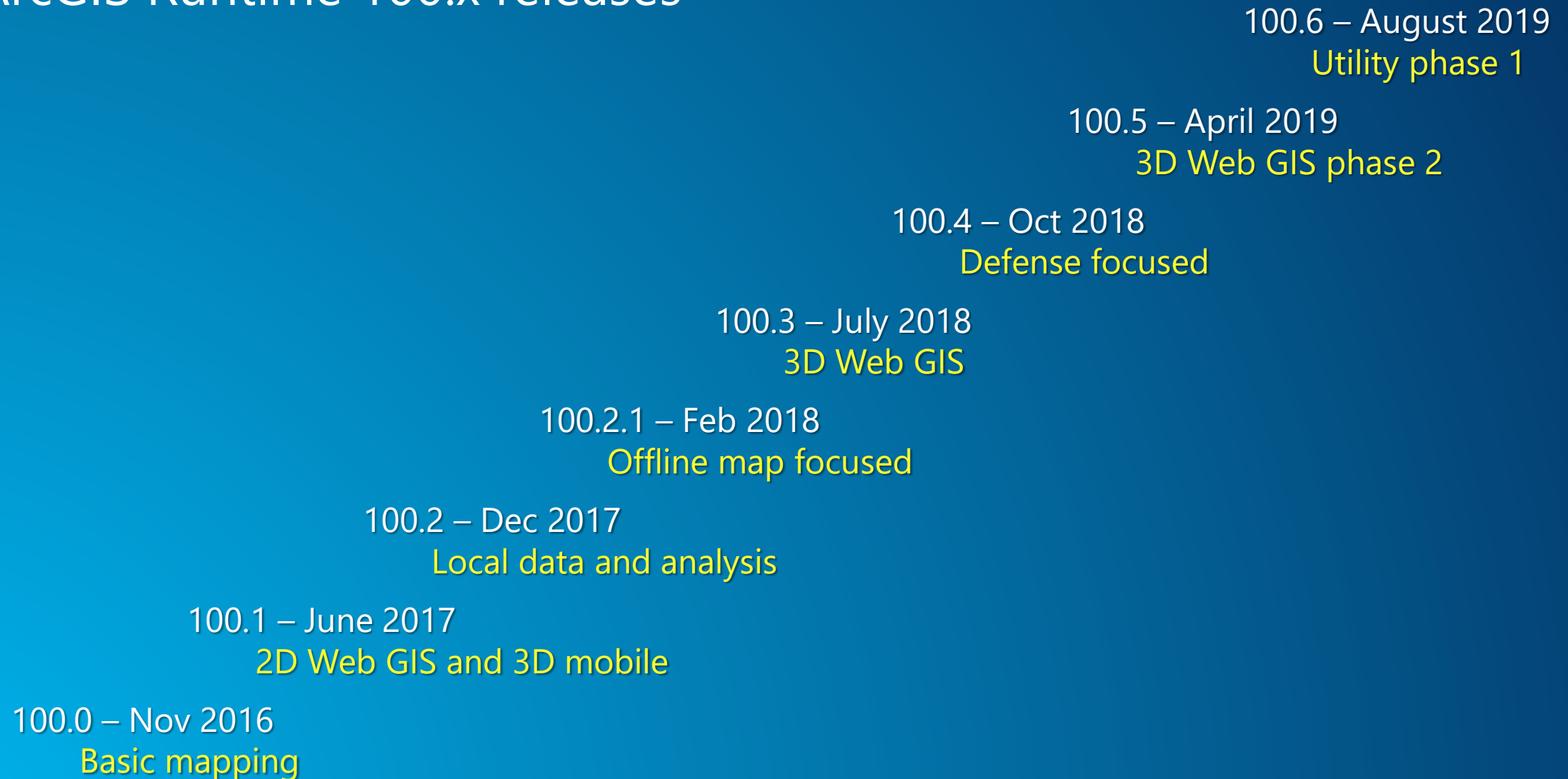# ArcGIS Runtime SDKs: What's New

Mike Branscomb
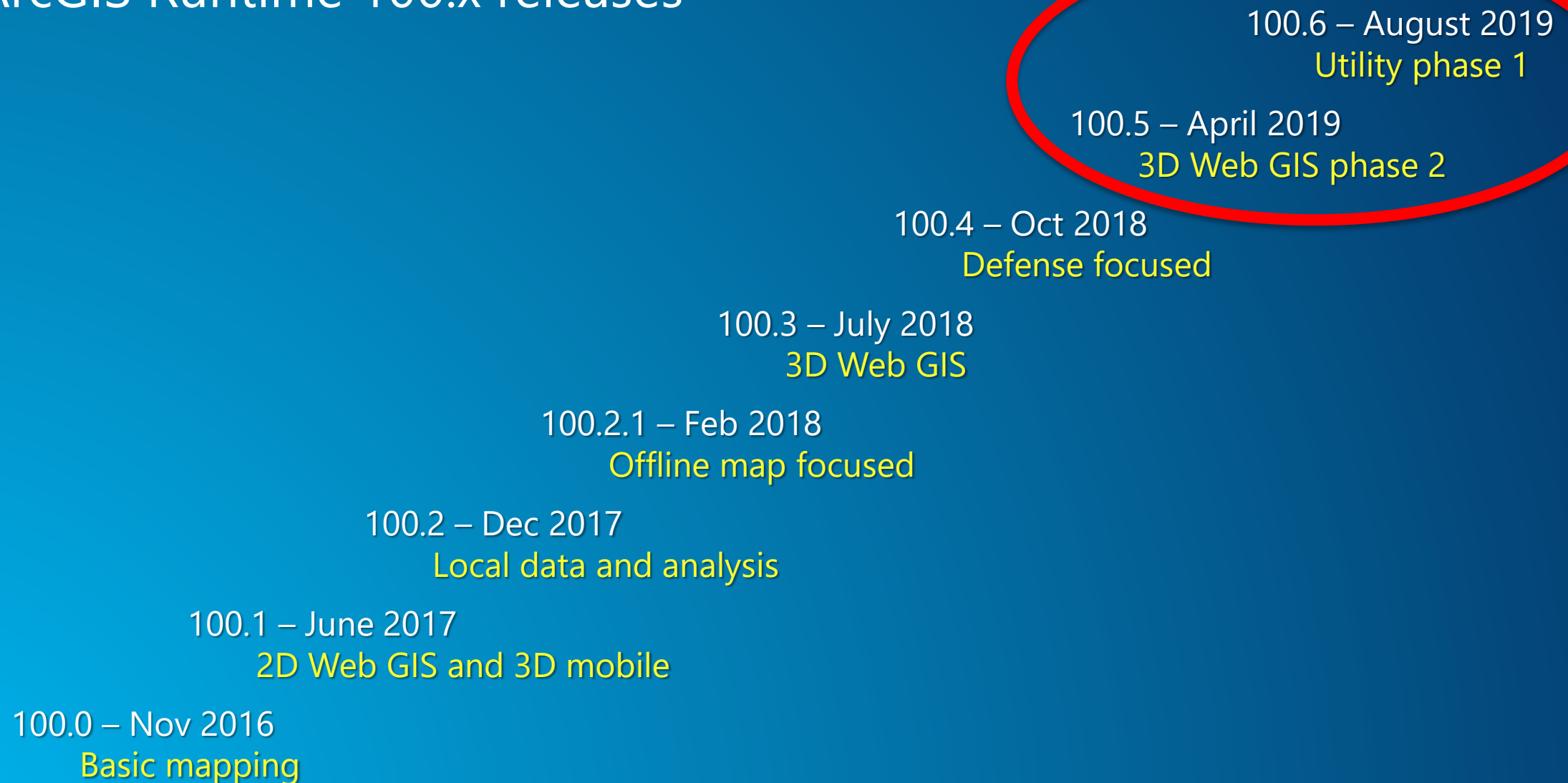
ESRI EUROPEAN DEVELOPER SUMMIT

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ArcGIS Runtime 100.x releases

100.6 – August 2019
Utility phase 1

100.5 – April 2019
3D Web GIS phase 2

100.4 – Oct 2018
Defense focused

100.3 – July 2018
3D Web GIS

100.2.1 – Feb 2018
Offline map focused

100.2 – Dec 2017
Local data and analysis

100.1 – June 2017
2D Web GIS and 3D mobile

100.0 – Nov 2016
Basic mapping

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ArcGIS Runtime SDKs: What's New Since Last Dev Summit

- April
  - ArcGIS Runtime SDKs 100.5

- August
  - ArcGIS Runtime SDKs 100.6

- September
  - ArcGIS Runtime **Local Server SDK** 100.6

- October
 - ArcGIS Runtime AR Toolkits 100.6

100.5

Update 5 (100.5) – April 2019

3D Web GIS (phase 2)

- Mobile scene packages

- Layers: Group, Point Cloud, Point scene, & Integrated Mesh

- Subsurface navigation

- 3D performance improvements

- KML Tours & Refresh overrides

- WFS

- New raster tile package (TPKX) and locator (LOZ) formats

- Enhanced symbology support and API for greater parity with ArcGIS Pro

- Reference scale for text and symbols

- Annotation layers

- Credential serialization (.NET)
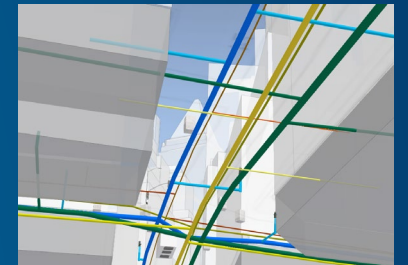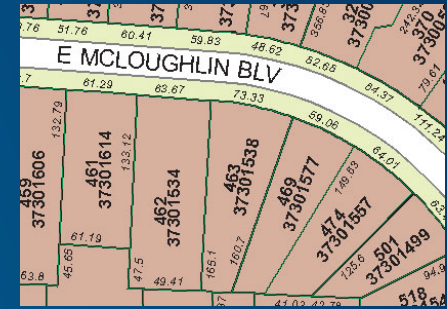
100.6

ArcGIS Runtime SDKs: What's New 100.6

- Runtime features
  - Utility Network Analysis
  - Offline workflows
  - 3D
  - OGC
  - Symbology
  - Navigation
  - Augmented Reality
- Runtime SDKs
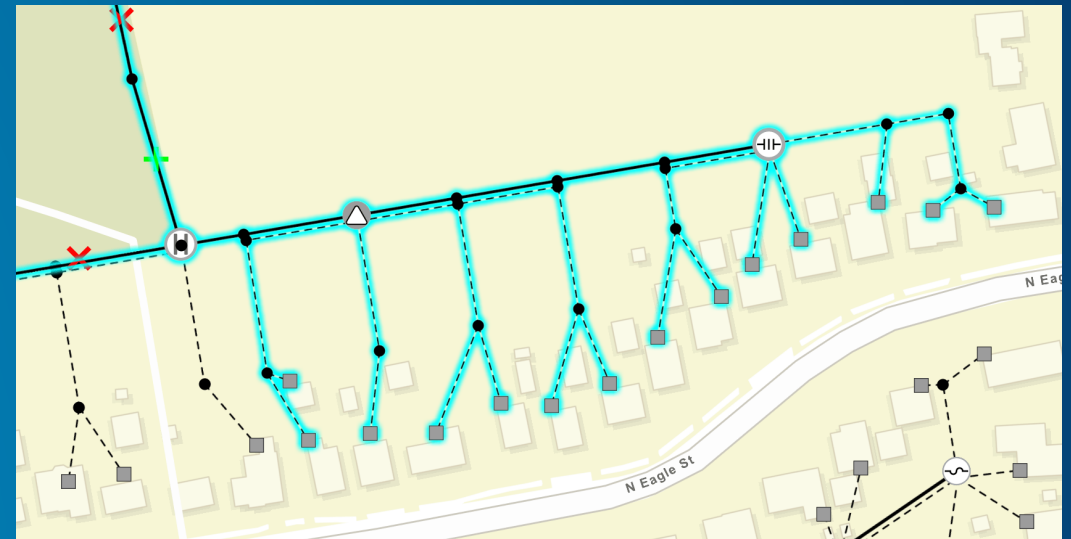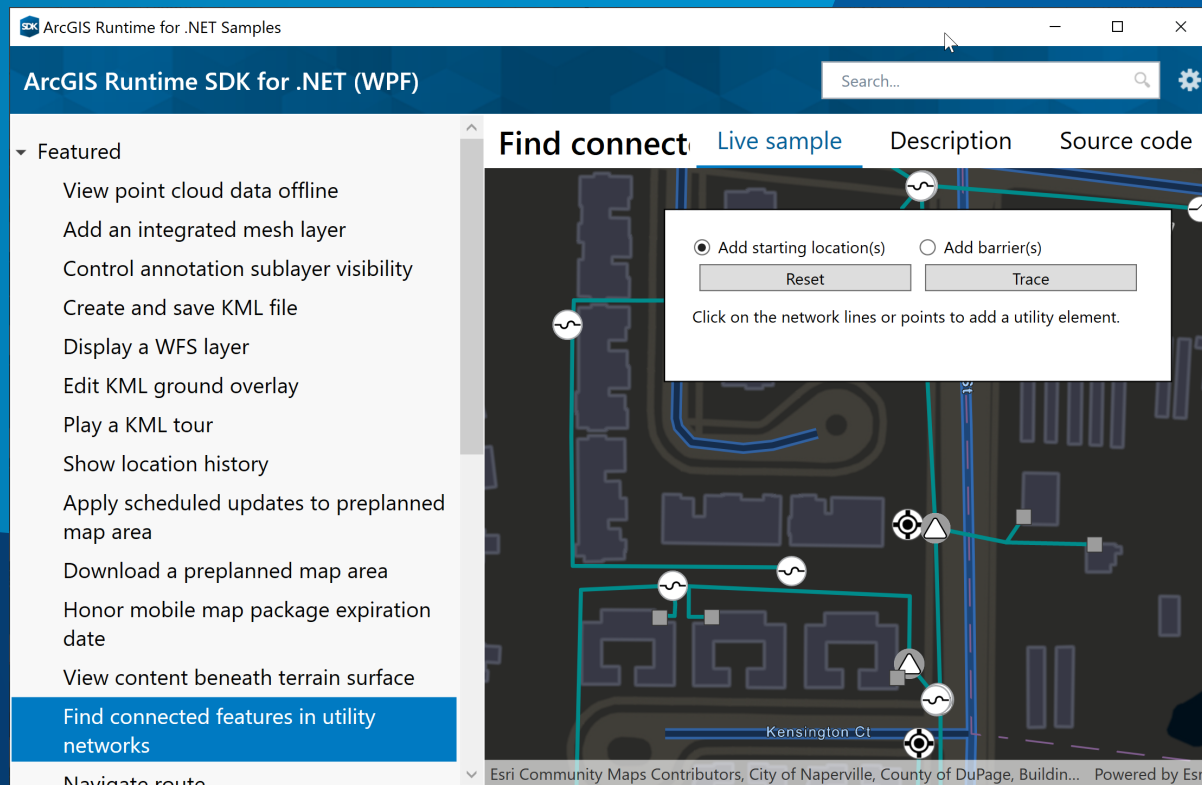 - Android & Java
  - iOS
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What's New: Utility Network Analysis

- 100.6 lays the foundation for Utility Network support in ArcGIS Runtime

- All current capabilities are service-based: require a network connection

- Open a feature service containing a utility network

- Read Utility Network definition
  - Network sources
  - Asset Group
- Asset Type

- Network properties
  - Terminal Configuration
  - Association Role
  - Terminal

- Connected Tracing
 - Start points and barriers

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What's New: Offline Workflows

- Annotation Layers
  - Introduced in 100.5
  - Take offline from sync-enabled feature service
  - Read-only workflow
  - Synchronize updates deltas down to your Runtime app
  - Access Annotation Sublayers to control visibility
- Scheduled Updates
  - Optimizes Preplanned workflows
  - Generates and stores read-only update deltas on server
  - Use Runtime API to check for updates and apply in sequence
  - Generate once: distribute broadly
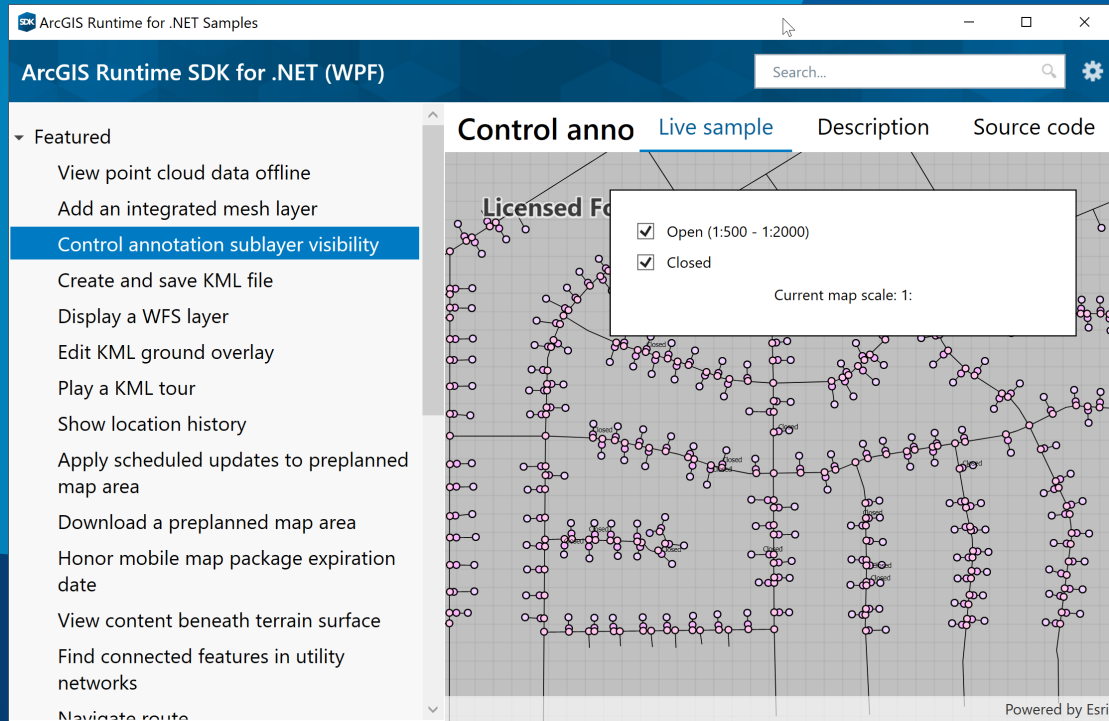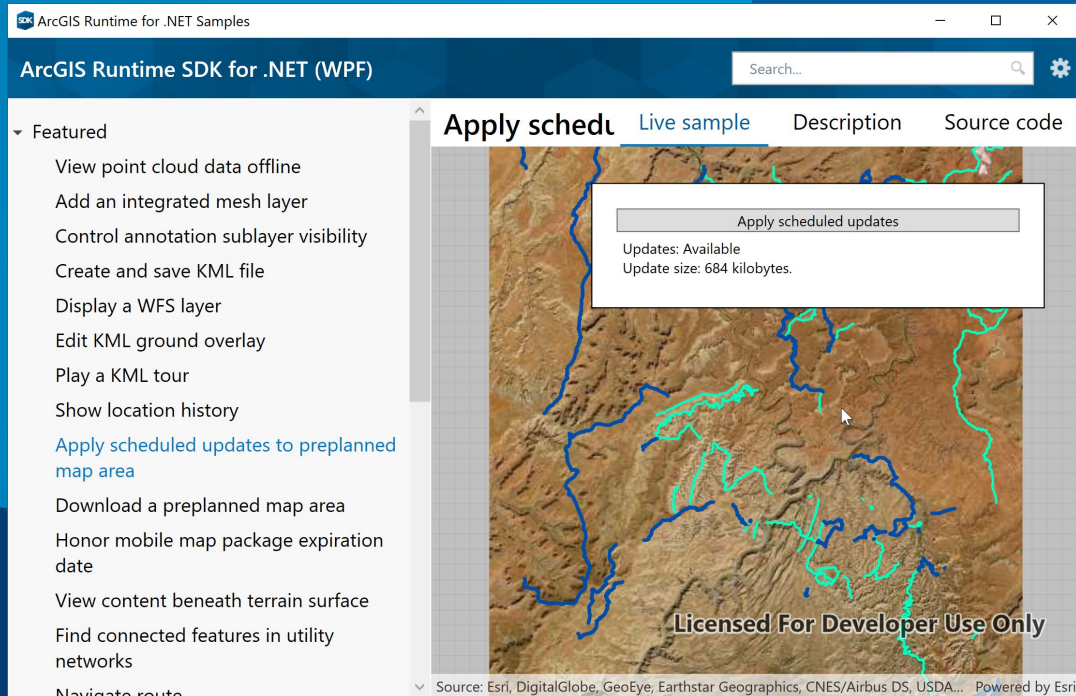
What's New: Offline Workflows

- Close() method on mobile packages
  - Mobile Map Package
  - Mobile Scene Package
  - Release files locks on disk
  - Allows you to remove package
- Memory and performance improvements
  - Display 3X faster
  - Use 1/3 less memory
- GroupLayers in Mobile Map Packages
  - Mobile Map Packages from ArcGIS Pro
  - Min/Max Scale, opacity, visibility
  - GroupLayers in MobileScenePackages introduced in 100.5

What's New: Offline Performance Updates

- Performance improvements
  - MMPK loading
    - JSON parsing
    - Symbol memory

- Third party upgrades
  - Security scans report vulnerabilities than require upgrades

Load time

MMPK	Before	After
Maine	5.0s	1.5s
California	5.6s	1.48s

Memory usage (MB)

MMPK	Before	After
Maine	328	221
California	335	230

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What's New: 3D

- Optimized scene layer loading pattern for desktop
  - Coarse representation covering full extent loaded initially
  - Finer detail is added progressively
- Elevation offset
  - Adjusts Z value of entire layer
  - Aesthetic cartographic offset
  - FeatureLayers and GraphicsOverlays (LayerSceneProperties)
  - 3D layers: ArcGISSceneLayer, IntegratedMeshLayer, PointCloudLayer
- Point Scene Layer
  - Introduced in 100.5
  - Fast display of point features in 3D based on view scale and distance thresholds
  - Now support select and identify operations

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What's New: OGC

- Current Runtime OGC layer support
  - WFS, WMS, WMTS, and KML
- WFS | WMS | WMTS
  - Support for parameter-based authorization schemes with authorization keys
  - Support for any custom parameters
  - WFS layer added at 100.5
  - 100.6 added read WFS layers from a web map
- KML
  - Create, edit and save KML (KMZ)
  - Placemarks (point, line, polygon)
  - GroundOverlays
  - Folder and document container nodes
  - Network links

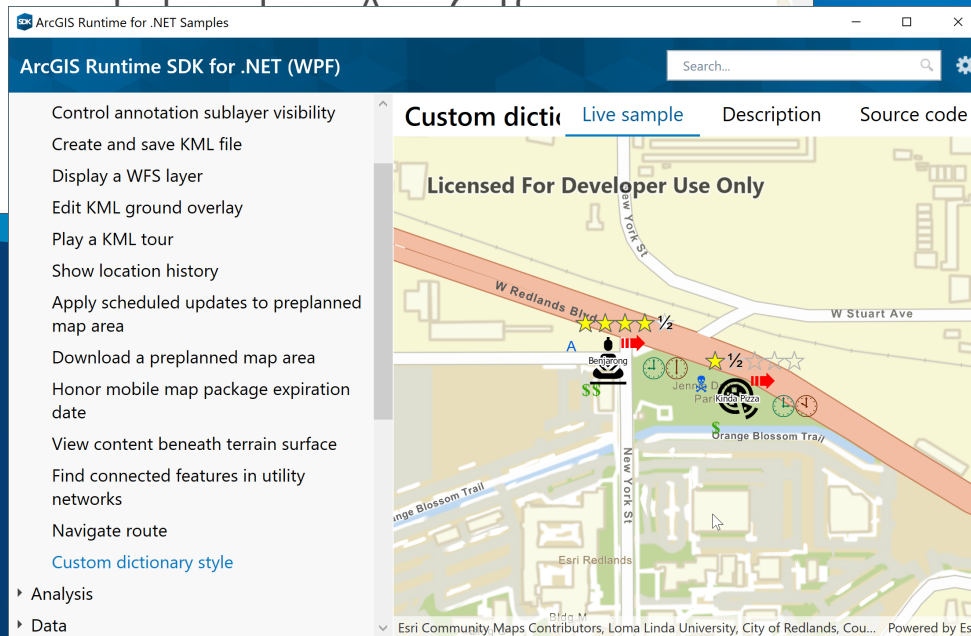# ArcGIS Runtime SDKs: What's New 100.6
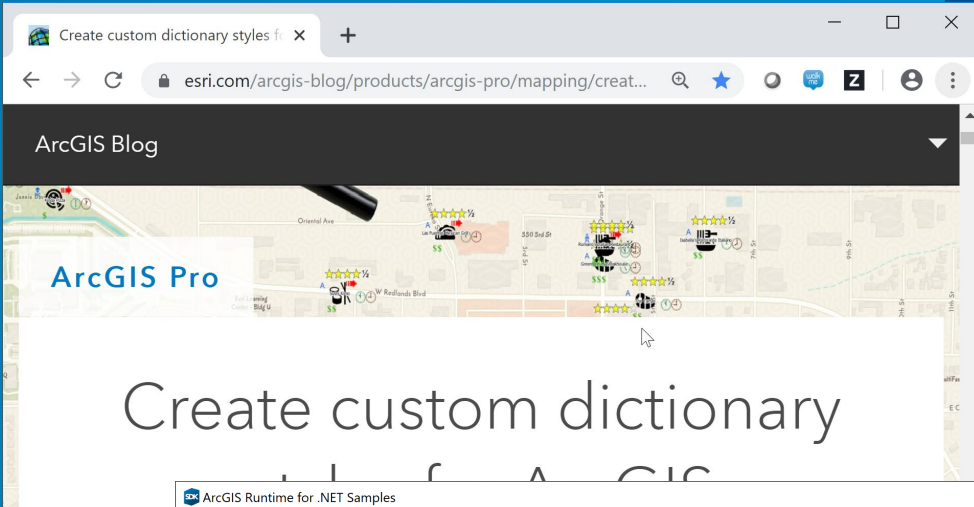
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What's New: Symbology

- Dictionary Renderer
  - New format of dictionary style file introduced @ ArcGIS Pro 2.4
  - Powers improved support for Military Symbology
  - Built into the platform: Pro, JavaScript API, and Runtime
  - Complex attribute driven rendering for use in any app
  - Create and manage styles in ArcGIS Pro
  - Configure style behavior with Arcade scripts
- Reading Dictionary Renderer from Mobile Map Package
- Read dictionary style directly
  - Specify field mapping and configuration options e.g. Text On/Off
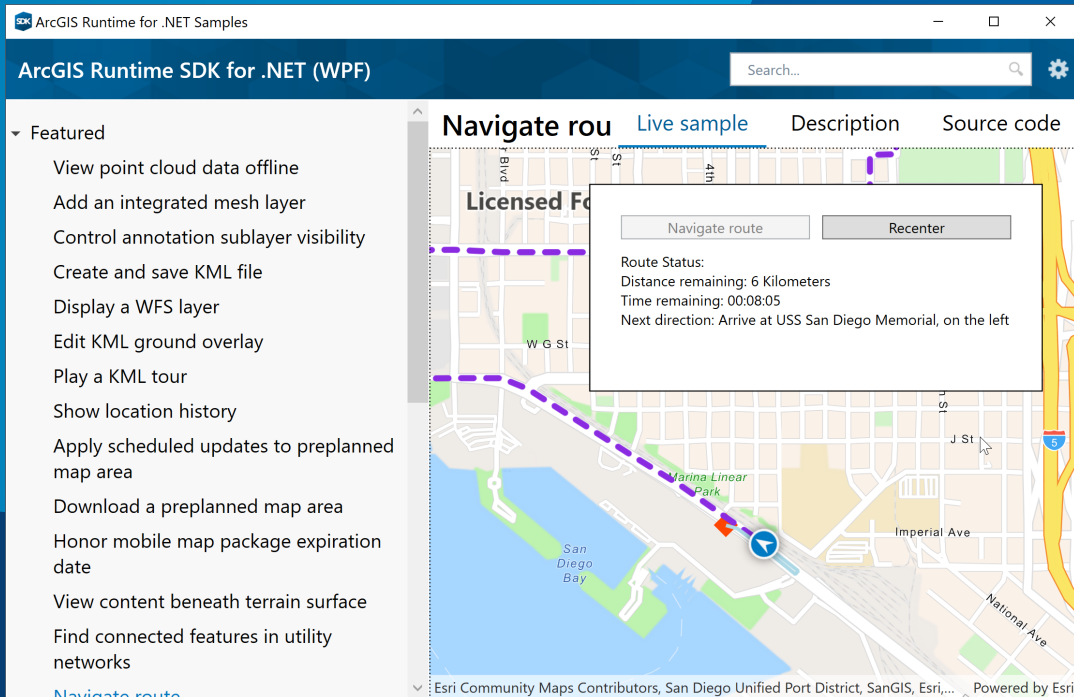- Provide default renderer for raster data

Dictionary Symbology

https://www.esri.com/arcgis-blog/products/arcgis-pro/mapping/create-custom-dictionary-styles-for-arcgis

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What's New: Navigation

- Existing Runtime capability to generate turn-by-turn directions
  - Both connected and offline
- But required effort to provide an interactive navigation experience
- New Navigation API
- Integrate navigation directly into your Runtime app
- Using current device location to track progress
- Provide navigation instructions (maneuvers)
- Integrate driving directions with your device's text-to-speech capability
- Automatically re-calculate a new route when user leaves the current route
- New Namespace: Esri.ArcGISRuntime.Navigation

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What's New: Augmented Reality

- ArcGIS Runtime is AR enabled for iOS and Android devices
- Customization, configuration, and calibration
- Open source Toolkit components to help build on top of the base API provided
- Three scenarios:
  - Tabletop
  - World-scale
  - Fly-over
- New AR view component
  - Build on the existing SceneView and 3D capabilities
- Use AR view with device sensors such as a compass and camera

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What's New: ArcGIS Runtime SDKs for *Android* / *Java*

- First release of Toolkit for Android
  - https://github.com/Esri/arcgis-runtime-toolkit-android
  - Compass
  - Scalebar
  - AR Toolkit
- Toolkit binaries available via bintray for easy inclusion in gradle build scripts
  - https://bintray.com/esri/arcgis/arcgis-android-toolkit

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What's New: ArcGIS Runtime SDK for *iOS*

- Initial enhancements for iOS 13 dark mode
  - UI elements pop-ups and attribution bar in Map View and Scene View adapt to dark mode
- Improved PKI Certificate support
- SceneView Interaction Options
- The static framework was deprecated at version 100.5.0
  - Removed at 100.6: Use the Dynamic framework
  - See Release Notes https://developers.arcgis.com/ios/latest/swift/guide/release-notes.htm

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What's New: ArcGIS Runtime SDK for *.NET*

- UWP support for Windows on ARM64

- WPF on .NET Core 3.0 *Preview*

- Toolkit: TimeSlider for Xamarin Forms

- Windows debug symbol files (WPF, UWP) published for richer call stacks inc *Native*

- Increased default number of concurrent web connections for requests

- Performance benchmarking using **https://github.com/dotnet/BenchmarkDotNet**

- Internal Graphic instance ID handling
  - Adding/removing a Graphic from a GraphicOverlay allocates ~18% less memory
  - Retrieving selected Graphics allocates ~50% less memory and is faster
  - Identifying on a GraphicsOverlay allocates ~70% less memory

- AddRange method on RuntimeCollection type
  - Benefits GraphicCollection most
  - 10-15% time improvement and 85-90% reduction in memory allocations

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What's New: ArcGIS Runtime SDK for *Qt*

- Upgraded to Qt Framework 5.12
- Better support for new C++ language features
  - For example, range based for loops in our list model types
- ECMAScript 6 & 7 support with the QML API.
  - Brings lots of new features to JS code e.g. as const/let/var, arrow functions, classes, static functions…
- New compiler warnings for deprecations
  - Easier to know when your code contains deprecated ArcGIS Runtime functionality
- Sample updates
  - Qt Quick Controls 2 are now used throughout the samples.
  - High DPI support throughout.

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- **Extra highlights**

Extra Highlights: Open Source Apps

- Open Source Apps
  - Rebranded from 'Example Apps'
- Production quality apps built by the development team
- https://developers.arcgis.com/example-apps/
- Renewed focus following the successful Runtime "feature team" model
  - New Open Source Apps
  - New component-ized approach
  - Toolkit candidates

# Extra Highlights: Deprecations and Additions

- Removed platform support
  - iOS 10
  - iOS 32-bit
  - Ubuntu 14 (Qt SDK)
  - SuSE 12 (Qt SDK)
- New platform support
  - Android Armv8 64-bit (Android SDK, Qt SDK, & .NET SDK)
  - Ubuntu 18 (Qt SDK)
  - SuSE 15 (Qt SDK)
- Deprecations announced
  - 100.6 increased min. Windows 10 version to 1703
  - 100.7 will increase min. Windows 10 version to 1709
  - 100.7 is the last release to support Windows 7
    - Microsoft ends support for Windows 7 in January 2020
- Check the Release notes at each Release!

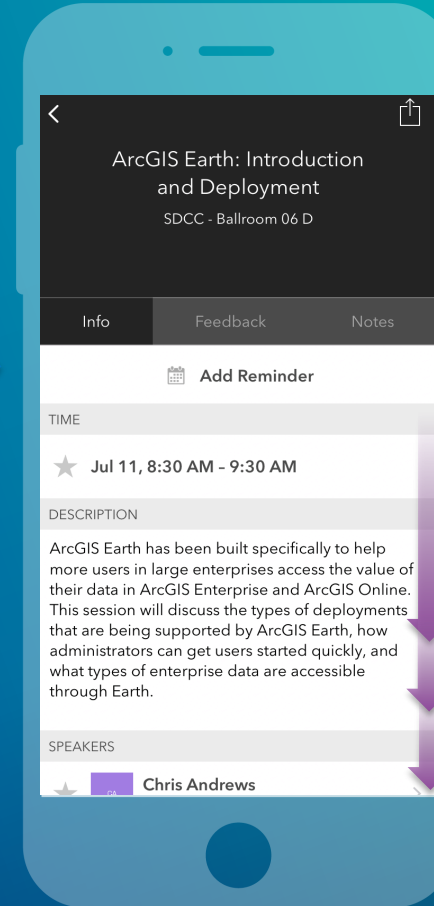# Please complete a session survey in the Esri events app

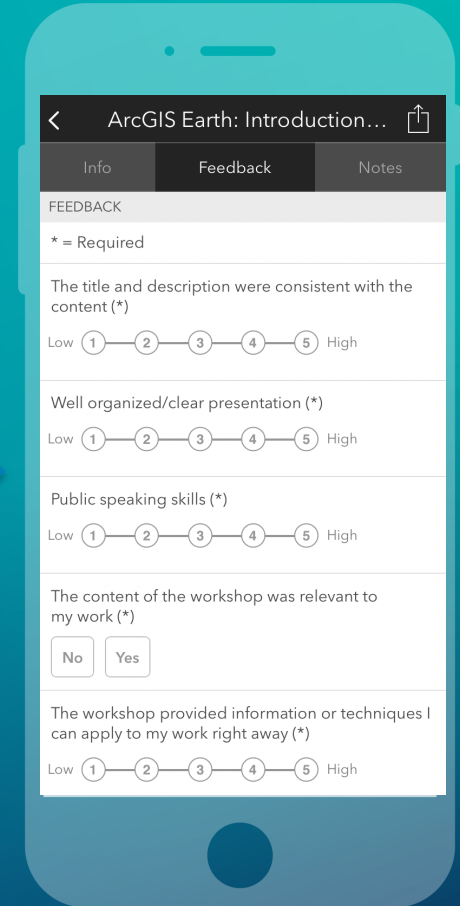**Download the Esri Events app and find your event**

Select the session you attended
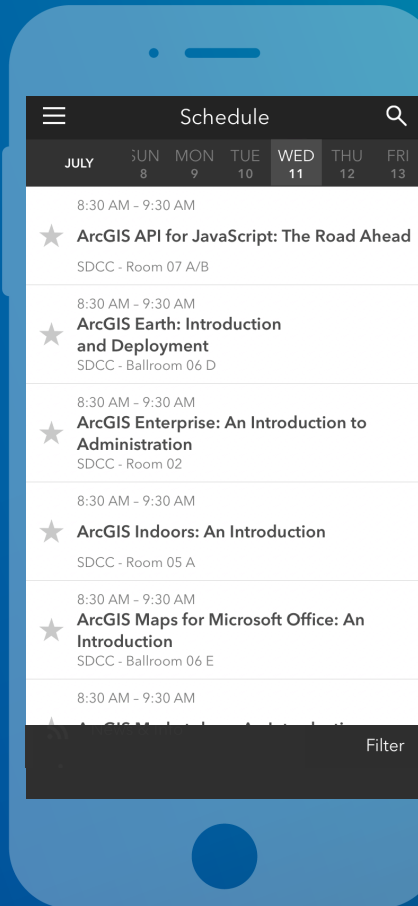
Scroll down to find the feedback section

Complete answers and select "Submit"