Web GIS with ArcGIS Enterprise 10.5

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Account Manager | Solution Engineer

ArcGIS ▸ Enabling GIS for Everyone

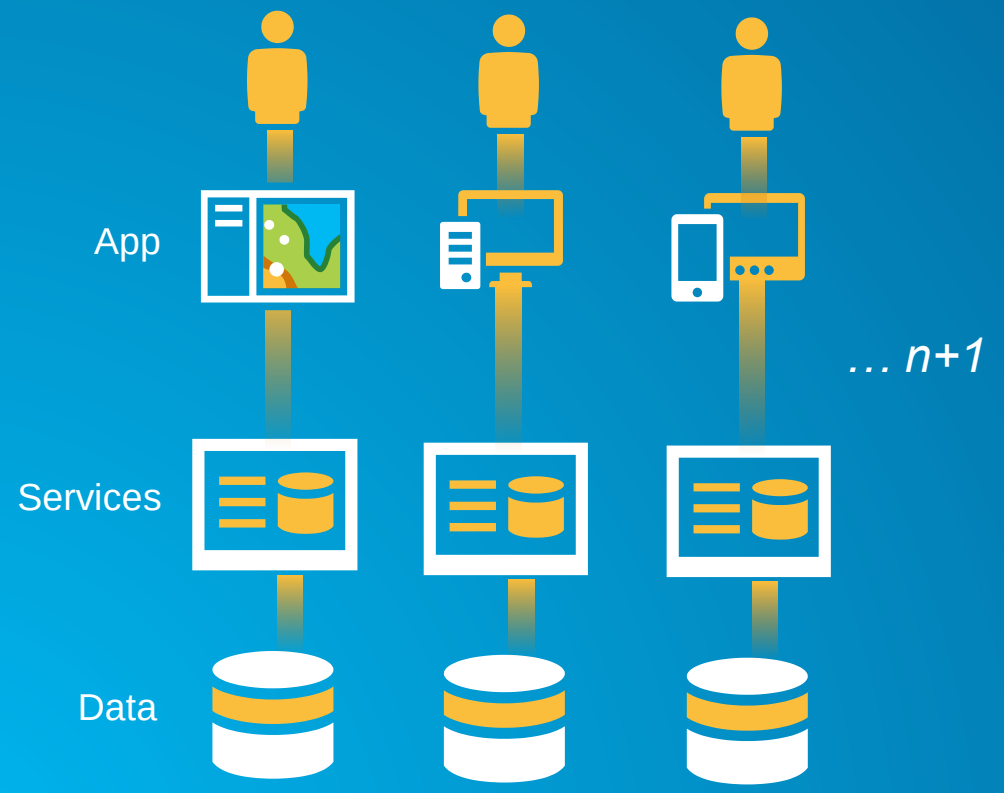
Web GIS

Transformation of the ArcGIS Platform

Web GIS | How is it Different from Server GIS?

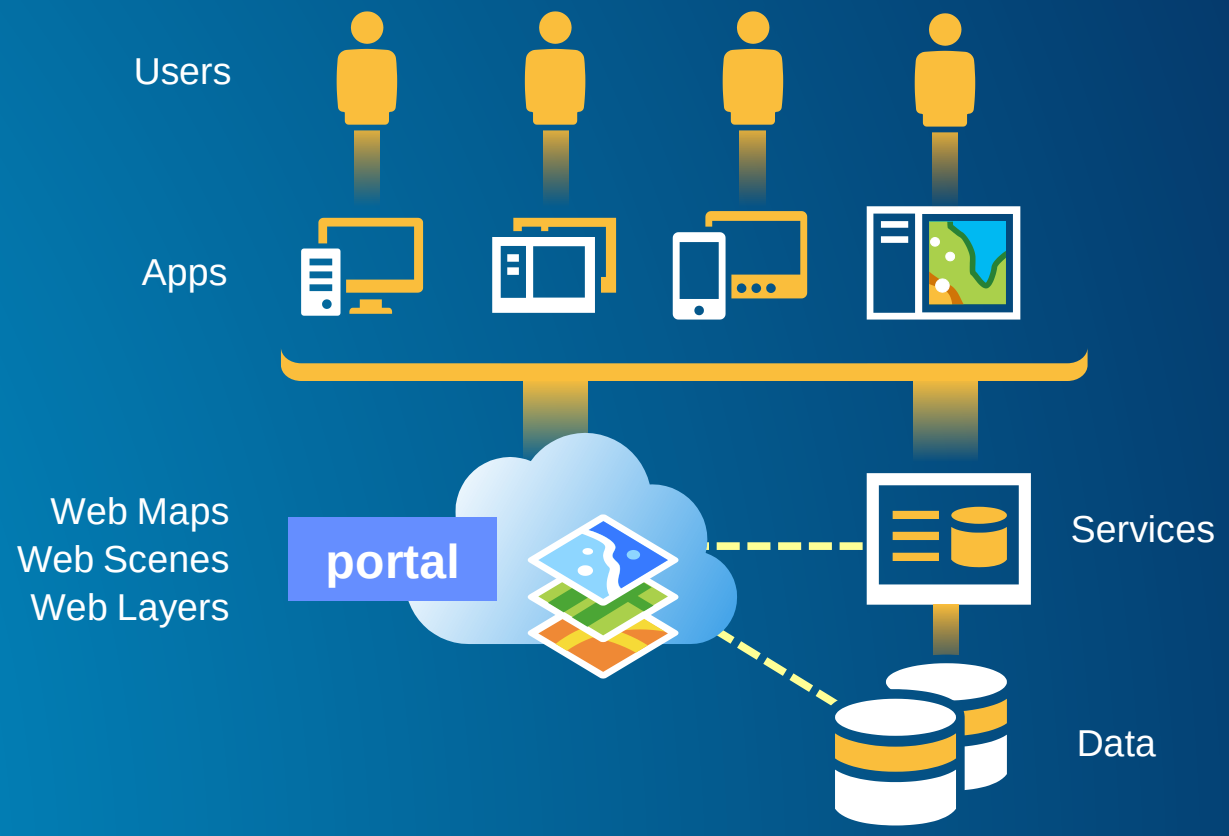
Server GIS

Silo'd use of GIS services within custom applications



Web GIS

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



Web GIS | Anatomy

Users & Apps

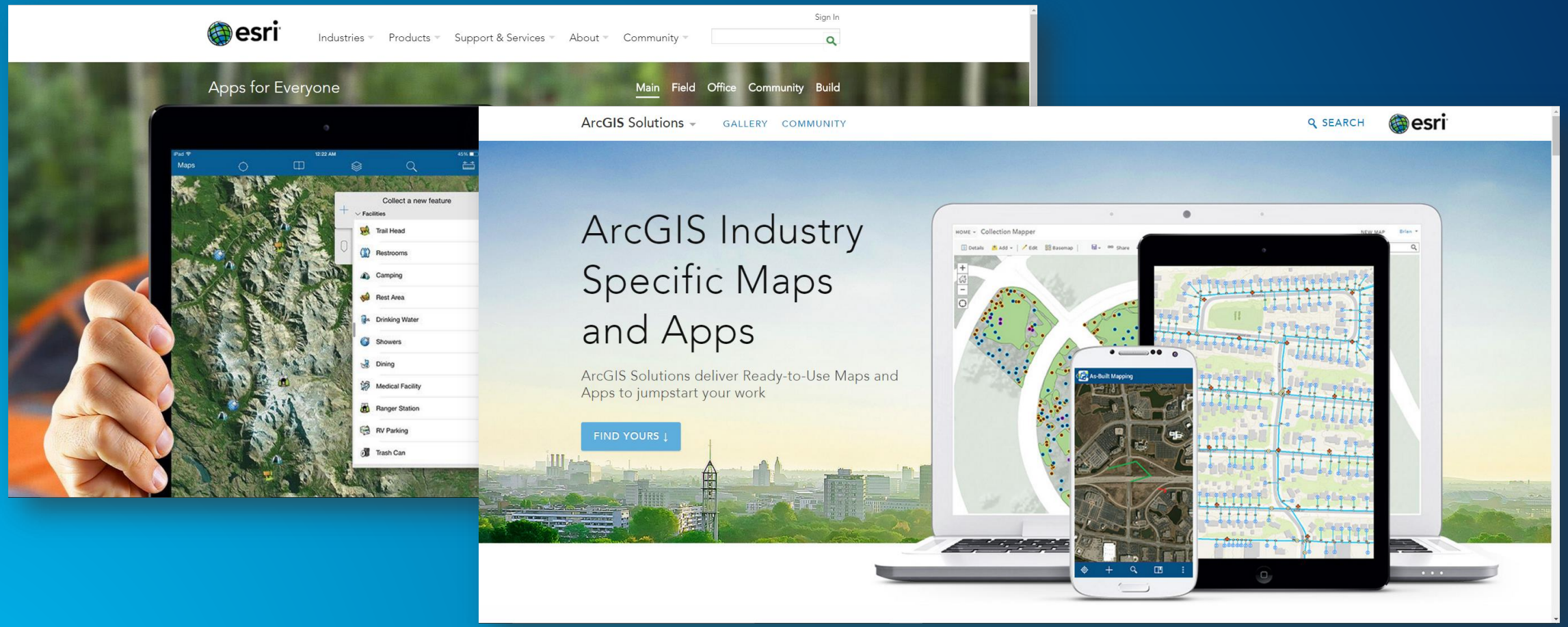
Access and Management

Services and Systems

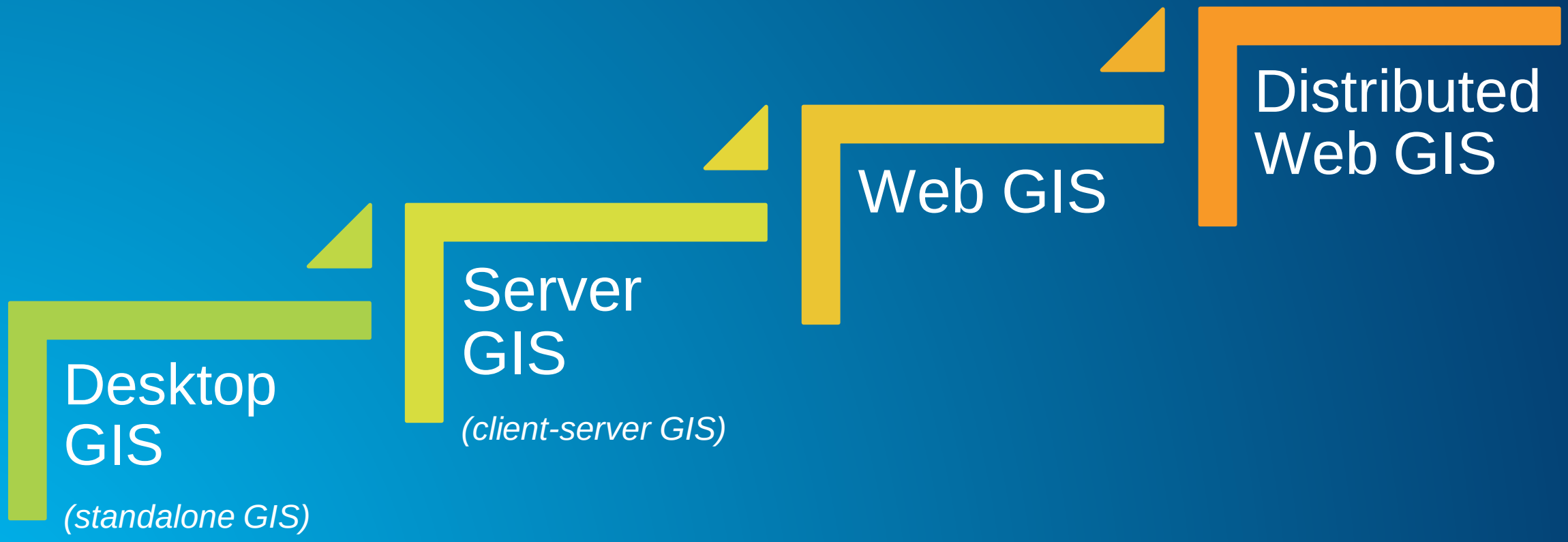
Web GIS | Core Functionality

- Visualize data in a browser-based web map
- Smart Mapping functionality
- Hosted spatial analysis tools
- Collaboration & sharing capabilities
- Robust identity-based security model
- Access to configurable apps and templates

Web GIS | Access to Configurable Apps and Templates



Distributed Web GIS | Next Evolution in GIS



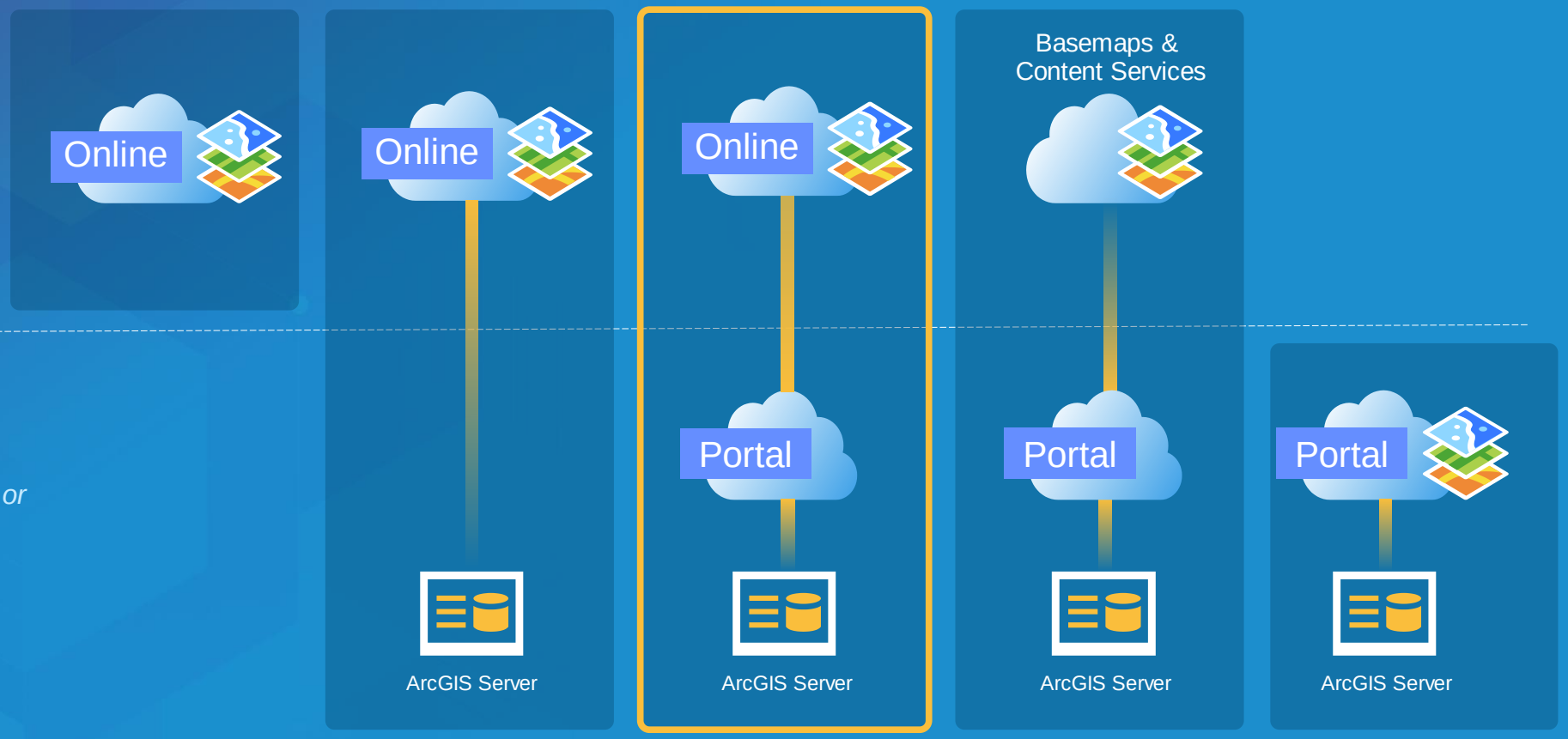
Web GIS Deployment Patterns | Typical Evolution(s)

ArcGIS Online

Software as a Service

Customer Managed Infrastructure

On-premises, private/public cloud or Esri Managed Services



Web GIS | How to Get a Portal

ArcGIS Enterprise

- Software
  - Portal for ArcGIS as part of ArcGIS Enterprise
  - Releases 1-2 times per year
  - Upgraded manually *(by organization)*
  - Organization controls SLA
- Core Web GIS functionality *(visualization, smart mapping, analysis…)*
- Enterprise Identity Integration
- Esri-provided content and services
  - Basemaps, Living Atlas
  - GeoEnrichment, Routing, …

ArcGIS Online

- SaaS
  - www.arcgis.com
  - Releases 3-4 times per year
  - Upgraded automatically *(by Esri)*
  - Esri controls SLA
- Core Web GIS functionality *(visualization, smart mapping, analysis…)*
- Enterprise Identity Integration
- Esri-provided content and services
  - Basemaps, Living Atlas
  - GeoEnrichment, Routing, …

Web GIS | Comparison of Benefits

ArcGIS Enterprise

- Additional Server Roles & Apps
  - GeoAnalytics, Raster Analytics, GeoEvent, Insights
- Work with local data
- Functions with restricted Internet
- Full control of the service infrastructure and updates
- Tight ArcGIS Enterprise integration via federation

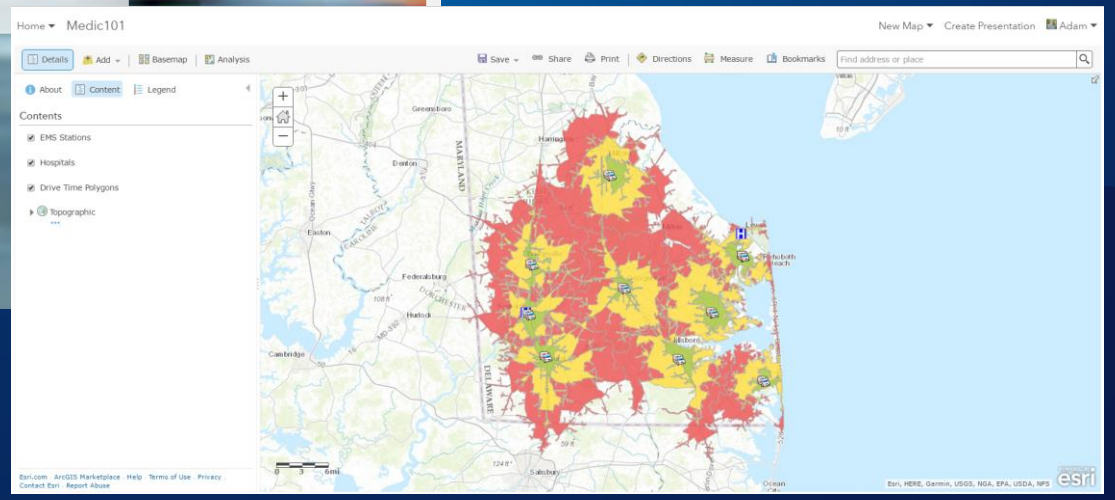
ArcGIS Online

- Easy to use & deploy
- Public facing environment
- Continuous enhancement via regular updates
- Elasticity (built-in scaling)

Demo

Web GIS

ArcGIS Online and Portal for ArcGIS



Overview of ArcGIS Enterprise

What is ArcGIS Enterprise

- Next evolution of the ArcGIS Server product line
- How you get Esri server technology
- How you deploy Web GIS in your infrastructure

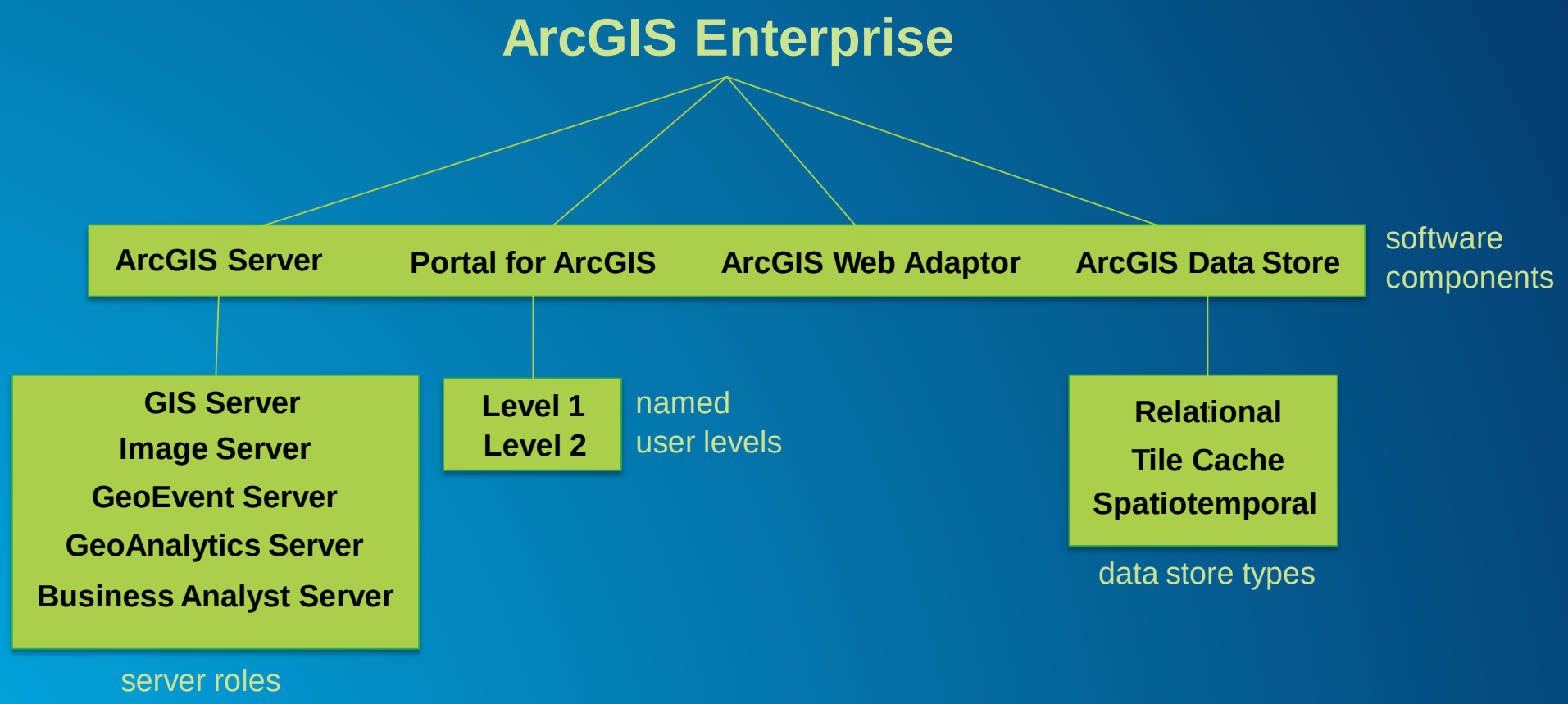
Why do you need ArcGIS Enterprise?

- New server capabilities will only work if you have deployed Web GIS via ArcGIS Enterprise
- New apps, such as Insights for ArcGIS, require Web GIS via ArcGIS Enterprise in order to run

Basics of ArcGIS Enterprise (1 – 2 – 3 – 4 – 5)

- 1 product
- 2 user levels
- 3 data store types
- 4 software components
- 5 sever roles

1 Product


ArcGIS Enterprise
ArcGIS Server
Portal for ArcGIS
ArcGIS Web Adaptor
ArcGIS Data Store
software components
GIS Server
Image Server
GeoEvent Server
GeoAnalytics Server
Business Analyst Server
server roles
Level 1
Level 2
named user levels
Relational
Tile Cache
Spatiotemporal
data store types

2 User Levels

Level 1

Applicable built-in roles: Viewer

Can view content, including maps, apps, and data.

Cannot create or own content.

Level 2

Applicable built-in roles: Viewer, User, Publisher, Administrator

Can create, view, share, and own content, including maps, apps, and data. Specific permissions will vary depending on privileges granted.

3 Data Store Types

Relational

- Use for most spatial data types

Tile Cache

- Use for 3D data

Spatiotemporal

- Use with GeoEvent Server and GeoAnalytics Server
- Handles high volume data

4 Software Components

- ArcGIS Server
- Portal for ArcGIS
- ArcGIS Data Store
- ArcGIS Web Adaptor

ArcGIS Enterprise | Anatomy of Web GIS in Your Infrastructure

ArcGIS Server

Portal for ArcGIS

ArcGIS Data Store

ArcGIS Web Adaptor

Set up as a GIS Server and configured as the hosting server, ArcGIS Server provides the layers, services, and horsepower required to power your Web GIS.

ArcGIS Enterprise | Anatomy of Web GIS in Your Infrastructure

ArcGIS Server

Portal for ArcGIS

ArcGIS Data Store

ArcGIS Web Adaptor

The web frontend and infrastructure backend that supports a user's interaction and overall experience with your Web GIS.

ArcGIS Enterprise | Anatomy of Web GIS in Your Infrastructure

ArcGIS Server

Portal for ArcGIS

ArcGIS Data Store

ArcGIS Web Adaptor

The Esri managed data repository that stores the spatial content that has been shared to Portal.

ArcGIS Enterprise | Anatomy of Web GIS in Your Infrastructure

ArcGIS Server

Portal for ArcGIS

ArcGIS Data Store

ArcGIS Web Adaptor

An Esri built software load balancer that appropriately directs network traffic and serves as a reverse proxy for Web GIS access.

5 Server Roles

- GIS Server
- Image Server
- GeoAnalytics Server
- GeoEvent Server
- Business Analyst Server

GIS Server

GIS Server: Powering traditional GIS web services and layers

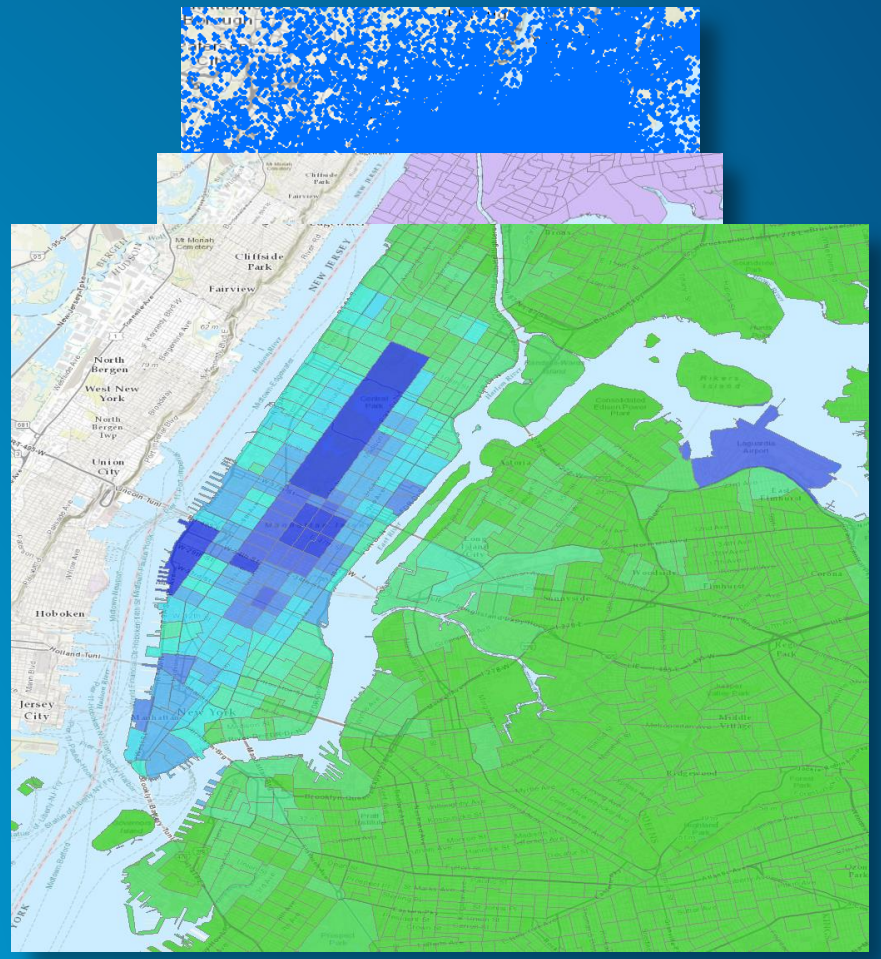
- Map Image Layers (Dynamic Map Services)
- Feature Layers (Feature Services)
- Tile Layers (Cached Map Services, Vector Tiles)
- Web Tools (Geoprocessing Services)
- Geocode services

GeoAnalytics Server

GeoAnalytics Server

*ArcGIS has a new way of processing **vector and tabular data** with both spatial (location) and temporal (time) components that is designed **fast distributed analytics** and storage*

GeoAnalytics Server | From Noise to Intelligence



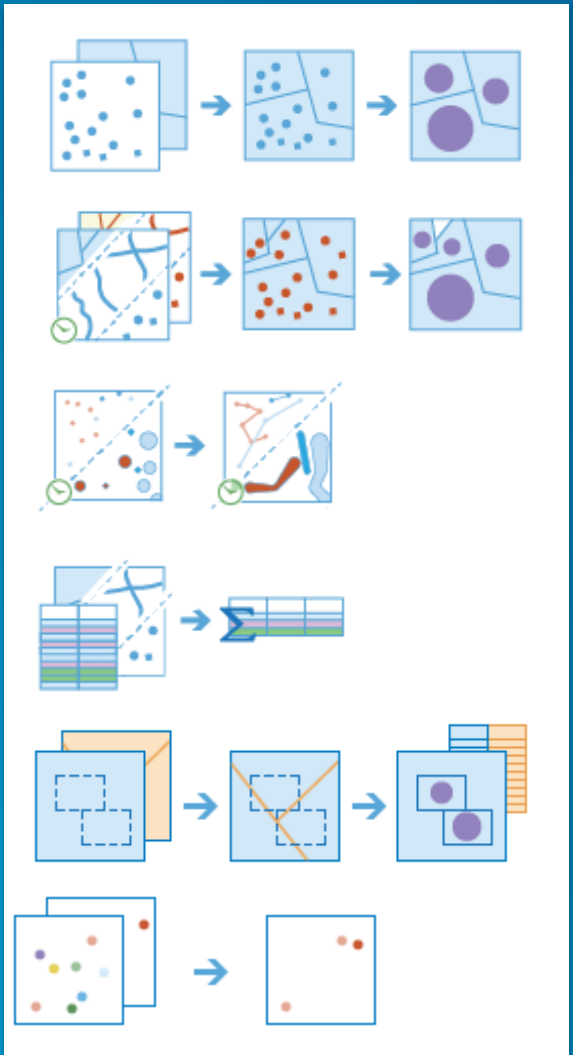
GeoAnalytics Server | Rich Collection of Analysis Tools

Summarize Data

Aggregate Points
Join Features
Reconstruct Tracks
Summarize Attributes
Summarize Within

Find Locations

Find Similar Locations



Analyze Patterns

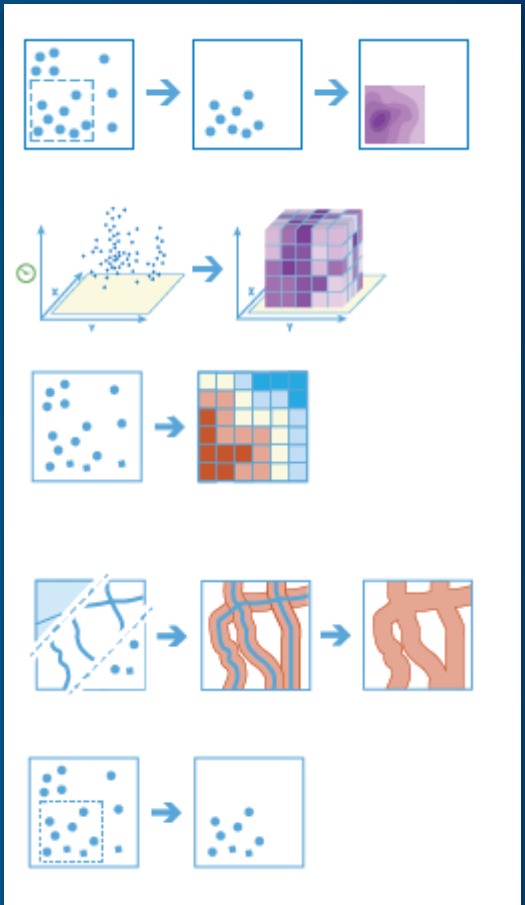
Calculate Density
Create Space Time Cube
Find Hot Spots

Use Proximity

Create Buffers

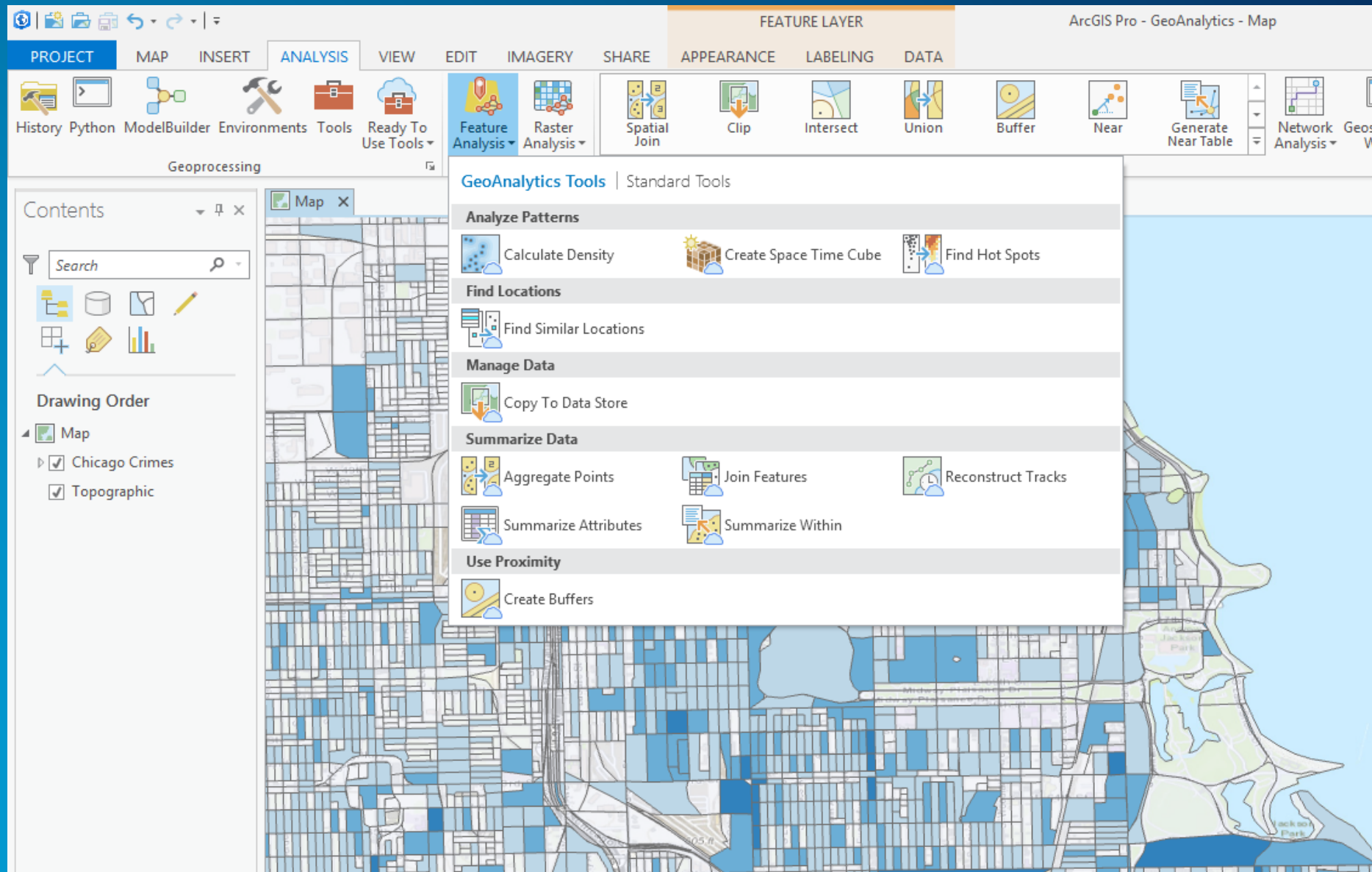
Manage Data

Copy to Data Store



GeoAnalytics Server | Familiar User Interfaces

ArcGIS Pro Map Viewer



GeoAnalytics Server | Developer Interfaces

Geoprocessing Service

- REST API
- ArcGIS Python API

ArcGIS REST Services Directory

Home > services > System > GeoAnalyticsTools (GPServer)

JSON | SOAP

System/GeoAnalyticsTools (GPServer)

Service Description: The GeoAnalyticsTools service is provided for distributed analysis of large datasets.

Tasks:

- AggregatePoints
- DescribeDataset
- JoinFeatures
- CreateBuffers
- CalculateDensity
- ReconstructTracks
- CreateSpaceTimeCube
- CopyToDataStore
- SummarizeAttributes
- SummarizeWithin
- FindSimilarLocations
- FindHotSpots

Execution Type: esriExecutionTypeAsynchronous

GeoAnalytics Server | Why?

- Applicable to anyone with ArcGIS Desktop
  - Helps you get “big jobs” done faster
  - Example: aggregate 6 million points into 44,000 polygons in 1.5 minutes on a single server
- Applicable to anyone performing automated regular analysis on large datasets
  - Fully scriptable in custom solutions
- GeoAnalytics is *out of the box* and *ready to use* within your ArcGIS system
  - familiar and simple interfaces
  - integrated with the rest of the platform so results cab be instantly visualized and refined
  - faster prototyping, R&D, and insight into your data

Image Server

with Raster Analytics

What is ArcGIS Image Server?

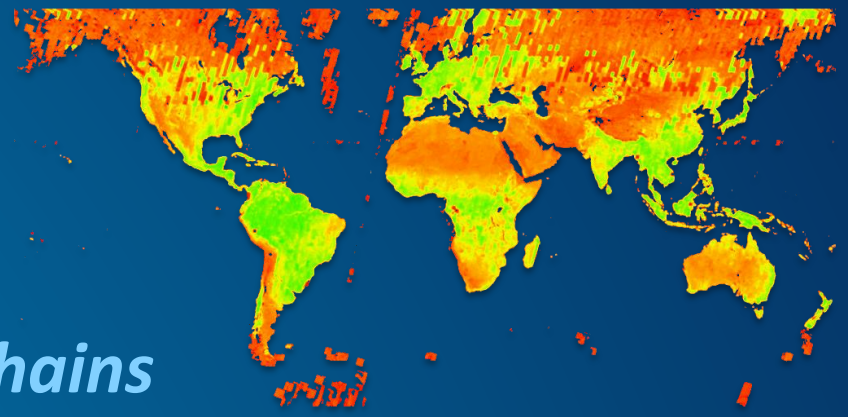
Server dedicated to the
Efficient Processing, Analysis and Dissemination
of Imagery and Rasters

- ***Dynamic Image Services*** **– 'Making your imagery accessible'**
  - **Serve large collections of imagery and rasters with dynamic mosaicking and on-the-fly processing**

- ***Raster Analytics*** **– 'Extracting information from imagery'**
  - **Enabling massive distributed processing and analysis of imagery and rasters**

new

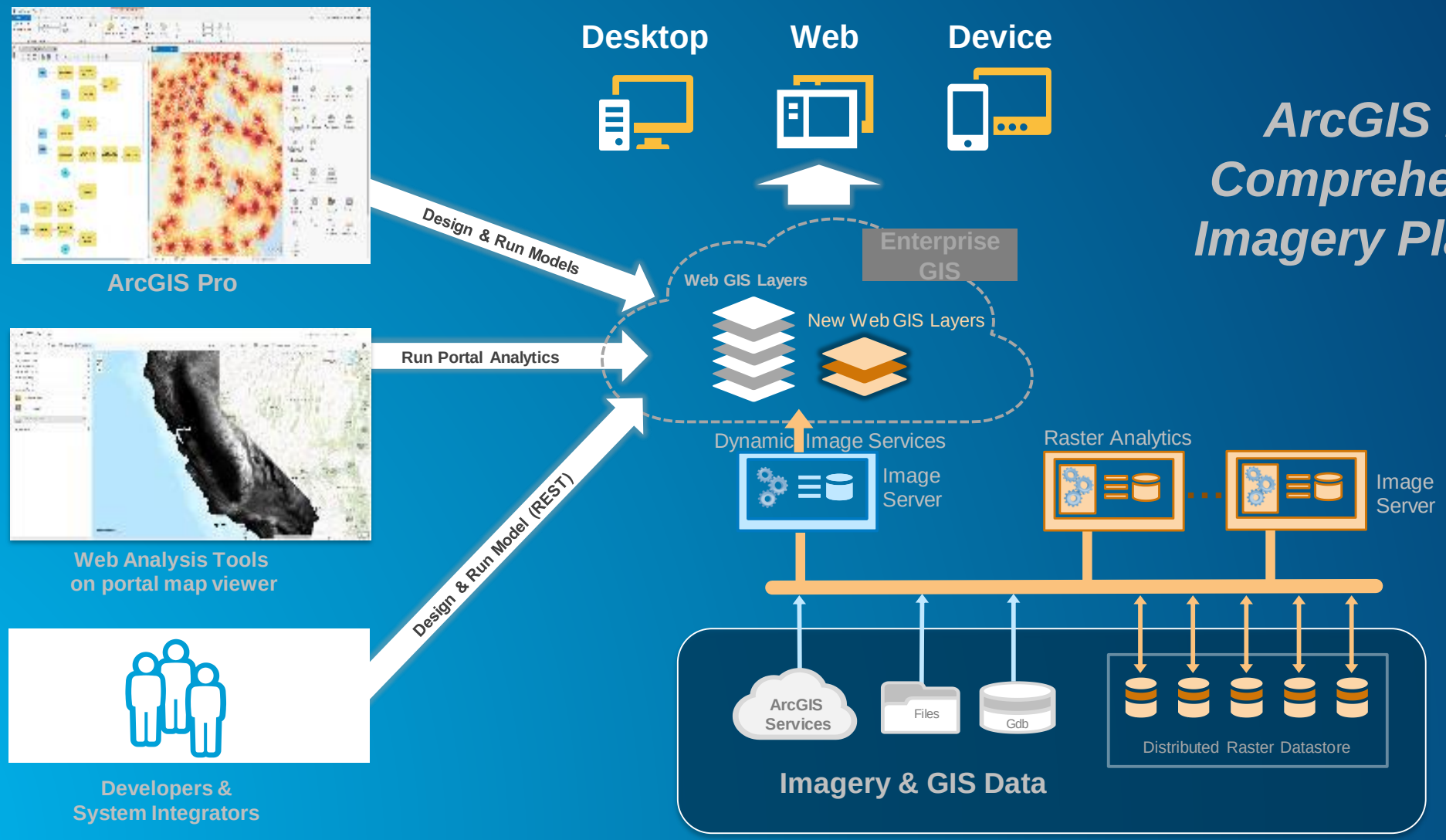
What is Raster Analytics?



A new way to create and execute
spatial analysis models and raster processing chains
which leverages distributed processing and storage

- **Works with your existing imagery, rasters and GIS data**
- **Enable massive distributed processing and analysis**
- **Integrate Analytics into your workflows**

Raster Analytics in the ArcGIS Platform

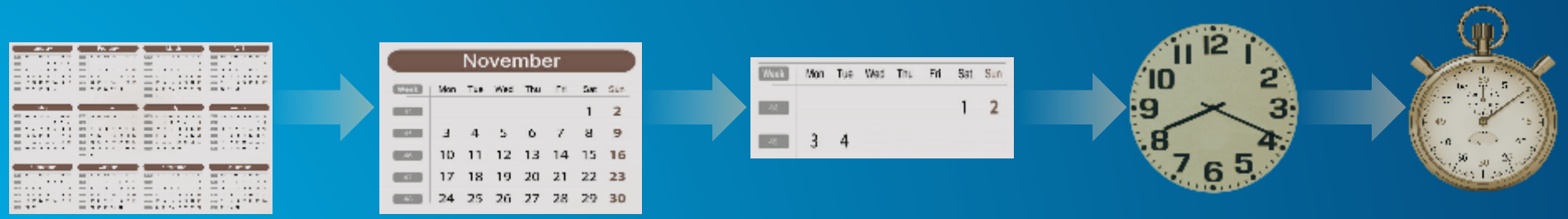


ArcGIS is a Comprehensive Imagery Platform

Solve New Problems with Raster Analytics

- **Run models against data that is too big for single desktop**
  - Cover big geography
  - High resolution
  - Large Collection

- **Run models to meet time constraints**



months weeks days hours minutes

Solve New Problems with Raster Analytics

30m National Solar Plant Suitability Raster

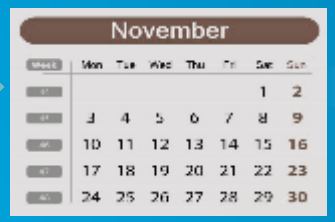
ArcGIS Desktop

5 hours 45 minutes

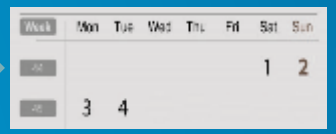
Raster Analytics

9 minutes

months



weeks



days

hours

minutes

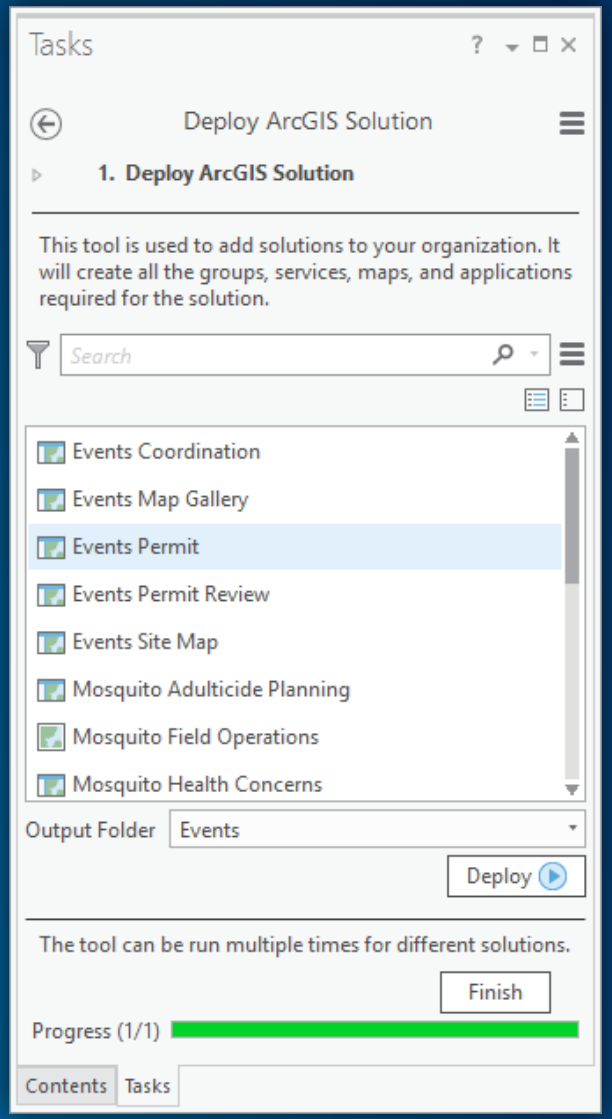
What else is new in 10.5?

ArcGIS Pro

Solution Deployment Tool

- **ArcGIS Pro tasks and tools**
  - Discover, deploy and configure solutions in an ArcGIS Organization

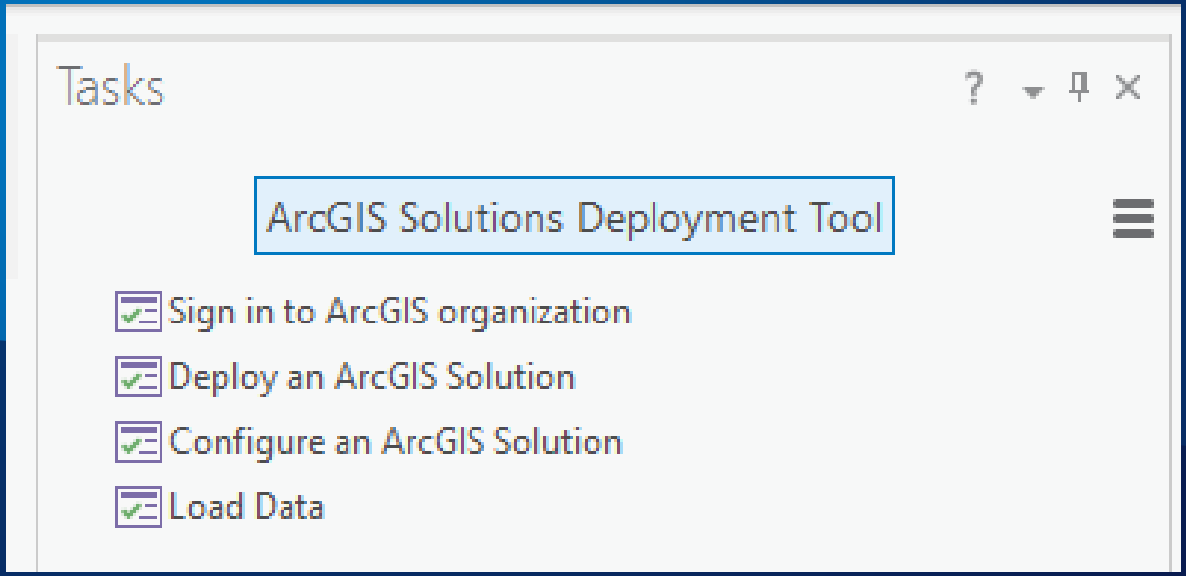
- **Helps Users**
  - Discover solution offerings available
  - Deploy the services, maps, and configurable apps to their organization
  - Configure the solution to meet specific needs in their organization
    - Add/Remove fields
    - Modify field domains and aliases
  - Load their data (if required)



Demo

Solution Deployment Tool

ArcGIS® Pro 1.4.1

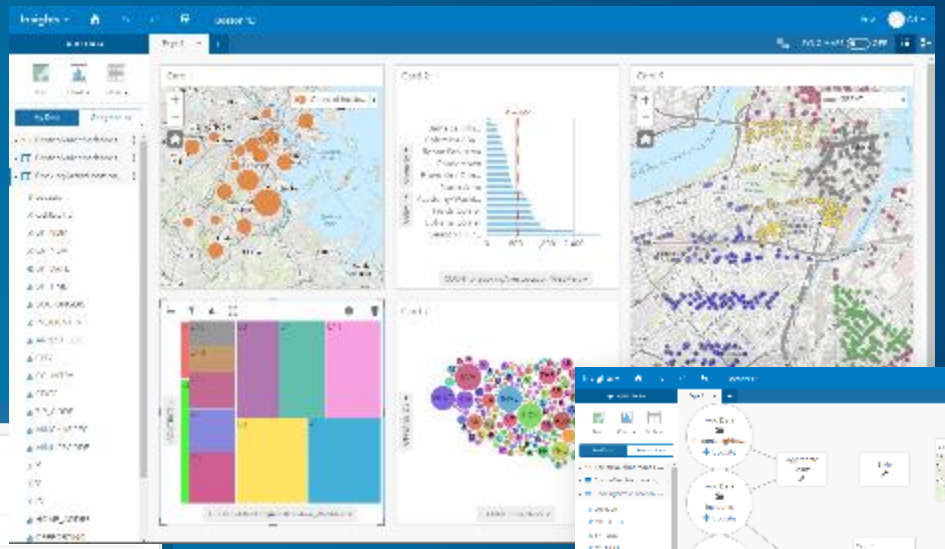


Insights ▸ Transforming Understanding with Interactive Analysis

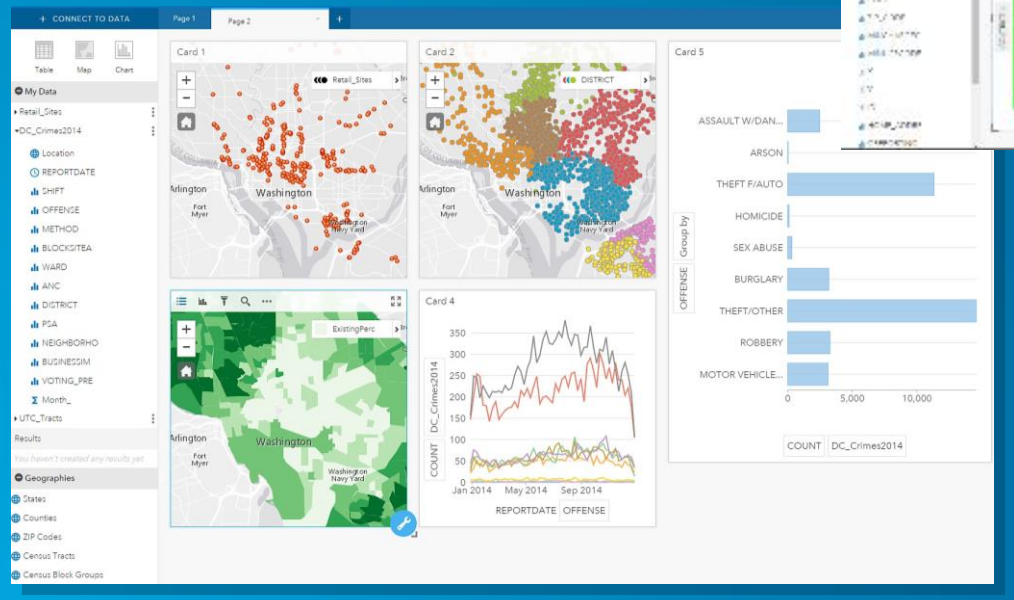
Insights

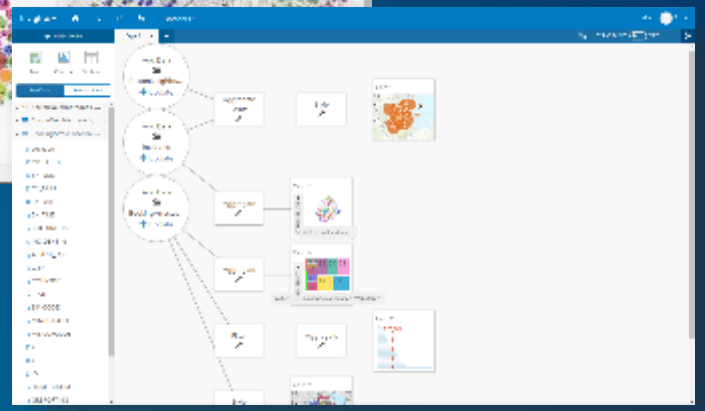
- **New Paradigm (Visual, Intuitive, Responsive)**
- **Dynamic Analysis**
- **Very Fast Data Access**

Linked and Responsive Charts and Maps



Integrated Spatial and Tabular Analysis

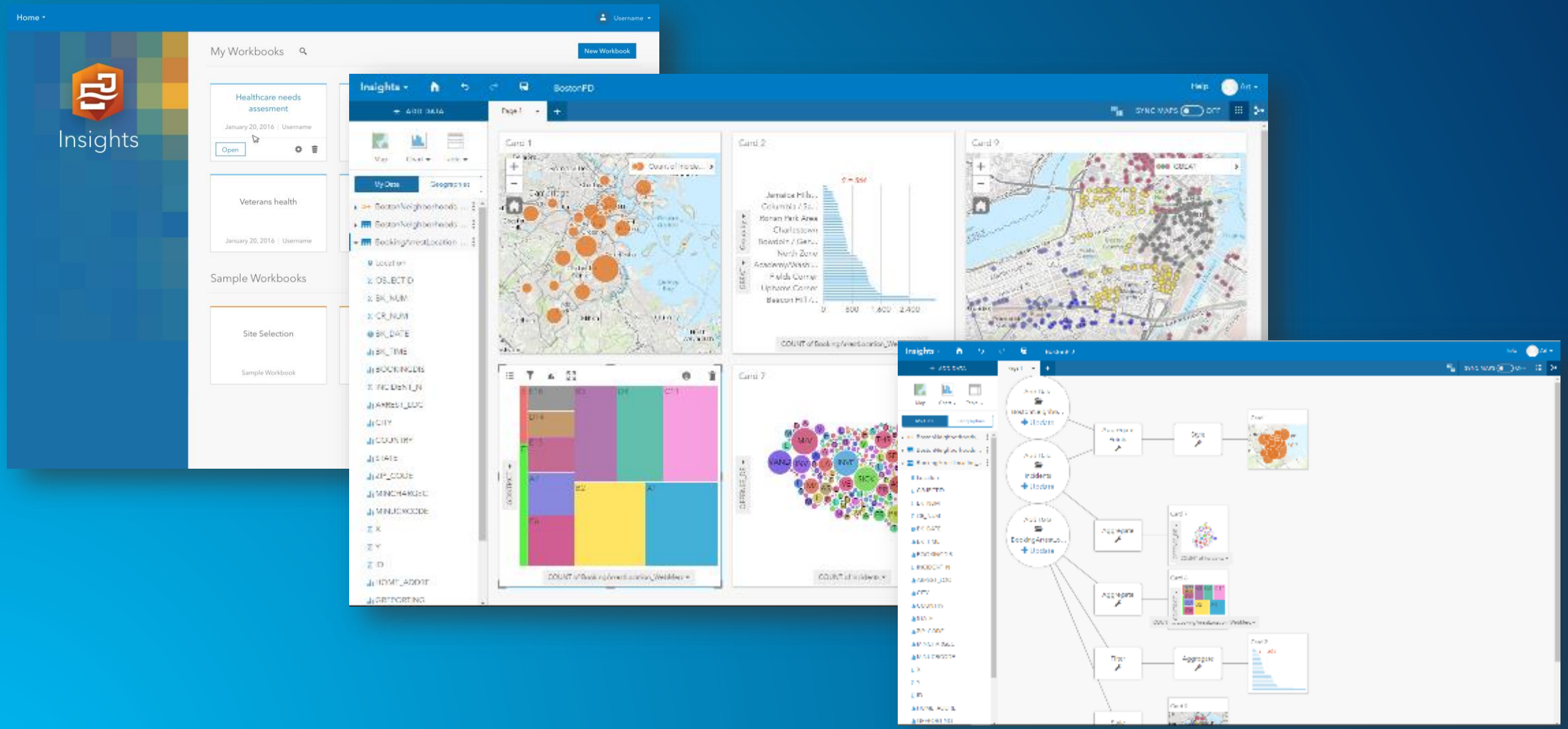




On-The-Fly Visual Models

Extending and Complementing Traditional Analysis …
. . . Supporting a System of Insight

Analytic Projects – Workbook, Pages, and Cards



What data does Insights work with?

- Feature Layers (Web GIS)
- Spreadsheets
- Geodatabase
- Business Databases
- Big Data
- Real-time data

What Analytic Operations can I do in Insights?

Spatial Analysis:

- Spatial Filter
- Kernel Density
- Find Similar
- Spatial Aggregation
- Find Nearby
- Spatial Join
- Fixed Distance & Drive-time buffers

Data Analysis:

- Filters
- Field Calculations
- Summary Tables
- Attribute Joins
- Queries

Plus:

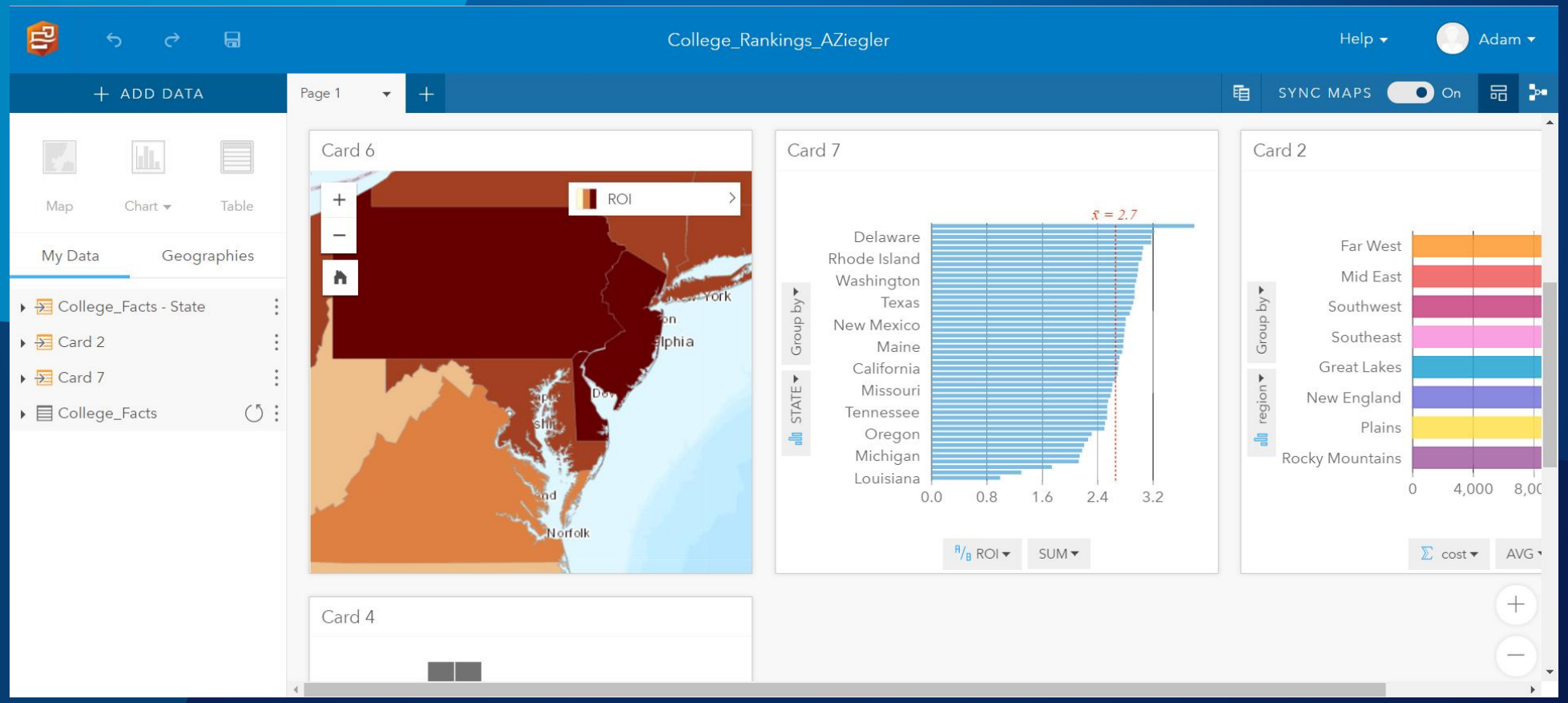
- Field Calculations
- Enrichment
- Summary Stats

Results of Analytic Operations are expressed in Cards

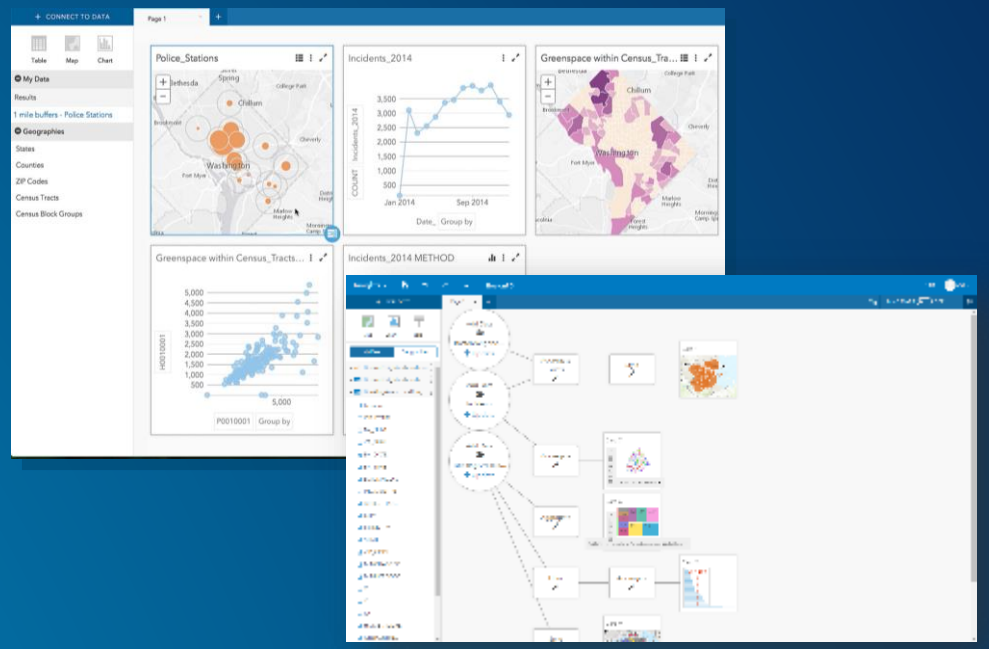
Visualizations

Demo

Insights for ArcGIS



In summary…



- **Exploratory and Interactive Spatial Analysis**
  - **Core capability in ArcGIS**
- **Focus on GIS**
  - **Go beyond basic mapping…**
  - **Harness the full power of ArcGIS and Spatial Analysis**
- **Start with the questions, get the answers, document the workflows and tell your stories.**

Succeeding with Web GIS | Requires More Than Technology

Web GIS Implementation Strategy

- **Design around your business needs, not technology**

- **What deployment pattern is best for your organization?**
  - Physical machines, virtualized environments, cloud, or a combination
  - What role will SaaS play?
  - Evaluate separate/multiple portals

- **How many machines will you need?**
  - Assess the machine's role, software components to be installed
  - Practice environment isolation

- **Consider what you already have**

Web GIS Strategies for Success

- Deliver the app(s) your user(s) need
- Go after quick wins (simple apps with big impact)
- Configure first (agile methodology)
- Don’t set it and forget it (monitor and improve performance, plan for change)
- Show something new (3D, mobile, real time, story maps, etc.)

esri | THE SCIENCE OF WHERE

Justin Cusick | Account Manager

Adam Ziegler | Solution Engineer