Mapping and Geospatial Data

Maps are used for public administration, town planning, housing, land management and development, as well as leisure purposes by the Government, private sectors and the general public. The Survey and Mapping Office (SMO) of the Lands Department (LandsD) is the survey, mapping and geospatial data agency of the Government. It is committed to the provision of accurate and up-to-date map and geospatial data to support the rapid development of Hong Kong. The SMO is developing a full-fledged 3D Digital Map and providing technical support for the operation of the Common Spatial Data Infrastructure (CSDI) so as to help develop Hong Kong as a Smart City.

Hong Kong Geodetic Datum: The Hong Kong 1980 (HK1980) Grid coordinates based on the Hong Kong 1980 Geodetic Datum are shown on most topographic maps. Geodetic coordinates (latitude and longitude) and the Universal Transverse Mercator (UTM) Grid coordinates based on the World Geodetic System 1984 (WGS84) are also shown on other small scale topographic maps. A booklet "Explanatory Notes on Geodetic Datums in Hong Kong" published by the SMO describes the map projection formulae and datum conversion parameters. It can be downloaded from the SMO Geodetic Survey webpage (www.geodetic.gov.hk/en/gi/refdoc.htm). In addition, the web-based transformation tools on the website (www.geodetic.gov.hk/en/gi/transformation.htm) and the Coordinates Transformation Application Programming Interface (API) via the Open Data Portal (data.gov.hk/en-data/dataset/hk-landsd-openmap-coordinates-transformation-api) provide instant conversion services among different geodetic datums.

Early Topographic Mapping: The early urban areas in Hong Kong and Kowloon were mapped at a scale of 1:600 with no contour or height information. In the 1950s, the New Territories areas were mapped at a scale of 1:1 200 with the intention to replace the old Demarcation District sheets produced in the early 1900s. These maps eventually evolved into a predominant planimetric record, though they only supplemented rather than replaced the Demarcation District sheets.

A mapping contract for the whole territory by aerial photography and photogrammetric plotting commenced in 1962 and was completed in 1971. It provided maps at 1:600 scale, with five-foot contours, covering the then Hong Kong Island, Kowloon and New Kowloon. All but the hilly areas and outlying islands of the New Territories were also mapped at 1:1 200 scale, with 10-foot contours.

Following the adoption of the metrication policy in the early 1970s, the SMO converted about 3 000 sheets of the topographic map to 1:1 000, with metric contours and spot levels. From 1994 to early 1997, the SMO embarked on a mapping programme to survey those previously unmapped hilly areas and remote islands by photogrammetric method.

SMO Map Products: The SMO produced various types of map products in both digital and paper forms, which are widely used by government departments and the public for various purposes. The 1:1 000 topographic map covering the entire territory of Hong Kong is the most popular map series. It is always used in city planning, land administration and construction development. Based on the 1:1 000 topographic map, other medium to small scale topographic maps, such as 1:5 000, 1:20 000, 1:50 000 and 1:200 000 are also produced by means of cartographic generalisation and symbolisation. Digital versions of the 1:1 000, 1:5 000, 1:10 000 and 1:20 000 topographic maps have become open data and the public can use them for free.

Apart from topographic maps, the SMO also produces various special maps such as the electronic map book e-HongKongGuide, (www.landsd.gov.hk/en/resources/mapping-information/ehkg.html), Countryside Series for hiking, Satellite Image Map, and Orthophoto Map. There are also other special maps prepared with information from other government departments, such as Geological Map depicting both the solid and superficial geology of Hong Kong, and the 1:5 000 Airport Height Restriction Plan, 1:50 000 Hong Kong Helicopter Flying Chart and the 1:100 000 Hong Kong Local Flying Chart showing civil aviation information.
For more information of the SMO map products, please visit www.landsd.gov.hk/en/survey-mapping/mapping.html.

Sale and Dissemination of Map Products: The online platform **Hong Kong Map Service 2.0 (HKMS 2.0)** (www.hkmapservice.gov.hk) provides functions of searching and ordering of different types of map products, including digital Cadastral Survey Records and map products other than those mentioned above.

In addition to HKMS 2.0, the SMO Map Sales Outlets (www.landsd.gov.hk/en/about-us/sales-outlets.html) provide another channel for ordering the SMO map products. The flagship, Map Publications Centre, Hong Kong, also serves as the Map Library for the public to inspect and purchase historical maps.

3D Digital Maps: The SMO develops and maintains the full-fledged 3D Digital Map, which comprises 3D Visualisation Map, 3D Indoor Map, and 3D Pedestrian Network. 3D Digital Maps enhance the understanding of multi-level spaces of a modern city, support urban planning and land management, and promote the development of various applications. The 3D Digital Map, being one of the major datasets of the CSDI, is being released to the public by phases since 2022. The public may preview and download these products at the **CSDI Portal** (portal.csdi.gov.hk) and the Open Data Portal (data.gov.hk).

Geospatial Data: Apart from the 3D Digital Map, the SMO provides various types of geospatial data, such as digital topographic and land boundary maps, aerial photographs, Geo-reference Database and GeoCommunity Database. Many utility companies, engineering consultants, IT practitioners, education institutes and government departments are using these geospatial data in their daily business activities. The SMO has made most of the geospatial data available for free commercial and non-commercial uses. Open geospatial data facilitates the development of digital economy, realising the visions of the Smart City Blueprint for Hong Kong 2.0 and enabling digital transformation of the whole society.

Open digital map products are available at HKMS 2.0 (www.hkmapservice.gov.hk). More open geospatial data can be downloaded from the LandsD's website (www.landsd.gov.hk/en/spatial-data/open-data.html), the CSDI Portal (portal.csdi.gov.hk) and the Open Data Portal (data.gov.hk).

Geospatial Portals and Services: In view of the rising geospatial awareness and increasing public needs for open spatial data, the LandsD has developed and launched different geospatial portals and services.

Open3Dhk: The Open3Dhk (3d.map.gov.hk) is an online application platform showcasing applications of the latest 3D Digital Map. It integrates 3D Indoor Map, 360-degree street-level panoramic images (known as "Streetscape 360") and other spatial data available on the CSDI Portal with 3D Visualisation Map to provide land, weather, environment, and transportation-related information.

GeoInfo Map: The GeoInfo Map (www.map.gov.hk) is a common geospatial information platform with integrated geospatial data from different sources for convenient access by the public .

MyMapHK: MyMapHK is the first SMO mobile map app for iOS, Android and Huawei platforms. It is an all-in-one map app with six themes - Map, Hiking, Old Hong Kong, Election, P5Me (Please Find Me) and Offline Map. It provides up-to-date bilingual base maps of Hong Kong and integrates more than 300 types of data related to public facilities. "Report Map Issue" allows users to report map-related issues to the SMO, while P5Me enhances hiking safety by the automatic sharing of user's location to preset persons when there is no change in the position of his/her mobile phone after a preset period of time.

VoiceMapHK: VoiceMapHK is a digital inclusion mobile map application making use of the voice-over feature of smartphones to facilitate the use of geographic information by the visually impaired users.

Map Application Programming Interface (Map API): The Map API provides web mapping services allowing the innovation and technology sector and the academia to readily display the latest map in their own web applications, expediting the development of more innovative map applications to support the development of Smart City. To facilitate the use of 3D Digital Maps, the SMO also newly launched the 3D Visualisation Map API, the 3D Indoor Map API, and Streetscape 360 API services in addition to the existing ones.

CSDI Portal: The CSDI Portal is an entry point under the CSDI initiative led and implemented respectively by the Development Bureau and the LandsD for supporting smart city development of Hong Kong. The Portal serves as a one-stop platform to open and share the Government's geospatial data. Users may explore and download from the Portal numerous types of geospatial datasets in different themes provided by various government departments. The Portal also provides various types of applications and tools to facilitate analyses and use of geospatial data by the public. The CSDI Use Cases in the Portal showcase real examples that leverage the open spatial datasets available on the Portal through storytelling and dashboard applications, which provide interactive platforms for the public to walk through spatial data driven narratives.

District-based Spatial Information Dashboard: The District-based Spatial Information Dashboard features simple interactive data visualisation tools for presenting the district-based analytic results that are of interest and provide valuable insights to the public.

Geo-tagging Tool: The Geo-tagging Tool is also a convenient web-based tool enabling the public, who do not have advanced technical skills in operating a geographic information system, to make their own geospatial data by correlating their data with positional information.

GeoAddress Finder: The GeoAddress Finder is a web-based application that aims to assist in location search and locating GeoAddress and promote the interoperability of address information across both government and community systems. Based on a building name, a facility name or an address, users can obtain a GeoAddress QR code and share it with others through various social media channels.

GeoSpatialiser: The GeoSpatialiser is another web-based application providing location search and address lookup services for users to geo-code multiple address records.

For more information about the geospatial portals and services, please visit (www.landsd.gov.hk/en/spatial-data/geospatial-infomation-services/geospatial-portals.html).

Enquiry: Enquiries about the map products and services provided by the SMO can be made at 2231 3187, or through e-mail at: smohq@landsd.gov.hk. For more information, please visit the LandsD's website (www.landsd.gov.hk).

GovHK Website: http://www.gov.hk
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