ArcGIS Runtime: Building 3D Apps

Rex Hansen
Adrien Meriaux
ArcGIS 3D helps customers

Create and Manage
Quickly and easily extract value from 2D and 3D data

Design and Simulate
Manage the designed environment

Visualize and Analyze
Understand and experience events and change
3D GIS across industries

- Scientific Visualization
- Mining
- Developing Energy resources
- Environmental assessment
- Urban Planning
- Utilities and Telecommunications
- Facilities Management
- Land Information Management
- Transportation
- Military
- Mining
- Developing Energy resources
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- Military
3D across the ArcGIS Platform
ArcGIS Runtime – Modern Architecture

- 64 Bit
- Local and Cloud
- Multi-Threaded
- Common APIs
ArcGIS Runtime SDKs – Common Core

- .NET
- iOS
- macOS
- Android
- Java
- Qt QML

Runtime Common API
C++ with C ABI

C++ Runtime core

3D Mapping and GIS capabilities
3D in Runtime Today

- Version 100.1
  - All SDKs
  - Scenes
  - Layers
  - 3D symbols
  - Elevation sources
Scenes

- **SceneView**
  - Renders data in 3D and enables interaction
- **Scene**
  - Defines how data is organized and presented in 3D
- **Web Scene**
  - Document to define display and interaction of spatial content in 3D
Scene Layers

- Optimized for display of 3D content
- Based on I3S spec
- 3D objects, integrated mesh

Sources
- ArcGIS scene service
- Scene layer package
Elevation sources

- Defines height values across the surface of a scene
- One or many

Sources
- ArcGIS image service
- Tile package with LERC
- Local raster
3D Symbology

- Extrusion
- 3D marker symbols
- Model marker symbols
- Distance composite symbol
Cameras, viewpoints, and controllers

- **Camera**
  - location, altitude, heading, pitch
  - RotateAround
- **Viewpoint**
  - camera, geometry, scale, rotation
- GeoView.GetCurrentViewpoint
  - geometry or center\scale
- GeoView.SetViewpoint
  - viewpoint, camera, timespan
- **Globe** – Free roaming global navigation
- OrbitGeoElement – pivot camera around a target element
- OrbitLocation – pivot camera around target point
3D Demos

- Offline
- View controllers
- Feature display
ArcGIS Runtime road ahead for 3D

100.x

June 2017

- Commercial support on mobile platforms
  - Improved memory management
  - Optimized for OpenGL, DirectX
- Camera controllers to follow geoelement
- Local elevation TPKs
- WMTS, OSM, Web tiled layers

Update 1 (100.1)

Dec 2017

- Analysis: viewshed, line of sight, measure
- KML, WMS, shapefiles, ArcGIS image services
- Dynamic feature layers
- WGS84 tiled layers
- Point cloud scene layers
- VR/AR public beta?

Update 2 (100.2)

2018

- Read/write web scenes
- Mobile scene packages
- Point scene layers
- Vector tiled layers
- Local scenes
- More analysis tools...

Update 3/4
Virtual and Augmented Reality with ArcGIS Runtime

• Enhance existing ArcGIS Runtime SDKs
  - VR: Add “stereo display” rendering mode
  - AR: Transparent background to render on video/camera feed
  - Private Beta in September 2017

• Integrate ArcGIS Runtime with game engines
  - Enable access to GIS data and analytics in developer environment optimized for immersive 3D experiences
  - Game engines currently power VR, AR and mixed reality (MR) solutions
  - Targeting Beta in early 2018