ArcGIS Runtime
Using Augmented Reality

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ESRI EUROPEAN DEVELOPER SUMMIT

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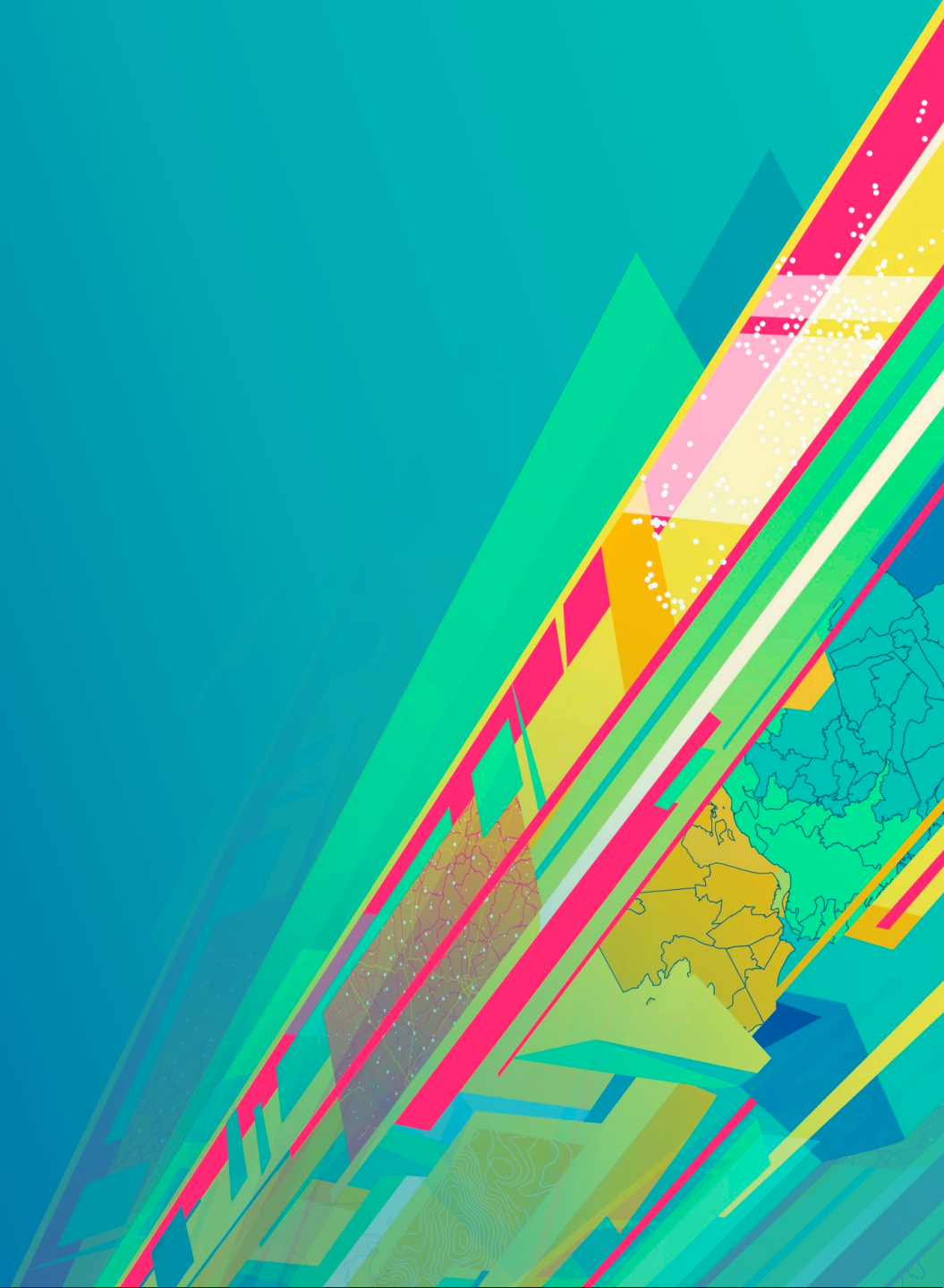
Agenda

- Introduction to Augmented Reality (AR)
- Support within ArcGIS Runtime
- AR Application Types
- Considerations when building AR applications

Introduction

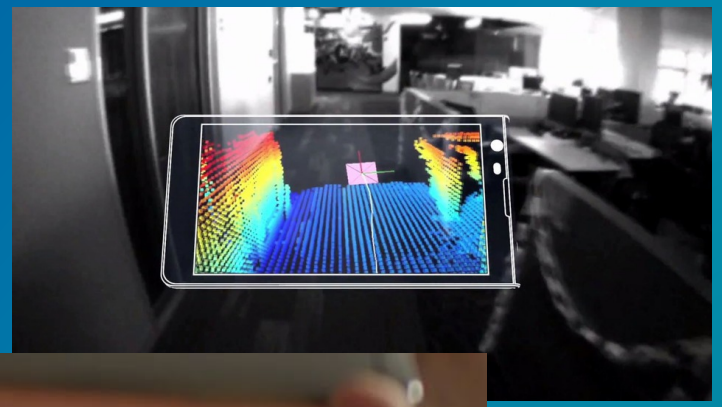


Introduction to the Terminology

- Many terms often talked about
  - Augmented Reality
  - Virtual Reality
  - Mixed Reality
  - eXtended Reality

AR - Augmented Reality

- Interacting with outside world



Standard AR

VR - Virtual Reality

- Being there

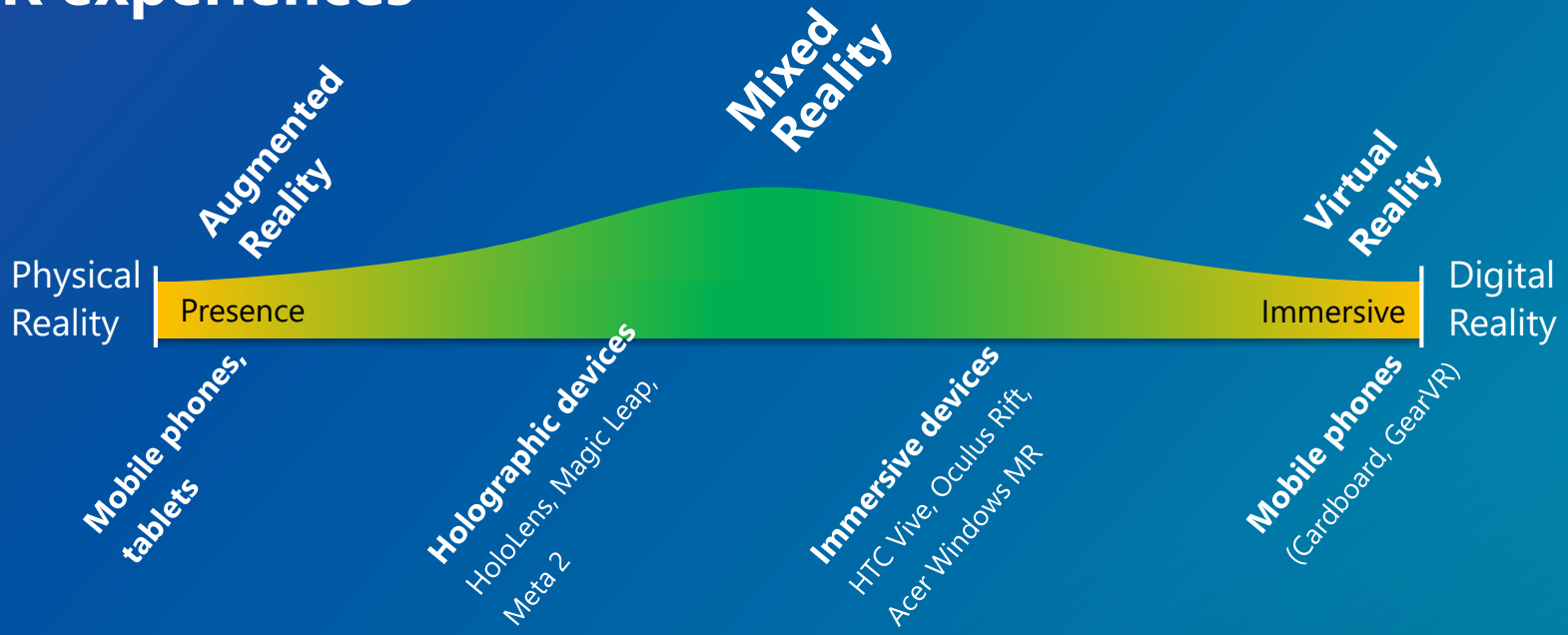
MR – Mixed Reality

- Mixed Presence
  - Microsoft Hololens
  - Magic Leap

XR – eXtended Reality

- Spectrum of virtual, augmented and mixed reality
- Breakthroughs
  - VR with Oculus Rift and PlayStation VR
  - AR with Pokemon GO
  - MR with Microsoft HoloLens
- Terminologies are still forming

Targeting XR experiences



- Many organizations seek to use their live and local authoritative spatial content and analytics across the XR spectrum
- Critical needs for usability
  - Virtual reality needs high fidelity and responsive performance
  - Augmented reality needs positional accuracy
  - Must be cost effective

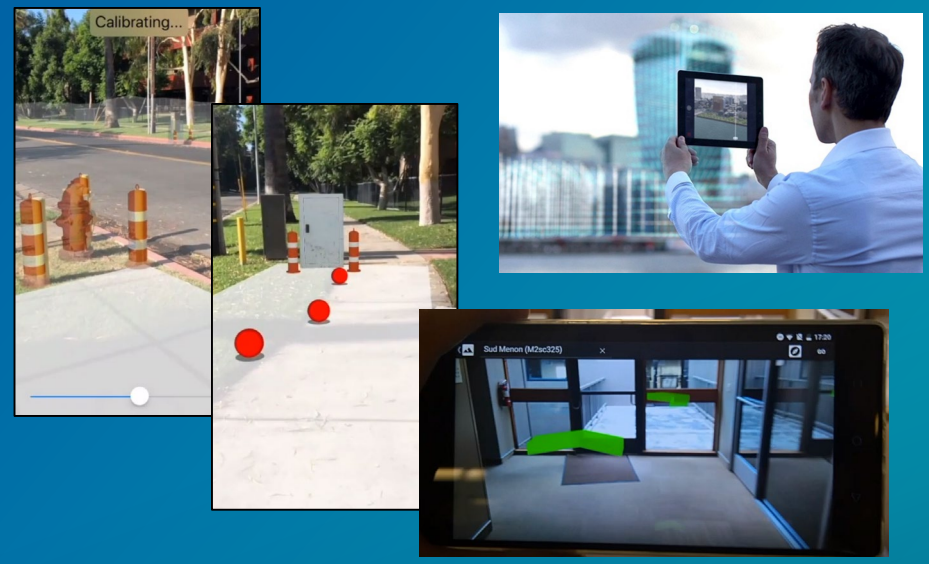
XR Market Trends in GIS

- AR/MR
- - Field operations, resource management, planning
  - Handheld
    - Use existing mobile devices
    - Simple enhancements to existing workflows
  - Head-mounted
    - In the field, full/world scale; In the office, table top
    - Hands-free for rapid response
    - Most immersive, collaborative 3D experience possible
- VR
- Education, planning, training
  - Mobile
  - Desktop

AR With ArcGIS Runtime

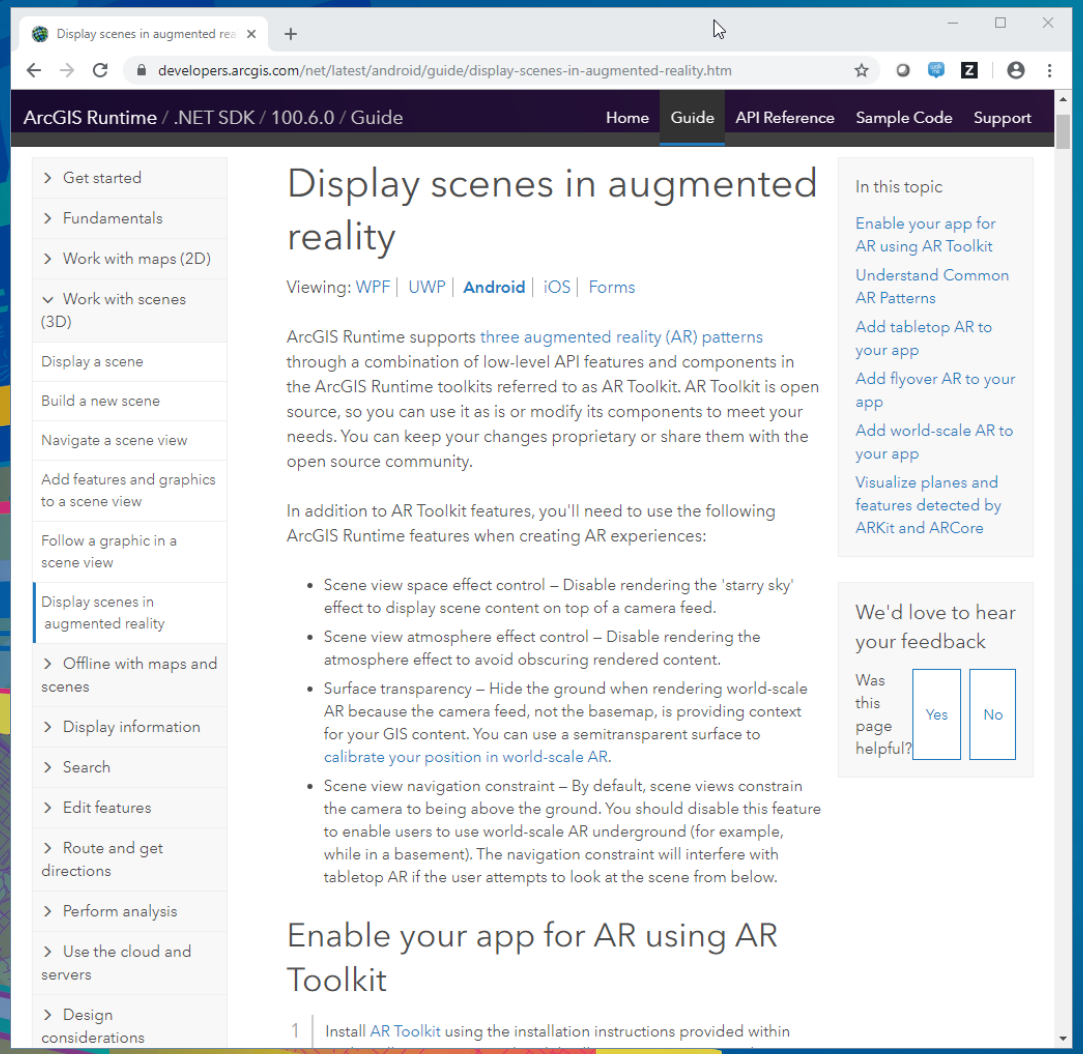
AR with ArcGIS Runtime

- Enhanced existing ArcGIS Runtime SDKs
  - Integrated with the ArcGIS Platform
  - 3D already supported on all platforms/devices
  - Native apps able to access sensors/controllers
- Available for production use with Update 6 (100.6)
  - Augmented reality for mobile platforms only
  - Available in Toolkits for .NET, iOS, Android, Qt
  - Not for VR or MR



ArcGIS Runtime AR Developer Experience

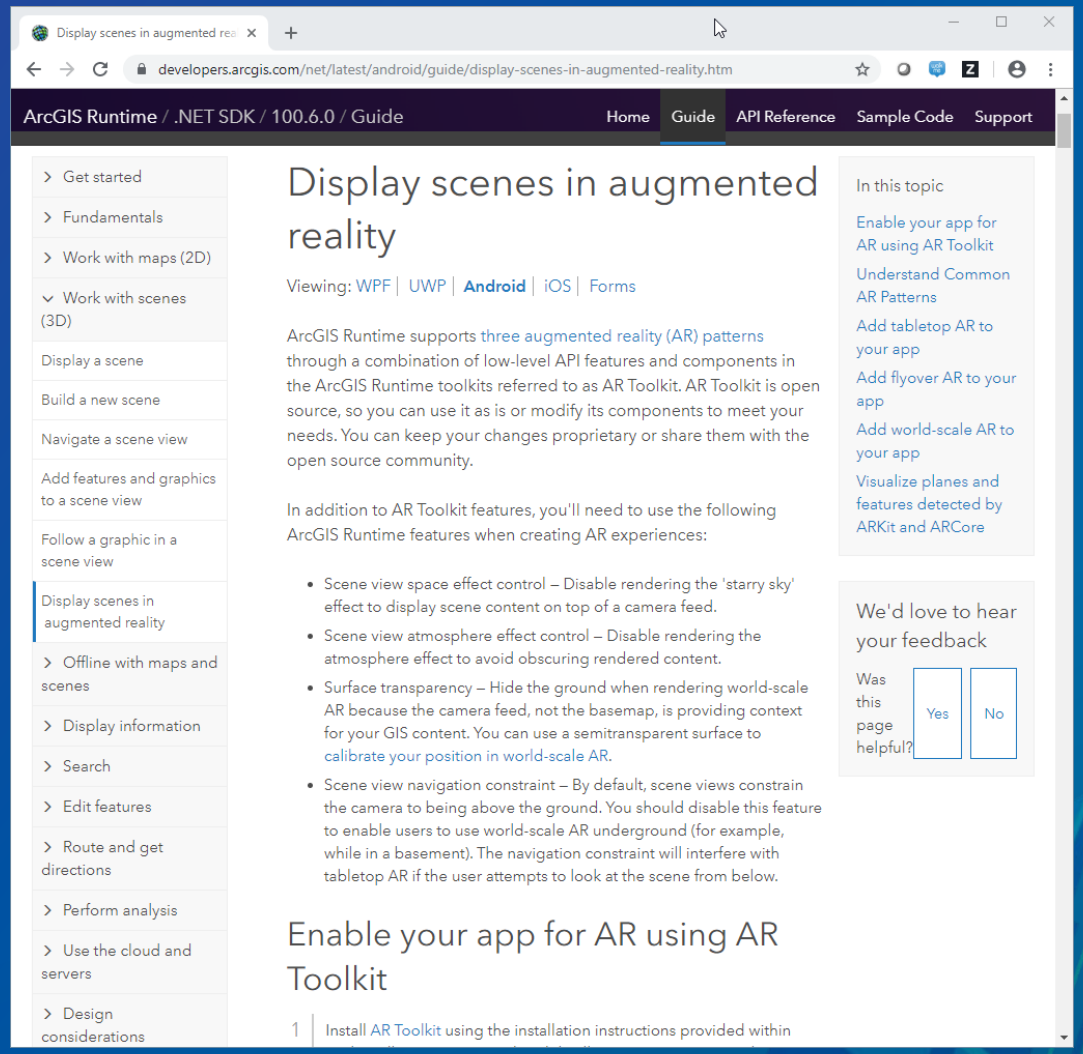
- Enhancements to existing Runtime API
  - Visual elements (stars, atmosphere)
  - Background visibility
  - Field of view control
- Additional toolkit components
  - Open source
  - Allows you to control the device runtime integration
  - Flexibility as device market continues to mature



Getting Started Demo

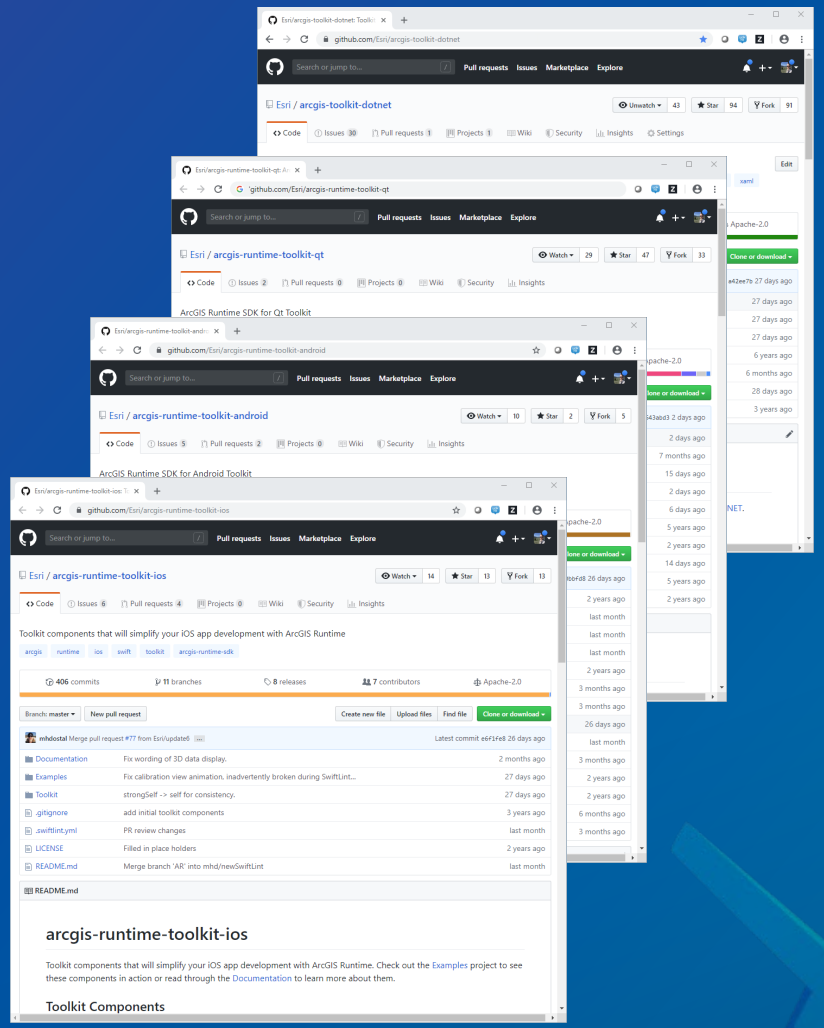
Mike

Guide Doc



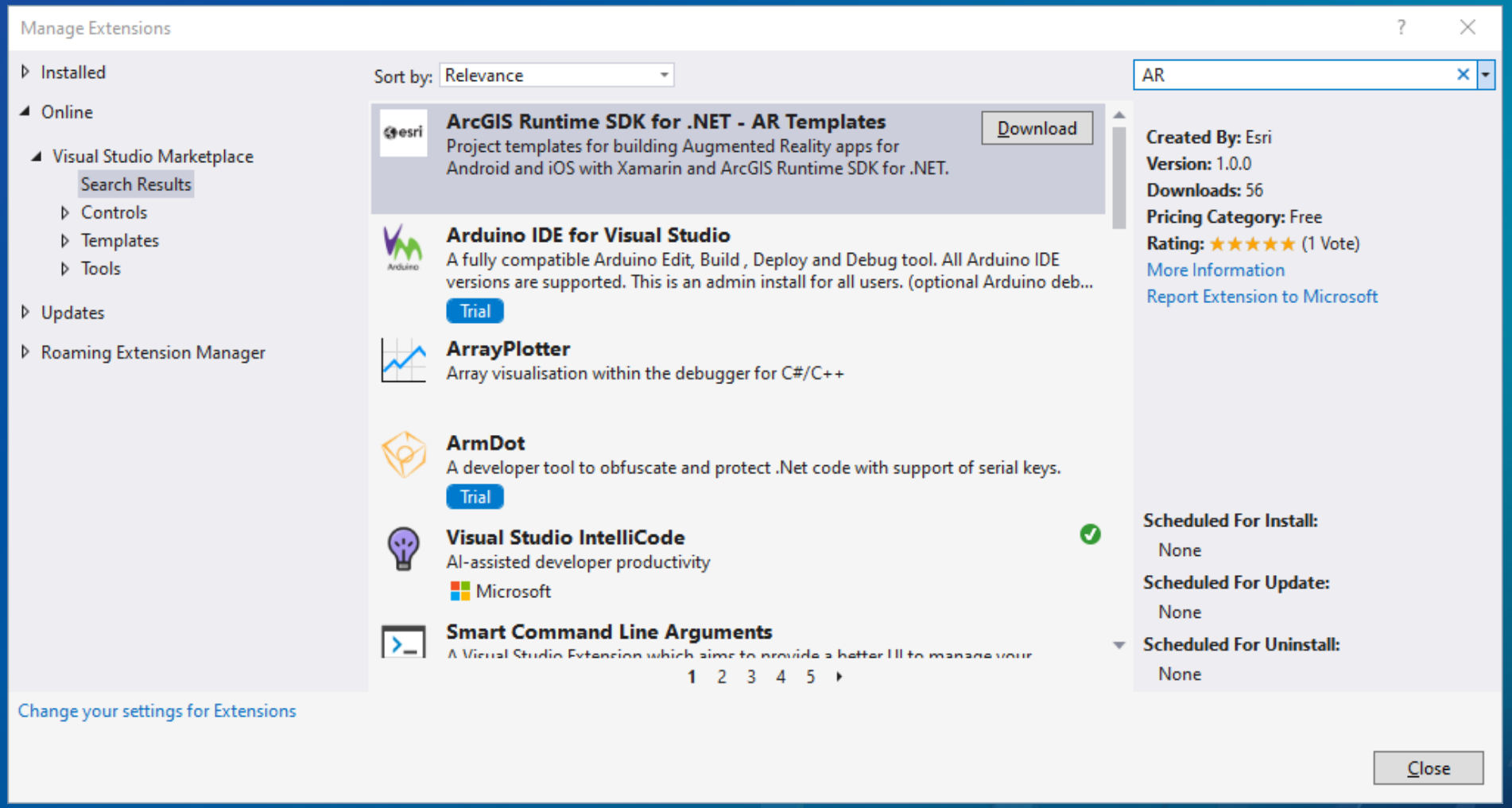
- Guide topic in doc for each SDK
  - Android | iOS | .NET | Qt
- Overview
- Toolkit information
- API
- Platform settings for privacy and permissions
- Patterns
  - Tabletop
  - Flyover
  - World-scale
- Considerations

Toolkits



- https://github.com/Esri/arcgis-toolkit-dotnet
- https://github.com/Esri/arcgis-runtime-toolkit-qt
- https://github.com/Esri/arcgis-runtime-toolkit-ios
- https://github.com/Esri/arcgis-runtime-toolkit-android

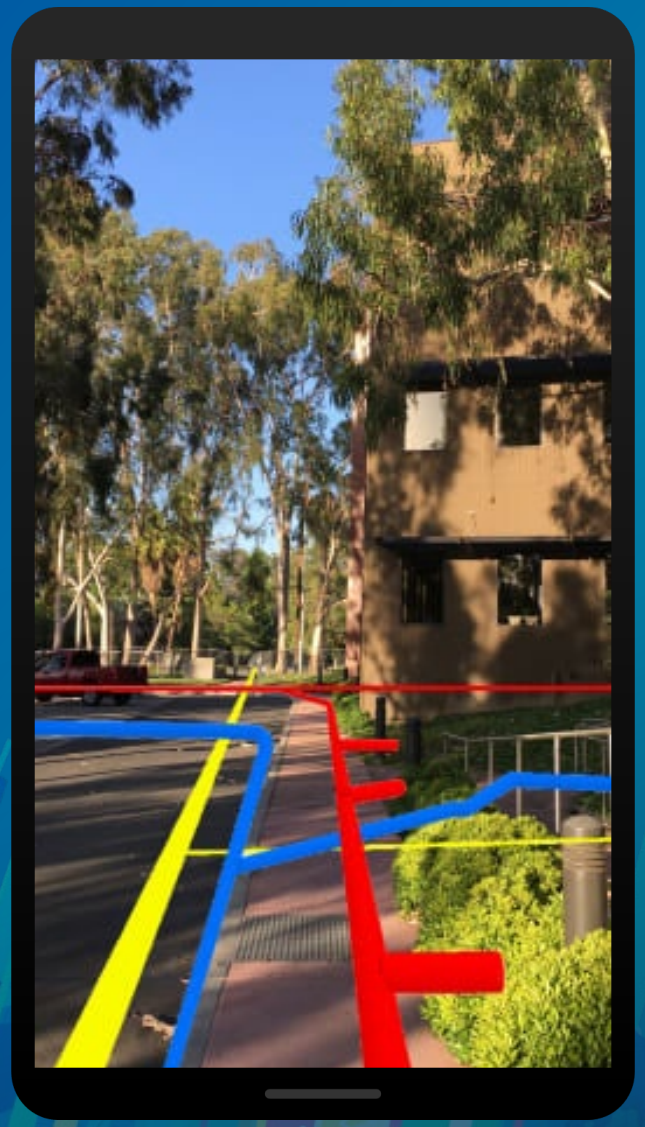
.NET SDK – Project Templates

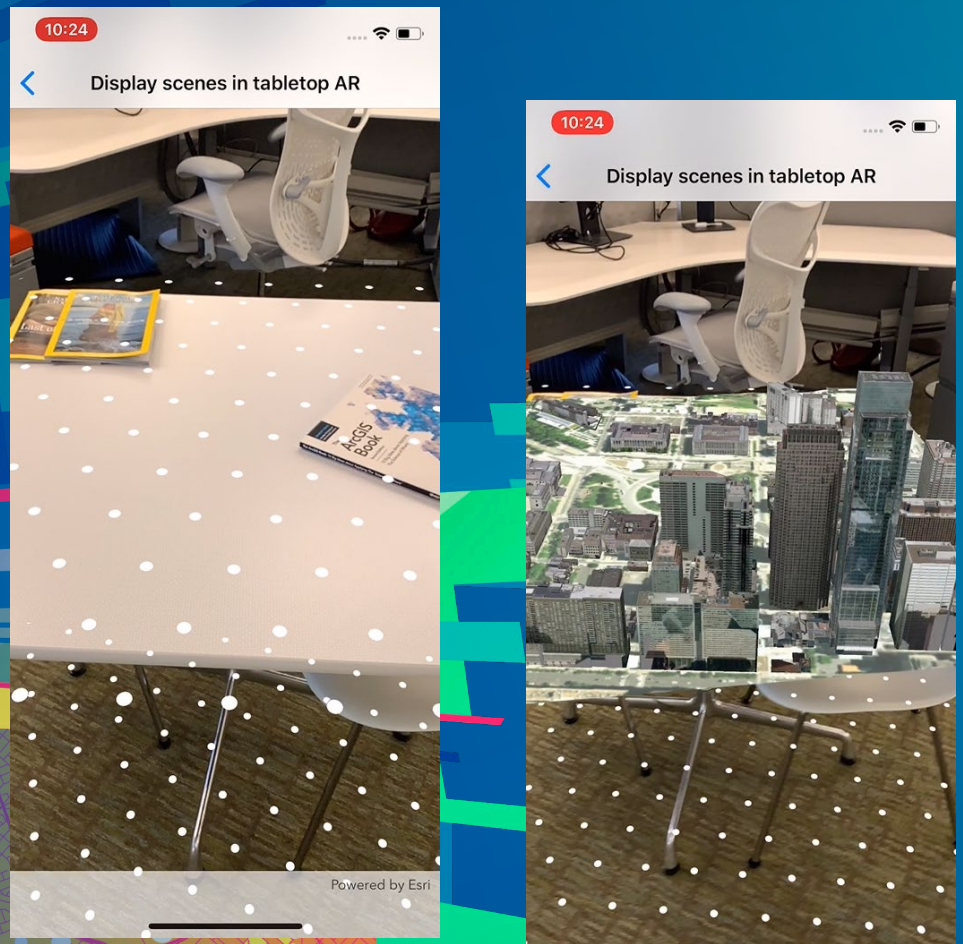


Types of AR Applications

3 Categories of Apps

- Table Top
  - Locks the scene to a surface
- Flyover
  - Intuitive way to navigate a scene
- World Scale
  - Overlays scene on the real world





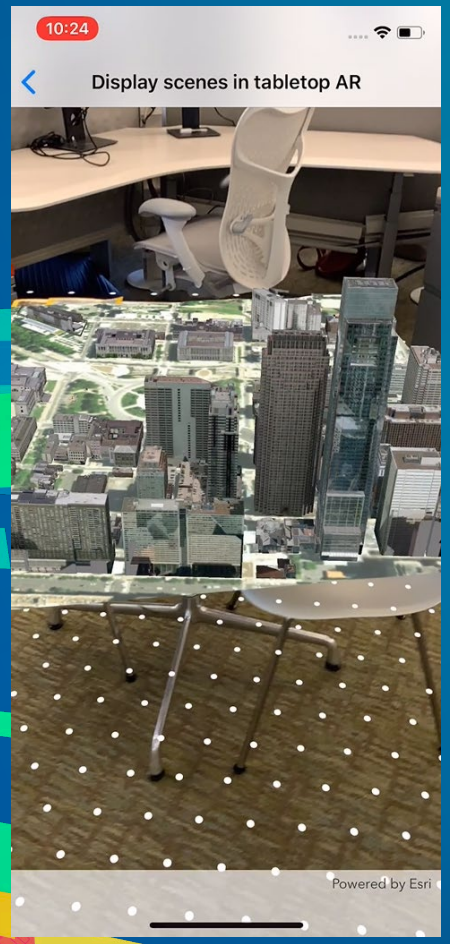


Table Top Demo

Mike

Table Top Use Cases

- Design
- Planning
- Education

- Good tool to promote collaboration

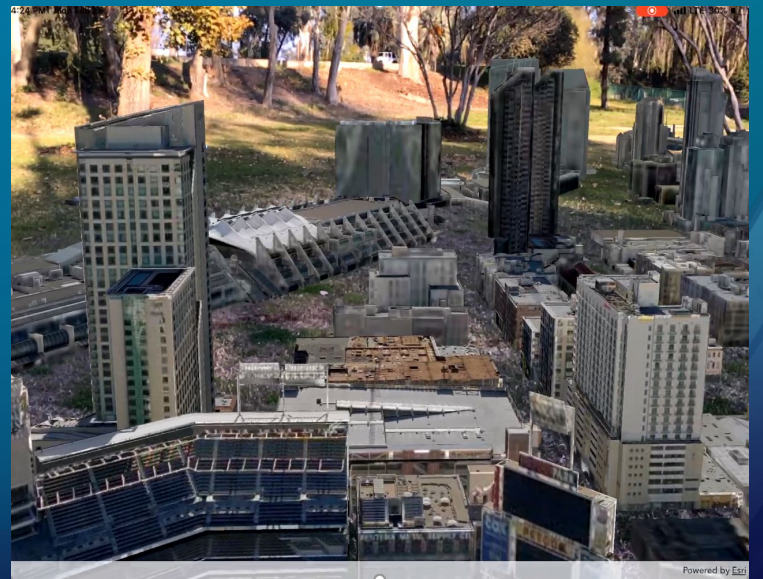
Fly Over Demo

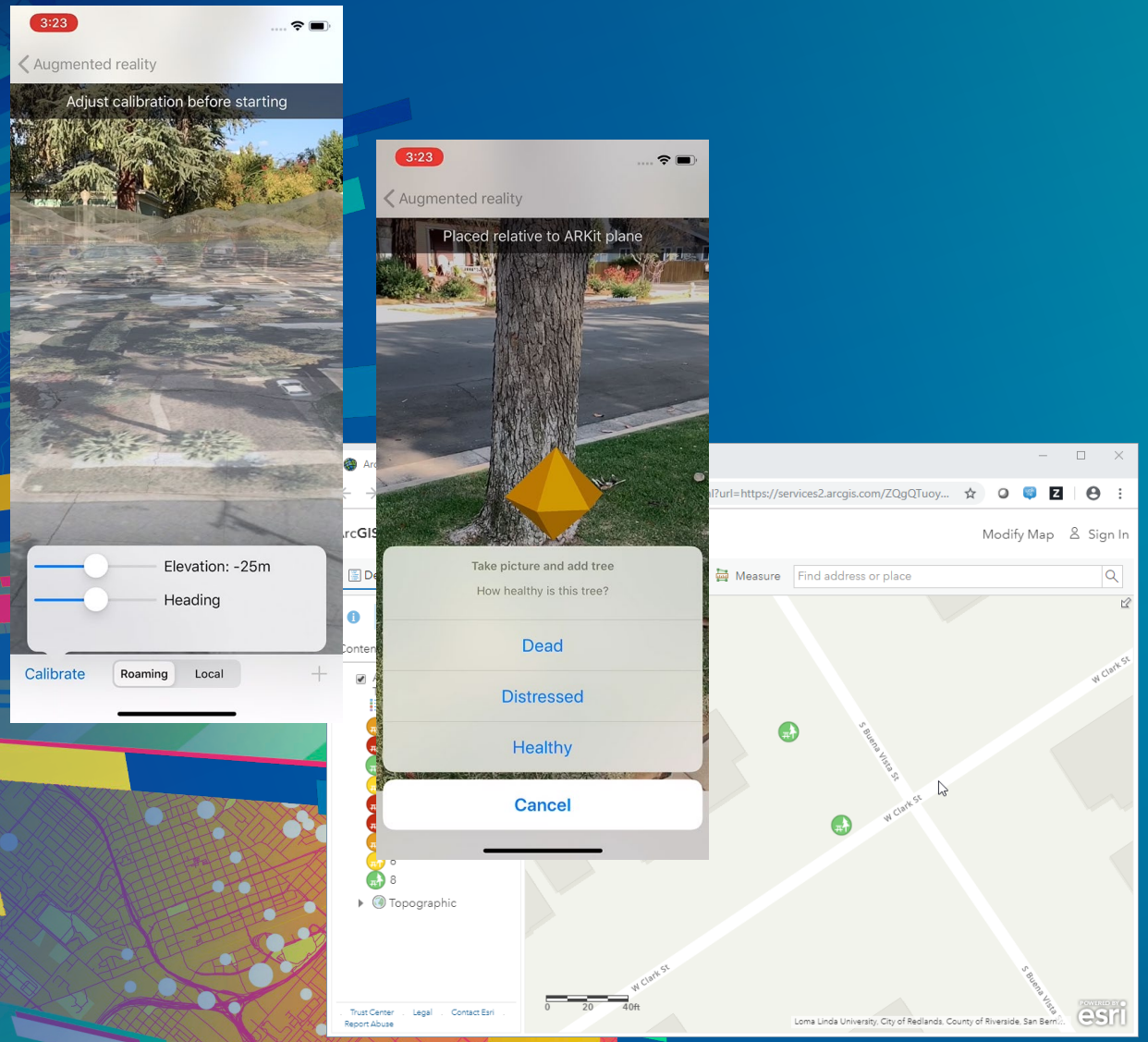
Mike

Fly Over App Use Cases

- Design
- Planning
- Education

- Provides an immersive navigation experience for an overall better experience



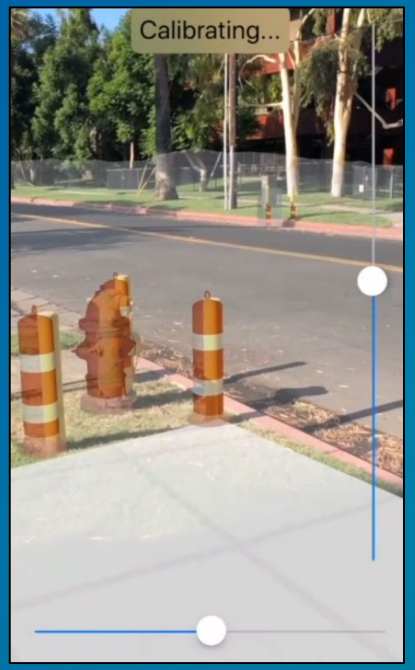


World Scale AR Demo

Mike

Full Scale AR Use Cases

- Field Operations
  - Asset location and inspection
- Situational Awareness
- Onsite visualization of proposed plans
- Routing and navigation



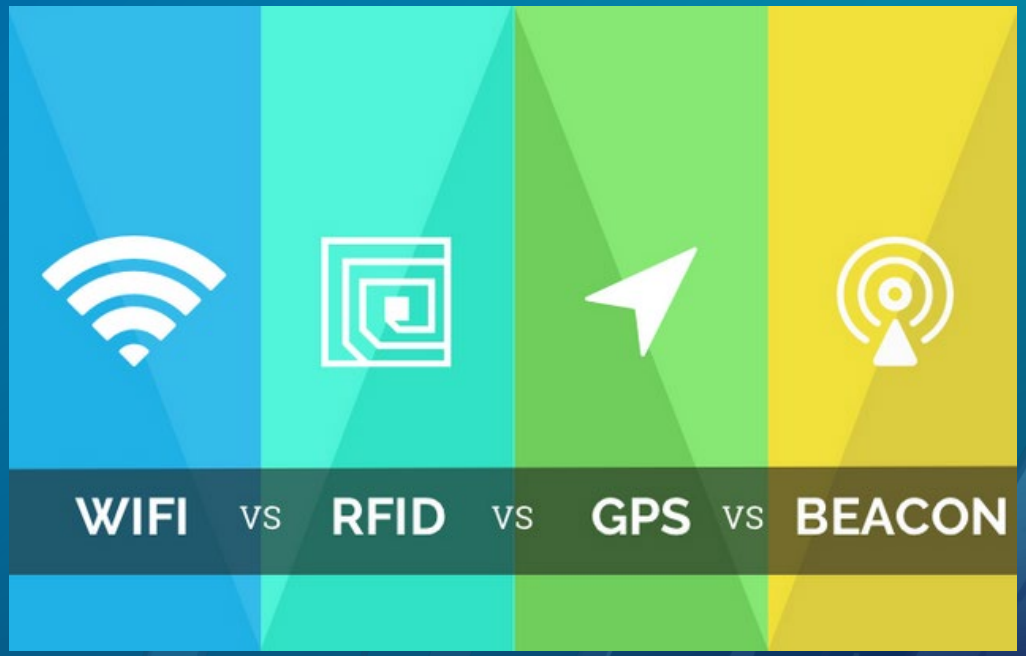
Development Considerations

Considerations

- Your user’s ability and expectations
- Device capabilities
  - AR sensors
  - Positional accuracy
- Data accuracy in 2D and 3D space

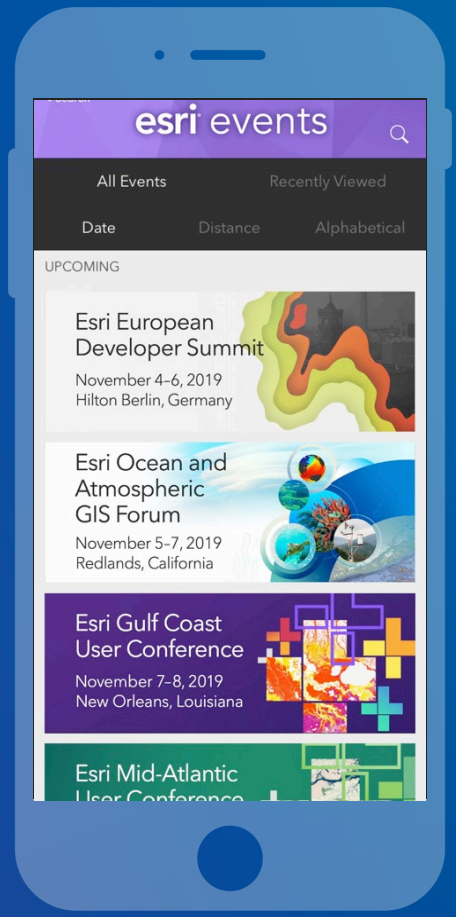
Positional Accuracy

- Local device versus Global Reference System
  - Global Positional Accuracy:
    - GPS: ~10m, outside-only
    - Wi-Fi: ~2m
    - Beacon: ~1m
    - RFID: ~1m
- Data drift away from local origin
- Perceived accuracy of overlaid data

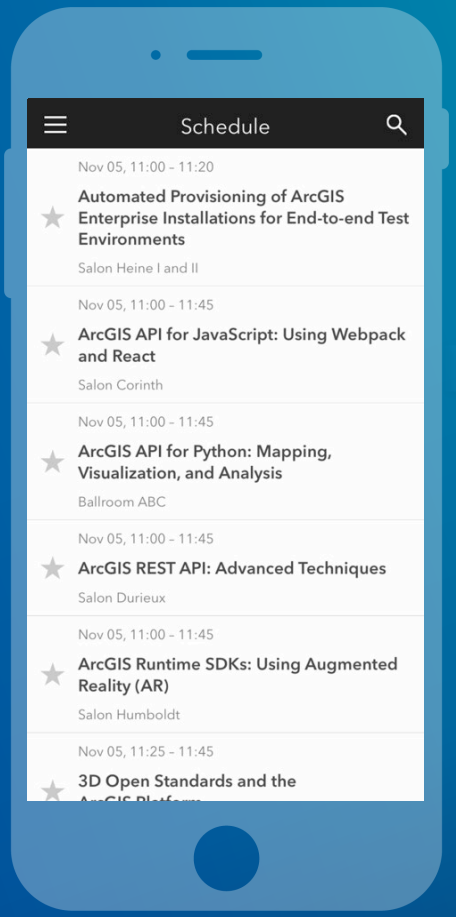


Please Take Our Survey on the App

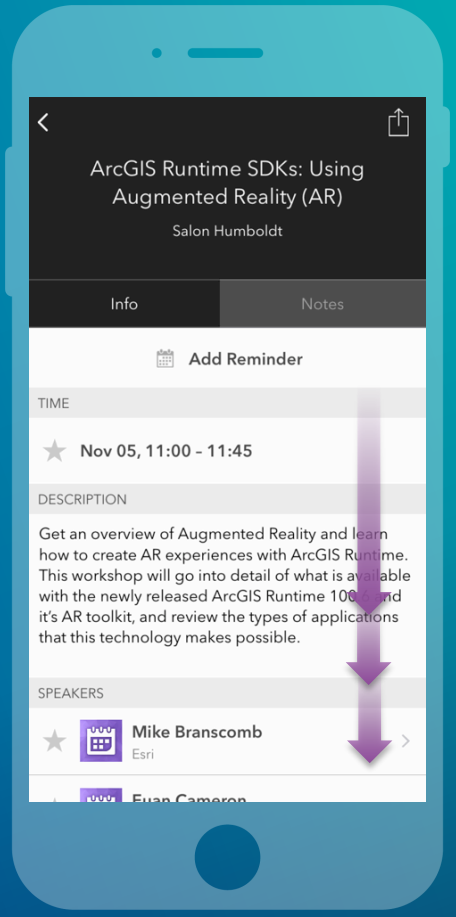
Download the Esri Events app and find your event



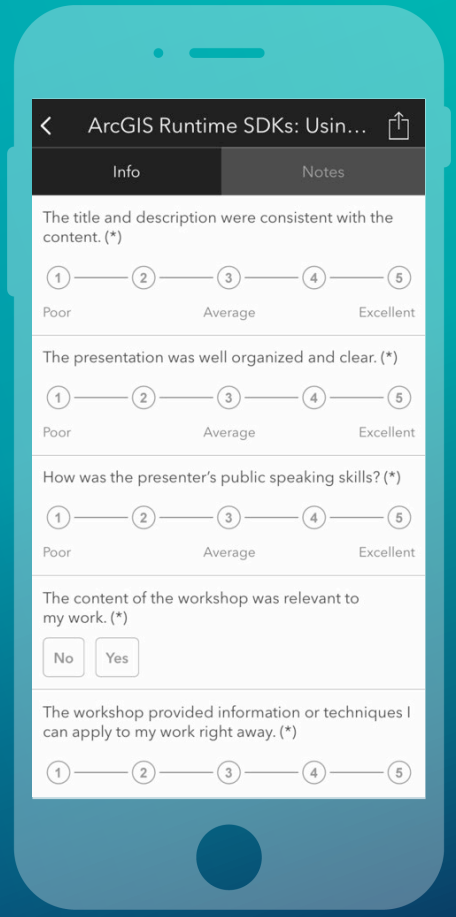
Select the session you attended



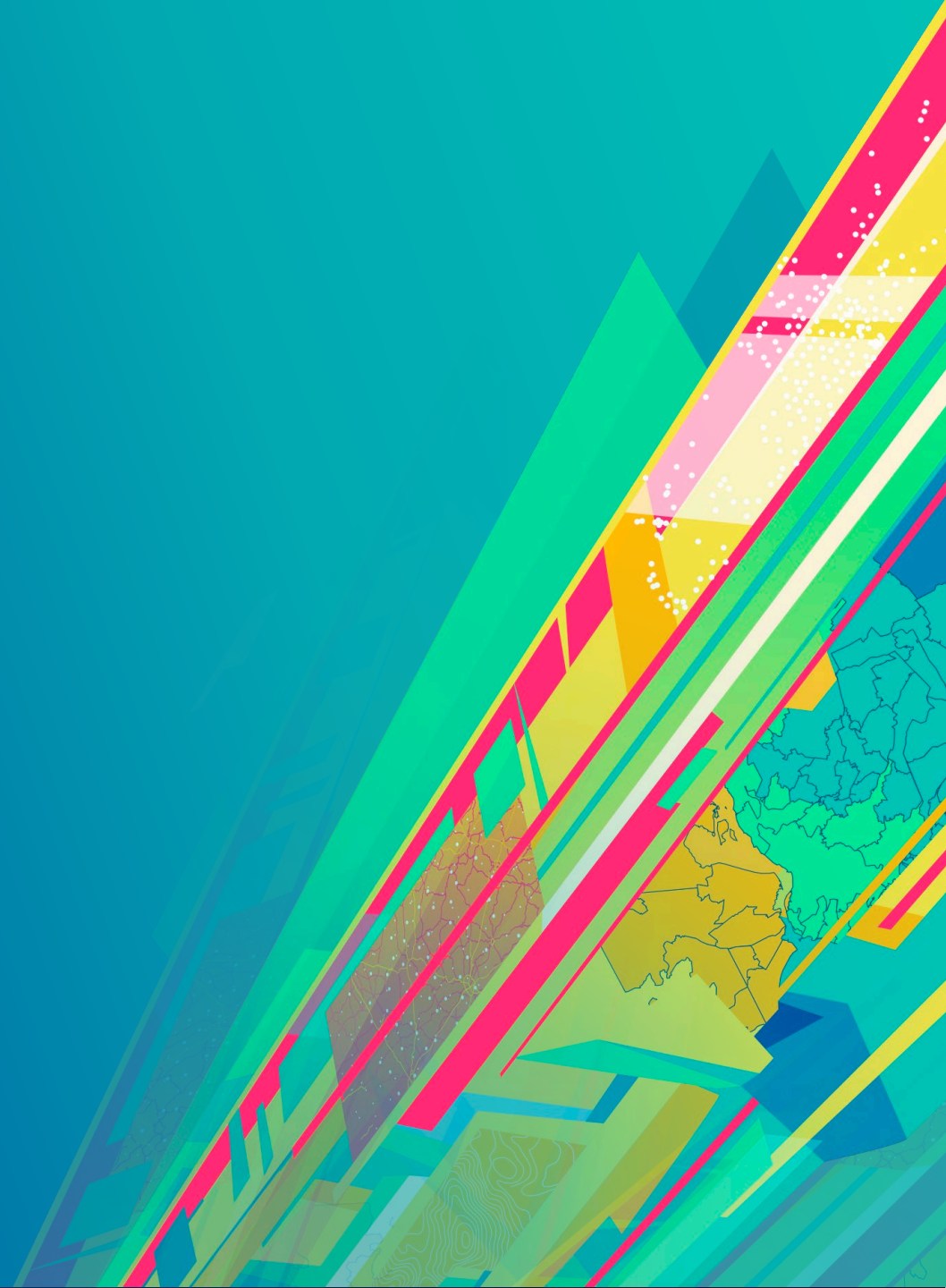
Scroll down to find the feedback section



Complete answers and select "Submit"



Questions?

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