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Technical Workshops | Tue, Jul 12

Creating an Effective GIS Technology Strategy

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Agenda

- Characterization of GIS in the Enterprise
  - Growing GIS in your Enterprise
  - Architectural Vision
  - Patterns in Practice
- ESRI Discovery Approach
  - Business Architecture
  - Information/Technical Architecture
  - Governance
- Tools
  - Resources

Extending the reach of GIS within your Business Enterprise…

The Business Enterprise

- Consists of all functional departments, people, and systems within an organization
- Successful enterprises have a “free flow” of information between mission critical systems
- *It is not a proxy for size*
- Most benefits occur when GIS is deeply integrated into organizational business and technology strategies

Real Business Challenges. . .

GIS can help make a difference

Real Business Challenges. . .

GIS can help make a difference

What is GIS in the Business Enterprise?

- Architectural: a workflow-based architecture where geographic data and services are integrated and shared across an organization
  - Facilities management, land records
- Organizational: the enterprise-wide use of GIS capabilities that are governed as IT
- Infrastructural: GIS infrastructure used to enable and extend existing systems with geospatial data and services
  - GIS is managed as a platform vs. an application

Tactical Growth Over Time

- Broad access for business enterprise to geographic data and processing
- Common infrastructure to build and deploy GIS
- Gain economies of scale through organization-wide GIS use
- Often the best technology to integrate disparate systems – GIS is by nature integration technology
- Promotion of reusability
- Obtain business sponsors and stakeholders

A Successful Strategy Requires a plan

- Create a baseline à how?
- Promote a series of events with the intent to investigate your current implementation of GIS in support of your business operations.
- Promote assessment and requirements gathering sessions for the validation of your technology deployment as it relates current industry and vendor related best-practices.

A Strategy is a systematic plan of action…

Need for Discovery

…so now what?

Execution of a plan requires “buy-in”

1. Understand where you are
2. Understand where you’re going
3. Identify the barriers
4. Developing the strategy

Lets dig in…

ArcGIS Online Capabilities

Web/Cloud

Empower

Designers

Developers

Open

Simple

Simple

Imagine

Create

Design

Style

Host

Publish

Deploy

Enterprise

Create

Actionable

Information

Share

Unlock

Easy

Open Data Feeds

Domain

Easy

3 Distinct Segments

Strategy – Formalize a Process

1 Align with the platform vision

↓

- Business Architecture
- Information Architecture
- Technical Architecture

SLA — 2

3

- Confirm business architecture
- Create baseline
- Probe on opposing views
- Create conceptual architecture
- Create service abstraction
- Revisit conceptual architecture
- Document gap analysis

Effects:
Properly defining solution
à (core, data, services, training)
Migration
Implementation
Change management
Best practices

Items to consider

Strategy & Technology Alignment

Data Management	Planning & Analysis	Field Mobility	Operational Awareness	Constituent Engagement
Collect, Organize, & Exchange Data	Transform Data Into Actionable Information	Get Information Into and Out of the Field	Disseminate Information Where and When it is Needed	Get Feedback and Make Informed Decisions
Geodatabase	Geoprocessing	Mobile	Web api's	Web api's Geodatabase

A Complete Integrated System

Desktop **Server** **Online**

Patterns of Business Behavior

Data Management	Planning & Analysis	Field Mobility	Operational Awareness	Constituent Engagement
Collect, Organize, & Exchange Data	Transform Data Into Actionable Information	Get Information Into and Out of the Field	Disseminate Information Where and When it is Needed	Get Feedback and Make Informed Decisions
Geodatabase	Geoprocessing	Mobile	Web api's	Web api's Geodatabase

A Complete Integrated System

Enterprise | **Web / Cloud** | **Device Pervasive**

Strategy – Communicate to Business

Summary

The ESRI Onsite Architecture Assessment (EOAA) is an event intended to investigate a customer's implementation of the ESRI technology platform in support of their business operations. An event is comprised of an onsite assessment and validation of the deployment of ESRI technology as it relates to the four GIS patterns of business behavior and current industry best-practices.

Goals

1. Validate the current deployment of ESRI technology against architecture best-practices.
2. Identify potential risks associated with the customer's existing ArcGIS technology deployment.
3. Identify shorter-term prescriptions for mitigating risk
4. Gather intelligence associated with customers vision for GIS within the organization including on-going and future initiatives
5. Promote the value of ESRI's complete technology platform in the context of the core GIS patterns and the customers business goals

Deliverables

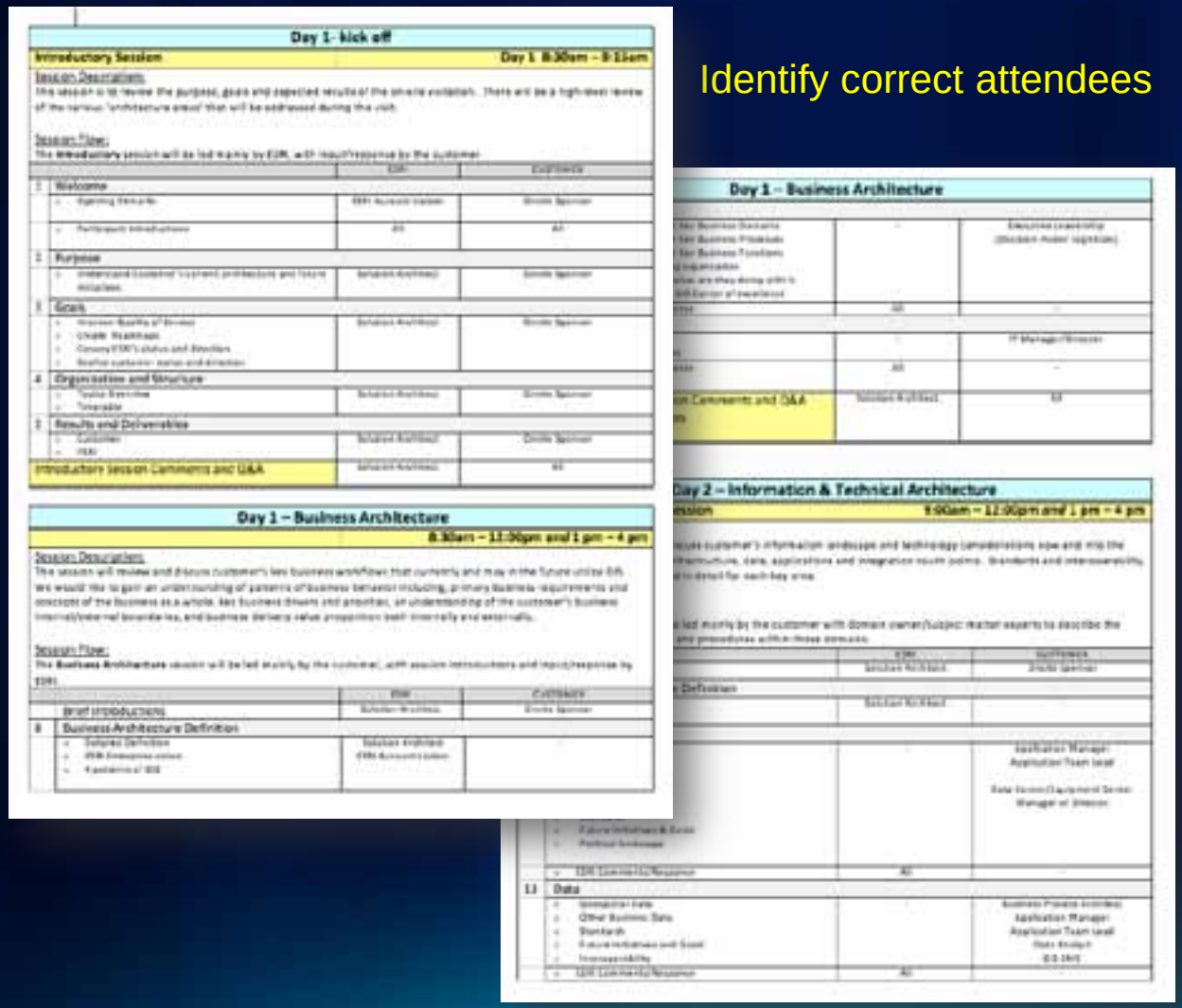
1. A site visitation report which includes:
    a. Current architecture diagram of ArcGIS technology implementation
    b. Future state conceptual architecture diagram
    c. A summary with visioning in the context of the GIS patterns and best practice recommendations

Note: Information gathering context

Often times the organizational vision is not apparent to those at the workgroup level. It is important to have executives or decision-makers present to obtain a clear picture of current, on-going, and future initiatives.

Inform, invite, interact with your stakeholders

Strategy – Conduct Formal Sessions



Identify correct attendees

Strategy – Ask Relevant Questions

Business Architecture

1. What are the top 5 business workflows you support using ArcGIS technology, are these considered to be mission critical? (e.g. data management, planning, field enablement, operational awareness)
2. What are the top 5 pain points regarding supporting business workflows using ArcGIS technology today?
3. Who are the primary stakeholders supported by your ArcGIS system, what is their role, what are their needs related to your organizations internal / external business boundaries?
4. How do these various stakeholders measure success?
5. Can you provide examples of business process workflow diagrams/documents that involve the use of ArcGIS technology?

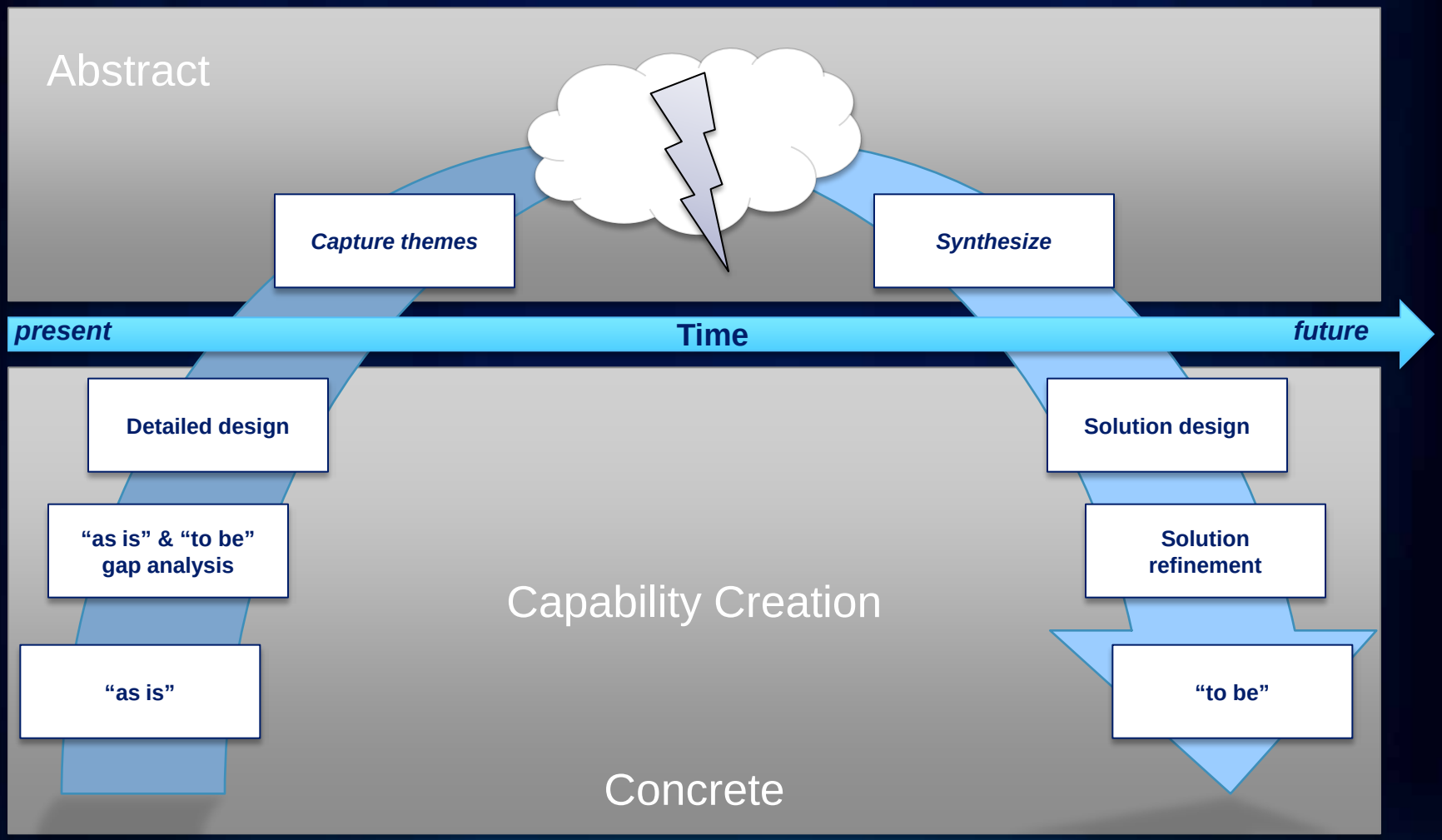
Information Architecture

1. What are the geo-centric / geo-enabled business applications that support the top 5 business workflows identified above?
2. What basemap data and operational layers are used to support each of these applications and what are their sources?
3. How is this data collected, organized and managed?
4. Could you provide examples of data structures and schemas as diagrams?

Technical Architecture

1. Could you describe the ArcGIS technology environment (hardware/software) used to support each of the geo-centric / geo-enabled business applications identified above?
2. Do you have variations in versions of core ArcGIS technology installed?
3. Do you have variations in versions of RDBMS, web server, or any other platforms interacting with ArcGIS technology?
4. Do you have network considerations that exist between installed components of ArcGIS technology?

Geospatial Capability Growth Timeline



Solution Recipe

- Core / Partner Technology
- Data
- Training
- Enterprise Best-practices
- Services / Support

GIS has evolved

Same Patterns
Different Solutions

GeoEnabled Solutions

Data Integration via location
Trends, What if's, Patterns
Mobile – workforce optimizing
Spatial Viewing

Business Enterprise

GeoCenteric Solutions

Asset / Data Management
Planning and Analysis
Field Operations
Operational Awareness

GIS Domain

Geospatial Capabilities

Types of enterprise users
- Developers
- IT / IS Managers
- Decision Makers
- Line of Business Managers

Create Solution Maps and identify aids

Problem

Solution

Problem Statement

- Clients are not able to leverage the ArcGIS platform across their business operations nor are they aware of how to do so in a manner that is consistent with ESRI's current recommendations and best practices.

Cause of Problem

- There is a lack of communication for how ESRI technology can be leveraged within the business operations.
- Have not reached business stakeholders.
- Unknown ESRI recommendations and best practices.

Negative Business Impact

- ESRI technology fails to meet customer / organizational demands.
- ESRI technology does not make client successful

How We Solve The Problem

- Effectively communicate how ESRI technology can offer business value.
- Provide client with a complete vision for leveraging ESRI technology.
- Perform knowledge transfers regarding ESRI best practices.

Positive Business Outcome

- Happy and successful customers.

Back to the strategy…

1 Align with the platform vision

2
- Business Architecture
- Information Architecture
- Technical Architecture

3
- Confirm business architecture
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Value Chain: Business Architecture

Business Architecture Definition

- Defines the enterprise value streams:
  - relationships to all external entities
  - Relationships to other enterprise value streams
  - the events that trigger instantiation

- Business Architecture is composed of processes, functions, workflows and events.
  - Influenced by the corporate strategy;
  - Developed and managed by the organization;
  - Realized through the technical architecture.

- Represents what the enterprise must produce to:
  - satisfy customers;
  - compete in a market;
  - sustain operations;
  - collaborate with its suppliers
  - care for the organization and employees.

Business Architecture Benefits

- A Business Architecture helps with:
  - Viewing the enterprise through the eyes of the customer;
  - Integrating and connecting necessary components;
  - Improving communication;
  - Accepting the evolution of technology;
  - Using strategic business thinking.

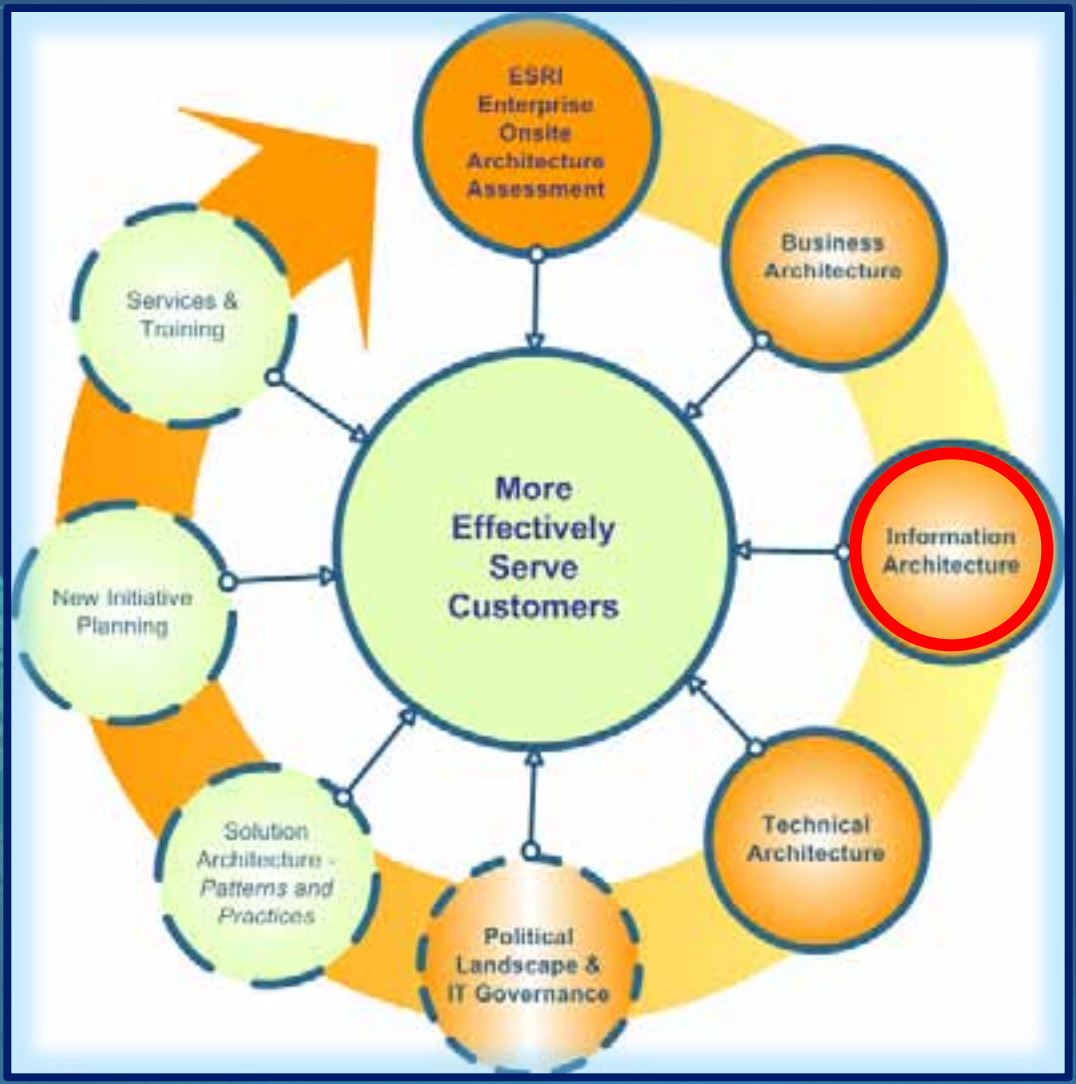
Business Architecture and GIS

- Understanding the processes, business functions, workflows:
  - Data and information requirements to solve the business challenge;
  - GIS functions to augment a workflow, string together business functions, replace a business process;
  - Spatially enable information traditionally managed elsewhere;
  - Organizational requirements to facilitate the tasks;
  - Determine the design *patterns* that the technical architecture will portray.

Business Architecture Topics

- Business Functions and Processes
  - Key Business Areas
  - Relationship to GIS Strategic Plan
- Operations
  - External Business Systems
  - Business Systems Operations/Procedures
  - Budget Process
- Organization
  - Staff and Roles

Value Chain: Information Architecture



Information Architecture Definition

- Helps map enterprise business systems:
  - Correlate with workflows
  - Specifies which part of the workflows are supported by application
  - Defines who owns data and who manages data

- Like Business Architecture, Information Architecture is composed of processes, functions, workflows and events.
  - Influenced by the corporate strategy;
  - Developed and managed by the organization;
  - Realized through the technical architecture.

- Represents the fuel that the enterprise must produce to:
  - Satisfy applications;
  - Sustain application level operations;
  - Integrate with other interfaces
  - Create actionable information

Information Architecture Benefits

- An Information Architecture helps with:
  - Exposing the owner and the consumer of data streams
  - Promotes and regulates agreement on interfaces and SLA for them;
  - Improved documentation and support;
  - Accepting the evolution of technology;
  - Using geographic approach as business intelligence.

Information Architecture and GIS

- Understanding the processes, business functions, workflows:
  - Data and information requirements to solve the business challenge;
  - GIS data to enhance a workflow, allowing us to orchestrate business functions, even replace a business process;
  - Choose where to spatially enable information traditionally managed elsewhere;
  - Influences the design patterns that the technical architecture will portray.

Information Architecture Topics

- Business Functions and Processes
  - Key Business Areas
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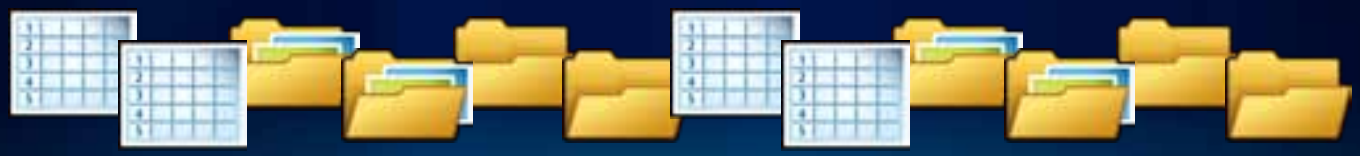
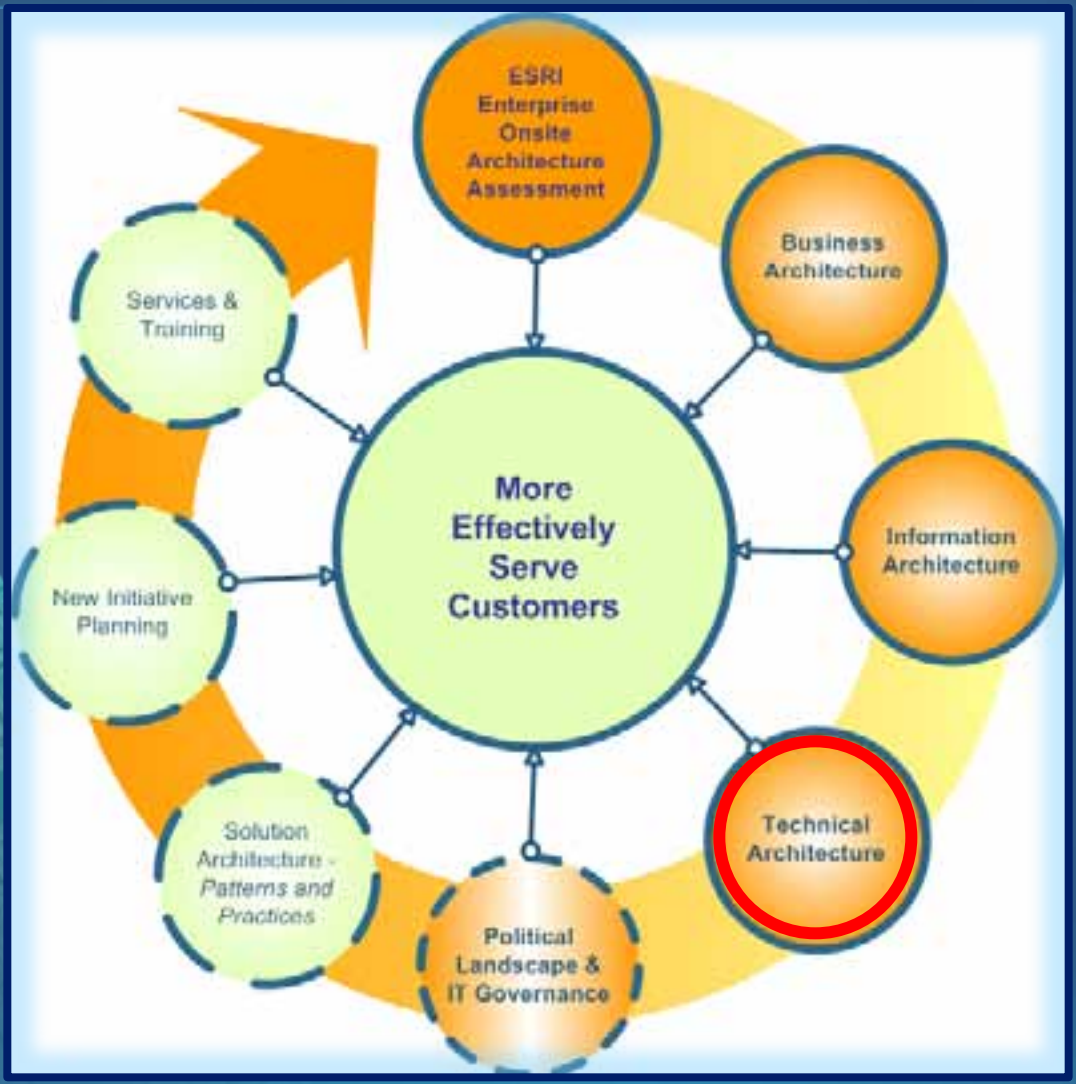


Value Chain: Technical Architecture



Technical Architecture Definition

- Aligns technologies with business needs.
- Defines the "technologies" that are required to support an organization's automation environment.
- Identify technologies that are critical to the implementation and use of a new applications environment.
  - To support company-wide connectivity
  - To create standardization
  - To integrate data
  - To implement integrated applications

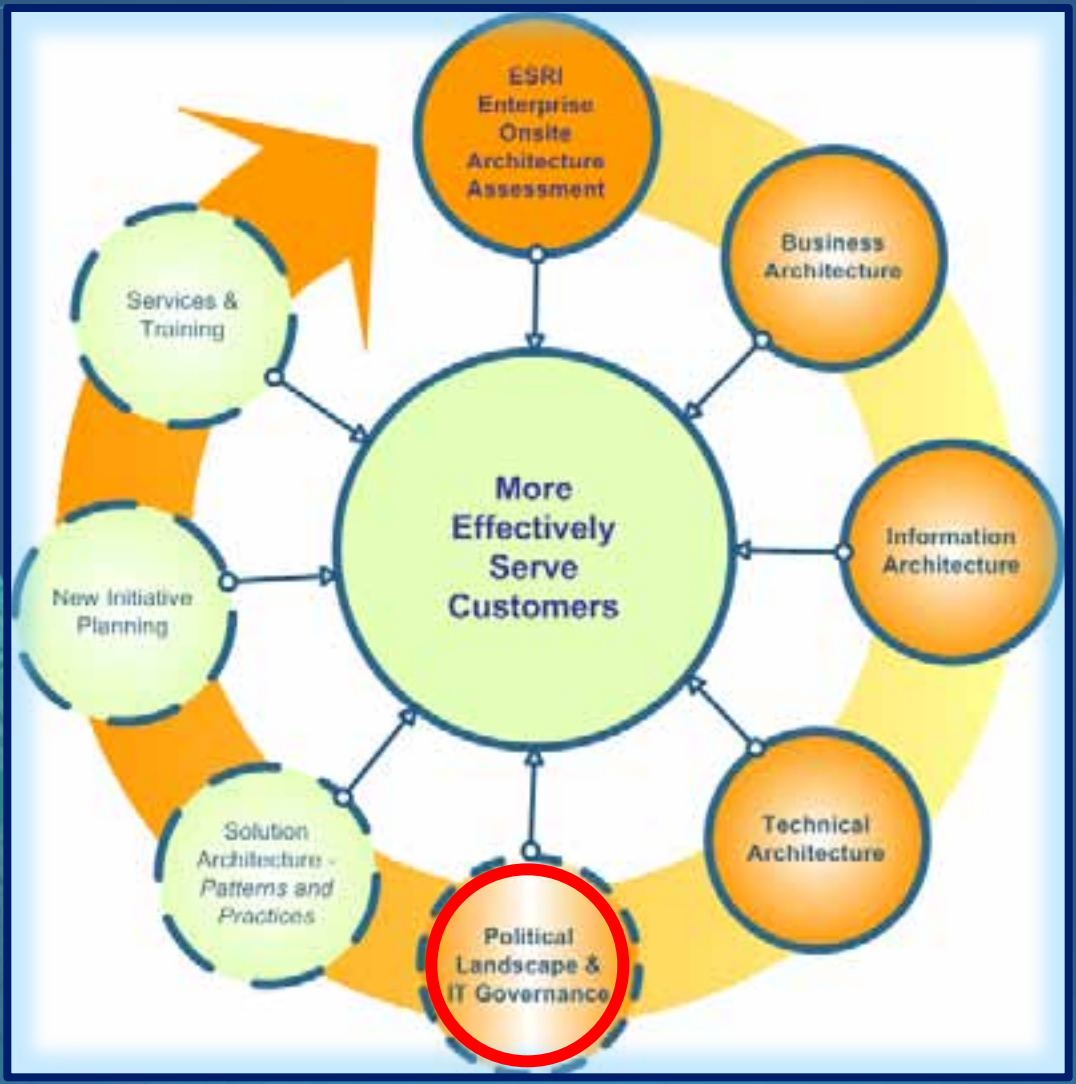
Technical Architecture Benefits

- A Technical Architecture helps with:
  - Meeting business and system requirements and objectives;
  - Reducing cost of maintenance and evolution;
  - Increasing reuse and integration with legacy and third party software;

Technical Architecture Topics

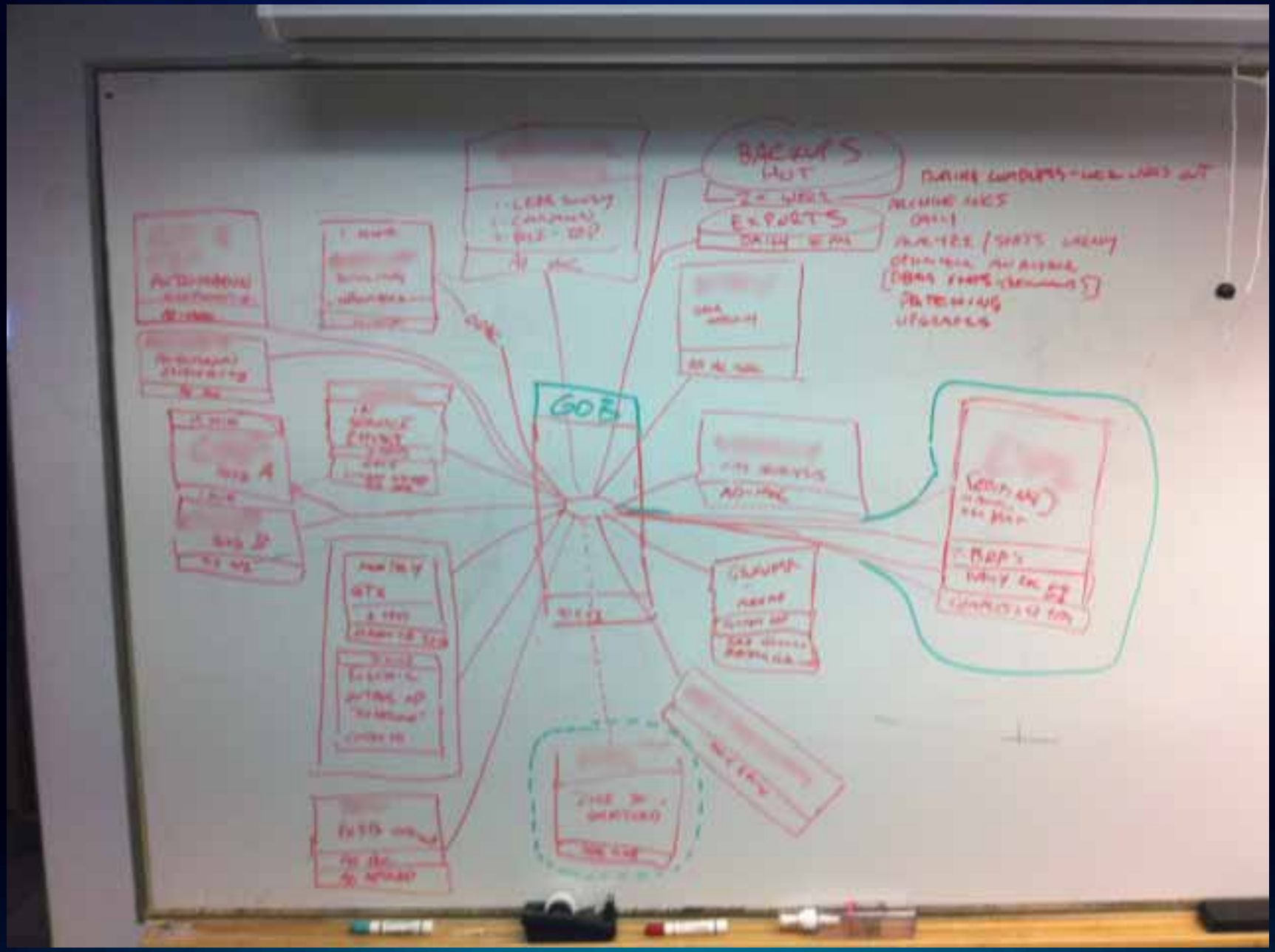
- Infrastructure Landscape
  - Hardware, Software, Security
  - Standards
  - Future initiatives & goals
- Application Landscape
  - Enterprise applications and geospatial enabled systems
  - Standards
  - Future initiatives and goals
- Integration Landscape
  - Integration platforms
  - Standards
  - Future initiatives and goals

Value Chain: Governance



IT Governance Definition

- Is a subset discipline of Corporate Governance focused on information technology (IT) systems and their performance and risk management.
- Specifies the decision rights and accountability framework to encourage desirable behavior in the use of IT
- Evaluates and directs the plans for the use of IT to support the organization and monitoring this use to achieve plans.


BACKUPS
HUT
EXPORTS
GOB

Putting it all together

1 Align with the platform vision

2
- Business Architecture
- Information Architecture
- Technical Architecture

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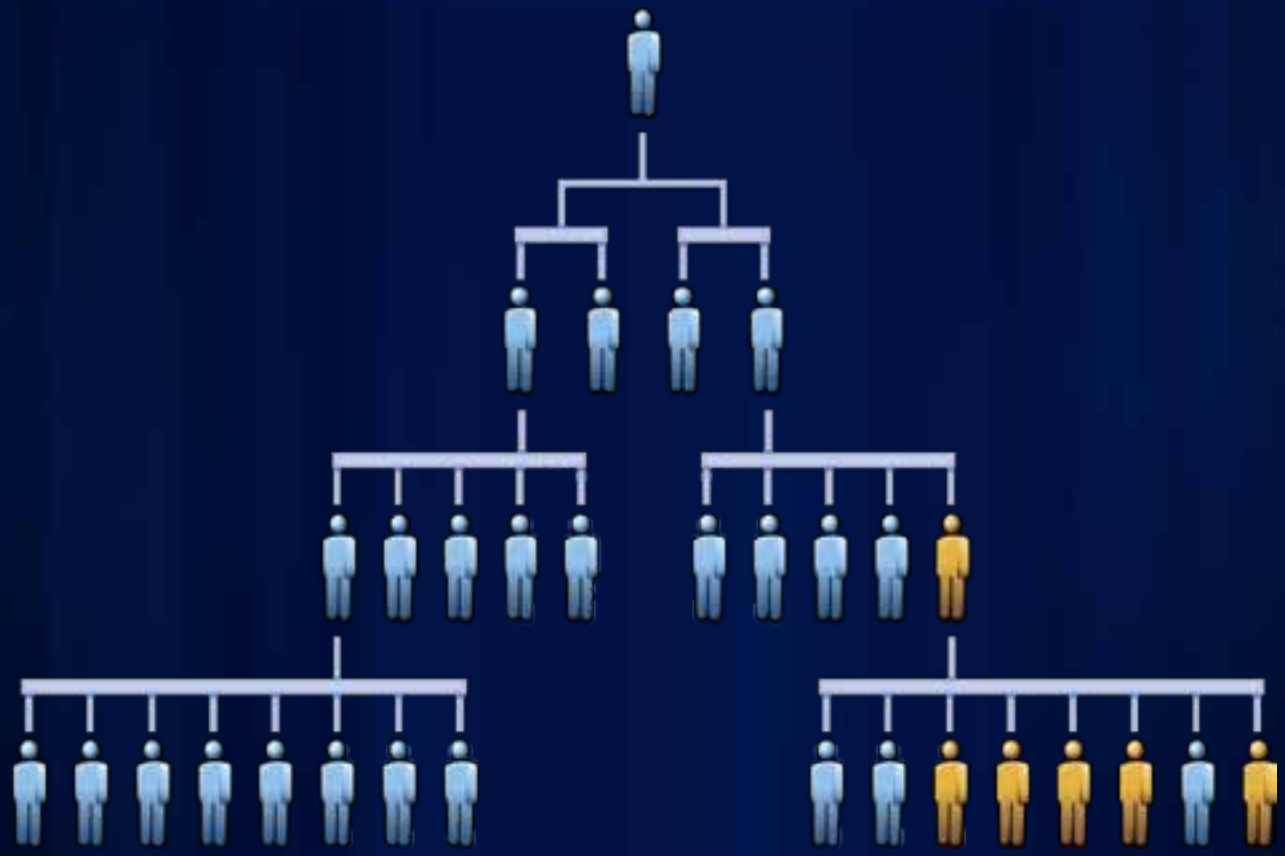
View (perspective) Into the Business



Strategy – Presentation Back to the Business

- GIS technology strategies are driven by business strategies
- Interpret the strategy with reference to value to the organization
- Value is defined directly as “saving,” “making,” or “obtaining” funding
- Technology (and GIS) is a partner to business areas, not an adversary or servant
- Communicate value proposition in no less than 15 and no more than 30 minutes for top level leadership

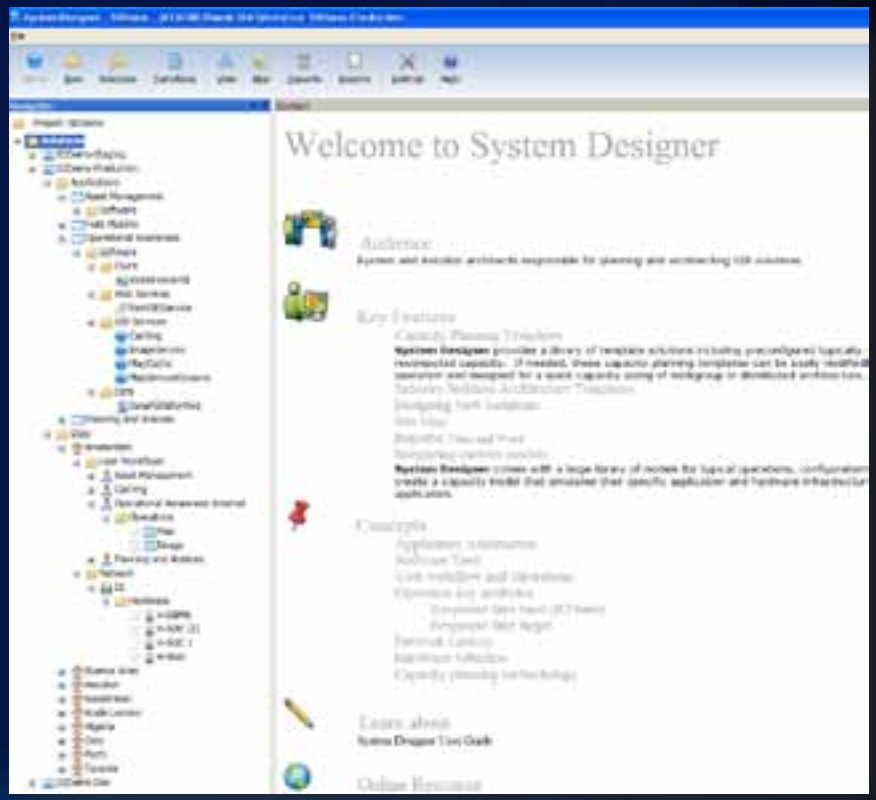
- Choose the presenter very carefully – *it may not be you…*

Tools

- Discovery in context of the patterns
- Define workflows
- Define measure of success
- Capacity Planning Tool (light) CPTL
- Test Harnesses
- Enterprise Resource Center
- System Designer

System Designer

- **Design new solution or from templates:**
  - **Applications**
  - **Infrastructure**
  - **User Workflow**
  - **Capacity**
- **Reports:**
  - **Visio**
  - **Word**
  - **Map**



Coming soon!

System Designer - Templates

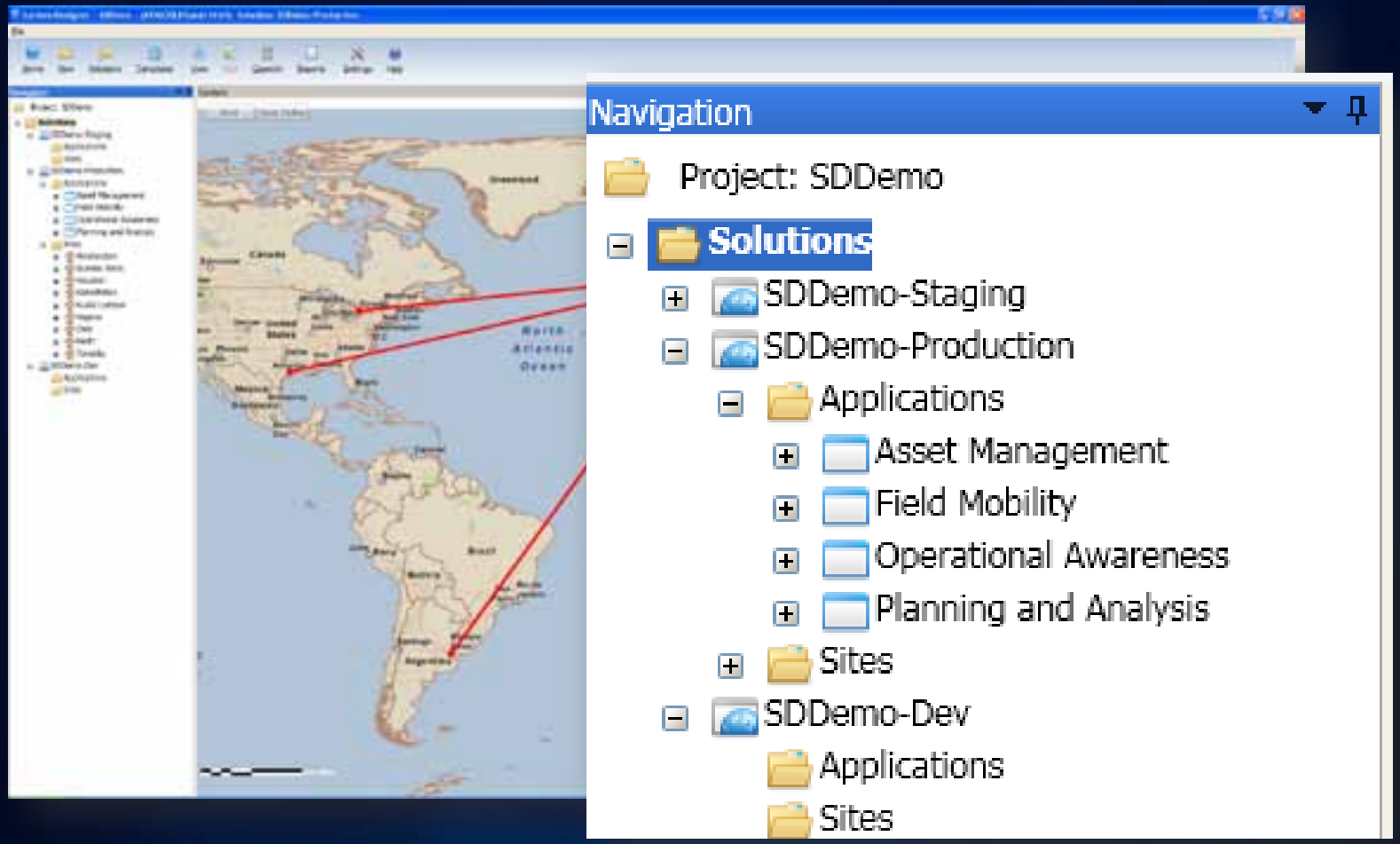
GIS Solution Templates

Template Search:

Industry Category	Applications	Solution Name	Description
	Flex	**RIA - Flex** All All	RIA Flex application using both dynamic and cahce services
	Silverlight	**RIA - Silverlight** All All	RIA Silverlight application using both dynamic and cahce services
	ArcMap	**Citrix** Utilities and Communication Electric	Utility company using Citrix, ArcMap, and GeoDatabase
	ArcMap	**Citrix** Natural Resources Water Resources	Utility company using Citrix, ArcMap, and GeoDatabase
	GISServices	**Capacity Calculator - Workgrou Arch.** All All	Several general GIS operations defined for quick capacity planning
	ArcGISDesktop Flex	**GlobalExplorationSolutionTemplate** Utilities and Communication Location-Based Services	

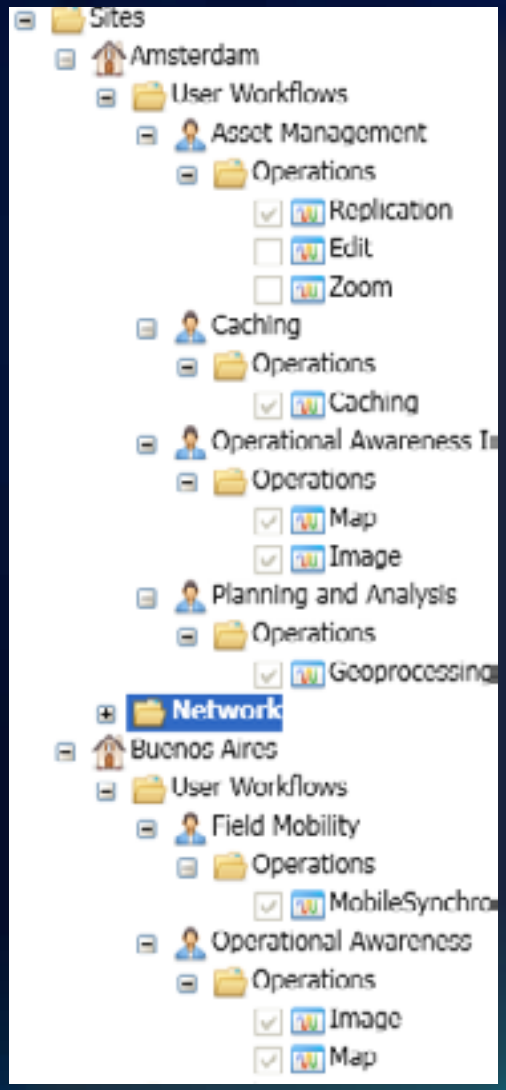
Starting with preconfigured templates will save time!

System Designer - Business Architecture



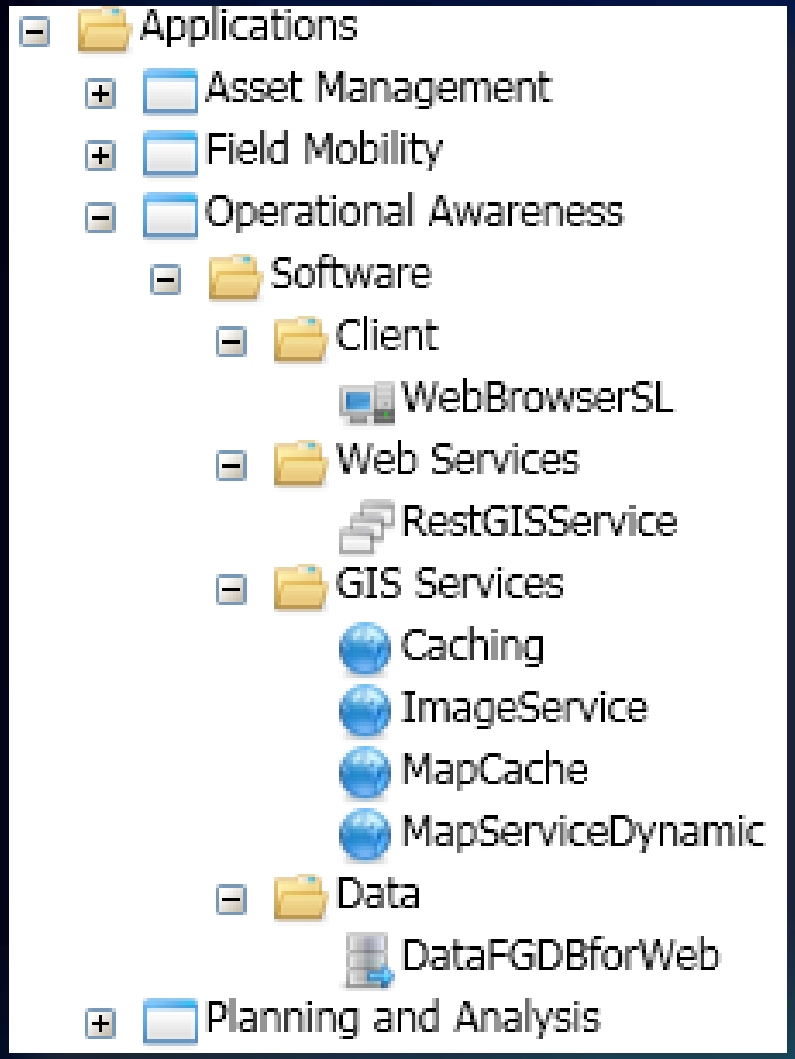
Identify ESRI Solutions Patterns defined in the GIS Strategy

System Designer – Business Architecture



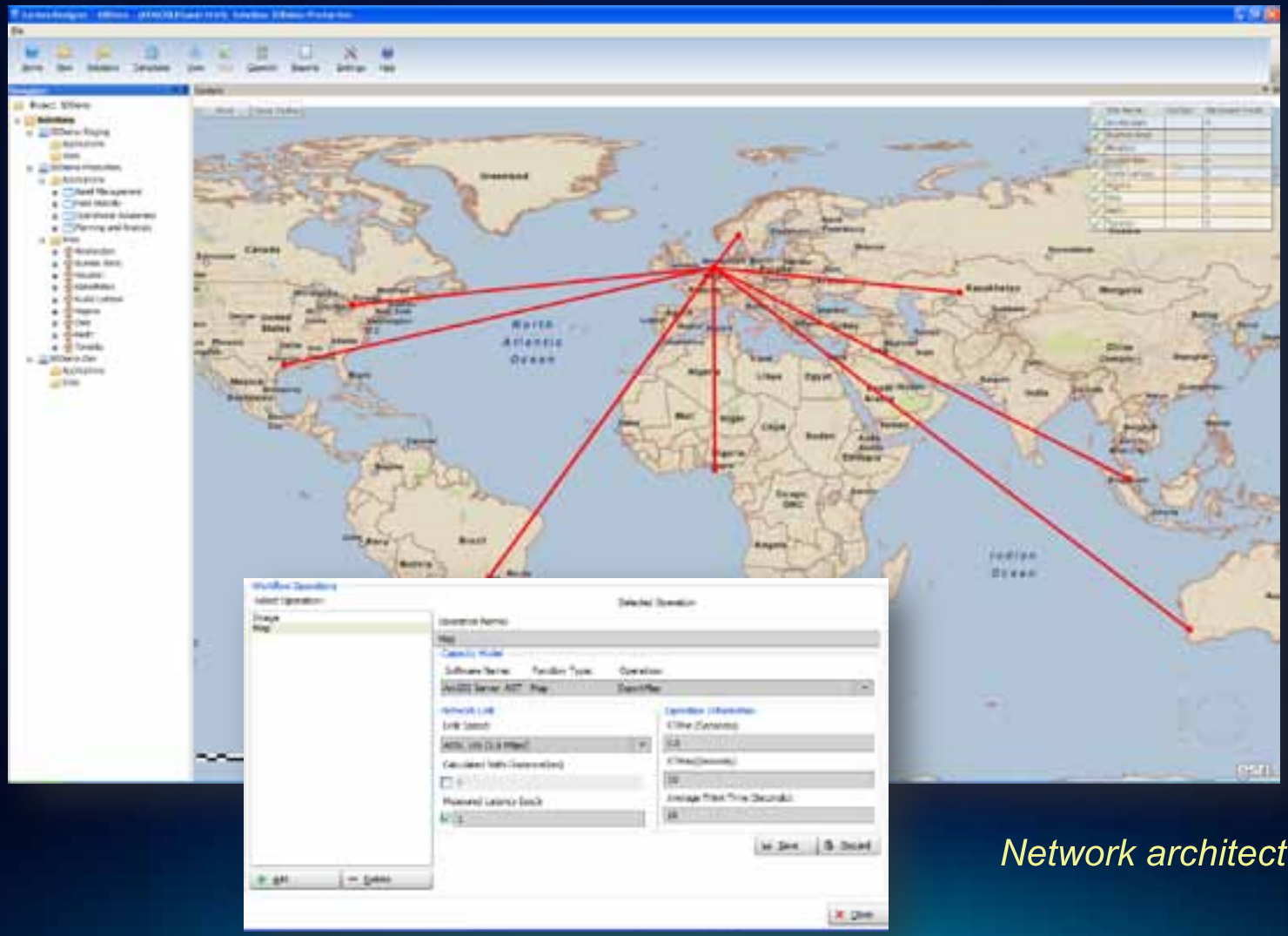
Map business process to user workflows

System Designer – Application Architecture



Select appropriate application architecture

System Designer – Infrastructure Architecture

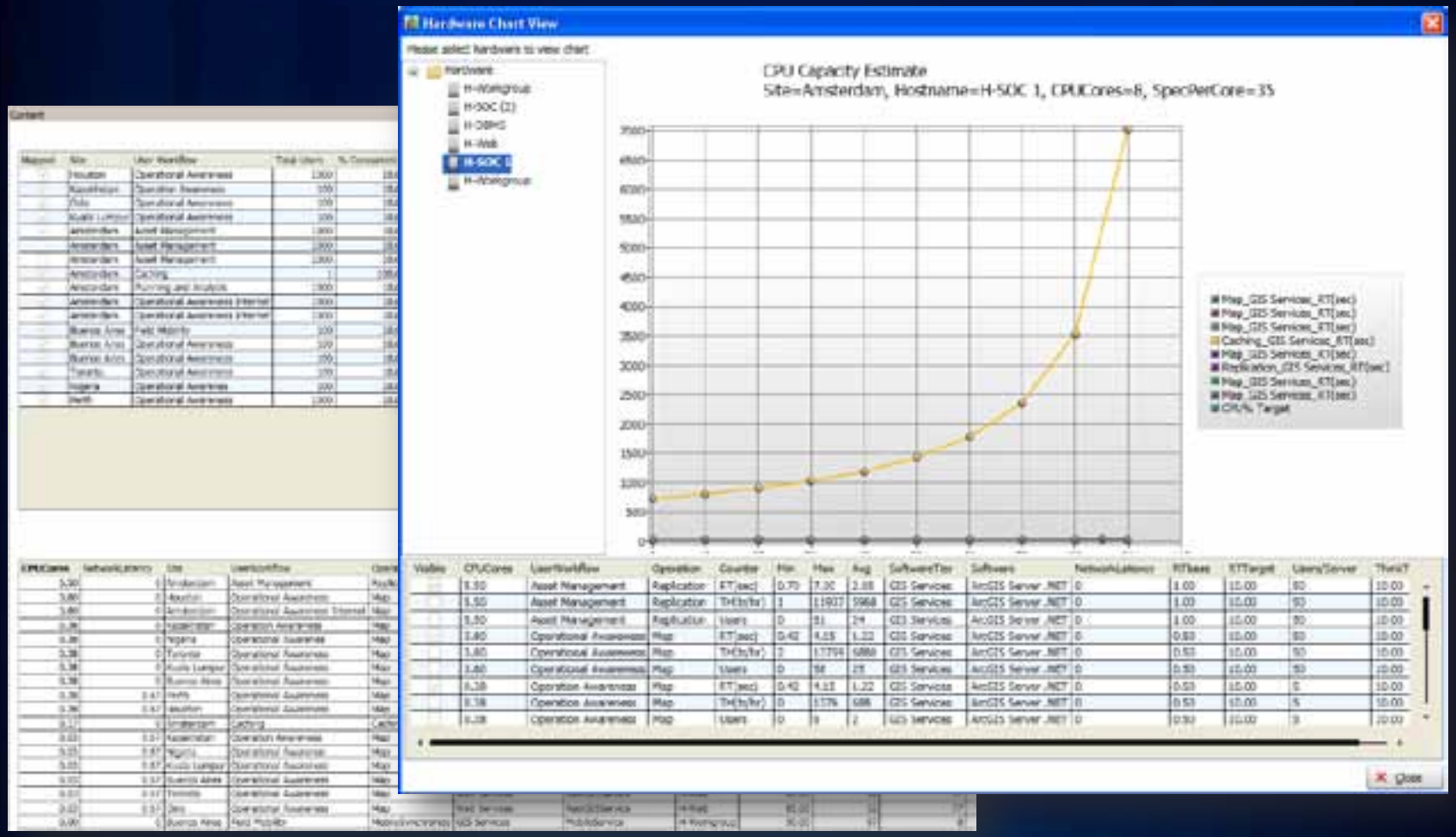


Network architecture

System Designer – Infrastructure Architecture

Hardware architecture

System Designer – Capacity Planning



CPU, Memory, Network

System Designer – Standard Reports

2.0 BUSINESS ARCHITECTURE 2

2.1 CURRENT BASELINE BUSINESS ARCHITECTURE 2
2.2 BUSINESS REQUIREMENTS 2
2.3 TARGET BUSINESS ARCHITECTURE 2

3.0 DATA ARCHITECTURE 2

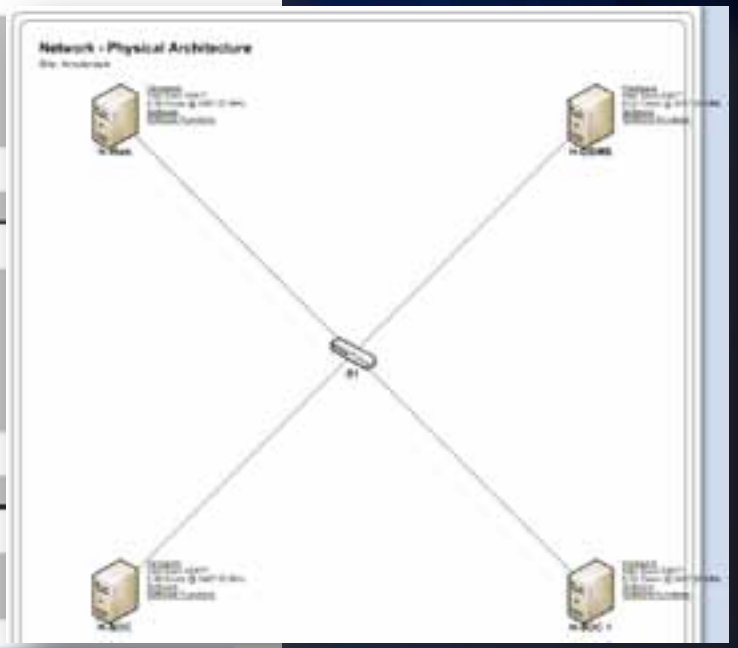
3.1 CURRENT BASELINE DATA ARCHITECTURE
3.2 GIS DATA STORAGE REQUIREMENTS
3.3 DATA AVAILABILITY REQUIREMENTS
3.4 TARGET DATA ARCHITECTURE

4.0 APPLICATION ARCHITECTURE

4.1 CURRENT BASELINE APPLICATION ARCHITECTURE
4.2 WORKFLOWS AND USER REQUIREMENTS
4.3 APPLICATION AVAILABILITY REQUIREMENTS
4.4 TARGET APPLICATION ARCHITECTURE
4.5 APPLICATION SECURITY HIGH LEVEL DISCUSSIONS*

5.0 TECHNOLOGY ARCHITECTURE

5.1 CURRENT BASELINE TECHNOLOGY ARCHITECTURE
5.2 CLIENT WORKSTATIONS



Visio and Word

What did we cover?

- Characterization of GIS in the Enterprise
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  - Patterns in Practice
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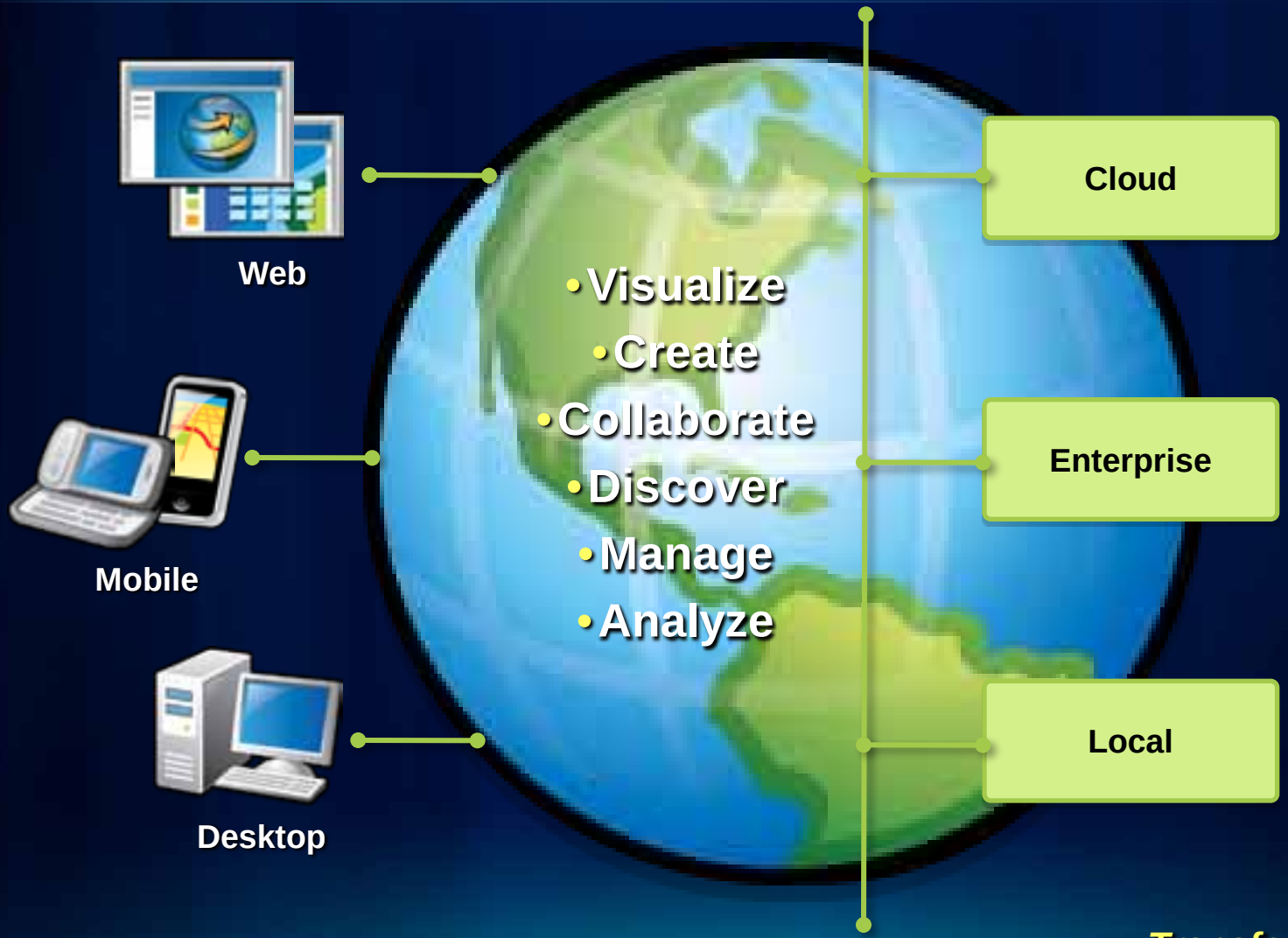
  - Governance
- Tools
  - Resources

Extending the reach of GIS within your Business Enterprise…

Enabling Technology



Transforming GIS

Thank you!

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