

Development Bureau of the  
Hong Kong Special Administrative Region Government

*For All and By All –  
the Spatial Journey of the  
Common Spatial Data  
Infrastructure (CSDI) of  
Hong Kong*

Sharing Session

October 27, 2025



# Agenda

Topic	Speaker(s)
<b>Welcome and Introduction</b>	Mr Kevin Leung
<b>Sharing of the CSDI Journey from 0 to 2.0</b>	Mr YC Chan
<b>Looking Ahead – CSDI Future Roadmap</b>	Dr Albert Wong, Mr Kevin Leung
<b>Value of Spatial Data for Selected Industries</b>	Dr Albert Wong, Mr Kevin Leung
<b>Q&amp;A Session</b>	Mr YC Chan, Dr Albert Wong and Mr Kevin Leung
<b>Closing</b>	Mr YC Chan

*The session is about 1.5 hours from 7pm to 8:30pm. No recording.*

## In the Room Today



**Mr. YC Chan**  
Head of Spatial Data  
Office  
Development Bureau  
HKSAR Government



**Dr. Albert Wong**  
Partner, Government  
& Public Sector  
Consulting  
PricewaterhouseCoopers



**Mr. Kevin Leung**  
Director,  
Government & Public  
Sector Consulting  
PricewaterhouseCoopers

# 1

## Sharing of the CSDI Journey from 0 to 2.0



# Sharing of the CSDI Journey from 0 to 2.0

## What is Spatial Data and Why It Matters



### Definition

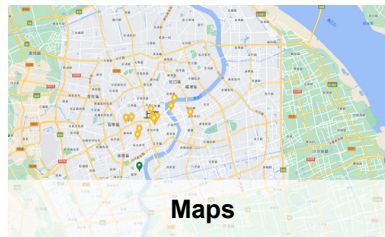
**Spatial data** is information that describes objects, events or other features with a location on or near the surface of the earth.

Spatial data typically combines the following information:

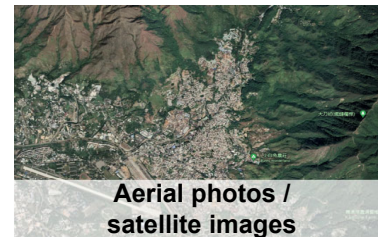
- **Location information** - coordinates on the earth
- **Attribute information** - the characteristics of the object, event or phenomena concerned
- **Temporal information** - the time or life span at which the location and attributes exists



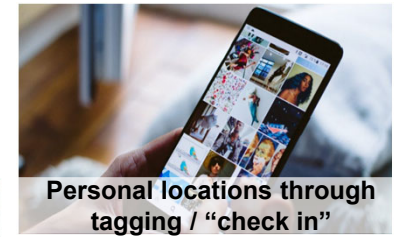
### Examples of Spatial Data



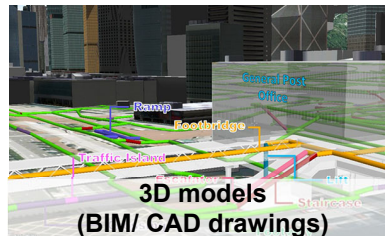
Maps



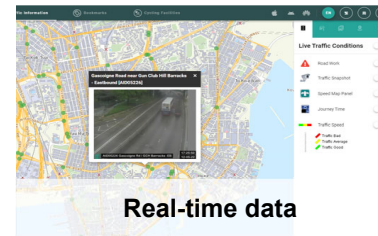
Aerial photos / satellite images



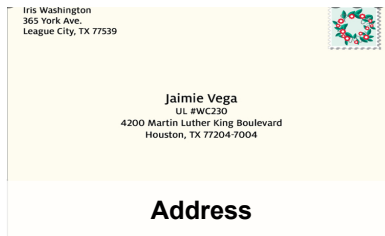
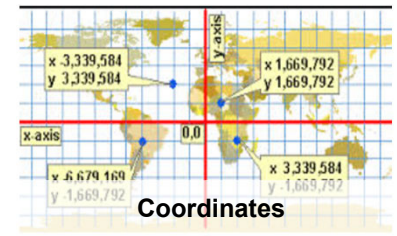
Personal locations through tagging / "check in"



3D models (BIM/ CAD drawings)



Real-time data



Address



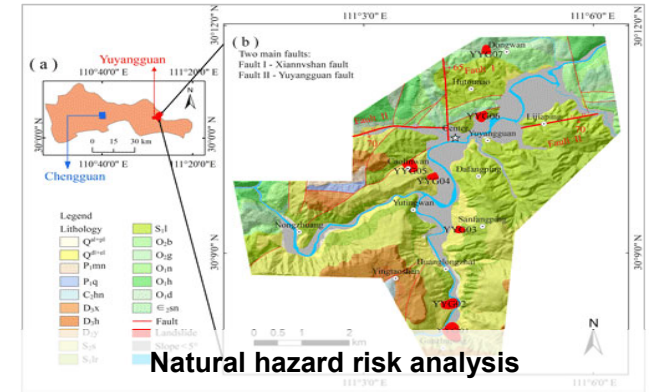
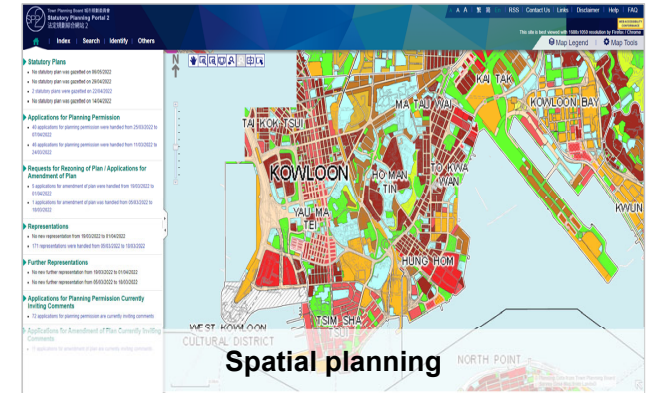
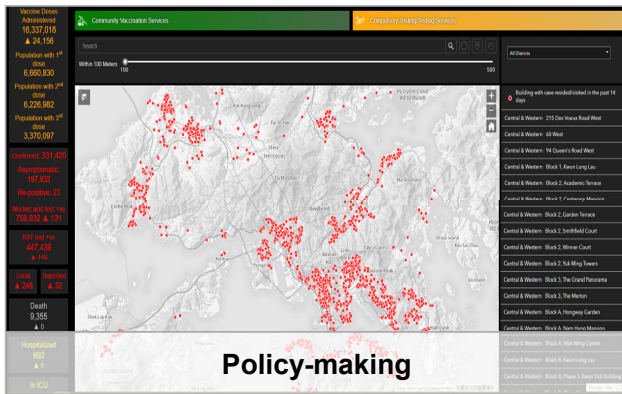
Census data



Sensor data

# Sharing of the CSDI Journey from 0 to 2.0

Putting spatial data to good use brings convenience in life and generate insights for policy making / business decision



# Sharing of the CSDI Journey from 0 to 2.0

If relevant data are available, we can easily answer the **WHERE**, **HOW** and **TO WHAT EXTENT**.

**BUT** the availability of up-to-date, easy to access and standardized spatial dataset is to be improved:



## Technical Challenges

- Multiple sources of data, lack of single source of truth
- Data not in digitally available format
- Dataset come in different format, standards, level of details
- Lack of interoperability
- Lack of definition of data / metadata



## Bureaucratic Obstacle

- Data are expensive
- Data are not made for sharing
- Process of obtaining data can be difficult
- Data are provided in piecemeals



## Changes in Mindset

- Data owners do not see value of their data to others
- Data users have no skills to use or interpret data
- Level of awareness is low – obstruct wider data usage and sharing

**Call for a practical solution to address the above challenges**

# Sharing of the CSDI Journey from 0 to 2.0

The Client appointed PwC to carry out a consultancy study to formulate the most effective CSDI development strategy for Hong Kong and address the issues facing sharing of spatial data.

## *Vision of CSDI*

To contribute to a liveable, competitive, innovative, sustainable and smart Hong Kong through:

Provision of convenient, easily accessible, high quality and up-to-date spatial information and services.








## *Mission of CSDI*

Maximise innovation, knowledge and value creation for Government, business and community.



## *Key Components*

-  Spatial information and services sharing portal
-  Data and technology
-  Funding
-  Capacity building, outreach and partnership
-  Effective governance framework

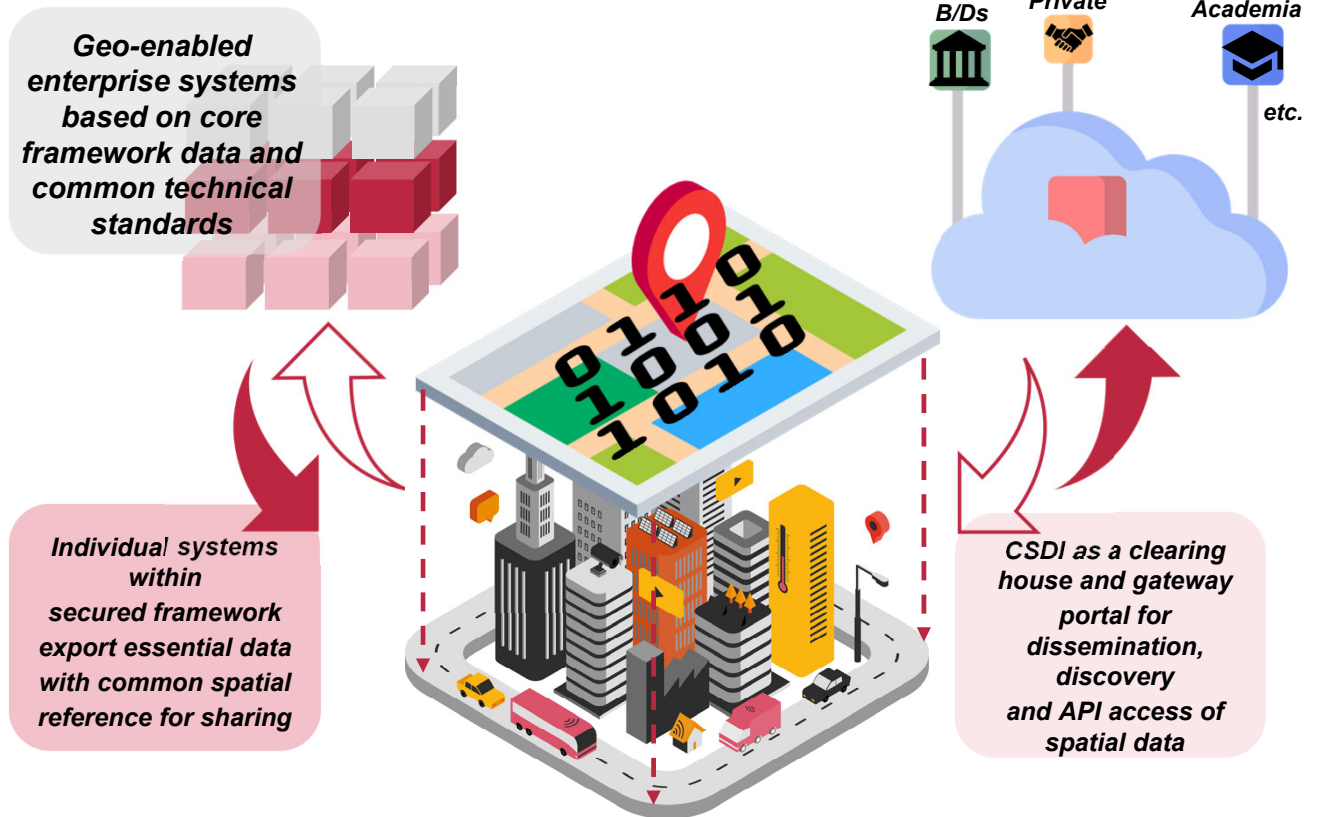
# Sharing of the CSDI Journey from 0 to 2.0

CSDI's applications are far-reaching, spanning across policy framework, institutional setup, technical standards and operational platform for the coordinated and adaptive planning, development and management of spatial data.

## WITHOUT CSDI



## WITH CSDI



# Sharing of the CSDI Journey from 0 to 2.0

*CSDI is not just a data infrastructure*

It is a holistic strategy covering governance arrangement, technical architecture, implementation plan, data structure, funding arrangement and partnership arrangements.

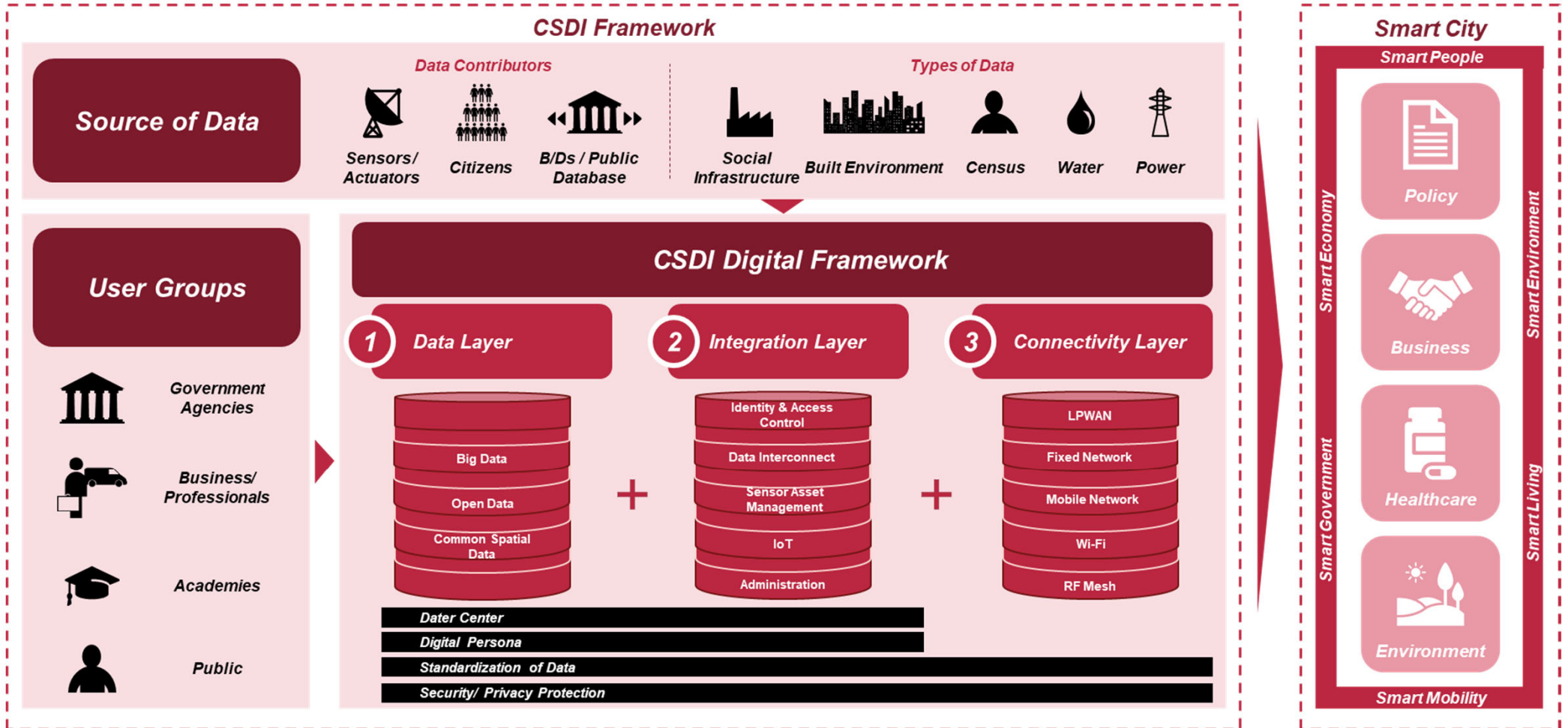


## Key priorities:

- Establish a dedicated project office to drive the development of CSDI
- Develop the technical infrastructure
- Formulate business rules and procedures for sharing spatial data
- Set up data standards
- Invest in promotion and awareness raising across different sectors of HK

# Sharing of the CSDI Journey from 0 to 2.0

The success of CSDI in driving Smart Hong Kong is governed by an ecosystem of users, data, software and hardware.



# 2

## Looking Ahead – CSDI Future Roadmap



# Looking Ahead – CSDI Future Roadmap

## *A refreshed perspective of CSDI*

The objective of the Consultancy Study is to conduct current situation analysis and review current policies relating to CSDI development so as to **facilitate formulation of strategies and measures for the continual development of CSDI to encourage public and private sectors to share more spatial data** and develop more applications using spatial data with a view to **boost further the digital economy** in Hong Kong; and

## *Scope of Work by PwC*



Research on Chinese Mainland and overseas situation of latest development trends, overseas legislation, development of SDIs



Undertake gap analysis on the implementation of 5 building blocks



Demonstrate the viability of benefits of CSDI to non-government sector of Hong Kong



Collect stakeholder feedback and aspirations for future development of CSDI



Recommend further strategy for CSDI to meet the requirements and measures to further the development of CSDI and implementation plan



Promote CSDI to selected stakeholders to introduce the new strategy and way forward

## *Desired Outcome*



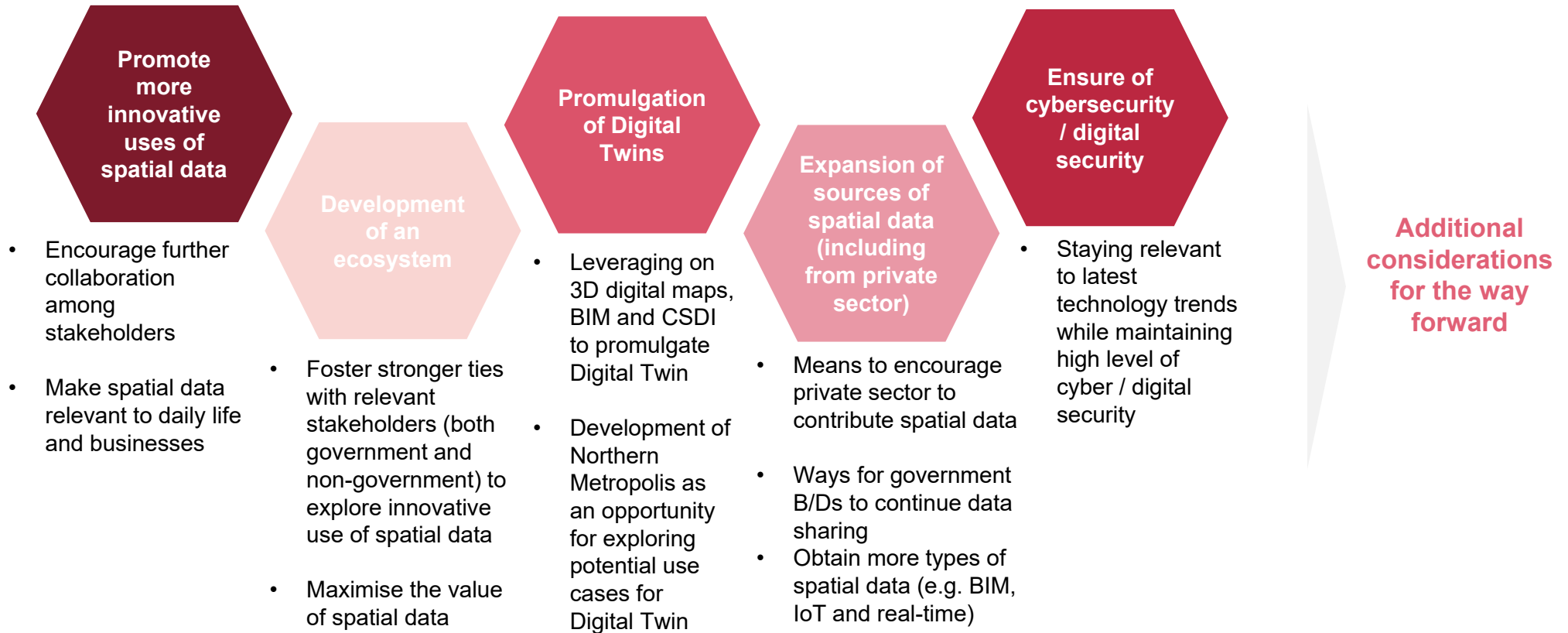
**Updated strategy to sustain the development of CSDI to:**

**Stay relevant in the latest technology trends, be in par with overseas comparators / experience, contribute to digital economy and make spatial data more accessible**

# Looking Ahead – CSDI Future Roadmap

## Guardrails for future CSDI development

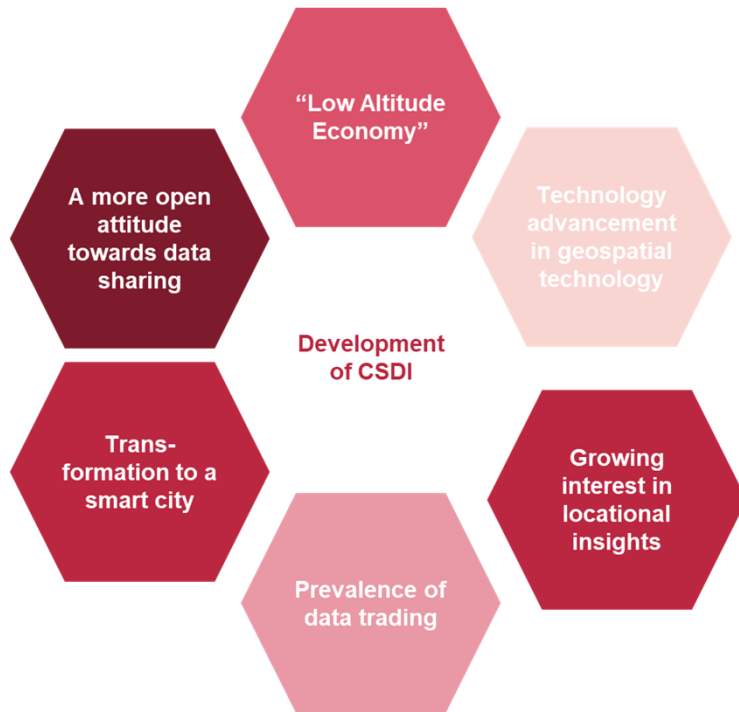
### One Government Approach



# Looking Ahead – CSDI Future Roadmap

Major trends that have shaped the context of CSDI development

## Changes in the market landscape



## Increasing provision of spatial data and downloading of spatial data via CSDI Portal



# Looking Ahead – CSDI Future Roadmap

*Increasing adoption of spatial data in business decisions have led to growing interests and usage of CSDI as an “authoritative single source of truth”*

## Financial Services

### Use Scenario

- Risk assessment (physical risks, climate risks etc.)
- Sustainability-related disclosure and assessment
- Financial planning / calculation and scenario analysis

### Data Types For Analysis



Climate Data



Property-related data



Census data

## Built Environment

### Use Scenario

- Urban planning and development
- Building and infrastructure management
- Environmental impact assessment
- Scenario analysis

### Data Types For Analysis



Environmental Data



3D Building Model



Geology



Census data

## Logistics

### Use Scenario

- Supply chain management
- Route optimization
- Warehouse management

### Data Types For Analysis



Real-time traffic information



Consumer and supplier data



Warehouse inventory and locations

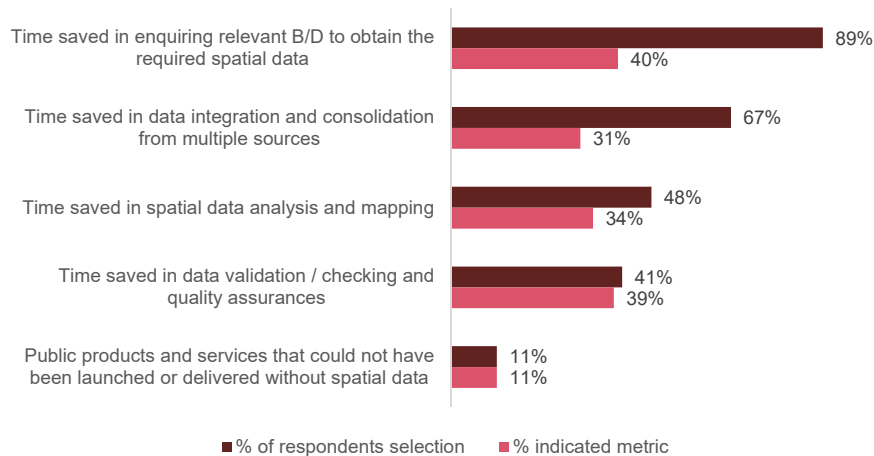
# Looking Ahead – CSDI Future Roadmap

*CSDI is widely recognised as saving times and leading to productivity gain*



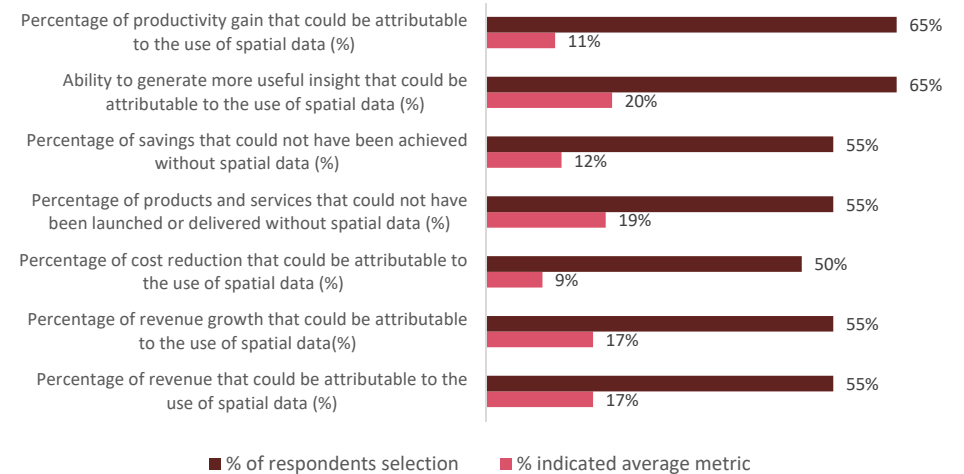
## For Government B/Ds

- **Time saving** is the most prominent benefits (by approx. 90% of B/D using spatial data)
- Significant time saving - **40%** time saving in **acquiring spatial data** and **31%** time saving in **consolidating data**
- CSDI as an **effective conduit** of spatial data



## For Private Sector

- **Productivity gain and generating more insights** are the most prominent benefit (both identified by 65% of respondents)
- **11% of productivity gain** and generating insights with an **average increase of 20%**
- CSDI could help with productivity gain and generating insights



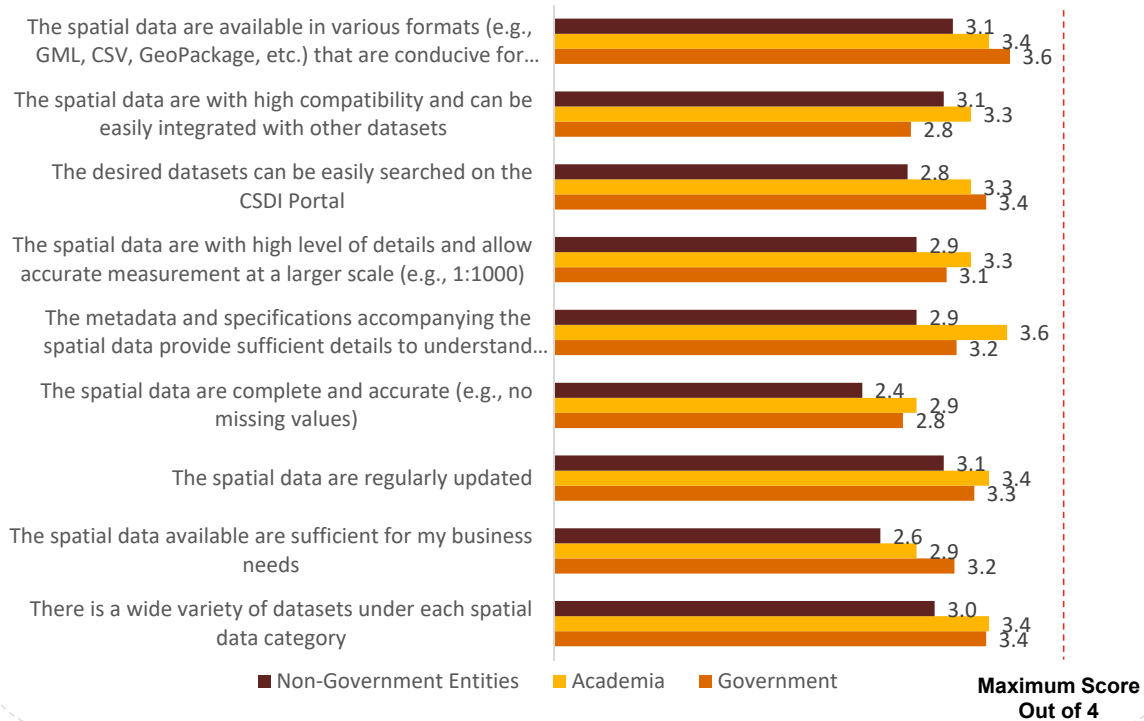
# Looking Ahead – CSDI Future Roadmap

*The survey results have provided insightful understanding of stakeholders' assessment of the CSDI Portal to understand their perspectives which are essential to inform the future development direction of the CSDI*

## User Experience of CSDI

### Scoring Dimensions of CSDI User Experience (Rated Out of 4)

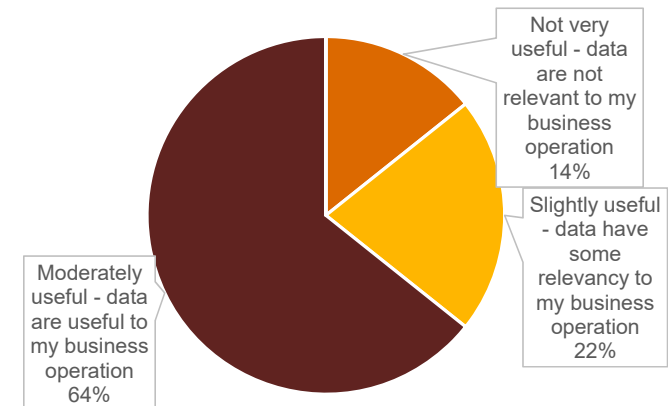
(Private Sector n = 14, Academia n = 7, Government n = 11)



## Key Insights

- Private sector has aspiration for better user experience
- Private sector also expect wider variety of relevant data

### Relevance of CSDI Datasets to the Private Sector Respondents



# Looking Ahead – CSDI Future Roadmap

## Reference for Hong Kong



### Latest policy and legislation to develop SDI

SDIs are regarded as a strategic digital infrastructure (all)

Governments lead the work of setting principles, policies and partnership development (all)

More matured jurisdictions are driving development of applications and taxonomy (UK)

Resources and support are key promoting wider use of SDIs and spatial data within governments and for private sector (UK/SG)



### Organisational development to propel and promote SDIs

Centralised body (e.g. a commission / office) to drive the development of SDIs and use of spatial data (all)

Capacity building activities are critical roles of centralised body (SG)

More application / theme-based approach to drive the development of spatial data applications and SDIs (UK/SG)



### Mechanism for data sharing within government and with non-government users

Use of a “data agent/trader” to help address the need for spatial data in the private sector (AU)

Reliance of partnership model for expanding the source of spatial data (UK/SG)

Developing a glossary for terms and definitions of geospatial data elements to facilitate easier communication (UK/SG)

Encourage intra-government departmental cooperation to simplify administrative processes and accelerate platform development (UK/SG)



### Application of spatial data in analytics and wider uses

All jurisdictions are keen to explore the use of Digital Twin and / or CIM - all start with pilot and proof-of-concept (all)

To better ensure readiness, more policies and use cases are being explored through studies and pilot cases (all)



### Management arrangement for spatial data

Mandatory sharing of data of importance, such as Underground Utilities data (UK/ CN)

Data standards to be applied more flexibly subject to domains and types of data (UK/SG)

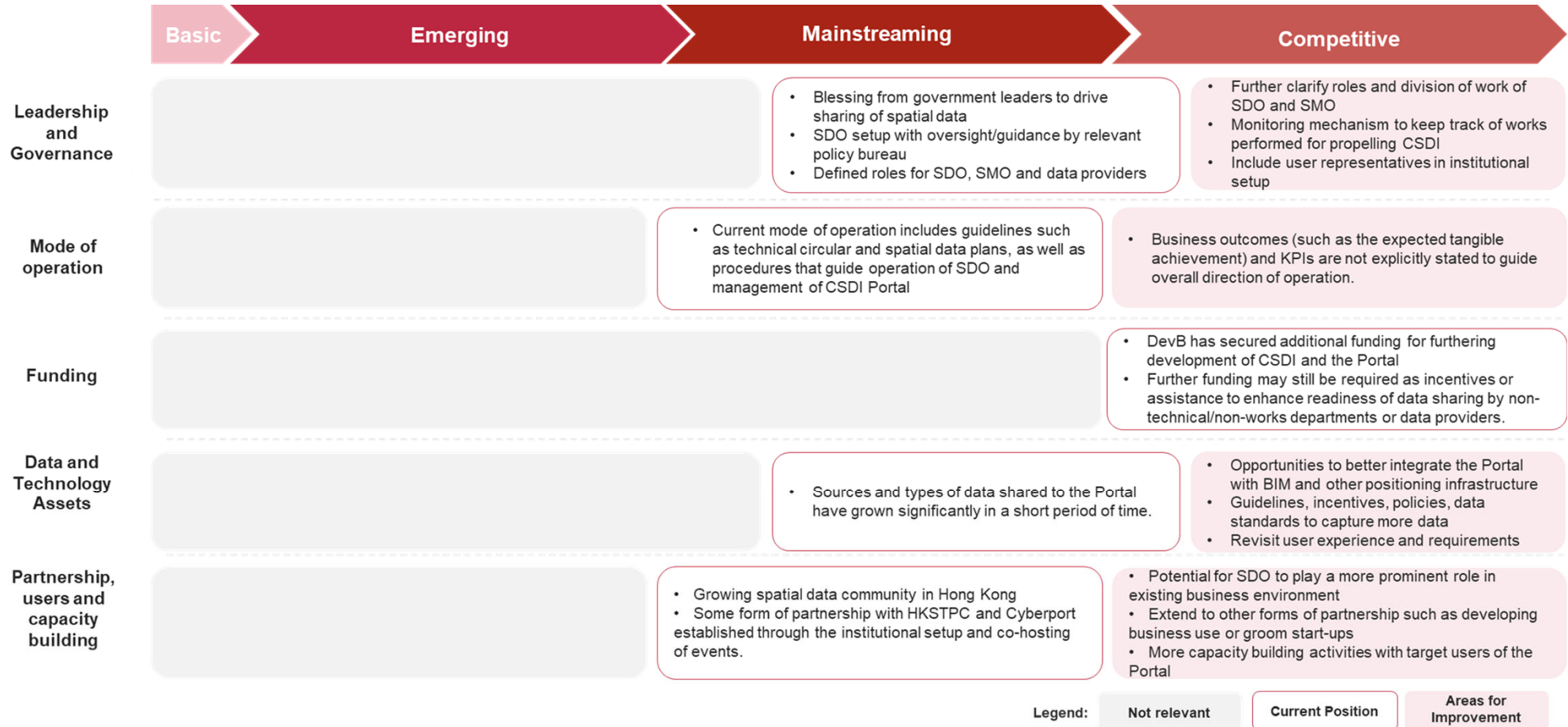


### Technology trends and integration of spatial data with other technologies

BIM / AI / IoT / geo-analytics as value-adding services / features, and where SDI bring synergies (all)

# Looking Ahead – CSDI Future Roadmap

*We have assessed the development stage of CSDI as a whole in terms of the five building blocks*



# Looking Ahead – CSDI Future Roadmap – Key Recommendations

*Based on the stakeholders views and assessment of CSDI development, the following illustrates our key recommendations for the way forward*

## Leadership and Governance

The DevB continues to serve as the “home” for CSDI and SDO to continue the momentum and upholding / improving established mechanism, which also aligns with overseas experience



- DevB plays the role as a governing body **and a dedicated office to push the momentum of CSDI’s development**



- Ensures a **consistent and coherent approach** in the continuous development of the CSDI platform and spatial data initiatives

Potential inclusion of representatives from relevant non-government stakeholders (from academia, NGOs, commercial sector) in relevant committees and working groups



- **Inclusive approach to recruit non-governmental sector players** will be conducive to the long-term development of CSDI



- Strategies and initiatives could be better tailored to diverse users and **engender more data sharing opportunities or creation of use cases**

# Looking Ahead – CSDI Future Roadmap – Key Recommendations

*Based on the stakeholders views and assessment of CSDI development, the following illustrates our key recommendations for the way forward*

## Fundamental and Common Sharable Data

Sharing of spatial data could be by theme or by policy outcomes, which would provide a purpose to data contributors and mandate for sharing



- **Provide a purpose** to data contributors and **motivation** for sharing relevant datasets for value creation



- Data contributors will understand how their **collected data will fit into the broader narrative**, fostering **closer engagement and ownership**

SDO could follow a theme-based approach and collaborate with industry organisations to collect aggregated data that are being shared within the businesses



- A theme-based approach helps aligning goals with the private sector to **gather high-priority datasets**



- Businesses may be more receptive in sharing spatial data if they perceive the potential benefits in creating theme-based initiatives that may **in return benefit themselves**

# Looking Ahead – CSDI Future Roadmap – Key Recommendations

*Based on the stakeholders views and assessment of CSDI development, the following illustrates our key recommendations for the way forward*

## Operation and Technology

Provide more value-adding services (e.g., data cleaning and manipulation, spatialise data) for Government B/Ds; and encourage partnership with external service provider(s) (potentially of a data agent) as a way to assist data owners and data users in the private market



- Foster a more **sustainable approach** to data management and processing with external help



- Facilitate smoother **data access and sharing for private market players** with external data agent acting as a mediator to communicate and standardise data

And  
/ OR

## Funding and Charging

Funding support to non-works B/Ds to incentivise data sharing and improve readiness for sharing



- Provide **resources and / or funding support** for B/Ds who are less familiar with the use of spatial data to help with the preparation of spatial data



- Aims to **promote and cultivate a collaborative environment** that drives information sharing

# Looking Ahead – CSDI Future Roadmap – Key Recommendations

*Based on the stakeholders views and assessment of CSDI development, the following illustrates our key recommendations for the way forward*

## Capacity Building, Outreach and Partnership

Identifying opportunities to demonstrate or build network with industries that are likely to use or benefits from spatial data, such as financial services industry, social welfare services or hospitality;



- Leverage **established synergies with various partnering organisations**, such as universities, HKSTPC, Cyberport, to organise events / promotional exhibitions for promoting the use of spatial data

Set up a showcase section to share real-life use cases and applications to demonstrate existing achievements of using CSDI datasets



- By **curating and sharing use cases**, the public and the private sector may be inspired to use optimise the use of CSDI datasets for fostering innovation

Identify within the Government, user departments that would be willing and able to conduct joint promotion with DevB or the SDO to promote CSDI from a user perspective



- **Identify key champions and partner with user government departments** could enable a more effective approach to create new practical applications or use cases to highlight the value and impact of spatial data

# Looking Ahead – CSDI Future Roadmap – Key Recommendations

*KPIs are proposed to measure the performance of CSDI in terms of impacts*



## Measurement in terms of economic impact

Quantifiable economic value-add to demonstrate contribution to economic activities

*Follow the funding application cycle*



## Measurement in terms of user experience

Collection of user feedback and usefulness of data available to track level of satisfaction

*Could be done annually or at appropriate interval*



## Types and number of beneficiaries / contributors

The reach of CSDI to various users in non-government sector

Number of active users of CSDI to determine user base

*Could be done annually or at appropriate interval*



## Measurement in terms of productivity gain / savings

Savings from data discovery, formatting etc.

*Follow the funding application cycle*

**Note:** Operational performance is also important, data such as number of outreach activities, number of registered users, number of products or tools developed etc. should also be captured

# 3

## Value of Spatial Data for Selected Industries



# Value of Spatial Data for Selected Industries

*We have tailor-made a framework to understand the quantifiable benefits and cost that are brought by the CSDI platform to selected industries in the context of Hong Kong's economy*

## Quantifiable Benefits brought by the proposed CSDI strategy to selected sectors in the economy of Hong Kong

### Tangible Economic Benefits:

1. Total economic impact contributed by revenue generated / increase in the private sector organisations as a result of using spatial data from the CSDI
2. Cost reduction for operating with better business planning / investment decision with spatial data provided by the CSDI

vs.

## Quantifiable Cost of providing spatial datasets on the CSDI, and maintaining and developing the platform

- Manpower involved in the whole data cycle (from data collection, cleansing, standardisation and integration to fine-tuning datasets upon publication on the CSDI platform)
- Manpower involved in the maintenance and the updating of the CSDI platform



Other qualitative benefits that may not be articulated in numbers such as enhanced accuracy at work

## Input for calculations

- Our framework referenced the experience and impact assessments conducted by other countries in estimating the **economic and social benefits** brought by geospatial data or related initiatives
- Based on the **inputs by respondents in the survey** and the information provided by the DevB on manpower costs, the quantifiable benefits and costs are calculated respectively to understand the impact of CSDI to the economy

# Value of Spatial Data for Selected Industries

*The survey results have provided valuable insights into the impact created from the use of spatial data and the CSDI platform, in which we have tailored a framework to extrapolate their contribution to selected industries in value-added terms (GDP contribution)*

## Economic Impact from the Use of Spatial Data

### Direct Impact

- % of revenue increased / enabled as a result of using spatial data in business operation

### Indirect Impact

- Additional economic impact generated as a result of the organisation's direct economic impact, in which the beneficiary organisation will also purchase goods and services as inputs into production within the local economy

### Induced Impact

- Impact arising from the expenditure and beneficiaries (throughout the supply chain) on other goods and services in Hong Kong from direct and indirect impact

## Calculation of Value Added in Selected Industries (GDP-by-industry)

### Economic Impact from the Use of Spatial Data

With the average **revenue increase collected in our survey for each industry, the % will be used for calculating the economic impact** generated by organisations of different sizes in the industry

X

### CSDI Contribution Factor (%)

The overall contribution factor of CSDI across different industries gathered from our survey will be multiplied

X

### Extrapolation Factor to the Wider Industry

#### Number of Establishment

The number of organisations based on their organisaitonal size in the industry will be multiplied

#### % of Orgainsation Using Spatial Data

Assumption on the proportion of organisations using spatial data will be applied

X

#### % Using Spatial Data Experience Revenue Increase

Gathered from survey results, the overall % of organisations experiencing revenue increase across industries of using spatial data will be multiplied

#### % Using CSDI Spatial Data

A conservative estimation that 10% of organisations will adopt CSDI spatial datasets in their business operation

# Value of Spatial Data for Selected Industries

*Based on our stipulated methodology and the inputs collected from the survey results, we have extrapolated the results to understand the GDP contribution of spatial data and CSDI platform to the selected industries*

## Key Inputs

- The categorisation of respondents are in accordance with the **C&SD definition**, in which relevant statistics are benchmarked for the calculation of annual revenue growth of respondents (% of revenue growth obtained from survey) and the **extrapolation of the industry's value add**
- Real, estate activities; and architectural, surveying and engineering services are grouped together under the building, construction, and real estate sectors since they fall under the same umbrella sector
- The economic contribution of spatial data and the CSDI platform is pivoted against **the value-add (in GDP terms) of the respective industries**, in which the last column illustrates the % of GDP enabled by the CSDI

Industry	Total GDP Enabled by Spatial Data (A)	Total GDP Enabled by CSDI (B)	Total GDP in the Industry (C)	% of GDP Enabled by spatial data (A ÷ C)	% of GDP Enabled by the CSDI (B ÷ C)
Information and communications	\$6,644,302,525	\$234,029,515	\$102,858,746,000	<b>6.46%</b>	<b>0.23%</b>
Transportation, storage and courier services	\$14,374,340,076	\$506,301,425	\$217,775,671,065	<b>6.60%</b>	<b>0.23%</b>
Utilities (Electricity and gas supply)	\$971,661,533	\$195,568,181	\$34,873,575,000	<b>2.79%</b>	<b>0.56%</b>
Building, construction and real estate sectors (incl., real estate activities; and architectural, surveying and engineering services only)	\$791,229,959	\$27,869,165	\$134,097,015,000	<b>0.59%</b>	<b>0.021%</b>

# Value of Spatial Data for Selected Industries

*A similar exercise has been conducted to understand the cost saving benefits that are brought by spatial data and the CSDI for the respective industries*

## Key Inputs

- Comparatively, the magnitude of contribution in cost savings is **less impactful than its enablement in revenue growth**, given the spatial data's versatility in application and service development or support
- Relevant statistics are benchmarked from the C&SD data for the calculation of cost savings of respondents (% of cost savings obtained from survey) and the **extrapolation of the industry's operating cost**
- Similarly, the total cost reduced as a result of using spatial data and the CSDI platform is **pivoted against the industry operating expenses of the respective industries**, in which the last column illustrates the % of operating cost reduced by CSDI



Industry	Total Cost Reduction by Spatial Data (A)	Total Cost Reduction Contributed by CSDI (B)	Total Operating Cost in the Industry (C)	% of Operating Cost Reduced in the Sector by Spatial Data (A ÷ C)	% of Operating Cost Reduced by CSDI (B ÷ C)
Information and communications	\$812,738,331	\$28,626,746	\$122,280,724,000	0.7%	0.023%
Transportation, storage and courier services	\$5,373,229,175	\$189,259,025	\$551,532,366,419	1.0%	0.034%
Utilities (Electricity and gas supply)	\$688,439,940	\$138,563,627	\$45,895,996,000	1.5%	0.30%
Building, construction and real estate sectors (incl., real estate activities, architectural, surveying and engineering services only)	\$5,792,573,184	\$204,029,406	\$486,390,746,000	1.2%	0.042%

# Value of Spatial Data for Selected Industries

*There is still much untapped economic potential to be materialised in other industry sectors through further improving the adoption and use of spatial data to which CSDI can be an effective and authoritative conduit*

**Continue to deliver relevant, accurate and high-quality CSDI datasets**

**Showcase the benefits** of CSDI datasets through use cases

Explore collaboration with the private sector to encourage **data sharing**

Encourage the public and private sector **utilisation and adoption of CSDI datasets**



4

Q&A Session



5

A.O.B



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