For discussion
on 28 November 2023

Legislative Council Panel on Development

Development of Common Spatial Data Infrastructure portal

PURPOSE

The Common Spatial Data Infrastructure (CSDI) is one of the key components underpinning the smart city development. This paper briefs Members on the progress of the development of CSDI[1], and seeks Members' support for our proposal to increase the non-recurrent commitment for the development of CSDI portal by $160 million, i.e. from $150 million to $310 million, so as to enable the ongoing development and enhancement of CSDI.

PROGRSS OF DEVELOPMENT OF CSDI

2. As a key initiative under the Smart City Blueprint for Hong Kong, CSDI aims to provide users (government departments as well as public and private organisations) with an information infrastructure to promote the sharing of spatial data and support the development of various smart city operations. With a non-recurrent funding of $150 million, the Spatial Data Office of the Development Bureau (DEVB), with support from the Innovation, Technology and Industry Bureau (ITIB), has been taking forward the development of CSDI since 2020. Lands Department (LandsD) provides support on the day-to-day management and operation of CSDI and related tools.

Launch of the CSDI portal as scheduled with a higher-than-expected number of datasets

3. The CSDI portal was launched for use by bureaux/departments (B/Ds) in May 2022 and was open to members of the public in December 2022. Since its launch, the CSDI portal has provided a platform for the effective integration, exchange and sharing of standardised spatial data by government departments, businesses, academia and the public. The portal

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[1] LegCo LC Paper No. CB(1)1006/20-21(07) refers ("Progress Report on the Development of the Common Spatial Data Infrastructure")

has also provided an essential frame linking different spatial datasets through locational information which can help analyse a large volume of data, present data analysis in informative forms geographically, and support the development of innovative applications.

4. The CSDI portal is widely receptive, as demonstrated by the volume of spatial dataset downloads from the portal and the Application Programming Interface (API) service calls supported by the portal for applications of different kinds. By end-October 2023, over 171 000 dataset downloads have been recorded. Moreover, the number of API service calls continues to grow, reaching over 930 000 000 requests[2].

5. The portal provides a wide range of spatial datasets. As at end-October 2023, over 740 spatial datasets from over 50 government departments have been made available free of charge through the portal, covering different areas including planning, lands, buildings, works, population, transport, etc. This number of datasets is substantially higher than 320 datasets in the original plan. To ensure reliability, accessibility and interoperability of spatial data, all datasets released in CSDI have to comply with the five CSDI standards, namely (i) geo-tagging of non-spatial data, (ii) documentation of data specifications, (iii) documentation of metadata, (iv) establishment of API, and (v) conversion of spatial data to an open and machine-readable format.

Benefits of CSDI

6. With the spatial data available in CSDI, users can enjoy the standardised datasets and APIs. Such spatial data can benefit the daily life of the general public, assist government departments in the provision of public services, and help drive the development of innovation and technology (I&T).

<u>Bringing convenience to daily life</u>

7. Many apps equipped with “map" functions on mobile phones involve spatial data. Spatial data of CSDI assists development of apps not only for general users, but also people with specific needs. For instance, the smart navigation tool named “Walking Assistant” for Energizing Kowloon East Office’s MyKE App can assist visually impaired persons or people in need to seamlessly navigate indoor and outdoor with audio instruction. The “Walking Assistant” has been well recognised by the industry and was

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[2] This figure refers to the total number of API calls since the release of Map API in October 2020. It includes over 390 000 000 requests for such calls since the launch of CSDI for public use in December 2022.

awarded with the "Gold Award in Hong Kong ICT Awards 2023: Smart Mobility (Smart Transport)". We will continue to explore with relevant organisations to scale up the tool to cover a larger area beyond selected areas in Kowloon East, so as to enable those in need to commute more freely.

Facilitating improvements to public services

8. CSDI is also useful in assisting B/Ds in delivering public services. For instance, spatial data provided by CSDI can assist deployment of fire engines and ambulances in route planning, and can also assist in search and rescue operations in remote areas. To facilitate interoperability of spatial information, DEVB has also developed a web-based tool namely "GeoSpatialiser" late last year for geo-referencing textual addresses. About 6 200 000 uses have been recorded. Separately, LandsD has recently released the online application platform for 3D digital maps namely "Open3Dhk", which makes use of the spatial data and API services available in CSDI. Users can interactively view photorealistic 3D city models and plan hiking and cycling routes with the help of the intuitive profiles graphs and gradient measurement tool.

Supporting the development of digital economy

9. Spatial data can have its commercial value unleashed, boosting the development of digital economy, when its use is coupled with value-added and innovative features. For instance, a start-up makes use of the LiDAR point clouds available in CSDI to create a realistic street car-racing game providing extraordinary experience for players. As another example, the 3D spatial data available in CSDI enables an I&T company in the aviation field to create a vivid and accurate simulated flight environment. Besides, professionals, consultants and private practitioners in many sectors, such as real estate, construction-related business, banking, insurance, make use of spatial data available in CSDI directly or indirectly in their day-to-day businesses. Academia also make use of spatial data in various studies and presentation of their research results in form of maps.

Capacity Building and Promotion

10. DEVB has been collaborating with B/Ds, including the Civil Service College, to conduct various kinds of training and workshops for colleagues in B/Ds, so as to nurture their mind sets and encourage them to apply spatial data in their daily businesses.

11. To reach out to a wider segment of the public, DEVB has also run roving exhibitions, established the Geospatial Lab (GeoLab), and conducted competitions in the past 2 years to encourage primary, secondary and tertiary students to make good use of spatial data in problem solving or development of applications with practical value. DEVB has reached out to over 30 000 participants through these activities in the past 3 years.

12. DEVB has also strived, through the GeoLab which commenced operation in July 2021, to nurture a geospatial community, and to encourage the young generation to explore ideas of harnessing the potential of spatial data to improve quality of life and work out business opportunities. Since its operation, the GeoLab has organised more than 270 activities such as talks, workshops and group visits. Members of Digital Economy Development Committee and LegCo Subcommittee on Matters Relating to the Development of Smart City, for example, visited GeoLab in October 2022 and May 2023 respectively and gave positive support to the CSDI initiative and the GeoLab.

UPCOMING DIRECTIONS

13. With the successful launch of the CSDI portal, we will continue to promote the development of CSDI in four major directions as set out below.

Explore more sources of spatial data

14. Spatial data is an important resource available in CSDI. Going forward, DEVB will explore more different sources of spatial data for CSDI, including spatial data from organisations outside the Government, spatial data from Building Information Modelling (BIM), and real-time data from Internet of Things (IoT). Besides, we will explore incorporating into CSDI a more diversified range of real-time data, e.g. localised air quality, real time carpark and electric vehicle chargers vacancy data, to meet the demand of the public and the trade. To this end, we will strengthen collaboration with potential data contributors, assisting them to "spatialise" their datasets and ensure that such datasets are in compliance with the required CSDI standards for sharing.

Build up a spatial data ecosystem

15. To promote a wider use of CSDI, we will continue to enhance the user interface of the CSDI portal, and develop and introduce more user-friendly common tools and applications to help build up a spatial data ecosystem.

16. In taking forward the CSDI initiative, we will maintain close connections with stakeholders in the I&T field such as Cyberport and Hong Kong Science and Technology Parks. We will also strengthen the partnership with Construction Industry Council, non-government organisations, academia and professional bodies in promoting more innovative use of spatial data and technology. We will also continue to tap the advice of the Common Spatial Data Advisory Committee in formulating measures to take forward the development of CSDI.

17. Apart from enhancing the collaboration with different sectors, we will, within the Government, continue to strengthen the support provided for B/Ds to develop and share common applications. DEVB has recently been collaborating with the Home Affairs Department (HAD) in exploring some spatial analytics "proof of concepts" projects to support its daily work in Sham Shui Po District by making use of various spatial data. They involve, for example, the use of demographic data and information about pedestrian network in identifying suitable location for Community Living Room. We will continue to explore with district offices and B/Ds on more use of spatial analytics and applications close to people's daily livelihood.

18. DEVB will step up the capacity building and implementation services for B/Ds and data contributors, and conduct public engagement activities, with targets including but not limited to those players in the I&T sector. When planning for these activities, we will take into account the views of stakeholders with a view to better addressing the needs of different stakeholders.

Promote innovative application and "Digital Twin"[3]

19. To further unleash the potential of CSDI, we will strive to engage stakeholders in exploring and promoting the use of spatial data for more innovative applications. With the spatial data provided by CSDI as a backbone, different sectors would be better placed to perform more analytics and develop more applications to fit their business needs. For instance, with BIM increasingly common for development projects, it is anticipated that spatial data from BIM will be a key data source for mega projects such as Northern Metropolis, and can be coupled with the use of innovative technology such as IoT, artificial intelligence, big data analytics. DEVB will explore with B/Ds the room for innovative application of spatial data and technology, throughout the development cycle from planning to city

[3] A digital twin is a digital representation of a physical object, or process, contextualized in a digital version of its environment.

management. We will also collaborate with relevant stakeholders to explore piloting "digital twin" in new development areas, so as to help project and city management, etc.

20. DEVB will strengthen the collaborations, share our CSDI story and exchange experience with relevant institutions in the Mainland (including other cities in the Greater Bay Area) and other places[4], with a view to better understanding the latest trend and directions in the use of spatial data, including the experience in taking forward "digital twin".

Ensure cyber security

21. As an on-going commitment, DEVB will keep in view the functionalities of CSDI and make enhancements, with a view to enabling it to have the capacity to cope with the growing demands and meet the latest technological requirements. In particular, we attach great importance to upholding the security of the spatial data on CSDI. Hence, we would monitor the latest developments on the front of cyber security, so as to ensure that the platform can operate in a secure manner.

FINANCIAL IMPLICATIONS

22. We estimate that the unspent balance for the commitment will drop to $8 million by the end of 2023-24 financial year. To enable the on-going operation of CSDI while taking forward new enhancement / applications, we **propose** to increase the non-recurrent commitment by $160 million (i.e. from the current $150 million to $310 million) to meet the expenditure for the operation and development of CSDI in the next five years (i.e. from 2024-25 to 2028-29). A breakdown of the funding requirement is set out in the table below. Subject to the Panel's support, we will seek approval from the Legislative Council for the increase in commitment in accordance with the established procedures.

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[4] In 2023, for example, DEVB received in April a delegation from Shanghai Municipal Commission of Economy and Informatisation, and received in September a delegation from Saudi Arabia, and had exchange of experience in CSDI development and explore collaboration opportunities with the delegations. DEVB also took part in an international conference of spatial data industry in the United States in July 2023. More recently, DEVB shared the CSDI development in the 2023 Digital Twin Pioneer City Innovation Conference organized by Shenzhen Municipal People's Government in November 2023 in Shenzhen.

Items	($'000)					
	2024-25	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**Total**
(a) Procurement of Implementation and Enhancement Services for CSDI Development[5]	11,000	12,000	12,000	12,000	12,000	**59,000**
(b) Procurement of Cloud Services (Software and Infrastructure)[6]	10,000	10,000	11,000	11,000	12,000	**54,000**
(c) Procurement of Implementation Services for Data Contributors[7]	5,400	5,400	5,400	5,400	5,400	**27,000**
(d) Promotion, Training and Engagement[8]	2,000	2,300	2,400	2,600	2,700	**12,000**
(e) Contingency	3,200	3,200	3,200	3,200	3,200	**16,000**
Total	**31,600**	**32,900**	**34,000**	**34,200**	**35,300**	**310,000***

* including the estimated expenditure of $142 million up to 31 March 2024

ADVICE SOUGHT

23. Members are invited to note the progress on the development of CSDI, and to give support to the proposed increase in the non-recurrent commitment for the development of CSDI portal.

Development Bureau
November 2023

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5 Including the procurement of professional information technology services maintaining and enhancing the operation and security of CSDI

6 Including the procurement of Government Cloud services and subscription of software services supporting the functions of CSDI (including data processing and publishing).

7 Including the procurement of services to support data contributors to "spatialise" their datasets and to ensure their compliance with the required CSDI standards; and develop common spatial applications for sharing.

8 Including various promotional work (such as roving exhibitions and promotion materials), training, events run in collaboration with stakeholders.