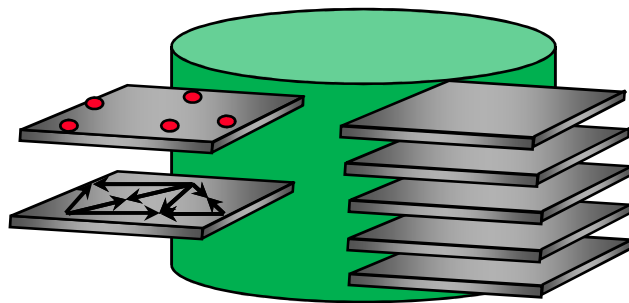

National Geospatial Data Repository Centralised or Distributed?

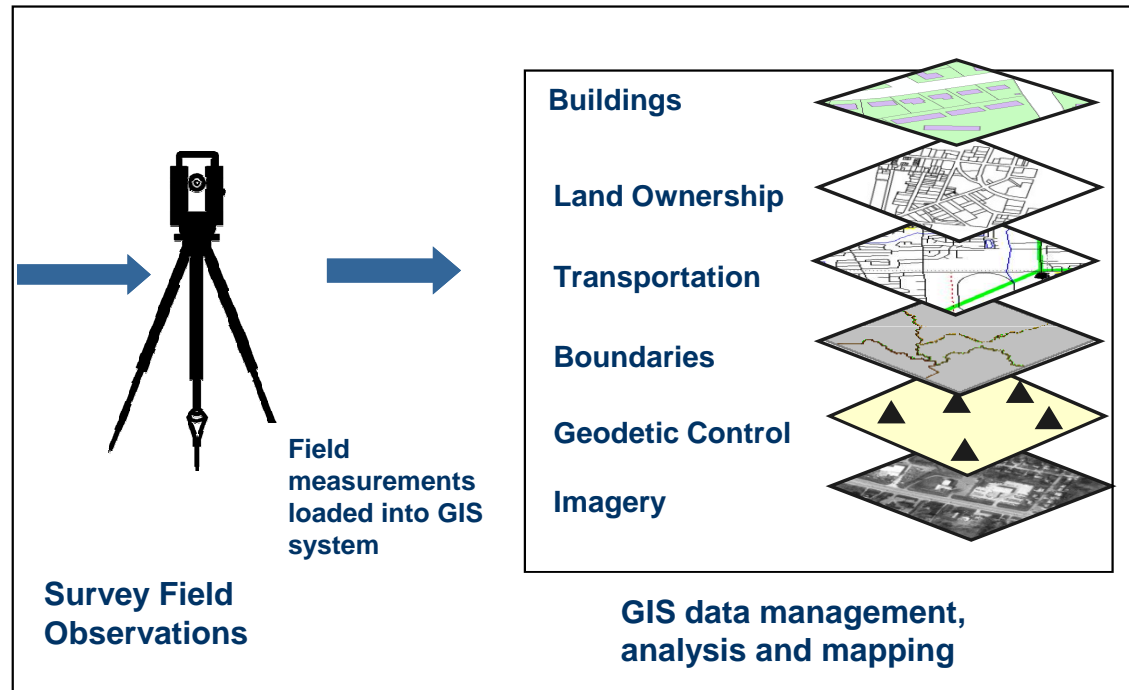


Dr. Aniruddha Roy
Vice President
Navayuga
New Delhi, INDIA

Presentation Overview

- NGDR - Perspective
- NGDR - Stakeholders
- Boundary Consistency in Spatial Data
- Centralised Data System
- Distributed Data System
- Hybrid Data System
- Observations

NGDI - Perspective

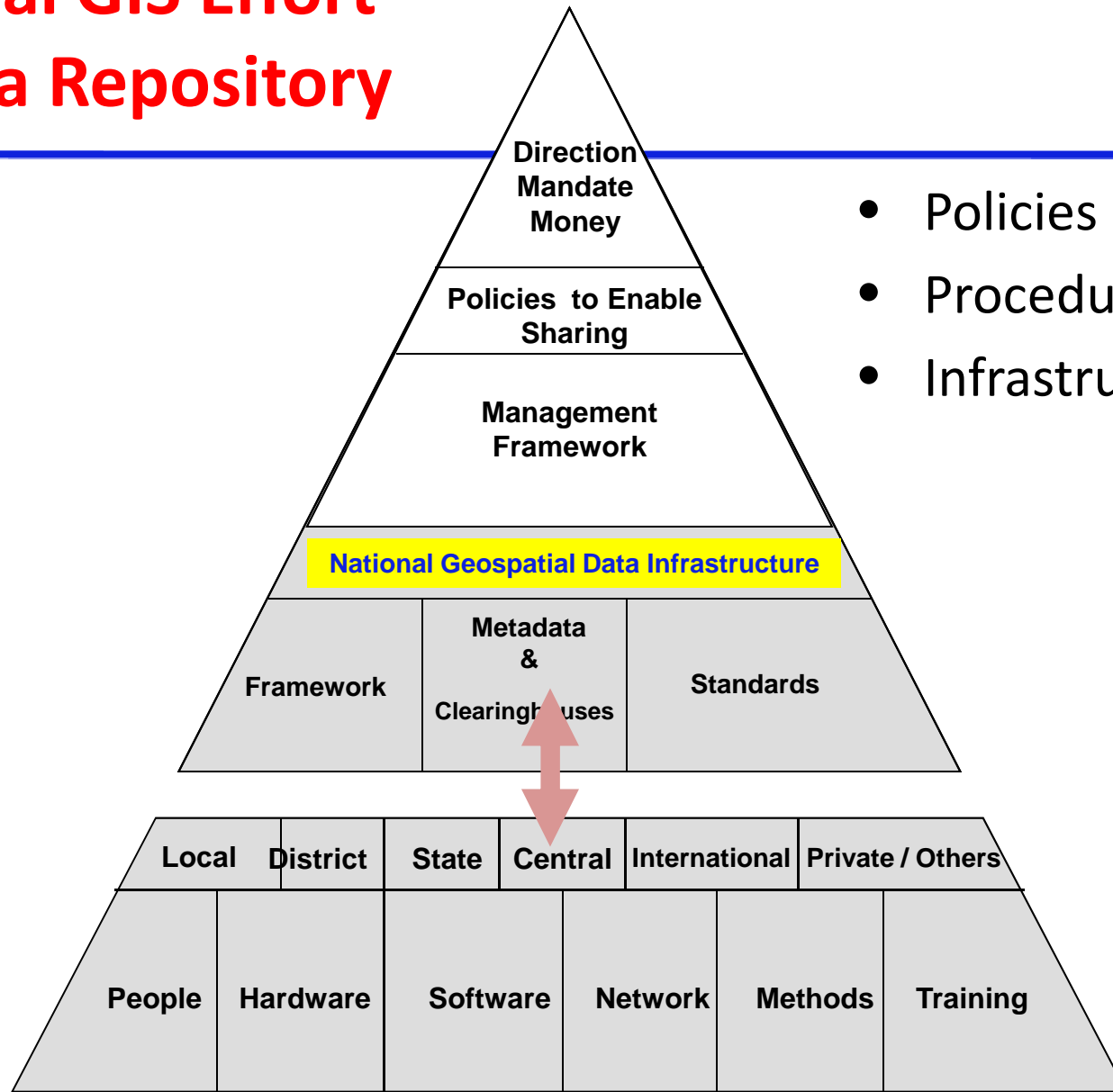


NGDI - Stakeholders

- Survey of India
- Geological Survey of India
- CGWB
- IMD
- NRSC
- RGI (Census)
- CWC
- NBSS & LUP
- NATMO
- FSI
-



“National GIS Effort” for Data Repository

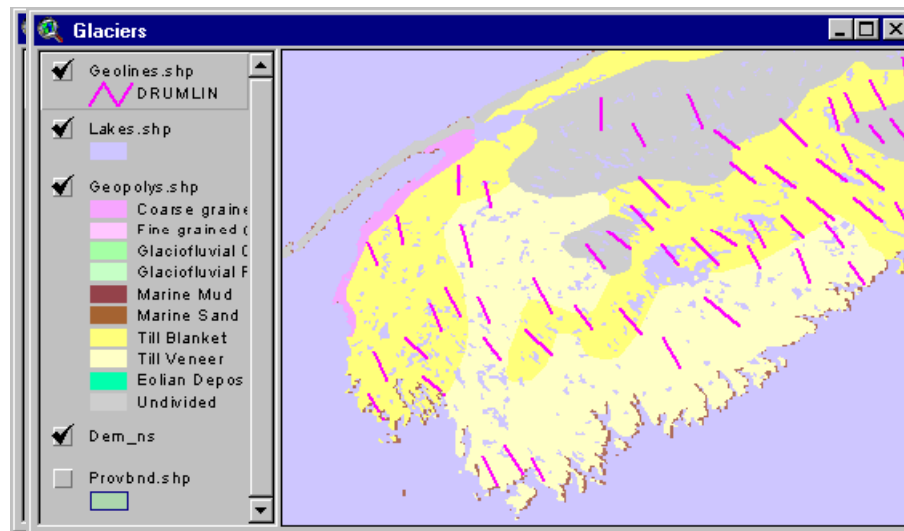


- Policies
- Procedures
- Infrastructure

National GeoSpatial Information Repository

Vertical Data Composition

- GIS contains many layers superimposes with same spatial extent



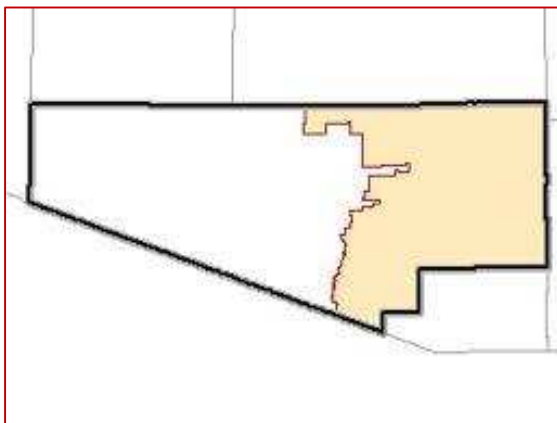
- Base Map Data
- Elevation
- Surface Geology

Boundary Issues

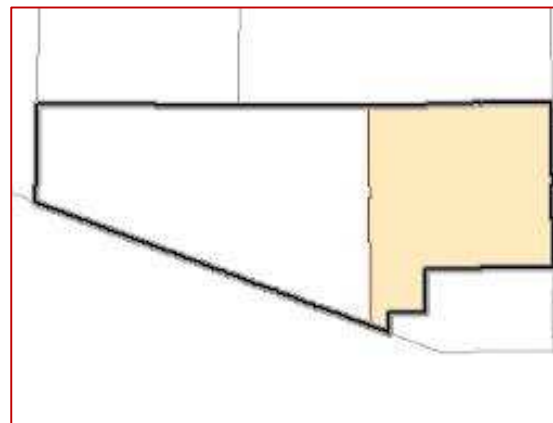
Data inconsistency with base maps even if organizations follow same standards w.r.t

- Scale
- Projection
- Accuracy
- Content
- Format

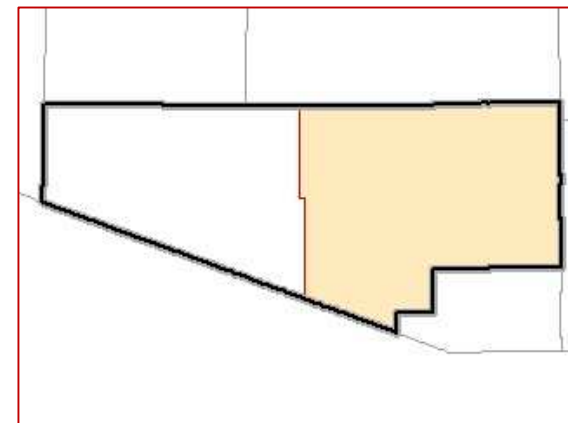
Org A



Org B



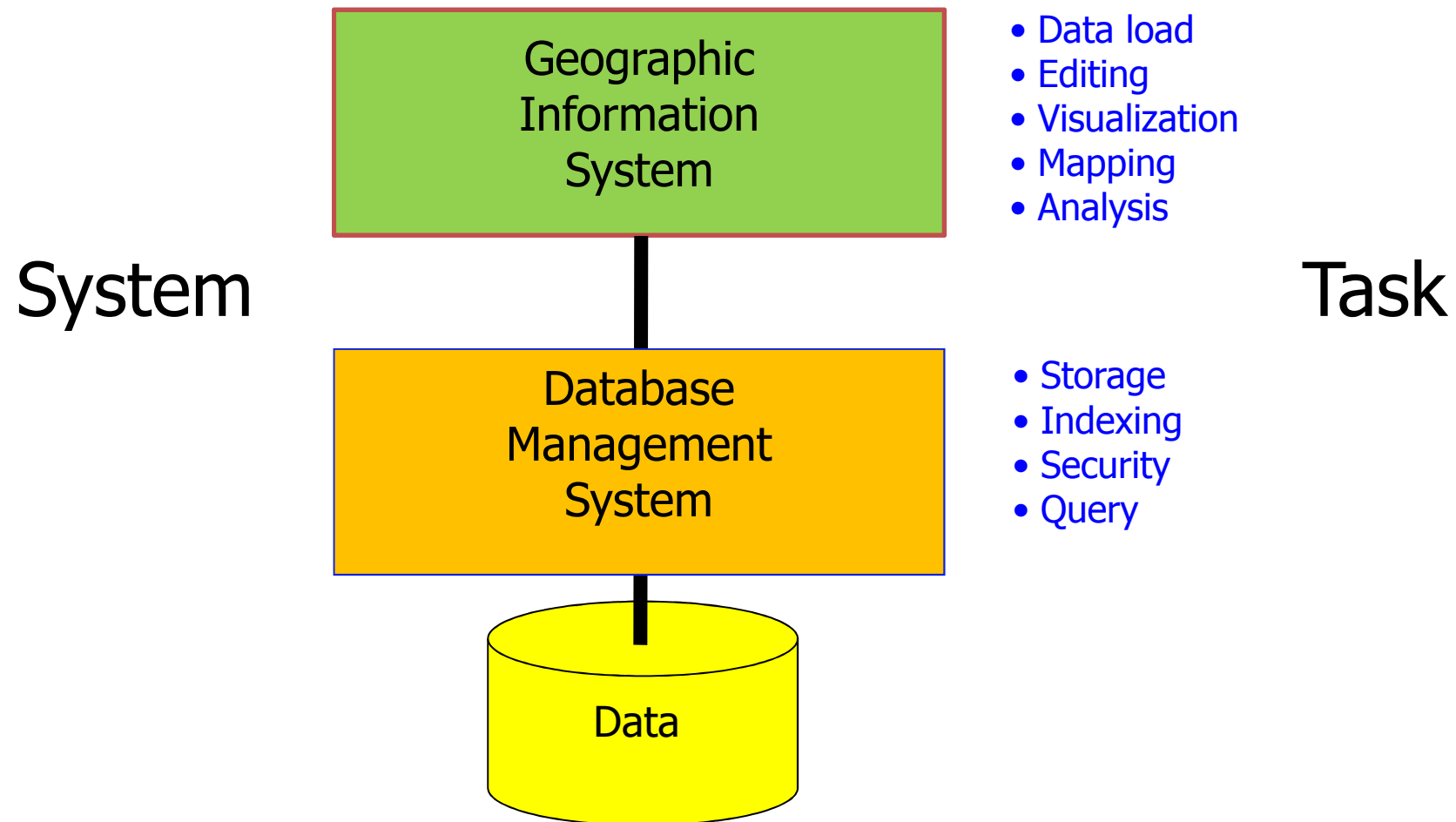
Org C



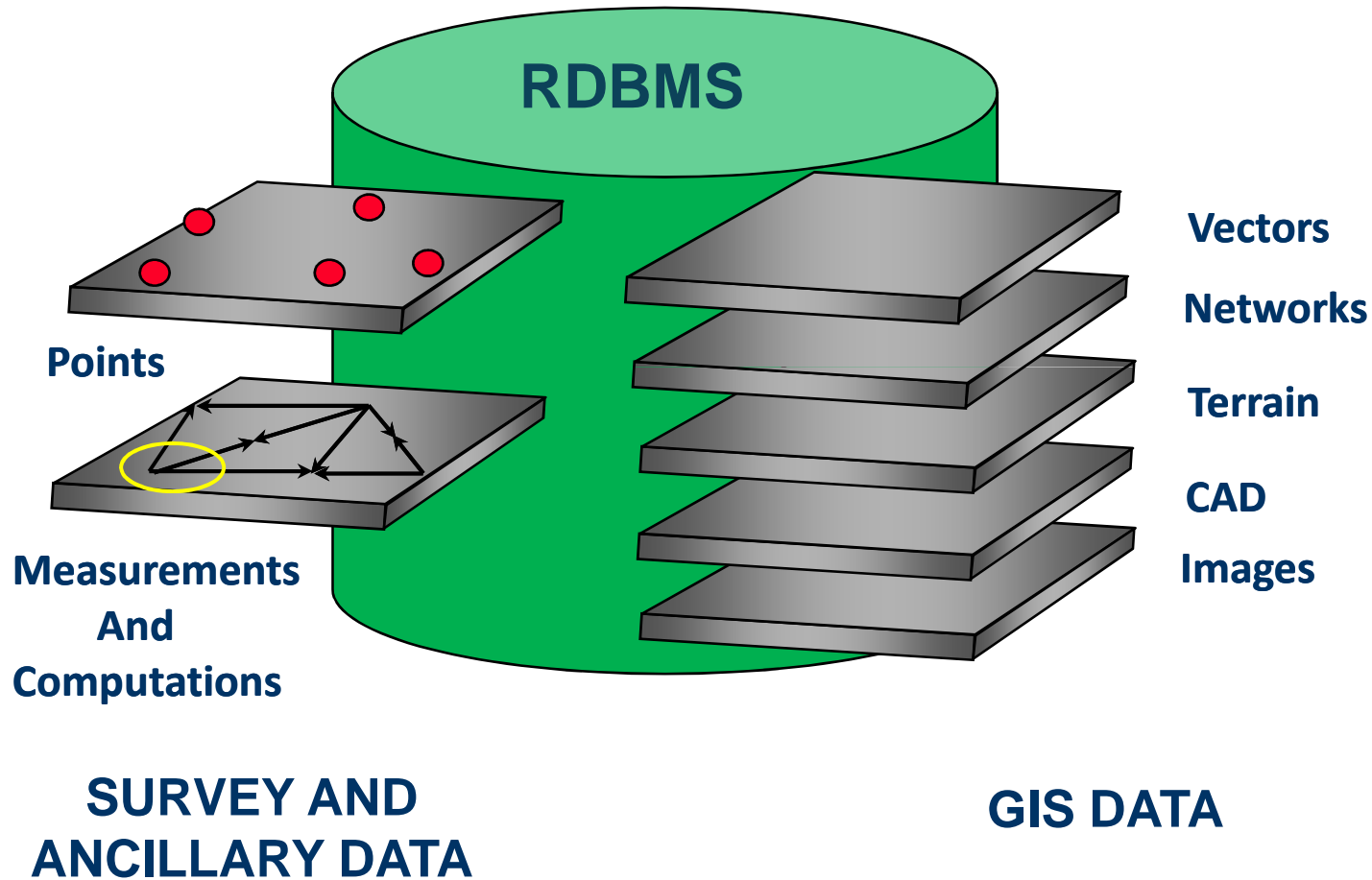
Data Consistency with Base Maps

- Survey of India, Toposheets are taken as base map
- Practice is prevalent for all scale of maps
- The administrative boundary mismatch
- Lead to wrong decision process for the Boundary areas
- Mandate may be provided for the Quality checks before data loading in the servers

Role of DBMS - Traditional



Integration within the Spatial Database



Popular RDBMS – Spatial Data Types

Name	Spatial Extension
Oracle	Oracle Spatial
Sql Server	Sql Server Spatial
Postgre SQL	Post GIS
DB2	DB2 Spatial Extender
Informix	Informix Spatial DataBlade
Sybase	Sybase Spatial

GIS Gateway to DBMS

Sl.No.	Name	Spatial Data Connector	Supported Database
1	ESRI	SDE	Oracle, Informix, DB2, Postgre SQL, SQL Server
2	Autodesk	FDO	Oracle, SQL Server, ARCSDE, MySQL, ESRI SHP
3	SuperMap	SDX+	Oracle, SQL Server, DB2, Postgre SQL
4	MapInfo	MapXtreme	Oracle, Informix, DB2
5	Geomedia	GeoMedia WebMap 2013 (Inbuilt)	Oracle Spatial, SQL Server, MS Access
6	Bentley		Oracle, SQL Server (ODBC Connectivity)

Industry Perspective- GIS Data

- Storage of vector, raster and descriptive data
- Management using standard means of present day database technology
- Seamless map
- Multi-user access to data
- Transactional processing
- Data security
- Integration with third parties' products at data level

Industry Perspective- GIS Data

- GIS data is becoming more distributed
not more centralized
- GIS logic needs to be more distributed
not connected to either a single database or a single server.

**Challenge is to use Multiple Technologies and
achieve interoperability without loss of data**

Data Producers and Consumers



Centralised Vs Distributed

Centralised



Distributed

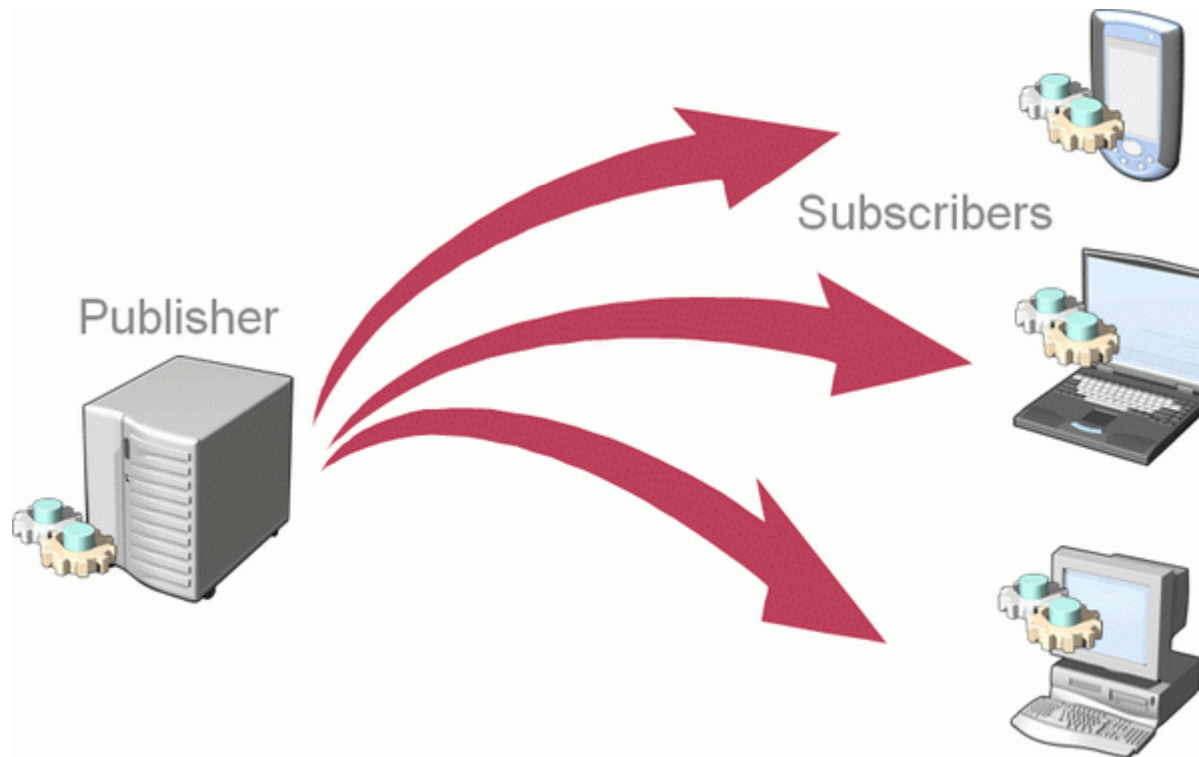


Centralised Vs Distributed

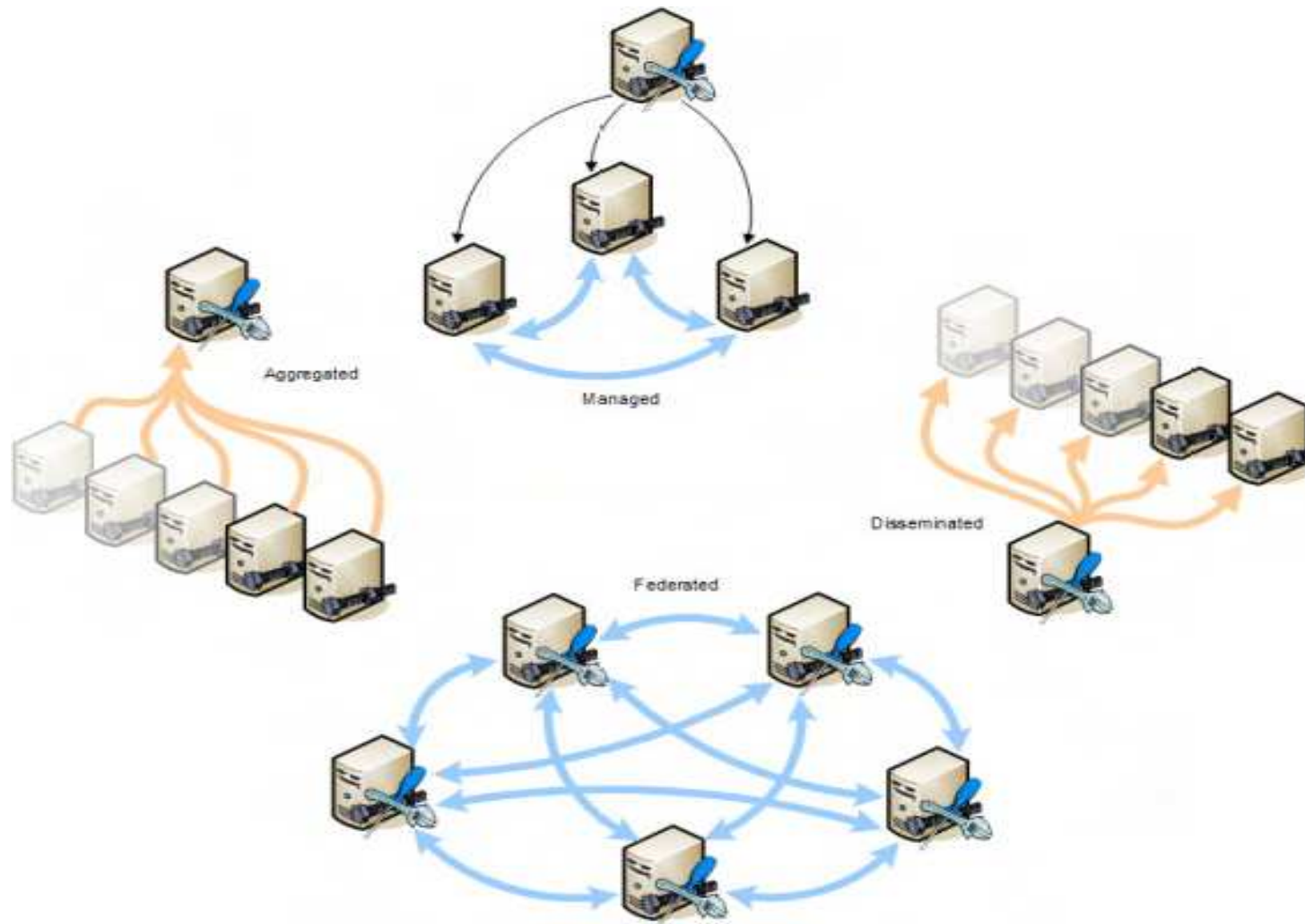
- **Centralized database** : Database located and maintained in one location. One main advantage is that all data is located in one place. The disadvantage is that bottlenecks may occur.
- **Distributed database** : Database in which storage devices are not all attached to a common processing unit such as the CPU.

Data Publication/Subscription Model

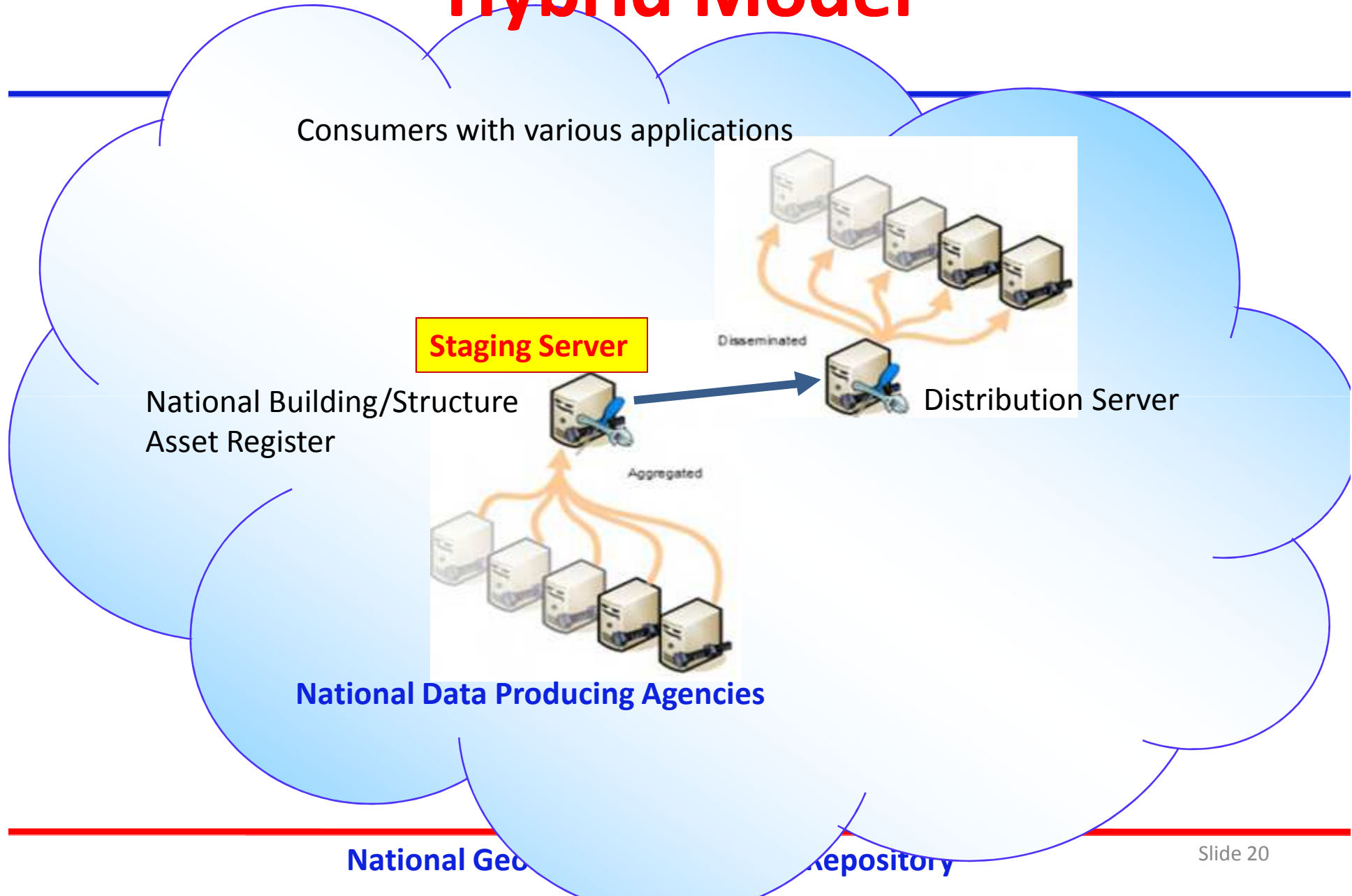
Data flows securely, automatically and in real time from Publisher to Subscriber



Supported Data Sharing Models



Hybrid Model



Concluding Points

- **Repository** commonly refers to a location for storage, often for safety or preservation
- Data Consistency is important for GIS
- NGDR – Data Access, Storage, Management and Dissemination
- Mechanism for Repository should be hybrid in nature
- Physical security + Network Security
- DC and DR in two separate Power Supply zones other than different seismic zones

Thank You

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