



Pre-Conference Seminar on Socio-Economic Value of Geospatial for National and Regional Development

SDI+

Smart Development Infrastructure for Sustainable Development and Investment

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Kuala Lumpur, Malaysia
August, 2017



Spatial Data Infrastructure (SDI)

Technology advances over the years made it technically possible for more people and organizations to be connected.....

GIS Projects



Stand Alone

GIS Systems



Coordinated

Distributed Networks



Cooperative

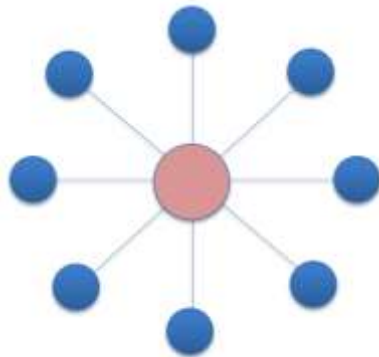
Public(s) Services



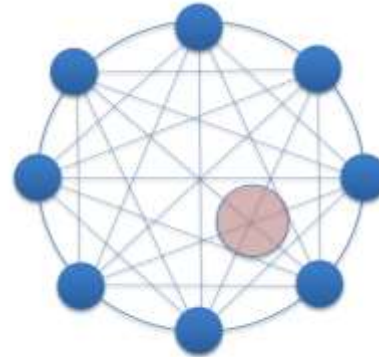
Cloud

We then had to invent new institutional and governance frameworks to take maximum advantage of these developments

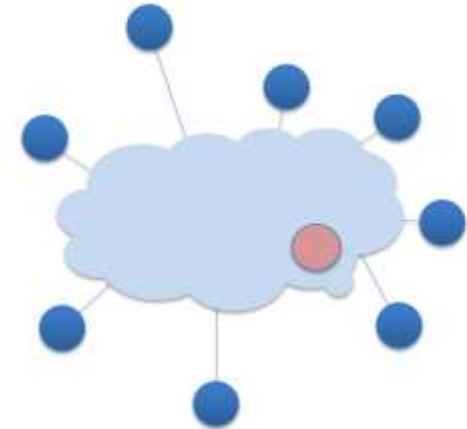
Organization Form & Function



Hub and Spoke



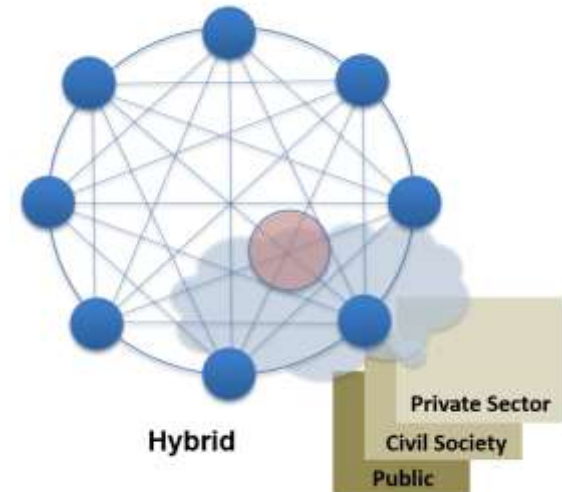
Orchestrated Distributed Network



Curated Cloud

Many different operational models for NSDI have been tried over the years, in part in response to new technological capabilities.

There is no “one size fits all” that is appropriate for every situation.



Hybrid

Private Sector
Civil Society
Public

Beyond Data and Human Capacity, there are institutional structural issues that need to be addressed.....

Institutional Ecology

Business Framework

- Mandated business area
- Business processes
- Change management

Technology Framework

- Data
- Application Software
- Computing Infrastructure
- Technical Staff Capacity

Institutional Framework

- Policies and Regulations
- Institutional Agreements
- Finance



Decision Making

Advisory

Analysis

Operations

Executive Leadership

Social

Environment & Infrastructure

Economic

Whole Government

Policy
Strategy
Regulatory
Institutional
Finance

Strategy and Policy

Interdisciplinary Technical Analysis , Planning, Coordination and Performance Management

??

KPI's

KPI's

KPI's

KPI's

KPI's

KPI's

KPI's

Strategic Plan

Strategic Plan

Strategic Plan

Strategic Plan

Strategic Plan

Strategic Plan

Strategic Plan

Interdepartmental analysis and coordination

Entity 1

Entity 2

Entity 3

Entity 4

Entity 5

Entity 6

Entity 7

Enterprise Info Solutions

Enterprise Info Solutions

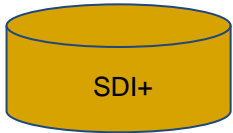
Enterprise Info Solutions

Enterprise Info Solutions

Enterprise Info Solutions

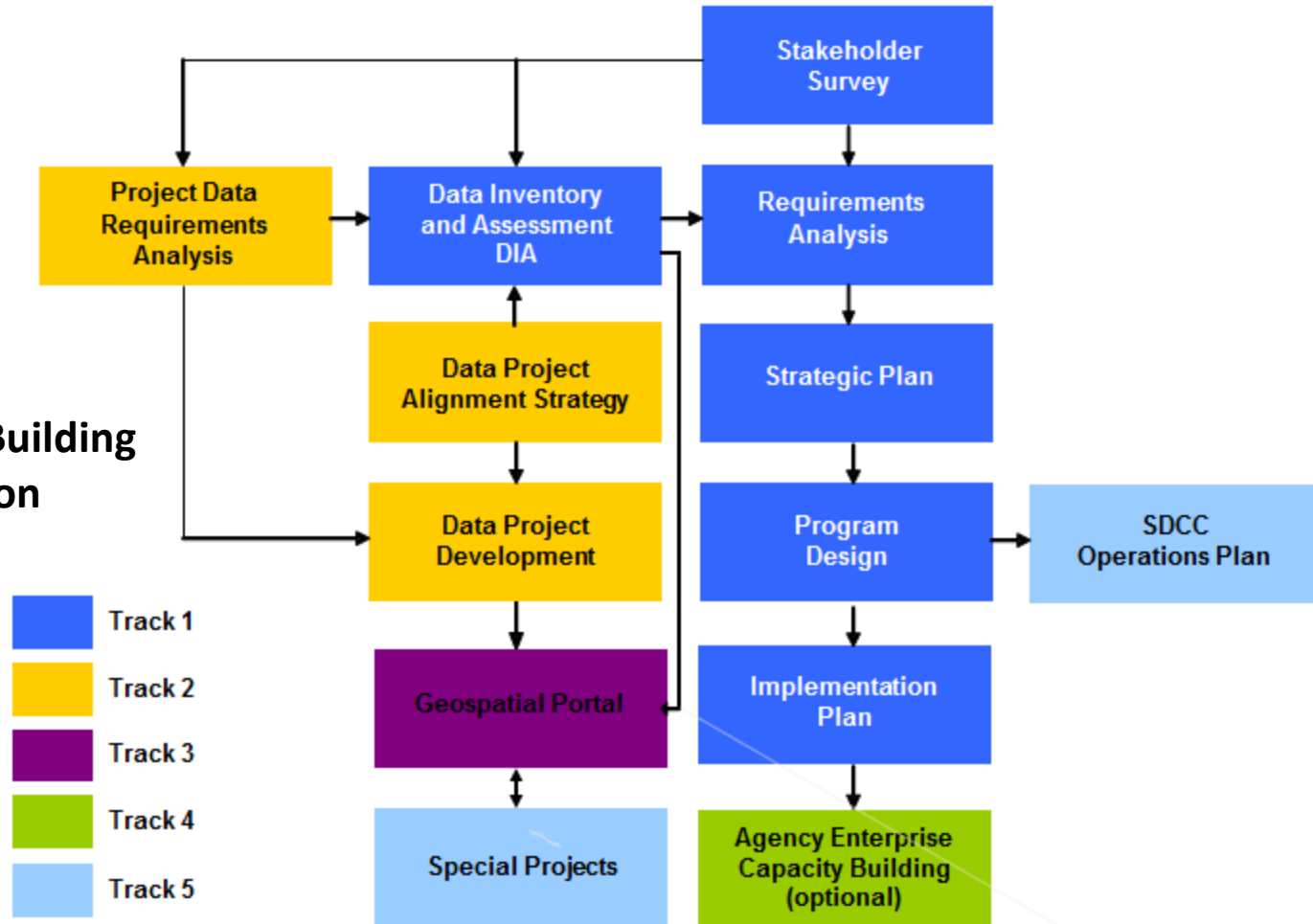
Enterprise Info Solutions

Enterprise Info Solutions

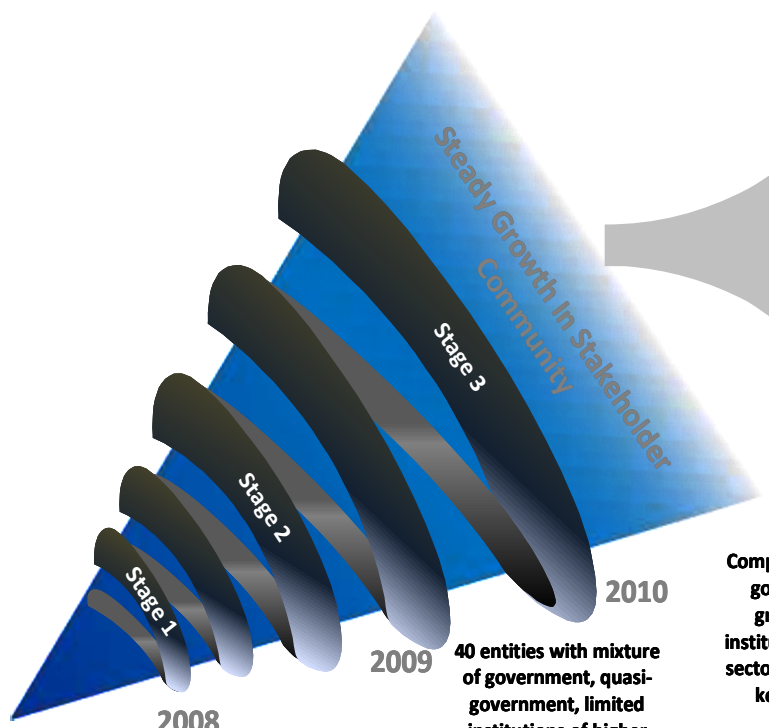


Typical Implementation Approach

Phase 1 – Foundation
 Phase 2 – Community Building
 Phase 3 – Transformation



Incremental Development Approaches



2007
8 original
government entities

2008
17 government and
quasi-government
entities

2009
40 entities with mixture
of government, quasi-
government, limited
institutions of higher
learning and private
sector

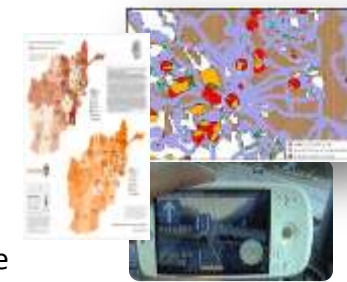
2010

2011
Complete absorption at
government level,
greatly increased
institutional and private
sector involvement plus
key international
engagements

New Ideas
and Methods

New Technologies
and Applications e.g.
Location Based Services,
Executive Dashboard, Mobile
Applications

2013
>65 entities involved, with
over 25 data providers,
580 layers accessible
through common
GeoPortal, common
services, and active
Technical Committee

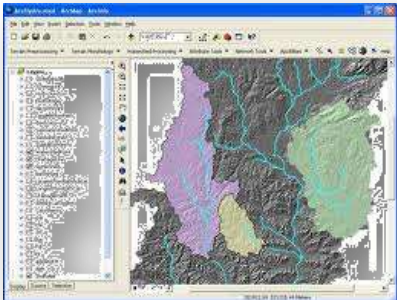


GIS technology is being used across nearly all sectors of the International Development field today....

Agriculture and Food Security



Water Security



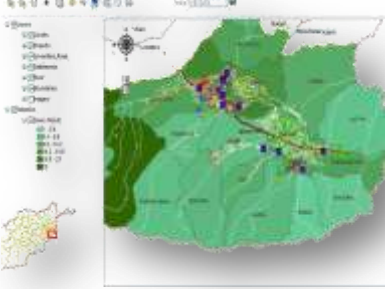
Humanitarian Assistance



Cadastral Survey and Land Registration



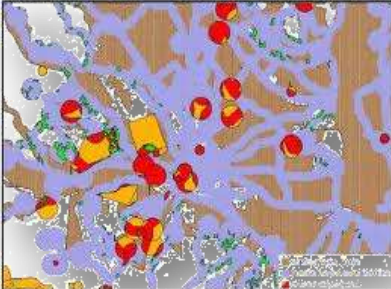
Project Monitoring and Evaluation



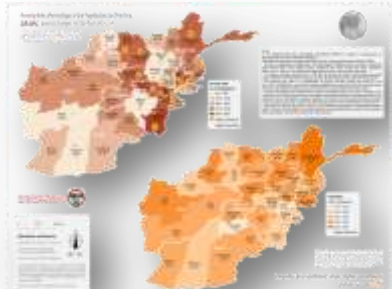
Disaster Management



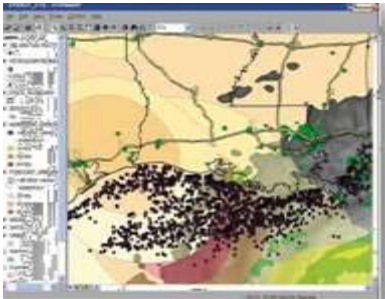
Demining



Poverty Mapping



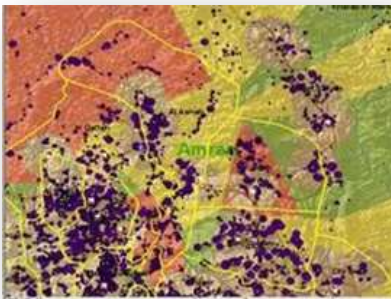
Renewable Energy



Reconstruction

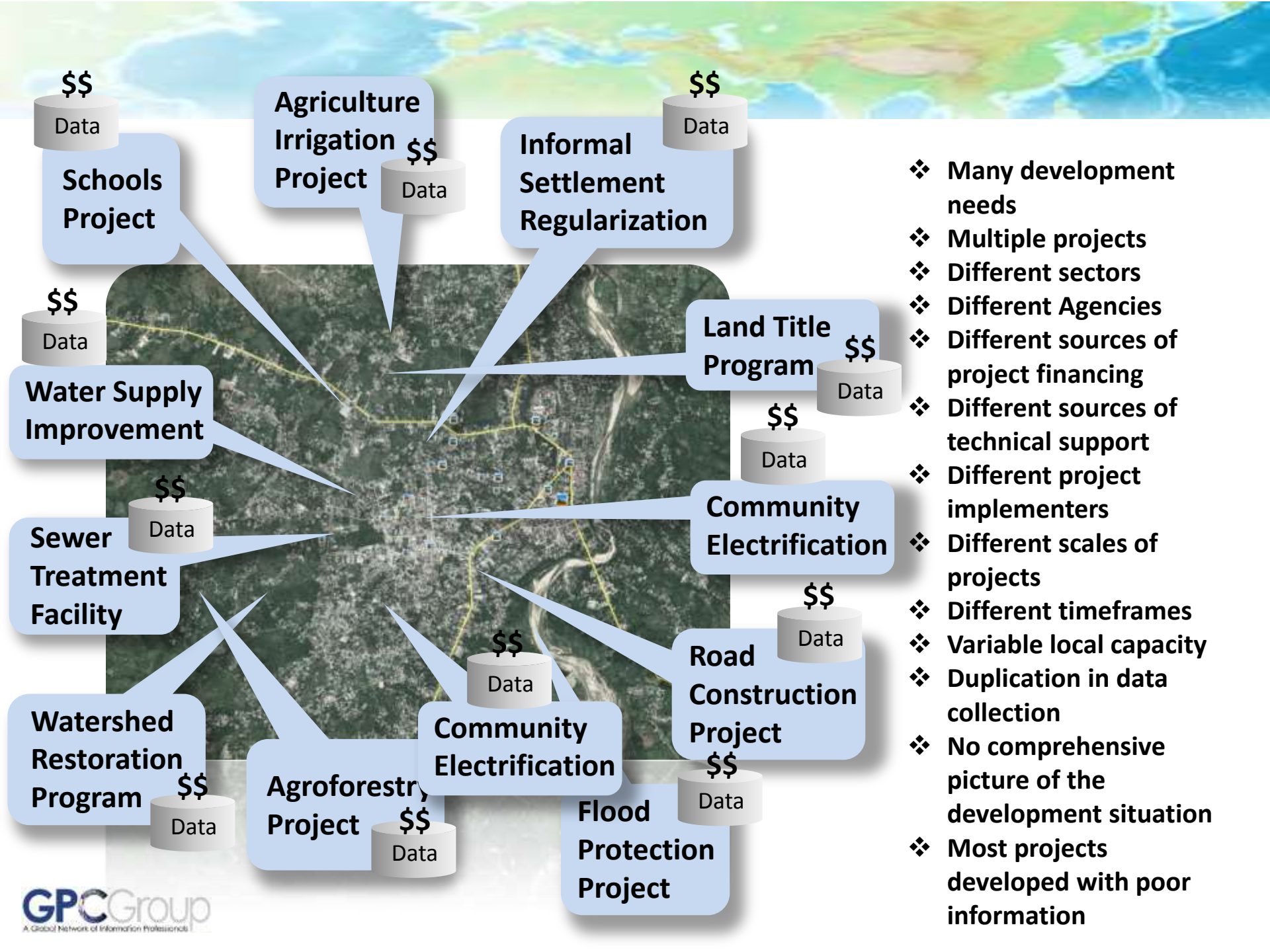


Health Services



Environment





\$\$
Data
Schools Project

Agriculture Irrigation Project
\$\$
Data

\$\$
Data
Informal Settlement Regularization

\$\$
Data

\$\$
Data
Water Supply Improvement

Land Title Program
\$\$
Data

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Data
Sewer Treatment Facility

\$\$
Data
Community Electrification

\$\$
Data
Watershed Restoration Program

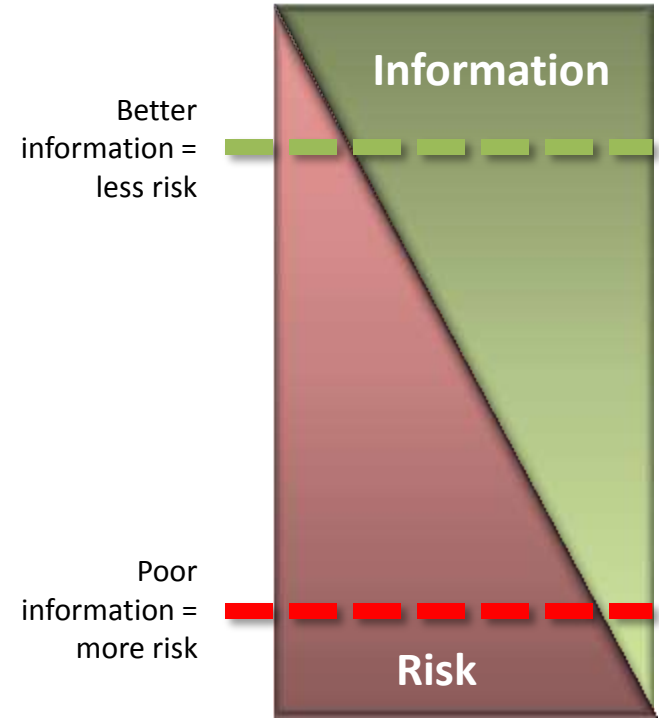
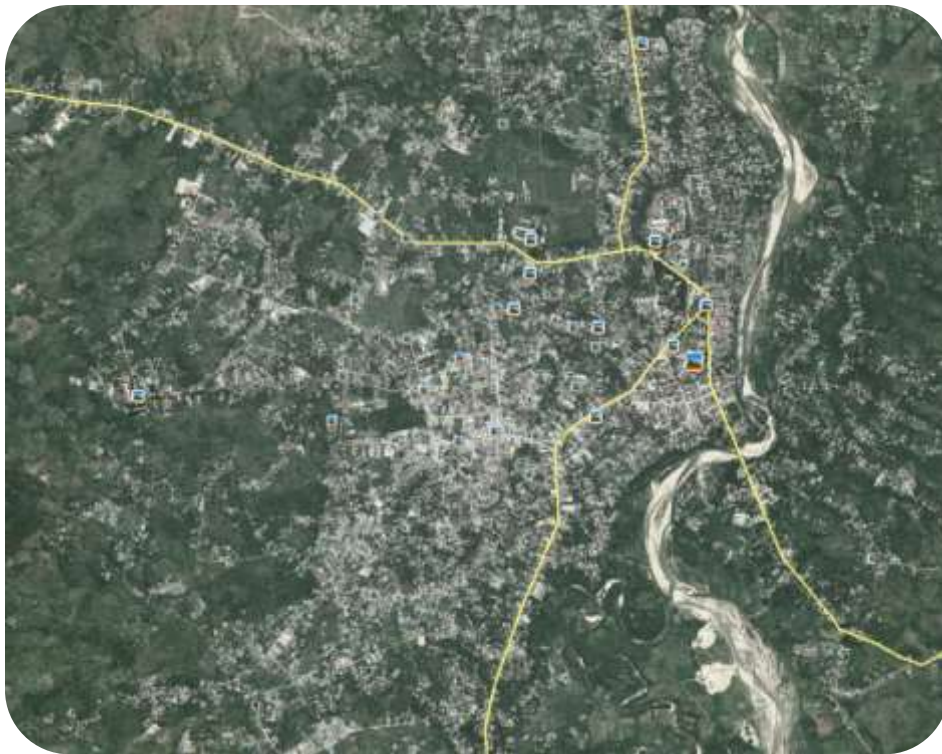
\$\$
Data
Community Electrification

\$\$
Data
Road Construction Project

\$\$
Data
Agroforestry Project

\$\$
Data
Flood Protection Project

- ❖ Many development needs
- ❖ Multiple projects
- ❖ Different sectors
- ❖ Different Agencies
- ❖ Different sources of project financing
- ❖ Different sources of technical support
- ❖ Different project implementers
- ❖ Different scales of projects
- ❖ Different timeframes
- ❖ Variable local capacity
- ❖ Duplication in data collection
- ❖ No comprehensive picture of the development situation
- ❖ Most projects developed with poor information



- ❖ Good information can increase positive impact and reduce risk
- ❖ De-risking projects can attract more finance options (sovereign funds, private sector, foundations, etc.)

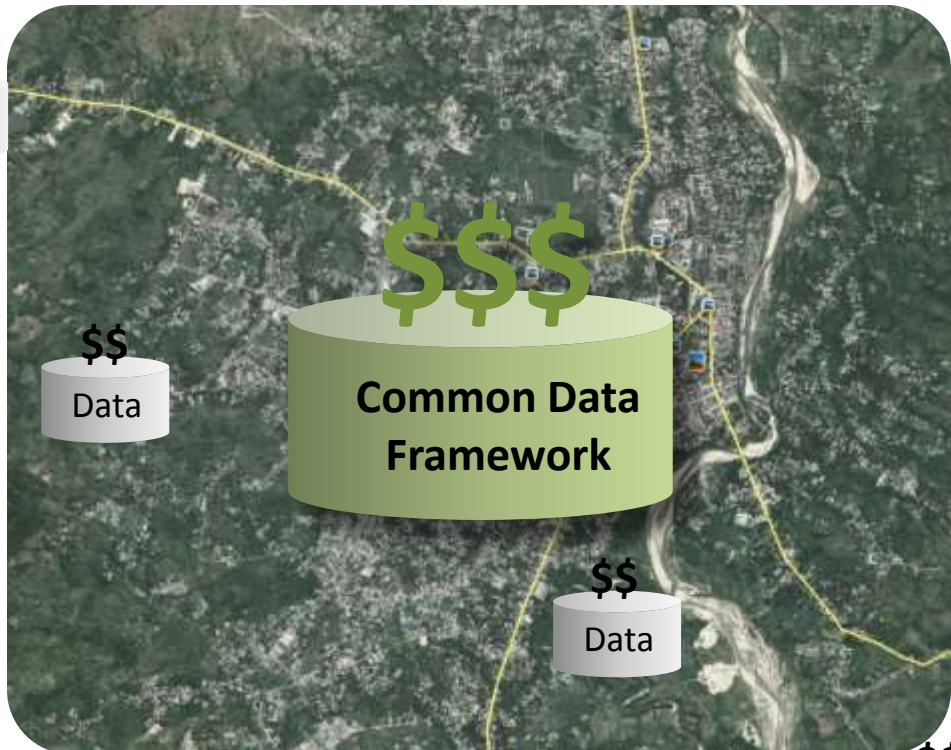


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Data

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Data



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Common Data Framework

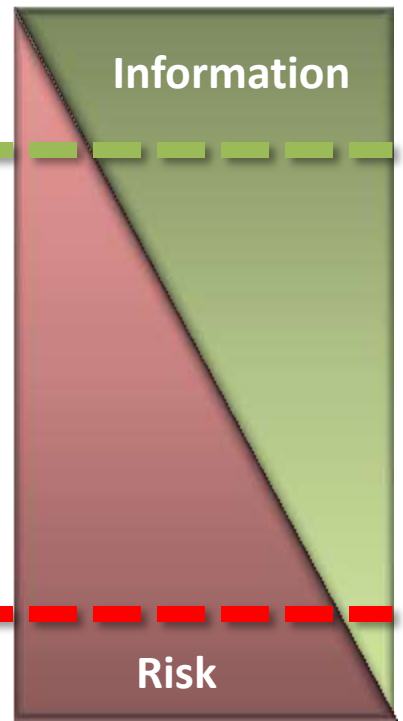
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Data



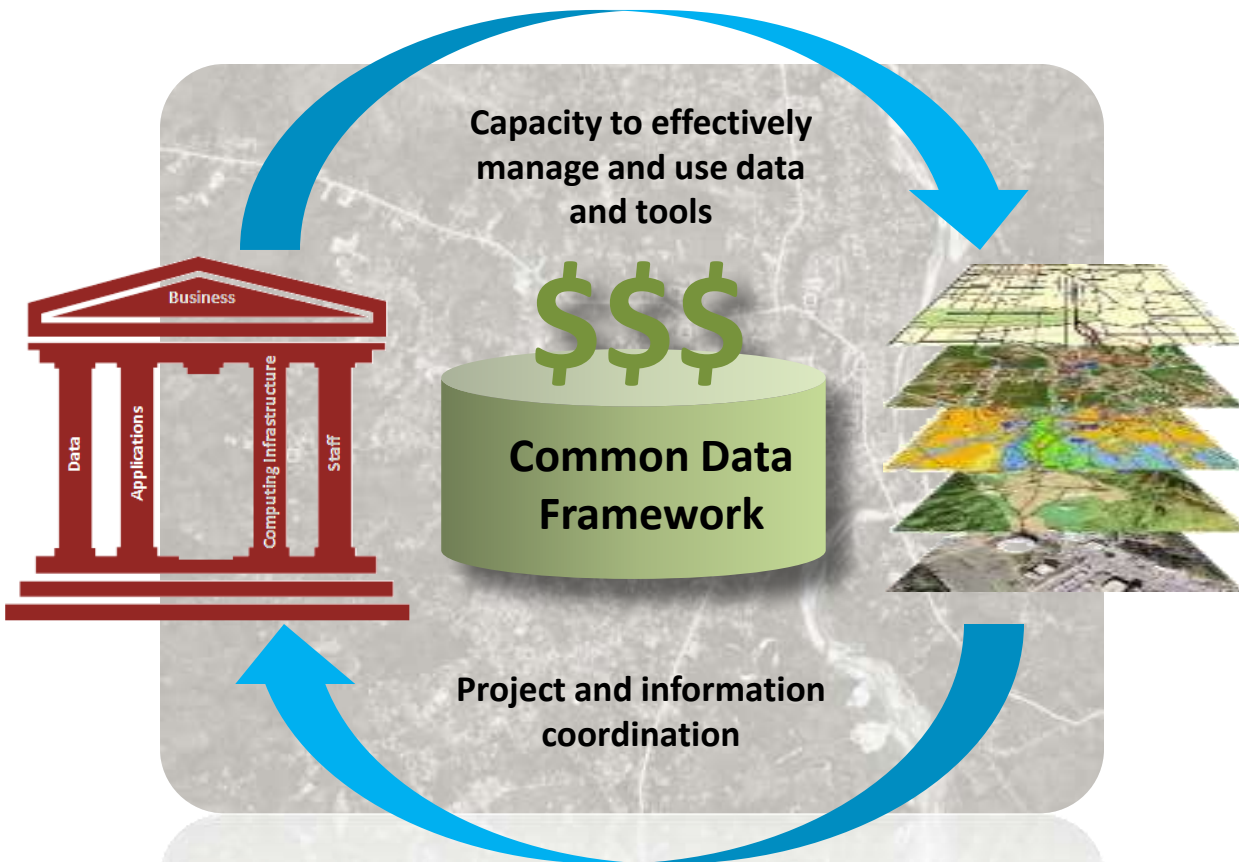
Better information = less risk

\$\$
Data

\$\$
Data

Poor information = more risk

❖ What required to retain and reuse the information we have and attract additional investment???



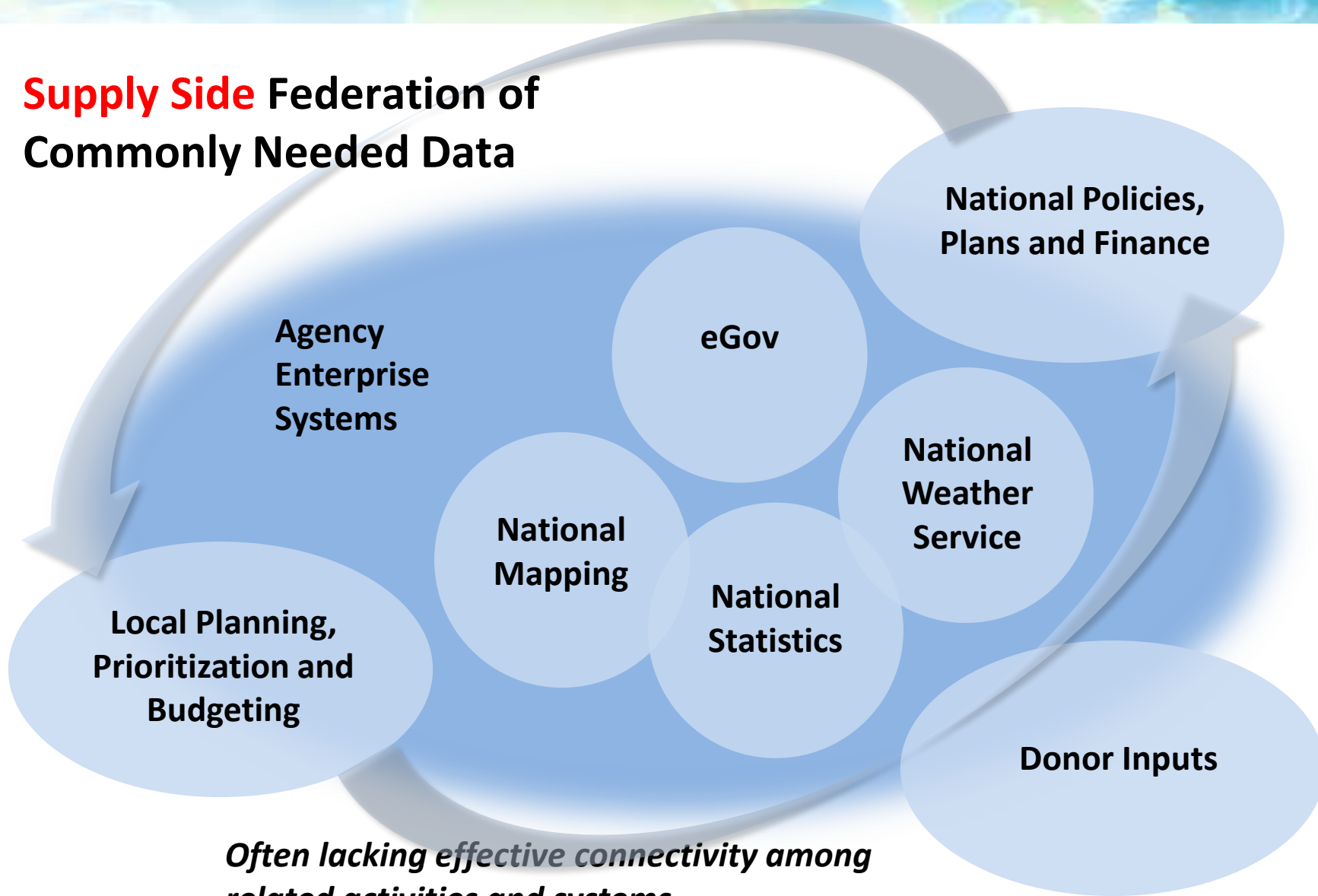
- ❖ What required to retain and reuse this information investment???
- ❖ Policy requiring repatriation of project data to host government
- ❖ Policy acknowledging project coordination and SDI+ function in government as an enabling environment for effective and sustainable development and investment
- ❖ Capacity building program
 - Central coordination unit
 - Agencies
 - Other Stakeholders

1994

The definition of SDI has not changed substantially but the technological world around us has evolved radically.....

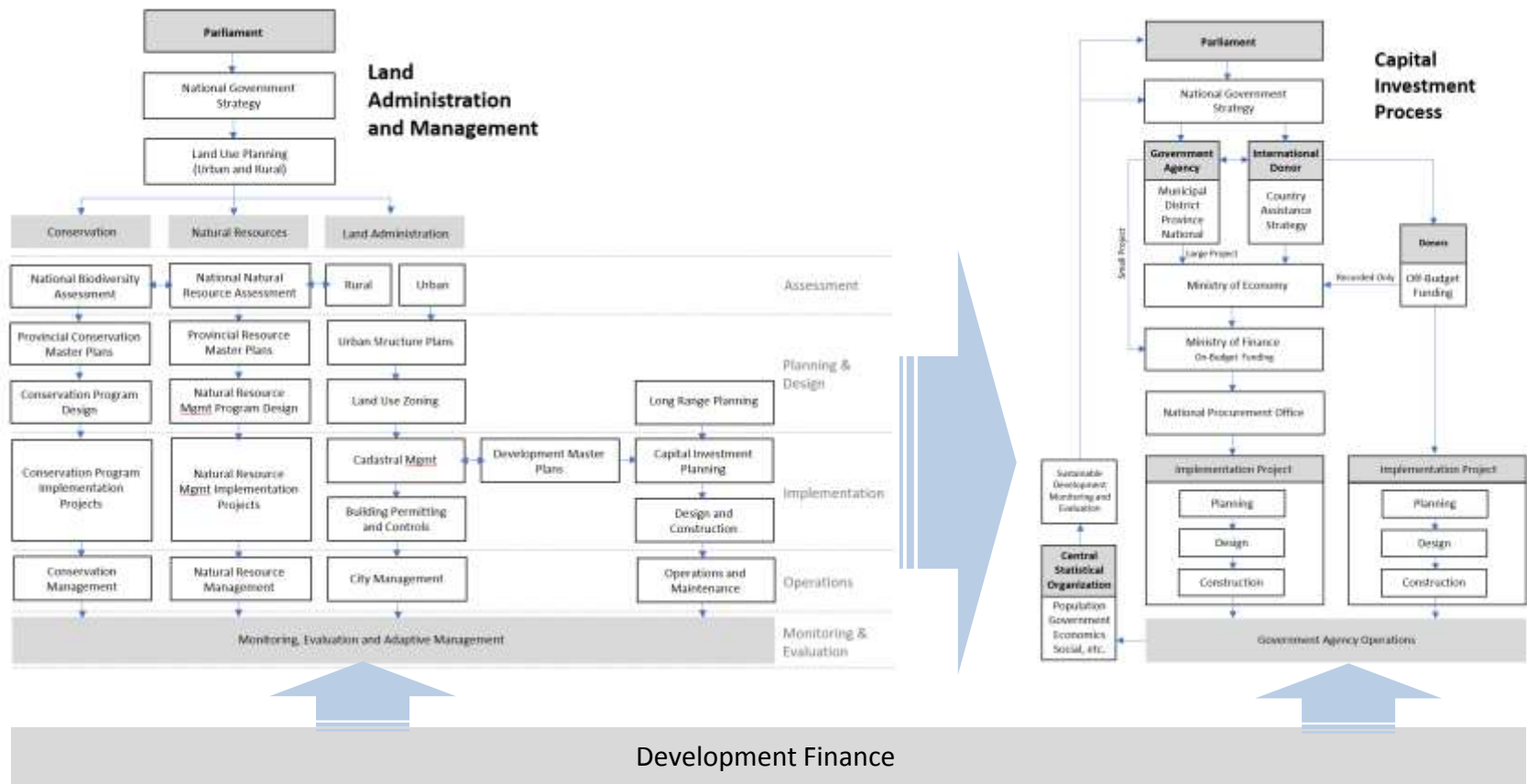


Supply Side Federation of Commonly Needed Data



*Often lacking effective connectivity among
related activities and systems*

Demand Side Application of Data to Key Government Processes and Investments





Core Proposition

Spatial Data Infrastructure (SDI)

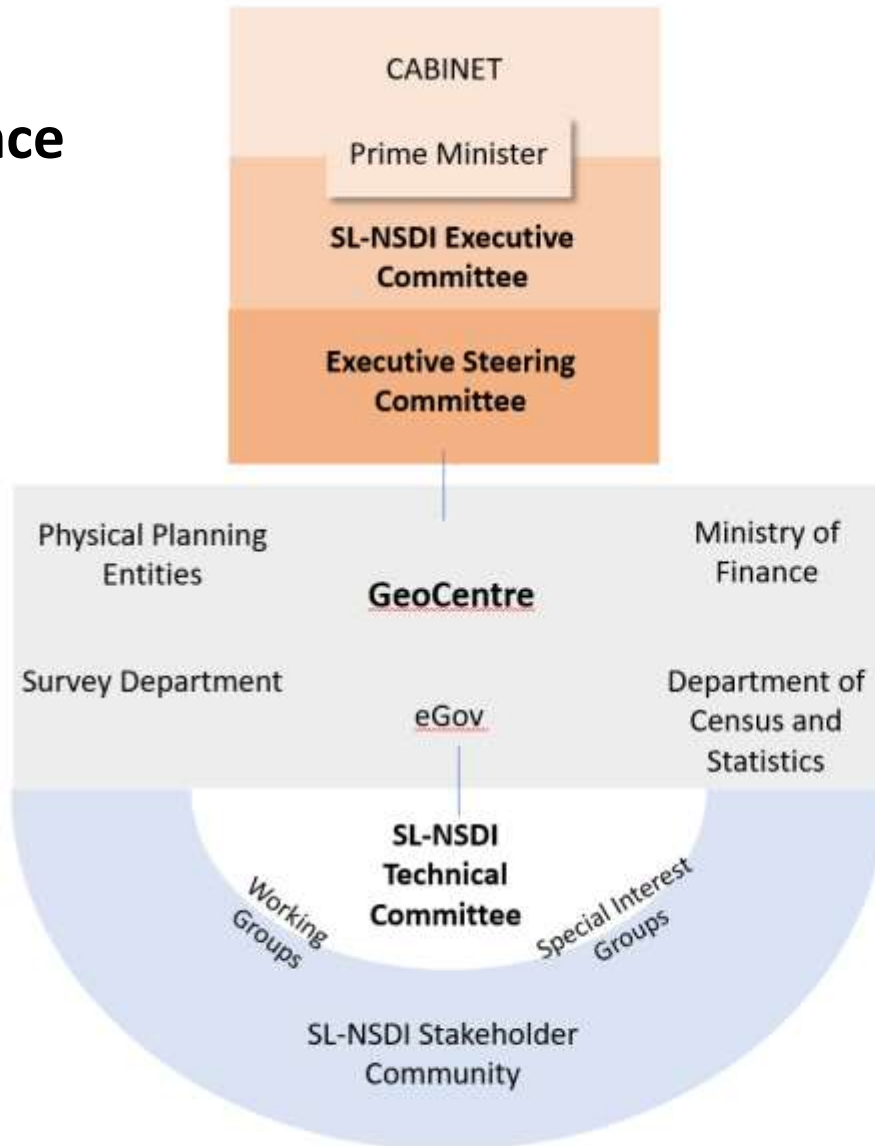
Largely technical program based on supply-side geospatial data development and sharing



SDI +

Smart Development Infrastructure for Sustainable Development and Investment

SL-NSDI+ Governance Model



Executive Authority

- Cabinet has ultimate authority and decision making powers
- Prime Minister Chair of Executive Committee
- Executive Committee comprising Ministers
- Executive Steering Committee comprising Directors of member agencies

Central Coordination

- Coordination Office acts as secretariat to the Executive Committee
- Direct coordination and alignment among key government offices governing planning, information, investment and government digital transformation

Community Representation

- Technical Committee comprising representation from all key stakeholders
- Ideally includes representation from non-government sectors (institutions, private sector, civil society)



SDI +

*Smart Development Infrastructure for
Sustainable Development and Investment*