卓越表現

優質服務

專業人才

流程管理

富城集團透過推行現代化管理模式，不斷設計及推行創新服務，提高員工素質，致力提升各物業及設施的資產價值，目標成為香港最卓越的物業資產及設施管理集團。

我們的業務涵蓋350項物業及設施，總樓面面積達1.2億平方呎，為100萬客戶提供專業優質的物業資產及設施管理、維修保養、項目管理、保安護衛和環境服務。

用心服務 專心管理

A Passion of Service A Quality Credential
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Setting New Heights for FM Professionals

This year marks the 15th Anniversary of The Hong Kong Institute of Facility Management (HKIFM). Throughout the past 15 years, the HKFM has successfully nurtured numerous talents and promoted best practice to the public, with an objective to promote facility management as one of the leading disciplines and professions in the management of built asset and facilities in Hong Kong.

I am most honored to be the Chief Editor of this 15th year commemorative Yearbook. I would like to extend my heartfelt gratitude to the Editorial Team for their immense effort and great contribution towards production of this publication.

At the same time, my sincere thanks go to all Past Presidents for their kind sharing of interesting articles and to all expert authors for their invaluable contribution of research papers on different FM topics in this commemorative publication. Also a special thanks to all of the companies who have generously supported this Yearbook. Their contributions are indispensable and have made this publication a success.

I wish HKIFM every success in the years to come.

Alex Cheung
Chief Editor
The slogan for our 15th Year Anniversary is “Setting New Heights for FM Professionals”.

With a negative thinking, this would be interpreted as “FM Professionals are not at the highest and that there are yet more to be achieved”. This is a true scenario at this stage because while in the past 15 years, more and more clients and users become aware of the importance of FM, and that there have been new setting up of FM-related groups/divisions in professional institutes, launching of various academic programmes/conference/seminars etc. related to FM, still the profession is not yet fully or commonly recognized.

With a positive thinking, which in fact we shall always have, the slogan is saying that FM professionals do have rooms and also the abilities for further developments, and we therefore anticipate that “New Heights” could be set.

In addition to continuous enhancements of capabilities and knowledge by learning and using advanced technology and improved processes in order to meet the ever increasing demand in terms of expectations from people (both management and the supporting sector) and workplace and yet shortage of professional and supporting personnel in the FM sector, we would identify the “height” where we are at present, and envisage what are the new heights that should be achieved in future.

This would be done by “identifying” to the industry as well as the community the FM profession’s competence in responding to business needs, provision of strategic options to reconfigure property assets, functional space and appropriate procurement and management of services delivery in order to best serve the organizational business objectives, i.e. the profession’s ability to “facility” the management to achieve the business objectives more effectively, on top of being efficient.

Let us work together to achieve the “New Heights” in the coming years!
CONGRATULATORY MESSAGE

The Hon Leung Chun-ying, GBM, GBS, JP
The Chief Executive
CONGRATULATORY MESSAGE

Mr Gregory So Kam-leine, GBS, JP
Secretary for Commerce and Economic Development
CONGRATULATORY MESSAGE

Mr Eddie Ng Hak-kim, SBS, JP
Secretary for Education
Mr Matthew Cheung Kin-chung, GBS, JP
Secretary for Labour and Welfare
CONGRATULATORY MESSAGE

Mr Wong Kam-sing, JP
Secretary for the Environment
Dr Ko Wing-man, BBS, JP
Secretary for Food and Health
Mr Lai Tung-kwok, SBS, IDSM, JP
Secretary for Security
CONGRATULATORY MESSAGE

Professor Anthony Cheung Bing-leung, GBS, JP
Secretary for Transport and Housing
CONGRATULATORY MESSAGE

Mr Eric Ma Siu-cheung, JP
Under Secretary for Development
CONGRATULATORY MESSAGE

Ms Anissa Wong Sean-yee, JP
Permanent Secretary for the Environment / Director of Environmental Protection
CONGRATULATORY MESSAGE

Mr Stanley Ying
Permanent Secretary for Transport and Housing (Housing) cum Director of Housing

26 June 2014

Congratulatory Message

I am much delighted to see that the Hong Kong Institute of Facility Management is celebrating its 13th anniversary, and wish to offer my warmest congratulations.

For a compact, vibrant city like Hong Kong, facility management is instrumental to its long term competitiveness and appeal. The Institute has dedicated itself to the advancement of the discipline and the development of the profession by nurturing new blood, promoting facility management and expanding the body of knowledge. Both the public and the private sectors have benefited a great deal from its valuable contributions, which I am sure will continually be made.

May I wish the Institute ever greater achievements for many years to come.

(Stanley Ying)
Permanent Secretary for Transport and Housing (Housing)
cum Director of Housing
CONGRATULATORY MESSAGE

Mr Leung Koon-kee, JP
Director of Architectural Services
CONGRATULATORY MESSAGE

Mr Hui Siu-wai, JP
Director of Buildings
Mr C K Hon, JP
Director of Civil Engineering and Development Department

CONGRATULATORY MESSAGE
Mr Chan Fan, JP
Director of Electrical and Mechanical Services Department
Ms Vivian Lau Lee-kwan, JP
Director of Food and Environmental Hygiene

CONGRATULATORY MESSAGE
CONGRATULATORY MESSAGE

Mr Lau Ka-keung, JP
Director of Highways
CONGRATULATORY MESSAGE

Ms Mary Chow
Land Registrar
CONGRATULATORY MESSAGE

Mr K K Ling, JP
Director of Planning
CONGRATULATORY MESSAGE

Mr Kenneth Mak Ching-yu
Director - General of Trade and Industry

聚賢匯智
利惠工商
CONGRATULATORY MESSAGE

Mr David Sun Tak-kei, BBS, JP  
*Director of Audit*

[Image of Mr. David Sun Tak-kei, BBS, JP]
CONGRATULATORY MESSAGE

Mr Alan Siu
Government Property Administrator

Message to
the Hong Kong Institute of Facility Management

I congratulate the Hong Kong Institute of Facility Management on the occasion of its 15th anniversary.

Over the years, the Institute has served the community with commitment and made significant contributions to enhancing the quality of facility management in Hong Kong. I wish the Institute continued success in the years to come.

( Alan Siu )
Government Property Administrator

31 Fl, Avenue Tower, S-Gloucester Road, Hong Kong.
香港仔香頓道五國敦道五十一號三十一樓

Fax: 2783 9750 Tel: 2784 7401
本電傳往 Our Ref: 主電話 Your Ref:
CONGRATULATORY MESSAGE

Ms Bernadette Linn
Director of Lands
CONGRATULATORY MESSAGE

Mr P K Tang, JP
Commissioner of Rating and Valuation
CONGRATULATORY MESSAGE

Mr Simon Peh
Commissioner of the ICAC
CONGRATULATORY MESSAGE

Mr Fred Lam
Executive Director of Hong Kong Trade Development Council
CONGRATULATORY MESSAGE

Dr Clement Chen Cheng-jen, SBS, JP
Chairman of Vocational Training Council

Congratulations on the 15th Anniversary of
The Hong Kong Institute of Facility Management

On behalf of the Vocational Training Council (VTC), I would like to extend my sincere congratulations to The Hong Kong Institute of Facility Management (HKIFM) on its 15th Anniversary.

HKIFM has been supporting the development of the facility management industry and providing the opportunity for practitioners to acquire recognised professional qualifications over the years. VTC will continue to collaborate closely with the HKIFM in devising quality and relevant training programmes for the needs of this fast-growing industry.

I wish the Institute every success in the years to come.

Dr Clement CHEN Cheng-jen, SBS, JP
Chairman
Vocational Training Council

香港設施管理學會成立十五周年誌慶

欣逢 香港設施管理學會成立十五周年，本人謹代表職業訓練局（VTC）致表心賀。

香港設施管理學會一直致力推動行業發展，並協助從業員取得專業資格認可，貢獻良多。VTC 將繼續與學會緊密合作，為行業籌劃具質素及適用度的培訓課程，以配合這個發展迅速的行業的需要。

祝賀學會未來諸事順遂，續創佳績。

職業訓練局主席
陳錦仁博士，SBS，JP
Mr Marco Wu, GBS
Chairman of Hong Kong Housing Society

CONGRATULATORY MESSAGE

The Hong Kong Institute of Facility Management (HKIFM) has been playing an active role in promoting and enhancing the professional standards of facility management in Hong Kong. It has contributed significantly to the advancement of the industry through continuing development and by bringing in new knowledge and technology from other parts of the world.

I congratulate the HKIFM on its 15th Anniversary and wish it continued success in the years to come.

Marco Wu
Chairman
CONGRATULATORY MESSAGE

Mr Clement Chan
President of Hong Kong Institute of Certified Public Accountants

The Hong Kong Institute of Certified Public Accountants would like to congratulate the Hong Kong Institute of Facility Management on its 15th Anniversary.

15th Anniversary is marked by crystal, just like the contribution and commitment of the HKIFM to Hong Kong’s facility management profession, it is precious. The HKIFM’s decade and a half of dedication to its profession has also left an indelible mark on Hong Kong itself.

The Institute wishes the HKIFM all the best on your anniversary.

Clement Chan
President
Hong Kong Institute of Certified Public Accountants
CONGRATULATORY MESSAGE

Dr Sigmund Leung
President of Hong Kong Dental Association
CONGRATULATORY MESSAGE

Ir Victor C K Cheung
President of The Hong Kong Institution of Engineers

Congratulatory Message
The Hong Kong Institute of Facility Management
15th Anniversary

On behalf of the Hong Kong Institution of Engineers, I would like to extend our heartfelt congratulations to the Hong Kong Institute of Facility Management (HKIFM) on the joyous occasion of its 15th Anniversary.

Over the years, the HKIFM has striven to foster a continuous professional development culture by organising regular meetings, seminars and various events for its members and enhancing communication between its members and the industry. By promoting and advancing facility management in Hong Kong, the HKIFM has won acclaim for its remarkable efforts in providing opportunities for practitioners from different professional backgrounds to acquire recognised professional facility management qualifications. In particular, its efforts in training facility managers and maintaining their professional standards are highly commendable.

Through integrating the latest technological and managerial innovation into facility management, I firmly believe that the HKIFM will continue to prosper and develop for enhancing the competitiveness of corporations in Hong Kong.

May I wish the HKIFM continuous success in the years ahead.

Ir Victor C K CHEUNG
President
The Hong Kong Institution of Engineers

Inspire the Young • 鼓勵新一帶 工程展未來
Mr Ellis Ip Chi-ming
President of The Hong Kong Institute of Housing

CONGRATULATORY MESSAGE
CONGRATULATORY MESSAGE

Sr Simon Kwok
President of The Hong Kong Institute of Surveyors

The Hong Kong Institute of Facility Management
15th Anniversary Annual Dinner

On behalf of the Hong Kong Institute of Surveyors, I would like to extend my warmest congratulations to the Hong Kong Institute of Facility Management (HKIFM) on the occasion of its 15th Anniversary Annual Dinner.

Over the years, HKIFM has contributed a great deal towards the promotion of quality and professionalism in the development of Hong Kong’s facility management sector. I am sure that through closer collaborations between HKIFM and our Institute, we could bring more values to the betterment of Hong Kong. I wish HKIFM and its members every success in their future endeavours.

Sr Simon Kwok
President
CONGRATULATORY MESSAGE

Mr Stephen Hung
President of The Law Society of Hong Kong

From the President

Congratulations are extended to The Hong Kong Institute of Facility Management on the occasion of its 15th anniversary. The Institute has demonstrated a firm commitment to the profession and its contribution is widely recognized.

Gregory C. Cheung
President of The Law Society

The Law Society of Hong Kong honours its cordial relationship with The Hong Kong Institute of Facility Management and looks forward to strengthening our strong ties of friendship.

Incorporated in 1905 as a company limited by guarantee
CONGRATULATORY MESSAGE

Prof John Ng
Chairperson of BEAM Society Limited
CONGRATULATORY MESSAGE

Ir Sr Jonathan Lee
President of Building Services Operation and Maintenance Executives Society

Building Services Operation and Maintenance Executives Society

Congratulatory Message
The 15th Anniversary of The Hong Kong Institute of Facility Management

On behalf of Building Services Operation and Maintenance Executives Society (BSOMES), I would like to convey my warmest congratulations to The Hong Kong Institute of Facility Management (HKIFM) on its 15th Anniversary celebration.

The achievements made by HKIFM reflect the success in professional development of facilities management from its members. I would like to take this opportunity to express my appreciation towards the commitment and contribution made by HKIFM for the promotion of the quality facilities management in the industry.

BSOMES looks forward to working closely together with HKIFM on the quality advancement of the working and living environment for the society of Hong Kong in near future.

I wish HKIFM and its members with every success in the years ahead.

Ir Sr Jonathan Lee
President (2012 – 2014)
Building Services Operation and Maintenance Executives Society
Mr Yip Ngai-ming
Chairman of Chartered Institute of Housing Asian Pacific Branch

18 June 2014

Congratulatory Message
The Hong Kong Institute of Facility Management 15th Anniversary

On behalf of the Chartered Institute of Housing Asian Pacific Branch, it is my great pleasure to congratulate the Hong Kong Institute of Facility Management on its 15th Anniversary.

In the past years, HKIFM have been very successful in promoting professional facility management practices and techniques for practitioners from different professional background. With your great effort in arranging training and continuous learning in the facility management industry, the professional standard in the management of built asset and facilities in Hong Kong has continued to grow.

I wish the Institute continued great success in the future.

Yip Ngai Ming
Chairman
Chartered Institute of Housing Asian Pacific Branch
CONGRATULATORY MESSAGE

Mr Mok Peng-lam  
President of The Chartered Institute of Building (Hong Kong)

15th Anniversary of the Hong Kong Institute of Facility Management

On behalf of the Chartered Institute of Building (Hong Kong), I wish to extend my warmest wishes to the Hong Kong Institute of Facility Management as it celebrates its remarkable 15th Anniversary.

The Institute has embodied a concept of excellence combining professionalism and services to the community and environment. With its commitment and professionalism, I am sure that the Institute and its members will continue to promote facility management and services on new dimensions and strive ahead for the interest of the society.

I wish Institute continued success as it celebrates this important milestone.

Mok Peng Lam  
President, The Chartered Institute of Building (Hong Kong)
I wish to extend my warmest congratulations to the Hong Kong Institute of Facility Management on this fifteen anniversary. With an aim to adopt in Facility Management world-wide and promotes the synergy of effective people and building / asset management that can enhance a corporation’s competitiveness, the Institute have built the professional platform to the industry and share their professional knowledge and experiences to us in the past fifteen years. Their excellent work and contribution benefited main of us in Hong Kong.

Through various seminars, workshops, technical visits, symposium and training courses, the institute have contributed their effort to promote and educate us with the most advanced information and knowledge.

I wish the Institute will continue its effort in encouraging positive changes and improvement to Facility Management industry and bring the services to a new heights.

Mr. Gary Chiang
Chairman of Energy Institutes (Hong Kong Branch)
Dr Lobo Fung
President of Greater China Institute of Property Management

Congratulatory Message

The 15th Anniversary
The Hong Kong Institute of Facility Management

I am delighted to congratulate The Hong Kong Institute of Facility Management on its 15th Anniversary.

In the past decade, the Institute has made valuable contributions to promote and enhance the professional practices and standards of the facility management industry in Hong Kong.

I wish the Institute every success in the years to come.

Lobo Fung
President
Greater China Institute of Property Management
On behalf of the Hong Kong Association of Energy Engineers, I would like to extend my warmest congratulations to the Hong Kong Institute of Facilities Management on the joyful occasion of its 15th Anniversary.

Over the past years, it is evident that the HKIFM has been playing an important role in enhancing the efficiency and competitiveness of corporations in Hong Kong and neighboring region through effective facility management of their built assets and strengthening the collaboration and coordination with many professional bodies in Hong Kong and other facility management organizations world-wide. It has organized various technical visits, forums, seminars, symposiums, etc. for its members and interested parties for relevant technology and experience exchanges for the betterment of the facility management industry. With the enthusiasm of its members, I trust that the HKIFM will continue to strive to meet the new challenges with their expertise in this rapidly changing world.

May I wish the Celebration Dinner a great success and the HKIFM continuous prosperity in its future endeavours.

Ir Dr. Raymond K.L. Chan
President (2014 – 2016)
Hong Kong Association of Energy Engineers
CONGRATULATORY MESSAGE

Mr Ivan Tam
President of The Hong Kong Association of Property Management Companies
CONGRATULATORY MESSAGE

Mr Paul Shieh SC  
Chairman of Hong Kong Bar Association

To: The Hong Kong Institute of Facility Management

On behalf of the Hong Kong Bar Association, I extend our warmest congratulations to the Hong Kong Institute of Facility Management on its 15th Anniversary, and wish it every success in the years to come.

Paul Shieh SC  
Chairman  
Hong Kong Bar Association

June 2014
CONGRATULATORY MESSAGE

Ir Conrad Wong Tin-cheung, BBS, JP
Chairman of Hong Kong Green Building Council

On behalf of the Hong Kong Green Building Council (HKGBC), I would like to express my warmest congratulations to the Hong Kong Institute of Facility Management (HKIFM) on the occasion of its 15th Anniversary.

HKIFM has played an important role in integrating the latest technological and managerial innovation into Facility Management practice. With its enduring commitment and vision to the development of Hong Kong, I have no doubt that HKIFM will continue to lead in the future in strengthening the recognition and professionalism of its practitioners in Hong Kong.

May I wish HKIFM every success in the year to come.

Ir Conrad WONG Tin-cheung, BBS, JP
Chairman, Hong Kong Green Building Council
CONGRATULATORY MESSAGE

Ms Maisy Ho
President of Hong Kong Institute of Real Estate Administrators
Ir Dr Hon Lo Wai-kwok, BBS, MH, JP
President of Hong Kong Professionals And Senior Executives Association

CONGRATULATORY MESSAGE
CONGRATULATORY MESSAGE

Ir Dr Hon Lo Wai-kwok, BBS, MH, JP
Chairman of Hong Kong Quality Assurance Agency
Dr Chan Chi-kau, Johnnie Casire, BBS, JP
Chairman of Housing Managers Registration Board

CONGRATULATORY MESSAGE
CONGRATULATORY MESSAGE

Mr Dave Hallam
President of International Facility Management Association (Hong Kong Chapter)

The Hong Kong Institute of Facilities Management

Attn. Mr. Low Hon Wah, President

Dear Mr. Low,

Re: Congratulatory Message on the Occasion of the 15th Anniversary of the Hong Kong Institute of Facilities Management

It gives me great pleasure to write to you on the occasion of your learned institute’s 15th Anniversary.

The International Facility Management Association, Hong Kong Chapter is pleased to see that a great milestone in your Institute’s history has been made and look forward to celebrating more such historical milestones with your good selves in the future.

You have paved the way for the professional development of the facilities management profession in Hong Kong and indeed brought the industry into the new millennium.

We look forward to further and deeper professional relations with your good selves in the years ahead for the betterment of the industry as a whole.

Yours sincerely,
For and on behalf of
International Facility Management Association, Hong Kong Chapter

Dave Hallam
President
International Facility Management Association, Hong Kong Chapter

The Hong Kong Chapter of International Facility Management Association
P.O. Box No. 95115, Tseung Kwan O Post Office
Tel: (852) 2512 0111  Fax: (852) 2512 0555
Ms Maureen SY Fung
Founding Chairman of Institute of Shopping Centre Management

Congratulatory Message

On behalf of the Institute of Shopping Centre Management, I would like to extend my warmest congratulations to The Hong Kong Institute of Facility Management on its 15th Anniversary.

Over the years, the association has made significant contributions to the enhancement of property management, promotion of high standards of professionalism in property management industry and exchange of professional knowledge at international level.

I sincerely wish the association and all members every success in its continued pursuit for excellence in the years ahead.

Maureen S.Y. Fung
Founding Chairman
Institute of Shopping Centre Management
CONGRATULATORY MESSAGE

Ir Prof Choy Kin-kuen
Chairman of Professional Green Building Council

On behalf of the Professional Green Building Council, I would like to offer our warmest congratulations to the Hong Kong Institute of Facility Management (HKIFM) on the joyous occasion of its 15th Anniversary.

Founded in 2000, the HKIFM has striven to uphold the highest professional standard for the Institute and its members. Throughout the years, the HKIFM has played a significant role in promoting facility management as one of the leading disciplines and professions in the management of built asset and facilities in Hong Kong. It develops ties and mutual recognition with other facility management organisations worldwide, particularly those within China and the neighbouring region. Its vision to enhance efficiency and competitiveness of corporations through effective facility management is highly commendable.

May I take this opportunity to wish the HKIFM continuous prosperity and every success in its future endeavours.

Ir Prof CHoy Kin Kuen
Chairman
Professional Green Building Council
Mr Keith Kerr, SBS, JP
President of The Real Estate Developers Association of Hong Kong

CONGRATULATORY MESSAGE

On behalf of The Real Estate Developers Association of Hong Kong, I wish to extend my warmest congratulations to the Hong Kong Institute of Facility Management on its 15th Anniversary.

Since its establishment, the Institute has made a significant contribution to promoting the professionalism of the industry and enhancing the quality of our built environment. I believe the Institute will continue to make commendable achievements to the industry in the years ahead.

Keith Kerr
President
CONGRATULATORY MESSAGE

Mr Andrew Lee
Chairman of Royal Institution of Chartered Surveyors Asia

Congratulatory Message

On behalf of the Royal Institution of Chartered Surveyors (RICS) Hong Kong, I would like to extend my warmest congratulations to the Hong Kong Institute of Facility Management (HKIFM) on the occasion of its 15th Anniversary.

Your institute has grown over the years to become one of the leading and influential organisations for the facility management profession in Hong Kong. I would like to take this opportunity to express my appreciation towards the contributions made by your members to the industry.

On this very special occasion, I wish the Institute a bright future with ever remarkable achievements in the years to come.

Best wishes,

Andrew Lee
Chairman
RICS Hong Kong
CONGRATULATORY MESSAGE - HONORARY FELLOW

Ir Dr Raymond Ho Chung-tai, SBS, SBStJ, JP
15th Anniversary of the
Hong Kong Institute of Facility Management

The Facility Management Industry is evolving and maturing. Over the last 15 years, the Hong Kong Institute of Facility Management has always been the beacon of change for this rapidly growing industry, not only in Hong Kong, but in China as well.

Facility Management is a profession that integrates People, Place, Process and Technology, in making our built environment a better place for all. The adoption of new technologies, and the growing awareness of sustainability issues and the need for green facilities, are making this industry, and thus the work of the Institute, extremely relevant and important to our society.

I would like to take this opportunity to convey my sincere congratulations to the Hong Kong Institute of Facility Management for 15 years of outstanding achievement in promoting and supporting the professional development of this industry, and looking forward to the continuing growth of the institute, as well as that of the profession, in the years to come.

Yours sincerely,

Philip Lo
Hon Fellow HKIFM, IFMA Fellow
CEO Lexco Limited
CONGRATULATORY MESSAGE - HONORARY FELLOW

Mr Alex Lam

27 October 2014

Subject: Hong Kong Institute of Facility Management
15th Anniversary EFMA Celebration

Every year the task of being on the jury for the EFMA is getting more and more difficult. This year for example, the entries are all of high standards and every company is doing such an amazing job serving their customers, looking after their employees and caring for the environment and the community. To differentiate one from another causes us to look very hard at each submission to search out their specific distinctive that separate the super-super stars from the super stars.

Everyone is doing the right thing and this year the accomplishment in managing facilities in Hong Kong far surpasses the efforts of the previous years. I must congratulate the Hong Kong Institute of Facility Management for doing such a remarkable job branding the FM profession in Hong Kong, nurturing the FM professionals via high standards of ethics and learning opportunities, and most importantly, bringing awareness of the FM profession to the public.

I am proud and honoured to be a part of this.

Yours sincerely,

Alex Lam, MAIC, Hon.I.FM, FMA Fellow
Director Global Development
AVIEMORE | STIRLING
Toronto, Canada

AVIEMORE | STIRLING
Toronto | Amsterdam | Hong Kong

Baptist Street, 15/F, Hopewell Centre, Mongkok, Kowloon, Hong Kong
CONGRATULATORY MESSAGE - HONORARY FELLOW

Mr Chung Pui-lam, GBS, OBE, JP

24th July 2014

The Hong Kong Institute of Facility Management

Congratulatory Message

On the occasion of the 15th Anniversary of the Hong Kong Institute of Facility Management, I would like to send my warmest congratulations to the Institute and all its members.

Over the years, the Institute has shown its enthusiastic and dedicated efforts to promote professionalism in building and facility management in Hong Kong. Good facility management enables the safe and efficient use of facilities in a building, which in turn enhances the value of the property and its environs.

May I take this opportunity to wish the Institute and its members every success in the future.

(CHUNG Pui-lam)
Sr Johnny Au Choi-kai, JP

CONGRATULATORY MESSAGE - HONORARY FELLOW

[Chinese text]

香港設施管理學會十五週年年刊

[Chinese text]

敬賀

名譽資深會員 區載佳 测量師
ABOUT HKIFM

The Hong Kong Institute of Facility Management (HKIFM) is a non-profit making organisation inaugurated in 2000. It was formed by a group of professional people who are actively involved in the field of facility management. The HKIFM is run by an elected Council that has a number of committees covering aspects on membership, education, corporate affairs, research and communications.

OBJECTIVE

The main objective of the HKIFM is to promote facility management as one of the leading disciplines and professions in the management of built asset and facilities in Hong Kong. The HKIFM aims to provide the opportunity for practitioners from different professional background to acquire a recognised professional facility management qualification. The HKIFM will involve in the training of facility managers, maintenance of professional standard as well as being the focus of excellence in the development and promotion of facility management techniques and know-how in the region. The HKIFM is working to develop ties and mutual recognition with other facility management organisations world-wide and particularly those within China and the neighbouring region.

WHAT IS FM?

Facility Management is the process by which an organisation integrates its people, work process and physical assets to serve its strategic objectives. As a discipline, facility management is the science and art of managing this integrative process from operational to strategic levels for promoting the competitiveness of organizations.

The HKIFM hence recognises Facility Management as both a process and a discipline. It also affirms the integrative approach adopted in Facility Management world-wide and promotes the synergy of effective people and building/asset management that can enhance a corporation’s competitiveness. In addition, the HKIFM accords Facility Management to the highest professional level whereby facility managers are instrumental in the strategic decision making of an organisation.

The HKIFM identifies the following 11 areas of Core Competency encompassing the spectrum of basic knowledge a Facility Manager should be equipped with in providing professional and customer-oriented facility management services.
HKIFM’S VISION AND MISSION

Enhancing the efficiency and competitiveness of corporations in Hong Kong Special Administrative Region and the neighbouring region through effective facility management of their built assets.

VISION
The Institute
- Embodies a concept of excellence combining professionalism and service to the community, environment and the region.
- Affirms the importance of effective integration of users’/ organisations’ needs with the physical planning and maintenance of built-facilities and support services.
- Develops a continuous professional development ethos and culture.
- Upholds the highest professional standing and recognition of the Institute and its members.
- Integrates the latest technological and managerial innovation into Facility Management practice where applicable.
- Collaborates with the leading Facility Management organisations and learned institutes world-wide for continuous improvement of the discipline and the profession.
- Committees to Facility Management education, training, research and development.
- Supports government and community initiatives in improving the effective management of built-facilities and support services for the economy.

MISSION
To achieve its vision, the Institute will
- Promote and advance the knowledge, study and practice concerned with the management of the built facilities.
- Establish the Institute as the leading facility management institute in the region.
- Maintain the highest professional standard for the Institute and its members.
- Serve the public through provisions of advisory services on all matters related to facility management.
- Advise the Government on all matters related to the management of the built facilities.
- Collaborate with other agencies and bodies locally and overseas in the promotion and development of facility management.
- Foster the highest professional standard through membership control, education and supports for research and development.

CLASSES OF MEMBERSHIP
Corporate (with a right to vote)
Fellow (F.PFM)
Member (PFM)

Non-corporate (do not have the right to vote)
Honorary Fellow (Hon.PFM)
Associate (AHKIFM)
Student

Retired Members

PROFESSIONAL FACILITY MANAGEMENT ESTABLISHMENT (PFME®)
They are organisations that are active in advocating quality practice in the management of the built environment and facilities and the promotion of facility management as a prime profession.
HONORARY ADVISOR, HONORARY FELLOWS
PAST PRESIDENTS AND COUNCIL (2013-2014)

Honorary Advisor
The Hon Leung Chun-ying, GBM, GBS, JP

Honorary Fellows
Ir Dr Raymond Ho, SBS, SBStJ, JP
Mr Daniel Lam, BBS, JP
Mr Philip Lo
Mr Alex Lam
Dr Michael Chiu, BBS, JP
Ms Wong Lai-chun, BBS
Prof Patrick Lau, SBS, JP
Dr Chan Man-wai
Mr Frankie So
The Hon Barry Cheung, GBS, JP
Sr Johnny Au, JP
Dr Fung Hong, JP
Dr Lau Wah-sum, GBS, JP
Mr Roger Lai, SBS, JP
Mr Yu Qingxin
Mr Marco Wu, GBS, JP
Mr Pau Shiu-hung, SBS, JP
Mr Thomas Ho
Dr Daniel Ho
Mr Kenneth Chan
Mr Chung Pui-lam, GBS, JP

Founding President
Dr Chan Man-wai (99-02)

Past Presidents
Dr Daniel Ho Chi-wing (02-03)
Mr Kenneth Chan Jor-kin (04-05)
Mr Lau Po-chi (06-07) (deceased)
Mr Stephen Chung Wai-kit (08-09)
Dr Eric Chan Kui-sing (10-11)
Mr Frankie So Hung-fai (03-04)
Ir Alfred Sit Wing-hang, JP (05-06)
Mr Ip Man-ching (07-08)
Mr Nelson Ho Siu-leung (09-10)
Ms Celine Tam Pui-ching (11-12)

Immediate Past President
Ir Edward Lee Kam-hung (12-13)

COUNCIL LIST (2013-2014)

President
Mr Low Hon-wah
Vice President
Dr Edmond Cheng Kam-wah
Hon. Secretary
Mr Alex Cheung Wai-keung
Hon. Treasurer
Ir Dr Percy Kong Tat-fun
Council Members
Mr Edmond Chau Fu-keung
Mr Ray Ng Kit-wah
Mr Lam Cheuk-yum
Mr Raymond Chow Chi-hang
Mr John Ho Yuen-kuen
Mr Gary Yeung Man-kai

Directors of Communications
Ir Edward Lee Kam-hung
Directors of Corporate Affairs
Dr Eric Chan Kui-sing
Directors of Education & Membership
Mr Frankie So Hung-fai
Directors of Professional Development
Mr Law Yeuk-tim
Directors of Programme
Mr Alex Cheung Wai-keung
Directors of Research
Dr Joseph Lai Hung-kit
Directors of Strategic Development
Mr Nelson Ho Siu-leung
Directors of Young Members
Mr Eric Wong Yin-wai
Presidents (1999-2014)

Front row (from left to right): Ir Edward Lee Kam-hung; Mr Low Hon-wah; Dr Chan Man-wai; Dr Daniel Ho Chi-wing; Mr Frankie So Hung-fai

Second row (from left to right): Ms Celine Tam Pui-ching; Dr Eric Chan Kui-sing; Mr Nelson Ho Siu-leung; Mr Stephen Chung Wai-kit; Mr Ip Man-ching; Ir Alfred Sit Wing-hang; Mr Kenneth Chan Jor-kin
MESSAGE FROM PAST PRESIDENTS

My congratulations to HKIFM on its 15th anniversary. I am indeed most happy to see HKIFM growing from strength to strength from its humble start. The success was won through the dedicated hardwork of its past presidents and Council members and sure with the enthusiasm towards promoting facilities management in the industry and the community at large. My salute to them for their dedication and selfness contributions.

Mr Frankie So Hung-fai
President (03-04)

As a past-president of the Hong Kong Institute of Facility Management (HKIFM), I have the great honour to extend my warmest congratulations to the institute on its 15th Anniversary.

The HKIFM has grown from a small group of founding members into an institute of significant influence in the profession which help to shape policies related to the future of the facility management profession in Hong Kong. I want to take this opportunity to express my gratitude towards successive presidents, council members, and ordinary members who are committed to and passionate about contributing positive changes to the industry. I am sure the institute will continue to lead the profession to face the challenges ahead and will achieve remarkable results in the years to come.

Dr Daniel Ho Chi-wing
President (02-03)

On the occasion of the fifteen anniversary of the establishment of the Institute, I am pleased to see a thriving organization dedicated to the continuing professional development of facility management.

The Institute has arranged seminars and conferences in both Chinese Mainland and Hong Kong to promote and raise the standards of the profession in the past fifteen years. The Institute has also conducted series of professional trainings to enhance the knowledge of the members and practitioners.

Looking forward to continuous success of the Institute.

Dr Chan Man-wai
President (99-02)
Kudos!

15 Great Years of “Fantastic Manifestation!”

My sincere wish that the Institute will continue to grow and exercise its influence in the society by defining professional standards, through public participation, developing membership, recognising exemplary practices and enhancing the competitiveness of corporation and effectiveness of other organisations through best and quality facility management services.

It is my great pleasure to congratulate the Hong Kong Institute of Facility Management on its 15th Anniversary.

Over the years, the Institute has played a pivotal role in promoting and developing the facility management profession through a number of activities such as conferences, seminars, professional development courses, talks and technical visits. I feel extremely honored to be able to serve the Institute in various positions. Since 2010, the Institute has organized the Excellence in Facility Management Award (EFMA) annually to recognize the outstanding performance and excellent contribution of organizations in delivering an exemplary record of Facility Management. Through my involvement in the adjudication works of the award, I have noted the ever rising standard of the participants over the years. It is particularly exciting to note that the participants are extending their embracement of green practices including various energy saving measures. There is no doubt that the Award has been instrumental in promoting best practices to the industry.

With the continued effort of the Institute and all stakeholders, I am sure the facility management profession will continue to take a leading role in promoting a better built environment in Hong Kong. On this joyous and memorable occasion, I wish the Institute and its members every success in the coming future.

In Memory of Mr Lau Po-chi

Mr Kenneth Chan Jor-kin
President (04-05)

Ir Alfred Sit Wing-hang, JP
President (05-06)

Mr Lau Po-chi
President (06-07) [deceased]
MESSAGE FROM PAST PRESIDENTS

It is a pleasure for me to congratulate The Hong Kong Institute of Facility Management for its 15th anniversary.

The Institute has helped to promote and advance the knowledge, study and practice in managing built asset and facilities in Hong Kong. The establishment of clear and achievable roadmap encourages individual in planning their advancement along the career path within the facility management profession. The regularly organized seminars and conferences provide forums for sharing among experienced fellows and passionate young practitioners academically and practically approaching options/initiatives in response to new challenges arose from the changing business environment. The annual Excellence Facility Management Award (EFMA) recognizes the achievement, contribution and commitment of all FM practitioners in best practice development for management of built assets and facilities in Hong Kong.

With the full support of all Past President, current and future Office Bearer, Committee Director and Council Member, I am confident that the Institute will be able to continue playing its vital role in enhancing the efficiency and competitiveness of corporations in Hong Kong Special Administrative Region and the neighbouring region through effective facility management of their built assets.

I look forward to seeing the Institute embark its second decade.

Wow! An extremely happy occasion, keep it up and carry on. And look forward to another on our 30th Birthday. :)

Originated from a concept developed while waiting for BBQ goose at the City U canteen, it is fascinated to see the celebration of the 15th Anniversary of the HKIFM! I am delighted to see the healthy growth of the Institute as well as the flourish of the profession under her promotion and advocation.

The demand of quality and competent FM professional is of great demand. I trust there are still work ahead for the Institute to develop and nurture more and more quality Professional Facility Managers with integrated knowledge and innovative minds.

Congratulations to all in HKIFM in this anniversary celebration! Keep up with the good work to bring the Institute and the profession to a new height!
MESSAGE FROM PAST PRESIDENTS

For the past 15 years, HKIFM has been rigorously performing a key leading role in strengthening the professional facility management services to the public.

In this dynamic facility management development, HKIFM has a pivotal role in the regulatory framework to promote the quality and reliable services to the community by working seamlessly with the Bureau in promoting the forthcoming legislation of the registration of professionals in facility and property management through the governing authority.

Definitely, it is instrumental in bringing HKIFM a full recognition of its professional qualification in the industry. Striving towards exemplary records of professional excellence, HKIFM has conducted a series of technical visits, talks, lectures, and researches for the benefits of our members.

With greater participation in every FM development and increasing influence in the industry, I have every confidence that HKIFM can set new heights for the professional FM development, realize an unparalleled achievement and make significant contributions and to the whole society in the many, many more years to come.

I wish a great success of 15th Anniversary of the HKIFM.

Throughout the past fifteen years, Hong Kong Institute of Facility Management has made great effort to promote progressive development of facility management profession in Hong Kong with wide public recognition.

Being the President for Year 2011/2012, I had the chance to serve the Institute and witness its contribution to various facility management services sectors and the community through a concerted effort of the Council.

Taking this opportunity, I would like to congratulate HKIFM on the special occasion of its 15th anniversary and wish the Institute to continue prospering in the years ahead.

On this special occasion of 15th Anniversary, I would like to extend my warmest congratulation to the Hong Kong Institute of Facility Management for all its contributions and achievements in the advancement of facility management profession in Hong Kong and neighboring regions over the years.

I feel very much privileged to have the opportunity of participating in various works of the Institute. With the persistent effort of the Institute and its members, I am sure it would continue to take a leading role in the furtherance of facility management in the regions.

I wish the Institute every success in the years to come.
HKIFM ACTIVITIES

CPD/SOCIAL EVENTS

The HKIFM holds regular Continuing Profession Development (CPD) events, conference and seminars for members and the general public to promote and develop skills and markets in FM and related fields.

<table>
<thead>
<tr>
<th>Year</th>
<th>Event Date</th>
<th>Event Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>28 Jul</td>
<td>Seminar on Critical Issues in Facilities Management</td>
</tr>
<tr>
<td></td>
<td>19 Aug</td>
<td>Technical Visit to Lantau Link</td>
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<tr>
<td></td>
<td>23 Sep</td>
<td>HKIFM Inauguration Seminar on Facilities Management in Hong Kong: Past, Present and Future and Towards a Successful Corporate FM</td>
</tr>
<tr>
<td></td>
<td>4 Oct</td>
<td>Full-day Seminar on Clicks &amp; Mortar Facilities Management Technologies</td>
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<tr>
<td></td>
<td>1 Nov</td>
<td>HKIFM 1st AGM &amp; Annual Dinner 2000</td>
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<tr>
<td></td>
<td>28 Nov</td>
<td>CPD Talk on Development in Education &amp; Global Trends in Facility Management - An Insight Review</td>
</tr>
<tr>
<td>2001</td>
<td>17 Mar</td>
<td>Technical Visit to Wind Tunnel at HKUST</td>
</tr>
<tr>
<td></td>
<td>6 Apr</td>
<td>Seminar on Business of FM and Dinner Talk on Indoor Air Quality</td>
</tr>
<tr>
<td></td>
<td>19 May</td>
<td>Technical Visit to iAdvantage Data Centre</td>
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<tr>
<td></td>
<td>16 Jun</td>
<td>Technical Visit to the flexible office of Sun Microsystems</td>
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<tr>
<td></td>
<td>24 Aug</td>
<td>Executive Programme in FM</td>
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<td></td>
<td>27 Sep</td>
<td>Luncheon Talk on Green Buildings</td>
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<tr>
<td></td>
<td>26 Oct</td>
<td>Luncheon Talk on The Risk of Exporting HK development Strategies to Mainland China</td>
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<tr>
<td></td>
<td>9 Nov</td>
<td>HKIFM 2nd AGM &amp; Annual Dinner 2001</td>
</tr>
<tr>
<td></td>
<td>30 Nov</td>
<td>Luncheon Talk on A Facilities Management Perspective</td>
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<tr>
<td>2002</td>
<td>24 Jan</td>
<td>Seminar on Legal Issues for FM Practitioners</td>
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<tr>
<td></td>
<td>25 Jan</td>
<td>Seminar on Construction Price Management System in PRC</td>
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<td></td>
<td>29 Jan</td>
<td>Seminar on EQ for Facility Managers</td>
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<tr>
<td></td>
<td>16 Mar</td>
<td>Seminar on Trends in Facilities Design and Management</td>
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<td></td>
<td>26 Apr</td>
<td>Luncheon Talk on What Every Facility Manager should know about Occupational Safety and Health</td>
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<tr>
<td></td>
<td>20 Sep</td>
<td>Luncheon Talk on Effectiveness of Building Management (Amendment) Ordinance 2000</td>
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<tr>
<td></td>
<td>17 Oct</td>
<td>Luncheon Talk on the Latest Development in FM</td>
</tr>
<tr>
<td>Date</td>
<td>Event Description</td>
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<tr>
<td>4 Nov</td>
<td>HKIFM 3rd AGM &amp; Annual Dinner 2002</td>
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<tr>
<td>21 Nov</td>
<td>Seminar on Pain-free Outsourcing</td>
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<tr>
<td>22 Nov</td>
<td>Luncheon Talk on Integration of Technology &amp; Humans</td>
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<tr>
<td></td>
<td>Directions for Efficiency &amp; Productivity in FM</td>
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<tr>
<td>22 - 23 Nov</td>
<td>Executive Programme in FM</td>
<td></td>
</tr>
</tbody>
</table>

**2003**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
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</thead>
<tbody>
<tr>
<td>25 Jan</td>
<td>Technical Visit to Cyberport</td>
</tr>
<tr>
<td>20 Feb</td>
<td>Dinner Talk on Benchmarking - Lies &amp; Statistics - a not too serious look at benchmarking practices in HK &amp; overseas</td>
</tr>
<tr>
<td>25 Apr</td>
<td>Forum on Facility and Drainage Improvements due to SARS and General Environmental Healthiness</td>
</tr>
<tr>
<td>27 Jun</td>
<td>Luncheon Talk on Why Technology is a Strategic Tool for Real Estate Companies?</td>
</tr>
<tr>
<td>29 Aug</td>
<td>Social Function on Astronomical Phenomenon</td>
</tr>
<tr>
<td>23 Aug</td>
<td>CPD Talk on Emergency Preparedness in FM : An After-SARS New Initiative</td>
</tr>
<tr>
<td>23 Sep</td>
<td>CPD Talk on Blackout in North America – A Lesson for Facility Manager</td>
</tr>
<tr>
<td>28 Nov</td>
<td>HKIFM 4th AGM &amp; Annual Dinner 2003 cum FAME Award 2003 Presentation Ceremony</td>
</tr>
<tr>
<td>27 Dec</td>
<td>Technical Visit to Newly Refurbished SARS Ward at KWH</td>
</tr>
</tbody>
</table>

**2004**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
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</thead>
<tbody>
<tr>
<td>5 Feb</td>
<td>Luncheon Talk on How to Handle Emergency Situations for a “FM” Perspective</td>
</tr>
<tr>
<td>9 Jul</td>
<td>Luncheon Talk on In Search of Greener Pastures</td>
</tr>
<tr>
<td>28 Aug</td>
<td>Technical Visit to Two IFC (The True Skyscraper) &amp; Casual Lunch</td>
</tr>
<tr>
<td>18 Nov</td>
<td>HKIFM 5th AGM &amp; Annual Dinner 2004 cum FAME Award 2004 Presentation Ceremony</td>
</tr>
<tr>
<td>12 Dec</td>
<td>WWII Battlefield Tour &amp; Countryside Hike</td>
</tr>
<tr>
<td>17 Dec</td>
<td>Career Talk &amp; Christmas Gathering for Young Members</td>
</tr>
</tbody>
</table>

**2005**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Jan</td>
<td>Seminar on Rights and Obligations of the Manager and IO in respect of management of the Common Part</td>
</tr>
<tr>
<td>18 Feb</td>
<td>Chinese New Year Luncheon Talk on Energy Efficiency in HK</td>
</tr>
<tr>
<td>7 Mar</td>
<td>CPD Talk on TEFMA and Presentation on the objectives of the Benchmarking Survey</td>
</tr>
<tr>
<td>13 May</td>
<td>Luncheon Talk on Facilities of A Golf Course : Facilities Manager’s Perspective</td>
</tr>
<tr>
<td>24 Jun</td>
<td>Luncheon Talk on Two Schools of Fung Shui</td>
</tr>
<tr>
<td>Date</td>
<td>Event Details</td>
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</tr>
<tr>
<td>21 Oct</td>
<td>Hearty Friday Evening</td>
</tr>
<tr>
<td>11 Nov</td>
<td>CPD Talk on Stress, Motivation and Performance</td>
</tr>
<tr>
<td>25 Nov</td>
<td>HKIFM 6th AGM &amp; Annual Dinner 2005</td>
</tr>
<tr>
<td>17 Nov</td>
<td>Workshop on Developing &amp; Managing FM Contracts</td>
</tr>
<tr>
<td>2 Dec</td>
<td>CPD Talk on FM Benchmarking: Experience from Australia</td>
</tr>
<tr>
<td>10 Feb</td>
<td>Spring Luncheon Talk on FM in Science Park</td>
</tr>
<tr>
<td>8 Jul</td>
<td>Technical visit to EMSD Headquarters</td>
</tr>
<tr>
<td>14 Oct</td>
<td>Technical visit to Bethanie of the HKAPA</td>
</tr>
<tr>
<td>15 Dec</td>
<td>HKIFM 7th AGM &amp; Annual Dinner 2006</td>
</tr>
<tr>
<td>2 Mar</td>
<td>Chinese New Year Luncheon Talk on Facility Managers’ Role in Heritage Conservation</td>
</tr>
<tr>
<td>17 Apr</td>
<td>CPD Talk on Knowing you own rights when being interrogated</td>
</tr>
<tr>
<td>3 May</td>
<td>CPD Talk on Engineering Solutions to Energy Saving</td>
</tr>
<tr>
<td>15 May</td>
<td>CPD Talk on Management of Service Level Agreements (SLA)</td>
</tr>
<tr>
<td>21 Jun</td>
<td>CPD Talk on Risk-based approach in evaluation of facility capital work projects</td>
</tr>
<tr>
<td>12 Jul</td>
<td>Technical Visit to Oncology Centre &amp; ID Block of Princess Margaret Hospital</td>
</tr>
<tr>
<td>27 Oct</td>
<td>Technical Visit to the HKSTP</td>
</tr>
<tr>
<td>2 Nov</td>
<td>HKIFM 8th AGM &amp; Annual Dinner 2007</td>
</tr>
<tr>
<td>12 Jan</td>
<td>Technical Visit to Lamma Wind &amp; Hiking at Lamma Island</td>
</tr>
<tr>
<td>22 Feb</td>
<td>Chinese New Year Luncheon Talk on New Real Estate Rule: Liquidity, Liquidity, and Liquidity</td>
</tr>
<tr>
<td>26 Feb</td>
<td>CPD Talk on The Challenges of Conserving and Adapting a Heritage Building for Contemporary Use – A Case Sharing of the Bethanie Project</td>
</tr>
<tr>
<td>10 Mar</td>
<td>CPD Talk on Most Real Estate Investors are Micro-Smart but Marco Dumb</td>
</tr>
<tr>
<td>15 Apr</td>
<td>CPD Talk on Emergency Preparedness for Disasters in Facility Management</td>
</tr>
<tr>
<td>6 May</td>
<td>CPD Talk on Development of Energy Efficient and Renewable Energy Installation in Government Buildings</td>
</tr>
<tr>
<td>27 May</td>
<td>CPD Talk on Why Facilities Management is Strategics?</td>
</tr>
<tr>
<td>25 Jun</td>
<td>CPD Talk on Practical means to achieve a better environment – Energy Efficiency &amp; Renewal Energy</td>
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<tr>
<td>Date</td>
<td>Event</td>
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<tr>
<td>23 Oct</td>
<td>HKIFM 9th AGM &amp; Annual Dinner 2008</td>
</tr>
<tr>
<td>15 Nov</td>
<td>Lunch Gathering &amp; Pre-lunch Tour with German FM Expert on Reaching the World</td>
</tr>
<tr>
<td>17 Nov</td>
<td>CPD Talk on How to achieve environmental sustainability by using Flexible Space System?</td>
</tr>
<tr>
<td><strong>2009</strong></td>
<td></td>
</tr>
<tr>
<td>21 Jan</td>
<td>CPD Talk on Lift &amp; Escalator Safety</td>
</tr>
<tr>
<td>16 Feb</td>
<td>CPD Talk on Energy Audit</td>
</tr>
<tr>
<td>24 Apr</td>
<td>CPD Talk on Professional Practice in Handling Insurance Claims</td>
</tr>
<tr>
<td>11 May</td>
<td>CPD Talk on Operation Building Bright 「楼宇更新大行動」</td>
</tr>
<tr>
<td>24 Jun</td>
<td>CPD Talk on Carbon Audit Guidelines for Buildings in Hong Kong</td>
</tr>
<tr>
<td>15 Oct</td>
<td>HKIFM 10th AGM &amp; Annual Dinner 2009</td>
</tr>
<tr>
<td>6 Nov</td>
<td>CPD Talk on Total Light &amp; Energy Management - A Case Study on New York Times Building</td>
</tr>
<tr>
<td><strong>2010</strong></td>
<td></td>
</tr>
<tr>
<td>22 Jan</td>
<td>Half Day Symposium on Revitalisation of Factory and Old Buildings</td>
</tr>
<tr>
<td>27 Feb</td>
<td>Spring Lunch Gathering and Seminar on IT in FM and Technical Visit to the Hong Kong Science Park</td>
</tr>
<tr>
<td>2 Mar</td>
<td>CPD Talk on LED Lighting</td>
</tr>
<tr>
<td>20 Mar</td>
<td>HKIFM &amp; HKIS (PFMD) Joint CPD on Technical Visit to the Amphitheatre of HKAPA</td>
</tr>
<tr>
<td>20 Apr</td>
<td>Technical Visit to HKSTP with Hwa Hsia Institute of Technology</td>
</tr>
<tr>
<td>28 May</td>
<td>CPD Talk on Effective Implementation of Asset Management</td>
</tr>
<tr>
<td>18 Jun</td>
<td>CPD Talk on MBM (Model, Build and Manage) by using BIM (Building Information Modeling)</td>
</tr>
<tr>
<td>13 Sep</td>
<td>CPD Talk on Leveraging Technologies and Opportunities for Sustainable Real Estate (Property), Infrastructure and Facilities Management</td>
</tr>
<tr>
<td>12 Nov</td>
<td>HKIFM 11th AGM &amp; Annual Dinner 2010 cum EFMA 2010 Presentation Ceremony</td>
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### 2011

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>15 Jan</td>
<td>CPD Talk on Licensing of Property Management Companies &amp; Practitioners</td>
</tr>
<tr>
<td>24 Mar</td>
<td>CPD Talk on Landscape Design &amp; Tree Management</td>
</tr>
<tr>
<td>14 May</td>
<td>Technical Visit to Venetian &amp; Macau Tower</td>
</tr>
<tr>
<td>4 Jun - 2 Jul</td>
<td>Training Course and Workshops A: Building Information Modelin...</td>
</tr>
<tr>
<td>23 &amp; 27 Sep</td>
<td>Training Course and Workshops B: BIM in Works Procurement &amp; Financial Management “Course Outline and Discussion Threads”</td>
</tr>
<tr>
<td>24 Sep</td>
<td>Technical Visit to ICC</td>
</tr>
<tr>
<td>27 Oct</td>
<td>HKIFM 12th AGM &amp; Annual Dinner 2011 cum EFMA 2011 Presentation Ceremony</td>
</tr>
<tr>
<td>26 &amp; 27 Nov</td>
<td>Training Course and Workshops C: BIM in Works Procurement &amp; Financial Management</td>
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### 2012

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<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
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<tbody>
<tr>
<td>4 Jan</td>
<td>Technical Talk on on Code of Practice for Fire Safety in Buildings 2011 related to Property Maintenance and Management</td>
</tr>
<tr>
<td>8 Feb</td>
<td>CPD Talk on Space Attack! Transforming Hospital Planning and Design with Science and Imagination</td>
</tr>
<tr>
<td>25 Feb</td>
<td>Technical visit to the HKSTP</td>
</tr>
<tr>
<td>23 Mar</td>
<td>Sharing Session of EFMA (2011) Winners</td>
</tr>
<tr>
<td>4 May</td>
<td>CPD Talk on Minor Works Control System (MWCS)</td>
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<tr>
<td>8 Jun</td>
<td>CPD Talk on Building Energy Efficiency Ordinance, Building Energy Code and Energy Audit Code</td>
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<tr>
<td>6 Jul</td>
<td>CPD Talk on Mandatory Building Inspection Scheme (MBIS)/ Mandatory Window Inspection Scheme (MWIS) and Registration of the Registered Inspector (RI)</td>
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<tr>
<td>18 Jul</td>
<td>Technical Visit to HKSTP</td>
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<tr>
<td>24 Aug</td>
<td>CPD Talk on CIC Zero Carbon Building (ZCB)</td>
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<td>20 Sep</td>
<td>CPD Talk on New Requirements of Lifts and Escalators Ordinance (&quot;LEO&quot;) and Lift Modernization</td>
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<tr>
<td>6 Oct</td>
<td>Technical Visit to Zero Carbon Building</td>
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<tr>
<td>18 Oct</td>
<td>HKIFM 13th AGM &amp; Annual Dinner 2012 cum EFMA 2012 Presentation Ceremony</td>
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<tr>
<td>9 Nov</td>
<td>CPD Talk on Waste Recycling</td>
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<tr>
<td>16 Nov</td>
<td>CPD Course 12/13 #1 on Building Ordinance - New Works</td>
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<td>Event Description</td>
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<tr>
<td>23 Nov</td>
<td>CPD Course 12/13 #2 on Building Ordinance - A &amp; A Works</td>
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<td>30 Nov</td>
<td>CPD Course 12/13 #3 on Building Ordinance - Maintenance &amp; Inspections</td>
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<td>Technical Visit to EcoPark</td>
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<td>CPD Course 12/13 #4 on Barrier Free Provision - Design Manual - Barrier Free Access 2008</td>
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<td>4 Jan</td>
<td>CPD Course 12/13 #5 on Building Energy Efficiency &amp; Energy Audit</td>
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<td>7 Jan</td>
<td>CPD Course 12/13 #6 on Fire Engineering</td>
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<tr>
<td>12 Jan</td>
<td>Technical Visit to DSD Stanley Sewage Treatment Works</td>
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<td>14 Jan</td>
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<td>CPD Course 12/13 #8 on Electrical Installation</td>
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<td>25 Jan</td>
<td>CPD Course 12/13 #9 on Lift &amp; Escalators</td>
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<tr>
<td>1 Feb</td>
<td>CPD Course 12/13 #10 on MVAC Systems</td>
</tr>
<tr>
<td>8 Mar</td>
<td>Talk and Technical Visit to Energizing Kowloon East Office (EKEO)</td>
</tr>
<tr>
<td>22 Mar</td>
<td>FM Networking cum Outstanding FM Students Award</td>
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<tr>
<td>9 Apr</td>
<td>Seminar on Facilities Management and Business of Managing Assets</td>
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<tr>
<td>12 Apr</td>
<td>Symposium on FM Best Practices cum Excellence in Facility Management Award (EFMA) 2013 Launch Ceremony</td>
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<tr>
<td>3 May</td>
<td>CPD Talk on District Cooling</td>
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<tr>
<td>15 Jun</td>
<td>Visit to King Yin Lei</td>
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<tr>
<td>4 Jul</td>
<td>CPD Talk on Turning Point of Real Estate Market</td>
</tr>
<tr>
<td>30 Aug</td>
<td>CPD Talk on Strategic Facility Planning for West Kowloon Cultural District</td>
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<tr>
<td>28 Sep</td>
<td>CPD Technical Visit to Kai Tak Cruise Terminal Building</td>
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<td>31 Oct</td>
<td>HKIFM 14th AGM &amp; Annual Dinner 2013 cum EFMA 2013 Presentation Ceremony</td>
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<tr>
<td>1 Nov</td>
<td>CPD Course 13/14 #1 on Introduction of Regulatory Requirements</td>
</tr>
<tr>
<td>8 Nov</td>
<td>CPD Course 13/14 #2 on Energy Efficiency in Lighting System</td>
</tr>
<tr>
<td>15 Nov</td>
<td>CPD Course 13/14 #3 on Energy Efficiency in AC Installations</td>
</tr>
</tbody>
</table>
22 Nov  CPD Course 13/14 #4 on Energy Efficiency in Electrical Installations
29 Nov  CPD Course 13/14 #5 on Lift & Escalator System
  6 Dec  CPD Course 13/14 #6 on Energy Audit and Carbon Audit
  13 Dec CPD Course 13/14 #7 on Renewable Energy and Case Studies
  14 Dec Technical Visit to Hong Kong Science Park Phase 3

2014
10 Jan  CPD Course 13/14 #8 on ISO 50001 Energy Management System
17 Jan  CPD Course 13/14 #9 on BEAM Plus and LEED
17 Jan  CPD Talk and Forum on Public Engagement on Municipal Solid Waste Charging
24 Jan  CPD Course 13/14 #10 on Experience Sharing - No/Low Cost, Practical Energy Saving Initiatives
22 Feb  Technical Visit to HKEx Data Centre
  1 Mar  Technical Visit to District Cooling at Kai Tak Development
  14 Mar  Technical Visit to North Lantau Hospital
  18 Mar  HKQAA SBI Training Course
  11 Apr Symposium on FM Best Practices cum EFMA 2014 Launch Ceremony
  11 Apr FM Networking cum Outstanding FM Students Award
  26 Jul  Technical Visit to Hong Kong Jockey Club, Sha Tin Racecourse
PSDAS PROJECTS

We are grateful for the assistance and financial support from the Professional Services Development Assistance Scheme (PSDAS) of the Commerce and Economic Development Bureau (CEDB) of the HKSAR Government. We would also like to thank all the collaborating institutions, sponsors, speakers, supporting organizations, helpers and participants for their support and efforts, which have made the following events under the above-mentioned scheme a great success.

1. 2003-2004 Quality Facilities Management Services for Modern Corporations
   5 Jun 04 Conference on “New World Order in Facility Management” in Beijing
   3 Jun 04 HK Conference on “New World Order in Facility Management”
   11 & 18 Nov 03 HK Seminars on “Facility Performance Measurements”
   5 Jul 03 HK Seminar on “Crisis in Facility Management”
   3-5 Mar 03 HK Real Estate Services Expo in Guangzhou

2. 2004-2005 Strategic Facility Management Services in China
   24 Sept 05 HK Seminar on “Strategic Facility Management in China”
   25 May 05 Conference on “Strategic Facility Management” in Shanghai
   26 Feb 05 HK Seminar on “Strategic Facility Management”
   24 Nov 04 Joint Conference with IFMA (HK Chapter) on “Where can FM add more?”

   6-8 Jun 07 Technical Visit on the Contribution of FM in Sustainable Developments in the PRD (Zhuhai, Zhongshan & Macau, China)
   21-24 Mar 07 Technical Visit on Sustainability and Energy Conservation (Tokyo and Yokohama, Japan)
   26 Oct 06 Conference on Total FM Solutions - Mapping Customer’s Aspirations in a Changing World & Technical Visit in Chongqing

   20 Mar 09 Conference on “China Real Estate 2009: A Year for the Vultures?”
   6-7 Nov 08 Conference on “China Real Estate”

   29-30 Sept 09 SIDP 09 Conference

   26 May 11 Conference
   28 May 11 One day Technical Visit in Hong Kong
HKIFM AWARDS

OBJECTIVE
The Awards aimed at promoting and encouraging the pursuit of excellence among Facility Management practitioners and encouraged the sharing of best practice amongst Facility Management professionals through competition. The Awards also helped promote the Facility Management profession to the community. This was conducive to achieving HKIFM’s core objectives, which is to promote Facility Management as one of the leading disciplines and professions in the management of built assets and facilities in Hong Kong.

FAcility Management Establishment (FAME) Award was launched in 2003 to give recognition to the outstanding Facility Management establishments while Best Managed Facility Award was launched in 2004 to give recognition to the on-site Facility Management teams. Applicants for these awards were scrutinized independently by Facilitators and Panel Judges composed of renowned professionals in the industry of Facility Management and very reputable individuals in the community.

FACILITY MANAGEMENT ESTABLISHMENT (FAME) AWARD 2003
Overall Winner           Synergis Management Services Ltd
Certificate of Excellence Eastpoint Property Management Services Ltd
Certificate of Merit      Urban Group

BEST MANAGED FACILITY AWARD 2004
GOLD Award

Residential Facility
City One Shatin managed by Urban Group

Other Facility
Hong Kong Institute of Education managed by Estates Office, the Hong Kong Institute of Education

Certificate of Merit
Casa Marina managed by Well Born Real Estate Management Ltd
Regence Royale managed by Well Born Real Estate Management Ltd
EXCELLENCE IN FACILITY MANAGEMENT AWARD (EFMA)

Since Year 2010, The Hong Kong Institute of Facility Management (HKIFM) has been promoting service excellence of facility management profession through the Excellence Facility Management Award (EFMA) which is well received by the general public.

Being the Chairperson of the Organizing Committee for Year 2013 and Year 2014, I have witnessed the strengths and significant contributions of various FM professionals and service providers to facility management industry with outstanding achievements, through various aspects such as technology, green initiatives, carbon reduction, universal access, occupational health & safety and teambuilding.

The Organizing Committee has also introduced a Theme Award to recognize the distinguished performance of FM organizations on a specific area. For Year 2014, the theme being "Waste Management", which assessment is based on the international acceptable concept of "Waste Management Hierarchy" as stated in the Hong Kong Blueprint for Sustainable Use of Resources 2013-2022, Environment Bureau" as follows:

i. Prevention
ii. Reuse
iii. Recycling
iv. Recovery
v. Disposal

Taking this special opportunity, the Organizing Committee would like to express gratitude to all participants for their invaluable efforts made to the success of EFMA over the past few years.

List of Awardees for EFMA 2010

Grand Award (Commercial)
Two IFC managed by MTR - Premier Plus

Excellence in Facility Management Award (Institution)
Hong Kong Science Park managed by ISS EastPoint Property Management Limited

Excellence in Facility Management Award (Commercial)
Argyle Street No. 113 managed by Main Shine Development Limited (Nan Fung Group)
Grand Waterfront managed by Well Born Real Estate Management Limited
Summit Terrace managed by Vineberg Property Management Limited (Nan Fung Group)
Sceneway Garden managed by Goodwell Property Management Limited
The Cullinan managed by MTR Corporation Limited

Excellence in Facility Management Award (Residential)

The Belcher’s managed by Shun Tak Property Management Limited

Excellence in Facility Management Award (Public Sector)
Cluster Facility Management, Kowloon West Cluster, Hospital Authority

Excellence in Facility Management Award (Teambuilding Projects)
Kwong Wah Hospital & TWGHs Wong Tai Sin Hospital

Excellence in Facility Management Award (Green Performance)
Cyberport managed by Hong Kong Cyberport Management Co Limited
International Trade Centre managed by Hong Yip Service Co Limited
Vista Paradise managed by Goodwell Property Management Limited

Excellence in Facility Management Award (Safety Performance)
Two IFC managed by MTR - Premier Plus
Prosperity Place managed by ARA Asset Management (Prosperity) Limited

Certificate of Merit (Institution)
Tseung Kwan O Plaza managed by Vineberg Property Management Limited (Nan Fung Group)

Certificate of Merit (Commercial)
Shun Tak Centre managed by Hong Yip Service Company Limited

Certificate of Merit (Residential)
The Belcher’s managed by Shun Tak Property Management Limited

Certificate of Merit (Technology Applications)
Project & Facility Management Department of Ka Shun Civil Engineering Company Limited

Certificate of Merit (Green Performance)
The Beverly Hills managed by Well Born Real Estate Management Limited
Hong Kong Disneyland Resort
EXCELLENCE IN FACILITY MANAGEMENT AWARD (EFMA)
List of Awardees for EFMA 2011

Grand Award (Hotel & Resort)
Hyatt Regency Hong Kong Sha Tin

Grand Award (Office Building)
Grand Century Place managed by Kai Shing Management Services Limited

Grand Award (Retail)
Grand Century Place managed by Kai Shing Management Services Limited

Excellence in Facility Management Award (Industrial)
Asia Trade Centre managed by Main Shine Development Limited (Nan Fung Group)

Excellence in Facility Management Award (Institution & Public Sector)
Kowloon West Cluster Facility Management of Hospital Authority

Excellence in Facility Management Award (Office Building)

118 Connaught Road West managed by DTZ Debenham Tie Leung Property Management Limited
Manulife Financial Centre managed by Goodwill Management Limited
Prosperity Place managed by ARA Asset Management (Prosperity) Limited
Standard Chartered Bank Building managed by DTZ Debenham Tie Leung Property Management Limited
Win Plaza managed by Hang Yick Properties Management Limited

Excellence in Facility Management Award (Retail)

1881 Heritage managed by Citybase Property Management Limited
Landmark North managed by Kai Shing Management Services Limited
Metro City Plaza II managed by Goodwill Management Limited

Certificate of Merit (Office Building)

Nan Fung Tower managed by New Charm Management Limited (Nan Fung Group)
Shun Tak Centre managed by Shun Tak Properties Limited

Certificate of Merit (Residential)

Centrestage managed by Hang Yick Properties Management Limited
Galasia managed by ISS EastPoint Property Mgt Limited
Grand Promenade managed by Well Born Real Estate Management Limited
Granville Garden managed by Well Born Real Estate Management Limited
La Cite Noble managed by Well Born Real Estate Management Limited
Liberte managed by Shun Tak Property Management Limited
Metro City Phase II managed by Metro City Management Limited
The Belcher's managed by Shun Tak Property Management Limited
The Sherwood managed by Well Born Real Estate Management Limited
Vista Paradiso managed by Goodwell Property Management Limited

Certificate of Merit (Retail)

Ma On Shan Plaza managed by Fortune Reit
Miramar Shopping Centre managed by Henderson Real Estate Agency
EXCELLENCE IN FACILITY MANAGEMENT AWARD (EFMA)

List of Awardees for EFMA 2012

Grand Award (Institution & Public Sector)
Hong Kong Science Park

Grand Award (Office Building)
International Commerce Centre managed by Kai Shing Management Services Limited

Grand Award (Corporate Real Estate)
Standard Chartered Bank (Hong Kong) Limited - Corporate Real Estate Services Department

Excellence in Facility Management Award (Institution & Public Sector)
EcoPark managed by Serco Guardian JV

Excellence in Facility Management Award (Office Building)
Grand Central Plaza managed by Kai Shing Management Services Limited
Kowloon Commerce Centre managed by Kai Shing Management Services Limited
Landmark North managed by Kai Shing Management Services Limited
Octa Tower managed by New Charm Management Limited (Nan Fung Group)
Prosperity Place managed by ARA Asset Management (Prosperity) Limited
Skyline Tower managed by Sino Property Services
World Trade Centre managed by Kai Shing Management Services Limited

Excellence in Facility Management Award (Corporate Real Estate)
248 Queen’s Road East managed by Henderson Sunlight Asset Management Limited

Excellence in Facility Management Award (Asia Pacific)
MGM MACAU managed by MGM Grand Paradise Limited
One Central Residences (Macau) managed by Shun Tak Property Management Limited

Certificate of Merit (Office Building)
Concordia Plaza managed by Citybase Property Management Limited
The Center managed by Citybase Property Management Limited
Well Tech Centre managed by Hang Yick Properties Management Limited

Certificate of Merit (Residential)
The Belcher’s managed by Shun Tak Property Management Limited
The Latitude managed by Hong Yip Service Company Limited

Certificate of Merit (Retail)
Kowloonbay International Trade & Exhibition Centre managed by KITEC Management Limited
Ma On Shan Plaza managed by Fortune Reit
EXCELLENCE IN FACILITY MANAGEMENT AWARD (EFMA)
List of Awardees for EFMA 2013

Grand Award (Office Building)
- Citibank Plaza managed by The Great Eagle Properties Management Company, Limited
- Peak One managed by Royal Elite Service Company Limited
- Olympian City managed by Sino Property Services

Grand Award (Private Residential)
- Citibank Plaza managed by The Great Eagle Properties Management Company, Limited
- Peak One managed by Royal Elite Service Company Limited

Grand Award (Retail)
- Olympian City managed by Sino Property Services

Excellence in Facility Management Award (Corporate Real Estate)
- 248 Queen’s Road East managed by Henderson Sunlight Asset Management Limited

Excellence in Facility Management Award (Industrial)
- Apec Plaza managed by Kai Shing Management Services Limited
- Wang Yip Industrial Building managed by Main Shine Development Limited (Nan Fung Group)

Excellence in Facility Management Award (Institution & GPA)
- Cluster Facility Management, Kowloon West Cluster, Hospital Authority
- Victoria Shanghai Academy managed by Urban Property Management Limited

Excellence in Facility Management Award (Office Building)
- Exchange Tower managed by Sino Estates Management Limited
- Grand Central Plaza managed by Kai Shing Management Services Limited
- Millenium Plaza managed by Urban Property Management Limited

Excellence in Facility Management Award (Private Residential)
- Kiwi Chung Plaza managed by Main Shine Development Limited (Nan Fung Group)
- liberté managed by Shun Tak Property Management Limited
- The Latitude managed by Urban Property Management Limited

Excellence in Facility Management Award (Public Rental Housing)
- Kwan Lung Lau managed by Hong Kong Housing Society

Excellence in Facility Management Award (Subsidized Purchase Housing)
- Bel Air Heights managed by Hong Kong Housing Society

Certificate of Merit (Office Building)
- 8 Wyndham Street managed by New Charm Management Limited

Certificate of Merit (Public Rental Housing)
- Tin Ching Estate managed by Easy Living Property Management Limited

Certificate of Merit (Private Residential)
- No.1 Homantin Hill managed by Supreme Management Services Limited

Certificate of Merit (Retail)
- China Hong Kong City managed by C.H.K.C Building Management Limited

Certificate of Merit (Subsidized Purchase Housing)
- Bel Air Heights managed by Hong Kong Housing Society

Certificate of Merit (Institution & GPA)
- Cheung Sha Wan Government Offices managed by Guardian Property Management Limited

Certificate of Merit (Public Rental Housing)
- Kwan Lung Lau managed by Hong Kong Housing Society

Certificate of Merit (Private Residential)
- No.1 Homantin Hill managed by Supreme Management Services Limited

Certificate of Merit (Retail)
- The Victoria Towers managed by Goodwell Property Management Limited

Certificate of Merit (Subsidized Purchase Housing)
- Bel Air Heights managed by Hong Kong Housing Society

Certificate of Merit (Institution & GPA)
- Cheung Sha Wan Government Offices managed by Guardian Property Management Limited
EXCELLENCE IN FACILITY MANAGEMENT AWARD (EFMA)

List of Awardees for EFMA 2014

Grand Award (Private Residential)
Manhattan Hill managed by Royal Elite Service Company Limited
Park Island managed by Kai Shing Management Services Limited
Rhythm Garden managed by Urban Property Management Limited

Grand Award (Subsidized Purchase Housing)
Kaiser Estate (Phase 1, 2 & 3) managed by Urban Property Management Limited
Remington Centre managed by Sino Estates Management Limited

Excellence in Facility Management Award (Industrial)
Billion Trade Centre managed by Hong Yip Service Company Limited
Fock Yip Building managed by Hon Hing Enterprises Limited (Nan Fung Group)
Fullerton Centre managed by Sino Estates Management Limited
Kaiser Estate (Phase 1, 2 & 3) managed by Urban Property Management Limited
Remington Centre managed by Sino Estates Management Limited

Excellence in Facility Management Award (Office Building)
Exchange Tower managed by Sino Estates Management Limited
Landmark North managed by Kai Shing Management Services Limited
Metropolis Office Towers managed by Kai Shing Management Services Limited
Skyline Tower managed by Sino Estates Management Limited
World Trade Centre managed by Kai Shing Management Services Limited

Excellence in Facility Management Award (Private Residential)
Aegean Coast managed by Kai Shing Management Services Limited
ARIA managed by Royal Elite Service Company Limited
Belcher’s Hill managed by Urban Property Management Limited
Harbour Place managed by Hong Yip Service Company Limited
Lime Stardom managed by Kai Shing Management Services Limited
Metropolis Plaza managed by Kai Shing Management Services Limited
Nan Fung Sun Chuen managed by Wiredge Property Management Limited (Nan Fung Group)
Ripple Hill managed by Grandeur Property Management Company Limited
Pacific Palisades managed by Sino Estates Management Limited
Park Summit managed by Sino Estates Management Limited
Sereno Verde managed by Urban-Weltboom Property Management Limited
The Latitude managed by Hong Yip Service Company Limited
The Leighton Hill managed by Supreme Management Services Limited
Vision City managed by Sino Estates Management Limited

Excellence in Facility Management Award (Retail)
China Hong Kong City managed by C.H.K.C. Building Management Limited
Chai Wan Plaza managed by The Link Management Limited
Citywalk managed by Citywalk Management Company Limited
Domain managed by Hong Kong Housing Authority
East Point City (Commercial) managed by Kai Shing Management Services Limited
HomeSquare managed by Kai Shing Management Services Limited
Langham Place managed by The Great Eagle Properties Management Company, Limited
Luk Fu Plaza managed by The Link Management Limited
Minamar Shopping Centre managed by Henderson Real Estate Agency Limited
New Town Plaza managed by Kai Shing Management Services Limited
Stanley Plaza managed by The Link Management Limited
Taien Wan Plaza (Shopping Arcade) managed by Hong Yip Service Company Limited
Tuen Mun Town Plaza Phase I & II (Shopping Arcade) managed by Sino Estates Management Limited

Excellence in Facility Management Award (Public Rental Housing)
Sun Chui Estate managed by Hong Kong Housing Authority

Excellence in Facility Management Award (Subsidized Purchase Housing)
Kam Tai Court managed by Urban Property Management Limited

Certificate of Merit (Industrial)
Ming Pao Industrial Centre managed by Urban Property Management Limited
World Tech Centre managed by Harriman Property Management Limited

Certificate of Merit (Institution & GPA)
Kwang Wah Hospital & TWGHs Wong Tai Sin Hospital

Certificate of Merit (Office Building)
IAA Financial Centre managed by Goodwell Management Limited
E-Trade Plaza managed by Hang Yick Properties Management Limited

Certificate of Merit (Retail)
Kwai Fong Plaza managed by The Link Management Limited

Theme Award – “Waste Management”
Gold Award
Landmark North managed by Kai Shing Management Services Limited

Silver Award
Aegean Coast managed by Kai Shing Management Services Limited

Bronze Award
Skyline Tower managed by Sino Estates Management Limited
Park Island managed by Kai Shing Management Services Limited
ABSTRACT
Hotels, being a key pillar of the tourism industry, have to render satisfactory services to patrons. Quality maintenance of their built facilities is, therefore, a must. While more and more hotels are utilizing computerised maintenance management systems (CMMS), hardly any have published how they made use of the recorded data to assess maintenance performance, or are willing to disclose the data for benchmarking. Meetings with the responsible staff of a quality hotel in Hong Kong had been held to seek information about how they utilised their CMMS and to collect the data it recorded. Analyses of the data yielded a range of performance indicators for the facilities in that hotel. The study also unveiled some problems and identified the future works needed. This pilot study, as reported in this paper, is believed to be the first of its kind.

Keywords: Benchmarking; computerised maintenance; facilities management; hotel; performance indicators

1. INTRODUCTION
Hotels are one of the key pillars of the tourism industry. Hotel patrons typically have a high expectation on service quality and can easily be upset by unsatisfactory performance of the built facilities in a hotel. The major kinds of facilities in hotels that require proper operation and maintenance (O&M) to upkeep their performances include building fabric and finishes, and engineering installations such as electrical, air-conditioning, plumbing, drainage and fire services.

To enable prompt recording and close tracking of the status of O&M works, quality hotels are increasingly equipped with a computerised maintenance management system (CMMS). Whereas advices on the necessary considerations that should be taken in using a CMMS are widely available (e.g. Levitt, 2007), how such systems are being used for evaluation of the performances of the facilities that they manage is largely unknown. Because O&M information is often regarded as too sensitive to disclose (Lai et al., 2008), study findings on performance evaluation results are scarce.

Facility and O&M managers are keen to see performance benchmarks for facilities (Lai and Yik, 2006). Although some cost benchmarks for luxury hotels have recently been made available (Lai and Yik, 2008), research in this area remains embryonic. Lacking knowledge about the performances of facilities and benchmarks for comparison, whether O&M works are good value-for-money cannot be judged.

With a view to fill this knowledge gap, a pilot study, believed to be the first of its kind, was carried out based on a quality hotel in Hong Kong. Findings of this study are reported in the following, which include, firstly, the data collection process and the types of data obtained. Then, an account is given on the hotel’s characteristics and the operation of its CMMS. This is followed by a series of analyses on the maintenance workloads, the manpower input and the performances of the facilities, which produced a range of indicators that can be used for performance evaluation or benchmarking. Finally, the problems encountered during the study and the future works needed are described.

2. DATA AND MATERIALS
Due to the exploratory nature of the study, a meeting was held with the relevant hotel staff before collection of the required data. At this meeting, the Director of Engineering and his colleagues briefed the study team about the major facilities in the hotel; how
The O&M works were organised and executed; and the process for recording maintenance data with the use of the CMMS. For appreciating the nature and scale of the facilities, a walk-through visit to the main and typical areas was paid subsequent to the meeting. During this visit, the study team was admitted to the Service Centre where the main terminal of the system was located to observe the operation of the CMMS.

The study team was further provided with the hotel’s factsheets, which show the number of storeys, areas and types and quantities of various premises of the hotel. The maintenance data stored in or generated by the CMMS over a period of 12 months were collected. The first type of such data was an annual report showing the statistics of the services requests. This report was generated by the CMMS, summarising the number of maintenance requests for every single job item handled by the engineering department.

A Detail Listing of Service Request Report, also generated by the CMMS, was another data source obtained. This report lists out all the maintenance orders over the year, and its content covers date, start time, finish time, duration of work completed beyond the prescribed time limit, location of work, work description, and identities of the responsible Service Agent and Service Runner. The prescribed time limits for completing maintenance work orders are available from a file which was also collected, to allow assessment to be made of the speediness of maintenance work. The last type of data collected, which is essential for measuring manpower utilization level, are the technicians’ duty schedules that show who were on duty or on leave in each of the three shifts per day.

3. THE HOTEL, THE MAINTENANCE TEAM AND THE CMMS

The 19-storey hotel selected for the study was 33 years old, and comprised 618 guestrooms and other areas. The non-guestroom areas, aggregated to 4,053 m², included function rooms, food and beverage outlets and kitchens. Bearing an international brand, this 4-star hotel was built with quality builder’s work (fabric and finishes) and building services installations such as electrical, air-conditioning, plumbing, drainage, and fire services.

The engineering department was headed by a Director of Engineering. The maintenance team, led by an Assistant Director, included a Building Maintenance Engineer, four Duty Engineers and four Foremen. The Foremen were each supervising a group of in-house technicians in one of the four specialized trades, namely air-conditioning, electrical, plumbing and drainage, and builder’s work. Maintenance works that must be undertaken by statutory parties (Lai and Yik, 2004), e.g. those for the fire services, were outsourced from contractors.

The hotel’s CMMS was meant for non-stop operation. A maintenance work order would typically start with a call made by dialling the dedicated number of the Call Centre. Upon receiving such a call, the Service Agent would see if the request is valid and, if so, he would create a work request through the CMMS. Taking into account the trade of work and the job history of the respective trade of technicians, the CMMS would send out a short message service (SMS) to the most appropriate technician (i.e. Service Runner). The Runner, after knowing the job details, would go to the scene and carry out the required work. After work completion, he would report back to the Service Agent. If no further work is required, the work order would come to an end. Figure 1 depicts this work flow.
At the main terminal of the CMMS, real-time information such as time of incoming call and call status (waiting on-line, abandoned before answering or message left in voice mails) and other information such as guest identity and room number would be displayed. Apart from allowing prompt tracking of the status of requests, the CMMS would record key information about the requests, e.g. start time, finish time, location of work, and identities of Agents and Runners who handled the requests. In addition, statistical summaries about the total number of requests and the number of the most frequent types of work requests could be generated as and when required by the CMMS user. The CMMS, however, was not built-in with some more in-depth but useful analysis functions, as will be shown below.

4. DATA ANALYSIS AND DISCUSSION

4.1 Maintenance Workload

A total of 17,799 maintenance requests (i.e. work orders) issued over a period of 12 months were recorded in the CMMS. As summarized in Table 1, the trade pertaining to the largest number of orders was electrical (EL), followed by plumbing & drainage (PD), builder’s work (BW) and air-conditioning (AC). The descriptions for 331 of those orders were unclear in meaning and thus were categorised as unclassified (UC).

<table>
<thead>
<tr>
<th>Trade</th>
<th>Total No.</th>
<th>Guestroom</th>
<th></th>
<th>Non-Guestroom</th>
<th></th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>AC</td>
<td>1223</td>
<td>771</td>
<td>63.0</td>
<td>452</td>
<td>37.0</td>
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<tr>
<td>EL</td>
<td>8896</td>
<td>7404</td>
<td>83.2</td>
<td>1492</td>
<td>16.8</td>
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<tr>
<td>PD</td>
<td>4428</td>
<td>4121</td>
<td>93.1</td>
<td>307</td>
<td>6.9</td>
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<tr>
<td>BW</td>
<td>2921</td>
<td>2276</td>
<td>77.9</td>
<td>645</td>
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<td>0</td>
<td>0.0</td>
<td>331</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 1
Summary of work orders issued

Between the numbers of orders issued for the guestroom and the non-guestroom areas, those for the former dominated (81.9%), which is most noticeable for the PD trade (93.1%). For non-guestroom areas, the highest proportion (37.0%) was about AC system problems.

The hotel had a mean monthly occupancy rate of 87.3% (range: 76.8% - 93.5%). When the number of work orders in each month was counted to unveil their monthly variations, it was discovered that work order records in two periods (18-30 June and 29-30 September) were lost because of breakdowns of the CMMS. To enable comparisons to be made on an equal basis, the problem with lost data was addressed by dividing the number of work orders in the month by the actual number of days in the month and the work orders issued on days with missing data were assumed to be equal to the average number so calculated. Furthermore, the monthly average daily total number of orders in a month was computed based on the actual number of days in the month. Figure 2 shows the monthly amounts of orders corrected and normalised in this manner together with their raw monthly amounts. It shows that the maintenance requests per day from the guestrooms peaked in April (52.3) whereas the trough was in February (34.7). Unlike those for the guestrooms, the amounts of requests per day for the non-guestroom areas, which ranged between 6.9 (October) and 11.3 (July), were comparatively more steady.

Figure 2. Monthly amounts of maintenance requests
The duration between the start time and the completion time of a work order was regarded as equipment downtime. To investigate if there was a correlation between equipment downtime and the amount of maintenance request, a scatter plot of the monthly figures of these two parameters, subdivided into the guestroom and the non-guest room groups, was prepared, as shown in Figure 3. From this figure, a strong positive correlation can be seen in both cases: the larger the amount of maintenance requests, the longer the equipment downtime. This implies that some maintenance works could have been interrupted by new and more urgent requests before they could be completed.

The amounts of work order and equipment downtime pertaining to different trades of work were further scrutinised by compiling the relevant statistics, including the values of mean, minimum, maximum, standard deviation (SD) and coefficient of variation (Cv) (Table 2). The EL trade recorded the highest mean number of work orders per month and the lowest mean was found with AC. The same observations were noted for the mean equipment downtime values.

As to the values of Cv, the highest ones belonged to the AC trade, both for the number of work order and the amount of equipment downtime. In contrast, the lowest values were found with the EL trade. These findings indicate that the workloads of AC maintenance works were the most variable whereas those of the EL trade were the least variable.

Suspecting that the number of guests staying in the hotel may affect the amounts of maintenance request and equipment downtime, a series of correlation analyses was carried out based on the monthly values of these variables, with room occupancy rate taken as indicator for number of guests in the hotel. A moderately positive correlation was found to exist between: (i) occupancy rate and amount of work order \((r = 0.648)\); and (ii) the former and amount of downtime \((r = 0.598)\). The correlation between the amounts of work order and downtime was even more significant \((r = 0.873)\), which concurs with the findings in Figure 3.

Examinations were further made on the same set of variables but on individual work trade basis. The computed correlation coefficients are consolidated in matrix form, as shown in Table 3. From these results, highly positive correlations between the amounts of work order and downtime across all the work trades \((r = 0.757 \text{ to } 0.887)\) were noted. Except that a weak correlation \((r = 0.229)\) was found between occupancy rate and amount of AC work orders, moderate correlations \((r = 0.356 \text{ to } 0.690)\) were observed from the remaining results.
Table 3
Correlation coefficient (r) matrices of different work trades

<table>
<thead>
<tr>
<th></th>
<th>AC</th>
<th>EL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OC  WO DT</td>
<td>OC  WO DT</td>
<td></td>
</tr>
<tr>
<td>OC</td>
<td>1 - -</td>
<td>1 - -</td>
<td></td>
</tr>
<tr>
<td>WO</td>
<td>0.229 1 -</td>
<td>0.539 1 -</td>
<td></td>
</tr>
<tr>
<td>DT</td>
<td>0.410 0.792</td>
<td>0.506 0.851</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OC  WO DT</td>
<td>OC  WO DT</td>
<td></td>
</tr>
<tr>
<td>OC</td>
<td>1 - -</td>
<td>1 - -</td>
<td></td>
</tr>
<tr>
<td>WO</td>
<td>0.690 1 -</td>
<td>0.370 1 -</td>
<td></td>
</tr>
<tr>
<td>DT</td>
<td>0.620 0.887</td>
<td>0.356 0.757</td>
<td></td>
</tr>
</tbody>
</table>

DT: downtime; OC: occupancy rate; WO: work order.

4.2 Maintenance Manpower

According to the organisation chart of the maintenance team, the total headcount of technicians was 17, which comprised four AC technicians, four electricians, four plumbers and five BW technicians. Inspecting their duty schedules found that these headcounts represented the maximum numbers of technicians that would be employed. The manpower available, in fact, was variable for different reasons, such as: some had resigned while replacements were pending; the technicians were on vacation or sick leaves; and so on. For identifying the actual manpower available for ‘producing’ maintenance works, the numbers of technicians who were on duty and their duty durations in each of the three shifts of every day were counted. The sums of these durations, measured in man-hours per month for each of the four trades, are shown in Figure 4.

Unlike the rather steady level of manpower of the BW trade, the AC manpower varied significantly throughout the year. The particularly low levels of manpower in July and December were due to the departure of two AC technicians. The EL trade also exhibited drops in manpower level in January and February during which only 3 of the 4 electrician posts were filled. While the manpower level of the PD trade seemed to be stable throughout most of the time, a full team of plumbers appeared only in January.

For measuring the productivity of the maintenance team, the work efficiency (E) of the technicians was calculated by Equation (1), where \( N_o \) is number of work orders completed and \( H_U \) the amount of man-hours used.

\[
E = \frac{N_o}{H_U}
\]  

(1)

Segregating the completed work orders and the used man-hours by the guestroom and non-guestroom areas, two groups of monthly work efficiency values were obtained. As the results in Figure 5 show, the efficiencies of maintenance works for guestrooms were fairly steady and were generally higher than those for the non-guestroom areas. The fact that the guestroom users have high expectations on the timeliness of maintenance works should have contributed to this finding.
Using Equation (1), the work efficiencies of the four work trades were also computed on a monthly basis. The statistics of these results, including mean, minimum, maximum, SD and Cv values, are shown in Table 4. The mean efficiency of EL works was the highest, followed by that of PD, BW and AC. Whereas this indicates that the AC works were on average the least efficient, the lowest and the largest efficiency levels were found also with the AC trade. The largest SD and Cv values of the AC trade further corroborates that the efficiencies of the AC works were the most variable. In contrast, the variations in efficiencies of the EL trade were the smallest.

<table>
<thead>
<tr>
<th>Trade</th>
<th>Mean</th>
<th>Min.</th>
<th>Max.</th>
<th>SD</th>
<th>Cv</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>2.40</td>
<td>1.86</td>
<td>3.45</td>
<td>0.54</td>
<td>22.4</td>
</tr>
<tr>
<td>EL</td>
<td>3.06</td>
<td>2.71</td>
<td>3.33</td>
<td>0.19</td>
<td>6.1</td>
</tr>
<tr>
<td>PD</td>
<td>2.77</td>
<td>2.36</td>
<td>3.34</td>
<td>0.25</td>
<td>9.1</td>
</tr>
<tr>
<td>BW</td>
<td>2.67</td>
<td>1.87</td>
<td>3.20</td>
<td>0.45</td>
<td>17.0</td>
</tr>
</tbody>
</table>

Table 4
Statistics of work efficiencies of different trades

Since work efficiency may be affected by the extent to which the amount of manpower is used for carrying out the works, the level of utilization \( U \) of manpower in each trade was calculated using Equation (2), where \( H_U \) is man-hours used and \( H_A \) the man-hours available for work execution.

\[
U = \frac{H_U}{H_A}
\]

The monthly manpower utilization levels of the four trades were calculated using Equation (2). As the statistics of these calculated results show (Table 5), the electricians, as compared to the plumbers, AC and BW technicians, were on average utilized at the highest level. While the maximum utilization level (56.0%) was only slightly over half of the available manpower, note should be taken that the maintenance technicians, besides performing the corrective maintenance works that the CMMS recorded, had to carry out some other works like preventive inspection and maintenance works.

<table>
<thead>
<tr>
<th>Trade</th>
<th>Mean</th>
<th>Min.</th>
<th>Max.</th>
<th>SD</th>
<th>Cv</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>8.8%</td>
<td>4.7%</td>
<td>21.6%</td>
<td>4.3%</td>
<td>49.2</td>
</tr>
<tr>
<td>EL</td>
<td>36.4%</td>
<td>20.1%</td>
<td>56.0%</td>
<td>8.7%</td>
<td>23.8</td>
</tr>
<tr>
<td>PD</td>
<td>22.7%</td>
<td>16.1%</td>
<td>31.7%</td>
<td>4.1%</td>
<td>18.0</td>
</tr>
<tr>
<td>BW</td>
<td>10.0%</td>
<td>7.0%</td>
<td>16.4%</td>
<td>3.1%</td>
<td>30.8</td>
</tr>
</tbody>
</table>

Table 5
Statistics of utilization levels of different trades

On average, the AC technicians were utilized the least and the minimum level of utilization of this trade was as low as 4.7%, which is less than one-fourth of the counterpart of the EL trade. On the other hand, the highest Cv value of the AC trade tells that its manpower utilization levels varied the most.

4.3 Performance outcome

The foregoing findings on work efficiencies (Figure 5) suggest that equipment downtimes in the guestrooms should be shorter than those outside the guestrooms. This deduction was verified by examining the distribution of downtimes in these two areas. As depicted in Figure 6, the cumulative proportion curve of the guestrooms is clearly above that of the non-guestroom areas. Based on the Pareto rule, i.e. considering the 80th percentile, most of the maintenance requests in the guestrooms were resolved within 30 minutes whereas the same proportion of requests in the non-guestroom areas required 10 more minutes to settle.

Further scrutiny was made on the distribution of equipment downtimes with respect to the four different trades. This was done by plotting the number of requests against the downtimes in each trade. As shown in Figure 7, magnitudes aside, the four distribution patterns are similar, with their majority group of orders completed between 5 to 15 minutes.
As a set of time limits had been preset for completing some critical works, checking was made on the finish times of the work orders against these limits. The checking results, as summarised in Table 6, reveal that the majority of the four trades of work orders were completed on time. Comparatively, the AC trade recorded the highest proportion of orders completed beyond the time limits. The rest of the orders, of which the aggregate proportions were small, were remarked as ‘cancelled’ or ‘time out’. The former group refers to those false requests or those which could only be fixed some days later due to their specific nature or complexity. Those in the latter were recorded when the technicians failed to complete the orders even beyond the extra time authorised by the relevant Duty Engineer, or when the necessary time extensions were not keyed in to the CMMS on time.

![Figure 6. Cumulative proportions of equipment downtimes (by areas)](image)

![Figure 7. Distribution of equipment downtimes (by trades)](image)

<table>
<thead>
<tr>
<th>Trade</th>
<th>On time</th>
<th>Late</th>
<th>Cancelled</th>
<th>Time out</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>75.7%</td>
<td>20.1%</td>
<td>2.5%</td>
<td>1.6%</td>
</tr>
<tr>
<td>EE</td>
<td>85.1%</td>
<td>13.4%</td>
<td>1.0%</td>
<td>0.4%</td>
</tr>
<tr>
<td>PD</td>
<td>84.4%</td>
<td>13.6%</td>
<td>1.4%</td>
<td>0.6%</td>
</tr>
<tr>
<td>BW</td>
<td>79.6%</td>
<td>17.8%</td>
<td>1.3%</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

### 5. CONCLUSIONS

Based on the CMMS data, the maintenance workloads in the guestroom and non-guestroom areas, and those under each of the four work trades (air-conditioning, electrical, plumbing and drainage and builder’s works), were analyzed. The monthly variations in maintenance manpower in different trades, their work efficiencies and the levels of their utilization were investigated. The statistical results of these parameters can serve as benchmarks for making comparisons with future performance of the same hotel, or with those of similar hotels.

Equipment downtimes, which indicate the speediness and hence the performances of the maintenance works, were scrutinised between different areas and different work trades. The cumulative proportion curves, as illustrated, can be used for evaluating or benchmarking the celerity of maintenance works.

During the study, the major problems identified include data lost due to breakdowns of the CMMS; some work orders were recorded manually; and the follow-up works for orders remarked as ‘cancelled’ or ‘time out’ could not be traced. On top of finding ways for overcoming these problems, further works are needed to explore more into this area through conduction of more studies on maintenance data of other hotels or buildings. Only when more evaluation and benchmarking results are made available would it be feasible to judge whether or to what extent the facilities are value-for-money.
ACKNOWLEDGEMENT

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References


Further readings


Endnotes

i. This article is adapted from the paper “Lai, J.H.K. and Yik, F.W.H., 2010, Performance Indicators for Hotel Facilities – a Study based on CMMS Data, Proceedings of The 1st Greater Pearl River Delta Conference on Building Operation and Maintenance: Sustainable and Value-for-Money Built Facilities, Hong Kong, 22 October, pp. 61-70.”

RESEARCH PAPER

AN INTEGRATED ASSET PERFORMANCE FRAMEWORK FOR OPERATIONAL BUILDINGS - RESULTS OF FOCUS GROUP VALIDATIONS IN HONG KONG AND AUSTRALIA.

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Teng-hee Tan
Director, Jetta Gardens, Queensland
Chi-kwan Chau
The Hong Kong Polytechnic University

ABSTRACT

Business performance is contingent upon effective use and management of all resources to enhance competitive advantage. However, whilst the resource value of finance, human resources and technology is widely recognized, that of the supporting physical asset (i.e. building or real estate) that houses these resources is not obvious to many corporate managers who see building-related expenses as a drain on profit. Operational buildings are at the same time, a physical asset, a functional facility, as well as a business resource. Literature on the subject suggests a wide range of views which tended to polarize towards either the measurement of the physical (technical) performance or the financial (cost) performance. Contemporary resource management supports the view that building assets are an essential resource just as human resource, technology; finance and knowledge are business resources needed to achieve corporate objectives. An integrated resource management approach views an optimum real estate or facility solution as one which is derived from consideration of all corporate resources to meet business needs. In this respect, the prime focus in measuring operational building performance must be viewed in the context of the relationship of building assets in relation to their contributions to business outcomes. This is the premise upon which an integrated asset performance framework for performance of operational buildings has been developed. The paper will explain the conceptual basis of an integrated asset performance framework and the preliminary results of two validation workshops conducted in Hong Kong and Australia.

Keywords: Asset Performance, Integrated Framework, Operational Buildings.

INTRODUCTION

One of the key business performance issues for both business and government is the ability to leverage maximum performance from resources and drive effective management of resources for long term sustainability. Building facilities or assets are business resources in the same manner as ICT, people and business capital. In many cases, investment in building assets ranks closely in value to the investment in people. Hence the performance of building assets as a business resource is increasingly becoming a focus for management in both the private and public sectors.

Competitive pressures and tight economic conditions are driving the search for competitive advantage beyond a focus on costs and budgets alone. Business and government need to develop an informed view of what customers and end-users of services value and the level of performance expectations. These business drivers have a direct influence on business performance. They also drive the need to explore with a more searching attitude, the performance of other aspects of the business, including the key resources supporting the business - people, property and technology (Then, 1994).

The need and desire to monitor the performance of operational building as a class of assets deserves management attention because of a number of unique attributes:
The capital intensive nature of building assets (usually worth many millions of dollars which could potentially be applied more profitably elsewhere);
• their durable nature (often lasting up to 20-50 years or more);
• their relative inflexibility in responding to changes in business directions and technology;
• the significant accompanying stream of recurrent expenditure burden associated with maintaining and operating them at a desired service standard;
• the potential liabilities due to deterioration and depreciation over time;
• their impact on productivity and business performance; and
• their exposure to a wide range of legal requirements and risks.

The importance of performance measurement as a tool for effective management of such an important business resource is also a key driver in the search for an effective performance measurement regime for building assets (Amaratunga & Baldry, 2002). However, the practical implementation of a performance measurement regime that delivers the desired management outcomes efficiently and effectively is more problematic. (Tan, Then and Barton, 2000). A wide range of methods and frameworks for performance measurement of building assets have been proposed (McDougall, et al. 2002). They range from the detailed technical assessments of physical aspects of buildings to surveys of user satisfaction with the occupied space and quality of the internal environment. Despite this, there appears to be no commonly adopted framework for buildings against which performance measures of operational assets can be established to meet the particular needs of corporate management requirements and expectations.

This paper proposes an integrated framework for assessing building performance (Then & Tan, 2004) and reports on the preliminary results of two validation workshops held in Hong Kong and Australia.

AN INTEGRATED ASSET PERFORMANCE MODEL

The Theory

The starting point of performance measurement is a conceptual model that can be applied as a framework for identifying and developing the necessary performance indicators that meet the objectives of any performance measurement effort. As a broad principle, performance measures can generally be divided into effectiveness measures, efficiency measures, and appropriateness measures (Figure 1).

Figure 1 highlights the need to clearly understand the purpose of performance measurement. Choosing the right measures for the right purpose is fundamental to any performance monitoring system.
The Need

The development of a conceptual framework for evaluation of performance of operational building assets must recognise at least three important characteristics of buildings as a product, and as a business resource:

- Buildings have a much longer life than most other assets in business. A building represents a special class of durable assets requiring high initial capital investment and subsequent running costs and reinvestment – a regime of life cycle management is required to optimise its efficient operation;
- A building’s value is represented by its effectiveness as a supporting resource in the overall value chain of an organisation’s productive process. Its role as an enabling resource is increasingly seen as crucial in raising staff productivity - an integrated resource management approach incorporating the delivery of an enabling workplace environment must be acknowledged; and
- Buildings involve a number of stakeholders: owners, managers, service providers and users throughout their operational lives. Existing buildings are also being changed and renovated more often in response to new owners, organisational changes, and new occupant requirements – buildings as dynamic entities which must be managed proactively in order to respond to changing users’ expectation and rapid technological development.

Evidence from the literature reviewed suggests that building performance monitoring is an amalgam of at least four aspects of facilities provision and their ongoing servicing as functional facilities:

- The appropriateness of the current asset base in meeting business objectives;
- The provision of a satisfactory working environment for occupants and customers;
- The minimisation of operating and maintenance costs by managing the condition of the existing facilities,
- The performance of the facilities as functional, operational assets supporting business processes.

In optimising the performance of building assets, an organisation must balance the interdependent and, often competing, outcomes of the above four aspects of asset performance in order to achieve their optimum service potential.

The EPFS Model

Taking the above constraints into consideration, Then and Tan (1998, 2000, 2002, 2004) proposed that asset performance indicators used by organisations from both the public and private sectors can be grouped under five broad categories or facets of performance measures:

- Economic measures
  The Economic facet of asset performance is concerned with decisions at a strategic level that optimises on value for money from property resources. Economic asset management requirements are governed by the need to relate physical facilities provision to longer-term business plans. The objective of measurement here is to ensure optimum resource allocation and affordable and economic provision of property resources in line with market offerings and business plans.

- Functional measures
  The Functional facet of asset performance is concerned with management decisions that relate to the creation of the desired working environment in line with the preferred organisational culture and workplace standards. The objective of measurement here is to ensure continuous alignment of supply of appropriate functional space to anticipated service demands as far as possible. Fitness of purpose for property resource in meeting business requirements may be measured in terms of locational distribution, type, form and size of buildings.

- Physical measures
  The Physical facet of asset performance is concerned with efficient and effective management of operational aspects of ongoing asset management. The objectives of measurement here are driven by the need to preserve asset value, ensure asset condition does not lead to unnecessary operational risks and liabilities, and to ensure occupancy costs are reasonable.
Service measures
The Service facet of asset performance is concerned with decisions and actions relating to quality perception by end users and quality of service delivery by service providers. The objective of measurement here is to ensure that the business context and organisational culture are appropriately reflected in aspects of service delivery and are aligned with core business requirements. Measures in this facet of asset performance are generally surrogate, often subjective indicators of performance derived from clients’ and end users’ perceptions of corporate facilities and support services.

Environmental measures
The Environmental facet of asset performance is concerned with the role of building assets and their impact on facilities users, the community and the ecological environment. Measures in this facet are likely to involve monitoring against prescribed sustainability targets at project / state /national levels.

The premise taken is that any integrated asset performance reporting must incorporate these five facets of measurement in order to obtain a balanced view of the contribution of building assets as an operating resource, as illustrated in Figure 2. However, this paper only reports on four of the five facets of asset performance measurement. The Environment facet is the subject of another study.

The above five categories of performance measures form the cornerstones of our integrated asset performance concept that can be applied to:
• Fulfil specific stakeholder perspectives of asset performance;
• Guide selection of appropriate key performance indicators;
• Assist in defining data requirements for specified key performance indicators; and
• Provide a balanced view of asset performance.

Table 1 summarises the key management focus of the five facets of asset performance measures. Each facet of asset performance is governed by a different set of variables with its associated key performance indicators. The proposed model provides a basic structure for considering the many dimensions of built assets performance and critically reviewing the suitability of currently available measures.

<table>
<thead>
<tr>
<th>Performance Facets</th>
<th>Management focus</th>
<th>Focus of performance monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>Value for money</td>
<td>Efficiency in allocation of resources</td>
</tr>
<tr>
<td>Functional</td>
<td>Fit for purpose</td>
<td>Effectiveness in utilisation of resources</td>
</tr>
<tr>
<td>Physical</td>
<td>Operational risk and liability</td>
<td>Appropriateness in type and condition</td>
</tr>
<tr>
<td>Service</td>
<td>Customer satisfaction</td>
<td>User/client’s Quality perception</td>
</tr>
<tr>
<td>Environmental</td>
<td>Workplace &amp; environmental sustainability</td>
<td>Meeting prescribed targets at project / state / national levels</td>
</tr>
</tbody>
</table>

Table 1 Asset performance facets and management focus

The necessity for a conceptual framework is supported by the need to explain, communicate and justify the need for data collection and analysis. A logical and consistent framework facilitates the process of focusing data collection on the asset performance parameters that are currently deficient or lacking from asset information systems.

Having a performance concept is only the first step in the implementation of an asset performance framework that is useful and cost-effective. There are a number of further steps which have to be navigated before full realization of a credible and sustainable asset performance measurement system (Then, S.S. & Tan T.H., 2000, 2002). Figure 3 illustrates the parameters within an organisational setting in which an asset performance measurement system must take into consideration. They are the factors that will influence the practice of asset performance management. (modified from Then & Tan, 2004).

The EPFS Model – Variables and KPIs

Through a series of brainstorming sessions with research collaborators, it was decided that a structured approach is required to identify the appropriate key asset performance indicators. The alternative is a linear approach which has the potential disadvantages of being almost a random selection of measures or a selection that is technically driven by professional inclination.

The structured approach adopted comprised of a two-stage analysis. Stage one involved the identification of all possible variables associated with each of the four facets (i.e. Economic, Physical, Functional and Service performance). These are illustrated in Figure 4. Stage two involved identification of possible performance indicators that are measures of each of the variables identified. A total of 95 Key Performance Indicators (KPIs) were selected for validated in two focus groups workshops held in Hong Kong (July 2004) and Brisbane (August 2004). Table 4 lists the 69 validated KPIs.
The sample of the Hong Kong focus group (N=21) consisted of middle/senior managers with responsibilities for property and facilities services representing commercial buildings, airports, universities and banks. The sample of the Brisbane focus group (N=20) consisted of middle/senior managers with responsibilities for property and facilities services representing public sector facilities. In both locations, initial contacts were made via telephone and email, explaining the purpose of the workshop and who from the organisation should participate.

The deliberation of each validation workshop followed a structured format that comprised the following:

Session 1 – Introduction, background and purpose of workshop - 10-15 minutes,

Session 2 – Concept Validation:
  a. EPFS Model Presentation by research collaborators – 30 minutes including questions,
  b. Validation of EPFS Model by respondents via structured questionnaire – 30 minutes,
  c. Validation of EPFS Variables via structured questionnaire – 30 minutes.

Session 3 – Practice Validation:
  a. KPIs Presentation by research collaborators – 10 minutes including questions,
  b. Validation of KPIs for each Variable via structured questionnaire – 60 minutes

Session 4 – Summary and Feedback.
In summary, both the workshops were well received by the participants who expressed keen interest in the outcomes of the research and analysis from the workshop questionnaires. A summary of the results of the research will be provided as feedback to participants of the validation workshops.

RESULTS FROM ANALYSIS OF RESPONSES FROM VALIDATION WORKSHOPS

1. Concept Evaluation of EPFS Model
The concept evaluation comprises a two-part analysis. Table 1 shows the results of the attributes evaluation of the combined sample of both sets of respondents from Hong Kong (N=20) and Australia (N=21). Respondents were requested to evaluate the EPFS model on five different attributes, each against a 5-point Likert scale. The model was highly rated against the attributes of Completeness, Robustness, Importance and Practical Relevance, scoring more than 4.0 on a 5-point Likert scale, with degrees of variation between 4.0 and 4.6.
A pairwise analysis was also conducted to evaluate the respondents’ opinions on the relative importance of the four different facets of asset performance: Economic, Functional, Performance, and Service. Six pair-wise importance questions with a nine-point linguistic scale were used (Sataay, 1977; Xu, 2000).

Example of Pairwise Evaluation of Relative Importance between Asset Performance Facets:

The individual respondents’ results on each individual pairwise question are aggregated using the geometric mean method before inputting into the necessary computation matrices. The final relative importance weightings of the four different facets of asset performance are shown in Table 2.

No significant differences in the perceived importance of the four facets of the EPFS model were found for both groups of respondents in Hong Kong and Australia. A check on the consistency of responses was also performed to ensure the validity of the computed results.

A consistency ratio of 0.0067 (<0.1) was obtained from the analyzed responses, which indicated that the responses given by all the respondents were quite consistent.
2. Validation of Asset Performance Variables

For each of the asset performance facets, their corresponding asset performance variables were identified via brainstorming sessions by the research collaborators. The degree of perceived relevance of each of the asset performance variables were evaluated using a 5-point Likert scale type questions with ‘1’ indicating not relevant and ‘5’ indicating very relevant. An asset variable is considered to be relevant if it has a mean value greater than 3.5. Table 3 shows those variables that are identified to be relevant under each of the four asset performance facets.

<table>
<thead>
<tr>
<th>Economic Performance</th>
<th>Perceived Relevance (1 - not relevant, 5 – very relevant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
<td>Mean (Standard Deviation)</td>
</tr>
<tr>
<td>Location</td>
<td>3.93(1.17)</td>
</tr>
<tr>
<td>Capital Value</td>
<td>3.61(1.36)</td>
</tr>
<tr>
<td>Size</td>
<td>3.59(1.14)</td>
</tr>
<tr>
<td>*Return on Investment</td>
<td>3.18(1.45)</td>
</tr>
<tr>
<td>*Benefits Return</td>
<td>3.95(0.88)</td>
</tr>
<tr>
<td>Utilisation</td>
<td>4.27(0.87)</td>
</tr>
<tr>
<td>*Image</td>
<td>3.73(0.99)</td>
</tr>
<tr>
<td>Portfolio Strategy</td>
<td>4.12(0.81)</td>
</tr>
<tr>
<td>Business Turnover</td>
<td>3.17(1.34)</td>
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| Mean<3.5             |
| N=41                 |
| *N=40                |

<table>
<thead>
<tr>
<th>Physical Performance</th>
<th>Perceived Relevance (1 - not relevant, 5 – very relevant)</th>
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<tbody>
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<tr>
<td>Utilities Costs</td>
<td>4.27(1.05)</td>
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<tr>
<td>*FM Management Costs</td>
<td>3.98(0.97)</td>
</tr>
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<td>Condition</td>
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<td>Risk</td>
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<tr>
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<tr>
<td>Refurbishment History</td>
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<tr>
<td>Maintenance History</td>
<td>3.98(0.88)</td>
</tr>
<tr>
<td>*Initial Capital Cost</td>
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<td>Replacement Value</td>
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<td>Deferred Maintenance</td>
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<td>Environmental Impact</td>
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<td>*Internal configuration &amp; Services</td>
<td>4.53(0.78)</td>
</tr>
<tr>
<td>Adaptability</td>
<td>4.07(1.08)</td>
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<tr>
<td>Policy Compliance</td>
<td>4.24(0.86)</td>
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<tr>
<td>Production Facilities</td>
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<td>External Infrastructure</td>
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<th>Service Performance</th>
<th>Perceived Relevance (1 - not relevant, 5 – very relevant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
<td>Mean (Standard Deviation)</td>
</tr>
<tr>
<td>FM Service Response</td>
<td>4.39(0.92)</td>
</tr>
<tr>
<td>FM Service Price</td>
<td>4.15(0.85)</td>
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<tr>
<td>FM Service Interface</td>
<td>4.24(0.97)</td>
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<tr>
<td>Building Service</td>
<td>4.20(0.98)</td>
</tr>
<tr>
<td>Internal Ambient</td>
<td>4.32(0.85)</td>
</tr>
<tr>
<td>External Ambient</td>
<td>3.66(0.94)</td>
</tr>
<tr>
<td>Local Serviceability</td>
<td>3.88(0.90)</td>
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3. Validation of Asset Performance Indicators

For each of the asset performance facets, and their corresponding asset performance variables, Key Performance Indicators (KPIs) were selected via brainstorming sessions by the research collaborators. A total of 95 KPIs were selected and workshop respondents were requested to rate their relevance via a series of dichotomous questions with ‘Yes’ and ‘No’ options. An indicator is considered to be relevant if the percentage of respondents choosing ‘Yes’ is greater than 75%.
Table 4. Relevant Key Performance Indicators (cont’d) Note: * implies N=40

<table>
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<tr>
<th>Facet</th>
<th>Asset Variable</th>
<th>Key Performance Indicators</th>
<th>Mean (Standard Deviation)</th>
<th>Portfolio Strategy</th>
</tr>
</thead>
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<tr>
<td><strong>ECONOMIC PERFORMANCE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Customers / tenants / visitors / clients</td>
<td>95.1% (0.218)</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Access to essential business services</td>
<td>85.4% (0.358)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>Floor space</td>
<td>92.7% (0.264)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefit Return</td>
<td>*Business</td>
<td>80.0% (0.405)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Community</td>
<td>80.5% (0.401)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilisation</td>
<td>Space (% of space/capacity used compared with available space/capacity)</td>
<td>97.6% (0.156)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Image</td>
<td>Customers</td>
<td>95.1% (0.218)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portfolio Strategy</td>
<td>Different types of assets</td>
<td>85.4% (0.358)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Location of assets</td>
<td>90.2% (0.300)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FM Services Cost</td>
<td>per unit area (sq m)</td>
<td>92.7% (0.264)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilities Cost</td>
<td>per unit area (sq m)</td>
<td>92.7% (0.264)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FM Management Costs</td>
<td>per unit area (sq m)</td>
<td>82.9% (0.381)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>Component / Element</td>
<td>82.9% (0.381)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Asset overall</td>
<td>82.9% (0.381)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk</td>
<td>Exposure to security issues</td>
<td>100.0%</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Exposure to contamination &amp; health issues</td>
<td>100.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exposure to legislative changes</td>
<td>78.0% (0.419)</td>
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<tr>
<td>Age</td>
<td>*Building level</td>
<td>80.0% (0.405)</td>
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<td></td>
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<tr>
<td></td>
<td>*Component level</td>
<td>85.0% (0.362)</td>
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<td>Refurbishment History</td>
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<td>80.5% (0.401)</td>
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<td></td>
<td>Nature of last refurbishment</td>
<td>90.3% (0.401)</td>
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<td>Maintenance History</td>
<td>*$ expenditure (total)</td>
<td>82.9% (0.331)</td>
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<tr>
<td></td>
<td>$ per annum as % of replacement value</td>
<td>87.8% (0.331)</td>
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<td></td>
<td>Major replacements (dates and costs)</td>
<td>95.1% (0.218)</td>
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<tr>
<td>Initial Capital Cost</td>
<td>Similar asset</td>
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<td>Industry standards</td>
<td>80.5% (0.401)</td>
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<tr>
<td>Replacement Value</td>
<td>*Depreciated book value</td>
<td>75.0% (0.439)</td>
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<td>Deferred Maintenance</td>
<td>*Total Value of Deferred Maintenance</td>
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<td>Compliance with Environmental legislation</td>
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<tr>
<td></td>
<td>Appropriate environmental rating system (e.g. HKBEAM)</td>
<td>82.9% (0.381)</td>
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<td>Remaining Life</td>
<td>Physical and functional conditions</td>
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<td></td>
<td>Economic viability</td>
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<td>Internal Configuration and Services</td>
<td>Layout</td>
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<td></td>
<td>Services</td>
<td>82.7% (0.264)</td>
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<tr>
<td></td>
<td>Amenities</td>
<td>82.7% (0.264)</td>
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<td>Adaptability</td>
<td>Major changes</td>
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<td>Policy Compliance</td>
<td>Space allocation</td>
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<tr>
<td></td>
<td>Quality of fit-out and furnishings</td>
<td>87.8% (0.331)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Security</td>
<td>100.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production Facilities</td>
<td>Capacity</td>
<td>78.0% (0.419)</td>
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<tr>
<td></td>
<td>Efficiency</td>
<td>85.4% (0.358)</td>
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<tr>
<td></td>
<td>Quality of outputs/outcomes</td>
<td>85.4% (0.358)</td>
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<tr>
<td>External Infrastructure</td>
<td>Capacity</td>
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<td></td>
<td>Function</td>
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<tr>
<td>FM Service Response</td>
<td>Response time to request</td>
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<td>23</td>
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<td></td>
<td>Time to resolve problems</td>
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<td>FM Service Price</td>
<td>Fit with budget</td>
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<td></td>
<td>Comprehensive of services</td>
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<td>FM Service Interface</td>
<td>Communication</td>
<td>90.2% (0.300)</td>
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<td></td>
<td>Resolution of issues</td>
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<td>Building Services</td>
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<td>Quality (meeting prescribed parameters)</td>
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<td>Reliability</td>
<td>97.6% (0.156)</td>
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<tr>
<td>Internal Ambient</td>
<td>Statutory compliance</td>
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<td></td>
<td>Comfort</td>
<td>97.6% (0.156)</td>
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<td>Ambience</td>
<td>87.8% (0.331)</td>
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<td>Work environment (e.g. noise, safety, etc.)</td>
<td>100.0%</td>
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<td>External Ambient</td>
<td>Appearance</td>
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<td></td>
<td>Noise</td>
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<td>Local Serviceability</td>
<td>Range of services available</td>
<td>82.9% (0.381)</td>
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<td></td>
<td>Quality</td>
<td>95.1% (0.218)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reliability</td>
<td>92.7% (0.264)</td>
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<td></td>
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<tr>
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<td>Responsiveness</td>
<td>82.9% (0.381)</td>
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<tr>
<td></td>
<td>Cost</td>
<td>82.9% (0.381)</td>
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</tbody>
</table>

Table 4 lists the selected KPIs against each asset performance variable and the corresponding asset performance facet. The sample size for the combined respondents from Hong Kong and Australia is 41 (i.e. N=41).
CONCLUSIONS

The quality of an asset performance measurement regime is subject to the proper definition, selection and organization of KPIs to provide relevant and reliable information for management decisions and actions. An unstructured and haphazard selection of KPIs is likely to lead to a waste of time and effort in data collection and incomplete or misleading performance information. This paper proposes a structured and logical framework for the development and selection of key performance measures. The EPFS Model provides a rationale and robust methodology for the organization of the KPIs selected and justification for the data requirement. Through a thorough literature review and follow-up brain storming sessions, the research collaborators identified possible variables corresponding to each of the four facets. For each of the variables identified, potential relevant performance measures or indicators were listed. Two workshops [in Hong Kong (N=20) and Australia (N=21)], comprising of professional practitioners in the field of property/asset/facility management, were conducted to test the validity of the EPFS model. The workshops comprised a combination of explanatory presentations followed by respondents completing three separate sets of questionnaires.

In the main, the EPFS model was statistically validated in term of the following attributes: completeness, robustness, usefulness, importance and practical relevance. In terms of the ranking of the four facets; the Functional facet was ranked as most important, followed closely by both Service and Economic facets, with Physical facet rated the lowest. The statistical analysis of the chosen performance indicators for the four facets confirmed 69 of 95 possible indicators as important measures.

Overall, the proposed EPFS model can be considered to be statistically validated relative to the sample of respondents in Hong Kong and Australia. The exercise has opened the doors for further development for practical use of the concepts underlying the evaluation of asset performance and the implementation of asset performance measurement towards best practice. It is anticipated that the EPFS Model will be further developed and refined through detailed case studies.

The valuable assistance of the participants in the validation workshops in Hong Kong and Brisbane is gratefully acknowledged by the research collaborators.

References

Parker, W.C. (1993) Performance Measurement in the Public Sector and ANAO. Best Practice Principles for Performance Information. pp.8
INTRODUCTION

Hong Kong faces an imminent waste management problem. In the past 30 years, our municipal solid waste (MSW) increased by nearly 80% while our population only increased by 36%. Hong Kong has been enjoying a steady growth in economy, population and standard in life, yet the increase in per capita waste generation of 30% over these 30 years made it clear that our way of waste generation and management is unsustainable. To achieve long term sustainability on waste management, good government initiatives together with the participation of the whole community are supplementary to each other. As about 90% of our population is living or working in premises with facilities management, this sector is an important partner to help achieve sustainable waste management for Hong Kong.

WASTE GENERATION IN HONG KONG

To provide a glance on the current situation of solid waste quantities and components in Hong Kong, data is extracted from the Environmental Protection Department (EPD) of the Hong Kong SAR Government on the disposal of solid waste from Year 2008 to 2012. Its trend is presented in Figure 1. Among the 13,844 tonnes of solid waste being disposed daily at landfills in 2012, MSW was the major contributor (67%), followed by construction waste (25%) and special waste (8%). Putrescible (including food waste and yard waste) is the key component (42%) in this 9,278 tonnes of disposed MSW at landfills, and the remaining is contributed by other types of waste including paper, plastics, metals, glass, etc. as shown in Figure 2. With such a large quantity of waste being disposed of at the three strategic landfills which have been operating since 1990’s, they are anticipated to reach their full capacities in the 2015, 2017 and 2019 respectively. In view of the current composition of solid waste generation and disposal, the HKSAR Government implemented and planned a series of initiatives and policies with an aim to manage the waste using both technological and social-economic tools.
GOVERNMENT’S INITIATIVES AND POLICIES

The waste management strategy of the Government has been evolving from maintaining environmental hygiene and providing efficient service on waste collection, transfer and disposal, to striving for environmental sustainability in a holistic view in the past decades. The internationally-accepted multi-tiered waste management hierarchy has been adopted to guide the policies formulation (Figure 3). The Government was no longer solely focusing on the end disposal problem of solid waste, but also formulating strategies to reduce waste generation from source, increase waste reuse, recycle and recovery, hence trying to maximize the value of resources recovery before its disposal.

For the purpose of achieving a more sustainable society by setting a clear and specific goal, the Government sets an aggressive per capita MSW disposal rate reduction targets from 1.27kg in 2011 to 0.8kg in 2022. It could only be achieved by reduction in waste generation and disposal, and increase in waste recycling and recovery. A series of waste management initiatives and policies are adopted and planned to serve the purpose.

Social-economic tools including quantity-based waste charging and producer responsibility schemes (PRS) are developed for providing financial dis-incentives for citizens and trade to reduce the quantity of waste being disposed at landfills. The construction waste charging scheme that was put in place in 2006 has proven to be effective in reducing the amount of construction waste to be dumped at landfills by 48%. Currently the community wide consultation for the quantity-based MSW charging scheme has completed and the detailed implementation framework on the charging mechanism, coverage of the scheme, charging level and recycling are being formulated. Hopefully the MSW charging scheme would help change people’s mindset, achieve further reduction of wastes at source and boost up recycling. Other types of waste including plastic shopping bags, waste electrical and electronic equipment, and glass beverage bottles are planned to be regulated by PRS.

The major component of disposed MSW at landfills, putrescible, on the other hand is hopefully reduced by social mobilization and education of general public. The Government has launched a Food Wise Hong Kong Campaign with one of the aims is to instill behavioral changes in the community to reduce food waste, which includes encouraging Food & Beverage and related sectors to minimize food waste by implementing good practices reducing waste at source, supporting food donation activities, separating and recycling of food waste, etc. Food Waste Recycling Projects in Housing Estates with $50 million earmarked financially supported by the Environment and Conservation Fund (ECF) have supported on-site food waste recycling and food waste reduction educational programme. The facilitation of collection, separation and recycling of different types of waste could not be more effective without the active participation of the facilities management sector. Hence it is necessary that the premises users will join hand with the facilities operators to formulate and implement effective waste management measures so as to separate the wastes at source for downstream collection and recycling.

While our 3 landfills will be exhausted soon, waste management facilities like extension of the landfills, Sludge Treatment Facility, Integrated Waste Management Facilities, Organic Waste Treatment Facilities, etc. are also under planning or development in order to increase the local waste treatment capacity.

Among the waste types, food waste is quite different from others because of its perishable nature which creates lots of problems including leachates and odour generation.
OPTIONS TO MANAGE FOOD WASTE

One of the best ways to manage food waste is to minimize its generation and to support donation of residual food. As discussed in the previous section, it could be achieved by social mobilization programmes like Food Wise Hong Kong Campaign. There are several other treatment options to manage food waste include incineration, landfilling and digestion / composting. However, all these options have their drawbacks.

Incineration

The biodegradable organic matters in food waste are high in moisture content which induces a quite low calorific value and it also creates emission problem. Offensive odour is also an issue. Therefore, food waste is considered not suitable for incineration and energy recovery.

Landfilling

The leachates and odour generation would result in high capital and operational cost in leachates removal at landfills, and nuisance to the surrounding area. The perishable nature of food waste would also lead to subsidence of land, increasing the instability of the landfilled area.

Digestion / Composting

Anaerobic digestion together with aerobic treatment (sometimes termed as composting) of food waste is considered to be a more sustainable way to manage food waste. However, proper source separation is essential for effective treatment. While the Government is planning to install several Organic Waste Treatment Facilities, the difficulty in getting the land as well as endorsement from the Legislative Council / District Council cannot be under-estimated. A poor quality of organic waste that mixes with unwanted objects like sand, batteries, chemicals, glass, etc., will not just affect the treatment process, but also the quality of recycled products. Also high transportation cost as well as the possible odour and leathate contamination issues will be resulted during transportation of food waste to the central facilities. In fact composting of food waste can be achieved either off-site or on-site. In addition to the current financial burden of transportation cost from the site to landfill, waste generators will need to face the possible introduction of MSW charge by the Government in around 2017. There is an increasing need to control the disposal of organic wastes (e.g. food waste) to landfills, and so it creates a demand for the adoption of effective food waste conversion process aiming at in-situ treatment and volume reduction at source. The adoption of on-site treatment technology will immediately help the waste generator not just to reduce their cost for haulage of waste, but also help them to save cost from MSW charging and generate revenue by selling the organic fertilizer / soil conditioner converted from food waste.

ON-SITE MANAGEMENT OF FOOD WASTE

The development of the High Performance Food Waste Conversion System (FWCS) by the Hong Kong Productivity Council (HKPC) together with the South China Agricultural University in Mainland China is to target for the decentralized on-site treatment of food waste from the commercial and industrial sectors. The targeted clientele of FWCS shall include those premises where pure food waste can be readily collected in considerable quantity, such as food factories, hotels, restaurants, wet markets, theme parks, universities, shopping malls with restaurants, hospital canteens, freight caterers, etc.

The system is equipped with smart control unit and hence it consumes only 30% of electricity comparing to a traditional composting machine. The merit of the technology is that it can substantially and rapidly reduce food waste by over 70% in around 25 days instead of 60-90 days by conventional composting method. The process can be operated continuously to reduce waste volume and to transform waste into organic fertilizer as a valuable product with total nutrient content of over 4%. Since most of the food waste can be completely converted into Eco-fertilizer, HKPC anticipates this effective technology can help major food waste generators that are now putting extensive efforts in handling the bulk volume of food waste in their daily operation to turn their “trash” (food waste) into “treasure” (organic fertilizer). The operation flowchart is shown in Figure 4.
The Food Waste Conversion System (FWCS) comprises a revolving Digestive Bioreactor drum, a Condenser and a Bio-filter as the core equipment. By adopting revolving design of the Bioreactor, the system avoids labor intensive pre-sorting procedure of food waste, use of high power electric mixer and damage of mixer due to waste blockage; at the same time achieves thorough mixing and contact of waste with microorganism and air inside the Bioreactor. Food waste is mixed with bulking agent and then put into the Bioreactor. When the food waste is converted into pre-cured product in about 7 days in the reactor, it can be taken out from the outlet of the Bioreactor. Some of the pre-cured product will be placed in the curing area for around 20 days to mature further, while the remaining output will be returned to the bioreactor inlet and mixed with fresh food waste to act as inoculum. Fresh air is supplied to the Digestive Bioreactor to facilitate aerobic digestion. Exhaust gases generated from the digestion process is directed through the condenser and bio-filter for cooling down of the exhaust temperature and removal of odour respectively before discharge. All the process equipment is operated in an automatic mode by a dedicated control unit. Normally a noticeable volume reduction in waste quantity for about 75% can be achieved after the rapid decomposition reaction in the Bioreactor.

In a system that was installed for a scenery park in Hong Kong for treating food waste from restaurant and green waste, the total nutrient level could achieve over 4%. The product from that system can be classified as eco-fertilizer. The laboratory analysis results in comparison to GB8172-87 (Control Standards for Urban Wastes for Agricultural Use) of the People of Republic China are shown in Table 1 below.

<table>
<thead>
<tr>
<th>Samples</th>
<th>Batch 1</th>
<th>Batch 2</th>
<th>Batch 3</th>
<th>GB8172-87</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameters</td>
<td>Based on dry weight (mg/kg unless specified)</td>
<td>Based on dry weight (mg/kg unless specified)</td>
<td>Based on dry weight (mg/kg unless specified)</td>
<td>Based on dry weight (mg/kg unless specified)</td>
</tr>
<tr>
<td>Total Nitrogen</td>
<td>2.7%</td>
<td>2.2%</td>
<td>2.8%</td>
<td>&gt; =0.5%</td>
</tr>
<tr>
<td>Total Phosphorus (as P2O5)</td>
<td>0.61%</td>
<td>0.14%</td>
<td>1.2%</td>
<td>&gt; =0.3%</td>
</tr>
<tr>
<td>Total Potassium (as K2O)</td>
<td>1.2%</td>
<td>1.3%</td>
<td>1.8%</td>
<td>&gt; = 1%</td>
</tr>
</tbody>
</table>

Table 1. Laboratory Results on the quality of eco-fertilizer from the FWCS in the scenery park

**CONCLUSION**

Hong Kong has been adopting unsustainable ways on waste management by relying on disposal of the wastes in our 3 landfills that will be exhausted soon. To achieve long term sustainability on waste management, good government initiatives together with the participation of the whole community are needed. As about 90% of our population is living or working in premises with facilities management, this sector is an important partner to help achieve sustainable waste management for Hong Kong. One of the demonstrated examples is to conduct in-situ conversion of considerable amount of food waste into resources. The Food Waste Conversion System offers a viable solution not only on reducing waste at source, but also recovers useful matters from wastes. The facilitation of collection, separation and recycling of different types of waste could not be more effective without the active participation of the facilities management sector. Hence it is necessary that the Government, premises users and facilities operators will join hand to foster a more sustainable environment.

**Reference**

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