

GIS for Human Terrain Analysis

This 3-day workshop aims to teach utilization of GIS for the purpose of Human Terrain mapping. This is a growing area of study with both national security and commercial applications. Its major goal is to facilitate modeling, representation, simulation and anticipation of behaviors and activities of both individuals and the organizations to which they belong over a physical space and in a spatial context.

WHO SHOULD ATTEND

- > Computer scientists and engineers
- > Geographers and cartographers
- > Planners and environmental scientists
- > Application specialists
- > People interested in changing careers
- > Law enforcement officers and administrators
- > Crime analysts and coordinators
- > Database and system administrators
- > EMS and first response professionals
- > Public health administrators
- > Intelligence Analysts
- > Geospatial Intelligence Analysts
- > Social Scientists

Topics Covered

Module 1: Foundations of GIS

- Introduction to ArcGIS
- Introduction to geographic data
- Introduction to spatial query (SQL)
- Advanced spatial query
- Working with layers in ArcGIS
- Import tabular information from other software
- Creating maps layout
- Creating maps without using a map template
- Introduction to geo-database
- Run a geoprocessing Tool

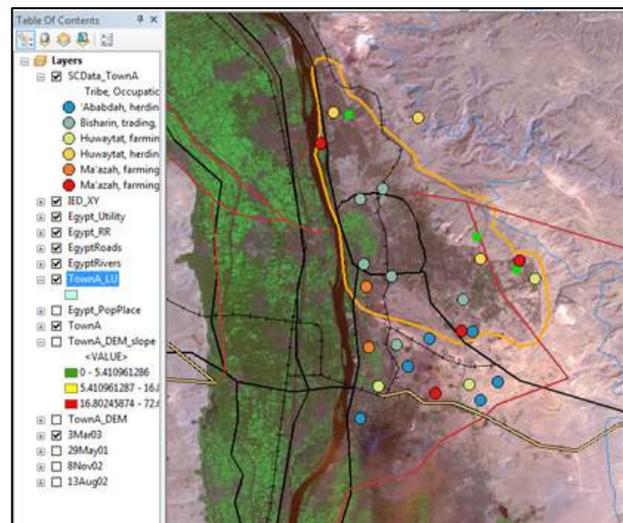
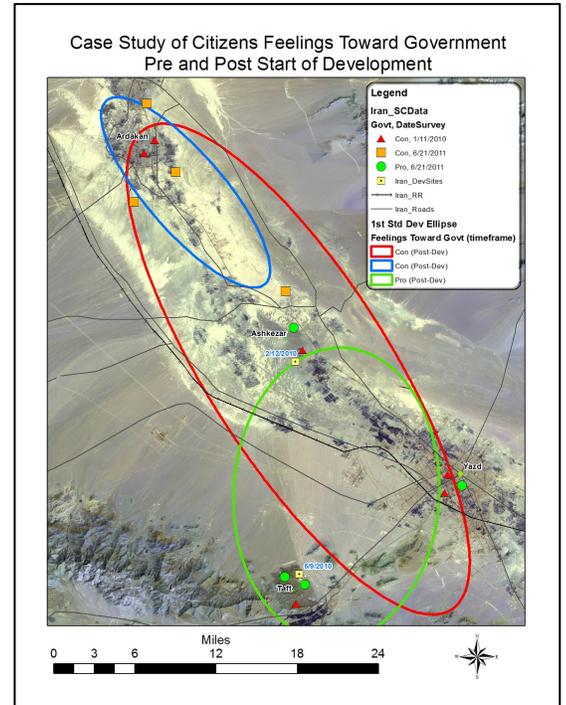
Module 2: Creating and Developing Data

2.1 Working with Vector Data

- Simple heads-up digitizing
- Point and stream mode digitizing
- Simple heads-up digitizing of an area feature
- Add x,y data from GPS to a map
- Determining GPS precision and accuracy
- Import AutoCAD files

2.2 Working with Raster Reclassification

- Creating image tiles to create backdrop
- Simple image classification using Spatial Analyst
- Georeferencing imagery
- Generalizing and cleaning raster data
- Covert vector to raster
- Reclassify an elevation grid
- Reclassify data to a common scale
- Reclassify a grid using a remap table
- Zonal statistics cross tabulation and neighborhood statistics
- Draping an image over a terrain surface



2.3 Working with Elevation and slopes

Using Triangular Irregular Networks (TIN)
Create a DEM using IDW and spline interpolation
Cross validation of interpolated surfaces

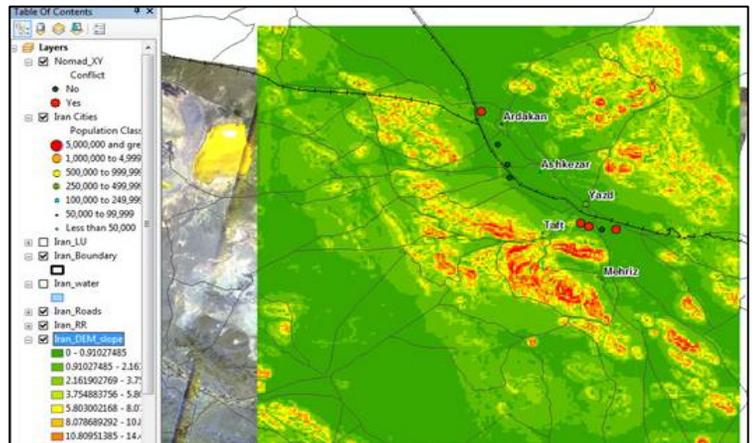
Module 3: Analyzing Spatial Data

3.1 Querying Data in ArcMap

Using the identify tool
Using the find tool
Selecting feature by attribute
Selecting features by location
Creating a layer from a selection

3.2 Preparing Data for Analysis

Selecting features
Clipping features
Dissolving features
Exporting data
Projecting and defining the coordinate system/spatial reference

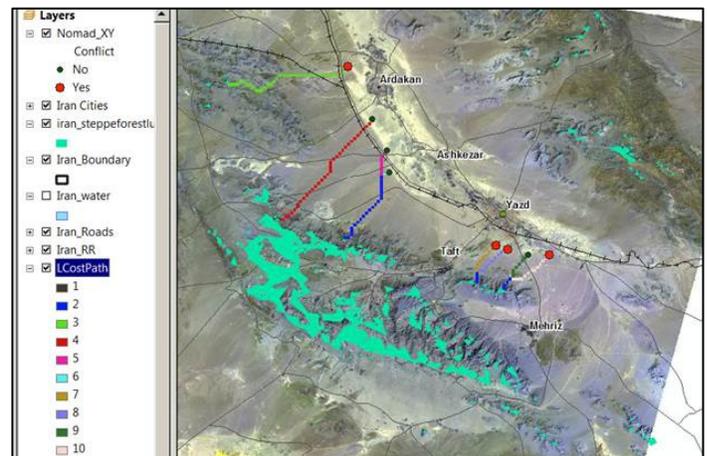


3.3 Analyzing Spatial Data

Buffering features
Adding a field to an attribute table
Overlaying data
Intersect overlay
Calculating attribute values

Module 4: Case Studies

Case Study 1: Crime Analysis
Case Study 2: Analysis of IED explosion risks on Youth
Case Study 3: Evaluation of IED Assistance
Case Study 4: Analyze Effects of Development
Case Study 5: Investigate Nomadic Mobility



Module 5: Rebuilding, Management and Assessment of Infrastructure

5.1 Geocoding infrastructures I-III

5.2 Spatial analysis for Site Selection

Case Study 1: Critical roads to repair after hurricane damage
Case study 2: Determine the location of a new firestation

5.3 Aging infrastructure analysis and setting priorities

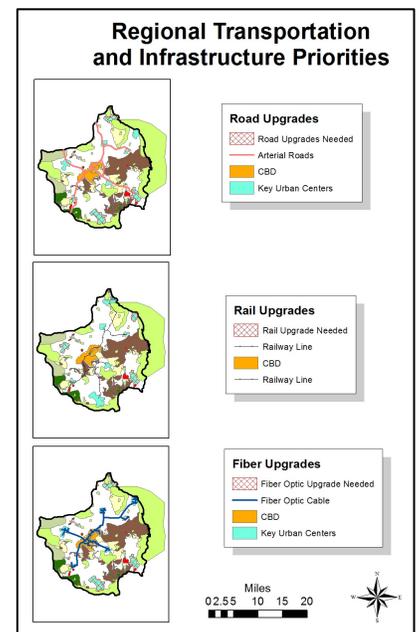
Case Study 1: GIS to improve transportation infrastructure
Case Study 2: Prioritizing roads for widening
Analyze the pattern of building damage

5.4 Strategic Planning with Spatial Component

Case Study 1: Use GIS to determine regional transportation and infrastructure priorities
Case Study 2: Analyze public response to proposed projects
Case Study 3: Impact of the new plant on the watershed's future population
Case Study 4: Create a spatial-temporal database to monitor property changes

5.5 Cost & Distance Analysis

Case Study: Distance Analysis-Air Rescue and Air Ambulance Service in Suez, Egypt
Case Study: Cost Surface Analysis- Least-Cost Path for a Proposed Power Line



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