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# City Planning Labs

01 CPL



Swiss Confederation



Korea  
Green Growth  
Trust Fund



Global  
Partnership  
for Sustainable  
Development Data



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An aerial photograph of a city, likely Singapore, showing a dense urban landscape with many buildings and green spaces. A semi-transparent white rectangular box is overlaid on the top half of the image, containing a quote and a name. The quote is in a black serif font and is enclosed in large opening and closing quotation marks. The name is in a smaller, black sans-serif font and is preceded by a short horizontal line.

*“At the core, planning fundamentals have not changed. However, advancements in geospatial and data technologies have ushered in exciting possibilities to improve the way we plan. New digital planning tools [...] are helping to provide better insights in planning, coordinate our work better across agencies, and improve work productivity.”*

– Ng Lang, CEO, URA Singapore

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# City Planning Labs

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## Building Data Foundations for Smarter, Sustainable Cities

The last decade has witnessed an urban data revolution, as cities globally have started mobilizing geospatial information to harness the potential of urbanization. Governments are transforming the way they operate with the conviction that **adding geospatial intelligence to urban service delivery systems will make it possible to do more with less.**

The use of geospatial information allows for accurate, targeted and evidence-based decision making, thereby enhancing public sector cost savings. It also paves the way for boosting socio-economic development in cities by connecting people with jobs and services. Other positive impacts of spatially informed planning and urban management include reduced traffic congestion, increased safety, and enhanced climate change resilience- in sum, it enables a better quality of life for all city residents.

Recognizing this, the World Bank's Technical Assistance program, **City Planning Labs (CPL)**, aims to strengthen the capacity of local governments to use geospatial intelligence for undertaking data-driven planning and urban management. CPL assists cities by developing **scalable and replicable tools that turn data into information and insights, while supporting the institutionalization and mainstreaming of data governance frameworks.** CPL's foundational interventions create an enabling environment for geospatial innovations, while helping partner cities deliver more efficiently on their core functions.

CPL interventions build on global good practices but maintain flexibility to allow customization to specific city and country contexts. CPL's products are modular, and allow for multiple entry points into the program based on the immediate needs and available resources of city governments. Most importantly, its framework and tools are **agile and adaptable** to cities of varying technical capacities.

Partners in the development of the CPL framework are Indonesian cities as well as the national government, who have collaborated to enhance the practicality of expert recommendations. Most importantly, CPL partner cities (Semarang, Denpasar, and Balikpapan) have pioneered the implementation of innovative products and approaches, actively contributing to make them relevant for urban local governments internationally.

Successes at the municipal level have been complemented by endorsement at the national level enabling the long-term sustainability of the initiative. For instance, national counterparts including the National Development Planning Agency (BAPPENAS), Ministry of Agrarian and Spatial Planning/ National Land Affairs (ATR/ BPN) and the Geospatial Information Agency (BIG) have encouraged the program to think at scale and transfer knowledge to build expertise within the country and replicate solutions without compromising innovation.

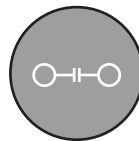


## Constraints to Data-Led Development

In many countries across the globe, municipal governments are responsible for providing a broad range of urban services. While larger, higher capacity cities may have the necessary human and financial resources to fulfill their functions effectively, most moderate to low-capacity cities in developing countries face institutional and technical capacity constraints to operationalizing data-driven planning and urban management. Based on the experiences in Indonesia, the CPL team has identified several generalizable obstacles, which our interventions aim to address:



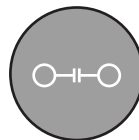
Lack of appropriate data governance frameworks and protocols for data production, management, utilization and data sharing, which exacerbates the issue of institutional silos



Absence of shared Fundamental Data Sets (FDS) within city line departments causing data duplication, inaccuracies, and ambiguous data custodianship



Inadequate technical and human resource capacity, which is a roadblock for organizations to embrace advanced technologies and improved processes

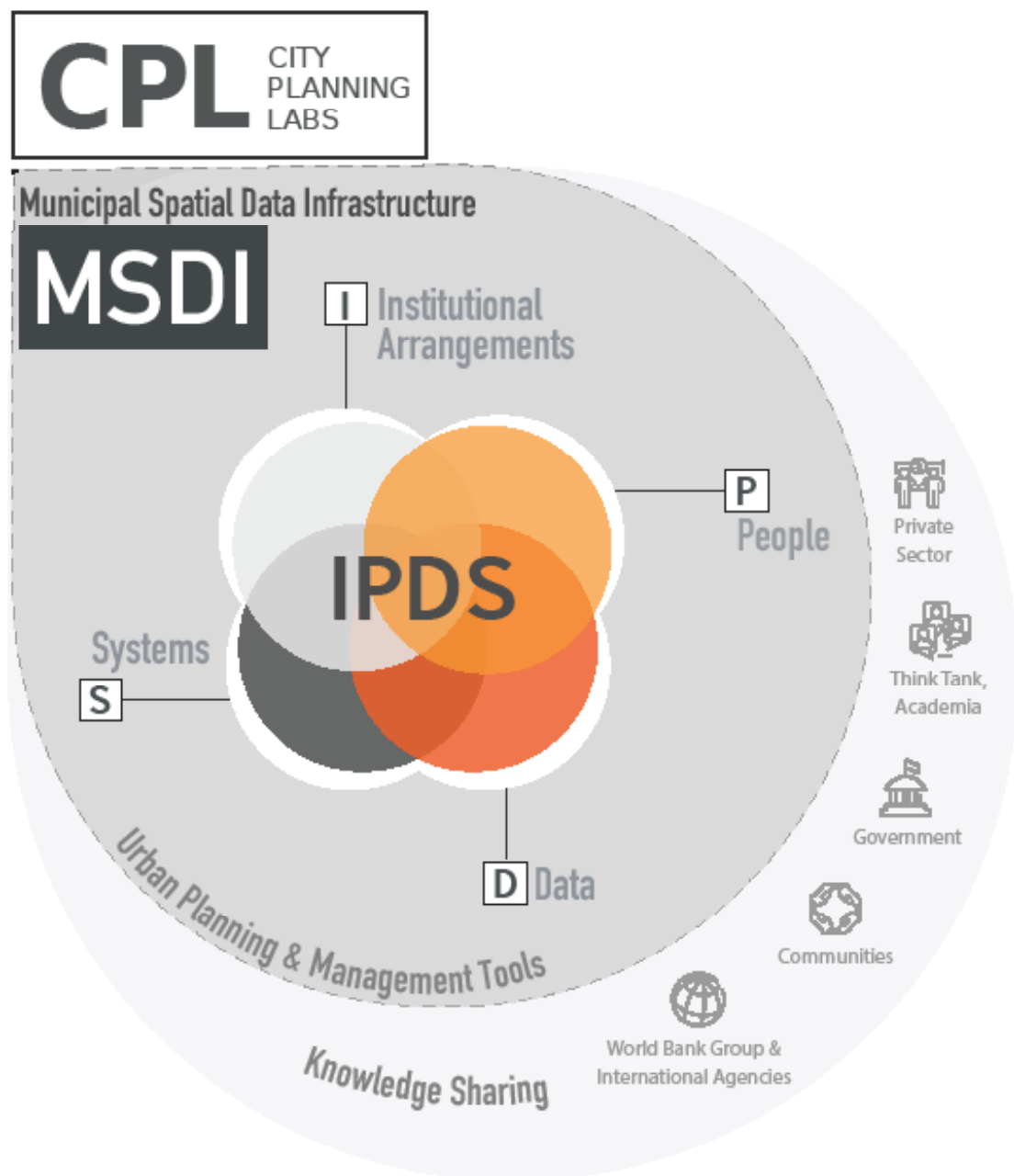


Absence of an Integrated Data Platform (Geoportal) to upload, access and utilize data for spatial planning, resulting in fragmented urban planning and service delivery

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# CPL Program: Products, Application, Toolkits

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# CPL has undertaken an ecosystem approach to develop and operationalize a robust Municipal Spatial Data Infrastructure (MSDI) in partner cities.

MSDI functions as the platform by which geospatial information can be organized, shared, and leveraged to tackle the many challenges of sustainable urban development. Human, legal and technical aspects are an integral part of the MSDI framework, and form the strategic investments needed by governments to support coordinated data driven planning efforts.

CPL's robust MSDI implementation strategy has four pillars: Institutional Arrangements, People, Data, and Systems (the IPDS framework). Each of these pillars have scalable and replicable toolkits that can be utilized to develop MSDI in any city across the globe. The components

are modular, allowing for multiple entry points for the establishment of a functioning MSDI. Opportunities and entry points are highlighted through the preparation of a MSDI Roadmap with an accompanying Monitoring & Evaluation framework, taking into account immediate needs and available resources of the city government.

An overview of the MSDI framework and its components is presented in the subsequent pages. In addition, a series of inter-related booklets provide a deep dive into MSDI operationalization and each of the contributing IPDS pillars.



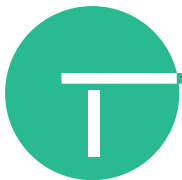
# CPL Flagship Product: MSDI

The operationalization of MSDI based on the MSDI Roadmap and IPDS implementation framework is CPL's flagship product.

Within this framework, the **Institutional Arrangements** component supports the development of regulatory frameworks and organizational structures to promote inter-sectoral coordination. It also encourages the establishment of protocols for data sharing across government, industry, and society; thereby increasing access to geospatial information. Such sectoral coordination is only successful if **People**, across line departments and even within communities, share the same

vision and develop their ability to utilize data for planning. An increase in geo-spatial skills further augments the ability of the city to collect, process, produce, manage and analyze **Data** to perform evidence-based urban planning. The last component of this framework aims at establishing ICT **Systems** that integrate spatial and tabular data within a single platform.

Such a platform provides a tangible space for the operationalization of data sharing policies established under the Institutional Arrangements pillar, and opens up the possibility of vertical integration of municipal and national spatial data infrastructure.



## Institutional Arrangements

Refers to the capacity of cities to develop and sustain formal policy, regulatory and governing structures that support geospatial related activities, and to the role of the city government in fostering the growth of the broader geospatial ecosystem.



## People

Refers to creating an awareness of capacity needs, and identifying gaps in human resource supply with respect to geospatial skills. It addresses the skills gap in the production, maintenance, and utilization of spatial data.



## Data

Refers to the current state of affairs on data availability, quality and related policies regarding formats, analysis and sharing of geospatial information. This diagnostic also considers the business case for investment in data and the extent to which the use of geospatial information can add value to existing line department Key Performance Indicators.



## Systems

Refers to software, hardware and physical IT-related infrastructure required to support MSDI. A key component lies in the adequacy, functionalities and user interface of the city-level Geoportals that combine GIS and spatially referenced tabular data.





# Urban Planning and Management Tools



Developing a robust MSDI allows for the seamless integration of Urban Planning and Management Tools such as [Urban Planning Tools \(UPTs\)](#) that simplify complex planning and urban management processes by providing data and methods for comprehensive assessments. Specifically, UPTs help cities analyze the patterns of urban growth and support the implementation of city-level strategic planning documents, such as the spatial and sectoral development plans. The tools do this by hosting spatial and quantitative data and performing a series of mathematical operations to output useful indicators for each set of scenario inputs considered. They also simplify consensus building since several actors can use a common platform to simulate their choices and compare performance results. CPL has customized two tools, the [Suitability Tool \(ST\)](#) and the [Urban Performance Tool \(UP\)](#). The ST tool helps identify optimal locations for the implementation of a specific policy or project while the UP tool forecasts the city's future performance by modelling specific policies or projects with a range of indicators.

In addition, CPL is also piloting the use of a Capital Investment Planning (CIP) tool. It is aimed at helping city officials make decisions on their capital investment projects by enabling them to incorporate spatial considerations in the prioritization process. The incorporation of spatial considerations in CIP can help ensure alignment between the city's capital investment plans and development needs (e.g., slum locations, flood-prone areas, land use plans).





# CPL Collaboration Knowledge Sharing

CPL prioritizes Knowledge Sharing across a gamut of actors including global peers and Indonesian cities through **study tours, conferences, workshops and toolkits prepared based on lessons learned from the CPL experience.** The target audience primarily includes (i) **other cities aiming to adopt MSDI** (ii) **South-South Knowledge Exchange (SSKE)**, and (iii) **other World Bank teams/international agencies.**



Operationalizing MSDI involves multiple actors and agencies at various levels of the government and a concerted effort across the short, mid, and long-term horizons.

This is only possible if a culture of collaboration is promoted and a collective sense of ownership is achieved.

As a result, collaboration is at the core of CPL's initiatives. For instance, formal data governance structures as well as roles and responsibilities are purposefully co-created in facilitated workshops involving all stakeholders. A similar approach underpins all aspects of the MSDI Roadmap and IPDS framework. Decisions arrived at through consensus ensure the sustainability and mainstreaming of the program.

Further, vertical-horizontal integration across the national and local levels are key to seamless execution. The [National Technical Working Group \(NTWG\)](#) established as part of CPL is another platform for collaboration across agencies at the national level. This group also informs the policy direction, focus of partner cities, and scaling-up process.

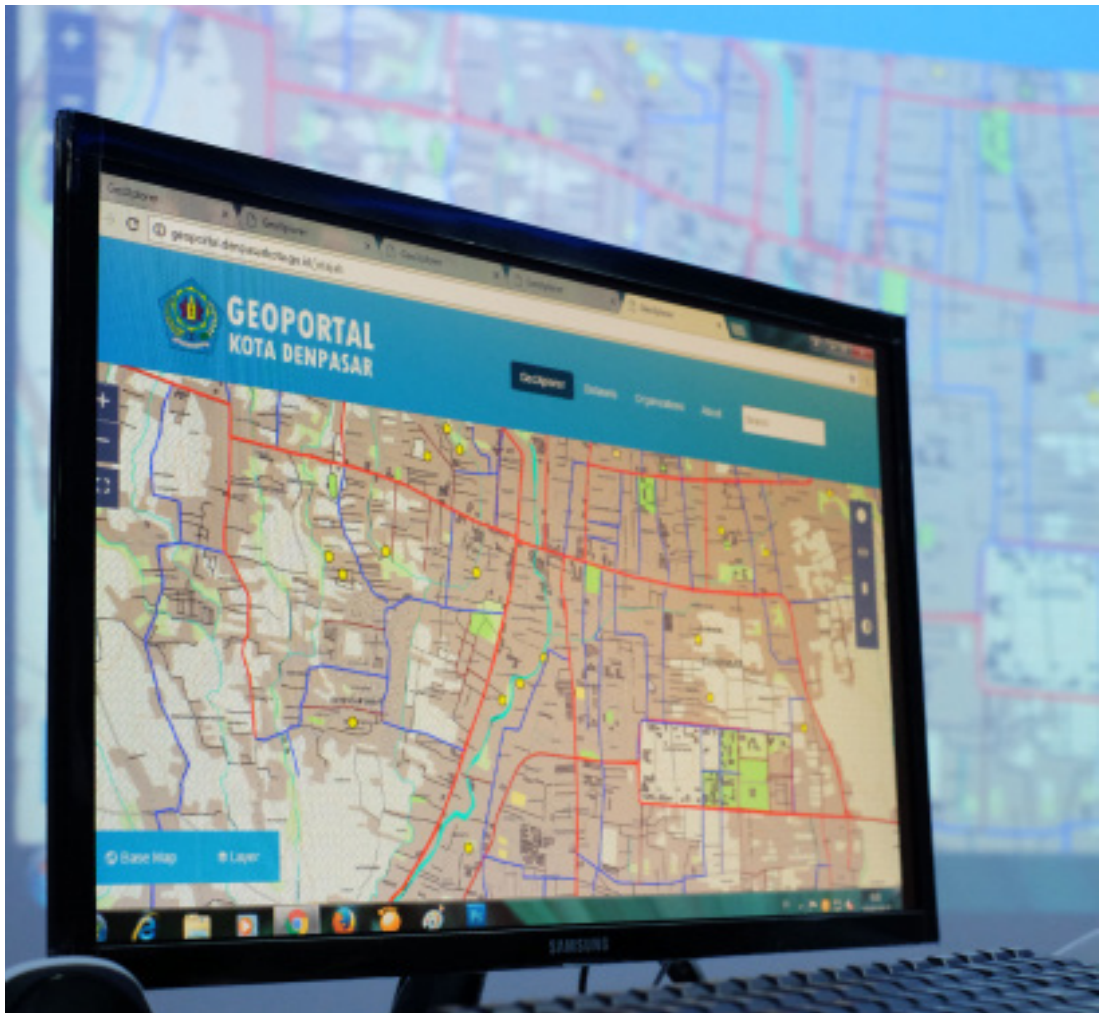
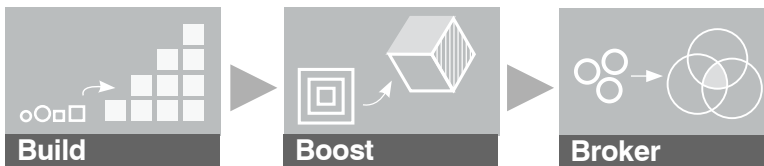
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# CPL Model:

## Built, Boost, Broker Framework

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CPL's approach is aligned with the **World Bank's Build, Boost, and Broker framework** as it builds and institutionalizes critical municipal spatial data foundations, boosts the capacity of city governments to utilize data for evidence-led planning, and brokers the relationships between city governments and the private sector to leverage innovation in technology.







## The CPL Series

This booklet is part of a series that offers a deep dive into the conceptual orientations, essential principles, approach and roadmap for introducing and operationalizing CPL in partner cities. Together, the booklets illustrate the process and knowledge gained through the CPL experience in Indonesia. The following booklets describe CPL's flagship product, the MSDI, and the four pillars that define it - Institutional Arrangements, People, Data, and Systems as well as Urban Planning and Management Tools i.e., Urban Planning Tools.

This **first booklet** provides a background on the City Planning Labs (CPL) program, its core objectives and an overview of the components, i.e., the Municipal Spatial Data Infrastructure (MSDI), Urban Planning Tools, and Knowledge Sharing strategy.

The **second booklet** elaborates on MSDI as one of CPL's foundational components. It briefly describes the components of the four pillared IPDS framework that operationalized MSDI in cities.

The **third booklet** focuses on Institutional Arrangements and emphasizes the importance of developing organizational structures, regulations and protocols to provide a robust grounding for operationalizing MSDI in cities.

The **fourth booklet** underscores the importance of People in terms of the need for awareness and skill building for local officials and other stakeholders to utilize geospatial data and administer data governance.

The **fifth booklet** refers to the current state of data availability and quality, and related policies regarding formats, analysis, and sharing of geospatial information.

The **sixth booklet** highlights the importance of ICT Systems that integrate spatial and tabular data within a single platform, enabling data sharing across agencies and communities.

The booklet on **Urban Planning Tools** provides details on two tools developed as part of CPL, (Land Suitability and Urban Performance tools) that aim to simplify complex planning and urban management processes and aid strategic planning and decision making.

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# CPL Product List

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## MSDI

### Rapid MSDI Readiness

#### Assessment

Survey instrument

### Geospatial Prioritization Survey

Survey instrument

### Deep-Dive MSDI Capacity

#### Assessment

Survey instrument and methodology document

### MSDI Roadmap

Step-wise methodology and resources for developing the MSDI Roadmap Collaboratively

Sample MSDI Roadmaps

### International Benchmarking

Summary of findings from ten global case studies of good practices across IPDS pillars

## Data Governance

### Spatial Information Policy: A Framework for Standards, Regulations and Protocols

Guidelines and template that define all MSDI components for which regulations are required

### Principles and Components of IPDS Framework

Definitions of the IPDS components and examples of inter-relationships between the four components

## Data Access Framework

Criteria for defining data access and methodology for consensus building across line departments of the city government

## Protocols for Data Sharing

Communication protocols and scenarios of communication between stakeholders of the city and the MSDI organizational structure for data sharing

## Standard Operating Procedures (SOP) for Data Management

Series of coordination protocols for data production, collection, processing, and dissemination

## Organizational Structure

### Organizational Framework

MSDI organogram supported by rationale and administrative action needed for setting up the MSDI organizational structure

### Roles and Responsibilities Guide

Detailed Roles and Responsibility statements for all key stakeholders

### Protocols for Inter-Departmental Coordination

Inter-departmental communication protocols for tasks initiated by MSDI coordinator, technical lead, geoportal lead, data contributors, data users

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## People

### GIS Competency Framework

Baseline list of roles and responsibilities of GIS analyst at various levels

### Geospatial Capacity Building Modules

Training modules on how to utilize spatial datasets and operationalize MSDI

### Urban Planning Tools Capacity Building Modules

Training modules on how to use the Suitability and Urban Performance Tools

## Data

### Data Inventory (DI) Survey

Survey instrument

### Baseline Fundamental Data Set (FDS) List

Reference List of FDS

### FDS Assessment Toolkit

An algorithm, accompanied by a markdown document/ codebook that explains how to use the tool, and the methodology behind the algorithm

## Systems

### Master TORs for Geoportal Development

Baseline ToR to guide the development of an open-source Geoportal

### Geoportal Source Code

Source code folder

## Urban Planning Tools

### Suitability Tool and Urban Performance Tool

The CPL series comprises of seven booklets including this one. The others are MSDI, Institutional Arrangements, People, Data, Systems and Urban Planning Tools.

The products listed here (and explained in detail in the respective booklets) have been developed by CPL and are available for use by any interested stakeholders.

**Interested in joining CPL?**

**Reach out to the CPL team!**

(contact details listed on the inside front cover)



