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Creating an Effective GIS Technology Strategy

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Topics

- Process
- Influencers
- Artifacts examples
- Tools

Process

Incorporating an Architecture Framework

TOGAF –The Opened Group Architecture Framework

Incorporating an Architecture Framework

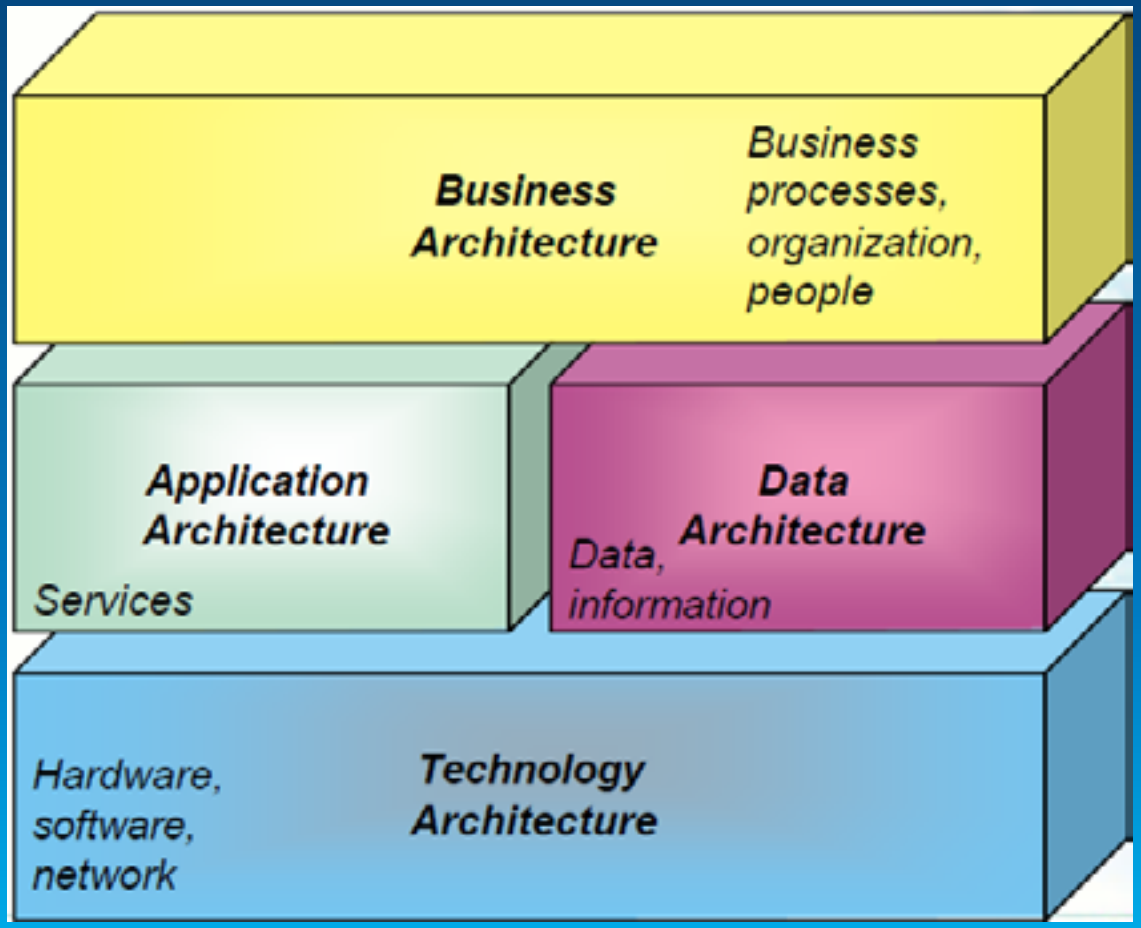
Core TOGAF areas

- Business Architecture
- Data Architecture
- Application Architecture
- Technology Architecture

Esri follows TOGAF, but NOT bound by it

Incorporating an Architecture Framework

TOGAF Architecture Types



Incorporating an Architecture Framework

- Business Patterns

- Rich Clients
- Web Applications
- Mobile

- **Key Attributes**
  - Performance
  - Security
  - Standards

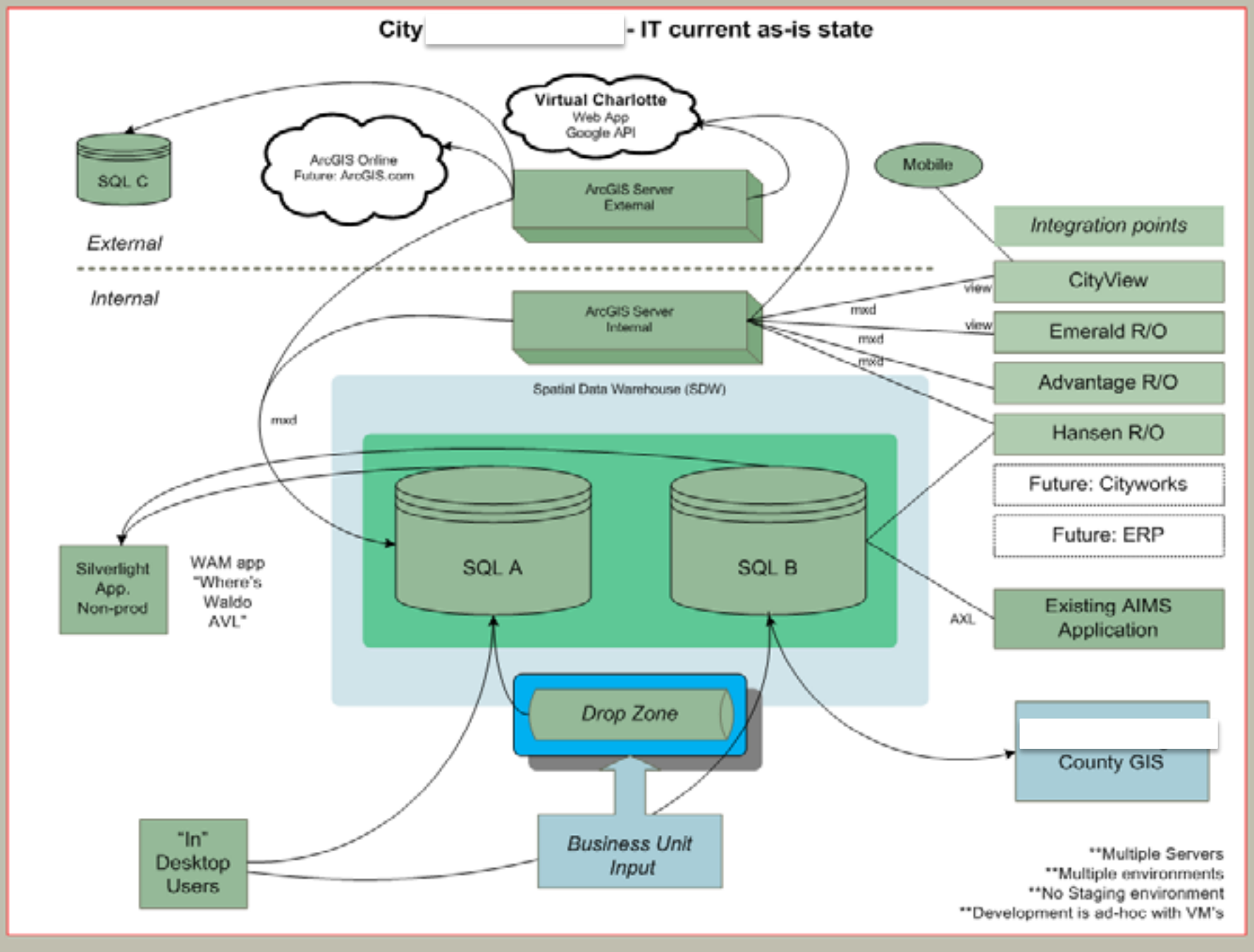
- GeoDB Modeling practices
- Image Management
- Data Interoperability / Integration

- EGIS Reference Architecture
- Application Deployment Patterns
- Infrastructure Deployment
- System Maintenance

A Successful Strategy Requires a baseline

- Create a baseline
- Current implementation of GIS in support of your business operations
- Current industry and vendor related best-practices

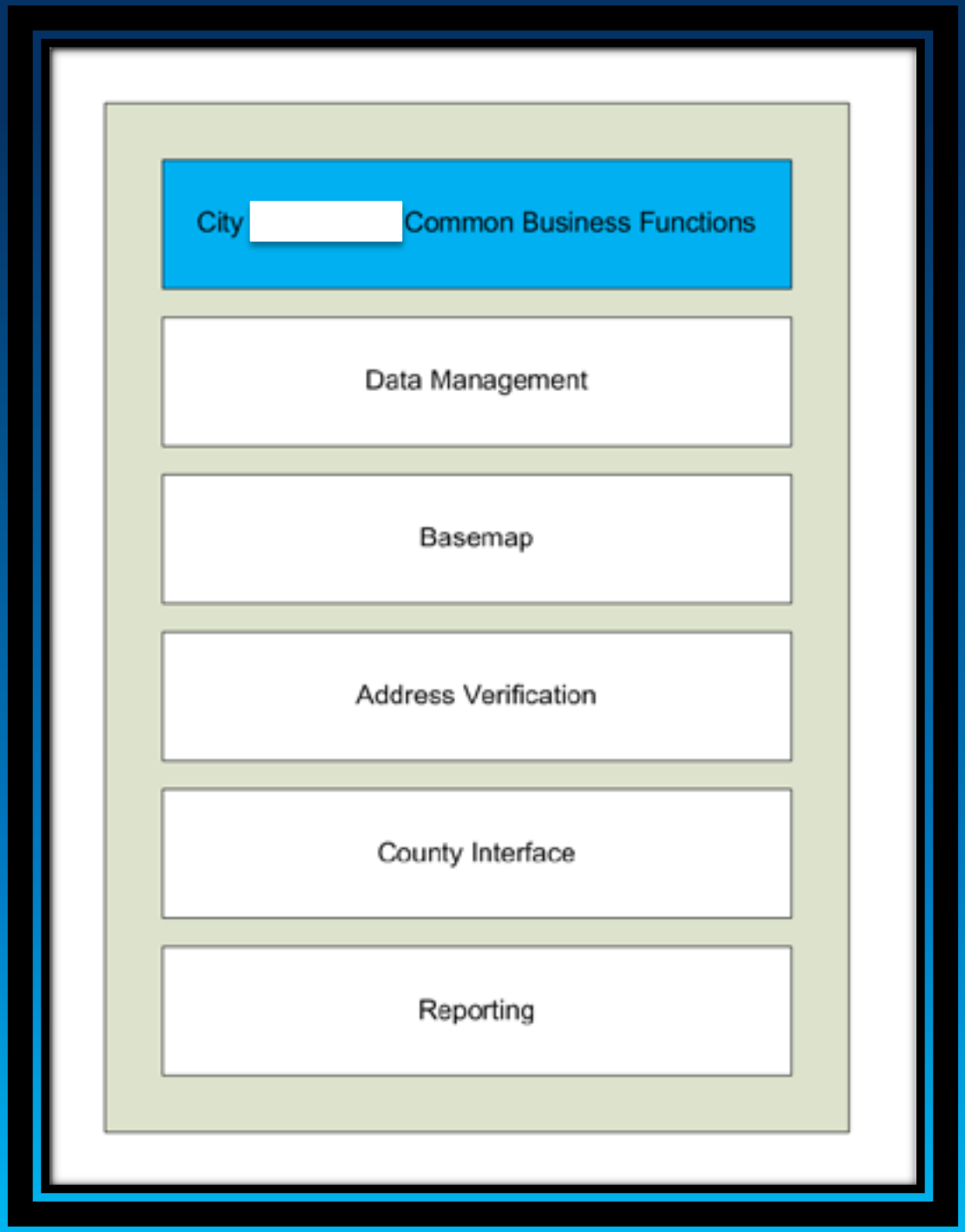
A systematic plan of action…


City - IT current as-is state
Virtual Charlotte
Web App
Google API
ArcGIS Online
Future: ArcGIS.com
SQL C
ArcGIS Server
External
Mobile
External
Internal
Integration points
CityView
Emerald R/O
Advantage R/O
Hansen R/O
Future: Cityworks
Future: ERP
ArcGIS Server
Internal
view
mxd
view
mxd
mxd
Spatial Data Warehouse (SDW)
mxd
SQL A
SQL B
Silverlight
App.
Non-prod
WAM app
"Where's
Waldo
AVL"
AXL
Existing AIMS
Application
Drop Zone
County GIS
"In"
Desktop
Users
Business Unit
Input
**Multiple Servers
**Multiple environments
**No Staging environment
**Development is ad-hoc with VM's

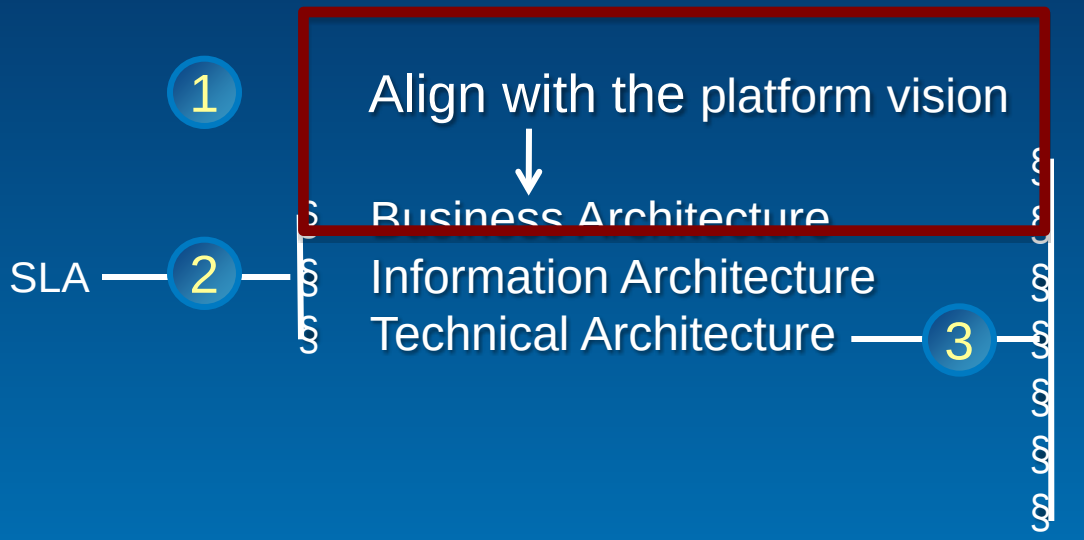
Execution of a plan requires “buy-in”

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

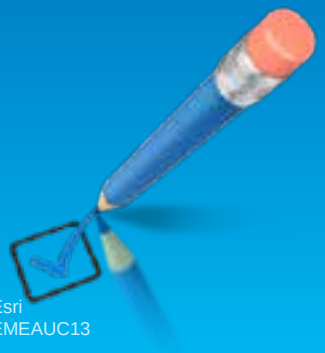
Lets dig in…


City Common Business Functions
Data Management
Basemap
Address Verification
County Interface
Reporting

Strategy – Formalize a Process



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



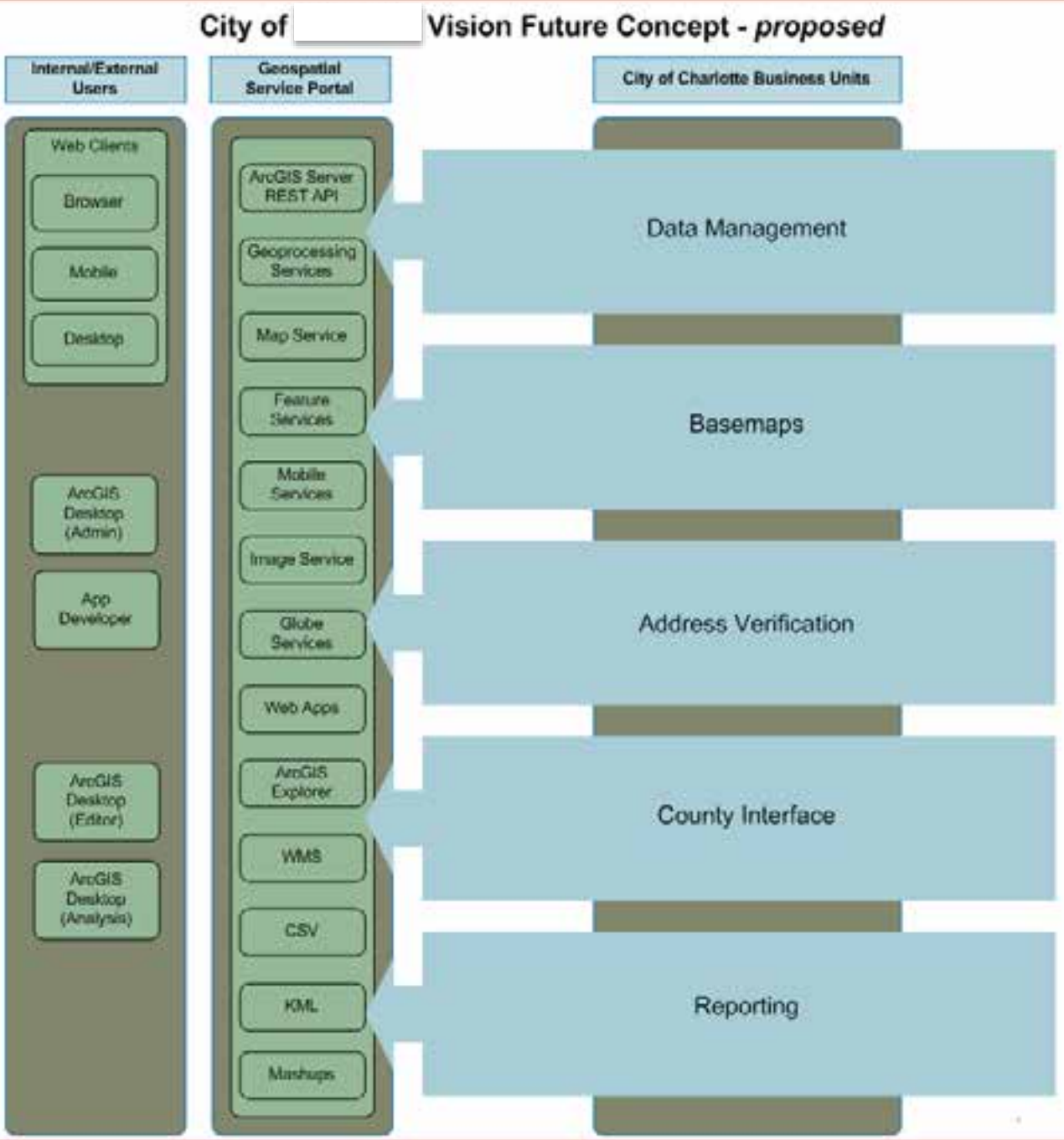
Strategy & Technology Alignment

Data Management	Planning & Analysis	Field Mobility	Operational Awareness	Constituent Engagement
A Complete Integrated System				
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
Desktop		Server	Online	



City of _____ Business Workflow Matrix

Common Business Functions	BSS - IT	SWS	NBS	Plan	CATS	CDOT	EPM	Aviation	CMU	Fire	Police	WAM
Data Management	X	X	X	X	X	X	X	X	X	X	X	X
Basemap	X	X	X	X	X	X	X	X	X	X	X	X
Address Verification	X	X	X	X	X	X	X	X	X	X	X	X
County Interface	X	X	X	X	X	X	X	X	X	X	X	X
Reporting	X	X	X	X	X	X	X	X	X	X	X	X


City of Vision Future Concept - proposed
Internal/External Users
Geospatial Service Portal
City of Charlotte Business Units
Web Clients
Browser
Mobile
Desktop
ArcGIS Desktop (Admin)
App Developer
ArcGIS Desktop (Editor)
ArcGIS Desktop (Analysis)
ArcGIS Server REST API
Geoprocessing Services
Map Service
Feature Services
Mobile Services
Image Service
Globe Services
Web Apps
ArcGIS Explorer
WMS
CSV
KML
Mashups
Data Management
Basemaps
Address Verification
County Interface
Reporting

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

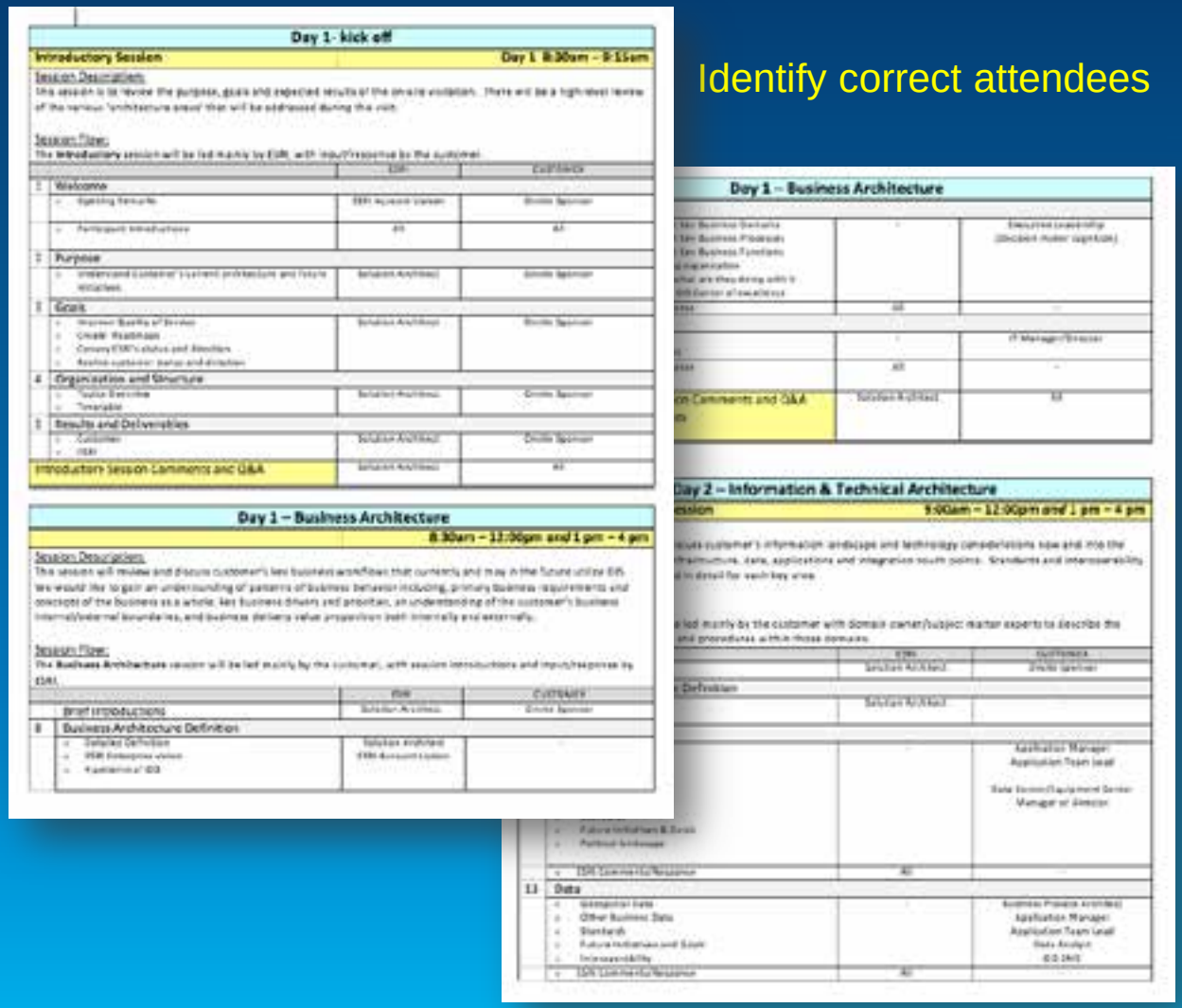
1. A site visitation report which includes:
    a. Current architecture diagram of ArcGIS technology implementation
    b. Future state conceptual architecture diagram
    c. A summary with visioning in the context of the GIS patterns and best practice recommendations

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 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?

Governance


ESRI Enterprise Onsite Architecture Assessment
Business Architecture
Information Architecture
Technical Architecture
Political Landscape & IT Governance
Solution Architecture – Patterns and Practices
New Initiative Planning
Services & Training
More Effectively Serve Customers

Governance Defined

à Is a subset discipline of Corporate Governance focused on information technology (IT) systems and their performance and risk management.

Define performance objectives

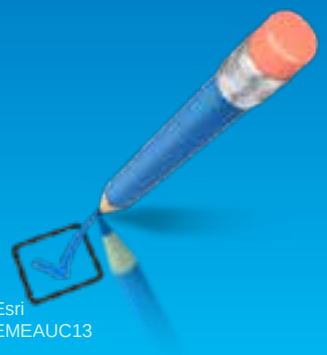
- Key Performance Objectives (KPO)
- Key Performance Indicators (KPI)
  - e.g. Utility company
    - KPO: optimized operations and maintenance
    - KPI: average repair time

Putting it all together

1. Align with the platform vision

2. Business Architecture
   - Information Architecture
   - Technical Architecture

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



Solution Recipe

Core / Partner Technology

Data

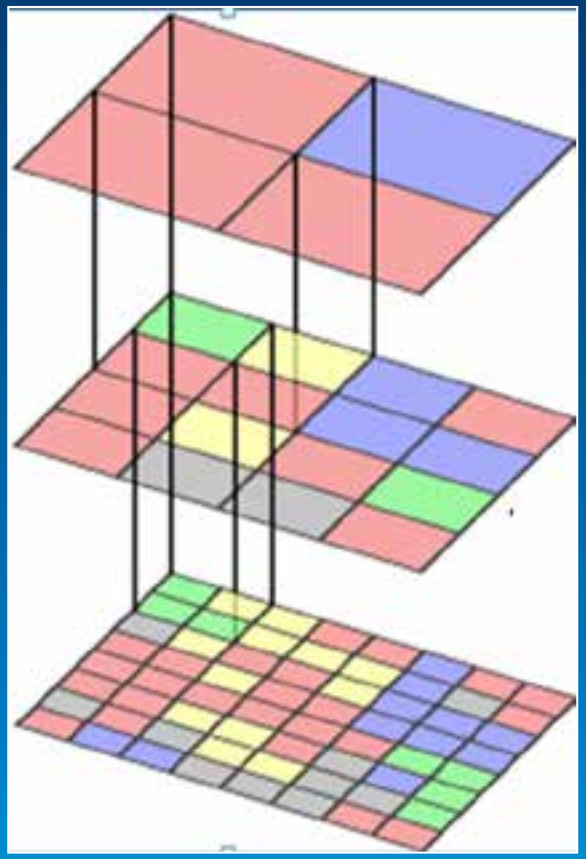
Training

Enterprise best-practices

Services / Support

Effective strategy is a blueprint for design and implementation

- Strategy
- Architecture Design
- - System Designer
- Implementation



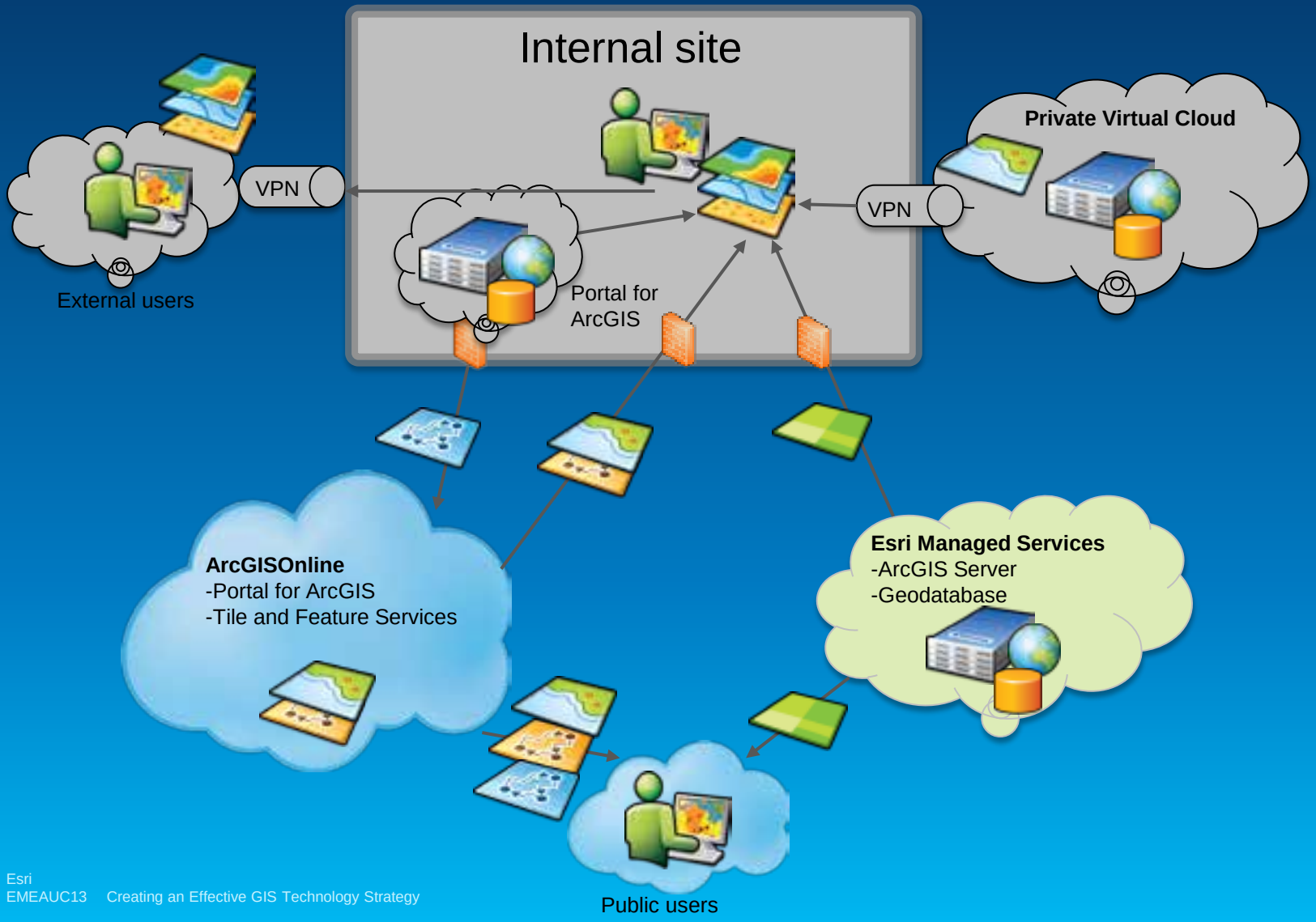
Present Your Strategy

Top strategy influencers

1. Business first, technology second
2. Deployment
3. Security
4. Data management
5. Data
6. Development
7. Integration
8. Search and discovery

Deployment strategy

Cloud deployment options



Deployment Strategy

ArcGIS Online

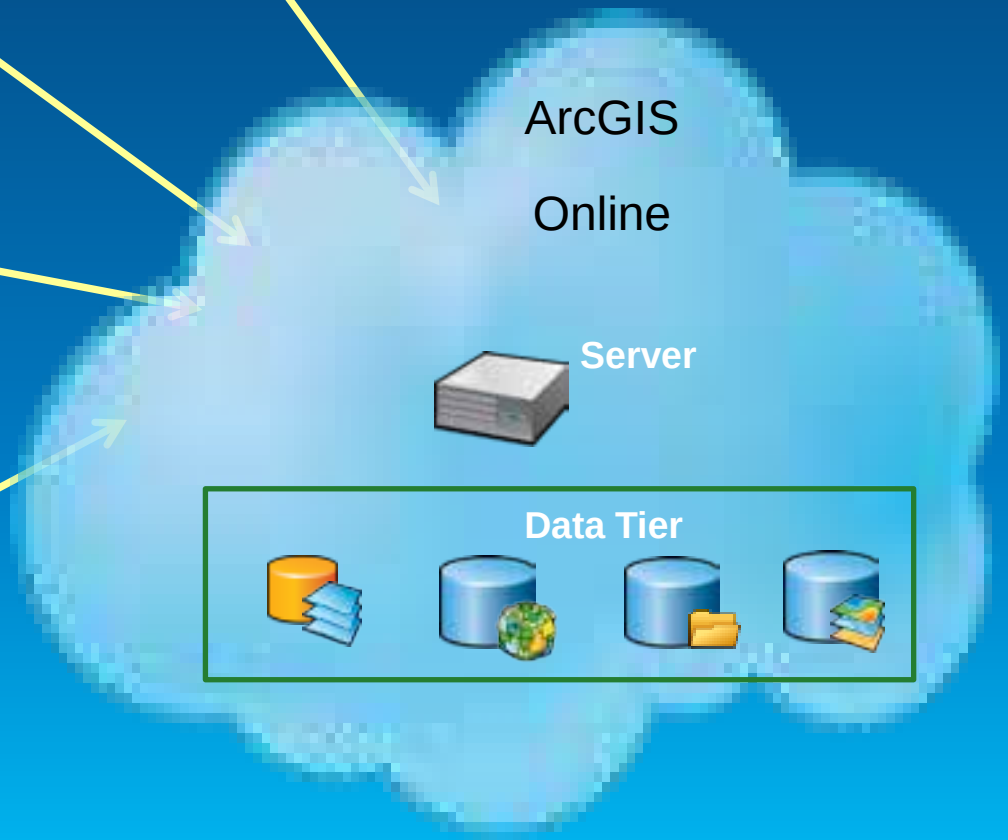
ArcGIS for Mobile

ArcGIS for Desktop

A SaaS offering for sharing and Collaboration of geospatial information

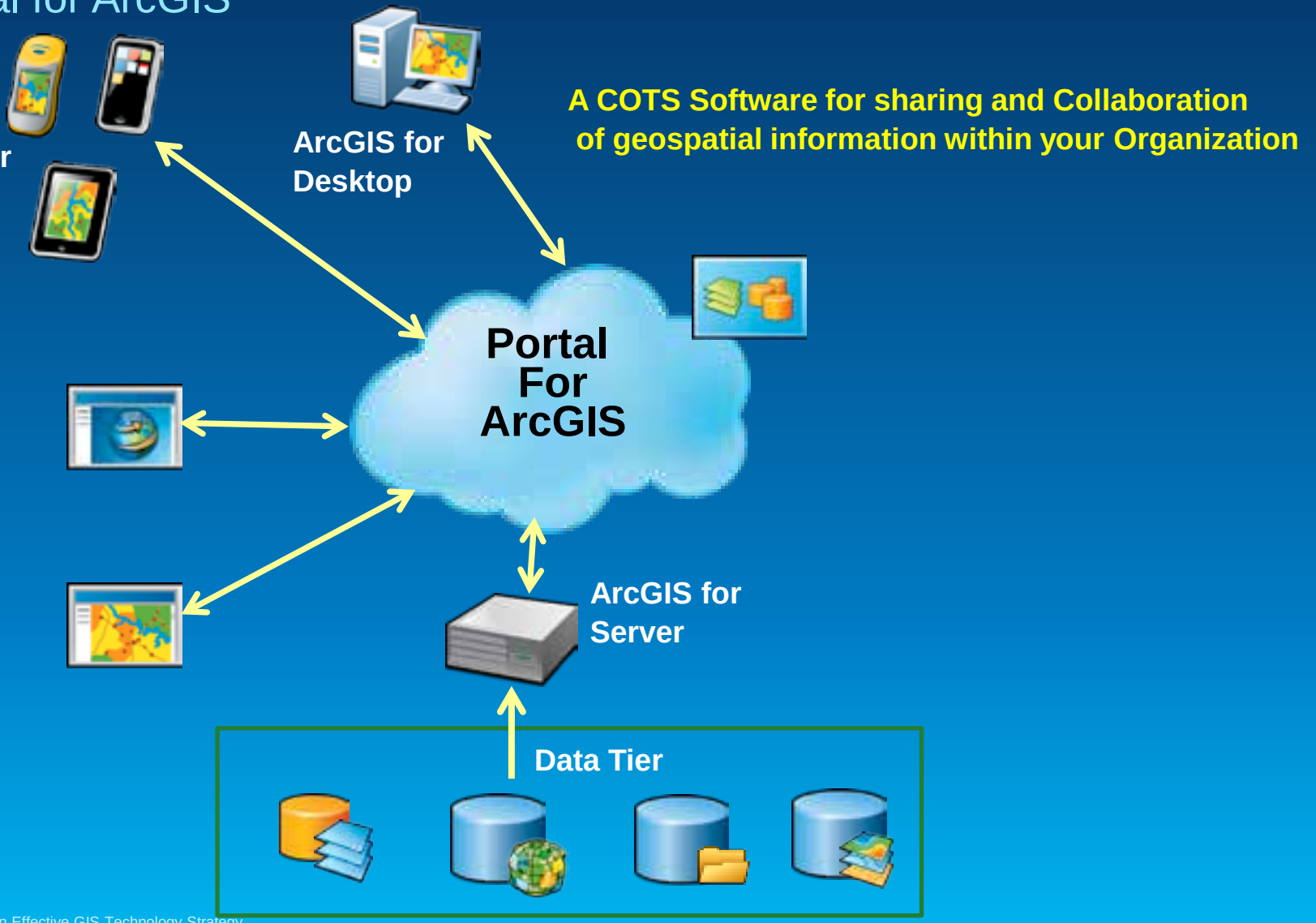
ArcGIS Explorer

Rich Internet Clients



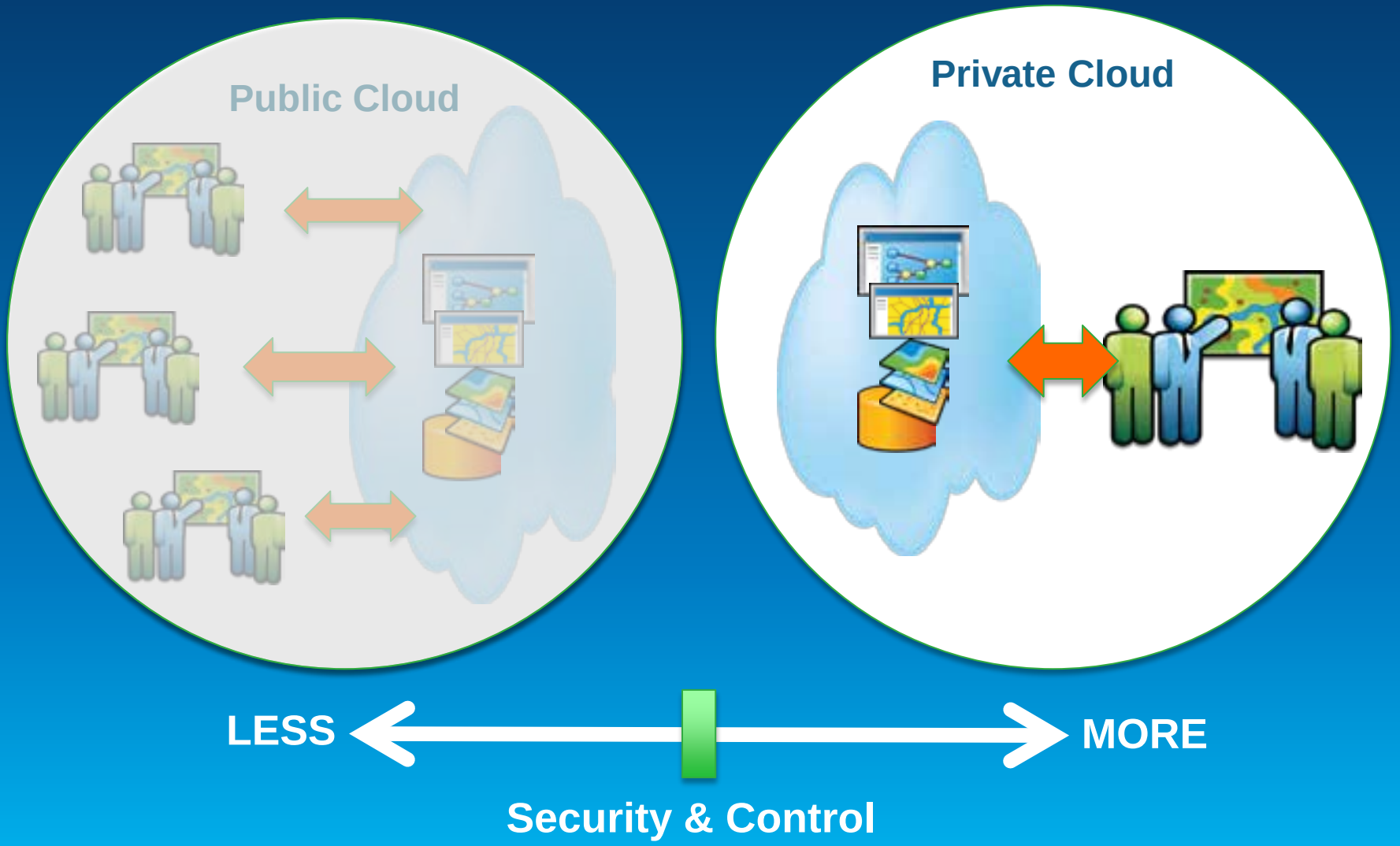
Deployment Strategy

Portal for ArcGIS



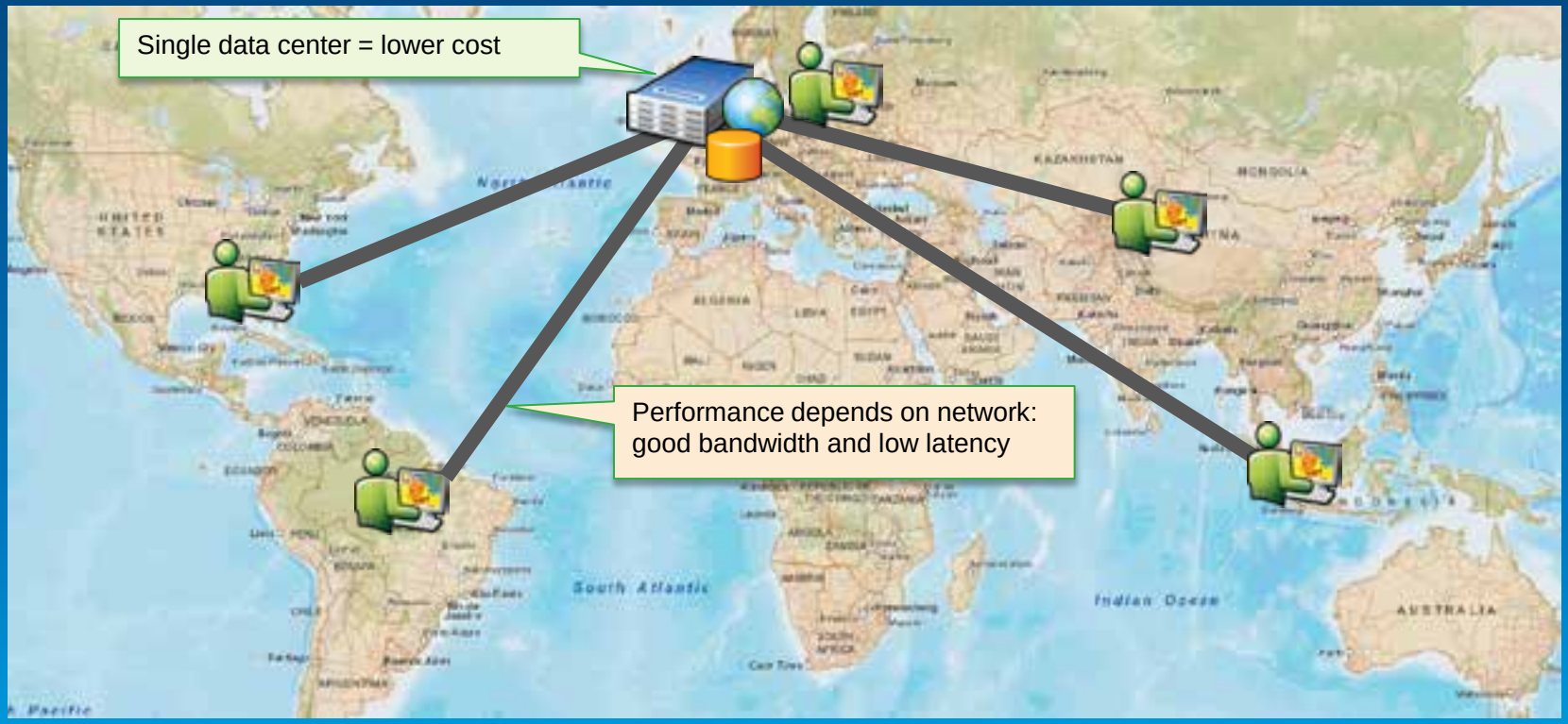
Security Strategy

Public vs. Private Cloud



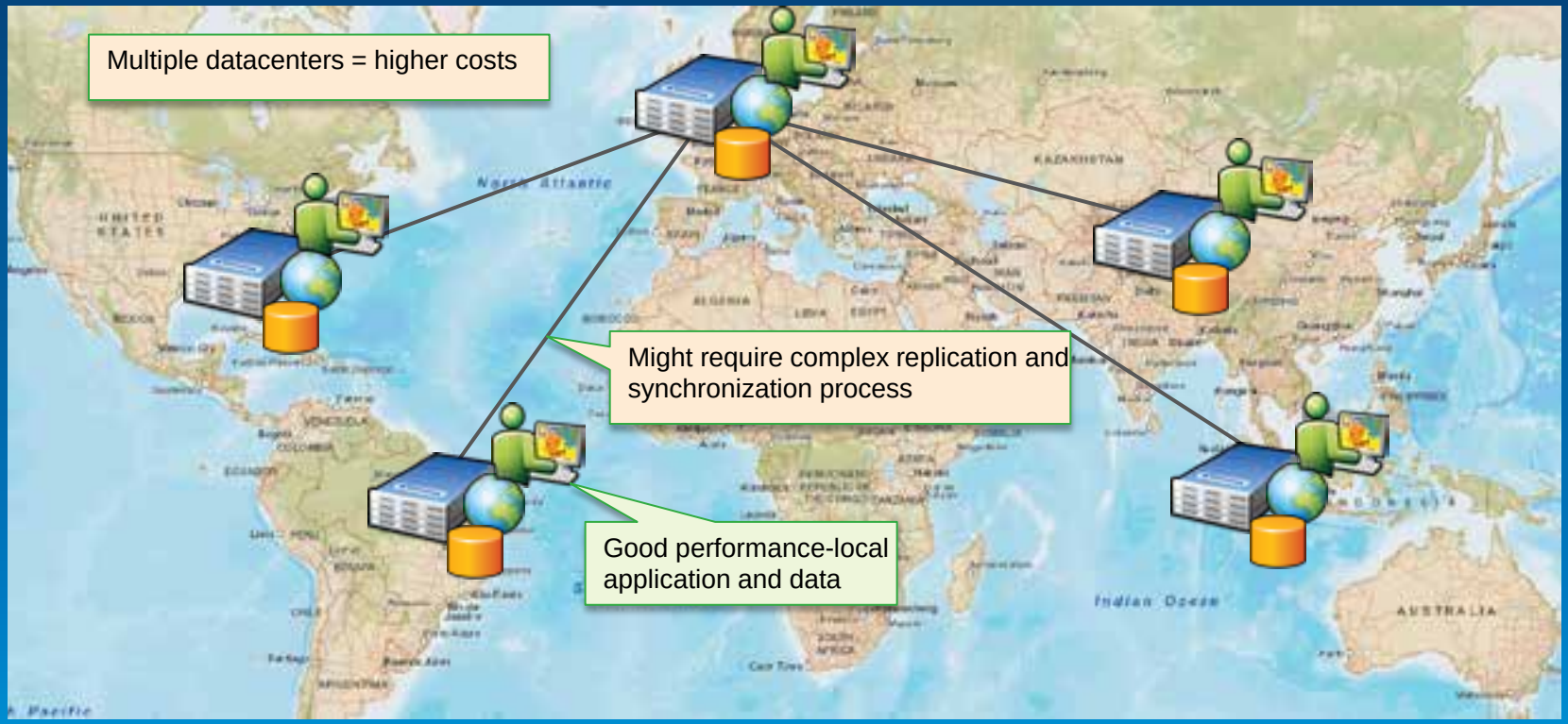
Data management strategy

Centralized



Data management strategy

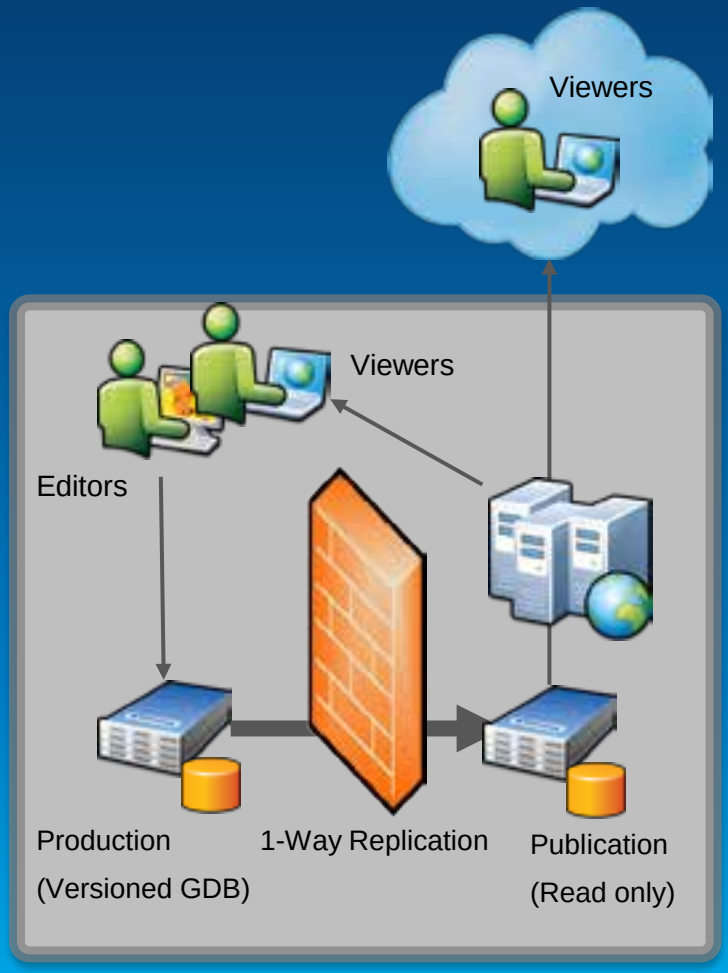
Distributed



Data management strategy

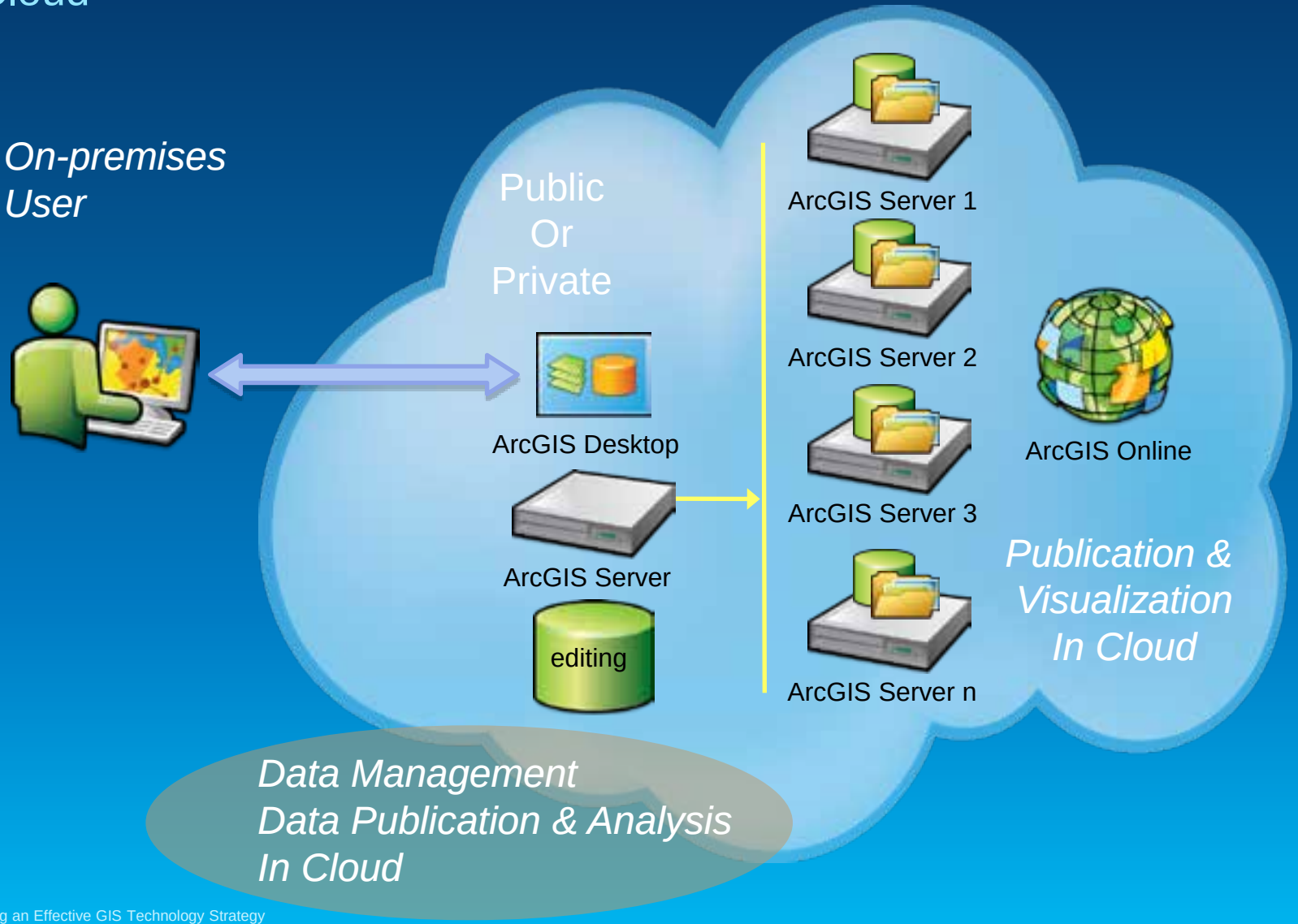
Production and Publication (external access)

- Pros:
  - Better security
  - Improved performance
  - Additional capacity
- Cons:
  - Requires replication
  - Additional hardware



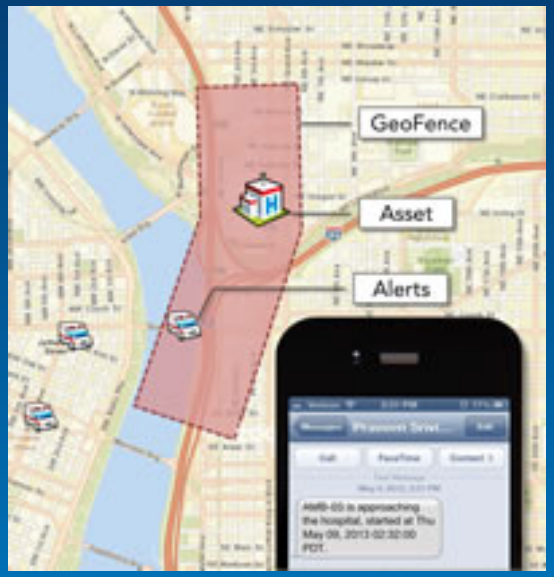
Data management strategy

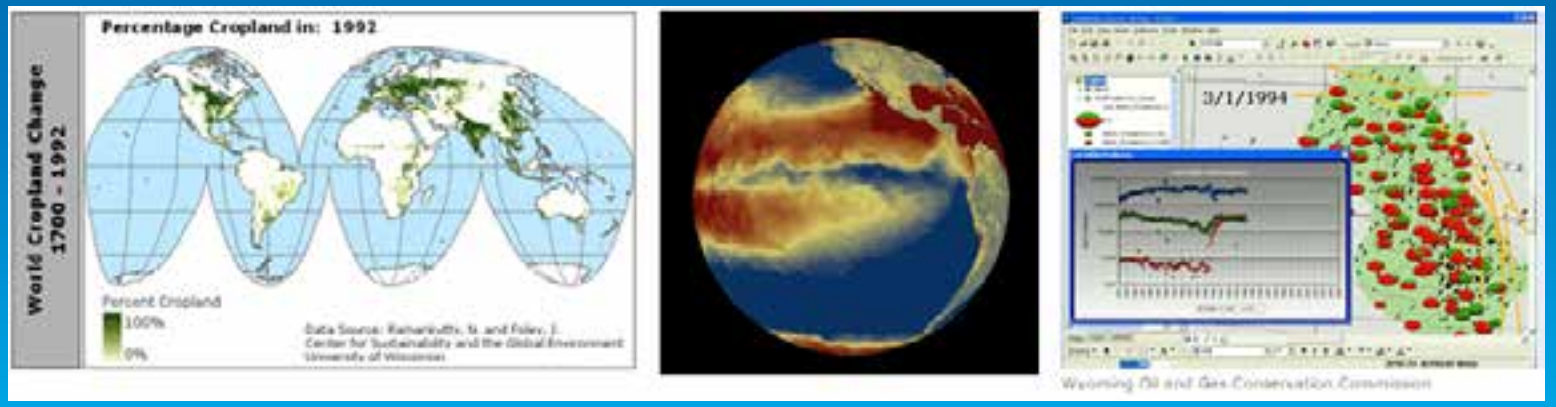
In Cloud



Data strategy

- Static vs. Dynamic
- Confidential vs. public
- Real Time (Geoevent)
- Temporal data





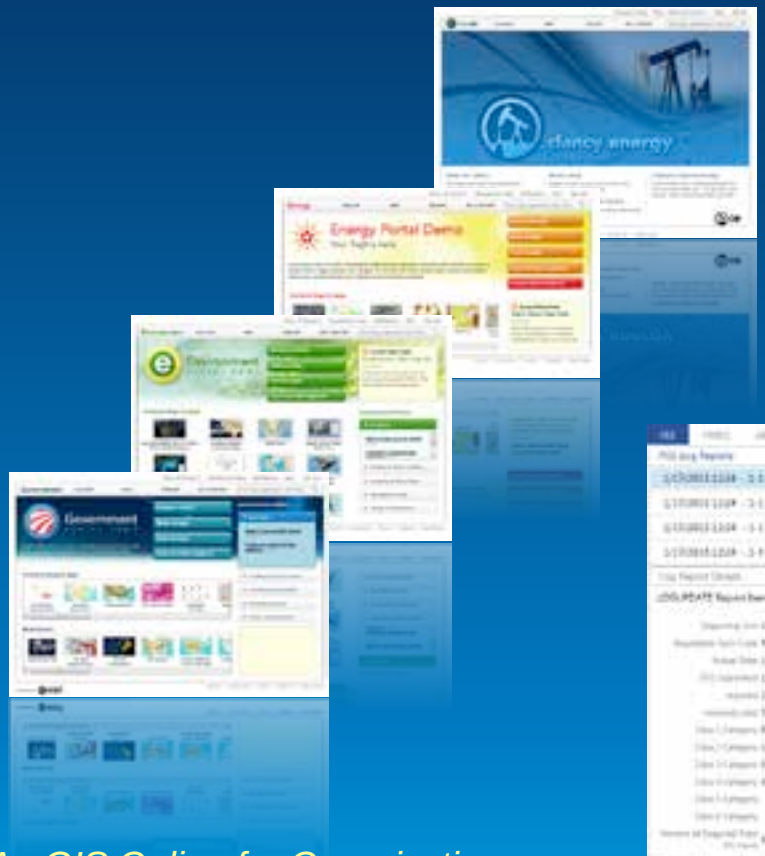
Data strategy

Base maps

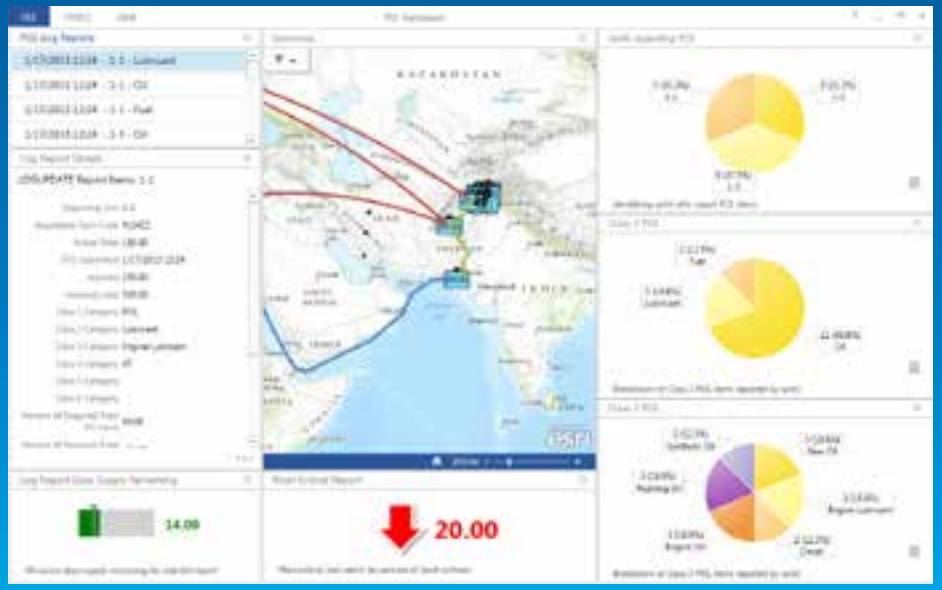
- 

Development strategy

COTS vs. custom

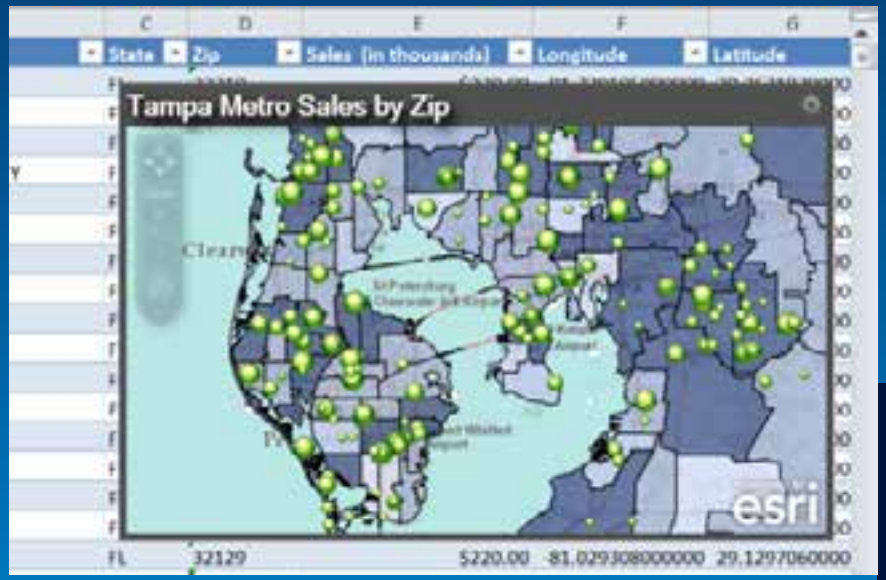


ArcGIS Online for Organizations



Operations Dashboard for ArcGIS

Integration Strategy



Esri Maps for Office

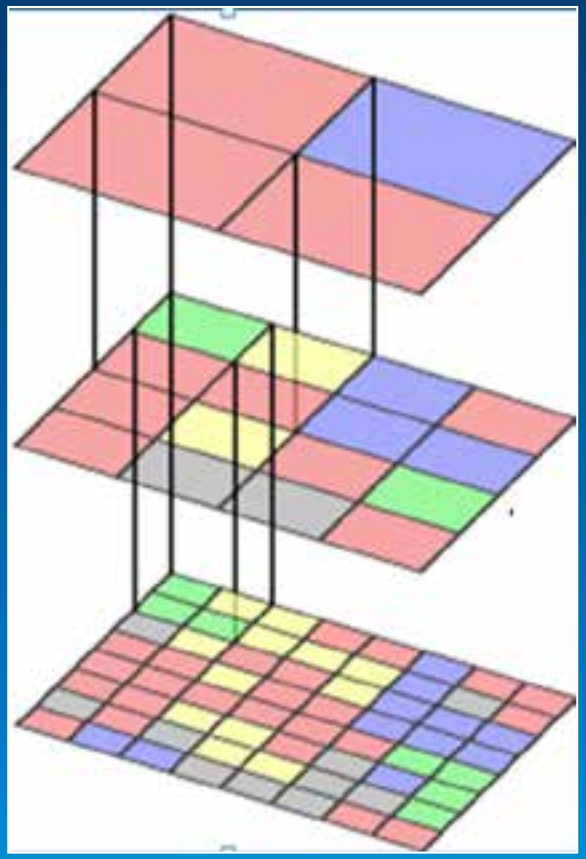
Esri Maps forSharePoint

System Designer – Overview

Helping Create Your GIS Technology Strategy

Effective strategy is a blueprint for design and implementation

- Strategy
- Architecture Design
- - System Designer
- Implementation



System Designer tool

http://www.arcgis.com/home/item.html?id=8ff490eef2794f428bde25b

Requirements and SME

Business
- *GIS Management*

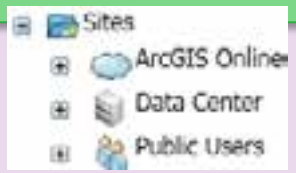
Application
- *GIS Management*
- *GIS Staff*
- *GIS Developers*

Data
- *GIS Management/Staff*
- *DBA*

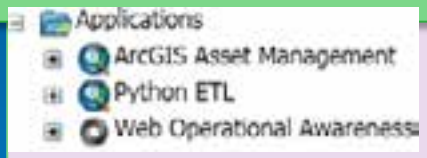
Technology
- *GIS Management*
- *IT Manager*
- *IT Architects*
- *IT Admins*

System Designer

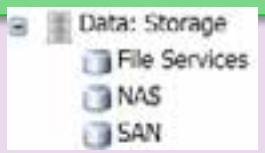
Sites and Business Drivers



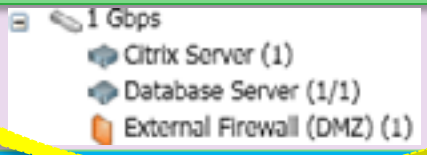
Functional and non-Functional



Data sources and flows



Hardware, OS, Network



Architecture

Business Arch.
- *Sites*
- *User workflows*

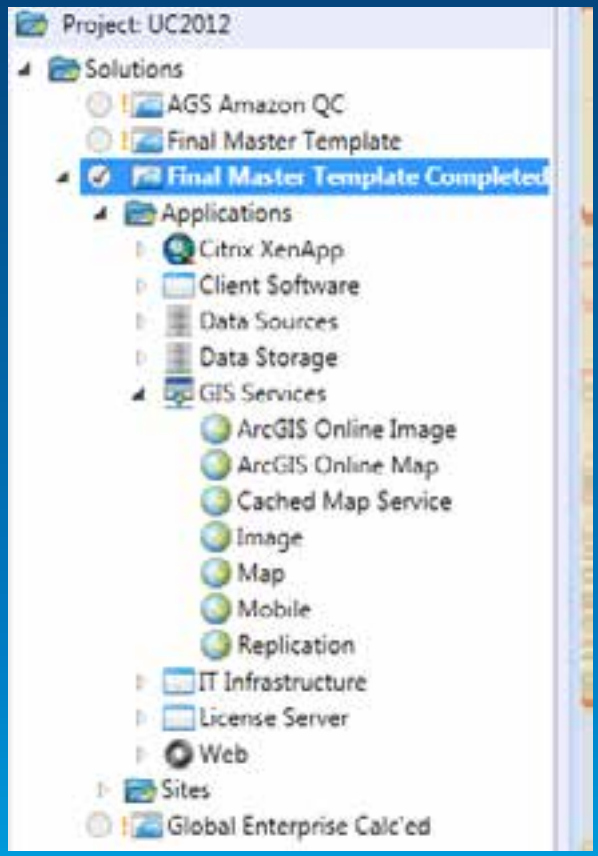
Application Arch.
- *Logical design*
- *Software list*
- *License*
- *Performance*

Data Arch.
- *Data Sources Types*
- *Databases*
- *Data location*

Technology Arch.
- Hardware List
- Resource Utilization
- Physical Design

System Designer

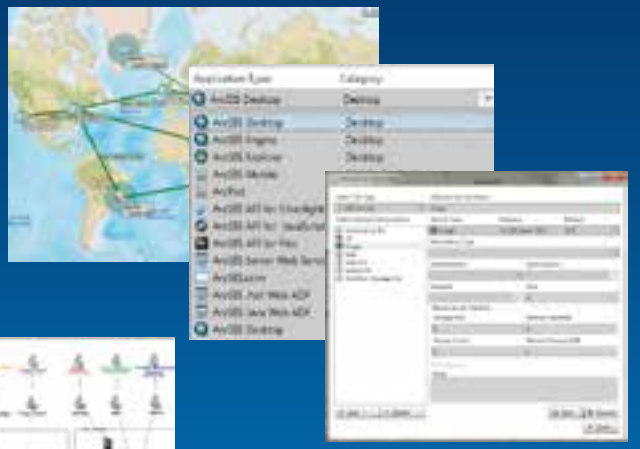
Provides solution templates for quick analysis



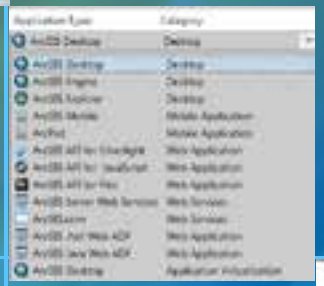
System Designer

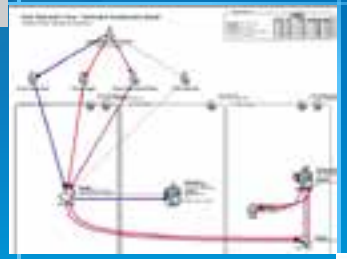
Guides through design process

- Gathering requirements
- Designing
- Capacity: CPU, Network, Memory
- Reporting



Demo: System Designer





Summary

- Strategy Artifacts
- Process
- Influencers