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# Creating an Effective GIS Technology Strategy

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# Introduction

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# Agenda

- Process
- Considerations
- Tools

# Strategy

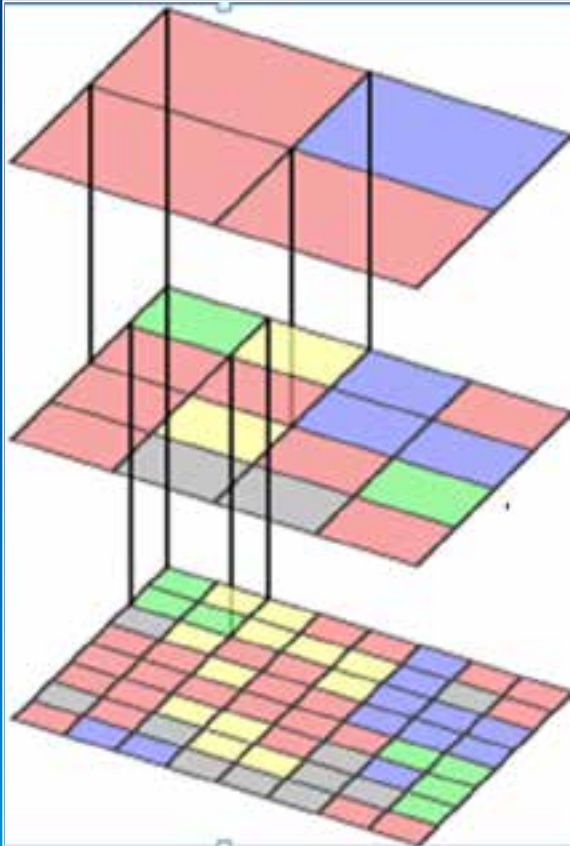
## Definition

- *a careful **plan** or method for achieving a particular goal usually **over a long period of time***
- Source: <http://www.merriam-webster.com/dictionary/strategy>



# Strategy

## Definition



- **Strategy**

- Design

- Implementation and Support

*Effective strategy is a blueprint for design and implementation*

# Process

# Incorporate an Architecture Framework

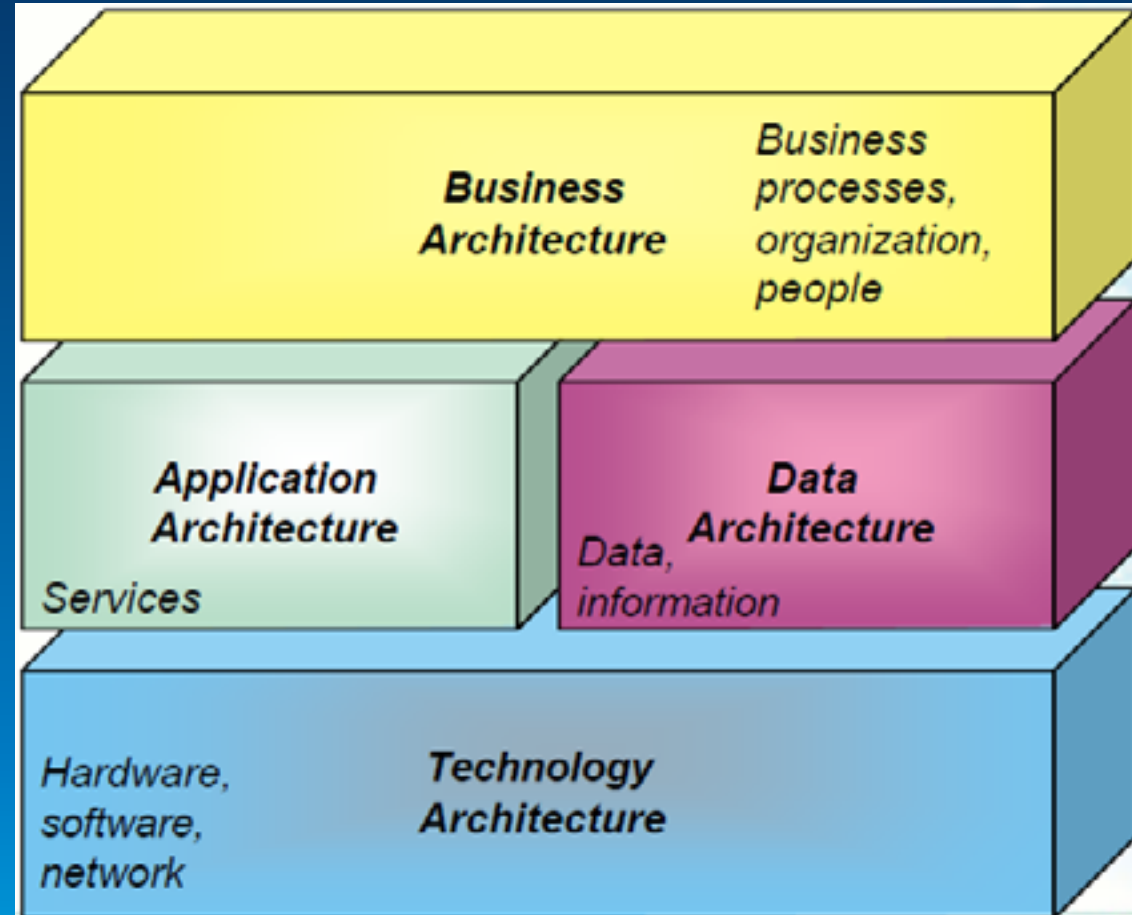
TOGAF –The Opened Group Architecture Framework



# Incorporate an Architecture Framework

## Core TOGAF areas

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



Esri follows TOGAF, but NOT bound by it



# Create baseline

- Current
  - Business drivers and stakeholders
  - Applications
  - Data
  - Technology



# Define target state

- Target
  - Business drivers and stakeholders
  - Applications
  - Data
  - Technology





# Conduct interviews with the stakeholders

## Ask relevant questions

- Top business workflows
- Top pain points
- Measure of success

### **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**

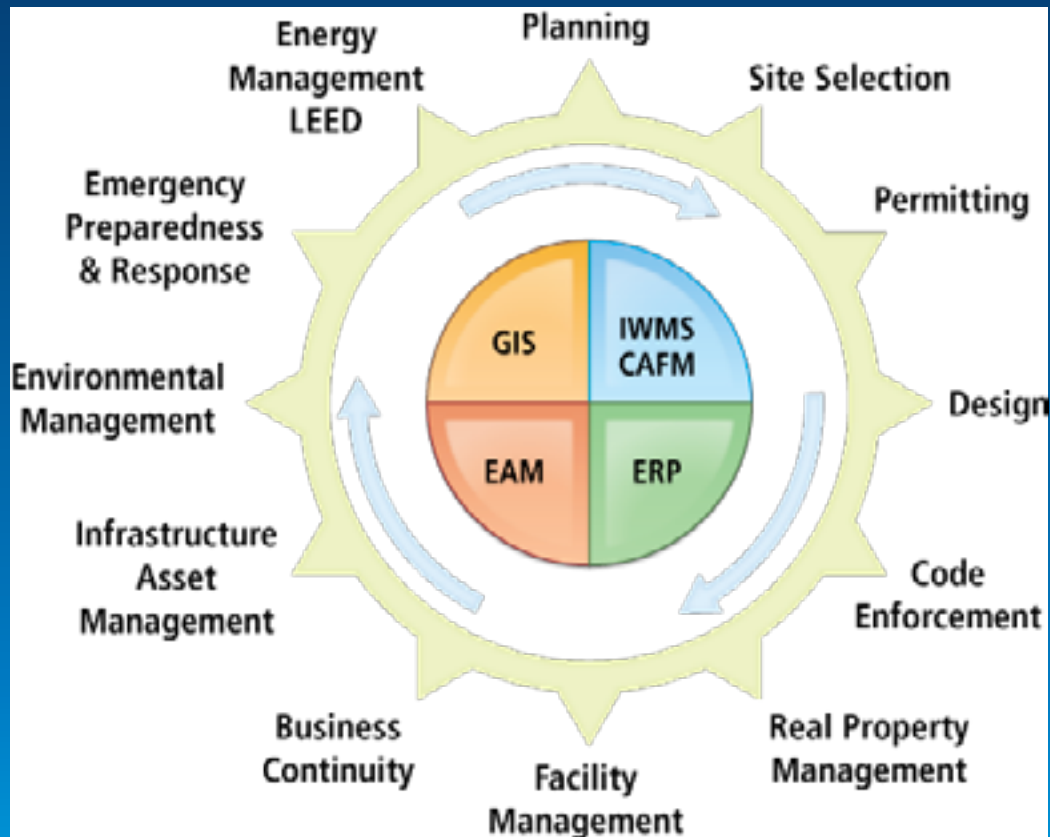
1. What are the geo-centric / geo-enabled business applications that support the top 5 business workflows identified above?
2. What basemap data and operational layers are used to support each of these applications and what are their sources?
3. How is this data collected, organized and managed?
4. Could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

# Identify business drivers

## Examples



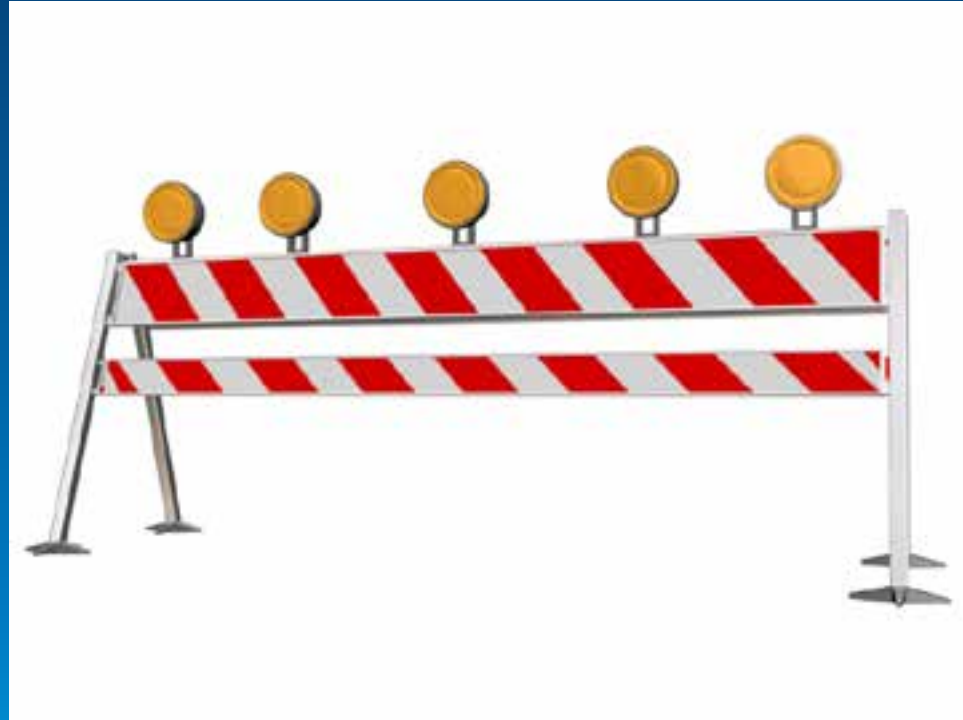
## Prepare gap analysis

- **What workflows are not supported by geo-enabled application?**



# Identify barriers

- Budget
- Resources
- Technology
- Infrastructure
- Enterprise readiness
- Time



# Probe opposing views

- **Example**
  - Centralized or distributed
  - In-house and/or cloud
  - Custom and/or COTS





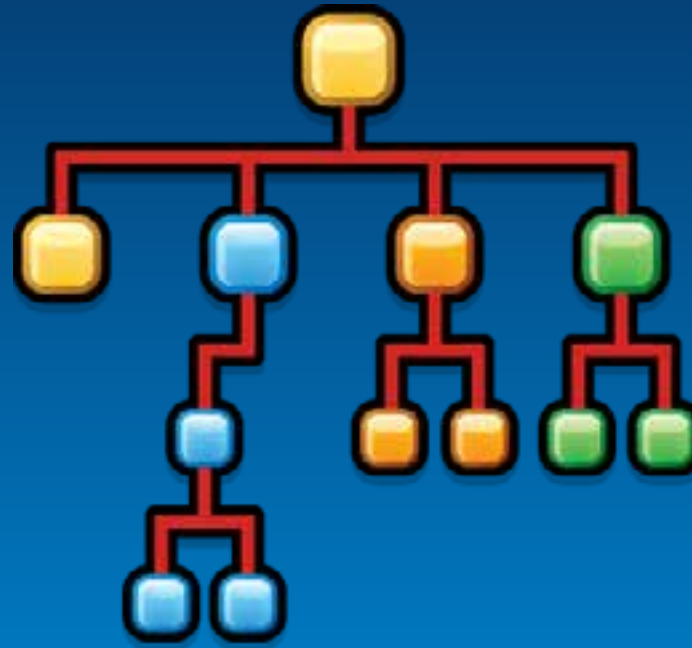
# Align Strategy & Technology



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# Define Governance

- GeoDatabase
- Hardware
- Applications
- Cloud
- Administration
- Support



## Define performance objectives

- **Key Performance Objectives (KPO)**
- **Key Performance Indicators (KPI)**

# Define Training and Support



Core / Partner  
Technology



Training



Services / Support

# Get buy-in from stakeholders



# Considerations

# Top strategy considerations

1. **Cloud**
2. **Security**
3. **Data flow**
4. **COTS vs. Custom**
5. **Integration**
6. **Performance**
7. **Administration and Monitoring**

# What is Cloud: IaaS?

Infrastructure-as-a-Service (IaaS)



- **Provides virtual server instances**
  - Configure virtual servers
  - Configure storage
  - Manage instances
- **Examples:**
  - Amazon Web Services





# What is Cloud: PaaS?

Platform-as-a-service(PaaS)



- Set of APIs, services, and product development tools hosted on the provider's infrastructure.
- Developers create applications on the provider's platform over the Internet
- Examples:
  - Microsoft Azure, GoogleApps, Force.com, CloudFoundry



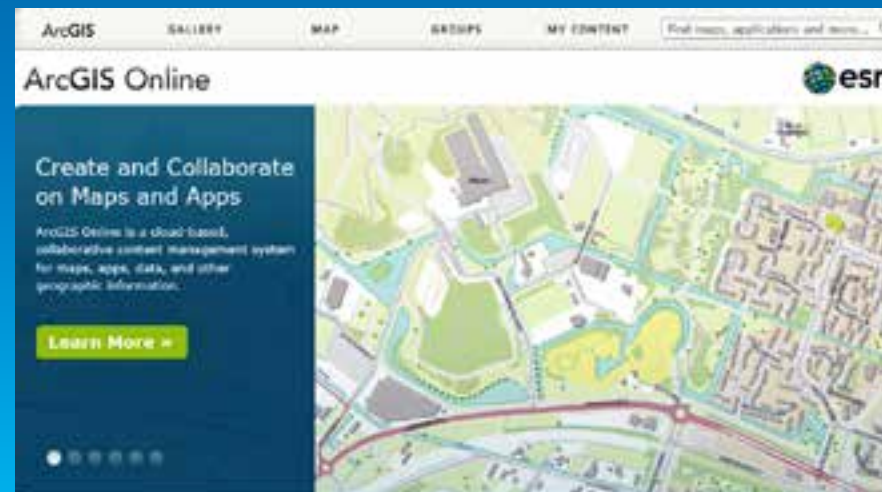
Deploying ArcGIS for Server

# What is Cloud: SaaS?

Software-as-a-service(SaaS)



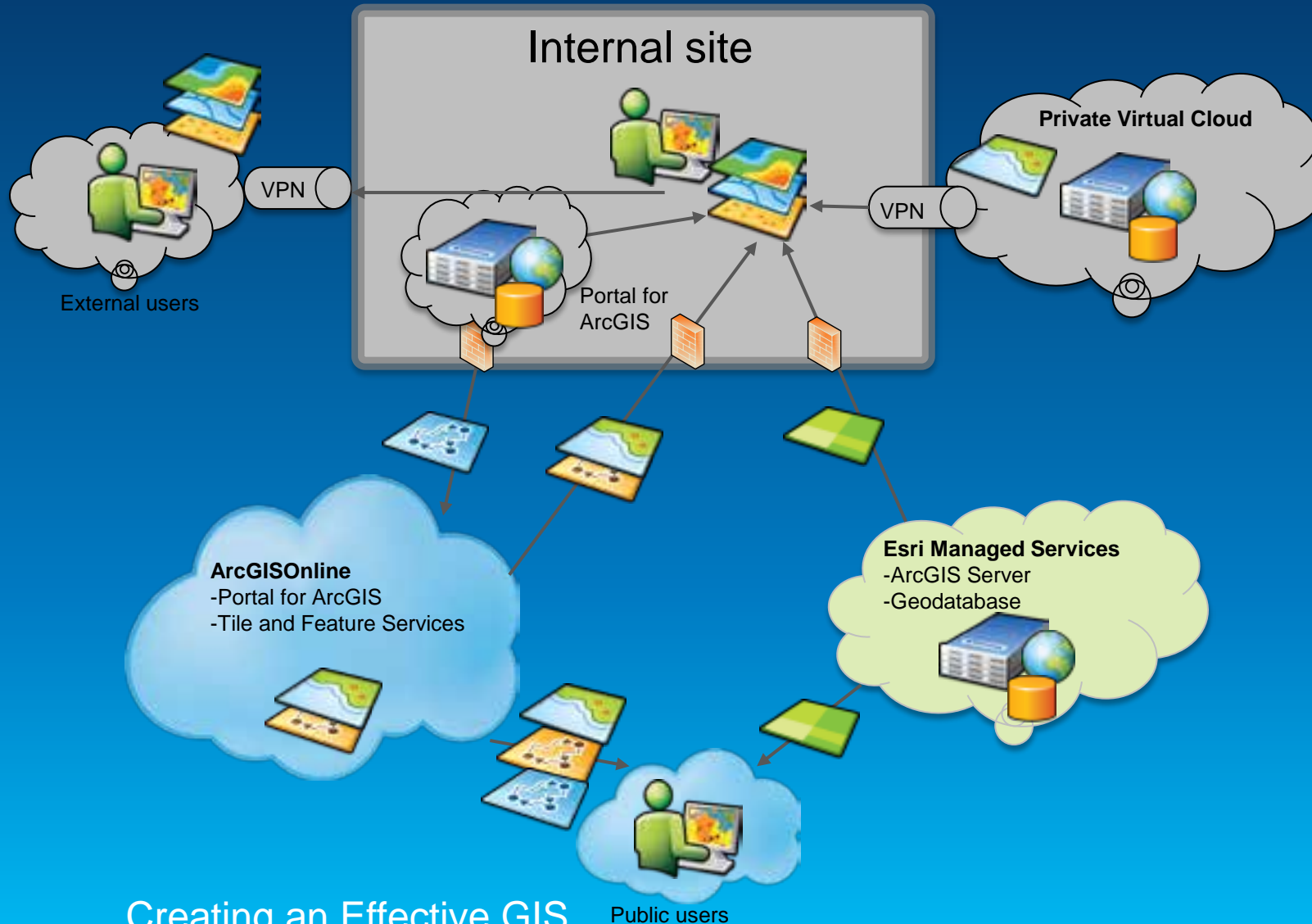
- Vendor supplies the hardware and software infrastructure ... whole applications
- Broad market
- Examples:
  - ArcGIS Online, [bao.esri.com](http://bao.esri.com), [Crimemapping.com](http://Crimemapping.com), [Salesforce.com](http://Salesforce.com)



Deploying ArcGIS for Server

# Cloud

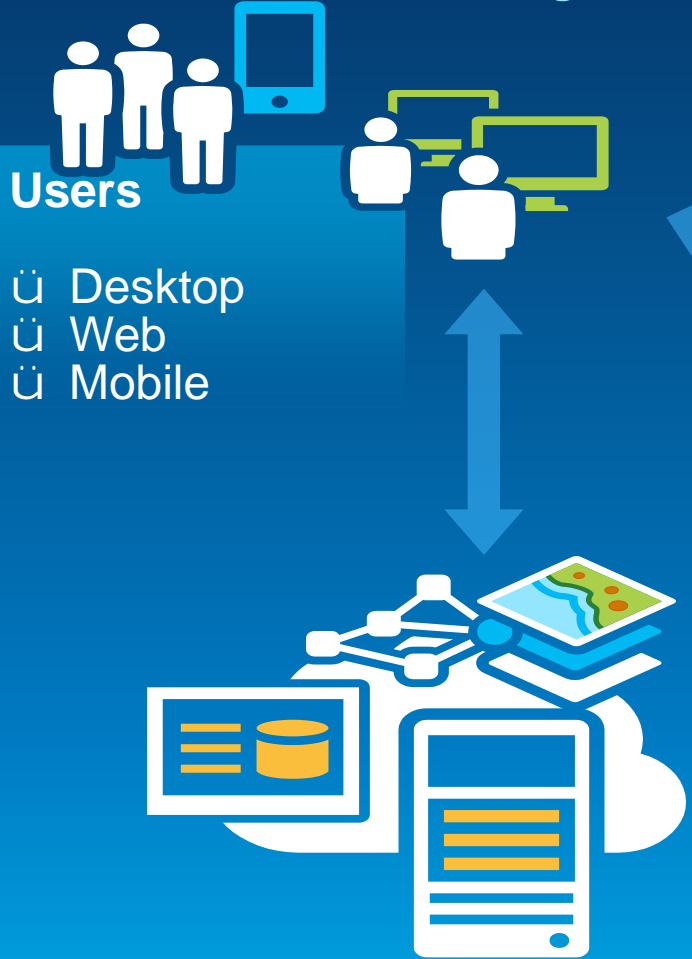
## Cloud deployment options



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# Cloud

## ArcGIS Online and Managed Services



### Users

- ü Desktop
- ü Web
- ü Mobile

### ArcGIS Online

- ü Online Basemaps
- ü Geocoding, Routing
- ü Hosted Feature & Tile Map Services
- ü App Templates

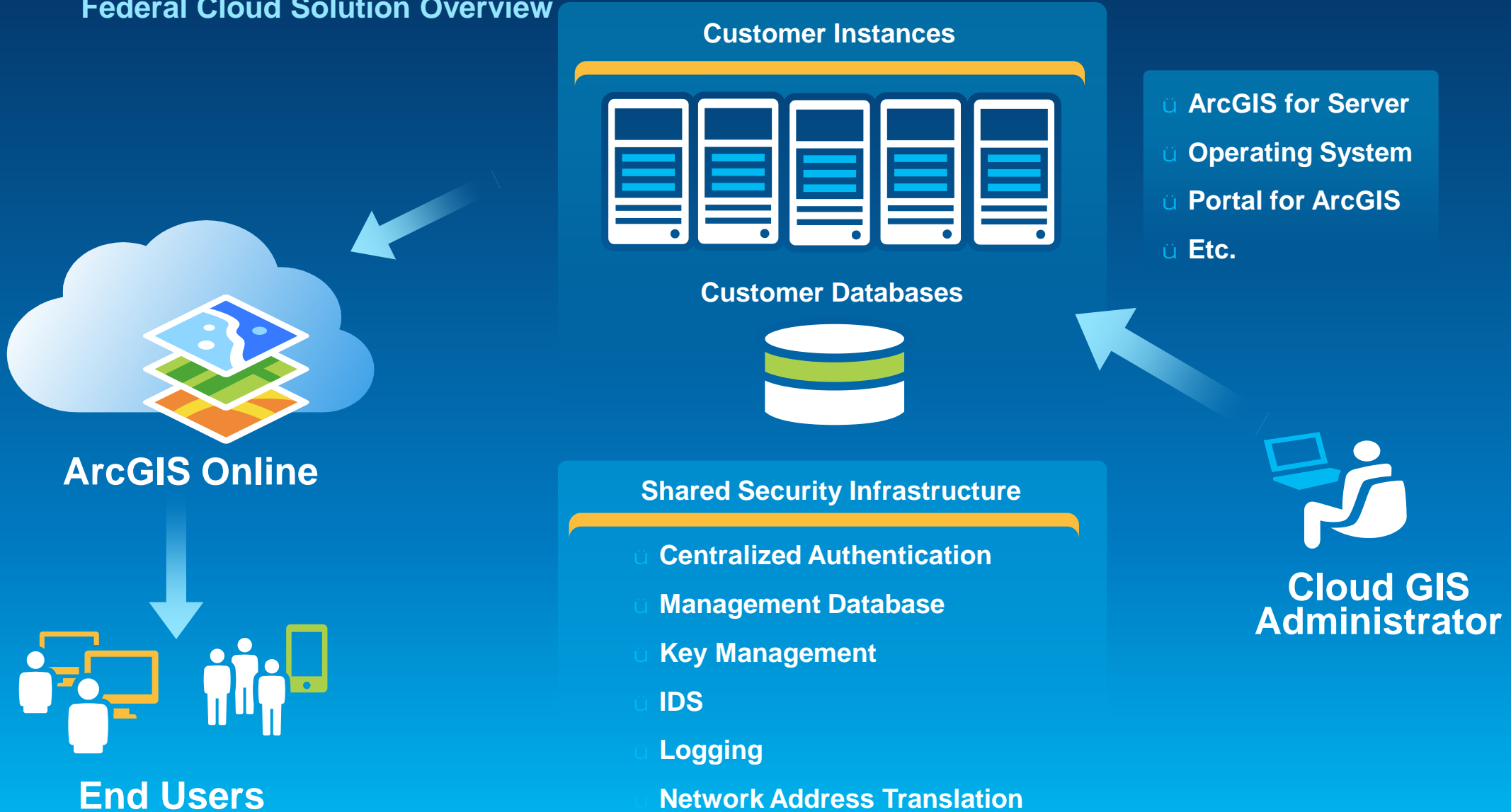
### Esri Managed Services

- ü Custom Web Apps
- ü GP, Reporting Services
- ü Imagery, Large Datasets
- ü Dynamic Map Services
- ü RDBMS (Oracle, SQL Server)

*ArcGIS Online front-end, Managed Services back-end*

# Cloud

## Federal Cloud Solution Overview



# Cloud

## Options

Sandbox

Production

Surge  
Support

AGOL  
Hybrid

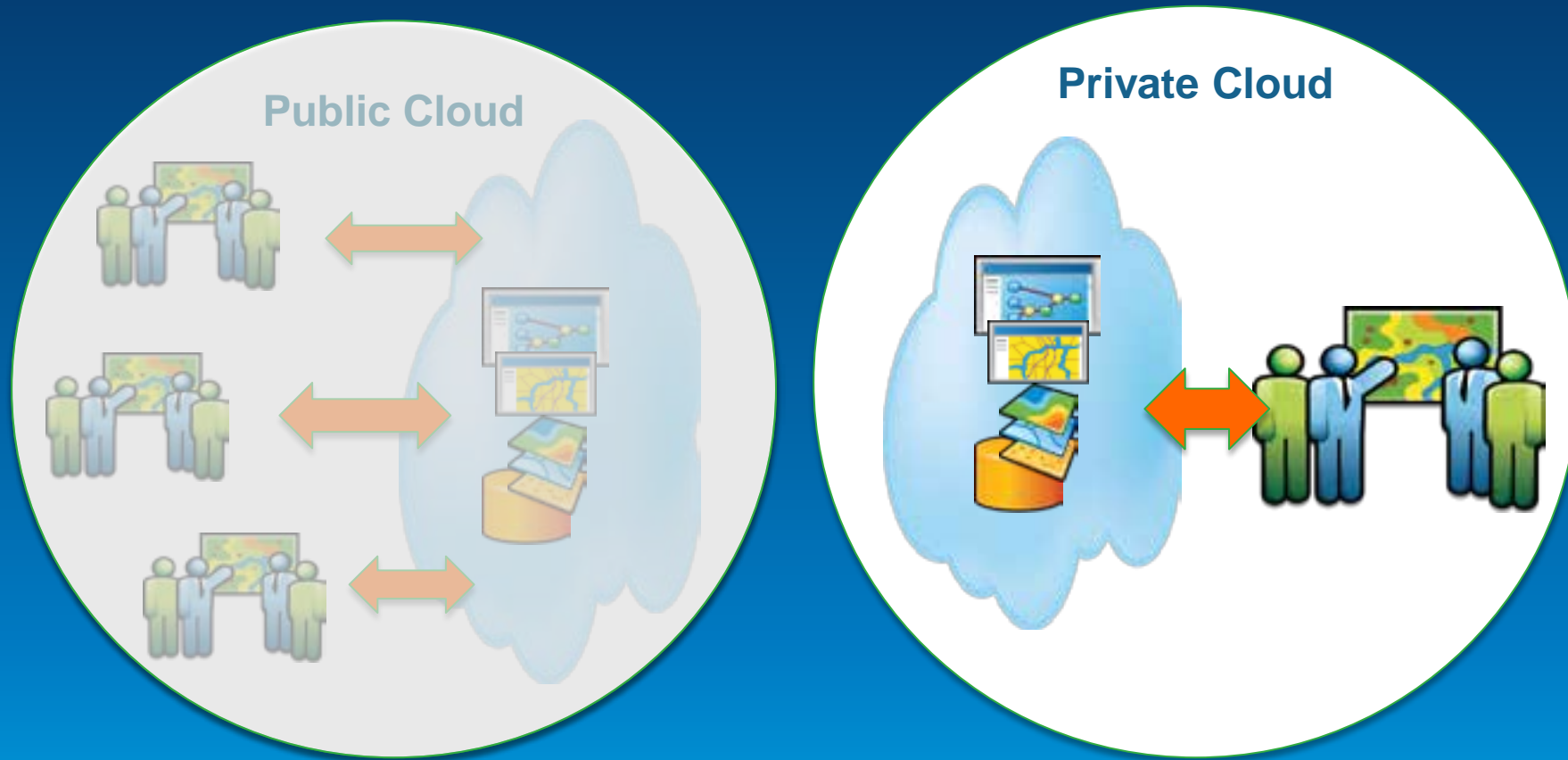
Disaster  
Recovery

Private  
Cloud

*Flexible offerings to support a variety of needs*

# Security Strategy

Public vs. Private Cloud



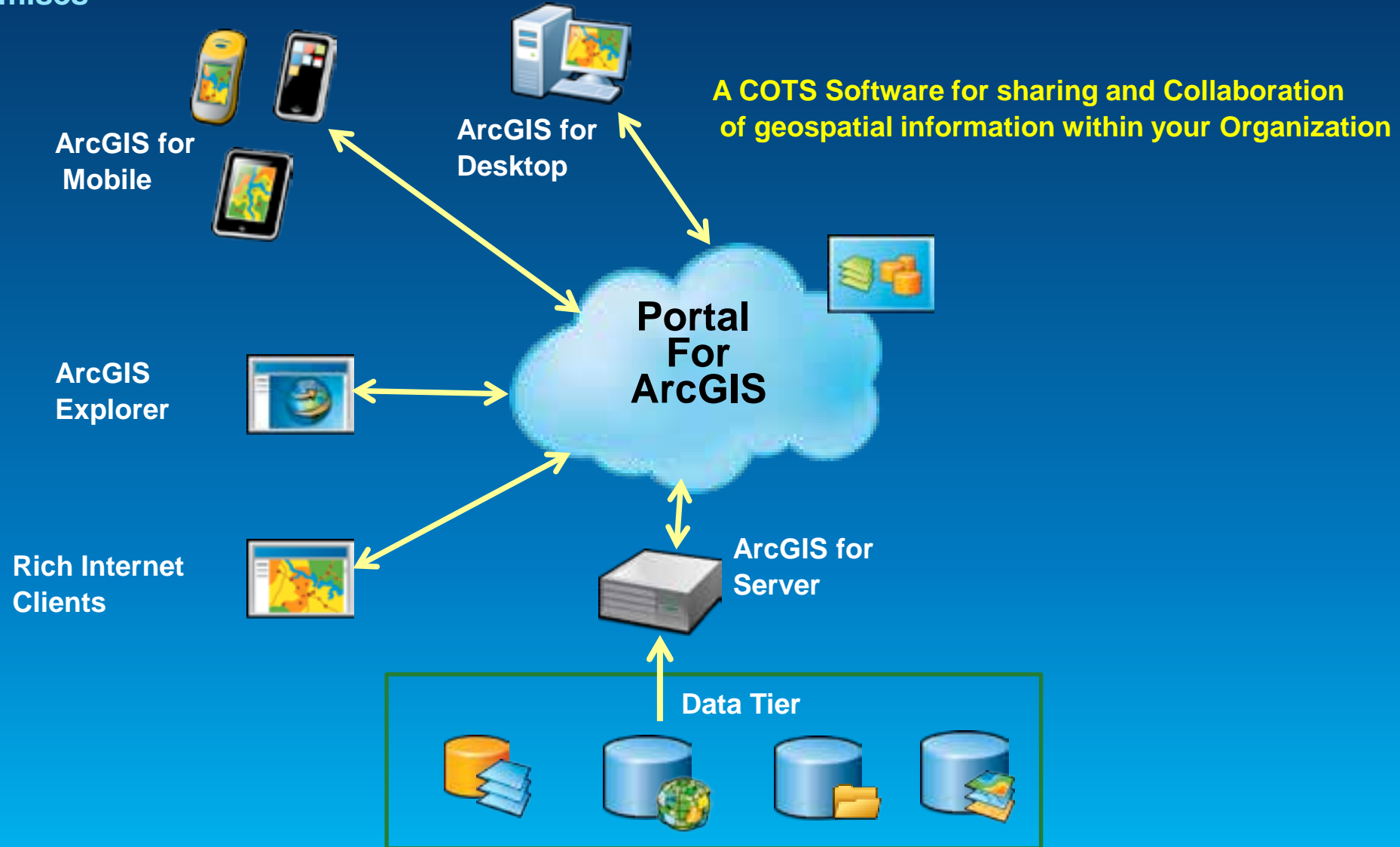
LESS ← → MORE

Security & Control

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# Deployment Strategy

On-premises

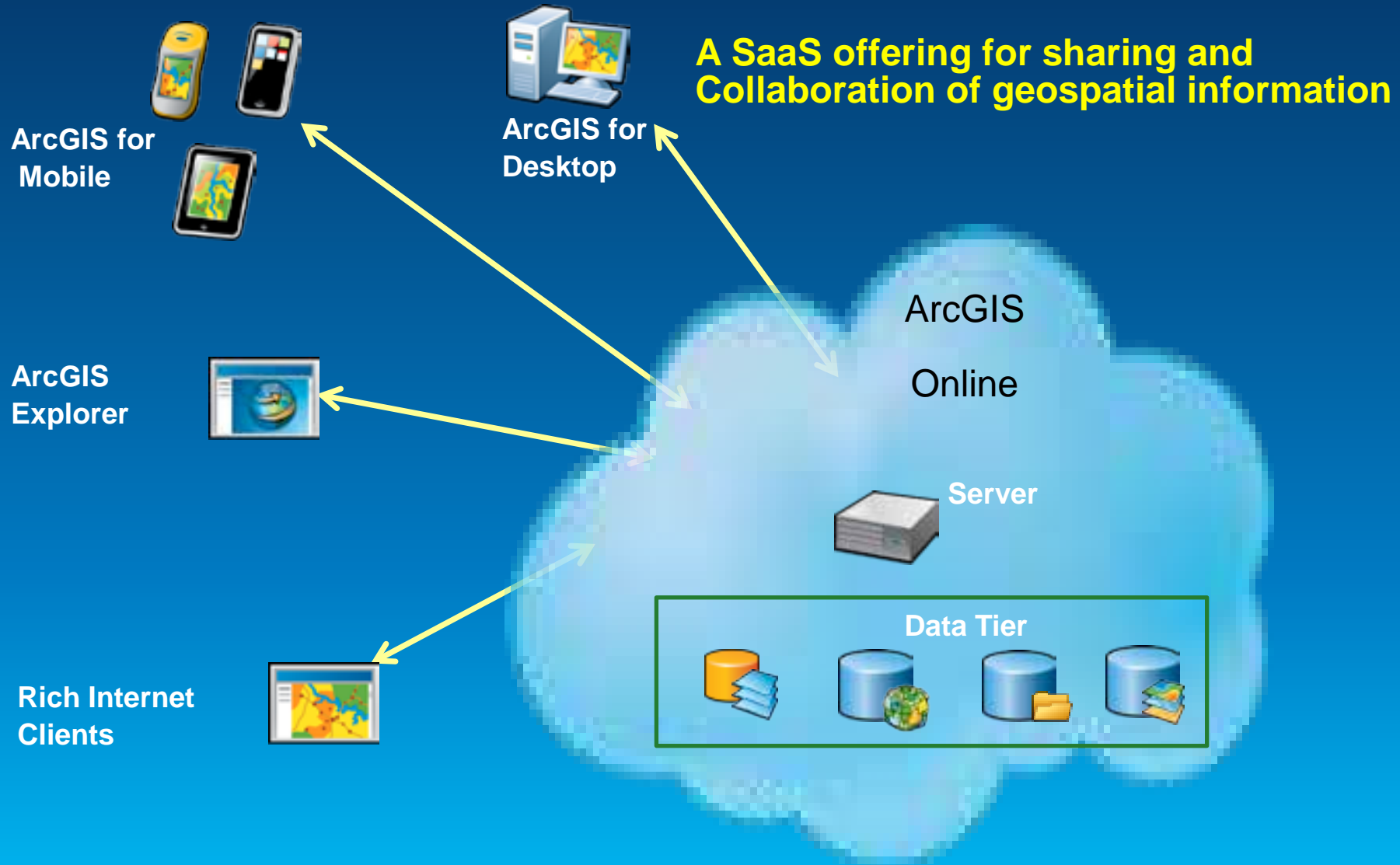


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# Deployment Strategy

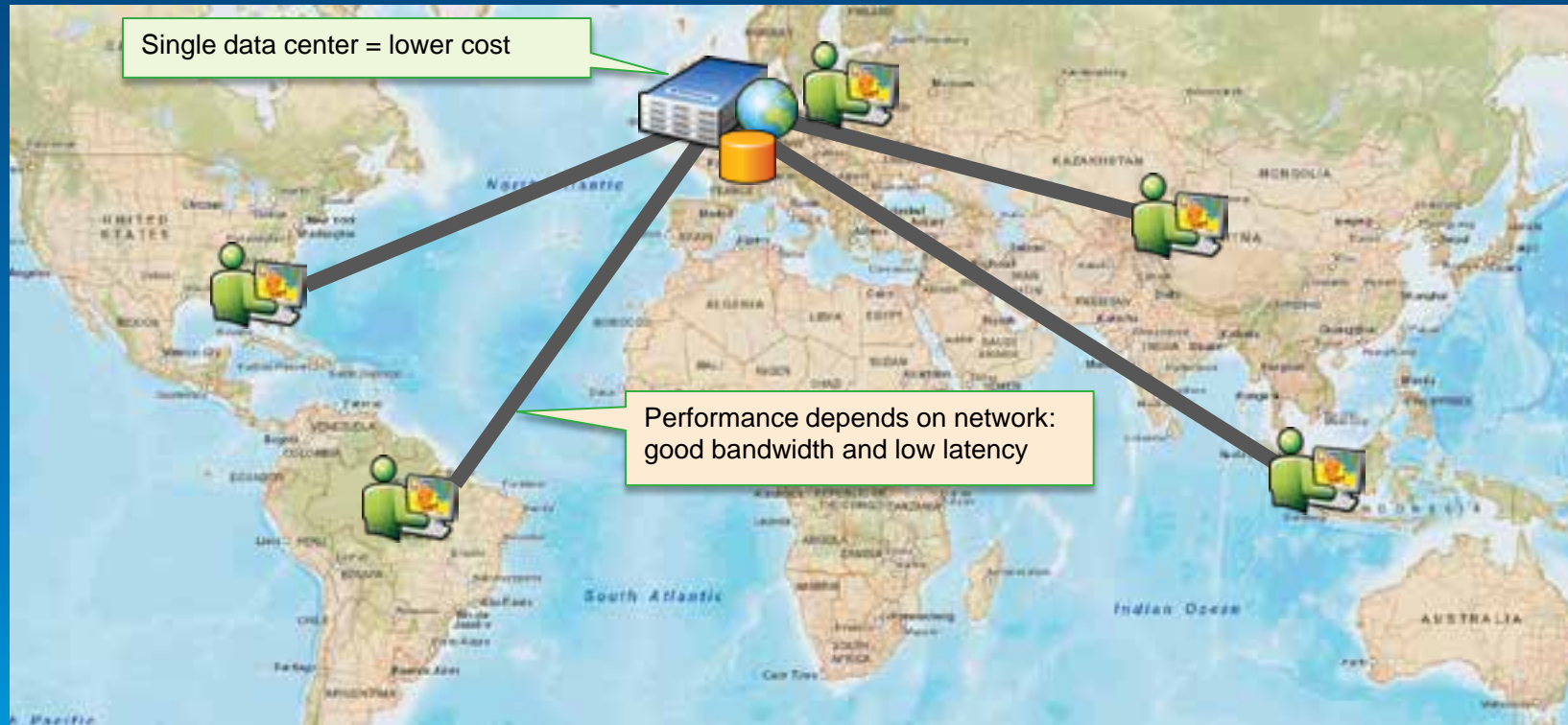
Off-premises



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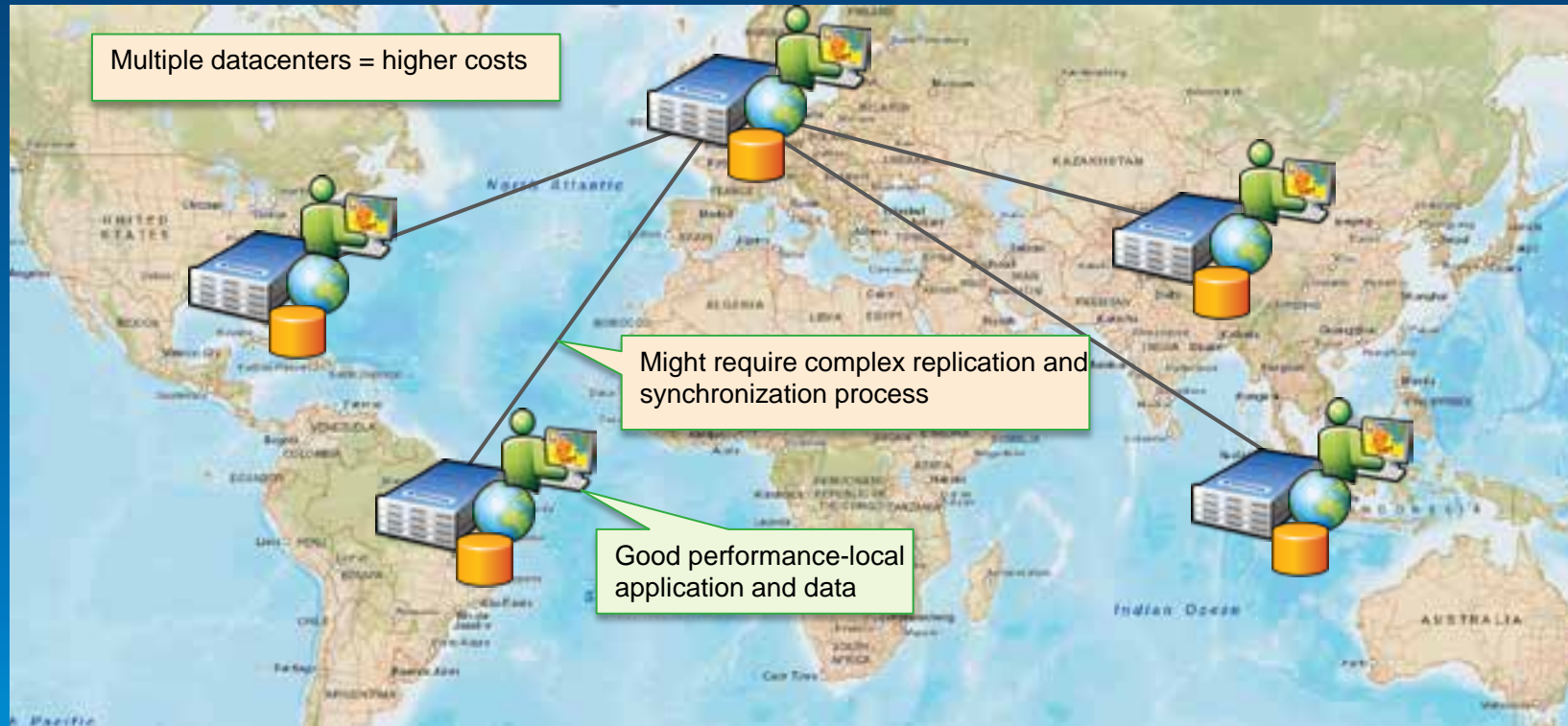
# Data management strategy

## Centralized



# Data management strategy

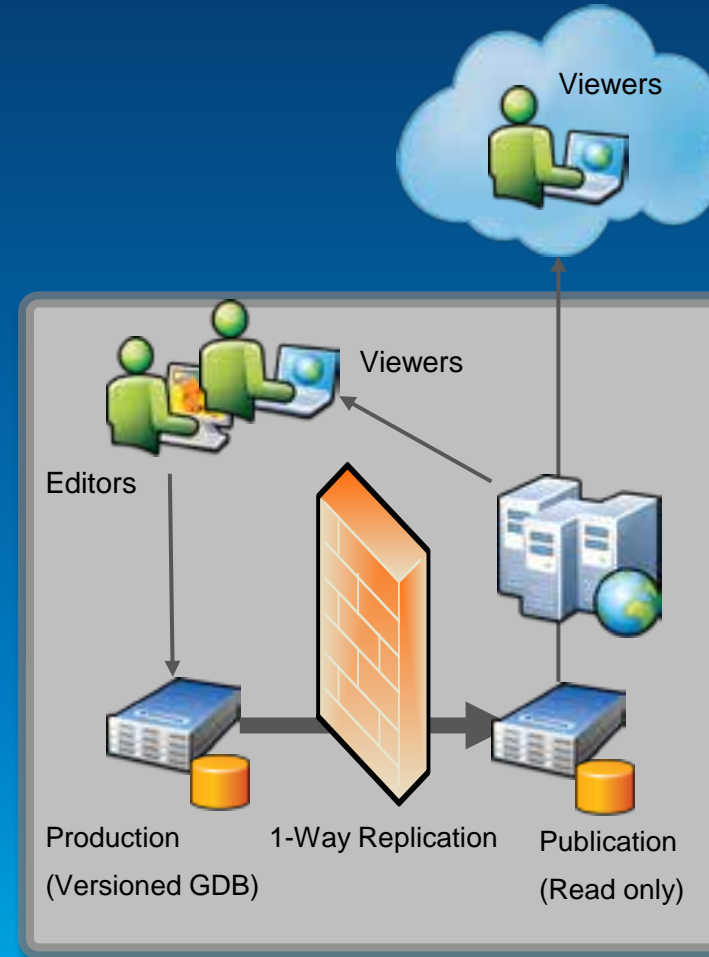
Distributed



# Data management strategy

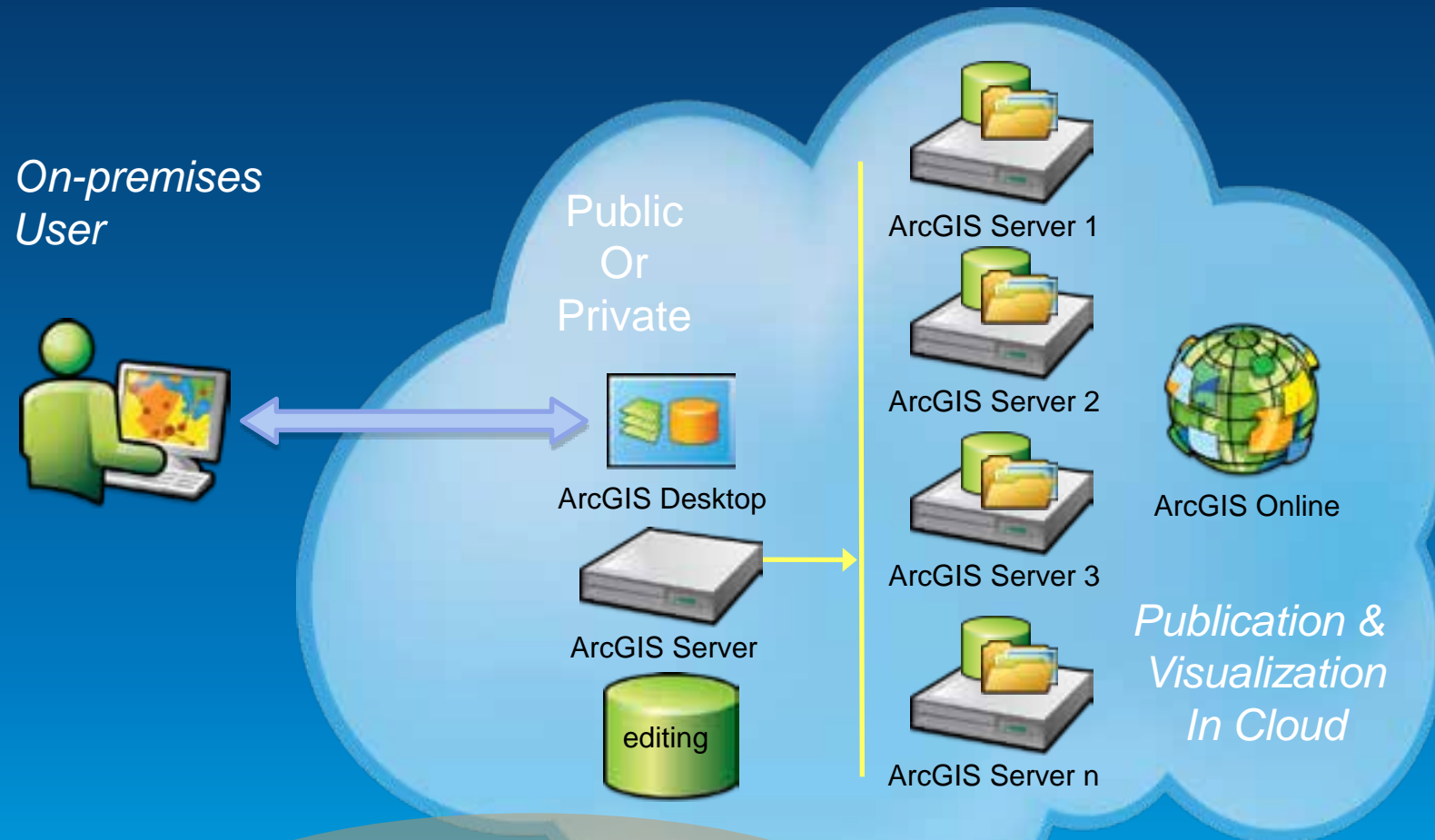
## Production and Publication (external access)

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



# Data management strategy

In Cloud



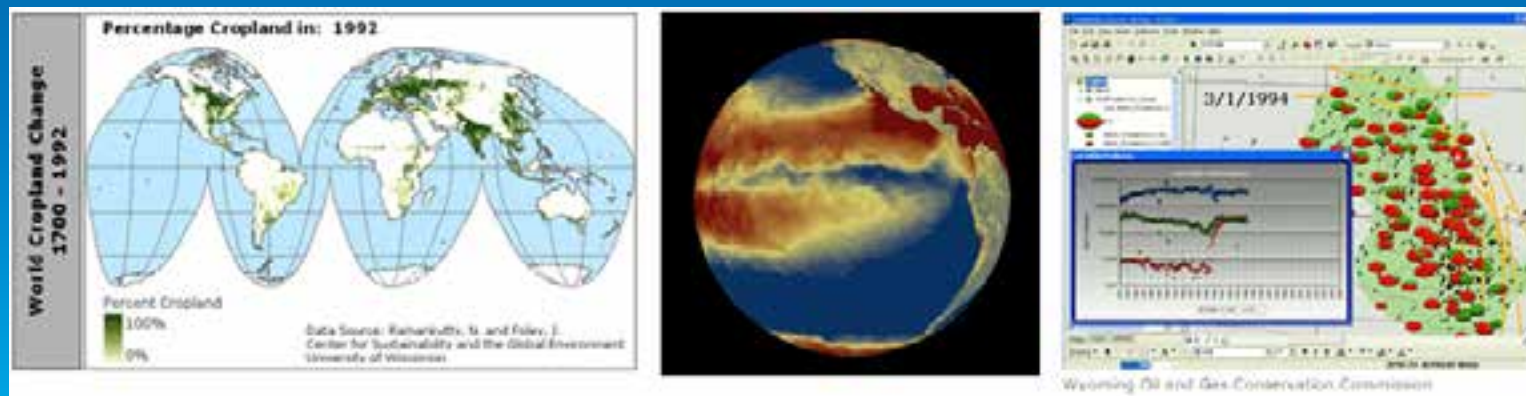
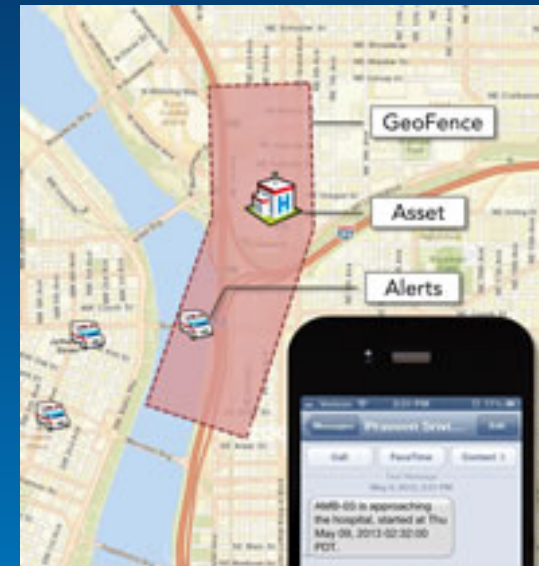
*Data Management  
Data Publication & Analysis  
In Cloud*

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# Data management strategy

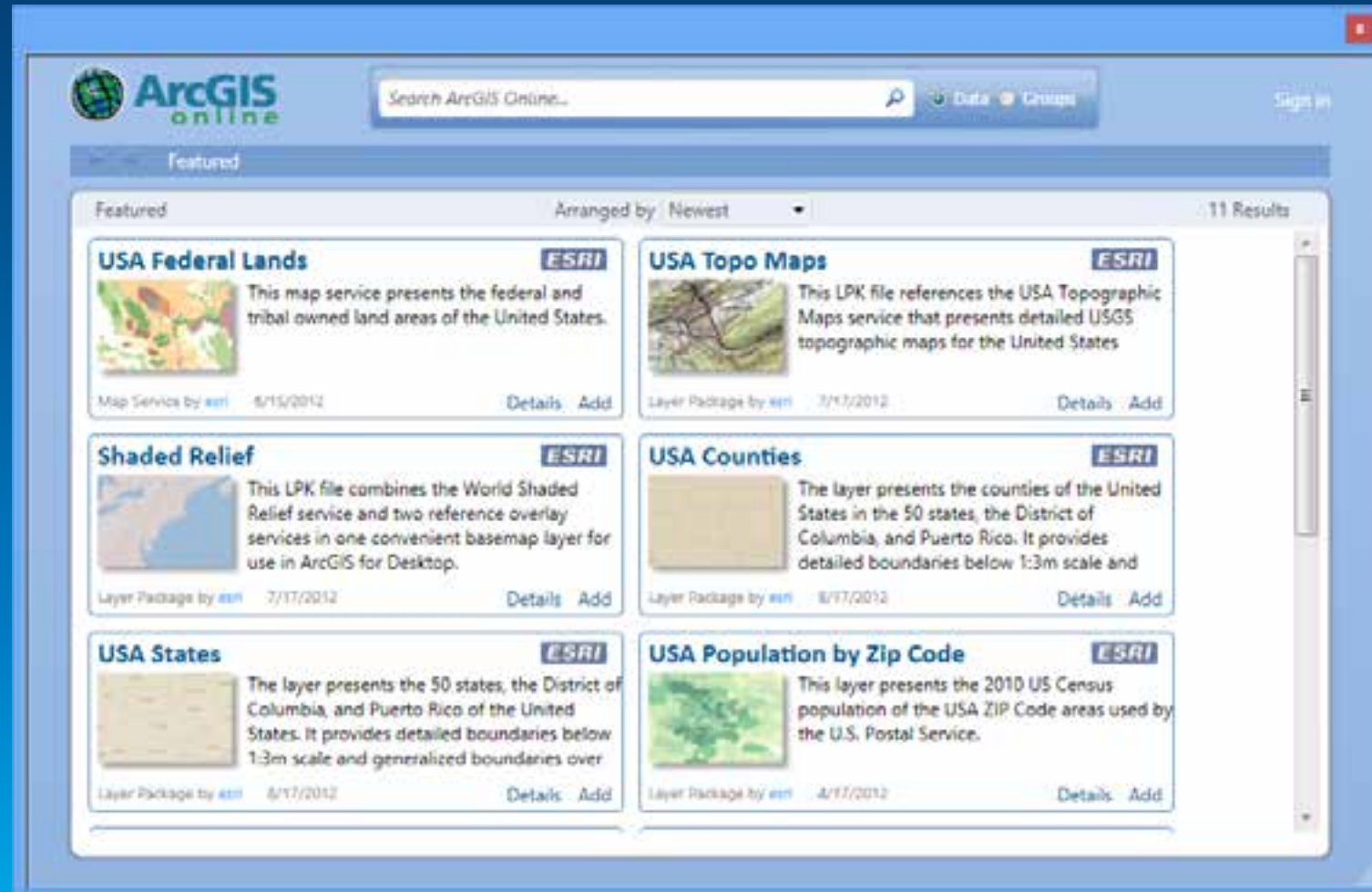
## Data types

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



# Data management strategy

## Base maps



The screenshot displays the ArcGIS Online interface. At the top left is the ArcGIS Online logo. A search bar contains the text "Search ArcGIS Online...". To the right of the search bar are links for "Data" and "Groups", and a "Sign in" button. Below the search bar, the page is titled "Featured" and shows "Arranged by: Newest" and "11 Results". The featured items are:

- USA Federal Lands** (ESRI): This map service presents the federal and tribal owned land areas of the United States. Map Service by [esri](#) 6/15/2012. [Details](#) [Add](#)
- USA Topo Maps** (ESRI): This LPK file references the USA Topographic Maps service that presents detailed USGS topographic maps for the United States. Layer Package by [esri](#) 7/17/2012. [Details](#) [Add](#)
- Shaded Relief** (ESRI): This LPK file combines the World Shaded Relief service and two reference overlay services in one convenient basemap layer for use in ArcGIS for Desktop. Layer Package by [esri](#) 7/17/2012. [Details](#) [Add](#)
- USA Counties** (ESRI): The layer presents the counties of the United States in the 50 states, the District of Columbia, and Puerto Rico. It provides detailed boundaries below 1:3m scale and... Layer Package by [esri](#) 8/17/2012. [Details](#) [Add](#)
- USA States** (ESRI): The layer presents the 50 states, the District of Columbia, and Puerto Rico of the United States. It provides detailed boundaries below 1:3m scale and generalized boundaries over... Layer Package by [esri](#) 8/17/2012. [Details](#) [Add](#)
- USA Population by Zip Code** (ESRI): This layer presents the 2010 US Census population of the USA ZIP Code areas used by the U.S. Postal Service. Layer Package by [esri](#) 4/17/2012. [Details](#) [Add](#)

# Development strategy

COTS vs. custom



*ArcGIS Online for Organizations*

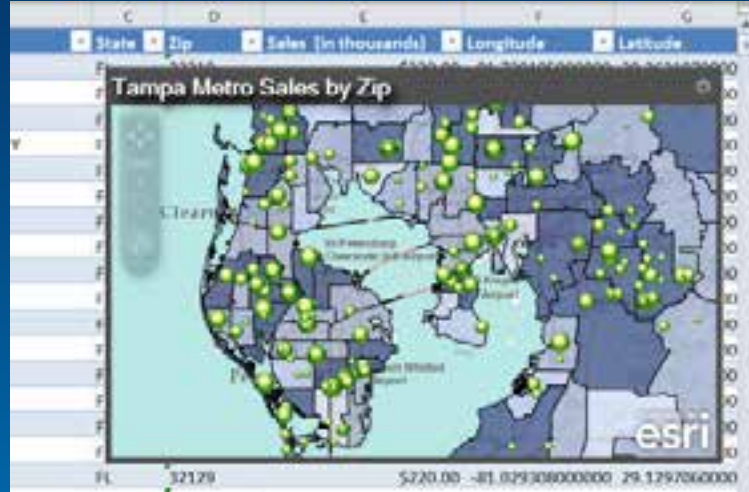


*Operations Dashboard for ArcGIS*

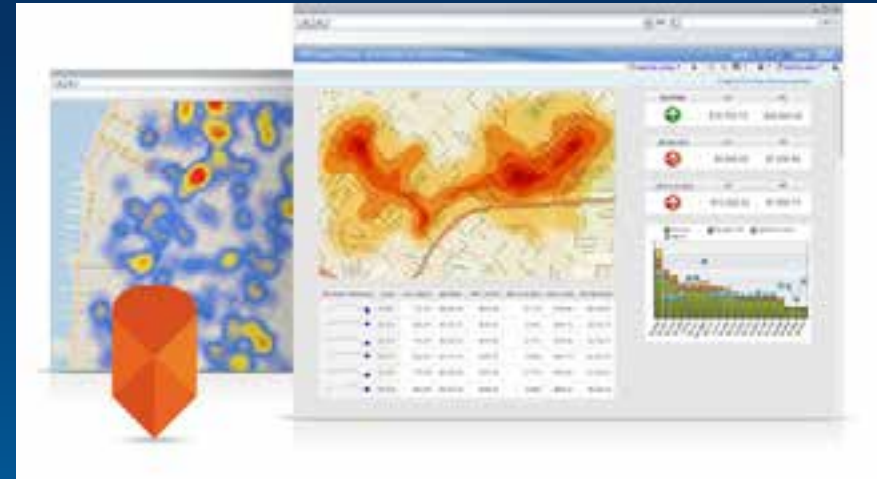
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# Integration Strategy



*Esri Maps for Office*



*Esri Maps for IBM Cognos*



*Esri Maps for SAP BusinessObjects*

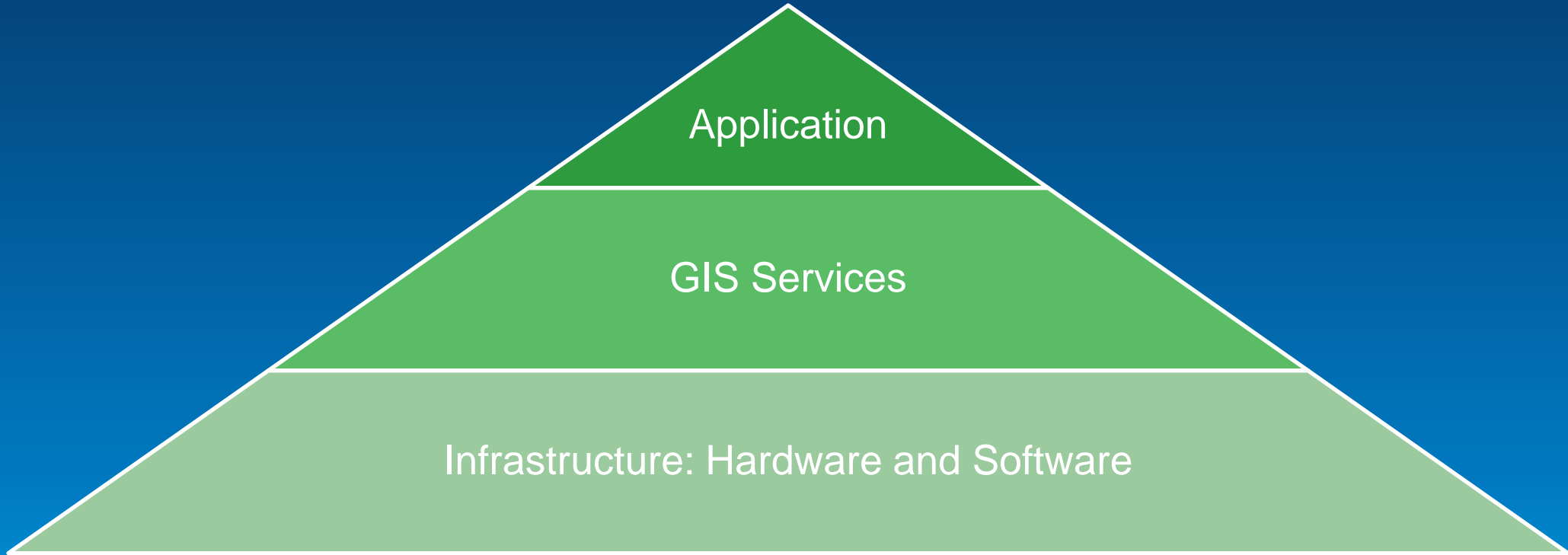


*Esri Maps for SharePoint*

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# Performance

Testing

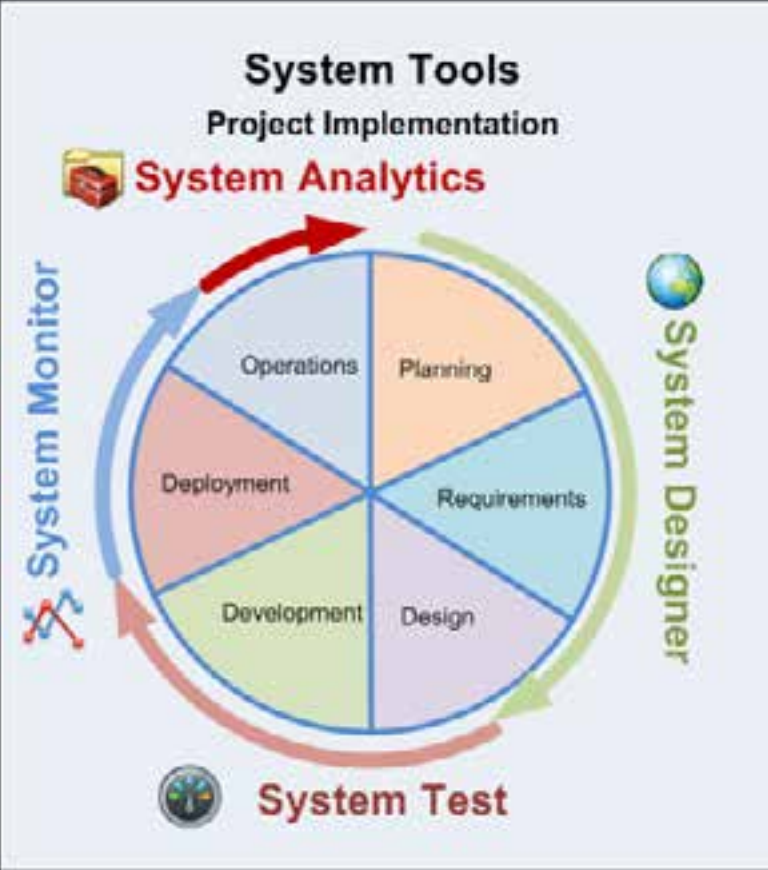


# Monitoring

- **Holistic monitoring**
  - **Infrastructure**
  - **GIS**
  - **Database**

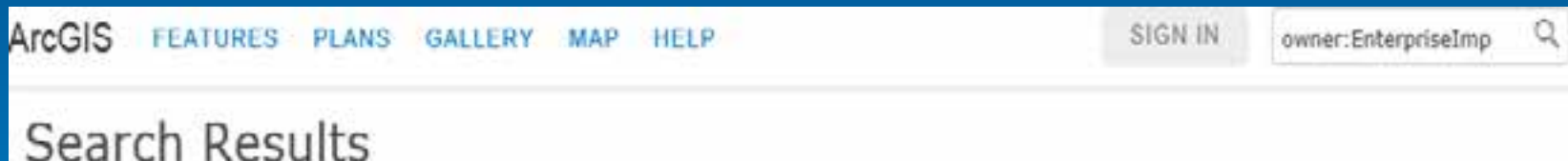
# Tools

# System Tools applied throughout Project



# Tools

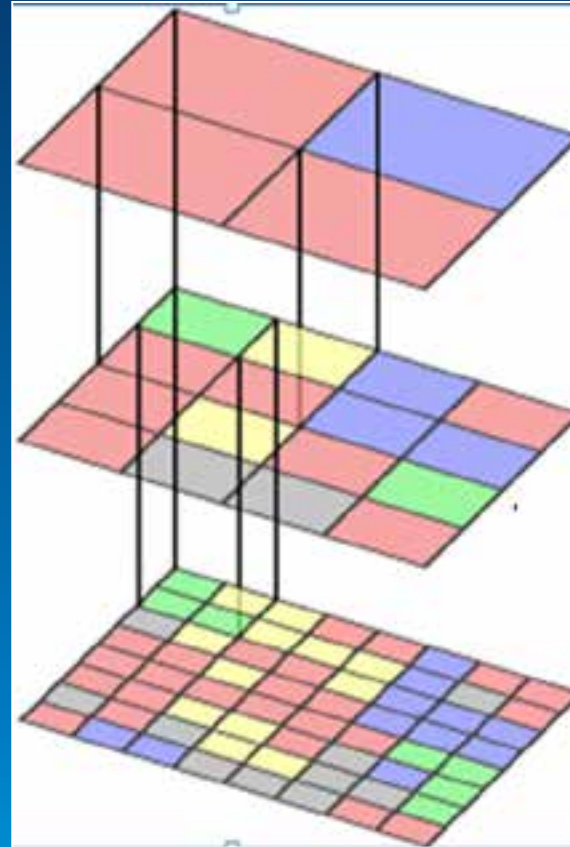
- <http://www.arcgis.com>
- owner:EnterpriseImp
- Show ArcGIS Desktop Content



ArcGIS Enterprise Systems:

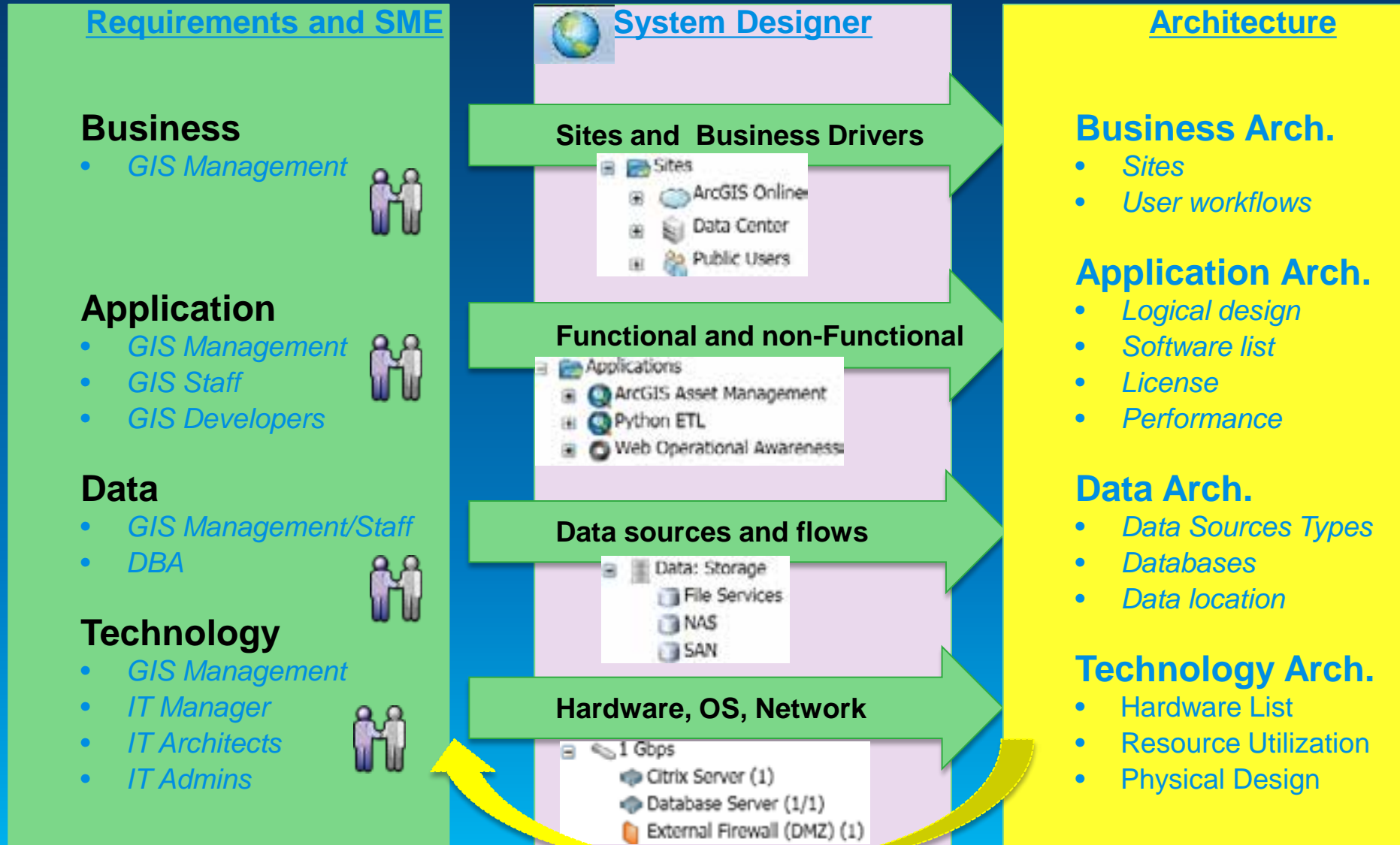
# Effective strategy is a blueprint for design and implementation

- Strategy
- Architecture Design
  - - **System Designer**
- Implementation



# System Designer tool

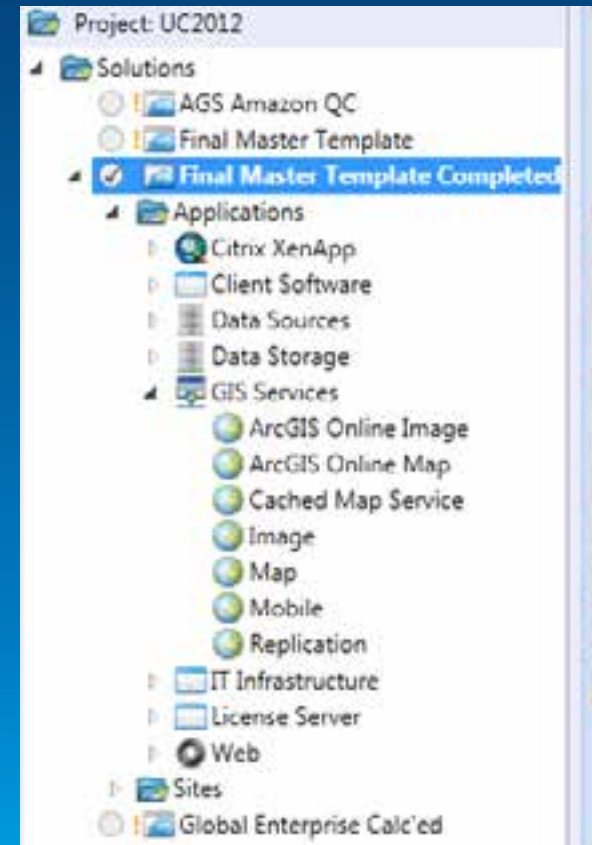
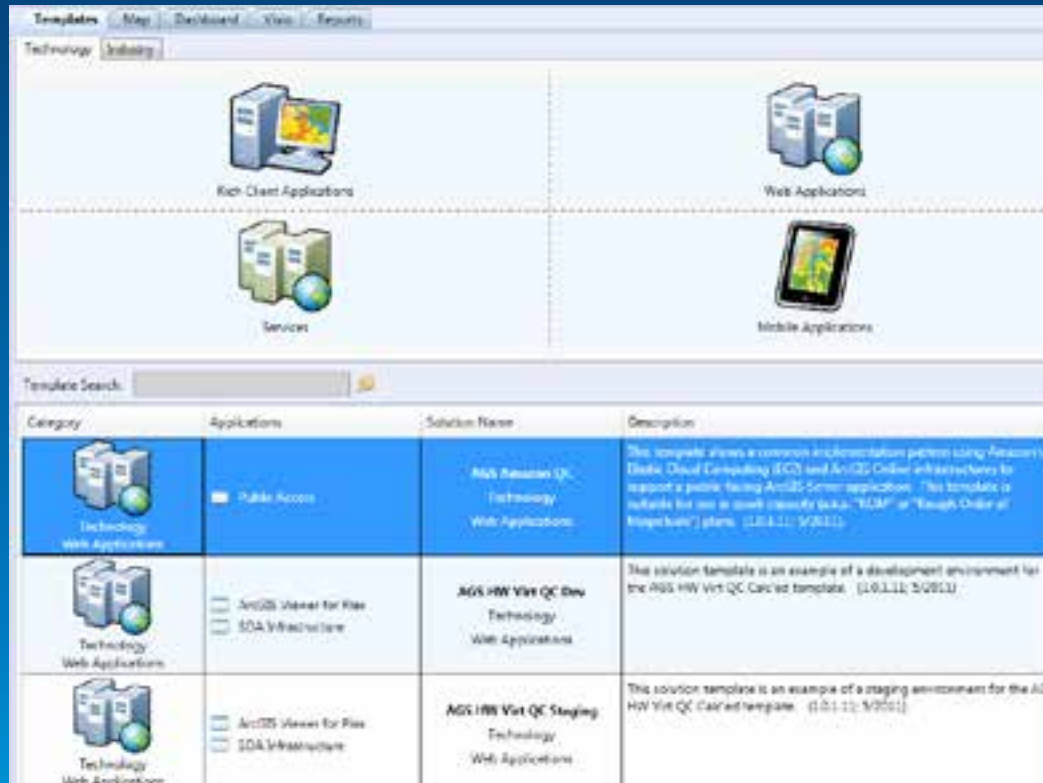
<http://www.arcgis.com/home/item.html?id=8ff490eef2794f428bde25b561226bda>





# System Designer

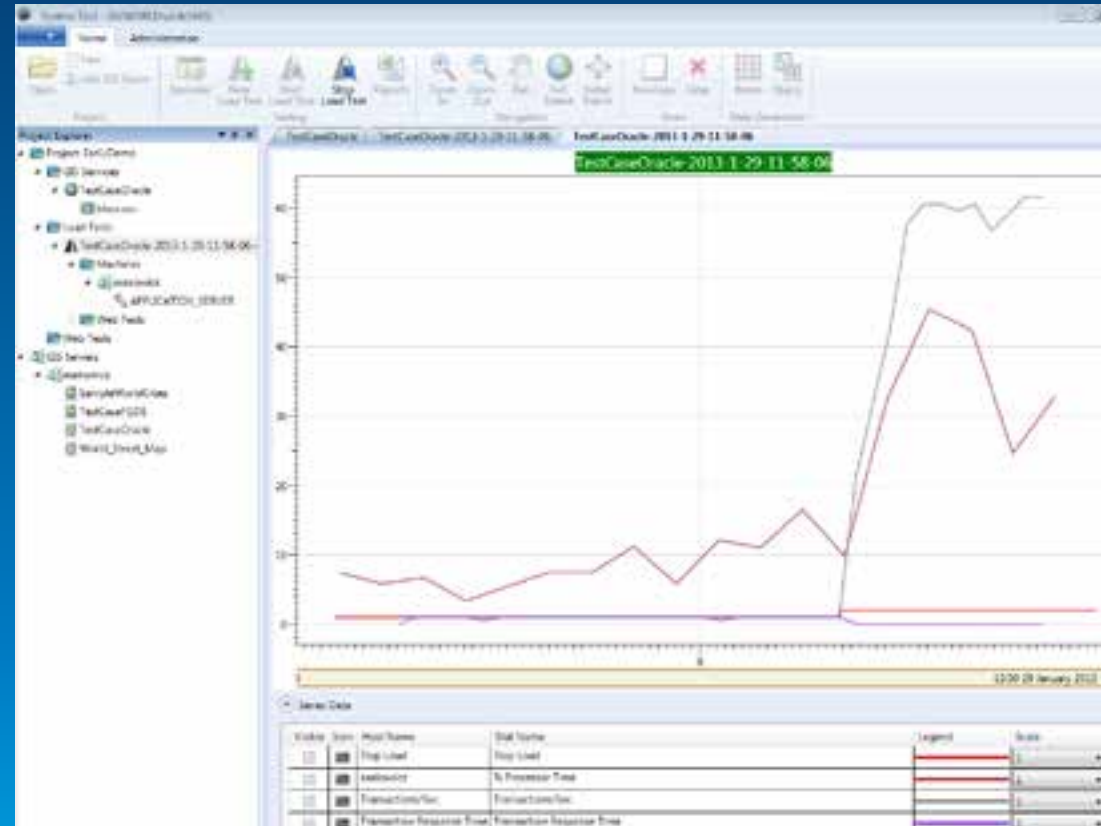
Provides solution templates for quick analysis





# System Test

- GIS Services
- Web application



# System Monitor

System Monitor | Dashboards | Alerts | System | Process | ArcGIS | DB | Http | RDP | Amazon

System Monitor:

Hosts | Process | ArcGIS | DB | Http | RDP | Amazon | EXT

| Alerting | Collecting | Type   | Name     |
|----------|------------|--------|----------|
| ●        | ↑          | System | ESLSRV15 |
| ●        | ↑          | System | ESLSRV19 |
| ●        | ↑          | System | ESLSRV4  |

# Summary

- Process
- Considerations
- Tools

# Thank you

Questions?

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