

Washington Geospatial Data Archive  
**WAGDA 2.0 Project**



- WAGDA 2.0 Motivation/Background
- WAGDA 2.0 Technical Overview
- Use Cases/Demo Stories/Prototypes
- Review of Survey Results



# Background and motivation

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- WAGDA started in mid 1990's to provide more convenient access to geospatial data needed for teaching/learning
- .zip file packages, served via http and/or ftp
- metadata and discovery not well integrated
- doesn't really provide a systematic foundation for broader data sharing, archiving, data management



# Convergences

- Work on NSF DataNet proposal (not funded) helped raise Libraries' interest in data services
- Articulated need for easier ways to discover and share geospatial data
- Willingness of faculty and researchers in Geography, Oceanography, APL to help us
- UCGIS interest in “enterprise GIS”
- Interest in data sharing from potential external partners



# Project Goals

- Near term: improve discovery and access to existing WAGDA data
  - Load existing WAGDA data into geodatabase
  - Provide access via web services and direct db connection (as appropriate)
  - Load metadata for this data into geoportal
- Medium term: begin to accept data from other campus entities
- Longer term: expand pool of data providers beyond campus



# Startup Activities

- Prototyping environment using ArcGIS Server and geoportal extension
- Geography 469 capstone project: develop geodatabase around a coastal zone model
- Test data loaded from WAGDA, PSNERP, SSHIAP
- Expose test data via direct geodb connections, web services
- Begin to identify gaps in functionality
- Engage ESRI professional services



# Systems Overview - Roles

## UW Libraries - WAGDA 2.0

### Data Storage

ArcGIS Server

Database - PostgreSQL; ArcSDE

### Data Discovery

Geoportal

ArcGIS Services

## Data Readers

Teaching

Research

UW Operations

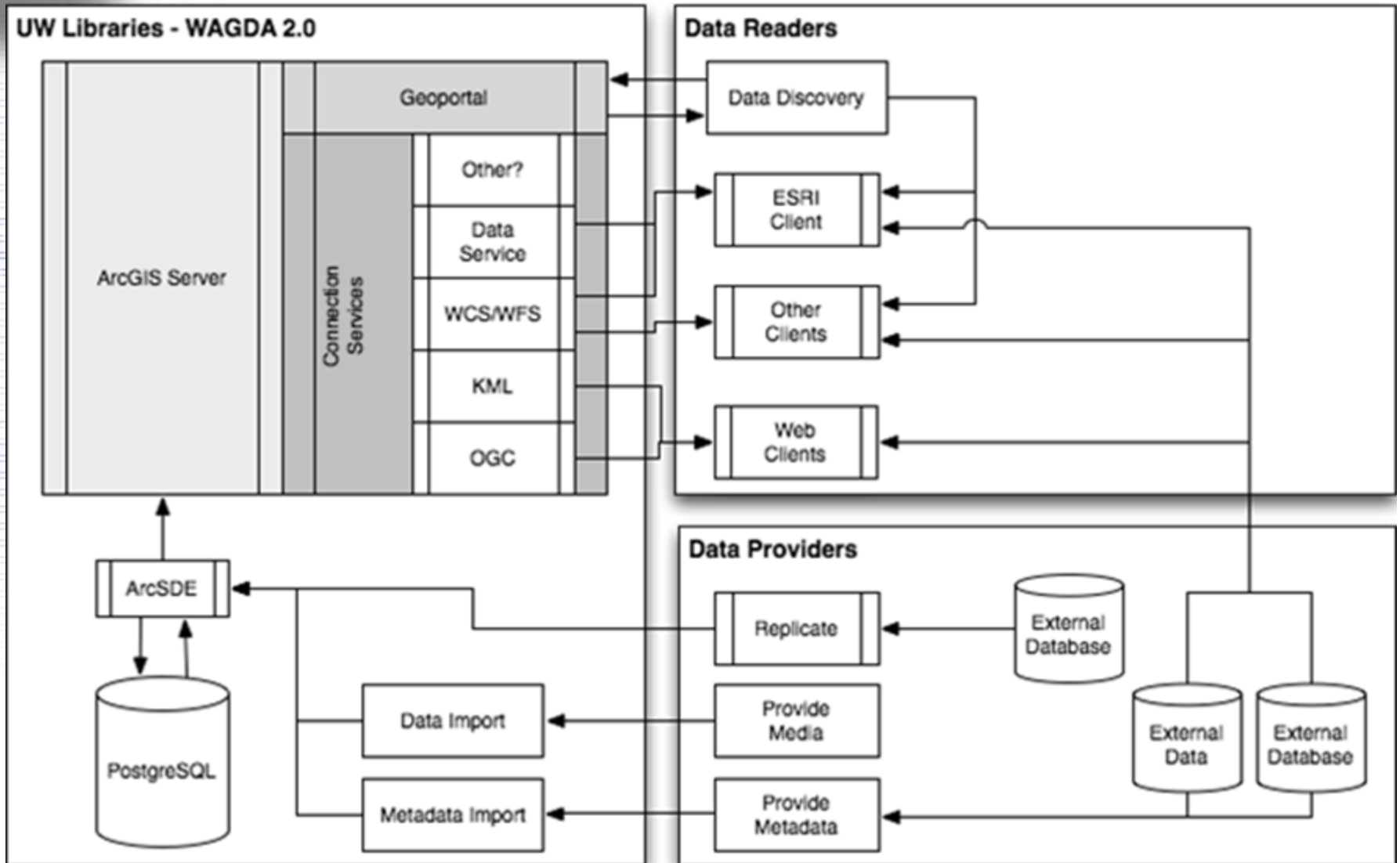
## Data Providers

Contributors

Editors



# System Overview - Design







# Systems Components

- Data Storage using PostgreSQL & ArcGIS (ArcSDE) for Server
- Metadata hosting using ArcGIS Server & Geoportal
- Data discovery and dissemination using ArcGIS Server Services & GeoPortal
  - All the data services available in ArcGIS
  - Which services have been chosen so far

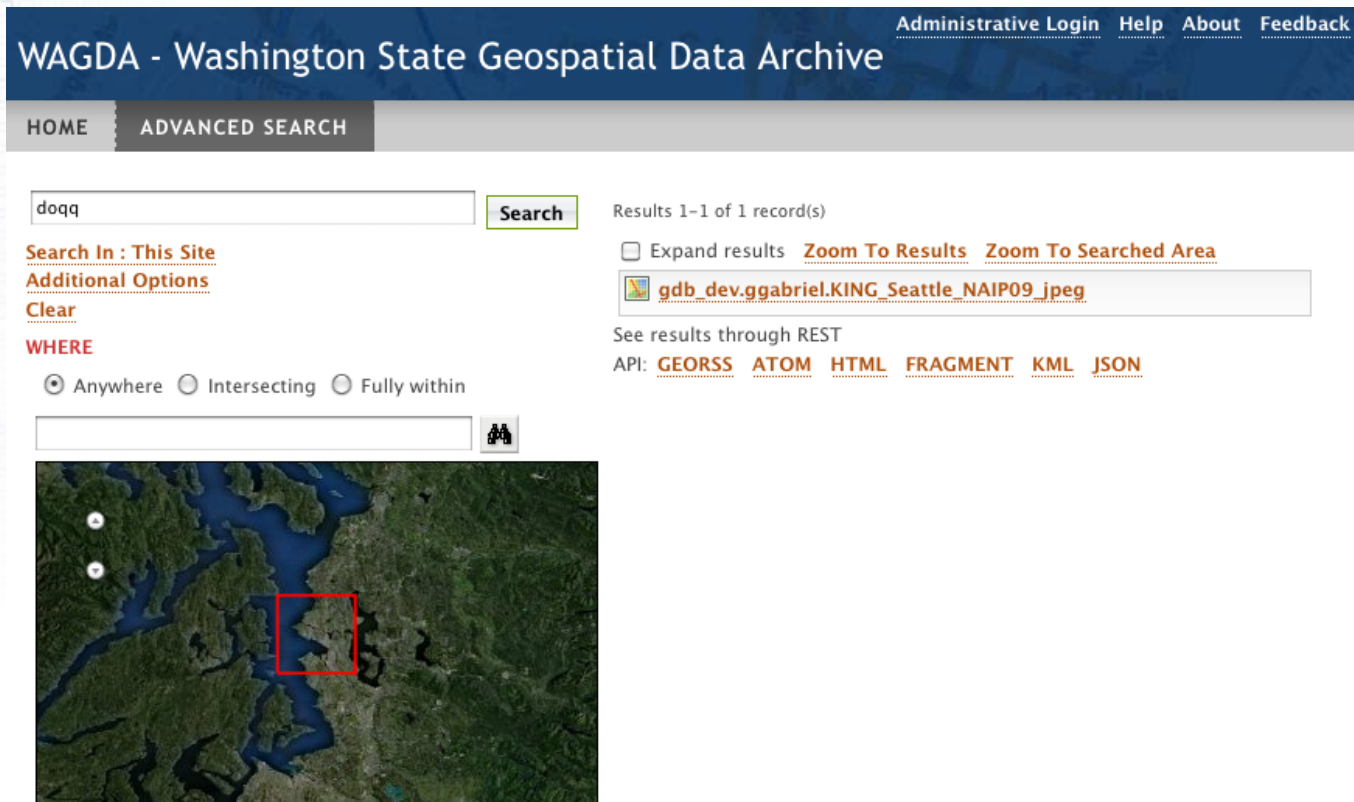


# WAGDA Data Loading

- Physical hand off of data, loaded by library staff
  - City of Seattle
  - NAIP Aerial imagery
- Direct database replication
  - CSDE (Census Summary Files)
  - Non-university organizations
  - Operations (Operations, Capital Projects Office, etc.)

# User Data Discovery

- GeoPortal – [wagda.lib.washington.edu/geoportal](http://wagda.lib.washington.edu/geoportal)



Administrative Login Help About Feedback


## WAGDA - Washington State Geospatial Data Archive

HOME ADVANCED SEARCH

doqq

Results 1-1 of 1 record(s)

Expand results [Zoom To Results](#) [Zoom To Searched Area](#)

 [gdb\\_dev.ggabriel.KING\\_Seattle\\_NAIP09\\_jpeg](#)


See results through REST


API: [GEORSS](#) [ATOM](#) [HTML](#) [FRAGMENT](#) [KML](#) [JSON](#)

[Search In : This Site](#)  
[Additional Options](#)  
[Clear](#)

**WHERE**

Anywhere  Intersecting  Fully within







# User Data Access

- Data Access
  - Multiple Services (currently in development)

Function	Direct Connection	Geodata Service	Image Service	Web Feature Service/Web Coverage Service	Web Mapping Service	Geoportal
Fast data view	●	○	○			
Remote data analysis	●	●	●	●		
Complete and ready metadata	●	●	●			●
Geodatabase versions	●	○	○			○
Exportable data	●	●	●	●		●
Interoperability			●	●	●	●
Modifiable access permission	●	●	●	●	●	○
Replication/Editing	●	●	●	●		

● supported - ○ unverified -

(blank) not supported - (grey) not preferred

- WAGDA 2.0 customers – campus segments
  - Teaching
  - Research
  - UW Operations



# Teaching – Calculate NDVI using ArcGIS 9

## WAGDA 1.0

1. Navigate WAGDA
2. Download zipped index file
3. Unzip index file
4. Load into ArcMAP
5. Identify image tile(s)
6. Email request to WAGDA
7. Download imagery from temporary FTP site
8. Unzip imagery
9. Load imagery into ArcMap
10. Calculate NDVI

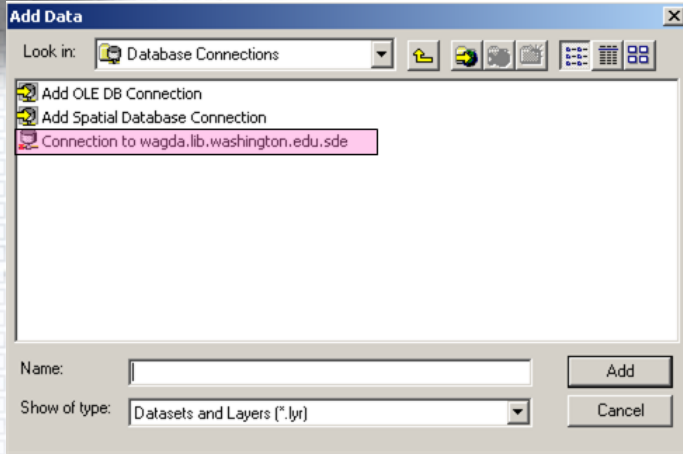
**Time: 5 minutes plus email response time (longer if after hours!)**

## WAGDA 2.0

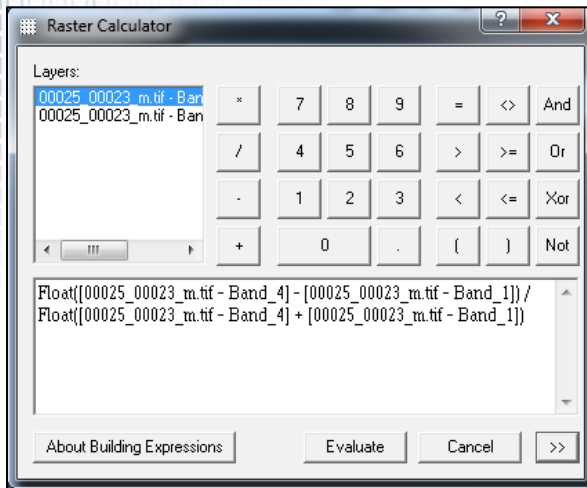
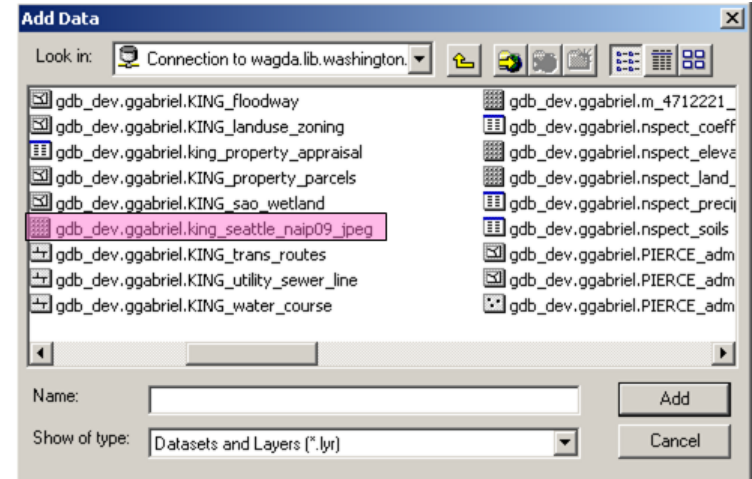
1. Connect to ArcSDEGeodatabase
2. Navigate to NAIP 4-band imagery
3. Add to ArcMap
4. Calculate NDVI

**Time: 2 minutes**

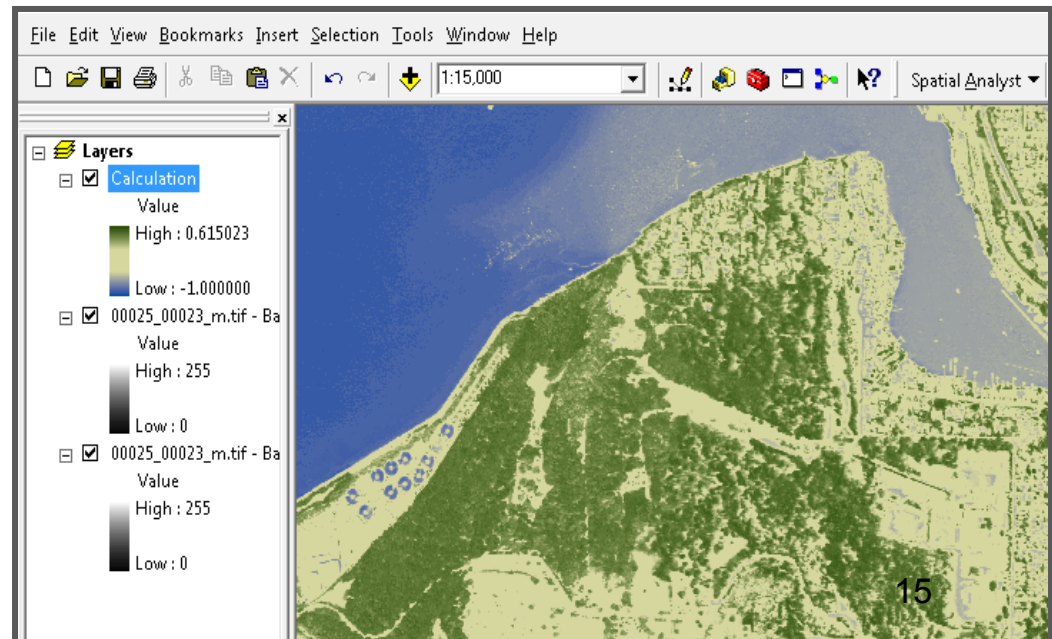
# Teaching – Calculate NDVI



Connect →



Perform Analysis →





# Research – Changes in Population Density using ArcGIS 9

## WAGDA 1.0

1. Navigate WAGDA
2. Download Census data
3. Email request to WAGDA
4. Download historic Census data from WAGDA
5. Unzip all Census data
6. Identify tables of interest in data dictionary
7. Load Census data into ArcMap
8. Join geometry to tables
9. Calculate Population Density

**Time: 2 hours**

## WAGDA 2.0

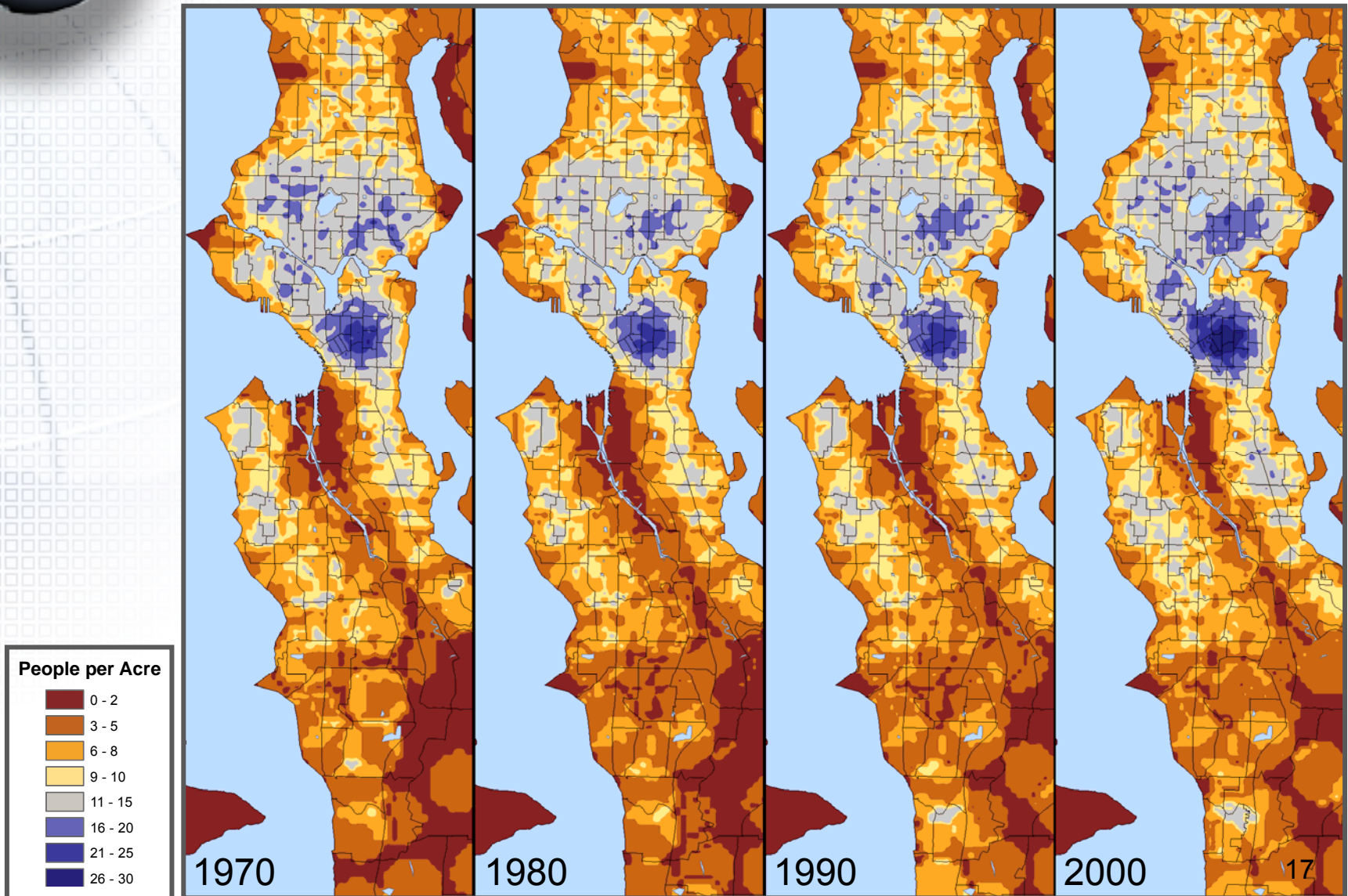
1. Connect to ArcSDEGeodatabase
2. Navigate to Census feature class
3. Calculate Population Density  
(common variables pre-joined.  
Specific variables require more user  
input)

**Time: 15 minutes**





# Research – Changes in Population Density





# UW Operations – Mapping UW Buildings using ArcGIS 9

## WAGDA 1.0

1. Building data does not currently exist on WAGDA 1.0
2. Contact various UW Operations departments for owner of needed data (UW Operations receives many requests for building data)
3. Receive email from UW Operations
4. Load building data into ArcMap
5. Make map of UW buildings

**Time: Not possible**

## WAGDA 2.0

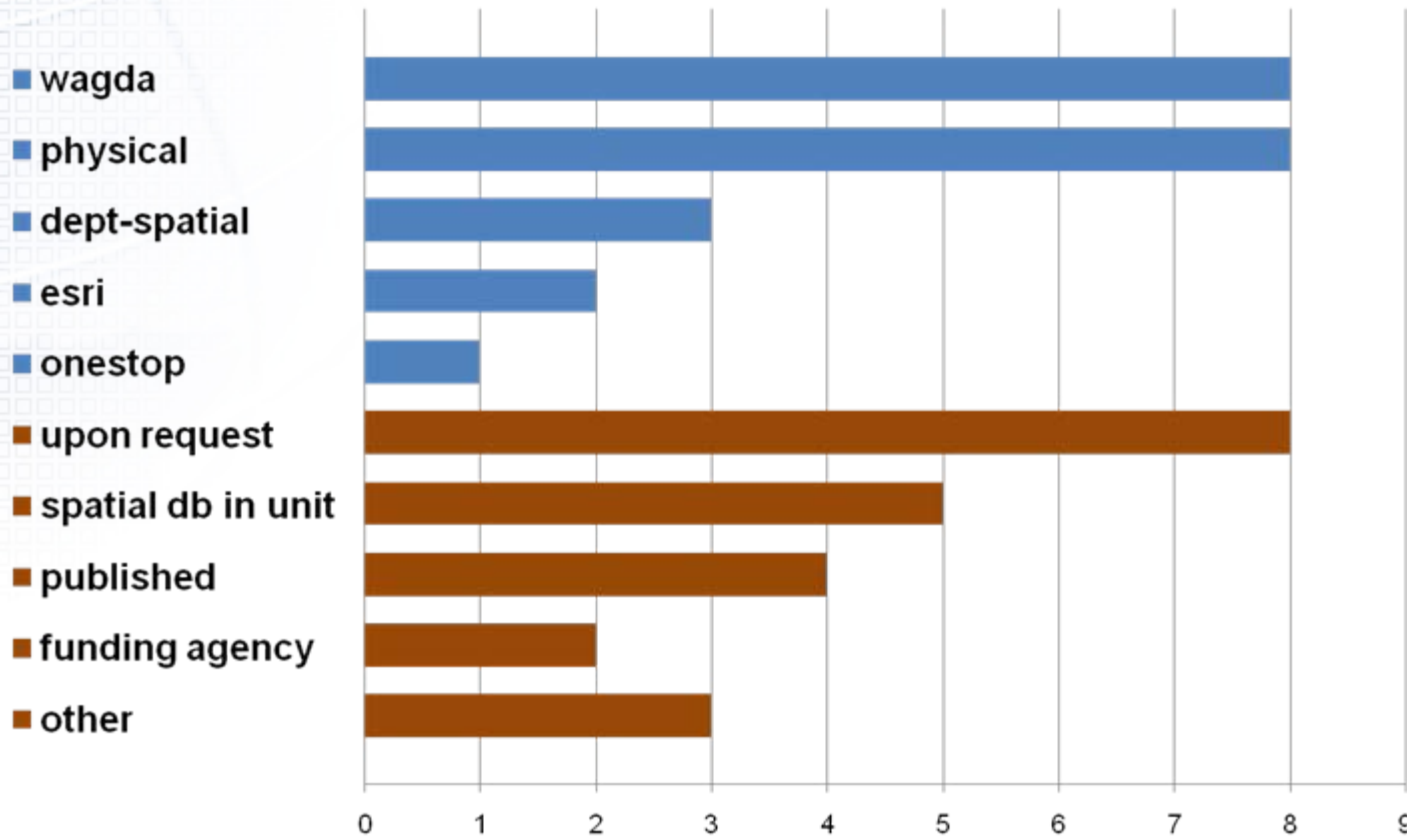
1. Connect to ArcSDEGeodatabase
2. Connect to WAGDA using the geodatabase service (or WFS) serving an archived dataset. The data will be updated on an agreed schedule.
3. Make map of UW buildings

**Time: ?**

# Survey results

- 16 respondents (9 use spatial data in teaching)

How do you currently address data dissemination?





# Survey results

How would you prefer to access data?

<u>Instruction</u>	<u>Research</u>		
<b>File download</b>	<b>4.2</b>	<b>3.94</b>	
<b>Personal/file geodatabases</b>	<b>4.67</b>	<b>4.06</b>	
<b>SDE service</b>	<b>4.22</b>	<b>4.06</b>	
<b>SDE direct</b>	<b>3.33</b>	<b>4.13</b>	
<b>OGC web services</b>	<b>3.0</b>	<b>3.31</b>	
<b>Local access</b>	<b>3.56</b>	<b>3.94</b>	



# Survey results

## Top 5 Data Formats Currently Used

<b>Instruction</b>	<b>Research</b>	<b>Bottom 6</b>
Shapefile	Shapefile	ISFC (ImageStation Feat. Coll.)
File Geodatabase	ESRI Grid	ECW (Enhanced Compressed Wavelet)
ESRI Grid	FileGeodatabase	GML (Geog. Markup Lang.)
ASCII	ASCII	Geomedia (InterGraph)
GeoReferenced Image Files	IMG (ERDAS Imagine)	DXF (Drawing Interchange Format)
USGS DEM (Digital Elevation Model)		Mapinfo TAB files

- Alpha testing
- Working beta version
- Scale up for production resources permitting

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