GIS

The Geographic Approach for the Nation

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Geoprocessing with ArcGIS Server

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Presentation Roadmap

- Overview of Geoprocessing with ArcGIS Server 9.3.1
- What is published to create a Geoprocessing service?
  - Author a Model
- How is a service published?
  - Published a Map Document with Tool Layer
- What options are available for a service?
  - Explore service properties
- How is a service used?
  - Create web mapping application that uses the service

What is ArcGIS Server?

- **Author** ArcGIS files in a familiar environment (ArcMap, ArcGlobe, ModelBuilder)
- **Serve** ArcGIS files (.mxd, 3dd, .tbx, etc.) as Geoservices
- **Use** in a wide variety of clients
  - Desktop
  - Web
  - Mobile

Geographic analysis over the Web

- Use a geoprocessing service to:
  - Serve a set of geoprocessing tools
  - Execute a tool on the server
  - Return results over the Web
- Advantages
  - Centralizes data and geoprocessing functionality
  - Allows lightweight Web clients to leverage server power
  - Simplifies complex processing tasks for less experienced users
  - No programming necessary

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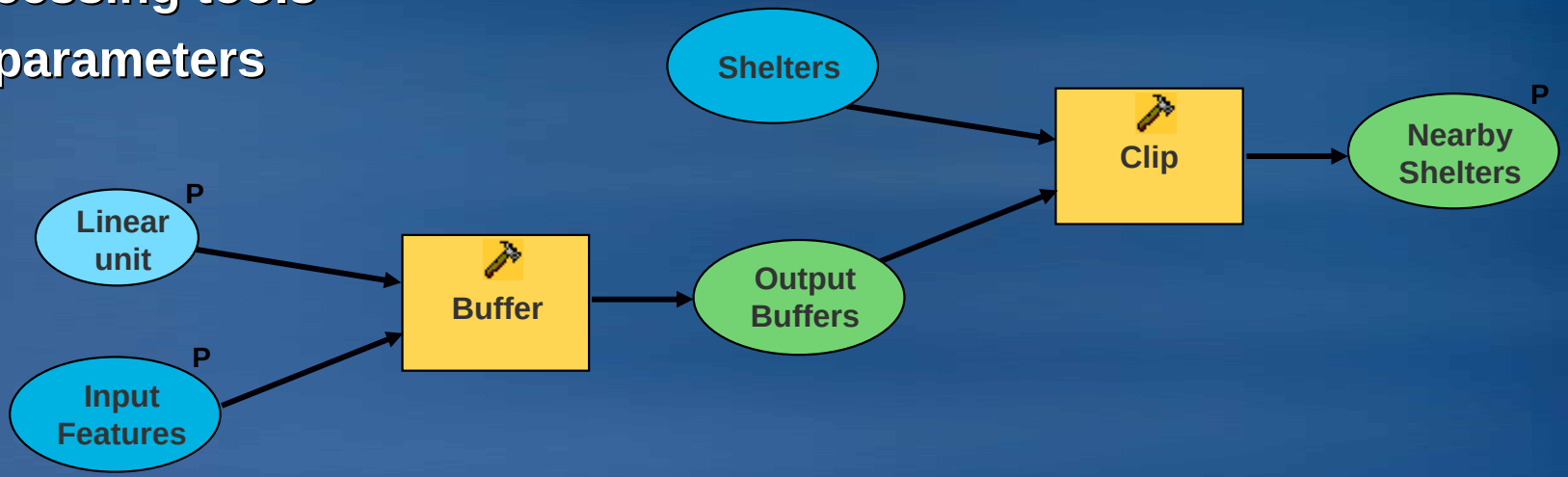
Authoring a geoprocessing service

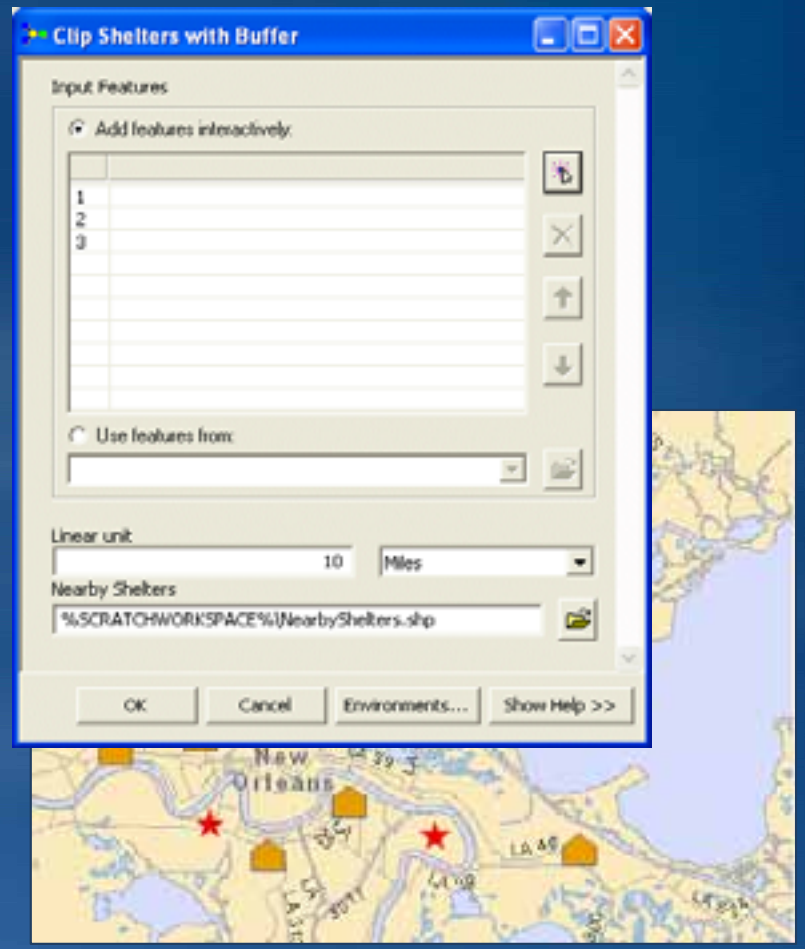
- Models contain functionality for geoprocessing services
  - Input parameters
  - Geoprocessing tools
  - Output parameters



- Additional considerations when publishing as a service:
  - Restricted data types for parameters
  - Data access and permissions
  - Performance

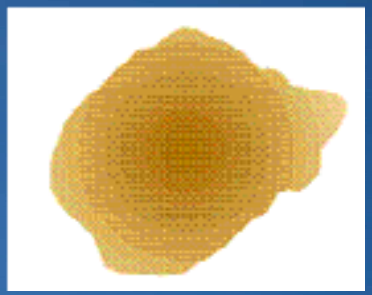
Commonly used input data types

- Feature set
  - User defines features
  - Ability to load a feature class
- Feature layer
  - Layer from associated map service
- Record set
  - User created table
  - Ability to load a table
- Other valid input data types
  - Raster dataset, string, long, double, Boolean, date, linear unit, file
  - Support for data type varies among clients



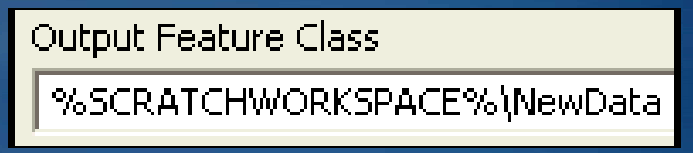
Defining schema and symbology

- Feature set inputs
  - Choose schema and symbology
  - Import from map layer or layer file
  - Determines geometry type to be drawn by the user
  - Defines attributes
- Output
  - Choose symbology
  - Import from layer file



GIS server Jobs directory

- Stores intermediate and output data
- Configured for each geoprocessing service
- When authoring the model:
  - Use %SCRATCHWORKSPACE% variable for output data
  - Make intermediate data managed



While authoring and testing → Tool uses ArcMap/ArcCatalog's scratch workspace (Defined in Environment settings)

After publishing → Tool uses ArcGIS Server's scratch workspace (Jobs directory)

DEMO: Create Model using ModelBuilder

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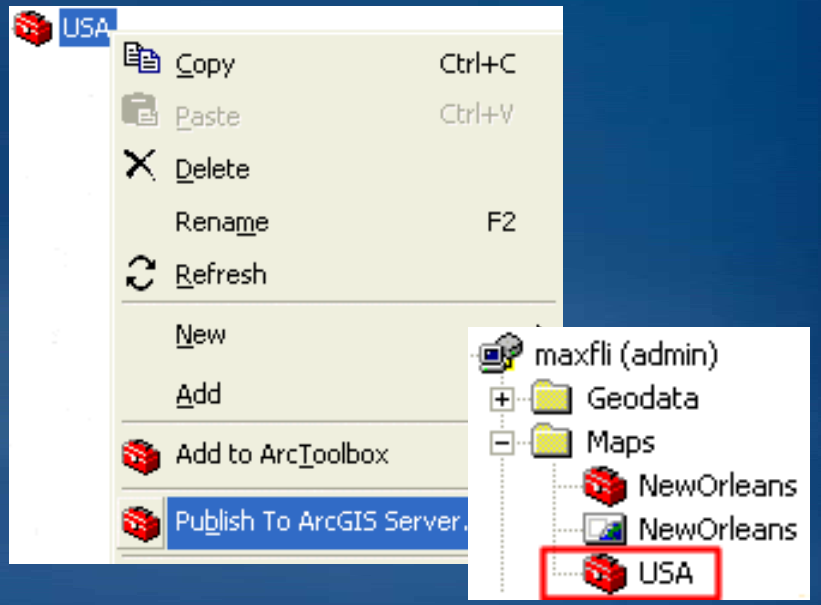
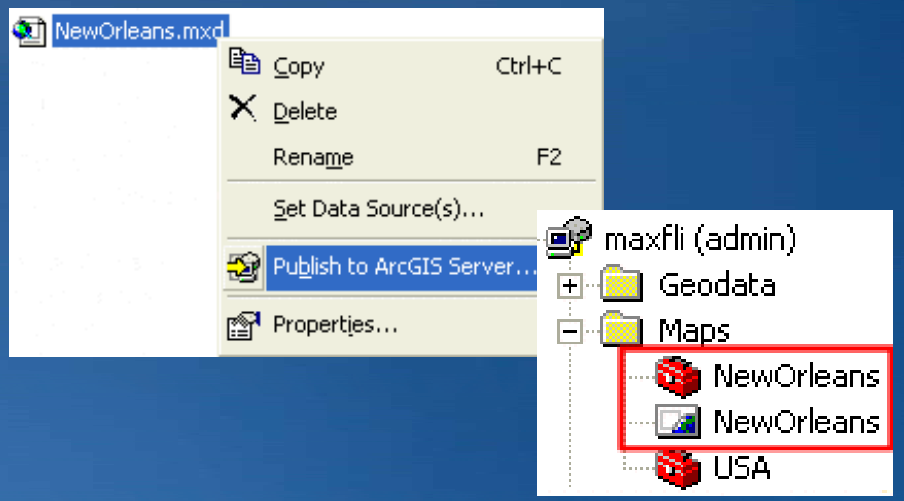
Publishing options

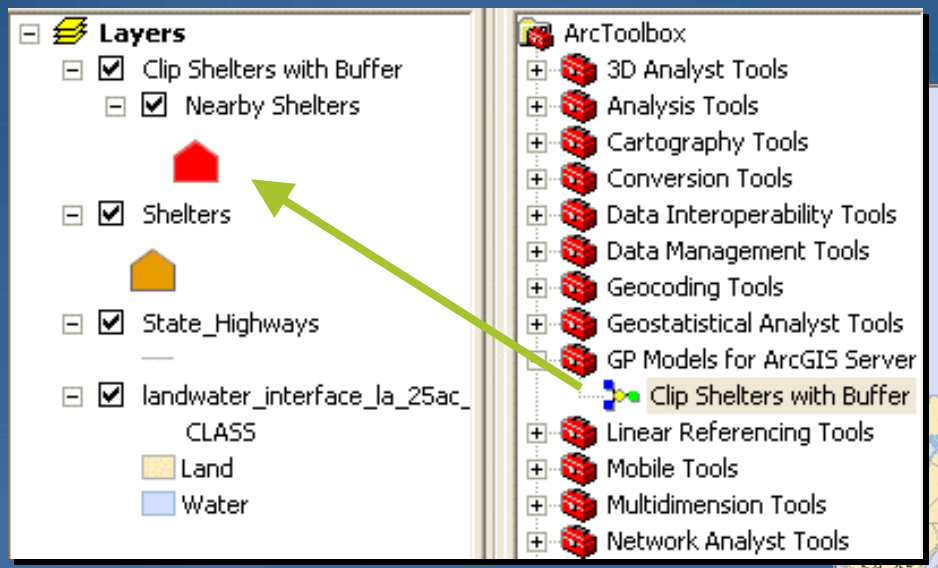
- Two methods:
  - Publish a toolbox
    - Creates geoprocessing service only
  - Publish a map document with a tool layer
    - Creates both geoprocessing and map service
    - Enable geoprocessing capability
    - Results drawn using associated map service
- New dynamic map services do not support tool layers

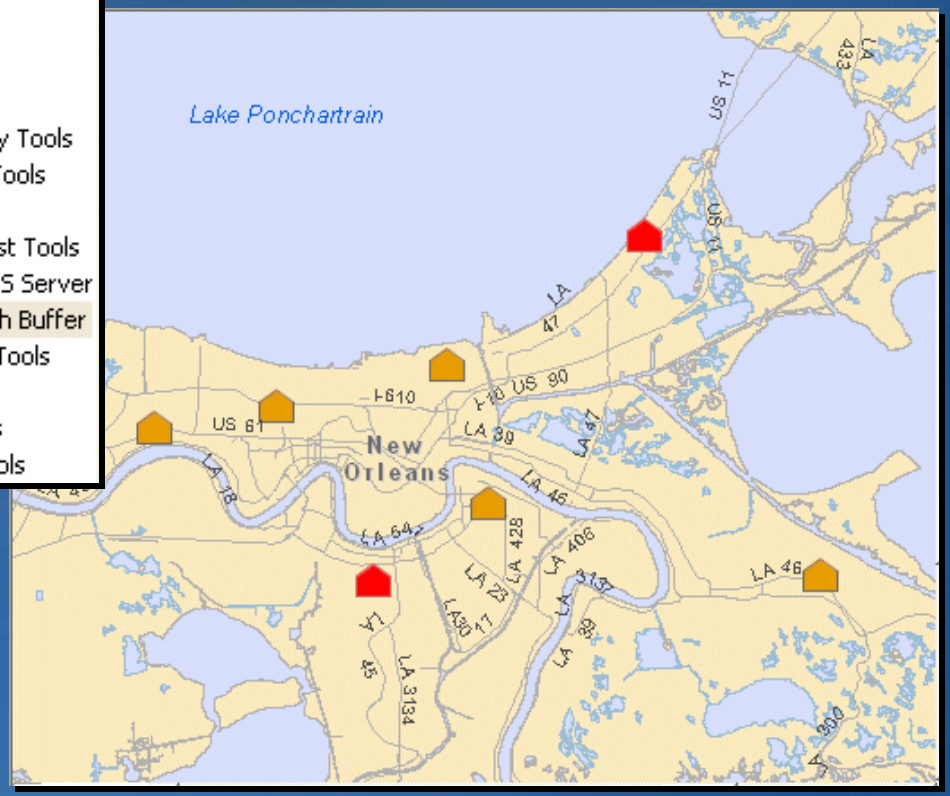




Tool layers

- Group layer in the table of contents
- Represents a tool (model or script) and its output





Choosing a publishing method

- Publish a toolbox if you:
  - Want to use results in another tool or model
    - Results sent to client
  - Have no spatial results to draw (output is table or file)
- Publish a map document if you:
  - Want to allow users to select map layers as input
  - Expect output to be a very large number of features
    - Results draw on associated map service
    - Results not sent to client
  - Want output added to display automatically

DEMO: Publish Service using a Map Document and Tool Layer

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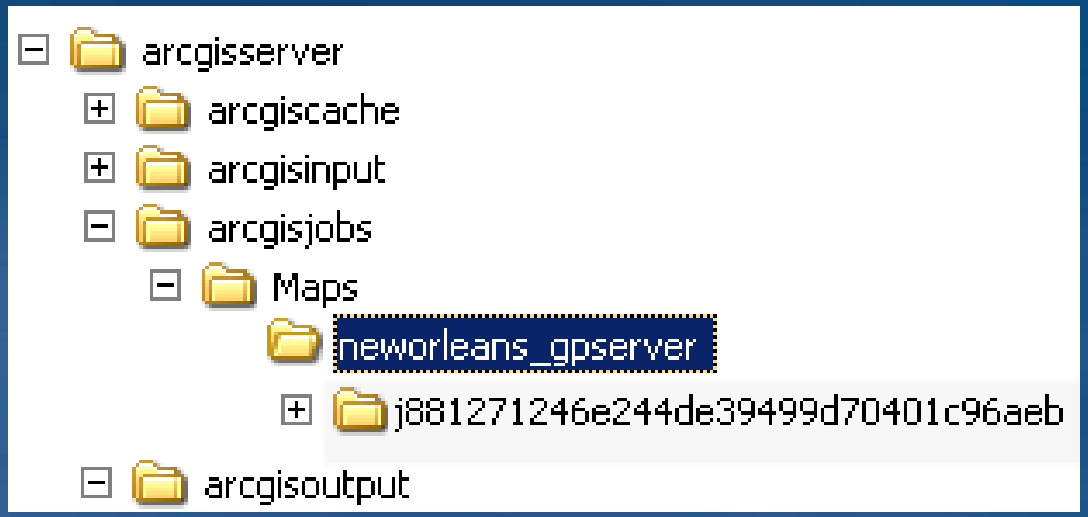
Geoprocessing service properties

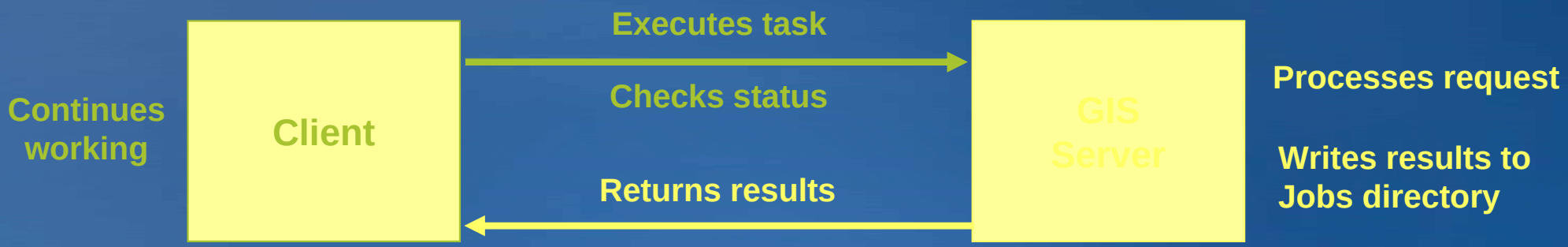
- Jobs directory location



- Maximum number of records
  - Conserve server resources
  - Prevent unreasonable requests
- Execution mode
  - Asynchronous
  - Synchronous

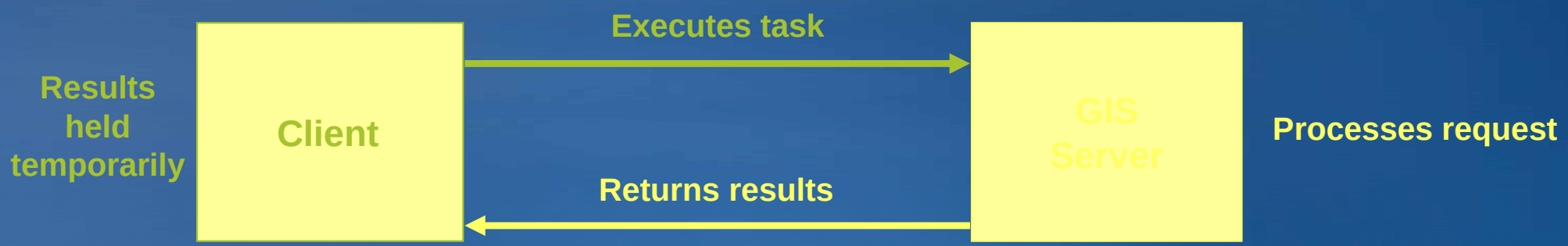
Asynchronous execution

- Well suited for longer processes
- Jobs are submitted to server
  - User can continue working
  - Client application checks status periodically
  - User can close application and check for results later
- Results are saved on server
  - Jobs directory



Synchronous execution

- Best suited for quick processes and small result sets
- Jobs are executed immediately
  - Client must wait for completion
  - Same behavior as with local tools
- Results are not saved on server
  - Temporarily held on client machine



DEMO: Explore Geoprocessing Service Properties

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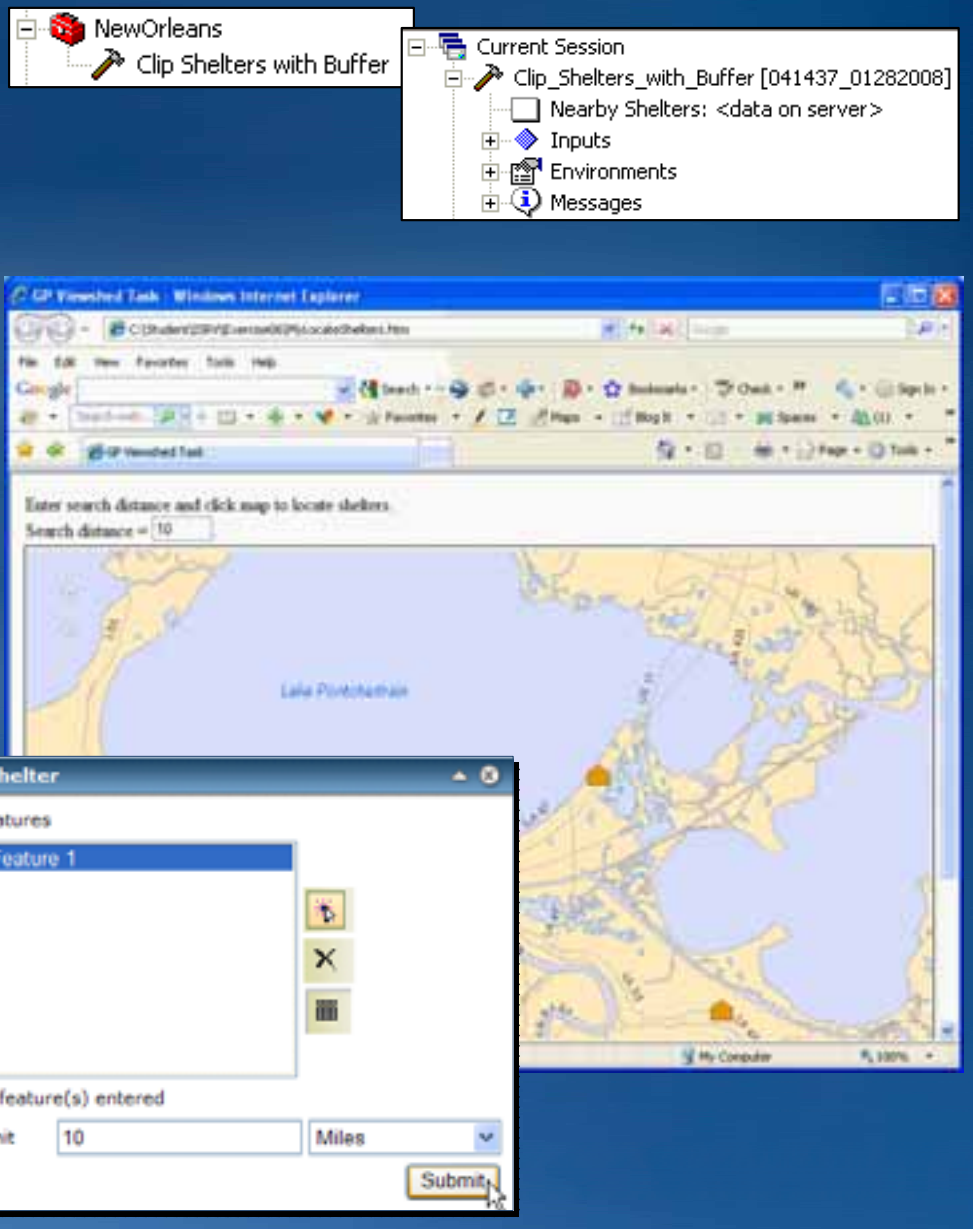
Using geoprocessing services

- ArcGIS Desktop
  - Available as toolboxes in ArcToolbox
  - Use Results panel to save data locally
- Web mapping applications
  - Add geoprocessing tasks when designing application
  - ArcGIS API for JavaScript



DEMO: Create WebADF Application Using the Service

Learn More

http://www.esri.com/training

- **Instructor-Led Training**
  - Introduction to ArcGIS Server
  - Building Web Maps Using the ArcGIS API for JavaScript
- **Free Web Training Seminar**
  - Authoring and Publishing Geoprocessing Services

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Thank you

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