

BIM及相关信息技术支持工 程全过程咨询

BIM and Related Information Technology Supporting Whole Process
Engineering Consulting



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广州优比建筑咨询有限公司
Guangzhou uBIM Technology
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广州优比建筑咨询有限公司 成立于2010年，在其核心管理团队从2003年开始的BIM研究和应用领域深入耕耘与长期积累基础上，依托广州珠江实业集团有限公司及其全资子公司广州珠江外资建筑设计院平台实现跨越式发展，为城市建设和管理领域提供高水平的BIM战略咨询、BIM项目咨询、境外与BIM Level 2项目咨询、BIM软件研发、企业BIM应用决策、企业BIM生产力建设培训、BIM可视化体验等专业服务。

uBIM Technology was founded in 2010, is a leading BIM technology and industry consultant in China. We specialize in understanding our customers and helping them integrate BIM and digital technologies within their projects, organizations, and cities.

We offer consulting services including BIM implementation, training, BIM content creation, BIM modeling and production, application development services, and configuration services.

Ubiquitous Technology is the authorized training center and Developer of Autodesk. Additionally, Ubiquitous was identified as High-Tech Enterprises by the Guangdong Provincial Department of Science and Technology Agency in 2017.

BIM与建筑行业信息化 BIM and Information Technologies



Handbook for the introduction of Building Information Modelling by the European Public Sector

EU BIM Task Group announces launch date for handbook

4th July 2017 / 0 Comments / in News / by Lauren Tomlinson

引入BIM标志着建筑业数字化时代的到来。

The introduction of Building Information Modelling (BIM) represents the construction sector's moment of digitalisation. It is undisputed that the wider use of technology, digital processes, automation and higher-skilled

onmental future.

Handbook for the Introduction of Building Information

Executive Summary

BIM是建筑业和建设环境数字化转型的核心。

Building Information Modelling (BIM) is at the centre of a digital transformation of the construction sector and the built environment.

This handbook responds to

What is 'BIM' to the public sector stakeholder?

在公共建设领域，BIM可以被认为就是“数字建造”。

For the public sector, BIM can be thought of as 'digital construction'. It is similar to the technology used in the public sector. It is similar to the technology used in the public sector. It is similar to the technology used in the public sector.

For public clients

BIM正在成为基础设施和建造领域的世界语言，预计BIM将成为全球公共基础设施项目的标准。

BIM is becoming a global language for the infrastructure and construction sector, enabling greater collaboration and movement of capabilities across borders. It is predicted that BIM will become the standard for delivering the world's public infrastructure projects. It is, for example, already being used on many of the metro schemes currently in construction around the world.

BIM与建筑行业信息化 BIM and Information Technologies

The screenshot displays the website for the Centre for Digital Built Britain. The main navigation bar includes links for Home, About Us, Building Information Modelling, Research Bridgehead, Resources, News, and Events. The current page is titled 'Building Information Modelling'. A left-hand sidebar menu lists sections: About Us, Building Information Modelling (with sub-links for UK BIM Programme, BIM Level 2C, and PwC BIM Benefits Methodology and Report), Research Bridgehead, Resources, and News. The main content area features a highlighted introductory paragraph about BIM's role in digital transformation, followed by a detailed paragraph explaining BIM as a collaborative working method that uses 3D models and a common data environment to improve efficiency and reduce risk.

BIM在英国建设环境数字化转型中位于心脏位置。

BIM的核心是整个供应链使用模型和公共数据环境（CDE）有效访问和交换信息，从而大大提高建设和运营活动的效率。

BIM技术政策 Policies of BIM

住建部《关于推进建筑信息模型应用的指导意见》（建质函 [2015] 159号）：**到2020年末**，以下新立项项目勘察设计、施工、运营维护中，集成应用BIM的项目比率达到90%：**以国有资金投资为主的大中型建筑；申报绿色建筑公共建筑和绿色生态示范小区。**

Ministry of housing and urban rural development of the people's Republic of China on promoting the application of building information model (JZH [2015] No. 159): **by the end of 2020**, the proportion of BIM integrated application projects in the survey, design, construction, operation and maintenance of the following new projects will reach 90%: **large and medium-sized buildings mainly invested by state-owned funds; public buildings and green ecological demonstration communities that apply for green buildings.**

国家发展改革委、住房城乡建设部联合印发《关于推进全过程工程咨询服务发展的指导意见》（发改投资规〔2019〕515号）：**大力开发和利用建筑信息模型（BIM）、大数据、物联网等现代信息技术和资源，努力提高信息化管理水平，为开展全过程工程咨询业务提供保障。**

The national development and Reform Commission and the Ministry of housing and urban rural development jointly issued the guiding opinions on promoting the development of the whole process engineering consulting service (fgzg [2019] No. 515): **vigorously develop and utilize modern information technology and resources such as building information model (BIM), big data, Internet of things, and strive to improve the level of information management and application, so as to improve the level of information management and application, and provide reference for the whole process engineering consulting business for protection.**

《2016-2020年建筑业信息化发展纲要》建质函 [2016] 183号：全面提高建筑业信息化水平，**着力增强BIM、大数据、智能化、移动通讯、云计算、物联网等信息技术集成应用能力，建筑业数字化、网络化、智能化取得突破性进展。大力推进BIM、GIS等技术在综合管廊、海绵城市、城市轨道交通工程、“一带一路”重点工程中应用。**

"2016-2020 construction industry informatization development outline" JZH [2016] No. 183: comprehensively improve the informatization level of the construction industry, focus on enhancing the information technology integration and **application capabilities of BIM**, big data, intelligence, mobile communication, cloud computing, Internet of things, etc., and make breakthroughs in the digitalization, networking and intellectualization of the construction industry. City's city and rail transit one belt, one road and other key projects will be vigorously **promoted by BIM and GIS technologies.**

全过程工程咨询服务中如何定位BIM

BIM ' Position in Consulting Services



中华人民共和国住房和城乡建设部
Ministry of Housing and Urban-Rural Development of the People's Republic of China (MOHURD)
www.mohurd.gov.cn

2020年7月26日 星期日

您现在的位置: 首页 > 政策发布

索引号: 000013338/2019-00076
主题信息: 建筑市场
发文单位: 中华人民共和国国家发展和改革委员会 中华人民共和国住房和城乡建设部
生成日期: 2019年03月15日
文件名称: 国家发展改革委 住房城乡建设部关于推进全过程工程咨询服务发展的指导意见
有效期:
文号: 发改投资规〔2019〕515号
主题词:
废改立情况:

国家发展改革委 住房城乡建设部关于推进全过程工程咨询服务发展的指导意见

the guiding opinions on promoting the development of the whole process engineering consulting service

各省、自治区、直辖市及计划单列市、新疆生产建设兵团发展改革委, 各省、自治区住房和城乡建设厅、直辖市住房和城乡建设(管)委、北京市规划和自然资源委、新疆生产建设兵团住房和城乡建设局:

为深化投融资体制改革, 提升固定资产投资决策科学化水平, 进一步完善工程建设组织模式, 提高投资效益、工程建设质量和运营效率, 根据中央城市工作会议精神及《中共中央 国务院关于深化投融资体制改革的意见》(中发〔2016〕18号)、《国务院办公厅关于促进建筑业持续健康发展的意见》(国办发〔2017〕19号)等要求, 现就房屋建筑和市政基础设施领域推进全过程工程咨询服务发展提出如下意见。

(三) 建立全过程工程咨询服务管理体系。咨询单位要建立自身的服务技术标准、管理标准, 不断完善质量管理体系、职业健康安全和环境管理体系, 通过积累咨询服务实践经验, 建立具有自身特色的全过程工程咨询服务管理体系及标准。大力开发和利用建筑信息模型(BIM)、大数据、物联网等现代信息技术和资源, 努力提高信息化管理与应用水平, 为开展全过程工程咨询业务提供保障。

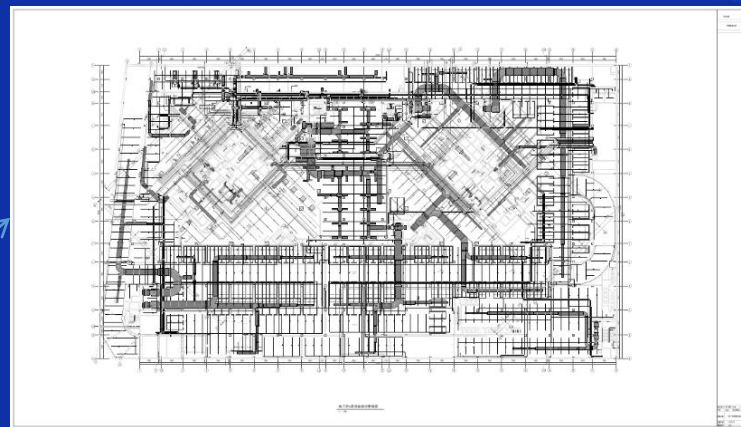
Develop and utilize modern information technology and resources such as building information model (BIM), big data, Internet of things, and strive to improve the level of information management and application, so as to improve the level of information management and application, and provide reference for the whole process engineering consulting business for supporting functions.

BIM对建筑行业生产方式影响

BIM and Construction Production



从业人员
Roles



图形 CAD



模型 Models



工程任务
Construction Tasks

BIM不是少数专人的事,
BIM是所有从业人员的事
BIM is related with
everyone

BIM对建筑行业交付方式影响

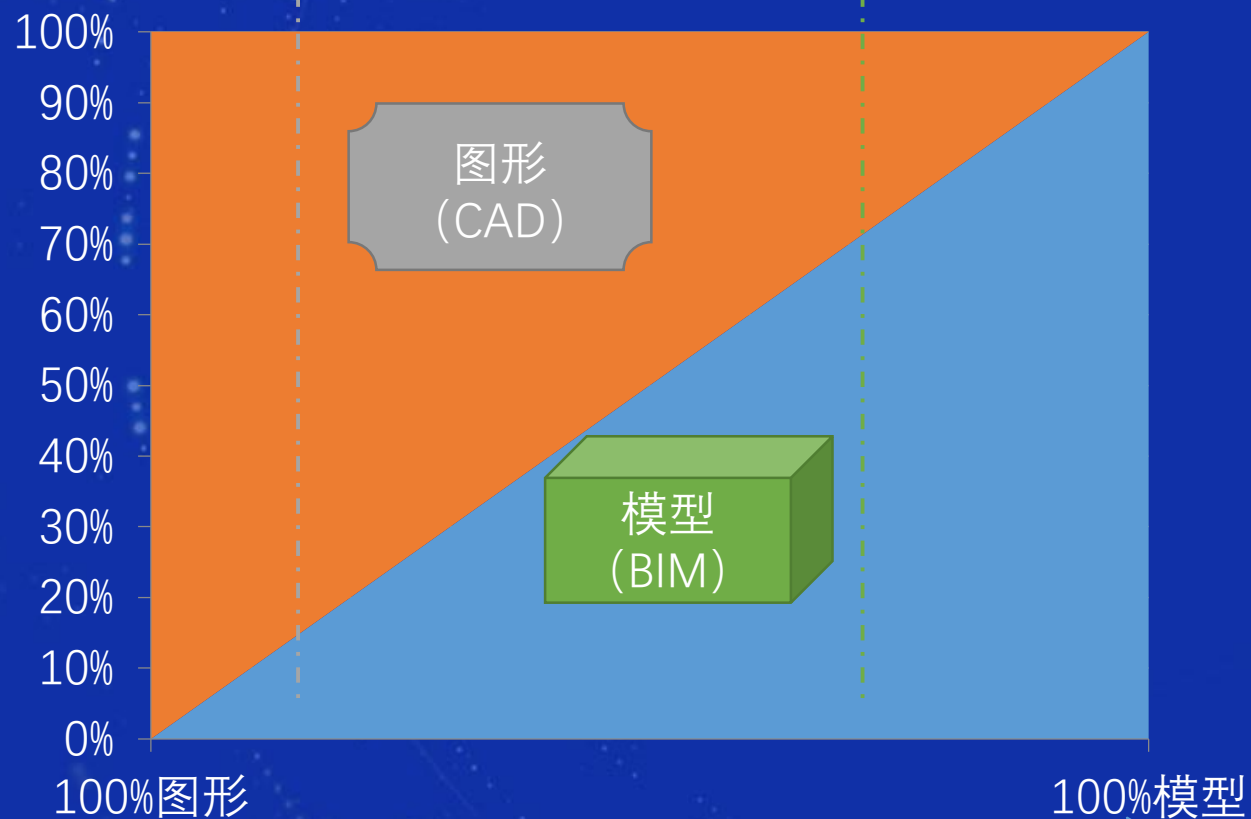
BIM and Construction Deliveries

BIM起始位置

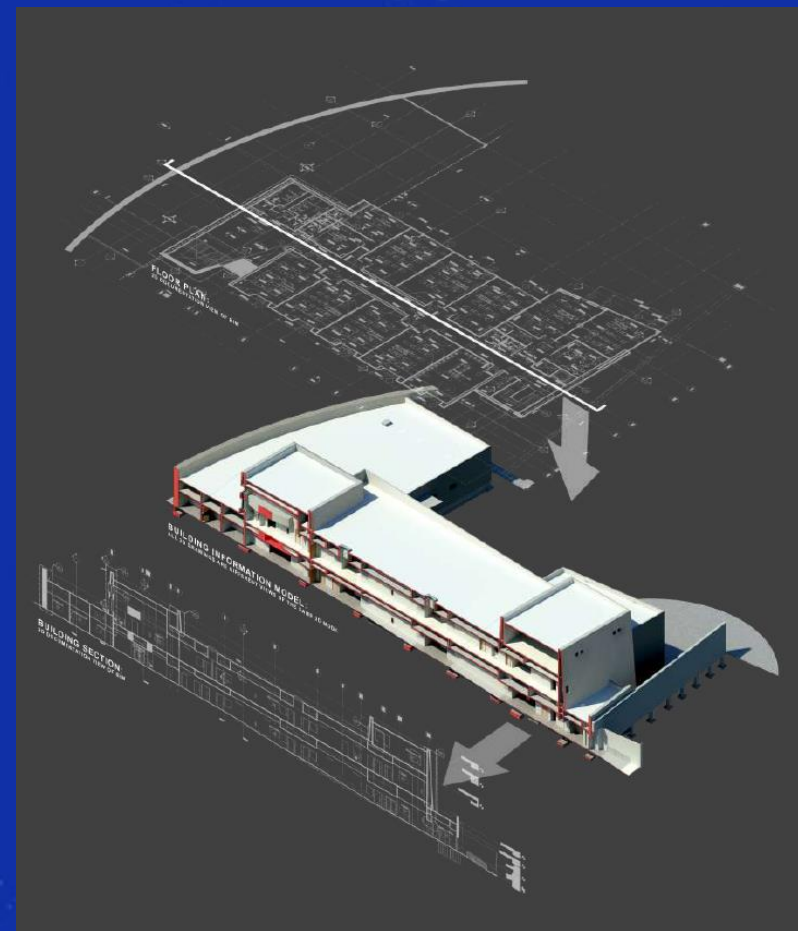
Starting Position of BIM

BIM终极位置

End Position of BIM

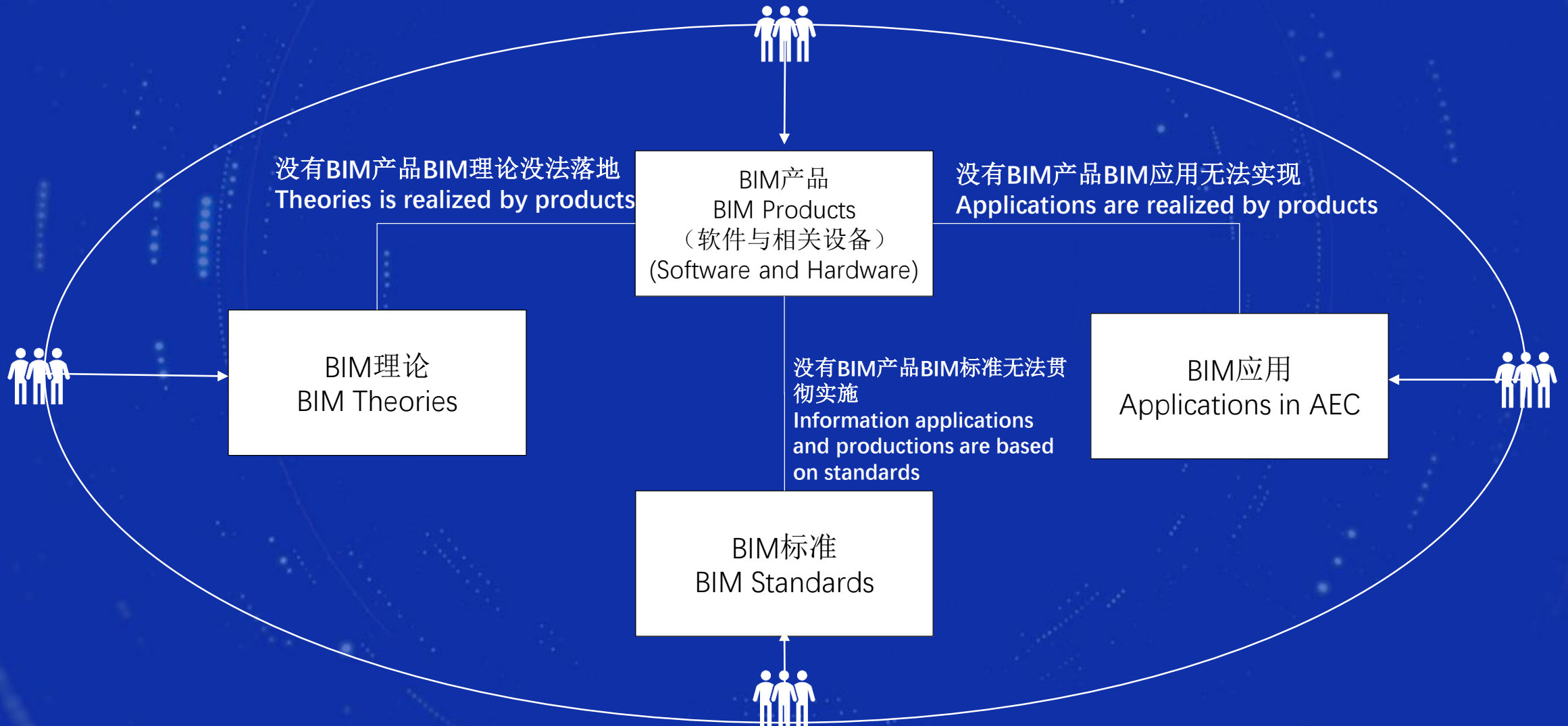


工程建设行业生产方式变化过程
Process of AEC Production Methods

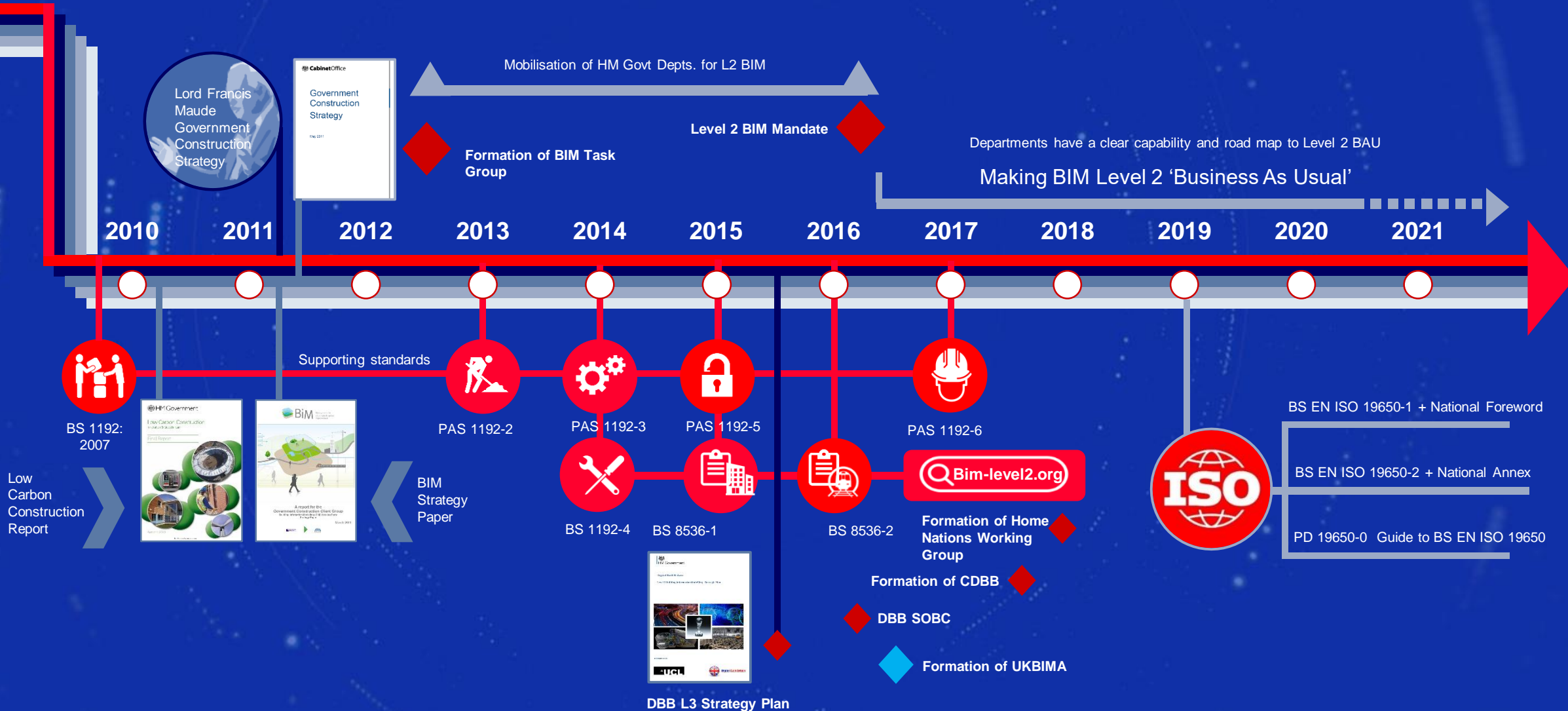


BIM实施的关键因素

BIM Implementation Keys



标准支撑 Standards Support

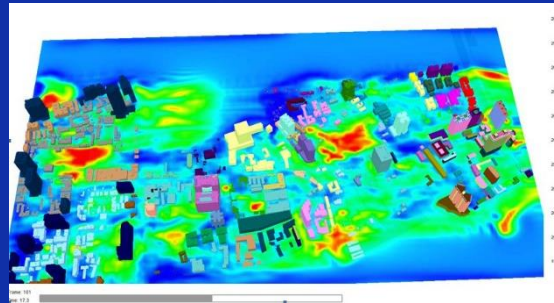


信息技术与工具

Information Technology and Tools

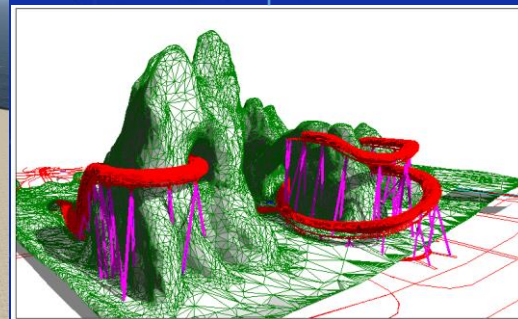
项目级BIM应用是城市级企业级BIM应用的基础
Project BIM is foundation of Enterprise and City's BIM

城市级应用
企业级应用
Information Technology by Cities & Enterprise



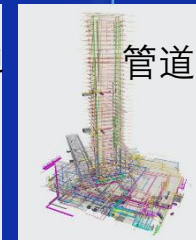
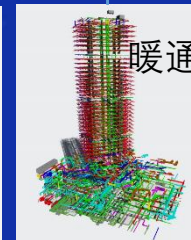
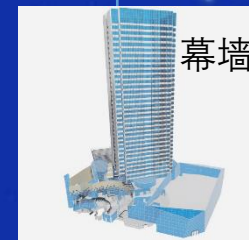
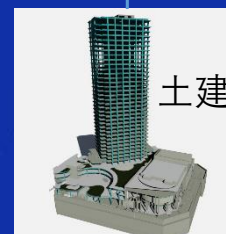
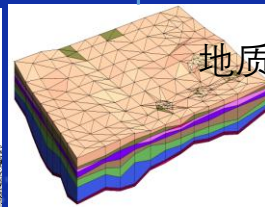
工具和产品的关键
Products are Key Issues

项目级应用
Information Technology by Projects



项目级BIM应用是专业级任务级BIM应用的目的
Information Technology by disciplines formalized project implementation

专业级应用
任务级应用
Information Technology by Disciplines



辅助要点 Assisting Points

阶段 Stages	准备阶段 Preparation	设计阶段 Design Stage		施工阶段 Construction Stage				竣工阶段 Closeout Stage	
BIM辅助内容 BIM Assisting		设计阶段BIM建模 Design Modeling	设计阶段BIM应用 BIM Application in Design	施工招标 Tendering	施工准备 CM Preparation	深化设计 Shop Drawings		施工过程BIM应用 Construction Management	竣工交付 Submittals
		土 建 Str 机 电 ME P 幕 墙 Fac	可 视 化 Visu al. 专 业 协 调 Co 管 线 综 合 ME P		方 案 可 视 化 Visu al 重 难 点 模 拟 Sim ulati on	土 建 Str 机 电 ME P 钢 结 构 Ste el 幕 墙 精 装 Dec or	进 度 模 拟 4D 工 程 量 统 计 5D 质 量 安 全 QA	模 型 整 理 信 息 录 入	
BIM职责 Duties of BIM	总体策划 BIM Execution Plan	模型审核 Model Review	应用成果审核 BIM Uses Review 问题闭环 Issues Closeout	辅助招 标 Tender Assisting	应用成 果审核 Review	模型整 合 Collaborat ion 模型审 核 Review	应用成 果审核 Review 技术支持 CM 效益总 结	模型审核 Model Review	
管理效 益 Benefits	项目标准 Project Standard	避免图纸遗留问题 Solving Drawing Issues 管综排布 MEP Coordination 进度预排、成本分析 4D、5D Analysis		进度、成本、质量、安全全方位精细化控制 大幅提高协同沟通效率 BIM control in 4D, 5D, Safety, QA, etc. Improving the communication Efficiency				形成项目数 据库 Project Database	

BIM辅助设计 BIM in Design

设计效率

Design Efficiency

设计质量

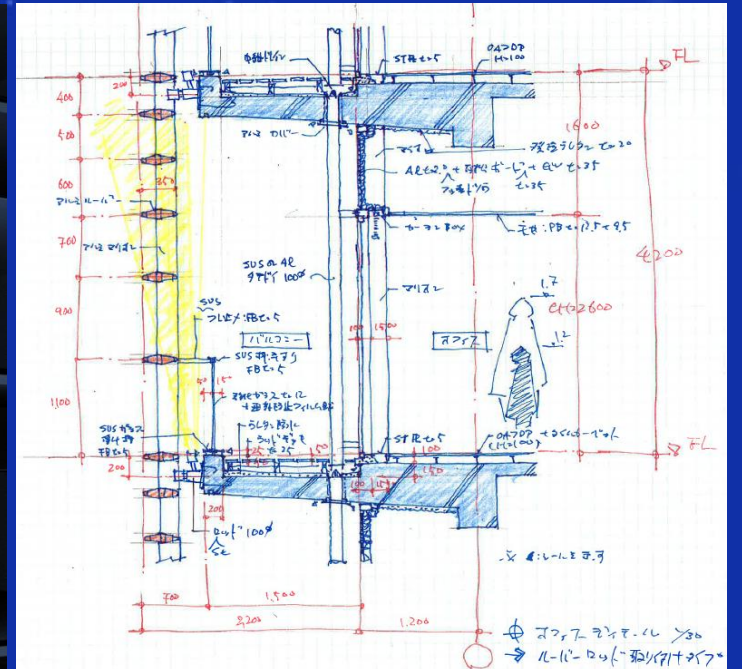
Design Quality

协同方式

Design
Coordination

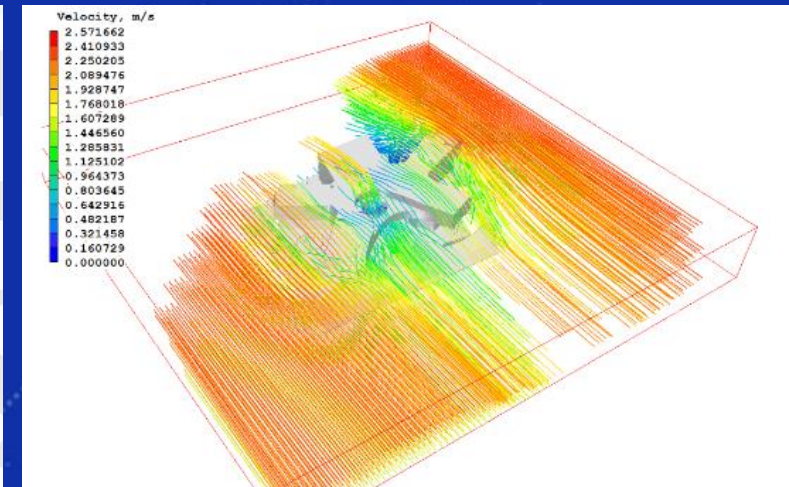
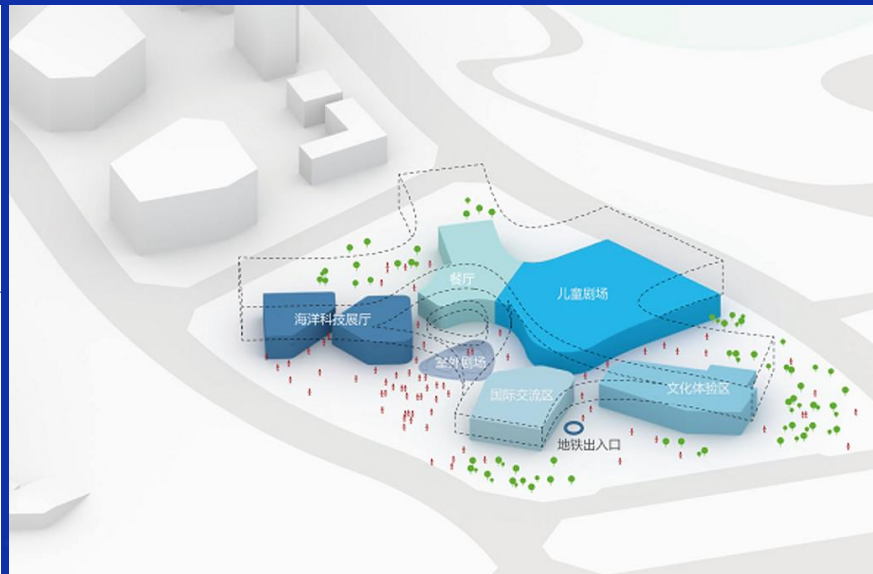
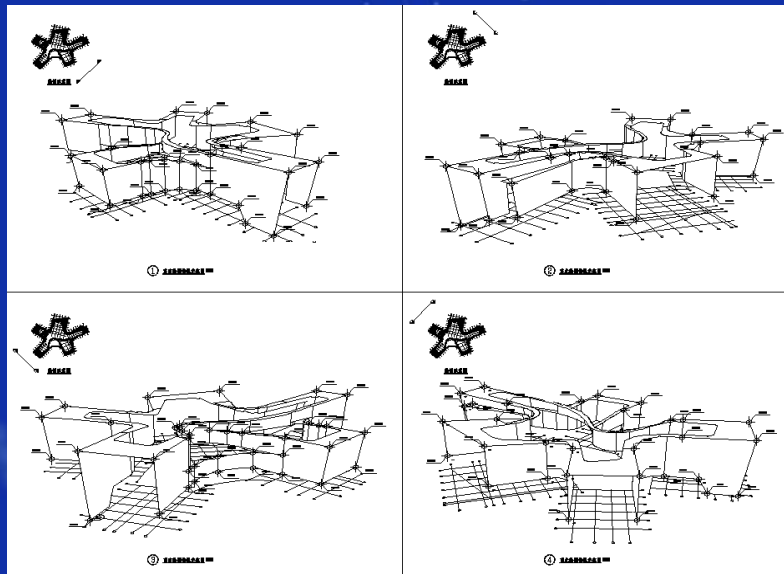
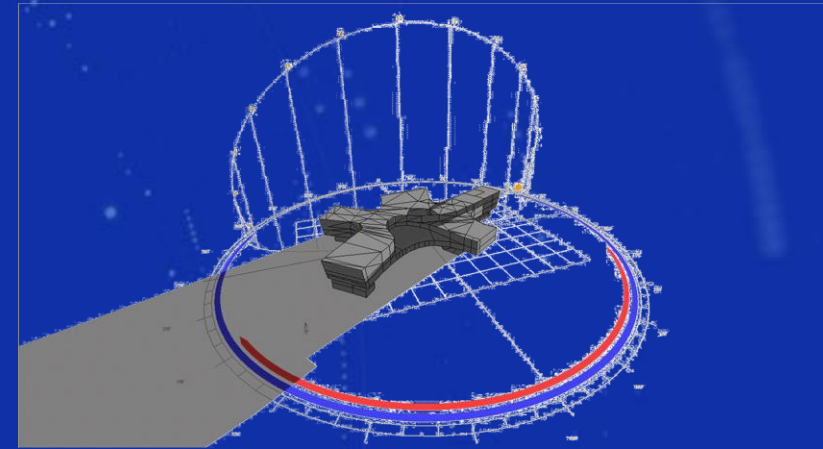
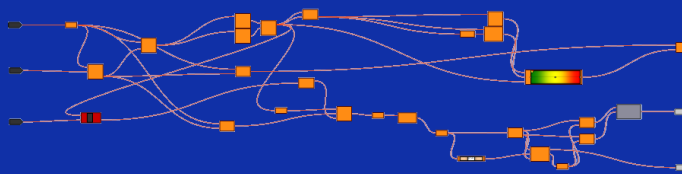
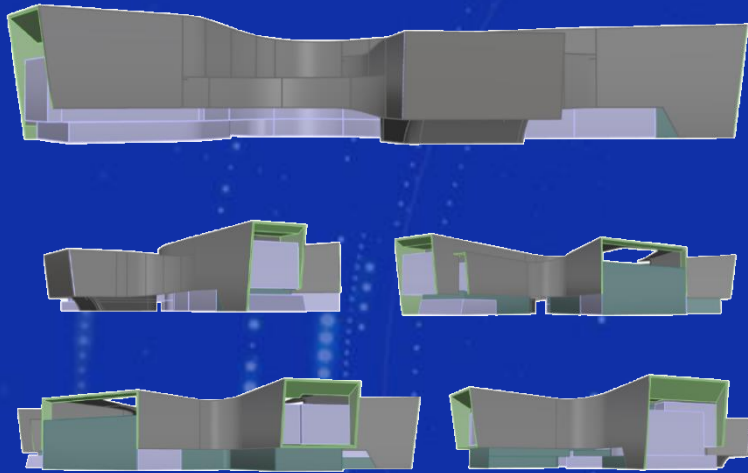
设计附加值

Design Values



三维可视化设计具有天然优势，
可确保设计效果与质量

BIM辅助规划 BIM in Planning



BIM辅助场地分析及规划选型 (BIM uses in site analysis and conceptual design): 南沙青少年宫项目案例

BIM辅助设计 BIM in Design

设计效率

Design Efficiency

设计质量

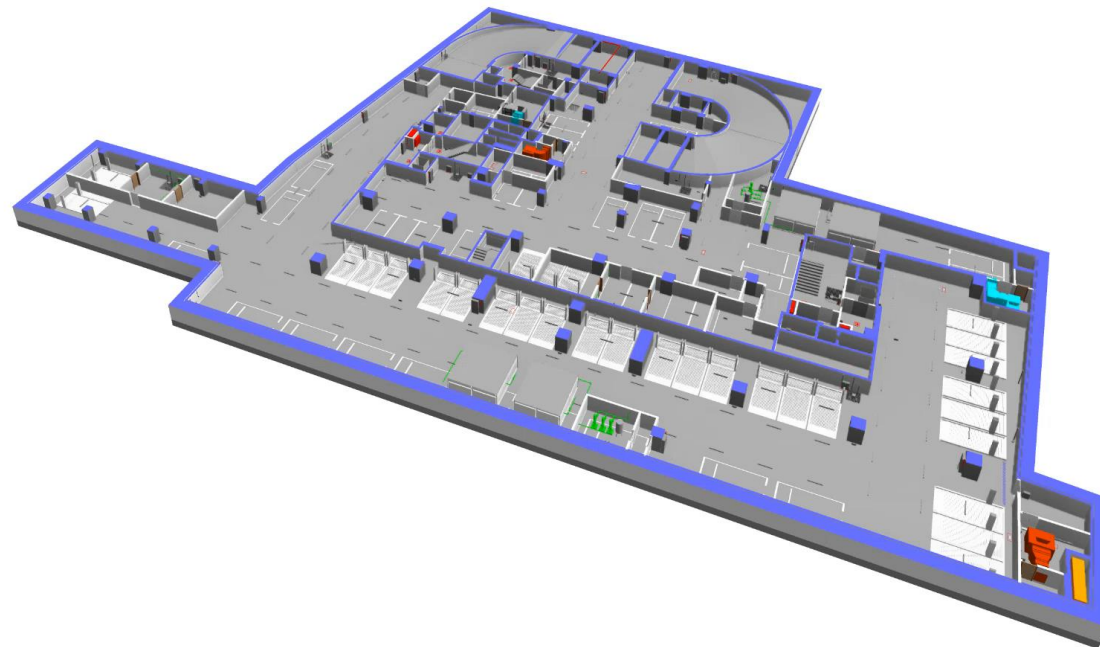
Design Quality

协同方式

Design
Coordination

设计附加值

Design Values



BIM辅助设计 BIM in Design

设计效率

Design Efficiency

设计质量

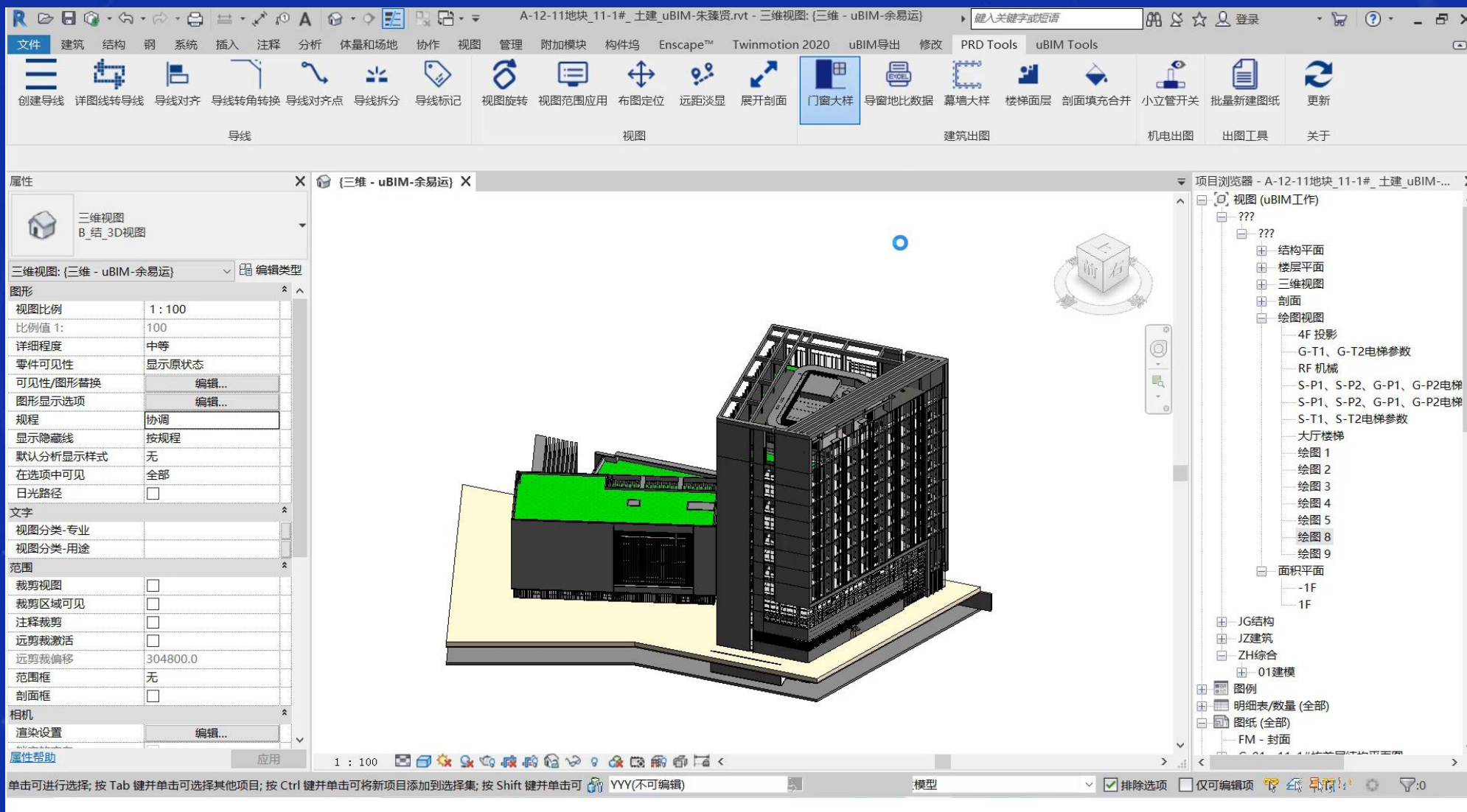
Design Quality

协同方式

Design
Coordination

设计附加值

Design Values



BIM辅助设计 BIM in Design

设计效率

Design Efficiency

设计质量

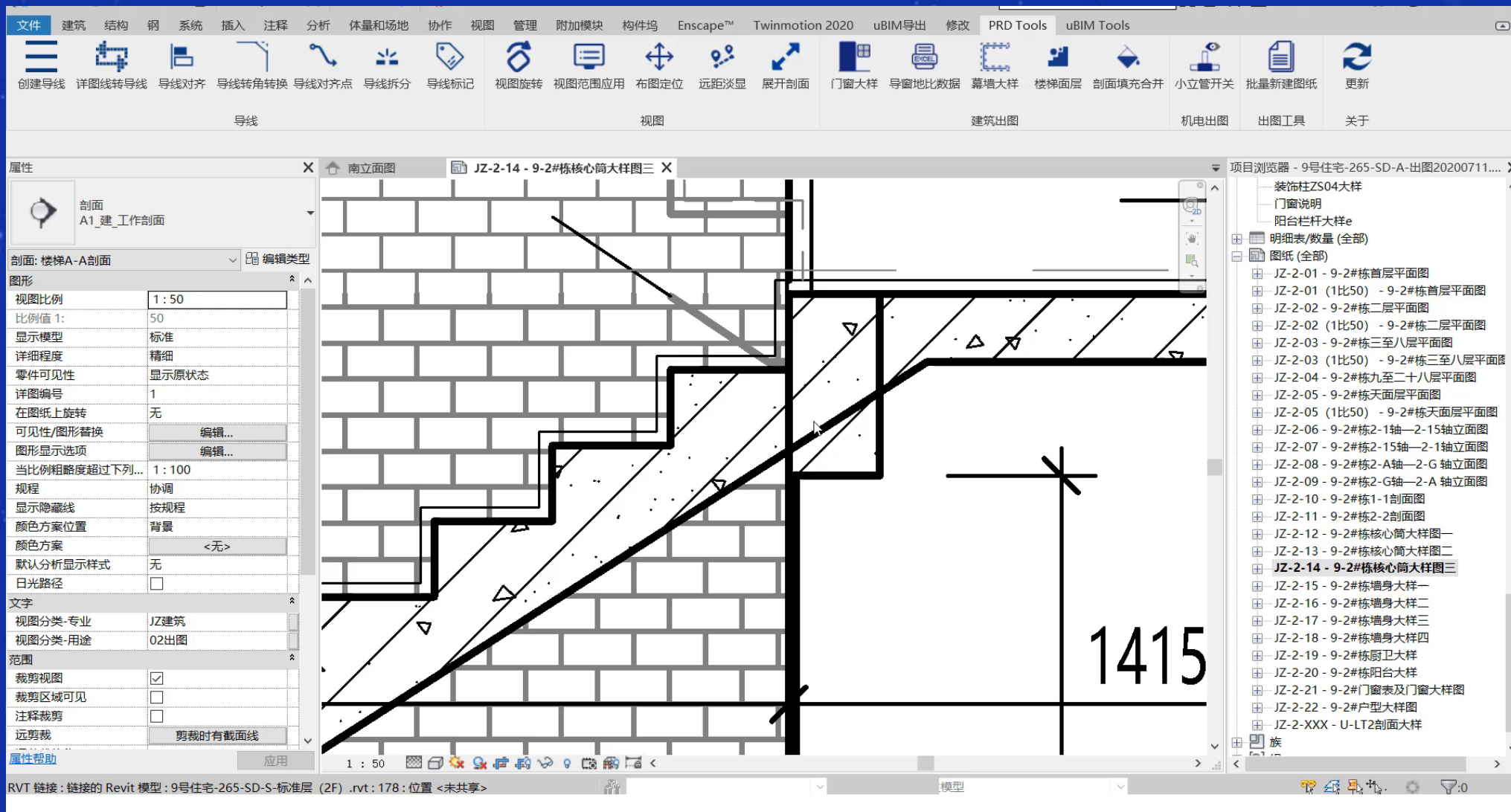
Design Quality

协同方式

Design Coordination

设计附加值

Design Values



BIM辅助设计 BIM in Design

设计效率

Design Efficiency

设计质量

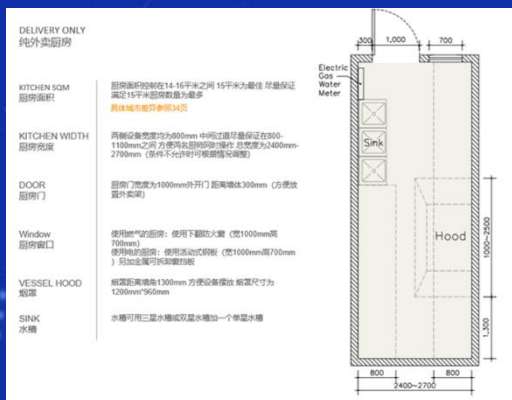
Design Quality

协同方式

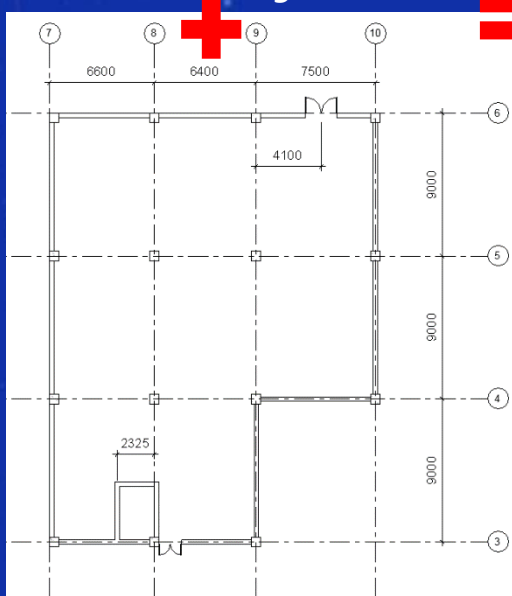
Design Coordination

设计附加值

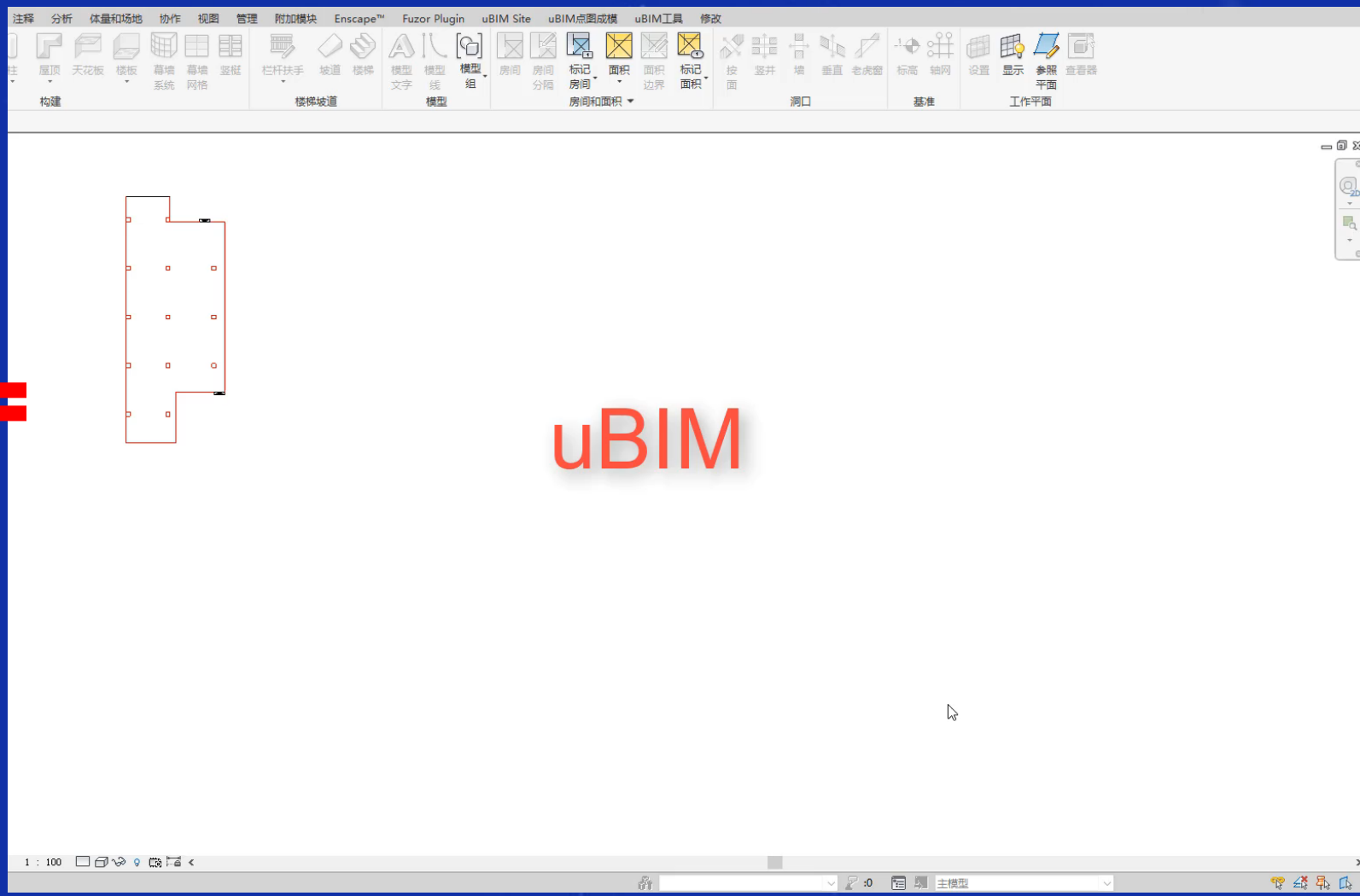
Design Values



设计规范 Design Standard



设计条件 Design Condition



uBIM

衍生式设计辅助方案选型 (Generative Design) : CloudKitchens案例

BIM辅助设计 BIM in Design

设计效率

Design Efficiency

设计质量

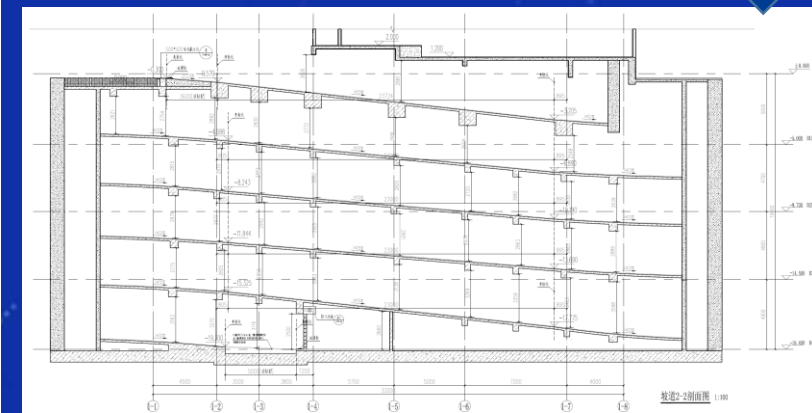
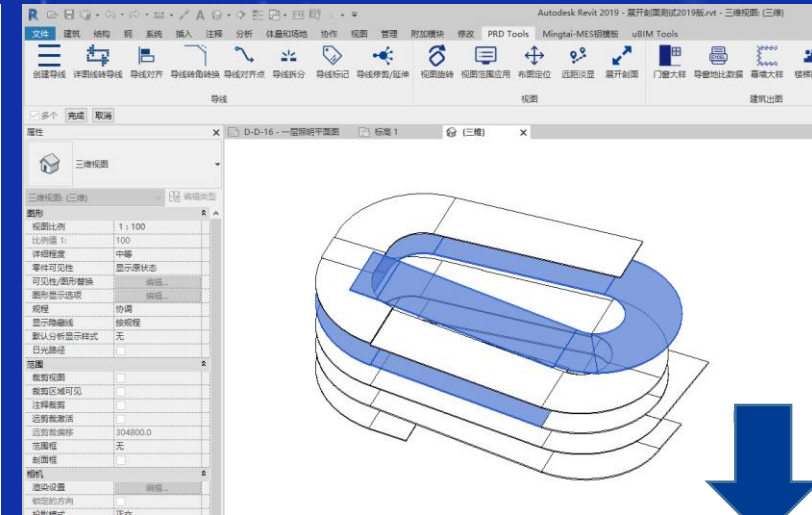
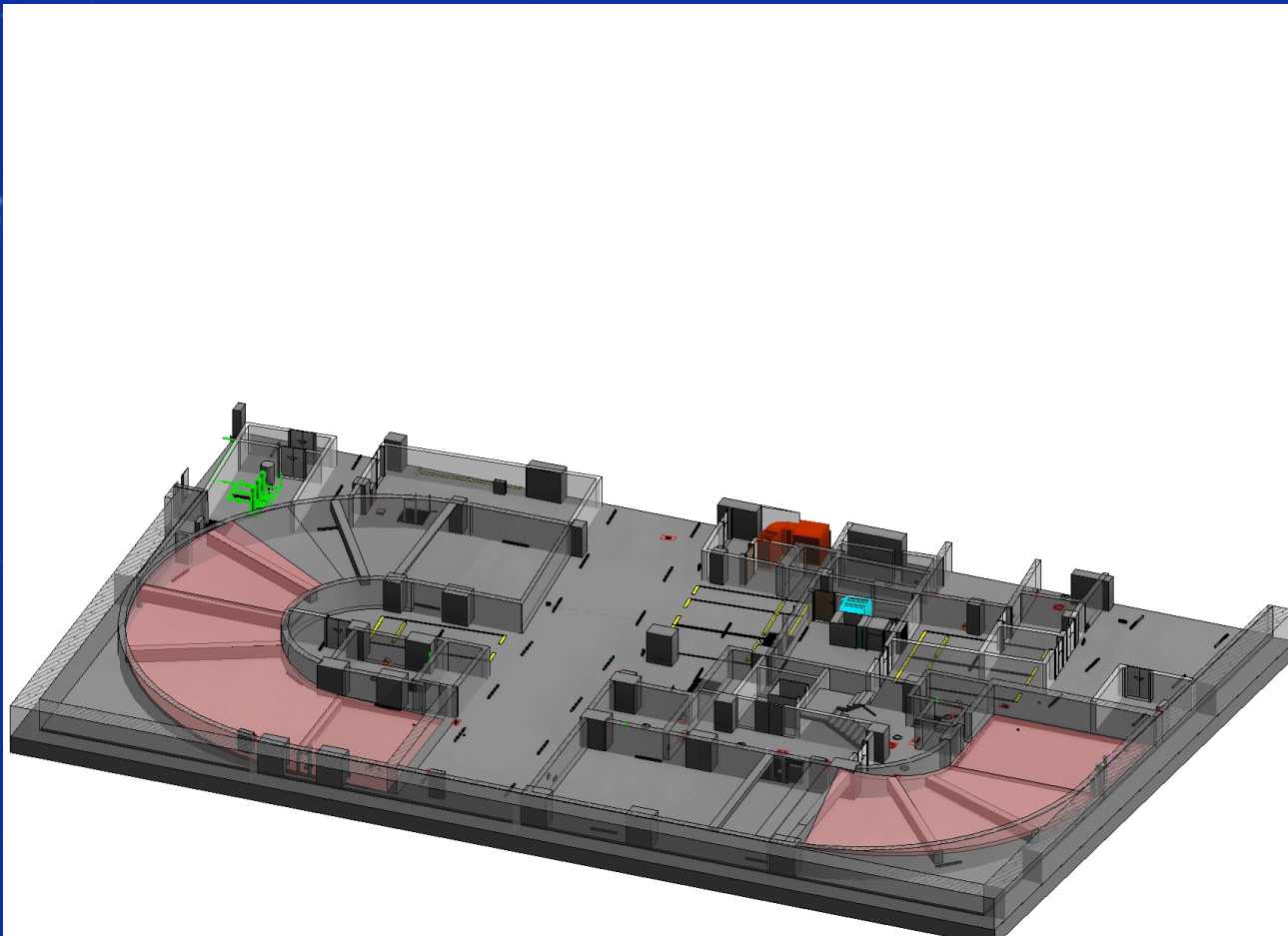
Design Quality

协同方式

Design
Coordination

设计附加值

Design Values



双回环车道可视化分析 (Double loop lane visual analysis) : JY8商业项目案例

BIM辅助设计 BIM in Design

设计效率

Design Efficiency

设计质量

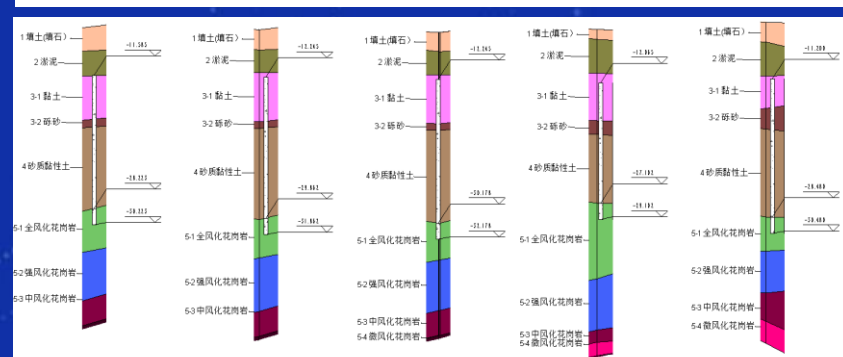
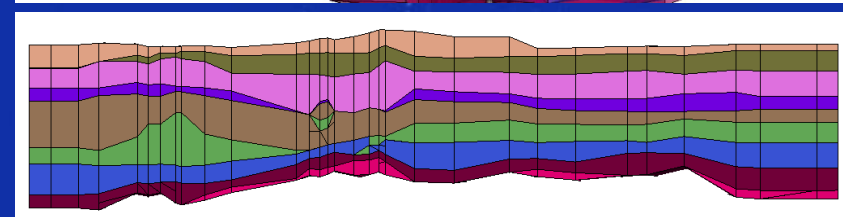
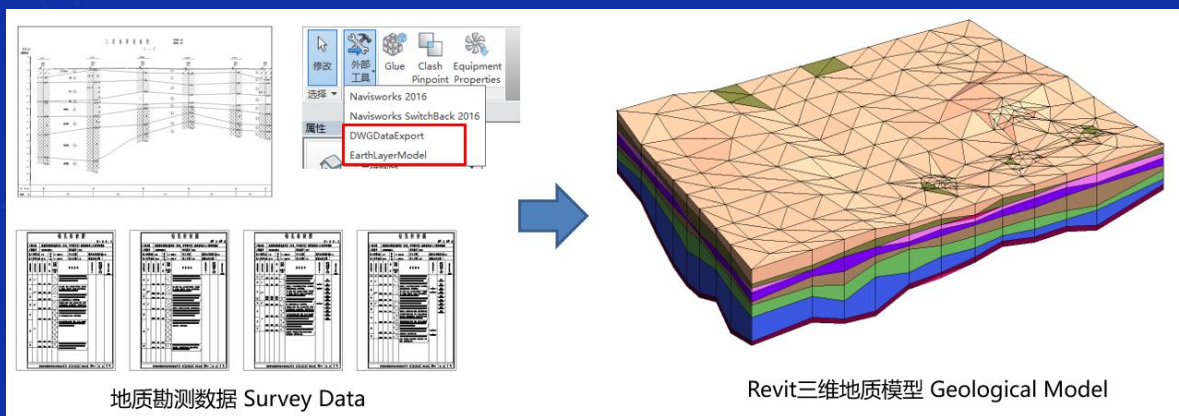
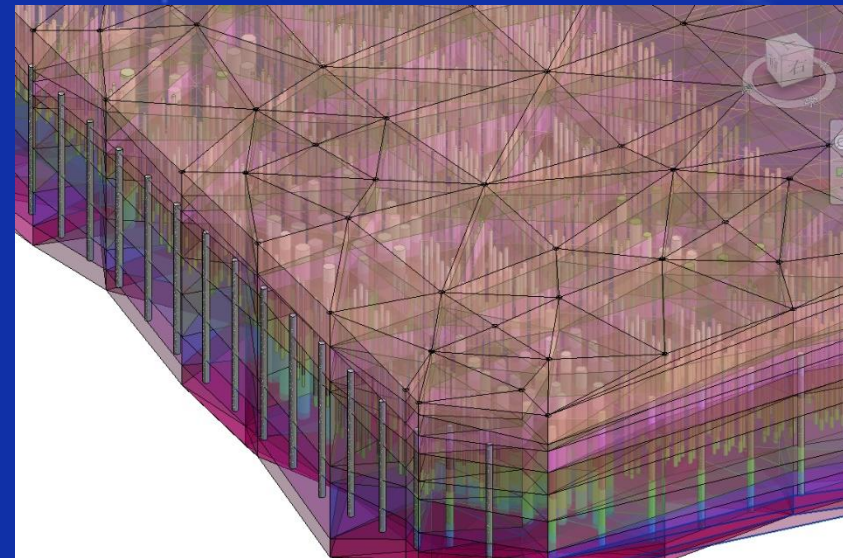
Design Quality

协同方式

Design Coordination

设计附加值

Design Values



三维地质建模及桩基分析 (Geological Modeling and Analysis) : JY8商业项目案例

BIM辅助设计 BIM in Design

设计效率

Design Efficiency

设计质量

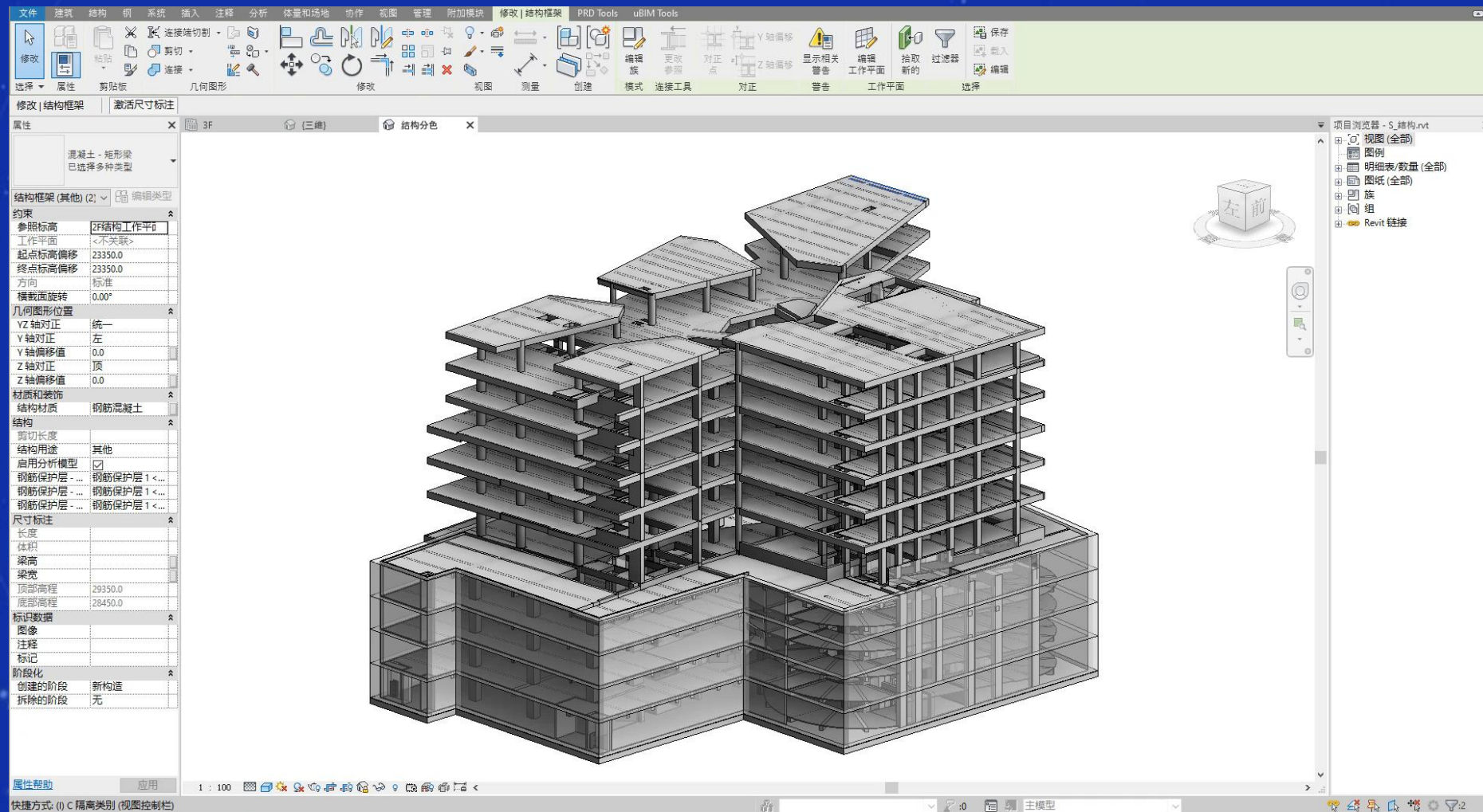
Design Quality

协同方式

Design
Coordination

设计附加值

Design Values



结构净高自动分析 (Structural Clearance Analysis) : JY8商业项目案例

BIM辅助设计 BIM in Design

设计效率

Design Efficiency

设计质量

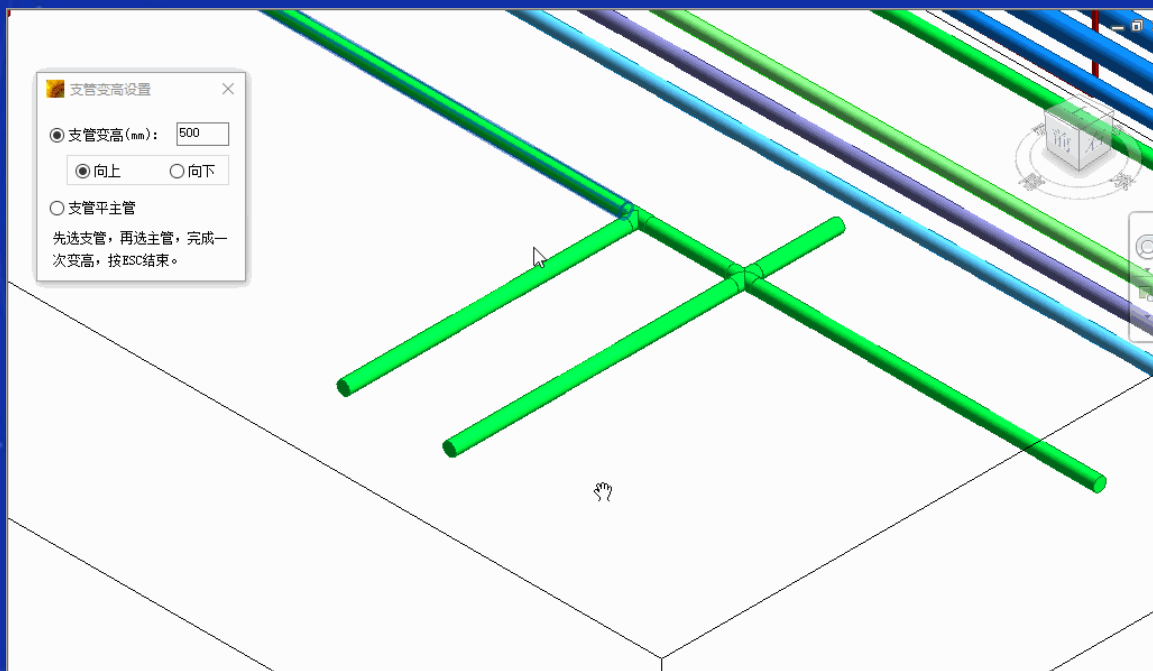
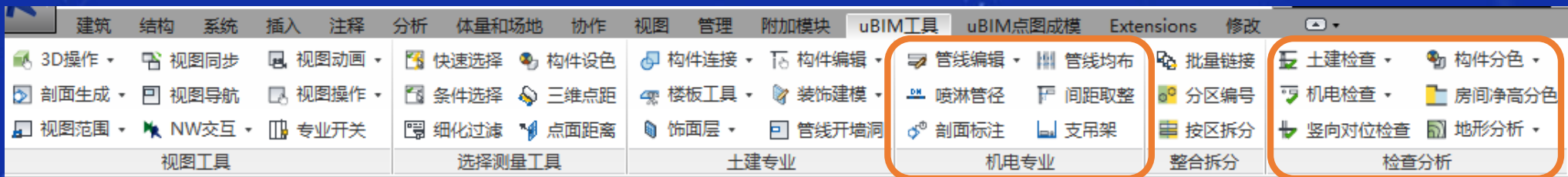
Design Quality

协同方式

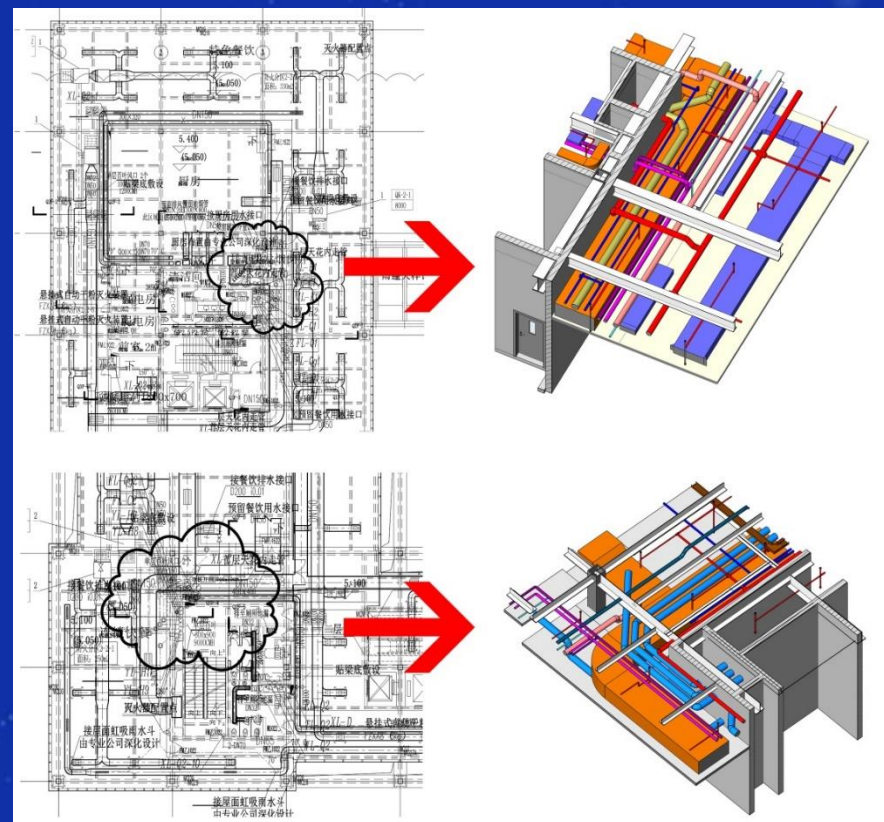
Design Coordination

设计附加值

Design Values



机电设计辅助及分析 (MEP Design Assistance and Analysis) : JY8商业项目案例



BIM辅助设计 BIM in Design

设计效率

Design Efficiency

设计质量

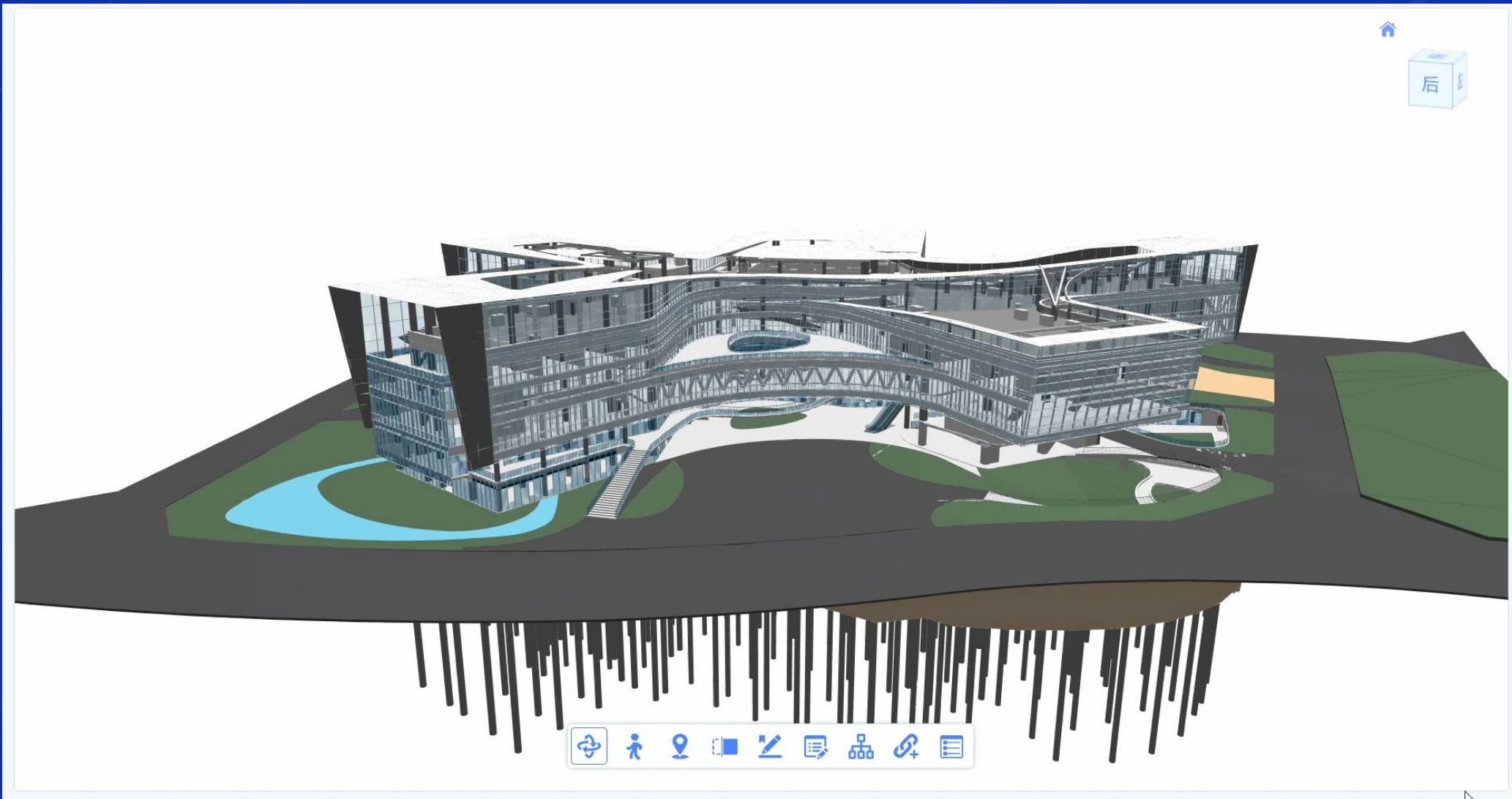
Design Quality

协同方式

Design
Coordination

设计附加值

Design Values



BIM辅助设计 BIM in Design

设计效率

Design Efficiency

设计质量

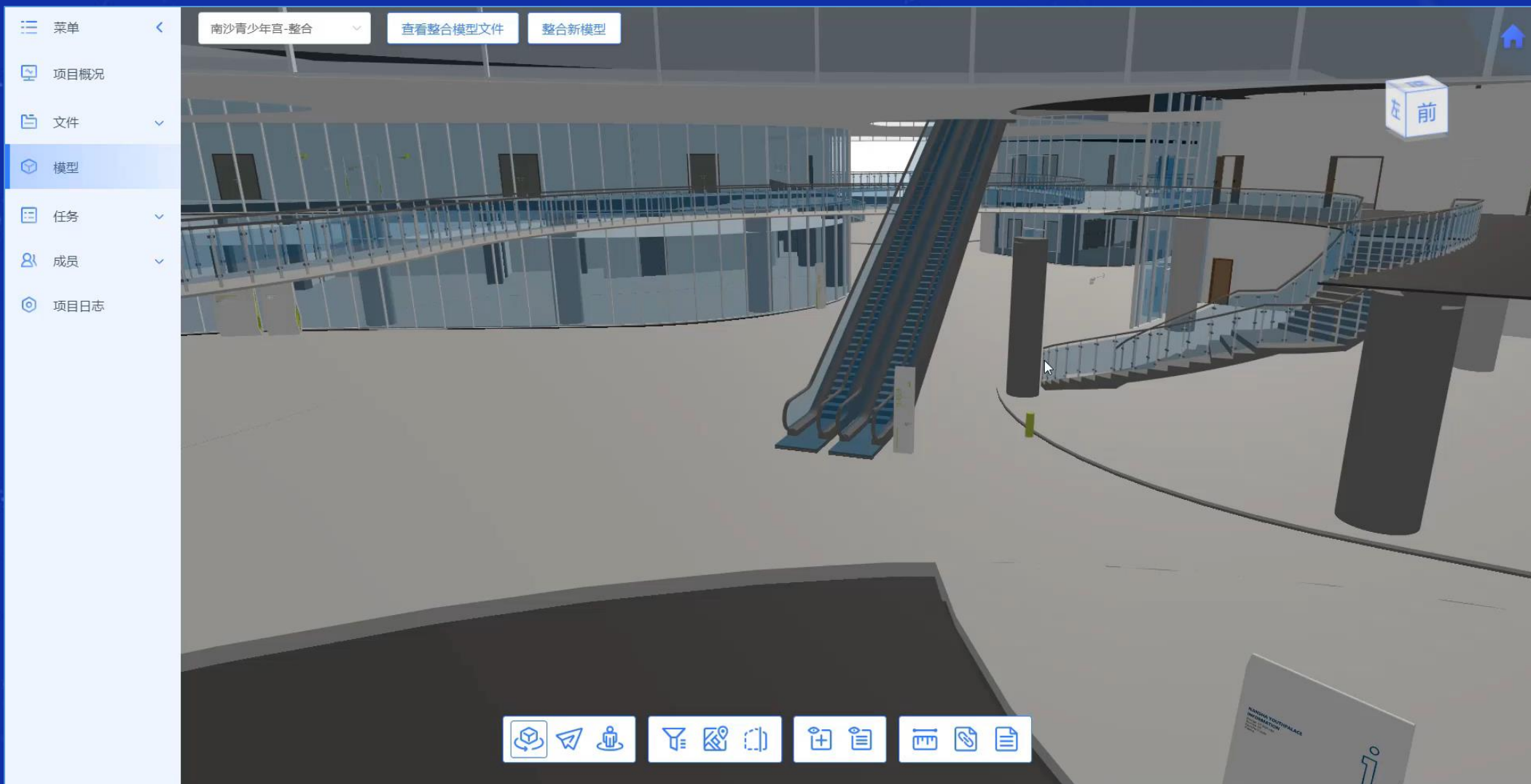
Design Quality

协同方式

Design
Coordination

设计附加值

Design Values



设计协同 (Design Collaboration) : 南沙青少年宫案例

BIM辅助设计 BIM in Design

设计效率

Design Efficiency

设计质量

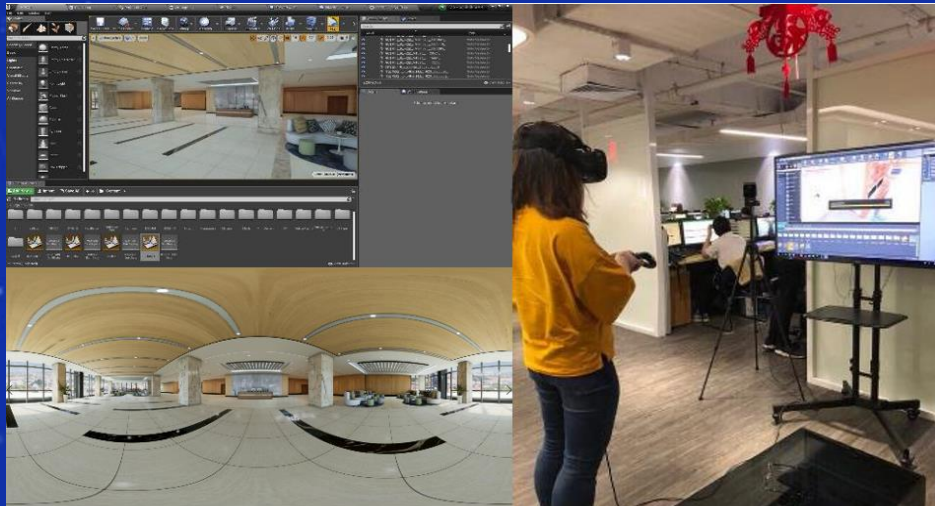
Design Quality

协同方式

Design
Coordination

设计附加值

Design Values



沟通媒介的丰富 (More collaboration methods)

BIM辅助设计 BIM in Design

设计效率

Design Efficiency

设计质量

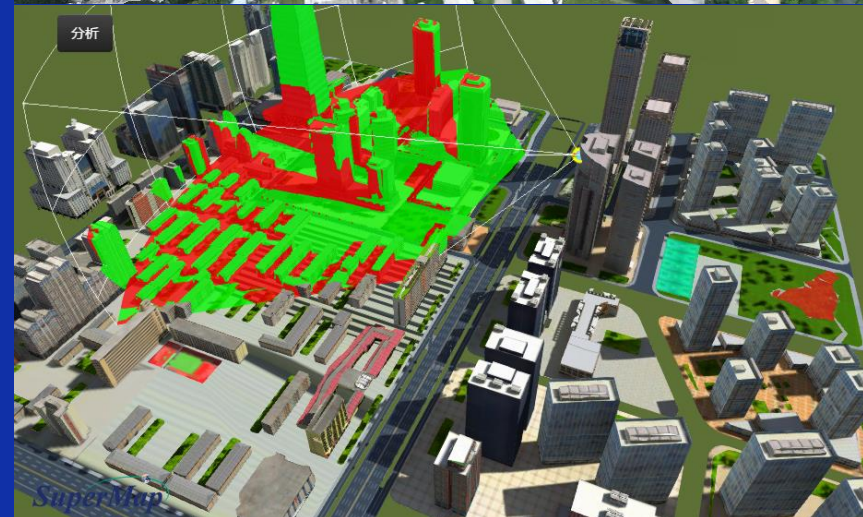
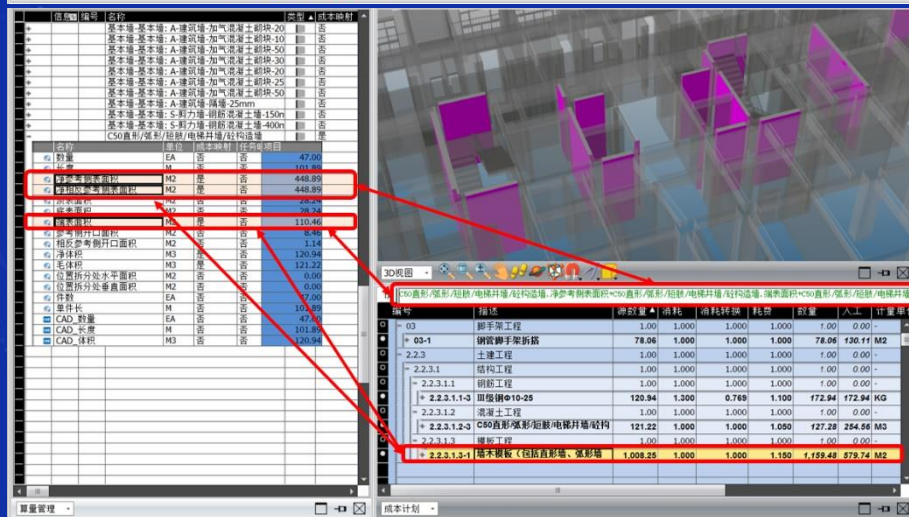
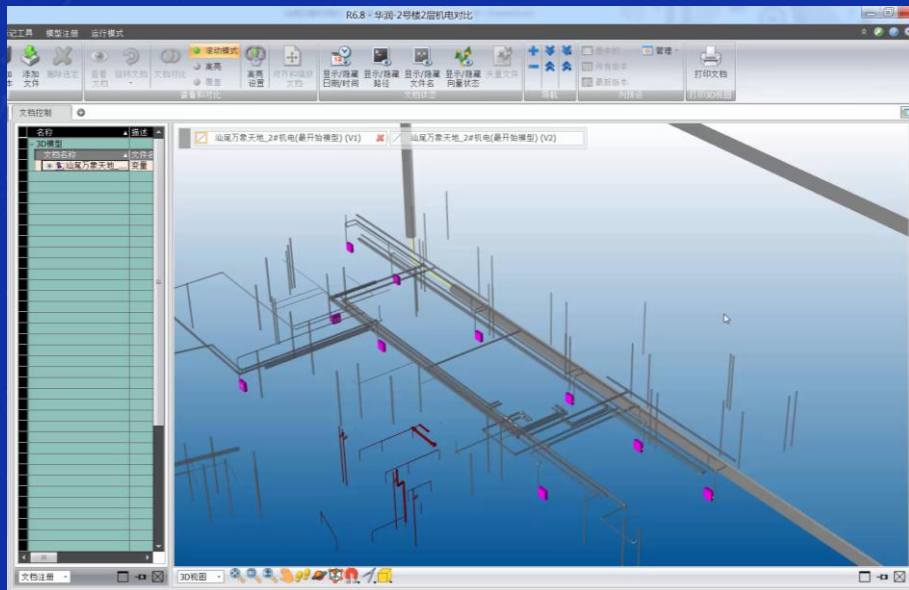
Design Quality

协同方式

Design
Coordination

设计附加值

Design Values



模型应用提升设计价值 (More design values)

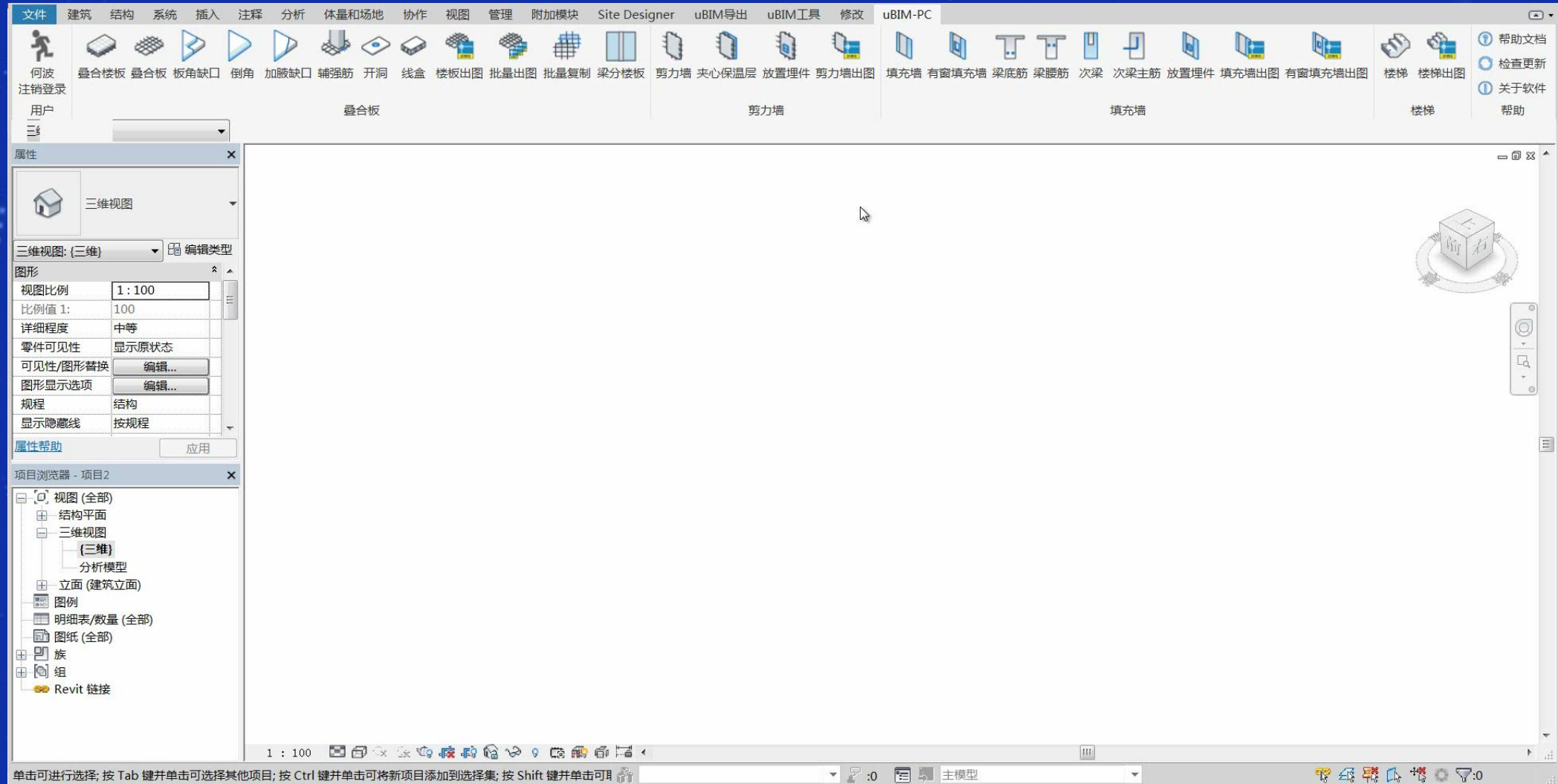
BIM辅助施工 BIM in Construction

深化及预制
Shop Drawings
and Fabrication

施工组织设计
Construction
Assistance

进度成本管理
4D and 5D
Management

现场综合管理
Filed
Management



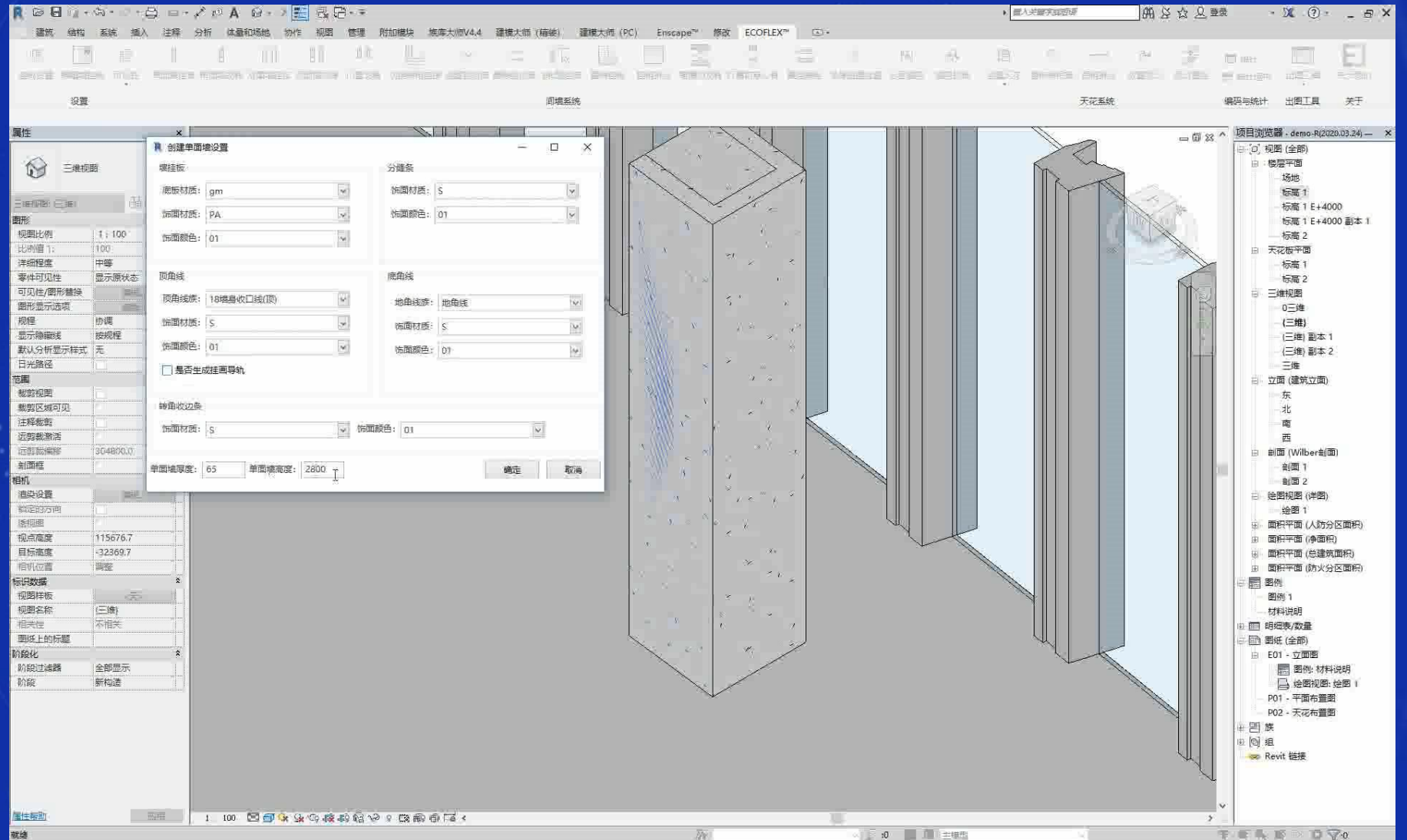
BIM辅助施工 BIM in Construction

深化及预制
Shop Drawings
and Fabrication

施工组织设计
Construction
Assistance

进度成本管理
4D and 5D
Management

现场综合管理
Filed
Management



BIM辅助精细化深化设计 (BIM for shop drawing design) : JY8项目案例

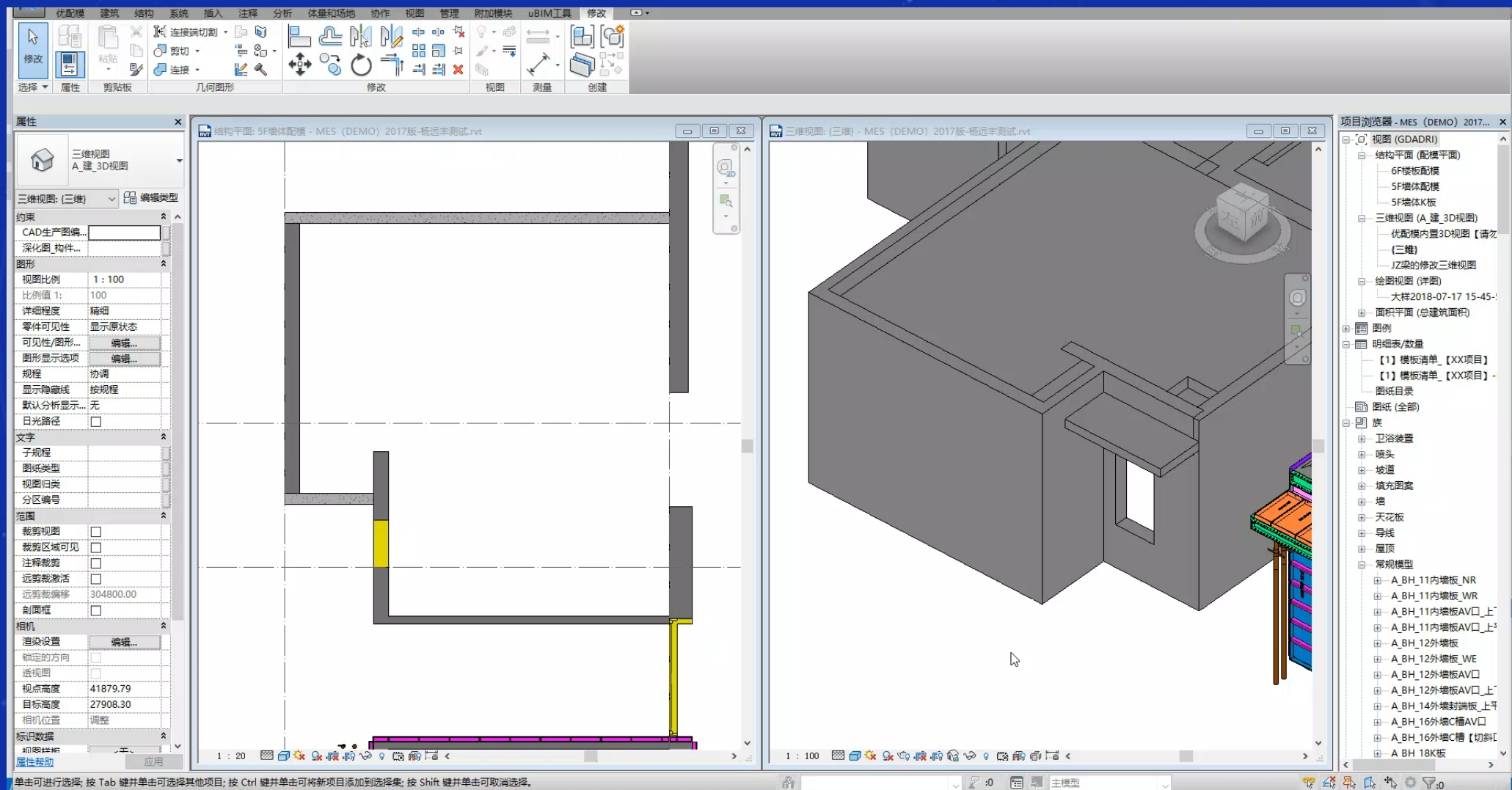
BIM辅助施工 BIM in Construction

深化及预制
Shop Drawings
and Fabrication

施工组织设计
Construction
Assistance

进度成本管理
4D and 5D
Management

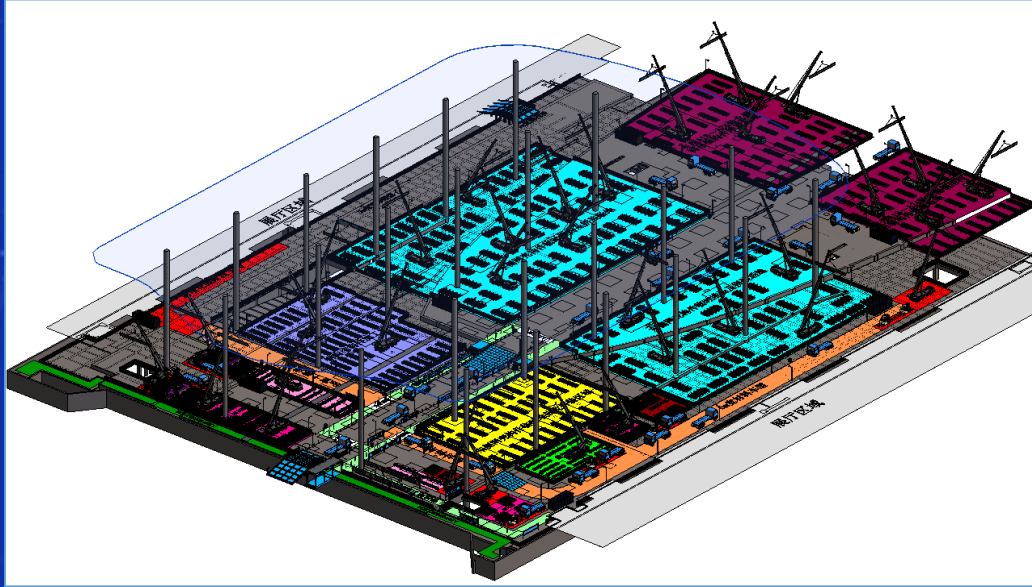
现场综合管理
Filed
Management



BIM辅助精细化深化设计 (BIM for shop drawing design) : JY8项目案例

BIM辅助施工 BIM in Construction

深化及预制
Shop Drawings
and Fabrication



施工组织设计
Construction
Assistance



进度成本管理
4D and 5D
Management

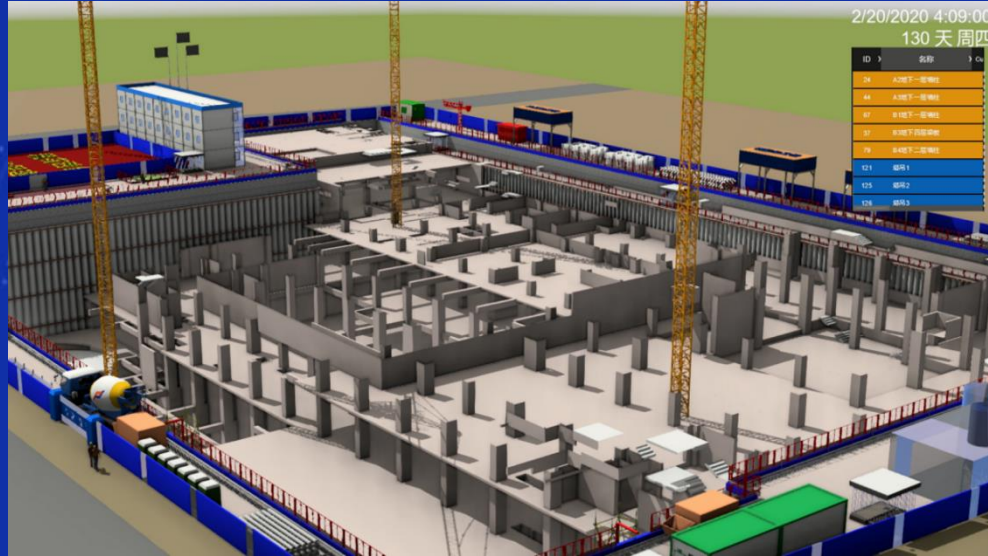


现场综合管理
Filed
Management



BIM辅助施工 BIM in Construction

深化及预制
Shop Drawings
and Fabrication



施工组织设计
Construction
Assistance

编号	描述	原数量	消耗	消耗转换	耗量	数量	人工	耗量单位	单位成本	基础成本	成本小计	%小计	工作包
000	劳务	1.00	1.000	1.000	1.000	1.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
010	01000007 灌注桩混凝土工程桩	469.30	1.000	1.000	1.000	469.30	5,894.64	M3	2,723.61	▲ 1,823.23	N/A	N/A	N/A
010	01000008 灌注桩混凝土工程桩	1,793.43	1.000	1.000	1.000	1,793.43	28,279.48	M3	6,497.81	▲ 11,653.33	N/A	N/A	N/A
[23]	支撑架板安装 叠式	66,363.16	1.000	1.000	1.000	66,363.16	27,681.68	M2	146.00	▲ 6,027.64	▲ 4,476.14	7.1%	68.89%
[24]	钢架梁安装 A500	1,793.43	1.000	1.000	1.000	1,793.43	0.09	M2	1,696.00	▲ 1,683.77	▲ 1,696.00	2.8%	96.76%
[25]	支撑架板安装	1,793.43	1.000	1.000	1.000	1,793.43	897.81	M2	971.81	▲ 1,743.63	▲ 971.81	1.6%	94.96%
010	01000030 灌注桩混凝土工程桩	1,686.42	1.000	1.000	1.000	1,686.42	4,124.69	M3	1,956.00	▲ 4,766.21	N/A	N/A	N/A
[17]	支撑架板安装	0.00	1.000	1.000	1.000	0.00	0.00	M2	0.00	0.00	0.00	0.00%	0.00%
[18]	钢架梁安装	1,686.42	1.000	1.000	1.000	1,686.42	289,693.20	M2	6.07	▲ 1,636.72	▲ 1,693.32	2.8%	82.87%
[20]	支撑架板安装	1,686.42	1.000	1.000	1.000	1,686.42	828.81	M2	926.67	▲ 1,474.63	▲ 926.67	1.5%	47.33%
004	压型钢板	119.93	1.011	0.999	1.000	121.25	0.00	M2	0.00	0.00	0.00	0.00%	N/A
1	钢结构工	367.48	0.333	3.003	1.000	55.77	55.77	HR	360.00	▲ 6,923.36	N/A	N/A	N/A
2	压型钢板	119.93	1.000	1.000	1.000	119.93	0.00	M2	100.00	11,993.32	N/A	N/A	N/A
3	檩条	3,349.61	1.000	1.000	1.000	3,349.61	0.00	M2	0.00	0.00	0.00	0.00%	N/A
[11]	檩条	3,349.61	1.000	1.000	1.000	3,349.61	0.00	M2	0.00	0.00	0.00	0.00%	N/A
[12]	檩条工	1.10	1.000	1.000	1.000	1.10	0.00	0.00	0.00	0.00	0.00	0.00%	N/A
005	钢架梁安装	0.00	1.000	1.000	1.000	0.00	0.00	M2	0.00	0.00	0.00	0.00%	N/A
[10]	钢架梁	663.32	1.000	1.000	1.000	663.32	0.00	M2	0.00	0.00	0.00	0.00%	N/A
[6]	钢板	0.03	1.000	1.000	1.000	0.03	0.00	T	0.00	0.00	0.00	0.00%	N/A
[7]	人工	300.00	1.000	1.000	1.000	300.00	300.00	HR	0.00	0.00	0.00	0.00%	N/A

进度成本管理
4D and 5D
Management

Quantity and Unit by Category Name

Model Name	Unit	Quantity	Count	Unit Cost	Average
工程_种植一分区_乔木	EA	968.00	968	\$0.00	\$0.00
种植	EA	968.00	968	\$0.00	\$0.00
七叶树	EA	47.00	47	\$0.00	\$0.00
乔木-七叶树	EA	47.00	47	\$0.00	\$0.00
云杉A	EA	32.00	32	\$0.00	\$0.00
乔木-云杉A	EA	32.00	32	\$0.00	\$0.00
云杉B	EA	9.00	9	\$0.00	\$0.00
乔木-云杉B	EA	9.00	9	\$0.00	\$0.00
五角枫A	EA	22.00	22	\$0.00	\$0.00
Total	EA	968.00	968	\$0.00	\$0.00

Quantity, Total Cost and Unit by Model Version and Family Name

Family Name	Unit	Quantity	Count	Unit Cost	Average
D1x大叶黄杨	EA	336.00	336	\$0.00	\$0.00
D1x大叶黄	EA	336.00	336	\$0.00	\$0.00
D2x红栎球A	EA	336.00	336	\$0.00	\$0.00
D2x红栎球B	EA	336.00	336	\$0.00	\$0.00
D3x女贞A	EA	336.00	336	\$0.00	\$0.00
D3x女贞B	EA	336.00	336	\$0.00	\$0.00
D4x小叶黄	EA	336.00	336	\$0.00	\$0.00
D4x小叶黄B	EA	336.00	336	\$0.00	\$0.00
丁香	EA	336.00	336	\$0.00	\$0.00
七叶树	EA	336.00	336	\$0.00	\$0.00
丛生紫薇	EA	336.00	336	\$0.00	\$0.00
云杉A	EA	336.00	336	\$0.00	\$0.00

现场综合管理
Filed
Management

目标工程清单

层数	批准	编号	名称	任务类型
-1	<input type="checkbox"/>	[14]	搭建模板	3
-2	<input type="checkbox"/>	[15]	搭建模板	3
-3	<input type="checkbox"/>	[16]	搭建模板	3
-4	<input type="checkbox"/>	[17]	搭建模板	3
-5	<input type="checkbox"/>	[18]	搭建模板	3
-6	<input type="checkbox"/>	[19]	搭建模板	3
-7	<input type="checkbox"/>	[20]	搭建模板	3
-8	<input type="checkbox"/>	[21]	搭建模板	3
-9	<input type="checkbox"/>	[22]	搭建模板	3
-10	<input type="checkbox"/>	[23]	搭建模板	3
-11	<input type="checkbox"/>	[24]	搭建模板	3
-12	<input type="checkbox"/>	[25]	搭建模板	3
-13	<input type="checkbox"/>	[26]	搭建模板	3
-14	<input type="checkbox"/>	[27]	搭建模板	3
-15	<input type="checkbox"/>	[28]	搭建模板	3

通用 | 工程数据 | 事件 | 相关性 | 日记

层数	名称	延迟(周)	行号	目标开始日期	实际开始日期	负责人
-1	需求计划	3	0	周 30/01/18		<没有选择>
-2	钢筋	3	0	周 30/01/18		<没有选择>
-3	模板	3	0	周 30/01/18		<没有选择>
-4	合模	3	0	周 30/01/18		<没有选择>
-5	支付清单	3	0	周 30/01/18		<没有选择>

复制所有

创建采购任务 查看方法 查看资源 创建采购任务 查找 移动到任务总结

BIM辅助进度成本管理 (BIM uses in 4D&5D management)

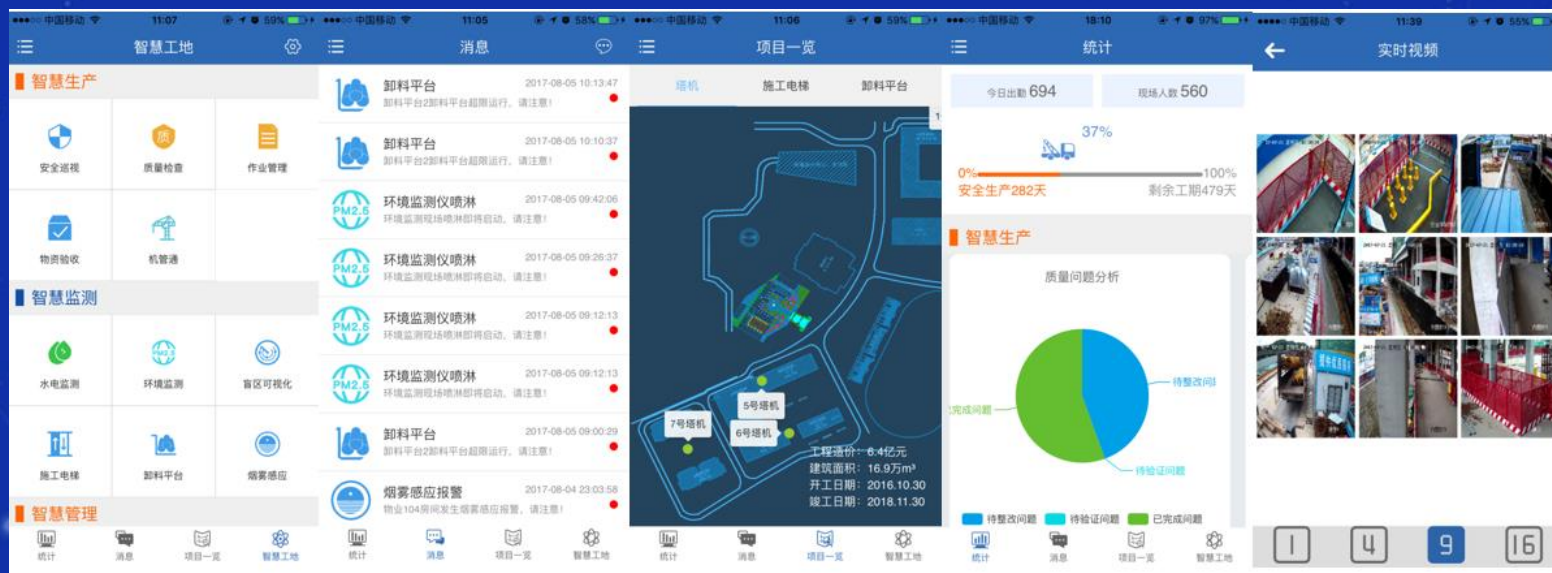
BIM辅助施工 BIM in Construction

深化及预制
Shop Drawings
and Fabrication

施工组织设计
Construction
Assistance

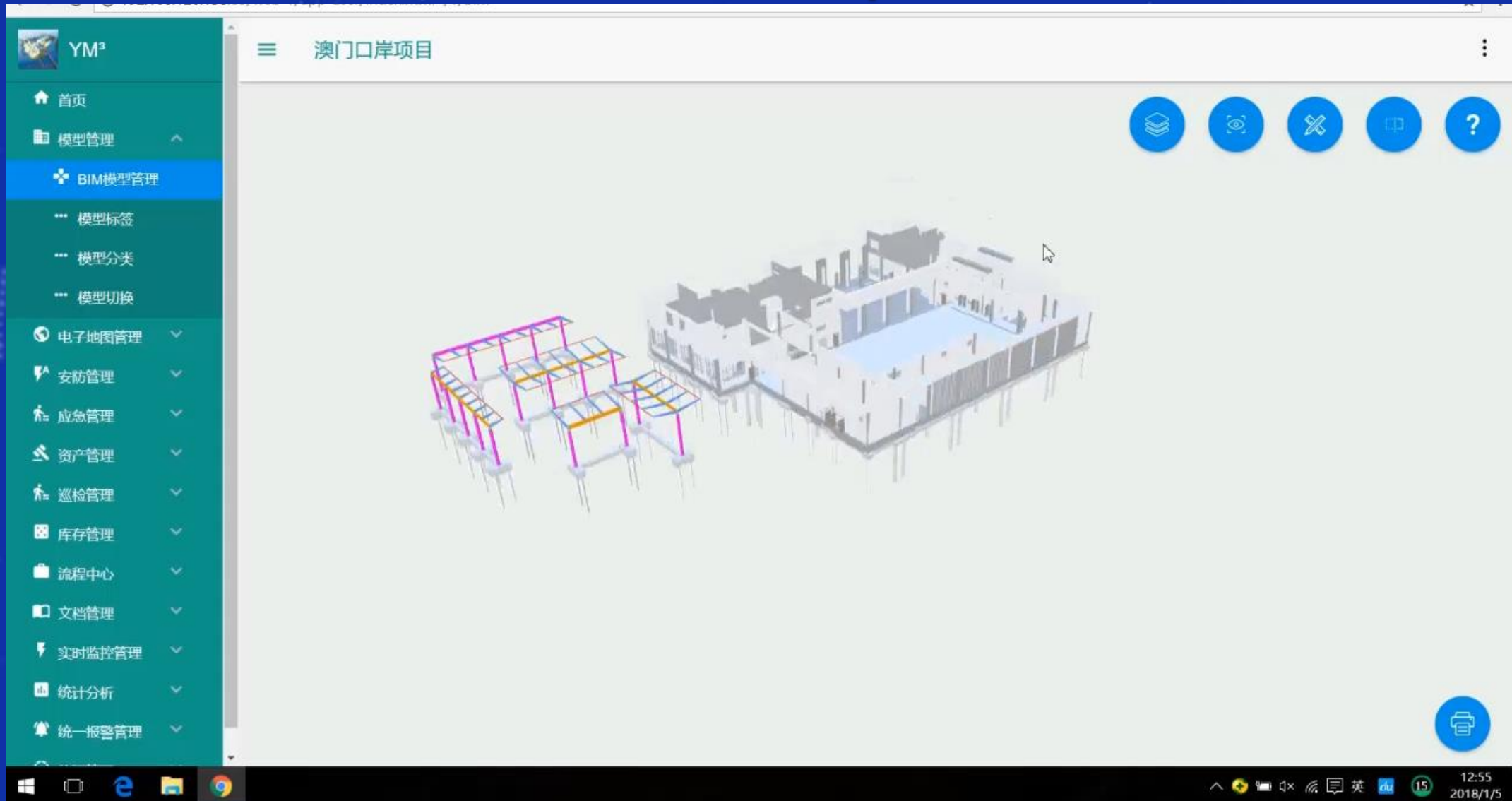
进度成本管理
4D and 5D
Management

现场综合管理
Filed
Management



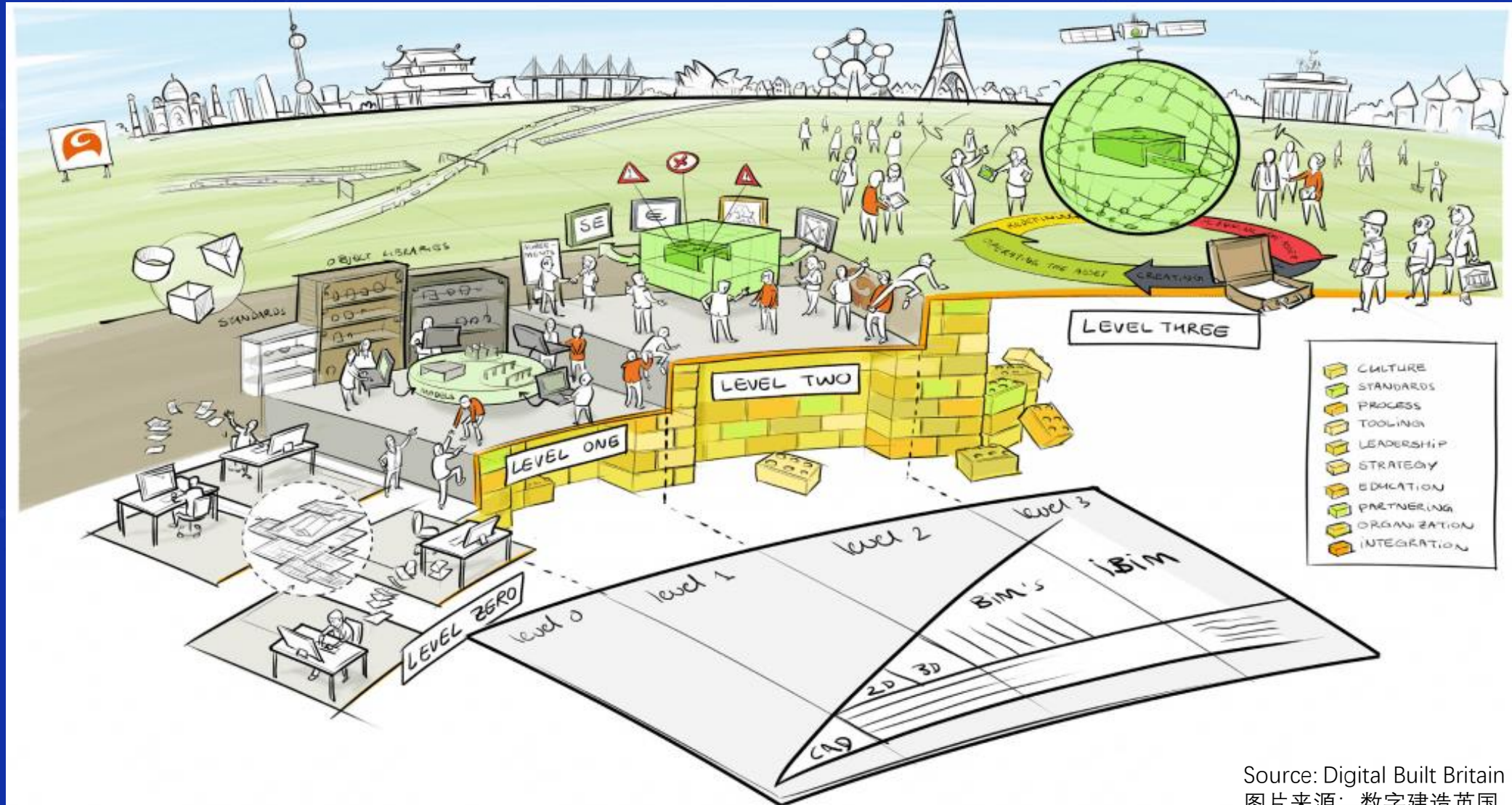
BIM辅助现场综合管理 (BIM uses in field management)

BIM辅助运维 BIM in Operations



BIM辅助运维管理 (BIM uses in operation phase)

BIM与建筑行业未来 BIM and Construction Futures



Source: Digital Built Britain

图片来源：数字建造英国

汇报结束，谢谢！
Thanks!

