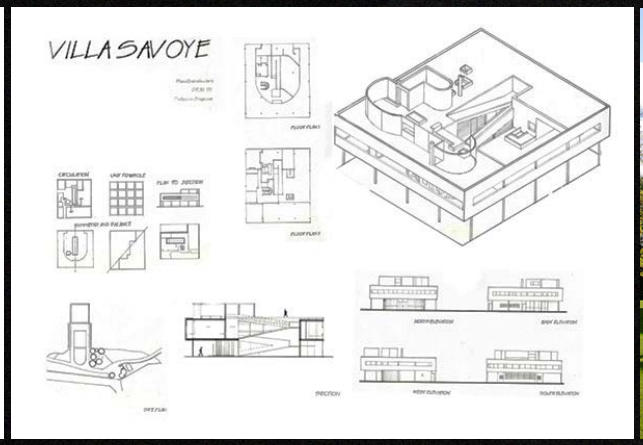




Tools
工具




Design
设计

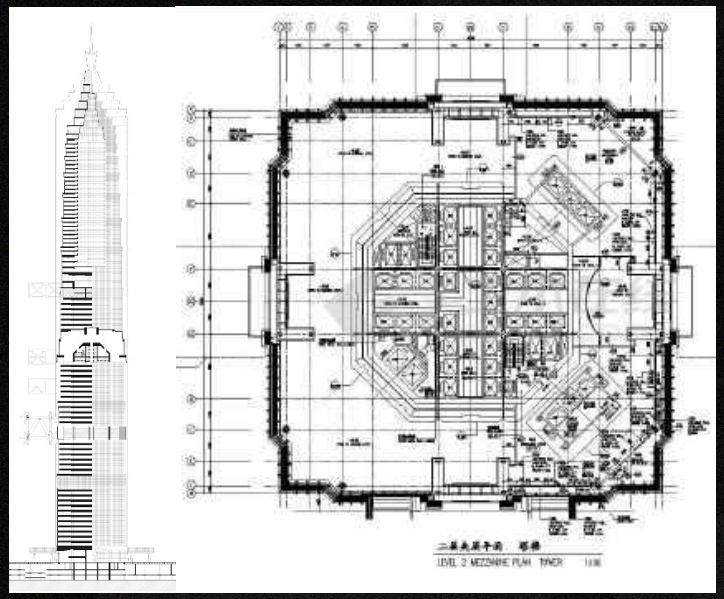



Presentation
表达方式

Product
完成品

Tools
工具

Design
设计

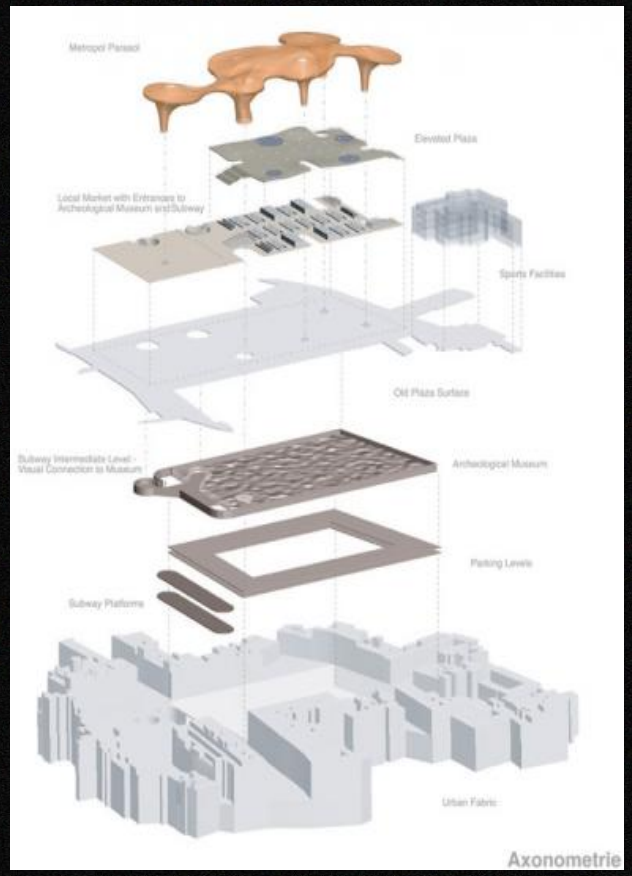


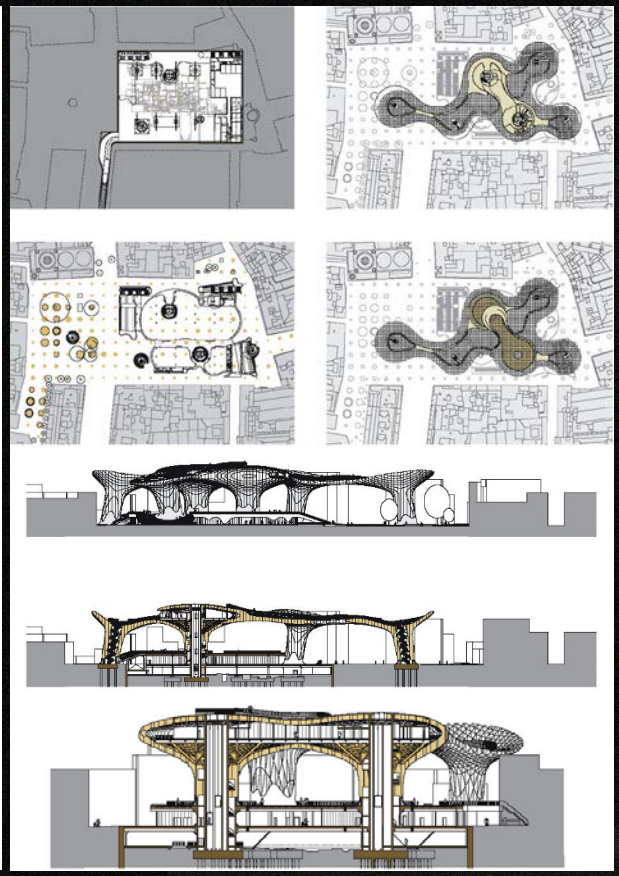
Presentation
表达方式

Product
完成品

Rhinoceros

NURBS modeling for Windows



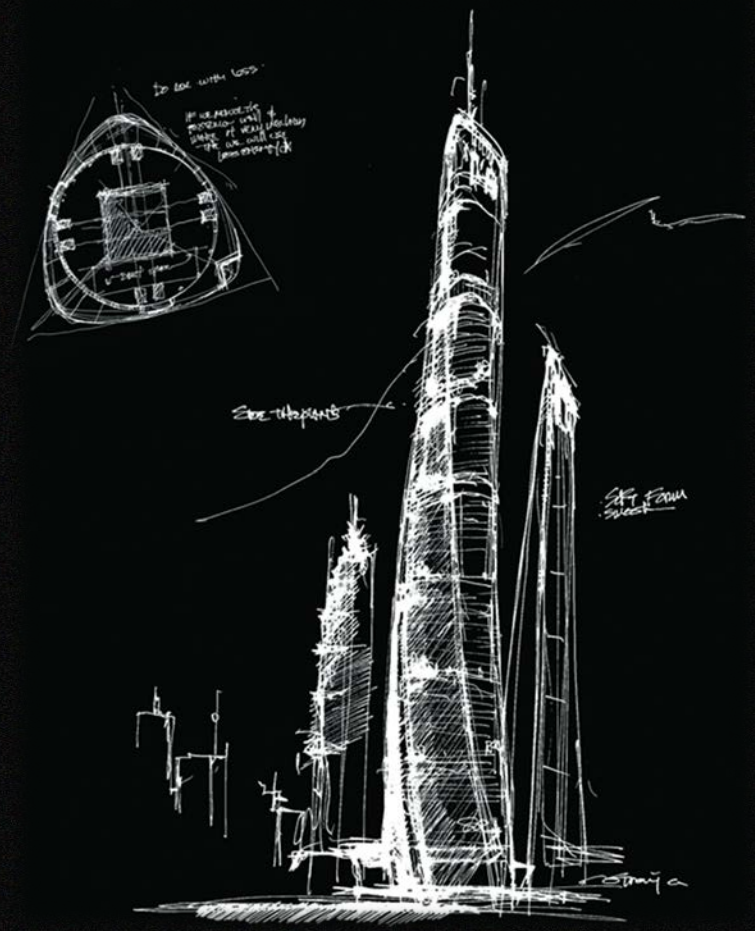
Tools
工具

Design
设计

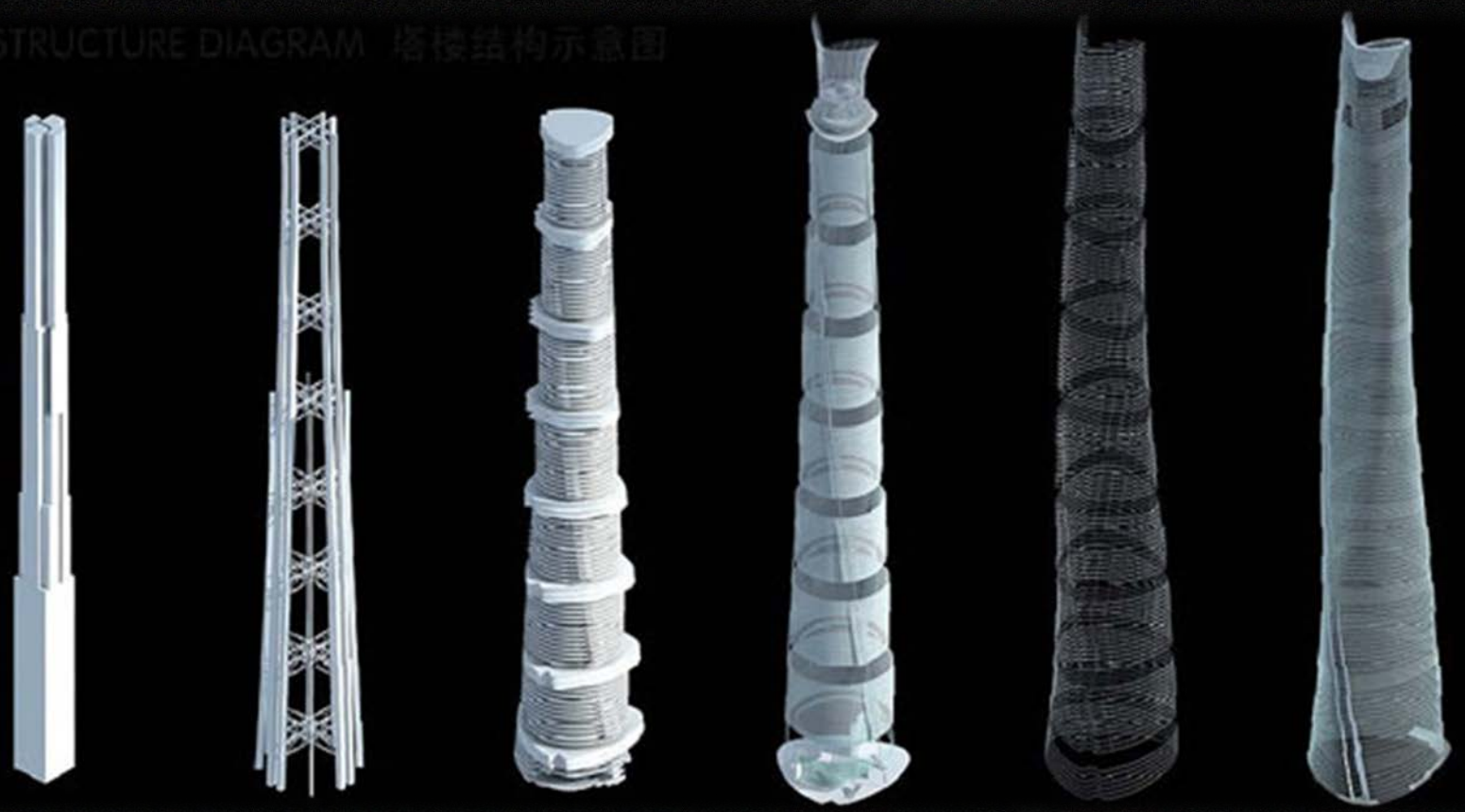
Presentation
表达方式

Product
完成品

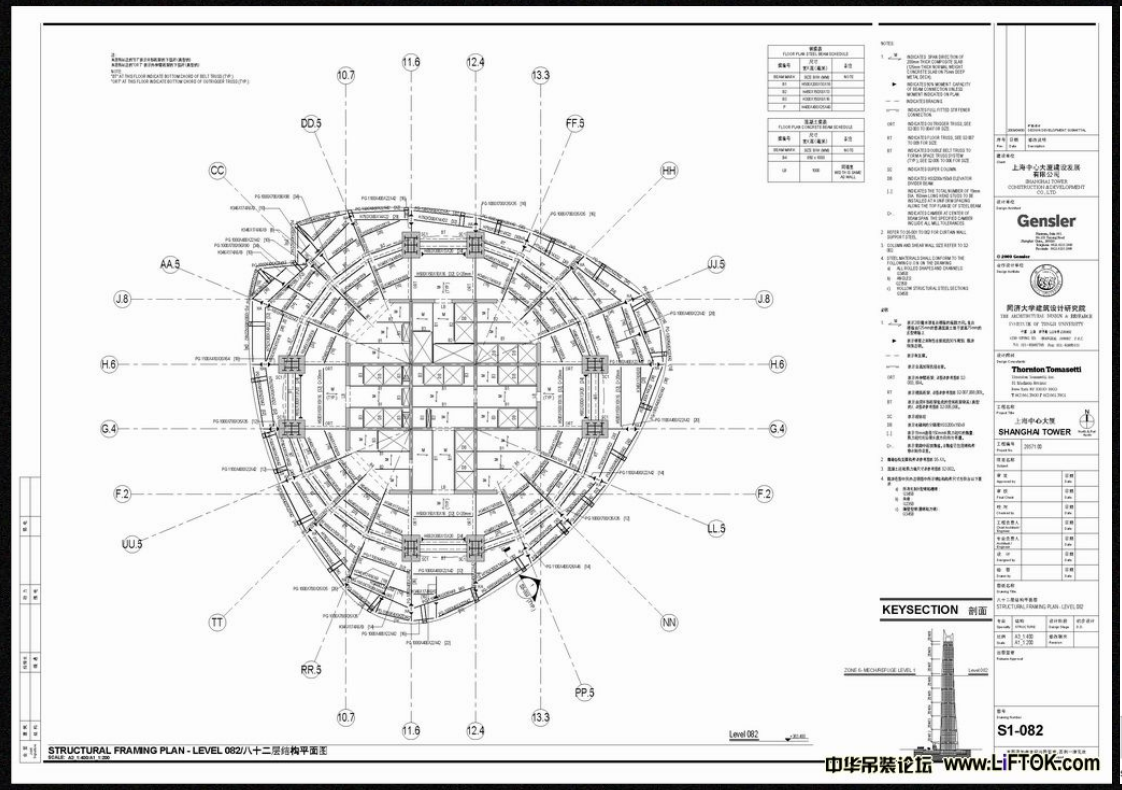
# Building 建筑 Information 信息 Modeling 模拟

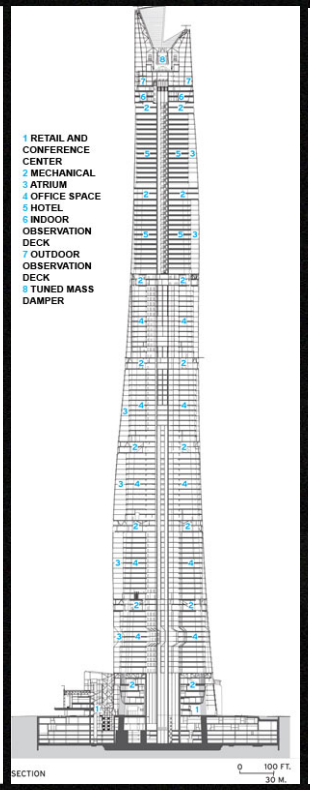


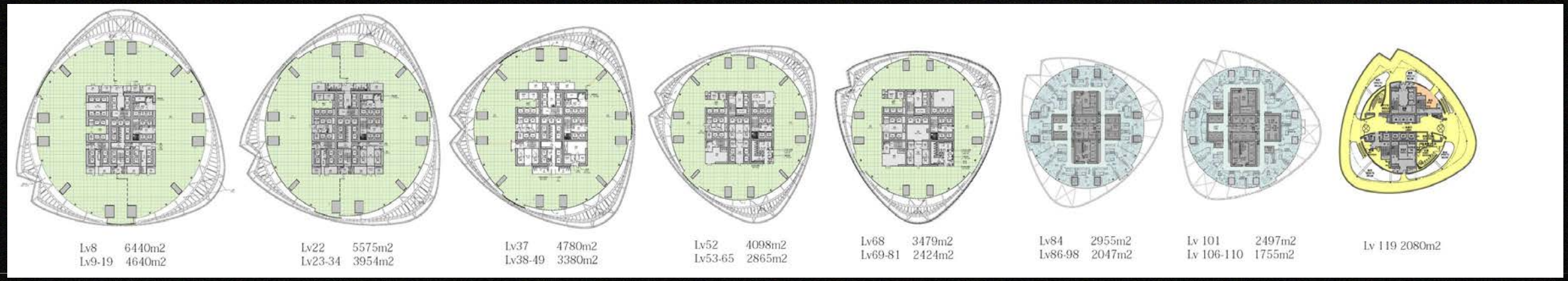
STRUCTURE DIAGRAM 塔楼结构示意图



# 表达方式


STRUCTURAL FRAMING PLAN - LEVEL 082/八十二层结构平面图
KEYSECTION 剖面
S1-082
Gensler
Thornton Tomasetti
SHANGHAI TOWER
中华吊装论坛 www.LIFTOK.com


1 RETAIL AND CONFERENCE CENTER
2 MECHANICAL
3 ATRIUM
4 OFFICE SPACE
5 HOTEL
6 INDOOR OBSERVATION DECK
7 OUTDOOR OBSERVATION DECK
8 TUNED MASS DAMPER
SECTION


Lv8 6440m2
Lv9-19 4640m2
Lv22 5575m2
Lv23-34 3954m2
Lv37 4780m2
Lv38-49 3380m2
Lv52 4098m2
Lv53-65 2865m2
Lv68 3479m2
Lv69-81 2424m2
Lv84 2955m2
Lv86-98 2047m2
Lv 101 2497m2
Lv 106-110 1755m2
Lv 119 2080m2

完成品