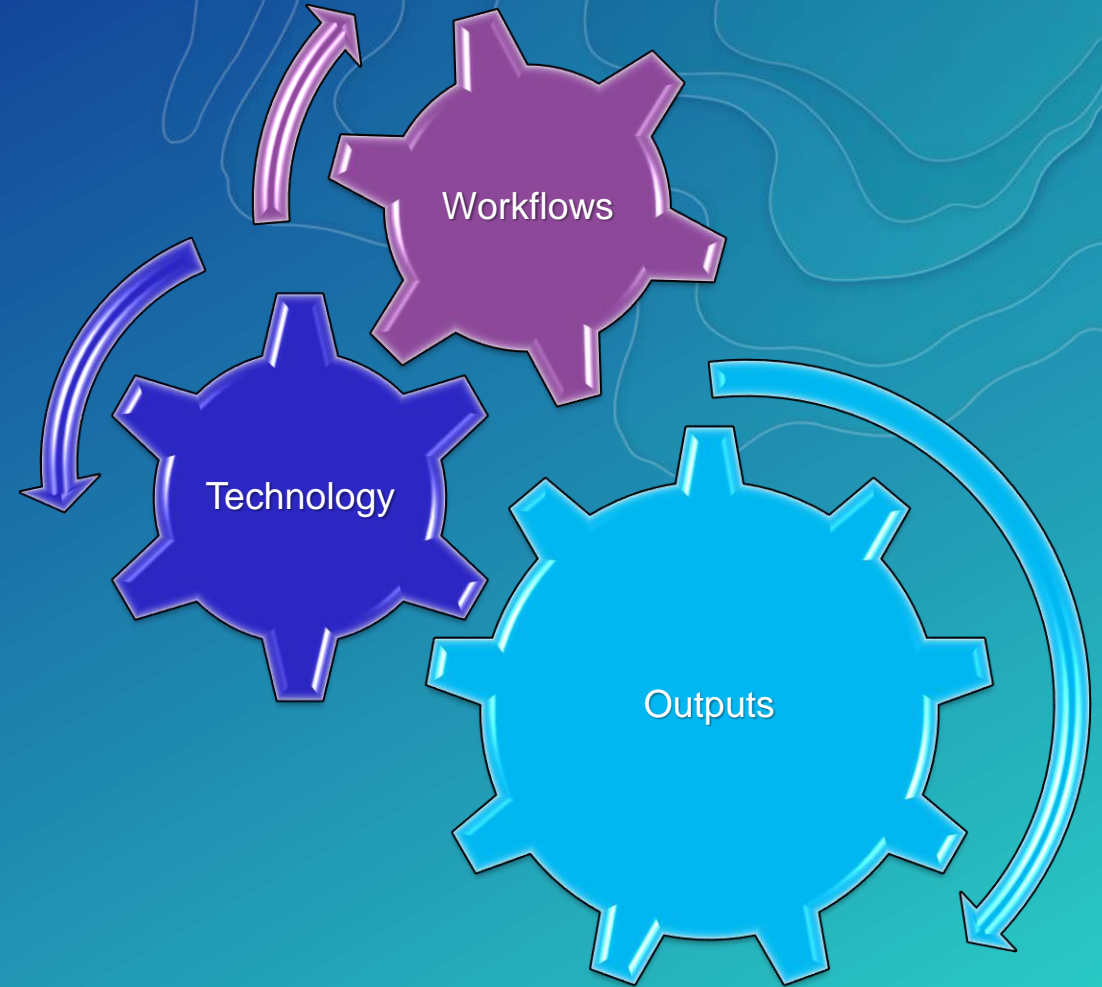# Establish an Initial Operating Capability for Your Organization

Matt Marino | Technical Consulting Manager | Esri Professional Services
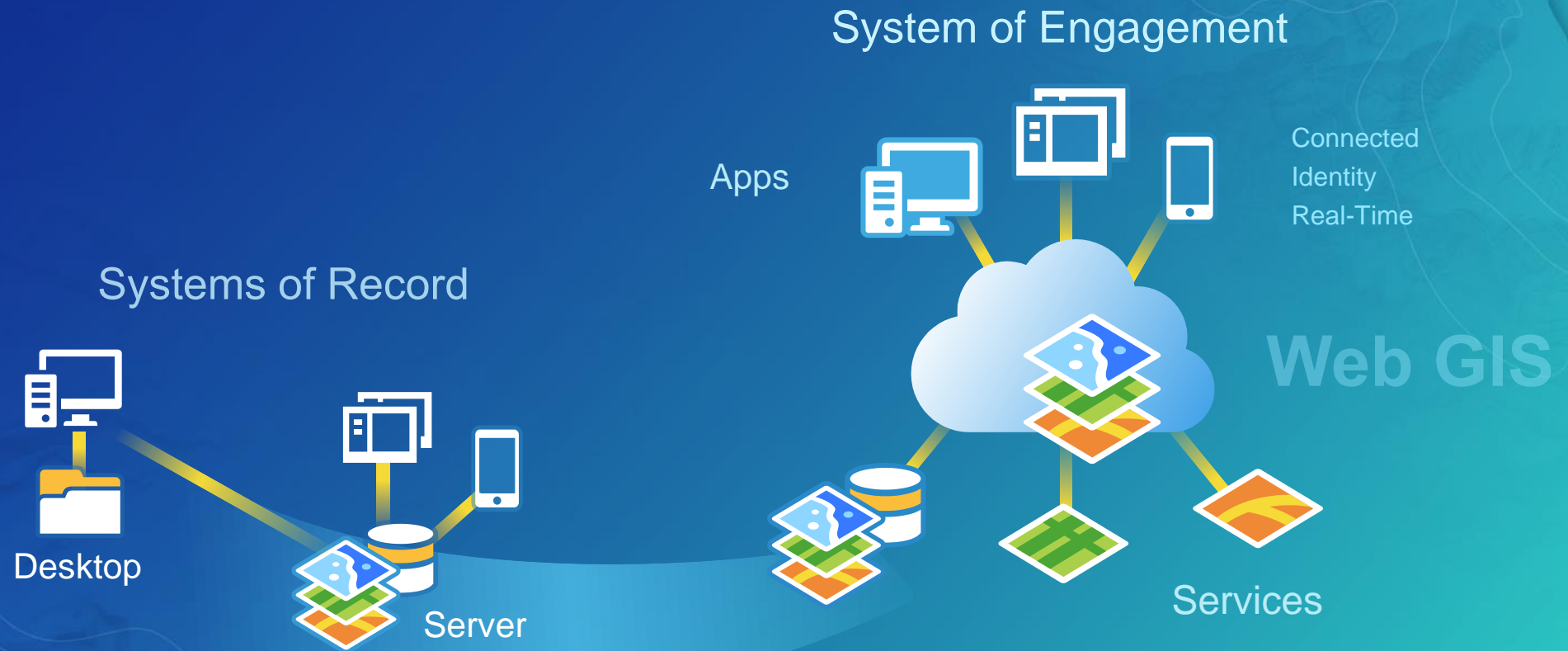
What is Initial Operating Capability?

- "The state achieved when a capability is available in its minimum usefully deployable form"

Workflows

Technology

Outputs

Web GIS Is Transforming GIS
Opening, integrating and simplifying everything

System of Engagement

Connected
Identity
Real-Time

Apps

Systems of Record

Web GIS

Desktop

Server

Services

Traditional Considerations for IOC

- Desktop -> Enterprise Geodatabase: multi-user editing and viewing

Systems of Record

Desktop

Server

- Desktop to Server: drawing maps in map services

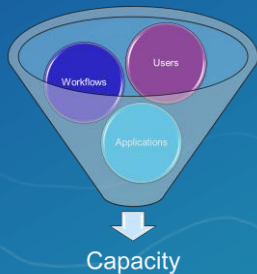# Modern Web GIS Considerations for IOC
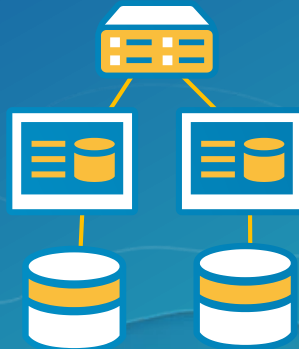
- Users & Workflows

- Data -> Services -> Webmaps

Security   Capacity   Architecture

Apps

System of
Engagement

Web GIS
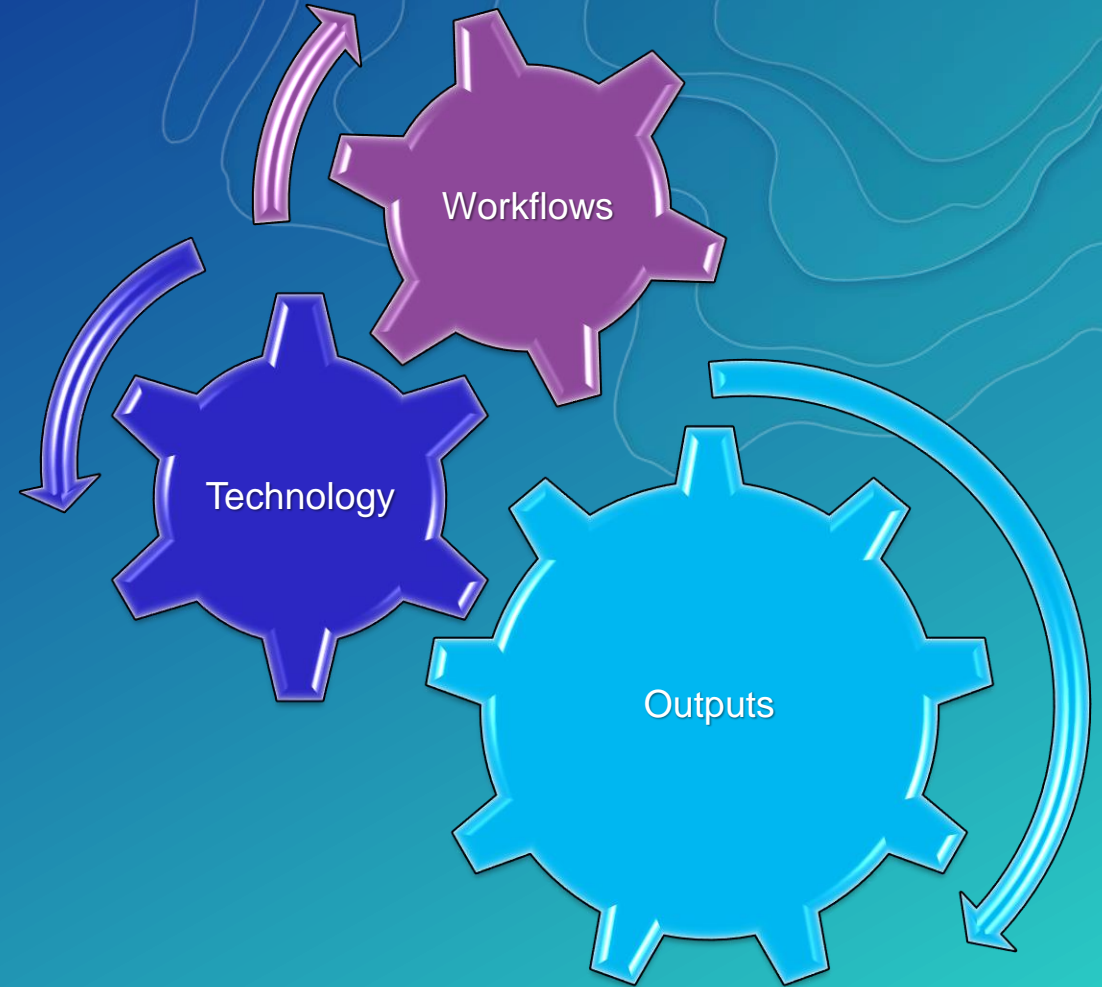
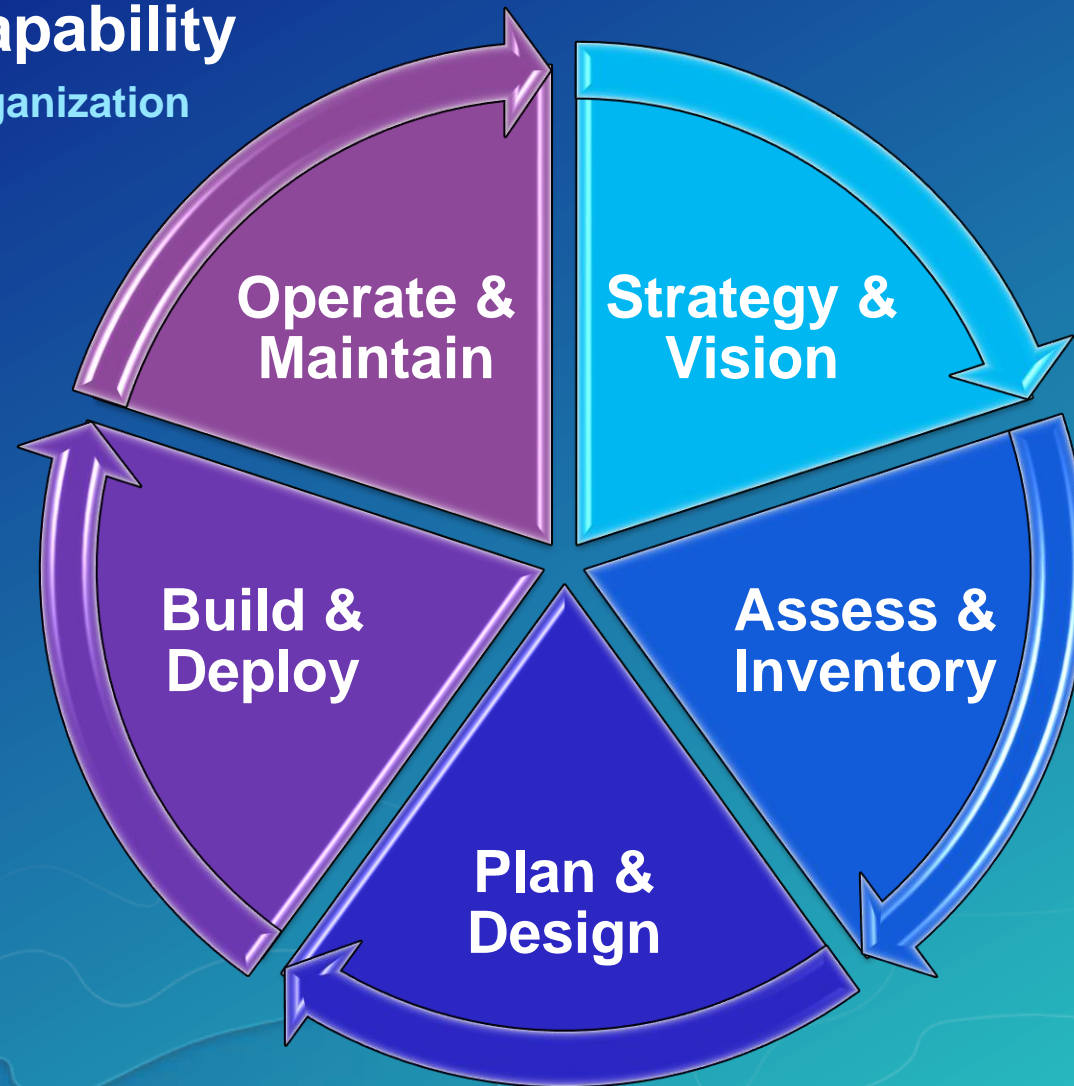Capacity

Connected
Identity
Real-Time

Services

What is Initial Operating Capability?

Workflows

Technology

Outputs

"The state achieved when a capability is available in its minimum usefully deployable form"

Strategy & Vision

Organizational Vision

Your Outward Message

The primary mission of the Department of Building Safety is to safeguard the public, promote the health, safety and welfare of the City…..

…..helps its clients achieve profitable growth with a combination of specialized broking expertise, strategic advisory services…..

Esri Professional Services supports customers and partners in the effective implementation and application of ArcGIS software

Establish Key Users

How is Location Valuable to Them?

Desktop Analyst

Team Supervisor

Field Worker

What is being collected?

Where is my team?

Where is my next task?

Discuss Goals & Identify Success

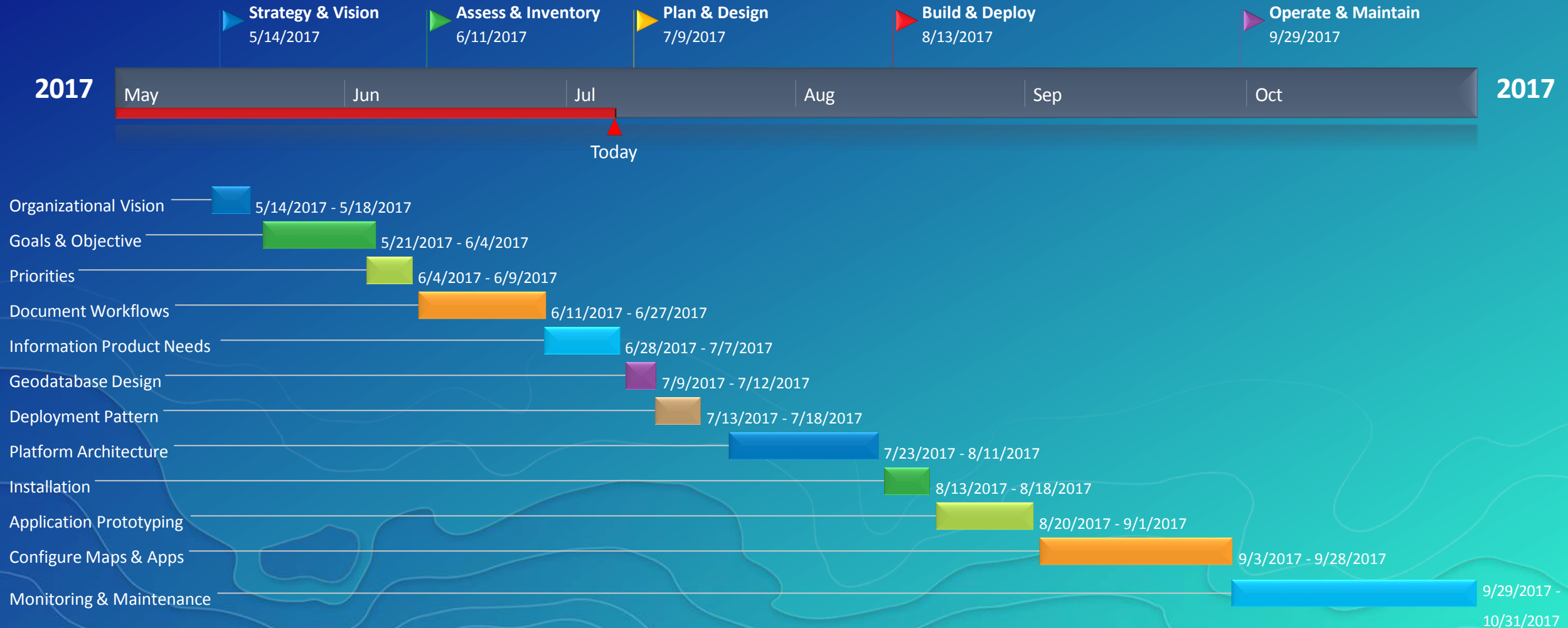**How is Location Valuable to Them?**

As a [Role] I can [Feature/Function] so that [Goal/Business Value]….

…. I will know I'm successful when I can [select/operate] [Feature/Function] so that [output] is [visible/complete/ect.]
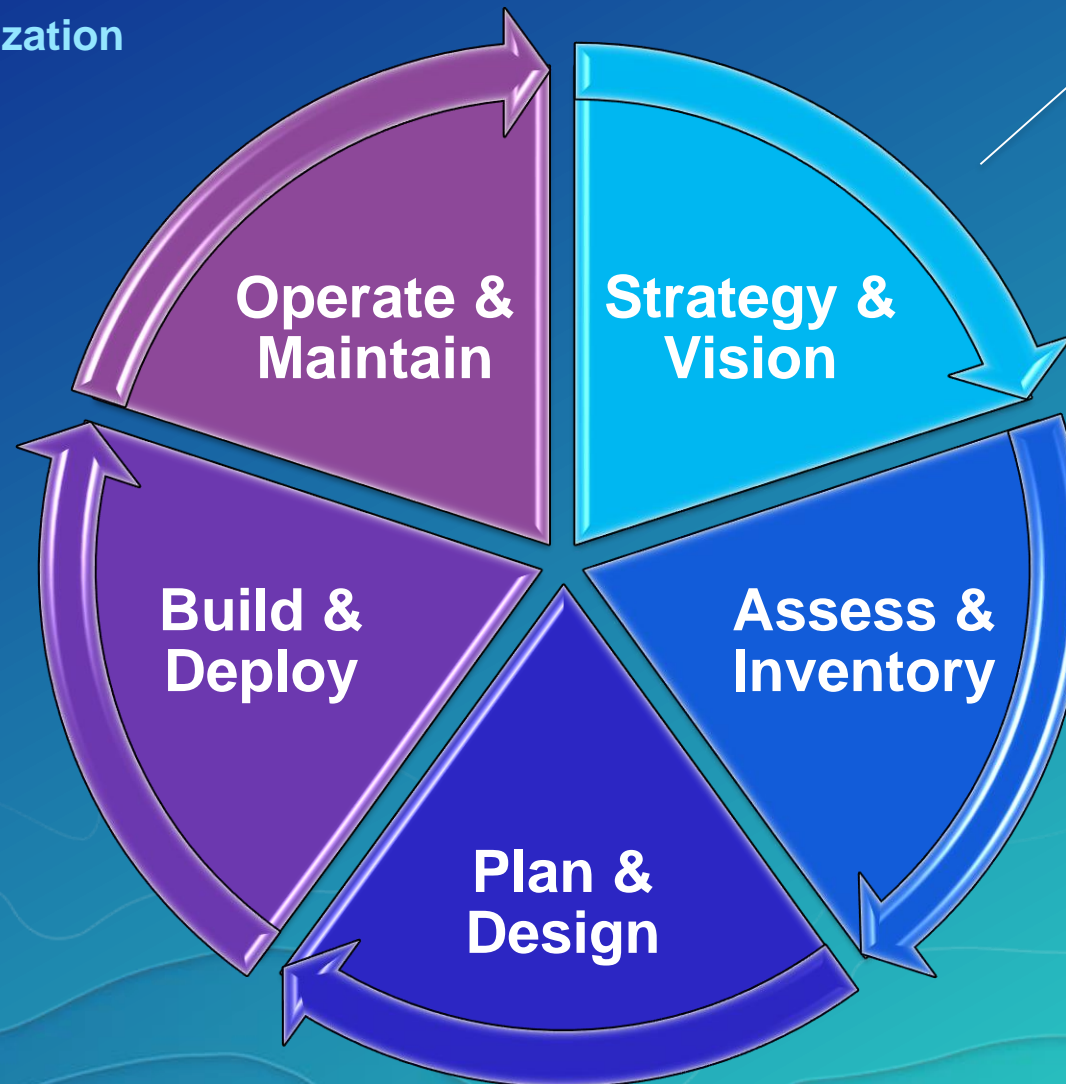
Assess & Inventory

Org, Business Cases & Infrastrucutre

Assess Resources

What's available to Use

Content

Technology

People

Document Workflows

Start with Patterns of Use
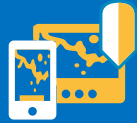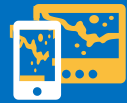
Location Enablement	Constituent Engagement	Decision Support	Field Mobility	Analytics	Location Data Management
Discover, use, make, and share maps at work – anywhere, anytime	Facilitate and manage communication with stakeholder	Inform execs and management with maps and location intelligence	Get authoritative information into and out of the field	Describe, predict, and improve business performance	Collect and organize location data about your assets and resources

Information Product Needs

Fit to Workflows

Operations Dashboard

ArcGIS Navigator

Business Analyst Online

Survey123

ArcGIS Collector

ArcGIS Earth

ArcGIS Explorer

Location Enablement	**Constituent Engagement**	**Decision Support**	**Field Mobility**	**Analytics**	**Location Data Management**
Discover, use, make, and share maps at work – anywhere, anytime	Facilitate and manage communication with stakeholder	Inform execs and management with maps and location intelligence	Get authoritative information into and out of the field	Describe, predict, and improve business performance	Collect and organize location data about your assets and resources

Set Priorities
What's Impactful & Achievable

Product	Impact	-	Level of Effort	X	User Base	=	
Cemetery Navigator	1		5		1		- 4
Public Health Survey	2		1		3		3
Parcel Viewer	5		4		4		4
DPW Asset Collector	3		1		5		10
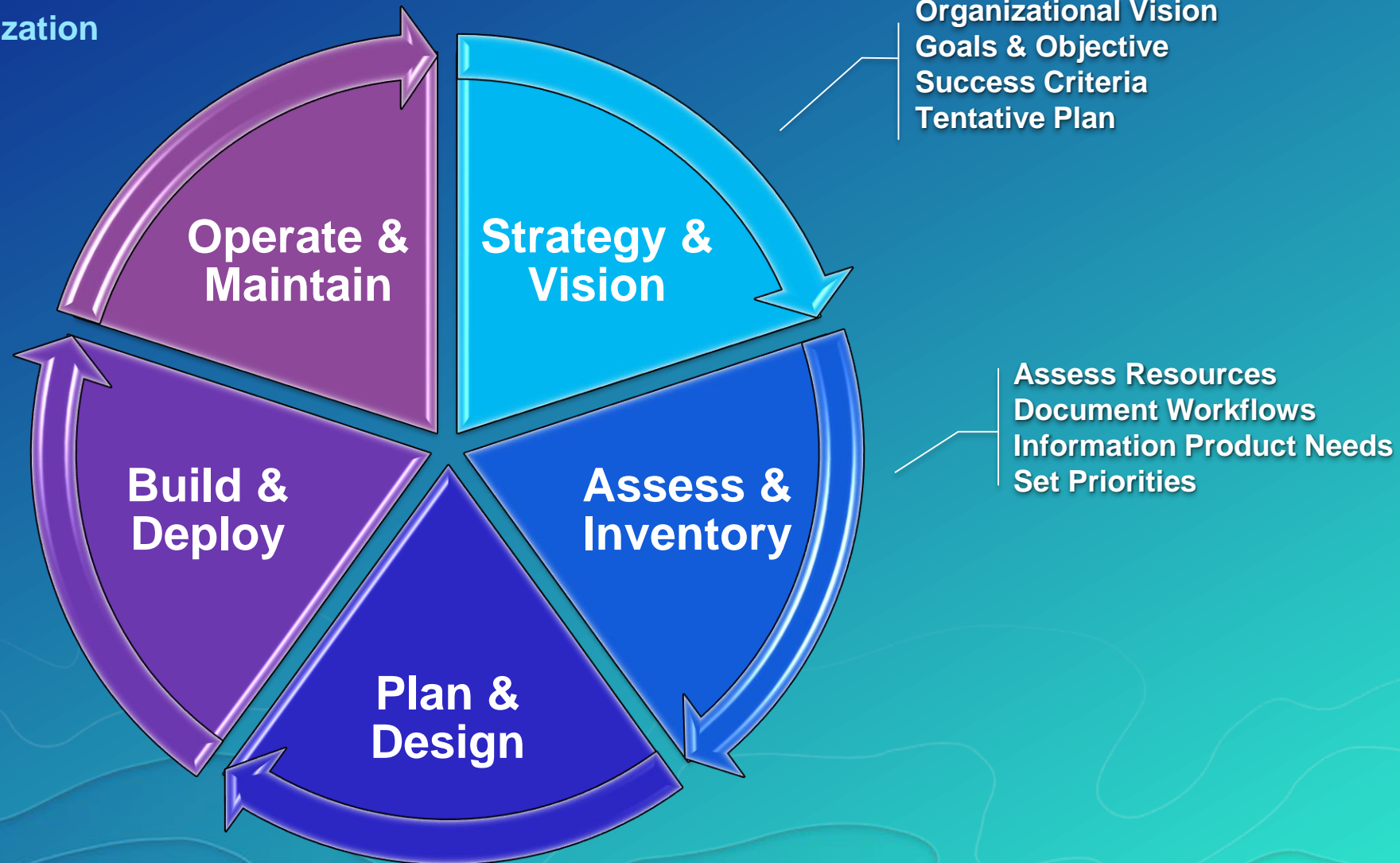
Plan & Design

Org, Business Cases & Infrastrucutre

Determine Core Web Maps

Common Maps with Broad Use
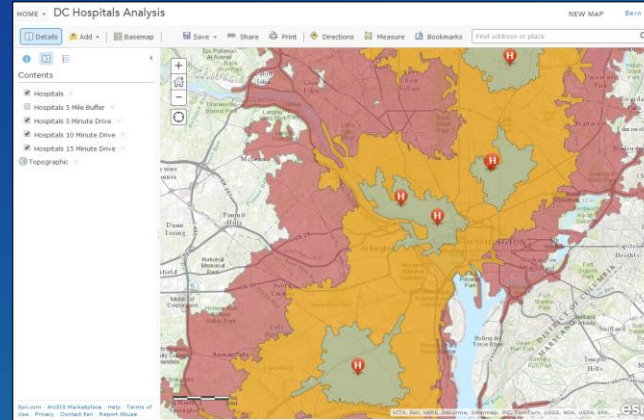
Geodatabase Design
Minimum Data Required to Meet Users Needs

1.

Layers

Map Layers
- Scene layer
- Tile layer
- Map image layer
- Imagery layers

Feature Layers
- Feature Service
- Feature collection

Tables
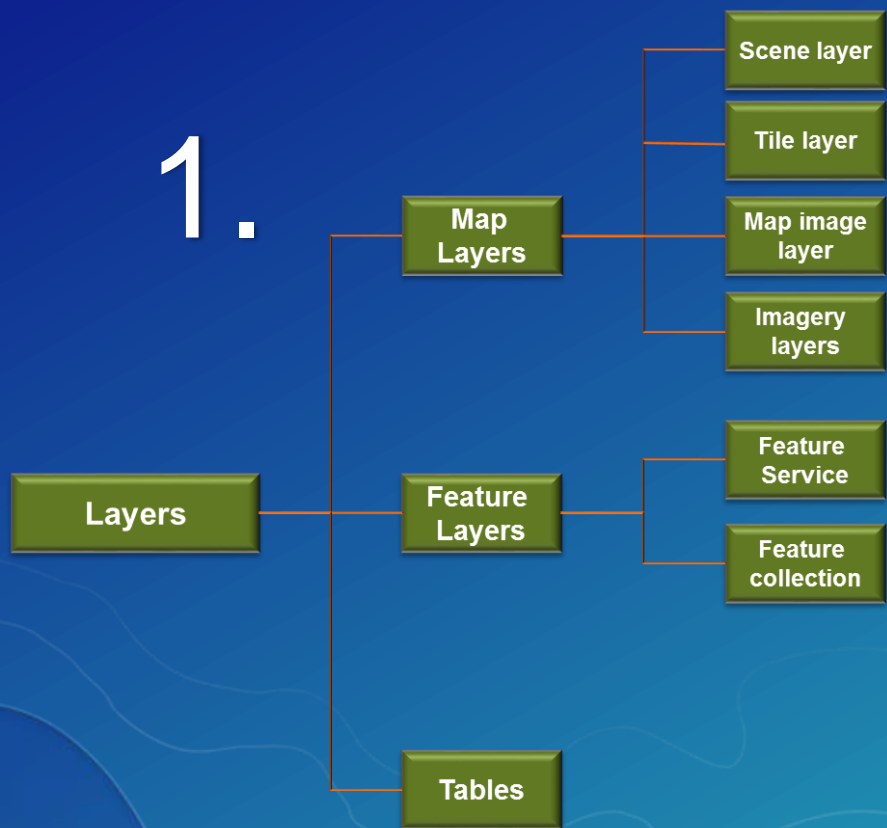
2. ArcGIS Online

Files

ArcGIS Data Store

Enterprise Geodatabase

Security Standards

Align to your Industry and IT Standards

✓ **Access**

✓ **Authentication**

✓ **Authorization**

✓ **Encryption**

Capacity Planning
Sizing Based on Workflows & Usage

$$Mbps = \frac{TH \times Mbits / req}{3600}$$

Concurrent users

Workflows

GIS Services

Assemble Requirements

$$TH = \frac{Users}{Response\ Time + Think\ Time}$$

throughput

Apply Methodology

response time

Network capacity

Determine Needs

software distribution

Core SpecRate

CPUs

$$\#\ CPU_t = \frac{ST_b \times TH_t \times 100}{3600 \times \%CPU} \times \frac{SpecRatePerCPU_b}{SpecRatePerCPU_t}$$

Determine a Deployment Pattern

- **Base Enterprise Deployment (10.5)**

  - ArcGIS GIS Server
  - Portal for ArcGIS
  - ArcGIS Datastore
  - ArcGIS Web Adaptor

- **Can be configured with a single machine or with multiple machines**

Portal
Web Adaptor

Server
Web Adaptor

Portal for ArcGIS

ArcGIS Data Store

ArcGIS Server
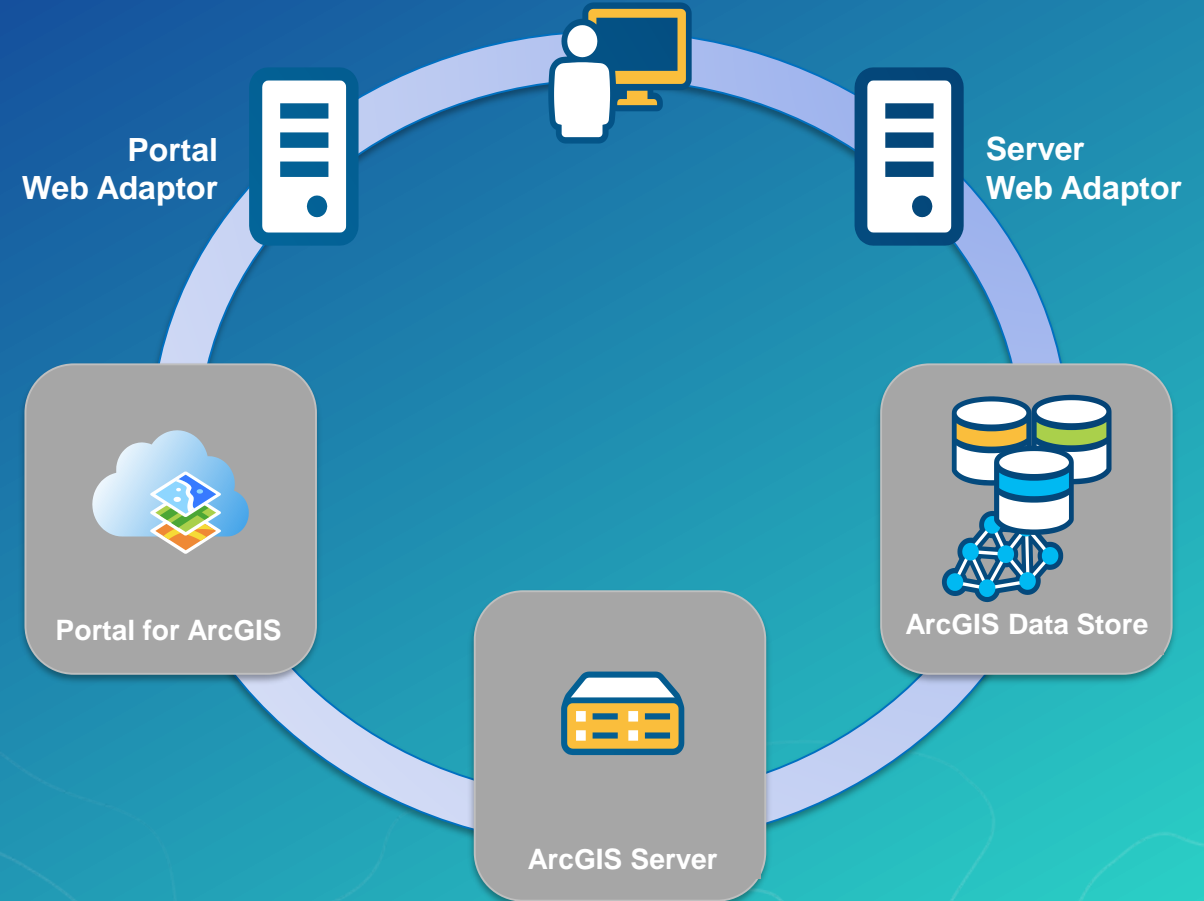
Single Machine Deployment

- **Benefits:**
  - **Minimal investment**
  - **All-in-one**
  - **Easiest to deploy**
  - **Best used for testing**
  - **Limited impact on hardware resources**

- **Considerations:**
  - **Least stable,**
  - **Not-scalable**

Portal Web Adaptor

Server Web Adaptor

Portal for ArcGIS

ArcGIS Server

ArcGIS Data Store

Single Machine
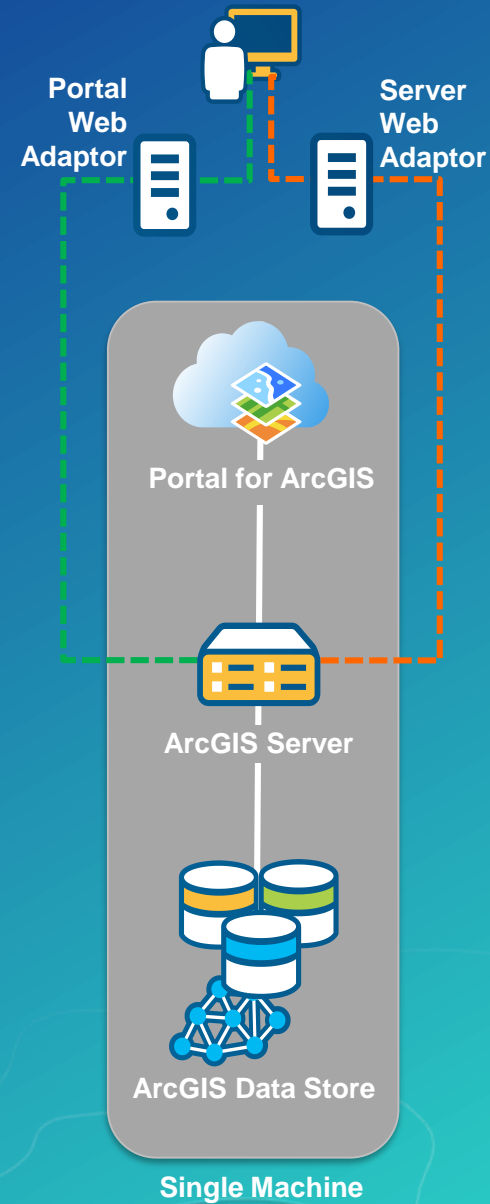
Multitiered Deployment

- **Benefits:**
  - Scales to meet increased load
  - Separation of work
  - More stable

- **Considerations:**
  - Increased hardware expenses & IT management

Portal Web Adaptor

Server Web Adaptor

Portal for ArcGIS

Machine 1

ArcGIS Server

Machine 2

ArcGIS Data Store

Machine 3
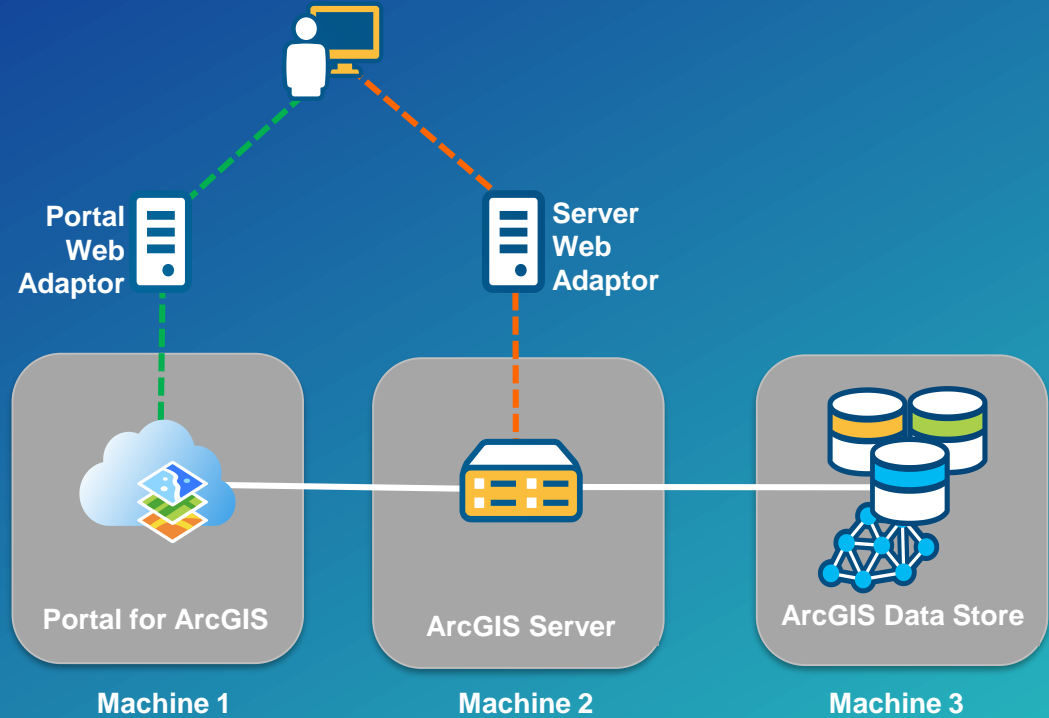
High-Availability Deployment

- **Benefits:**
  - **Highest stability**
  - **Load balancing**
  - **Fail over**

- **Considerations:**
  - **Increased hardware expenses**
  - **Integration with 3rd party software**
  - **More IT management required**

Portal Web Adaptor

Server Web Adaptor

Site 1

Site 2

Portal for ArcGIS

Machine 1

ArcGIS Server

Machine 2

ArcGIS Data Store

Machine 3

Portal for ArcGIS

Machine 1

ArcGIS Server

Machine 2

ArcGIS Data Store

Machine 3
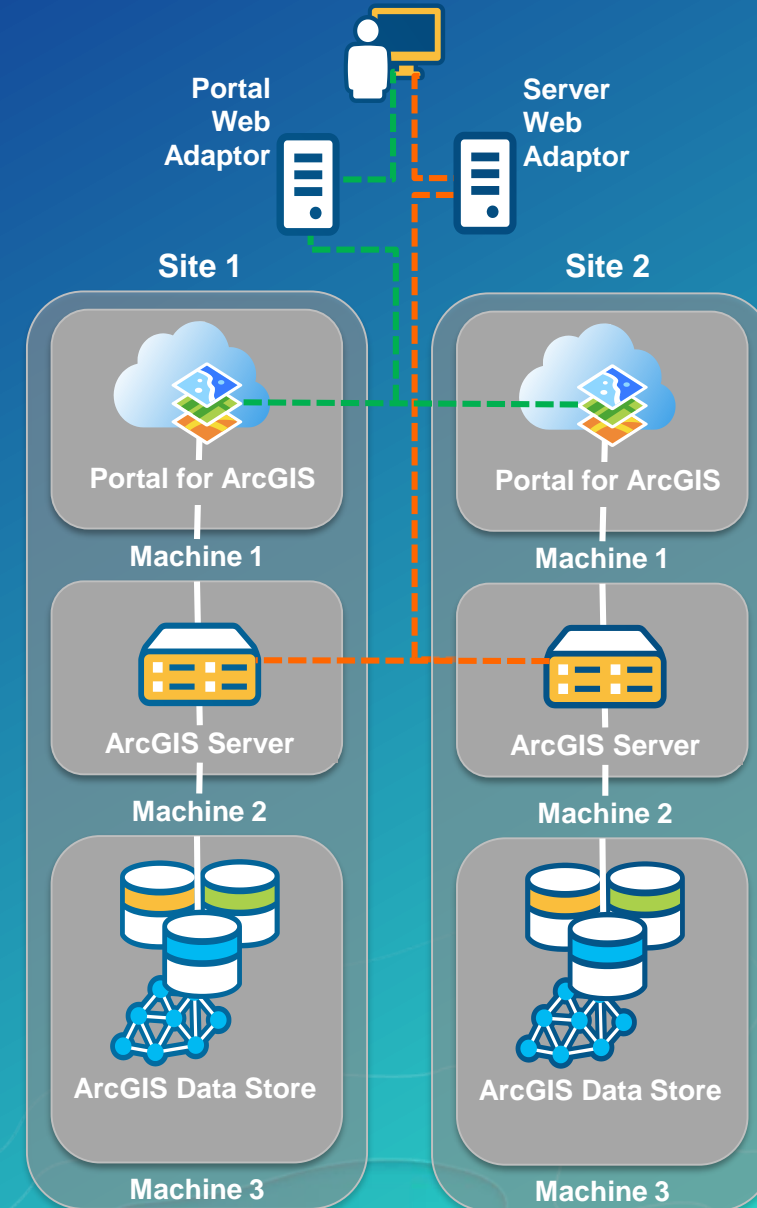
Platform Architecture
Detail to the Level Necessary

- **Components**
- **Networks**
- **Users**
- **Server Configuration**
- **Sizing**

Public Internet

Public Users
Web Browsers
Collector for ArcGIS

Portal URL

DMZ

WA-fqdn.domain.com
100.100.1.1
Supersweetmaps.esri.com
WA – C:\inetpub\wwwroot
Virtual Machine
Windows Server 2012R2
4-core 16gb RAM
C:\100GB

Web Adaptor

VPN Users
Web Browsers
ArcGIS Desktop
Native Mobile Apps

VPN Tunnel

Internal Domain

Internal Users
Web Browsers
ArcGIS Desktop

Internal Network

DS-fqdn.domain.com
200.200.2.2
DS – D:\arcgisdatastore
Virtual Machine
Windows Server 2012R2
4-core 16gb RAM
C:\100GB
D:\200GB

ArcGIS Data Store

Portal-fqdn.domain.com
300.300.3.3
Portal – D:\arcgisportal
Virtual Machine
Windows Server 2012R2
4-core 16gb RAM
C:\100GB
D:\200GB

Portal for ArcGIS

AGS-fqdn.domain.com
400.400.4.4
AGS – D:\arcgisserver
Virtual Machine
Windows Server 2012R2
4-core 16gb RAM
C:\100GB
D:\200GB

ArcGIS Server

RDBMS optional

SQL Server

Initial Operating Capability
Enable & Empower Your Organization

Operate & Maintain

Strategy & Vision

Assess & Inventory

Plan & Design

Build & Deploy

Organizational Vision
Goals & Objective
Success Criteria
Tentative Plan

Assess Resources
Document Workflows
Information Product Needs
Priorities

Determine Core Web Maps
Geodatabase Design
Deployment Pattern
Security Standards
Capacity Planning
Platform Architecture

Build & Deploy

SUBHEAD INFORMATION

Software Installation

Distribute Content to Users

ArcGIS for Server Installation and Configuration

- Initial setup/configuration on server
- Install ArcGIS Server technology, apply ArcGIS Server patches
- Complete ArcGIS Server post-install process
- Install Server Web Adaptor

Portal for ArcGIS Installation and Configuration

- Install Portal for ArcGIS, apply patches
- Install Portal Web Adaptor and Data Store
- Configure Federated/Hosting Server
- Configuring supported user authentication

Geodatabase Setup

- Create ArcGIS for Desktop database connection
- Run Ent. GDB Tool
- Review maintenance scripts
- Database tuning overview

ArcGIS Administration

- Publishing services
- ArcGIS Server optimization overview
- Portal for ArcGIS User, Publish and Administrator functions
- ArcGIS Enterprise troubleshooting overview

Configure Organizational Site

Your User's First Impression

- Use your organizational brand
- Use consistent visual cues
- Intuitive naming conventions
- Add useful descriptions
- Pre-populate with content
- Create a resource destination
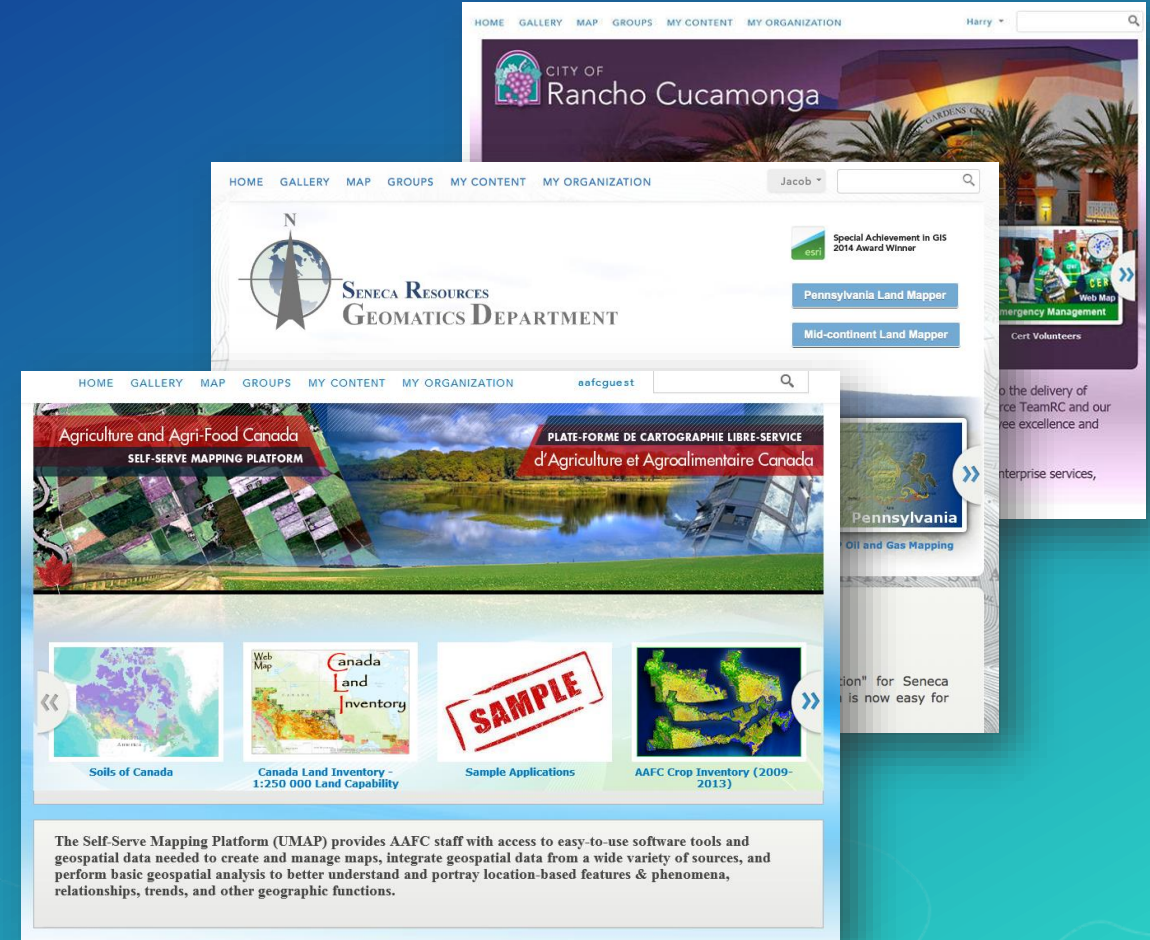
Building Data

Central & Authoritative Content

Configure Maps & Apps

Finalize Your Prototypes

Business Analyst Online

AppStudio for ArcGIS

Operations Dashboard
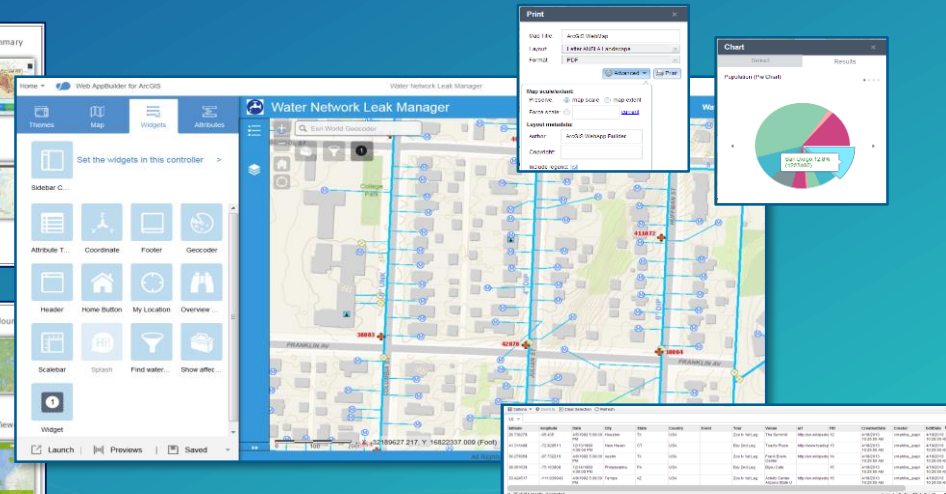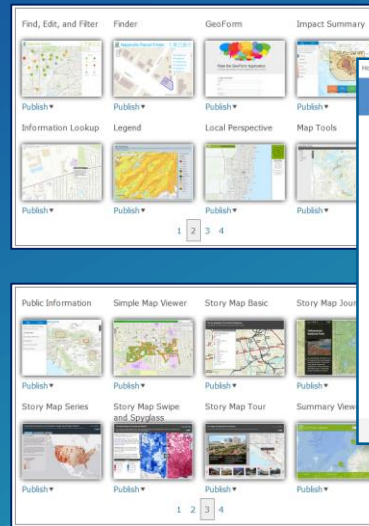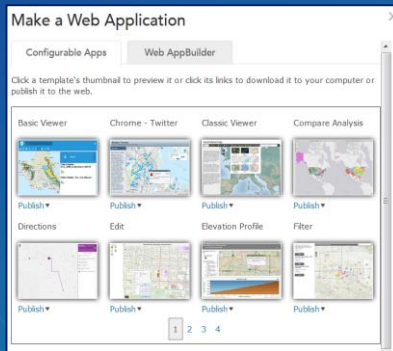
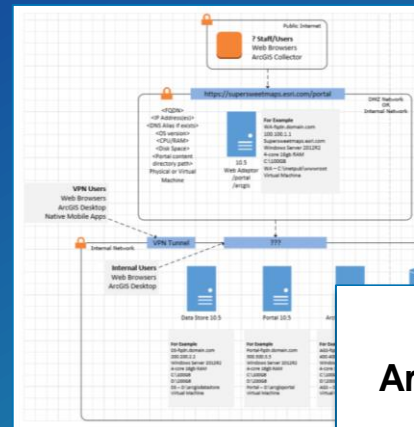ArcGIS Collector

ArcGIS Explorer

ArcGIS Earth

Survey123

ArcGIS Navigator

Runbook
Standard Documentation To Capture

- Intended Use Cases
- Capacity Calculations
- System Diagram
- Installation Summary
- Configuration Specifications
- Go-Live Details
- Logged Incidents
- Training Needs
- Restore Procedures

Initial Operating Capability
Enable & Empower Your Organization

Operate & Maintain

Strategy & Vision

Build & Deploy

Assess & Inventory

Plan & Design

Organizational Vision
Goals & Objective
Success Criteria
Tentative Plan

Assess Resources
Document Workflows
Information Product Needs
Priorities

Installation
Building Data
Application Prototyping
Configure Maps & Apps
Rollout

Determine Core Web Maps
Geodatabase Design
Deployment Pattern
Security Standards
Capacity Planning
Platform Architecture

Operate & Maintain

SUBHEAD INFORMATION

Maintenance

All Facets of Your Implementation

ArcGIS

Monitoring
Proactively Review Your Status
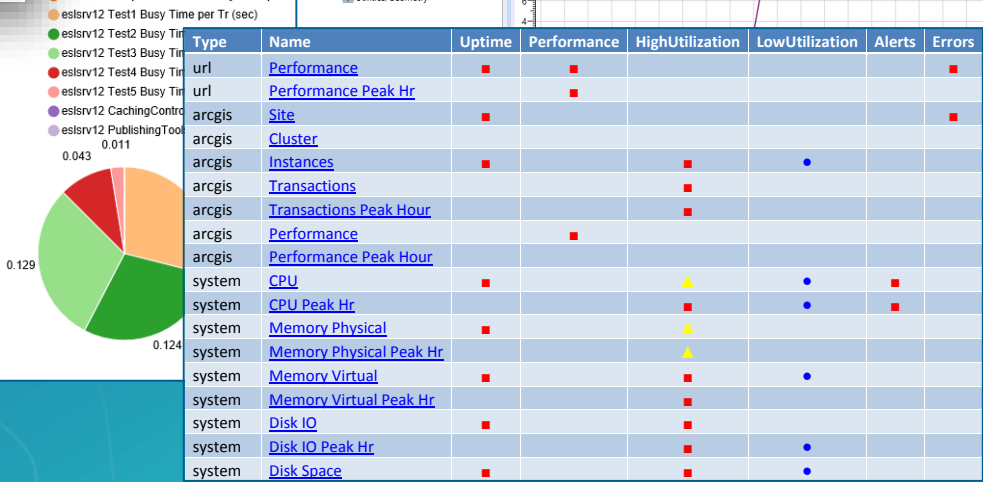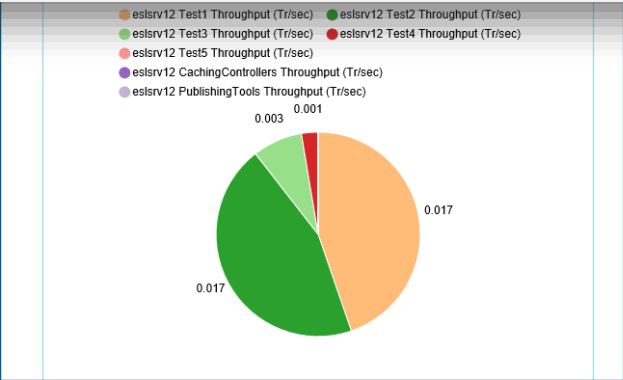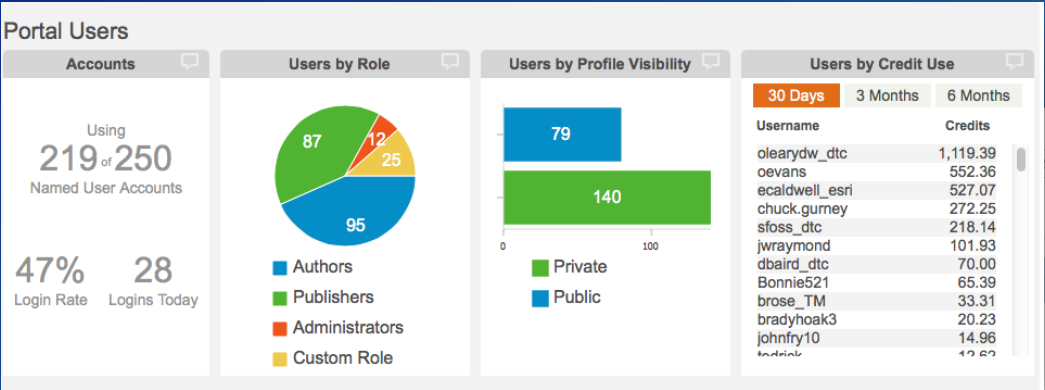
Testing, Tuning, & Scaling
Fixing Issues – Preparing For Expansion

Custom Tools
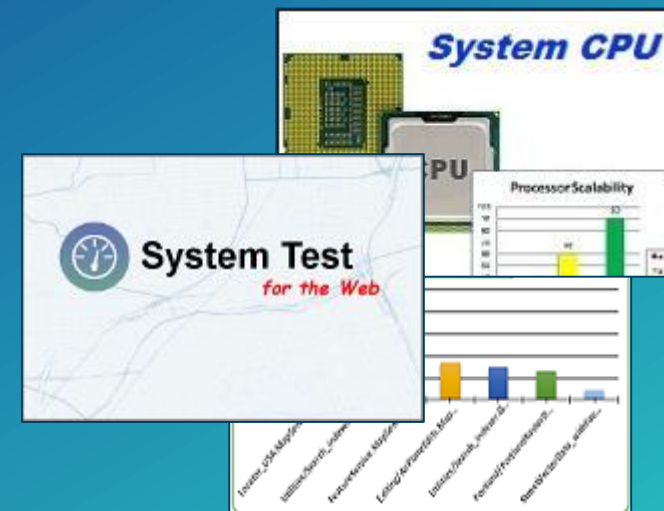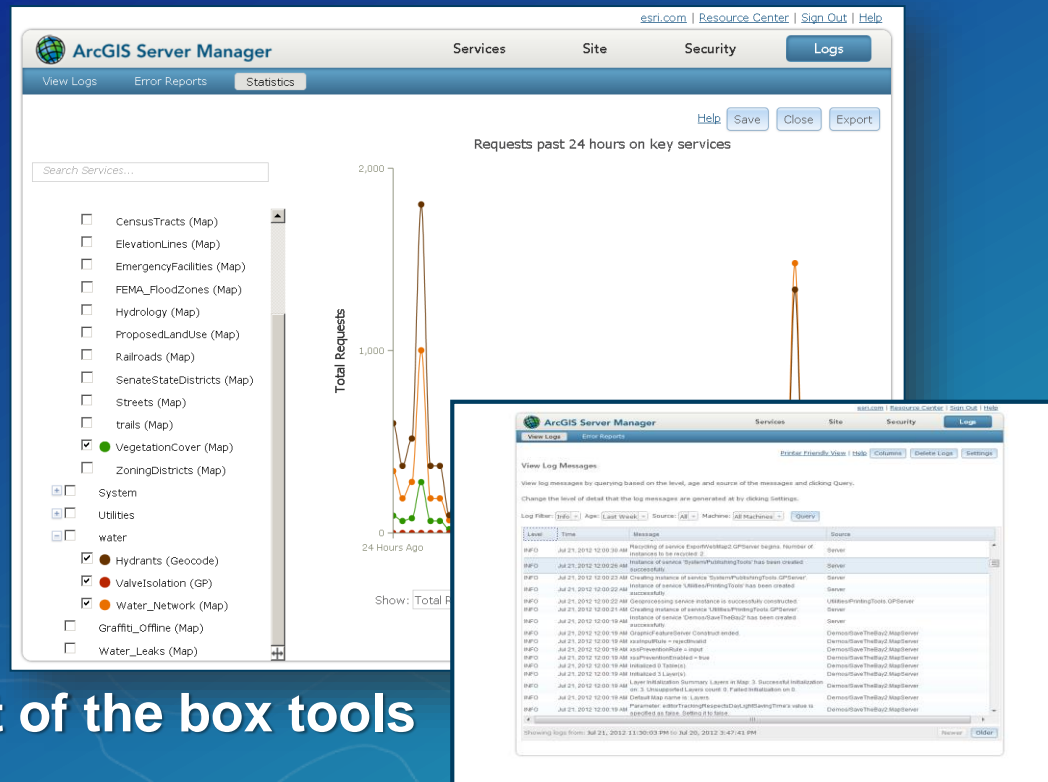
Out of the box tools

Training

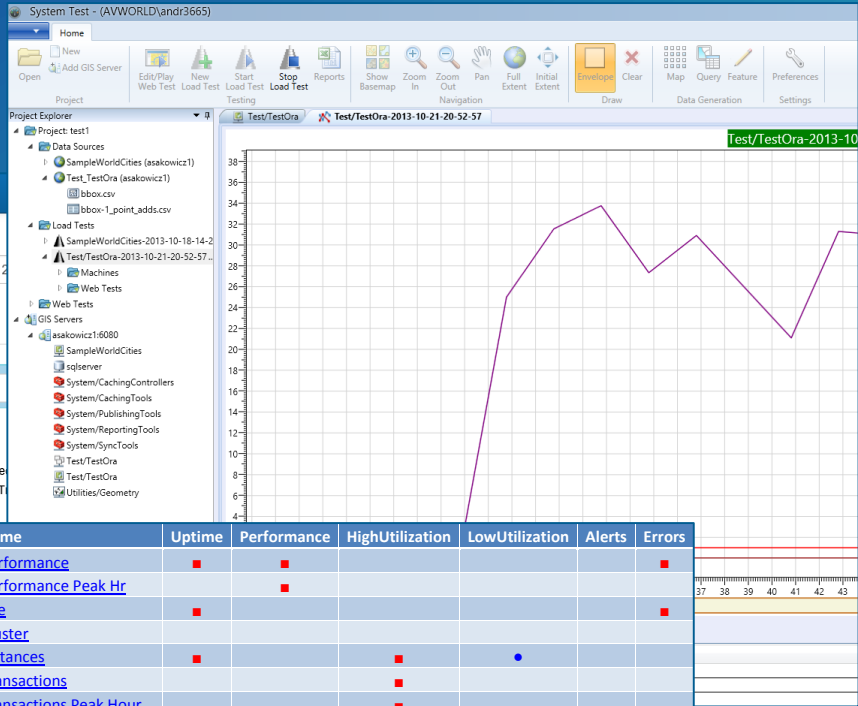**Evolve Your People with Your Technology**

Skill

Training

Time

Reconnect With Users

Have Needs Changed?

Initial Operating Capability
Enable & Empower Your Organization

Operate & Maintain

Strategy & Vision

Assess & Inventory

Plan & Design

Build & Deploy

Organizational Vision
Goals & Objective
Success Criteria
Tentative Plan

Monitoring & Maintenance
Testing & Training
User Engagement

Assess Resources
Document Workflows
Information Product Needs
Priorities

Installation
Building Data
Application Prototyping
Configure Maps & Apps
Rollout

Determine Core Web Maps
Geodatabase Design
Deployment Pattern
Security Standards
Capacity Planning
Platform Architecture

Where to go for Support

SUBHEAD INFORMATION

Framework to help you move forward

Launching Your Location Platform
The Esri Guide

www.esri.com/LaunchGuide

- Location strategy
- Assess and plan
- Build capability
- Operate and measure

www.esri.com/launchguide

Architecting the ArcGIS Platform: Best Practices

Patterns &
Practices &

Support

Search Esri Support 🔍

Products ▾   Knowledge Base   Downloads   Other Resources ▾ | Manage Cases   Request Case   Start Chat

Desktop ❯

ArcGIS Desktop

Industry Focused Extensions

Data and Workflows Extensions

Server ❯

ArcGIS Server

Portal for ArcGIS

Extensions

and more...

Online ❯

ArcGIS Online

GeoNet
The Esri Community

All Places >

Learn–Plan–Configure–Use: ArcGIS Platform Enablement

Actions ▾

Overview   Activity   Content   People   Projects   Calendar

ⓘ Log in to follow, share, and participate in this socialgroup.

Welcome to the Learn–Plan–Configure–Use Community!

Learn–Plan–Configure–Use is a public community group created by Esri for the ArcGIS community, to facilitate discussions on best practices to learn, plan, configure and use the ArcGIS Platform. Here, questions can be asked and expert advice can be offered on six key overarching topics in achieving success using the ArcGIS Platform across an organization:

- Strategy & Planning
- Architecture & Security
- Geodata Engineering
- Configuration & Integration
- Workforce Development
- Operational Support

In this community, subject matter experts in each of these topics share tips and advice on best practices, address questions, and engage in discussion on topics challenging GIS professionals. This includes experts from the Esri Services team, who help thousands of ArcGIS users from all over the world to address these challenges every day. Gain from the experience of these teams by asking your questions, share your experience by offering advice, and follow this community to stay connected.

Content by Category

- 📁 Strategy & Planning
- 📁 Architecture & Security
- 📁 Geodata Engineering
- 📁 Configuration & Integration
- 📁 Workforce Development
- 📁 Operational Support

Featured Content

- 📄 Lightning Talks in Platform Enablement at UC 2016.pdf
- 📄 Platform Enablement at UC 2016.pdf

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Page Discussion

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Platform Performance

System Design Strategies (select here for table of contents)			
1. System Design Process	2. GIS Software Technology	3. Software Performance	4. Server Software Performance
5. GIS Data Administration	6. Network Communications	7. Platform Performance	8. Information Security
9. GIS Product Architecture	10. Performance Management	11. City of Rome	12. System Implementation
A1. Capacity Planning Tool	B1. Windows Memory Management	Preface (Executive Summary)	SDSwiki What's New

Spring 2017 Platform Performance 40th Edition

Chapter 3 (Software Performance) discussed some best practices for publishing high performance map services, and the importance of selecting the right software technology to support your business needs. This chapter will focus on hardware platform performance, and share the value of selecting the right computer technology to support your system performance needs.

Selecting the right hardware will improve user performance, reduce overall system cost, and establish a foundation for building effective GIS operations. Selecting the wrong hardware can contribute to implementation failure - spending money on a system that will not support your business needs.

Hardware vendors do not know what hardware is required to satisfy your GIS needs. This chapter shares the system architecture design methodology developed to help you select the right hardware for your planned GIS operations. This chapter also shares information for justifying hardware purchases based on expected return on investment.

Contents [hide]

Navigation menu
- Main page
- Categories
- Create new page
- Contributors
- GIS Dictionary
- GIS User Groups
- GIS Events
- GIS Blogs
- Random page
- Popular pages

Need Help
- Contact us
- About Wiki.GIS
- Online help

Share

Tools
- What links here
- Related changes
- Special pages
- Printable version
- Permanent link
- Page information

Training

Your location for **lifelong** learning

Authoritative Resources

Thousands of hours of professionally developed and curated content

Relevant Training for Your Role

Content for everyone – students, educators and professionals

Many Ways to Learn

Multiple options and formats to meet your needs

Helping you Grow

Content for all stages along your learning journey

Consulting Services

Project Services

Expert-led engagements throughout the entire project life cycle

Project Services provides comprehensive industry, domain, and technical help. Our experts manage a project's scope, schedule, and budget and use proven methodologies to deliver turnkey systems and applications.

We can consult with you to define the approach to delivering transformational GIS capabilities for your organization.

Business and Technical Consulting Services

Get productive sooner

We offer consulting across multiple business and technical domains depending on what you need and at what level of your organization. Our consultants work directly with you to provide organizational or technical enablement, technical or business strategy.

Business Consulting

Industry subject-matter expertise that can help incorporate GIS into your overall business strategy, or provide advice on project planning.

Enterprise Consulting

Experienced consultants who can advise and guide your enterprise GIS strategy and implementation approach.

Configuration Consulting

ArcGIS installation and configuration specialists providing focused services to enable your teams to get it right the first time.

Rent-a-Tech Consulting

Highly skilled technical specialists – app developers, geodata engineers, geospatial analysts, and more – working alongside your team to help you succeed.

We offer a range of packages, flexible or custom engagements, working either remote or on-site with your team, over a short or long term.

Esri Service Packages

High-Impact, Cost-Effective Consulting Services

Esri® Service Packages are short-term, high-impact services, delivered by Esri professionals, that provide knowledge transfer, best practices, and consulting support on a variety of Esri products and GIS management tasks.

Service packages help you
- Implement Esri technology faster.
- Increase productivity and operational effectiveness.

What are Esri Service Packages?

Service Packages are standardized service offerings with a defined scope and fixed price. They are available to US customers and partners. The following types of Service Packages are offered:

- **Jumpstart:** Designed to help you quickly become self-sufficient in installing, implementing, and managing Esri software, Jumpstart Services Packages typically provide technical knowledge transfer and best practices for the use of the ArcGIS Platform.

- **Launch Kit:** Collaborative engagements to empower you with the knowledge and workflows to manage your organizational account, build high quality content and create focused maps and apps.

- **Enterprise Consulting:** Get specific assistance in key areas such as enterprise GIS architecture design and GIS for land records or facilities.

- **Workshop:** Interactive, hands-on technology transfer helps you become self-sufficient in using Esri technology. Workshop-based Service Packages cover specific Esri technology and GIS- or industry-related activities.

See the back page for a list of available packages.

"I am grateful to Esri for validating my faith in the people and solutions that make your organization the world leader in GIS. As I sit here, we are far ahead of where I thought we would be this evening—even with what I would have considered a successful jump start experience. So there's nothing but positives in this feedback.

There is no doubt that the deliberate approach that was taken to this program prior to the team's visit played a huge role in our success."

Eric Schmidt, MA, GISP, GIS-S
GIS Supervisor
Douglas County, NV

Esri Service Packages

High-Impact, Cost-Effective Consulting Services

ArcGIS Enterprise Jumpstart
Best Practices for Implementing ArcGIS Enterprise

Esri's ArcGIS Enterprise Jumpstart provides the support you need to learn how to implement and leverage ArcGIS Enterprise on your infrastructure and get you up and running quickly with the ArcGIS platform. During this on-site engagement, an Esri consultant will work with you to install and configure the ArcGIS Enterprise software and help you learn best practices on how to operate and administer your deployment to meet your needs.
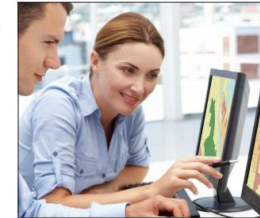
With Esri's support, you'll
- Reduce the amount of time it takes to install, configure, and become proficient.
- Increase the productivity and effectiveness of your implementation of the ArcGIS Platform.

Work side-by-side with an Esri consultant to:
- Plan and diagram your ArcGIS Enterprise Implementation based on proven deployment patterns.
- Setup and configure ArcGIS Enterprise Components including ArcGIS Server, Portal for ArcGIS, and the ArcGIS Data Store.
- Connect to data sources and publish services.
- Learn to administer your environment and perform diagnostics.
- Review other enterprise GIS functions based on your needs.

Email ProfServices@esri.com or
Visit esri.com/servicepackages.

Esri Service Packages

High-Impact, Cost-Effective Consulting Services

Web GIS Launch Kit
Building Maps & Apps– Engaging Users

Gain access to an Esri platform engineer to help you put the capabilities of Web GIS into the hands of your users. This service will focus on identifying organizational Web GIS opportunities and providing you with the tools and knowledge to implement accessible geographic information system (GIS) solutions.

With Esri's support, you'll
- Understand your organization's Web GIS goals.
- Foster adoption of GIS by your teams and stakeholders.

Assess Available Resources → Configure Organizational Portal → Develop Quality Content → Build Information Products → Empower Your Users

During this engagement, your Esri platform engineer will get you up and running with Web GIS by helping you to
- Configure your Web GIS organization using ArcGIS Online or Portal for ArcGIS.
- Leverage your existing data and applications.
- Build powerful maps and apps to meet your users' needs.
- Establish best practices.

Email ProfServices@esri.com or
Visit esri.com/servicepackages.

Esri Service Packages

High-Impact, Cost-Effective Consulting Services

Capacity Planning
System Recommendations Based on Your Workflows and Usage

Esri's Capacity Planning services package provides you with access to an Esri enterprise consultant who will review your current and anticipated services, workflows, data sources, user workload, and application architecture to calculate the future server capacity needs for an ArcGIS Server site.

With Esri's support, you'll
- Understand your infrastructure and licensing requirements before deploying ArcGIS Enterprise.
- Optimize your implementation of the ArcGIS platform for current and anticipated use.

- Review your input through emails, calls, and webcasts.
- Apply our capacity planning methodology using tools designed by Esri.
- Determine system requirements based on our best practices.
- Receive a report detailing the anticipated workload, server hardware, and network capacities needed to support your future capacity.

Email ProfServices@esri.com or
Visit esri.com/servicepackages.

Esri Service Packages

High-Impact, Cost-Effective Consulting Services

Enterprise GIS Health Check
Proactively Review and Assess Your GIS

The Enterprise GIS Health Check is an on-site engagement providing early detection of potential issues through a review of your system configuration, error logs, system administration, and operations.

With Esri's support, you'll
- Discover areas for performance improvements.
- Evaluate potential issues early.

- Review your ArcGIS implementation, user needs, restrictions, and goals.
- Discuss your key apps, workflows, data sources, and concerns.
- Collect empirical data on the state of your implementation in order to make informed decisions on possible improvements.
- Receive a report of findings and recommendations detailing current health of your GIS.

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