Third International Workshop on Operationalizing the Integrated Geospatial Information Framework
26 – 28 November 2019, Conference Room, Office of the National Statistical Committee
Minsk, Belarus

Integrated Geospatial Information Framework

strengthening NSDIs and geospatial information management capacities

United Nations Secretariat for Global Geospatial Information Management
Statistics Division, Department of Economic and Social Affairs

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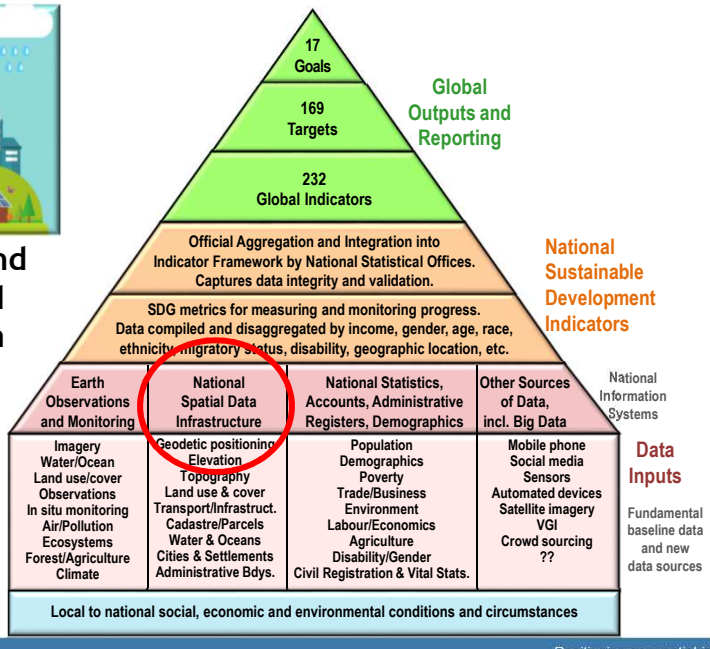
An integrative and interconnected data ecosystem



There needs to be more institutional collaboration, coordination and integration across the various national data frameworks, information systems and platforms.

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The NSDI approach…origins in the 1990s

- Coordinated actions that promote the awareness and implementation of complimentary policies, common standards and institutional arrangements for the development and availability of interoperable digital geographic data and technologies to support decision making at all scales for multiple purposes.
- The NSDI of a country can be generally defined as a framework of policies, standards, technology and institutional arrangements that facilitate data providers to publish and users to access and integrate, distributed heterogeneous geospatial information.
- A long-standing and well understood enabling infrastructure to provide the 'institutionally' coordinated policies, common standards, arrangements, and effective mechanisms for the development and availability of interoperable geospatial information at multiple levels of government.

Developing Spatial Data Infrastructures:

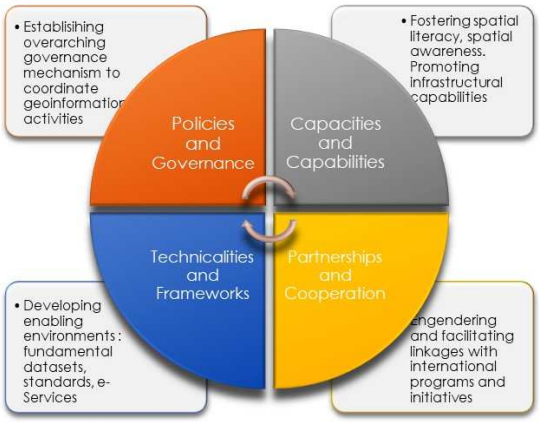
The SDI Cookbook

Spatial Data Infrastructures

The term "Spatial Data Infrastructure" (SDI) is often used to denote the relevant base collection of technologies, policies and institutional arrangements that facilitate the availability of and access to spatial data. The SDI provides a basis for spatial data discovery, evaluation, and application for users and providers within all levels of government, the commercial sector, the non-profit sector, academia and by citizens in general.

The word infrastructure is used to promote the concept of a reliable, supporting environment, analogous to a road or telecommunications network, that, in this case, facilitates the access to geographically-related information using a minimum set of standard practices, protocols, and specifications. The applications that run "on" such an infrastructure are not specified in detail in this document. But, like roads and wires, an SDI facilitates the conveyance of virtually unlimited packages of geographic information.

NSDI KEY PILLARS



United Nations Economic Commission for Africa

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HOLISTIC FRAMEWORK FOR GEOSPATIAL INFORMATION MANAGEMENT

- Coordinated process that adopts common regional standards, frameworks and tools
- Addressing key global challenges including Sustainable development, climate change, disaster management, peace and security, and environmental stresses

United Nations Economic Commission for Africa

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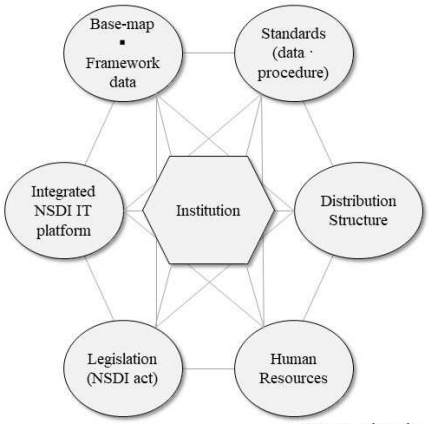
Infrastructures Nationales de Données Spatiales

Une réalité virtuelle au Cameroun

- **Activités** (8 activités identifiées)
  - Activité 1. Matrice des services à validation spatiale
  - Activité 2. Inventaire
  - Activité 3. Forum des Acteurs
  - Activité 4. Comité de rédaction
  - Activité 5: Sensibilisation
  - Activité 6. Arrangement institutionnel
  - Activité 7. Liaison:
  - Activité 8. Validation et adoption
- **Méthodologie, Planification et Budget**
- **Bénéficiaires**

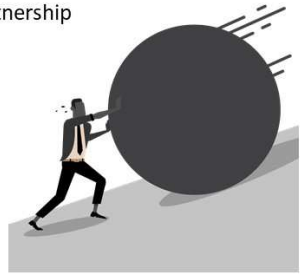
National perspectives

NSDI Design Framework

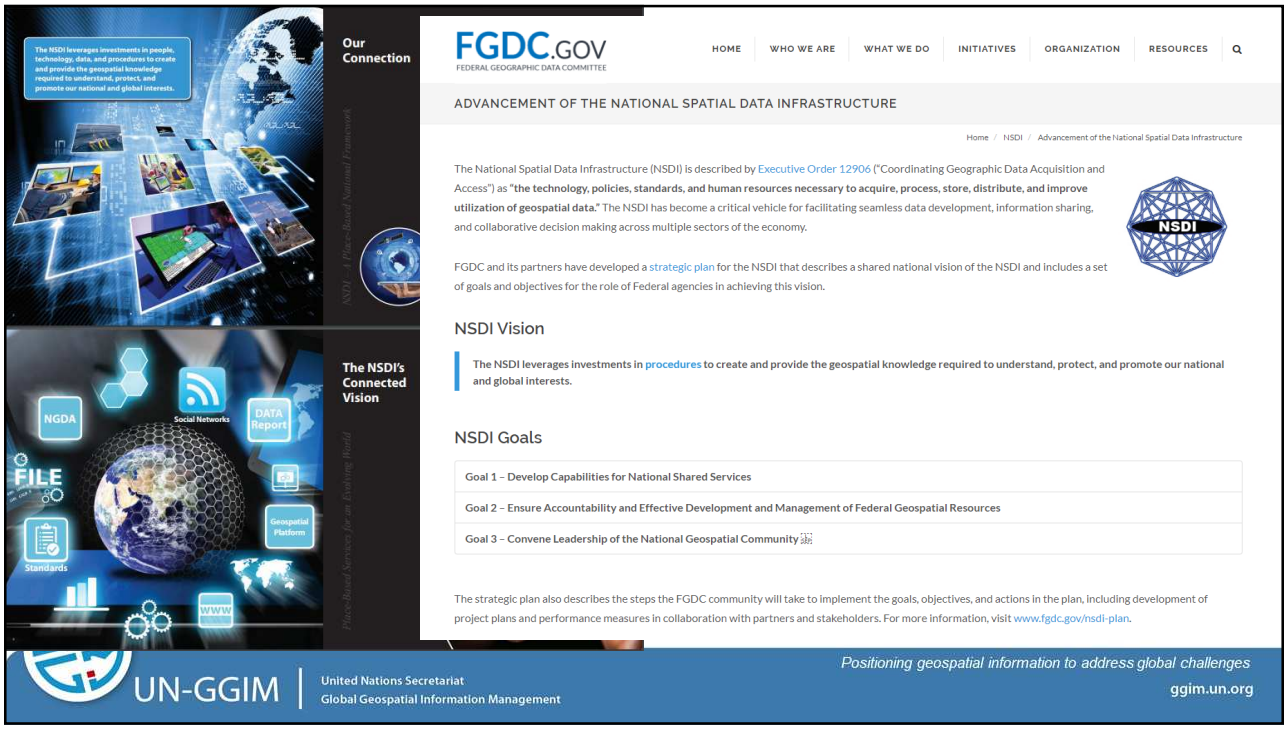


Challenges

- Outdated datasets
- High cost for high resolution imageries
- Duplication of efforts
- Expensive commercial GIS softwares
- Mobilization of resources
- Partnership



NSDI IN RWANDA
Current situation, opportunities, challenges and perspectives



The NSDI approach…today

- Virtues of NSDIs are their ability to promote geospatial data sharing throughout all levels of government and society, enabling effective use of geospatial data for sustainable national development and other every day requirements.
- Two factors challenge the limitations of a traditional NSDI:
  1. The availability of more data and more data types. Big data, structured and unstructured data, and other realities pressure the current limitation of NSDI as more of these external data add potential value to everyday queries for information. Some data are geospatially referenced while others are not, which identifies a need for geolocation information.
  2. The need for data integration and analysis. Traditional NSDIs are very structured (silo) repositories of valuable geospatial information, with defined and managed (separate) data themes, such as transport, elevation and depth, boundaries, addresses, water, etc. These assets now must meet diverse and specific local and national requirements and need to be 'integrated' with other data (especially statistics) and sectors.

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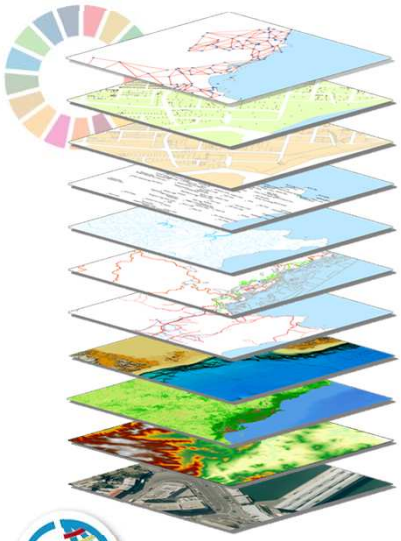
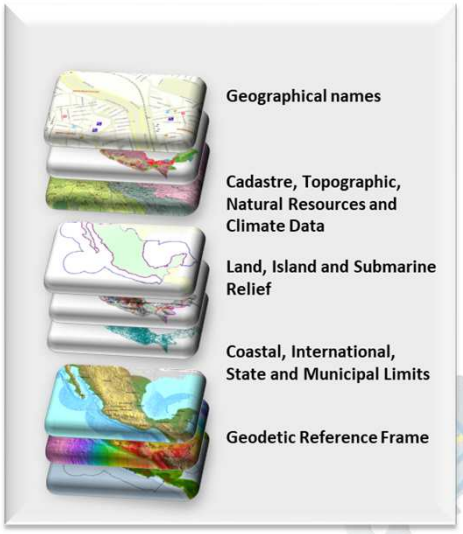
Global fundamental geospatial data themes



Positioning (Geodetic)
Address (Buildings)
Cadastre (Tenure)
Names (Gazetteer)
Water (Hydrology)
Administrative Boundaries
Transport
Bathymetry (Hydrography)
Land cover (Vegetation)
Elevation
Imagery (Satellite & Photo)



Geographical names
Cadastre, Topographic, Natural Resources and Climate Data
Land, Island and Submarine Relief
Coastal, International, State and Municipal Limits
Geodetic Reference Frame

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Goals, targets, indicators, measuring…fundamental data

Global Fundamental Geospatial Data Themes

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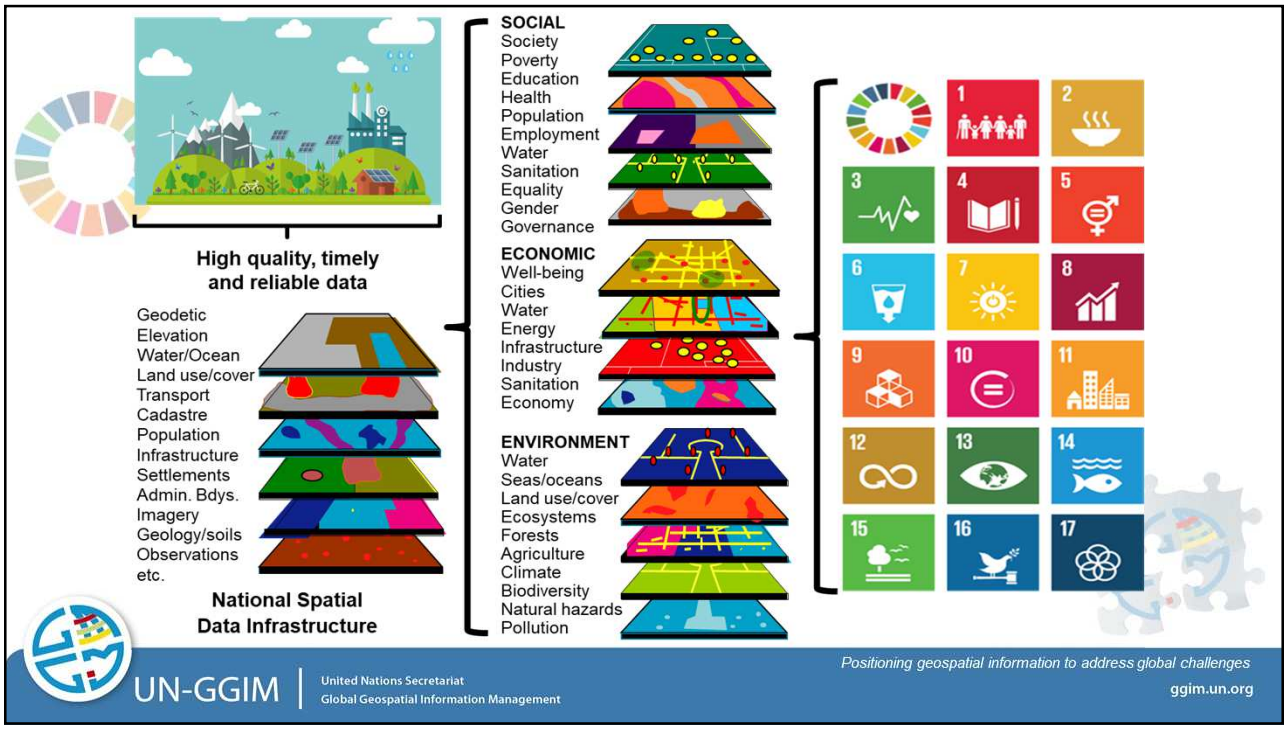

The NSDI approach…with the IGIF

- The principal focus of NSDIs is geospatial data. What is needed to establish or maintain an integrated national geospatial program is not sufficiently addressed by the NSDI.
- While an NSDI is a core and valuable component, a national geospatial program is much more than the data. The Integrated Geospatial Information Framework (IGIF) defines each of the interrelated 9 strategic pathways required for an integrated national geospatial program.
- Building on the existing benefits and practices of NSDIs. The IGIF is more comprehensive than the traditional efforts of NSDIs.
- What is the driver for why we have the IGIF rather than the NSDI? More diverse data types and needs that are now more relevant and dependent on geospatial data than were originally considered. This is a reflection of both technology evolution and the new and emerging data ecosystem that is more dependent on “location” and “integration”.

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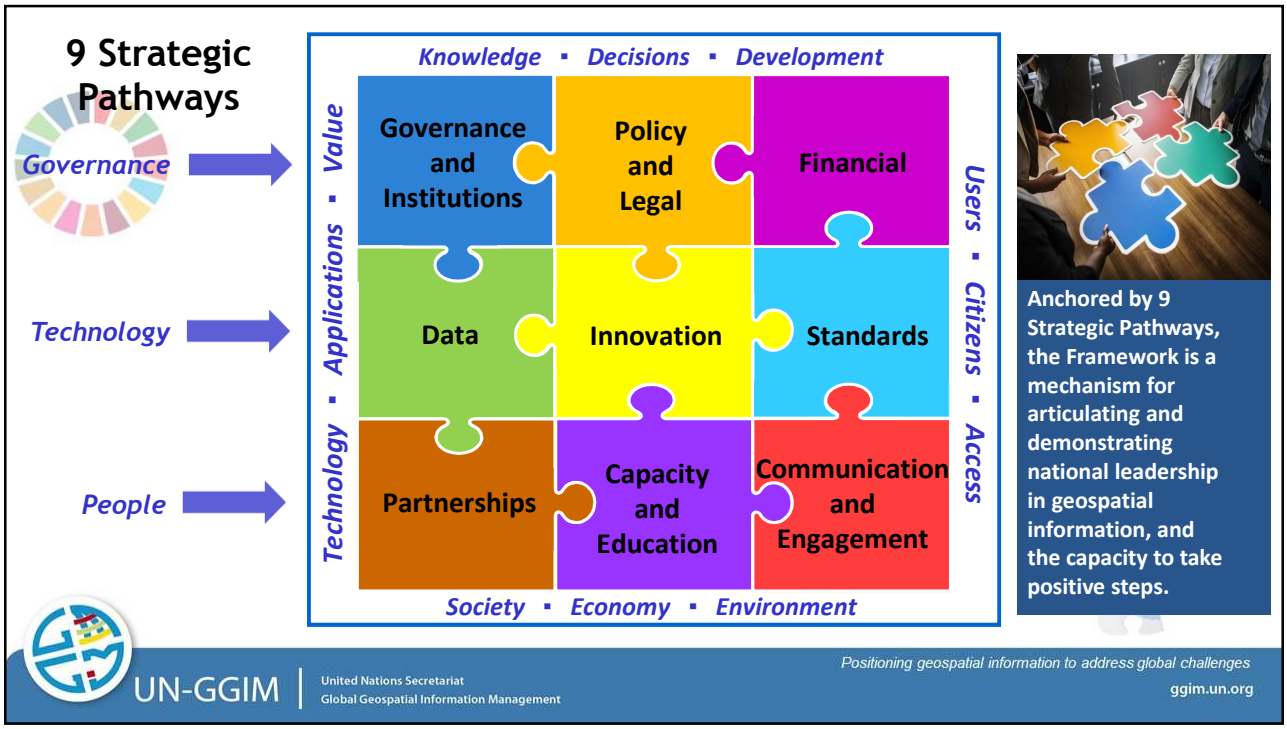
9 Strategic Pathways
Governance
Technology
People
Knowledge ▪ Decisions ▪ Development
Value ▪ Applications ▪ Technology
Users ▪ Citizens ▪ Access
Governance and Institutions
Policy and Legal
Financial
Data
Innovation
Standards
Partnerships
Capacity and Education
Communication and Engagement
Society ▪ Economy ▪ Environment
Anchored by 9 Strategic Pathways, the Framework is a mechanism for articulating and demonstrating national leadership in geospatial information, and the capacity to take positive steps.
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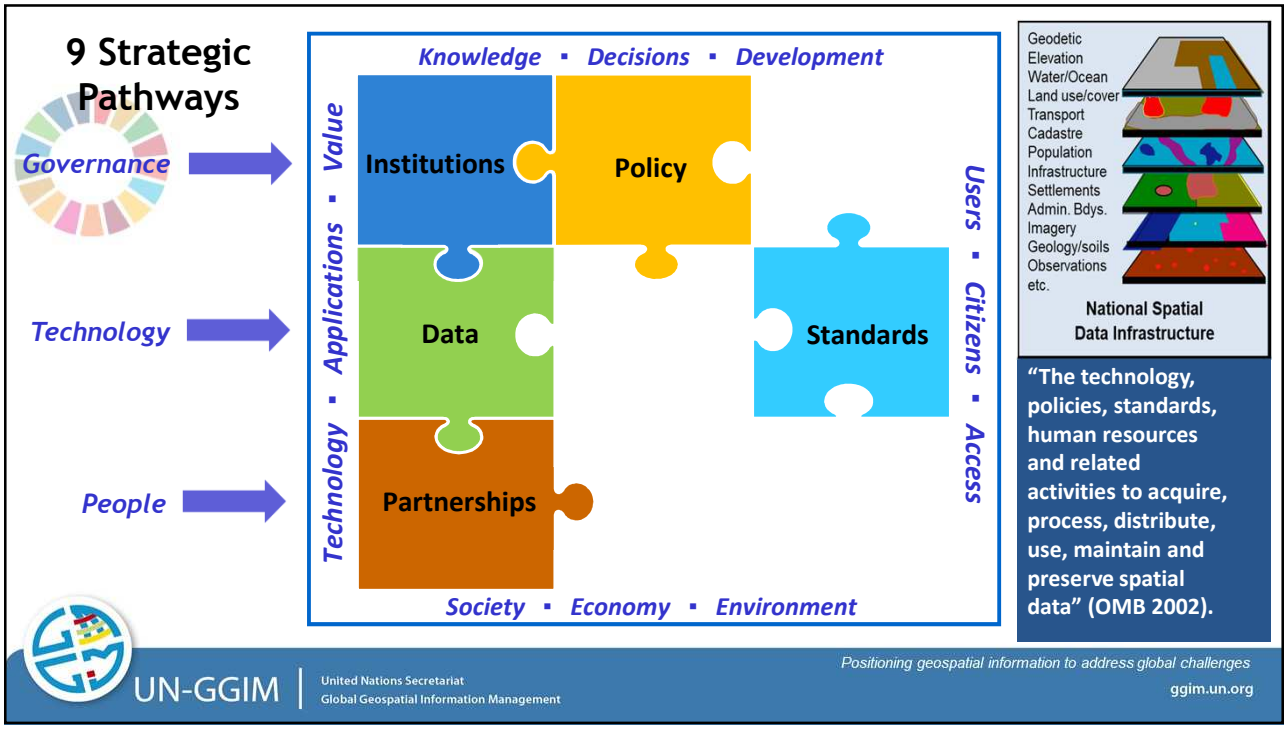
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Data
Standards
Partnerships
Society ▪ Economy ▪ Environment
Geodetic
Elevation
Water/Ocean
Land use/cover
Transport
Cadastre
Population
Infrastructure
Settlements
Admin. Bdys.
Imagery
Geology/soils
Observations
etc.
National Spatial Data Infrastructure
"The technology, policies, standards, human resources and related activities to acquire, process, distribute, use, maintain and preserve spatial data" (OMB 2002).
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9 Strategic Pathways

Governance →

Technology →

People →

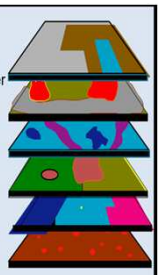
Knowledge ▪ Decisions ▪ Development

Value ▪ Applications ▪ Technology

Governance and Institutions	Policy and Legal	Financial
Data	Innovation	Standards
Partnerships	Capacity and Education	Communication and Engagement

Users ▪ Citizens ▪ Access

Society ▪ Economy ▪ Environment



National Spatial Data Infrastructure

The Framework will augment and build upon existing NSDI arrangements, providing a holistic, integrated national information system-of-systems approach to the data life cycle

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Interactions

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