What's New in the ArcGIS API for JavaScript

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Hello
Agenda

- What's new - 3.x
- Introducing 4.0
- Resources
- Additional Sessions
- Questions
Rendering improvements: Multivariate rendering 3.x

- Use VisualVariables
  - ColorInfo -> defines color ramp
  - SizeInfo -> defines symbol size, feature size proportional to data
  - OpacityInfo -> defines the opacity of features
Rendering improvements: Scale driven sizing

3.x

- Calculate symbol size based on map scale (SizeInfo)
- Use on polygon markers and outlines
- Stops
- Expression, e.g. view.scale
Rendering improvements: Show predominance

3.x

- Generates UniqueValueRenderer showing predominant value for each feature
- Compares among two+ competing fields
- Supported on hosted feature services
- Good [app](#) discussing this
Symbol playground

3.x

- Data visualization techniques page
Added support for OGC Web Feature Services (beta)
3.x

- esri/layers/WFSLayer
Widgets: FeatureTable 3.x

- Out of beta at 3.15
- 3.16 introduces editing support
  - attributes of existing features
- Customize UI
- Reorder columns
Widgets: Elevation Profile widget

3.x

Creates an elevation profile based on an input polyline geometry

```javascript
var elevationProfile = new ElevationProfile({
  map: map,
  scalebarUnits: Units.MILES,
  chartOptions: chartOptions
});
elevationProfile.startup();
```
Widgets: Layer List widget

Provides a list of layers that allows the toggling of layer visibility.
Vector tiles
3.15+ and 4.0+

- Esri vector tile basemaps
- Custom vector tile maps published from Pro
- Map Style
  - Use as-is in apps
  - Use a tool like this to customize style & save as a item
  - Style dynamically in code
- Programmatically update map; i.e. styling or layer visibility
Geometry Engine: Overview
3.13+ and 4.0+

- Geometry Engine out of beta at 3.15

- What is it?
  - 30+ methods for measuring, overlaying, and testing spatial relationships

- Why and when should you use this?
  - Use if application makes frequent requests with GeometryService or handles large amounts of geometries.

- Client-side = No network requests made
- ~ 160 Gzipped

- Reasons to use the GE include:
  - Working with spatial relationships and editing
  - Measurements
  - Overlay analysis
Geometry Engine: Spatial relationships & editing
3.13+ and 4.0+

- Spatial relationships are verified before editing using testing functions
  - offset, disjoint, equals, within, intersects, and crosses
- Operations (intersect, cut, etc.) perform quicker
- No multiple GeometryService requests when testing relationships and actual edit operations
- Overall should enhance the user's editing experience
Geometry Engine: Measurement
3.13+ and 4.0+

- Measurement for
  - lengths, areas, and distances

- Methods for both
  - Geodesic -> curvature of Earth
  - Planar

- Geodesic supports WGS84 and Web Mercator

- Planar supports projected coordinate systems (not limited to WGS84 and Web Mercator)
Geometry Engine: Overlay analysis
3.13+ and 4.0+

• Overlay functions, e.g.
  - Clip
  - Difference
  - Intersect
  - Union
  - symmetricDifference

• Provides a means of performing preliminary calculations prior to doing any major analysis
Agenda

- What's new - 3.x
- Introducing 4.0 ..what can I do with the API?
- Resources
- Additional Sessions
- Questions
2D & 3D Visualization
Visualization

4.0

- Map model / view separation
- Same programming model for 2D and 3D
- 3D introduces additional capabilities/concepts; i.e.:
  - 3D symbology
  - Environment
  - Camera
  - Slides
  - Local scenes

Visualization

4.0

• Renderers
  • Simple
  • ClassBreaks
  • UniqueValue

• Visual Variables & multivariate mapping
  • Using symbol size, opacity, color
  • Thematic
  • Real-world sizes

Support for web maps and scenes

4.x

- Map contains
  - basemap
  - operational layers
  - initial state

- WebMap/WebScene contains
  - portal item
  - presentations
  - environment options

- Scene can be global or local
Local scenes

4.x

- World is flat
- Supports local projected coordinate systems
- Possible to render data below the surface
- Optional “clipping area” makes a custom size/extent of the map/view.

```javascript
webScene.viewingMode = "local";
```
Global scenes
4.x

- World is a globe
- Only supports WGS84 and WebMercator coordinate systems.
- No subsurface rendering.
Security

4.x

- Support for IdentityManager
  - Use for token-based ArcGIS Server security
  - Use with OAuth2 security against the ArcGIS platform.
Tasks

4.x

Currently supports:

- ClosestFacilityTask
- FindTask
- GeometryService
- Geoprocessor
- IdentityTask
- ImageServiceIdentifyTask
- Locator
- QueryTask
- RouteTask
- ServiceAreaTask
Tasks

4.x

- Use RouteTask for Directions functionality
User Interface: Creating apps that run across any device

4.x

- Responsive Design
- Map rotation
- New pop-up design (for any screen size)
User Interface: Padding

4.x

• Map view padding:
  - Center, extent, etc works off subsection of view

• UI padding:
  - Position widgets manually or in corners + offset from edge

Map’s center, etc is offset from the edge

Widget set in corner, with padding from edge
User Interface: Widgets

4.x

- OOB widgets @ 4.0
  - Attribution
  - BasemapToggle
  - Compass
  - Home
  - Locate
  - Popup
  - Search
  - Track
  - Zoom
  - Legend (in the works)

- Style with css
User Interface: Widgets & view models

4.x

• Separation between business logic & UI
  - ViewModel
  - View
• Replace OOB View with your own
• Use your framework of choice
U.S. Capitol Building

The United States Capitol, often called Capitol Hill, is the seat of the United States Congress, the legislative branch of the U.S. federal government. It sits atop Capitol Hill, at the eastern end of the National Mall in Washington, D.C. Though not at the geographic center of the Federal District, the Capitol forms the origin point for the District’s street-numbering system and the District’s four quadrants.

The original building was completed in the year 1800 and was subsequently expanded, particularly with the addition of the massive dome. Like the principal buildings of the executive and judicial branches, the Capitol is built in a distinctive neoclassical style and has a white exterior. Both its east and west elevations are formally referred to as fronts, though only the east front was intended for the reception of visitors and dignitaries.

In 2014, scaffolding was erected around the dome for a restoration project scheduled to be completed by early 2017.
Configurable Web Apps
Built with 4.0

Web AppBuilder 2.0 (beta): 2D & 3D

3D Web application templates
Agenda

• What's new - 3.x
• Introducing 4.0
• Resources
• Additional Sessions
• Questions
Additional help and resources
3.X and 4.x

- Visualization blogs
- Geometry Engine blogs
- SDK site
- GeoNet
Other Sessions

- ArcGIS API for JavaScript: Discover 4.0 the Next Generation / Wed. 2:30 Primrose A
- Vector Tiles in the ArcGIS Platform / Wed. 4PM Mohave
- Web 3D with the ArcGIS API for JavaScript Advanced Topics / Thur. 9AM Santa Rosa
- Building Your Own Widget with ArcGIS API for JavaScript / Thur., 10:30AM Mohave
- An Insight into Esri’s 3D Engine in the Browser / Thur. 10:30 Mesquite C
- ArcGIS API for JavaScript: Building Apps that Consume Web Maps and Web Scenes / Thur. 11AM Mesquite C
- Building Interactive Web Apps Using the JavaScript API’s Geometry Engine / Thur. 1PM Demo Theater 2
- Using and Customizing the ArcGIS API for JavaScript Widgets / Thur. 1:30 Demo Theater 2
- 3D Visualization With the ArcGIS API for JavaScript / Thur. 1PM Primrose B
- The Road Ahead: ArcGIS API for JavaScript / Thur. 4PM Primrose A
Thank you and enjoy the rest of Dev Summit