Product Certification on Building Materials - Hong Kong Housing Authority's Experience

Tom TONG
Architect (Components & Materials)
Hong Kong Housing Authority

21 November 2019

Organisers 主辦機構

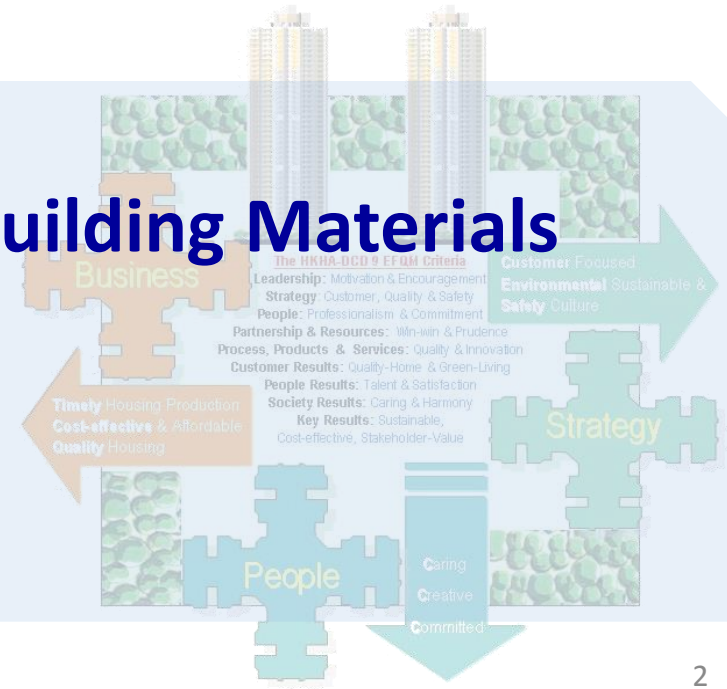
香港檢測和認證局 The Hong Kong Council for Testing and Certification

香港認可處 Hong Kong Accreditation Service

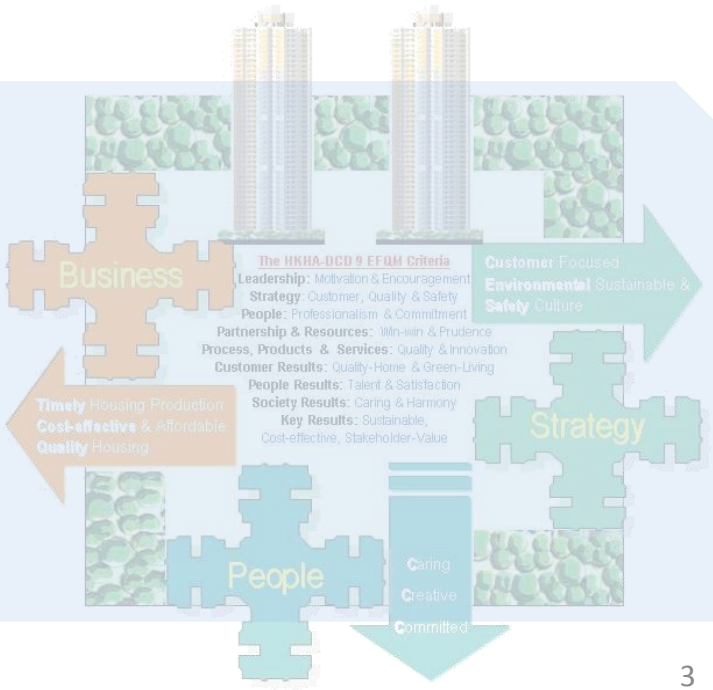
SEMINAR ON PRODUCT CERTIFICATION ON CONSTRUCTION MATERIALS
Conference Hall, 4/F, HKPC Building, 78 Tat Chee Avenue, Kowloon Tong

Contents

1. Building Materials Quality Control System
2. Certification Requirements for Material Suppliers
3. Product Certification on Building Materials



1. Building Materials Quality Control System



Quality Journey in HA

Material Risk Management System to ISO 31000

CIC Lighthouse Club
Safety Leadership Award

Certified to OHSAS: 18001: 2007 for Material Testing Laboratory

2013

2016

Certified to ISO 50001: 2011

2012

2011

Established the **ISO 31000** risk management system framework

Verified to **HKQAA CSR Index** in accordance with **ISO 26000** criteria

CSR Advocate since 2010

APBEST (**EFQM**) **Grand Award**

2010

2009

Certified to ISO 14001:2004

Certified to ISO 9001:2008

Certified to ISO 9001:2000

2003

1995

Certified to ISO 9001:1994

Certified to ISO 9001:1987

1993

1992

Established the ISO 9001:1987 QMS

1990

Implementation of **Performance Assessment Scoring System (PASS)**

1987

Introduction of **Quality Control Engineer** for each public housing construction site

Certified System Standards in HA

- **ISO 9001:2015 - Quality Management System**
  (1st certified to ISO 9001:1987 in 1993)
- **ISO 14001:2004 - Environmental Management System**
  (certified since 2009)
- **HKQAA CSR Index** with respect to ISO 26000 criteria
  (performance verification since 2010)
- **ISO 50001:2011 - Energy Management System**
  (certified since 2012)
- **OHSAS 18001:2007 - Health & Safety Management**
  (HD Materials Testing Laboratory certified since 2013)

Building Materials Quality Control System

1. Purchasing
2. Delivery
3. Storage
4. Use

Materials Risk Management

2,000 +

Legislation requirements

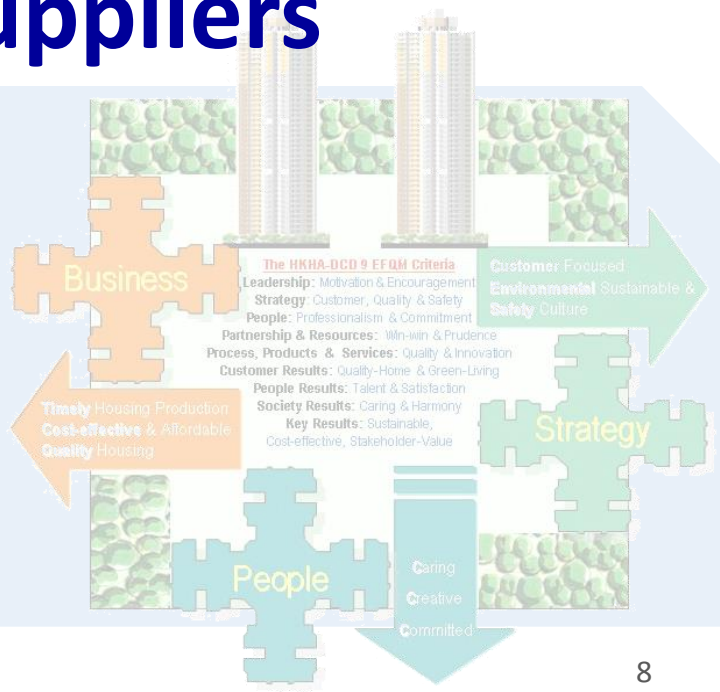
Materials Risk Management

IN

2,000 +

OUT

2. Certification Requirements for Materials Suppliers



Certification of Building Products

- Suppliers/Manufacturers are to be certified to **ISO 9001, ISO 14001**
- Valid **test certificate** *(a HOKLAS endorsed test report to which the report is issued within 3 or 5 years from the commencement date of the building contract)*
- **Surveillance tests** upon material delivery
- HA spearheads implementation of ***product certification*** in stages in 2010/2011 for 12 major building materials

Certification Requirements for Material Suppliers

ISO 9001

Aluminum Windows	Timber Doorsets	Lever Handle Door Furniture & Locks	Overhead Door Closers	Precast Concrete Components	Panel Wall Partitions	Multi-Layer Acrylic Paints
Emulsion Paint	Synthetic Paint	Tile Adhesives	Tile Grouts	Mixer (Shower /Basin /Kitchen Sink)	Shower Handsets	uPVC Drainage Pipes & Fittings
Ready -To-Use Mortars	Galvanized Mild Steel Gatesets	Float Operated Valves & Flushing Device	Close -coupled WC Suites	Flexible Hoses	Cement Sand Mortar w/ Latex	Epoxy Coated Cast Iron Pipe
Ready Mixed / Site Batch Concrete	Cooking Bench	Non-slip Homogeneous Floor Tile	Glazed Ceramic Wall Tile	Kitchen Sink Unit	Cement Product (for Arch. Use)	Repair Mortars
Fabric / Mesh Reinforce -ment	Primers for Galvanized Surfaces	Proprietary False Ceiling Sub-Contractor	Mortice Dead Locks	Porcelain Enamelled Cast Iron Baths	. . . *(> 40)*	etc.

Certification Requirements for Materials Suppliers

ISO 14001

Aluminum Windows	Timber Doorsets	Lever Handle Door Furniture & Locks	Overhead Door Closers	Precast Concrete Components	Panel Wall Partitions	Multi-Layer Acrylic Paints
Emulsion Paint						Synthetic Paint
Tile Adhesives						Tile Grouts
Mixer (Shower /Basin /Kitchen Sink)						Shower Handsets
Ready Mixed / Site Batch Concrete	Cooking Bench	Non-slip Homogeneous Floor Tile	Glazed Ceramic Wall Tile	Kitchen Sink Unit	Galvanized Mild Steel Gatesets	. . . *More To Come*

Certification Requirements for Materials Suppliers

Product Certification

Ready Mixed / Site Batch Concrete (QSPSC)

Panel Wall Partitions (PCCS-PFPP)

Timber Doorsets (PCCS-PFPP)

Cement Products (PCCS-CP)

Tile Adhesives (PCCS-TA)

Repair Mortars (PCCS-RM)

Ceramic Tiles (PCCS-CT)

Aluminum Windows (PCCS-AW)

Close-coupled WC Suites (PCCS-WC)

uPVC Drainage Pipes & Fittings (PCCS-UP)

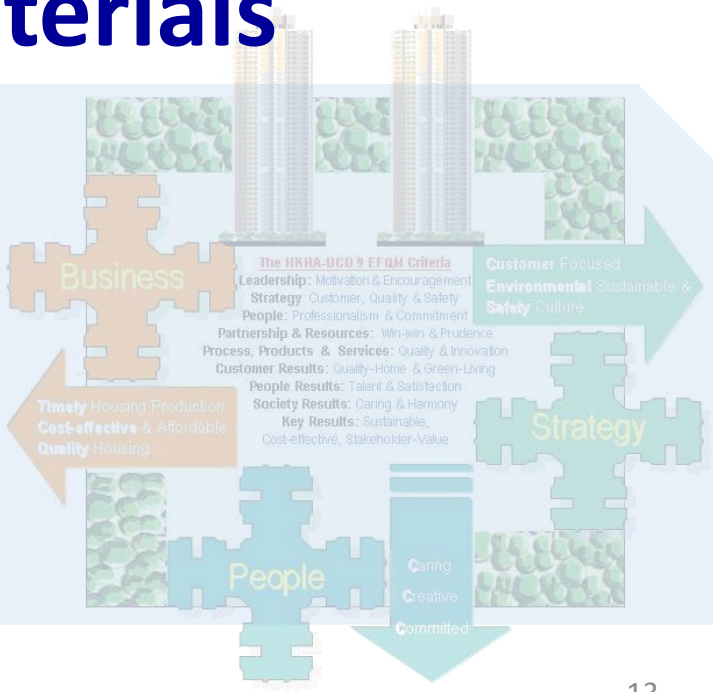
Fabric / Mesh Reinforcement (PCCS-MR)

LED Bulkhead

Paint Products (PCCS-PP)

Plumbing Products (Kitemark) New!

3. Product Certification on Building Materials



Instituting Upstream Quality Assurance

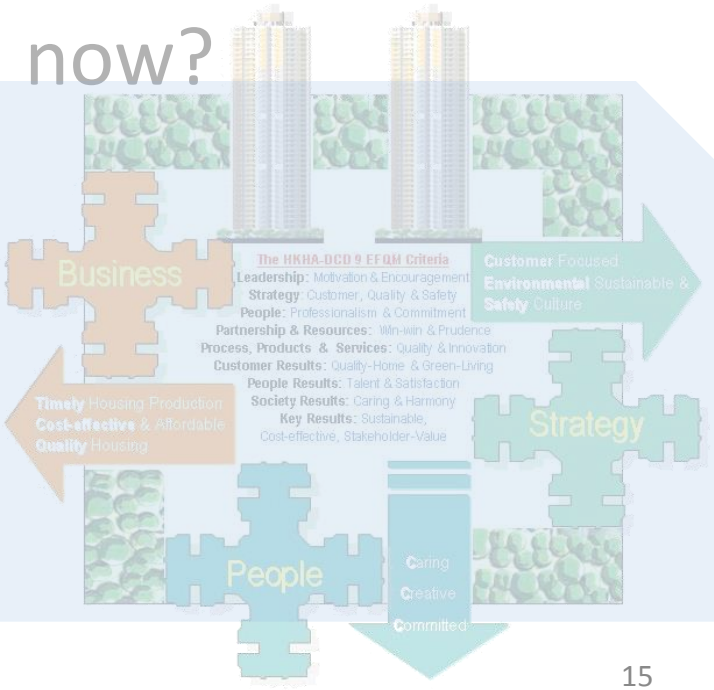
Being a public sector developer and a procuring entity, **Hong Kong Housing Authority (HA)** has been **spearheading** the development and **implementation of Product Certification** for Building & Construction Materials in Hong Kong.

- **Why** do we do it?
- **What** have we done?
- **What** is the situation now?

What are the **challenges** and the **Way Forward**?

Instituting Upstream Quality Assurance

- **Why** do we do it?
- **What** have we done?
- **What** is the situation now?



Quality of Building Products - Our Prime Concern

- **Quality assurance of building products manufactured off site** as equally important as quality supervision of construction works on site.
- Building products -
  - **procured through main contractors** under performance-based specification **without specifying their place of origin**, which conforms to **WTO GPA**.
  - mostly manufactured in the **Pearl River Region** in Mainland China.
  - conforms to the HONG KONG Building Environment Assessment Method (**BEAM Plus**) which promotes **material sourcing within 800 km**.

Material Sourcing Within 800km

"Tested in Hong Kong, Certified in Hong Kong"

- **Testing and Certification Services** was one of the six pillar industries for propelling Hong Kong towards a knowledge based economy as set out in the **2009 Chief Executive's Policy Address**.

Four trades are included in the Development Plan for the testing & certification Industry by the Hong Kong Council for Testing and Certification (HKCTC)

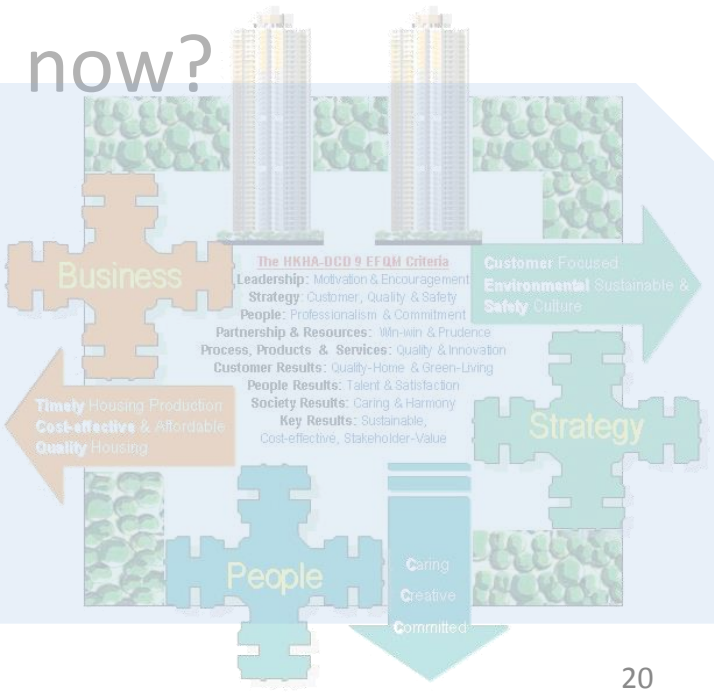
- Chinese Medicine
- **Construction Materials**
- Food
- Jewelry

Assuring Product Quality through Supply Chain Management

1. **ISO 9001 certification** of manufacturers
2. **Sample Approval** of selected building products
3. **Material Surveillance Testing**
4. **Quarantine Testing** as Risk Management of Critical Building Materials
5. **Verifications upon On-site delivery**
6. **P**erformance **A**ssessment **S**coring **S**ystem (**PASS**) **assessment** of selected building products on site
7. **Radio Frequency Identification (RFID)** for traceability of selected building products
8. **Product Certification** of selected building products
   – An upstream quality assurance measure

Instituting Upstream Quality Assurance

- **Why** do we do it?
- **What** have we done?
- **What** is the situation now?



Promoting Quality Assurance through Upstream Control, HA is in Support of Product Certification

- HA spearheaded implementation of product certification in its construction projects in stages in **2010/2011** for **seven** major building materials mainly manufactured in Mainland China:

Implementation	Building Products	Tender out date
Stage 1	1. Timber Doors (fire rating) 2. Panel Wall Partitions (fire rating)	1/5/2010
Stage 2	3. Cement Products (for architectural use) 4. Tile Adhesives	1/8/2010
Stage 3	5. Ceramic Tiles 6. Repair Mortars	1/12/2010
Stage 4	7. Aluminium Windows and 4-Bar Hinges Assembly	30/12/2011

Promoting Quality Assurance through Upstream Control, HA is in Support of Product Certification

- Five other building materials have been implemented for product certification in HA's construction contracts **three in 2013 and two in 2016/17**:

Implementation	Building Products	Tender out date
Stage 5	8. uPVC Drainage Pipes & Fittings 9. Close-coupled Water Closet Suites	1/6/2013
Stage 6	10. Mesh Reinforcement	1/7/2013
Stage 7	11. LED Bulkhead 12. Paint Products	2/2016 1/9/2017

A Successful Story of Product Certification

Quality Scheme for Production and Supply of Concrete (QSPSC)

- Jointly developed by the HKHA and the Hong Kong Quality Assurance Agency (HKQAA) in **1991** for **ready-mix concrete** produced off-site.
- Subsequently specified in HKHA's contracts on top of in-situ quality control and testing regime.
- QSPSC was later **widely accepted** by the construction industry and became a policy requirement by **Development Bureau** for all public works, and a regulatory requirement by **Buildings Department** for private sector's construction projects.

Instituting Upstream Quality Assurance

What is the **situation** now?

- Current progress of **Product Conformity Certification Scheme (PCCS) Development?**
- Current status of **Certified Manufacturers / Suppliers?**

Current progress of Product Conformity Certification Scheme (PCCS) development

Building Products	Product Conformity Certification Scheme (PCCS)
Timber Doorsets (Fire Resistance) #	PCCS-PFPP (3rd Issue 2017) published to accord with new Fire Code
Panel Walls (Fire Resistance) #	
Cement Products *	PCCS-CP (1st Issue 2010)
Tile Adhesives *	PCCS-TA (2nd Issue 2017)
Ceramic Tiles *	PCCS-CT (1st Issue 2010)
Repair Mortars *	PCCS-RM (2nd Issue 2017)
Aluminium Windows & 4-Bar Hinges Assembly #	PCCS-AW (1st Issue 2010) *(review in progress)*
uPVC drainage pipes & fittings +	PCCS-UP (1st Issue 2013) *(review in progress)*
Close-coupled water closet suites +	PCCS-WC (1st Issue 2013) *(review in progress)*
Mesh reinforcement *	PCCS-MR (1st Issue 2013)
Paint Product ^	PCCS-PP (1st Issue 2015)

We would like to express our sincere gratitude to the following professional institutes for preparing the above schemes :

Hong Kong Institute of Steel Construction (HKISC)
* Hong Kong Concrete Institute (HKCI)
+ Hong Kong Institution of Plumbing and Drainage (HKIPD)
^ Hong Kong Association for Testing, Inspection and Certification (HKTIC)

Current Status of Certified Manufacturers / Suppliers

Building Products	**Certified** (as at Dec 2018)	**Year of Implementation**
Timber Doorsets	**3**	2010
Panel Walls	**4**	
Cement Products	**5**	
Tile Adhesives	**5**	
Ceramic Tiles	**7**	
Repair Mortars	**6**	
Aluminium Windows	**6**	2011
uPVC Drainage Pipes & Fittings	**1** *(1 in progress)*	2013
W.C. Suites	**3**	
Mesh Reinforcement	**5**	
Multi-Layer Acrylic Paint	**3** *(1 in progress)*	2017

- Since mid-2012, we have posted and updated regularly the details of Certified Manufacturers or Suppliers on HA website for access by public - (http://www.housingauthority.gov.hk)
- HKAS has also posted the Accredited Certification Bodies and their Scope of Accreditation on in its website - (http://www.hkas.gov.hk)

Difficulties Encountered

Supplier

Accredited Laboratory Test

Accredited Certification Body

Instituting Upstream Quality Assurance

- **What** are the challenges and the **Way Forward**?

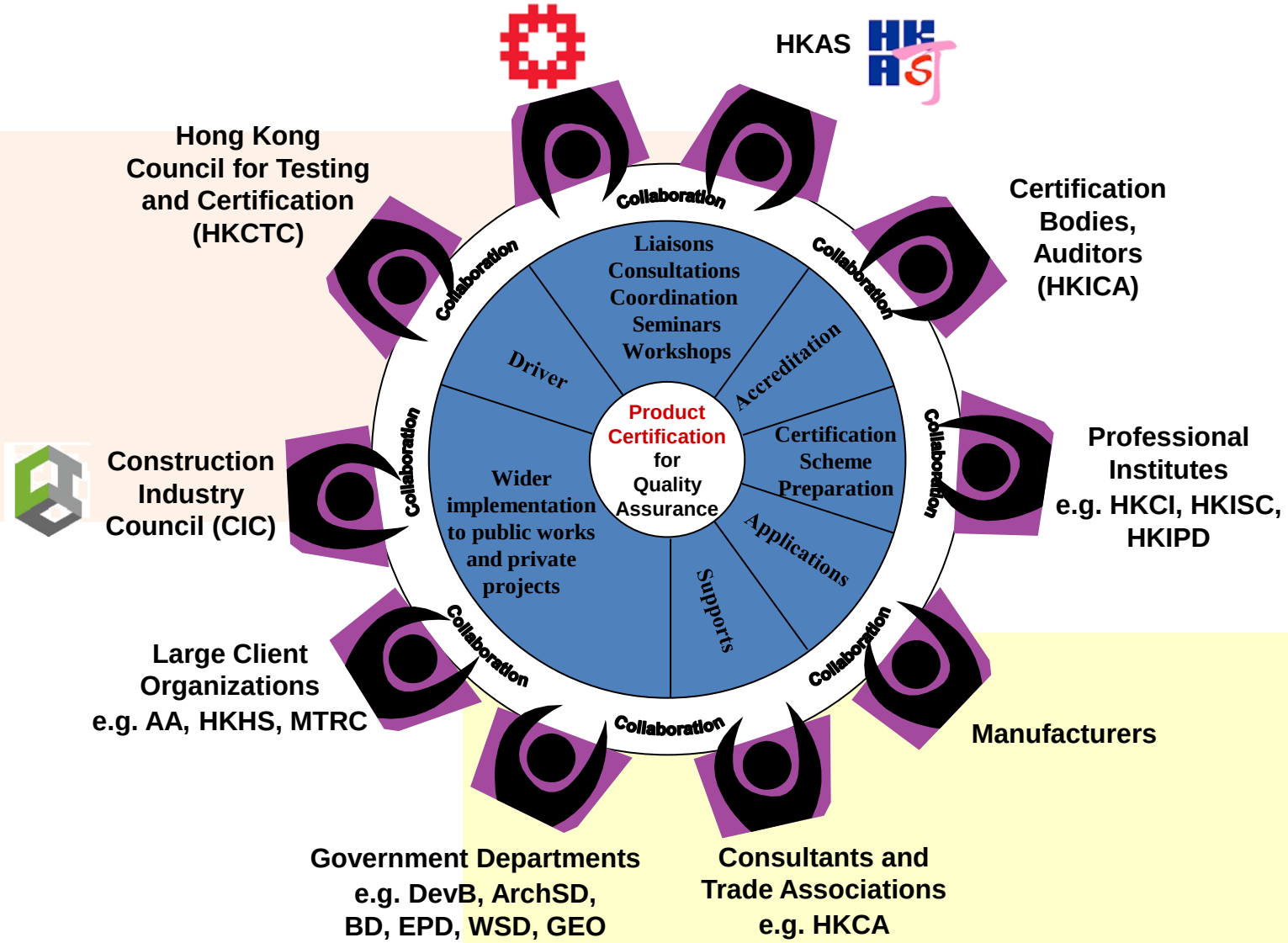
Challenges

- Clients vs Suppliers
- Continuous Collaboration with Stakeholders
- We cannot walk alone!

Clients vs Suppliers

- **HKHA** has pioneered as a client to specifying product certification in its housing development projects.
- **Architectural Services Department (HK)** is actively considering the adoption of products with certificates of conformity in their contracts, with the ultimate objective of assuring public safety and health.
- **Buildings Department (HK)** has scheduled to launch voluntary adoption of product certification for selected building products in the coming months.
- With the gradual acceptance of product certification, we hope that **main contractors** would voluntarily adopt the same in their sub-contracts to better assure upstream quality.

Continuous Collaboration with Stakeholders at all Fronts

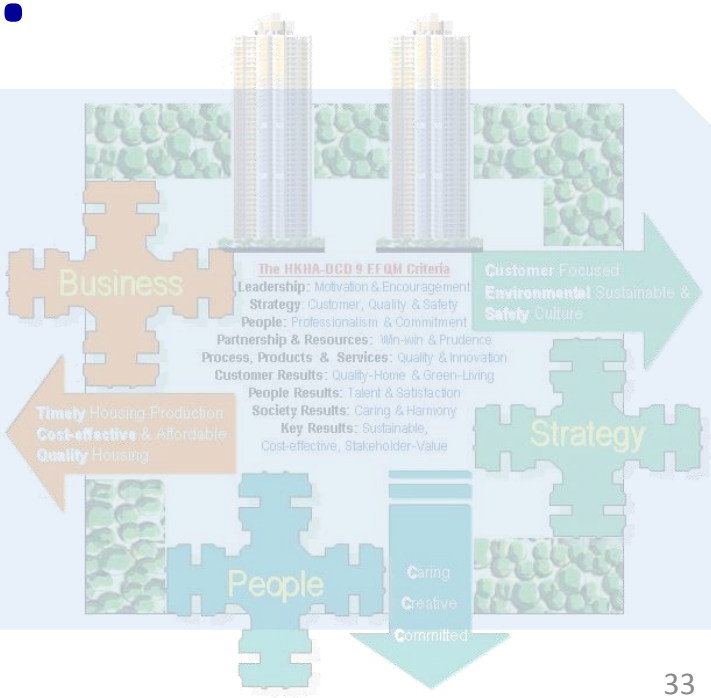


Way Forward

We Need Support from Industry !

To join hands for a **wider implementation of product certification** for the benefits of the industry and society.

Thank You!


Business
The HKHA-DCD 9 EFQM Criteria
Leadership: Motivation & Encouragement
Strategy: Customer, Quality & Safety
People: Professionalism & Commitment
Partnership & Resources: Win-win & Prudence
Process, Products & Services: Quality & Innovation
Customer Results: Quality-Home & Green-Living
People Results: Talent & Satisfaction
Society Results: Caring & Harmony
Key Results: Sustainable, Cost-effective, Stakeholder-Value
Customer Focused
Environmental Sustainable &
Safety Culture
Timely Housing Production
Cost-effective & Affordable
Quality Housing
Strategy
People
Caring
Creative
Committed