太古地产
SWIRE PROPERTIES

BIM in Property Development, Operation and Facility Management

25 July 2016
Shanghai CHINA

Value Driven BIM

1. **Professional Team**
2. **Life-cycle BIM Value**
3. **Full BIM Management Platform**

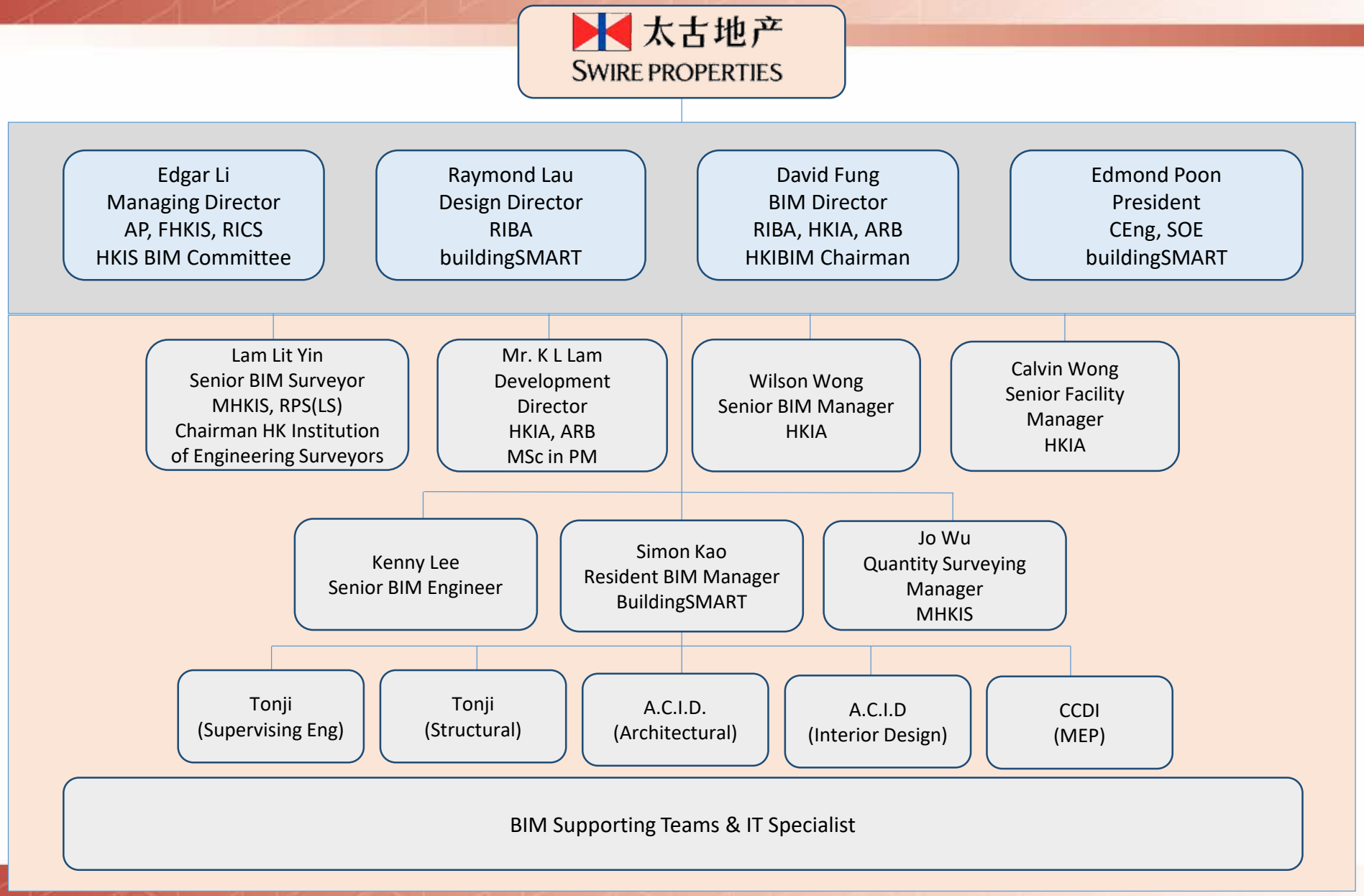
Value Driven BIM

1. **Professional Team**
2. **Life-cycle BIM Value**
3. **Full BIM Management Platform**

Value Added and Profession Involved

- ✓ **Good practice and management platform**
  - ➢ integrated teams with local knowledge and international exposure.
- ✓ **Professional team**
  - ➢ architects, engineers, surveyors, facility managers, project mangers, construction managers, supervising engineers – to perform and monitor.
- ✓ **Government department, professional institutes, world-class universities**
  - ➢ engage in BIM platform establishment.
- ✓ **BIM with technology development**
  - ➢ patents, mobile devices, VR, UAV, laser scanning, 3D printing.

Team Organization



Team Profile

InBuilt Corporation 英建盈科 NCIJ
www.inbuiltcorp.com

Mr. Raymond LAU

Design Director

- RIBA Chartered Architect
- Associate of the H.K.I.A.
- Member of buildingSMART of Hong Kong

Professional Experience

- Zaha Hadid Architects Beijing Studio, Beijing, China. / Zaha Hadid Architects, London, UK.
- AKT Consulting Structural and Civil Engineers, London, UK.
- M fuksas ARCH, Rome, Italy.
- FXV.org, London, UK.
- Lan Johnson Architect Inc., Toronto, Canada.
- Arctec (International) Ltd., Hong Kong.

International Awards

- 2nd Price Winner, European 8, biennial design competition across Europe for young architects under 40.
- Finalist, 400,000 Dwellings - International Housing in Catalonia Competition.
- Semi-Finalist, Far East International Digital Architectural Design Award.

Mr. David FUNG

BIM Director

- Chairman of Hong Kong Institute of BIM
- Member of the H.K.I.A.
- Member of Royal Institute of British Architects
- Member of the Royal Australian Institute of Architects
- Master of Project Management
- 香港建筑信息模拟学会（HKIBIM）发起人及现任会长（David Fung）
- 香港房屋署、建筑署BIM技术管理顾问及培训导师团队
- 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
- 中华人民共和国住建部
  - 《建筑工程设计信息模型交付标准》
  - 《建筑工程设计信息模型分类和编码标准》
  - 《建筑工程设计信息模型出图标准》

Team Profile

InBuilt Corporation 英建盈科 NCIJ
www.inbuiltcorp.com

Mr. Edgar LI Kwok Wah
Managing Director

- Authorized Person (Surveyor), Buildings Department, Hong Kong
- Fellow Member of the Hong Kong Institute of Surveyor
- Assessor of the Royal Institution of Chartered Surveyors
- Professional Member of the Hong Kong Institute of Facility Manager
- Chartered Project Management Surveyor
- Honour Committee Member Guangzhou Supervising Engineer Association
- Member of the Chartered Institute of Arbitration
- Committee Member, BIM Committee of the Hong Kong Institute of Surveyor
- Member of buildingSMART of Hong Kong
- Former Director China DTZ Building Consultancy

Mr. Edmond POON Chi Ho
President

- Master of Science in Construction Management
- Chartered Engineer Engineering Council, UK
- Chartered Senior Mechanical Engineer, China
- Society of Operation Engineer, Fellow Member
- Member of buildingSMART of Hong Kong

Team Profile

InBuilt Corporation 英建盈科 NCIJ
www.inbuiltcorp.com

Mr. K L Lam
Development Director
- Authorized Person (Architect)
- Registered Architect, ARB
- Professional Member of the H.K.I.A.
- MSc in Project Management
- Member of buildingSMART

Mr. Simon Kao
Resident BIM Manager
- Member of buildingSMART
  Professional experience
- Ronald Lu & Partners
- Aedas Ltd
- RMJM Hong Kong Ltd
- Atkins Architect

Mr. Wilson Wong
Senior BIM Manager
- Registered Architect, ARB
- Professional Member of the H.K.I.A.
- Professional Member of the HKIBIM
- Member of buildingSMART

Mr. Calvin Wong
Senior Facility Manager
- HKIA

Mr. Kenny Lee
Senior BIM Engineer
- Member of buildingSMART

Mr. Lam Lit Yin
Senior BIM Surveyor
- MHKIS, RPS(LS),
- Chairman HK Institution of Engineering Surveyors

Mr. Jo Wu
Quantity Surveying Manager
- MHKIS

Mr. DX Zhang
Tongji (Supervising Eng)

Ms. Han
CCDI (MEP)

Mr. Samantha Hu
A.C.I.D (Architectural)

Mr. Alvin Kung
A.C.I.D. (Interior Design)

Mr. DX Zhang
Tonji (Structure)

Project Strategic Partners

AUTODESK.

AM Animotion Studio

THE UNIVERSITY OF HONG KONG 香港大學
faculty of architecture 建築學院
Department of Architecture 建築學系

SYNNEX

TSINGHUA-1911-UNIVERSITY
清華大學

hk3dprint co.ltd.
專業3D打印服務

aconex

E Tag

Core Values

Our **IN-BU-I-L-T** Values

- **IN**tegrity
- **BU**siness Partner
- **I**nnovation
- **L**egitimate
- **T**imely

Corporate Profile

InBuilt Corporation 英建盈科 NCID

www.inbuiltcorp.com

InBuilt Corporation

- We are a professional consultancy company based in China and Hong Kong.
- We provide comprehensive Building Information Modelling (BIM) solutions to Architectural, Engineering and Construction (AEC) sectors in both China and Hong Kong.
- We use BIM, the most effective way to drive efficiency in building design and delivery, shorten the cycle time required for project implementation, and enable comprehensive information management.

InBuilt offers

- A wide spectrum of integrated architectural design, asset information management (AIM) and project management services.
- Our experts have over 20 years' worldwide experiences of MEP design & engineering, asset and facility management, surveying, as well as traditional architectural services across various industries.
- We also possess over 10 years' architectural project management experience in mainland China.
- We are proud of our teams' competence, flexibility and innovation to provide our clients with one-stop solutions that address their needs
- Our services ranging from BIM implementation and consultancy services, quantity surveying services, AIM solutions, interior and landscape designs, construction planning and project management.

- We also work in collaboration with academic institutes and provide opportunities for student on industrial exposure and gain experience from real projects.
- With good understanding of local and foreign cultures, their regulations and market trends, we are able to complete all types of project effectively. We also have a big pool of vendors across boundaries, with proven competence, to support our project delivery with quality service.
- Together with our hands-on experiences and professional judgement, we assure our clients that they experience our high quality and cost-effective architectural engineering and project management services at all times.

Patency

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计算机软件著作权登记证书

证书号：软著登字第1297877号

软 件 名 称：英建盈科双向格式转换软件 V1.0

著 作 权 人：前海英建盈科建筑咨询（深圳）有限公司

开发完成日期：2016年01月20日

首次发表日期：未发表

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权 利 范 围：全部权利

登 记 号：2016SR119260

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计算机软件著作权登记证书

证书号：软著登字第1300238号

软 件 名 称：英建盈科BIM三维打印控制网络平台系统 V1.0

著 作 权 人：前海英建盈科建筑咨询（深圳）有限公司

开发完成日期：2016年01月25日

首次发表日期：未发表

权利取得方式：原始取得

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登 记 号：2016SR121621

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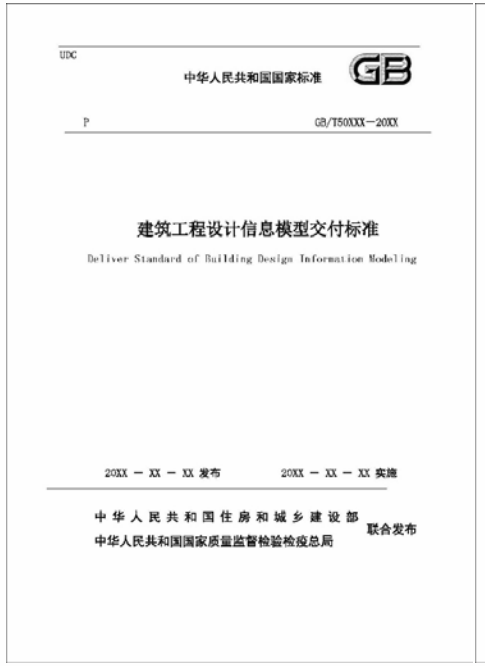
No. 01057398

2016年05月27日

英建盈科BIM三維打印控制網絡平台系統

BIM Standards and Manual



UDC

中华人民共和国国家标准

P GB/T50XXX—20XX

建筑工程设计信息模型交付标准

Deliver Standard of Building Design Information Modelling

20XX — XX — XX 发布 20XX — XX — XX 实施

中华人民共和国住房和城乡建设部
中华人民共和国国家质量监督检验检疫总局 联合发布

UDC

中华人民共和国国家标准

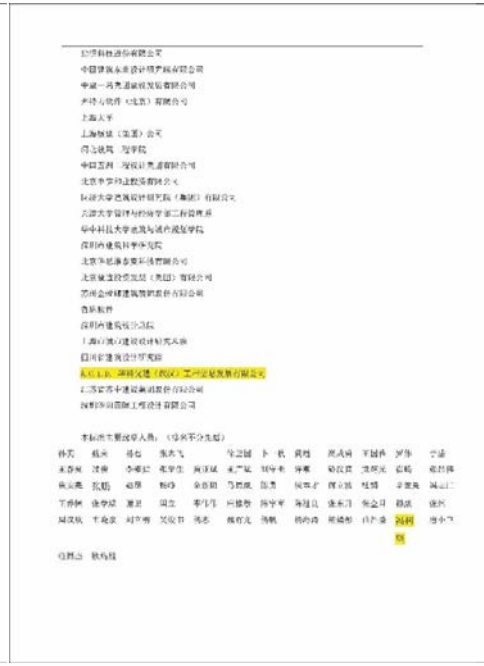
P GB/T50XXX—20XX

建筑工程设计信息模型分类和编码标准

Standard for classification and coding of building constructions design information model

20XX — XX — XX 发布 20XX — XX — XX 实施

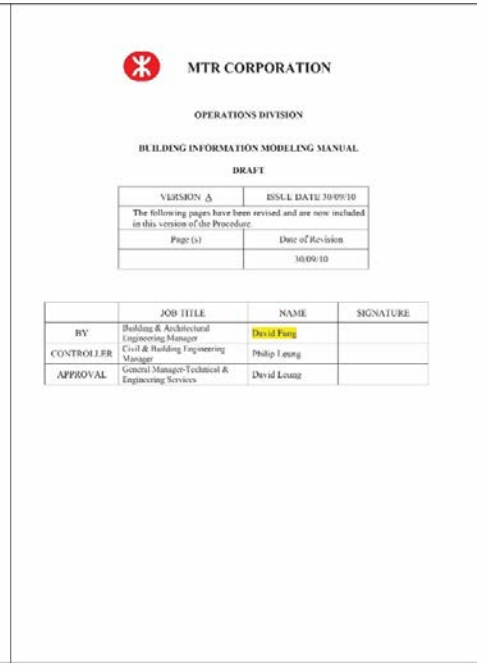
中华人民共和国住房和城乡建设部
中华人民共和国国家质量监督检验检疫总局 联合



Hong Kong Institute of Building Information Modelling

BIM Project Specification

HKIBIM Specification (Rev 2.1) Page 1 of 26



MTR CORPORATION

OPERATIONS DIVISION

BUILDING INFORMATION MODELLING MANUAL

DRAFT

VERSION A	ISSUE DATE 30/09/10
The following pages have been revised and are now included in this version of the Procedure	
Page (s)	Date of Revision
	30/09/10

	JOB TITLE	NAME	SIGNATURE
BY	Building & Architectural Engineering Manager	David Fung	
CONTROLLER	Civil & Building Engineering Manager	Philip Leung	
APPROVAL	General Manager-Technical & Engineering Services	David Leung	

《建筑工程设计信息模型交付标准》 《建筑工程设计信息模型分类和编码标准》 《建筑工程设计信息模型出图标准》 HKIBIM BIM Manual MTR BIM Manual

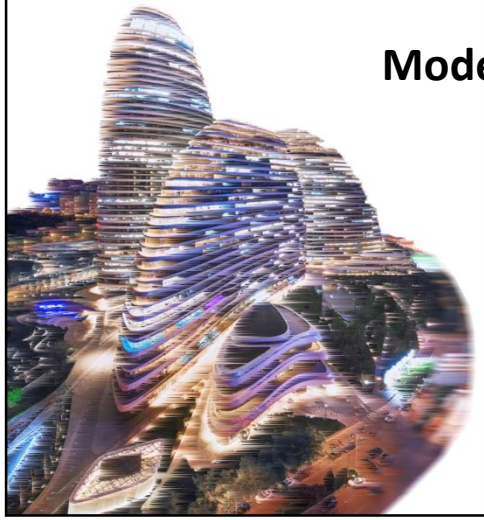
BIM Training

THE UNIVERSITY OF HONG KONG 香港大學
faculty of architecture 建築學院
Department of Architecture 建築學系

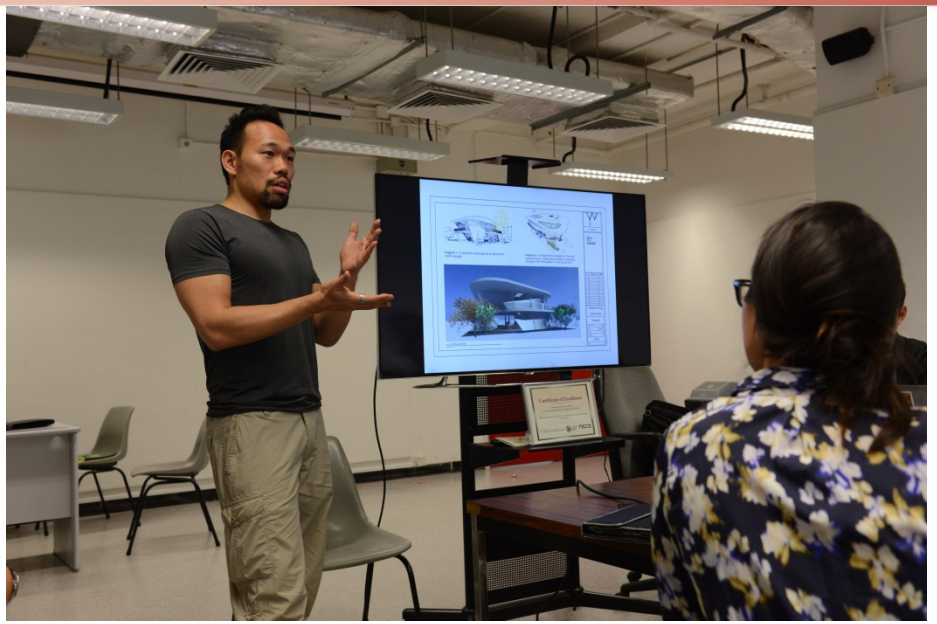
InBuilt Corporation 英建盈科

Course Number: ARCH6130

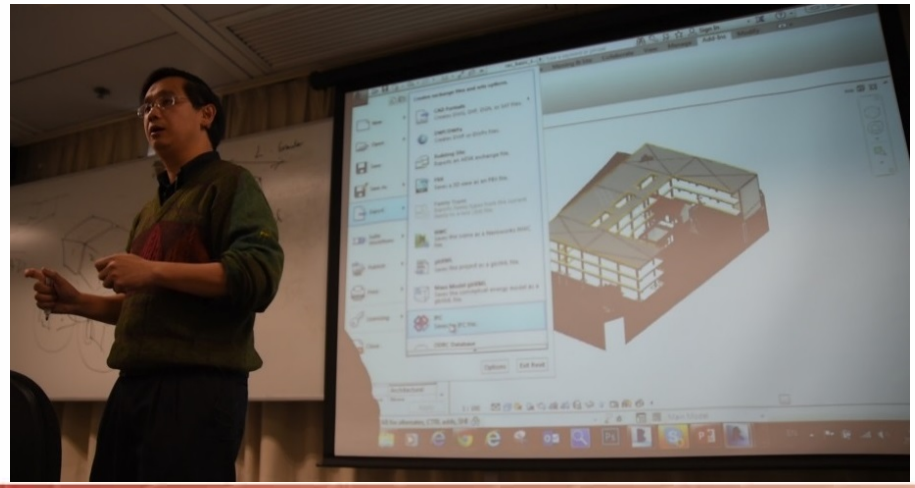
Course Title: Building Information Modeling in Architectural Practice

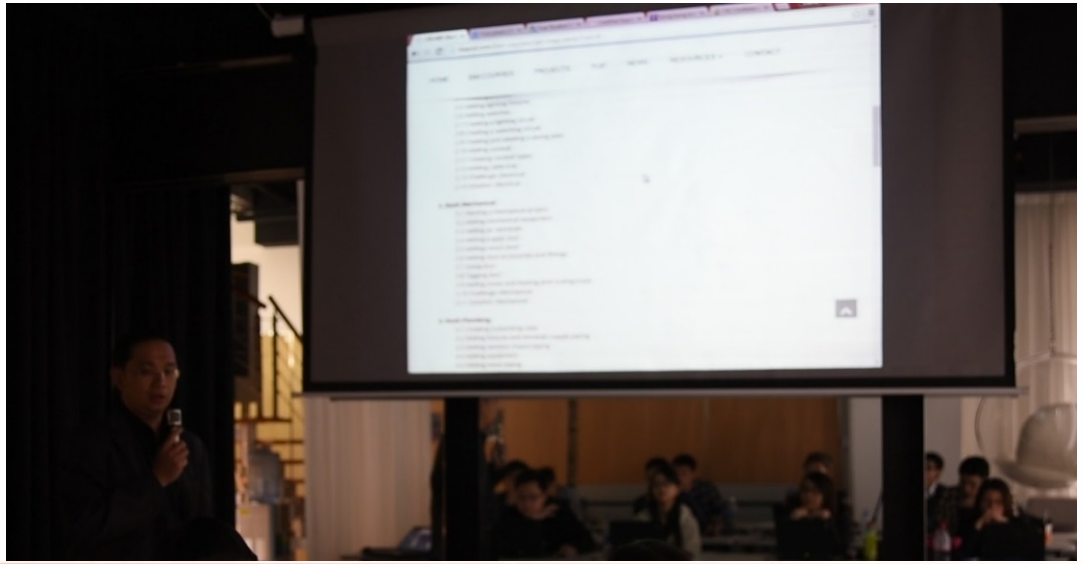


BIM Training



BIM Training





BIM Training

InBuilt Corporation 英建盈科 NCIC

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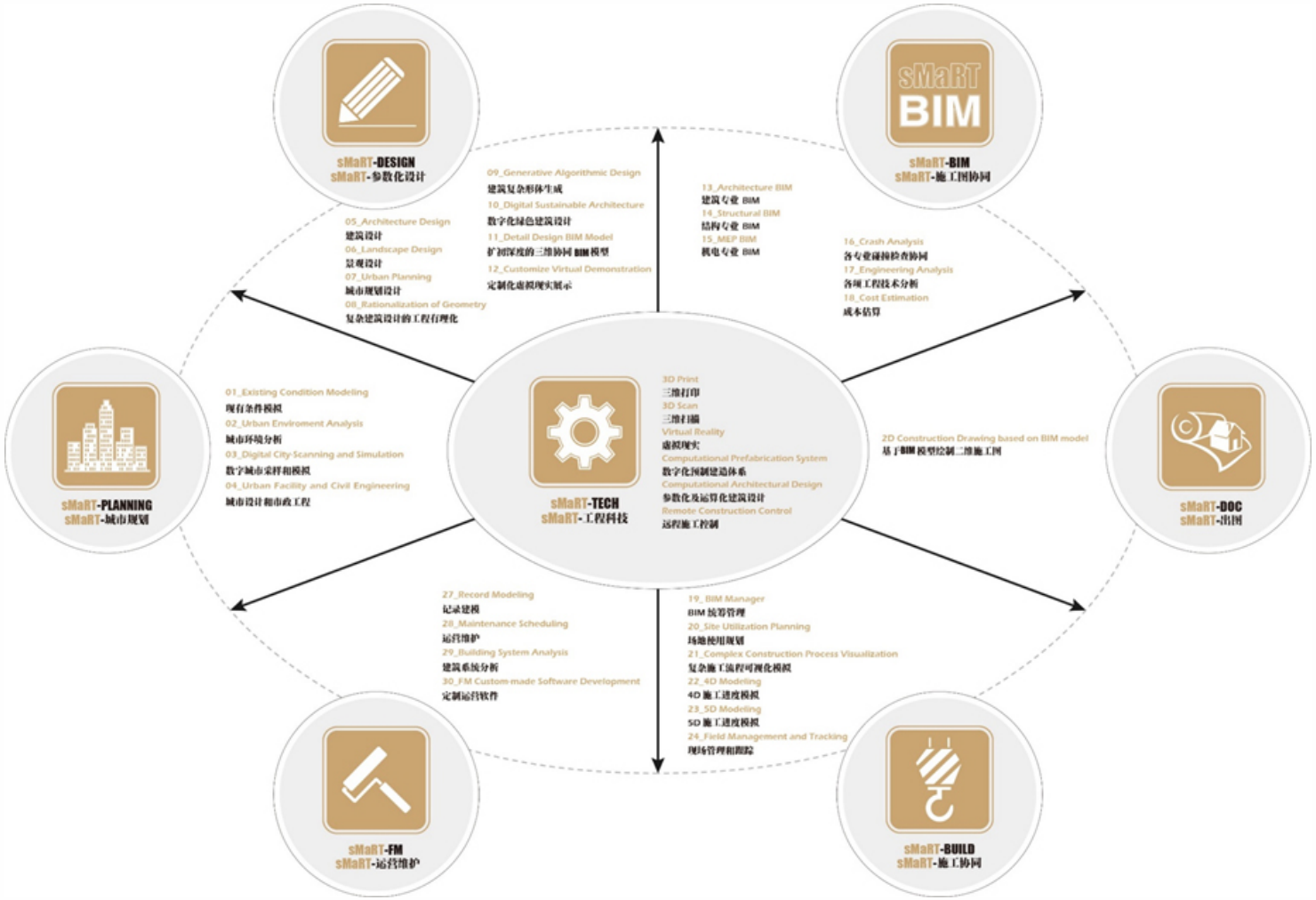
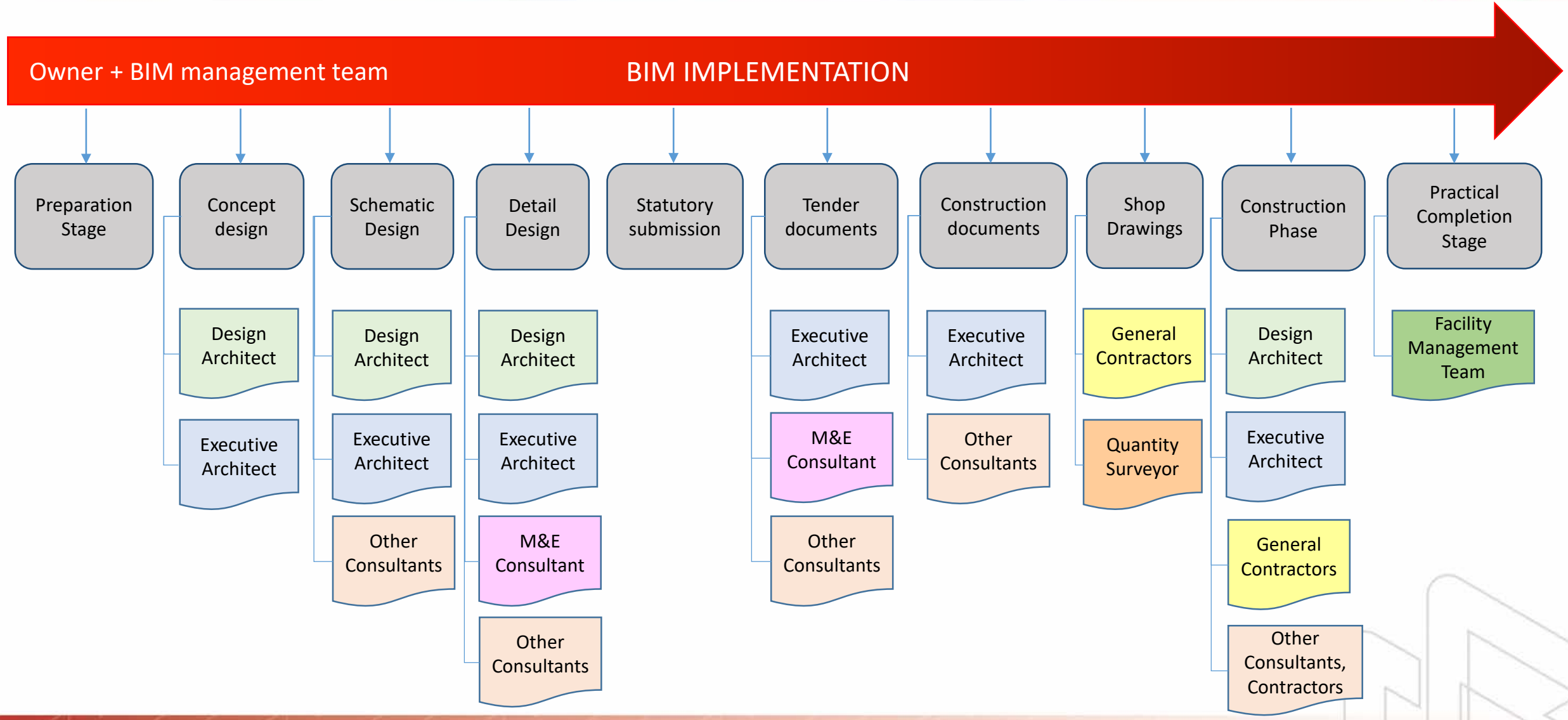
01 [CEI] CEI Basic (Revit) 8 hrs.	02 [CEII-A] CEII Architecture (Revit) 32 hrs.	03 [CEII-S] CEII Structure (Revit) 32 hrs.	04 [CEII-M] CEII MEP (Revit) 32 hrs.	05 [CEII-F] CEII Families (Revit) 21 hrs.	06 [CEIII-A] CEIII Architecture (Revit) 36 hrs.
07 [CEIII-S] CEIII Structure (Revit) 24 hrs.	08 [CEIII-M] CEIII MEP (Revit) 24 hrs.	09 [CEIII-Q] CEIII Cost Management 24 hrs.	10 [CEIII-C] CEIII Construction Management 32 hrs.	11 [CEIII-B] CEIII BIM Management 30 hrs.	

Service Intergration



- ✓Smart Planning
- ✓Smart Design
- ✓Smart BIM
- ✓Smart Documentation
- ✓Smart Build
- ✓Smart FM

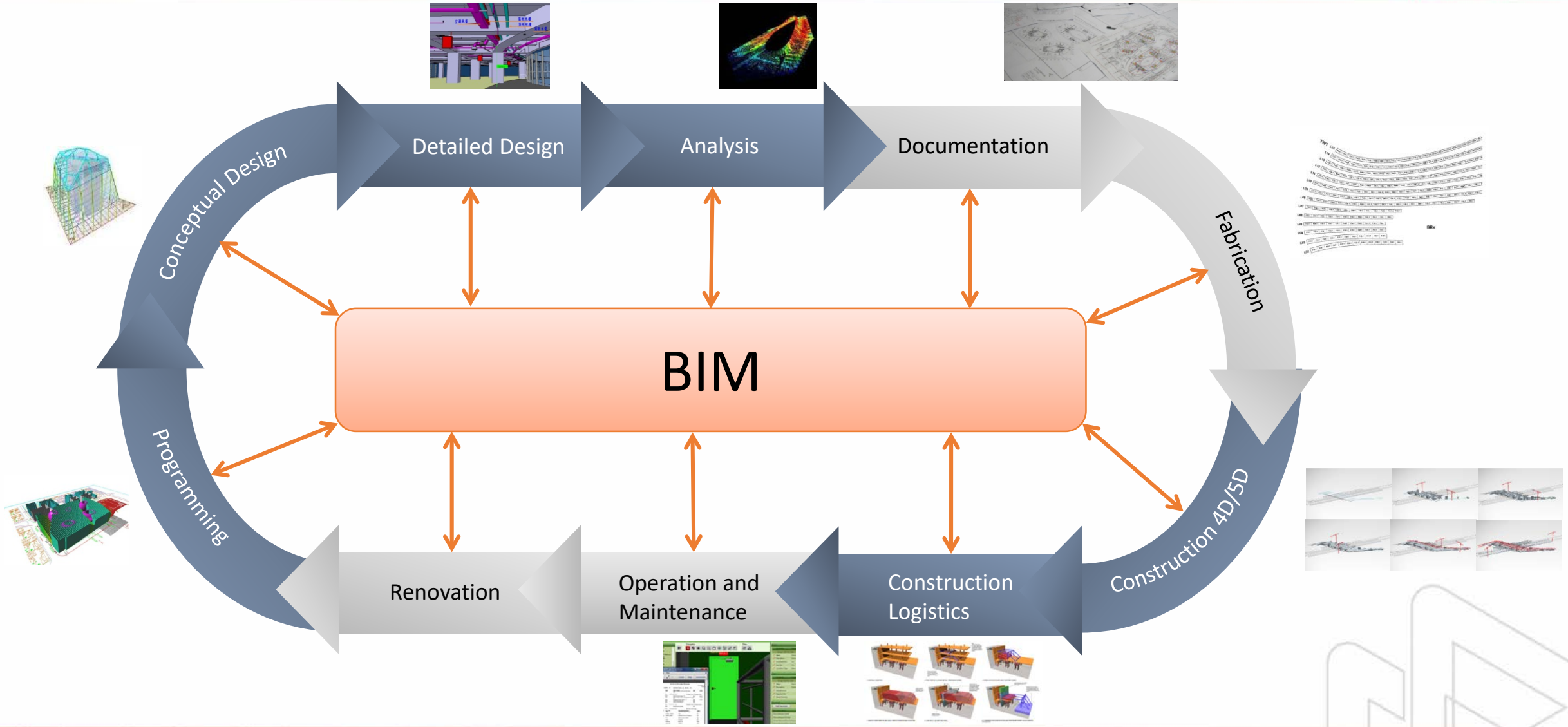
BIM from Design to Built



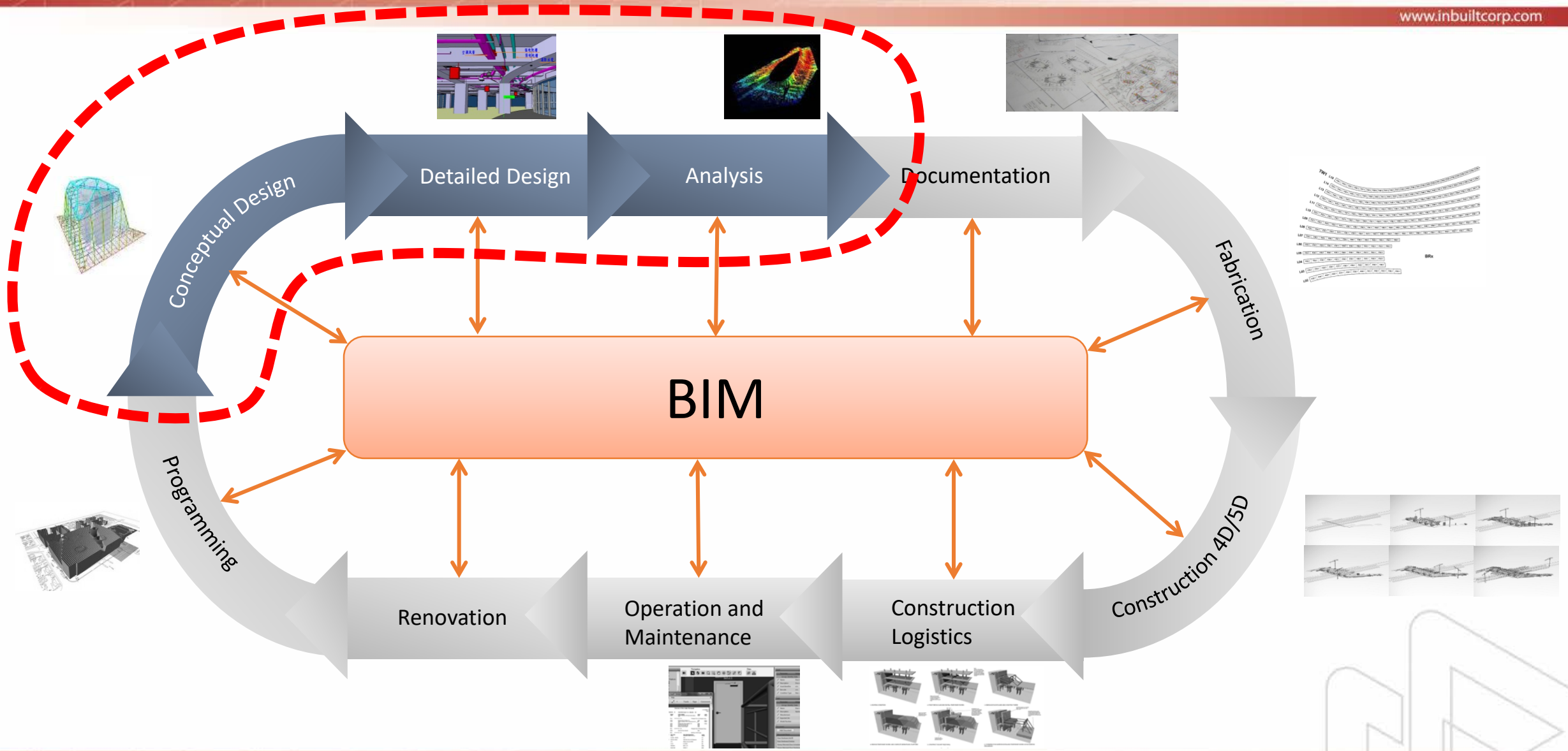
Value Driven BIM

1. **Professional Team**
2. **Life-cycle BIM Value**
3. **Full BIM Management Platform**

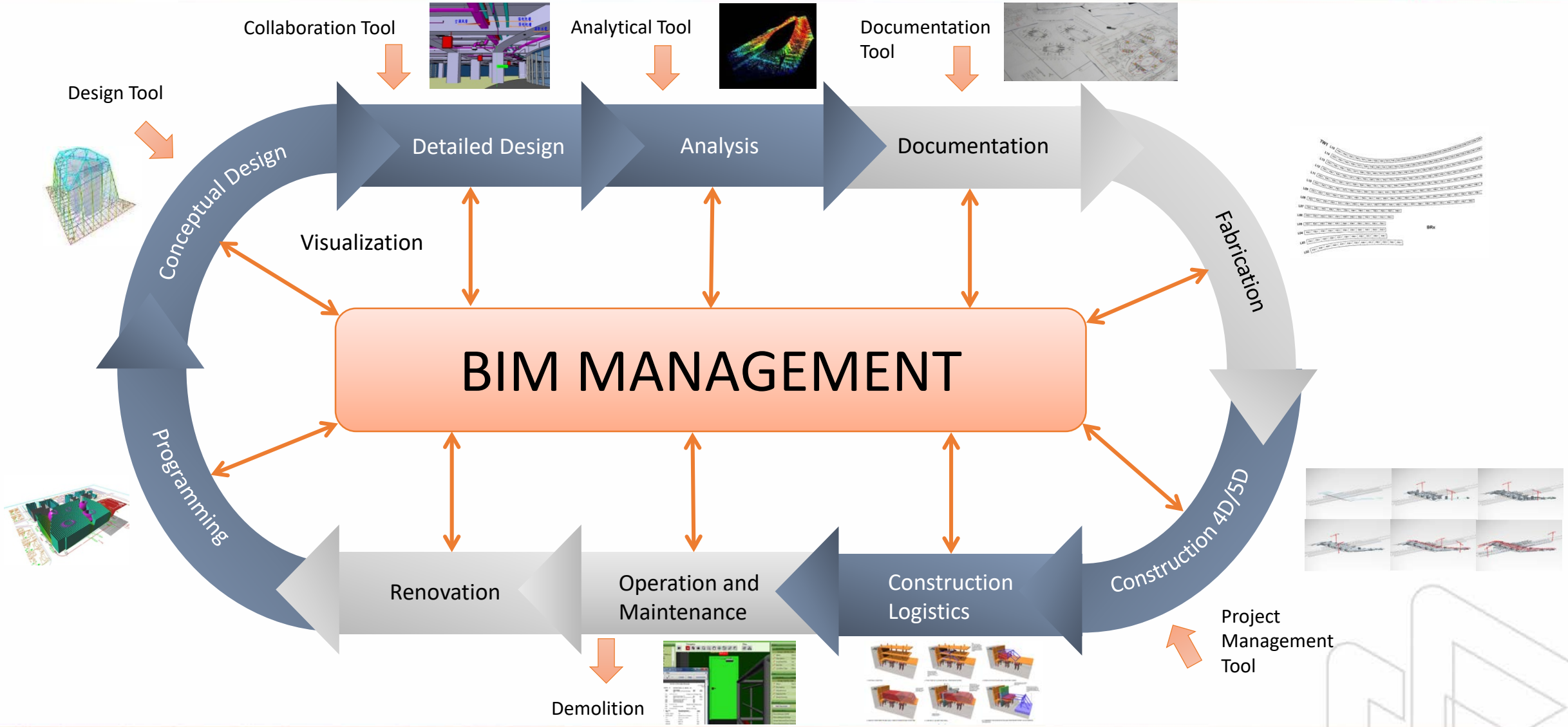
Ideal BIM Project Life Cycle



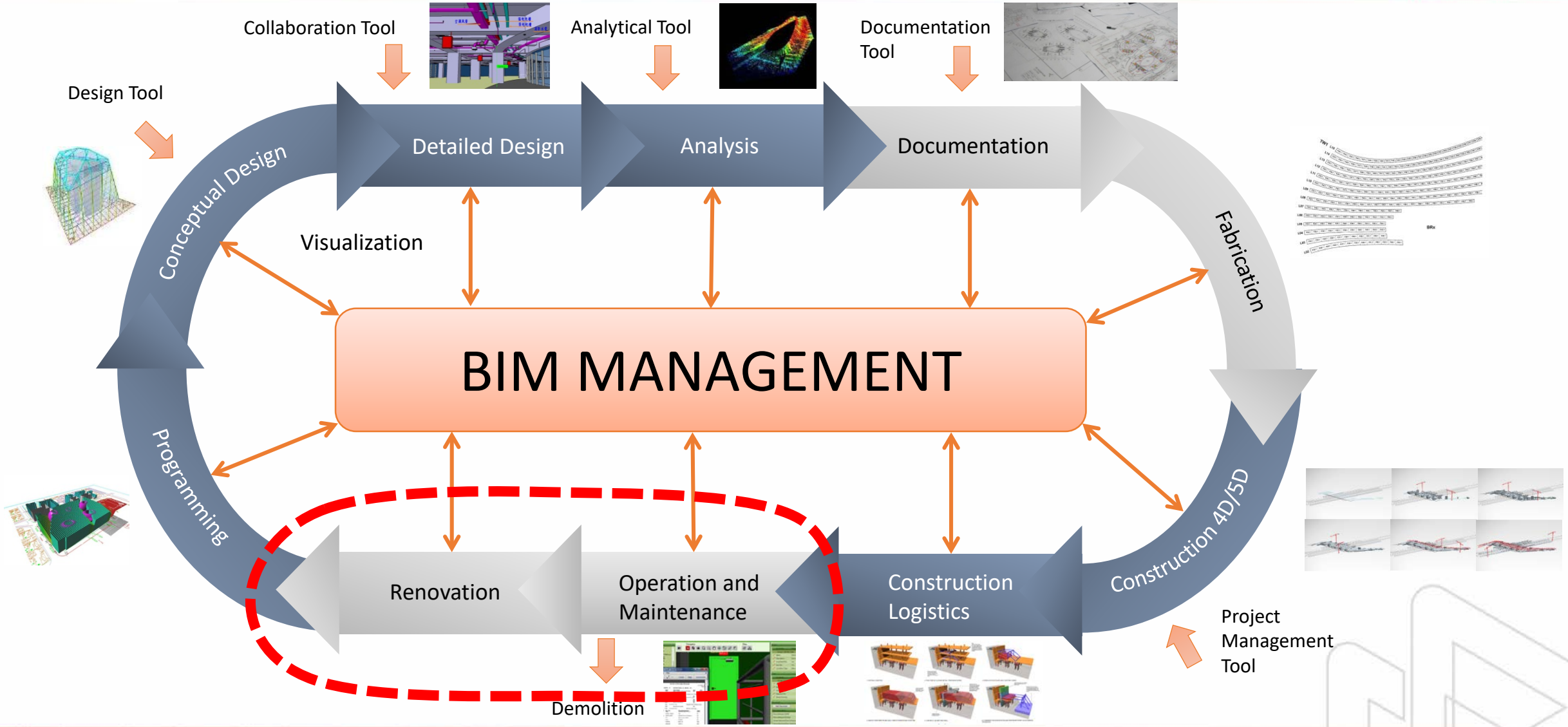
Current BIM Practice



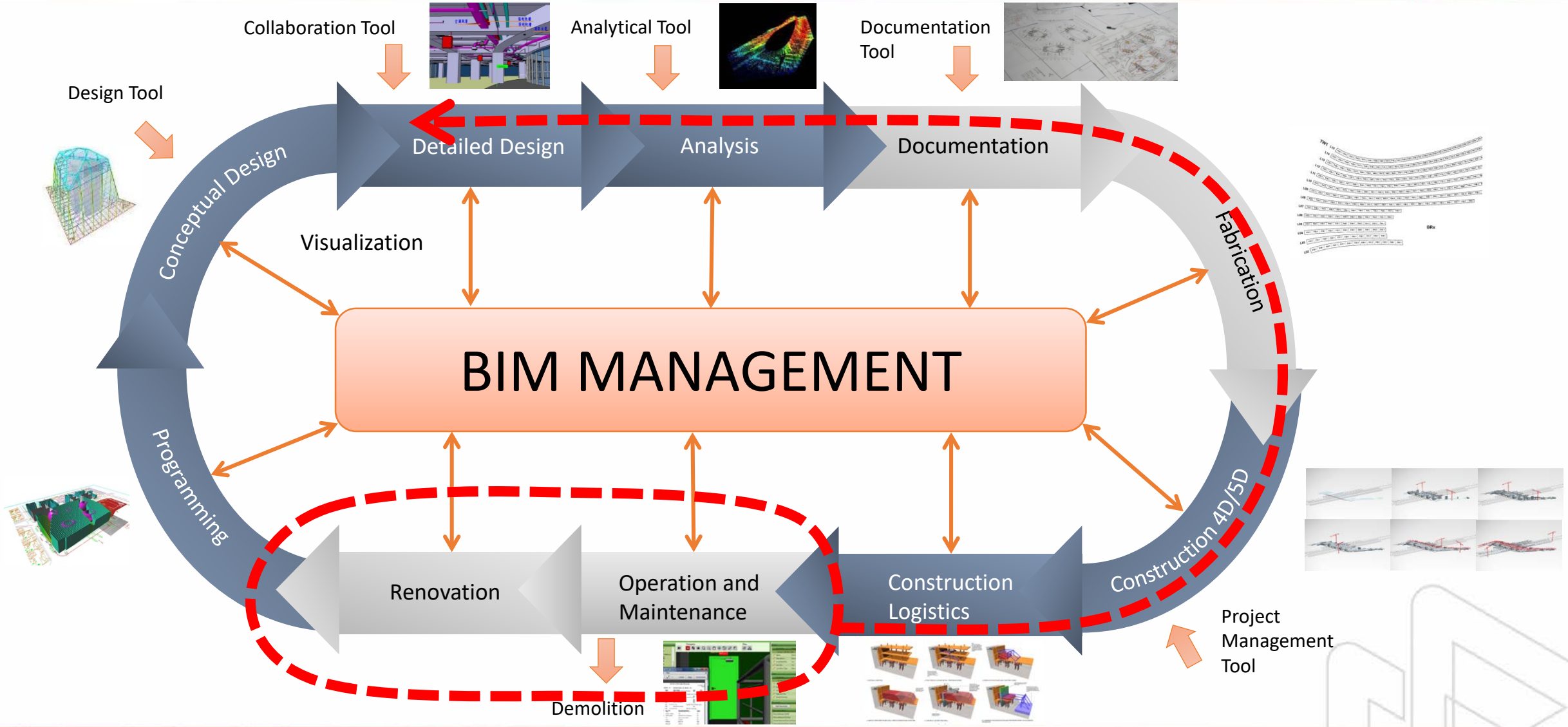
Our BIM Strength



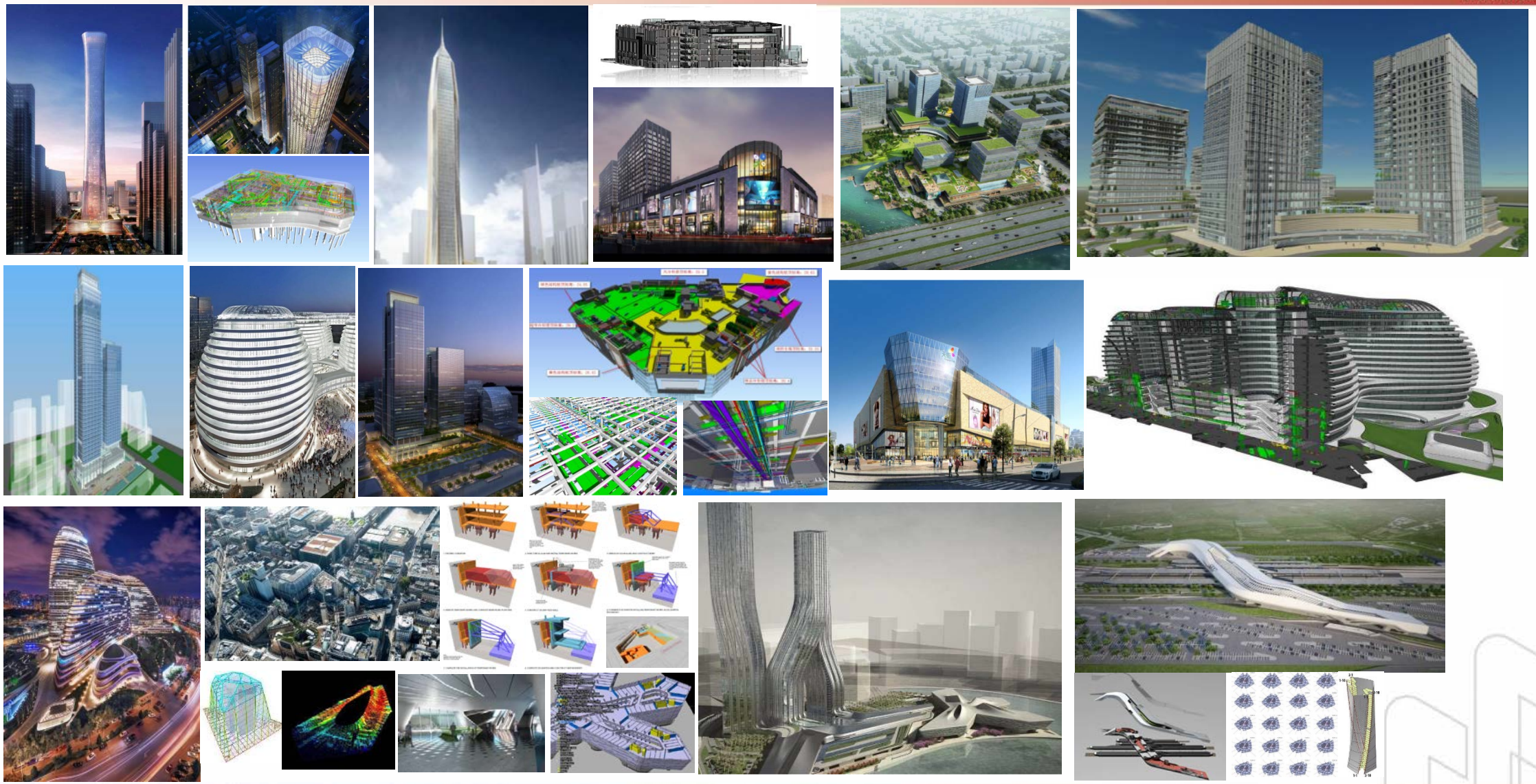
Value Driven BIM



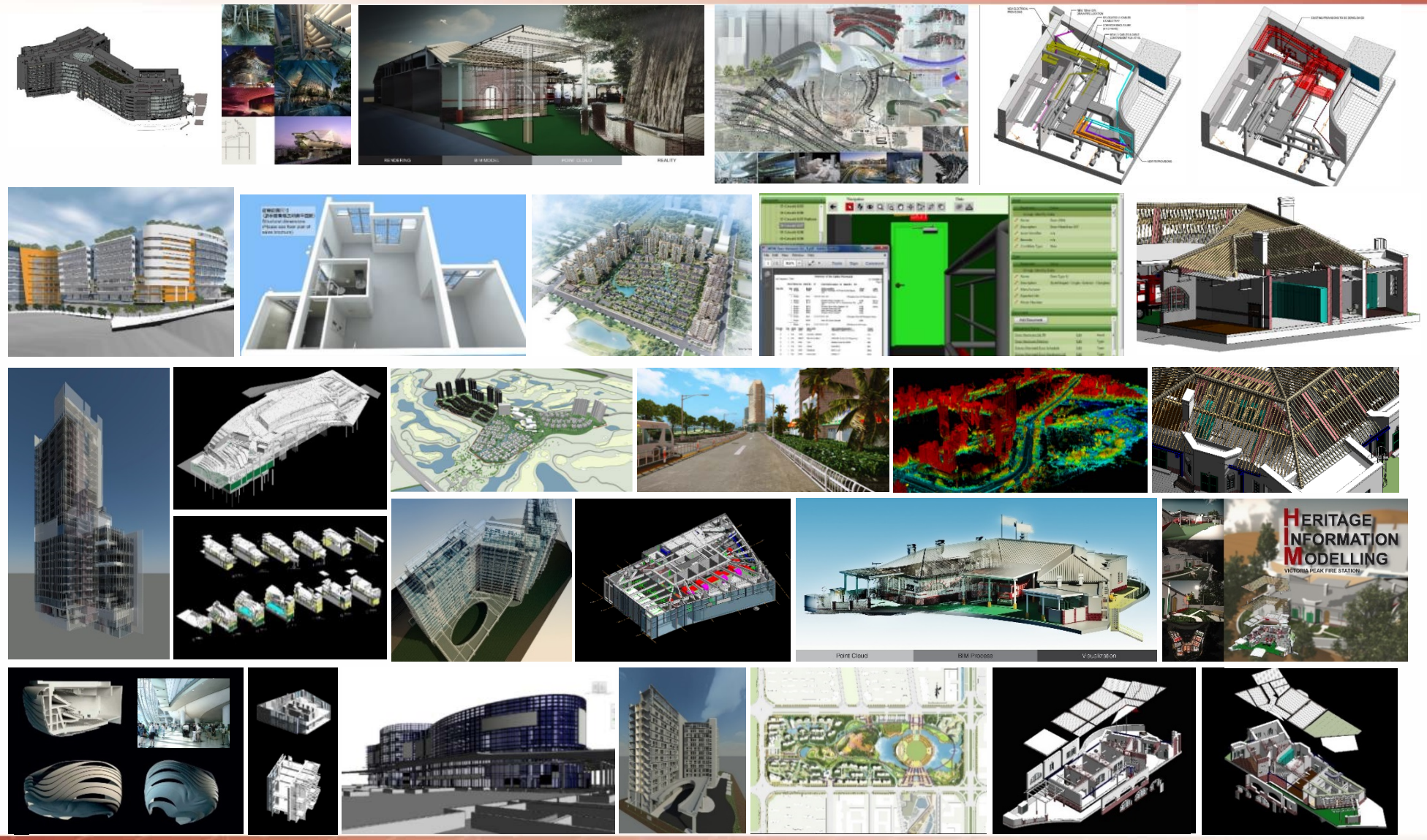
Value Driven BIM



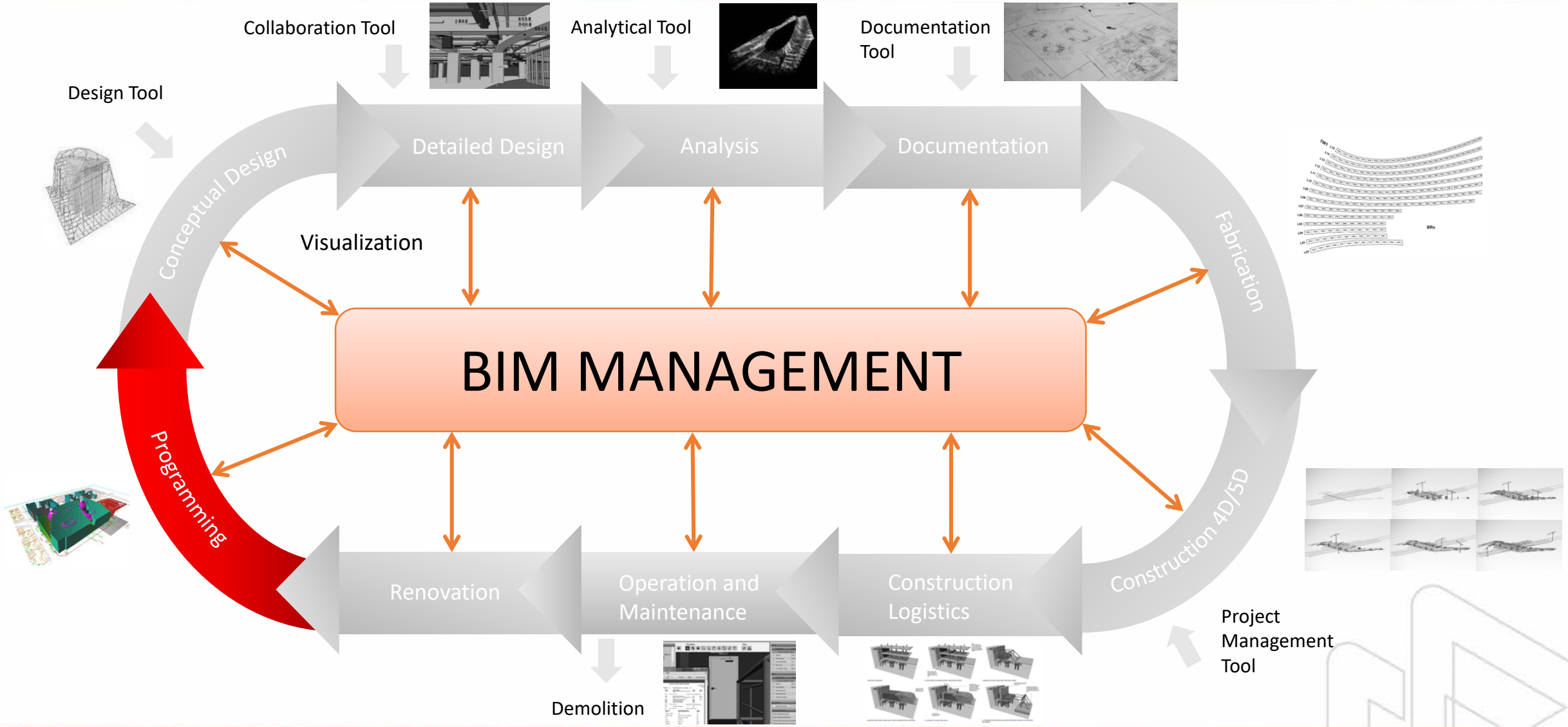
Project Overview



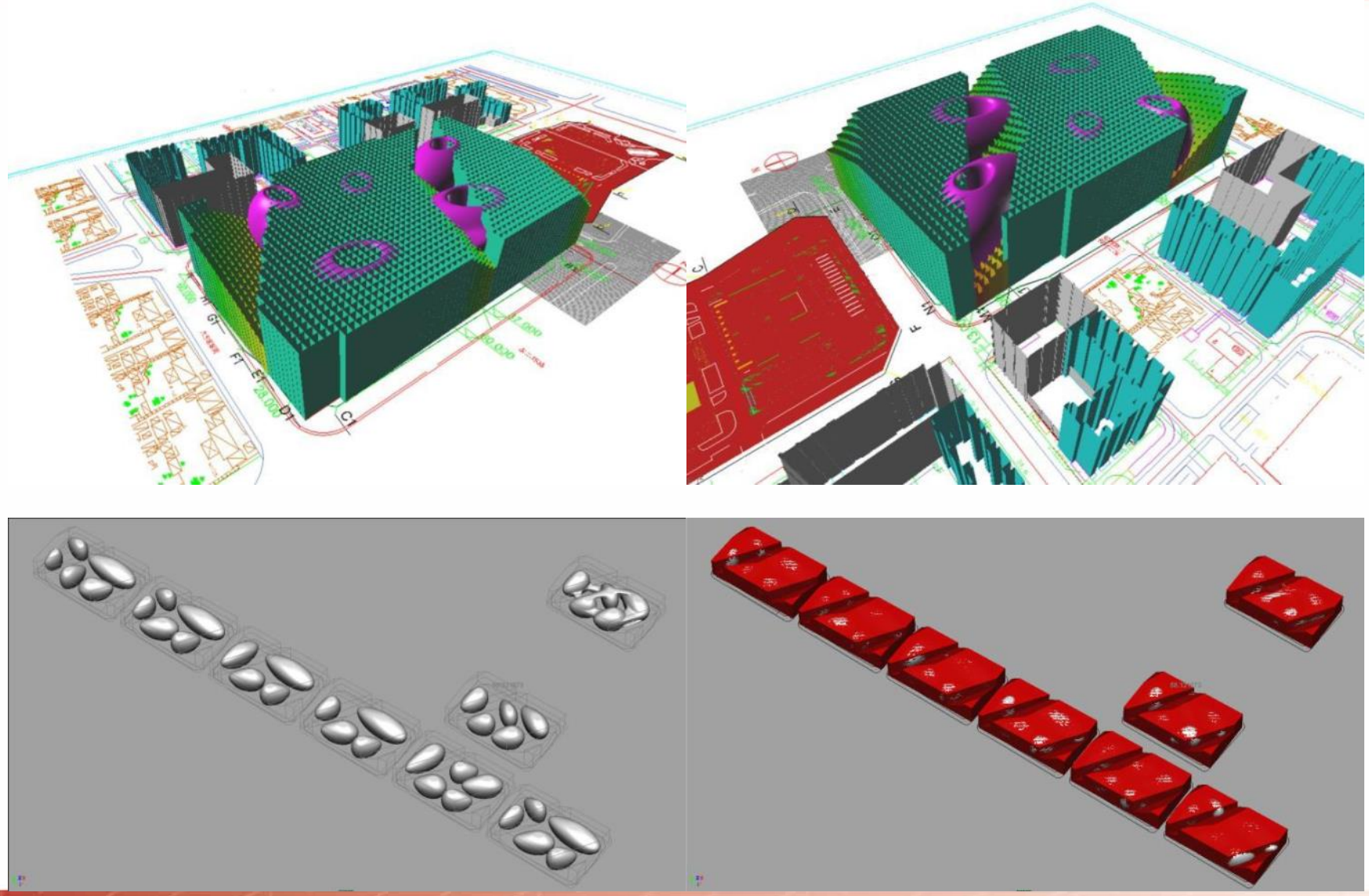
Project Overview



Maximising Development Potential



Form Optimization (Galaxy 银河 SOHO)



Flat Mix Optimization (Large Residential Development)

InBuilt Corporation 英建盈科 NCIC

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General Floor Schedule

Tower No.	Level	Comments	Calculated Area
T1	Level 1	Duplex	767 m²
T1	Level 2	Duplex	767 m²
T1	Level 3	Duplex	767 m²
T1	Level 4	Duplex	767 m²
T1	Level 5	Duplex	767 m²
T1	Level 6	Duplex	767 m²
T1	Level 7	Duplex	767 m²
T1	Level 8	Duplex	767 m²
T1	Level 9	Duplex	767 m²
T1	Level 10	Duplex	767 m²
T1	Level 11	Duplex	767 m²
T1	Level 12	Duplex	767 m²
T1	Level 13	Duplex	767 m²
T1	Level 14	Duplex	767 m²
T1	Level 15	Refuge Floor	0 m²
T1	Level 16	Duplex	767 m²
T1	Level 17	Duplex	767 m²
T1	Level 18	Duplex	767 m²
T1	Level 19	Duplex	767 m²
T1	Level 20	Duplex	767 m²
T1	Level 21	Duplex	767 m²
T1	Level 22	Duplex	767 m²
T1	Level 23	Duplex	767 m²
T1	Level 24	Duplex	767 m²
T1	Level 25	Duplex	767 m²
T1	Level 26	Duplex	767 m²
T1	Level 27	Duplex	767 m²
T1	Level 28	Duplex	767 m²
T1	Level 29	Duplex	767 m²
T1	Level 30	Duplex	767 m²
T1	Level 31	Refuge Floor	0 m²
T1	Level 32	Duplex	767 m²
T1	Level 33	Duplex	767 m²
T1	Level 34	Duplex	767 m²
T1	Level 35	Duplex	767 m²
T1	Level 36	Duplex	767 m²
T1	Level 37	Duplex	767 m²
T1	Level 38	Duplex	767 m²
T1	Level 39	Duplex	767 m²
T1	Level 40	Duplex	767 m²
T1	Level 41	Duplex	767 m²
T1	Level 42	Duplex	767 m²
T1	Level 43	Duplex	767 m²
T1	Roof	Roof	0 m²
			31147 m²

General Floor Schedule

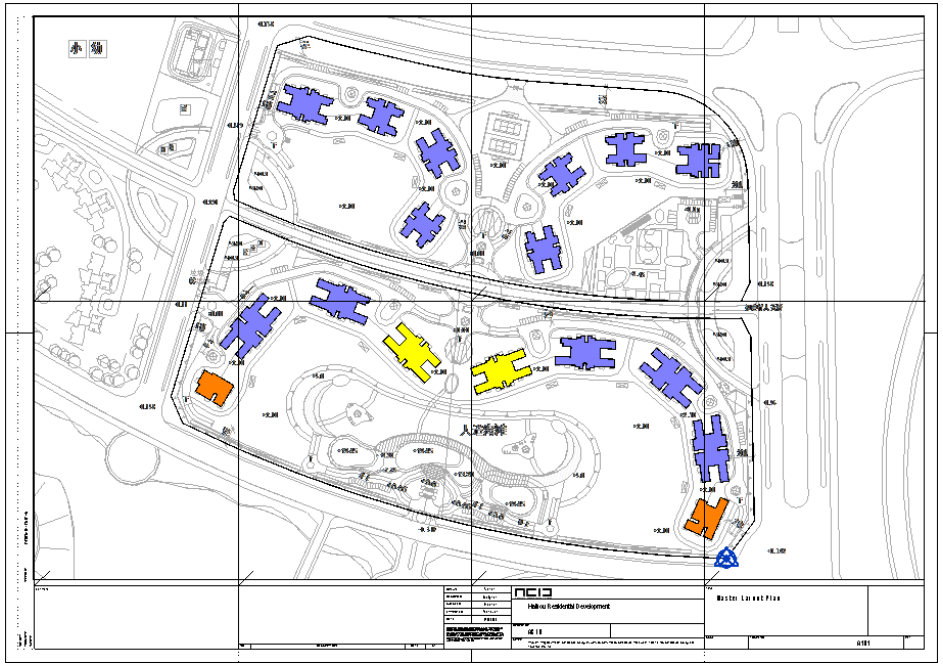
Tower No.	Level	Comments	Calculated Area
T2	Level 1	Typical Floor	1233 m²
T2	Level 2	Typical Floor	1233 m²
T2	Level 3	Typical Floor	1233 m²
T2	Level 4	Typical Floor	1233 m²
T2	Level 5	Typical Floor	1233 m²
T2	Level 6	Typical Floor	1233 m²
T2	Level 7	Typical Floor	1233 m²
T2	Level 8	Typical Floor	1233 m²
T2	Level 9	Typical Floor	1233 m²
T2	Level 10	Typical Floor	1233 m²
T2	Level 11	Typical Floor	1233 m²
T2	Level 12	Typical Floor	1233 m²
T2	Level 13	Typical Floor	1233 m²
T2	Level 14	Typical Floor	1233 m²
T2	Level 15	Typical Floor	1233 m²
T2	Level 16	Refuge Floor	0 m²
T2	Level 17	Typical Floor	1233 m²
T2	Level 18	Typical Floor	1233 m²
T2	Level 19	Typical Floor	1233 m²
T2	Level 20	Typical Floor	1233 m²
T2	Level 21	Typical Floor	1233 m²
T2	Level 22	Typical Floor	1233 m²
T2	Level 23	Typical Floor	1233 m²
T2	Level 24	Typical Floor	1233 m²
T2	Level 25	Typical Floor	1233 m²
T2	Level 26	Typical Floor	1233 m²
T2	Level 27	Typical Floor	1233 m²
T2	Level 28	Typical Floor	1233 m²
T2	Level 29	Typical Floor	1233 m²
T2	Level 30	Typical Floor	1233 m²
T2	Level 31	Typical Floor	1233 m²
T2	Level 32	Refuge Floor	0 m²
T2	Level 33	Typical Floor	1233 m²
T2	Level 34	Typical Floor	1233 m²
T2	Level 35	Typical Floor	1233 m²
T2	Level 36	Typical Floor	1233 m²
T2	Level 37	Typical Floor	1233 m²
T2	Level 38	Typical Floor	1233 m²
T2	Level 39	Typical Floor	1233 m²
T2	Level 40	Typical Floor	1233 m²
T2	Level 41	Typical Floor	1233 m²
T2	Level 42	Typical Floor	1233 m²
T2	Level 43	Typical Floor	1233 m²
T2	Level 44	Typical Floor	1233 m²
T2	Level 45	Typical Floor	1233 m²
T2	Level 46	Typical Floor	1233 m²
T2	Level 47	Typical Floor	1233 m²
T2	Roof	Roof	0 m²
			56606 m²

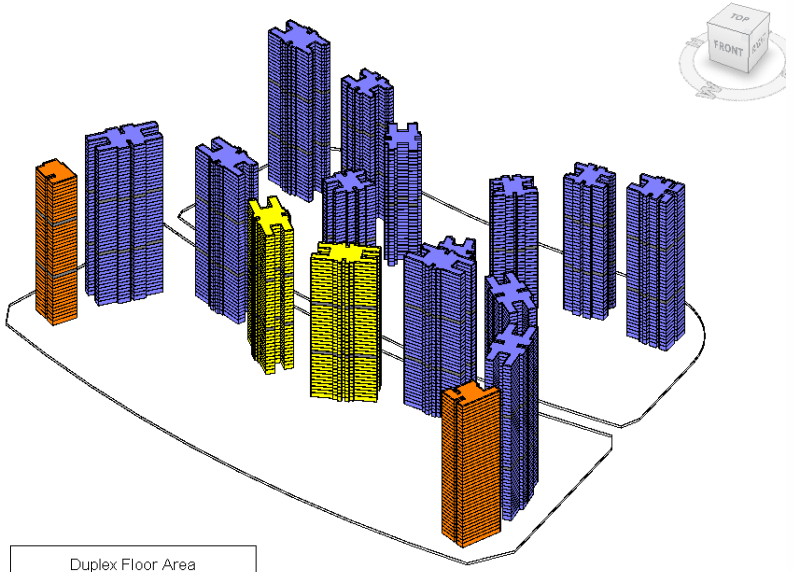
General Floor Schedule

Tower No.	Level	Comments	Calculated Area
T3	Level 1	Typical Floor	1200 m²
T3	Level 2	Typical Floor	1200 m²
T3	Level 3	Typical Floor	1200 m²
T3	Level 4	Typical Floor	1200 m²
T3	Level 5	Typical Floor	1200 m²
T3	Level 6	Typical Floor	1200 m²
T3	Level 7	Typical Floor	1200 m²
T3	Level 8	Typical Floor	1200 m²
T3	Level 9	Typical Floor	1200 m²
T3	Level 10	Typical Floor	1200 m²
T3	Level 11	Typical Floor	1200 m²
T3	Level 12	Typical Floor	1200 m²
T3	Level 13	Typical Floor	1200 m²
T3	Level 14	Typical Floor	1200 m²
T3	Level 15	Typical Floor	1200 m²
T3	Level 16	Refuge Floor	0 m²
T3	Level 17	Typical Floor	1200 m²
T3	Level 18	Typical Floor	1200 m²
T3	Level 19	Typical Floor	1200 m²
T3	Level 20	Typical Floor	1200 m²
T3	Level 21	Typical Floor	1200 m²
T3	Level 22	Typical Floor	1200 m²
T3	Level 23	Typical Floor	1200 m²
T3	Level 24	Typical Floor	1200 m²
T3	Level 25	Typical Floor	1200 m²
T3	Level 26	Typical Floor	1200 m²
T3	Level 27	Typical Floor	1200 m²
T3	Level 28	Typical Floor	1200 m²
T3	Level 29	Typical Floor	1200 m²
T3	Level 30	Typical Floor	1200 m²
T3	Level 31	Typical Floor	1200 m²
T3	Level 32	Refuge Floor	0 m²
T3	Level 33	Typical Floor	1200 m²
T3	Level 34	Typical Floor	1200 m²
T3	Level 35	Typical Floor	1200 m²
T3	Level 36	Typical Floor	1200 m²
T3	Level 37	Typical Floor	1200 m²
T3	Level 38	Typical Floor	1200 m²
T3	Level 39	Typical Floor	1200 m²
T3	Level 40	Typical Floor	1200 m²
T3	Level 41	Typical Floor	1200 m²
T3	Level 42	Typical Floor	1200 m²
T3	Level 43	Typical Floor	1200 m²
T3	Level 44	Typical Floor	1200 m²
T3	Level 45	Typical Floor	1200 m²
T3	Level 46	Typical Floor	1200 m²
T3	Level 47	Typical Floor	1200 m²
T3	Roof	Roof	0 m²
			53640 m²

General Floor Schedule

Tower No.	Level	Comments	Calculated Area
T5	Level 1	Typical Plan	1067 m²
T5	Level 2	Typical Plan	1067 m²
T5	Level 3	Typical Plan	1067 m²
T5	Level 4	Typical Plan	1067 m²
T5	Level 5	Typical Plan	1067 m²
T5	Level 6	Typical Plan	1067 m²
T5	Level 7	Typical Plan	1067 m²
T5	Level 8	Typical Plan	1067 m²
T5	Level 9	Typical Plan	1067 m²
T5	Level 10	Typical Plan	1067 m²
T5	Level 11	Typical Plan	1067 m²
T5	Level 12	Typical Plan	1067 m²
T5	Level 13	Typical Plan	1067 m²
T5	Level 14	Typical Plan	1067 m²
T5	Level 15	Refuge Floor	0 m²
T5	Level 16	Typical Plan	1067 m²
T5	Level 17	Typical Plan	1067 m²
T5	Level 18	Typical Plan	1067 m²
T5	Level 19	Typical Plan	1067 m²
T5	Level 20	Typical Plan	1067 m²
T5	Level 21	Typical Plan	1067 m²
T5	Level 22	Typical Plan	1067 m²
T5	Level 23	Typical Plan	1067 m²
T5	Level 24	Typical Plan	1067 m²
T5	Level 25	Typical Plan	1067 m²
T5	Level 26	Typical Plan	1067 m²
T5	Level 27	Typical Plan	1067 m²
T5	Level 28	Typical Plan	1067 m²
T5	Level 29	Typical Plan	1067 m²
T5	Level 30	Typical Plan	1067 m²
T5	Level 31	Refuge Floor	0 m²
T5	Level 32	Typical Plan	1067 m²
T5	Level 33	Typical Plan	1067 m²
T5	Level 34	Typical Plan	1067 m²
T5	Level 35	Typical Plan	1067 m²
T5	Level 36	Typical Plan	1067 m²
T5	Level 37	Typical Plan	1067 m²
T5	Level 38	Typical Plan	1067 m²
T5	Level 39	Typical Plan	1067 m²
T5	Level 40	Typical Plan	1067 m²
T5	Level 41	Typical Plan	1067 m²
T5	Level 42	Typical Plan	1067 m²
T5	Level 43	Typical Plan	1067 m²
T5	Level 44	Typical Plan	1067 m²
T5	Level 45	Typical Plan	1067 m²
T5	Roof	Roof	0 m²
			45440 m²





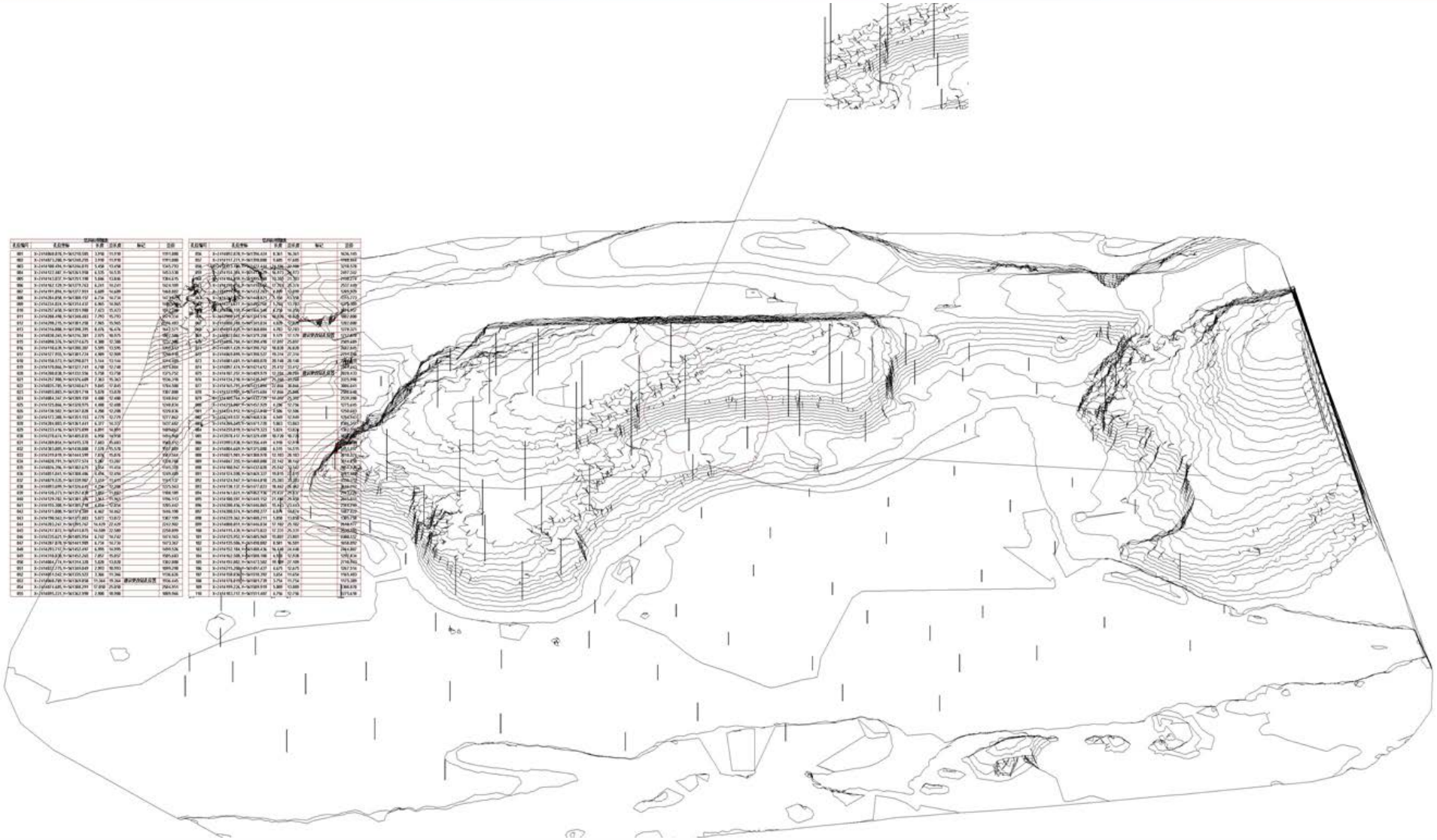
Duplex Floor Area	
Comments	Area
Duplex	56773 m²

Refuge Floor Area	
Comments	Area
Refuge Floor	27475 m²

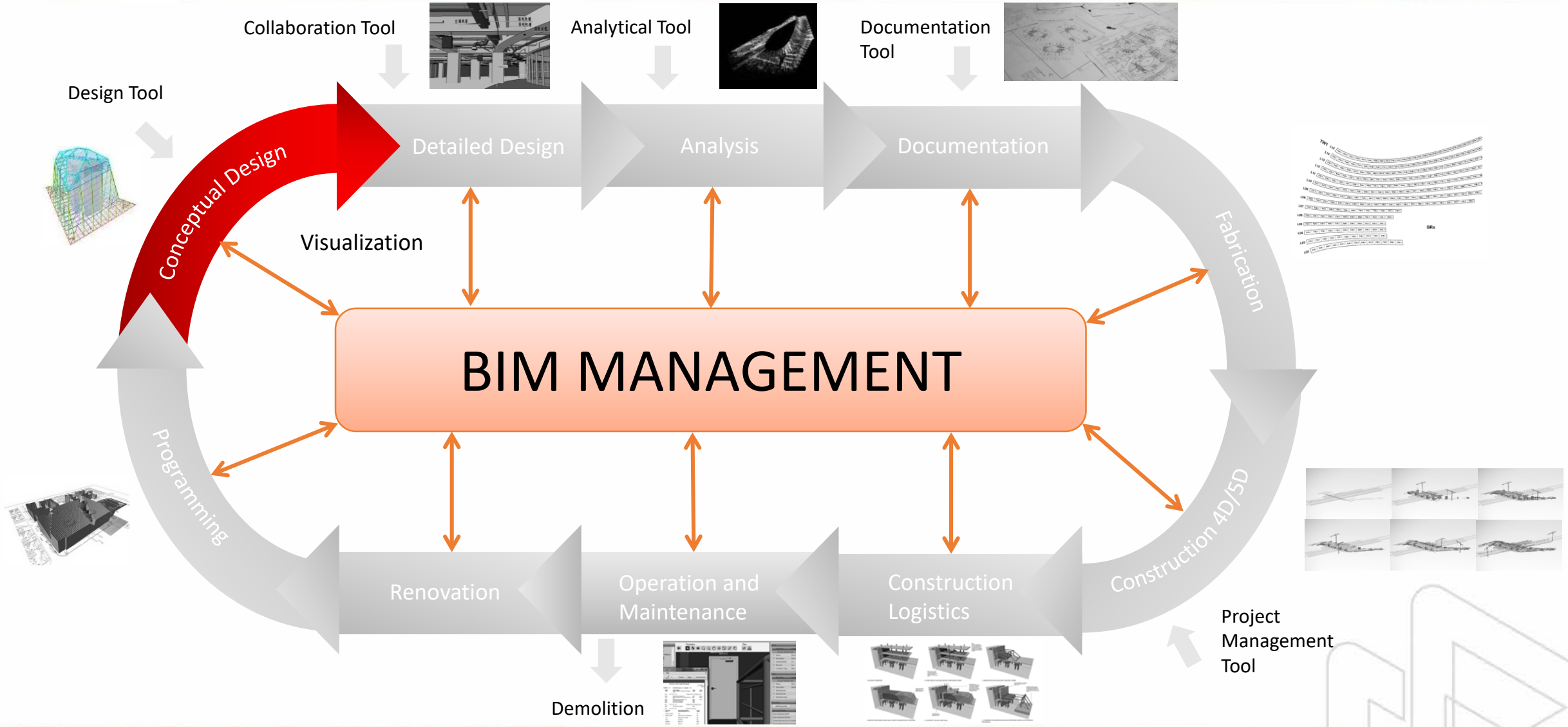
Service Apartment Area	
Comments	Area
Service Apartment	85798 m²

Typical Floor Area	
Comments	Area
Typical Floor	441109 m²

Foundation Depth Estimation



Optimising Design Option



Optimising Design Option (Galaxy 银河 SOHO)

Optimising Design Option （Dubai Financial Market）

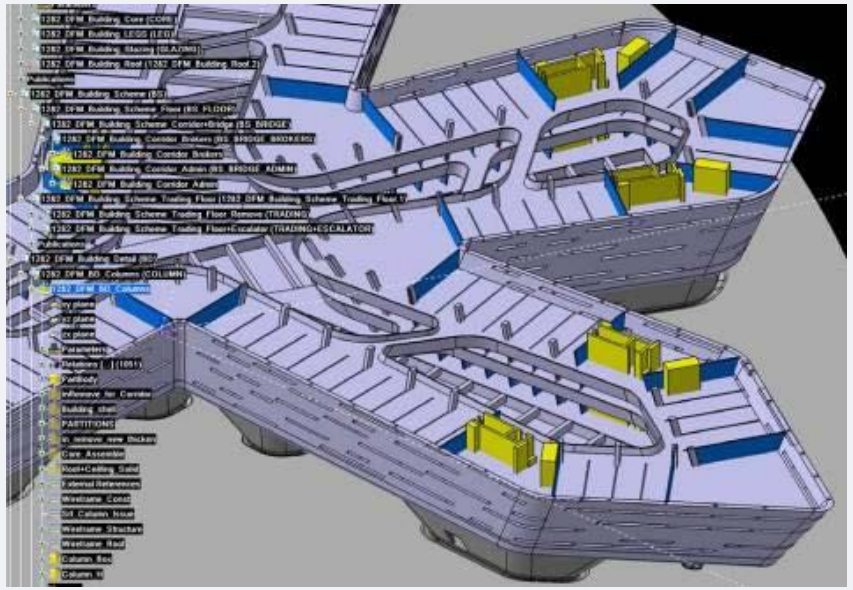
InBuilt Corporation 英建盈科 NCIC

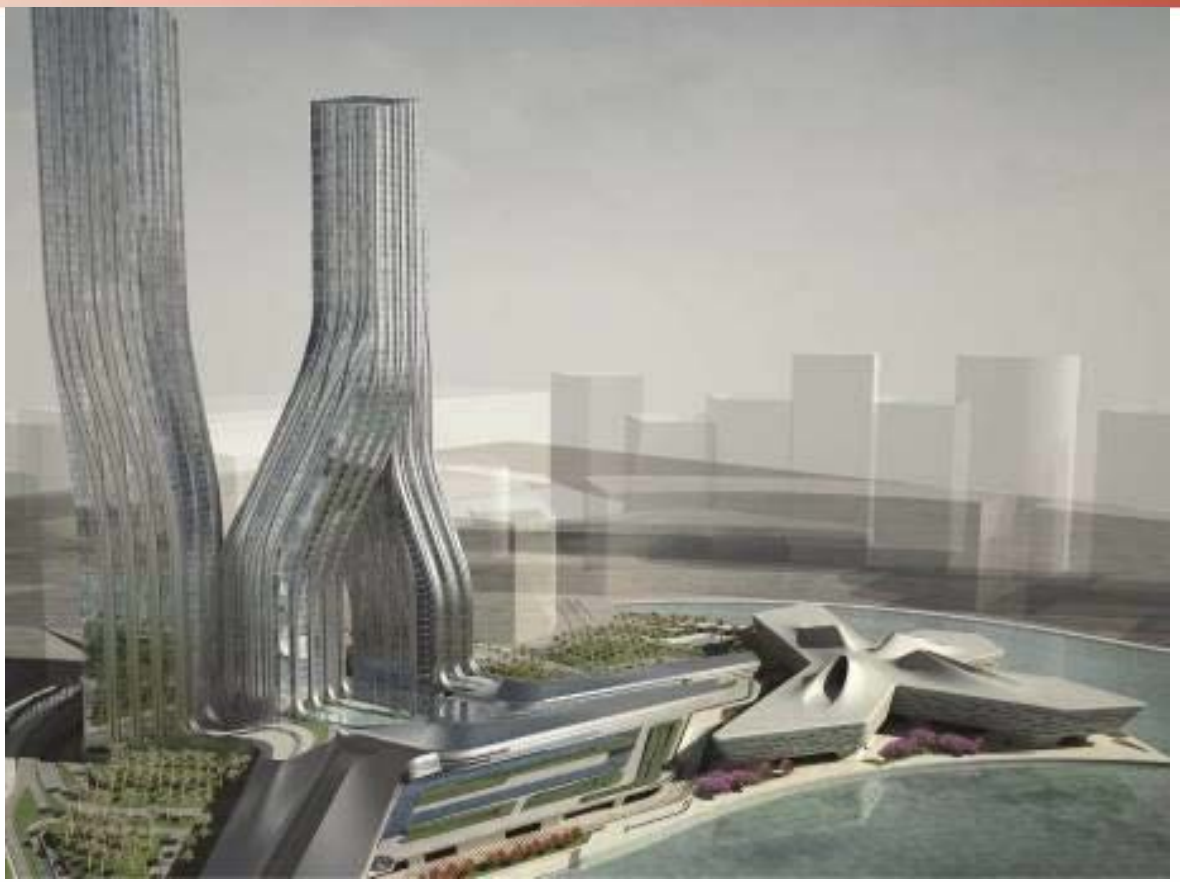
www.inbuiltcorp.com

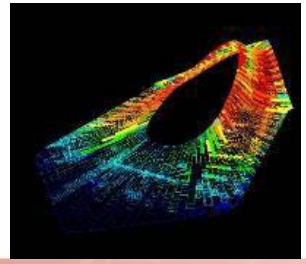
Address
Dubai, UAE

Gross Floor Area
42,000 sq.m.

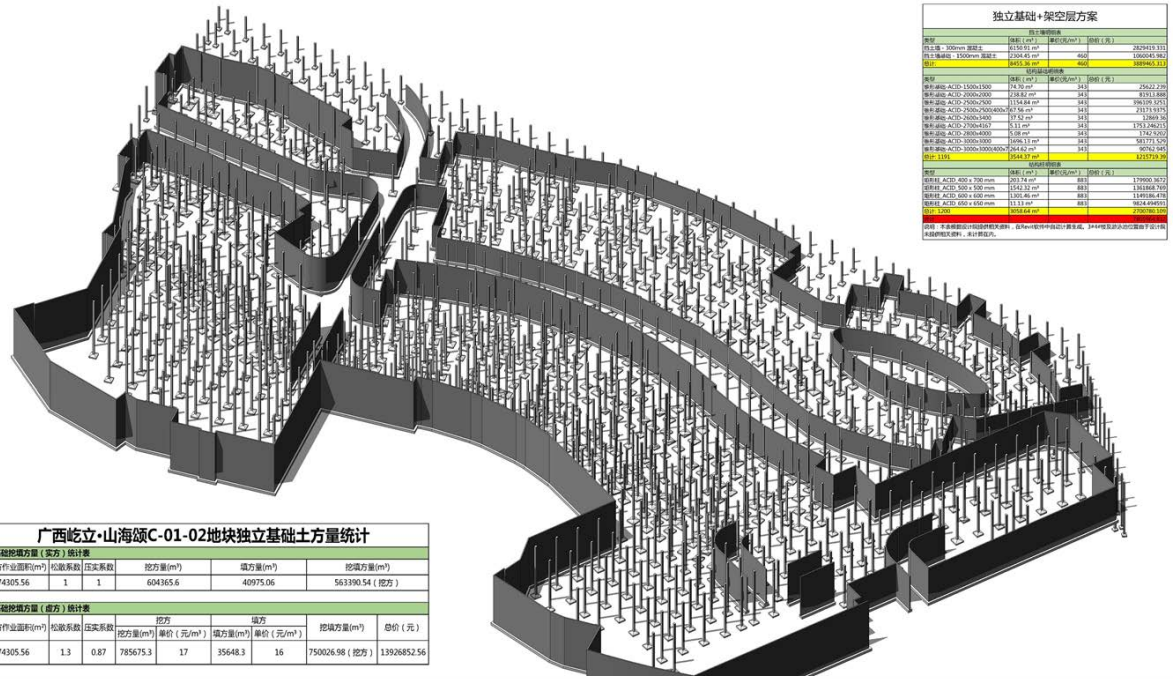
Features
| Stock market for general public of Dubai
| Main building floor elevated with sculpted concrete structures.
| Application of BIM system to optimize construction efficiency
| Complex structural shapes and façade systems are simulated in BIM
| This project is a personal experience of InBuilt's key founder







Explore Structural Options



独立基础+架空层方案

挡土墙明细表			
类型	体积（m³）	单价(元/m³)	总价（元）
挡土墙 - 300mm 混凝土	6150.91 m³		2829419.331
挡土墙基础 - 1500mm 混凝土	2304.45 m³	460	1060045.982
统计:	8455.36 m³	460	3889465.313
结构基础明细表			
类型	体积（m³）	单价(元/m³)	总价（元）
独形基础: ACID-1500x1500	74.70 m³	343	25622.239
独形基础: ACID-2000x2000	238.82 m³	343	81911.888
独形基础: ACID-2500x2500	1154.84 m³	343	396195.1753
独形基础: ACID-2500x2500(400x7	67.58 m³	343	23171.9375
独形基础: ACID-2600x3400	37.52 m³	343	12869.56
独形基础: ACID-2700x4167	5.11 m³	343	1753.246215
独形基础: ACID-2800x4000	5.08 m³	343	1742.9262
独形基础: ACID-3000x3000	1696.13 m³	343	581771.529
独形基础: ACID-3000x3000(400x7	264.42 m³	343	90762.945
合计: 1191	3544.37 m³		1215719.39
结构柱明细表			
类型	体积（m³）	单价(元/m³)	总价（元）
结构柱: ACID_400 x 700 mm	203.74 m³	883	179900.3672
结构柱: ACID_500 x 500 mm	1542.32 m³	883	1361868.769
结构柱: ACID_600 x 600 mm	1301.46 m³	883	1149186.478
结构柱: ACID_650 x 650 mm	11.13 m³	883	9824.494931
合计: 1200	3058.64 m³		2700780.109

说明：不表根据设计院提供相关资料，在Revit软件中自动计算生成。3#4#楼及游泳池位置由于设计院未提供相关资料，未计算在内。

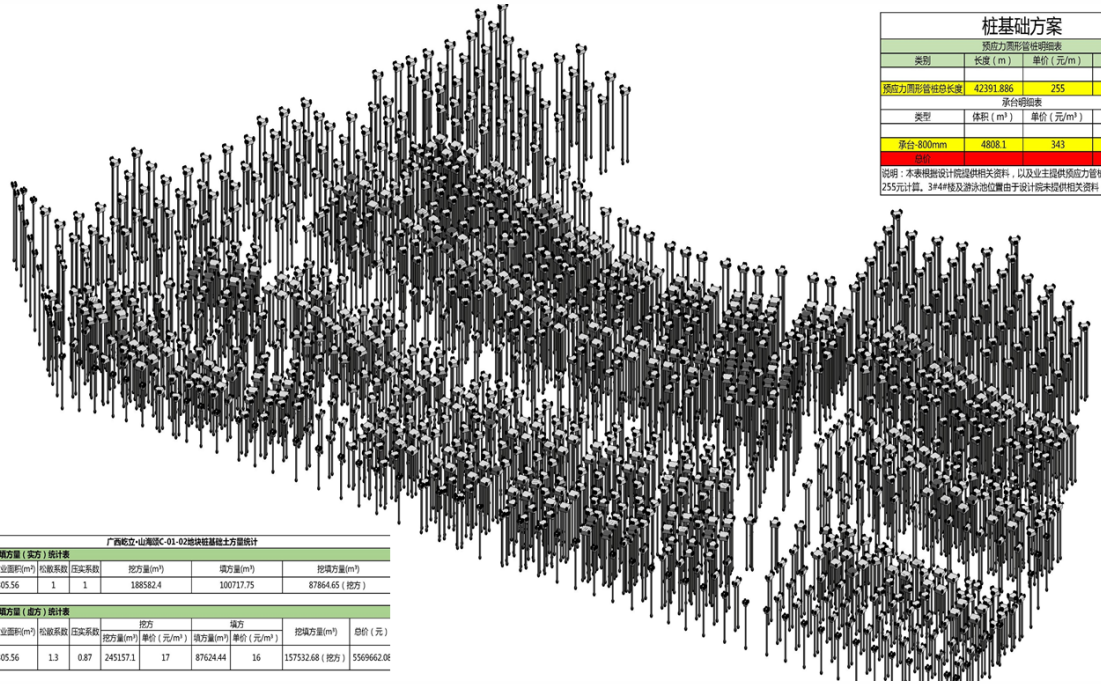
广西屹立·山海颂C-01-02地块独立基础土方量统计

独立基础挖填方量（实方）统计表

挖填方作业面积(m²)	松散系数	压实系数	挖方量(m³)	填方量(m³)	挖填方量(m³)
74305.56	1	1	604365.6	40975.06	563390.54（挖方）

独立基础挖填方量（虚方）统计表

挖填方作业面积(m²)	松散系数	压实系数	挖方		填方		挖填方量(m³)	总价（元）
			挖方量(m³)	单价（元/m³）	填方量(m³)	单价（元/m³）		
74305.56	1.3	0.87	785675.3	17	35648.3	16	750026.98（挖方）	13926852.56



桩基础方案

预应力圆形管桩明细表			
类别	长度（m）	单价（元/m）	合计（元）
预应力圆形管桩总长度	42391.886	255	10809930.93
承台明细表			
类型	体积（m³）	单价（元/m³）	合计（元）
承台-800mm	4808.1	343	1649178.3
总计:			12459109.23

说明：本表根据设计院提供相关资料，以及业主提供预应力管桩报价单，取每米255元计算。3#4#楼及游泳池位置由于设计院未提供相关资料，未计算在内。

广西屹立·山海颂C-01-02地块桩基础土方量统计

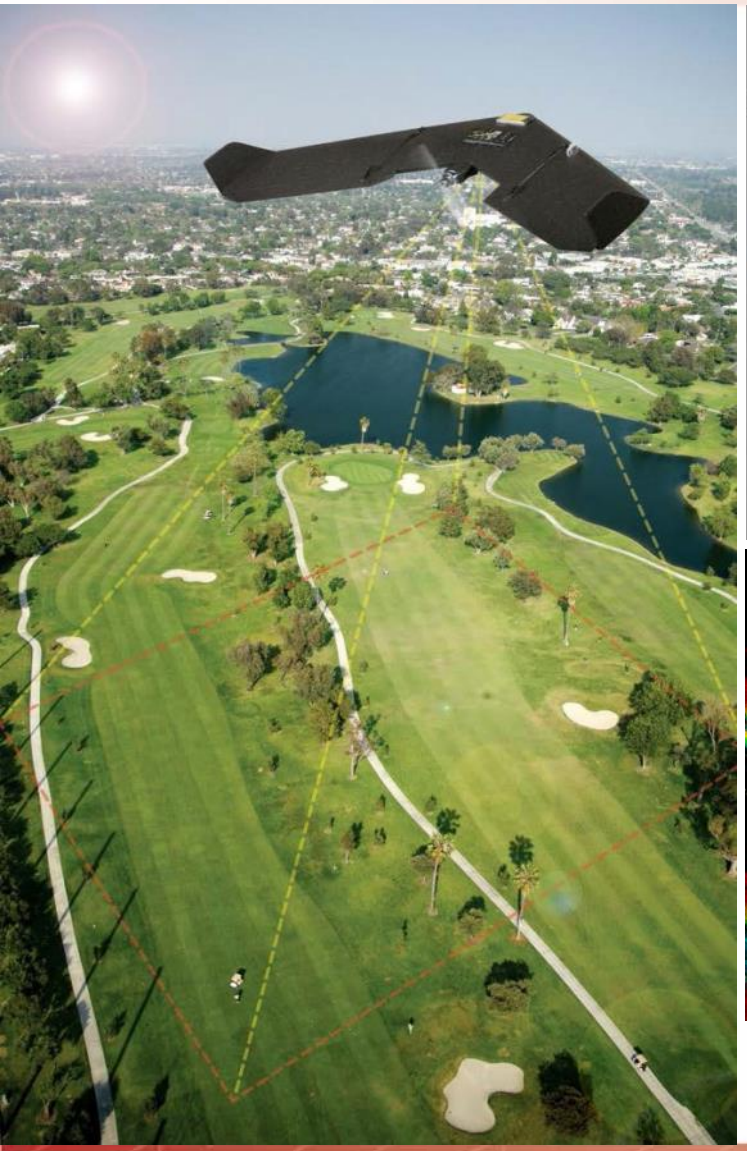
桩基础挖填方量（实方）统计表

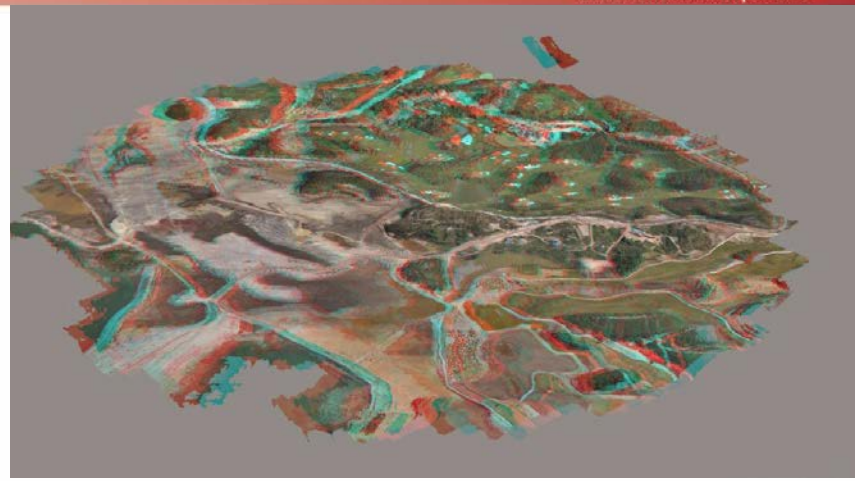
挖填方作业面积(m²)	松散系数	压实系数	挖方量(m³)	填方量(m³)	挖填方量(m³)
74305.56	1	1	188582.4	100717.75	87864.65（挖方）

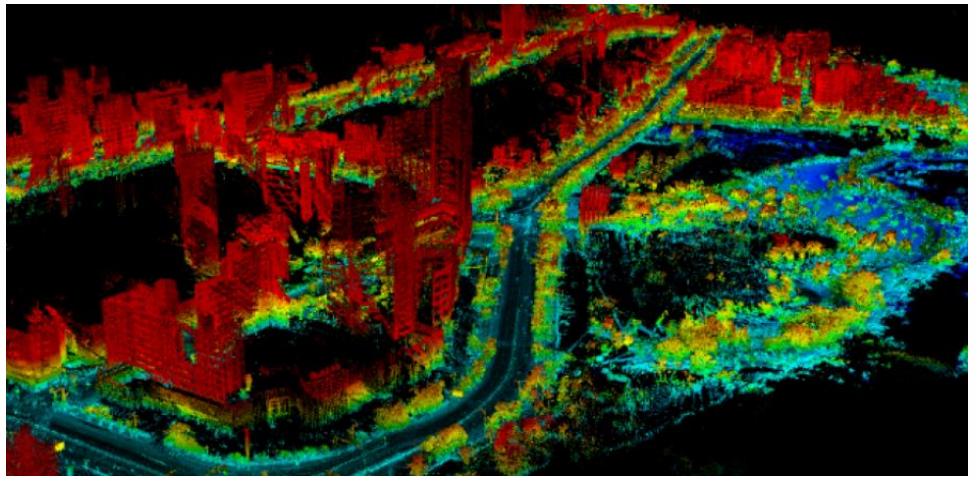
桩基础挖填方量（虚方）统计表

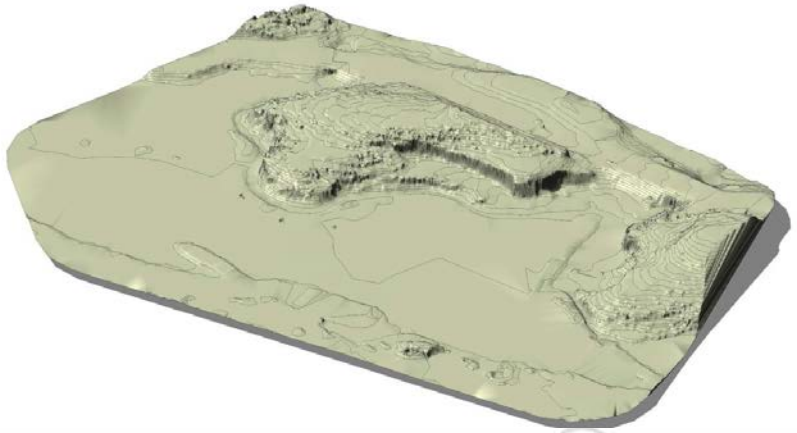
挖填方作业面积(m²)	松散系数	压实系数	挖方		填方		挖填方量(m³)	总价（元）
			挖方量(m³)	单价（元/m³）	填方量(m³)	单价（元/m³）		
74305.56	1.3	0.87	245157.1	17	87624.44	16	157532.68（挖方）	5569662.08

Understanding Constraint (Photogrammetry)

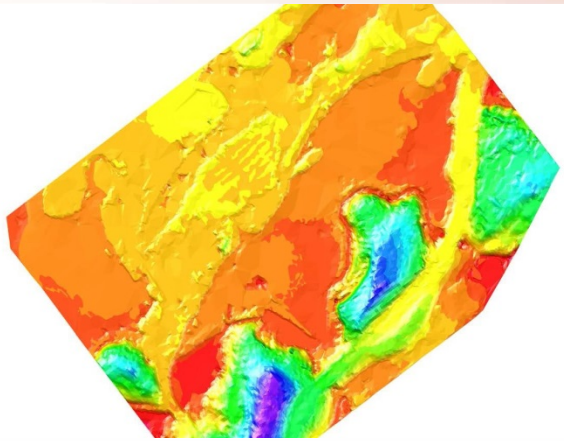




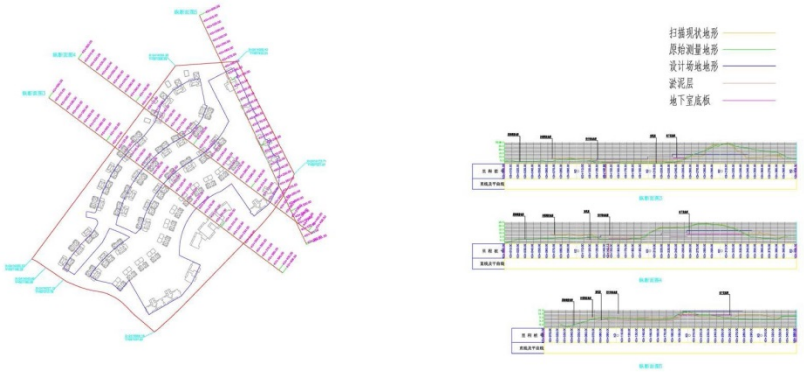




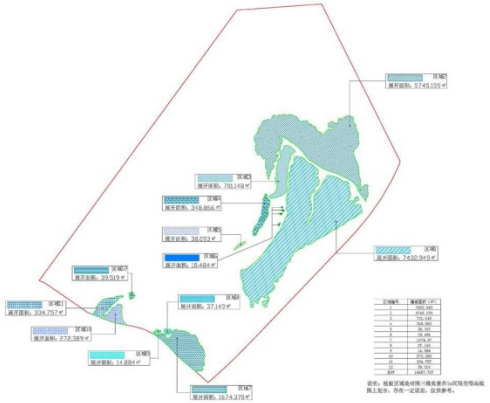
Site Levels Comparison



场地汇水分析

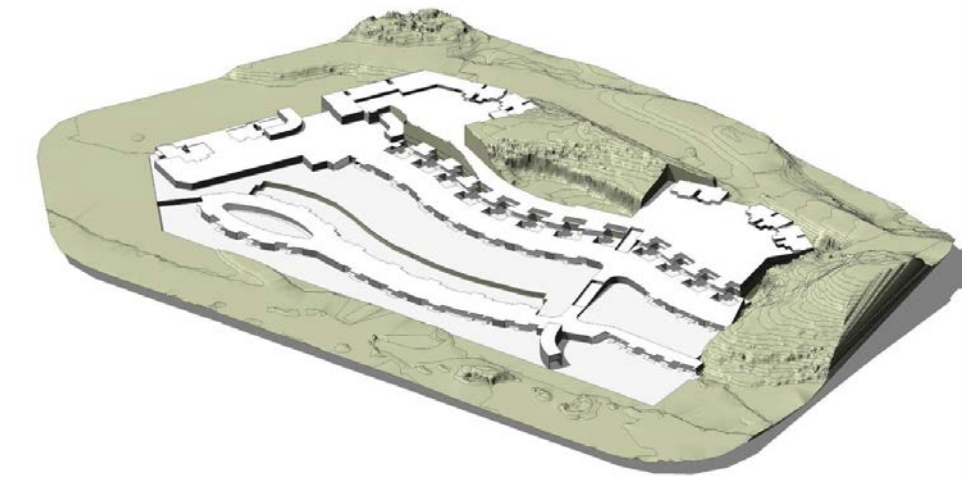


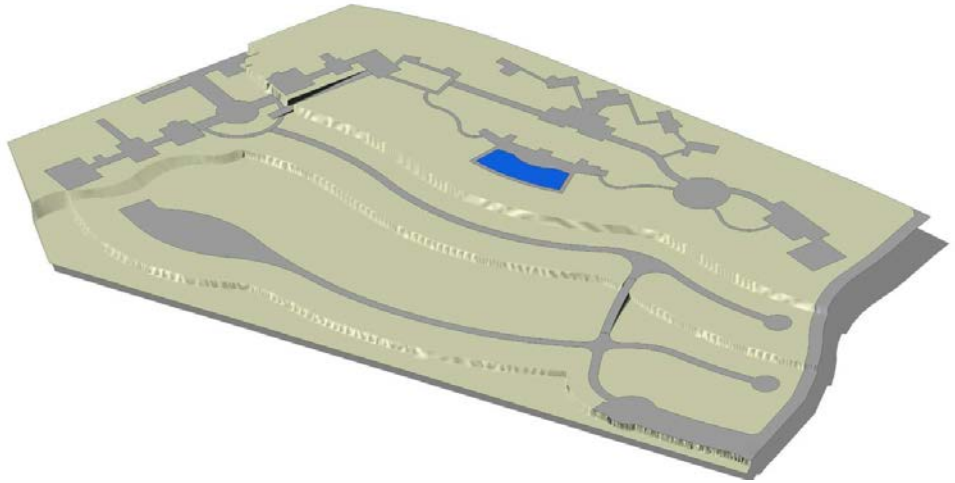
场地植被表面积统计

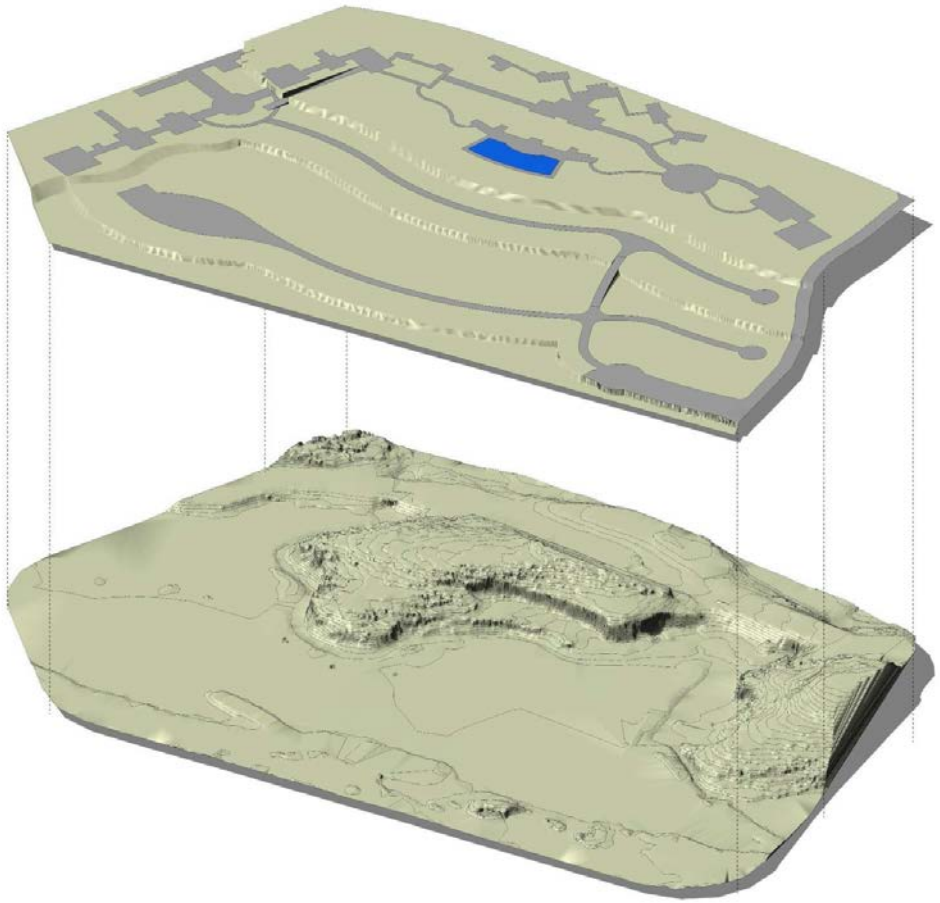


场地任意断面生成

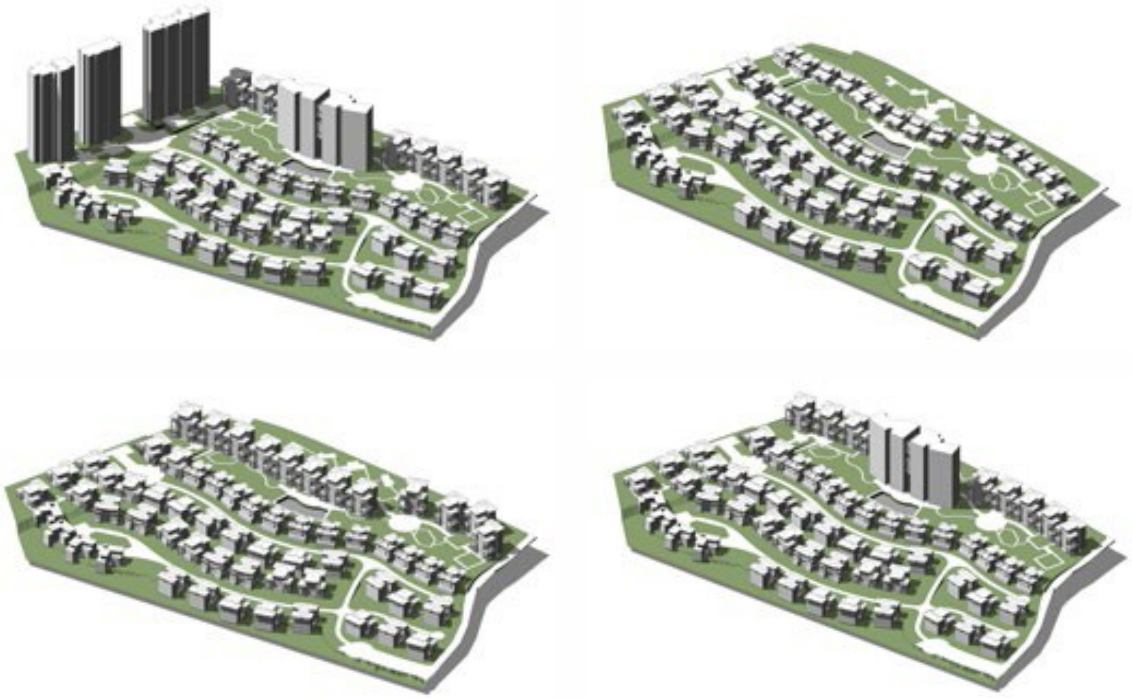
Optimising Site Formation



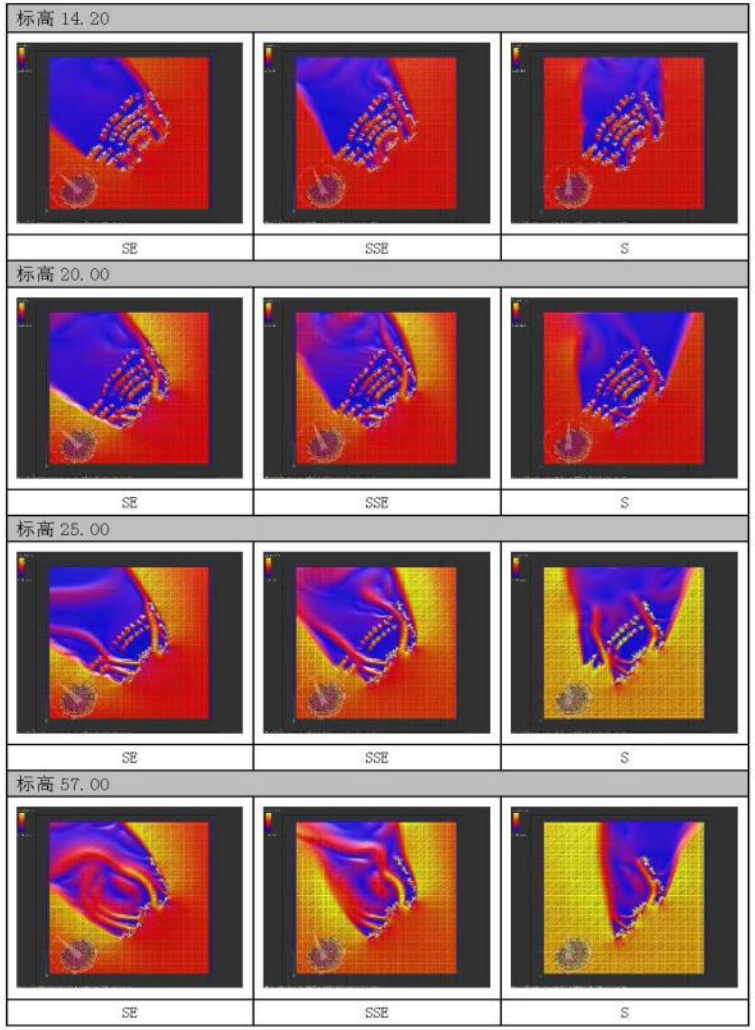




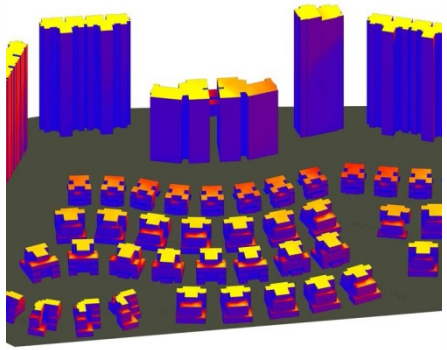
Optimising Site Formation



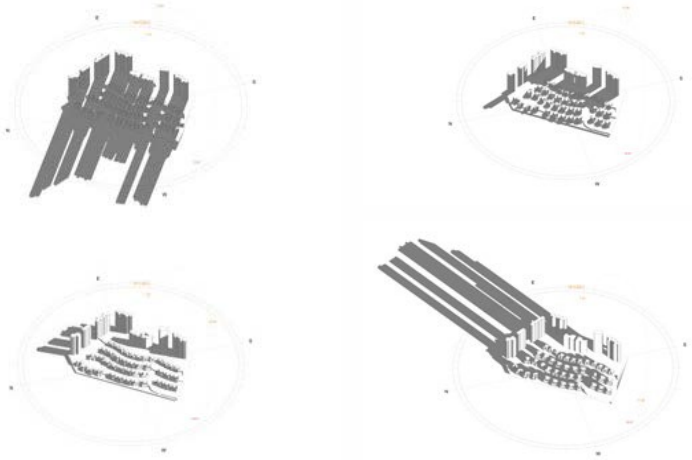
Sustainability Analysis



场地风环境分析



日照辐射分析



日照遮挡分析

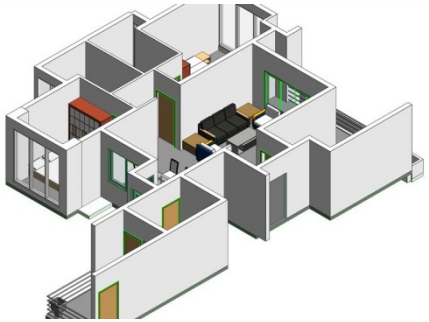
Landscape Integration

Zou Cheng Project

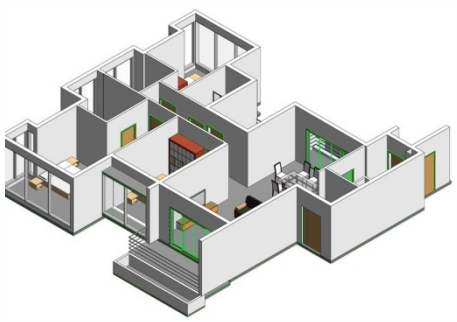
Qinzhou Project

Flat Mix Options

- 花园洋房标准层



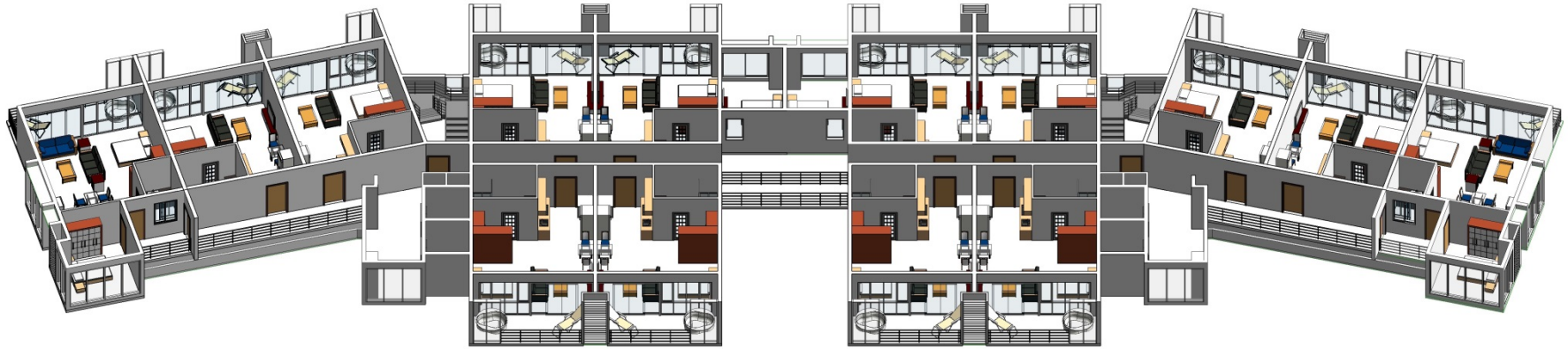
户型 A-1



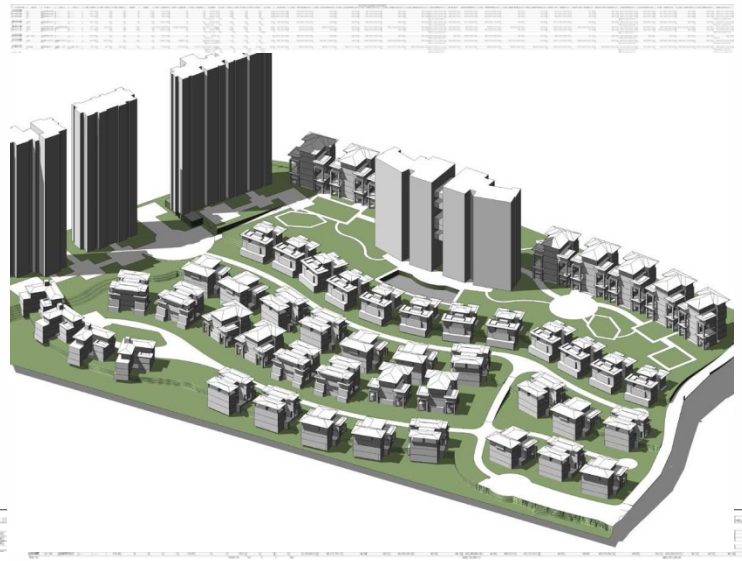
户型 A-2

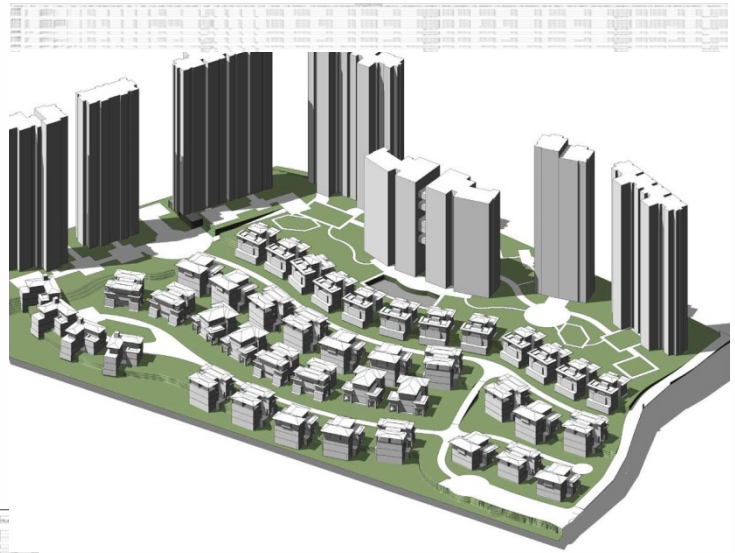
复式户型 1

复式户型 2

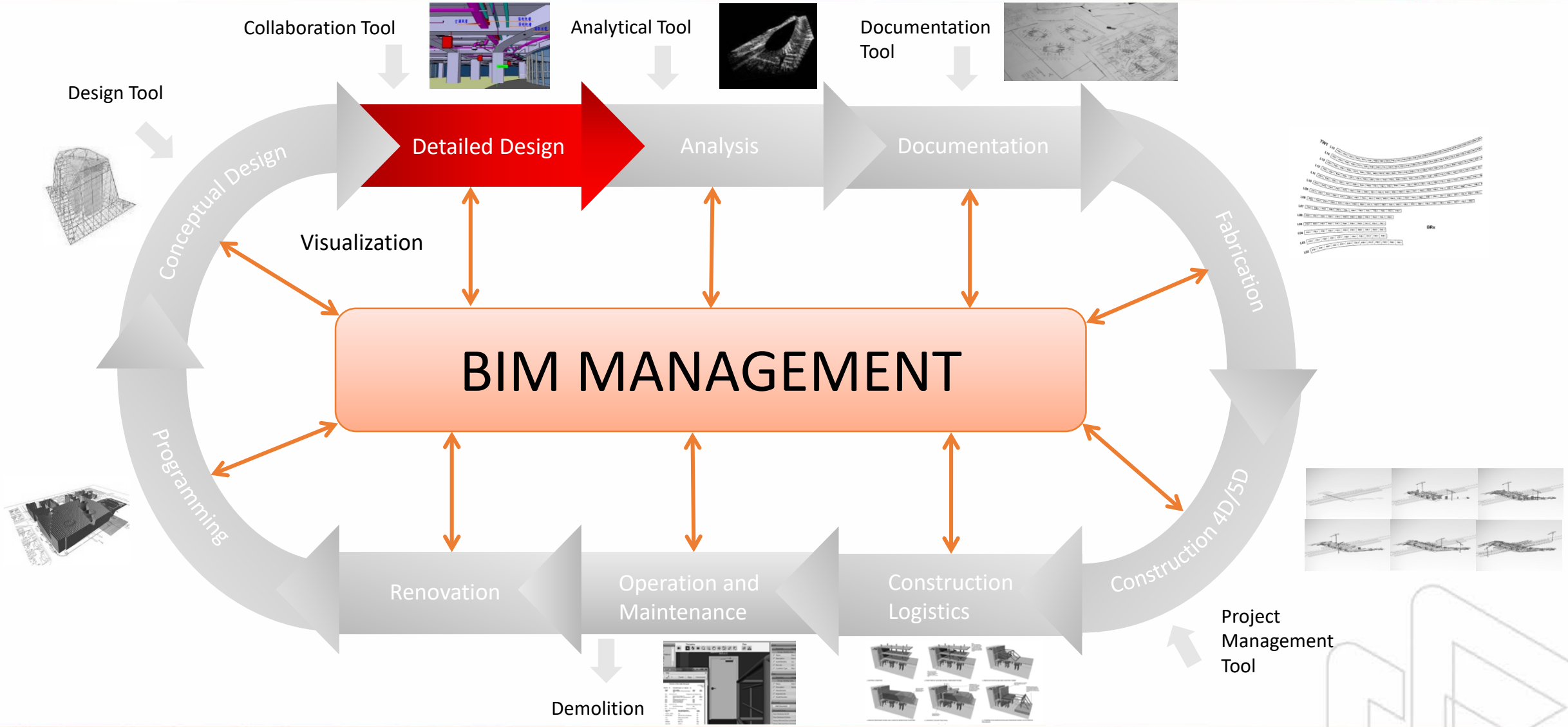


Sales Value Determination





Enhancing Coordination & Collaboration



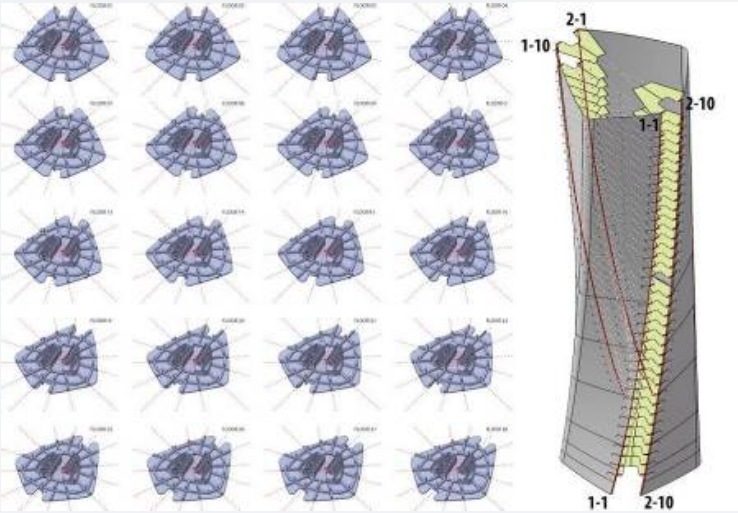
Structural Coordination (Milan CityLife Tower)

Address
Milan, Italy

Site Area	Gross Floor Area	Height
366,000 sq.m.	67,000 sq.m.	185 m

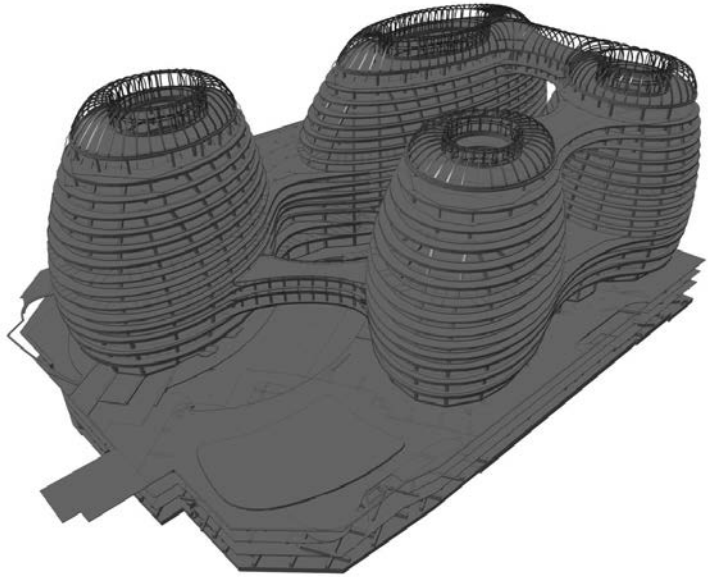
Features

| Mixed Use Commercial and Residential Development
| Total of 44 floors (+ 3 floors basement)
| Application of BIM system to optimize construction efficiency
| Rotating floor plates, core structure, and beams are simulated in BIM
| This project is a personal experience of InBuilt's key founder

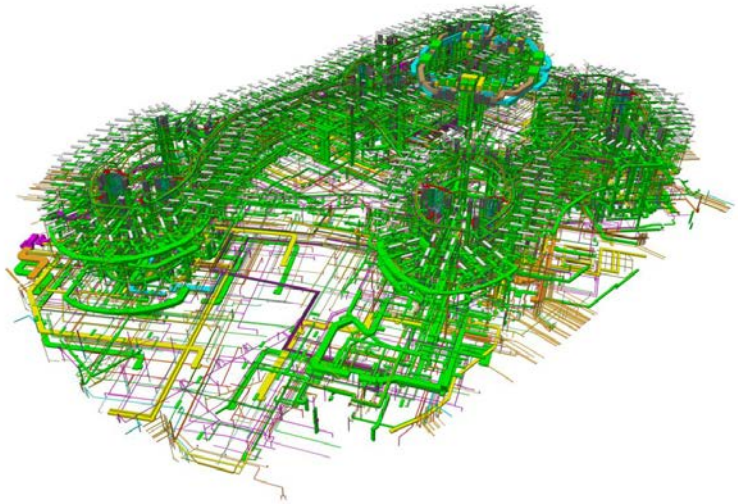


Multi-Disciplinary Complexity (Galaxy 銀河SOHO)

3D Design Visualization

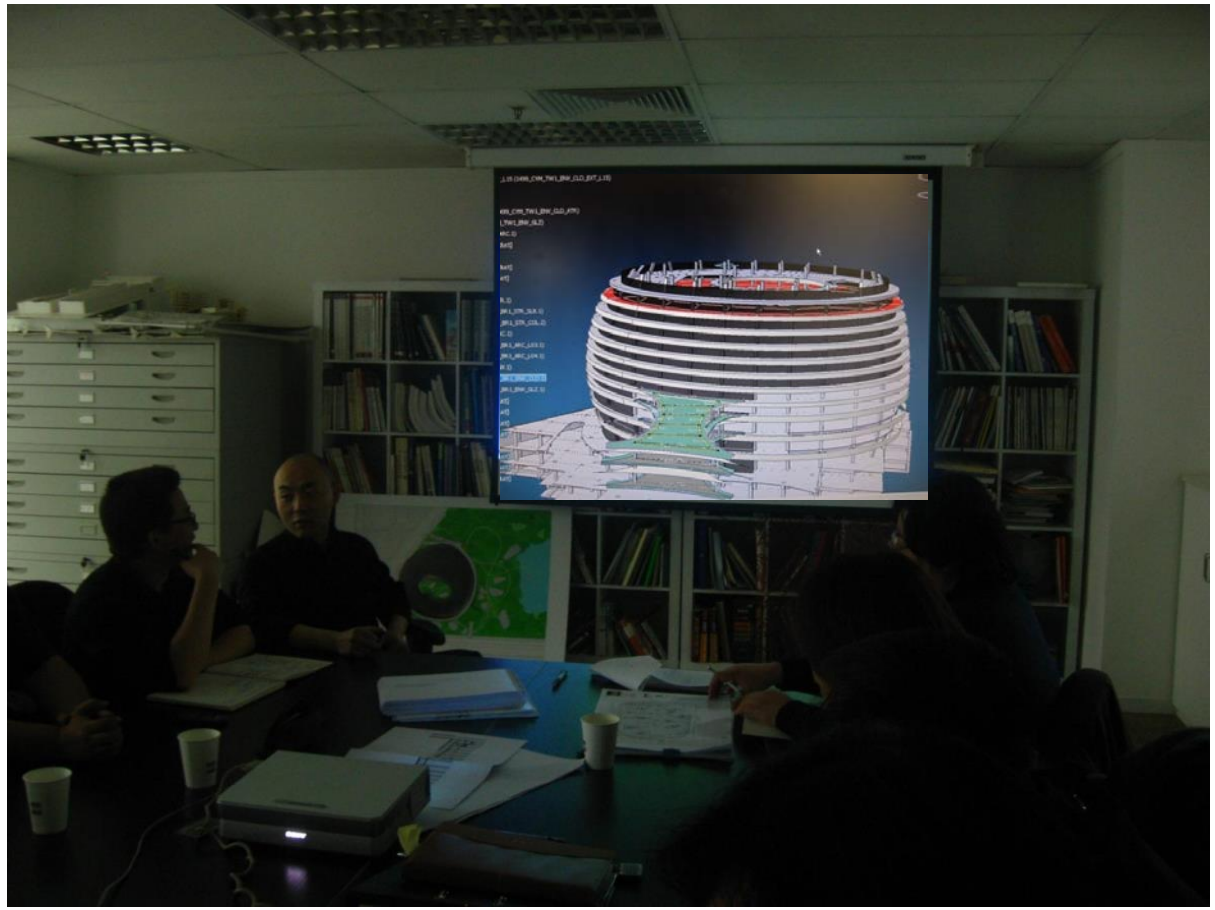


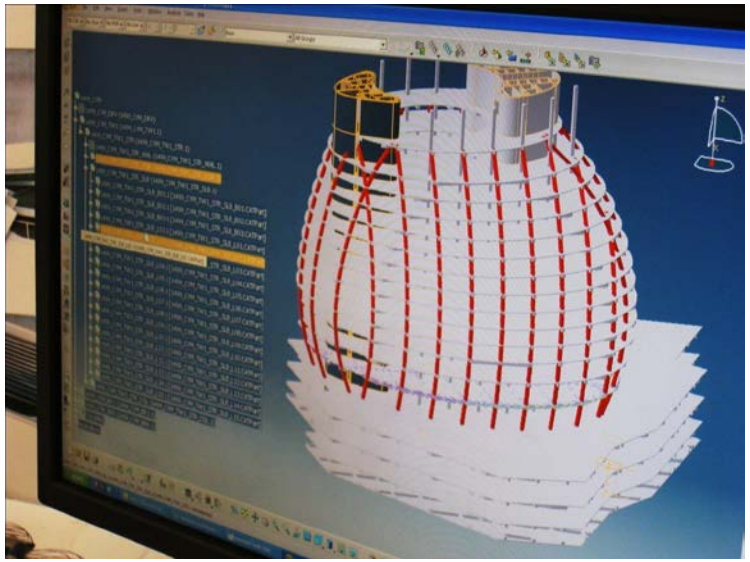
Structural Analysis



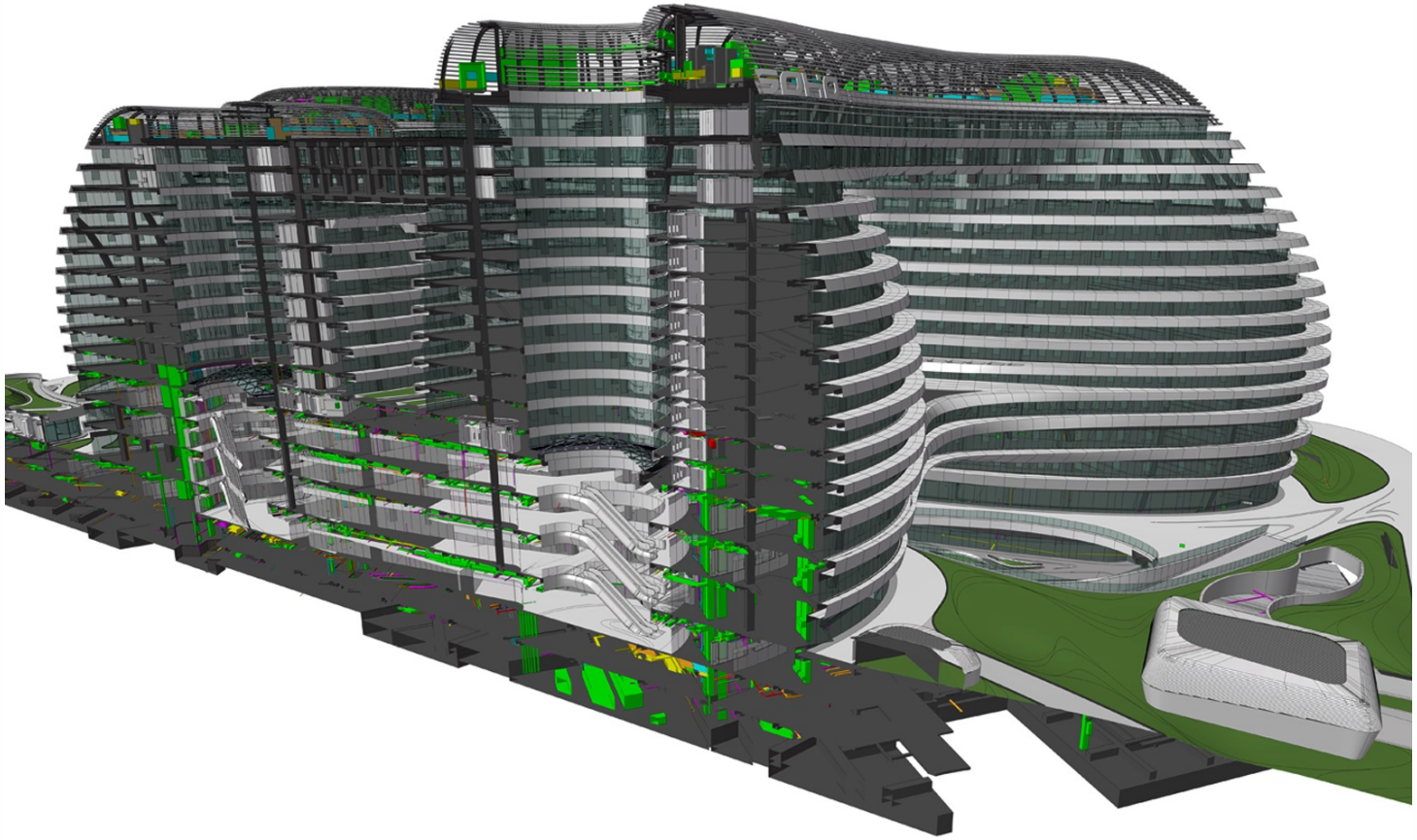
Architectural, Structural, E&M Coordination

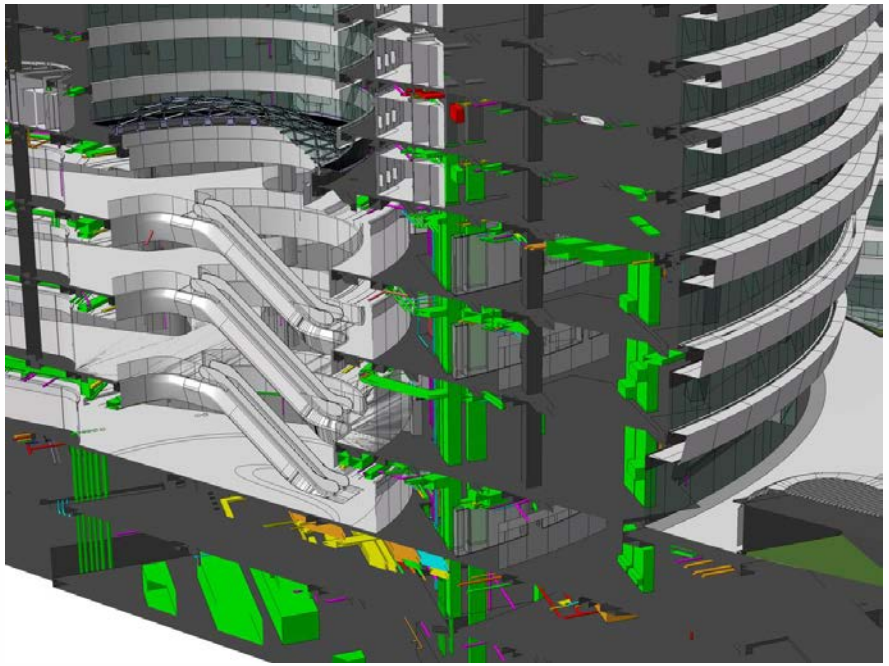
Instant Coordination Feedback (Galaxy 銀河SOHO)



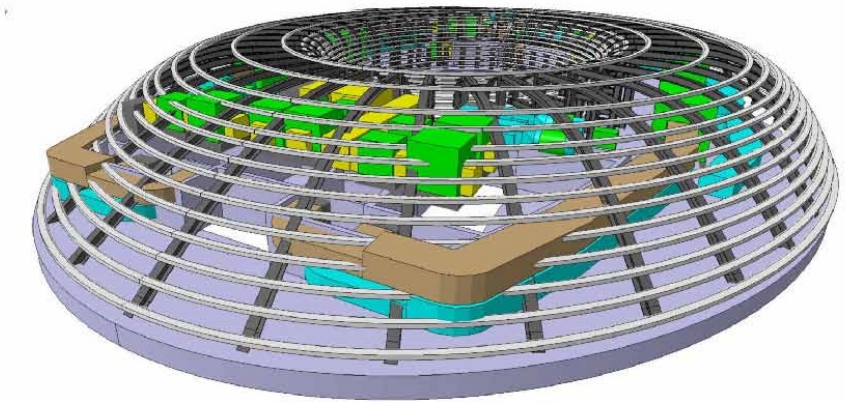


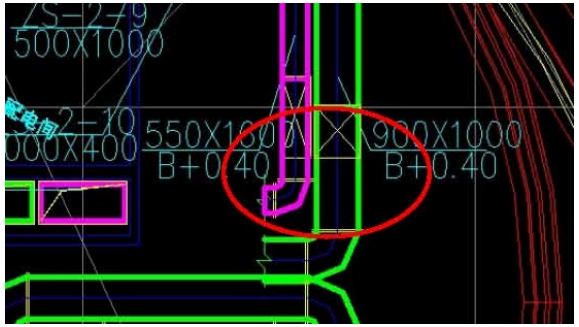
Instant Coordination Feedback (E & M)

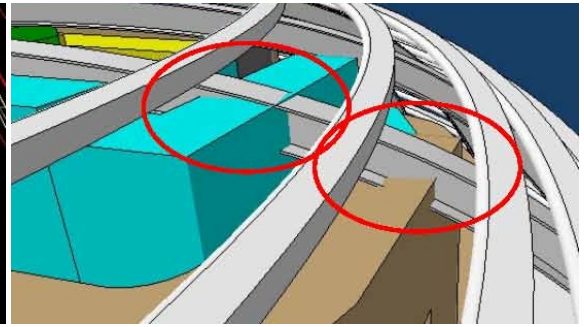


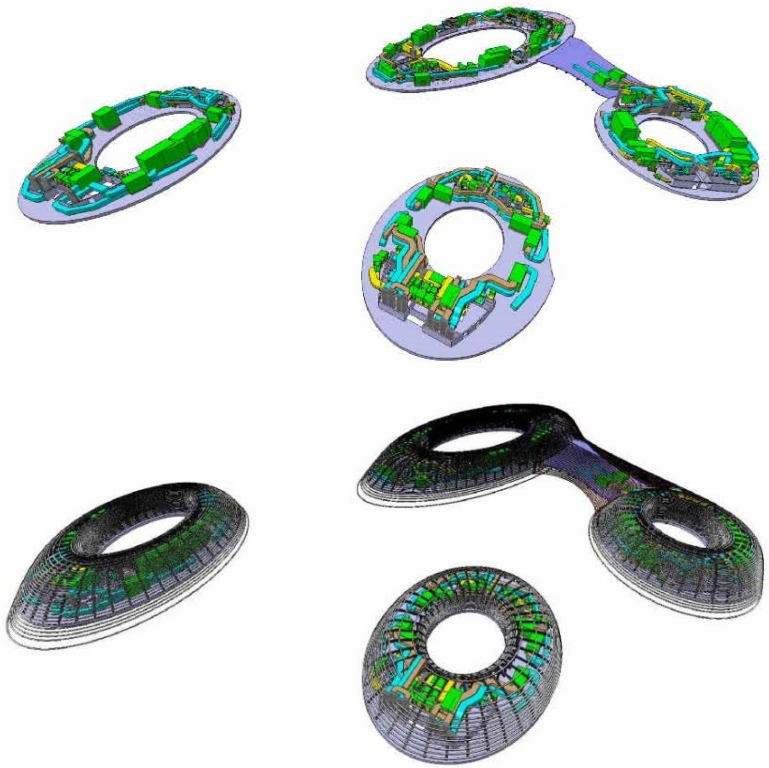


Instant Coordination Feedback (Clash Detection)

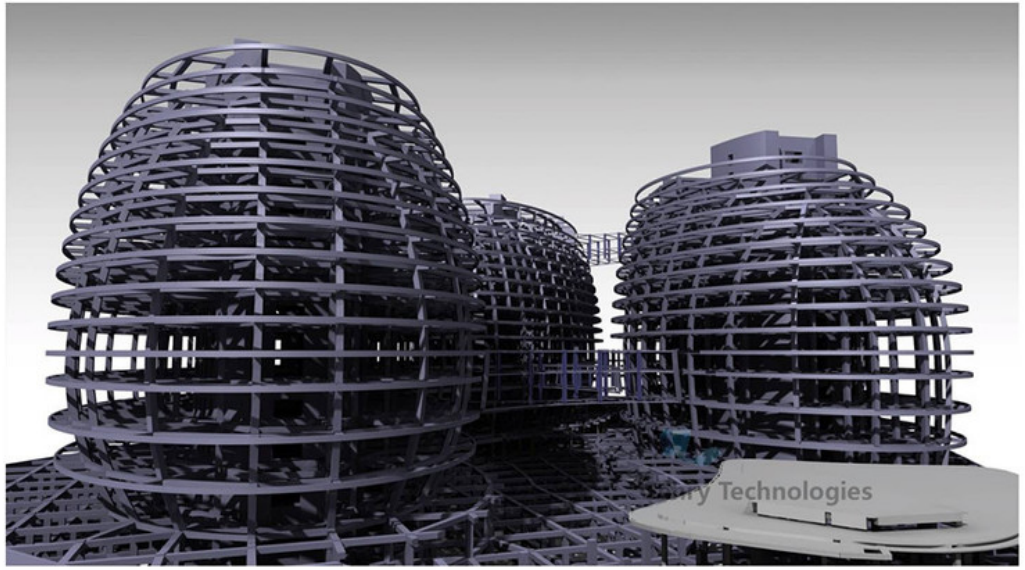


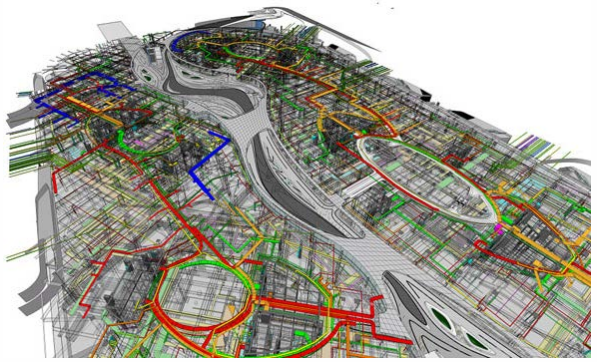


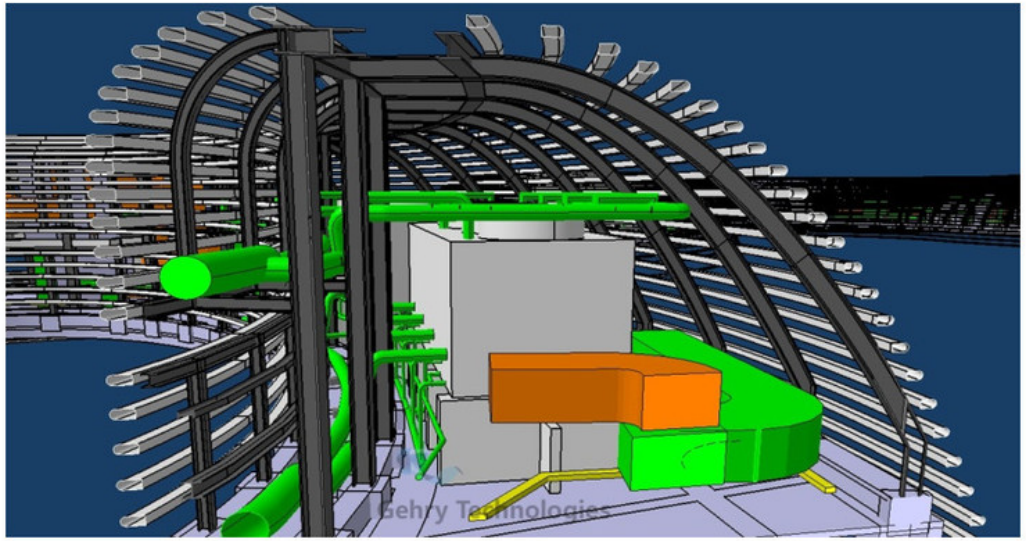


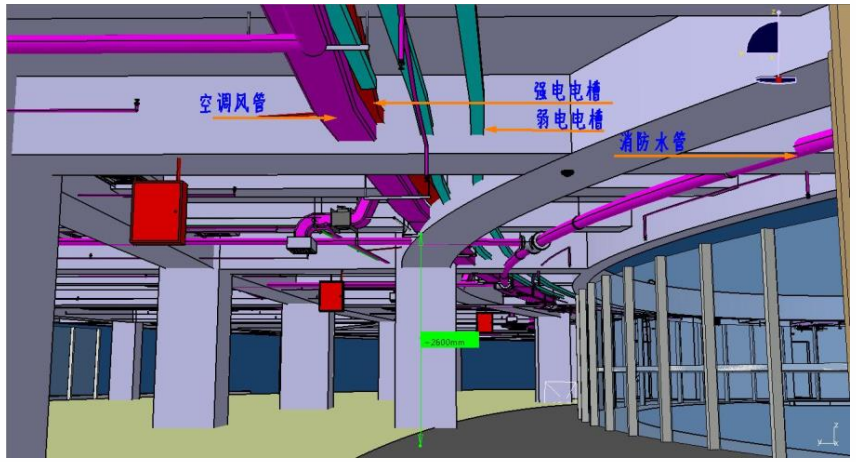


Instant Coordination Feedback (Clash Solutions)

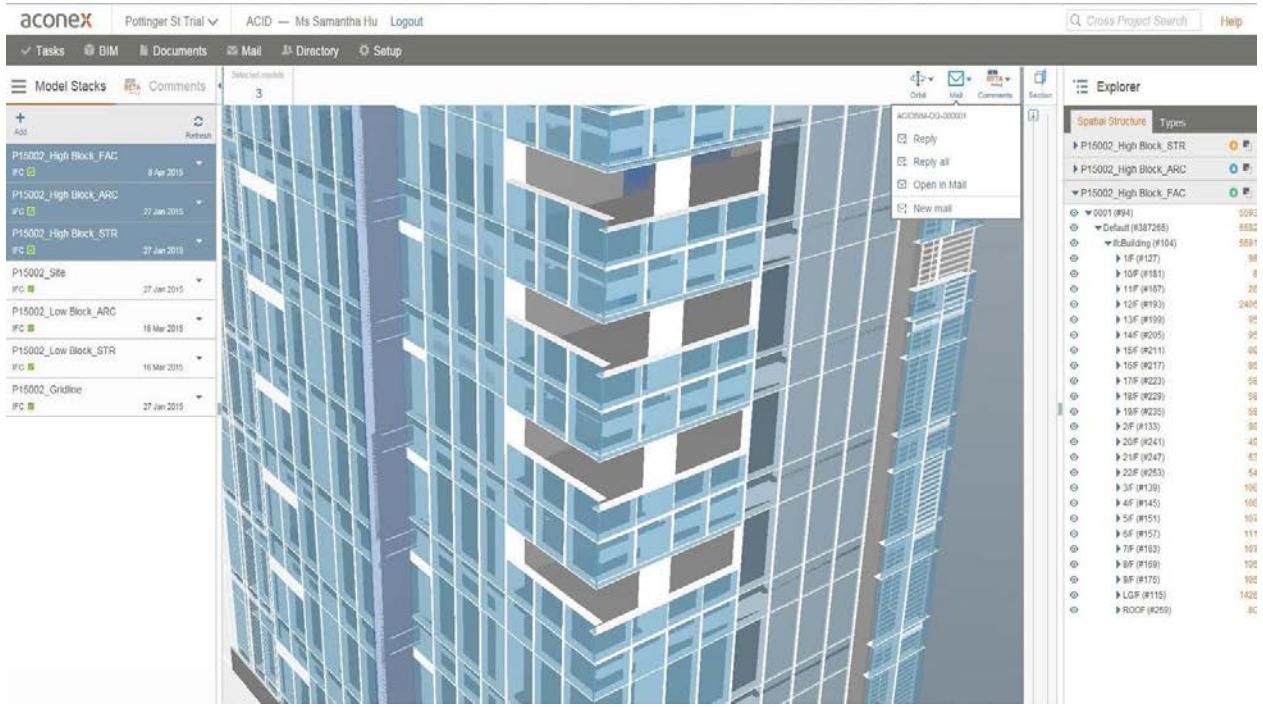


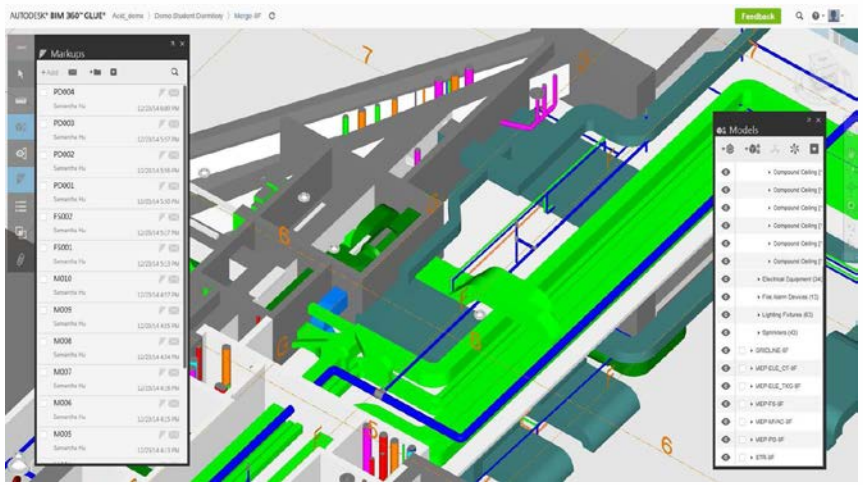


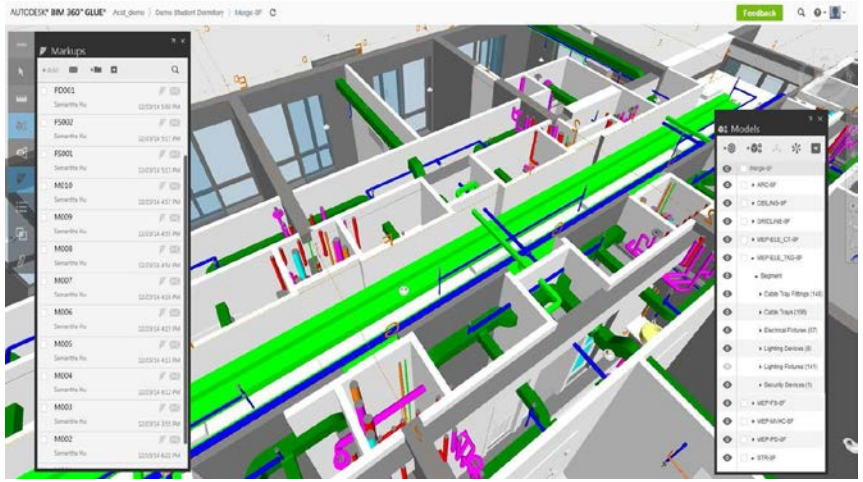


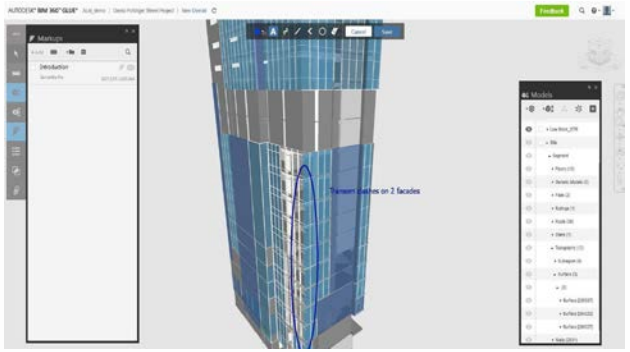


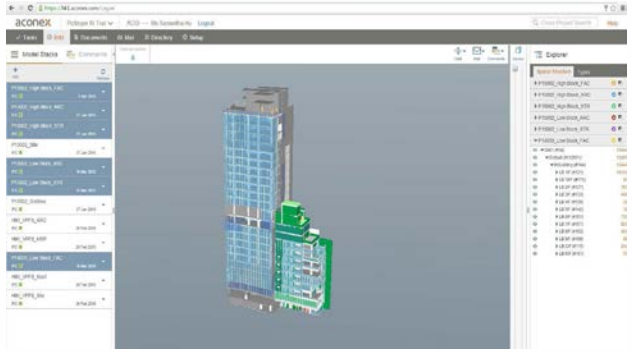
Aconex Collaboration Platform











Clash Detection Report

InBuilt Corporation 英建盈科 NCIS

www.inbuiltcorp.com

碰撞检测报告

1. 说明

碰撞规则说明：

（1）此次碰撞报告采用分专业分系统两两碰撞。

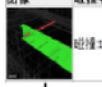
专业及系统包含：建筑（门、窗、楼梯）、结构（梁、柱）、空调冷媒系统（管道及设备）、空调通风防排烟系统（管道及设备）、给排水及消防系统（管道及设备不含消防水箱）、喷淋系统（管道及设备）、强电系统（桥架）、弱电系统（桥架）。

（2）此次碰撞所定义公差：

建筑&结构 5mm，其它 1cm，即发生碰撞但碰撞程度小于 5mm/1cm 的碰撞忽略不计。

2. 碰撞报告中字符的含义：

结构&给排水	公差	碰撞	新建	活动的	已审阅	已核准	已解决	类型	状态
	0.010m	77	0	77	0	0	0	硬碰撞	确定

						项目 1		项目 2	
图像	碰撞名称	距离	网格位置	说明	碰撞点	项目 ID	图层	项目 ID	图层
	碰撞1	-0.196	4-E'-4-11 : 2F	硬碰撞	x:44.074、y:64.012、z:9.445	元素 ID: 712304	2F	元素 ID: 329741	3F

轴网及标高

碰撞程度

缩略图

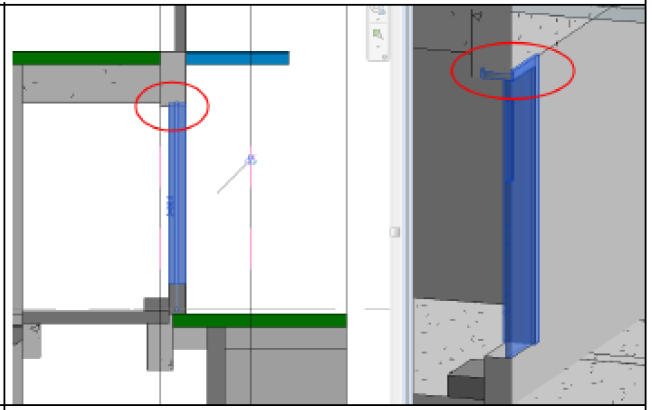
3. 碰撞数量汇总表及碰撞分析说明

全专业总碰撞数量共计：1053 个，
其中建筑&结构：3 个，
结构&机电：341 个，
机电内部：709 个。
（具体碰撞点详见附件：碰撞报告）

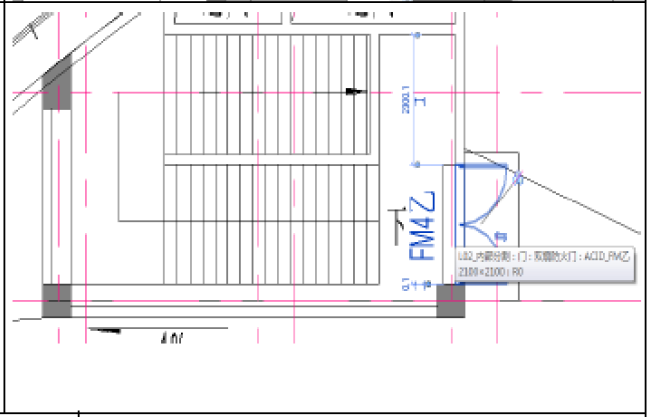
建筑	碰撞类别	碰撞数量	公差	说明
新世界 A 地块商务办公楼	建筑&结构	3	5mm	**经过对碰撞结果的核查，剔除无效碰撞后，剩余 3 个碰撞均为设计图纸问题，需设计核查。**
	结构&给排水及消防系统	40	1cm	**经过对碰撞结果的核查，剔除无效碰撞后，碰撞类型有 3 种：** 1. 给排水横管与结构横梁碰撞，此类碰撞由于设计管道标高未充足考虑不同尺寸结构梁的空间，可通过后期管线深化解决。例：碰撞 1,3,4,5 等。 2. 给排水立管与结构横梁碰撞，此类碰撞由于设计过程中未考虑结构梁造成，需进行立管位

专业	结构	问题编号	STR-01
图纸名称	I-LT11	模型名称	
问题位置	V-E~1/V-E；V-3	涉及专业	
问题描述	楼梯间门与梁发生碰撞，高度不够。无法安装		
优化建议	建议建筑结构协调调整门高或梁高。		
问题截图			

三维视图

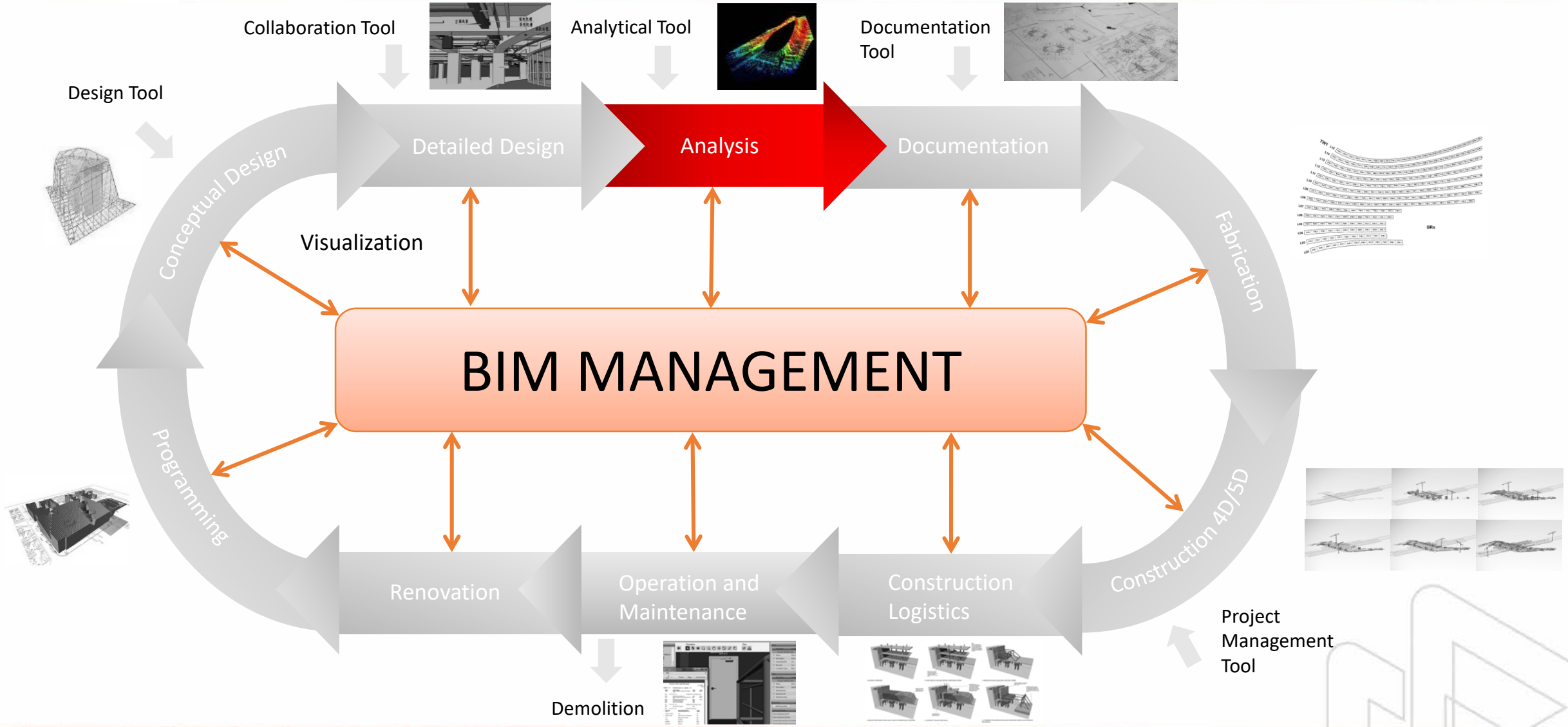


平面图

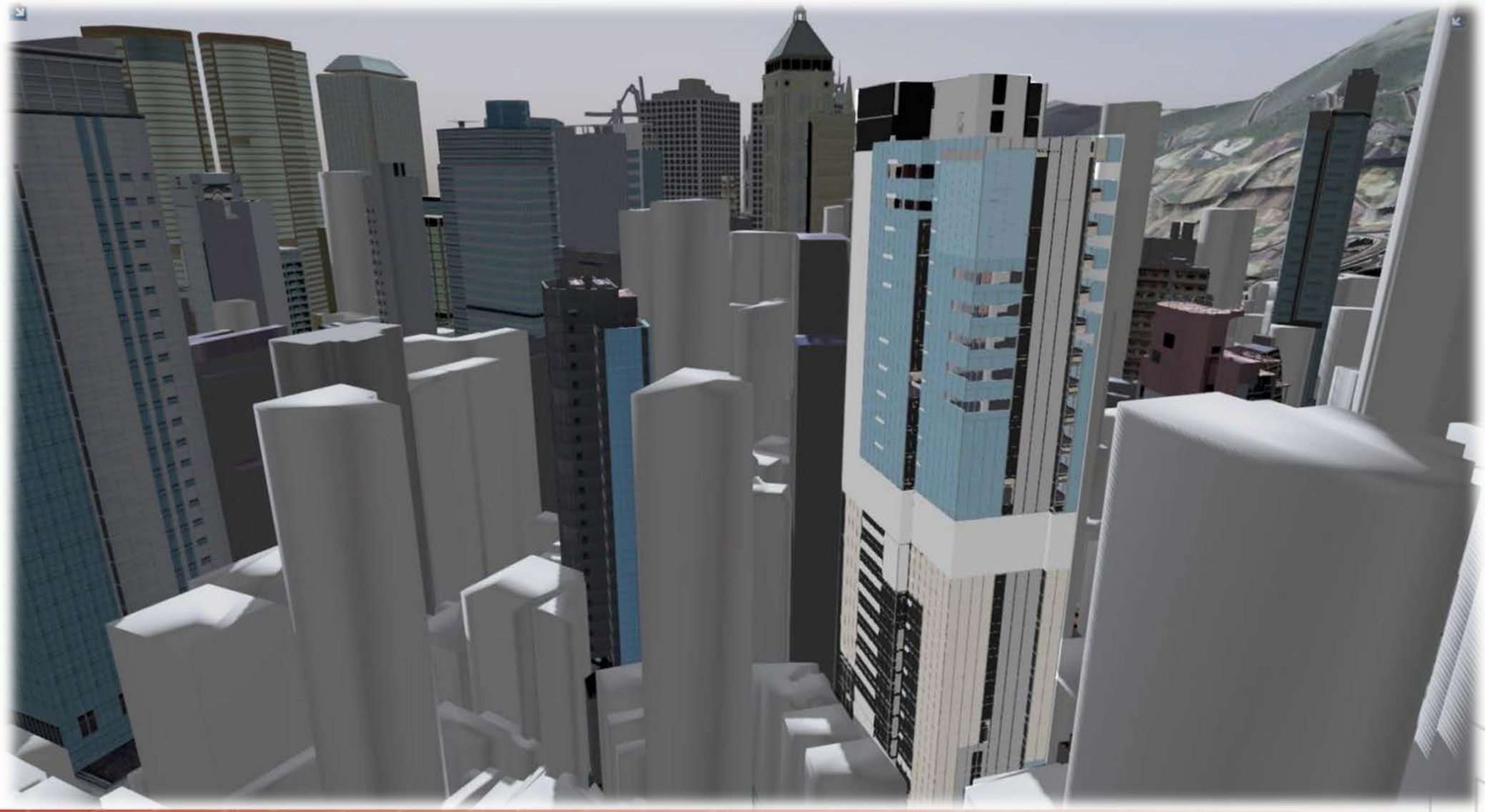


设计院意见	

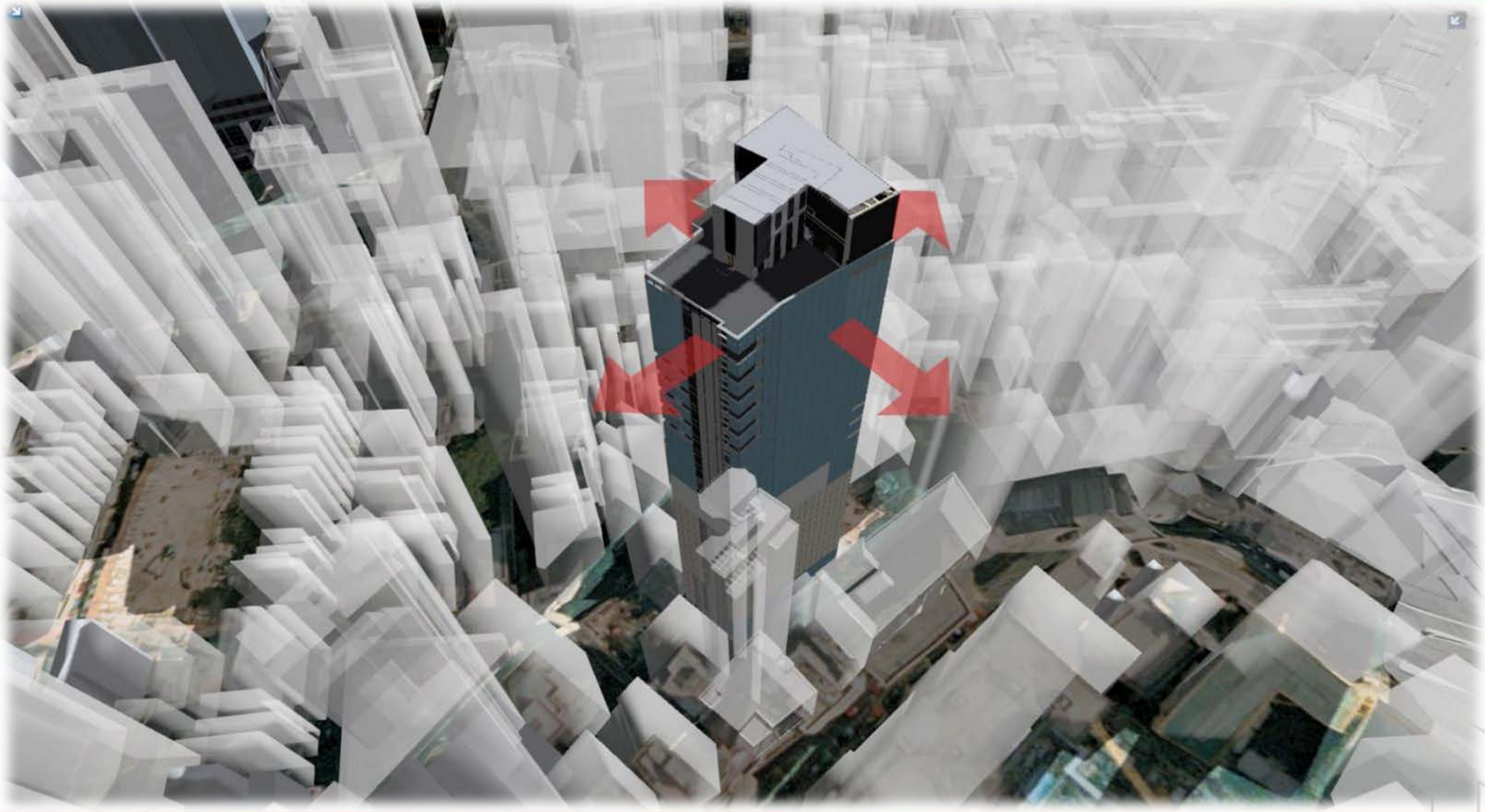
Buildability



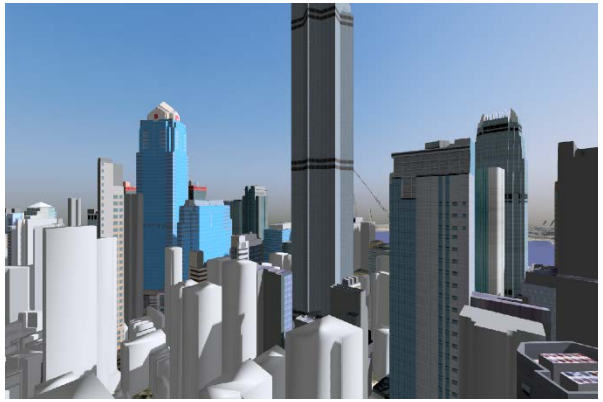
View Analysis



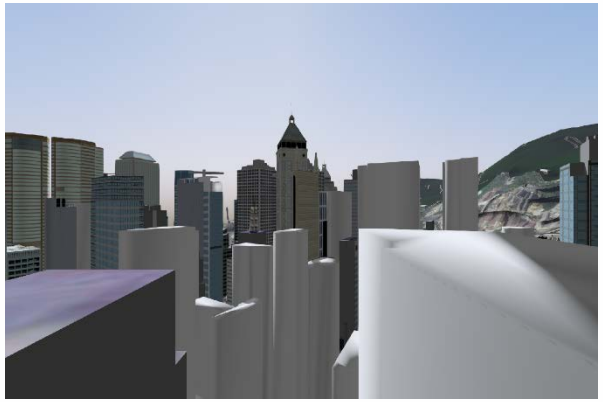
View Analysis - All directions



View Analysis - All directions



North Facade

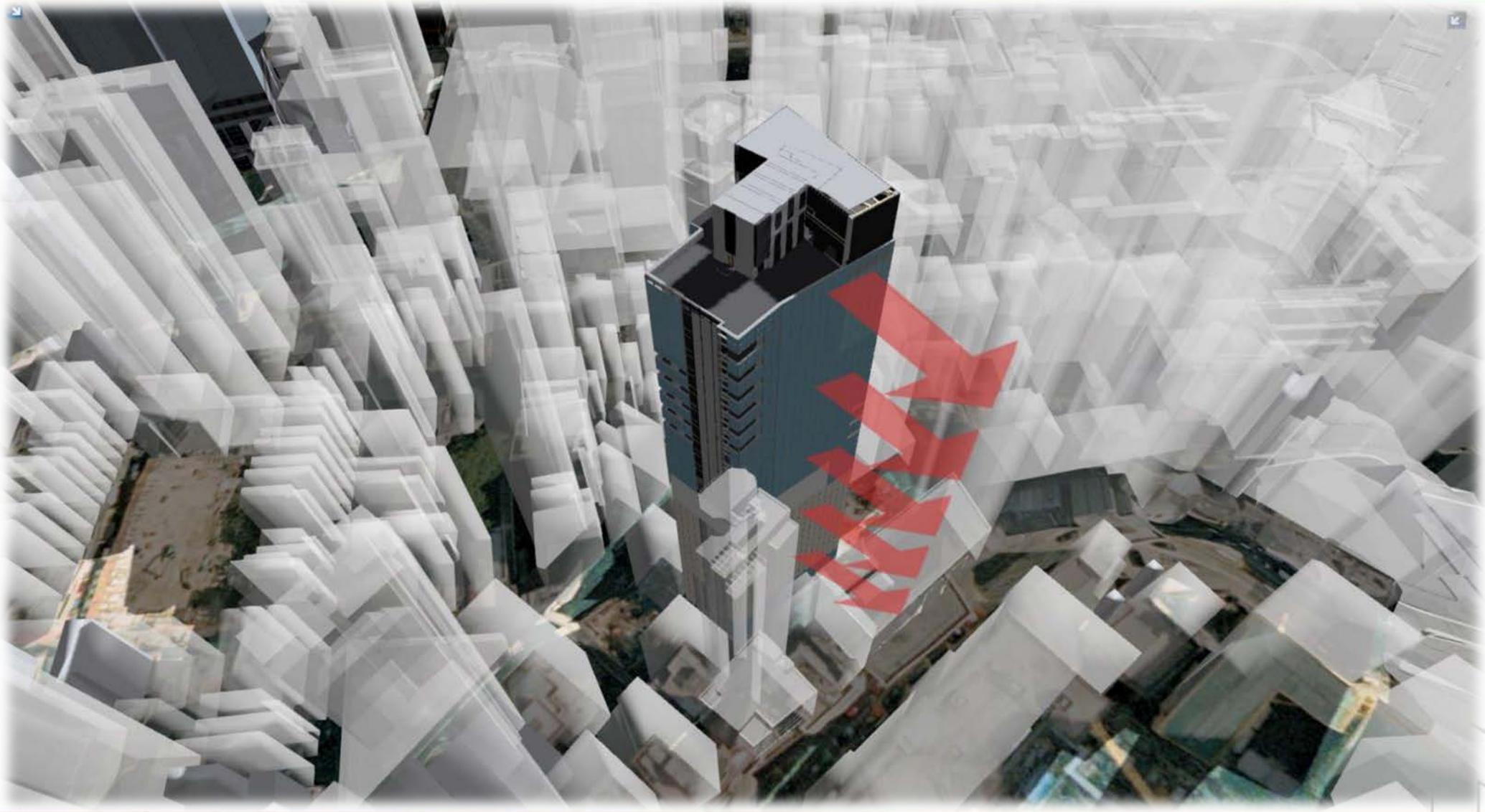


East Facade

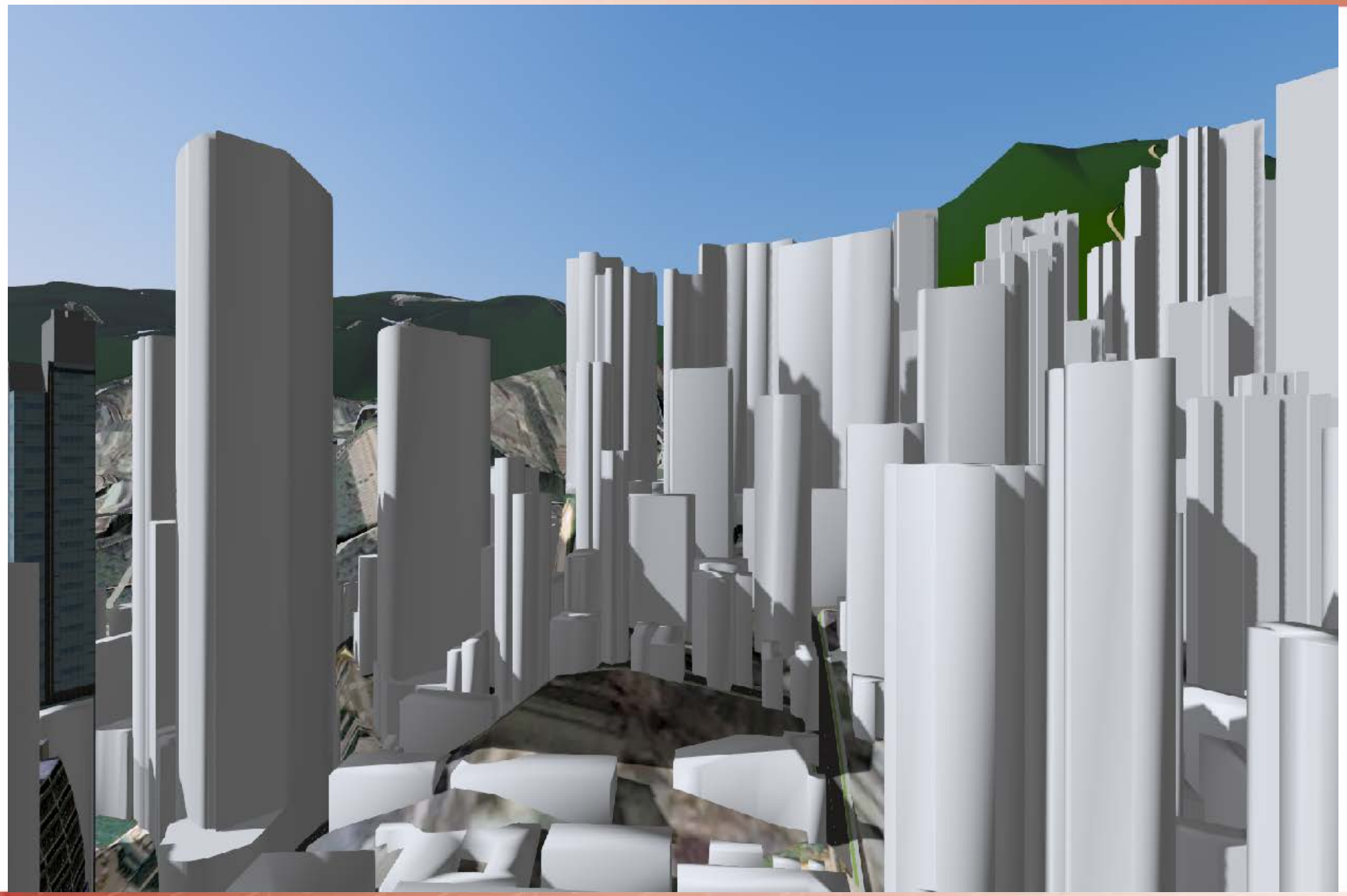
South Facade

West Facade

View Analysis - All Floors



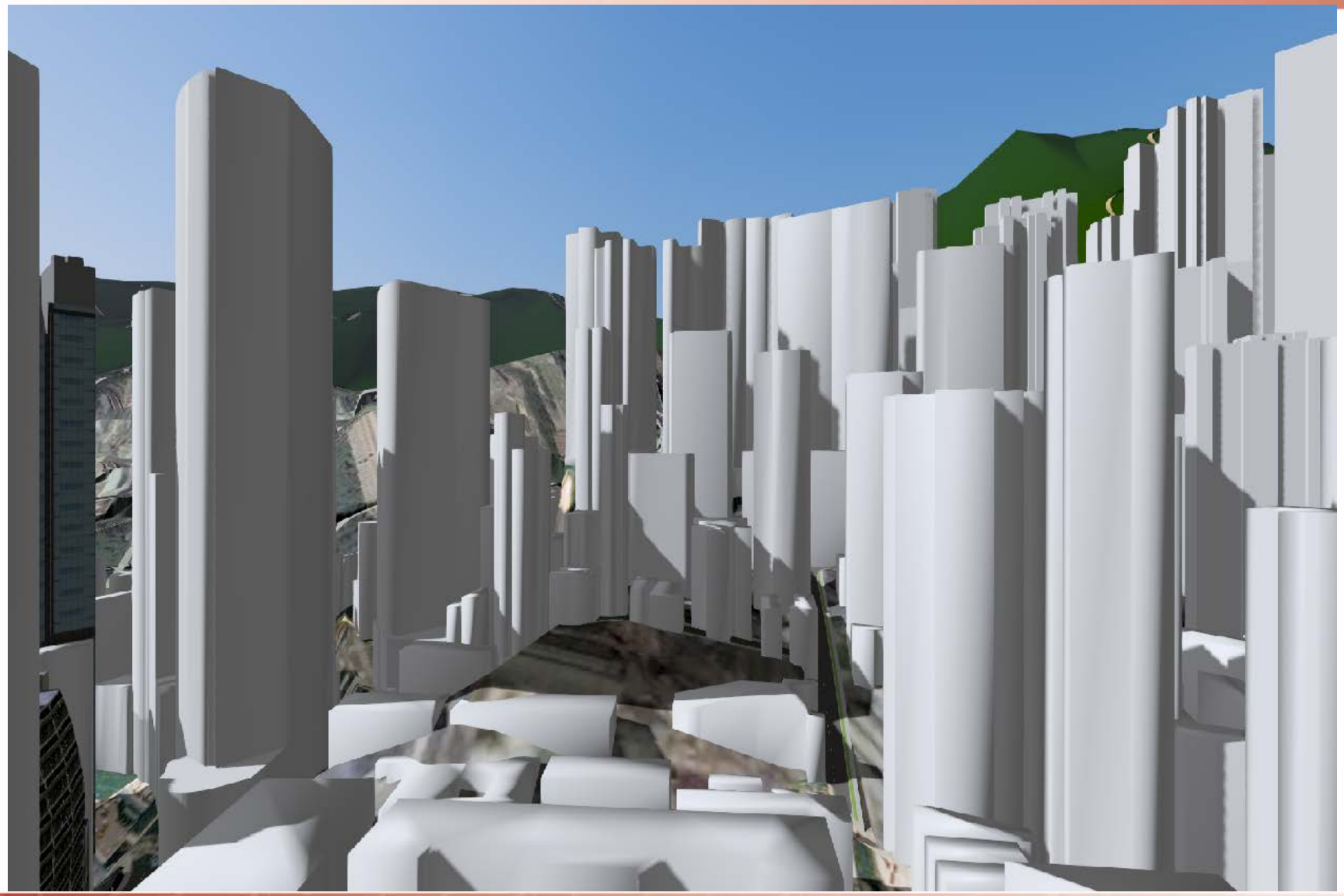
View Analysis - All Floors 22/F



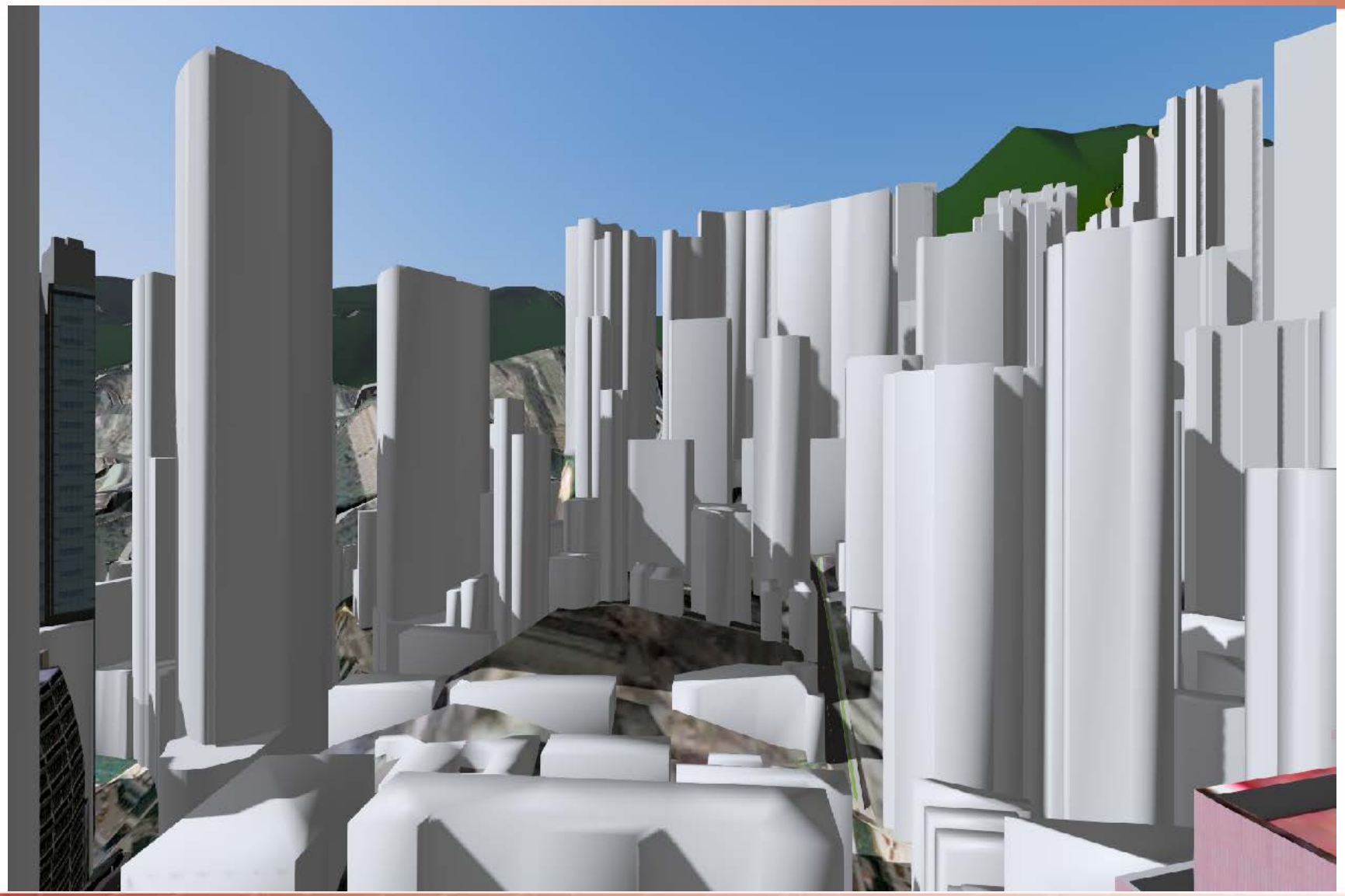
View Analysis - All Floors 21/F

View Analysis - All Floors 20/F

View Analysis - All Floors 19/F

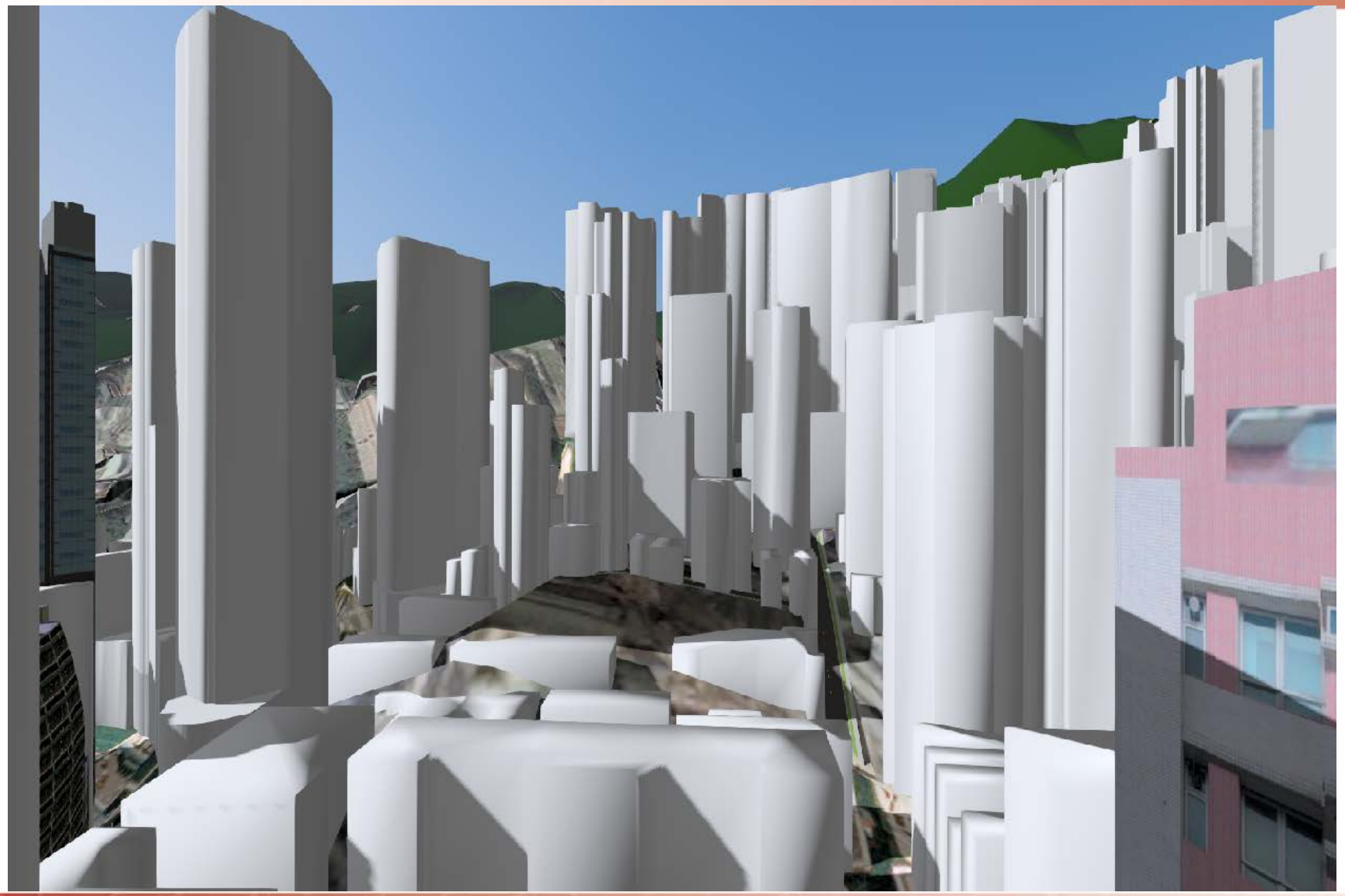


View Analysis - All Floors 18/F



View Analysis - All Floors 17/F

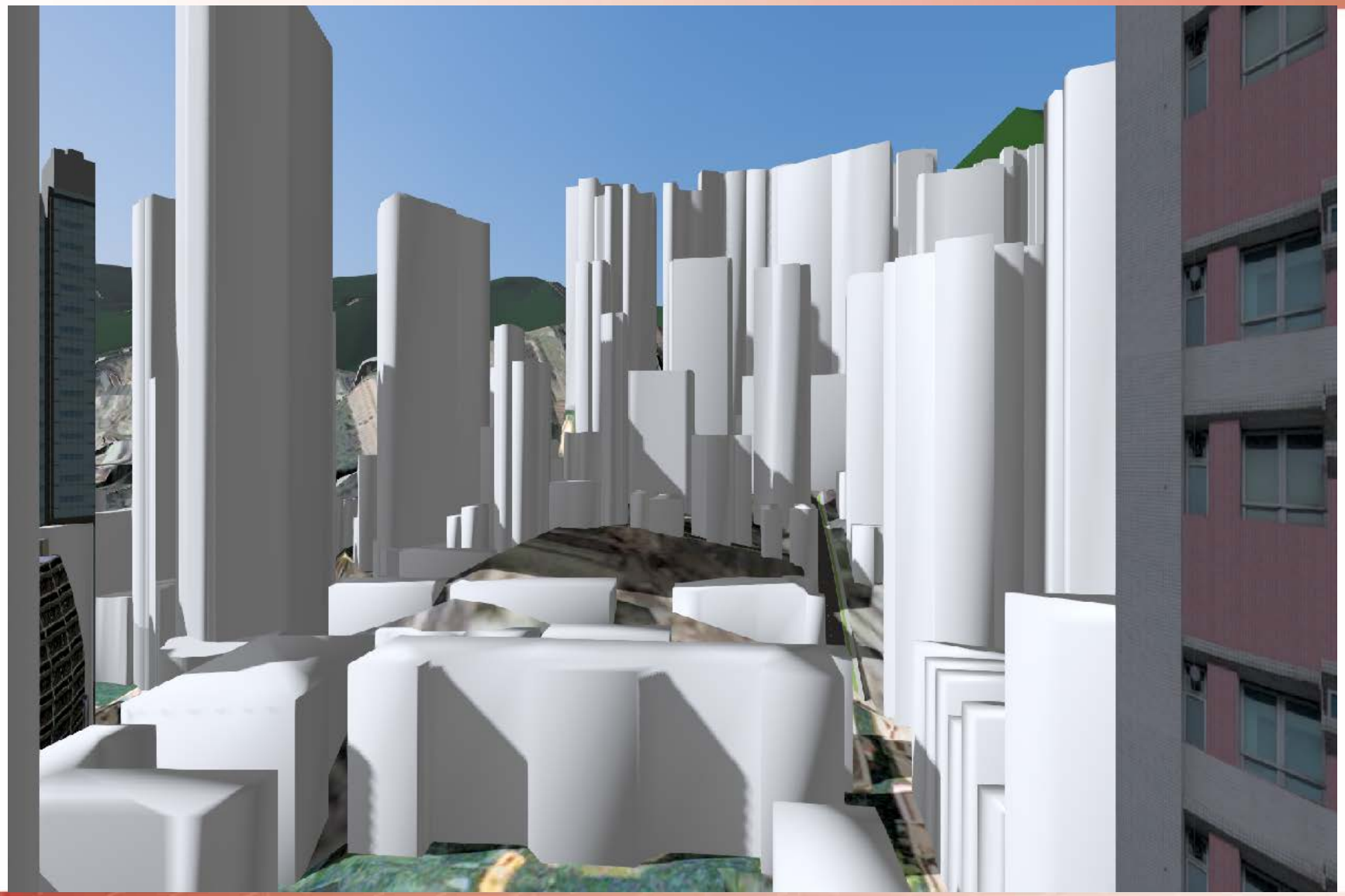
View Analysis - All Floors 16/F



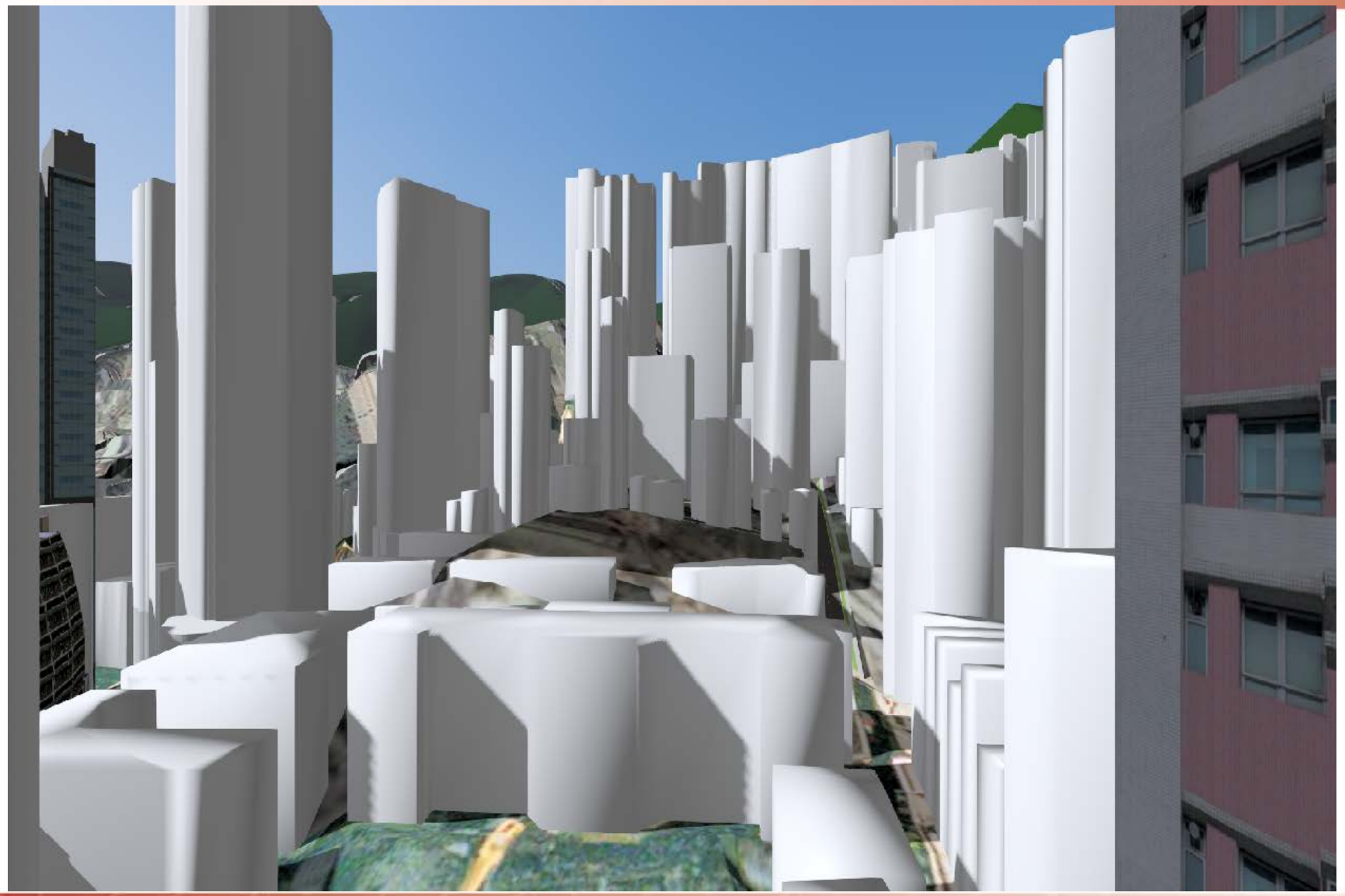
View Analysis - All Floors 15/F

View Analysis - All Floors 14/F

View Analysis - All Floors 14/F



View Analysis - All Floors 12/F



View Analysis - Rendered Color Percentage

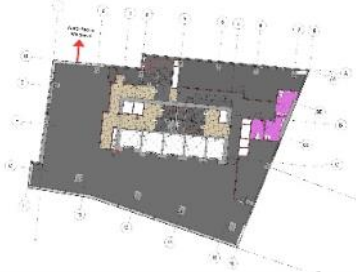
South Façade 1 (Realistic Mode)

View Analysis - Rendered Color Percentage

South Façade 1 (Abstract Mode)

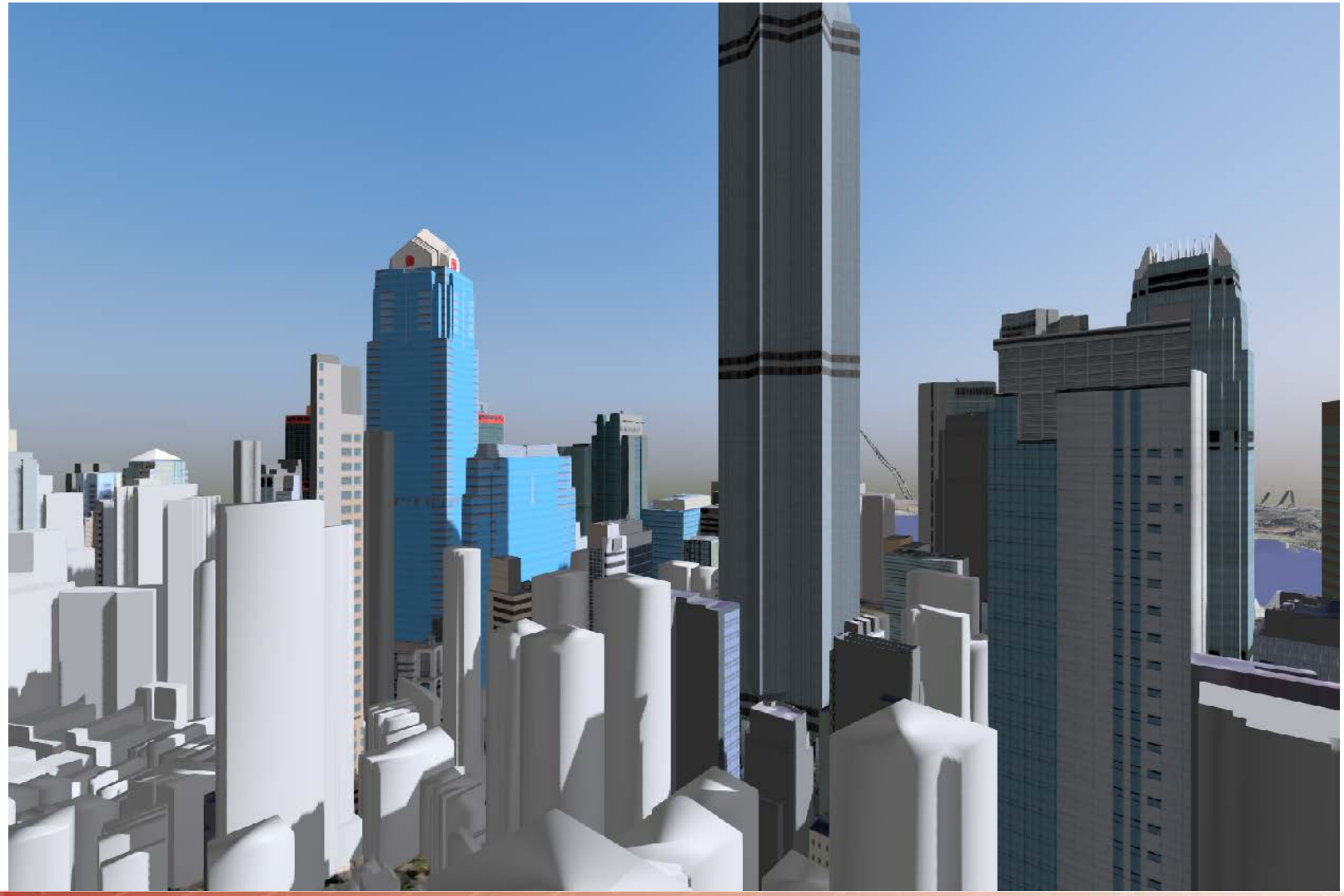
Rendered Color Percentage

Buildings	69.2%
Sky	25.60%
Greeneries	4.2%
School	1.00%



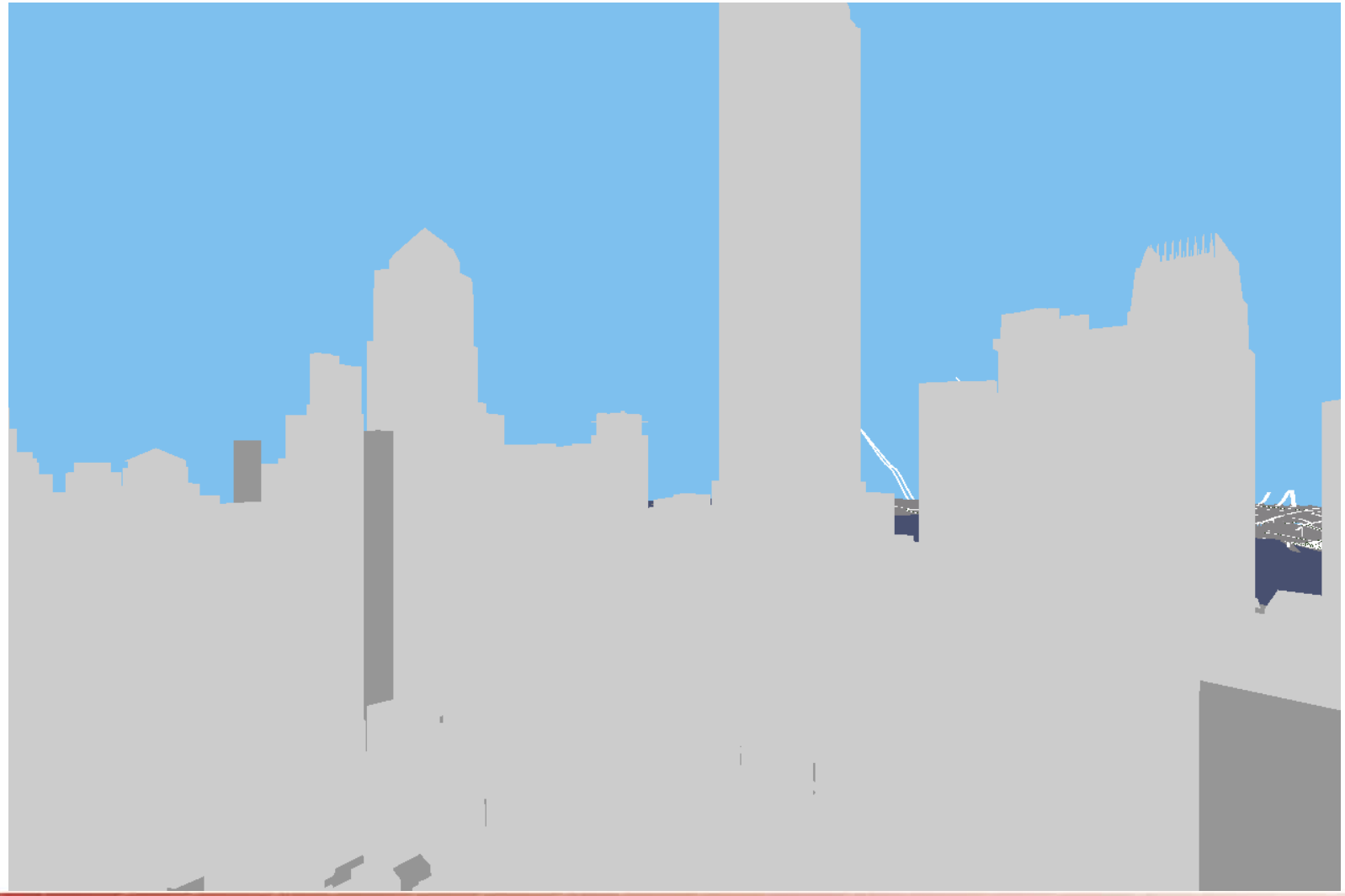
View Analysis - Rendered Color Percentage

North Façade 4 (Realistic Mode)



View Analysis - Rendered Color Percentage

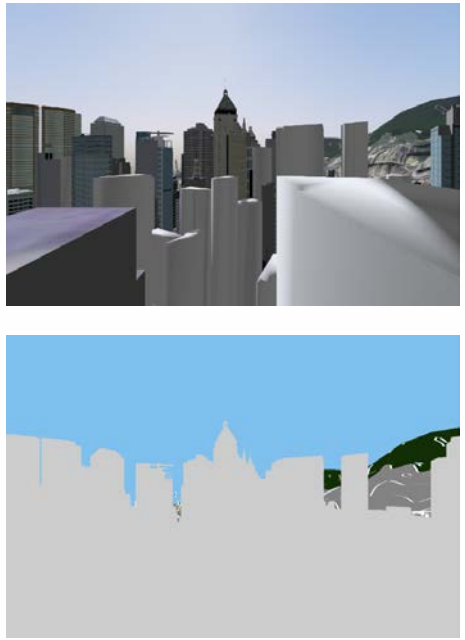
North Façade 4 (Abstract Mode)

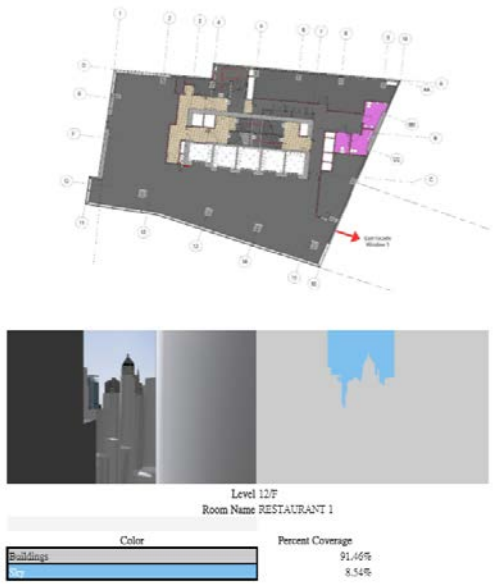


Rendered Color Percentage

Buildings	56.49%
Sky	39.56%
Sea	0.33%
Greeneries	0.01%

View Analysis - Potentials



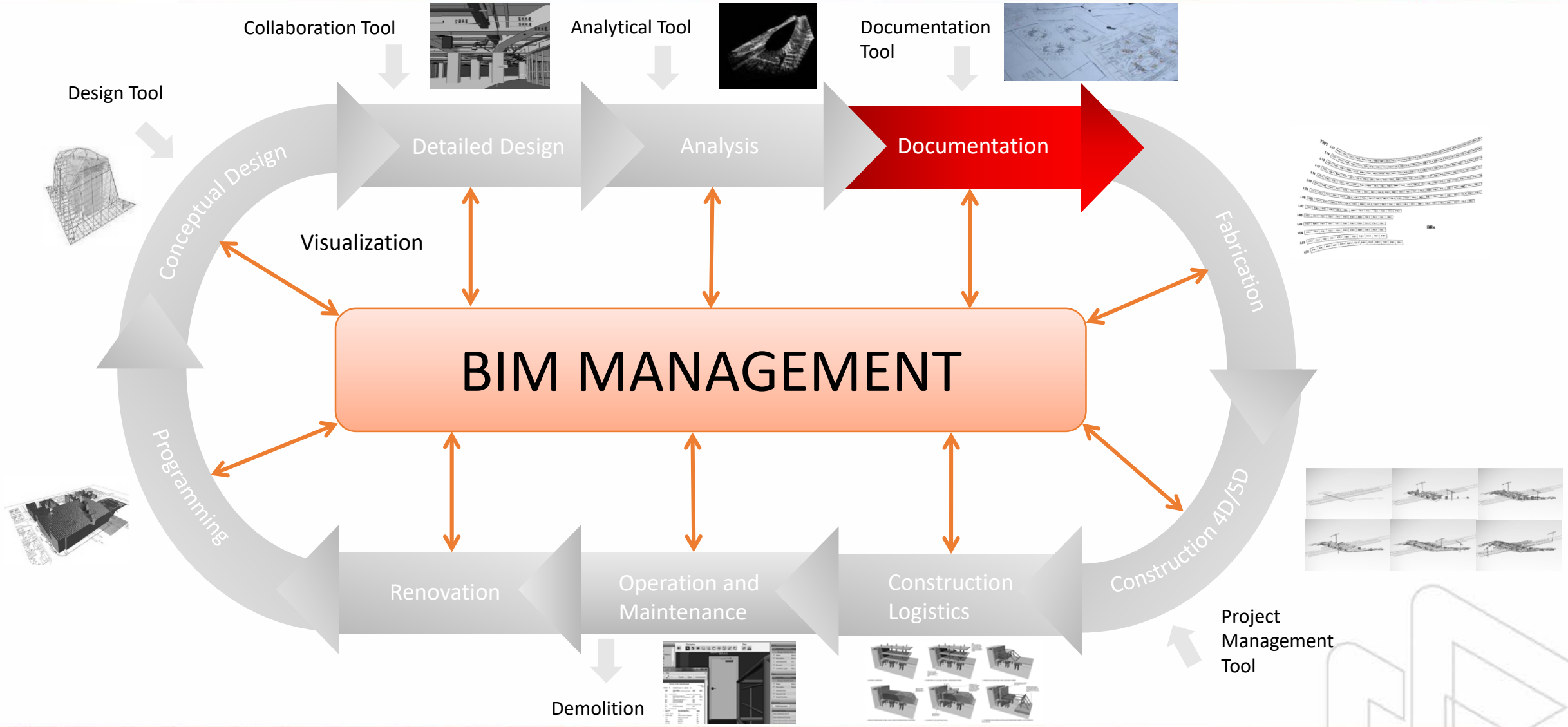


Information → $ → Value

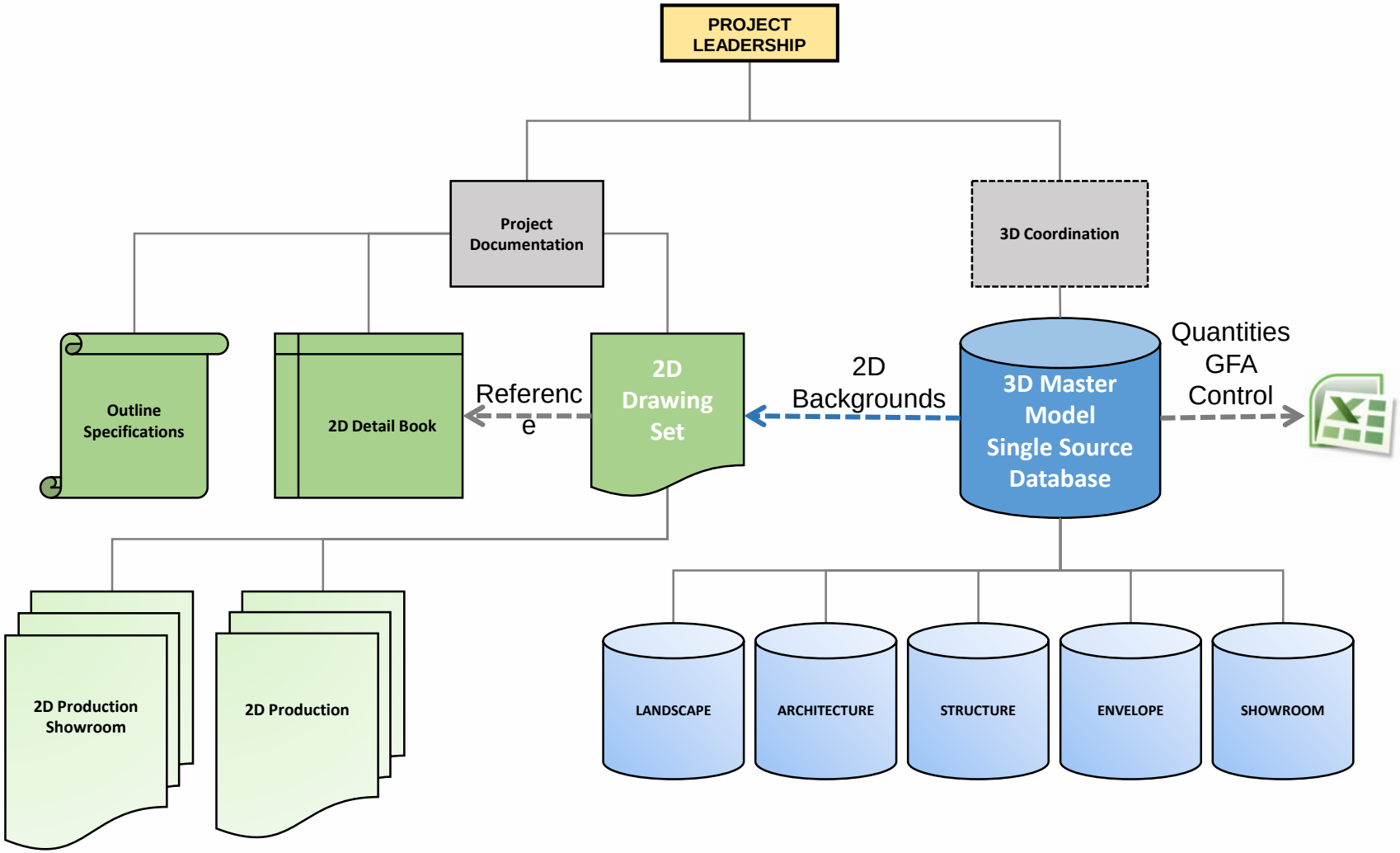
View Analysis

Report

Consistency Between 2D/3D



Single Source Database (Galaxy 銀河SOHO)

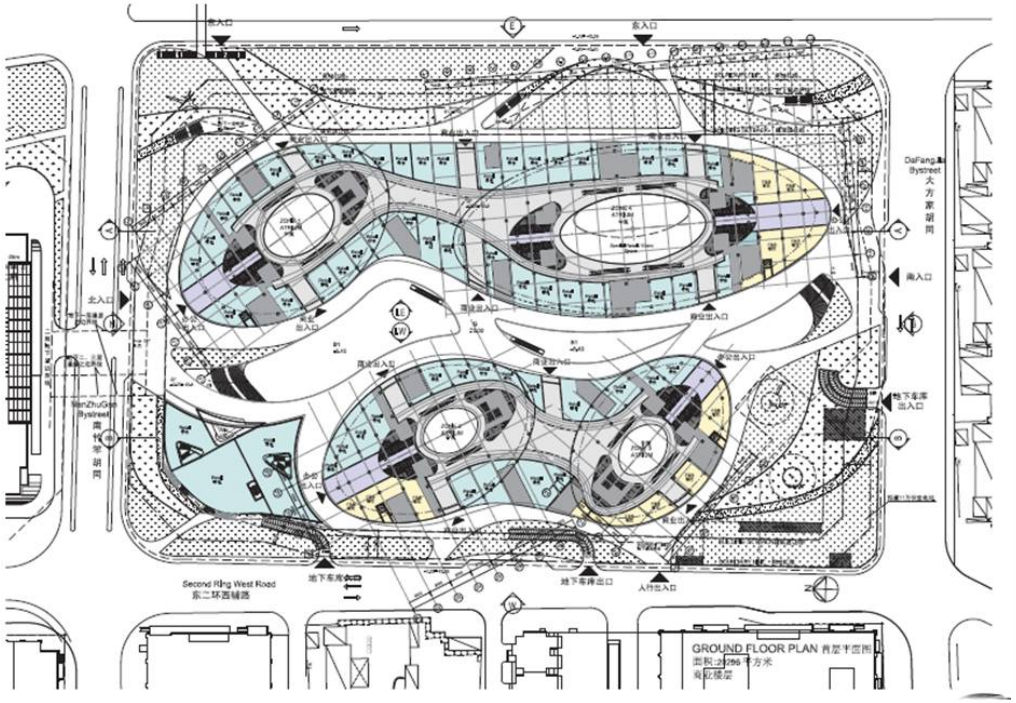


Information

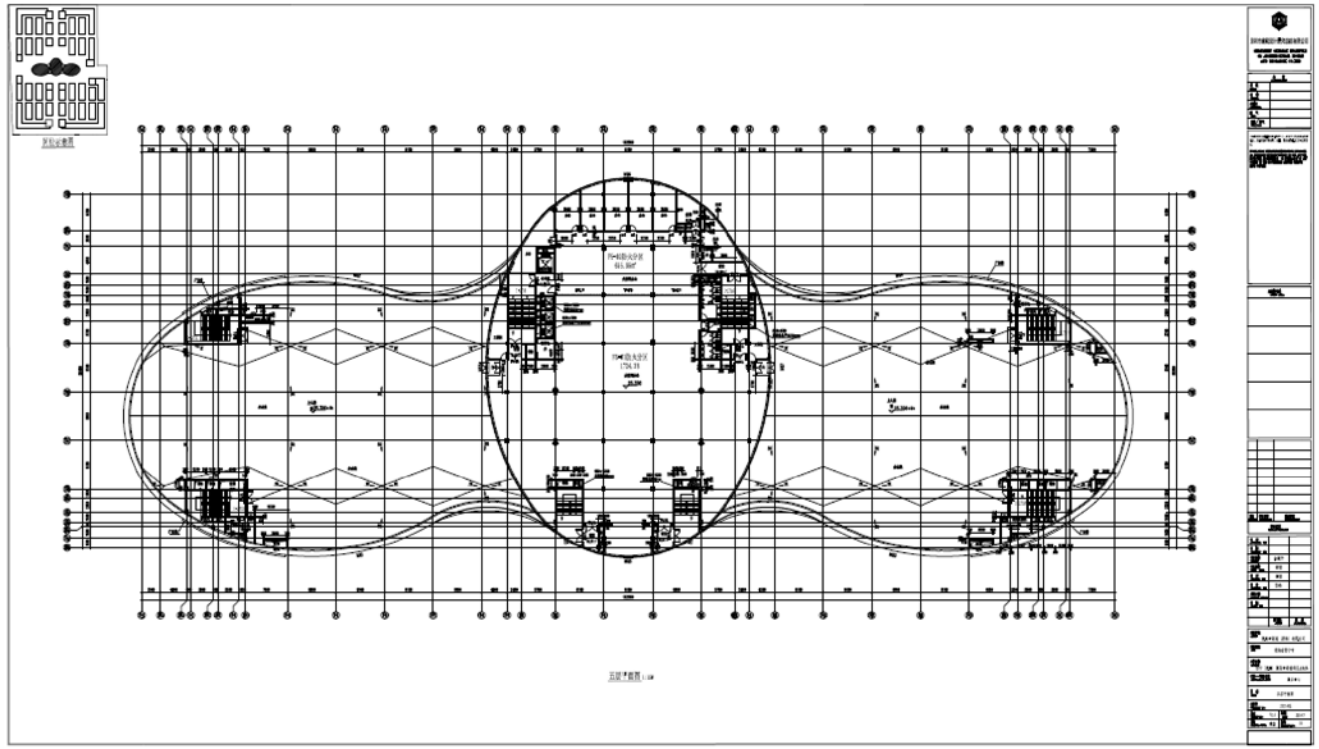
2D Drawings

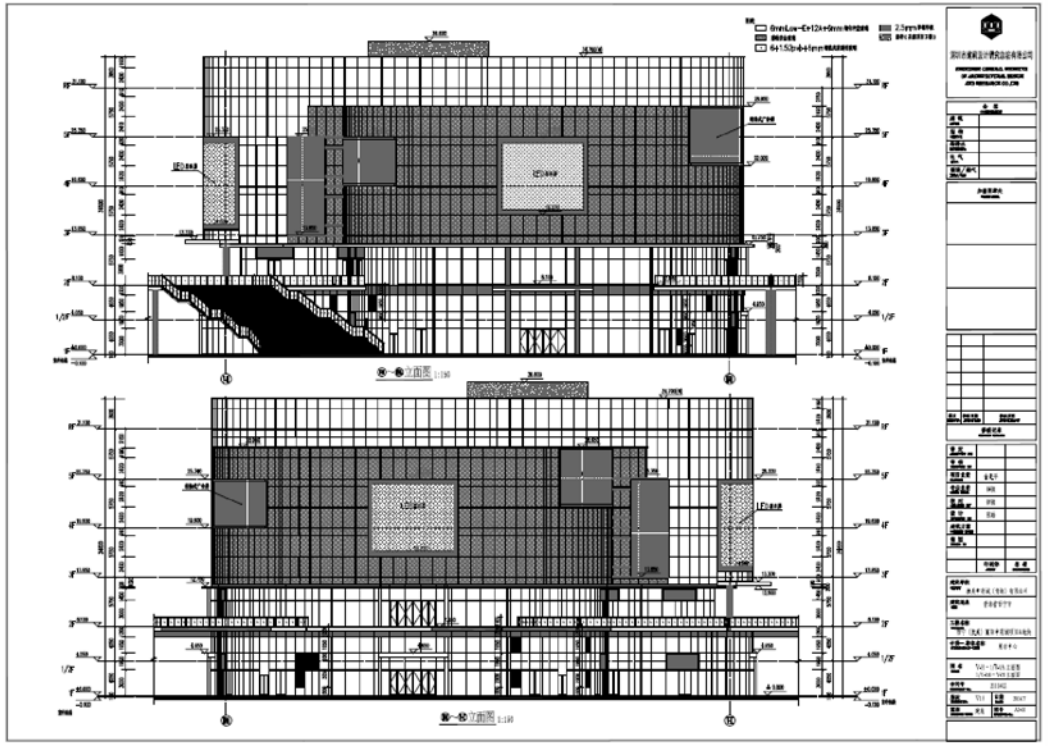
3D BIM

2D Drawing Production (Galaxy 銀河SOHO)

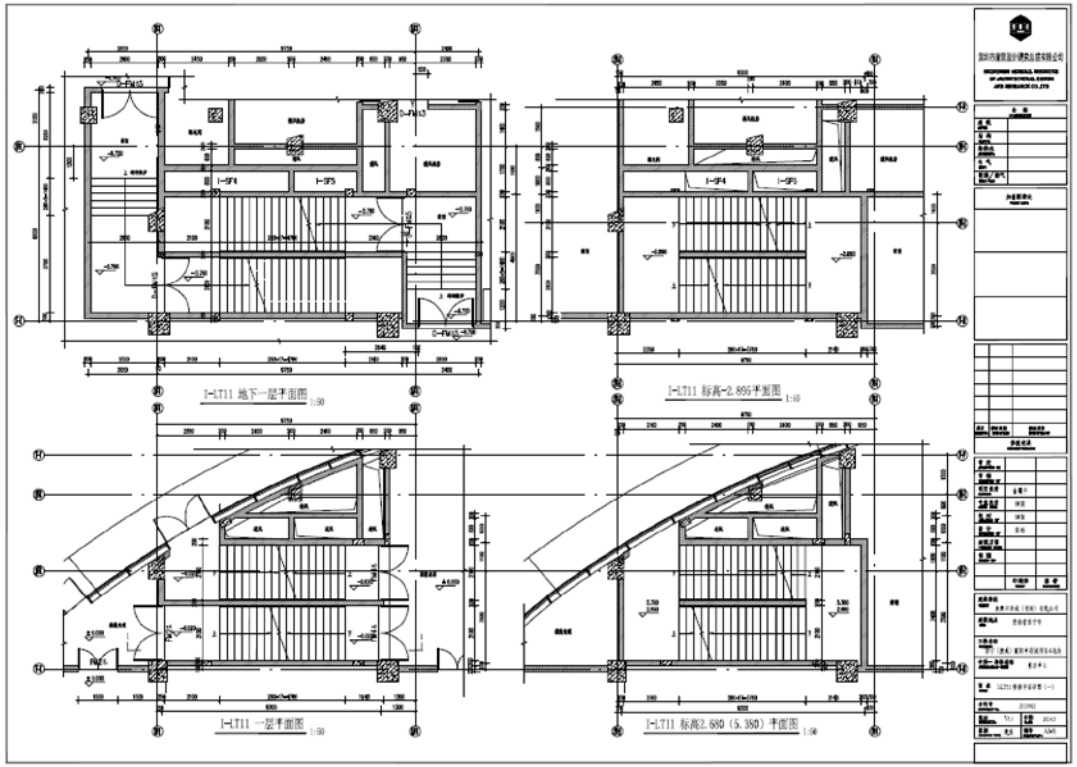


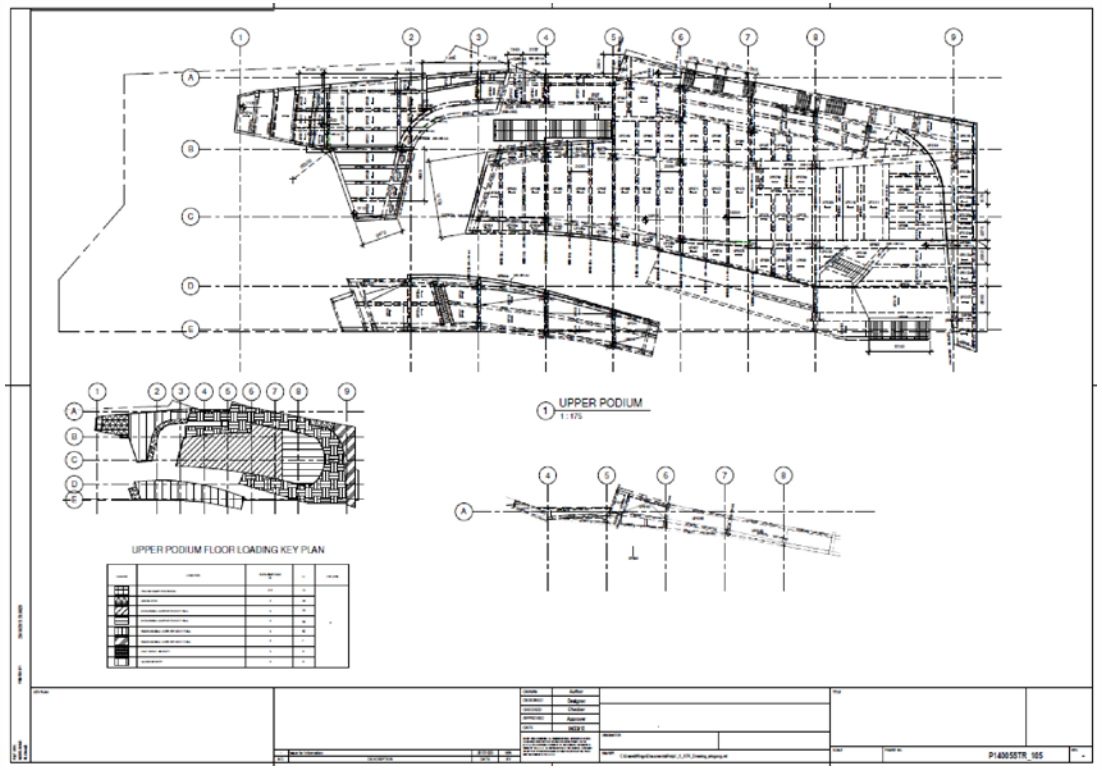
Drawing Production - Architecture



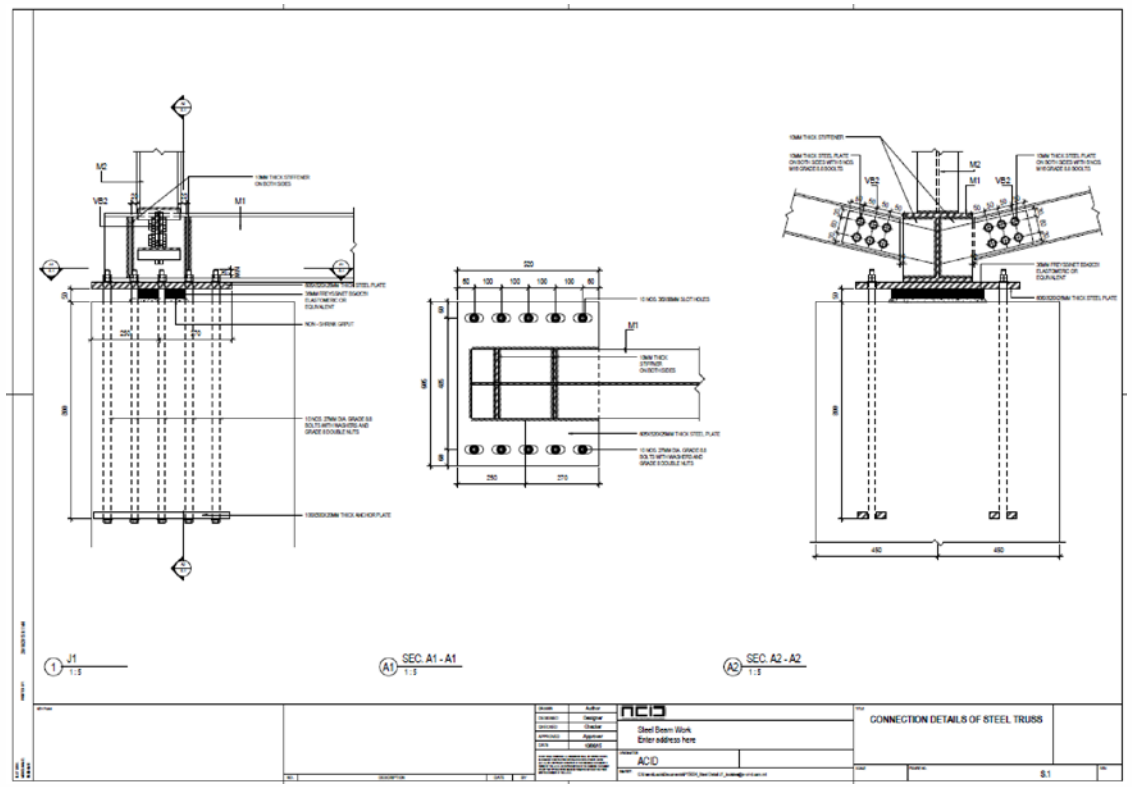


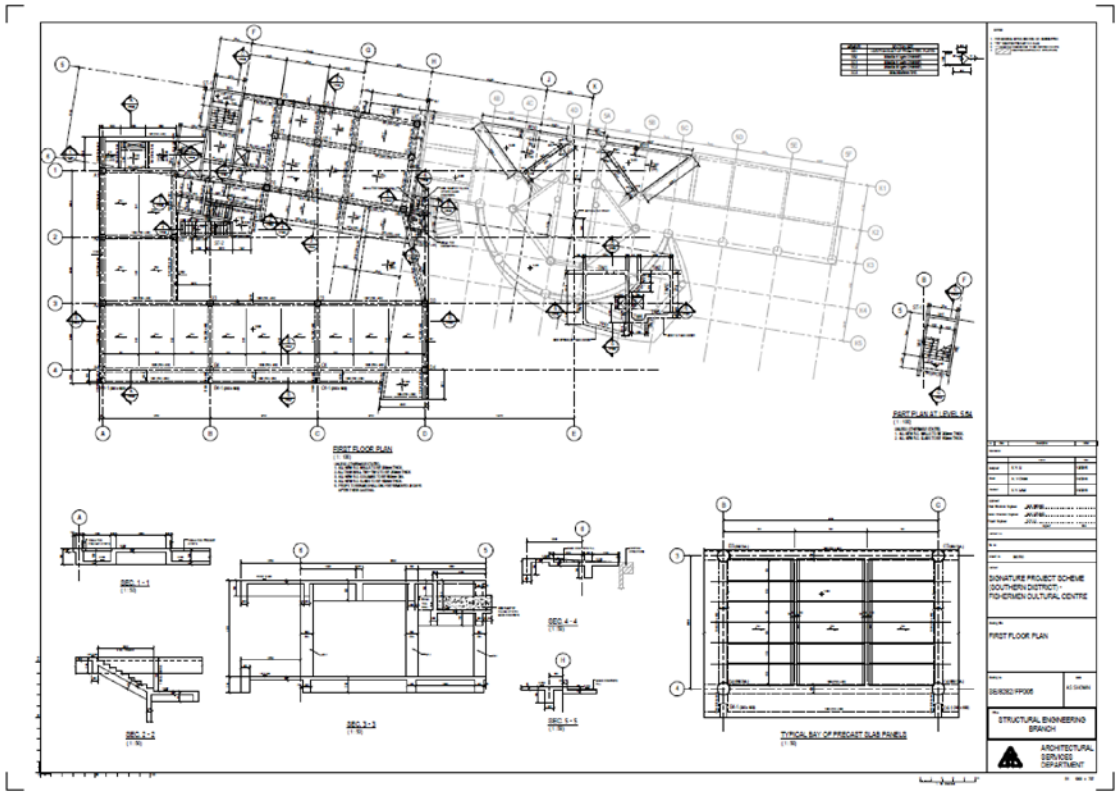
Drawing Production - Structure



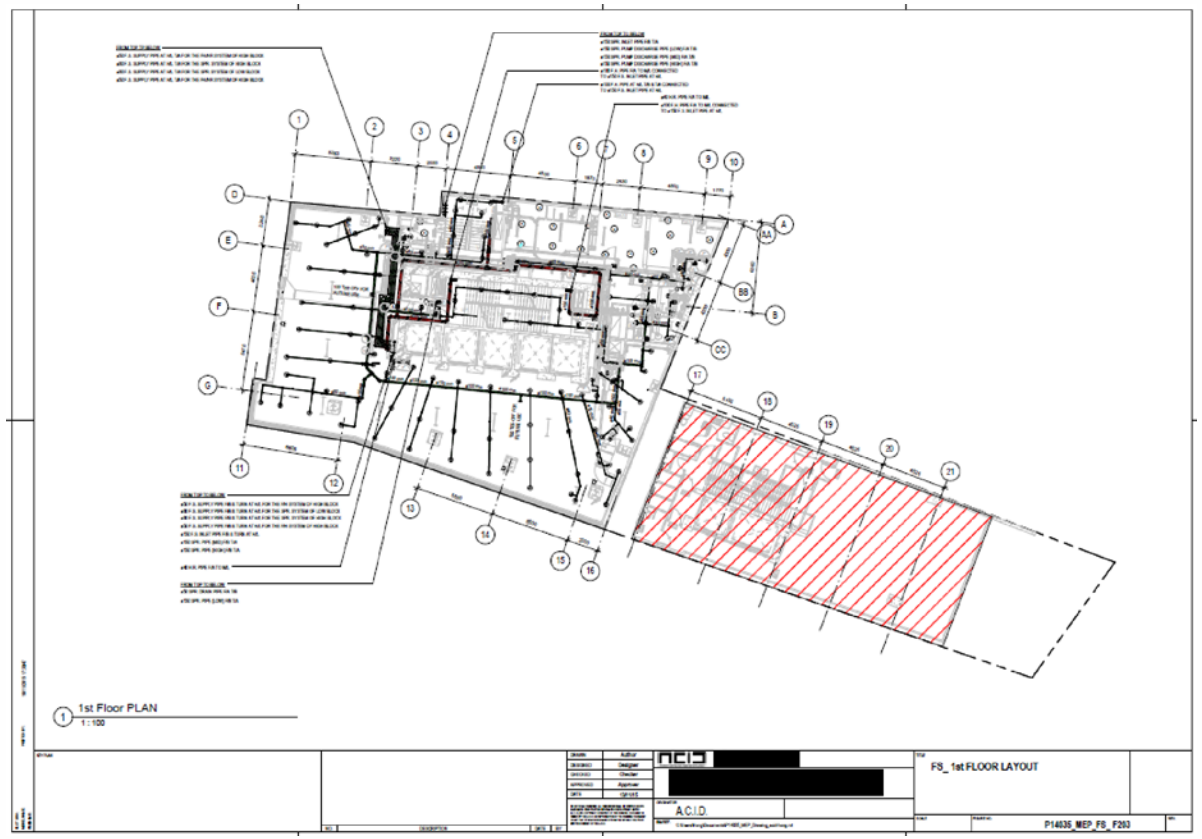


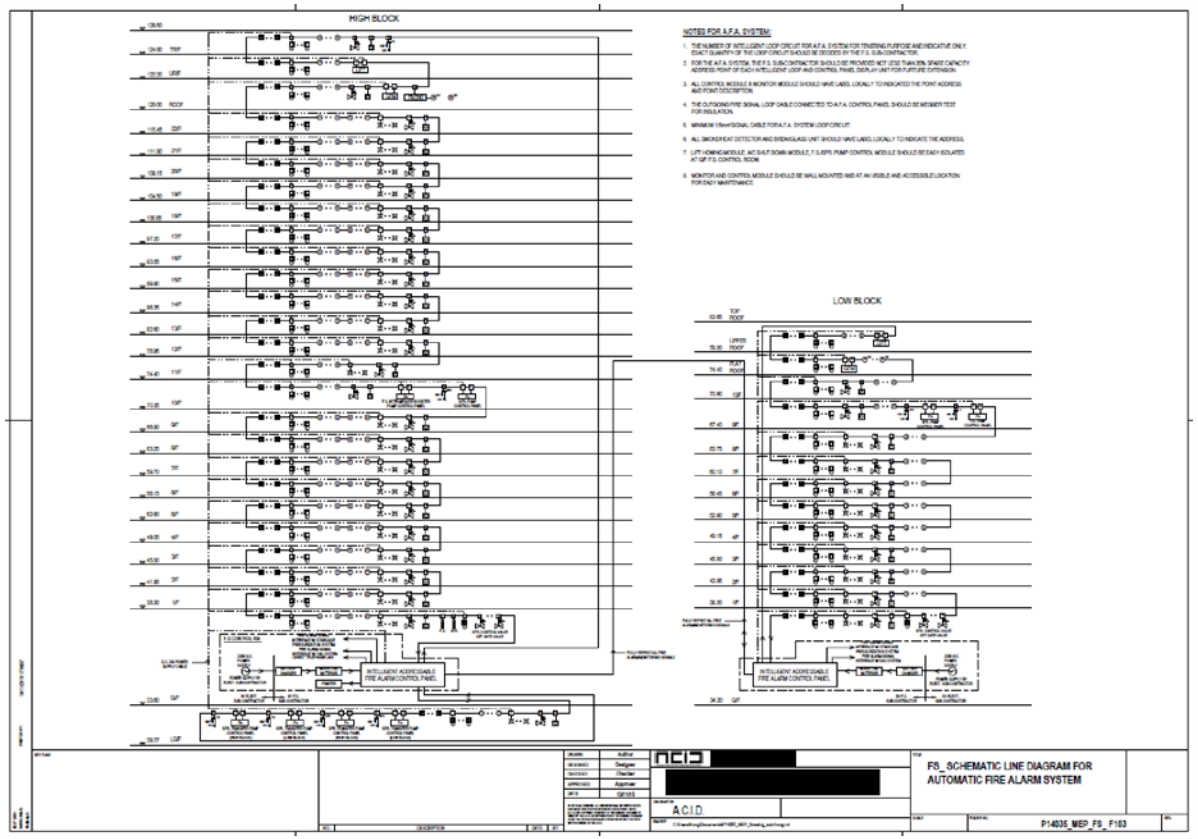
Drawing Production - Structure



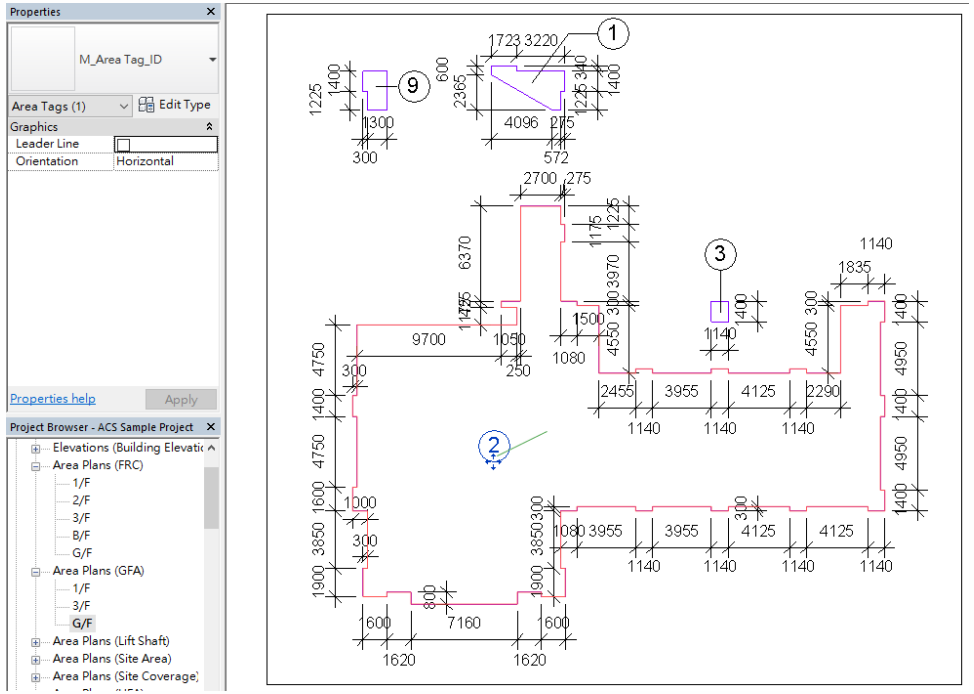


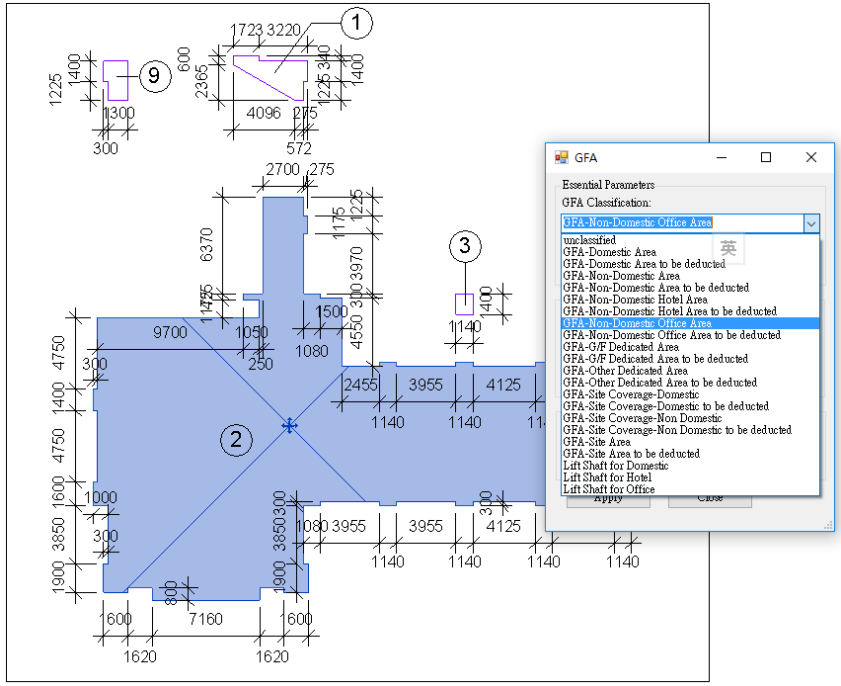
Drawing Production – E&M





Statutory Submission



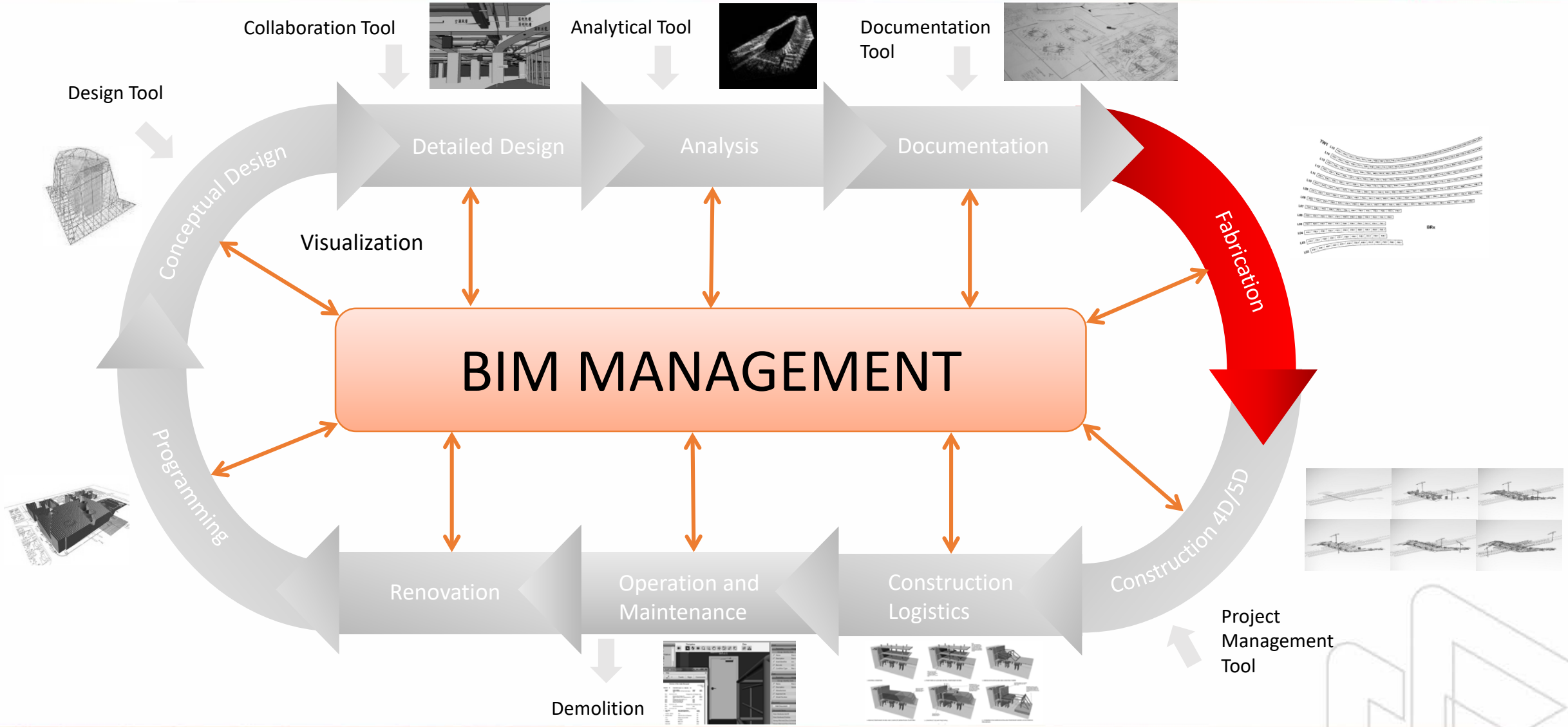


CLASS OF SITE:	A
SITE AREA (SQ.M):	1990.642
BUILDING HEIGHT (M):	19
PERMITTED NON-DOMESTIC SC (%):	95
PERMITTED NON-DOMESTIC PR:	6.7
ACTUAL SITE COVERAGE (SQ.M):	788.919
ACTUAL SITE COVERAGE IN %:	788.919/1990.642x100
	39.631<95
ACTUAL NON-DOMESTIC GFA (SQ.M):	2266.734
ACTUAL NON-DOMESTIC PR:	2266.734/1990.642
	1.139<6.7

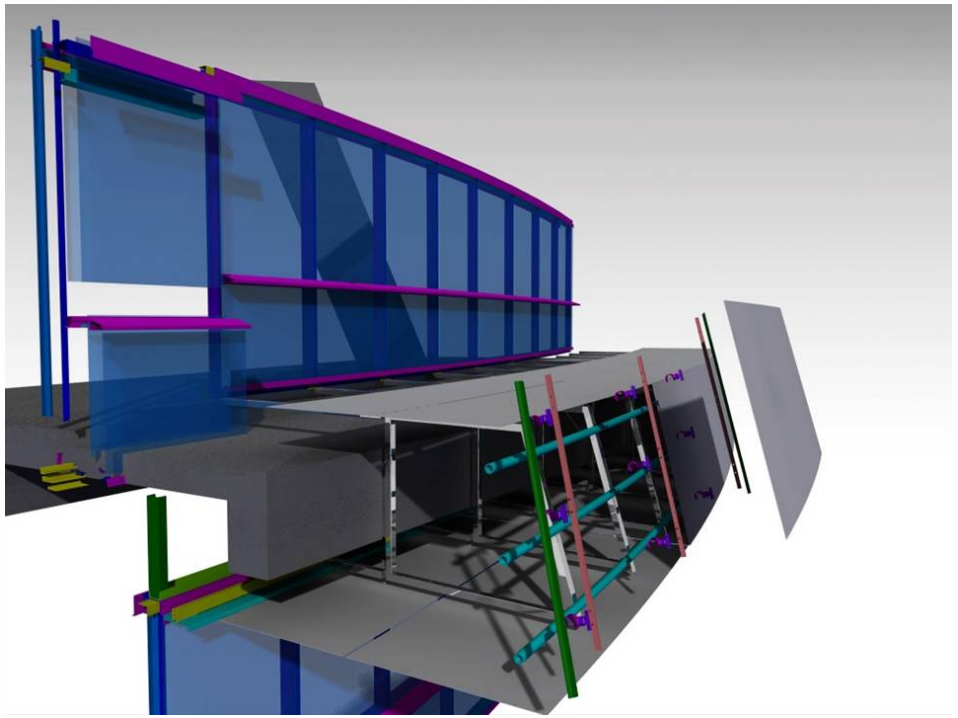
LIFT SHAFT SUMMARY

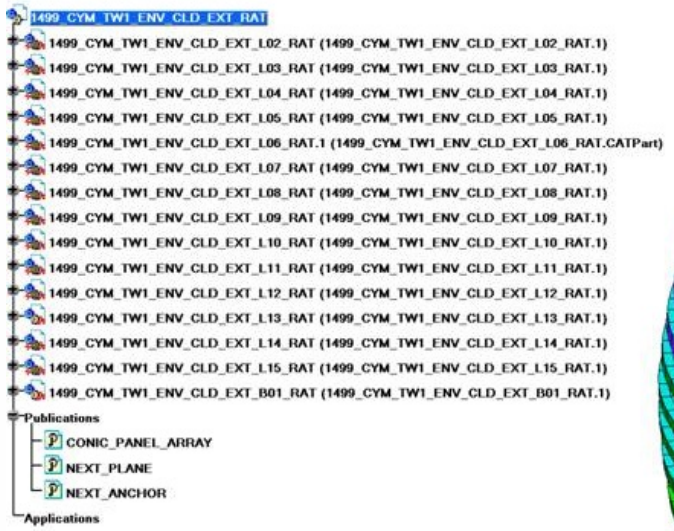
OFFICE ACCOMMODATION	
OVERALL OFFICE GFA (SQ.M):	2266.734
OFFICE LIFT SHAFT AREA (SQ.M):	41.400
MAXIMUM EXEMPTED GFA (SQ.M):	2266.734x3%
	68.002
ACTUAL EXEMPTED GFA (SQ.M):	41.400-2266.734x5%
	0 (MAX.68.002)
ACTUAL OFFICE GFA (SQ.M):	2266.734-0
	2266.734

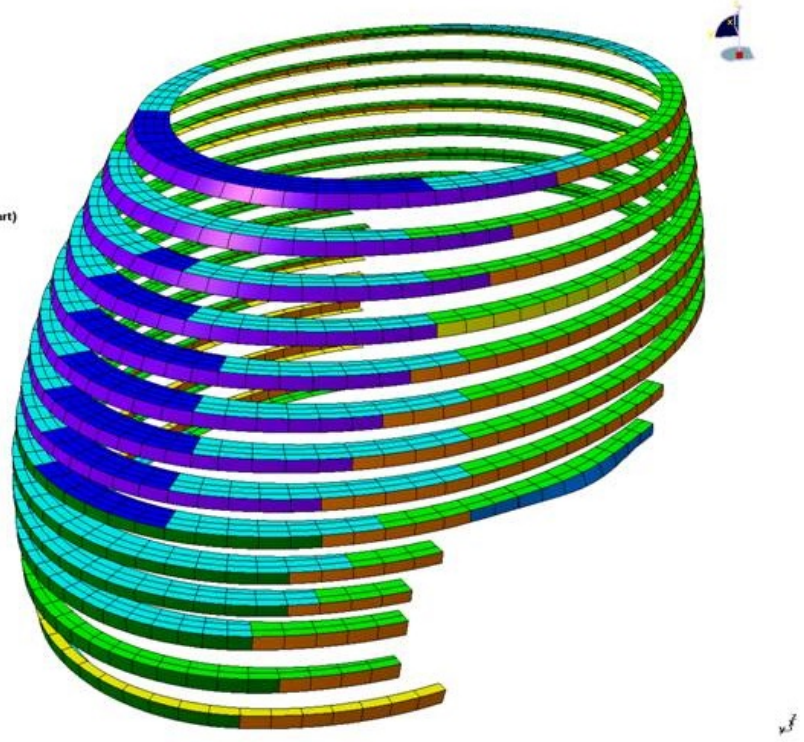
Downstream Data Utilization



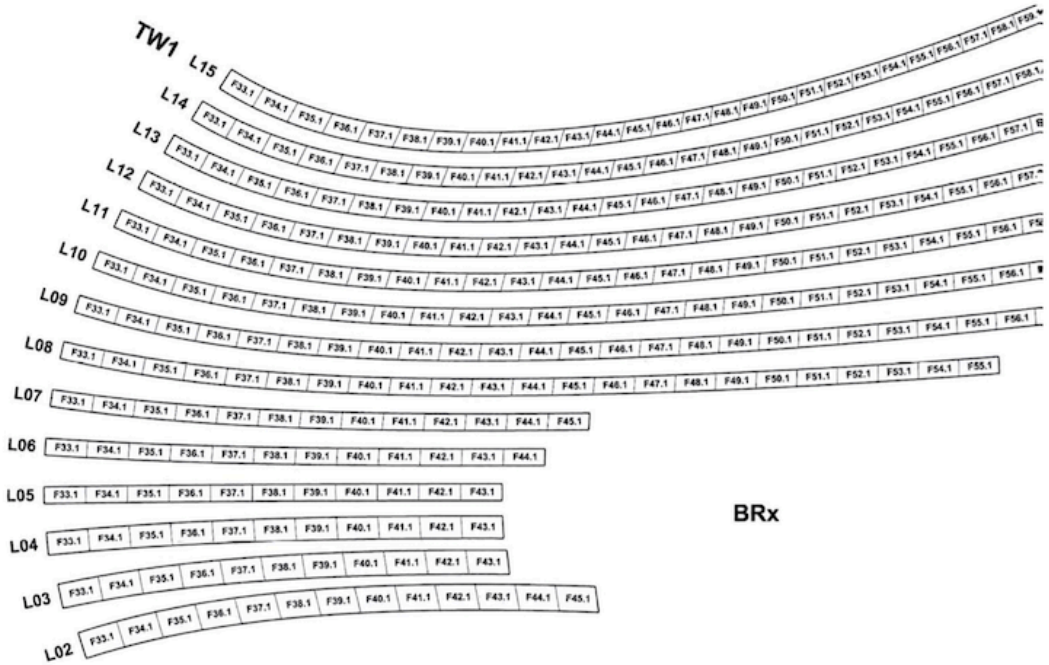
Automated Cladding Design / Panelization

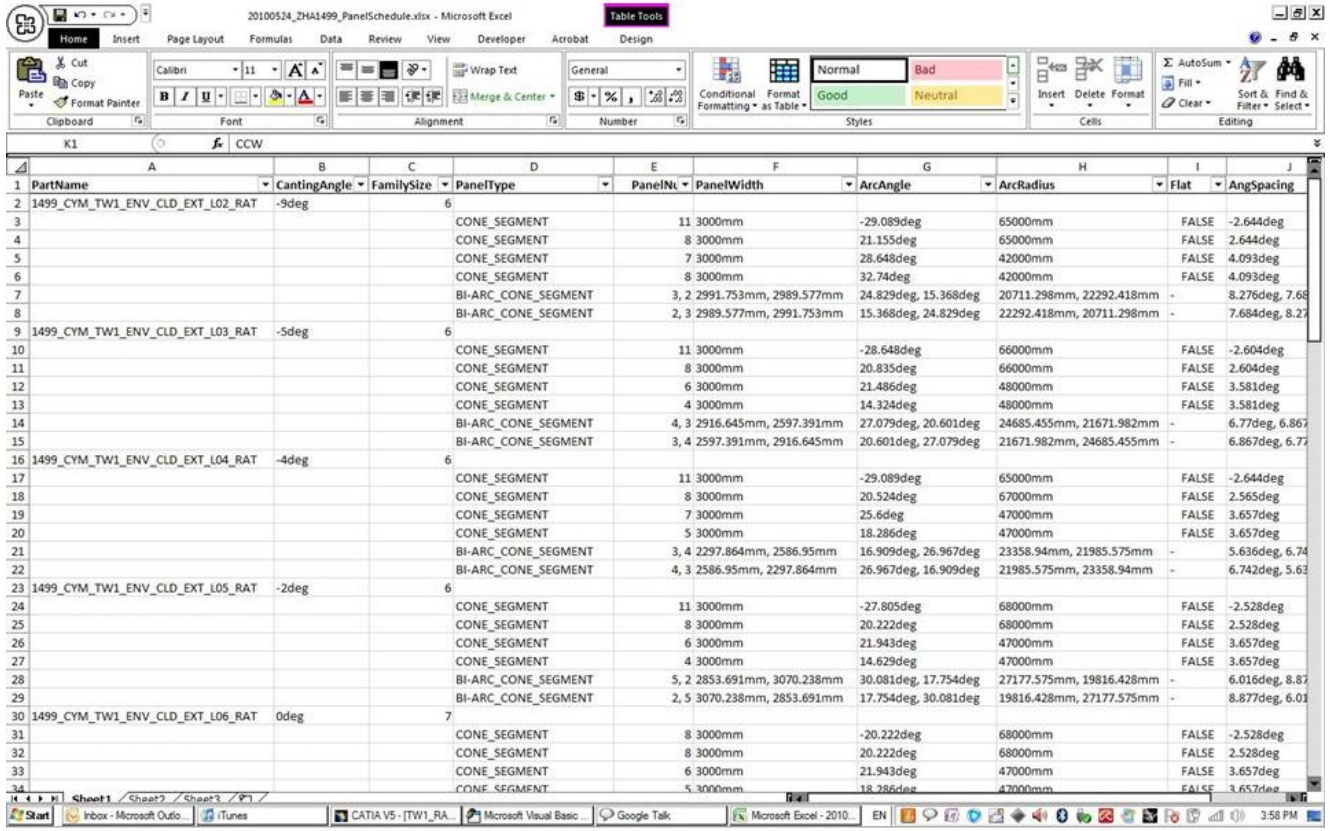






Automated Scheduling and QTO

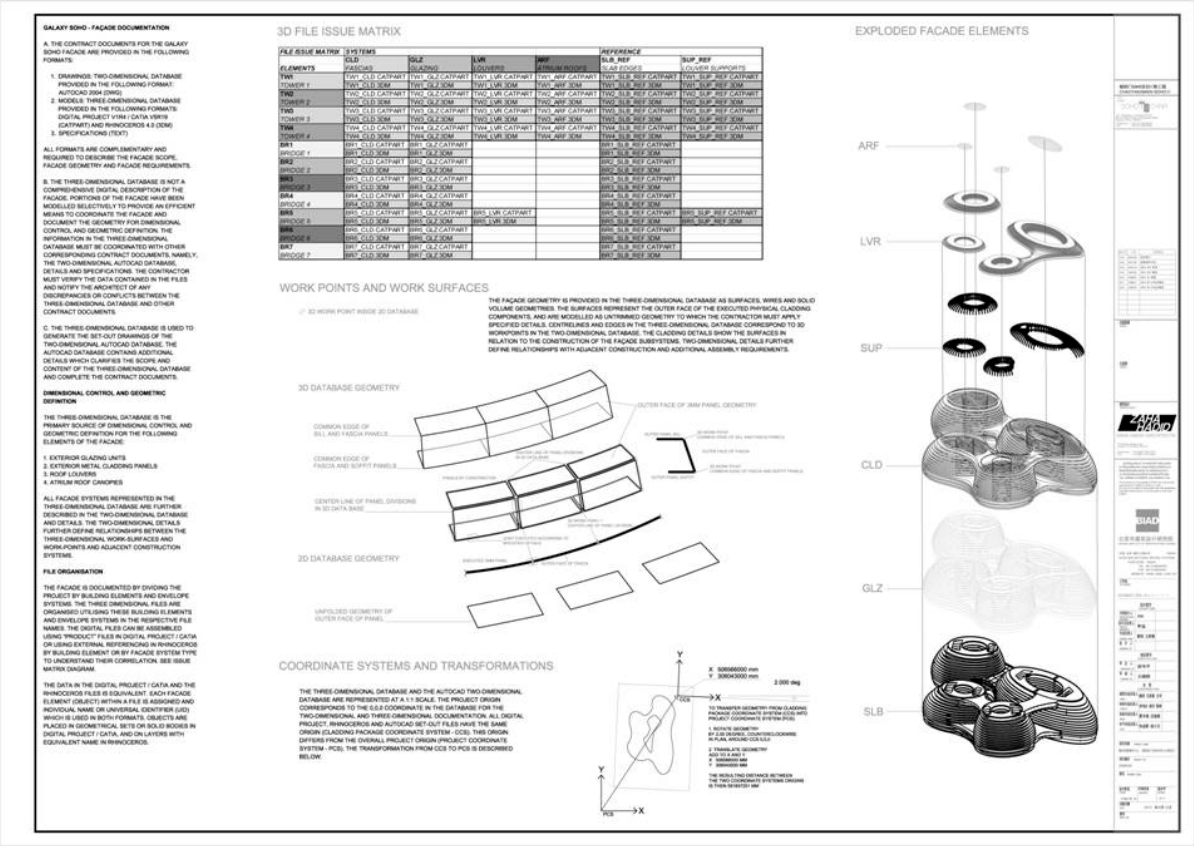


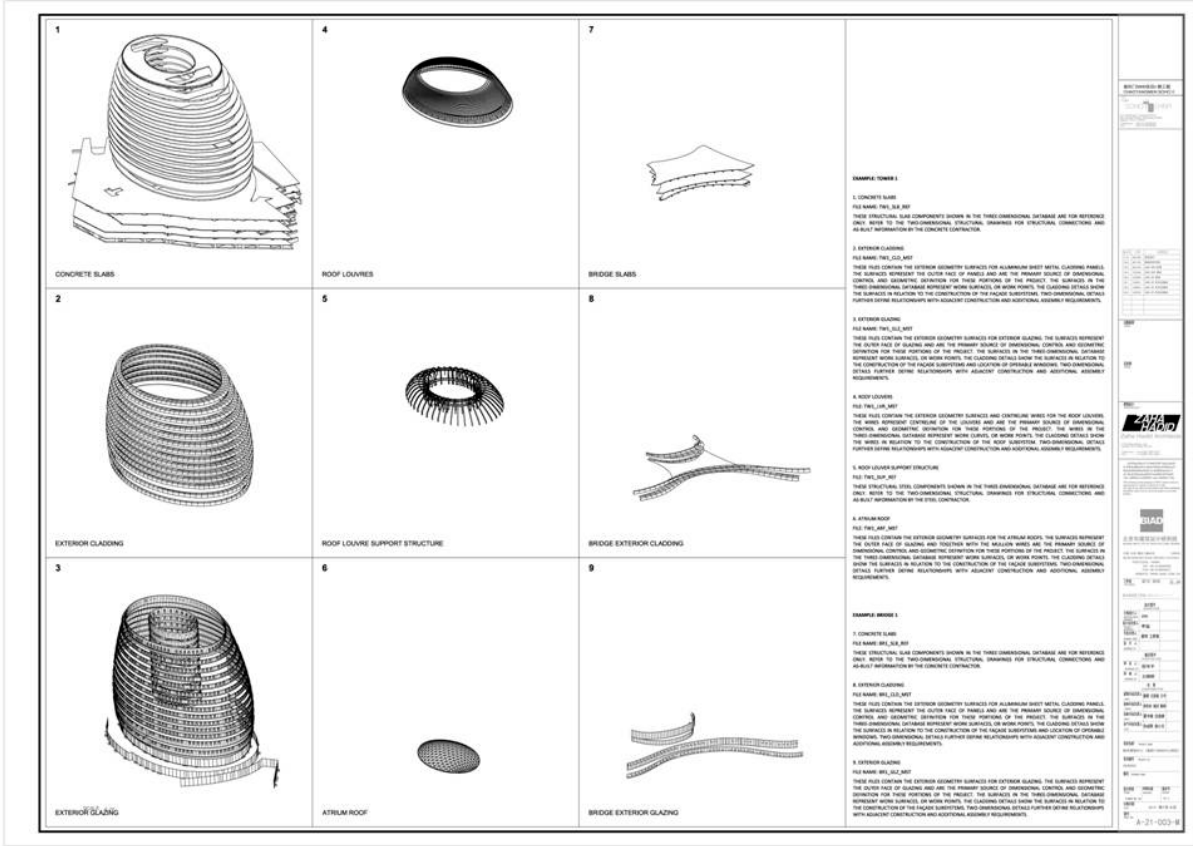


20100524_ZHA1499_PanelSchedule.xlsx - Microsoft Excel

	A	B	C	D	E	F	G	H	I	J
1	PartName	CantingAngle	FamilySize	PanelType	PanelNu	PanelWidth	ArcAngle	ArcRadius	Flat	AngSpacing
2	1499_CYM_TW1_ENV_CLD_EXT_L02_RAT	-9deg	6							
3				CONE_SEGMENT	11	3000mm	-29.089deg	65000mm	FALSE	-2.644deg
4				CONE_SEGMENT	8	3000mm	21.155deg	65000mm	FALSE	2.644deg
5				CONE_SEGMENT	7	3000mm	28.648deg	42000mm	FALSE	4.093deg
6				CONE_SEGMENT	8	3000mm	32.74deg	42000mm	FALSE	4.093deg
7				BI-ARC_CONE_SEGMENT	3, 2	2991.753mm, 2989.577mm	24.829deg, 15.368deg	20711.298mm, 22292.418mm	-	8.276deg, 7.68
8				BI-ARC_CONE_SEGMENT	2, 3	2989.577mm, 2991.753mm	15.368deg, 24.829deg	22292.418mm, 20711.298mm	-	7.684deg, 8.27
9	1499_CYM_TW1_ENV_CLD_EXT_L03_RAT	-5deg	6							
10				CONE_SEGMENT	11	3000mm	-28.648deg	66000mm	FALSE	-2.604deg
11				CONE_SEGMENT	8	3000mm	20.835deg	66000mm	FALSE	2.604deg
12				CONE_SEGMENT	6	3000mm	21.486deg	48000mm	FALSE	3.581deg
13				CONE_SEGMENT	4	3000mm	14.324deg	48000mm	FALSE	3.581deg
14				BI-ARC_CONE_SEGMENT	4, 3	2916.645mm, 2597.391mm	27.079deg, 20.601deg	24685.455mm, 21671.982mm	-	6.77deg, 6.867
15				BI-ARC_CONE_SEGMENT	3, 4	2597.391mm, 2916.645mm	20.601deg, 27.079deg	21671.982mm, 24685.455mm	-	6.867deg, 6.77
16	1499_CYM_TW1_ENV_CLD_EXT_L04_RAT	-4deg	6							
17				CONE_SEGMENT	11	3000mm	-29.089deg	65000mm	FALSE	-2.644deg
18				CONE_SEGMENT	8	3000mm	20.524deg	67000mm	FALSE	2.565deg
19				CONE_SEGMENT	7	3000mm	25.6deg	47000mm	FALSE	3.657deg
20				CONE_SEGMENT	5	3000mm	18.286deg	47000mm	FALSE	3.657deg
21				BI-ARC_CONE_SEGMENT	3, 4	2297.864mm, 2586.95mm	16.909deg, 26.967deg	23358.94mm, 21985.575mm	-	5.636deg, 6.74
22				BI-ARC_CONE_SEGMENT	4, 3	2586.95mm, 2297.864mm	26.967deg, 16.909deg	21985.575mm, 23358.94mm	-	6.742deg, 5.63
23	1499_CYM_TW1_ENV_CLD_EXT_L05_RAT	-2deg	6							
24				CONE_SEGMENT	11	3000mm	-27.805deg	68000mm	FALSE	-2.528deg
25				CONE_SEGMENT	8	3000mm	20.222deg	68000mm	FALSE	2.528deg
26				CONE_SEGMENT	6	3000mm	21.943deg	47000mm	FALSE	3.657deg
27				CONE_SEGMENT	4	3000mm	14.629deg	47000mm	FALSE	3.657deg
28				BI-ARC_CONE_SEGMENT	5, 2	2853.691mm, 3070.238mm	30.081deg, 17.754deg	27177.575mm, 19816.428mm	-	6.016deg, 8.87
29				BI-ARC_CONE_SEGMENT	2, 5	3070.238mm, 2853.691mm	17.754deg, 30.081deg	19816.428mm, 27177.575mm	-	8.877deg, 6.01
30	1499_CYM_TW1_ENV_CLD_EXT_L06_RAT	0deg	7							
31				CONE_SEGMENT	8	3000mm	-20.222deg	68000mm	FALSE	-2.528deg
32				CONE_SEGMENT	8	3000mm	20.222deg	68000mm	FALSE	2.528deg
33				CONE_SEGMENT	6	3000mm	21.943deg	47000mm	FALSE	3.657deg
34				CONE_SEGMENT	5	3000mm	18.286deg	47000mm	FALSE	3.657deg

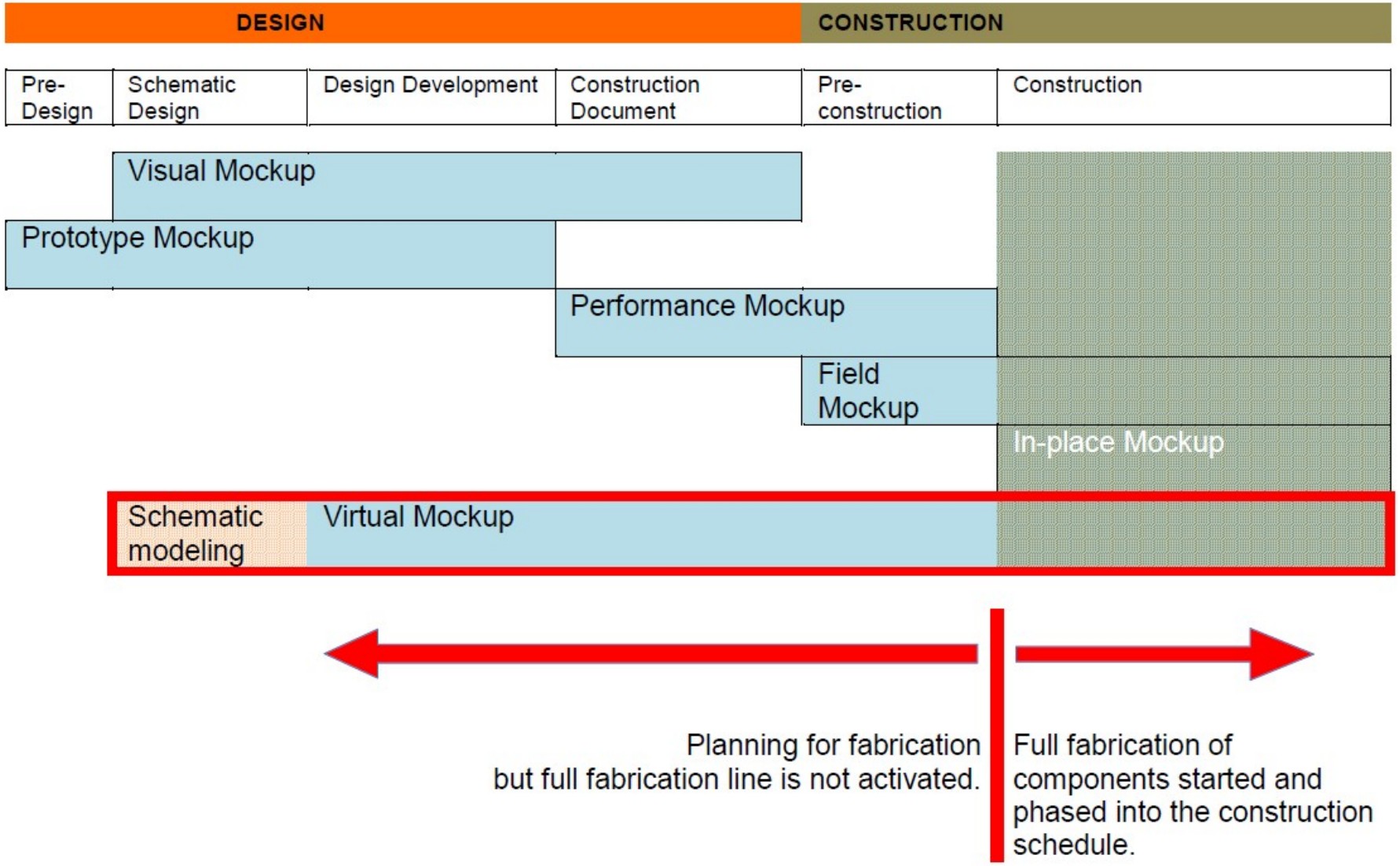
Fabrication Drawing Production



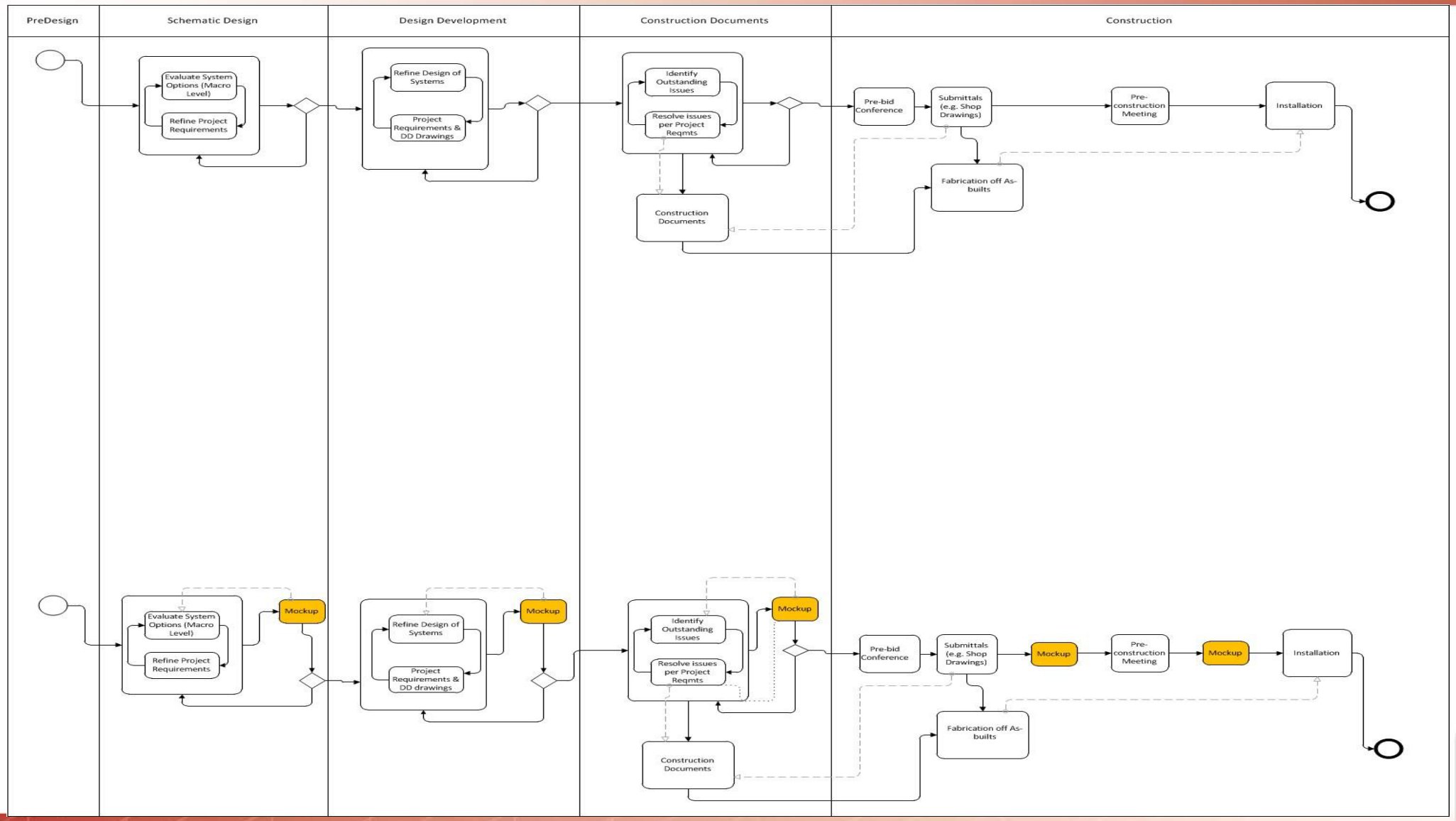


Panel Installation Inspection

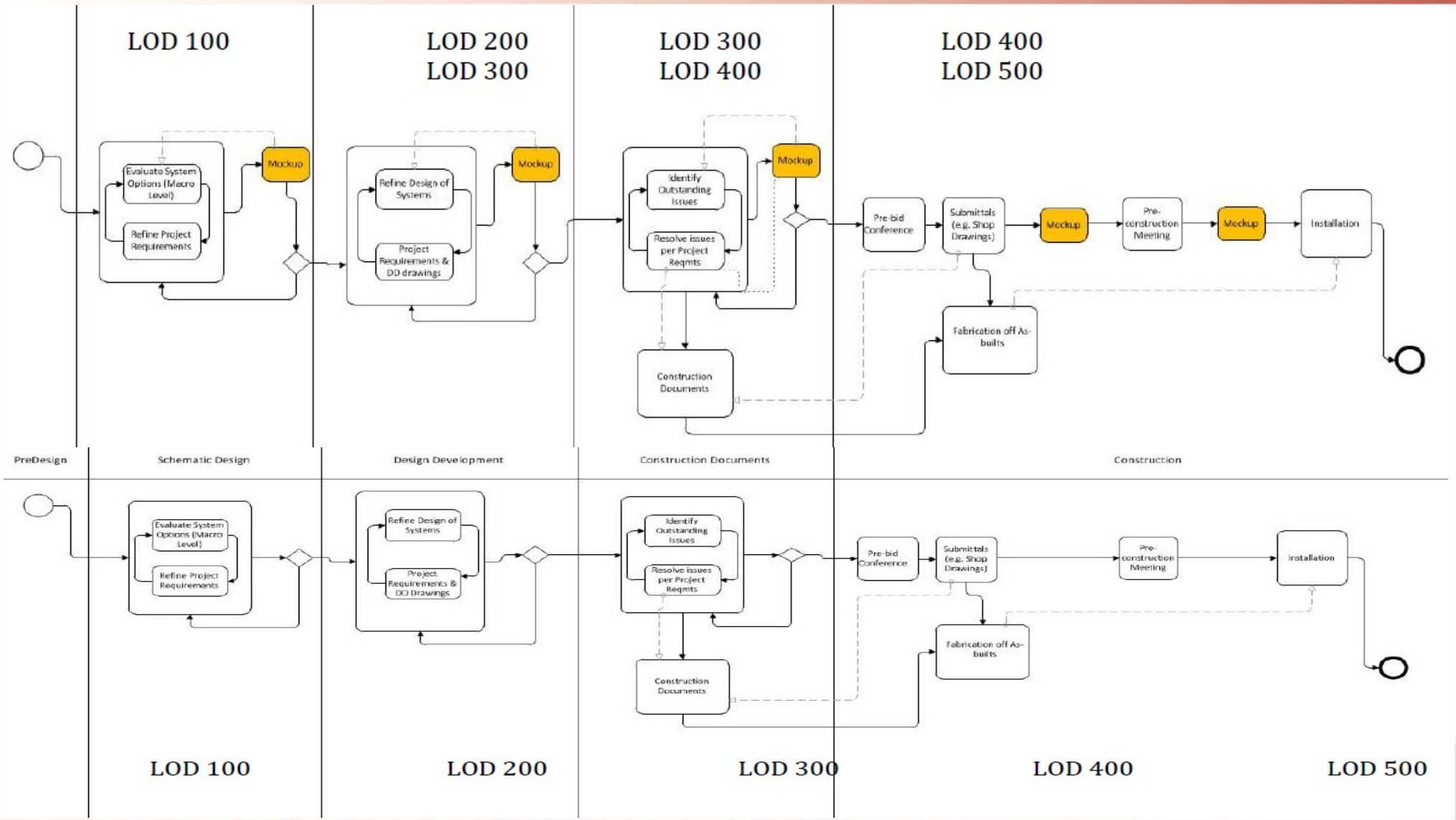
Virtual Mockup Flow



Virtual Mockup Flow

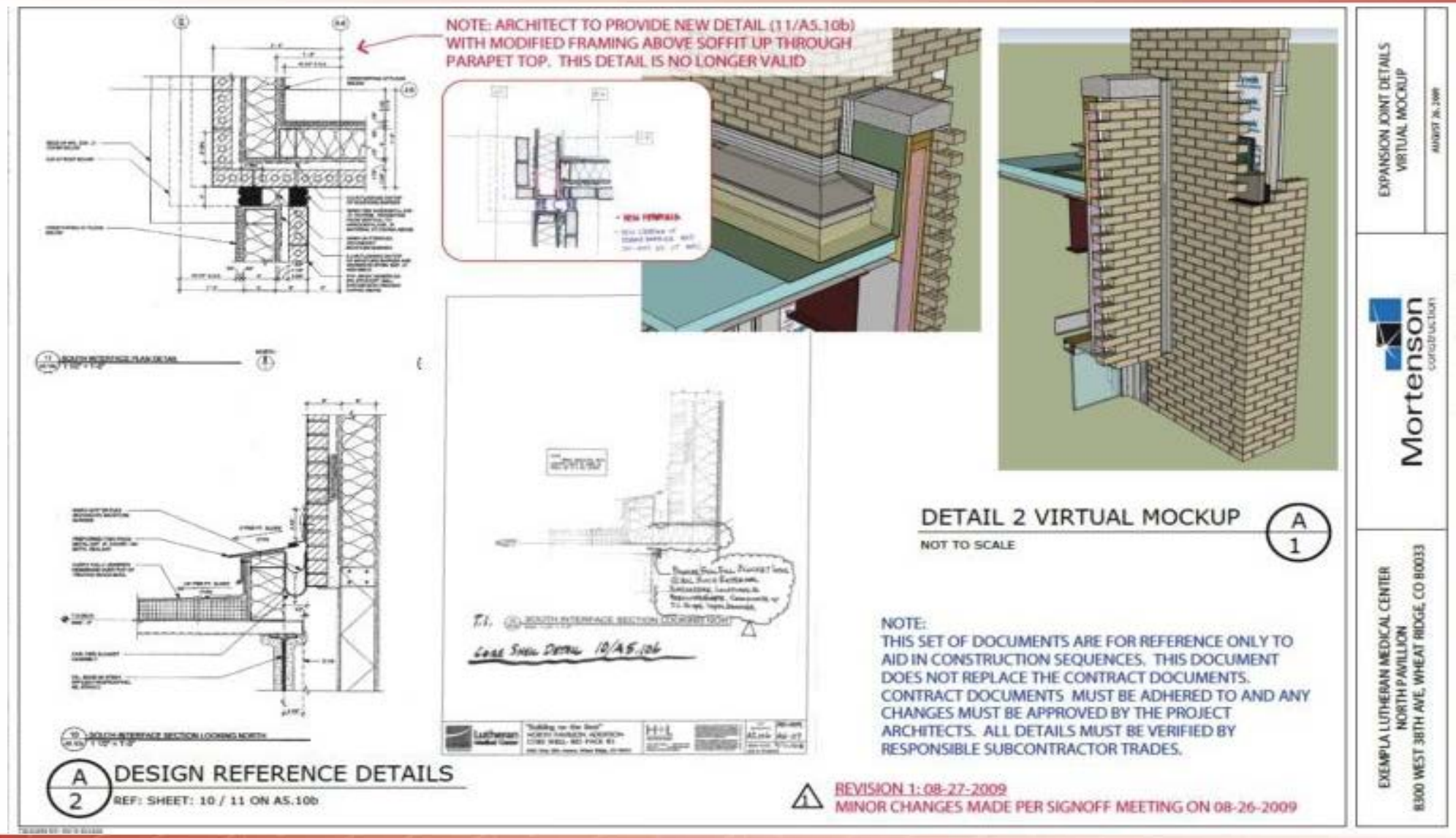


Virtual Mockup Flow

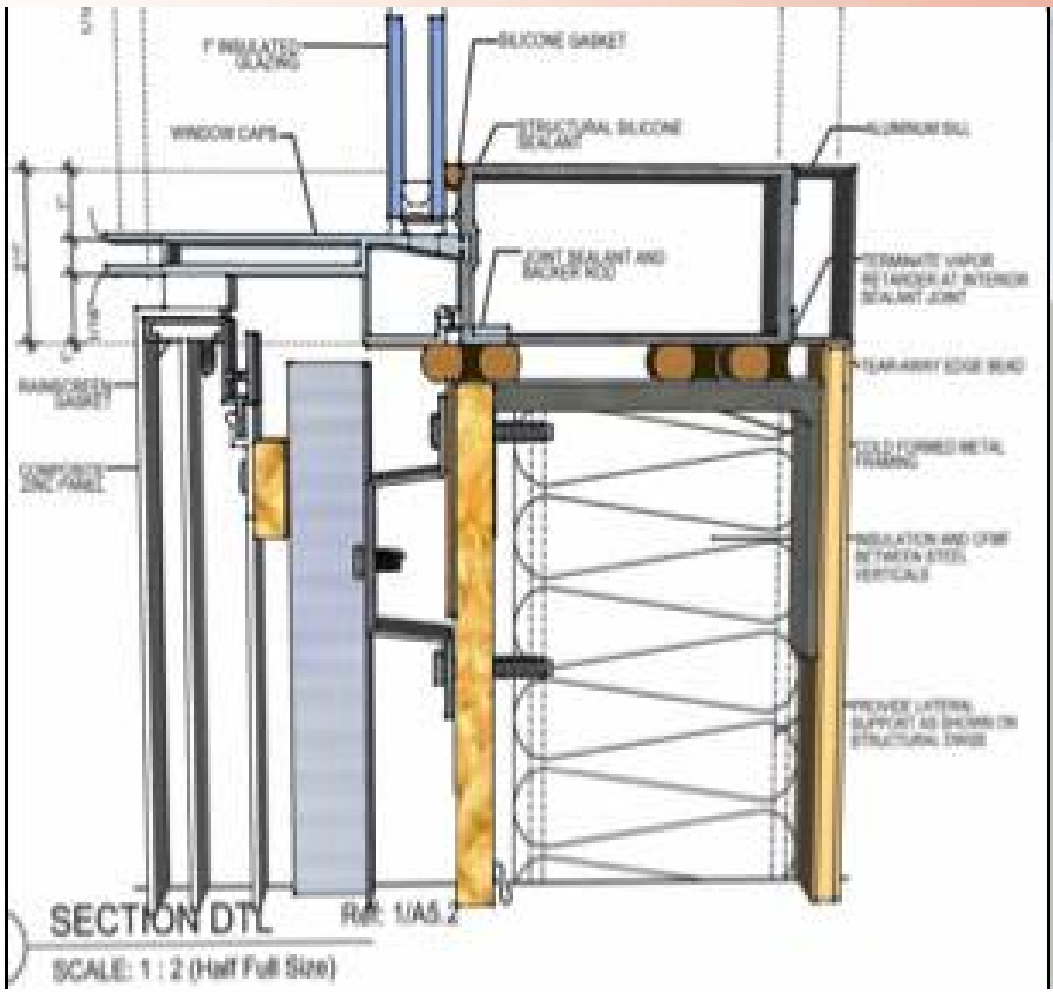


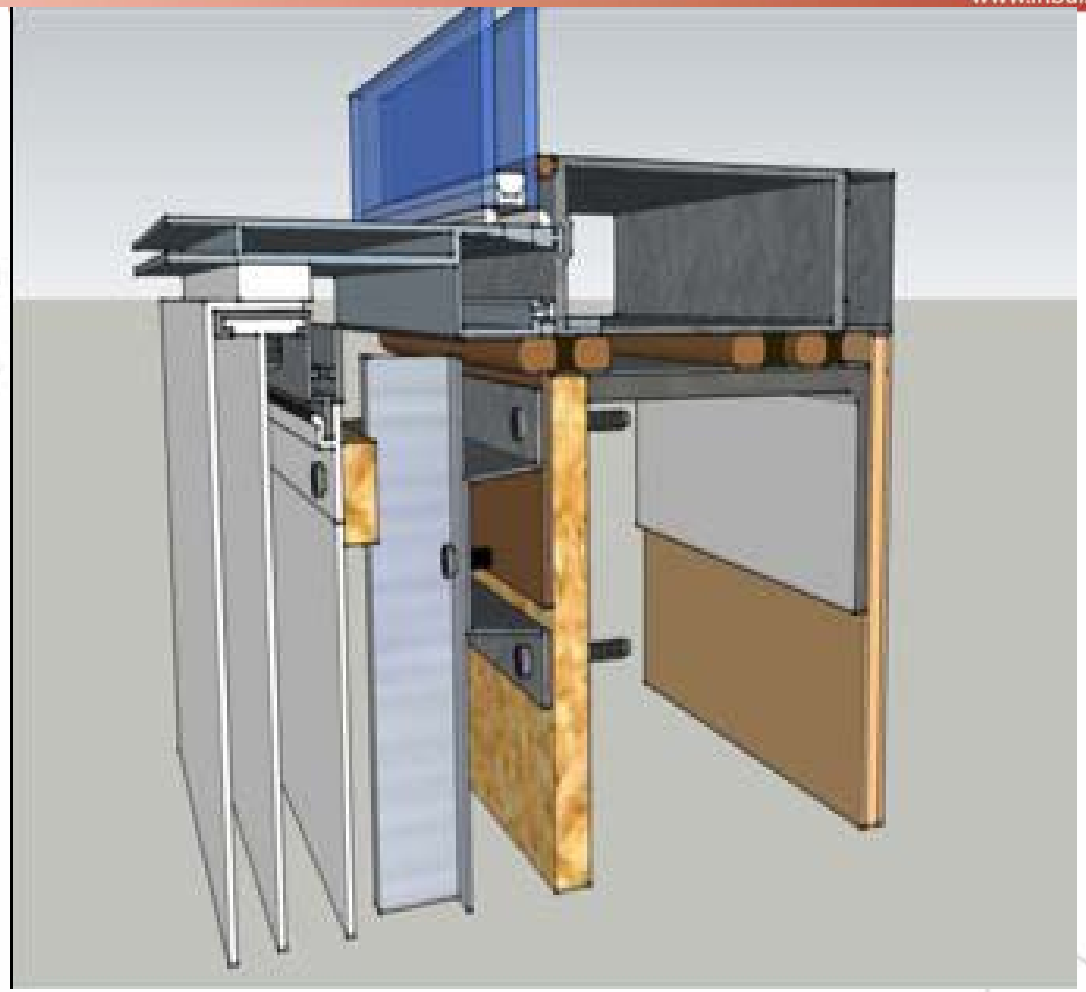
Virtual Mockup Flow

Virtual Mockup Flow

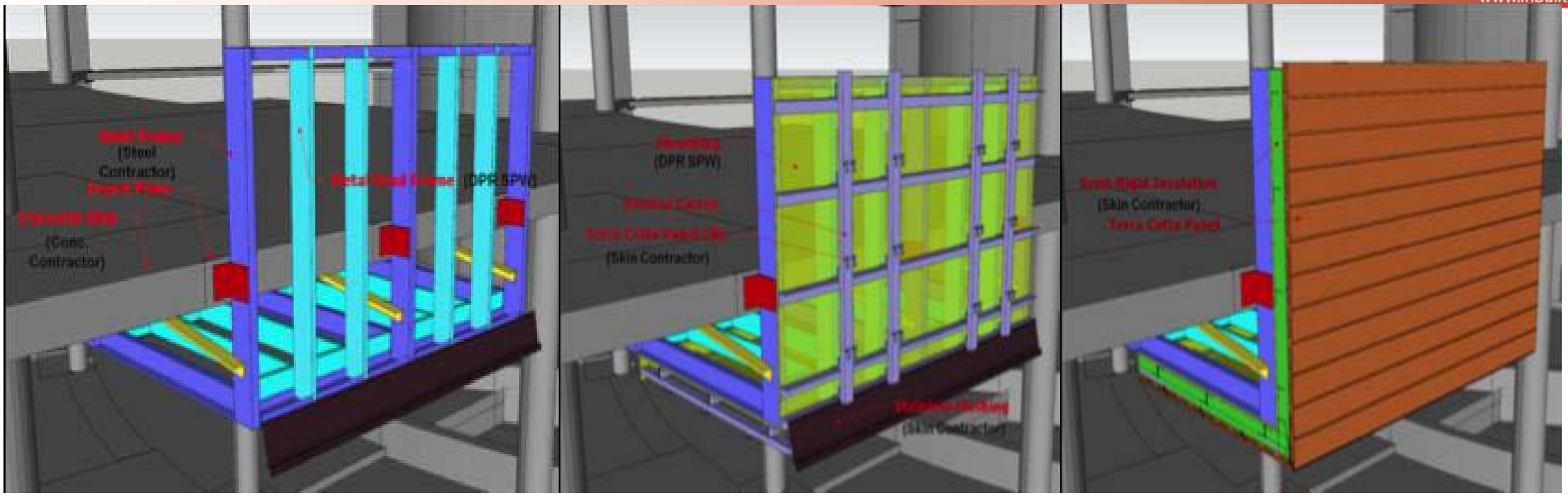


Virtual Mockup Flow

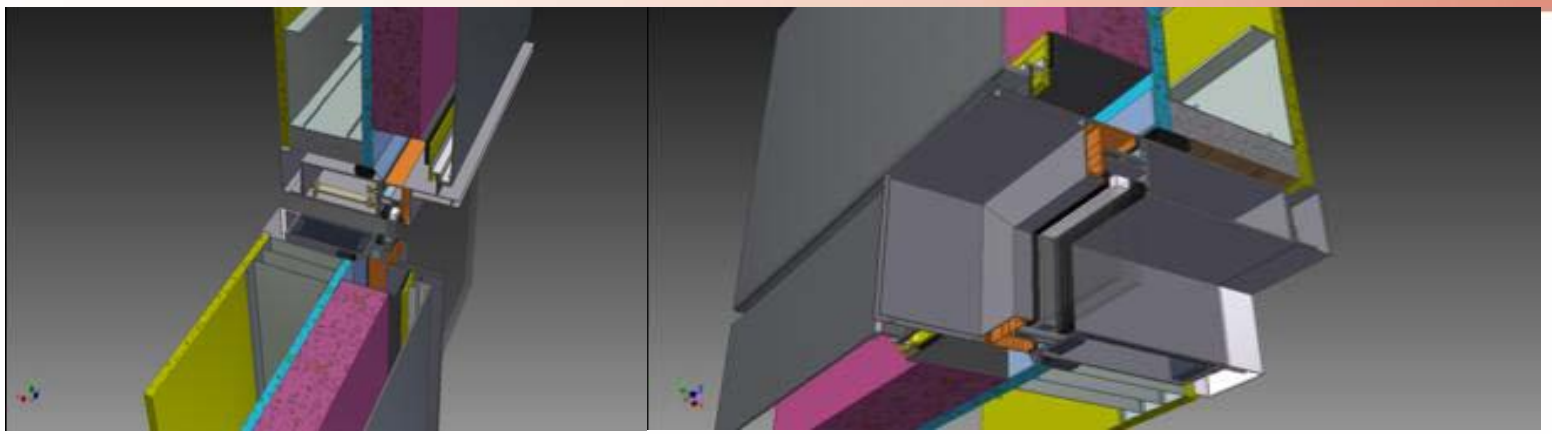


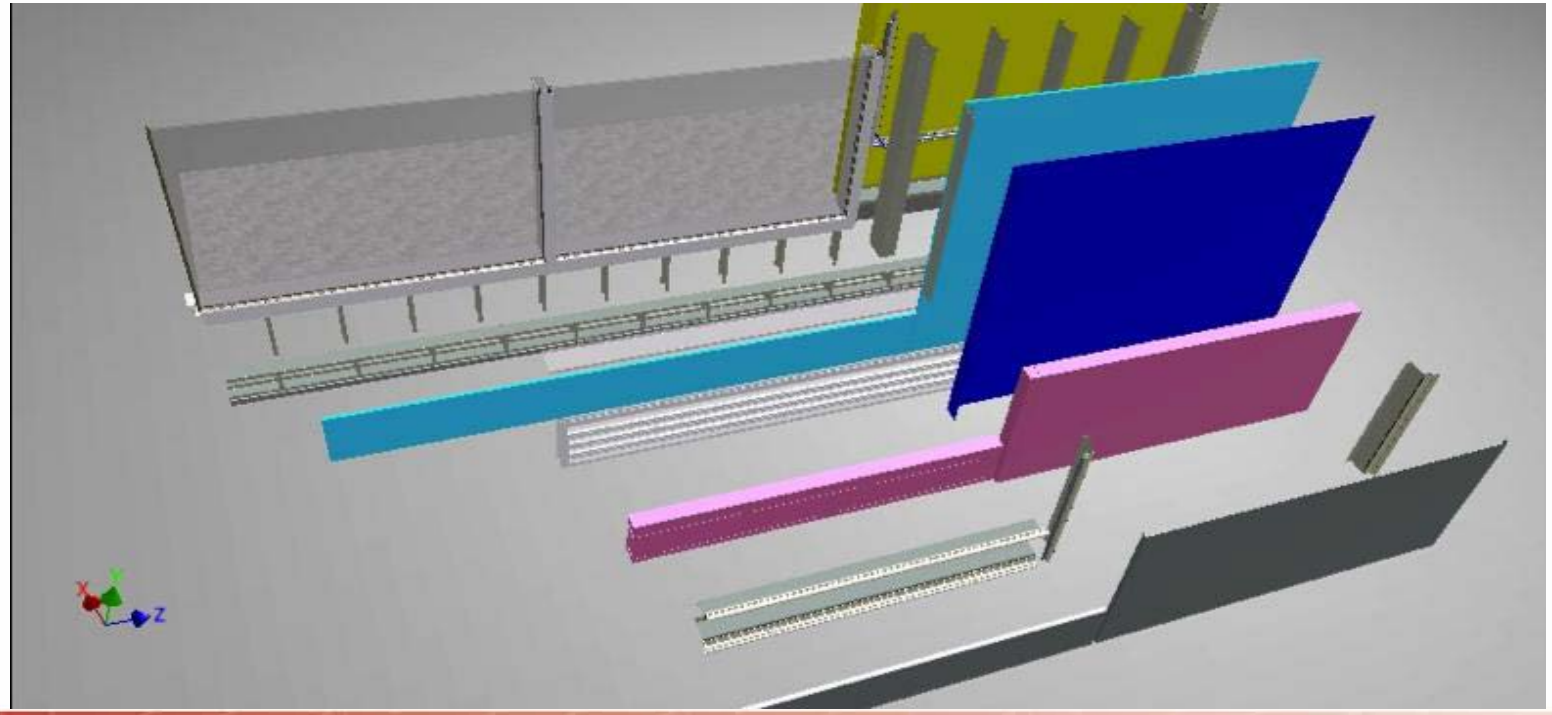


Virtual Mockup Flow

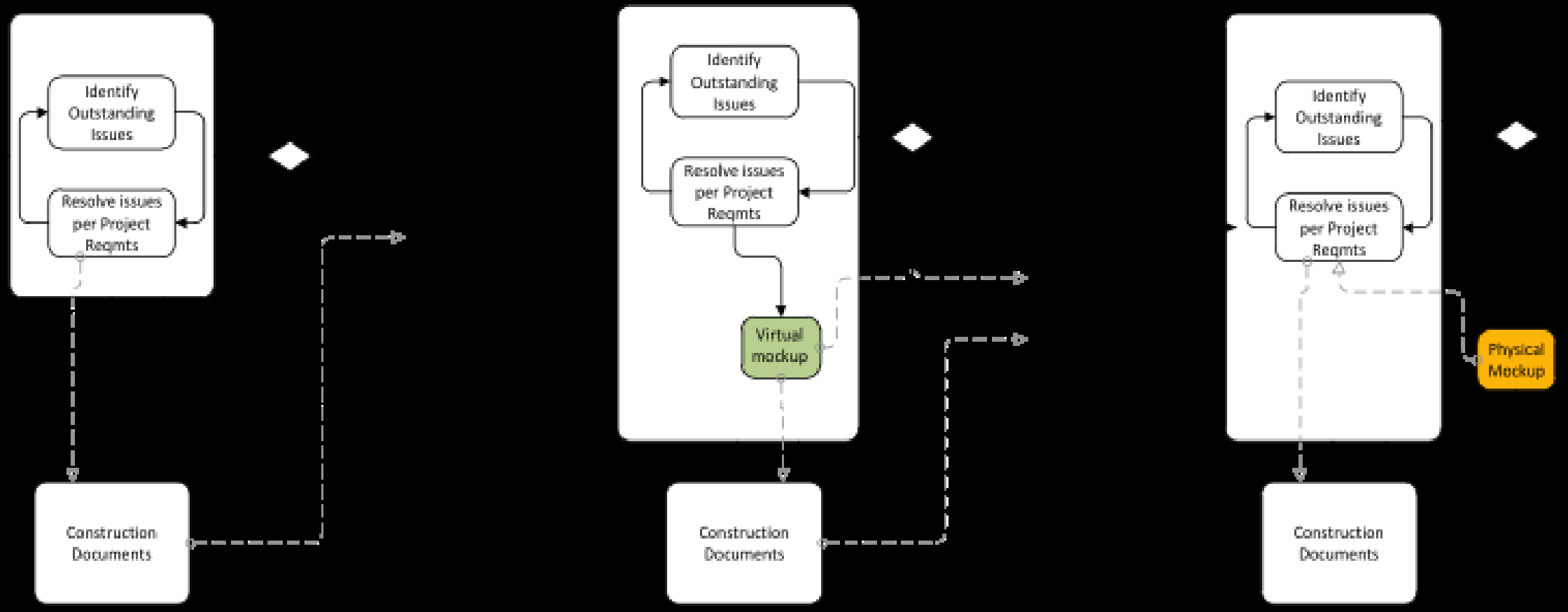


Virtual Mockup Flow





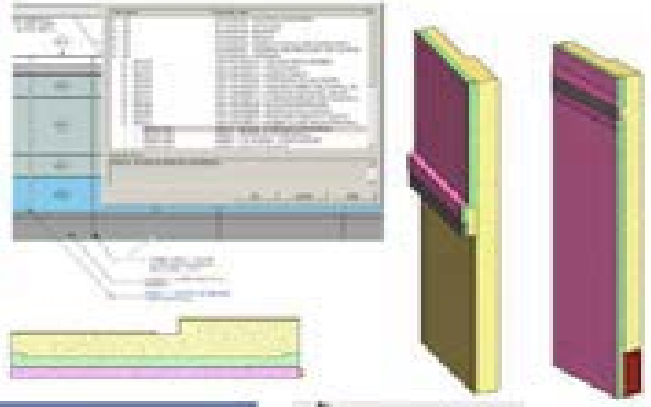
Virtual Mockup Flow

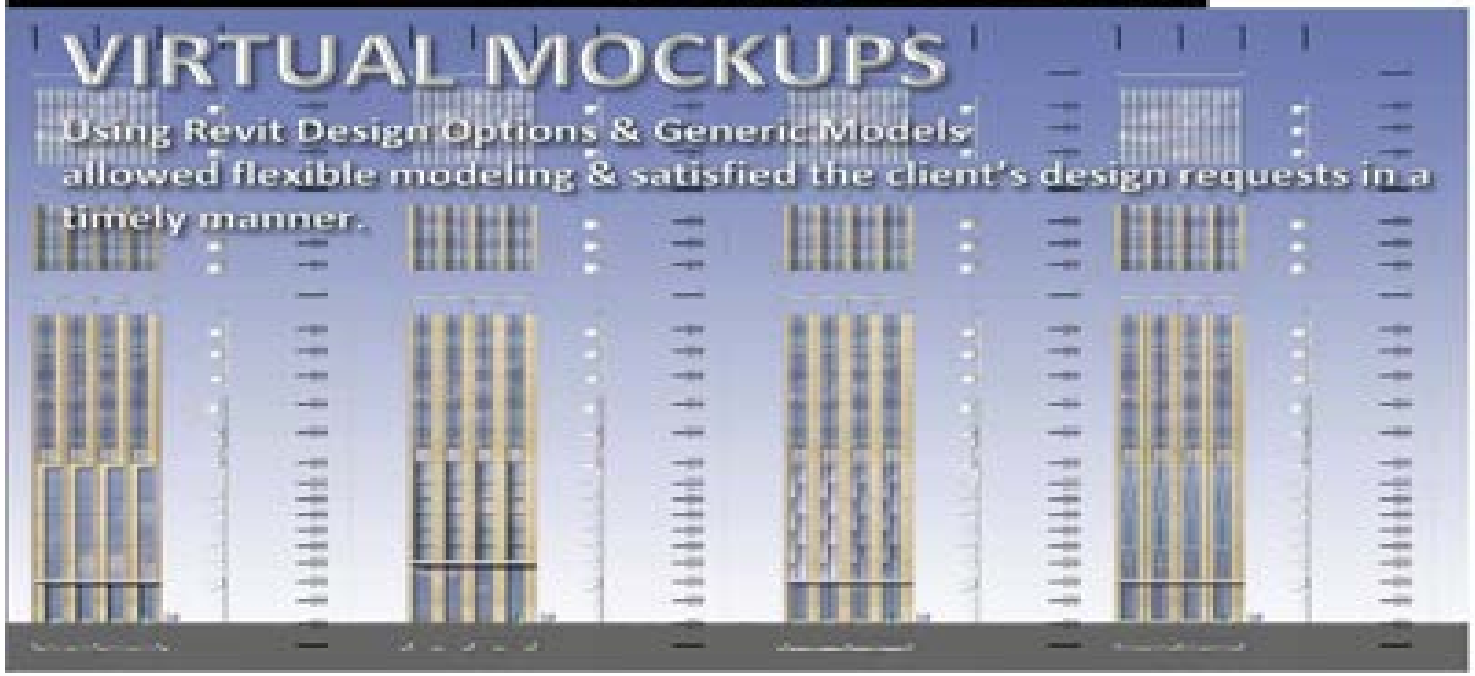


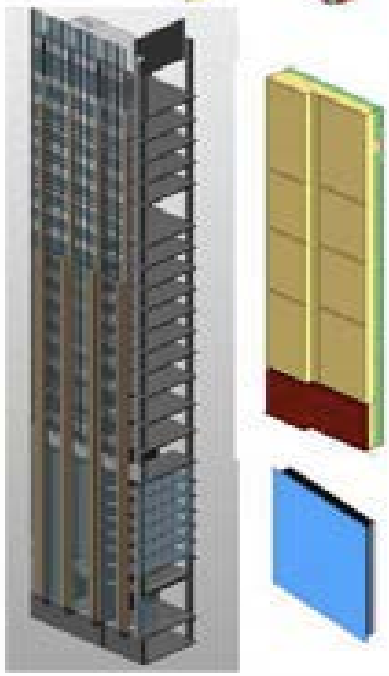
Virtual Mockup Flow

Custom Revit Generic Models of insulated, fire protected precast modules & glazing spandrel panels, as well as the use of **e-SPECS for Revit**, allowed for the following:

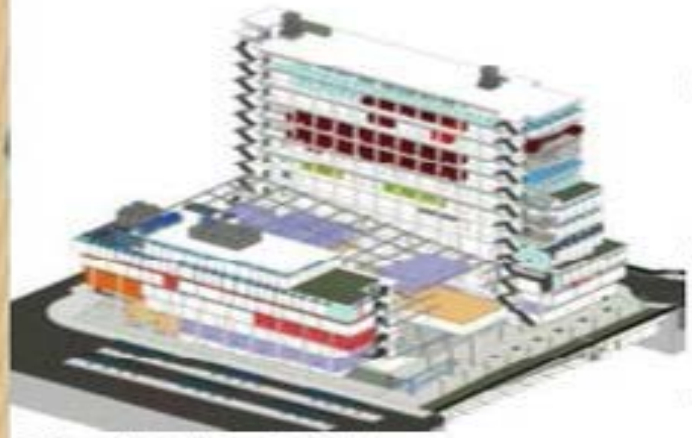
- Modular design
- Ease of fabrication
- Quick design changes
- Ease of scheduling
- Smart keynoting



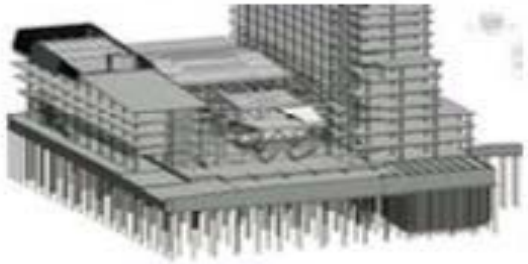




Virtual Mockup Flow

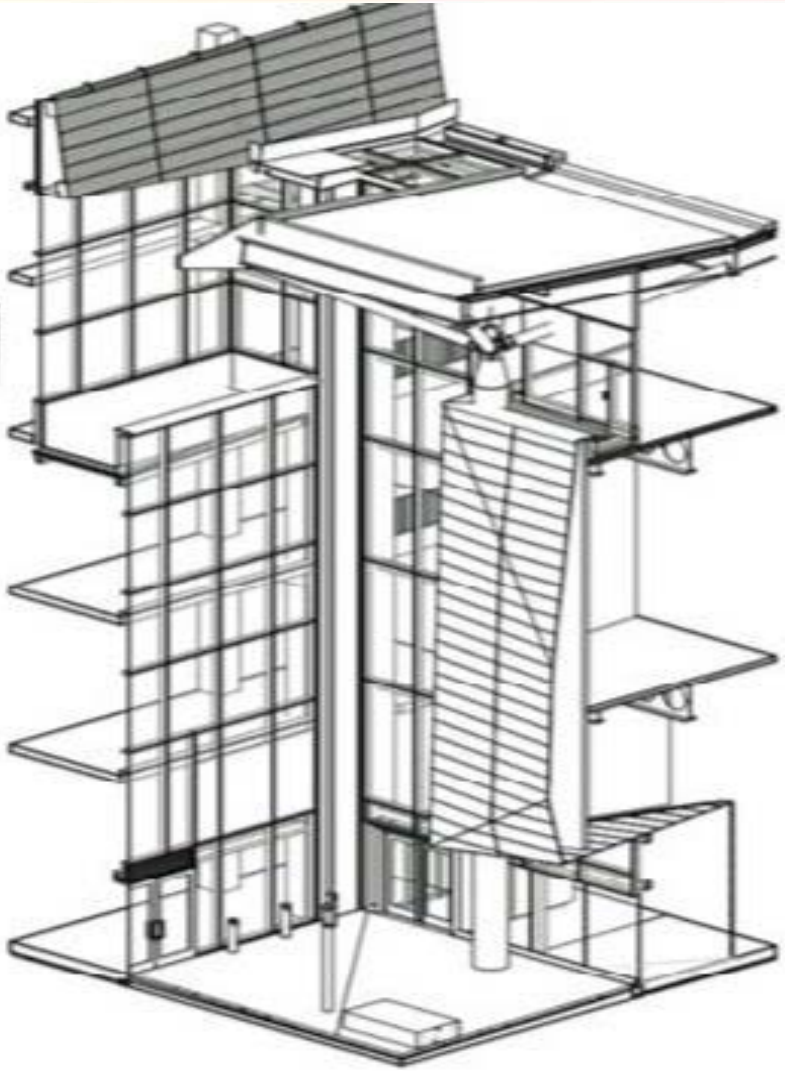


3D model showing color coded program boxes.

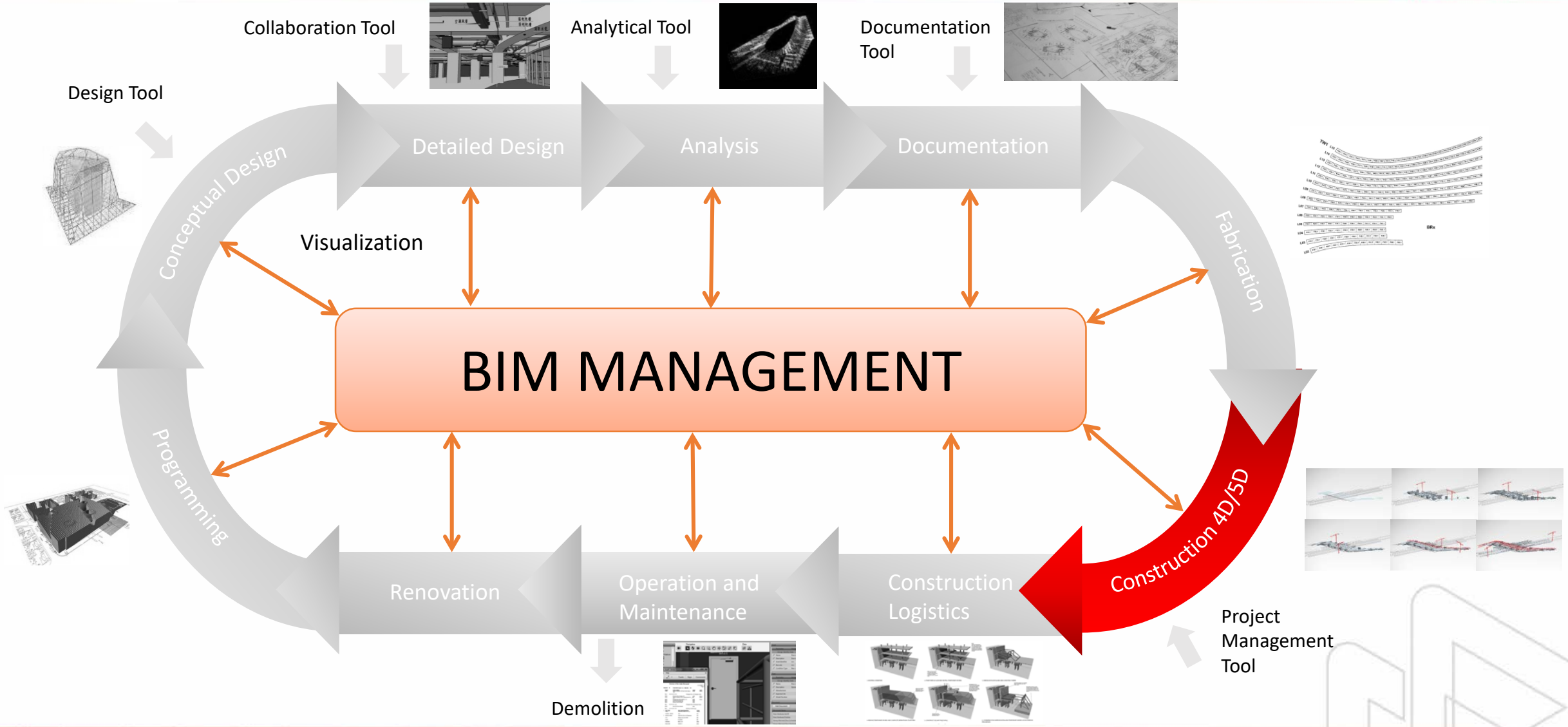


3D model showing components of a system. In this example, the structural model.

Revit was used to convey many design ideas from renderings, program layout to constructability studies.



Construction Management



Napoli-Afragola High Speed Train Station

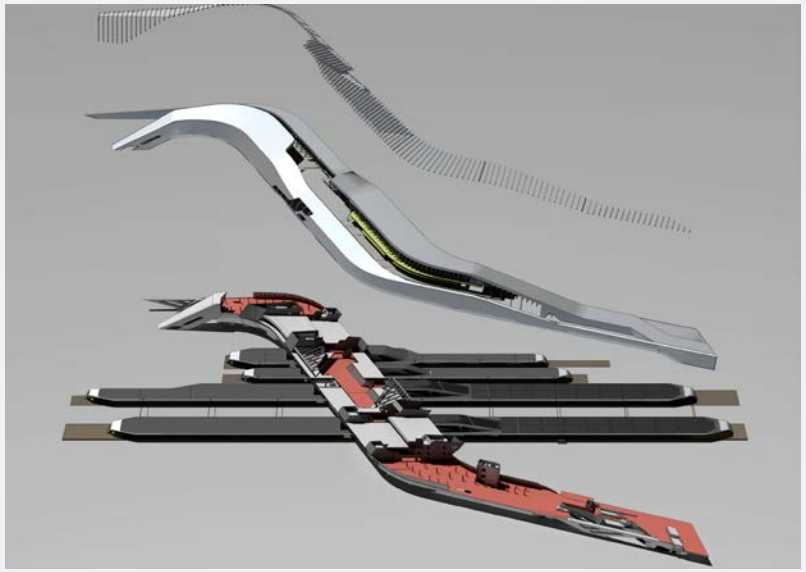
InBuilt Corporation 英建盈科 NCIJ

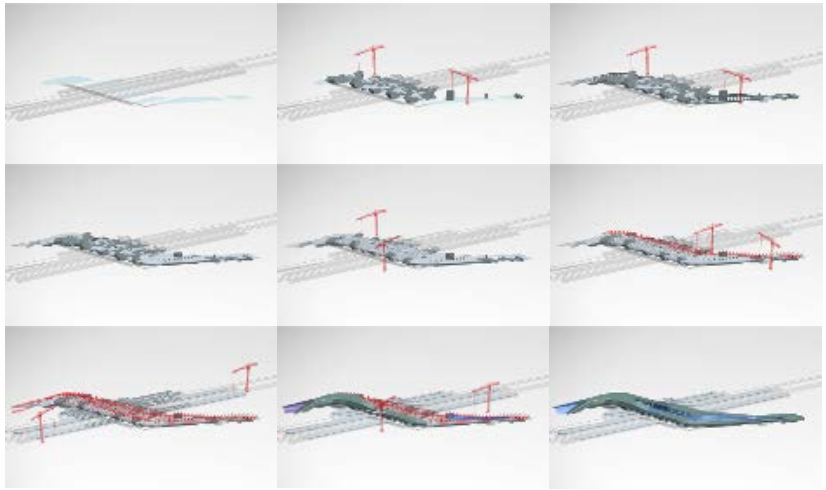
www.inbuiltcorp.com

Address
Naples, Italy

Gross Floor Area
20,000 sq.m.

Features
| Transport interchange and landmark
| Application of BIM system to optimize structural and cladding components
| Using BIM to simulate and control construction sequences
| This project is a personal experience of InBuilt's key founder





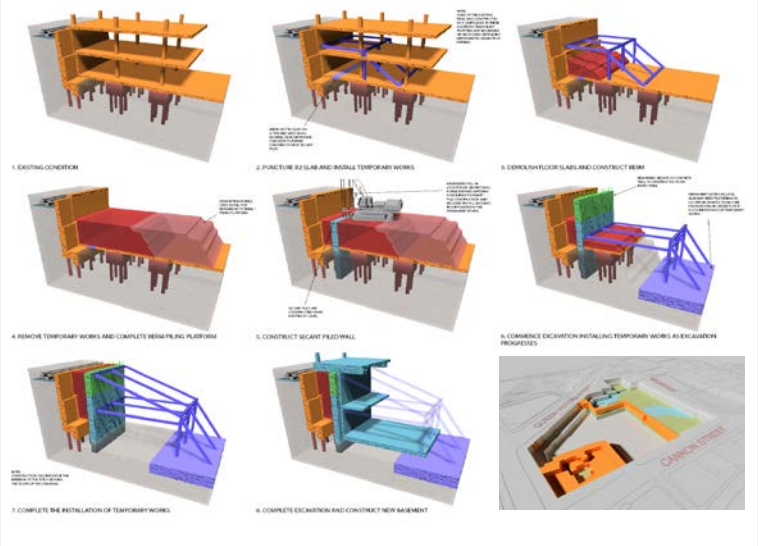
Bloomberg Place

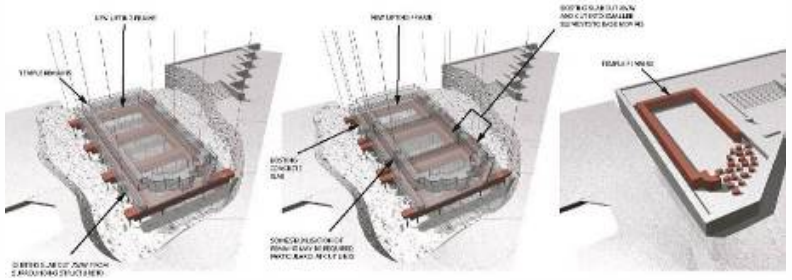
InBuilt Corporation 英建盈科 NCIJ
www.inbuiltcorp.com

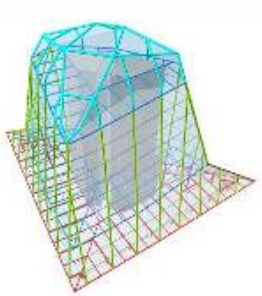
Address
London, UK

Gross Floor Area
62,000 sq.m.

Features
| Archaeological remains under the site need to be preserved or relocated
| Application of BIM system to generate excavation options, to simulate the reconstruction sequence of retaining wall systems
| Complex structural shapes is simulated in BIM
| This project is a personal experience of InBuilt's key founder

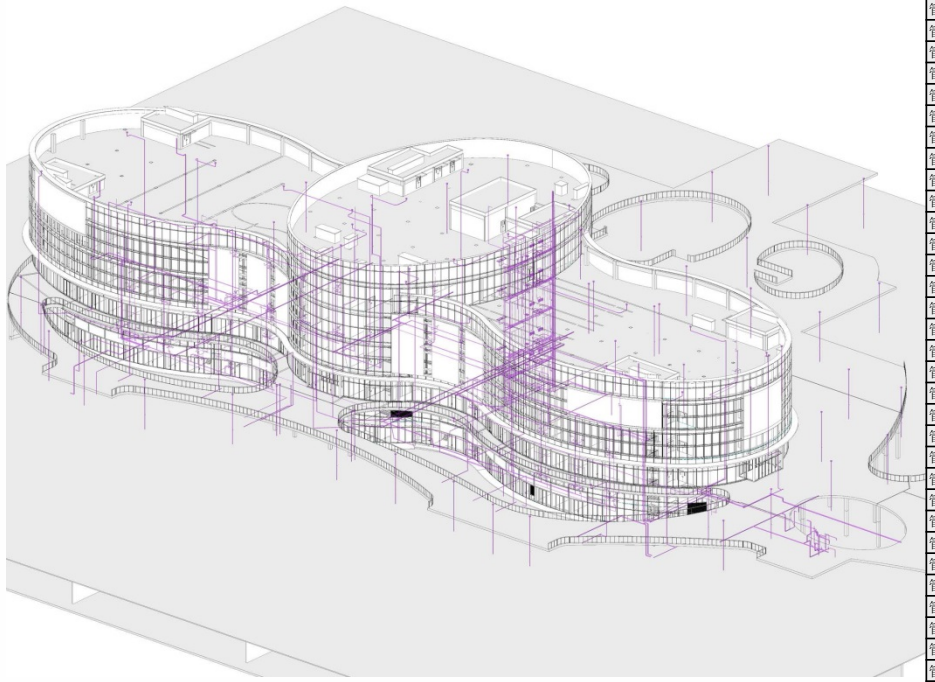






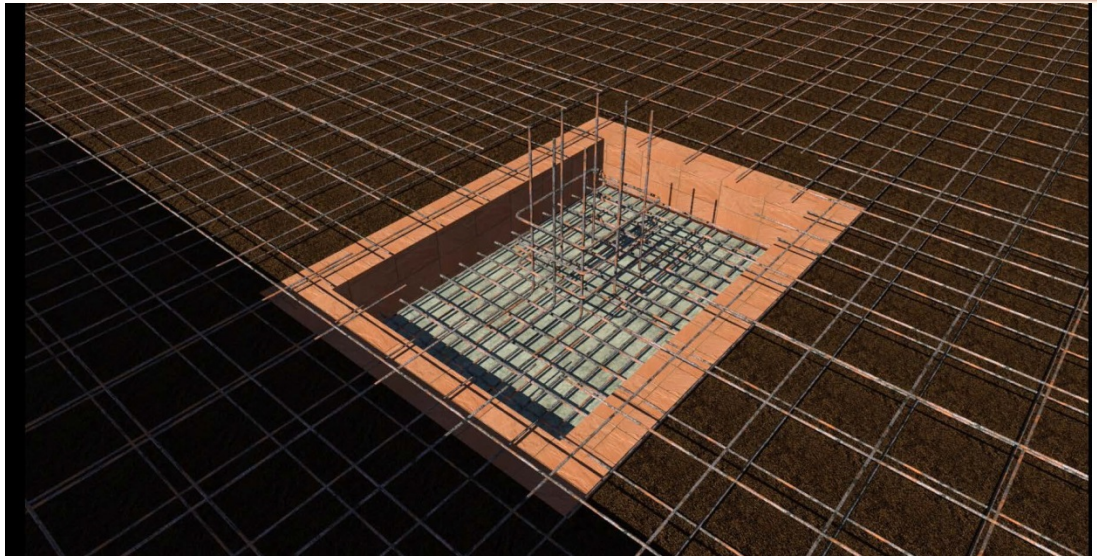
Site Planning & Constructability

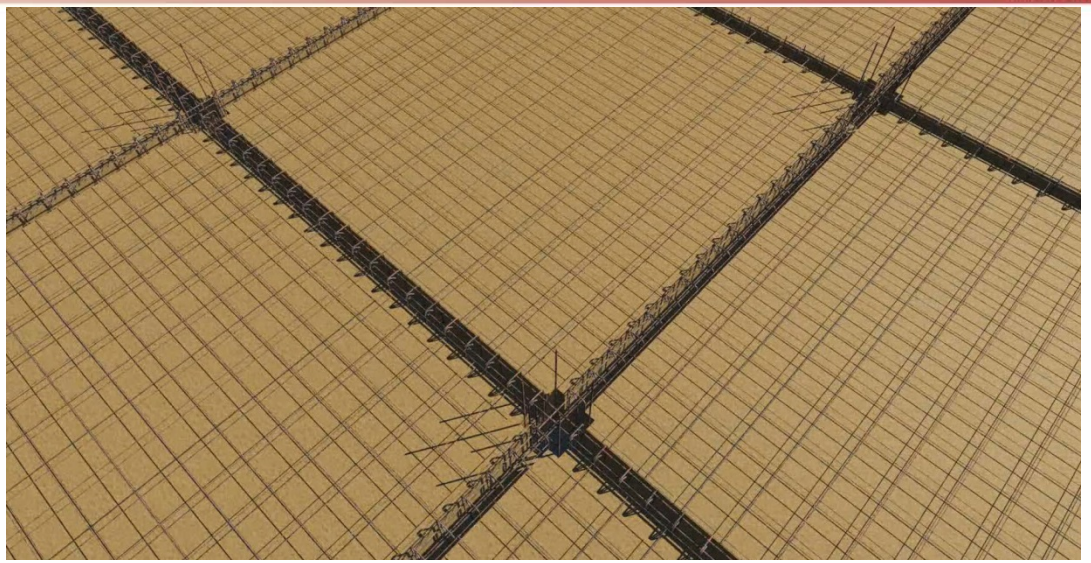
Cost Control with BIM

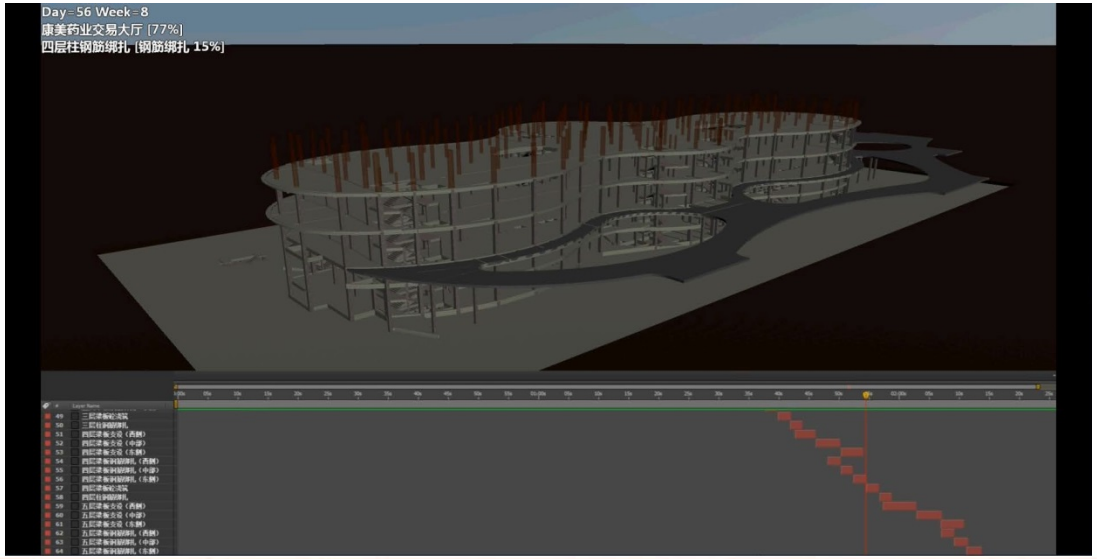


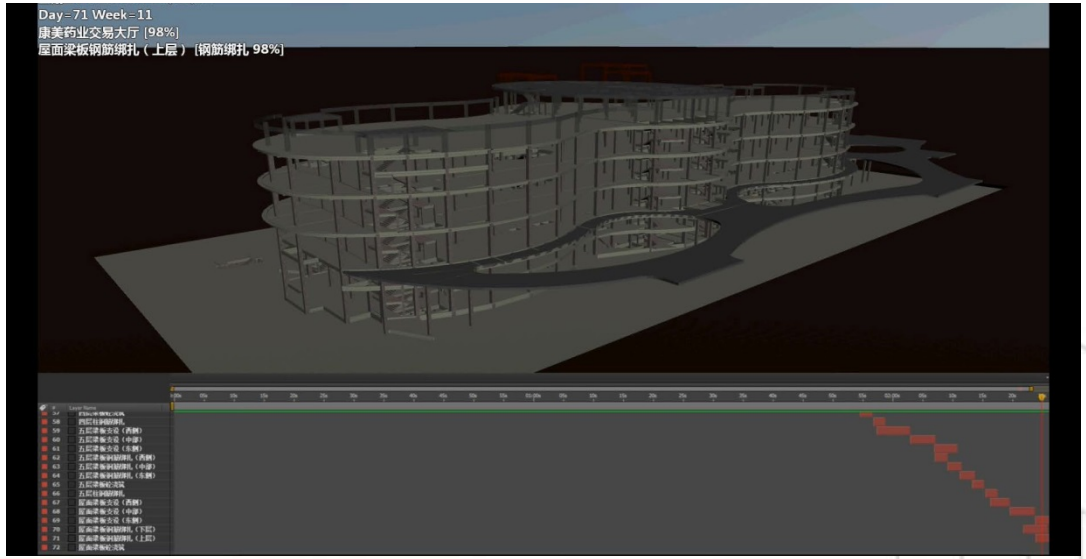
给排水									
[族与类型]	[系统分类]	[尺寸]	[内径]	[外径]	[总体大小]	[规格/类型]	[相对粗糙度]	[材质]	[合计]
管道类型: ACID HVAC_冷水供水管	循环供水	20 mm	20 mm	22 mm	20 mm	CECS 171 - 1.0 MPa	2020	铜	1
管道类型: ACID HVAC_冷水供水管	循环供水	25 mm	26 mm	28 mm	25 mm	CECS 171 - 1.0 MPa	2620	铜	1
管道类型: ACID HVAC_冷水供水管	循环供水	40 mm	40 mm	42 mm	40 mm	CECS 171 - 1.0 MPa	3960	铜	10
管道类型: ACID HVAC_冷水供水管	循环供水	80 mm	82 mm	85 mm	80 mm	CECS 171 - 1.0 MPa	8200	铜	5
管道类型: ACID HVAC_冷水供水管	循环供水	100 mm	105 mm	108 mm	100 mm	CECS 171 - 1.0 MPa	10500	铜	33
管道类型: ACID HVAC_冷水供水管	循环供水	125 mm	130 mm	133 mm	125 mm	CECS 171 - 1.0 MPa	13000	铜	45
管道类型: ACID HVAC_冷水供水管	循环供水	150 mm	155 mm	159 mm	150 mm	CECS 171 - 1.0 MPa	15500	铜	11
管道类型: ACID HVAC_冷水供水管	循环供水	200 mm	211 mm	219 mm	200 mm	CECS 171 - 1.0 MPa	21100	铜	2
管道类型: ACID HVAC_冷热水供水管	循环供水	125 mm	130 mm	133 mm	125 mm	CECS 171 - 1.0 MPa	13000	铜	15
管道类型: ACID HVAC_冷热水供水管	循环供水	150 mm	155 mm	159 mm	150 mm	CECS 171 - 1.0 MPa	15500	铜	2
管道类型: ACID HVAC_冷热水供水管	循环供水	200 mm	211 mm	219 mm	200 mm	CECS 171 - 1.0 MPa	21100	铜	28
管道类型: ACID HVAC_冷热水供水管	循环供水	250 mm	259 mm	267 mm	250 mm	CECS 171 - 1.0 MPa	25900	铜	16
管道类型: ACID HVAC_冷热水供水管	循环供水	300 mm	315 mm	325 mm	300 mm	CECS 171 - 1.0 MPa	31500	铜	25
管道类型: ACID HVAC_冷热水回水管	循环供水	200 mm	211 mm	219 mm	200 mm	CECS 171 - 1.0 MPa	21100	铜	6
管道类型: ACID_FSD_喷淋	循环供水	25 mm	26 mm	28 mm	25 mm	CECS 171 - 1.0 MPa	2620	铜	6
管道类型: ACID_FSD_消防	循环供水	65 mm	68 mm	86 mm	65 mm	22	136.6	铁，铸铁	12
管道类型: ACID_FSD_消防	循环供水	100 mm	104 mm	122 mm	100 mm	22	208.28	铁，铸铁	15
管道类型: ACID_FSD_消防	循环供水	100 mm	105 mm	108 mm	100 mm	CECS 171 - 1.0 MPa	10500	铜	2
管道类型: ACID_FSD_消防	循环供水	150 mm	156 mm	175 mm	150 mm	22	311.912	铁，铸铁	13
管道类型: ACID_HP_采暖供水	循环供水	40 mm	40 mm	42 mm	40 mm	CECS 171 - 1.0 MPa	3960	铜	6
管道类型: ACID_PD_废水	循环供水	50 mm	53 mm	56 mm	50 mm	GB/T 5836	26500	PVC-U	28
管道类型: ACID_PD_废水	循环供水	75 mm	78 mm	82 mm	75 mm	GB/T 5836	39000	PVC-U	52
管道类型: ACID_PD_废水	循环供水	80 mm	84 mm	90 mm	80 mm	GB/T 5836	42000	PVC-U	3
管道类型: ACID_PD_废水	循环供水	100 mm	104 mm	110 mm	100 mm	GB/T 5836	51800	PVC-U	13
管道类型: ACID_PD_排水	循环供水	25 mm	28 mm	32 mm	25 mm	GB/T 5836	14000	PVC-U	1
管道类型: ACID_PD_排水	循环供水	50 mm	53 mm	56 mm	50 mm	GB/T 5836	26500	PVC-U	120
管道类型: ACID_PD_排水	循环供水	75 mm	78 mm	82 mm	75 mm	GB/T 5836	39000	PVC-U	173
管道类型: ACID_PD_排水	循环供水	100 mm	0 mm	0 mm	100 mm	GB/T 5836	0	PVC-U	1
管道类型: ACID_PD_排水	循环供水	100 mm	104 mm	110 mm	100 mm	GB/T 5836	51800	PVC-U	604
管道类型: ACID_PD_排水	循环供水	150 mm	152 mm	160 mm	150 mm	GB/T 5836	76000	PVC-U	59
管道类型: ACID_PD_排水	循环供水	200 mm	190 mm	200 mm	200 mm	GB/T 5836	95100	PVC-U	9
管道类型: ACID_PD_空调补水	循环供水	15 mm	14 mm	15 mm	15 mm	CECS 171 - 1.0 MPa	1360	铜	5
管道类型: ACID_PD_空调补水	循环供水	20 mm	20 mm	22 mm	20 mm	CECS 171 - 1.0 MPa	2020	铜	13
管道类型: ACID_PD_空调补水	循环供水	32 mm	33 mm	35 mm	32 mm	CECS 171 - 1.0 MPa	3260	铜	59
管道类型: ACID_PD_空调补水	循环供水	50 mm	52 mm	54 mm	50 mm	CECS 171 - 1.0 MPa	5160	铜	2
管道类型: ACID_PD_空调补水	循环供水	65 mm	65 mm	67 mm	65 mm	CECS 171 - 1.0 MPa	6460	铜	6
管道类型: ACID_PD_空调补水	循环供水	80 mm	82 mm	85 mm	80 mm	CECS 171 - 1.0 MPa	8200	铜	35
管道类型: ACID_PD_空调补水	循环供水	100 mm	105 mm	108 mm	100 mm	CECS 171 - 1.0 MPa	10500	铜	3
管道类型: ACID_PD_给水	循环供水	10 mm	11 mm	12 mm	10 mm	CECS 171 - 1.0 MPa	1080	铜	81
管道类型: ACID_PD_给水	循环供水	15 mm	14 mm	15 mm	15 mm	CECS 171 - 1.0 MPa	1360	铜	473
管道类型: ACID_PD_给水	循环供水	20 mm	20 mm	22 mm	20 mm	CECS 171 - 1.0 MPa	2020	铜	401
管道类型: ACID_PD_给水	循环供水	25 mm	26 mm	28 mm	25 mm	CECS 171 - 1.0 MPa	2620	铜	266
管道类型: ACID_PD_给水	循环供水	32 mm	33 mm	35 mm	32 mm	CECS 171 - 1.0 MPa	3260	铜	144
管道类型: ACID_PD_给水	循环供水	40 mm	40 mm	42 mm	40 mm	CECS 171 - 1.0 MPa	3960	铜	12
管道类型: ACID_PD_给水	循环供水	50 mm	52 mm	54 mm	50 mm	CECS 171 - 1.0 MPa	5160	铜	89
管道类型: ACID_PD_给水	循环供水	65 mm	65 mm	67 mm	65 mm	CECS 171 - 1.0 MPa	6460	铜	7
管道类型: ACID_PD_给水	循环供水	80 mm	82 mm	85 mm	80 mm	CECS 171 - 1.0 MPa	8200	铜	12
管道类型: ACID_PD_给水	循环供水	100 mm	105 mm	108 mm	100 mm	CECS 171 - 1.0 MPa	10500	铜	16
管道类型: ACID_PD_给水	循环供水	150 mm	155 mm	159 mm	150 mm	CECS 171 - 1.0 MPa	15500	铜	19
管道类型: ACID_PD_通气	循环供水	100 mm	105 mm	108 mm	100 mm	CECS 171 - 1.0 MPa	10500	铜	56
管道类型: ACID_PD_通气	循环供水	150 mm	155 mm	159 mm	150 mm	CECS 171 - 1.0 MPa	15500	铜	19
总计: 3035									

Cost Control with BIM

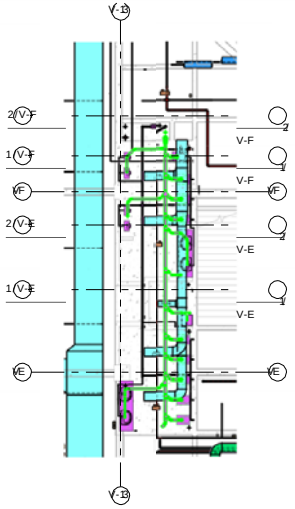




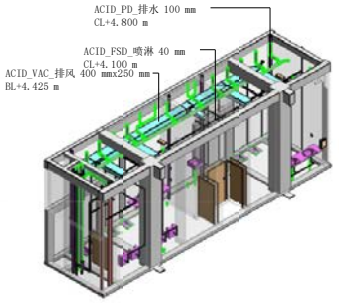




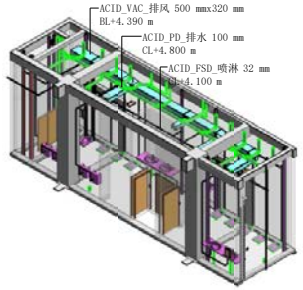
On Site Supervision with BIM



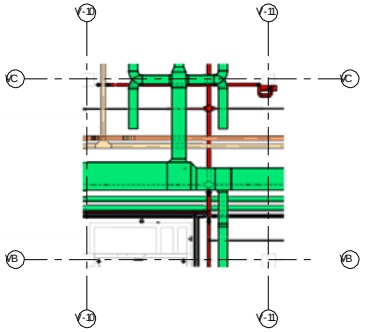
5 3F 卫生间
1 : 100



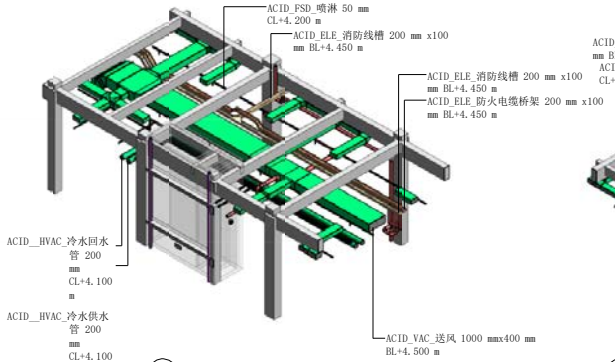
2 F3-卫生间1



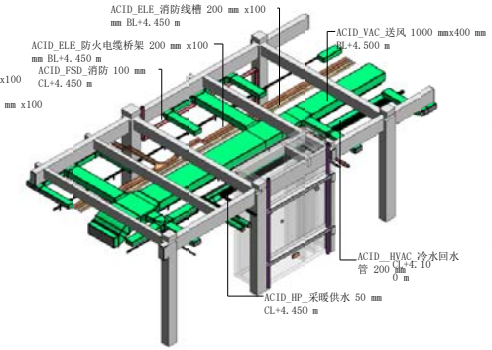
4 F3-卫生间2



7 3F 1-1
1 : 100

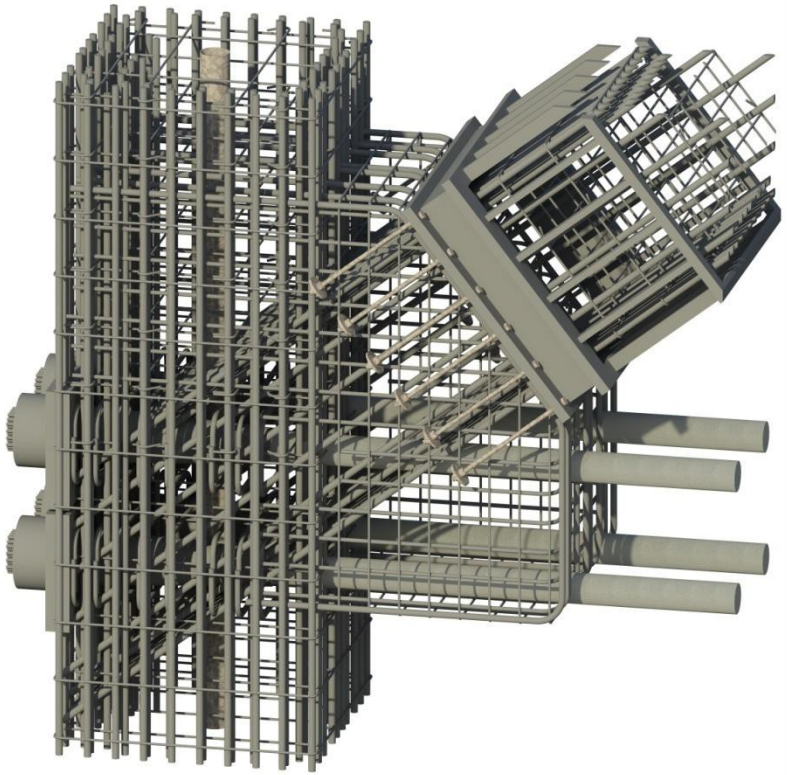


3 F3-1/1

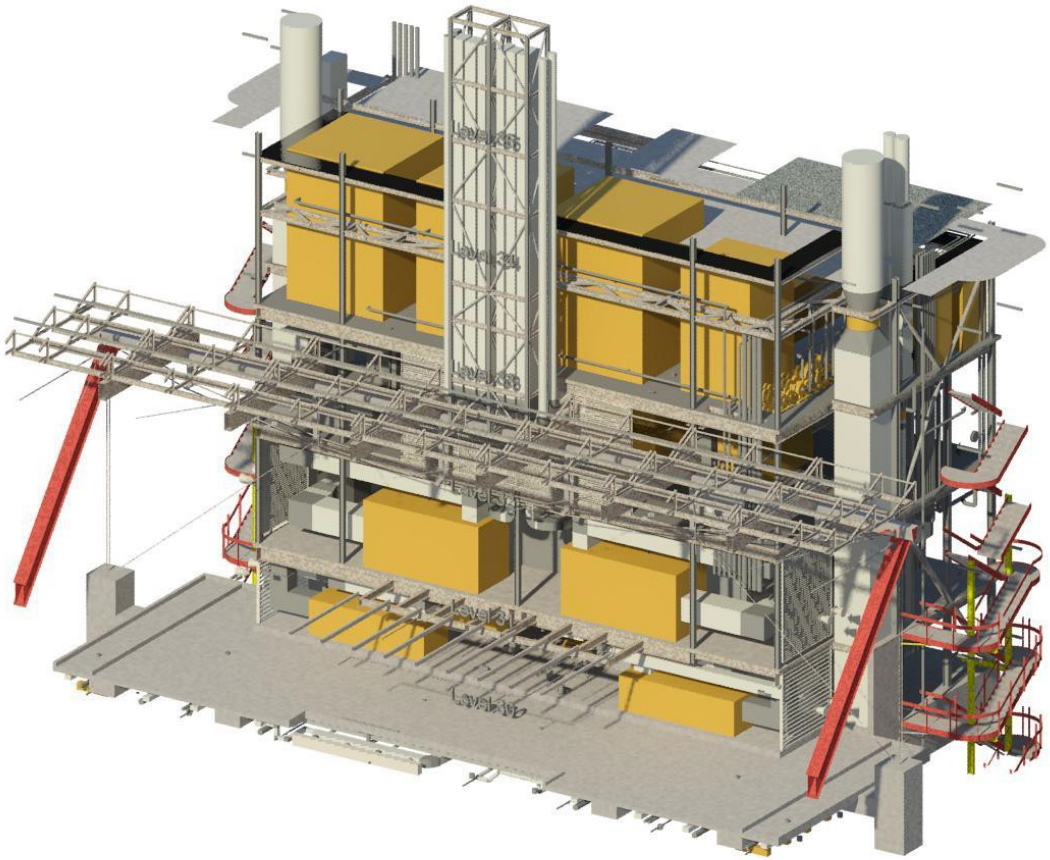


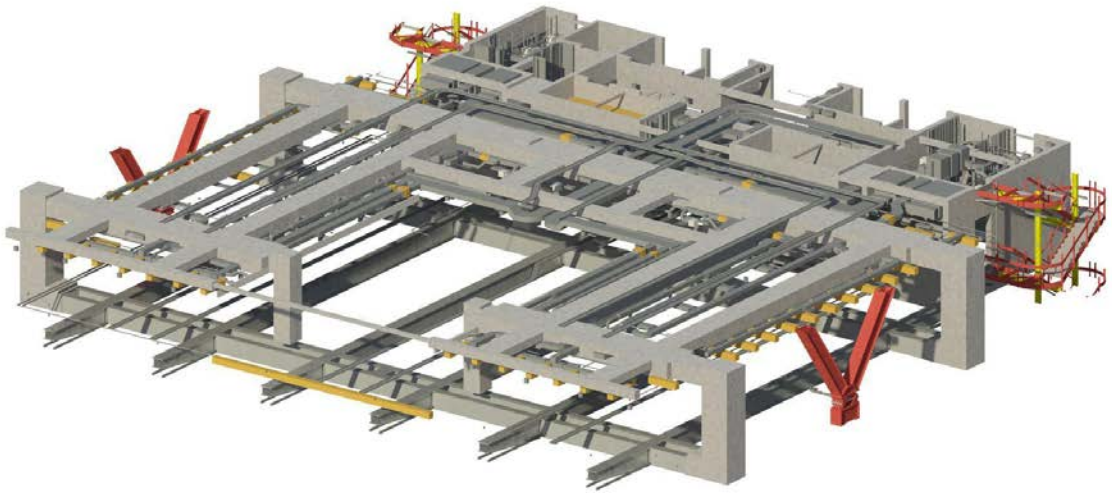
1 F3-1/2

On Site Structural Coordination

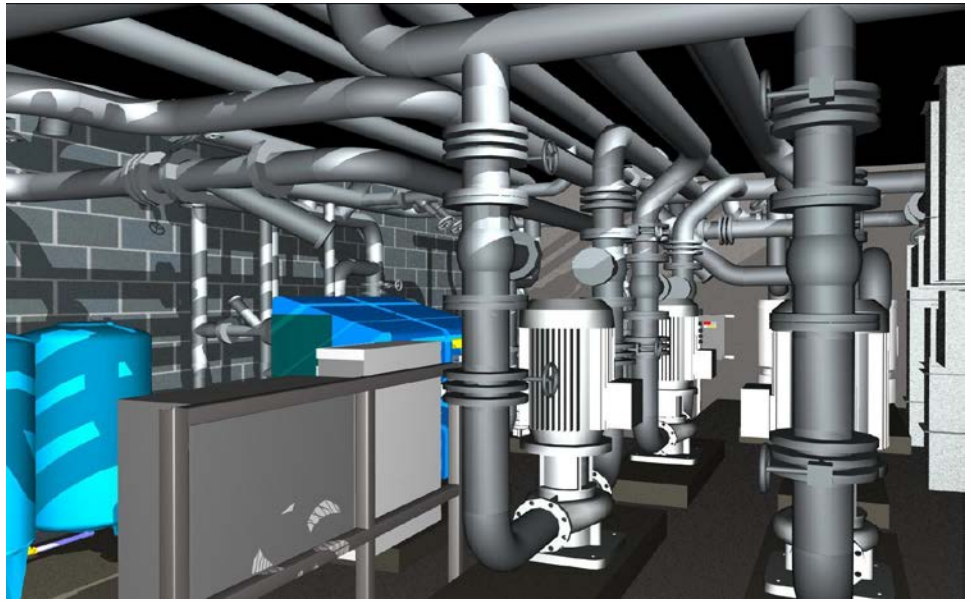


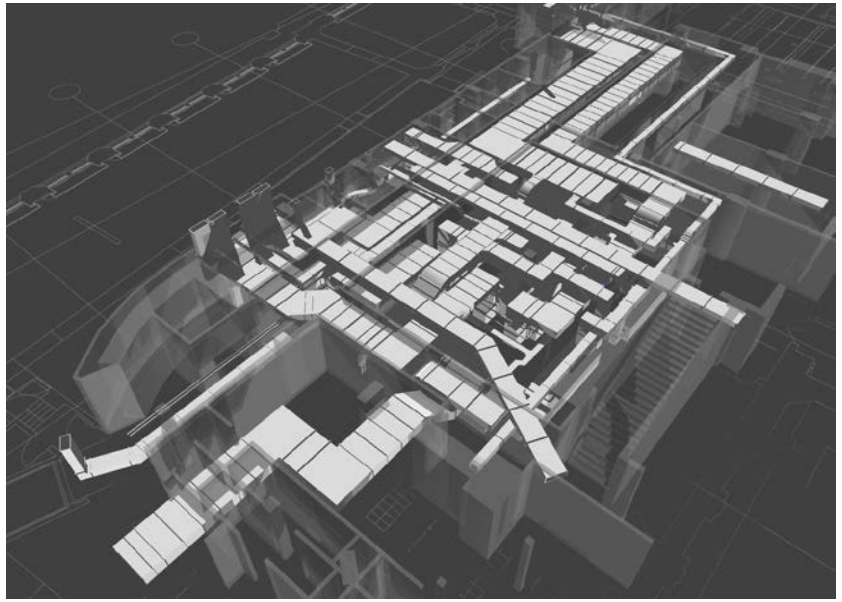
On Site Structural Coordination

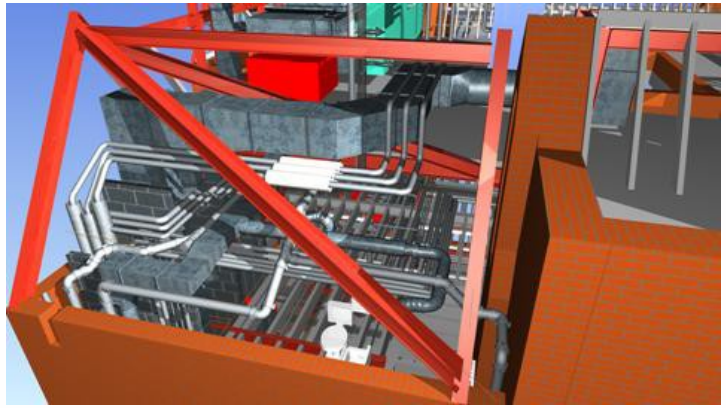




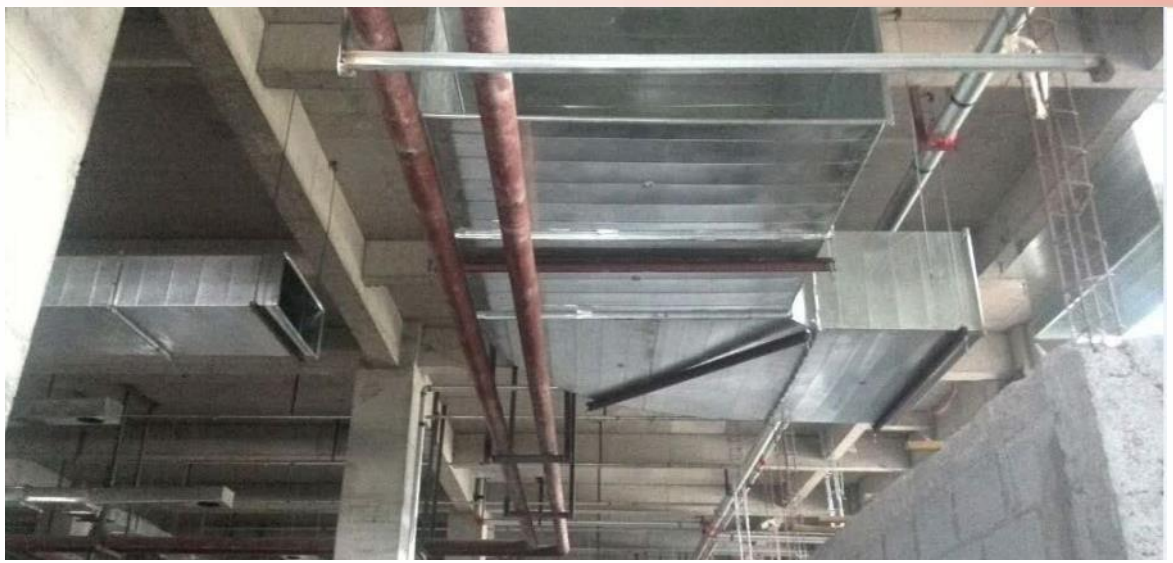
On Site E&M Coordination

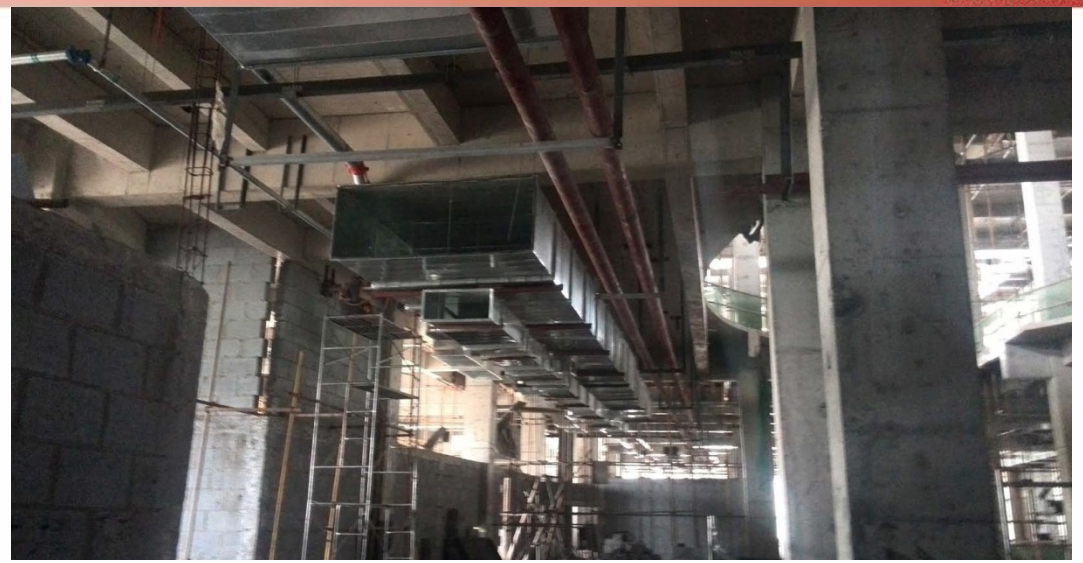


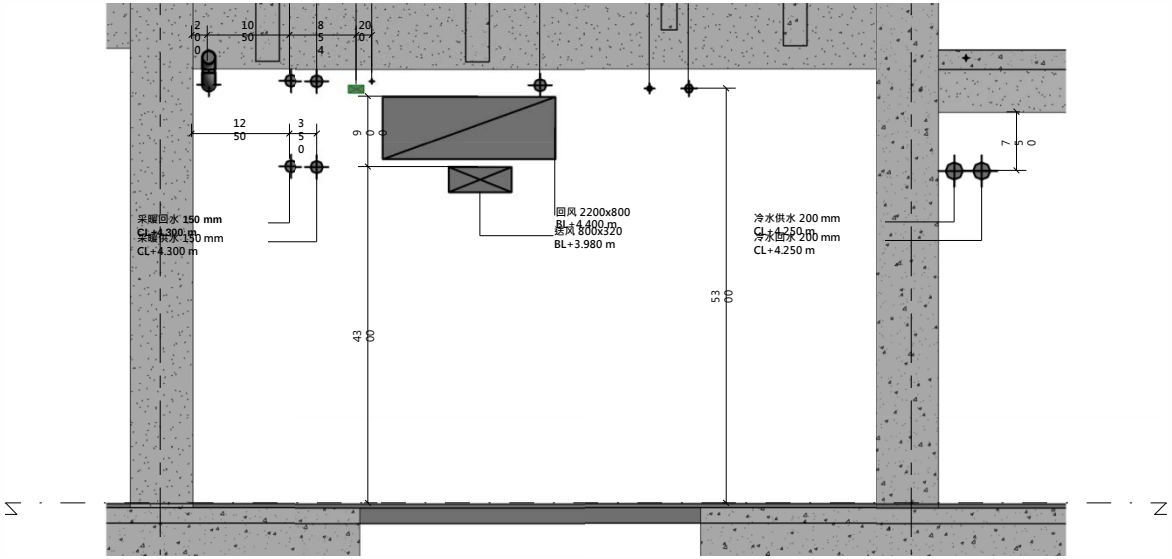


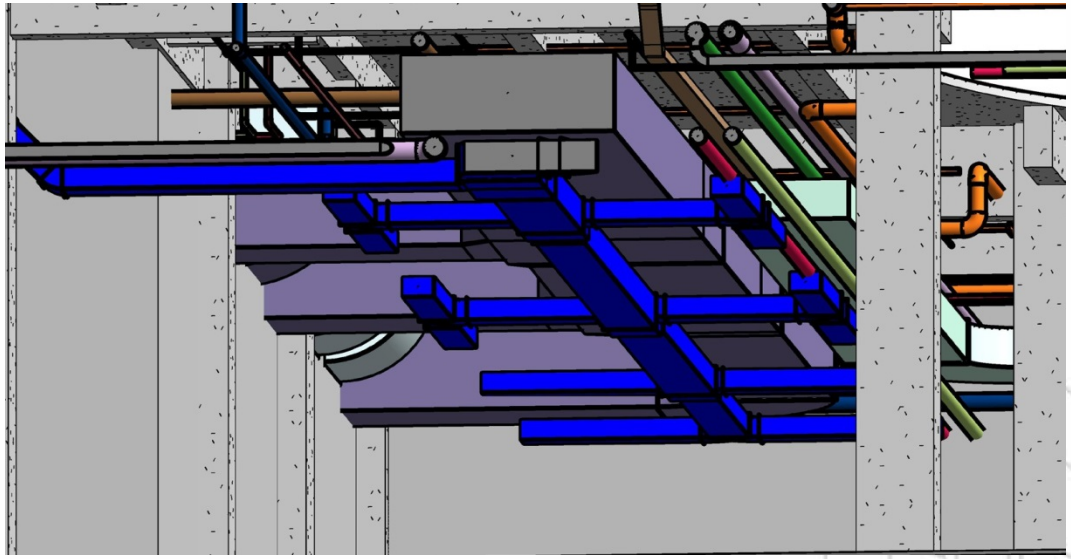


基于 BIM 技术的施工现场协调指导

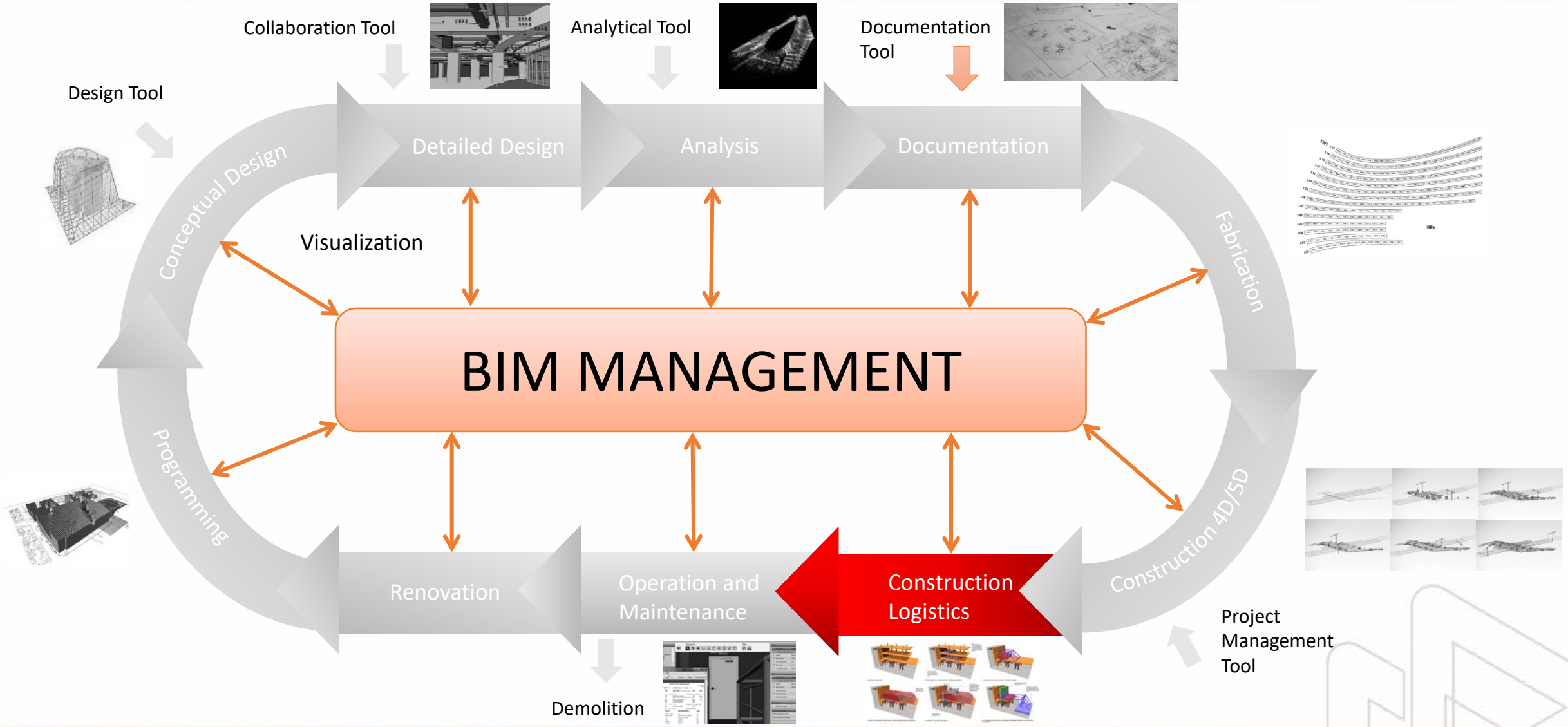




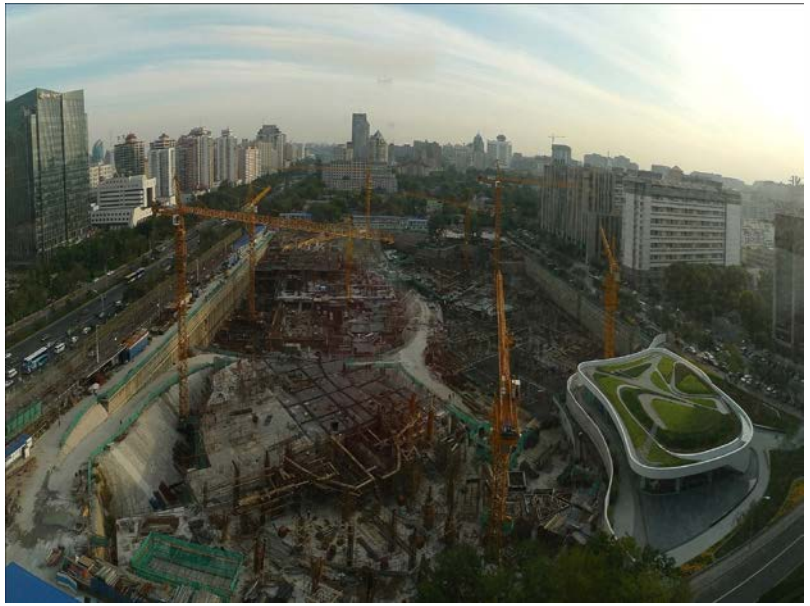




Role and Involvement

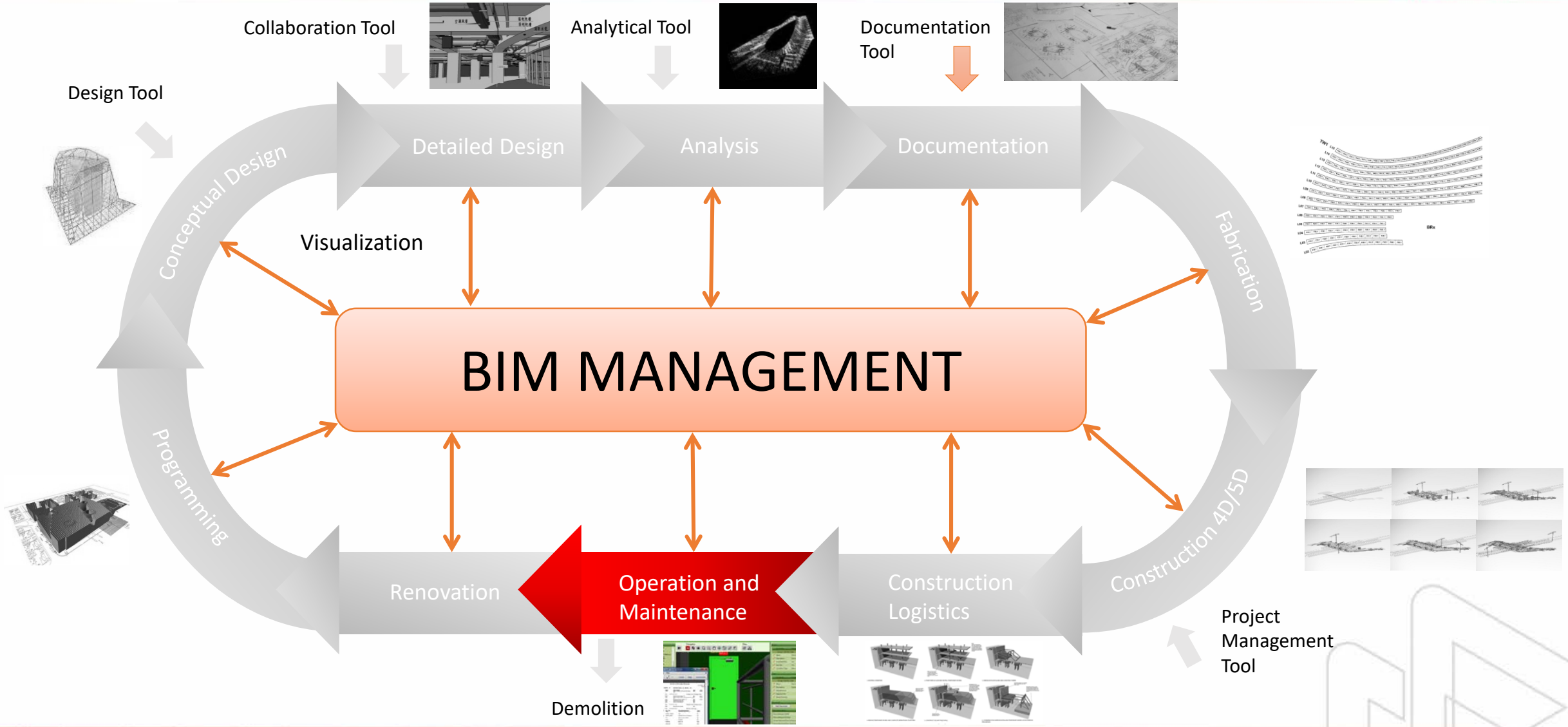


Site Management (Galaxy SOHO)

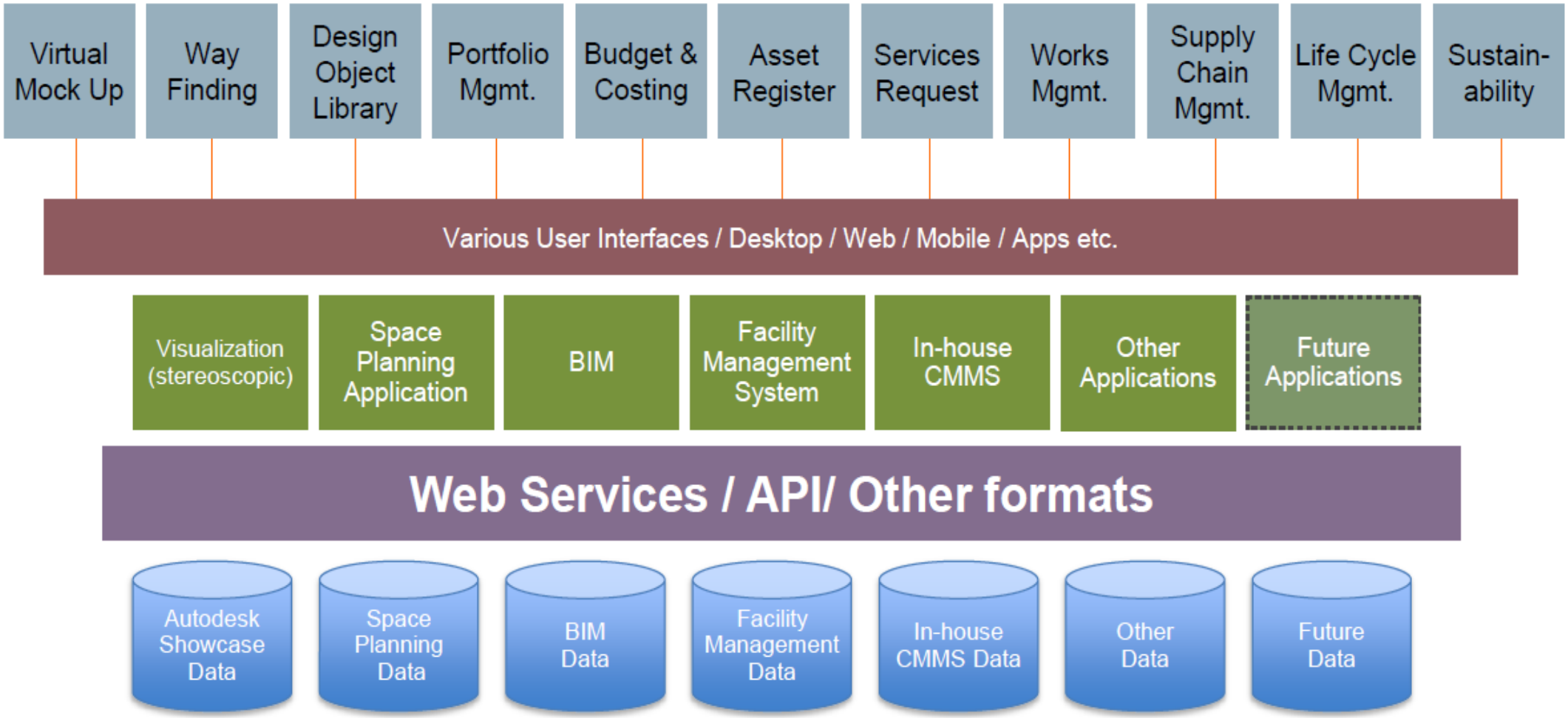


Site Management (Tianjin CTF Finance Centre)

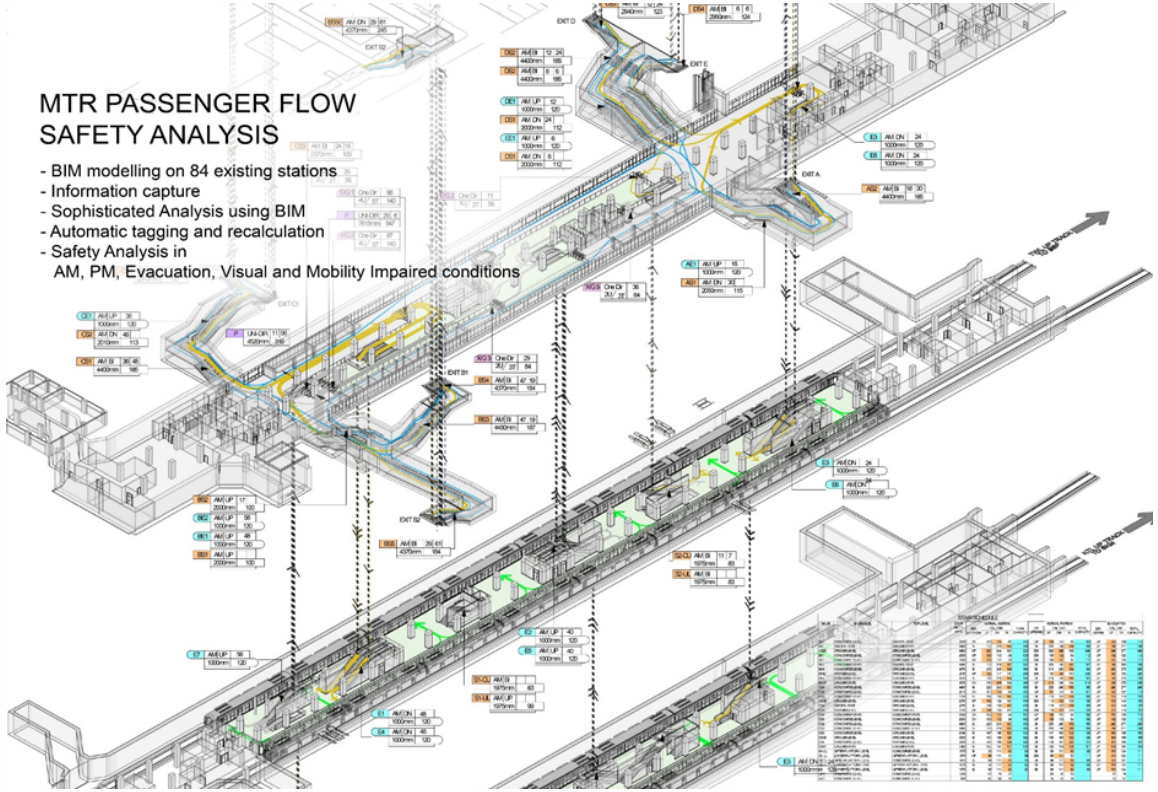
Role and Involvement

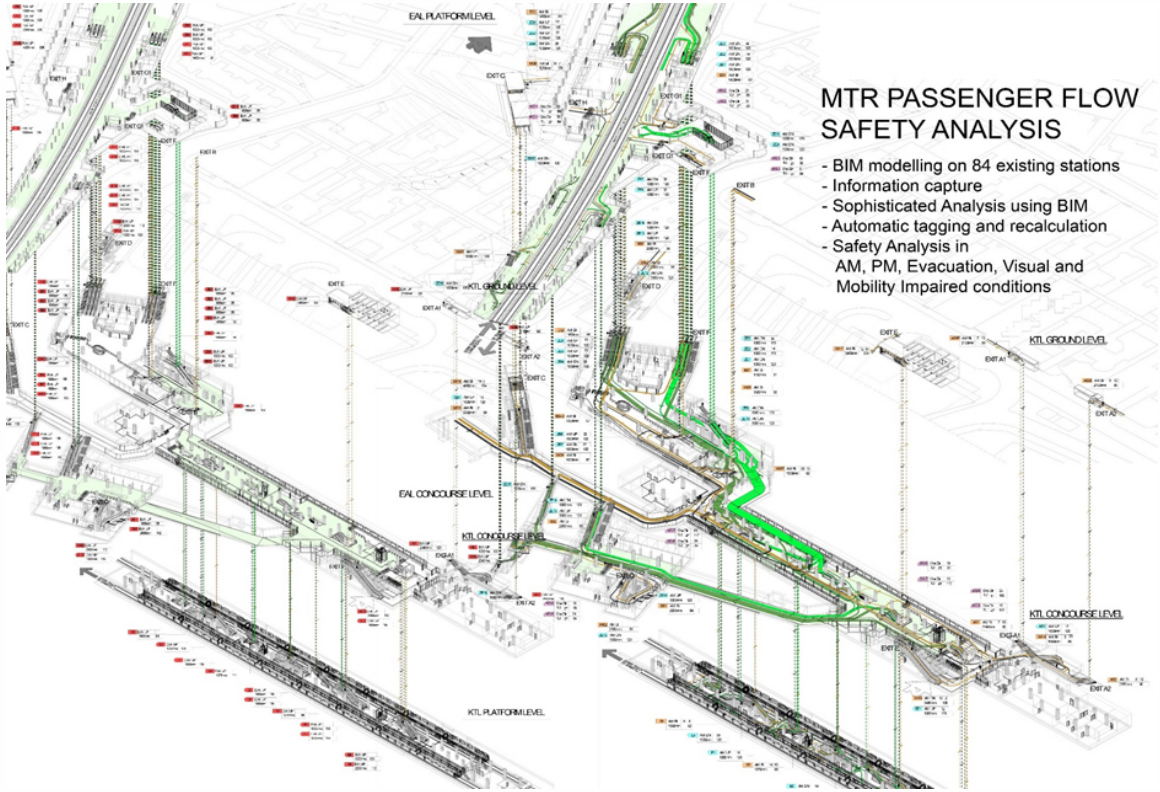


Facility Operational Management Data Flow

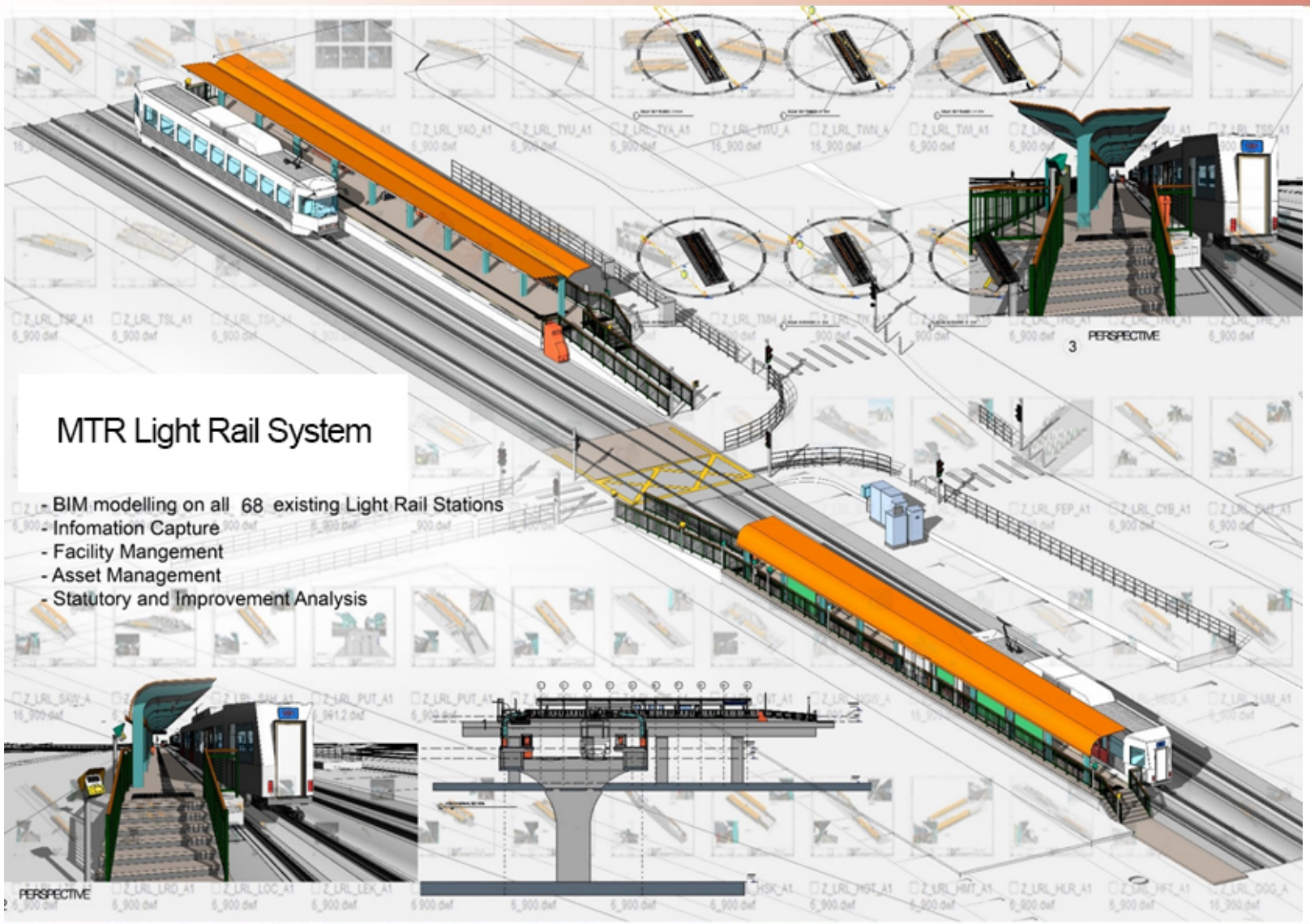


MTR Station Passenger Flow Safety Analysis

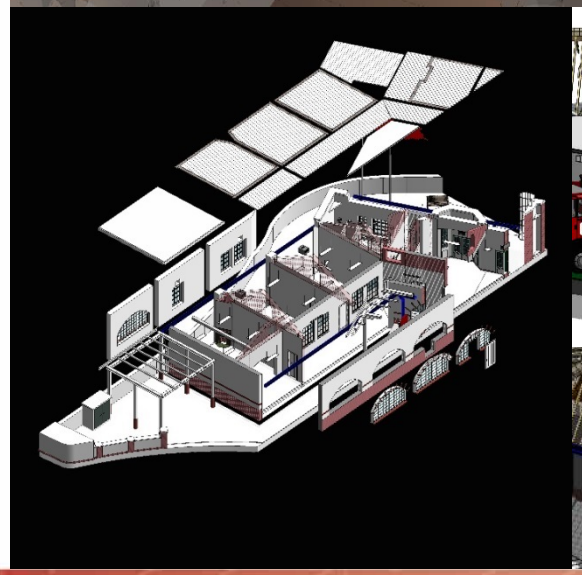


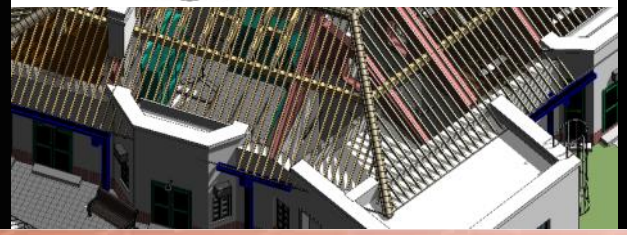


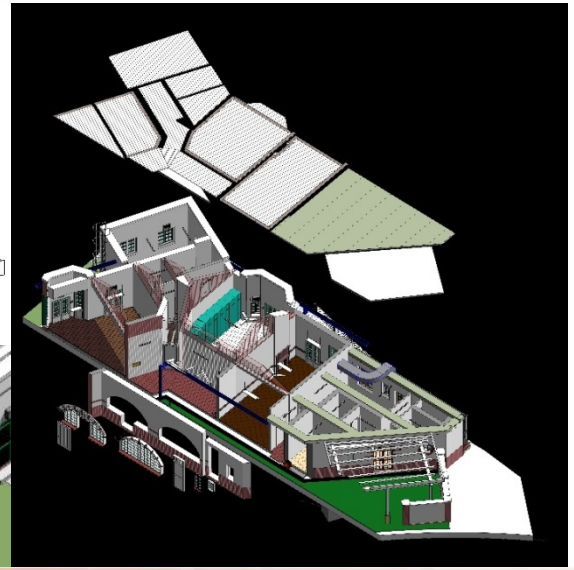
AM / FM (MTR Light Rail System)



Asset Management / Facility Management
ASD Heritage Consultancy – Victoria Peak Fire Station





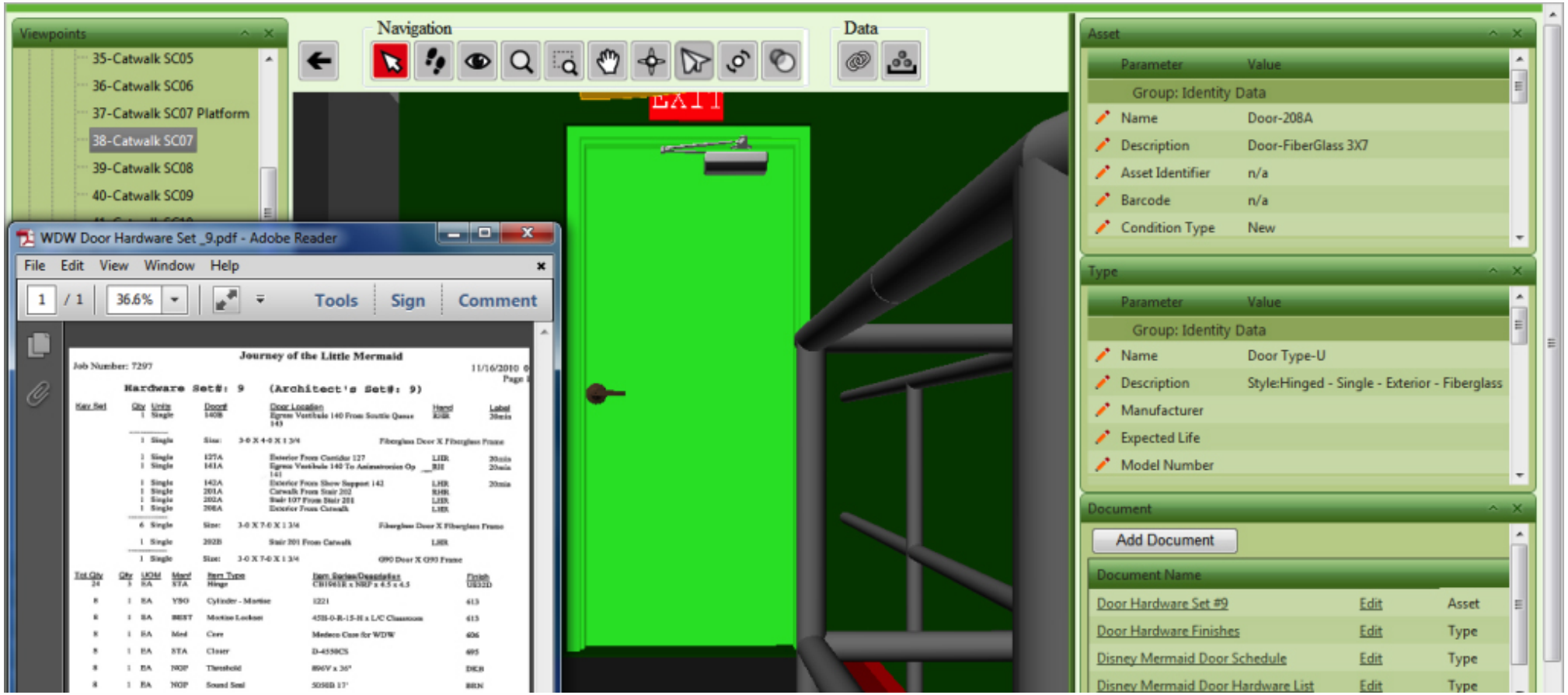


Asset Management / Facility Management
ASD Heritage Consultancy – Victoria Peak Fire Station

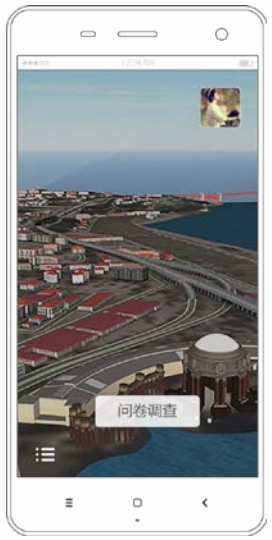
RENDERING | BIM MODEL | POINT CLOUD | REALITY

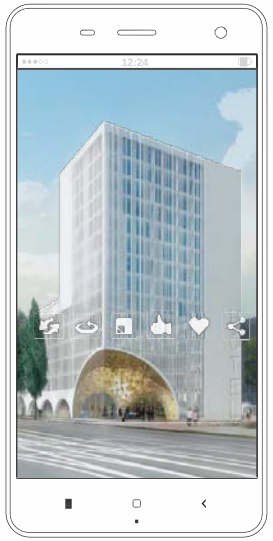
Point Cloud | BIM Process | Visualization

EMSD Management Project



Mobile Applications





Value Driven BIM

1. **Professional Team**

2. **Life-cycle BIM Value**

3. **Full BIM Management Platform**

Value Driven BIM

1. **Professional Team**

2. **Life-cycle BIM Value**

3. **Full BIM Management Platform**