

AIMS IMS 101: A hands on approach to the Jo Co Mapping Application. Class Outline

Johnson County – AIMS
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1. Intro to GIS (Geographical Information System)
 - a. Definition/Example
 - i. GIS is a system that uses multiple layers such as streets, buildings, or addresses to represent the actual physical location and possibly the shape of a feature. Information about each feature can be tied to the feature, and used through different analysis techniques to gain information about patterns that are developing, route delivery trucks to their destination, direct police the fastest way to a scene, or something as simple as make a map of an area.
 - b. Terms
 - i. Feature
 1. The Geometry that represents a physical object, such as a point to represent a Tree, or a line to represent a street, or a polygon to represent a piece of property.
 - ii. Point
 1. Represents something small, such as a manhole, fire hydrant, or a single tree.
 - iii. Line (Arc)
 1. Represents something fairly thin, but with some amount of length such as a street, or fence
 - iv. Polygon
 1. Represents something with an area such as a pond, or building.
 - v. Attribute
 1. A value in a table that relates in some way to the feature. Ex. You might have an address point, the attributes of that point would be the address that it is representing. Ex. 2 If you have a street, the attributes might be the name, length, type of surface, and number of lanes.
 - vi. Layer
 1. Contains a collection of similar features such as all the Streets, Buildings, or Property.
 - vii. Scale
 1. A measure of how much distance on the map represents some larger distance in the real world. It is displayed as a fraction such as 1 inch equals 200 ft. The 1 inch is the portion of the map that represents 200 ft of actual distance.
 - viii. Scale Dependency
 1. Some layers do not show up at certain scales.
 - a. Ex. Property layers are not available for viewing when you open the application at the County Extent, and Aerial images go away if you zoom in too far.

ix. Projection

1. Map Projection is the inherent inaccuracies, and distortion of the geometry of the map. We use the State Plane projection for our data, because we have found it to have the least amount of distortion for this area. This is the reason for the tilt, or slant of the lines on this site.

x. Metadata

1. Data about the Layer. Ex. Who developed the data, when it was first created, when it was last updated, what people, or organizations were involved.

2. Web Site Layout

a. Layout

The web site layout consists of a banner heading at the top, a GIS Interface located in the middle, and footer located on the bottom. The banner heading identifies the web site as belonging to Johnson County AIMS and includes navigational hyperlinks. The GIS Interface allows users to view and interact with Johnson County spatial data layers. The footer includes copyright information, disclaimers, and contact information.

b. GIS Interface

A GIS interface consists of a viewing area, commonly called a “Map or View”, where spatial data, such as points, lines, and polygons can be displayed. The Map is the essence or focal point of any GIS interface. Along with the Map, the GIS Interface includes a table of contents and a suite of interactive tools. The table of contents usually resides to the left of the Map and provides the user with the ability to select data layers to view on the map. Map tools usually reside above, below, and/or to the right of the map. Map tools provide the user with abilities to change the scale of the Map (Zoom In/Zoom Out), to select data or features on the Map, and to measure distances represented on the Map, to name a few.

3. GIS Tools

a. General Discussion

Tools are ways that the user can interact with the map and the displayed data. Tools come in many forms, such as buttons, radio buttons, list boxes, combo boxes, and text lines.

b. Zoom In/Zoom Out

These allow the user to zoom in or out where the user clicks on the map. The amount of zoom can be specified by choosing a factor to zoom by. The default is 2x (2 times). Options include 3x, 4x, 6x, 8x, or 10x. The zoom factor is applied to current scale of the map. The zoom in tool can also be used by dragging a box on the map while holding down the left mouse button to the desired extent. A red box or “rubber band” should appear while the mouse is moved and the new extent should come up when the left mouse button is released.

c. Id Feature (Active Layer)

Allows the user to see all of the related information or attributes for a selected feature. Before Id Feature can be used, the user should make the layer of interest visible in the map, by checking the check box for the layer on the left side of the map and clicking the redraw button. Then the user should select the data layer in the Active Layer combo box. This is necessary to provide a quick and efficient method for searching the data. If the Active Layer was not used in this regard, the web site would have to search through all layers and this would be extremely time-consuming. Only the data from the Active layer, and only in the area selected will be displayed. The user can then get information about a specific feature by clicking on that feature.

i. Id of Property.

1. When doing one of the two methods of the above Id Feature to the Property Polygons, or Property layer, brings up a special information window. This is due to the large amount of information tied to each property. The user can use the tabs at the top of the Identify Results window to toggle between the information screens, or use the print all link to view, and print all of the information for that property as well as a small location map. The links that are in the property Identify Results window will either bring up a definition when hovered over for the feature codes, or will bring up another window with the specific information. (e.g. landuse, zoning, appraisal information, etc.) Zoning will soon be available for many of the cities in the county.

d. Pan

This will simply center the map where the user clicks. Clicking on the location map will pan the extent of the map to that location. This is helpful if you need to pan a long way across the county.

e. Measure

This allows the user to determine distances on the map. It works by measuring the distances on the map between the locations where the user clicks. The measure tool provides two measurements: a Segment Distance and a Total Distance. The Segment Distance is the distance between the last two clicked locations. The Total Distance is the distance between the first clicked location and last clicked location. The measured distances are displayed in the status bar of the Internet browser window, located in the lower right corner of the window. If you do not see a status bar, make sure you have made it visible in your Internet browser settings. A red line should track user clicks on the map, and the last segment distance, and total distance should be displayed in the status bar at the bottom of the window. To erase the red lines, click the clear map, or redraw button. The line and distance will be reset if you move the mouse off of the map portion of the window. If you move back on the map window a new line will be started with the next mouse click and the distance will be set back to zero.

f. Draw Box

This allows the user to specify the extent of a rectangle and have it displayed on the map for assistance in determining the size of an area located on the map. To draw the box, select the upper left corner location for the box by clicking on the map and then hold the mouse button and drag the mouse to where the lower right corner of the box should be and then release the mouse button. Upon release, the map will be redrawn with the box the user specified outlined in red. The area and coordinates of the box will be displayed in the status bar, located in the lower right corner of the Internet browser window. To remove the box, redraw the map.

g. Search for Location / Locate It!

This is a quick method for locating a particular location. The tool exists as a text line and allows the user to enter an address, street intersection, parcel id, AIMS map number, or AIMS map number with the quarter section (e.g. K26NE), or a Township, Range and Section in that order, just the numbers, with a dash between each. After entering in the text, the user can hit the <Enter> key or click on the “Locate It!” button. The map will then be redrawn, focused on the particular searched location. If the map cannot find the particular location, or if multiple locations are found, red text will appear below the map indicating the problem, or will have a list of the possible locations. There is a hyperlink named “e.g. Address, Parcel Id, or Parcel No.” below the “Locate It!” button, which opens a new window highlighting examples of location text to search by.

- i. Address searches are executed as follows. The tax records are searched for a matching address, if none is found then the address repository is searched for a match. If a match is found in the address repository that point is intersected with the parcels to locate that property. If no address is found in the address repository, the address is matched against the address ranges on the county centerline file.
- ii. Address intersection searches are typically more successful if the address number is entered instead of the numbered street. For example 13500 Pflumm may be more likely to be found than 135th and Pflumm.

h. Map Size

This tool exists as a radio button below the map. There are three possible sizes: Small, Medium, and Large. The default is Medium. After selecting the appropriate size, click Redraw to adjust the map size.

i. Full County

This allows the user to quickly return the map to the scale of viewing the entire county.

j. Redraw

As the name implies, this tool will force the map to re-draw itself. It is located below the Legend and below the Map. It is important to remember that if a tool changes some aspect of the map but doesn't redraw the map, the user will have to manually click Redraw to see the changes in the map. A good example of this is checking and un-checking data layers to make them viewable or invisible. The action of checking and/or un-checking the data layers does not force the map to be redrawn, but the changes in visible data layers will not be seen until the user manually clicks Redraw. The reason the functionality exists this way is so the user does not have to wait on actions that are fairly slow and are largely repeated. Case in point, if the user wants to make five layers visible, it is better to let the user select all five before redrawing the map instead of redrawing the map five times.

4. Advanced Features

a. Zoom to Feature

i. Choose a Layer

1. Choose a Feature to zoom to, and then click on “Zoom to It”.

b. Print Map

- i. Make sure you have the area you want on your map in the map window, this will be what shows up on the printed map.
- ii. Choose Print Map, this will bring up a window that allows you to change certain things about the area around the map, such as the title, if it has a legend, north arrow, scale, and small location map, it will also allow you to choose if you want to print to a color printer, or black and white.
- iii. Click the Create plot button after choosing the options you would like, this will bring up a print preview window where you can look at the map before it is printed to make sure it is what you want.

- iv. To actually print the map, go to the file menu in the window, and choose print. This will take you through the normal steps to print a document. Tip: removing page headers and footers as well as setting margins to a maximum of .5 inch, and setting the format to be landscape from the page setup window will help get the map on a single sheet of paper, and should ensure the printed map scale is accurate.
- c. Buffer Location
 - i. This is particularly useful if you need to contact people within a certain area around an address or piece of property. You can enter in the address, or property ID, and the number of feet you would like to go out from the property up to 5280 ft (1 mile). You can use the check box to display the Property ID numbers that partially, and totally fall within the buffer.
 - ii. If you choose to display the Property ID's they will be displayed in a new window as a list. You can then print this list, and/or map, and take it to the County Clerks office to get owner, and contact information if you needed. (You will have to sign a Kansas Open Records Act form before you receive this information.)

5. Layer Categories

- a. Property Layers
 - i. Layers that have to do with property location, dimensions, addresses, and other legal information about the property.
- b. Aerial Images
 - i. Orthophotography
 - 1. Most Accurate, resolution of .5 feet with an accuracy of 1 ft or better. Has more error caused by image distortion taken out by correcting for camera angle and elevation. This is the most accurate image to use if you are measuring.
 - ii. Black and White Aerial Photography
 - 1. Have a resolution of 1 or 2 feet with an accuracy of 7 feet or better from the location being represented.
 - iii. Color Aerial Photography
 - 1. Have a resolution of 2 feet with an accuracy of 7 feet or better from the location being represented.
 - iv. Year
 - 1. Represents the year in which the photography was flown.
 - 2. The Orthophotography is from the years of 1998 through 2000.
- c. Planimetric Layers
 - i. Derived from Orthophotography. Contains things such as building outlines, lakes and ponds, streams, and topographic lines.
- d. Other Layers
 - i. Layers maintained by Johnson County and its data partners, such as Street Centerlines, Zoning information, City Boundaries, and certain other public services.
- e. Admin. Layers
 - i. Polygons of certain administration boundaries, such as Sheriff Districts, Fire Districts, or County Commissioner Districts.
- f. School Layers
 - i. Layers pertaining to certain school features, such as points for individual school locations, and polygons for school district boundaries.
- g. Utility Layers
 - i. Layers that deal with different Utility features such as Sewer Lines, and Service area boundaries.

- h. Legend/Symbology
 - i. Click the word “Legend” to bring up the legend.
 - ii. Contains information about what different colors, and symbols mean, each layer, or type of feature has it’s own symbol. Ex. All fire hydrants have one symbol, and all manholes have a different symbol. Ex. 2 Street centerlines are colored differently for the type of street they are, highways are displayed different from thoroughfares, which are different from residential streets.
- i. Scale Dependency
 - i. Some layers do not show up at certain scales.
 - 1. ex. Aerial images are not available if the scale is too large (you are zoomed in too far), and Property layers are not available if you are not zoomed in far enough.

6. Data Currency and Metadata

- a. Data Currency

The web site provides access to a plethora of Johnson County data sets, but not all data sets are maintained and updated by Johnson County. The County works with other government entities, such as cities, and private companies to obtain the most recent and highest quality data. Thus, it is important to remember that when combining data sets together in one map, the data may differ in currency and quality.
- b. Metadata

Metadata means simply “Data about Data”. To obtain Metadata information regarding a particular data layer, click on the data layer name. This will open a new Internet browser window showing Metadata information. The window will contain three Metadata sections, displayed as tabs, which include “Description”, “Spatial”, and “Attributes”. When you click on each tab, the displayed information below will change to reflect the content of the selected tab. The “Description” tab is the default when the window opens and it displays general information about the data, such as abstract, keywords, and status. “Spatial” contains information regarding where the data exist in the world, identifying projection, coordinate, and accuracy information. “Attributes” identify all of the non-spatial related information with the data (essentially all of the fields included with the data set).

7. Tips and Tricks/FAQ

- a. Tips and Tricks
 - i. Searching hints
 - ii. How to do a plot plan
 - iii. Using the measure tool to create graphics
 - iv. Useful web pages and links
 - v. Useful printing techniques
- b. FAQ

These include: how to do a plot plan, how to see property dimensions, where are the easements on my property, how to find and view my plat, would about floodplain information, what is an AIMS Map number, how is printing from Advanced Features different from printing from the Internet browser window, etc.