

Evolutionary Process of the Development of Spatial Data Infrastructure (SDI) in Hong Kong

Agenda

What, **W**hy necessary,
Who is responsible & **W**ay forward

Dr Conrad Tang
Dept. of Land Surveying & Geo-Informatics
The Hong Kong Polytechnic University

Mr Lesly LAM
Land Surveying Division
The Hong Kong Institute of Surveyors



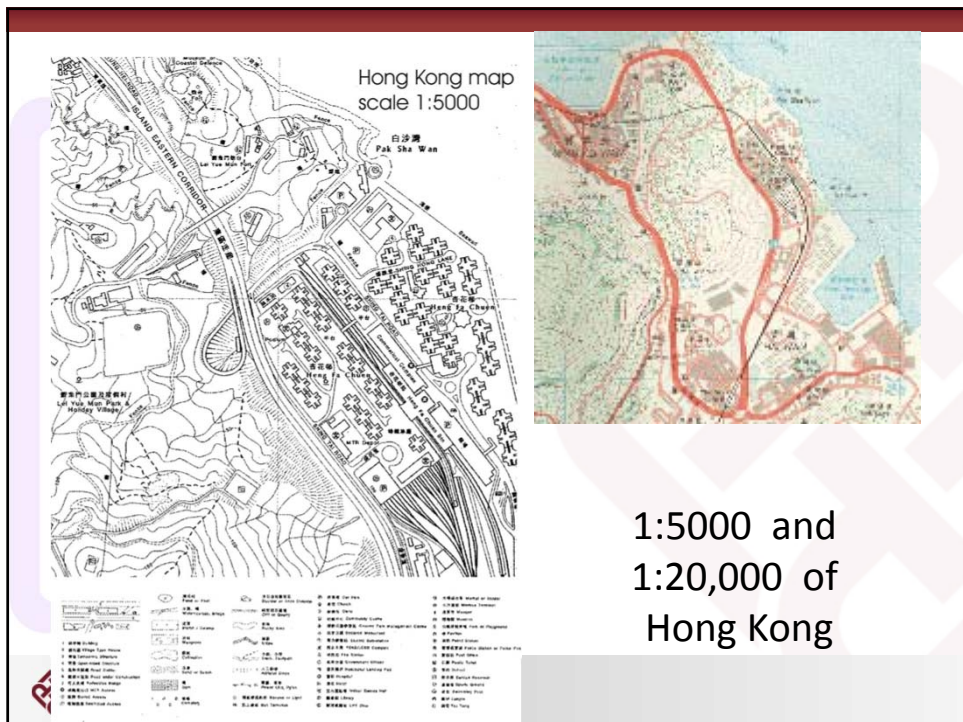
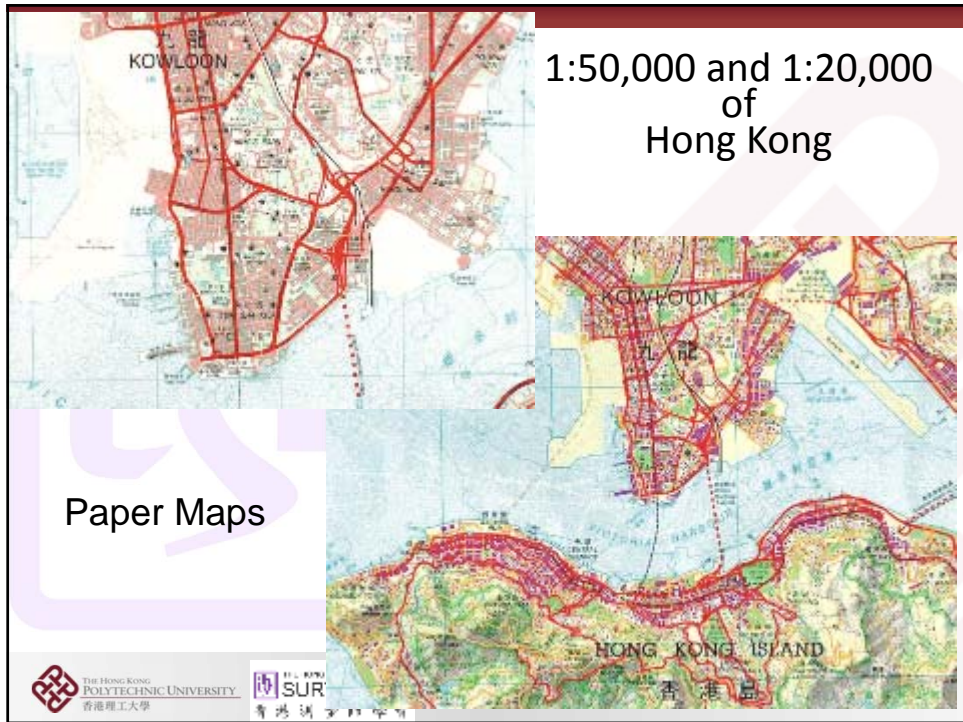
1

What is SDI in HK now?

- **Hong Kong SAR Government**
- **Geospatial Information Hub (GIH)**
- 2004. GIH is a web-based geographic information portal within the government.
 - digital maps and aerial photographs
 - lot boundaries and land use zonings
 - Dangerous slope; trees; population & health data...
- A Lands Department initiative



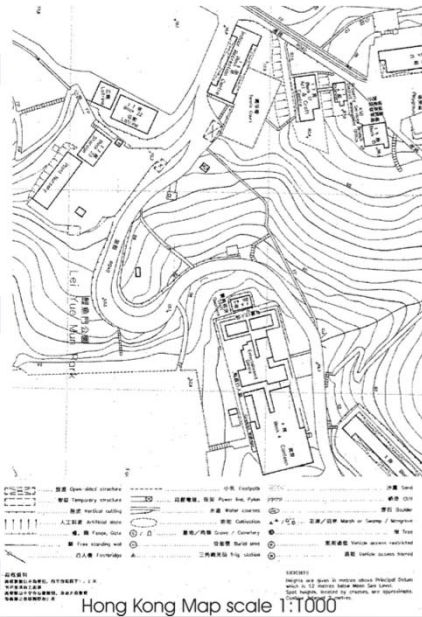
2



1:1000 map of
Hong Kong
*(Basic Mapping
System & Cadastral
Information System)*

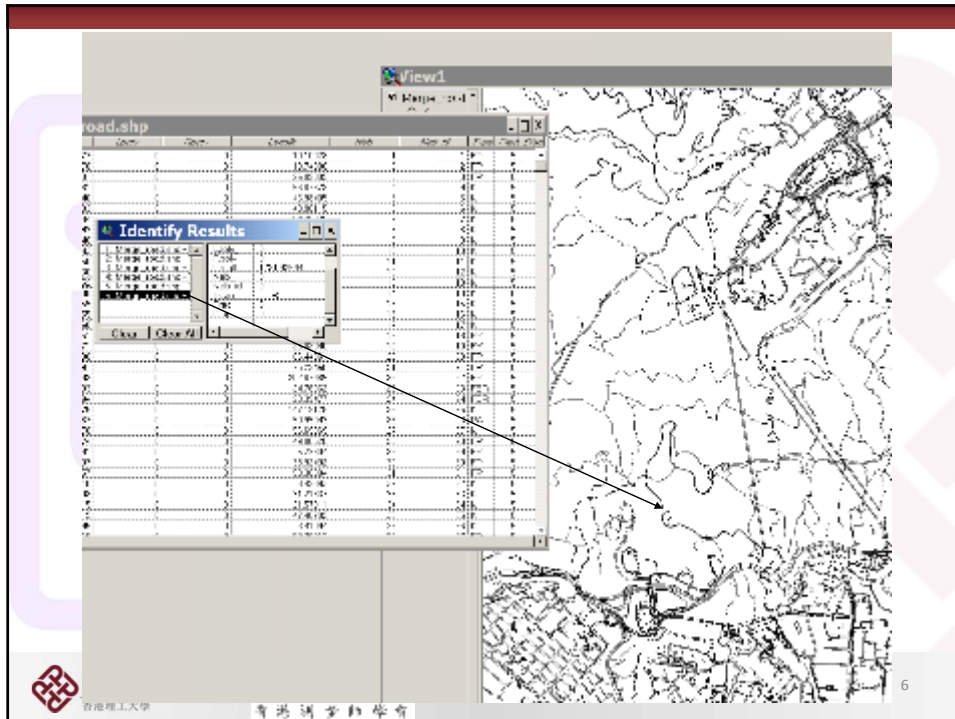
3010 sheets

750m(E) x 600m (N)



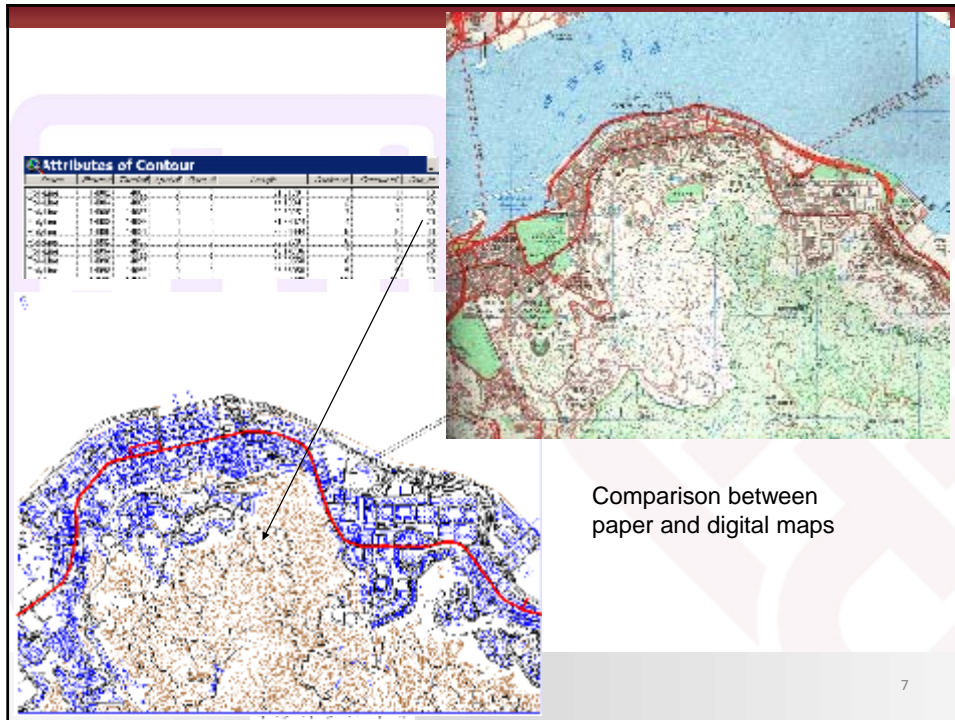
THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學

SURVEYORS
香港測量師學會



香港理工大學

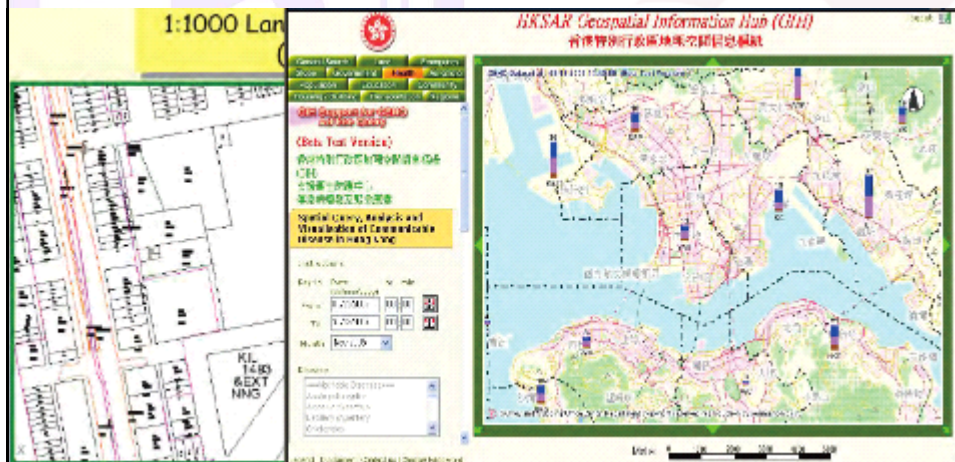
香港測量師學會



Lands Department

Computerized Land Information System
Geospatial Information Hub

Data Alignment Measure
Data Dissemination System

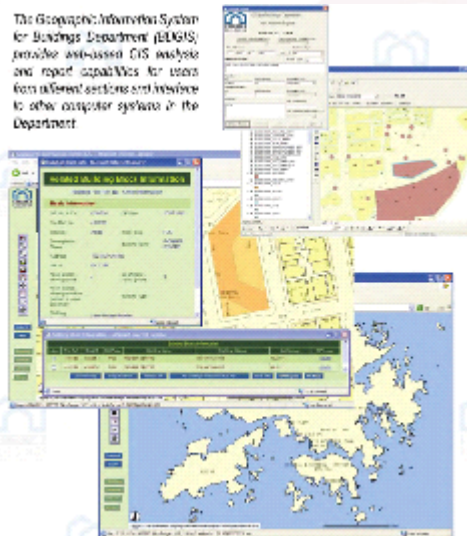


Buildings Department



Geographical
Information
System for
Buildings
Department

BDGIS

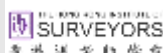


The Geographical Information System for Buildings Department (BDGIS) provide web-based GIS analysis and report capabilities for users from different sections and interface to other computer systems in the Department.

Census & Statistics Department



THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學



THE HONG KONG
POLYTECHNIC UNIVERSITY
SURVEYORS
香港測量師學會



Census and Statistics Department

The Government of the Hong Kong Special Administrative Region

Planning Department



THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學



THE HONG KONG
POLYTECHNIC UNIVERSITY
SURVEYORS
香港測量師學會



Transport Department

Route Number	Route Name	Public Stop	Transfer Stop	Route No.	Public Stop
1	180000001 Bus	180000001	180000001	180000001	180000001
2	180000002 Bus	180000002	180000002	180000002	180000002
3	180000003 Bus	180000003	180000003	180000003	180000003
4	180000004 Bus	180000004	180000004	180000004	180000004
5	180000005 Bus	180000005	180000005	180000005	180000005
6	180000006 Bus	180000006	180000006	180000006	180000006
7	180000007 Bus	180000007	180000007	180000007	180000007
8	180000008 Bus	180000008	180000008	180000008	180000008
9	180000009 Bus	180000009	180000009	180000009	180000009
10	180000010 Bus	180000010	180000010	180000010	180000010
11	180000011 Bus	180000011	180000011	180000011	180000011
12	180000012 Bus	180000012	180000012	180000012	180000012
13	180000013 Bus	180000013	180000013	180000013	180000013
14	180000014 Bus	180000014	180000014	180000014	180000014
15	180000015 Bus	180000015	180000015	180000015	180000015

Route Search: Tips

1. For better search results, please input more specific location names, a stop name, station name with stop number, street name with house number or ZIP code.
2. If no results are found, please locate the "Origin" or "Destination" on the map, click on the public transport stop and search again.
3. To search for a specific bus route, please input the bus route number in the search box (e.g. 180000001).
4. To search for a specific bus stop, please click on the map and click on the stop name.
5. Please check the map on the accuracy of the suggested stop-ups through the street name, coordinates and between address map.
6. For input errors, please click here.
7. Please check "News" for the latest supplementary information or put and other news.
8. Please check "Traffic Information" for the Spatial Traffic Information, Real Time Road Traffic Condition and Latest Speeds, Traffic News.

THE HONG KONG POLYTECHNIC UNIVERSITY SURVEYORS
香港理工大學 香港測量師學會

Consultant: Dept. of LSGI, HKPU 13

Yellow Pages

ypmap.com

Location Services

- Home
- Search
- Map
- Advanced Search
- Help
- Feedback
- Privacy Policy
- Terms of Service
- Site Map
- Mobile Site
- PC/WWW Version
- Contact Us

Map of a city area with various points of interest marked.

THE HONG KONG POLYTECHNIC UNIVERSITY SURVEYORS
香港理工大學 香港測量師學會

14

Mobile GIS – “Locating Jetso”

你現在位於銅鑼灣區的銅鑼灣廣場附近範圍:

立即開始搜尋以下項目:

- 所有餐館
- 自動餐館
- 火鍋餐館
- 中菜及飲茶餐館
- 日韓美食餐館
- 西式美食餐館
- 茶館甜品餐館
- 其他飲食餐館
- 所有信用卡餐館
- 信用卡飲食餐館
- 信用卡購物餐館
- 信用卡捐贈餐館
- 你設定了的信用卡是中國銀行, 恆生銀行

All credit cards promotional discounts

加怡海景
銅鑼灣廣場1期
登龍街
羅素街
振華街
雲東街
香港電訊
東角
黃金
京華
灣超道
恩平道
登龍街
羅素街
振華街
雲東街
香港電訊

THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

SURVEYORS
香港測量師學會

Typical Spatial Data



Digital Topographic Model

Geological Map

High Resolution Color Satellite Data

Aerial Photo

GIS to Present Different Spatial Factors

Non-made Slope (SIS)

Landslide Incident

Support Decision Making during Landslide Study

Boundaries Distribution

HPA Catchment

Land Status / Lot Boundary or Land Ownership Nature

Borehole

District Information System (DIS)

Orthorectified Aerial Photos

EMTL & Regolith Map

Street Centerline

SUR & County Files

Data Acquisition: Digital aerial photo

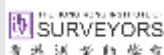
Courtesy of ARSC



- ❖ Y-5 is a small, single-engine, general-purpose bi-plane with good low altitude performance. In China, it is used for 1:500 scale for digital photogrammetry.



THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學



香港測量師學會

1:500 Digital Ortho Map



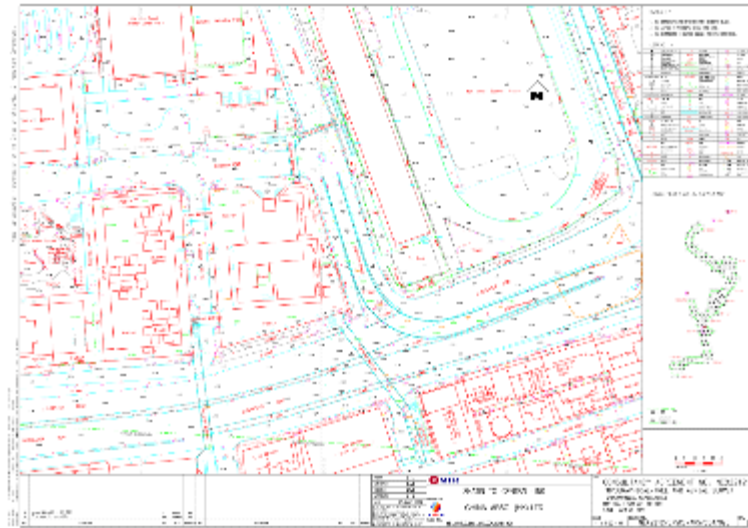
THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學



香港測量師學會

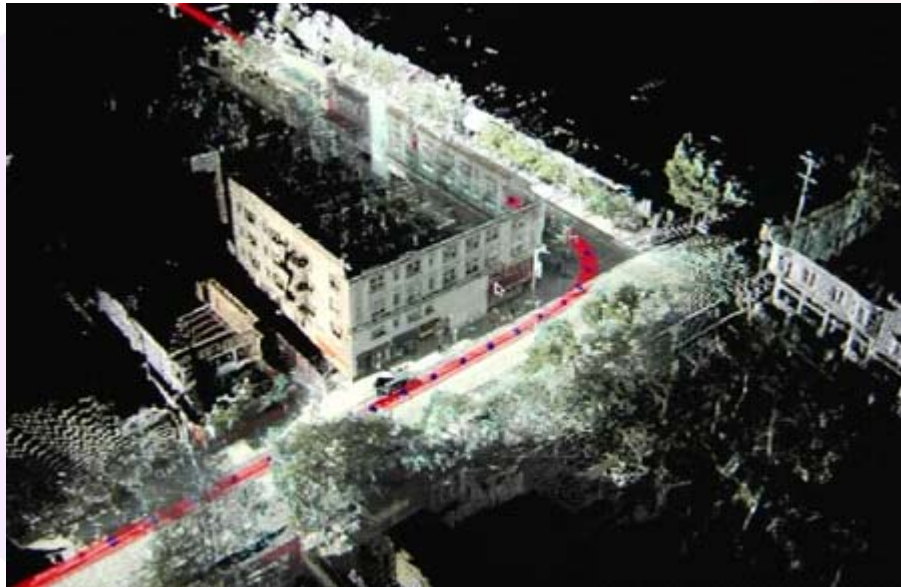
Courtesy of MTR 18

1:500 Digital Line graph



Data Acquisition: Mobile Mapping System





THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學

SURVEYORS
香港測量師學會

Courtesy from Topcon HK

21



THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學

SURVEYORS
香港測量師學會

Courtesy from Topcon HK

22

Why is SDI necessary?

- Intuitively, it is a part of our daily live.
- For mutual understanding of the phenomena (What do I mean = What do you mean)
- For data sharing
- For consistency in management
- For avoiding duplication in data capture
- For resource saving



THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學



THE HONG KONG
SURVEYORS
香港測量師學會

23

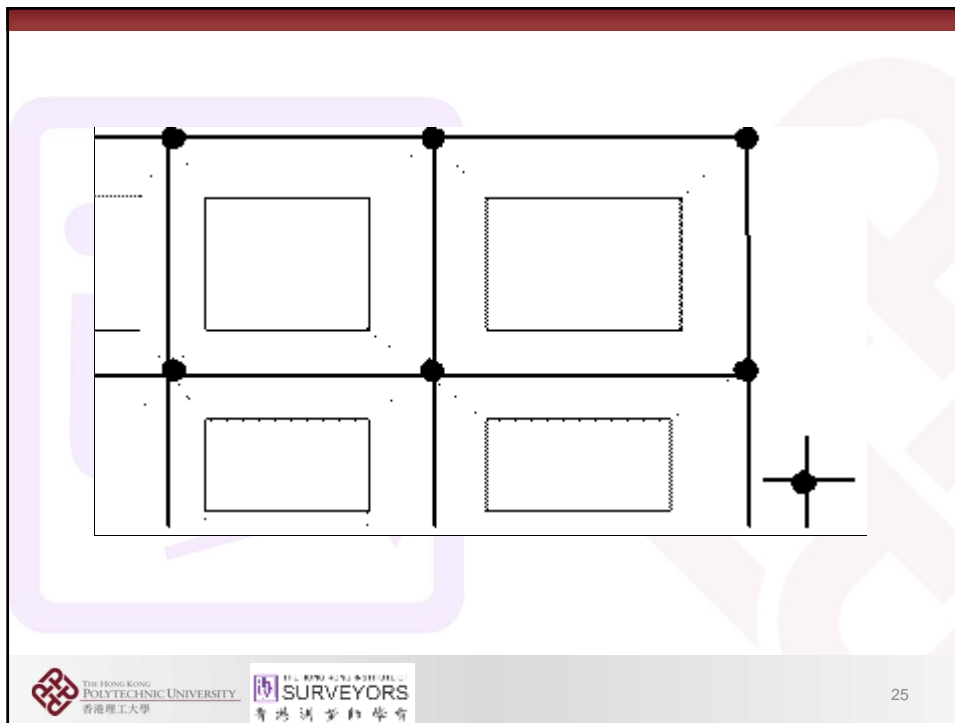


THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學



THE HONG KONG
SURVEYORS
香港測量師學會

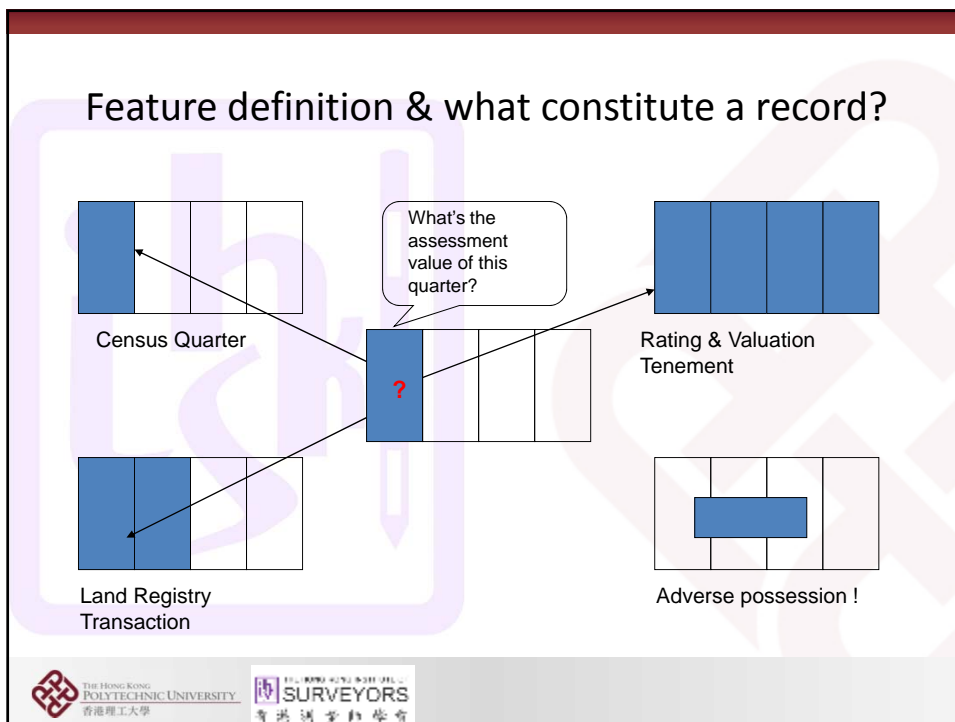
24



THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學

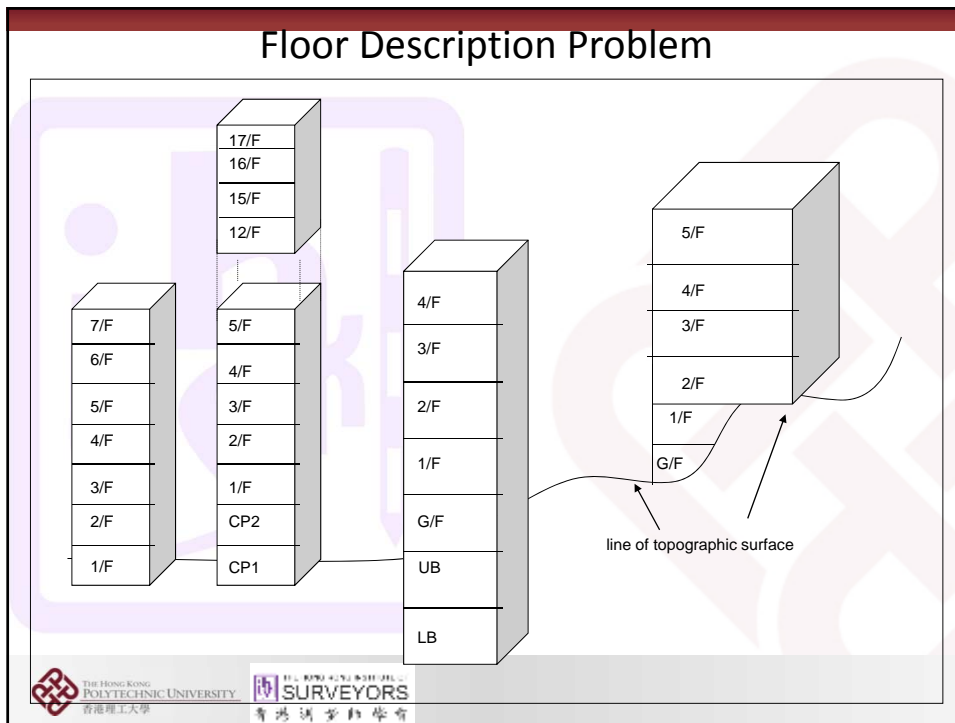
SURVEYORS
香港測量師學會

25



THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學

SURVEYORS
香港測量師學會





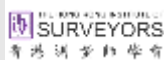
Spatial data

Spatial data consideration :

- Could we have free data accessible on web?
- Could we have aerial photos, terrestrial photos, or even specific photos of the tree?
- Could we have the law and regulation information accessible?
- Land Object concept in Cadastre 2014



THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學



THE HONG KONG
SURVEYORS
香港測量師學會

31

Who is responsible?

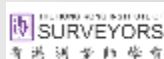
Intuitively, infrastructure should be provided by the Government.

Technically, the stakeholders:

- Spatial data suppliers / owners / custodian
- Users
- Integrators



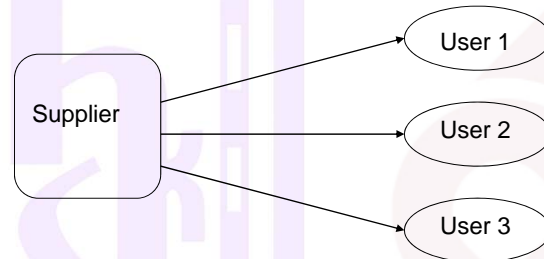
THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學



THE HONG KONG
SURVEYORS
香港測量師學會

32

Model 1 – Supplier-User Uni-directional Relation



Digital mapping products in the early 1990's



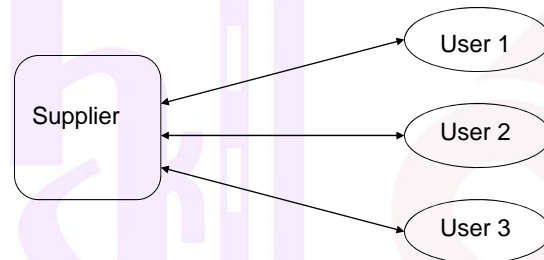
THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學



THE HONG KONG
SURVEYORS
香港測量師學會

33

Model 2 – Supplier-User Bi-directional Relations



Digital mapping products in the late 1990's
feedbacks and updates

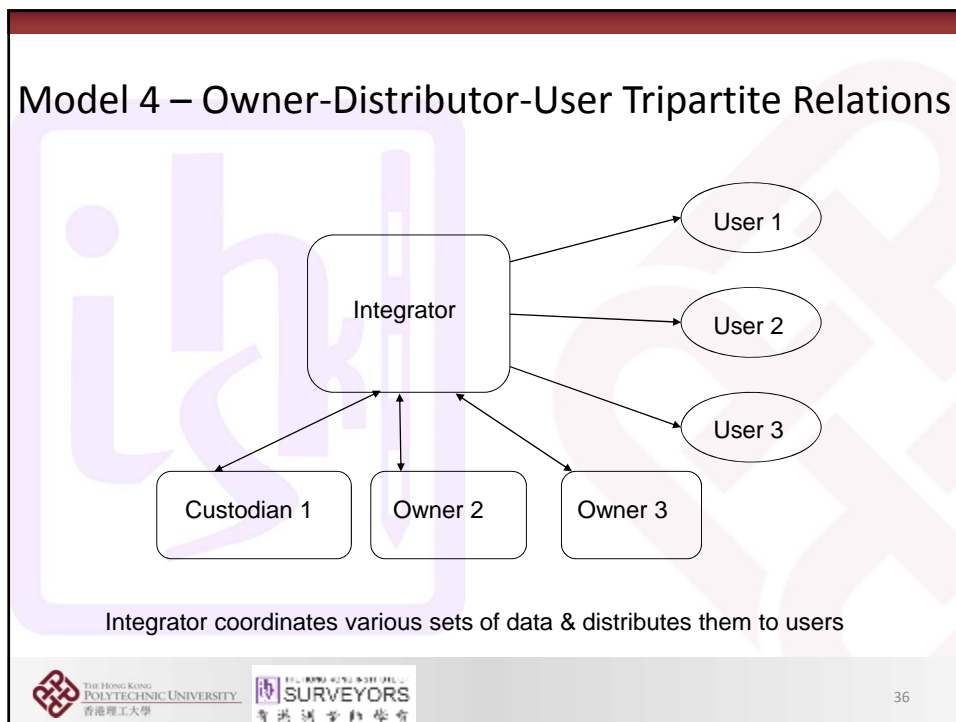
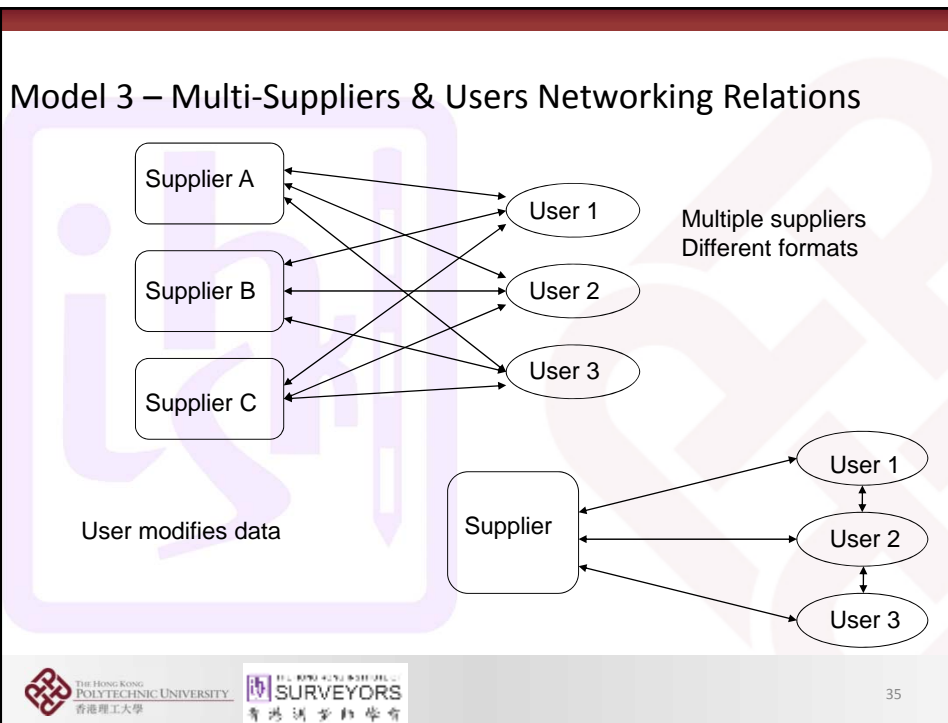


THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學



THE HONG KONG
SURVEYORS
香港測量師學會

34



The **W**ay Forward

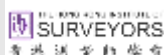
A SDI **policy** which unites:

Government organizations, Data custodians,
Policy makers, Professional bodies, Academics

- Intrasectoral development
- copyright and legal issues
- location privacy
- institutional reorganization
- education, research & development



THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學



THE HONG KONG
SURVEYORS
香港測量師學會

37

Position of spatial data within overall **IT** strategy

- Intrasectoral development
- copyright and legal issues
- location privacy
- institutional reorganization
- education, research & development



THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學



THE HONG KONG
SURVEYORS
香港測量師學會

38

Position of spatial data within overall IT strategy

- 5D Spatial Data

- DOM /TDOM True Digital Ortho Map
- DEM Digital Elevation Model
- DSM Digital Surface Model
- DLG Digital Line Graphic
- DRG Digital Raster Graphic

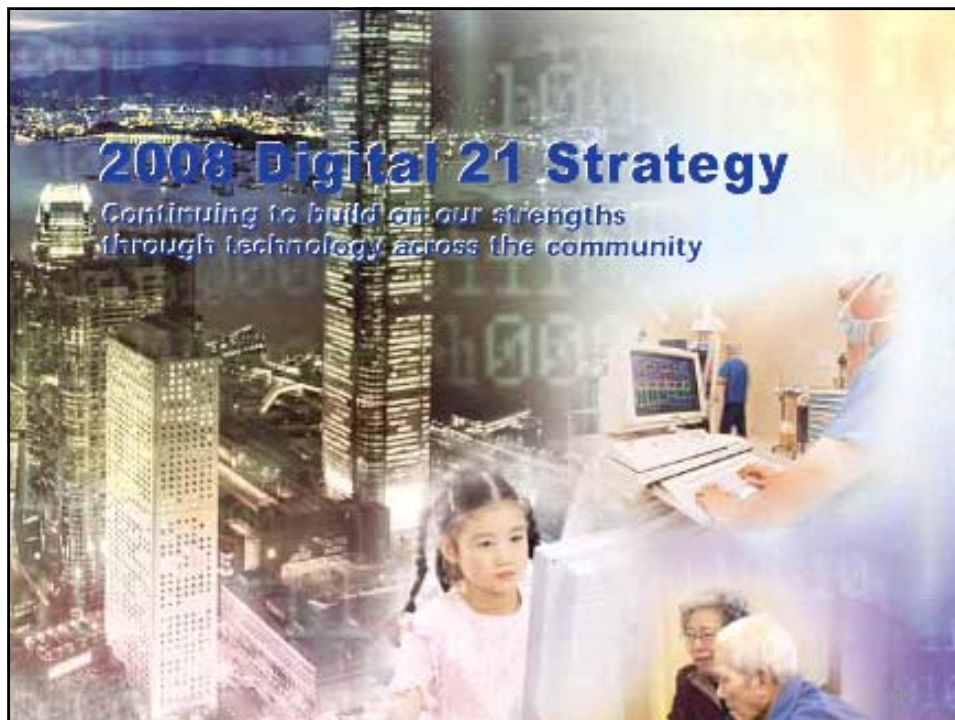


THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學



THE HONG KONG
SURVEYORS
香港測量師學會

39



Future SDI in Hong Kong

2008 Digital 21 Strategy

Continuing to build on our strengths through technology across the community

- <http://www.info.gov.hk/digital21/eng/index.htm>
- Facilitate a digital economy
- Promote advanced technology & innovation
- Hub of technological cooperation & trade
- Inclusive, knowledge-based society

41

GIS on the Web

The Web is the New Platform

- Many Authors & Publishers
- Lots of Communities
 - Interconnected
 - Interoperable
 - Integrative
 - Dynamic

ESRI China
Hong Kong

Web 2.0

Distributed Collaboration

Web 1.0

Mapping & Visualization


Web GIS

Legacy


Client / Server

Web 1.0

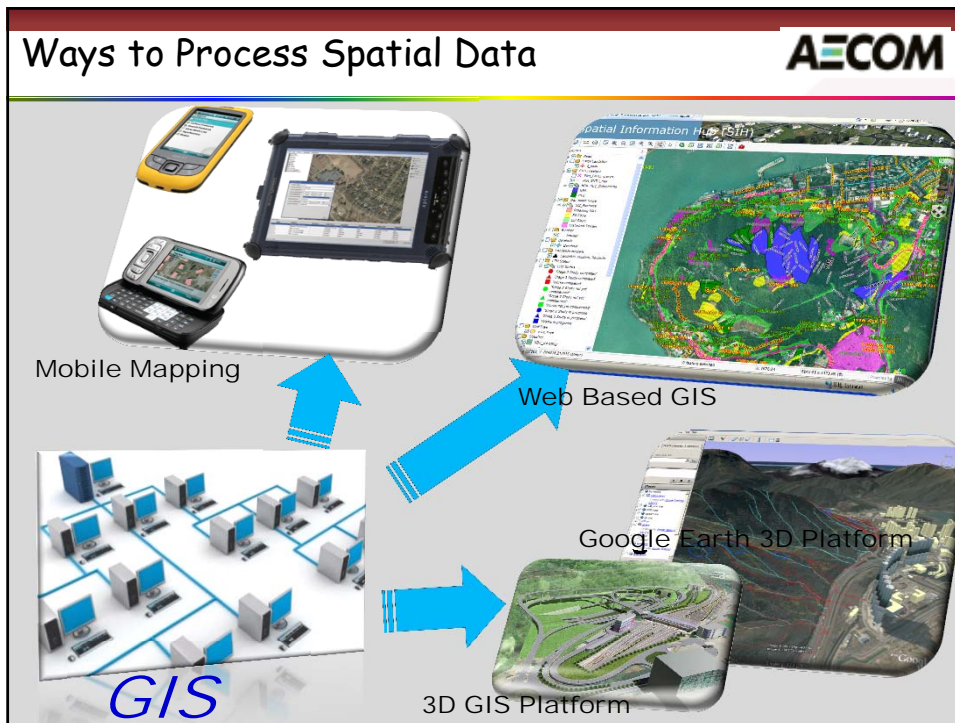
Web 2.0



THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學



THE HONG KONG SURVEYORS
香港測量師學會



Lesly LAM
leslylam@hkis.org.hk

Conrad Tang
lstang@polyu.edu.hk

Thank You!



THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學



THE HONG KONG
SURVEYORS
香港測量師學會

45