NYSAMPO 2023 Conference
ArcGIS: What’s New, Trending, and On The Roadmap

Mark Scott  mscott@esri.com
Many new and improved implementations of GIS in new areas, as well as existing tech that is starting to take off.

- Indoor Mapping
- Real-Time GIS
- Experience Builder
- ArcGIS Urban
- ArcGIS Hub
- ArcMap Deprecation
- ArcGIS 3.x
- Solutions
ArcGIS Indoors | Modern Workplace Planning and Mobility

Smart Workplaces

Resource Planning
- Allocation
- Accessibility
- Utilization

Safety and Security
- Continuity Planning
- Equipment Inspection
- Event Response

Asset Maintenance
- BIM Integration
- Real-Time Tracking
- Problem Reporting

Wayfinding
- Calendar Integration
- Employee Routing
- Visitor Kiosks

Complete Workplace Awareness

Performance Monitoring

Space and Asset Visibility

Stakeholders
- Business Owners
- Operators
- Employees
- Visitors

Complete Indoor Mapping and Location System
ArcGIS Indoors Viewer

- Visualize sites, buildings, floors
- Discover and share facilities
- Find and reserve workspaces
- Navigate and manage workflows
ArcGIS Indoors Mobile

- Indoor positioning compatible
- Integrate calendar events
- Reserve conference rooms and office hotels
ArcGIS Indoors Space Planner

- Create space plans
- Make space moves
- Create office hotels
- Share new plans
ArcGIS Indoors Dashboards

• Occupancy
• Proximity Analysis
• Asset Tracking
• Work Order Tracking
• Energy Demands
• Security Operations
ArcGIS Indoors for ArcGIS Pro

- Convert floorplans to indoors
- Generate routable networks
- Configure maps and categories
- Publish indoors data
The Indoor Dataset

- Floorplan features
- Routable network

+ model your own floor aware data
ArcGIS IPS

- Indoor Positioning System (IPS)
  - Outdoors = GPS
  - Indoors = IPS

- Real-time positioning capability (or “blue dot”) inside buildings

- IPS does not provide indoor mapping but makes use of it (e.g. via ArcGIS Indoors Pro)
IPS requirements & background

- Building/Campus of a decent size

- ArcGIS IPS uses beacons, Wifi, 3rd party IPS solutions and more
  - 2021 Release: beacons only
  - 2022: adding Wifi and other technologies

- Use:cases: Simple VS Complex
  - Simple: presence detection (e.g. standing close to a machine)
    - Roadmap 2022
  - Complex: indoor positioning (e.g. navigating to a machine)
    - Release later this year
ArcGIS GeoBIM
Connected Projects in Context

ArcGIS Online

GeoBIM Projects

Linking ArcGIS Features to Autodesk Records

Autodesk Construction Cloud & BIM 360

Supporting Integrated Visualization & Query

GeoBIM Apps
Integrating GIS and BIM for Professionals
Resources

- **GeoBIM**
  - [ArcGIS GeoBIM – An Introduction (esri.com)](https://esri.com)
  - [ArcGIS GeoBIM | Tutorials, Documentation, Videos & Resources (esri.com)](https://esri.com)
  - [ArcGIS GeoBIM Overview (esri.com)](https://esri.com)

- **Indoors**
  - [Reinvent a Hybrid Workplace with ArcGIS Indoors (esri.com)](https://esri.com)

- **IPS**
  - [ArcGIS IPS Overview (esri.com)](https://esri.com)
ArcGIS Urban
Our Cities Are Facing Massive Challenges
Visualize Projects Citywide

Visualize, track, and review development projects throughout their lifecycle.
Streamline the creation and sharing of zoning and land use plans directly in the web browser, in 3D.

Improve Planning Productivity
Increase Transparency and Understanding

Report on citywide performance indicators and disseminate trends to public and private stakeholders.
Better Engagement

Simplify community involvement to gain early buy-in.
Demo
ArcGIS Urban Launch Plan

1. Base Data Preparation
2. Application Deployment
3. Example Scenario Configuration
4. Knowledge Transfer (Remote or Onsite)
Resources

Esri UC Plenary and Technical Sessions
youtu.be/u1G_J0FUNqw

Blog: Getting Started with ArcGIS Urban
go.esri.com/urban-blog-getstarted

Webinars
go.esri.com/urban-webinars

GeoNet Community
go.esri.com/urban-community

Documentation
doc.arcgis.com/en/urban
ArcGIS Hub is a cloud-based engagement platform that helps you work more effectively with your community.
Initiatives organize teams, content, and action

- **Staff**
  - Trusted collaborators: On initiative teams; work with staff
  - Actively engaged: Trained volunteers; on teams

- **Actively interested**: Have account and follow initiatives

- **General public**: Anonymous

Who??

Have identity
Hub Enabling Community Engagement

Basic

Hub Sites
Inform and Educate

Open Data and SDI
Share Data & Apps

Geospatial Infrastructure
Apps & Maps
Dashboards
StoryMaps
Experiences
Plan Scenarios
BA Reports

Data
Docs

Engagement Tools
Collect Feedback, Data

Premium

Initiatives, Teams
Deeper Collaboration

Teams
Messagings
Event Creation
Crowdsourcing
Content Editing
Data Contribution

Events
Surveys
Discussions
Hubs around the world  Building communication bridges

Conservation

Volunteerism

Transparency

AEC

Education

Neighborhood Projects

Sustainability

https://hub.arcgis.com/pages/gallery
Integration and Branding

Integrate your existing site and authoritative data using Hub

Custom Branding options - URLs, Logos, Fonts, Colors, Layout Patterns
Surveys

Survey Templates – From Esri or Community

Survey123 integrated
Hub Events

- Premium only
- Featured events
- Share events across multiple initiatives
- Invite community members
- Email attendees
Hub Resources


• ArcGIS Hub User Lab- https://hubuserlab.esri.com/


• ArcGIS Hub Changelog- https://hub.arcgis.com/pages/changelog

What is ArcGIS Experience Builder

Highly configurable, No-Code application creator

- **Build web apps and pages**
  - Explore design decisions with templates
  - Access ready-to-use tools
  - build custom tools

- **Data driven**

- **Modern interface**

- **Successor to Web App Builder**

Flexibility

JSAPI 4

Data Driven
ArcGIS Experience Builder Key Features

- Mobile optimization
- Flexible Design
- 2D and 3D in one app
- Interconnection between widgets
- Integration with other ArcGIS apps
- Extensibility
An experience

Design/config

GUI builder

1. Template
2. Widget
3. Data source
4. Theme
5. Extensibility
2023 Roadmap

**Q1 2023**
- Add Data widget
- Business Analyst widget (out of beta)
- Utility Network Trace widget (out of beta)
- New Slice tool in 3D Toolbox widget
- New Histogram chart in Charts

**Q2 2023**
- Basemap Gallery widget
- Swipe widget
- Near Me widget (include capabilities in Situation Awareness, Screening, Info Summary)
- Related table editing
- Accessibility

**Q4 2023**
- Geoprocessing widget
- Analysis widget
- Image Measurement widget
- App URL parameters
- Mobile-first design
Get started with a Learn Lesson

Helpful Resources

- Experience Builder Developer Edition
- Experience Builder Online Edition
- Gallery
- Product page
- Community
- Blog

- Learn lessons
- YouTube Playlist (full video)
- YouTube Playlist (short video)
- YouTube Release Playlist
Transitioning from Web AppBuilder to Experience Builder

ExB Will Reach Significant Parity By End of 2023

Many ArcGIS Solutions are already moving from Web AppBuilder to Experience Builder
Web AppBuilder Retirement Plan

- The developer edition will retire in July 2024, alongside the legacy 3.x version of ArcGIS API for JavaScript.
  [JavaScript API version 3.x Retirement]

- Web AppBuilder in ArcGIS Enterprise will be deprecated as of now. The final release of Web AppBuilder as part of ArcGIS Enterprise will be planned to be H1 2025 (Enterprise 11.5).

- Web AppBuilder in ArcGIS Online will retire at the end of 2025.
Web AppBuilder Roadmap for Retirement Blog

- Blog
  - Timelines
  - FAQ
  - Migration resources
Speaking of “Retirement”…so you’re still using ArcMap…

ArcMap is slated for retirement March 1st, 2026

ArcMap Product LifeCycle

ArcMap Continued Support Plan
If you are an ArcGIS Enterprise User

With no plans for an ArcMap 10.9, the runtime that allows for services to be published from ArcMap will be removed from ArcGIS Enterprise at version 11. Current version is 11.1

What does this mean exactly?
ArcGIS Enterprise contains two internal runtimes.

One runtime for services to be published from ArcGIS Pro.

Keeping these runtimes up to date involves work for every release.

One runtime for services to be published from ArcMap.
Both runtimes will still be included.

New tooling will switch compatible services from ArcMap runtime to ArcGIS Pro runtime.

Services that aren’t compatible will need to be republished.

Starting with the ArcGIS 2021 releases…
Starting with the ArcGIS 2022 releases…

Only the ArcGIS Pro runtime will be included.

It will no longer be possible to publish or run services from ArcMap.

Some ArcMap-based services will no longer run.
ArcGIS 2021

2020
Contains both ArcMap and ArcGIS Pro runtimes.

2021
Will contain both ArcMap and ArcGIS Pro runtimes + migration tooling.

ArcGIS 2022

2022
Will only contain ArcGIS Pro runtime.
ArcGIS Pro 3.x
Semantic Versioning

• ArcGIS Pro version numbers use the semantic versioning specification

• Given a version number MAJOR.MINOR.PATCH, increment the:
  • MAJOR version when you make incompatible API changes,
  • MINOR version when you add functionality in a backwards compatible manner, and
  • PATCH version when you make backwards compatible bug fixes.

Example 2.9.2 vs 3.1.1
ArcGIS Pro 3.x

At 3.0 ArcGIS Pro is moving to .NET 6 (formerly known as .NET Core)

• 4.8 was the last release of the .NET Framework
• .NET 6 is the current Long Term Support release of the new .NET line

This will result in breaking changes to the Pro APIs

• Add-ins will need to be converted to .NET 6
• Recompiled to work with Pro 3.0 and breaking changes fixed
Projects in 3.x

ArcGIS Pro projects are a zip archive

- 1.x and 2.x projects contained CIM objects persisted as XML

At 3.0, the CIM objects in the zip archive move to JSON

- Smaller size
- Faster
- Matches lyrx, mapx, pagx, files and styles
- Matches the use of the CIM on web and mobile
- We document the CIM spec as JSON at https://github.com/esri/cim-spec
  - This will expand to include JSON Schema
Performance and Productivity Enhancements

- Content Management
- Editing
- Display
- Geodatabase
- Geoprocessing
- Layout
- Map Authoring
- Parcel Fabric
- Scene Layers

Repetitions for distances - Divide tool

Export presets

Traverse entry grid performance
ArcGIS Pro 3.x Highlights

- Dedicated Learn Page
- OpenStreetMap 3D Layers
- Date Modified & Size in Catalog View
- Update Cloned Python Environments
- Export Presets
ArcGIS Pro 3.x Highlights

Geocoding Credit Estimation

New Hydrology Analysis Tools

Tool parameter memory/autofill

Selection and filtered input notification

Multiscale Geographically Weighted Regression (MGWR)
ArcGIS Pro 3.x Highlights

- Time aware stand-alone tables
- Color Vision Deficiency Simulator
- IFC Infrastructure Discipline Support
- Maps in Reports
- Save Web Scene
### Now
- Upgrade Python Environment
- Reality Mapping Extension
- Projects in the Enterprise
- Export Presets
- Provenance in Knowledge Graphs
- Indoor Positioning
- Suitability Modeler Additional Weighting
- Parcel metes and Bounds Visualization
- Roof Editing
- Enhanced Radar Data Support
- Hydrologic Analysis
- Multiscale GWR
- Scene Layer Performance
- OSM Streetmap 3D Layers
- Maps in Reports

### Near
- Simulation Modeling
- Catalog Layers
- Point Cloud Scene Layer Data Management
- Non-versioned Editing
- Presentations
- Spatio-temporal Density Analysis
- Scientific Data (DSG) Ingestion
- Managed Indoor Data Pipeline
- Roof Editing in Stereo
- ENC Chart Viewing
- 64-Bit Object ID

### Coming
- Terrain Editing
- Materials Authoring
- High Fidelity Rendering
- 3D Mesh as Ground
- Integrated Mesh Scene Layer Data Management
- New Data Types (BigInteger, Timestamp with Time zone)
Location Tracking in ArcGIS | Tracking Services for Your Organization

• **New Organizational Capability**
  • Administrators can enable location tracking in their organization
  • Will create a single service for storing & managing location tracks in the big data store

• **Mobile app**
  • Simple, schedule-driven tracking experience
  • Supports offline use
  • Optimized for low battery consumption

• **Web app**
  • Create Track views
  • Display and manage users & their location history
  • See only the users that you have access to
Real-Time Visualization & Analytics

Integrating Sensor Networks and IoT

Supporting High-Velocity Data Streams
Tracking, Monitoring and Alerting

Collapsing the Time from Measurement to Decision Making

Enterprise

ArcGIS Online

Sensors

IoT Platforms

GeoEvent Server
GeoAnalytics Server

Real-Time Data

Situational Awareness
Analytics
Alerting

Cloud Native Service
Very Fast
High Volume
SaaS

New
<table>
<thead>
<tr>
<th>ArcGIS GeoEvent Server</th>
<th>ArcGIS Velocity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprise ready</td>
<td>Cloud ready</td>
</tr>
<tr>
<td>On-premises, requires ArcGIS Enterprise</td>
<td>Software as a service (SaaS), requires ArcGIS Online</td>
</tr>
<tr>
<td>Secure deployments in local or cloud environments</td>
<td>Kubernetes-based, cloud-native architecture</td>
</tr>
<tr>
<td>Real-time data ingestion, processing, and analysis</td>
<td>High-speed, real-time data ingestion; processing; and analysis</td>
</tr>
<tr>
<td>Extensible</td>
<td>Easy configuration and maintenance with built-in resiliency and failover</td>
</tr>
<tr>
<td>Advanced real-time processing</td>
<td>Big data analysis</td>
</tr>
</tbody>
</table>
ArcGIS Velocity
Leverage sensor and IoT data for geospatial reasoning

...connects to industry leading cloud IoT platforms, data lakes, and sensor vendor APIs
ArcGIS Industry Solutions | Industry-Specific Apps, Maps, & Tools...Extending Your GIS

Solution Components:
- Local & State Government
- Defense & Security
- Popular (500K Downloads)
- Extensive (450+)
- Open Source
- Fully Supported

Solution Configurations:
- Emergency Management & Public Safety
- Utilities & Telecom
- Tools
- Data Models
- Apps
- Workflows
- Maps
- Widgets
- Add-Ins
- Dashboards

Preconfigured

Ready to Deploy
- Technology
- Workflows
- Implementation
- Training
- Support

Services are deployed from ArcGIS Online

http://solutions.arcgis.com/
New and Planned Solutions

• New
  - Parks Management
  - Broadband Outreach
  - Lead Service Line Inventory
  - Curb Restriction Management
  - ROW and Easement Management

• Planned
  - Spatial Finance

• Built on Key ArcGIS Tech
  - ArcGIS Hub
  - Experience Builder
  - Survey 123
Curb Regulation Management

• Streamline curb regulation inventories
Example: Curb Regulation Management
Streets now support a vast array nonvehicular uses

• Growing use of, and competition for, curb space in urban areas and downtowns

• Data and knowledge about the curb is generally lacking

• Many departments in local government need access to curb information
Curb Regulation Management
Focused Maps and Apps

Mapping Technician

ArcGIS Online
ArcGIS Enterprise

Planning / Engineering / Enforcement Staff
Curb Regulation Viewer

Curb Regulation Data Management

Signs
Curb lines
Street centerlines
Streamline curb regulation inventories

An ArcGIS Pro project used to maintain an inventory of curb regulations and share regulations with internal stakeholders.
Streamline curb regulation inventories

An ArcGIS Experience Builder app used by planning, engineering, and enforcement staff to visualize and understand curb regulations.
Tomorrow’s Challenges

Electric & Autonomous Vehicles

Site EV Charging Stations

Indoor Mapping

Space and Asset Management

Drone-Based Imagery

Streamline Damage Assessments
What’s Next?
Identifying Opportunities for Reimagination…

- Challenges
- Goals
- Paper / Personal Knowledge
- Other Systems
- Sensors
- Right-of-Way
- Weather
- Facilities
What’s Next
Learning & Community

Learning
• Classes & E-Learning
• Esri Technical Certification
• ArcGIS for Personal Use

Community
• Esri Events
• GeoNet
Questions & Answers
mscott@esri.com

...slides will be provided ASAP...
Thanks!

See you this Fall!

FALL NEARC

SUNDAY, OCTOBER 15 - WEDNESDAY, OCTOBER 18, 2023
NEW HAVEN, CONNECTICUT

NYGeoCon 2023: September 25-27, The Desmond Crowne Plaza, Albany, NY