Visibility Analysis

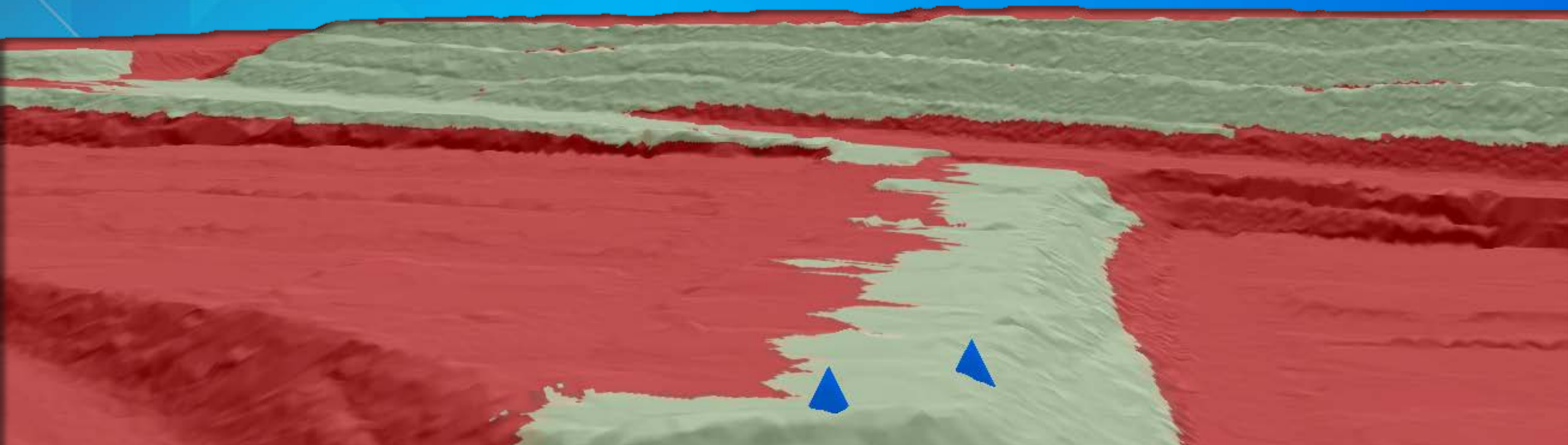
Khalid Duri

Jinwu Ma

Viewshed Analysis

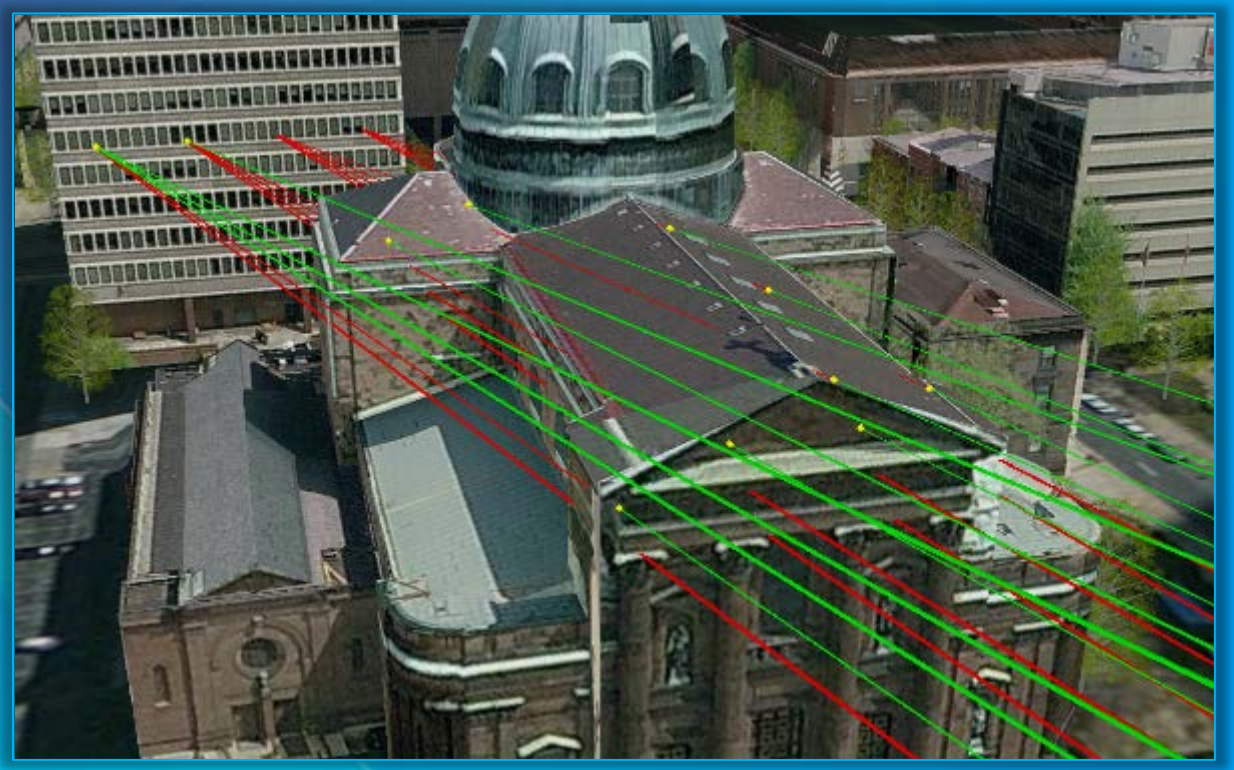
Raster Surface Visibility

- Determine how many observers can see a given location
- Determine which observers see a specific location
- Find the height a non-visible location must be raised to become visible



Line of Sight

Visibility Along 2-Point Sightlines

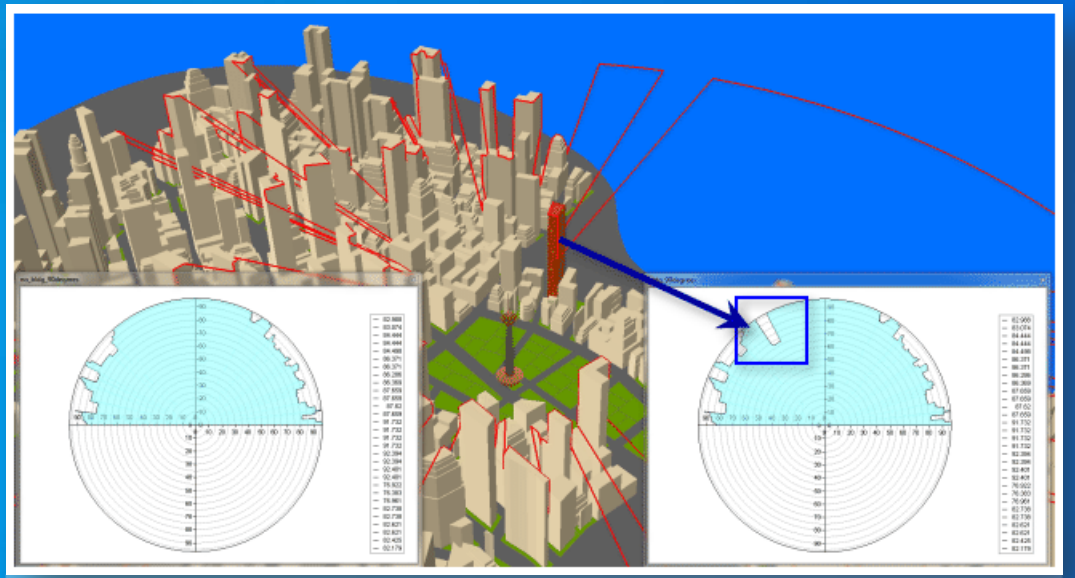


- Determine visibility along a line
- Identify the obstructions preventing the end point's visibility
- Use Construct Sight Lines to generate 2-point lines between observer points and target features

Skyline Analysis

Studying the Horizon

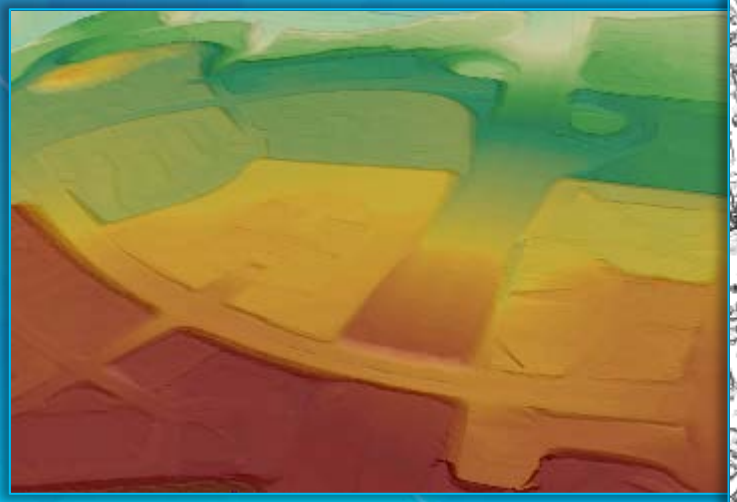
- Delineate the horizon for each observer
- Segment the horizon by each contributing feature
- Graph the percent of possible sky that is obstructed by observers



Shadow Modelling

Shadows from the Sun and Localized Light Sources

- Shadows cast by sunlight for a given date/time
- Find the shadows cast by localized light sources



Hillshade at 45˚

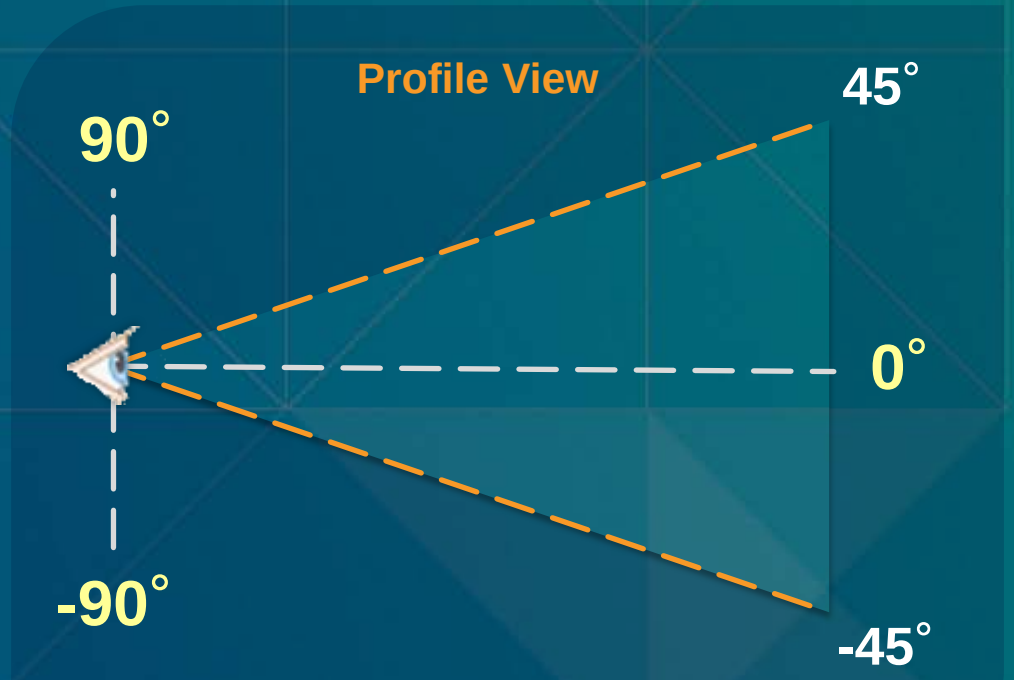
Hillshade at 90˚

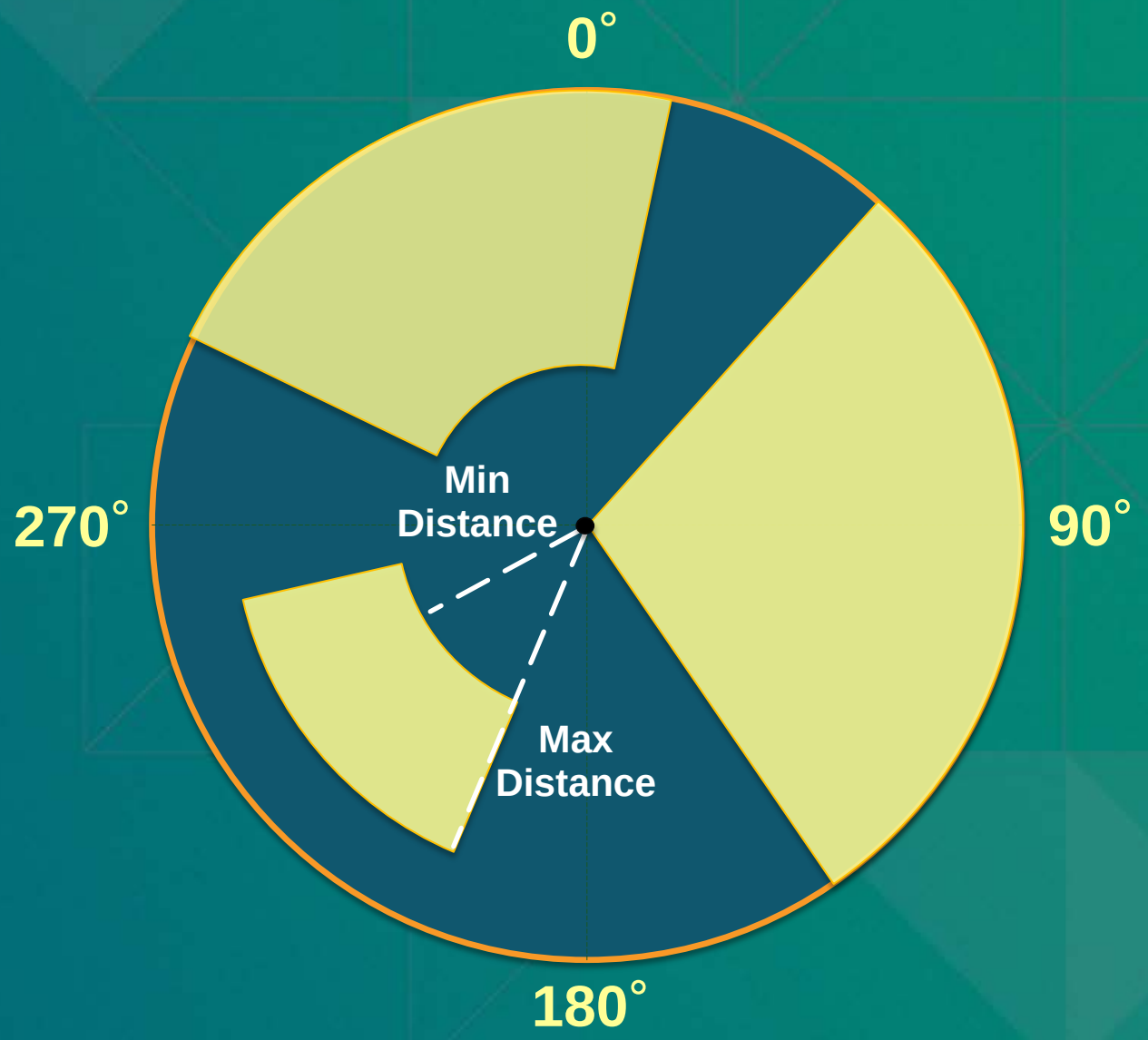
Sun Shadow Volume

Controlling the Observer

Visibility Analysis Concept

- Vertical angle range
- Azimuth range
- Visible distance range





Bird's Eye View

Atmospheric Refraction

Visibility Analysis Concept

- Adjusts visibility to account for bending of light passing through atmosphere
- Influenced by variations in air pressure, density, humidity, temperature and elevation
- Refraction coefficient supported by:
  - Line of Sight
  - Skyline
  - Viewshed tools (Viewshed, Observer Points, Visibility, Viewshed 2)
  - Solar radiation tools in Spatial Analyst

Exploratory Analysis

Interactive Tools in ArcMap

Line of Sight: Determines visibility of sight line & identifies possible obstructing point

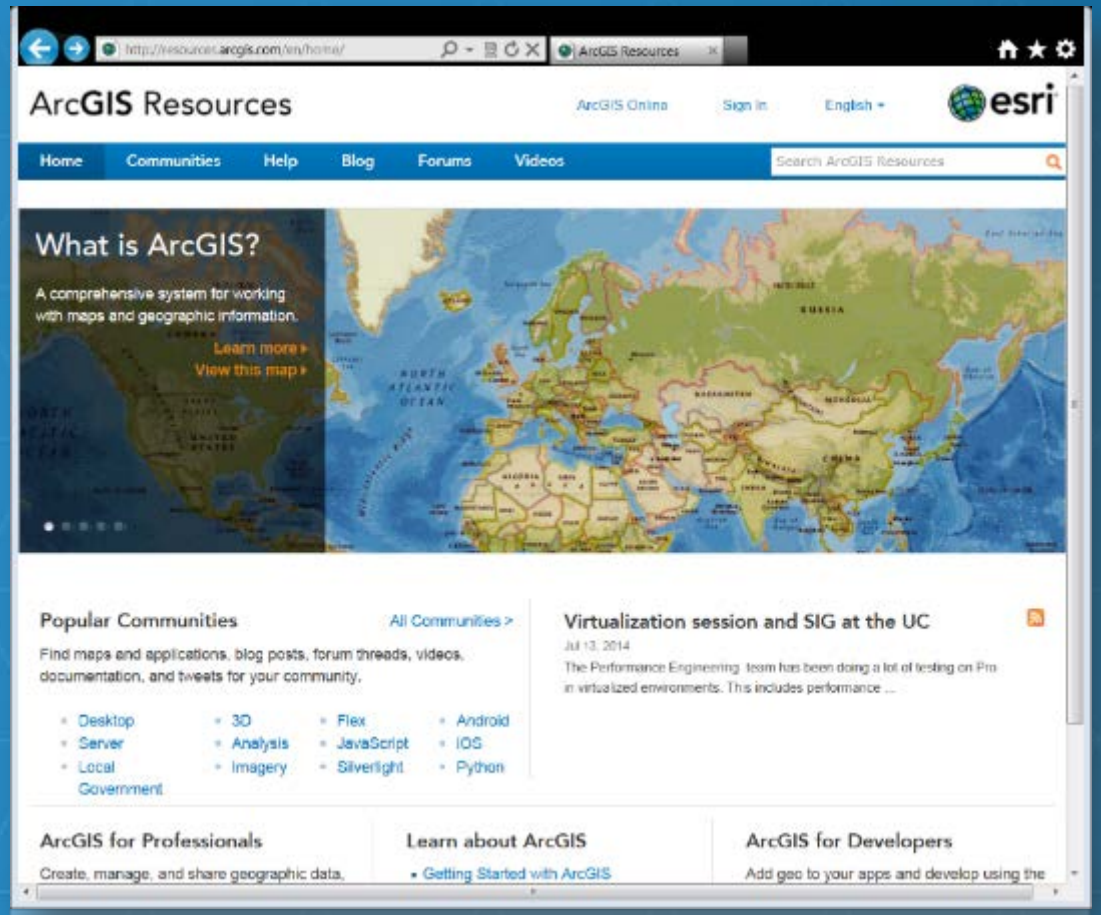
Target Surface Layer: Surface layer in document that will be processed by interactive tools.

Profile: Creates profile graph of surface or point cloud.

3D Community on ArcGIS Resource Center

http://resources.arcgis.com

- Helpful Utilities: Many custom tools and useful applications
- Solution Templates: Guides and sample data to illustrate best practice applications for tasks in 3D
- News: Learn about the latest developments in GIS.



At the UC

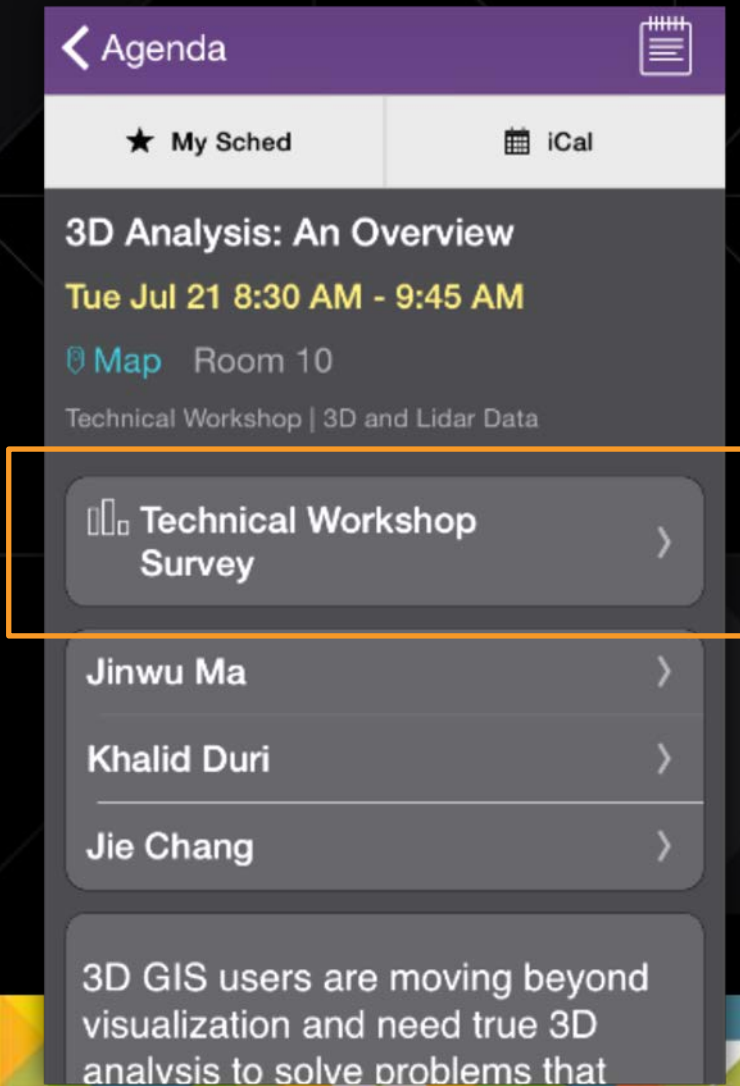
- Product Island
  main conference hall
- Tech Support
  follow up assistance

Online

- GeoNet
  http://geonet.esri.com/welcome
- 3D GIS Resource Center
  http://resources.arcgis.com/communities/3d
- ArcGIS Desktop Help
  http://help.arcgis.com

Thank You!

Please fill out a session survey in your mobile app by clicking "Technical Workshop Survey"



Understanding our world.