



ArcWeb Services SOAP API Deep Dive

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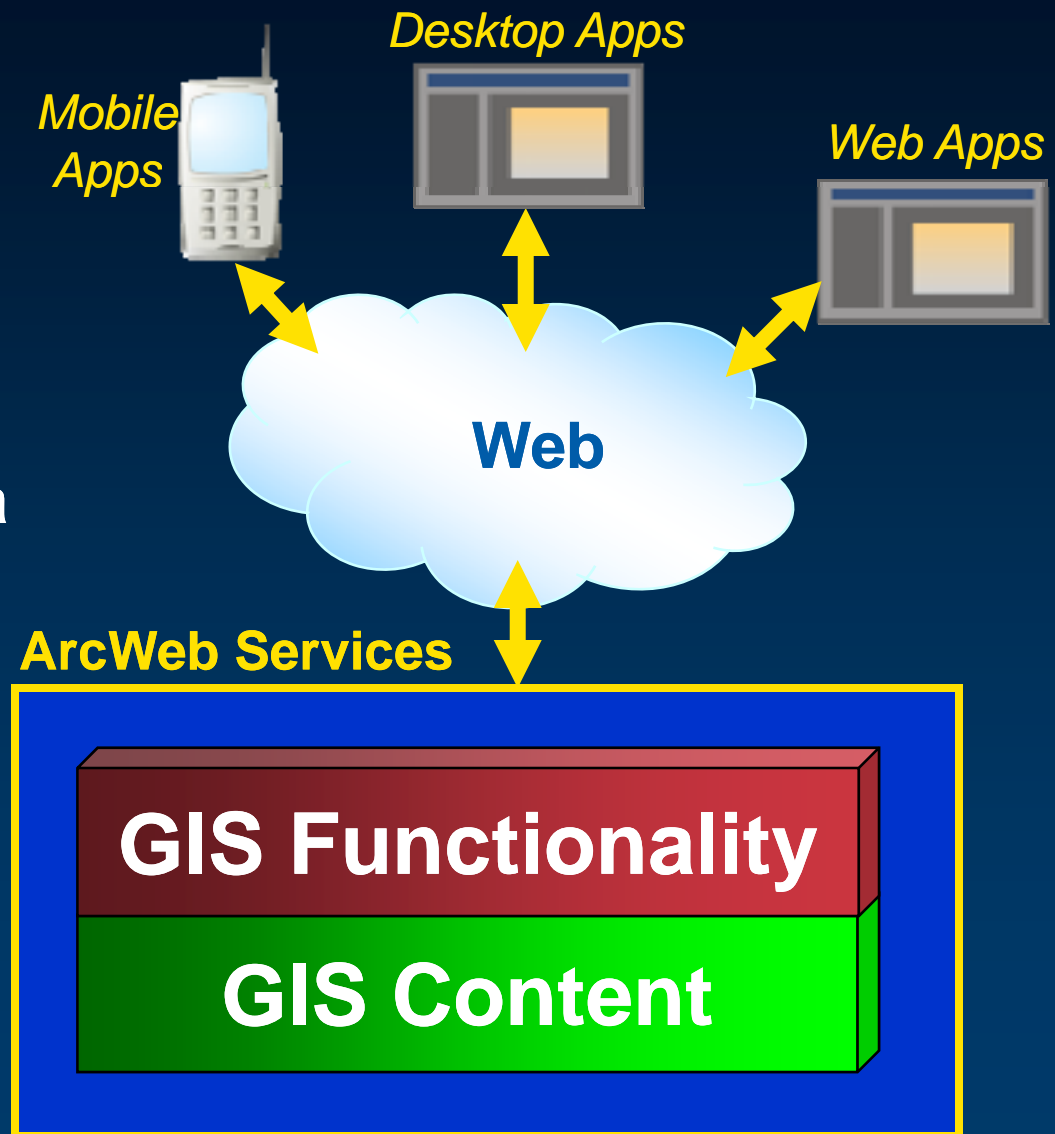
ArcWeb Senior QA Engineer

Topics

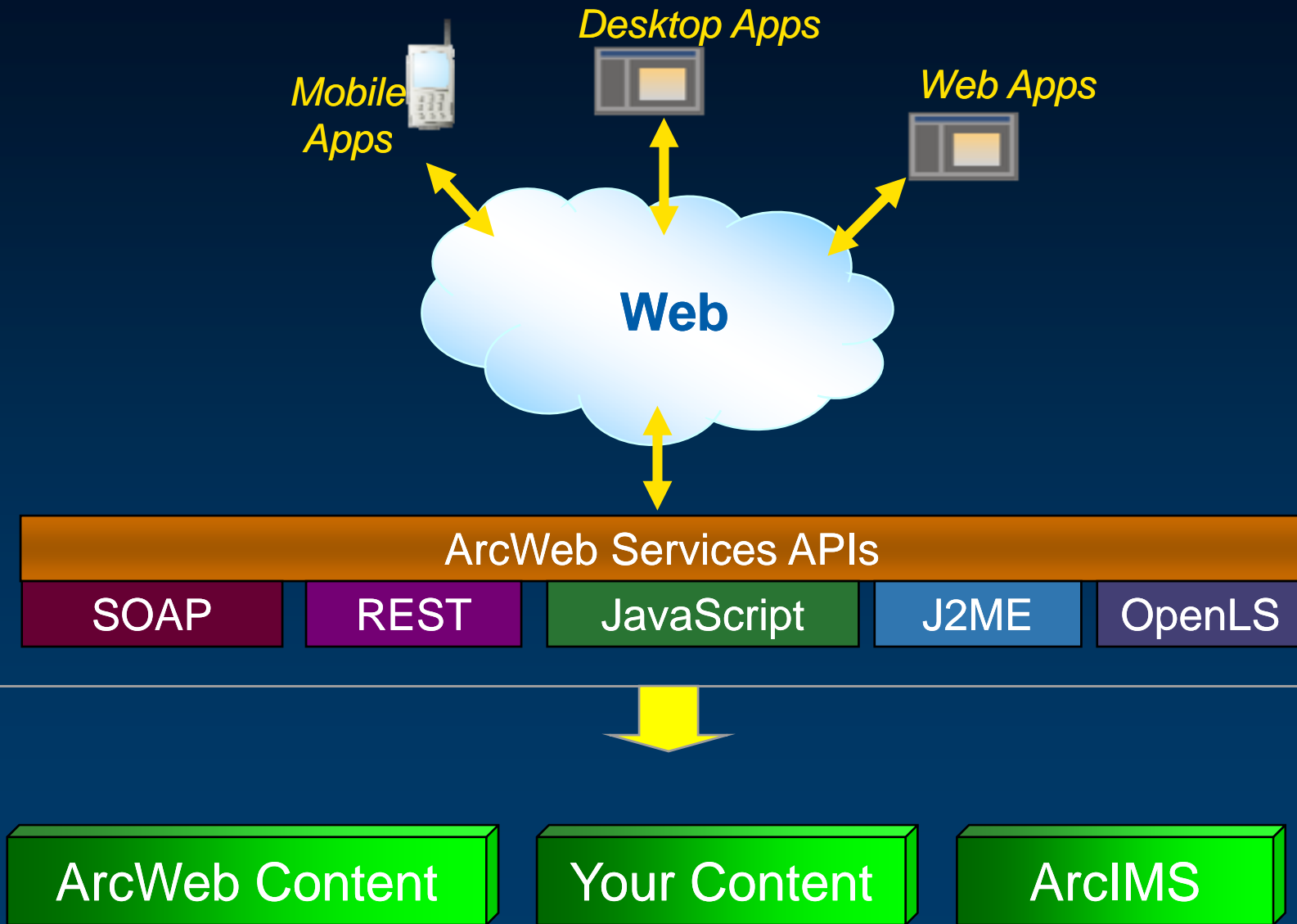
- **Quick Overview**
- **Location services**
- **Spatial analysis services**
- **Data Management**

What are ArcWeb Services?

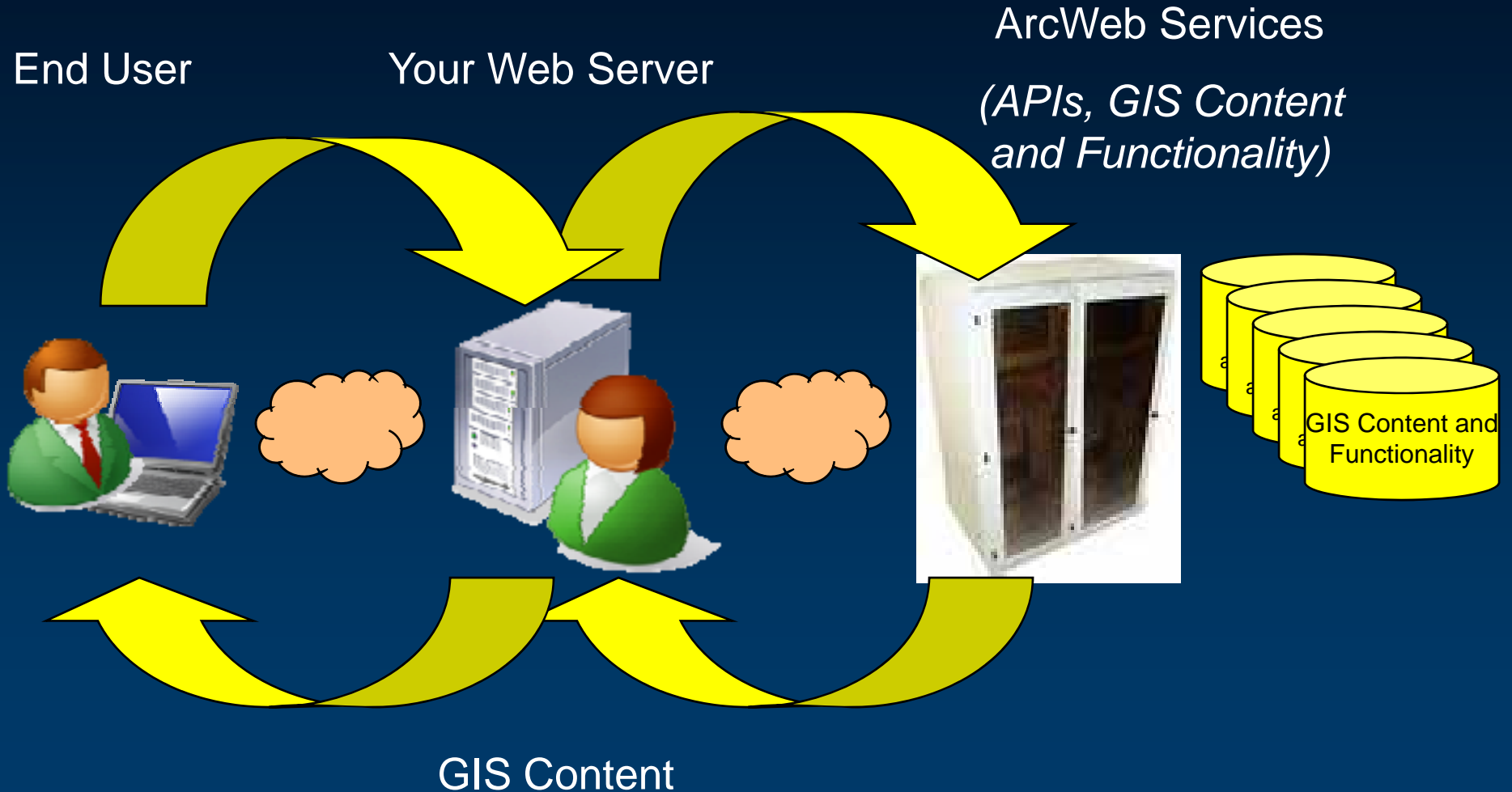
- GIS Web Services
- Hosted by ESRI
- Instant access to best-of-breed GIS data & functionality
- No software to install
- No data to maintain



How is ArcWeb used?



Building ArcWeb solutions?



Full Featured

- Mapping
- Routing
- Spatial Query
- Find: Place, Address, Phone, IP/Domains, Businesses Reverse Geocoding
- Drive Time Polygons
- Demographic Reports
- Data Management
- Map Layer Management & Transparencies
- Create custom services
- And much more...



Over 500 Data Layers To Choose From

- **Your Data + Base Data + Overlays**

- **Base Data**

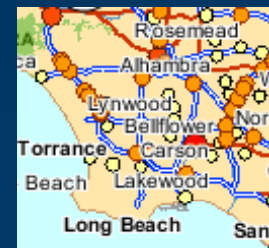
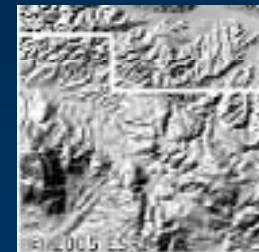
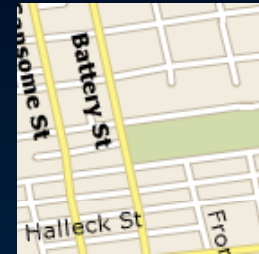
- Streets
- Aerial/Satellite
- Thematic
- Topographic
- Shaded Relief

- **Overlays**

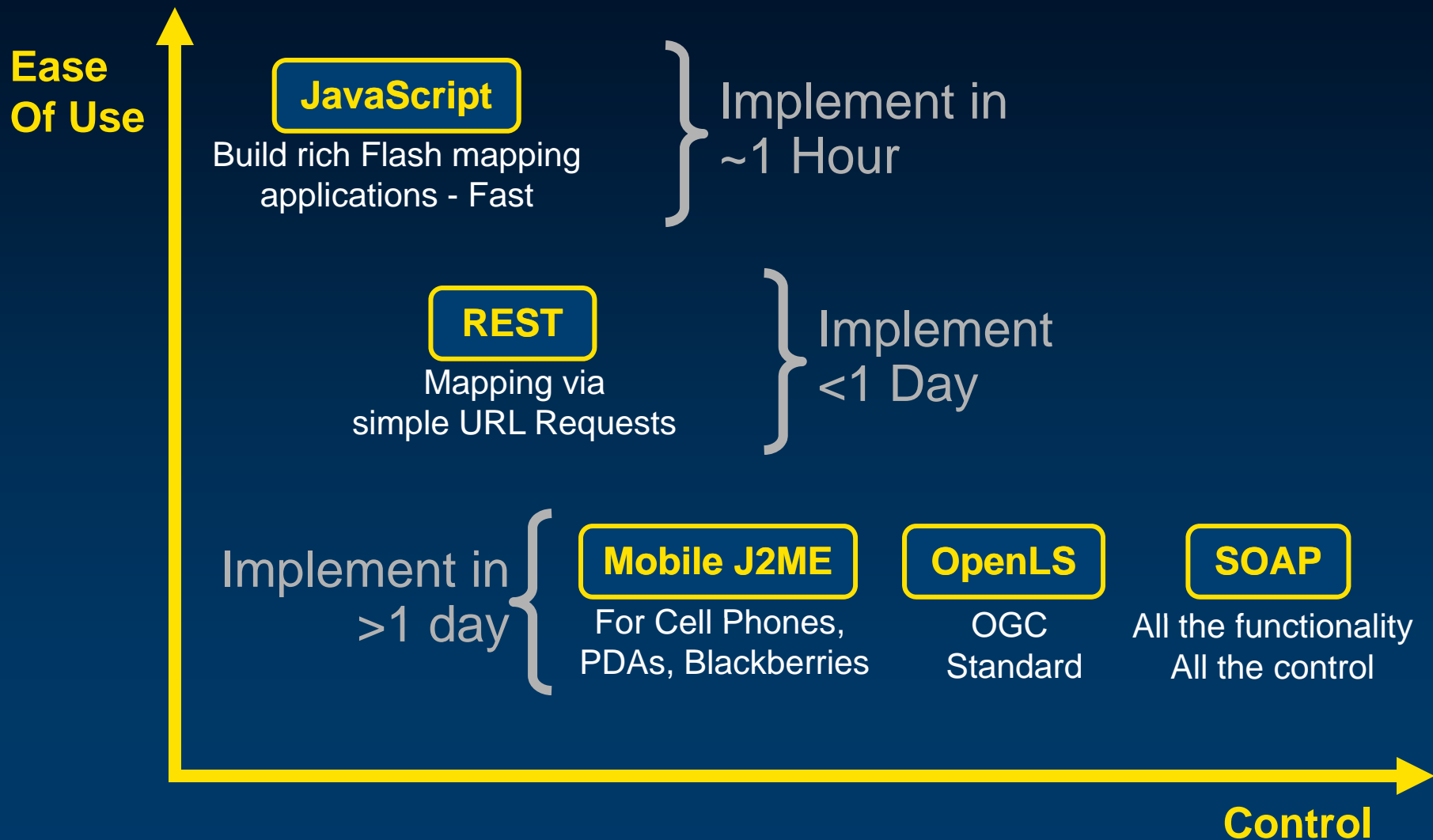
- Business Data
- POI's
- Elevation
- Weather, Traffic

- **Your Data**

- Points, Lines, Polygons



ArcWeb APIs: to suit every Developer's Needs



Getting Access to ArcWeb

- 90 Day Free Trial
- Pay-as-you-go Transaction Model
- Volume Discounts
- EDN Users & Business Partners get 100,000 Credits



ArcWeb Services Portal

ArcWeb Services

Home Learn Live Develop Build

Welcome to ArcWeb Services

ArcWeb Explorer Rich Internet Mapping

Navigation Find Directions Map Tools Reports RTN

Navigation

Reports (Beta)

Define report area

Number of rings

First ring

Second ring

Third ring

Get Report

News & Events

- Customize ArcWeb Explorer with the JavaScript API
- NAVTEQ Global LBS Challenge 2007
- Explore emerging technologies and products in the new ArcWeb Labs area
- Find archived news stories

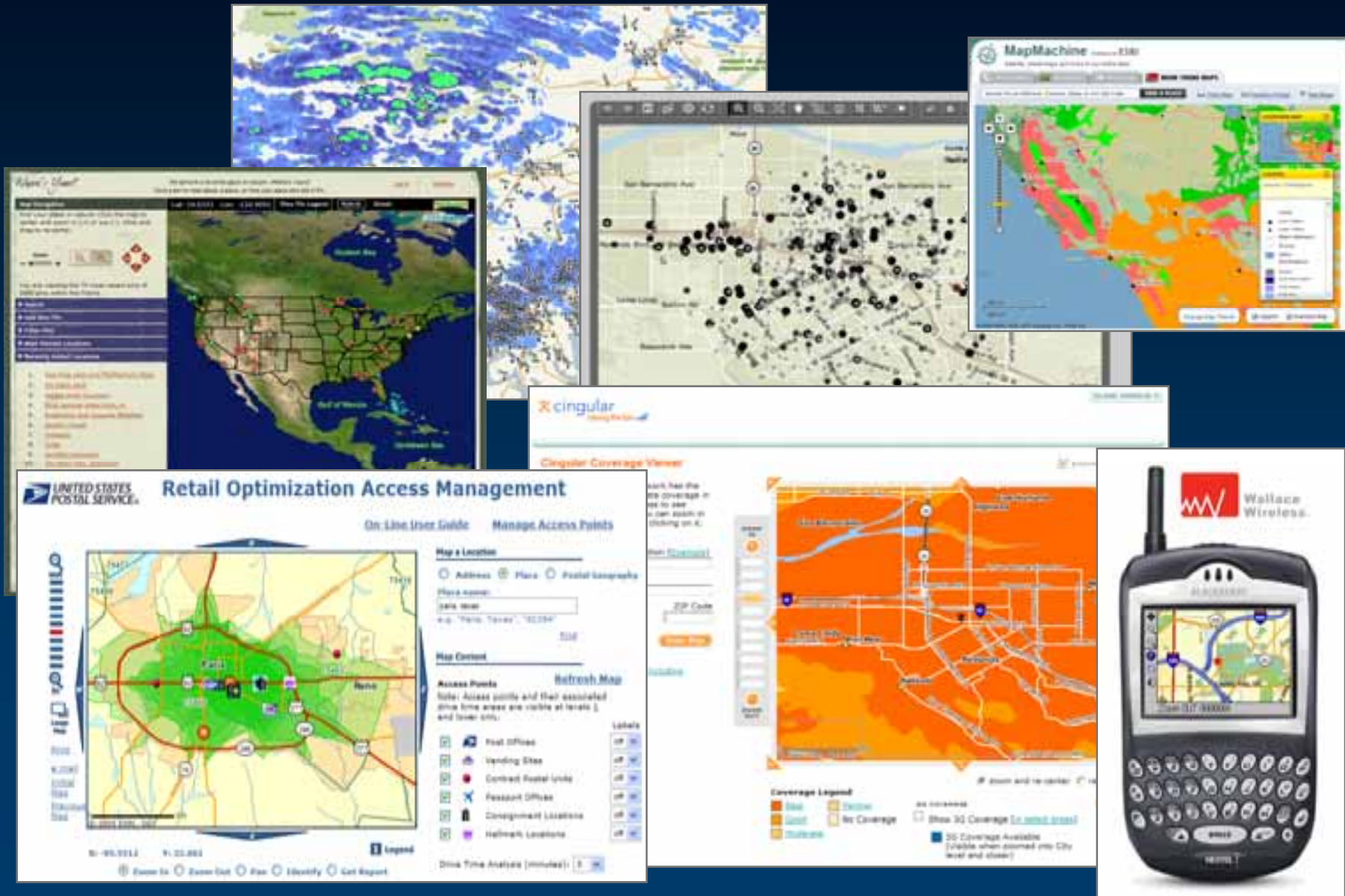
Try a full enhancement register data and whichever

FREE TRIAL

ArcWeb Labs
Shape the future of ArcWeb.

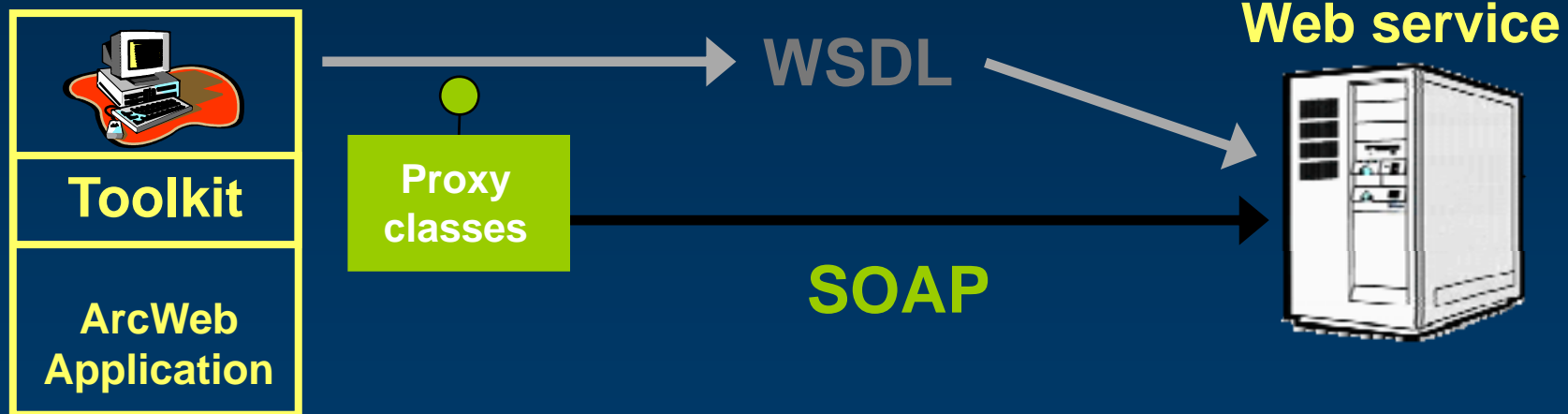
- www.arcwebservices.com
- Provides access to:
 - API Documentation
 - Content Library
 - Sample Code, Demos
 - Account Management Tools
 - Data Upload Tools
 - Custom Map Service Tools
 - ArcWeb Solutions

ArcWeb is a great Solution platform

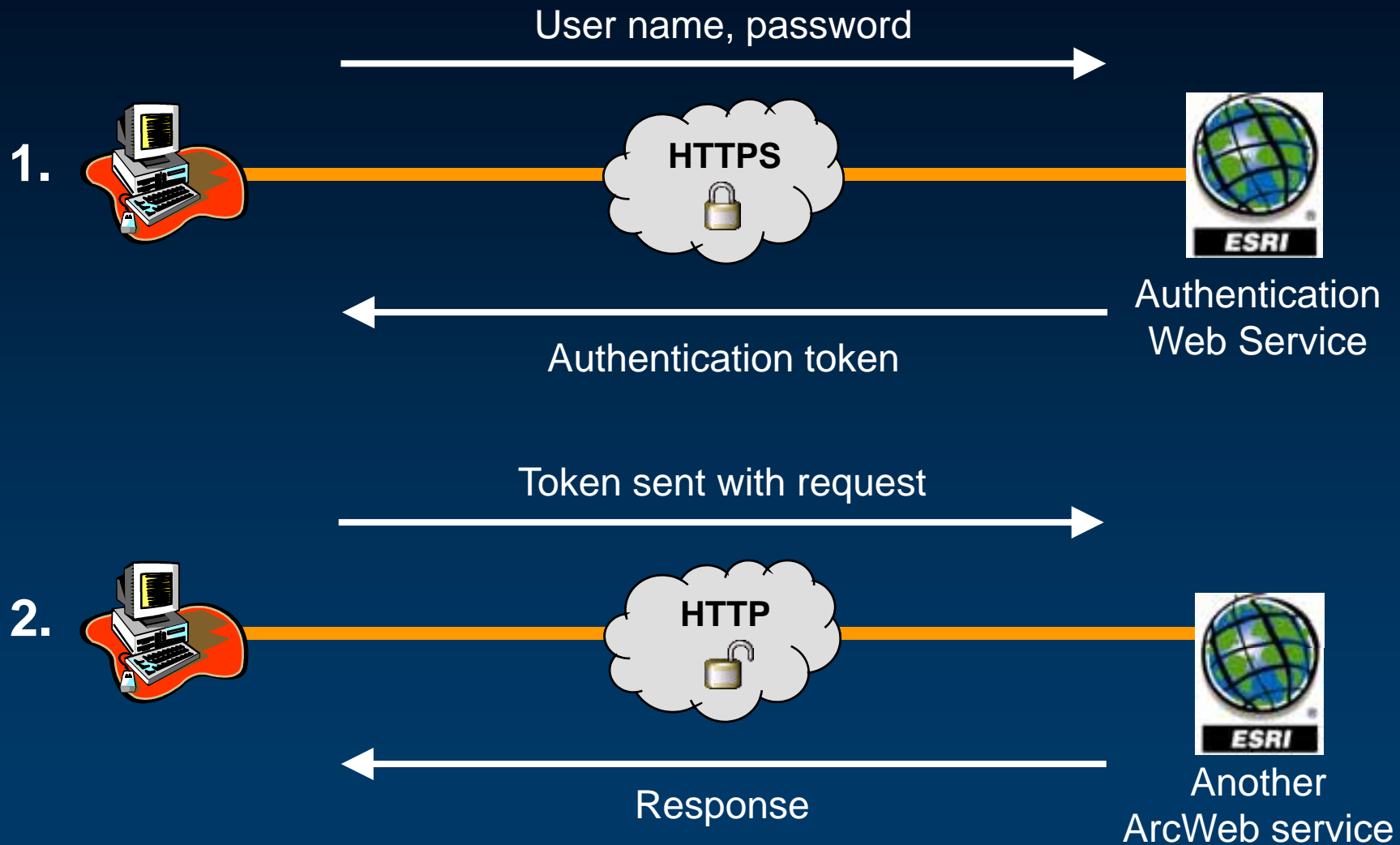


How SOAP works?

- WSDL file
 - https://www.arcwebservices.com/services/v2006_1/Authentication?wsdl
- SOAP toolkit



Authentication Web Service





Demo: ArcWeb Services in .Net

Example: Getting Map from ArcWeb Services

- Steps involved

- ① Get Token using Authentication Service

```
`Create Authentication web service
Dim auth As New AWS.Authentication
'Generate token
Dim token = auth.getCustomExpirationToken(username, password, 1440)
```

- ② Get Map using MapImage Service

```
'Create MapImage web service
Dim mapImage As New AWS.MapImage

'Specify map extent and set in the Map Area
Dim mapAreas(0) As AWS.MapArea
Dim mapArea1 As New AWS.MapArea
Dim envelope As New AWS.Envelope
envelope.maxX = 180
envelope.maxY = 180
envelope.minX = -180
envelope.minY = -180
mapArea1.extent = envelope
mapAreas(0) = mapArea1
```

.....

Getting Map from ArcWeb Services

② Get Map using MapImage Service (cont'd)

.....

```
'MapImageOptions contains parameters for creating a map
Dim mapImageOptions(0) As AWS.MapImageOptions
Dim mapImageOption1 As New AWS.MapImageOptions
mapImageOption1.dataSource = "ArcWeb:TA.Streets.NA"
mapImageOptions(0) = mapImageOption1

'MapImageInfo contains requested information about a map
Dim mapImageInfos(0) As AWS.MapImageInfo
mapImageInfos = mapImage.getMaps(mapAreas, mapImageOptions, token)

'Display map on the page using MapImageInfo
mapurl.ImageUrl = mapImageInfos(0).mapURL
```

Topics

- Quick Overview
- **Location services**
- Spatial analysis services
- Data Management

Much more than Find an Address...

Addresses

380 New York St,
Redlands CA

Places

London

Points of Interest

Disneyland

Business Names & Categories

Wells Fargo Bank
Pizza

Phone Numbers

909 793 2853

Your Own Data

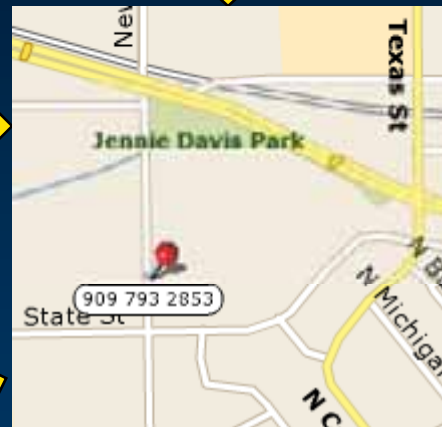
Store Locations
Customer Locations
Incident Locations

Cell Phones



Domains & IPs

www.esri.com
198.102.62.255



Place Finder



- Input place name
- Constrain search by geographic area or place type
- Define the number of records to return
- Filter by country
- Define the type of search
- Auto Data Source *
- Include multiple data sources in one request, essentially creating your own auto data source *

* Available with the latest release of 2006.1

Address Finder & Address Manager

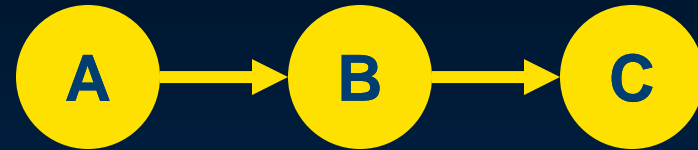
- **Address Finder**
 - Geocode multiple inputs
 - Reverse Geocode
- **Address Manager is for batch**
 - upload points
 - receive geocoded locations
- **Rich data sources**
- **Auto Data Source ***
- **Include multiple data sources in one request, essentially creating your own auto data source ***



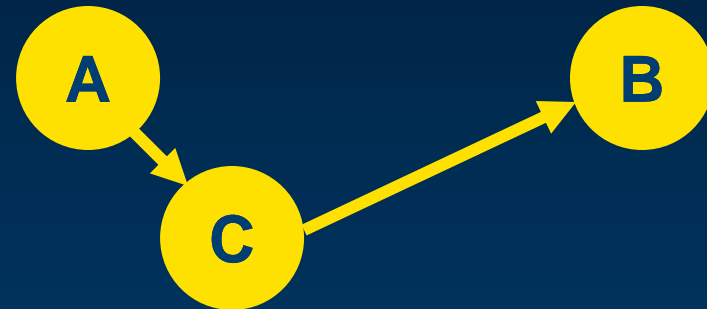
* Available with the latest release of 2006.1

Much more than “A-to-B” Directions...

Multipoint Routing



Traveling Salesman

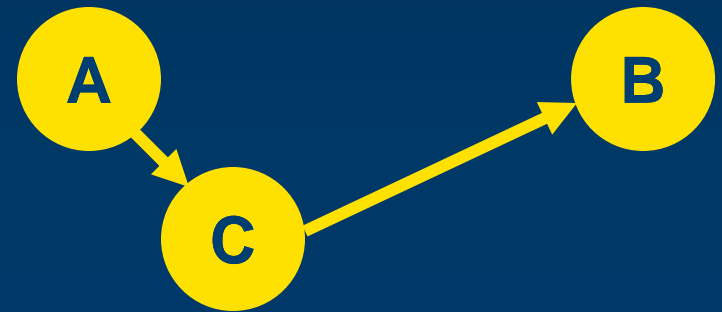


**Avoid Barriers,
Avoid Traffic**



Route Finder

- Create a list of coordinate pairs for start, end, and midpoints for a route
- Specify description for points on a route
- Specify returned route as textual driving directions, map image, turn-by-turn maps, or a combination
- Determine whether to avoid traffic delays or other hazards
- Determine if the geometry is returned
- Customize the look of the route
- Choose the language of the driving directions
- Request traveling salesperson routing
- Auto Data Source*



* Available with the latest release of 2006.1

Wireless Location

- View the location of a device
- View the stopped locations along a path
- Determine the direction and speed of a trip
- Check status, including if a device is turned on
- Send text message (SMS)
- Current suppliers
 - Sprint PCS - USA
 - Bell Mobility – Canada





[Http://help.arcwebservices.com/](http://help.arcwebservices.com/)



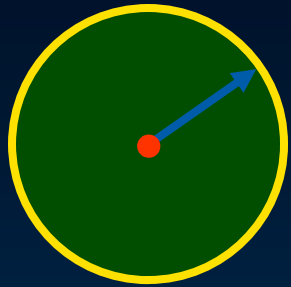
Demo:

Location services

Topics

- Quick Overview
- Location services
- **Spatial analysis services**
- Data Management

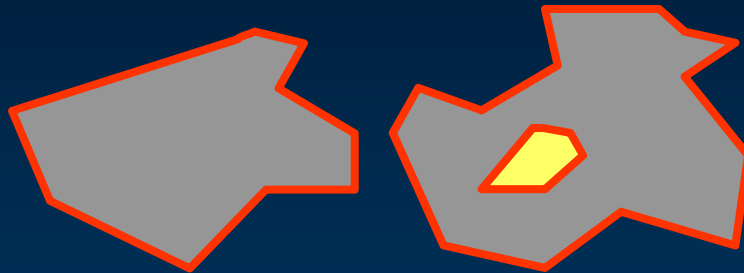
Much more than “Where is the Nearest?” ...



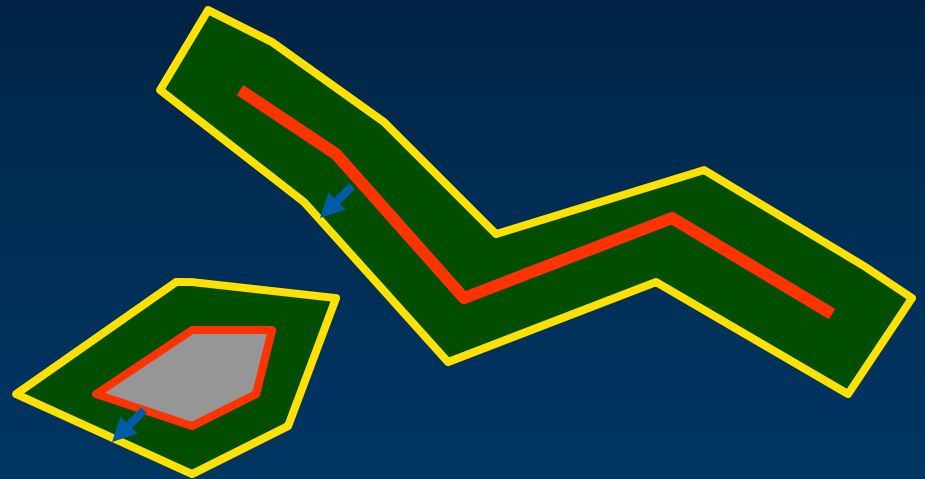
Find nearest n points
Find all within distance



Find within Rectangle



Find within Area



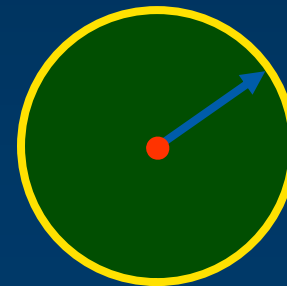
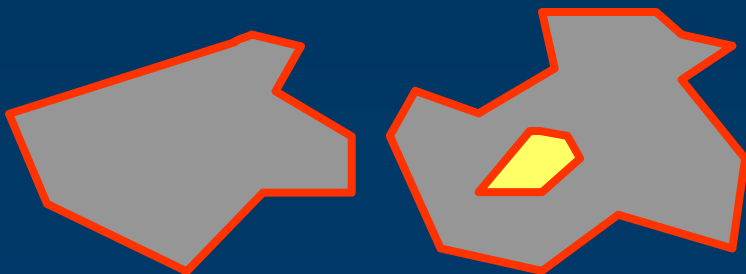
Find within distance from line
Find within buffered area



Drive Time, Drive Distance

Spatial Query

- Find nearest features to a point, line, polygon, or extent
- Find features within a specified geometry
- Generate a list of attributes or field names, and their descriptions, for a point, line, polygon, envelope or data source
- Constrain query by field name, SQL WHERE clauses, total number of records, geography and so on



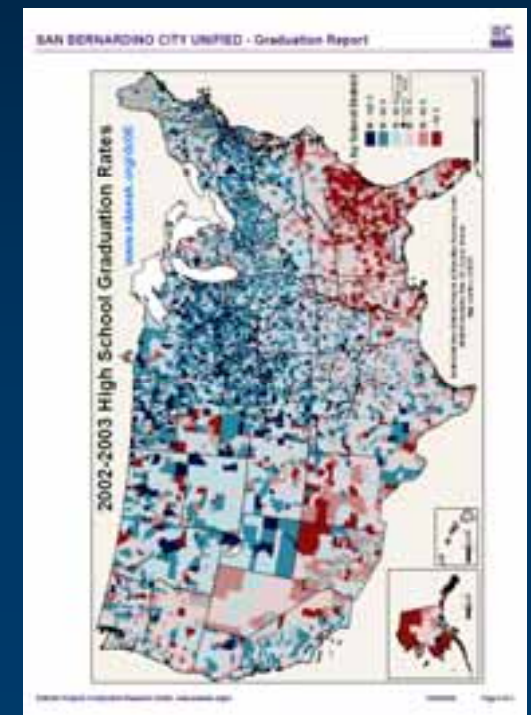
How to get best performance from Spatial Query?

- “find nearest” searches are faster than “find within”
- For line and polygon data, generalize your data
- Organizing your data into multiple data files
- Use same projection for queries as data was uploaded with (and stored in)

- Keep where clauses as simple as possible and avoid “ends with” wildcards (Ex: COUNTRY_NAME like ‘UNITED%’ is better than COUNTRY_NAME like ‘U%’)
- If you use buffers keep the buffer radius as small as possible
- Upload again?

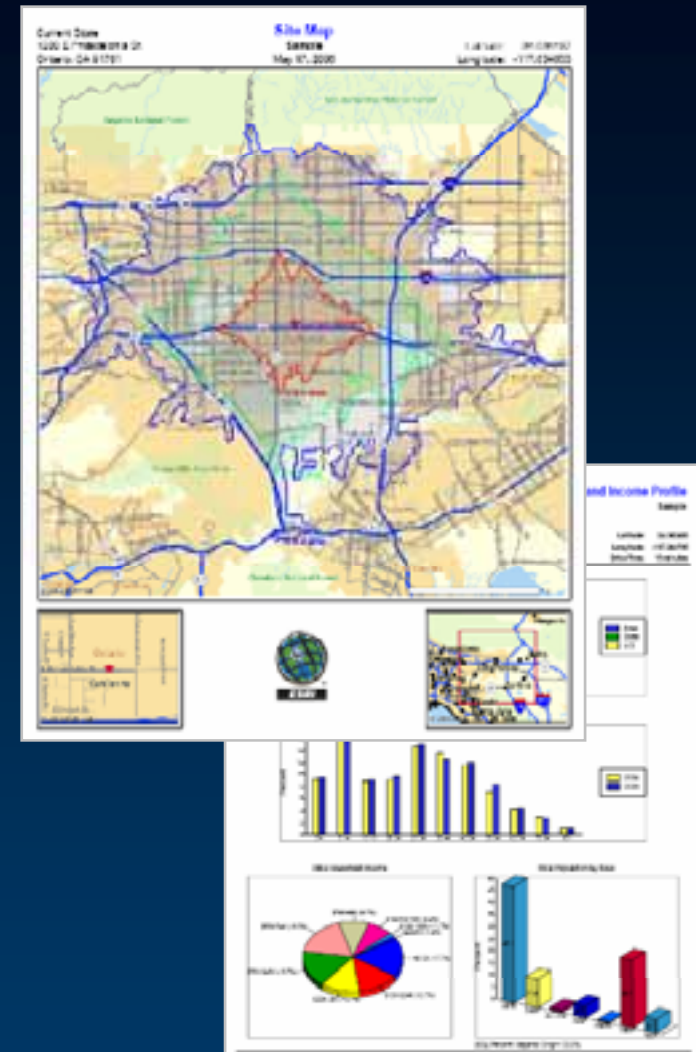
Map Image

- **Generate map image for specified geographic area**
- **Generate thematic map based on ESRI demographic variables or user-defined values**
- **Customize the look of your map**
- **Specify type (jpg, gif, svg, swf, and png)**
- **Specify image size**
- **Specify background color**
- **Display scale bar**
- **Display text**
- **Display custom icons with labels**
- **Display circle**
- **Display marker points including custom markers**
- **Determine coordinates for a map click**
- **Fuse map images**
- **Save and retrieve maps**



Report

- Detailed 2006/2011 demographic reports from ESRI
- The Tapestry Segmentation Area Profile report for market analysis
- Comprehensive Consumer Expenditures
- Census 2000 data available in a summary report and a 1990-2000 comparison profile report
- Traffic Profile report
- Other thematic maps of the areas being analyzed.



Utility & drive time

- Calculate the drive time polygon around a point (the distance you can travel in X minutes from a starting point)



- Calculate the great circle distance between two points
- Change coordinate system and/or datum transformation for point, polyline, polygon, multipoint, or envelope



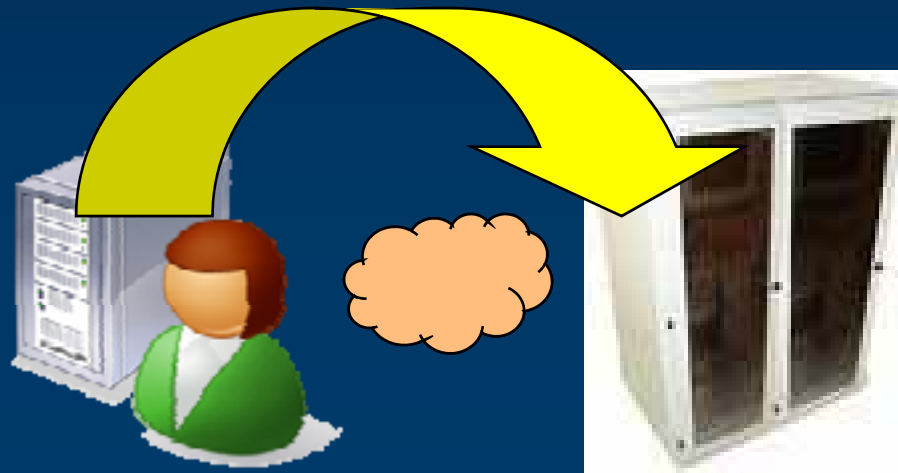
Demo: Geospatial Analysis services

Topics

- Quick Overview
- Location services
- Spatial analysis services
- **Data Management**

Data Manager Service

- Upload a set of points (or ungeocoded addresses), lines, or polygons and associated attribute information to the ArcWeb system through a Web interface
- Geocode saved data
- Add, edit, or delete features in a data file
- Search data files
- Upload icons to use in maps (Web interface only)



ArcWeb portal

The screenshot shows the ArcWeb Services Build Tools portal in a Mozilla Firefox browser window. The browser's address bar shows the URL http://www2.arcwebservices.com/v2006/builder_main.asp. The page features a navigation menu with links for Home, Learn, Use, Overview, and Build. A search bar is located in the top right corner. The main content area is titled "Build Tools" and includes a sub-header "Builder Tutorials" with a list of links such as "How do I get started?", "What data can I use?", and "How can I explore the available content?". Below this, there are five main sections, each with an icon and a brief description:

- Browse & Edit Content**: Search for available services, layers, data files, and styles that you can use with ArcWeb Services.
- Upload Data and Create Layer**: Upload database files and shapefiles to use with ArcWeb Services.
- Upload GIF and JPG Markers**: Upload icons to use with custom map services.
- Modify Layer**: Set filters and apply styles and labels to your layers.
- Build Service**: Create custom map services and spatial query services.

At the bottom of the page, there are links for "Site Map", "Contact Us", "Privacy", and "About ESRI", along with a copyright notice for ESRI.

Upload data

The screenshot shows a web browser window with the URL `http://www2.arcwebservices.com - ArcWeb Services | Builder - Mozilla Firefox`. The page title is "ArcWeb Services" and it features a progress bar with four steps: "UPLOAD DATA" (highlighted in orange), "MODIFY LAYER", "BUILD SERVICE", and "SERVICE COMPLETE". The main heading is "Upload Data File" with the instruction: "You can upload a database file of locations or a shapfile with point, line, or polygon data to use with ArcWeb Services." Below this, the section "Upload Data File" contains the text: "Select a compressed shapfile (*.zip) or a DBF file (*.dbf) to upload." and a note: "Note: The maximum file size you can upload is 10 MB. Click [here](#) for more file requirements." There is an empty text input field followed by a "Browse..." button. At the bottom of the form area is a "Next >" button. The status bar at the bottom left of the browser window shows "Done".

Upload data properties

http://www2.arcwebservices.com - ArcWeb Services | Builder - Mozilla Firefox

ArcWeb Services

Support | Close

UPLOAD DATA MODIFY LAYER BUILD SERVICE SERVICE COMPLETE

Set Field Properties

When you upload your data, you can set the name you want to use for each field.

Your Fields: sample data	Enter Alias Name
AREA: 67290.001	AREA
STATE_NAME: Washington	STATE_NAME
STATE_FIPS: 53	STATE_FIPS
SUB_REGION: Pacific	SUB_REGION
STATE_ABBR: WA	STATE_ADDR
POP1990: 4866692	POP1990
POP1999: 5773907	POP1999
POP90_SOM: 72	POP90_SOM
HOUSEHOLDS: 1872431	HOUSEHOLDS
MALES: 2413747	MALES

Advanced Options Next >

Done

Upload data metadata

http://www2.arcwebservices.com - ArcWeb Services | Builder - Mozilla Firefox

ArcWeb Services

Support | Close

UPLOAD DATA > MODIFY LAYER > BUILD SERVICE > SERVICE COMPLETE

Info About This Data File

The information you provide on this page serves as the metadata. The more complete this information is, the easier it is for other members of your group to find, identify, and use your data.

Fields marked with an R are required.

Title R

Data File Name R

Summary	<input type="text" value="ESRI, 2007"/>	Publisher	<input type="text" value="ESRI"/>
Theme Keywords	<input type="text"/>	Publication Date	<input type="text" value="2007"/>
Place Keywords	<input type="text"/>	Purpose	<input type="text"/>
Scale	<input type="text"/>	Beginning Date (YYYY-MM-DD)	<input type="text"/>
Extent Description	<input type="text"/>	End Date (YYYY-MM-DD)	<input type="text"/>
Category	Select from list	Progress	Select from list
Content is relevant to these industries	<ul style="list-style-type: none">Banking / InsuranceConsumer ProductsEducationFederal GovernmentHealth & Human ServicesHomeland Security <small>Control-click to select multiple industries (Mac users: Command-click)</small>	Update Frequency	Select from list
		Legal Restrictions	Select from list
		Projection Define Projection	<input type="text"/>
		Online Linkage	<input type="text"/>
		Supplemental Info	<input type="text"/>

Done

Upload complete

http://www2.arcwebservices.com - ArcWeb Services | Builder - Mozilla Firefox

ArcWeb Services

Support | Close

UPLOAD DATA MODIFY LAYER BUILD SERVICE SERVICE COMPLETE

Upload Complete

You have successfully uploaded your data and created a layer for it. From this page, you can share it with your group and, once shared, notify your group of its availability.

Data Uploaded: Test200
Where to find it: Content Library > My Library > Data Files [Edit Data File](#)

Layer Created: Test200
Where to find it: Content Library > My Library > Layers [Modify Layer](#)

[Share to Group](#)

[Upload Another](#) [Done](#)

Done

Build Service

ArcWeb Services | Builder - Mozilla Firefox




http://www2.arcwebservices.com/v2004/builder_services.jsp

Home Learn Use Develop Build

Welcome, AHClientDevTeam

Select a Type of Service

You can create a map service or a spatial query service accessible by Internet applications.

- **Build a Map Service**
Create a map service using ArcWeb content or data you uploaded.
- **Access an ArcIMS Map Service**
Create a map service by referencing an ArcIMS URL.
- **Build a Spatial Query Service**
Create a spatial query service using data you have uploaded to ArcWeb.

Builder Tutorials

- How do I get started?
- What data can I use?
- How can I explore the available content?
- How do I add data?
- How can I create a map service?
- How can I create a spatial query service?
- More ...

Frequently Asked Questions

- What is a Service?
- What is a Layer?
- What is a Data File?
- More ...

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Having issues uploading data?

- do one time upload, one by one record will get slower
- each account is allowed 50M or more, keep it broken down, not in one data source
- new data sources will be faster
- follow recommendations for Spatial Query





Demo:
**Custom Query Service:
Web client & ArcGIS access**



Upgrade to latest!



Keep an eye on ArcWeb Labs...

ArcWeb Labs

Labs



Help shape the future of ArcWeb!

- **Early access to latest technologies**
- **Developer community feedback**
- **Enables you to influence final shape of products**
- **www.arcwebservices.com/labs**



www.arcwebservices.com



Thank You!