ArcGIS Enterprise:
Building content for Sustainable Development

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GIS FOR A SUSTAINABLE WORLD 2019
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Themes for today’s presentation

- Introducing and Explaining ArcGIS Enterprise
- Planning ArcGIS Enterprise Deployments
- Best Practices and Options for Sharing Content
- Recent Enhancements in ArcGIS Enterprise
- Working in the Cloud
What is Web GIS?
Working with ArcGIS Enterprise
ArcGIS Enterprise is a complete system for data management, spatial analysis and application building that is installed on infrastructure you control, whether in the cloud or on-premises.
ArcGIS Enterprise | Server GIS vs. Web GIS

**Server GIS**
*Use of GIS services with custom front end applications*

**Web GIS**
*Pervasive use of web layers, scenes, and maps within all of the ArcGIS apps*

- Users
- Apps
- Services
- Data
ArcGIS

ArcGIS Online

- Hosted by Esri (SaaS)
  - Upgraded automatically (by Esri)
  - Esri controls SLA

- Esri-provided content and services
  - Basemaps
  - Living Atlas
  - GeoEnrichment, Routing, ...

ArcGIS Enterprise

Core Web GIS functionality
(Apps, visualization, smart mapping, analysis...)

- In your own infrastructure (Software)
  - Upgraded by the organization
  - Organization controls SLA

- Advanced GIS functionality
  - GIS Server
  - Image Server (optional)
  - GeoEvent Server (optional)
  - GeoAnalytics Server (optional)
ArcGIS Enterprise | Web GIS Pattern Evolution

Begin with ArcGIS Online & SaaS

ArcGIS Enterprise
Customer Managed Infrastructure

On-premises
Private Cloud
Public Cloud (AWS, Azure, others)
Managed Services

ArcGIS Online

Begin with ArcGIS Enterprise & Software
What can I do with ArcGIS Enterprise?

- Publish, host and serve web services
- Build and use applications
- Web mapping and analysis
- Access all kinds of data
- Share and collaborate
- Customize the look & feel of your GIS
- Run field operations
- Analyze big data
- Work with imagery and raster data
- Data science and machine learning
- Monitor real-time data and your IoT
ArcGIS User Types | Match the Way Your Team Works

ArcGIS Enterprise

Identity + Capabilities + Apps

Pro

View
Edit
Analyze
Create
Share
Administer

ArcGIS Online

Apps

APIs

< / >

Apps
User Types

• New licensing model for users beginning at 10.7
• Provides the much requested ‘intermediate level’ user
• Each user type has an identity, capabilities and included applications
• Match your licensing to your workflows
Planning your Deployment:
ArcGIS Enterprise architecture
Server Licensing Roles

ArcGIS Server

GIS Server

GeoEvent Server*

Image Server

GeoAnalytics Server

Notebook Server**
  (new at 10.7!)

One software component, multiple server roles

* GeoEvent Server requires installing the ArcGIS Server software + overlaying the GeoEvent Server setup
** Notebook Server is a separate download and install that does not require the main ArcGIS Server setup
Software Components

ArcGIS Enterprise = ArcGIS Web Adaptor, Portal for ArcGIS, ArcGIS Server, ArcGIS Data Store
Base Deployment Logical Architecture

- Portal for ArcGIS
- ArcGIS Server (hosting server)
- ArcGIS Data Store (relational + tile cache)
- ArcGIS Web Adaptor
- ArcGIS Web Adaptor
Integrates with your organization’s existing web server to provide a single endpoint that distributes incoming requests and enables you to use web-tier authentication.
Portal for ArcGIS

The software component that enables the ArcGIS Enterprise portal. Portal for ArcGIS is the web frontend and API backend that supports a user’s interaction and overall experience with your Web GIS.
In a base deployment ArcGIS Server should be configured with a GIS Server licensing role and as the hosting server. In this capacity it gives you the ability to publish and share maps and layers from ArcGIS Pro using your own business databases and by copying data to the server.
ArcGIS Data Store

The ArcGIS managed data repository that stores the Enterprise portal’s hosted content. It is not a replacement for your enterprise geodatabases.
Base Deployment Logical Architecture

ArcGIS Data Store
- Relational
- Tile Cache
- Spatiotemporal

NOTE: This is not a replacement to your Enterprise Geodatabases.
Expanding out from the base deployment

• Multiple reasons and ways to add to the base deployment

1. Adding additional GIS Server sites
   - Isolate hosting server site from traditional GIS Server duties
   - Have dedicated GIS Server sites for various purposes: heavily used map services, geoprocessing services, ...

2. Adding additional capabilities
   - Image Server
   - GeoEvent Server
   - GeoAnalytics Server
Adding additional GIS Server site to your deployment

Base deployment

GIS Server (hosting)

GIS Server (geoprocessing)

GIS Server (mapping and visualization)
Adding Image Server to your deployment

Base deployment

Image Server Site (dynamic image services)

Image Server Site (raster analytics)

Separate Image Server sites for each capability
Summary – Deployment Architecture

• Always start with your Base Deployment
  - Higher SLA requirement/importance -> redundant components and more complicated systems
• With strong Base Deployment you can expand in multiple directions later on

Next steps when Deploying
• Verify deployment (Publish test data)
• Add members (Built-In or enterprise users)
• Customize the portal
Examples
ArcGIS Enterprise in the Wild

American Red Cross

World Health Organization

GICHID
World Health Organization
GICHD – IMSMA Core
Best Practices:
Sharing Content with ArcGIS Enterprise
GIS is Evolving
Influenced by Innovation in Many Areas

- Technology
  - Virtualization
  - Big Data
  - IoT
  - Faster Computing
  - Distributed Processing
  - Smart Devices
  - Consumerization
  - Cloud

- Content
  - Lidar
  - Field Survey
  - Real-Time
  - Sensors
  - Scientific Data
  - Remote Sensing
  - Crowdsourcing
  - UAVs

- Applications
  - Analytics
  - Apps
  - Mobile
  - 3D
  - Real-Time
  - Visualization
  - Collaborative

- Implementation
  - Configurable
  - Agile
  - Open
  - Easier
  - Ready to Use

Web GIS
Web GIS
Abstracts & Organizes All Types of Geospatial Data

GeoInformation Model
Maps / Scenes
Layers
GIS Maps & Data
Imagery
Enterprise Data
Real-Time (IoT)
- View all content or a curated group
- Filters: Date Modified, Status
- Search
- Living Atlas tab (‘Esri Featured Content’) moved to Content page
Tabs for Subsets
- Filters: categories, date modified, date created, shared, status
- Sort by date modified, title
- Display: grid, table, list
- Search
Filters: date created, viewable by
- Sort by title, date modified, date created
- Search
Item level enhancements

- New item information bar
- Authoritative and deprecated badges

Encourage quality metadata

Promote quality items
Content categories

- A way to arrange and discover content based on organization-wide themes

- Categories allow members to organize items consistently and provide a simple way to browse content in the organization

- Use custom or template hierarchies

- Default administrator role or custom role with privilege ‘manage categories’
Sharing beyond your organization
Distributed collaboration

Establishes a trusted, collaborative environment with others
Enables the sharing of data and information, quickly, easily and repeatedly
Sharing Summary

• Understand the Sharing Model
  - Access and Permissions
• Build a sharing model to match your org structure
• Use sharing + user roles for fine grained access control
• Highlight quality content with tags and item info
Demo

Sharing in Enterprise:
Categories, Tags and Authoritative Content
Recent Enhancements:
ArcGIS Enterprise 10.6.1/10.7.0
Create offline map areas
Support offline field workflows

Create pre-determined map areas to take offline:

- Makes it easier and faster to package up and take maps offline
- Update offline areas on a schedule to reflect changes in your web map
- Use in apps built using the Runtime SDK or Collector for ArcGIS
ArcGIS Notebook Server
Host Python notebooks in your infrastructure

A powerful data science platform
- Uses Docker containers to isolate each notebook author’s workspace
- Code with the Python API and ArcPy
- Dynamic mapping and visualization

Integrated with your portal
- Users are granted notebook privileges via portal user roles
- Add and reference portal items
- Share notebooks in the portal

Included with Enterprise (Standard)
Comes with a rich gallery of sample notebooks to illustrate workflows
Introducing webhooks
Automate notifications based on portal actions

An action occurs.
- Something is published
- A user creates a new account
- An item is deleted

The webhook is triggered.
- Delivers JSON description of event
- Relevant info fields

Your platform of choice kicks in.
- IFTTT
- Zapier
- Microsoft Flow
- Integromat

It performs an action.
- Emails you
- Messages You, e.g. in Slack
- Update a Website
- …

```
"info": {
  "webhookName": "Group Monitoring",
  "webhookId": "72fed926eb7b4c9e725a",
  "portalURL": "https://ach1nu7rl/portal/",
  "when": 134319219521
},
"events": [{
  "username": "administrator",
  "userId": "173dd04b60134b09c5000aad0b6208",
  "when": 134319219521,
  "operation": "update",
  "source": "group",
  "id": "173dd04b60134b09c5000aad0b6208",
  "properties": {}
}]
```
Hosted feature layer views

Apply different characteristics than the source data:

- Styles and symbology
- Editing settings
- Feature and/or field definitions
- User access through group sharing
Demo
Hosted Feature Layer Views
Working in the Cloud:
Options for deployment and Automation
Cloud Deployment Best Practices

• Our cloud compatibility and strategy
• Tools for Cloud Deployments
Considering Automation

**Efficiency**
- Get up and running faster
- Handle systems of any size
- Schedule install and upgrade

**Consistency**
- Avoid long list of manual steps
- Install/upgrade workflows generally same
- Dependable, testable results

**Productivity**
- Save yourself the time and effort
- Easier upgrades!
- Run off-peak hours, start working sooner
ArcGIS Enterprise Automation Tools

**Deployment Automation**
How you setup the software

**Workflow Automation**
How you automate analytical and administrative tasks

- ArcGIS Enterprise Builder
- Amazon Web Services
- Microsoft Azure
- Chef
- Powershell DSC
- ArcGIS API for Python
- webgisdr Utility
- and more
Deployment Automation Tools Styles/Experiences

Wizard
- ArcGIS Enterprise Builder

Machine Images + Tooling
- Amazon Web Services
- Microsoft Azure

IT Standard Framework
- Chef
- Powershell DSC
Demo
- Azure Cloud Builder
- Administering Enterprise with Notebooks
What’s next?
How to learn more and take action
Other Sessions at the Conference

• 1300h -1400h – Lunch Break in the Expo area
• This afternoon – Panel Discussions on Humanitarian, Sustainable Business and Staff Development

• Wednesday Plenary – Analysis Tools and GeoAI
• Wednesday Technical Workshops – ArcGIS Pro and Story Maps
• Thursday – Field Mobility, Developer Track and Business Intelligence

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