

Driving Digital Transformation in the Built Environment Industry

- | A Proposed Holistic Digital Transformation Framework (HDTF) In Cost Management

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amazon



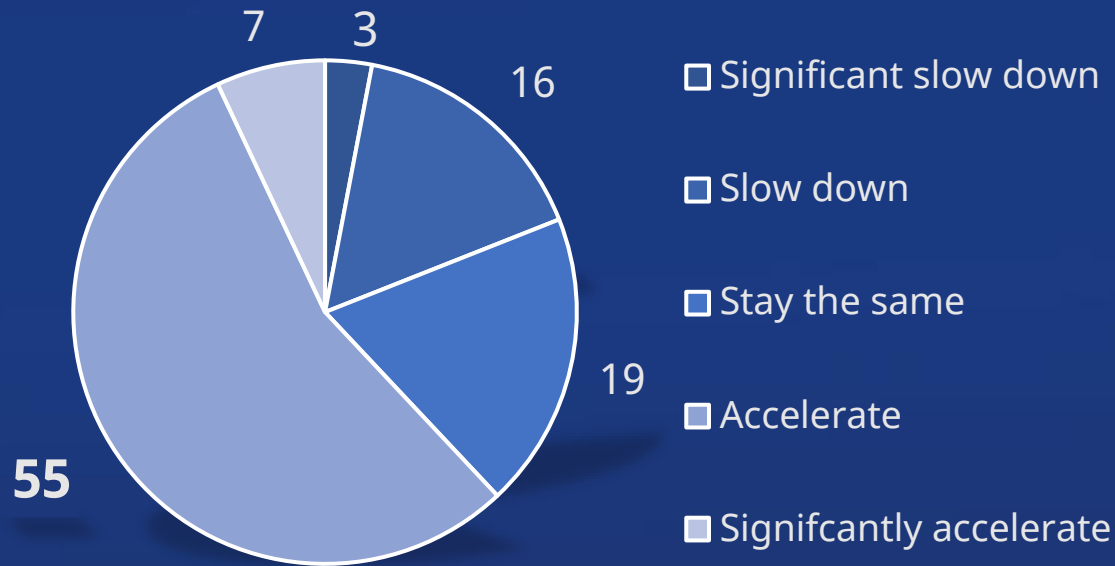
Digital transformation leverages opportunities presented by technology from IT to advanced analytics, sensors, robotics, 3D printing and many other

Digital transformation in construction across globe is still low



Approximately 60% of construction companies worldwide are only starting their digital transformation journeys.

Two-thirds of survey respondents believe that the COVID-19 crisis will accelerate industry transformation



The Covid-19 crisis **accelerate** the overall transformation of the construction industry

INVESTMENT TO THE NEW FUTURE



Companies have **started to invest more** to adjust to the new future

02

**Foundation and Challenges of
Digital Transformation**





Why?

Idea exploration

What?

Develop business case

How to buy?

Procurement strategy

How to create?

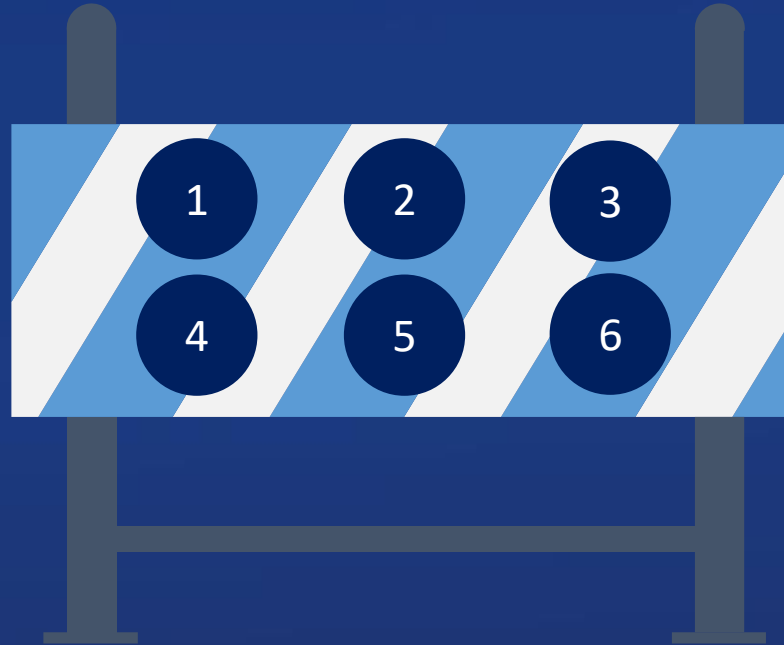
Implementation strategy



1. POOR LEADERSHIP

**2. ORGANISATIONAL
SILOS**

**3. LOSS AVERSION
BIAS**



**4. TOO MANY
PRIORITIES**

**5. LACK OF DIGITAL
TALENTS**

**6. LACK OF
AWARENESS**

◆◆ Digital success is not all about Technology

TECHNOLOGY

30%

STRATEGY

TALENTS

DIGITAL
INFRASTRUCTURE

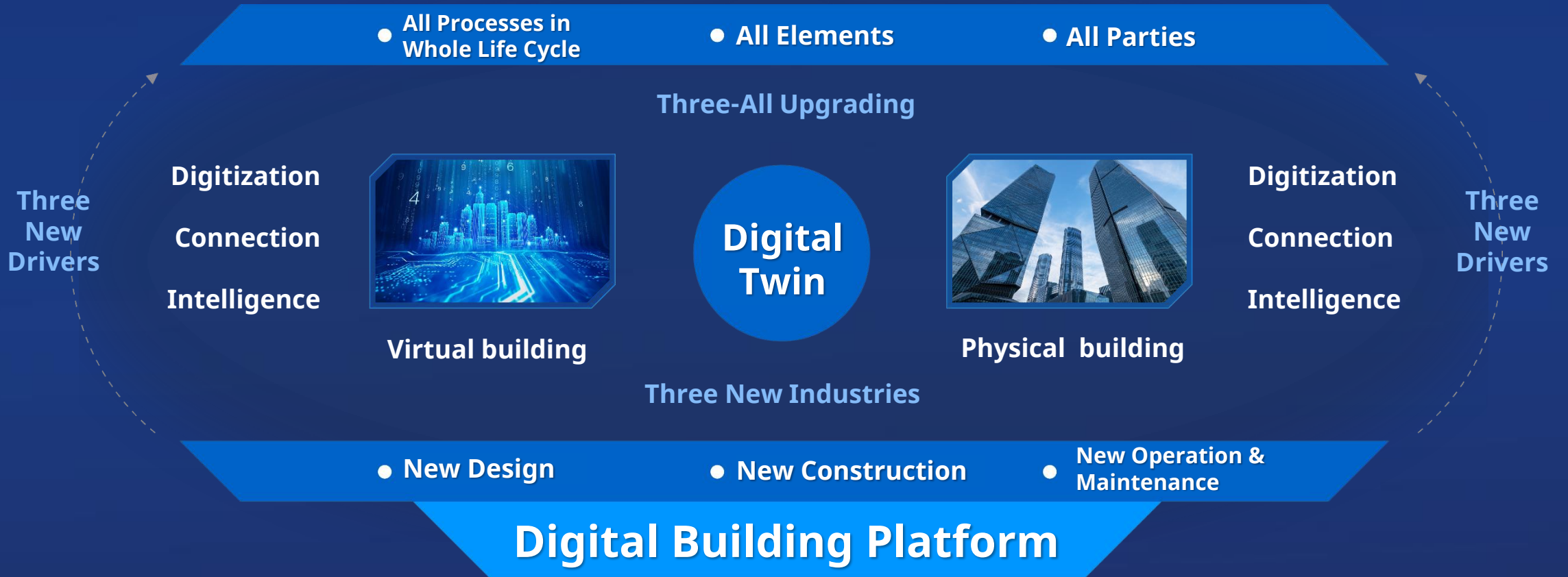
CULTURE &
LEADERSHIP

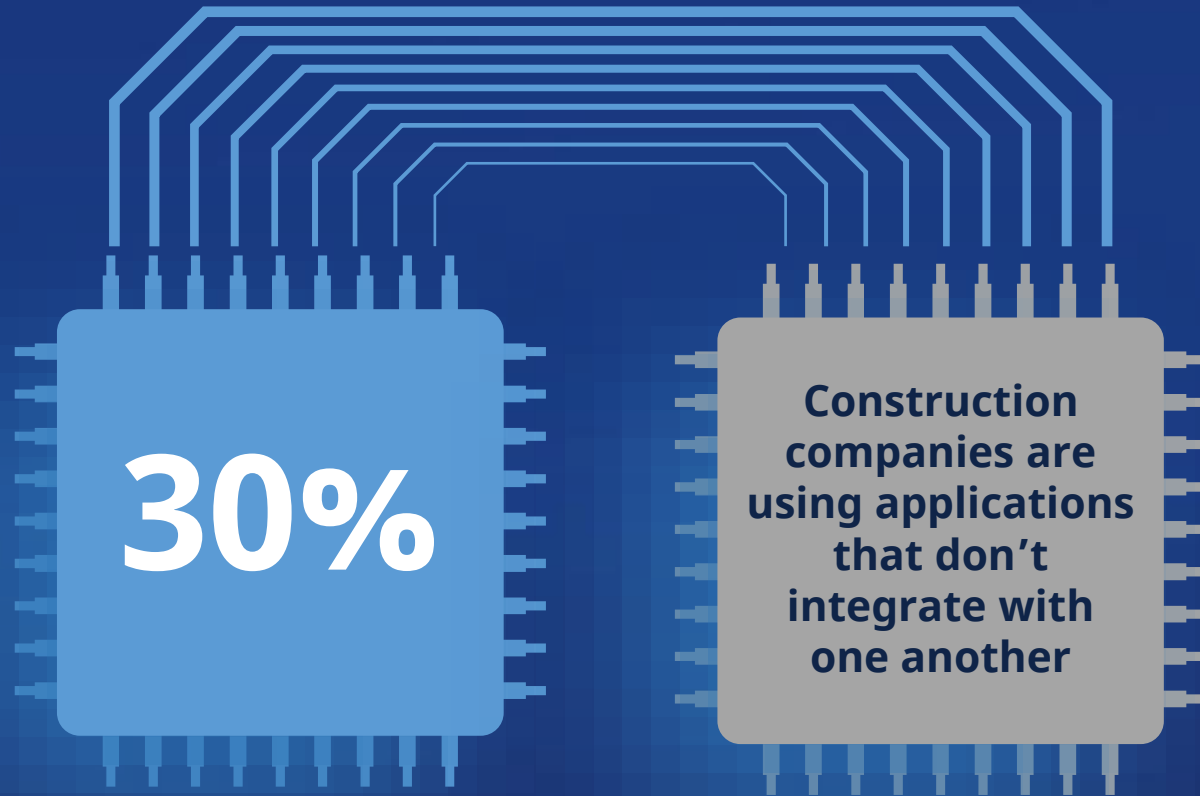
70%

Holistic

Integrated







Overall, BIM adoption in QS professionals is relatively low.

Fragmented and working in data silos

96% of project data produced goes unused

03

**Holistic Digital Transformation Framework
(HDTF) for Cost Management**



Integrated Digital Cost Management Platform

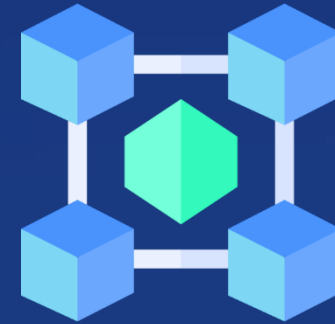




BIM Graphic Technology



Cloud Computing and Big Data



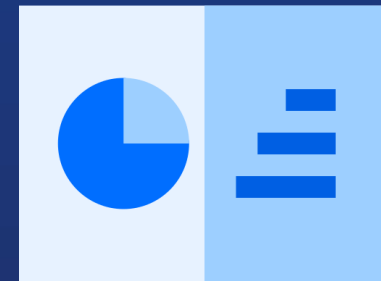
Blockchain Technology



Artificial Intelligence



Machine Learning



Predictive Analytics



Information and Data of Digital Whole Lifecycle Cost of Built Asset

Pre-Contract

- Cost Appraisal and Benchmarking
- Cost Plan
- Tender Estimate
- BOQ
- Develop and maintain Cost Data
- Produce Tender Document
- Tender Evaluation and Report

Post-Contract

- Cash Flow Forecast
- Interim Payment Valuation
- Variation Order Management
- Subcontracting
- Final Account

Operation and Maintenance

- Facilities and energy management



5D BIM Quantity Takeoff Tools

Quantity and Cost Integration



5D Digital Costing Tools

BIM Model





**Cost
Management
Dashboards**



**Market Trend
Forecast
Analysis**



**Risk
Assessment**

.....

Information and Data of Digital Whole Lifecycle Cost of Built Asset

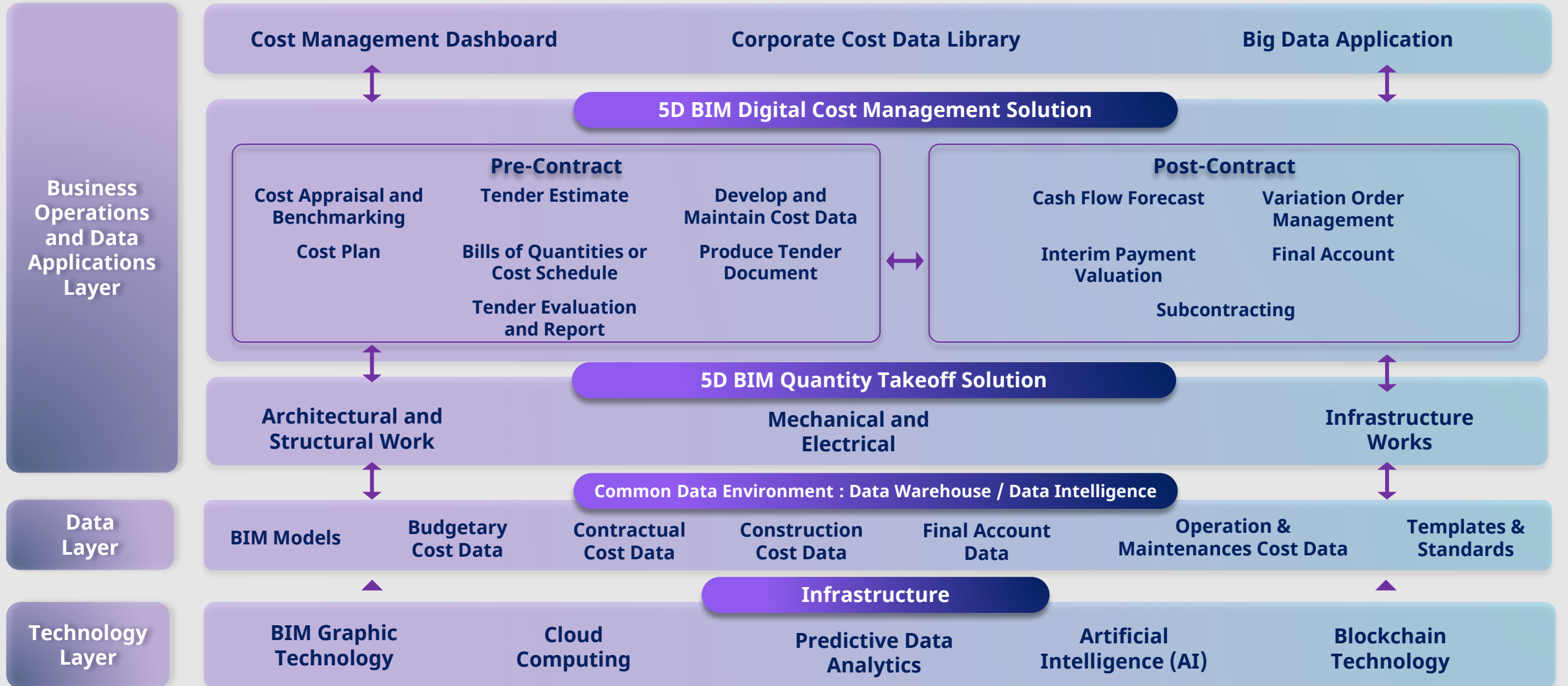
Pre-Contract

Post-Contract

Operation and Maintenance

BIM Model

5D BIM Integrated Digital Cost Management Platform





Integrated and Cloud-based Digital Building Platform

The screenshot displays the Glodon Digital Building Platform interface. The top navigation bar includes: Home, BIM Data Center, Dashboard (active), Reports, Photo Gallery, and Project Details. The main content area is divided into several sections:

- Project Overview:** Lists project details such as name, area (65027.72 m²), structure type (Frame-Shear Wall), and completion time (2019-03-16 to 2020-12-01).
- Construction Simulation:** A video player showing a 3D model of the building under construction.
- Project Map:** A map showing the project location in Beijing, China.
- Project Progress:** A list of tasks with corresponding photos, such as "5号楼竖向结构绑扎钢筋" (Reinforcing steel for vertical structure of Building 5).

China Mobile International Information Port, Beijing

Country: China

Size: 65,028 SqM

Value: 363million RMB

Data Management, Sharing and Collaboration

| 全部文件 | 上传人 | 大小 | 上传时间 |
|---------------|-----|----|------|
| 全部文件 | | | |
| 01.造价咨询前期资料 | | | |
| 02.合同 | | | |
| 03.图纸 | | | |
| 05.进度款 | | | |
| 06.会议纪要 | | | |
| 07.总包合同预算书... | | | |
| 08.日常工作 | | | |
| 09.全过程造价咨询... | | | |
| 10.勘察照片 | | | |

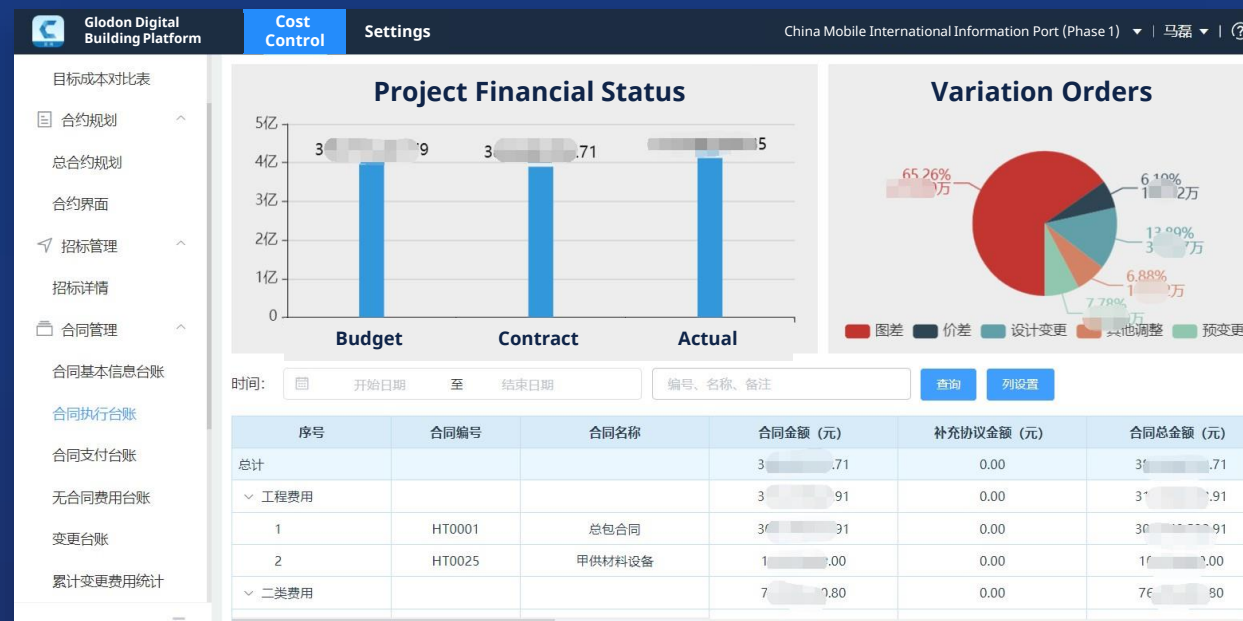
BIM Model - Real-time Data Integration

| 专业 | 构件类型 | 规格 | 工程量类型 | 单位 | 工程量 |
|----|------|----|-------------|----|-------------------|
| 土建 | 墙-结构 | | 外墙外翻钢丝网片总长度 | m | 223.389 |
| 土建 | 墙-结构 | | 面积 | m2 | 354.156 |
| 土建 | 墙-结构 | | 长度 | m | 66.3 |
| 土建 | 墙-结构 | | 体积 | m3 | 70.35199999999999 |

BIM Model – Cashflow Monitoring



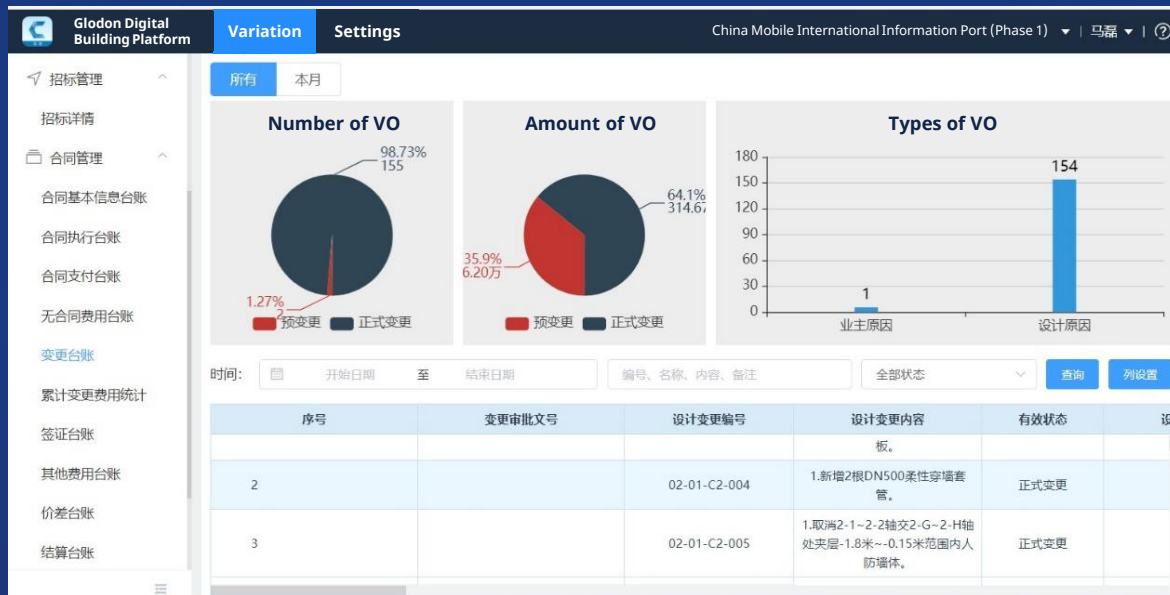
Contract & Cost Management Dashboards



Business Case of HDTF for Cost Management



Variation Management



Interim Payment Valuation

| ★编号 | ★名称 | 合同类别 | 合同总金额 | 计量周期 | ★计量日期 | ★支付类型 | ★送审金额 | ★审核金额 | ★审核日期 | ★应付金额 | ★支付比例 | ★支付日期 |
|-----|----------|------------|---------------|---------------------|------------|-------|-----------|-----------|----------|----------|----------|----------|
| 1 | HT0001 | 总包合同 | 302,758,52... | | | | | | | | | |
| 2 | YD-FK... | 预付款 | | 2019-01-01 至 201... | 2019-02-10 | 预付款 | 39,391.39 | 39,391.39 | 0.00 | 1,391.11 | 12.9139 | 1,391.11 |
| 3 | YD-FK... | 进度款 | | 2019-03-25 至 201... | 2019-04-25 | 进度款 | 14,451.13 | 1,167.11 | -1.283 | -9.135 | 304.16 | 1.715 |
| 4 | YD-FK... | 进度款 | | 2019-04-25 至 201... | 2019-05-25 | 进度款 | 9,598.597 | 285.69 | -2.312 | -20.820 | 0.0 | 0.0 |
| 5 | YD-FK... | 进度款 | | 2019-05-25 至 201... | 2019-06-25 | 进度款 | 23,266.21 | 1,141.11 | -2.125 | -10.751 | 4,607.11 | 4.1512 |
| 6 | YD-FK... | 进度款 | | 2019-06-25 至 201... | 2019-07-25 | 进度款 | 24,287.19 | 791.11 | -4.446 | -19.81 | 7,825.11 | 3.7511 |
| 7 | YD-FK... | 进度款 | | 2019-07-25 至 201... | 2019-08-25 | 进度款 | 26,748.22 | 763.11 | -3.515 | -14.451 | 1,809.11 | 4.6314 |
| 8 | YD-FK... | 进度款 | | 2019-08-25 至 201... | 2019-10-31 | 进度款 | 26,748.22 | 1,050.11 | -1.609 | -37.981 | 7,050.11 | 5.9818 |
| 9 | YD-FK... | 进度款 | | 2019-09-25 至 201... | 2019-11-28 | 进度款 | 11,056.7 | 833.18 | -4.223 | -36.467 | 833.18 | 2.387 |
| 10 | YD-FK... | 进度款 | | 2019-10-25 至 201... | 2019-12-10 | 进度款 | 11,164.11 | 1,566.11 | -5.9808 | -4.951 | 9,566.11 | 3.6711 |
| 11 | YD-FK... | 进度款 | | 2019-11-25 至 201... | 2020-01-06 | 进度款 | 5,788.284 | 758.05 | -5.5023 | -11.294 | 758.05 | 1.474 |
| 12 | YD-FK... | 进度款 | | 2019-12-25 至 202... | 2021-03-25 | 进度款 | 4,408.723 | 211.44 | -1.194 | -24.633 | 565.10 | 1.183 |
| 13 | YD-FK... | 进度款 | | 2020-01-25 至 202... | 2021-03-25 | 进度款 | 11,364.11 | 1,122.11 | -2.24254 | -2.061 | 8,128.11 | 3.4710 |
| 14 | YD-FK... | 进度款 | | 2020-02-25 至 202... | 2021-03-25 | 进度款 | 10,309.11 | 1,572.11 | -1.73718 | -1.321 | 4,054.11 | 5.316 |
| 15 | YD-FK... | 进度款 | | 2019-03-16 至 202... | 2021-03-25 | 进度款 | 15,477.11 | 1,355.11 | -322.31 | -0.5418 | 1,424.11 | 6.218 |
| 16 | YD-FK... | 进度款 | | 2019-03-16 至 202... | 2021-03-25 | 进度款 | 35,804.35 | 1,872.11 | -981.74 | -0.9634 | 1,796.11 | 11.3534 |
| 17 | YD-FK... | 进度款 | | 2019-03-16 至 202... | 2021-03-25 | 进度款 | 11,510.11 | 1,228.11 | -211.97 | -0.7718 | 1,011.11 | 5.9618 |
| 18 | YD-FK... | 进度款 | | 2019-03-16 至 202... | 2021-03-25 | 进度款 | 4,285.20 | 1,974.11 | -311.31 | -0.7315 | 1,655.11 | 6.5515 |
| 19 | YD-FK... | 进度款 | | 2019-03-16 至 202... | 2021-03-25 | 进度款 | 11,909.11 | 1,679.11 | -389.83 | -1.4818 | 5,089.11 | 6.031 |
| 20 | BL0001 | | | 2021-11-25 至 202... | 2021-03-26 | 进度款 | 0.00 | 0.00 | 0.00 | 0.00 | -12.910 | 0.00 |
| 21 | HT0015 | 建设单位... | 4,027,600.00 | | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22 | HT0016 | 城市基础设施... | 12,980,500.00 | | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | HT0003 | 工程量清单... | 470,863.95 | | | | 4,33.95 | 47,3.95 | 0.00 | 0.47 | 100.47 | 100.47 |
| 24 | YD-FK... | 2019年4月份 | | 2019-04-01 至 201... | 2019-08-03 | 进度款 | 4,33.95 | 47,3.95 | 0.00 | 0.47 | 100.47 | 100.47 |
| 25 | YD-FK... | 2020-3-25 | | 2020-03-25 至 202... | 2021-03-25 | 进度款 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | HT0017 | 建设工程文... | 323,400.00 | | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | HT0002 | 造价合同 | 2,373,745.12 | | | | 47,9.02 | 47,19.02 | 0.00 | 0.47 | 20.47 | 19.02 |
| 28 | YD-2月 | 2017-12-01 | | 2017-12-01 至 201... | 2019-09-05 | 进度款 | 47,9.02 | 47,19.02 | 0.00 | 0.47 | 20.47 | 19.02 |
| 29 | HT0006 | 审计合同 | 2,484,700.00 | | | | 55,17.33 | 55,37.33 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | BL0014 | 2017-12-16 | | 2017-12-16 至 201... | 2019-09-05 | 进度款 | 55,17.33 | 55,37.33 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | HT0018 | 建筑工... | 324,500.00 | | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

04

Key Takeaways



01

**Identify the
purpose,
requirements
and deliverables**

02

**Establish digital
strategies and
build digital
culture**

03

**Work together
with a
technological
partner**

Making Every Project A Success

Helping Every Practitioner Have Achievements

www.glodon.com/en/

THANK YOU



Get in Touch



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