OpenBIM and Construction Technology

Hong Kong Alliance of Built Asset & Environment Information Management Associations
香港建設資產及環境信息管理聯盟

buildingSMART Hong Kong

OpenBIM, Open Opportunities to Build a Better World

Ar Prof Ada Fung, BBS
President, HKABAEIMA
Chairperson, Hong Kong Chapter of buildingSMART International
Chairperson, Committee on BIM, Construction Industry Council (CIC)
Board Director, Logistics and Supply Chain MultiTech R&D Centre (LSCM)

“Build a Better World”

Healthy, Safe, Smart & Green within 1.5 degrees

We have only **ONE Planet Earth**.

Please use it wisely!

Source: United Nations Environment Programme (2021). Catalysing Science-based Policy action on Sustainable Consumption and Production – The value-chain approach & its application to food, construction and textiles.

CHALLENGES	OPPORTUNITIES
1) What type of construction is built and used, and where? Different types of construction built in different locations and regions. contribute in different ways to meeting needs of societies and achieving the sustainable development goals, and can cause different pressures on use of resources and environmental impact	Promote and enable adequate and sustainable construction
2) How much is being built? The construction market is growing worldwide, which causes pressures on resources and environmental impacts. However, construction does not necessarily follow demand. For example, empty buildings and property speculation is registered in many developed countries, while there is a construction gap in developing countries.	Align development needs with supply of construction worldwide
3) How are they being built and used? The impacts of construction are associated with: type and amount of construction materials used, consumption of resources in the operation of buildings, and construction and demolition processes. Changing design, construction and use practices is fundamental to use resources more efficiently and reducing environmental impacts.	Adopt more sustainable practices relating to the manufacturing of construction products and the design, construction and use of buildings and infrastructure

Table 5: key challenges and opportunities for addressing natural resource use and environmental impacts along construction value chains

Source: United Nations Environment Programme (2021). Catalysing Science-based Policy action on Sustainable Consumption and Production – The value-chain approach & its application to food, construction and textiles.

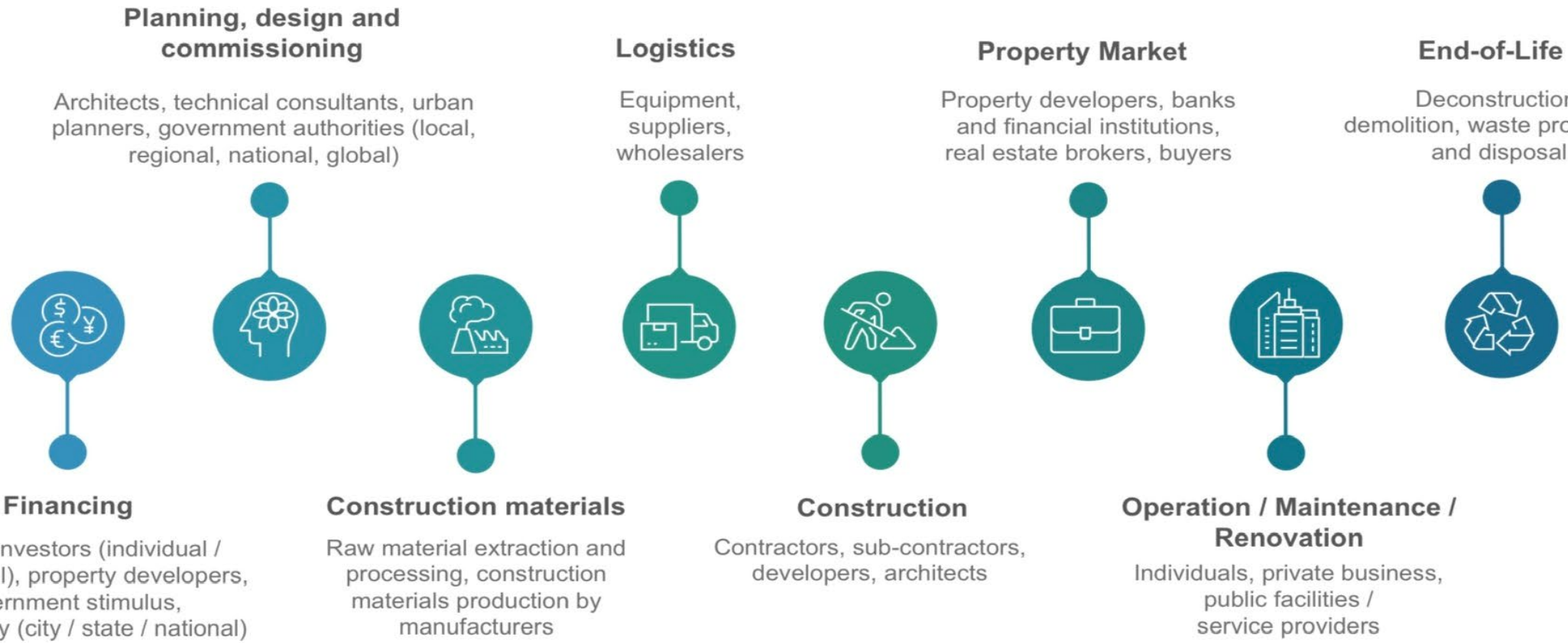
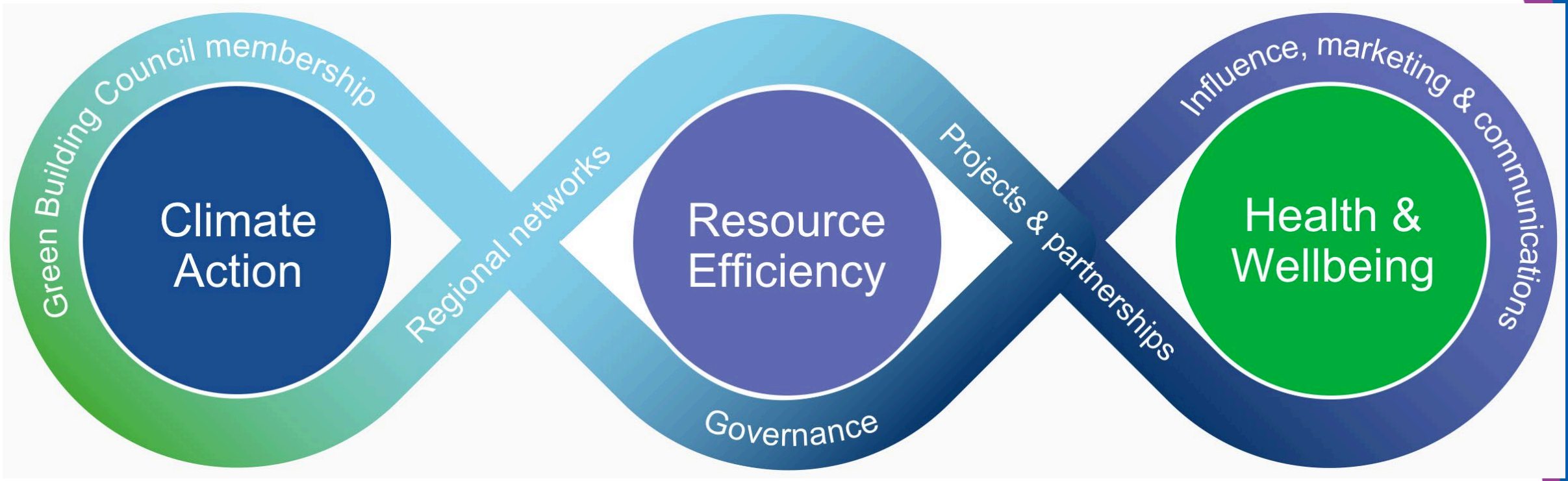


Figure 7: Stages of the construction value chain

Source: United Nations Environment Programme (2021). Catalysing Science-based Policy action on Sustainable Consumption and Production – The value-chain approach & its application to food, construction and textiles.

Green buildings to meet Sustainable Development Goals

Our Strategy: drive sector impact

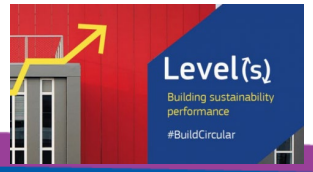


ADVANCING NET ZERO

BUILD UPON

Building Efficiency Accelerator

Energy Efficient Mortgages Initiative



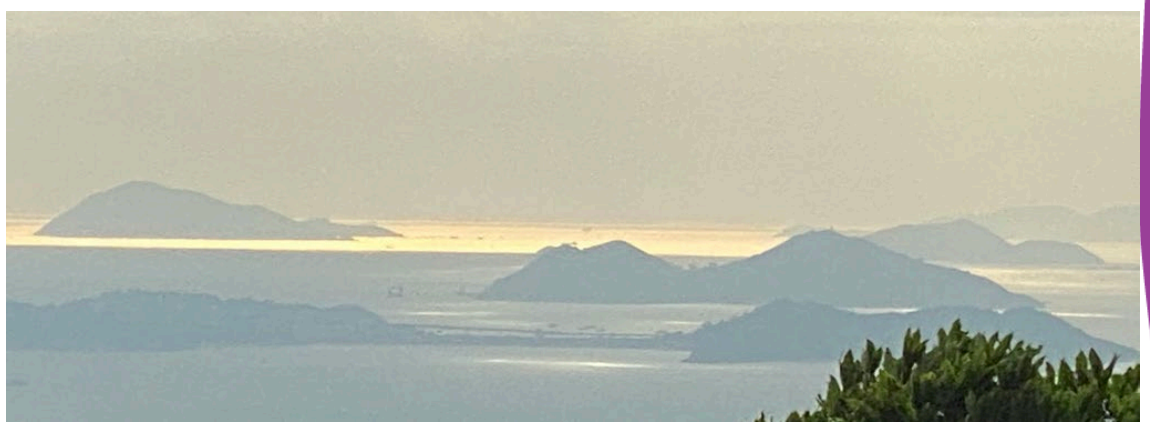
BETTER PLACES FOR PEOPLE

WORLD GREEN BUILDING COUNCIL

Hong Kong Special Administrative Region

Population	**< 7.5M**
Land	**1,100 km²**
Built up area	**25%**

High-rise
High density
Compact city
Subtropical climate
Hilly terrain

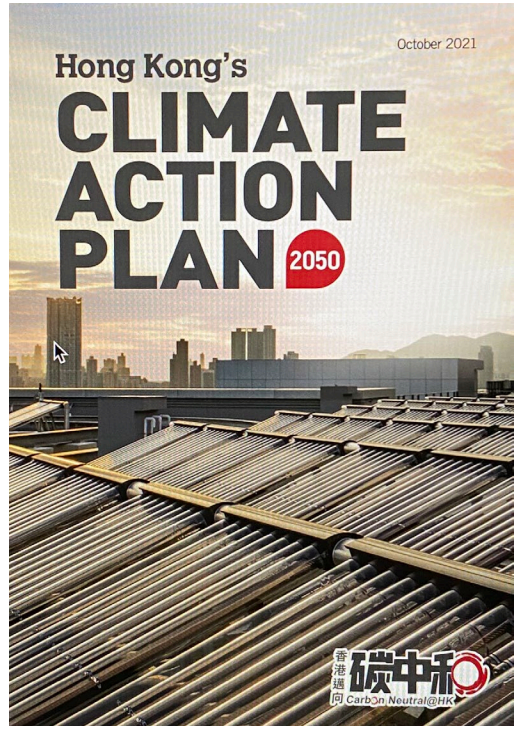


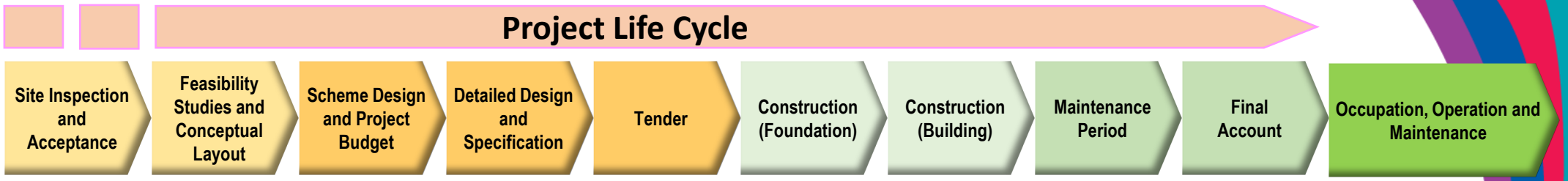
“Build a Better World”

Healthy, Safe, Smart & Green within 1.5 degrees

Caring for People
Caring for Environment
Decarbonize before **2050**

- **From Macro level to Micro level**
- **We need Trusted Data**

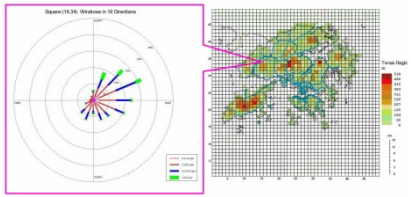




Technical Studies for Potential Sites

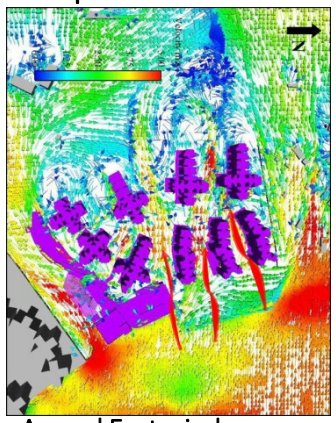
1. Air Ventilation Assessment
2. Microclimate Studies
3. Retail Viability Study
4. Project Feasibility Studies
5. Architectural Feasibility Studies
6. Site Potential Studies
7. Visual Impact Assessment
8. Heritage Impact Assessment
9. Ecological Assessment
10. Land Use Studies
11. Planning and Engineering Study
12. Environmental Assessment Study
13. Air Quality Objectives Assessment
14. Odour Assessment
15. Chimney Emission Impact Assessment
16. Traffic Impact Assessment
17. Drainage Impact Assessment
18. Sewerage Impact Assessment
19. Land Decontamination Study
20. Ground Assessment
21. Natural Terrain Hazardous Study
22. Potentially Hazardous Installations Assessment
23. Tree Survey
24. Condition Survey for Existing Building
25. Land Surveying
26. Archeological Study
27. Landscape Impact Assessment

PASSIVE DESIGN: BRINGING BREEZE AND AIR

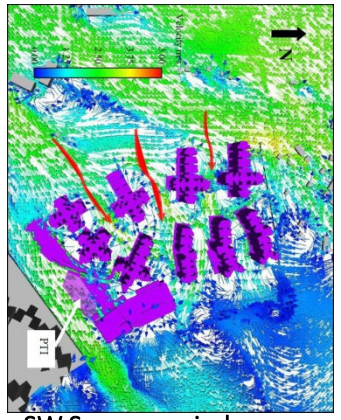


Corridors for the WIND

Computer Simulation on Wind Performance



Annual East wind



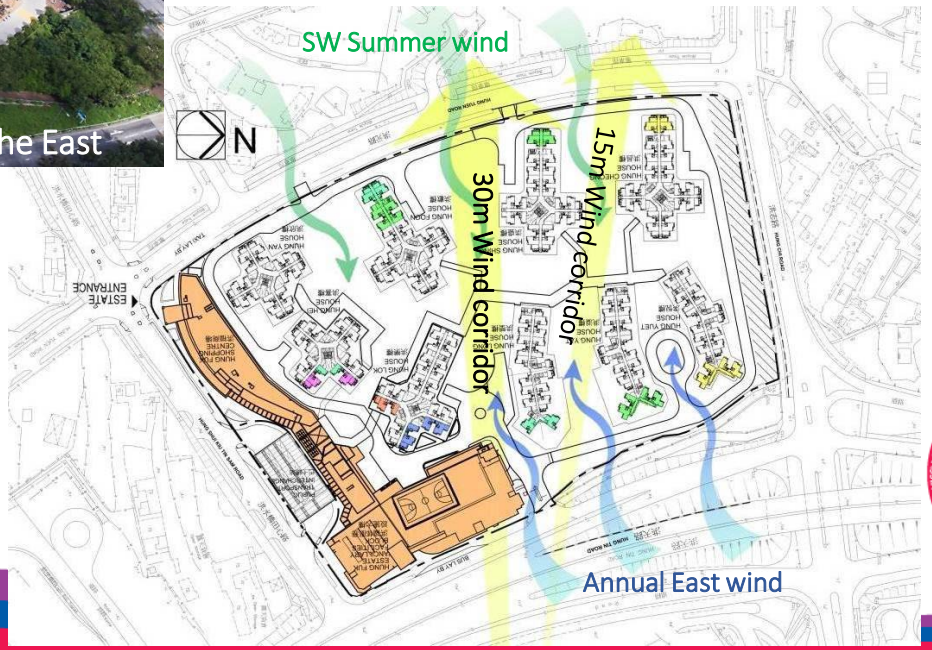
SW Summer wind

To Enhance Wind :

- Two wind corridors
- Large building separation
- Orientation of blocks in parallel with prevailing wind direction
- Ground floor empty bays

Average wind speed at pedestrian level

- ranges from 1.2 to 3.1 m/s under summer South-west wind.
- around 2.5 m/s under annual East wind.



Comparing with a baseline scheme, the design results 37.8% improvement in wind velocity ratio within the development.

openBIM®

Home » About » openBIM

openBIM® extends the benefits of BIM (Building Information Modeling) by improving the accessibility, usability, management and sustainability of digital data in the built asset industry. At its core, openBIM is a collaborative process that is vendor-neutral. openBIM processes can be defined as sharable project information that supports seamless collaboration for all project participants. openBIM facilitates interoperability to benefit projects and assets throughout their lifecycle

openBIM ensures that:

1. **Interoperability** is key to the digital transformation in the built asset industry
2. **Open** and neutral standards should be developed to facilitate interoperability
3. **Reliable** data exchanges depend on independent quality benchmarks
4. **Collaboration** workflows are enhanced by open and agile data formats
5. **Flexibility** of choice of technology creates more value to all stakeholders
6. **Sustainability** is safeguarded by long-term interoperable data standards

https://www.buildingsmart.org/about/openbim/

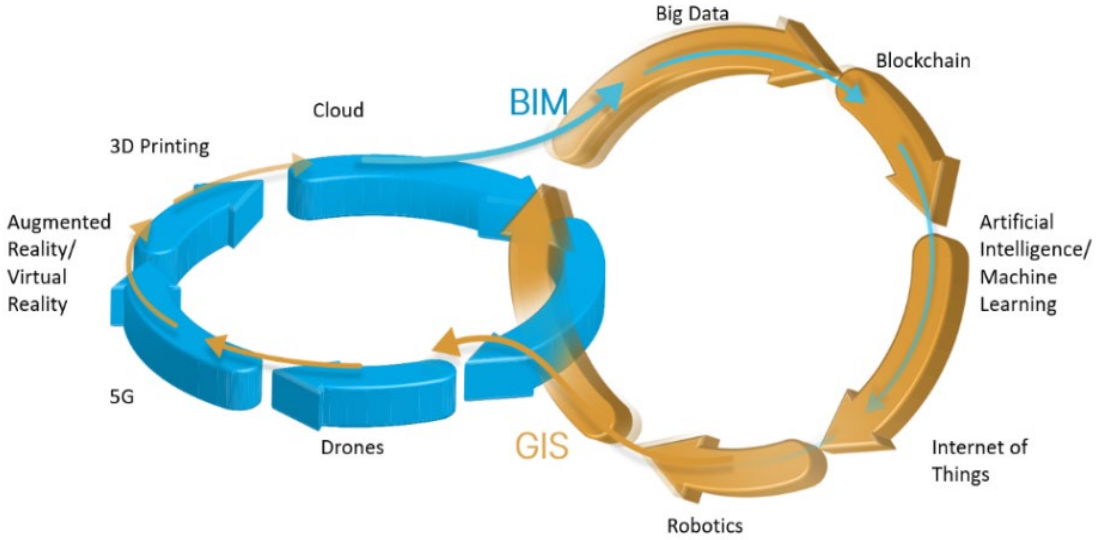
BIM & GIS Integration

While BIM is the digital representation of a built asset; geographic information system (GIS) is a framework for gathering, managing & analysing data.

GIS analyses spatial location and organises layers of information into visualisations using maps and 3D scenes.

The use of BIM (asset) & GIS (spatial) data supports applications across virtually all sectors of human activities:

- Topographic Basemaps
- Land Records
- Disaster / Emergency Management
- Urban & Regional Planning
- Census
- Environmental Management
- Health Care
- Education
- Economic Development
- Transportation / Routing / Logistics
- City Services Management
- Utility Management / Telecommunications placement



TC › ISO/TC 59/SC 13

ISO/TR 23262:2021
GIS (geospatial) / BIM interoperability

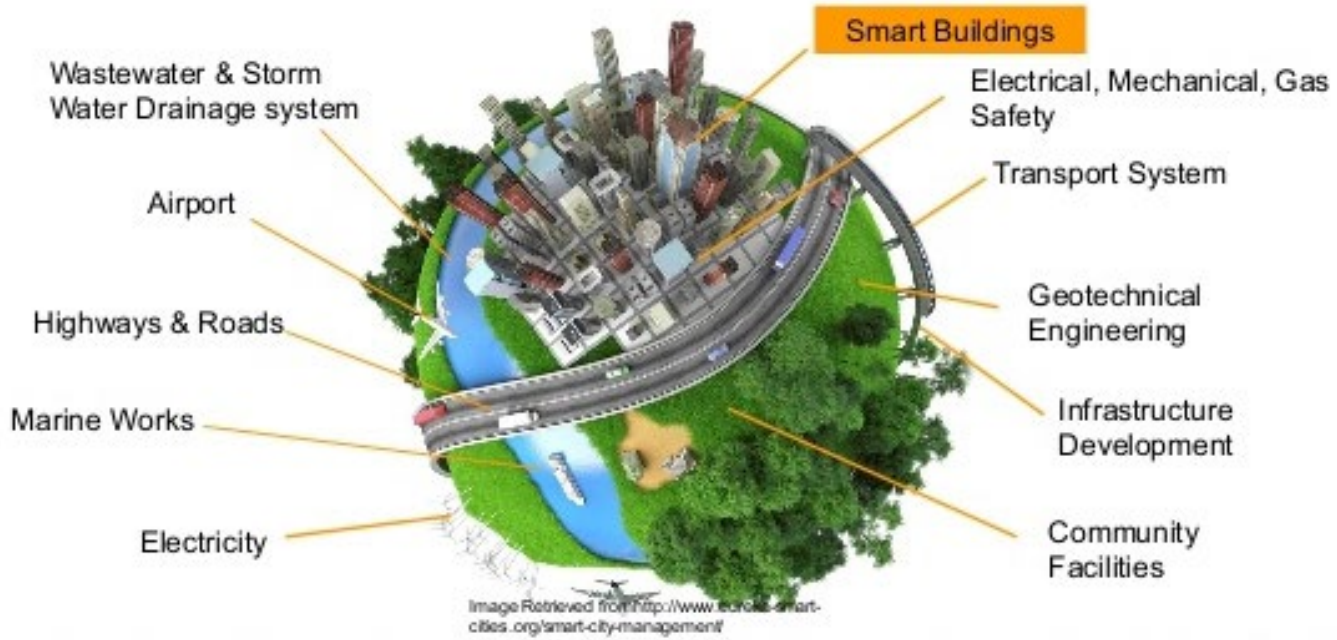
Both GIS and BIM deal with the issues of graphical, non-graphical information and documentation. Each has different technology, delivery formats and data standards to support their approach and resolve their perspective challenges.
The professionals should spell intended applications for designing the data flow from BIM to GIS at different stage of project life cycle.
The development of open formats using API based approaches is recommended by both to facilitate information exchanges. The integration of BIM and GIS involves the matching of entities in the IFC (BIM) and the CityGML (GIS) schema. However, not all the entities are well defined and documented under these two schemas and this will lead to confusion and inconsistencies in the matching process.

Building Smart Cities with Digital Transformation

Smart City is built with smart infrastructure & smart buildings

The use of BIM & GIS (spatial) data supports applications across virtually all sectors of human activities.

- Topographic Basemaps;
- Land Records;
- Utility Management;
- Telecommunications;
- Disaster Management;
- Urban & Regional Planning;
- Census;
- Environmental Management;
- Health Care;
- Education;
- Logistics;
- Economic Development



All service providers work together wisely for sustainable economic growth & a high quality of life.

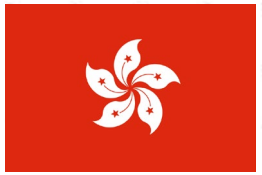
Source: Extracted from Smart Building to Smart City, Kalloc Studios Asia Limited

We need trusted information to **build a better world.**

We join buildingSMART, drive **openBIM** through membership, training, R&D, Awards.

We seek **open opportunities** to collaborate with like-minded organizations.

OpenBIM in HKSAR

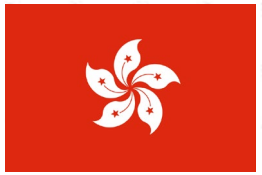


Hong Kong Alliance of Built Asset & Environment Information Management Associations
香港建設資產及環境信息管理聯盟

buildingSMART® Hong Kong

CONSTRUCTION INDUSTRY COUNCIL
建造業議會

OpenBIM in HKSAR



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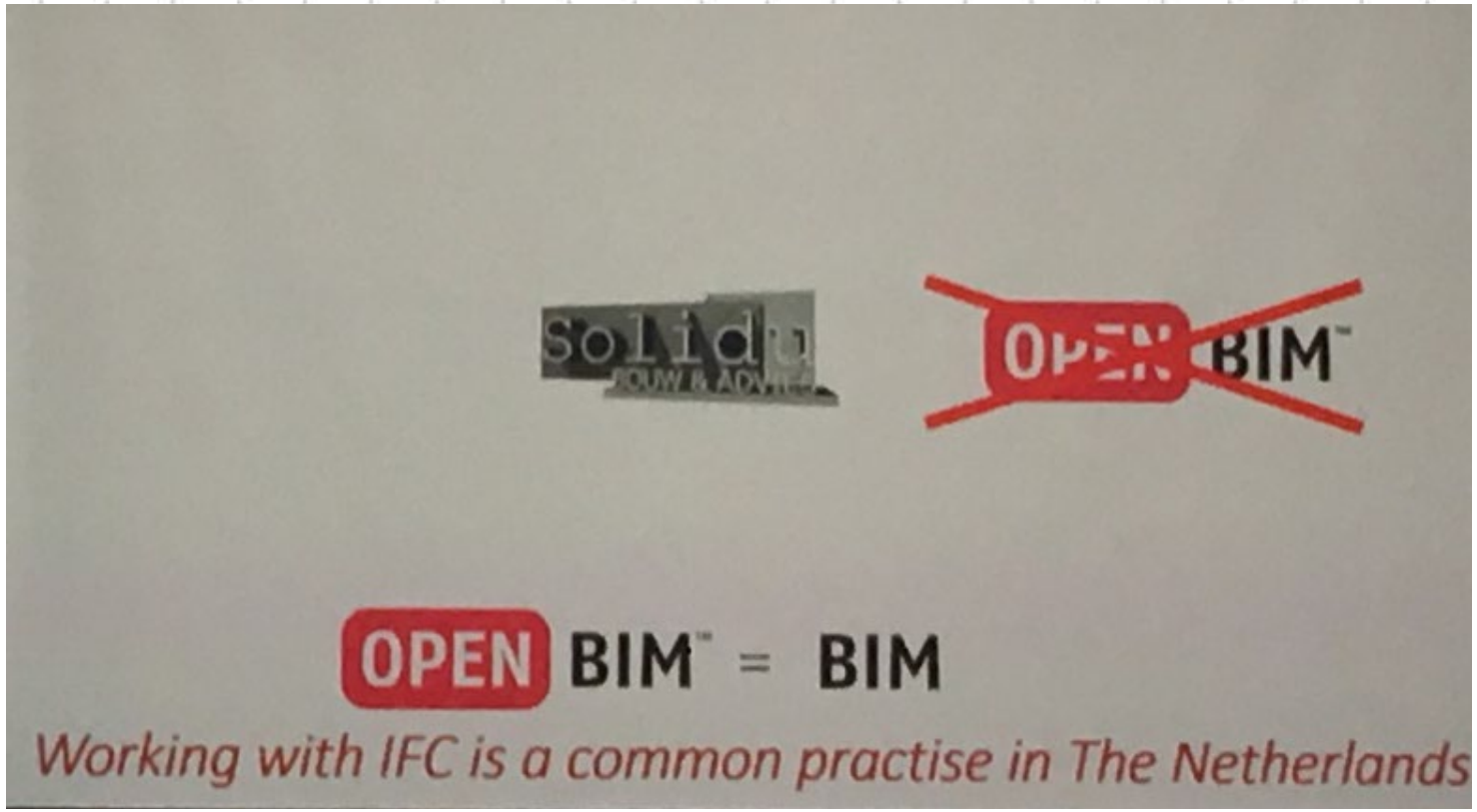
CONSTRUCTION INDUSTRY COUNCIL
建造業議會

1. I first attended bSI Summit in **Tokyo** and met Chairman and CEO of bSI in **October 2018**

In quest for integrating BIM and GIS for the planning & design of public housing, I was first introduced to the use of IFC in 2010, and it worked. It was not until 2018, when I first attended buildinSMART International Standards Summit in Tokyo. This gave me the impetus to drive openBIM in Hong Kong.

“We do not use the term openBIM in The Netherlands. From the very beginning, the BIM we learn is openBIM.”



2. Next we have a 13-member delegation attending bSI Summit in **Dusseldorf** and met Chairman and CEO of bSI in **March 2019**

When we came back to Hong Kong and examine the details of joining buildingSMART as a Chapter, CIC as a statutory body discovered that it would not be possible for them to do so. We got stuck; so what do we do? Our second best option is to get professional bodies to take it up.

3. A small delegation attended buildingSMART Chapters Conference in **Helsinki** in **June 2019**, as we prepared to form the Alliance and then apply to be the Hong Kong Chapter!

The Alliance is founded by three professional associations:

1. Hong Kong Geographic Information System Association (HKGISA),
2. Hong Kong Institute of Civil and Building Information Management (HKICBIM) &
3. The Hong Kong Institute of Building Information Modelling (HKIBIM)

which are specialised in Information Management for **Built Asset** and **Environment** industries.

Board of Directors (established in end August 2019)

Ar. Ada FUNG, BBS
President

Ir. Francis LEUNG
Vice President

Dr Weifeng LI
Honorary Secretary

Sr Michael WONG
Honorary Treasurer

Kevin WONG
Director

Dr Kenneth TANG
Director

Billy WONG
Director

Our Missions

Hong Kong Alliance of Built Asset & Environment Information Management Associations
香港建設資產及環境信息管理聯盟

Industry level — to connect information management communities across built asset and environment industries;

Society level — to serve society by building capacity, sharing experience and enabling information exchange; and

Global level — to drive digital transformation in line with global development.

4. Hong Kong delegation's special meeting with Chairman and CEO of bSI in **Beijing** on 28 **October 2019**

Hong Kong Alliance of Built Asset & Environment Information Management Associations
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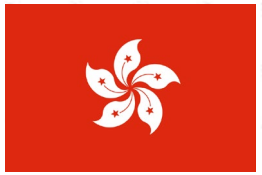
October 2019

OpenBIM in HKSAR



Hong Kong Alliance of Built Asset & Environment Information Management Associations
香港建設資產及環境信息管理聯盟

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Our Vision

Hong Kong Alliance of Built Asset & Environment Information Management Associations
香港建設資產及環境信息管理聯盟

buildingSMART Hong Kong

Foster societal collaboration

for

Smarter information management

across

Built asset and environment

Enable full benefits

from

Digital ways of working

in the

Built asset industry

TRAINING & EDUCATIONAL ACTIVITIES

Hong Kong Alliance of Built Asset & Environment Information Management Associations
香港建設資產及環境信息管理聯盟

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4 types of TRAINING ACTIVITIES

1. ***Virtual Classroom*** – *free of charge (since April 2020)*
2. ***bSI Professional Certification Foundation Program*** *(since January 2021)*

buildingSMART Professional Certification - Foundation

3. ***BIM+GIS Training Program*** *(since April 2021)*
4. ***Special Training Event (Hybrid Mode)*** – *free of charge (since July 2021)*

Hong Kong Alliance of Built Asset & Environment Information Management Associations
香港建設資產及環境信息管理聯盟

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1. In our **Virtual Classroom** – Classes are held twice a month since April 2020

Season **ONE** :	From BIM to openBIM	(5 classes)
Season **TWO** :	BIM and GIS Integration	(3 classes)
Season **THREE** :	Digital Construction with BIM, GIS, IoT for Smart City Development	(6 classes)
Season **FOUR** :	Empower openBIM Knowledge Transfer; Vendors' openBIM Development Trend	(11 classes)
Season **FIVE** :	Way Forward: openBIMer's Roles	(9 classes)
Season **SIX** :	Extend Our openBIM Learning in ISO 19650	(6 classes)
Season **SEVEN** :	Application of GIS for Spatial Analysis	(4 classes)
Season **EIGHT** :	Innovations in openBIM and openGIS	

2. Professional Certification

Professional Certification

Levels and modules

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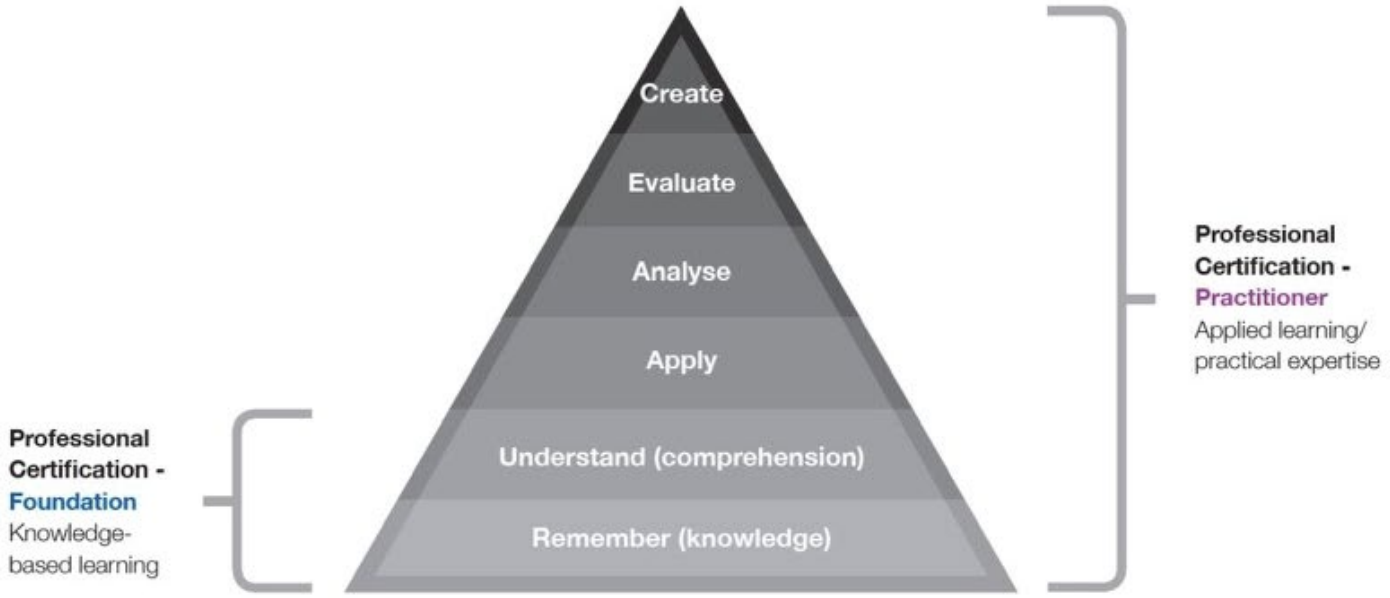
The Program has two skill levels:



Foundation

Practitioner

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buildingSMART Professional Certification - Foundation

buildingSMART Professional Certification - Foundation Level

Training: 5 Learning Outcomes

1. **What is BIM? (Concepts & Terminology).**
   (5 learning objectives)
2. **Benefits of (open)BIM.**
   (5 learning objectives)
3. **BIM Processes (ISO 19650-1).**
   (6 learning objectives)
4. **openBIM Standards.**
   (7 learning objectives)
5. **Processes within an organisation.**
   (7 learning objectives)

Examination: Multiple Choice Questions

https://qualification.buildingsmart.org/

Hong Kong Alliance of Built Asset & Environment Information Management Associations
香港建設資產及環境信息管理聯盟

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buildingSMART Professional Certification - Foundation

We have >300 Qualified Individuals on the qualified list under Hong Kong Chapter

buildingSMART Professional Certification

Home | About | FAQ | Downloads | Registry | Forum | Contact

Hong Kong Chapter

Registered Training Providers

Company Logo and Link	Exam Language	Training Providers
strategic buildinginnovation / bim SCORE	English	SBI

Qualified Individuals
The Exam is in English

Last Name	First name	Provider
CHAN	Chun Hong, Felix	SBI
CHENG	Chin Pang, Jack	SBI
CHEU	Yuk Yi, Yvonne	SBI
Cheung	Yiu Fai	SBI
Chun	To Cho	SBI
FUNG	Ada Y. S.	SBI
FUNG	Shue Kin, David	SBI
KOO	Ho Laam, Ben	SBI
LEE	Joe C. M.	SBI
LEE	Woon Ming, Wendy	SBI
LEUNG	Chung Ming	SBI
LEUNG Chi Suen	Francis	SBI
LI	Weifeng	SBI
WONG	Paulina P. Y.	SBI
WONG	Sai Choi, Kevin	SBI
WONG	Kin Michael	SBI
WONG Chi Pan	Billy	SBI
WONG Chun Kuen	George	SBI

3. Integrated BIM + GIS Training Program for Professional Bodies

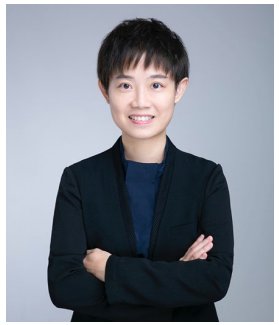
香港規劃師學會
THE HONG KONG INSTITUTE OF PLANNERS

An Integrated BIM+GIS Training course for members of the **Hong Kong Institute of Planners** has been offered from 5 June to 7 August 2021 on Saturday Mornings from 0900 to 1330.

The instructors of this course are two experienced members of HKABAEIMA:

Ar. David Fung

Dr. Paulina Wong



This 40-hour training course is sponsored by the Development Bureau (DevB) of the HKSAR Government under the ***"Matching Grant Scheme for Skills Upgrading"*** **scheme.**

The objective of the scheme is to provide matching grants to statutory bodies, industry associations and professional bodies for organizing training programmes for their members so that they would be better equipped with enhanced skills and new technologies.

Hong Kong Alliance of Built Asset & Environment Information Management Associations
香港建設資產及環境信息管理聯盟

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10-week Professional Training on
BIM x GIS Integration (Foundation)

Course objective:

This aim of this training programme is about the foundation of **Building Information Modelling (BIM)** and **Geographical Information System (GIS).** The contents will cover how the BIM and GIS integration can support various data transformation, streamline the workflows and empower the AEC industry, ultimately to support the Smart City Development of Hong Kong. This course combines lecture and hands-on tutorial to learn BIM and GIS integration skills by practice, using *Autodesk and ESRI* software and Government datasets.

Supporting Organization:

AUTODESK. esri China HONG KONG 25

Upon completion, a fully engaged candidate will be able to:

- Understand the foundation concept of BIM and GIS;
- Discuss and evaluate the role and capability of BIM and GIS integration in the AEC Industry;
- Experience the integration techniques and workflows of BIM and GIS.

Course fee: HK$10,000

New openBIM Courses To Be Offered
openBIM Project and Application Courses

From Qualifications To **Applications** & **Management**

Since 2021

openBIM® Qualification

*In collaboration with **buildingSMART International** and **buildingSMART Hong Kong Chapter***

Life-long buildingSMART Qualification

IFC, IDM, MVD, BCF, bSDD, ISO 19650

Mid 2022

openBIM® for Project and Contract Management Course

*In collaboration with **buildingSMART Hong Kong Chapter***

Integrating openBIM® into Contracts & Project Mgt

Quality Assurance/ Quality Control

Mid 2022

openBIM® Applications Course

*In collaboration with **buildingSMART Hong Kong Chapter***

Hands-on Applications

openBIM® Harmonisation and Automation

AWARDS & COMPETITION

2021 Awards **Winner** - Professional Research Category

The buildingSMART International Awards Program 2021

OpenBIM: Opening the gate for BIM and Blockchain integration (OBBi)

Prof. Wilson Lu, Dr. Frank Xue, Dr. Jinying Xu,
Mr. Maohong Tang, Mr. Rui Zhao, Mr. Liupengfei Wu

THE UNIVERSITY OF HONG KONG 香港大學
faculty of architecture 建築學院
Department of Real Estate and Construction
房地產及建設系

Estates Office
The University of Hong Kong

Hong Kong openBIM/openGIS Award 2022

- To honor demonstrations of openBIM and/or openGIS best practices or innovation within project delivery and lifecycle asset management in the built asset industry.

Judging Panel Members


Ar Ada Fung


Mr. Aidan Mercer


Prof. Calvin Kam


Ar David Fung


Ir Francis Leung


Dr. Jianfeng Li


Sr Michael Wong


Mr. Wei Lai

Categories

- openBIM/openGIS Project Award
- openBIM/openGIS Research Award

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Hong Kong openBIM/openGIS Award 2022

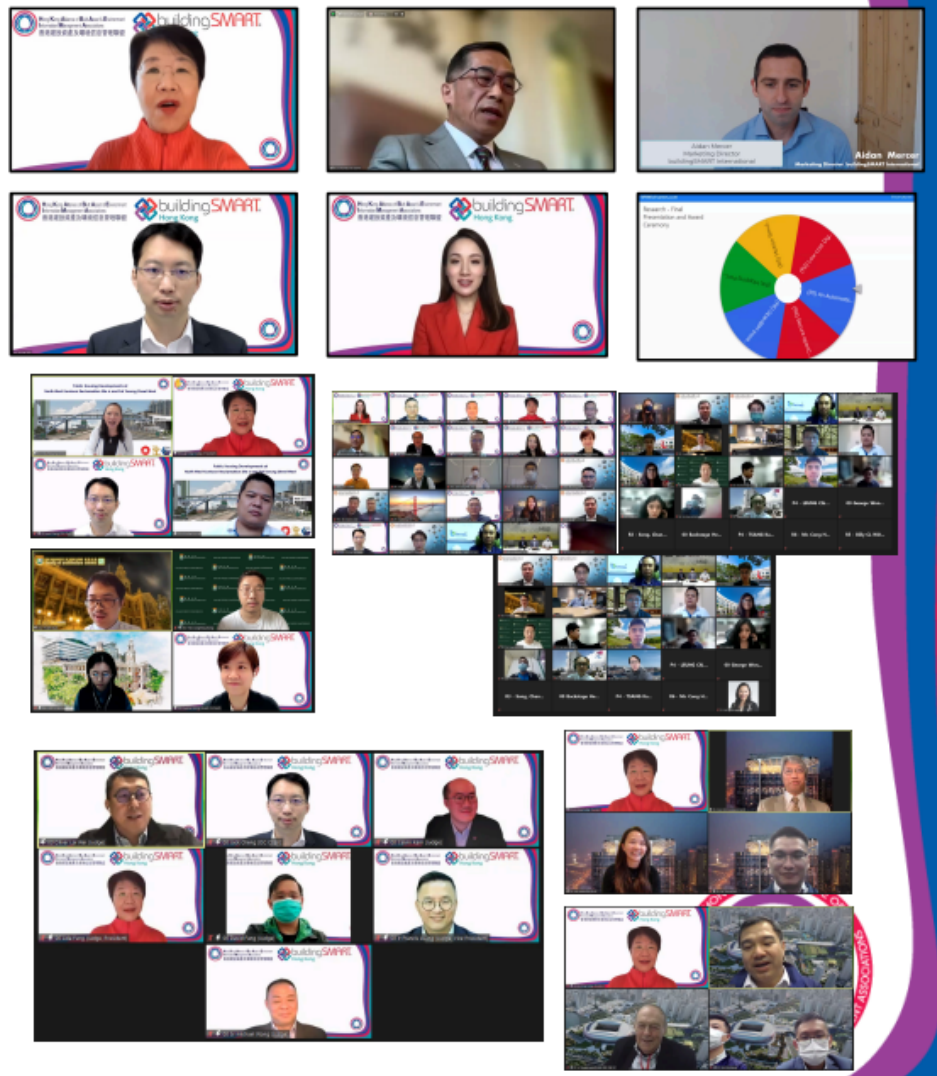
50 Supporting Organizations

Hong Kong openBIM/openGIS Award 2022

Virtual Final Presentation and Award Ceremony (23 March 2022)

PROGRAMME RUNDOWN

TIME	Description
09:00 – 09:30	*Registration*
09:30 – 10:00	**Welcome Address** • President Ar Ada FUNG, BBS (President of HKABAEIMA, cum Chairperson of Hong Kong Chapter of buildingSMART International) **Opening Address** • Ir Thomas HO (Guest of Honor) (Chairman of Hong Kong Construction Industry Council) • Mr. Aidan MERCER (Guest of Honor) (Marketing Director of buildingSMART International)
10:00 – 10:10	**Introduction to the Award and Arrangement** • Prof. Jack CHENG (OC Chair of the Hong Kong openBIM/openGIS Award 2022)
10:10 – 10:15	**Group Photos**
10:15 – 11:00	**Final Presentations of the Shortlisted Submissions (Project Category)***
11:00 - 11:05	*Break*
11:05 - 12:10	**Final Presentations of the Shortlisted Submissions (Project Category)***
12:10 – 14:00	*Lunch Break*
14:00 – 15:30	**Final Presentations of the Shortlisted Submissions (Research Category)***
15:30 – 15:40	*Break*
15:40 - 16:15	**Comments from Judges (Project Category)** **Result Announcement and Award Presentation (Project Category)**
16:15 – 16:50	**Comments from Judges (Research Category)** **Result Announcement and Award Presentation (Research Category)**
16:55 - 17:00	**Closing Remarks** • President Ar Ada FUNG, BBS (President of HKABAEIMA, cum Chairperson of Hong Kong Chapter of buildingSMART International)
17:00	*End of Program*



Hong Kong openBIM/openGIS Award 2022

Awards

Project Category

2 Grand Awards

2 Merit Awards

3 Honorable Mention

Research Category

2 Grand Awards

3 Merit Awards

1 Honorable Mention


buildingSMART
International
The buildingSMART openBIM
Awards Program 2022

The buildingSMART openBIM Awards Program 2022 – Finalists Announced [A Total of 21 Finalists in 9 Categories]

Category of **CONSTRUCTION FOR BUILDINGS**:

- Henderson Land Development Company Limited, Hip Hing Construction Company Limited – *"The Henderson - an "Office for the Future"* – Hong Kong.

Category of **PROFESSIONAL RESEARCH**:

- HDR – *"TPF-5(372) BIM for Bridges and Structures Transportation Pooled Fund"* – USA.
- University of Naples Federico II – *"State of Preservation Domain to Document Existing and Historic Buildings"* – Italy.
- The Hong Kong University of Science and Technology – *"Secure openCDE with Blockchain for HKUST Campus-wide Digital Twin with openBIM and openGIS Applications"* – Hong Kong.

Category of **HANDOVER**:

- Strategic Building Innovation – *"bSI Information Delivery Specification (IDS) for integrated openBIM and openGIS Platform"* – USA.
- Mostostal Warszawa S.A. – *"Handover to FM with openBIM - Marshal's Office, West Pomerania"* – Poland.

The buildingSMART openBIM Awards Program 2022

Finalists Announced!

Category of **CONSTRUCTION FOR BUILDINGS**:

- Henderson Land Development Company Limited, Hip Hing Construction Company Limited – "*The Henderson - an "Office for the Future*" – Hong Kong.

MEMBERSHIP; COLLABORATION

HKABAEIMA Members (55) representing more than 50,000+ people

Signing of Memorandum With GS1 Hong Kong (27 OCTOBER 2020)

We believe that closer collaboration with GS1 Hong Kong would help advance the frontiers of open standards and interoperability throughout the entire value chain of built asset, and the broader application of digital product information.

Signing of MOU with Smart City Consortium

HKABAEIMA and SCC signed MoU to foster better management of built asset, environment information and associated technologies for smart city development.

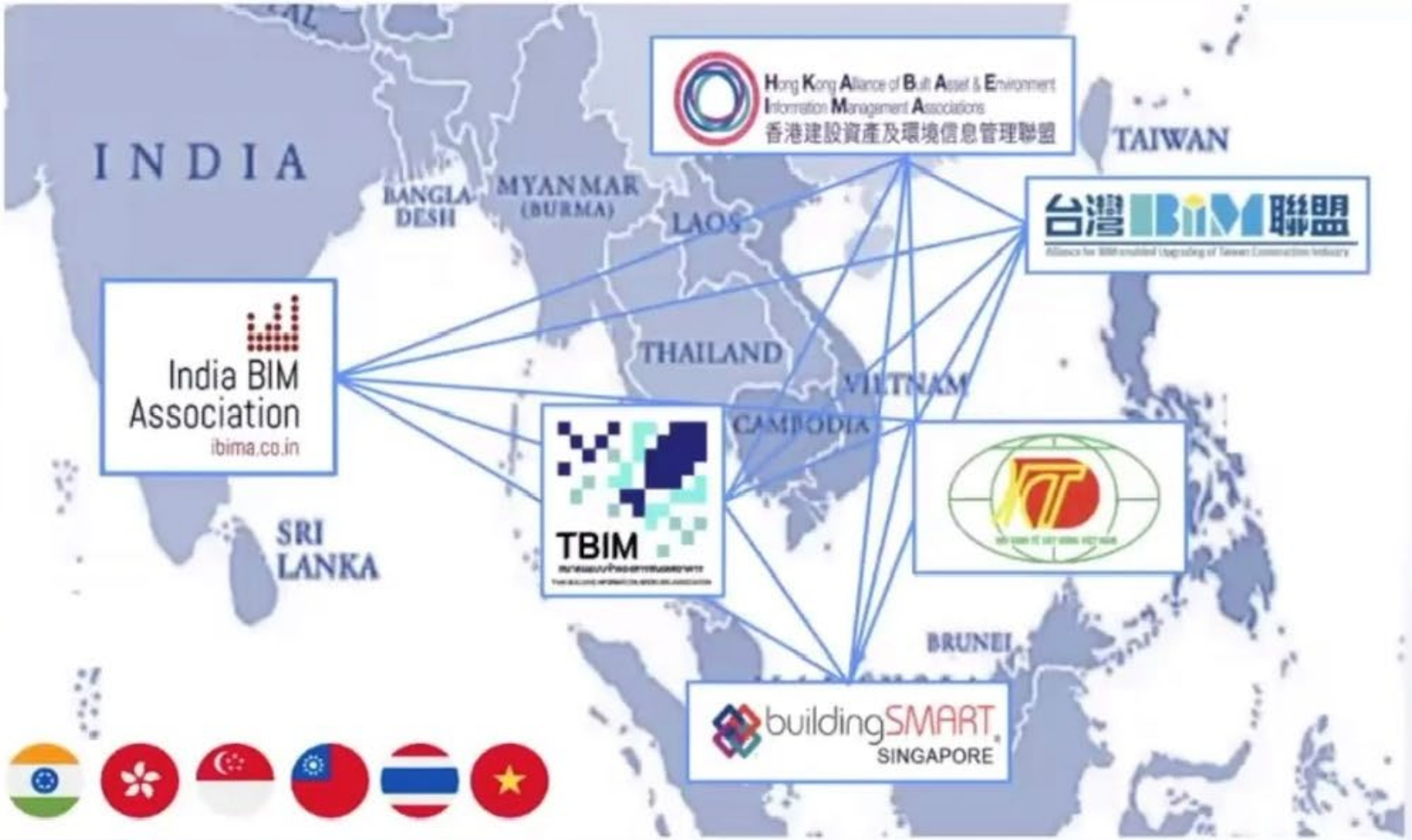
Signing of MOU with CIOB & GBIUA 30 DECEMBER 2021

ABC GROUP

Asia BIM Collaboration Group

India
Hong Kong
Taiwan
Singapore
Thailand
Vietnam

ASIA BIM COLLABORATION CEREMONY 2022



"Enhancing Digital Delivery Transformation within the Built Environment in Asian countries, via Collaboration and Information Exchange for the Purpose of Mutual Benefit, and Promoting Growth and Development of the Digital Ecosystem."

ABC's manifesto

BCT
BUILDING CONSTRUCTION TECHNOLOGY

Supported by:

India BIM Association
ibima.co.in

buildingSMART SINGAPORE

台灣BIM聯盟

TBIM

Organized by:

IMPACT
MUANG THONG THANI

KEY COMPONENTS OF DIGITAL TRANSFORMATION

SKILL SETS

Enhancement of competencies and skill sets in the various stages of project cycle. Develop accreditation schemes.

STANDARD OPERATIONS PROCESSES

Promote best practices and work processes in the project cycle.

SYSTEMS

Promote integration of hardware and software with solutions and tools to promote interoperability in various stages of the project cycle

STANDARDS

Promote standards to enhance management of information and productivity in digital delivery projects

Supported by:

Organized by:

President Speech

Vision for Asia BIM Collaboration across Asian Economies:

- *Enable full benefits from digital transformation in the built asset industry;*
- *Promote buildingSMART's global open digital standards for adoption;*
- *Develop operational processes and workflows, interoperability and integration;*
- *Provide platforms for experience sharing and training.*

Ar. Ada Fung
President of
building SMART Hong Kong Chapter

Always Have Your Room

Rooms

We need trusted information to **build a better world.**

We join buildingSMART, drive **openBIM** through membership, training, R&D, competitions.

We seek **open opportunities** to collaborate with like-minded organizations.

OpenBIM, Open Opportunities to Build a Better World

GO FOR YOUR DREAMS.

THEY MAY COME TRUE.

THANK YOU!