

Innovation

The Push and Pull at ESRI

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The Push and The Pull

- The Push is the information technology that drives research and development at ESRI.
- The Pull is the moving of our GIS technology users to new levels.



The Driving Forces of Innovation

- User driven – we listen
- Technology driven – we follow
- Competition driven – we compete
- Experience drive – we work on projects



Users

- Features and functionality
- Specific data or datum support
- Integration
- Applications
- Usability



Technology

- New platforms – workstations
- New processors – RISC; 64-bit
- New Operating Systems – Unix; OS/2; Linux; Windows to more Windows
- New Databases and database features – SQL Server; Access; DB2; Informix; Oracle and Oracle Spatial
- New Data Models – industry templates



More Technology

- New programming languages – Visual Basic; C++; Java; .Net; Python
- New hardware configurations –
 - minicomputers and terminals>
 - servers and workstations>
 - servers and desktops>
 - servers and fat clients>
 - servers and thin client>
 - application servers



More Technology

- The Web – http, html, SOAP, UDDI; Web Application Servers (IIS, WebSphere, WebLogic, Apache)
- Mobile devices – GPS data collectors; PDAs; mobile phones; AVL units
- Integration – DDE; DLL; API
- Standards – ISO, OGC, etc.



Competition

- Features and Functions
- Platforms supported
- Interoperability
- Performance
- Licensing



Innovation In GIS Will Improve Applications

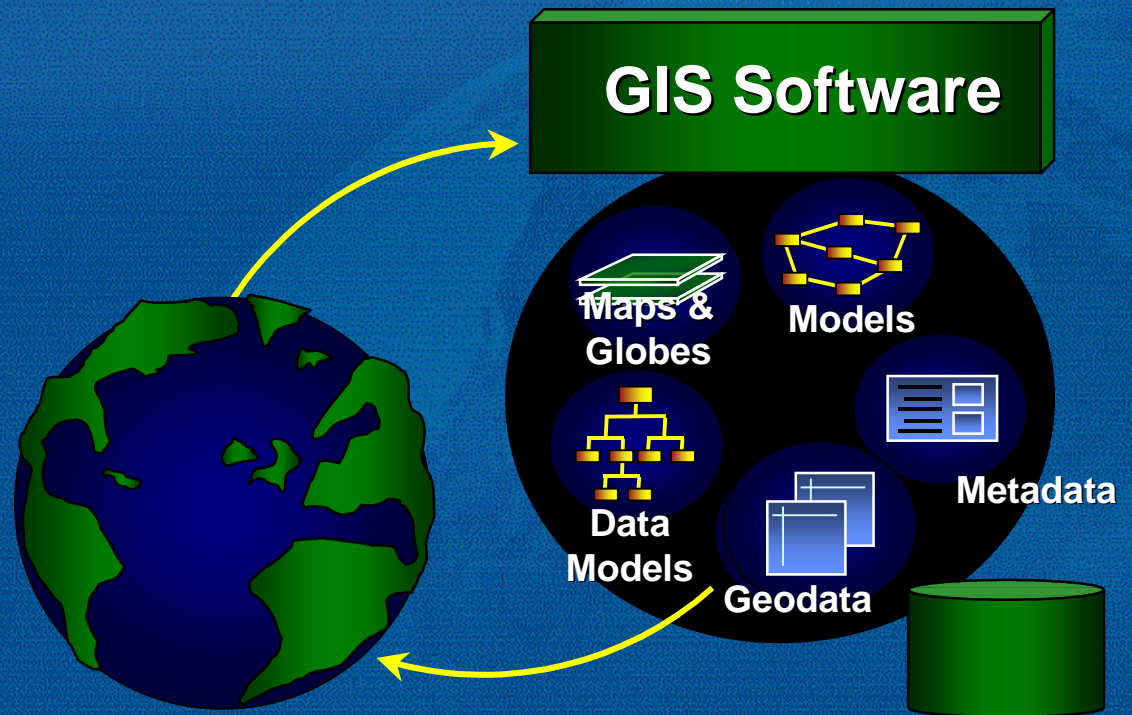
- Intelligent GIS
- Web Services
 - GIS Services
 - Networks
 - GIS Portals
- Distributed GIS
 - Server
 - Embedded
 - Desktop
 - Mobile
- Component Software
- New GIS Functionality
 - Geoprocessing Models
 - Global Visualization
 - Cartography & Labeling
 - Image Integration
 - Real Time
 - Mobile GIS/LBS
- Interoperability



Innovation in the GIS Framework

Managing Datasets, Workflows ...
... In a Common Environment

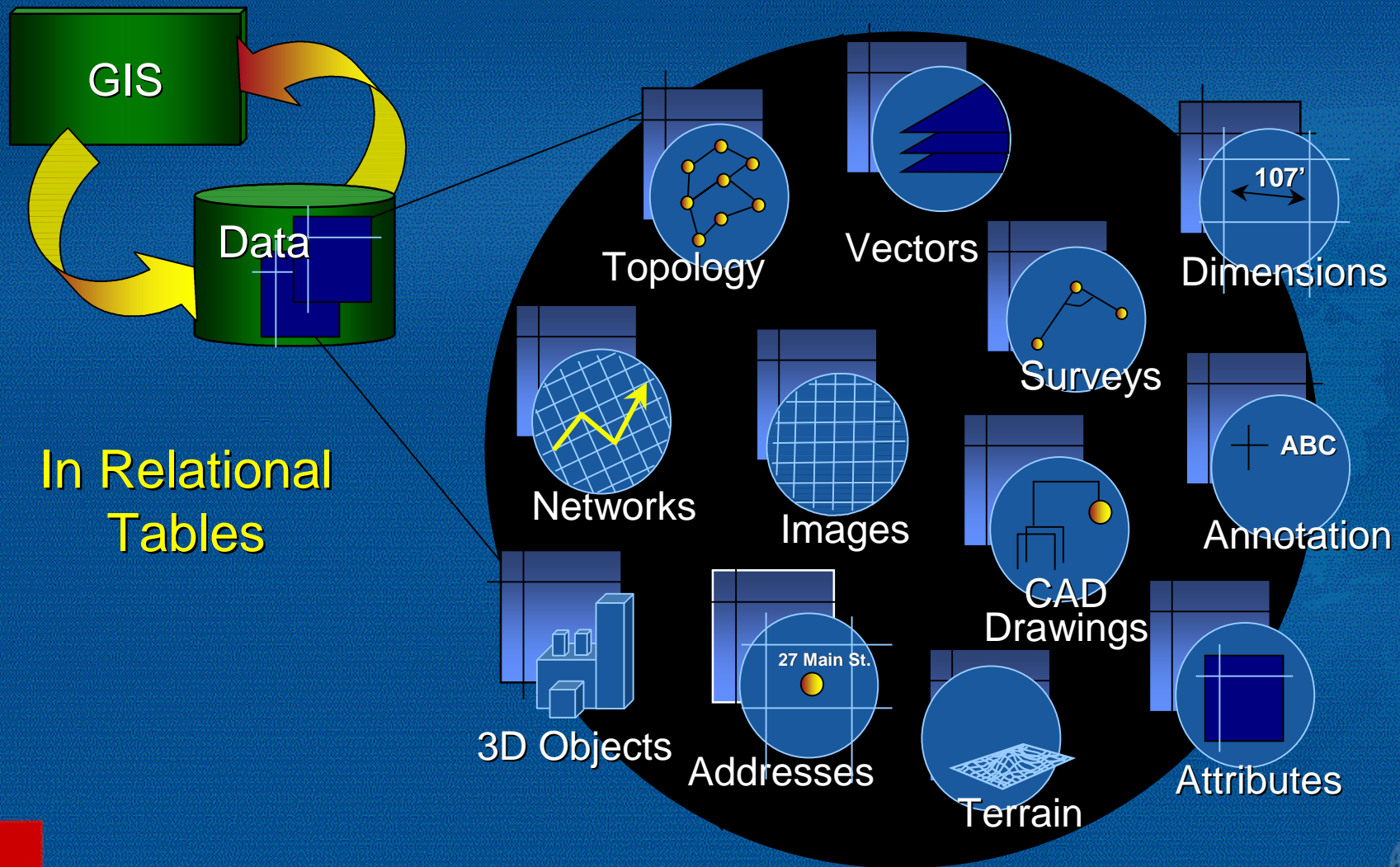
...Encapsulating
Five Basic
Elements



...Abstracting Geographic Knowledge



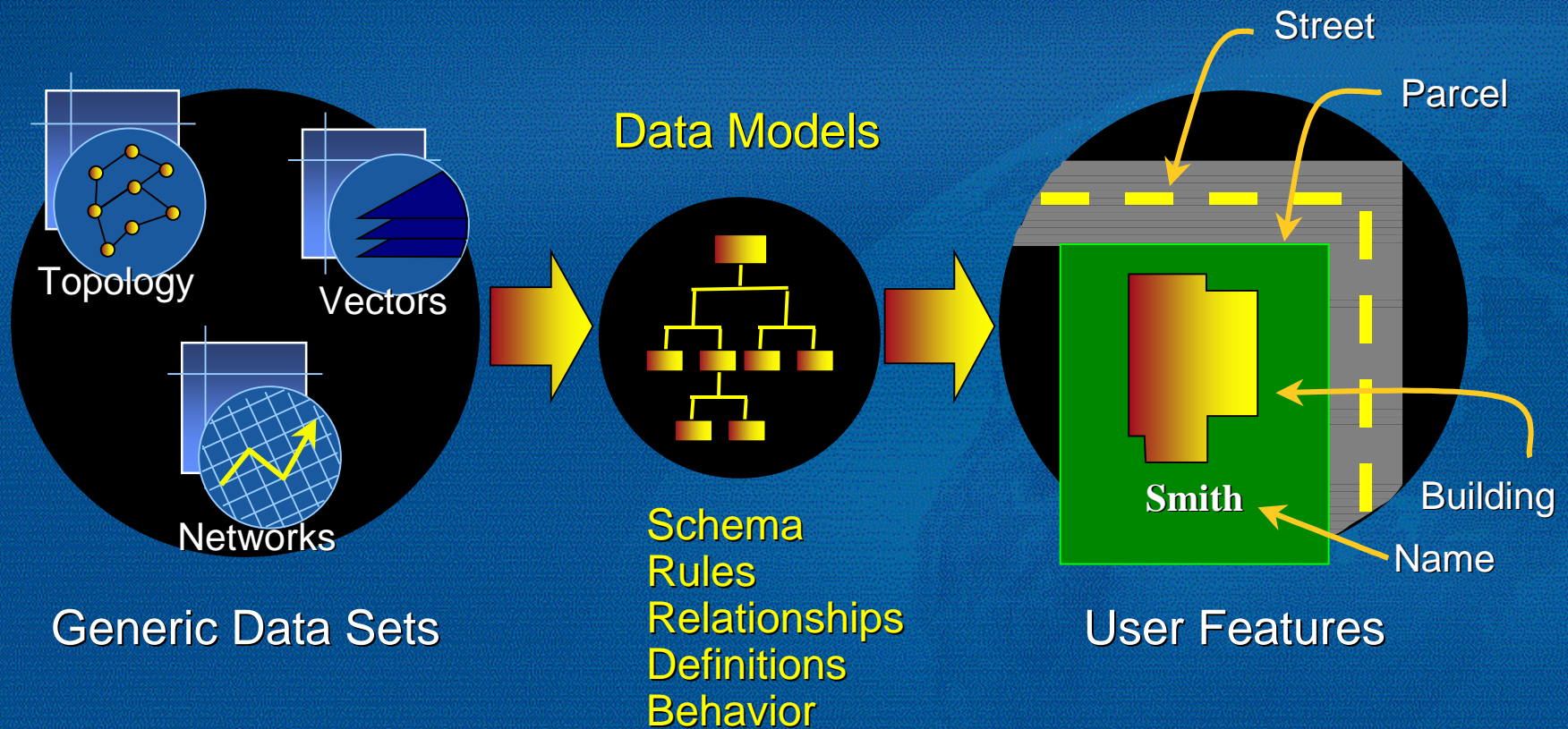
Innovation Means Supporting All Spatial Data Types



With Rules That Define Relationships and Behavior

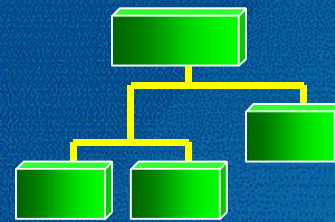
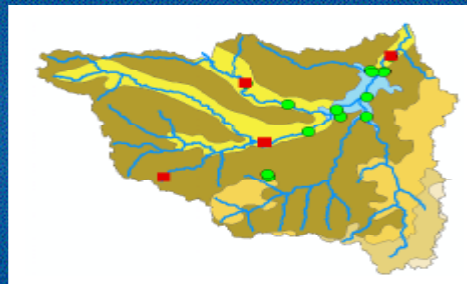
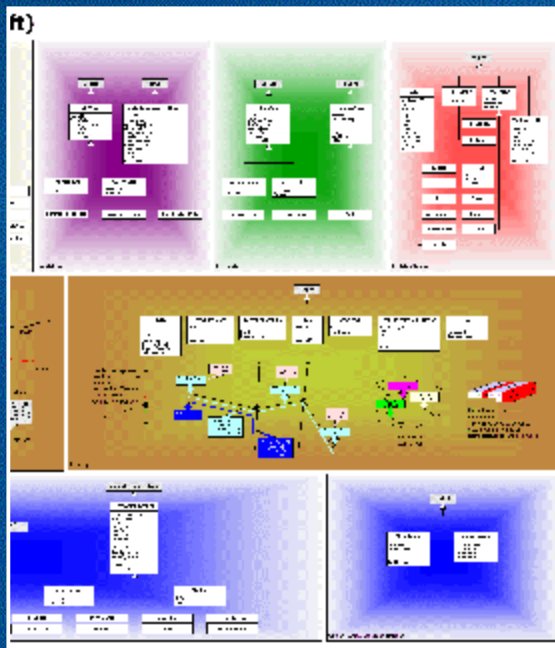


“Intelligent” Features Are Maintained Using Data Models . . .



Thematic Data Models Extend Generic Data Models

Implementation Templates



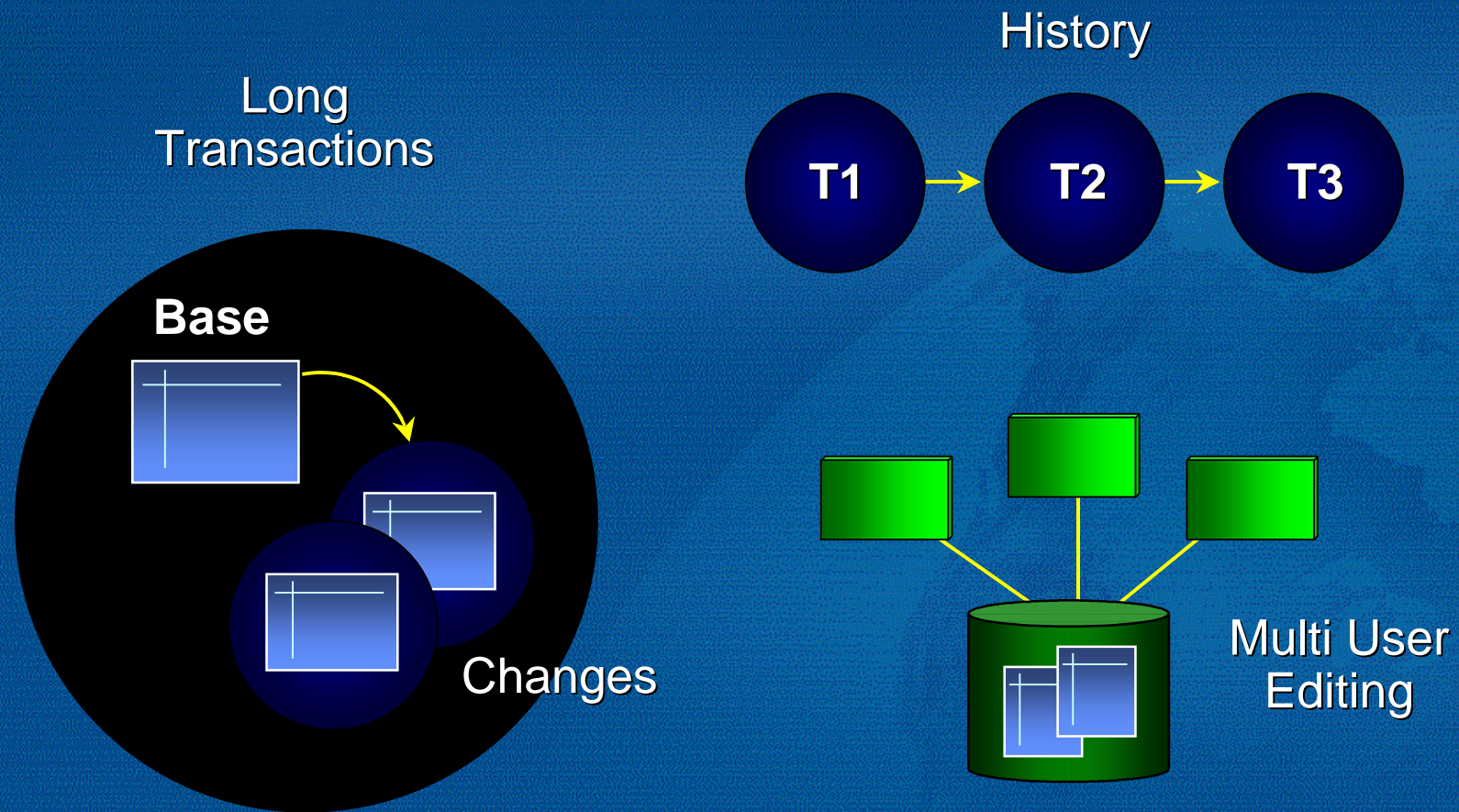
- Petroleum
- Pipeline
- Marine

- Administrative Boundaries
- Hydrology
- Water/Wastewater
- Land Parcels
- Utilities
- Transportation
- Environmental Facilities
- Biodiversity
- Forestry
- Defense
- Base Map
- Addresses
- Geology

... Built In Collaboration With User Community...
Encapsulating Expert Knowledge... Jump Starting Projects

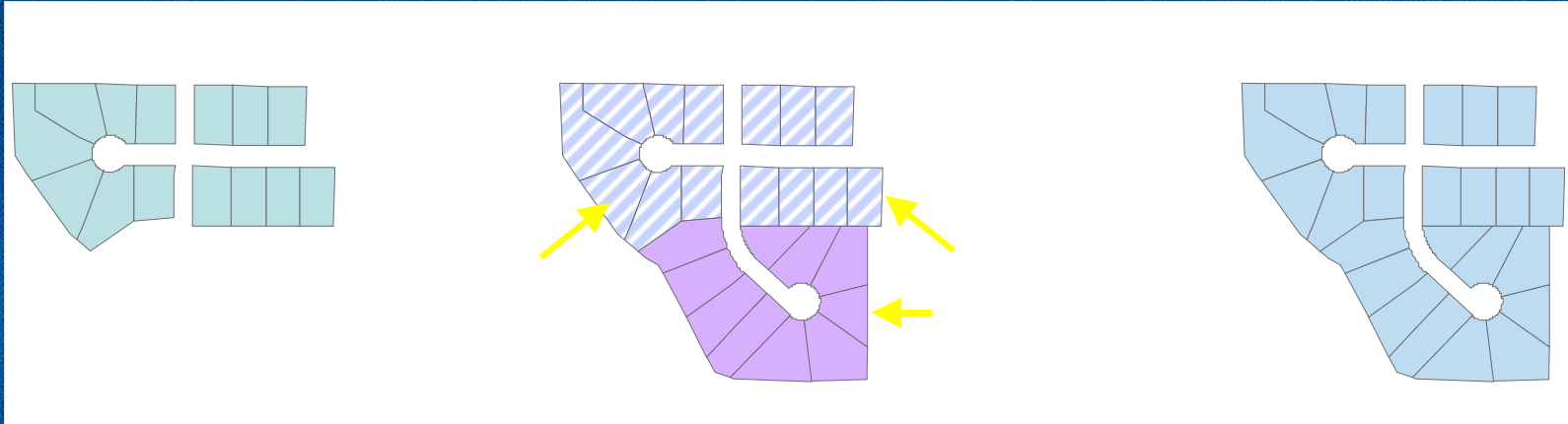


Geodatabase Manages Change

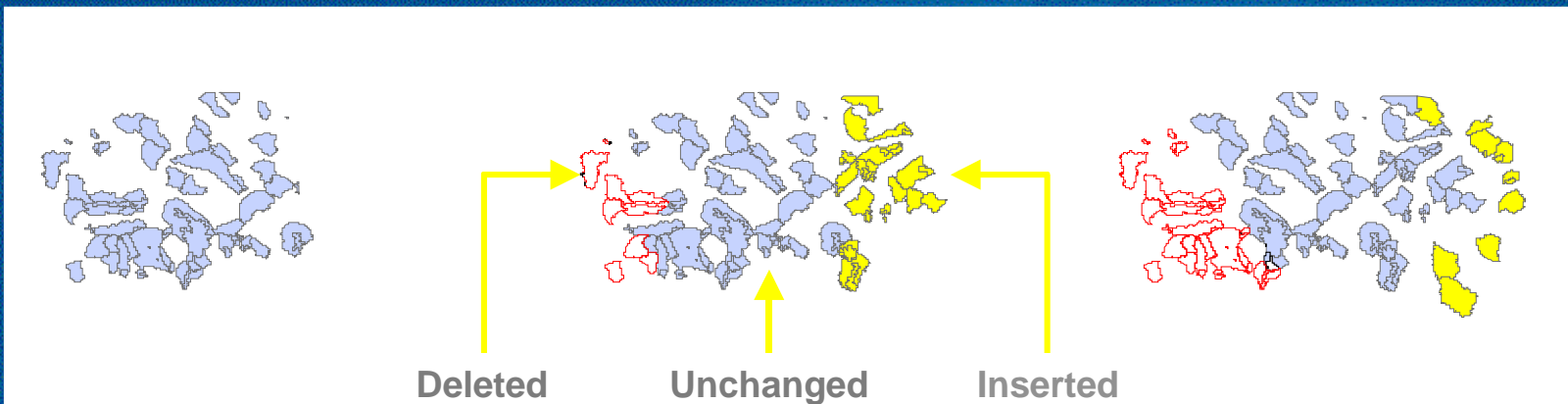


Geodatabases Manage Change

Transaction Models



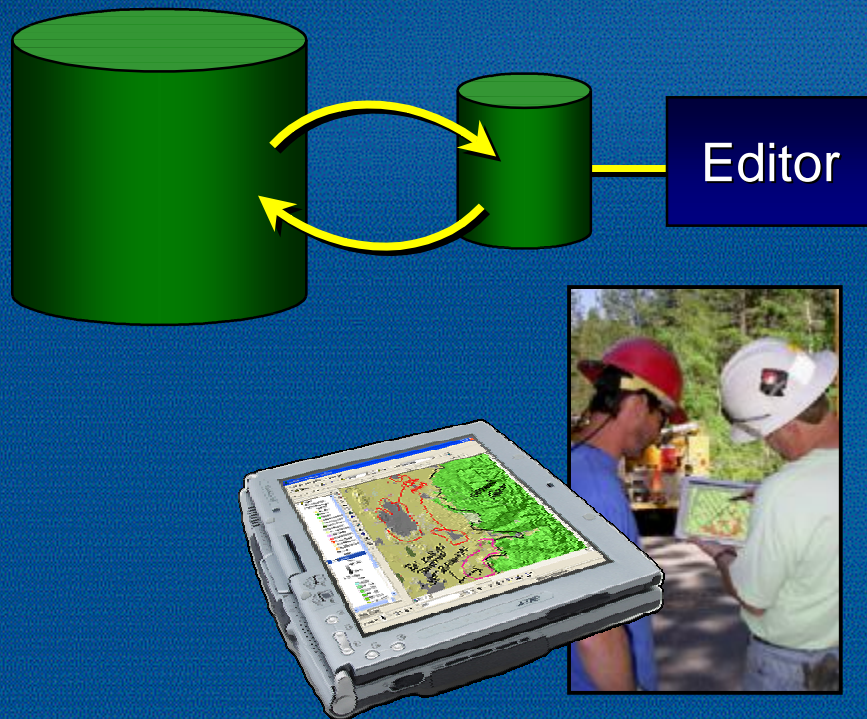
Multi-user editing



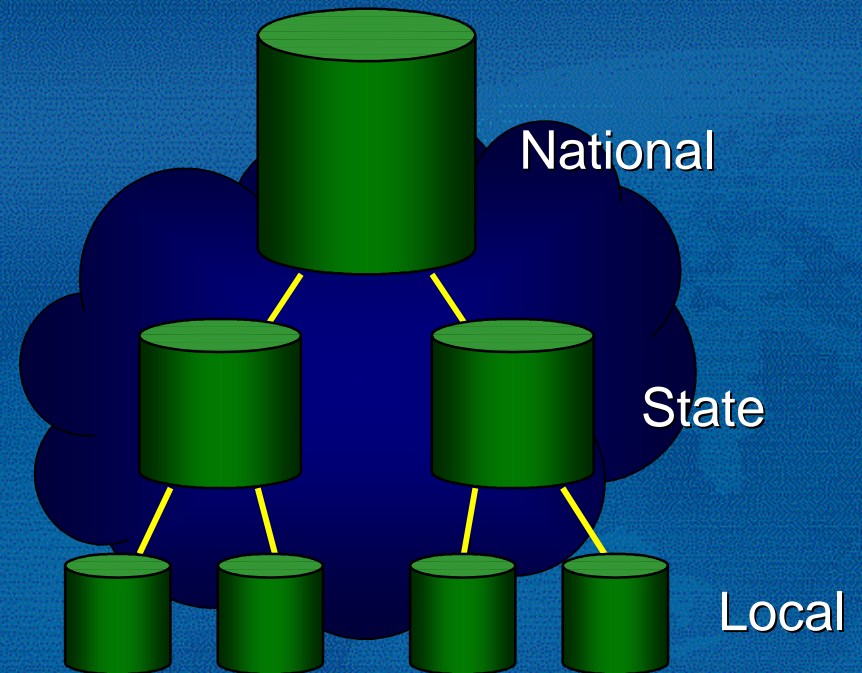
Historical Archive

Geodatabase Manages Distributed Data

Disconnected Editing

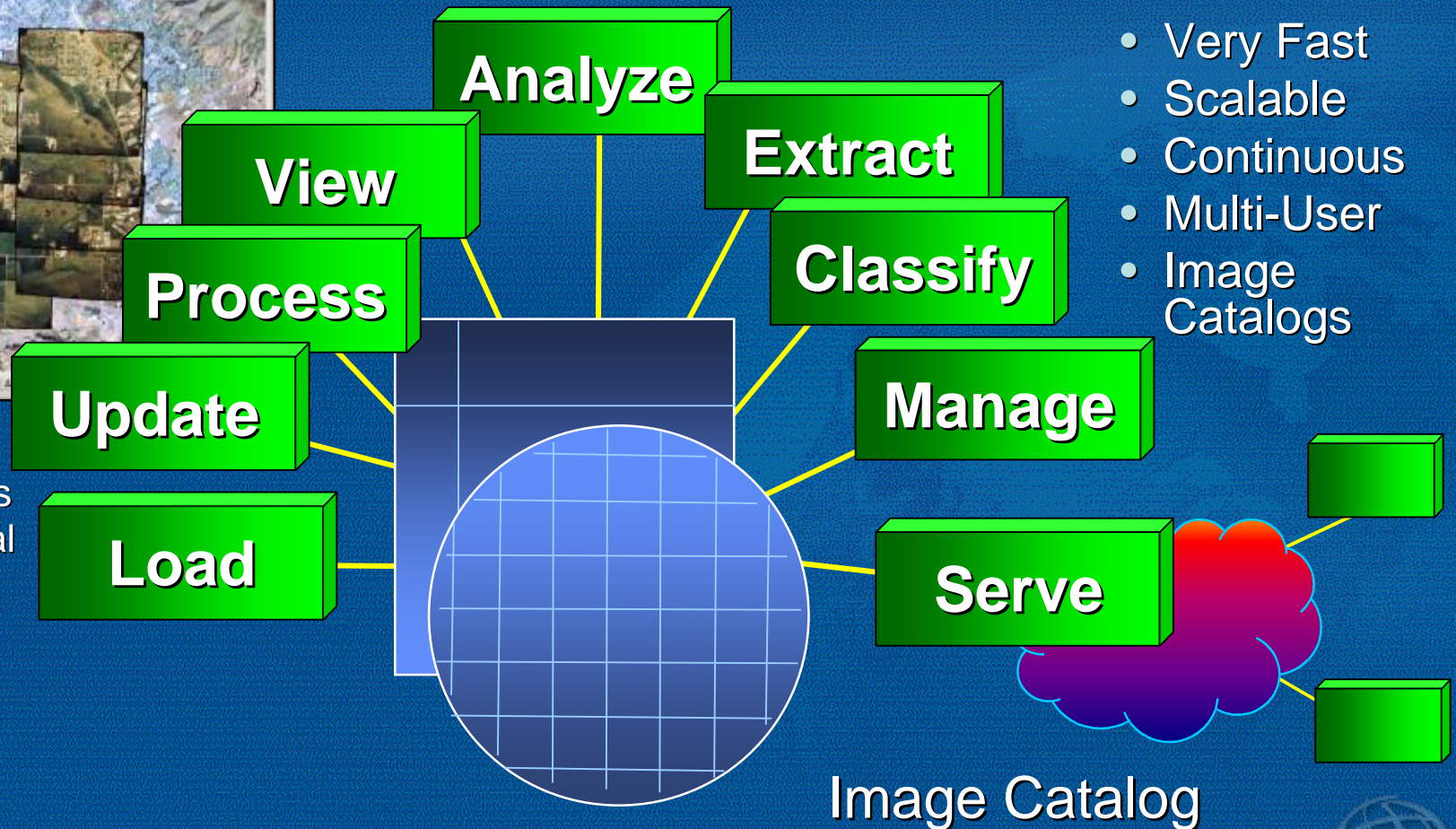


Multiple Replication



The Geodatabase Provides The Base For an Image Information System

A Complete System for Raster Data



- Orthophotos
- Multispectral
- Binary
- Documents
- Elevation
- Grids

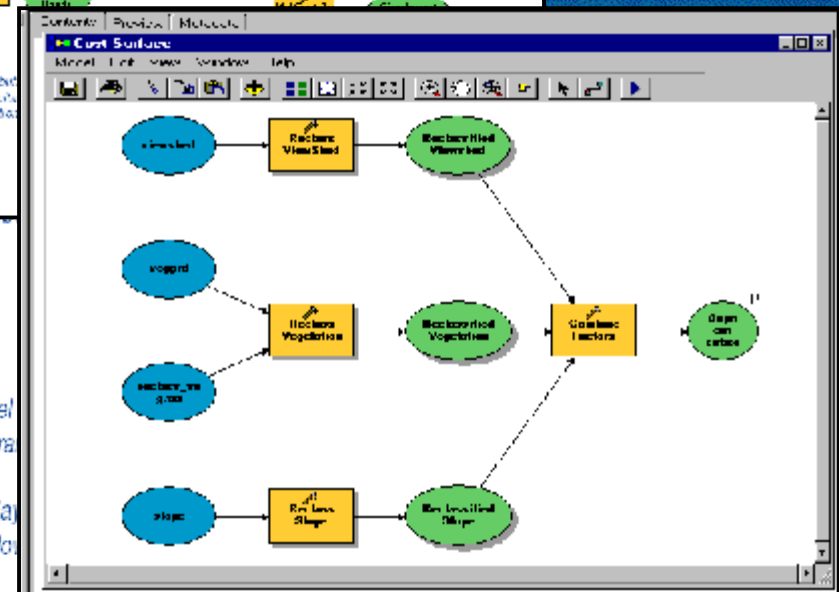
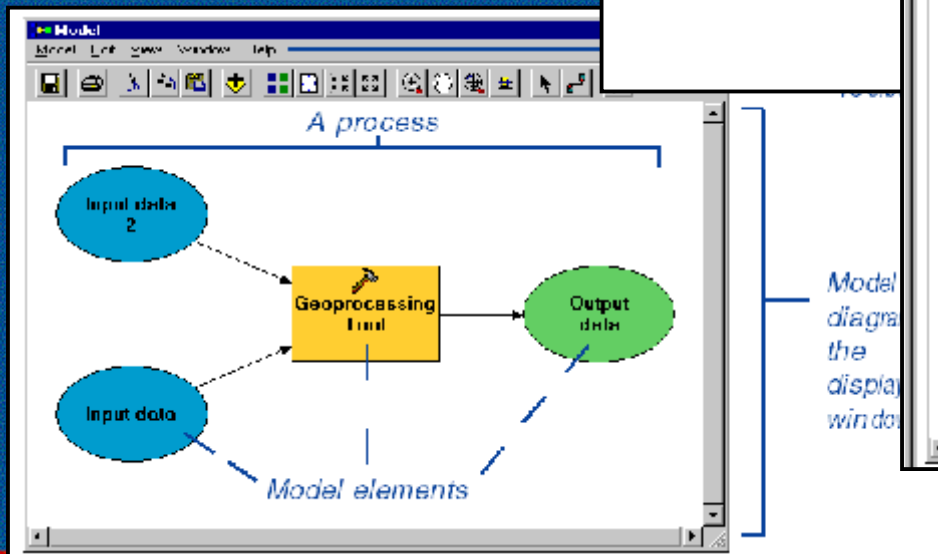
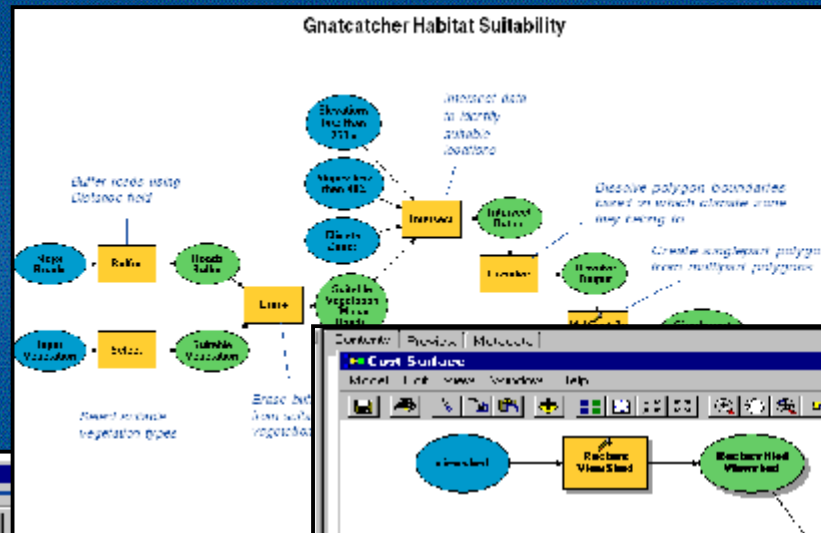
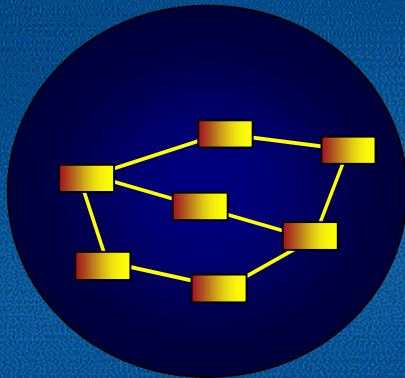


... For Large Multi-User Environments



Geodatabase Encapsulates Models

– Best Practices and Applications



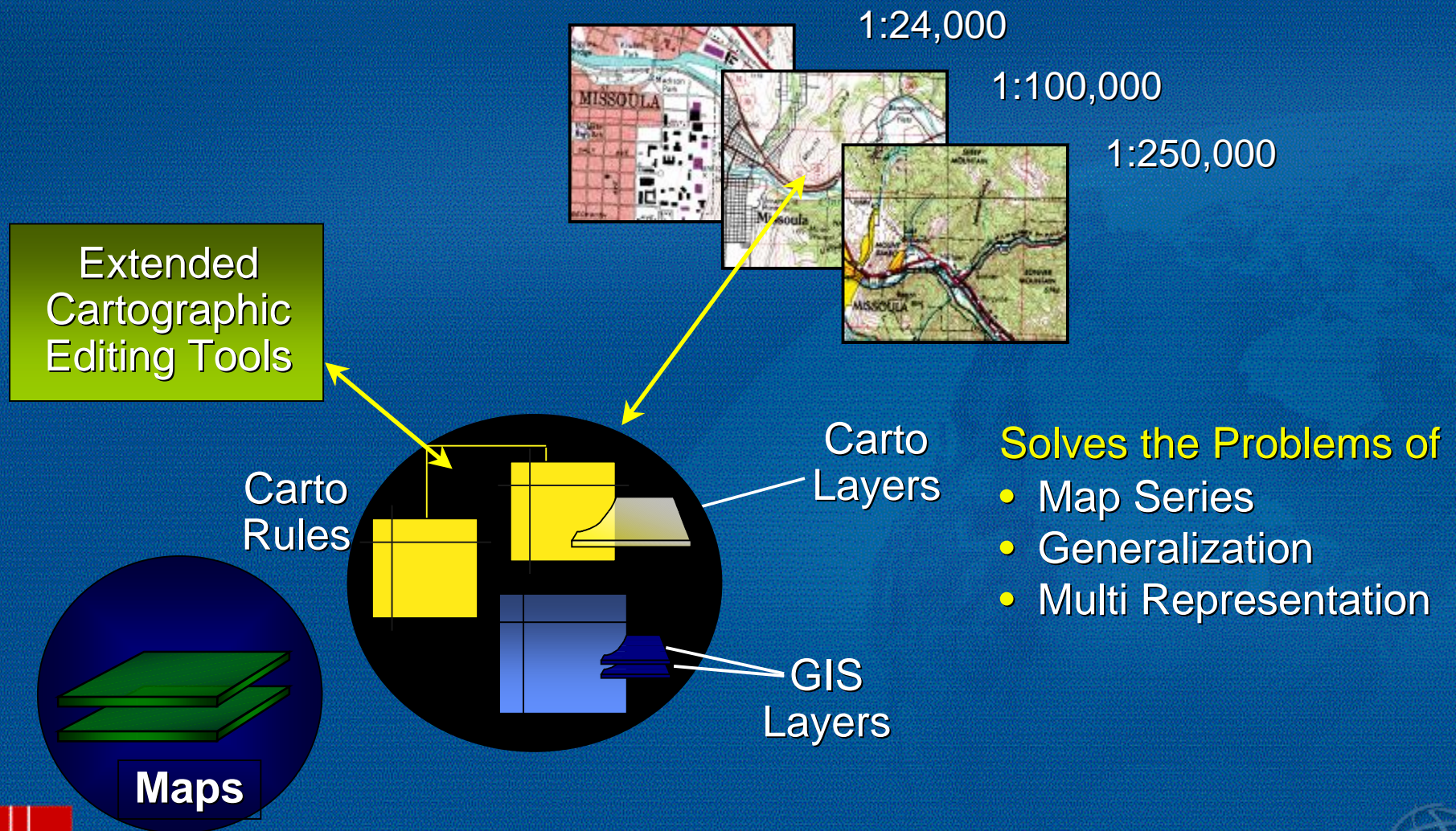
FIG

... Sharing Geographic Knowledge



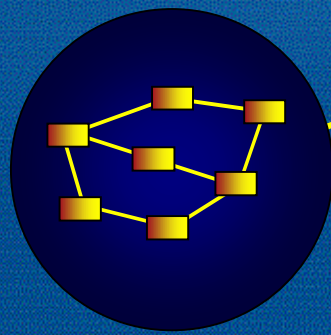
Geodatabase Innovation Manages Maps

Database Cartography

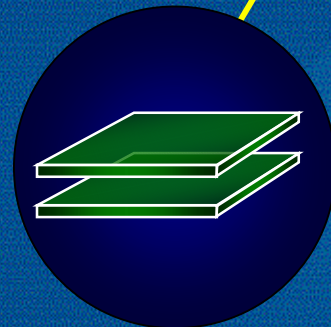


Geodatabase Manages Metadata

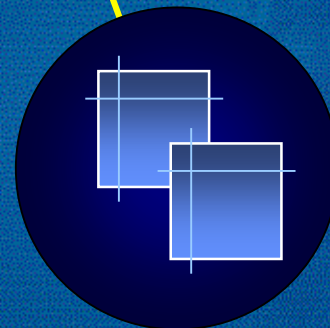
Documenting and Describing



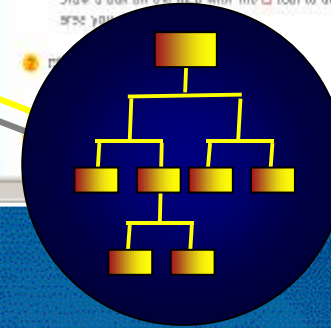
Workflow Models



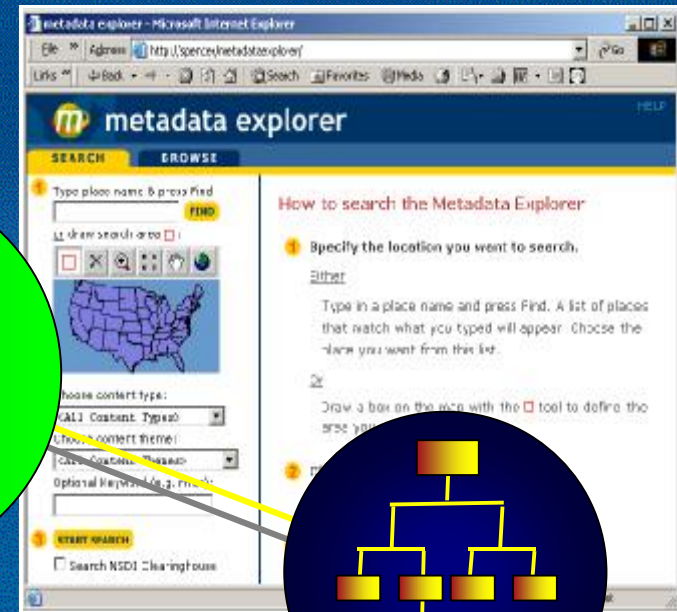
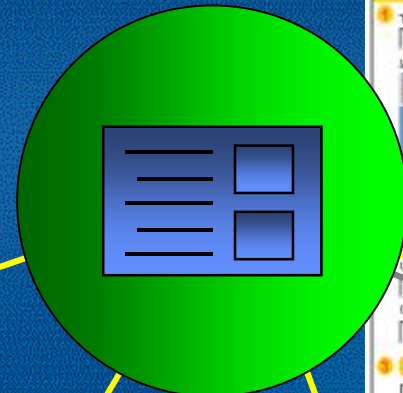
Maps (Services)



Data Sets



Data Models

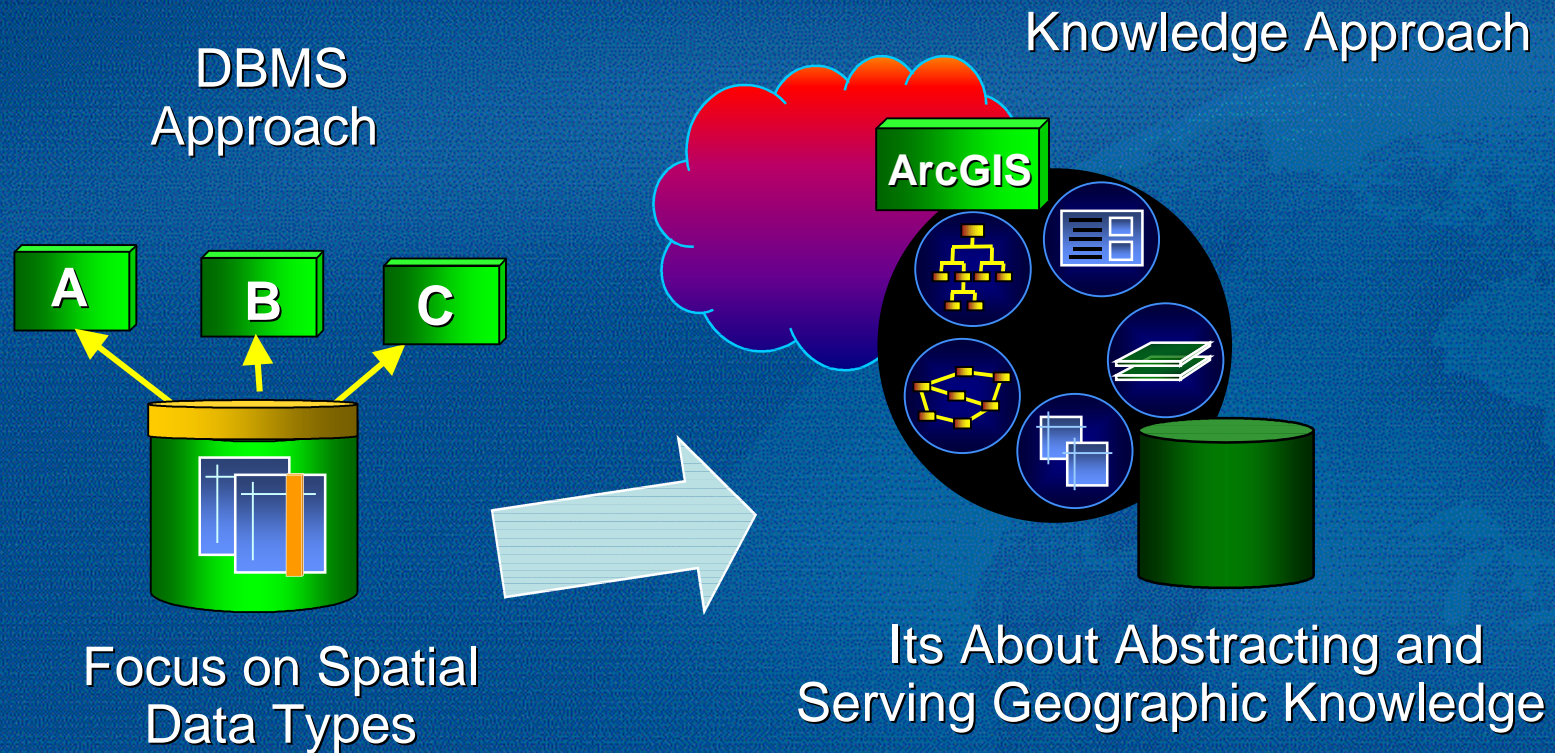


... Geographic Knowledge



Innovation In Approach

It's More Than Just Data And Tools....

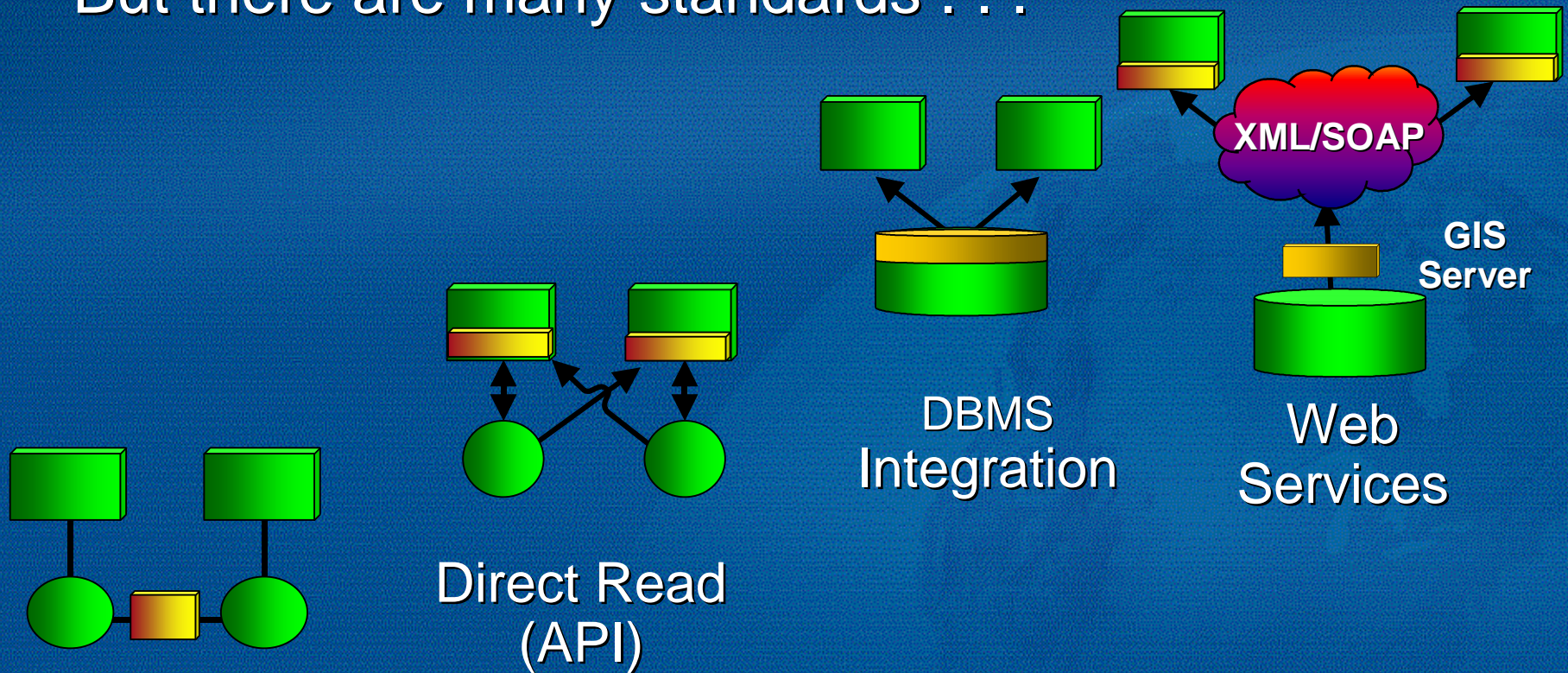


... Focus Is On Managing Geographic Knowledge



Interoperability is Important

But there are many standards . . .



Conversion

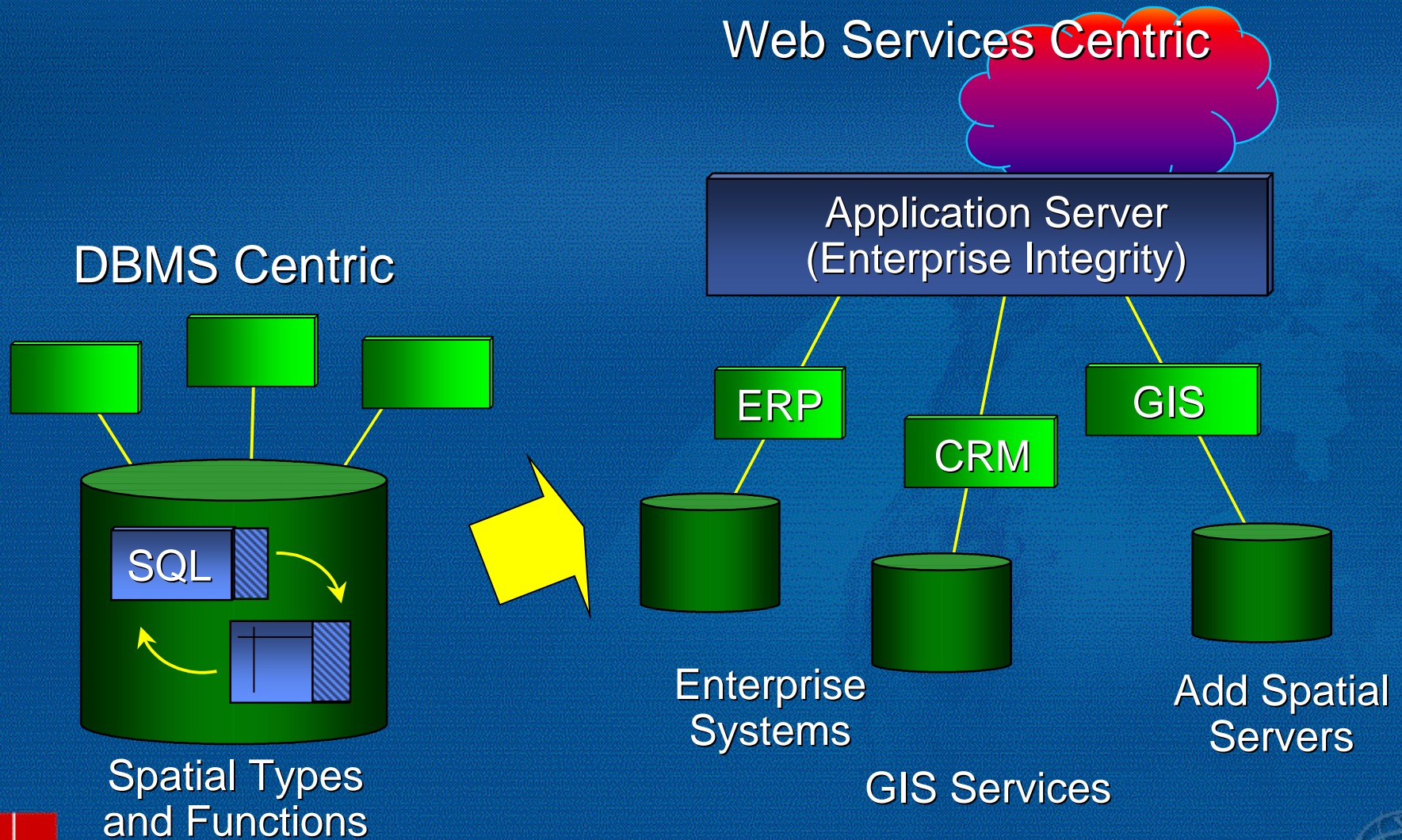
Direct Read
(API)

DBMS
Integration

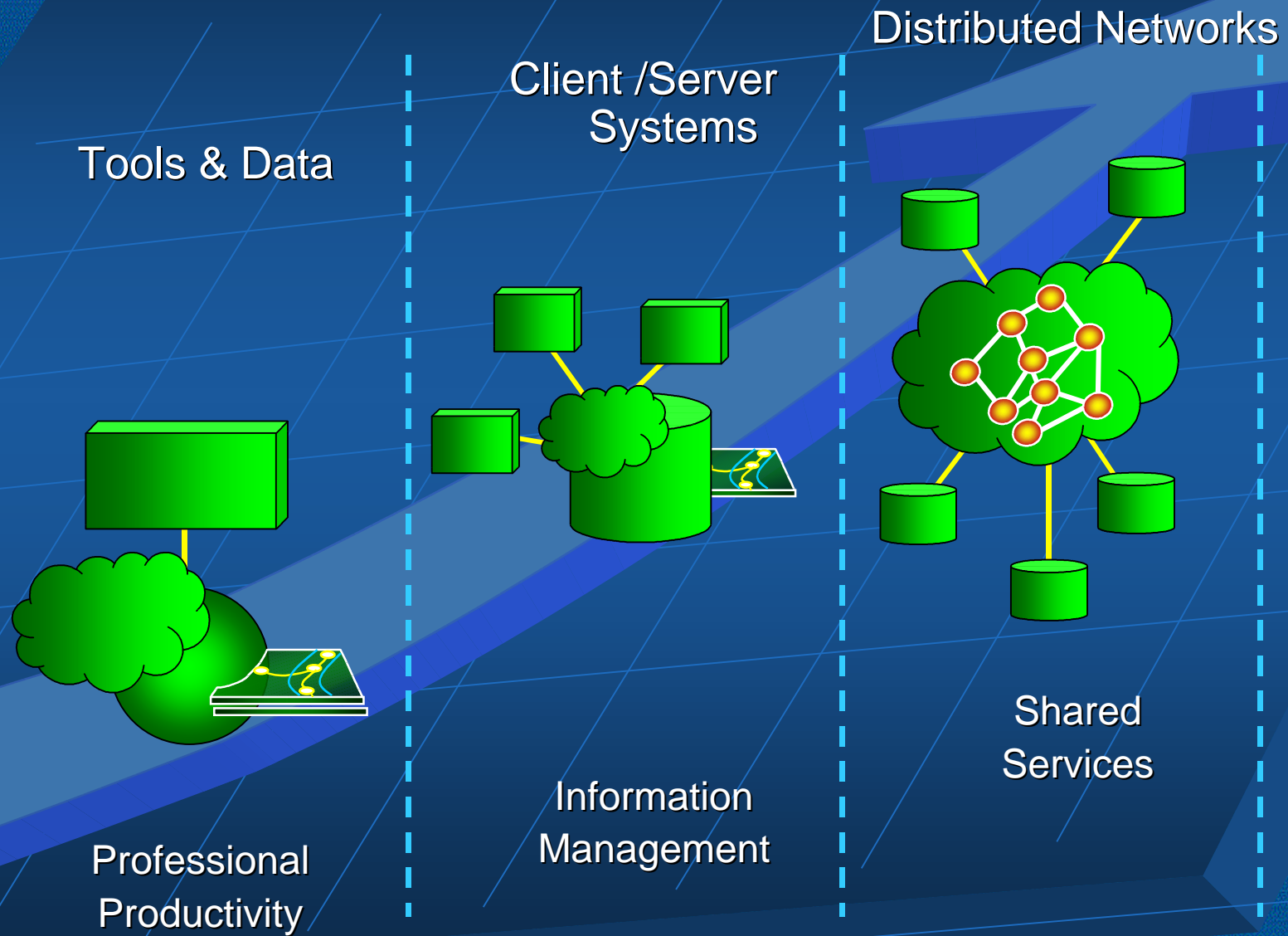
Web
Services

. . . So focus on simple and
practical approaches that work

Two Design Options



Technology Transforms GIS



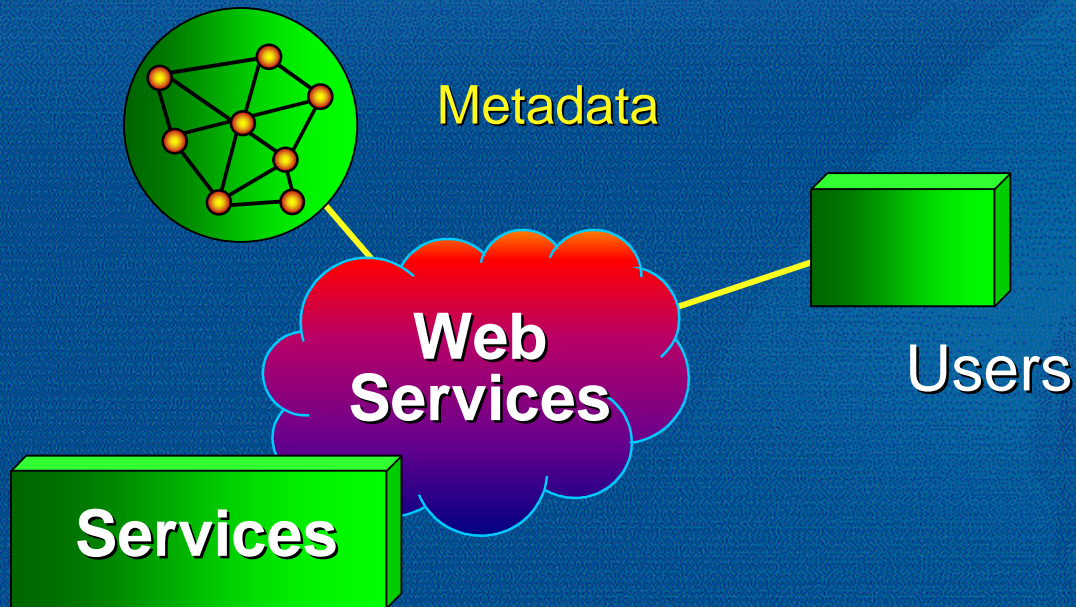
... Web Services Provide A New Platform



Web Services Provide

A System of Open and Interoperable Protocols
... XML, SOAP & UDDI

GIS Portal

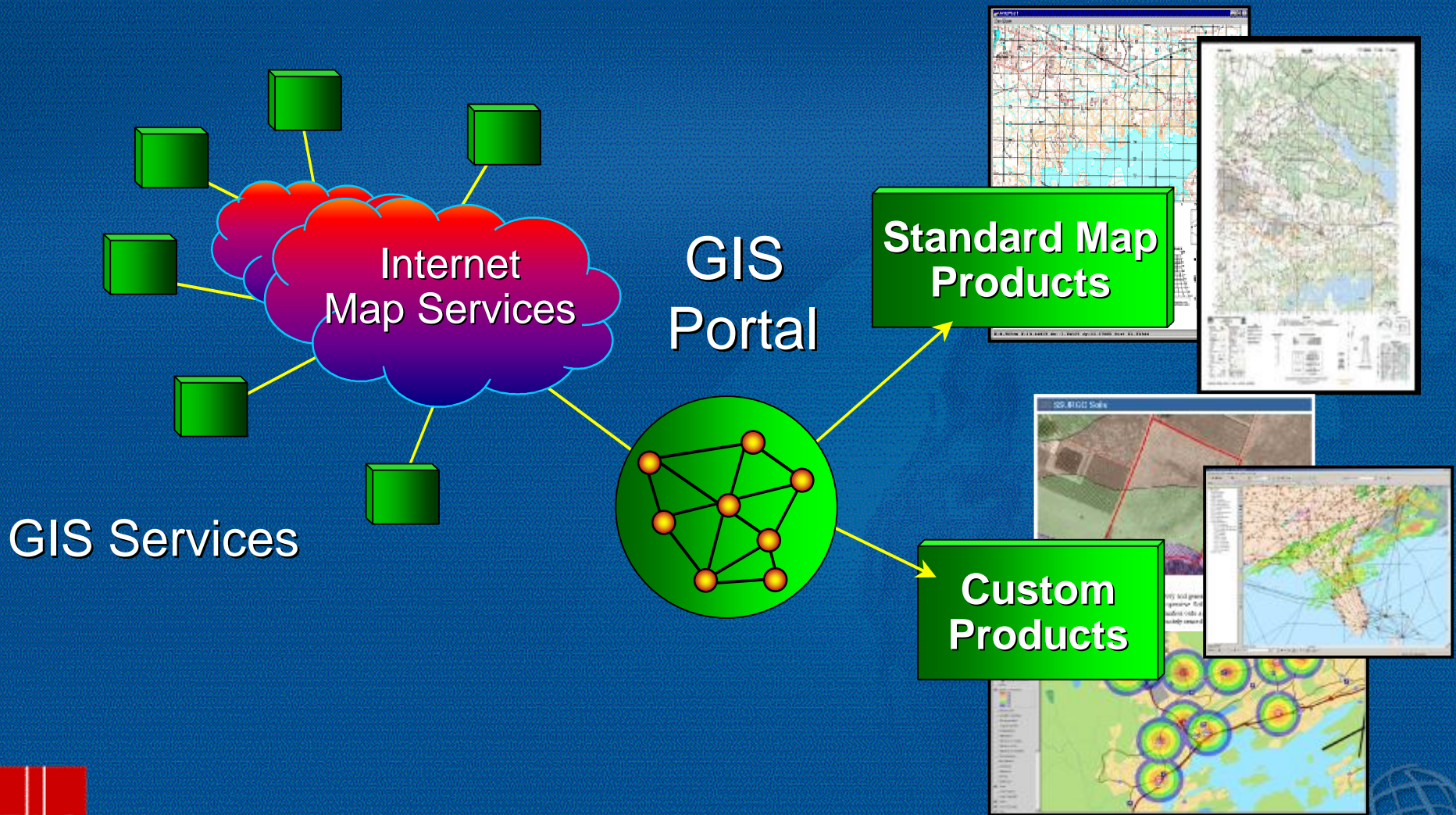


- Many Clients
- Many Servers
- Meta Data Portal
- Loosely Coupled Network

... Network Centric



Web Services Provide A New Architecture For GIS

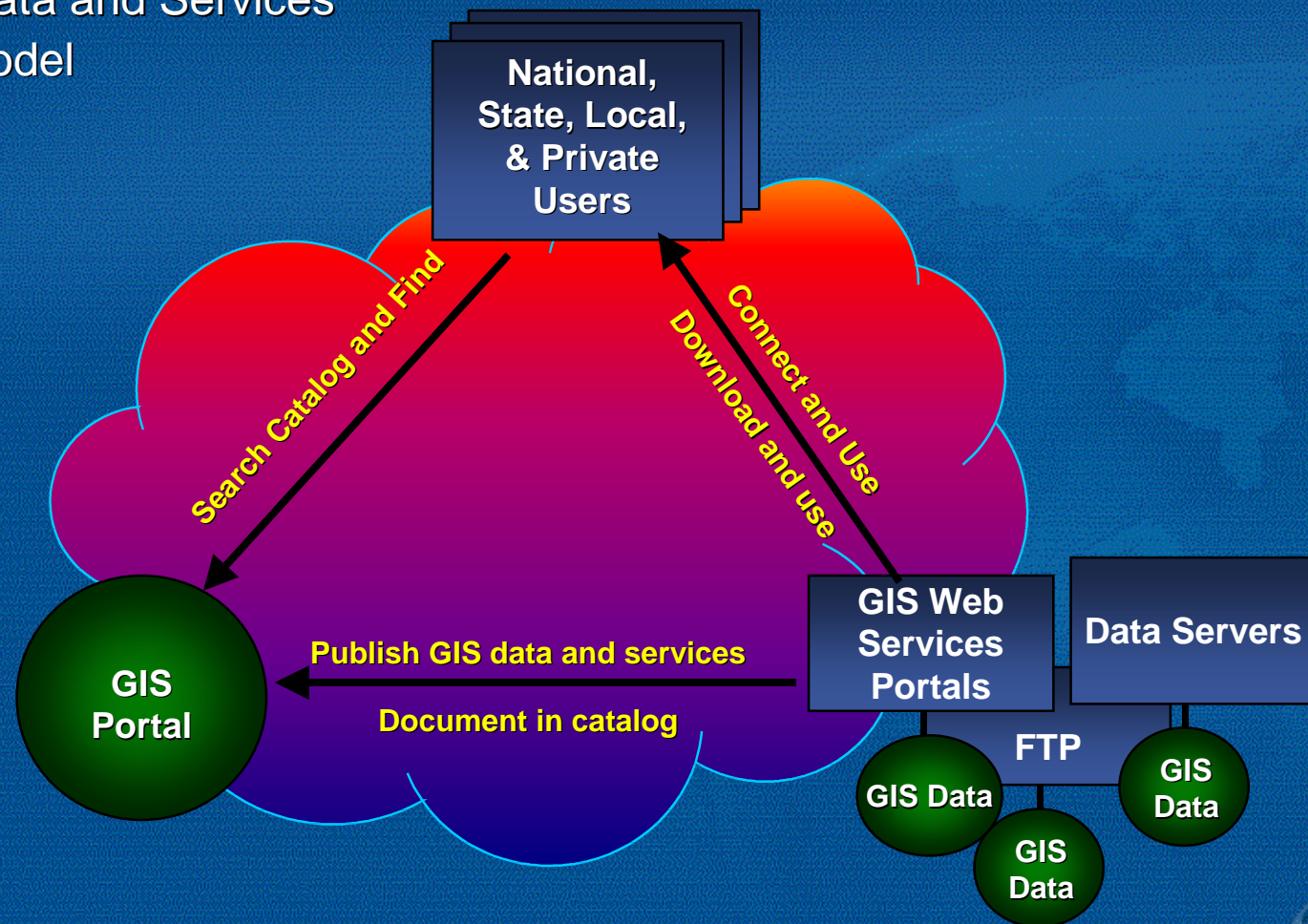


... They Dynamically Integrate Many Distributed Services

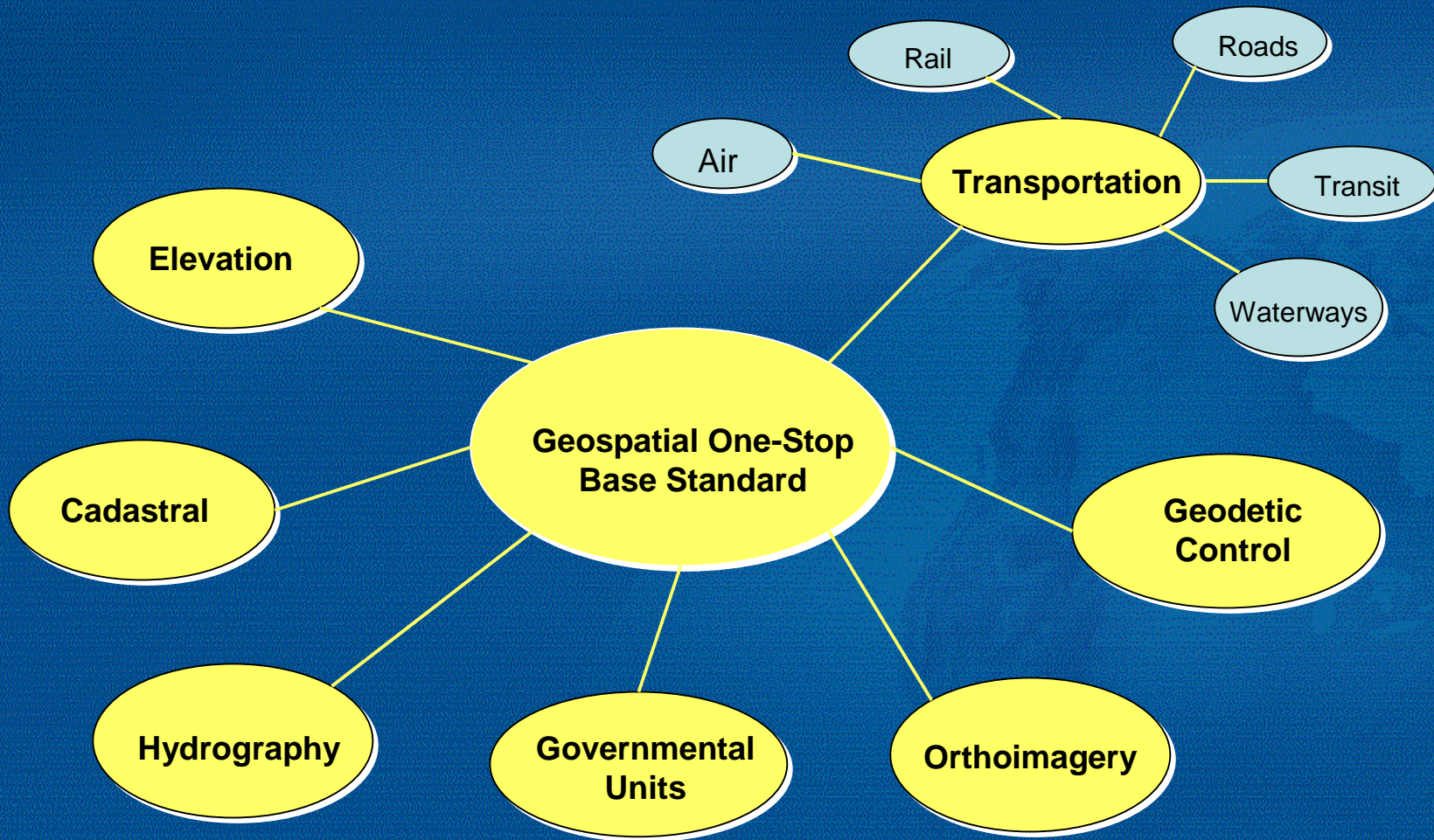


Portal Configuration

- Distributed Data and Services
- Federated Model



Framework Data



Innovation Leads Government



E-Government Is A Community – As Part of the Community

...coordinated, collaborative decision
making, with Citizen access.



Innovation

- People driven
- Performance driven
- Price driven
- Process driven

What's Next?

