Building Intelligence 2017

Building a Collaborative Future : BIM in HK

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Deputy Director of Housing (Development and Construction)

To supervise the Development & Construction Division of the Housing Department; and

To oversee all facets of public housing development work in Hong Kong, including project management, planning, design and contract management, as well as establishing operational policies on procurement, design, construction, quality, performance assessment, dispute resolution, research and development, safety and the environment.

Chairperson, Committee on BIM

To formulate strategies for market transformation, promote the use and facilitate the application of BIM, digital construction, and its related technologies in construction industry; and

To promote cross-disciplinary collaboration and adoption of BIM.
Agenda

1. CIC as the key driver of BIM in HK AEC industry
   - What we have achieved?
2. BIM in Hong Kong today
   - BIM in Policy Address
   - Recent BIM Development in Hong Kong
3. Our Way Forward
Global Perspective on BIM

- The global construction industry is undergoing a paradigm shift
- Adoption of BIM is a national strategy in many countries/ economies
- Long term commitment and investment on BIM by some governments and regional agencies
- Hong Kong has been adopting BIM since 2007 and is progressing well with CIC as the driving arms to push the AEC industry for using the technology.
BIM Collaborative Moving Through HK CIC

Hong Kong Construction Industry Council (HKCIC) was established under the Laws of Hong Kong: Chapter 587 - CIC Ordinance - to coordinate Hong Kong’s construction industry including Government, public and private works.

Hong Kong BIM stakeholders are being collaborated through HKCIC to work together towards strategic implementation of BIM in Hong Kong’s construction industry.

HKCIC has formed task forces on BIM to collaborate with the stakeholders from public clients, private clients, architectural, engineering, surveying, BIM professional institutes, trade unions, academia, etc., to drive the BIM implementation in Hong Kong.

The BIM implementation in Hong Kong’s construction industry by HKCIC is taking both:
1) Push Strategy (i.e. advocate project clients and asset owners to adopt BIM)
2) Pull Strategy (i.e. promote industry-wide buy-in and buildup industry-wide ready)
CIC as the key driver of BIM in HK AEC industry

- **2013**: First CIC Conference in BIM
  - Established of the Task Group on BIM Implementation

- **2014**
  - Published of BIM Standard Phase 1
  - Launched Industry-wide BIM Excellence Award
  - Published of Roadmap
  - Launched BIM Year 2014 with a series of promotion and awareness program

- **2015**
  - Established of BIM Innovation and Development Centre
  - Published of BEAM v2.0

- **2016**
  - Used BIM can score credit under Innovation & Addition in BEAM. BEAM v2.0 is under preparation, that it would become normal credit under integrated design management category.

- **2017**
  - Established of Committee on BIM with members from 40+ organisations and institutions
Comparison of Leading Practice Countries and Hong Kong Practice
What CIC has done to lead for BIM development in Hong Kong?

Roadmap for BIM Strategic Implementation in Hong Kong’s Construction Industry

Identification
Current benefits and constraints of BIM implementation

Establishment and Set Out
A blueprint and Industry-wide BIM implementation strategies

16 Recommended Initiatives in 9 areas
- Collaboration
- Incentive and Proven Benefit
- Standard and Common Practice
- Promotion and Education
- Global Competitiveness
- Legal and Insurance
- Information Sharing and Handover
- Compliant BIM Tool
- Audit Risk Management

3 Suggested Imminent Actions
- Awareness Programs
- Industry Standards
- Training
Three Suggested Imminent Actions

1. *Industry Standards*

HKCIC’s BIM Standards (Phase 1)

*Standard & Common Practice – Published in Sep 2015*

Establishment

A set of industrial specifications & common practice to facilitate the wider use of BIM in construction projects

4 Major Chapters

a) Project Execution Plan  
b) Modeling Methodology  
c) Level of Development  
d) Presentation Style & Data Organization
Three Suggested Imminent Actions

Industry Standards

Project Clients Summit: Development of BIM Implementation Strategies Workshop and Summit Report

3 Major Sectors
- Government
- Public Developer
- Private Developer

Methodology and Approach of the Workshop
1. Scientific and Evidence-based Information
2. Practical Methodologies from Global Perspective
3. Purpose-based and Performance-based Template for Strategy Development
Three Suggested Imminent Actions

Industry Standards

BIM Standards on GBP Submission (Phase 1)
(To be published in 2017)

Aim
With local practice, to provide a quick third party method in quality checking of drawings using BIM technology before General Building Plan (GBP) submission to statutory authorities & concerned Government Departments.

Benefits
• Reduce time in manual checking
• Avoid errors and rejections

Deliverables
• Set of specifications, steps and
• Methods to achieve a semi-automatic computational solution

Scopes
• Fundamental standards as per current Practice Notes issued by statutory authorities and concerned Government
• Gross Floor Area
• Means of Escape
• Sanitary Fitment Provision
• Fire Compartment
• Fire Resisting Construction
Three Suggested Imminent Actions

1. Industry Standards

Production of BIM Objects Guide
(To be published in 2018)

Aim
To guide the industry practitioners to develop BIM objects for 3D modeling and production of drawings

 Deliverables
- Guideline
- Sample BIM objects
Three Suggested Imminent Actions

2. Training

BIM Innovation & Development Centre
Opened in April 2016

Training Courses

- BIM Awareness Training
- BIM Management for Senior Executives
- BIM Basic Modelling
- BIM Advanced Modeling for individual disciplines: Architectural, Structural and MEP
- Understand of BIM for construction workers and site supervisors
- Workshop of Hong Kong’s BIM Standards
- Professional Certificate on BIM and Construction Industry
- Development of BIM Objects
Award received by CIC BIM Centre
Three Suggested Imminent Actions

3. **Awareness Programs**

**HKCIC’s Awareness Programs**

- Conferences, Seminars, Exhibitions, Official meetings
- Publication and Media Exposure

**BIM Excellence Awards**

- An industry-wide BIM excellence awards
- BIMer of the Year, Young BIMer of the Year, Construction Innovator by BIM
- To recognize practitioners who have spearheaded an effort in the harnessing of BIM technology & process
Three Suggested Imminent Actions

3. Awareness Programs

Demonstration of BIM-AM in Zero Carbon Building (ZCB)

- Adoption of BIM-AM Technologies in ZCB
- A joint BIM project between CIC & Electrical and Mechanical Services Trading Fund (EMSTF)
- To demonstrate the use of BIM-FM in
  - Energy performance analysis
  - Facilities / assets management
  - Mobile platform
  - Integration with BMS system
  - Real-time location tracking with RFID
  - Renovation / alternation planning
CIC Committee on BIM to drive BIM forward

To *formulate* strategies for market transformation, *promote* the use and facilitate the application of BIM, digital construction, and its related technologies in construction industry.

To *promote cross-disciplinary collaboration and adoption* of “BIM” in project delivery processes including planning and design, construction, facility and asset management.

To develop CIC as a *Centre of Excellence for “BIM”* in the form of a central hub and of the open sharing platform of “BIM” with specific focus.

To *identify* areas which require further investigation, *promote research & development* for “BIM”.
The construction industry has been facing the challenges of high construction costs and labour shortage in recent years. Hence, the Government is proactively promoting the adoption of technology and innovative construction methods to improve productivity and cost-effectiveness. For instance, the Government is assisting the industry in establishing large-scale and highly automated steel reinforcing bar prefabrication plants for the production of prefabricated steel reinforcement components for use in construction projects. We will also adopt Building Information Modelling technology in the design and construction of major government capital works projects that are scheduled to start in 2018, and promote the use of this technology in private construction projects. Besides, the new Construction Innovation and Technology Application Centre of the Construction Industry Council will be in operation by the end of this year to provide the latest information on local and overseas construction technologies and to support their adoption by small and medium enterprises.
Buildings Department (BD) of HKSAR
Practice Note on Building Information Modelling

• Issue as Practice Note (ADV-34) for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers
• Provides general guidelines on BIM submissions
• Facilitate plan processing by BD.
• Encourage adoption of using BIM under Buildings Ordinance
• BIM as additional information to enhance illustration of the proposals and/or construction sequence of the proposed works
HKHA’s BIM applications now encompass full design and construction cycle

Building a collaborative future: BIM in Hong Kong
HKHA’s BIM achievements through Collaboration

Collaboration between:

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<th>HKHA’s Management &amp; Working Level</th>
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Building a collaborative future: BIM in Hong Kong
HKHA’s BIM achievements through Collaboration

1. Collaboration between - HKHA’s Management & Working Level

Management
- Strategy
- Policy

Working Level
- Implementation

Establish BIM Infrastructure

3-Tier BIM Management structure

Tier 1  Project Steering Committee (PSC)
To plan strategically the implementation of BIM.

Tier 2  Working Group (WG)
The BIM WG underpins the BIM PSC and is represented by all professional disciplines.

Tier 3  BIM Service Team (BIMST)
To act as central support to project teams on BIM implementation.

Building a collaborative future: BIM in Hong Kong
HKHA’s BIM achievements through Collaboration

1 Collaboration between - HKHA’s Management & Working Level

Management
• Strategy
• Policy

Working Level
• Implementation

Establish BIM Infrastructure

a. Set up BIM Service Team and BIM Centre

b. Create HA BIM Families

c. Establish HA BIM standards

d. Provide BIM Training
HKHA’s BIM achievements through **Collaboration**

### Collaboration between – HKHA’ Professional Disciplines

- Architect
- Landscape Architect
- Structural Engineer
- Building Services Engineer
- Civil Engineer
- Geotechnical Engineer
- Planner
- Land Surveyor
- Quantity Surveyor

### Cross Platform Integration

**Integrated Use of BIM and GIS**

**Innovation in Integrating Civil 3D, ArcScene and Revit (CAR)**

- **Civil 3D**
- **ArcGIS**
- **Revit**

**Analysis**

- Ridge Line Analysis
- Vantage Point Analysis
- Shadow Analysis
- Site Appraisals

**Building a collaborative future: BIM in Hong Kong**
HKHA’s BIM achievements through **Collaboration**

3 Collaboration between – HKHA & Counter-parties

**Construction Planning and Safety**

a. Integrated use of BIM & RFID to monitor the manufacturing and delivery of building components

1. **Fabrication**
   - Planning and monitoring via a web platform with BIM visualization functions
   - Reading RFID tag before delivery
   - Reading RFID tag after concreting

2. **Transportation**
   - Reading RFID tag after delivery

3. **Assembly**
   - Reading RFID tag after installation

Planning and monitoring via a web platform with BIM visualization functions

**Building a collaborative future: BIM in Hong Kong**
Collaboration between – HKHA & Counter-parties

HKHA

Contractors

Construction Planning and Safety

b. Construction planning footbridge installation sequence

Building a collaborative future: BIM in Hong Kong
3. Way Forward

1. Government’s adoption of BIM in design & construction of major capital works projects in 2018 will be the major driving force in 2018
2. Promote the use of BIM in private sector
3. Foresee a higher demand of BIM professionals and training from large corporates to SMEs
4. BIM training to students in high education for well prepared next generation’s needs
5. Explore wider applications of BIM
6. Integration of 3D spatial data and BIM for different land development & infrastructure projects
Thank You

Traveller, there is no road, you make your own path as you walk.
Antonio Machado (1875 – 1939)