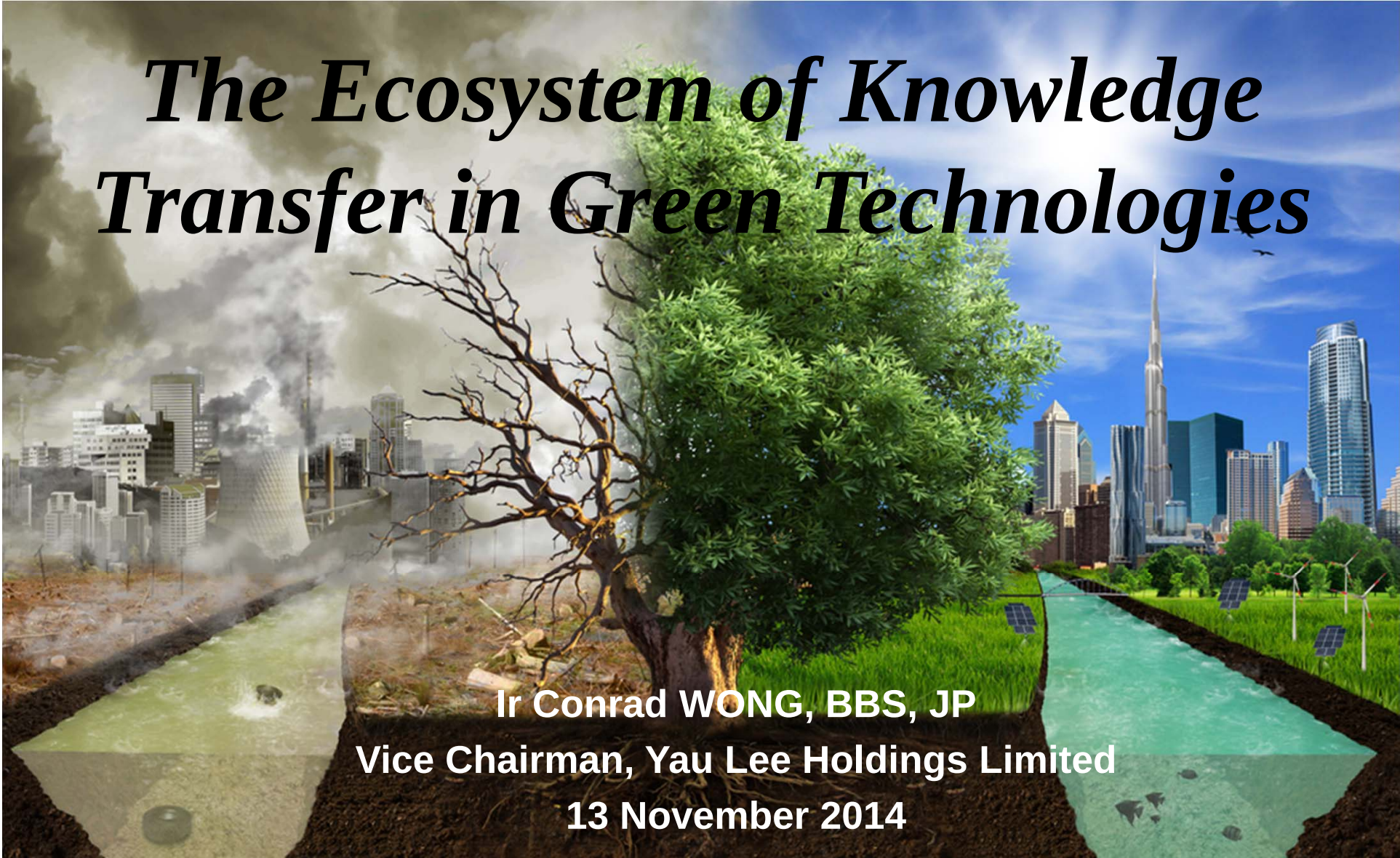




# *The Ecosystem of Knowledge Transfer in Green Technologies*

**Ir Conrad WONG, BBS, JP**

**Vice Chairman, Yau Lee Holdings Limited**

**13 November 2014**



**Yau Lee Holdings Limited**  
(HKEX: 406, listed in 1991)

**We Build We Serve We Create**

**Yau Lee Construction Co., Ltd.**

(Established in 1958)

**Green Integrated Corporation in the  
Building Sector**

Strong vertical supply chain | Specializes in Modular Fast Track Construction | Green Solutions Providers

**Public Housing  
Estate**



**Yau Lee Wah  
Concrete Precast**



**REC Engineering  
(E & M Operation)**



**Design & Build Hospital and  
Government Office Building**



**Yau Lee Curtain Wall  
and Steel Works**



**Green Technologies & Solutions**



**Fitting Out, Building  
Renovation & Maintenance**



**Leena Theme  
Painting Limited**



**Ming Hop Co., Ltd.  
(Plumbing & Drainage)**



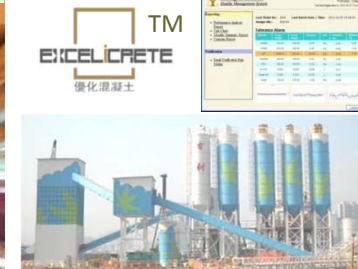
**Property  
Development**



**InnoVision  
Architectural Services**



**Excelicrete**



**Hotel  
Business**



**VHSoft Technologies**

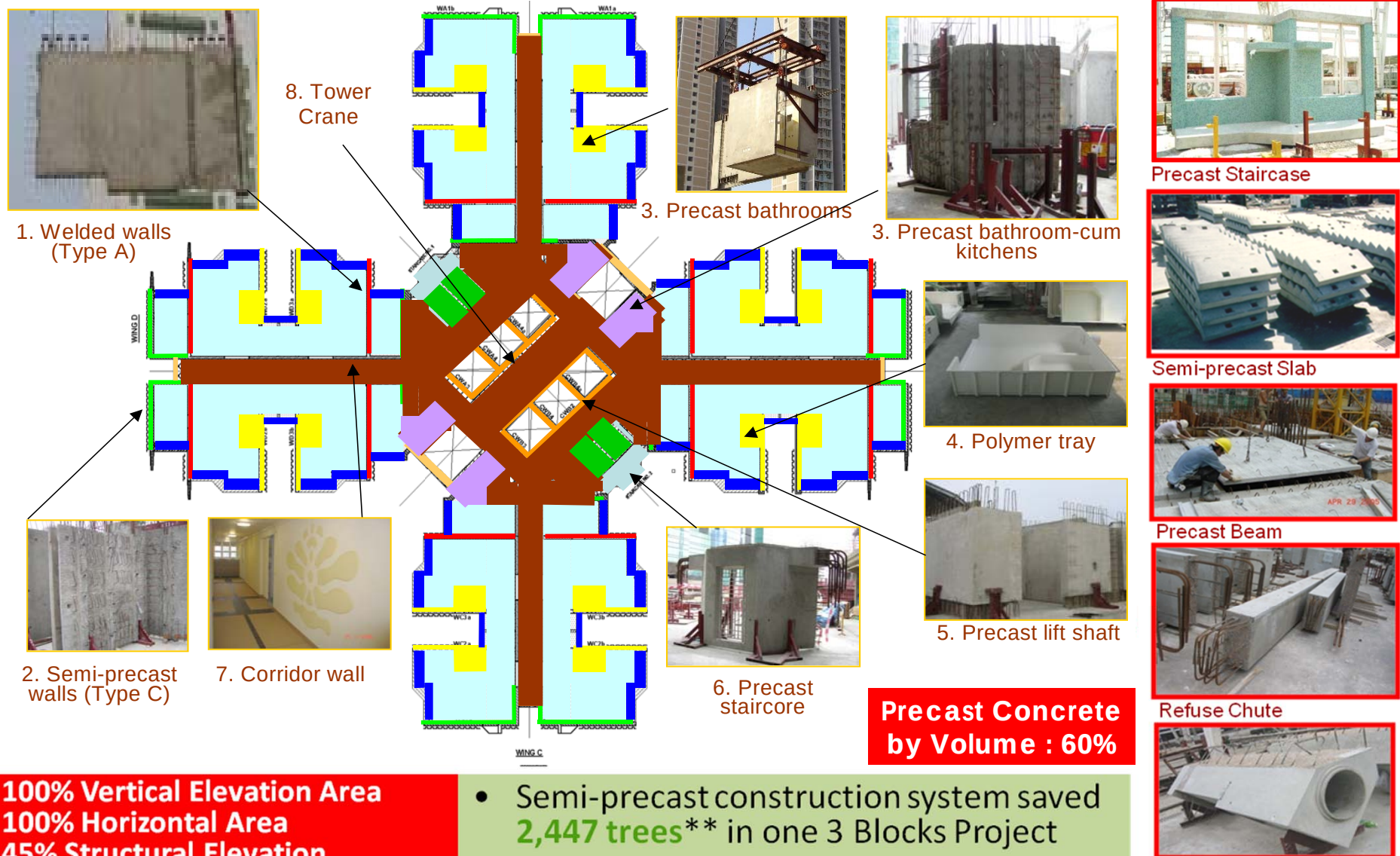


**Low Carbon Materials**



# Development of Semi Precast Construction Method

## Year 2005 – Typical floor required no timber used



**100% Vertical Elevation Area**  
**100% Horizontal Area**  
**45% Structural Elevation**  
**Precast Concrete by Volume: 60%**

- Semi-precast construction system saved **2,447 trees\*\*** in one 3 Blocks Project

Yau Lee saved around **40,000 trees** in last 10 years

# Precast Concrete Products

**Precast Façade**



**Volumetric Precast**



**No. 1** Producer in HK/China region



**Precast Bay Window Facade**



**Precast Balcony**



**Precast Bathroom with noise barrier**



**Staircore**

# Other products in factories

**No. 1**



**Cooking Bench**



**Steel Mould**



**No. 1**



**Drywall**

**No. 1**



**Aluminum Window**



**Metal Gate set**



**GRG/GRC**

# Precast Bathroom Products

## Precast Bathroom – 4th Generation

- Further developed in year 2013
- Hong Kong Housing Authority Project  
Hung Shui Kiu Area 13 Phase 3

Features:

- Box structure with base and ceiling
- Ceiling with half structural slab
- Structural walls with simple in-situ rebar lapping details
- Installation after casting of floor slab

Gained  
IP  
Rights



1st Generation (2000)



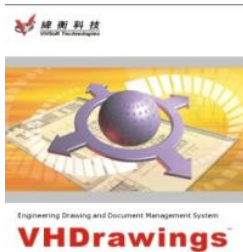
Implemented at Tong Ming Court

4th Generation (2013)



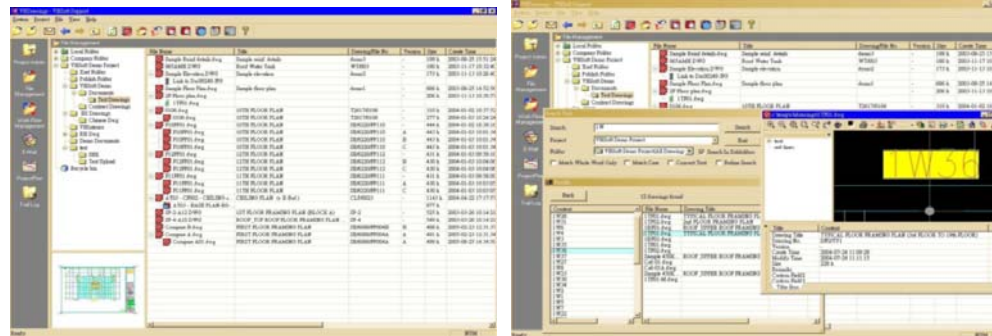
Implemented at Kai Tak & Anderson Road  
Housing Development projects

# Online Project Management



## VHDrawings™ Document and Drawing Solutions

- With an unique AI technology to recognize the CAD files
- Strengthen Internal Management



Gained  
IP  
Rights



## VHSmart™ Construction Intelligent Management System

- Real-time site inspection and routine progress monitoring at fixed and remote sites location
- Use of mobile device to inspect and take photo in potentially risky area



Gained  
IP  
Rights

# Holiday Inn Express Hong Kong SoHo



- Opened on September 2012
- Number of floors: 36 storey
- Gross Floor Area: 9,163 m<sup>2</sup>
- Number of guest rooms: 274 nos

Electricity : HK\$2.16M /year

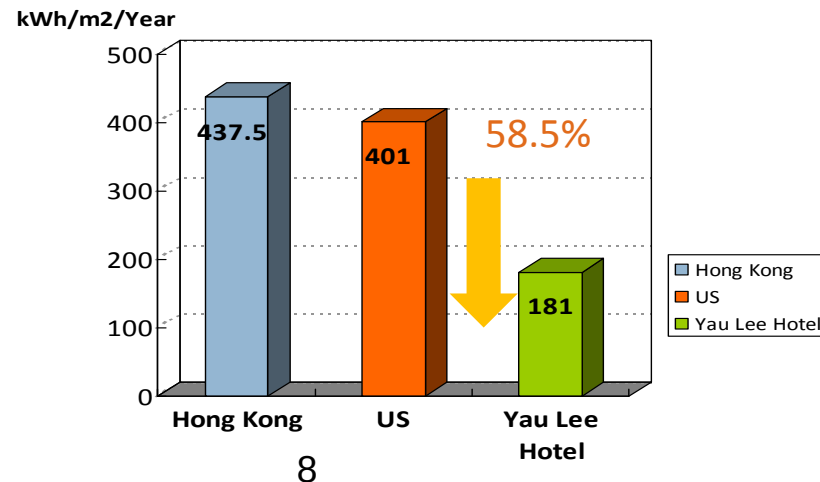
Gas: HK\$0 /year

Extra Investment: HKD13M

Energy consumption reduced: 2,566,680kWh

Energy Bill Saved: HKD3.33M / year

Payback period: 4 years



# Holiday Inn Express Hong Kong SoHo

**The World's First High Rise Building / Hotel Achieved Four Platinum or Equivalent of Green Awards**

**HK BEAM-Plus Platinum (Final)**

**Achieved points : 79.8**

**(Achieved max. points under energy used)**



**HK Green Building Council**

**US LEED Platinum**

**Achieved Points : 82**

**(Achieved max. points under energy used)**



**US Green Building Council**

**BCA Green Mark Platinum**



**Singapore BCA**

**Three-Star**



**China Green Building Council**



**Green Building Award 2012 Merit Award**



**Asian Institute of Intelligent Buildings  
Intelligent Hotel (Distinction Rank)**



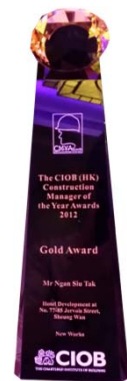
**Quality Building Award 2014 Merit Award**



**Outstanding Hotel Partner Award 2012**



**The 2013 HICAP Sustainable Hotel Award**



**Construction Manager of Year Awards 2012 - Gold**

# Building Services Capability

## REC Green Technologies / REC Green Energy Solutions



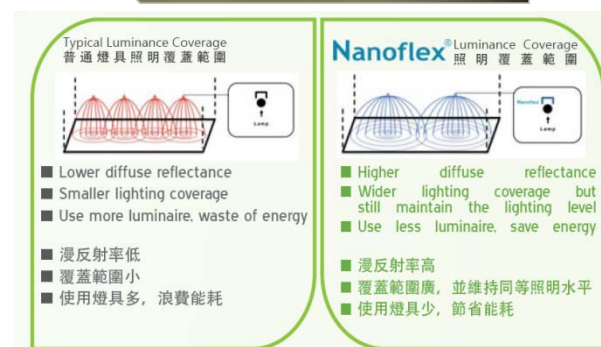
### Green Building Solutions

- Research, design and build energy saving products and green products



### Energy Optimization Engineering Solutions

- Energy consumption can be significantly reduced if optimization process is carried out on the building systems in regard of the architectural, constructional and building services engineering aspects



# iFancoil

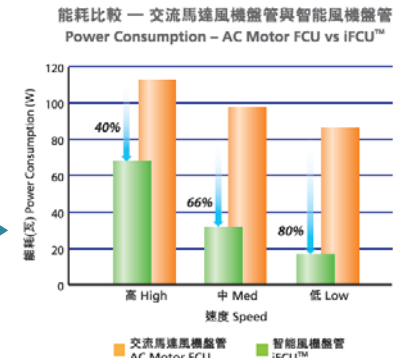


## Energy Saving Smart Intelligent Fan Coil Unit – iFCU™

Energy Saving Solution by using high efficiency **permanent magnet motor** and control driver

### Advantages

- (1) Energy consumption is reduced by 40%-80%
- (2) Variable speed
  - 5 speeds control (Super, High, Medium, Low, Extra Low)
- (3) Temperature control accuracy up to  $\pm 0.5^{\circ}\text{C}$
- (4) Motor heat dissipation is lowered from 58% - 95%
- (5) Much lower noise level



| Speed  | IFCU™ motor (°C) | AC motor (°C) | Diff. % |
|--------|------------------|---------------|---------|
| Low    | 1.2              | 26.9          | 95%     |
| Middle | 2.3              | 18.1          | 87%     |
| High   | 4.9              | 11.6          | 58%     |

Operating temperature rise of motor



Fan Coil Unit



Permanent Magnet Motor



Control Box



Intelligent Programmable Thermostat

**Fully automatic & save money with better comfort!**

# HKGBC – An Organization Aims

## Vision

To help **save the planet** and **improve well-being** for the people of Hong Kong by transforming the city to a greener built environment.

## Mission

To lead market transformation by advocating **Green Policies** to the Government, introducing **Green Building Practices** to all stakeholders, **setting Standards** for the building profession, and promotion a **Green Lifestyle** to the people of Hong Kong.

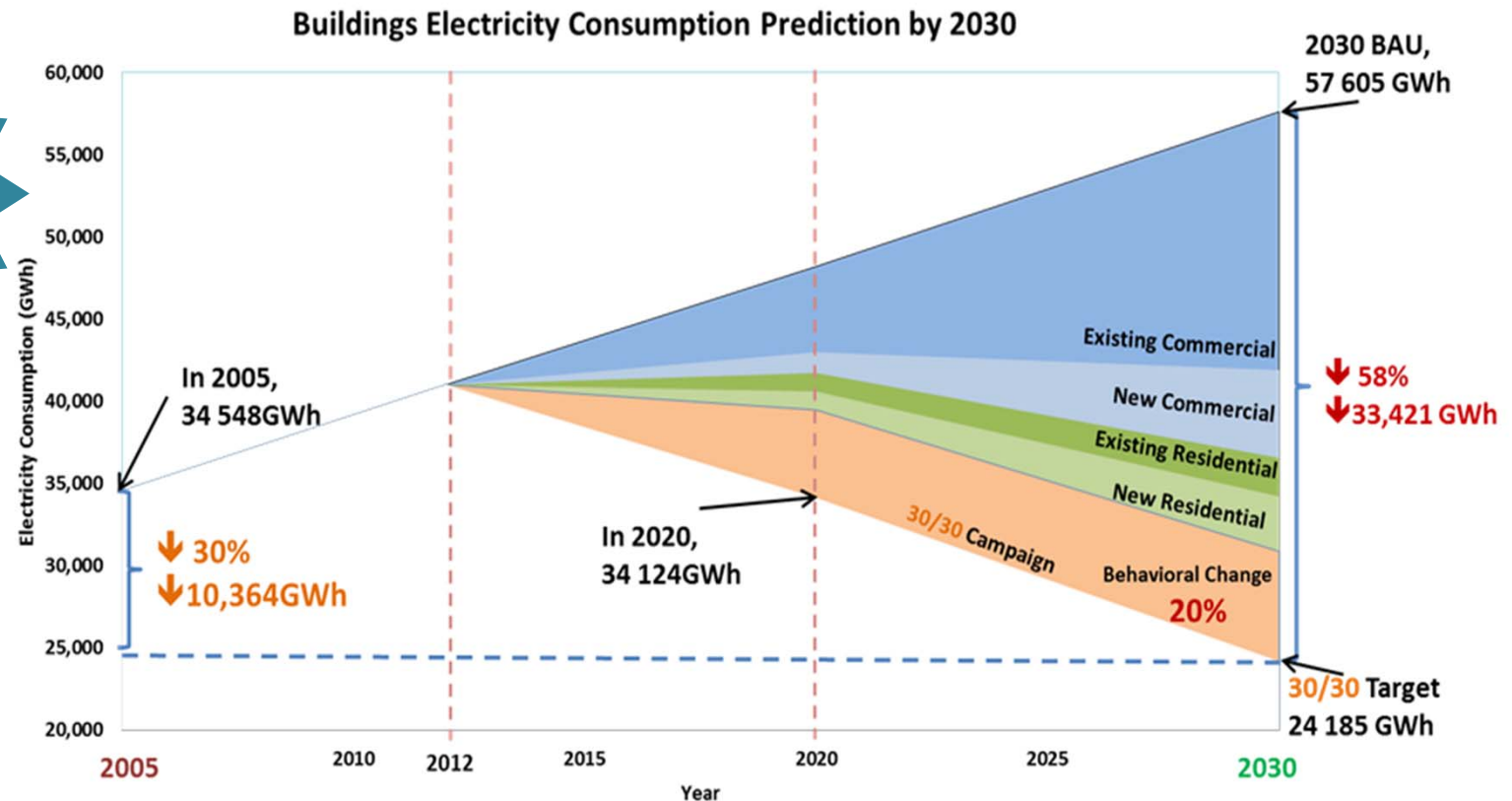




# Green Policy Advocacy

## HK “30/30” Roadmap – Target

- **30%** Absolute reduction (10364 GWh) in Electricity Consumption in Buildings by 2030 (2005 baseline: 34548 GWh)
- **60%** intensity reduction (33421 GWh) as compared to the projected electricity consumption in 2030



# Green Practices for Professional Green Building assessment [BEAM Plus]

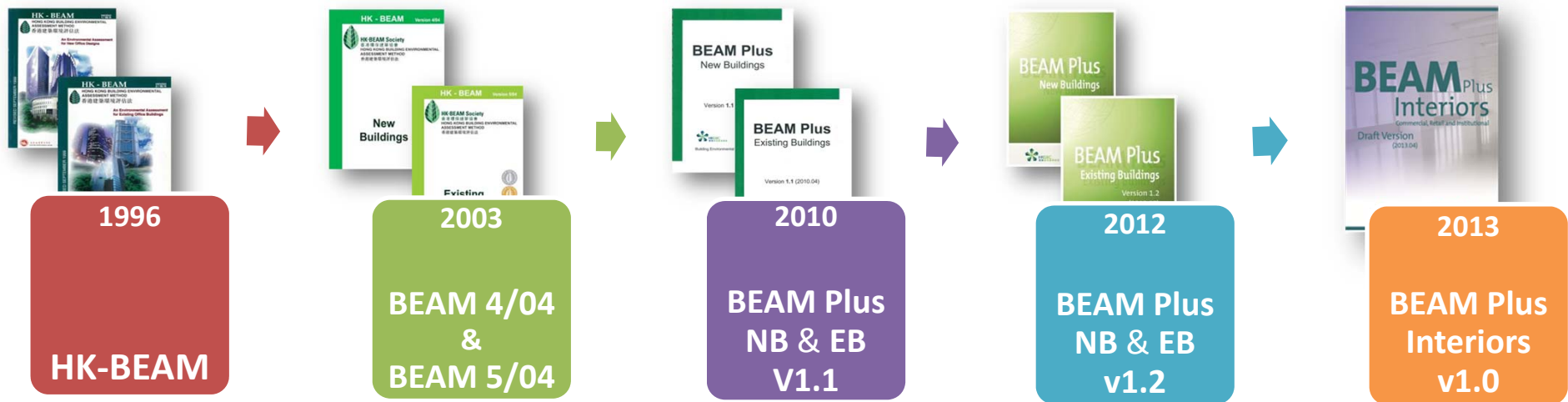
## BEAM Plus

- A voluntary green building assessment scheme developed locally suitable for compact high-rise cityscape in the sub-tropical areas.

Gained  
IP  
Rights

## Development in Brief

- BEAM scheme was established in 1996, since then a number of updates were released. In 2010, BEAM Plus v1.1 was released in 2011 and the current version is v1.2.



# BEAM Plus Project Registration

- By the end of 2013, **460 projects** were registered under BEAM Plus, of which **110 projects** had completed Provisional Assessment (PA).
- Up to Mid-Aug 2014, more than **550** projects have been registered and more than **164** projects have completed PA, of which **5** projects have also completed Final Assessment (FA).
- A total of **32** projects have achieved **Platinum** rating in either PA/FA.

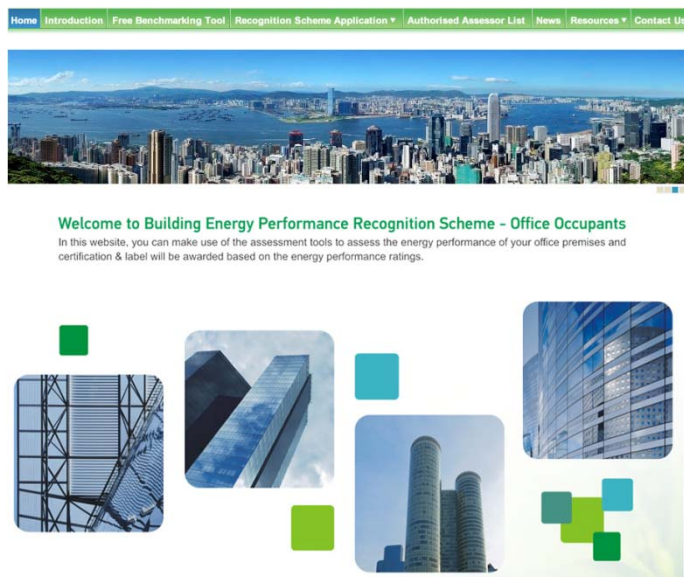


# Building Energy Performance Recognition Scheme (Office Occupants)

- The tool will analyze the electricity consumption of the applicant and compare with similar office type.
- Energy performance rating will then be advised.  
(Platinum/ Gold/ Silver/ Bronze/ Green/ No Rating)

Gained  
IP  
Rights

## Web Based Platform



## Website

<http://www.hkgbc.org.hk/bestoo>

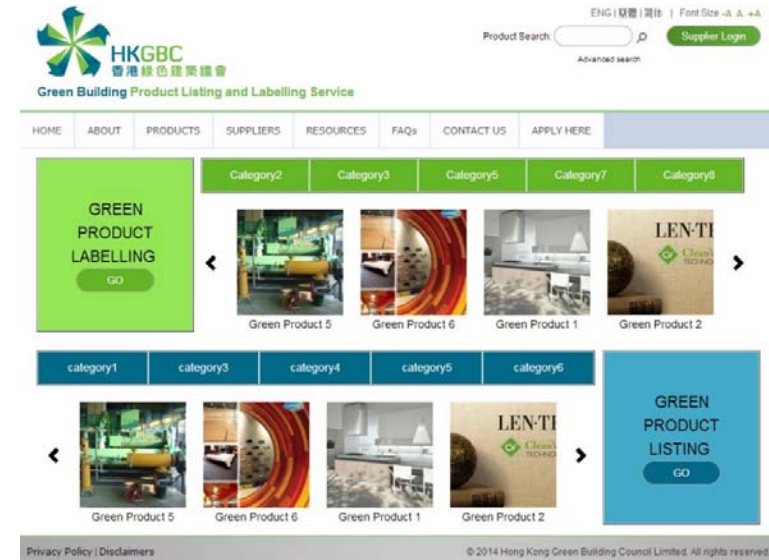
## Ratings of Certification and Label

### Benchmarking & Energy Saving Tool Rating :

| Ranking of Operational Energy Performance | Label Rating Under the Scheme |
|-------------------------------------------|-------------------------------|
| Reach Top 10 Percentile of range of data  | <b>Platinum</b>               |
| Reach Top 20 Percentile of range of data  | <b>Gold</b>                   |
| Reach Top 30 Percentile of range of data  | <b>Silver</b>                 |
| Reach Top 40 Percentile of range of data  | <b>Bronze</b>                 |
| Reach Top 50 Percentile of range of data  | <b>Green</b>                  |
| Below 50 Percentile of range of data      | <b>No Rating</b>              |

# Green Building Product Labelling Scheme

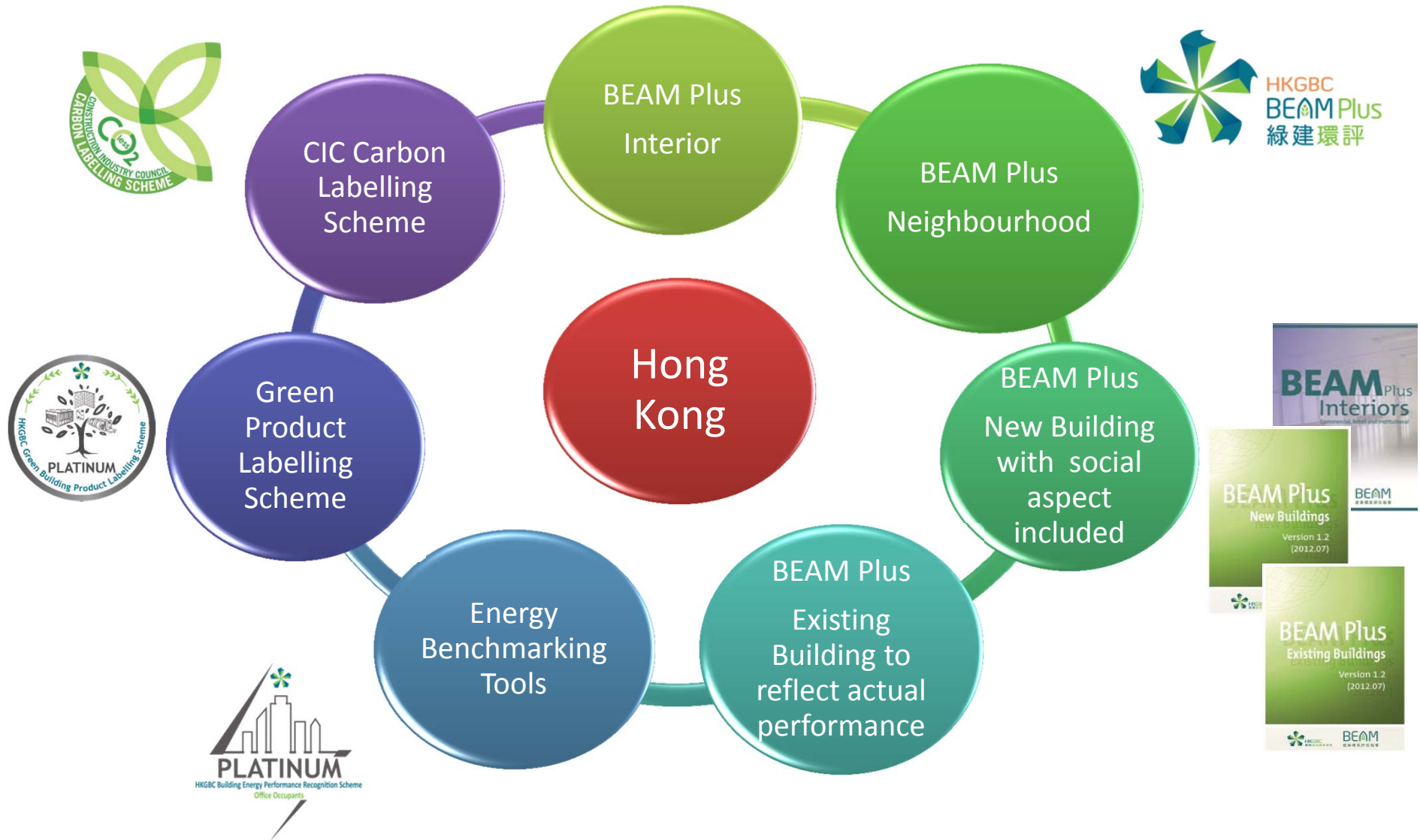
- Building Professionals want to specify Green Building Product in their contract to Promote Green
- General Public may be willing to pay at higher price for a Greener Building Product
- A labelling system is required for market differentiation



| Ratings  | Benchmarked Scores for each product |
|----------|-------------------------------------|
| Platinum | >90                                 |
| Gold     | 81 – 90                             |
| Silver   | 71 – 80                             |
| Bronze   | 61 – 70                             |
| Green    | 50 – 60                             |



# Creating a Ecosystem for Green Products



# Key Finding

- **Transfer in Green Technologies**
  - IP right is important but not sufficient
  - The technology must be sound and cost effective
- **Market differentiation**
  - New Product has little Brand
  - Labelling system or third party certification scheme for endorsement can create awareness
  - An overall target such as HK3030 create market demand
- **Government Procurement Policy**
  - Innovation Friendly Policy
  - Willing to try out new technology, provide preference for local investor
  - Three suppliers policy kill innovation
    - **Innovators want to create a market hub but cannot wait until other suppliers to be available.**
    - **Without job reference, especially Government job reference. It is very difficult to explore overseas.**
    - **Job reference is MOST IMPORTANT**

# My Suggested Solution

- Set up a Bureau level of Innovation Unit to pre-approve new technology so that it can be adopted in the departmental level. The front line officer can specify it without being question later.
- Government needs to establish a clear target such as waste and energy reduction in order to create a market demand.

