

This working document will be used to develop system requirements for the application. These requirements will tell the working group what functions are most important.

A. Overview

Current Problem

Several local governments have GIS tools to support business entity users and public access that are reaching the end of their technical life, are becoming increasingly expensive to maintain, and many commercially available systems do not meet our needs.

Goals

1. Develop a simple to use web-based tool for users (variety of staff and the public) to explore (view, query, and make maps) geographic information.
2. Develop a simple mechanism so that GIS professionals with limited time and training can support the web tool.
3. Develop a simple tool (component) that can be added to the web tool so that simple shapes and attributes can be edited and updated.
4. Develop a simple tool (component) that can be added to the web tool so that basic GIS analysis can be done.

Stake Holders

1. IT/GIS Staff - will maintain the system
2. Business Entity Users – will use the system to solve their business problems
3. Public – will use the system to access information

Project Boundaries/Limits

1. Web based
2. Simple to use by non-gis staff and the public
3. Will include both spatial and non-spatial data on servers or services including:
Shapefiles, Database Tables, ArcMap Feature Classes in PostGRES/PostGIS, Tables with X/Y coordinates
4. Must be of an acceptable speeds
5. Must work in a "stand-alone" environment
6. Be administered by non-programmer GIS staff that control access to data and capabilities

* See system considerations in primary document

Future Directions

1. Interactive feature editing
2. Geographic analysis

B. Summary (Business) Use Cases

The summary use cases describe the steps each type of user will use to support their daily jobs. The focus of these use cases is how a each person jobs gets done. The following terms will be used when documenting the use case.

Use Case: An activity or function that accomplishes some business goal.

Use Case Group: An artificial grouping or collection of use cases that includes internal business use cases, public support, public access use cases, and system administration.

Actor: The person who is completing the use case or business function.

Goal: What the actor is trying to accomplish

Number of Users: How many actors there are in a typical organization that performs this business function.

Frequency: An approximate index of how often the business function is performed including many times a day, daily, daily/weekly, weekly, and rarely.

Steps: The generalized steps required to complete the business function.

Post Condition: What exists when the business function is completed.

Phase: Phase of development (Prototype or First or Second)

Use Case Group: Internal Business Use Cases

Uses case that will be included in the first phase of application developed will be identified.

1. Field Appraisal: Field Appraisers take laptops into the field to support the appraisal process

Actor: Field and/or Farm/Forest Appraiser

Goal: Examine property records and geographic information of record to ensure that past appraisals are accurate and to identify new improvements or enhancements to a property.

Number of users: 5+/county

Frequency: Daily

Steps:

1. Search for property meeting specific parameters (Name, street, subdivision, house number, account, map number, etc)
Or
Graphically go to and select a property
2. List properties
3. Select properties from a list
4. View property attributes (A&T attributes)
5. View Map with photo or property dimensions, etc
6. Adjust map view
7. Graphically select other near by features
8. Produce maps and/or property report
9. Overlay property on soils layer and apportion error to equal legal area (* Lincoln)

** - During this process it would be nice to see where you are if you have GPS

Post Condition: Appraisal information is known and used.

Phase: First

2. Survey Research: Survey techs, surveyors, and engineers search survey documents for a variety of reasons.

Actor: Surveyor or Survey Tech.

Goal: Find surveys and view survey documents that impact a specific property or area of interest.

Number of users: 1-2/county

Frequency: Daily/Weekly

Steps:

1. Search for a survey, property, or corner
2. List surveys, property owner, or corner
3. Select survey, property or corner from list

4. View survey attributes, property or corner attributes
5. View Map with photo, survey outline, property dimensions, etc
6. Identify feature coordinates
7. Adjust map view
8. Graphically select (drilldown/buffer) other nearby features
9. Produce maps and/or property report

Post Condition: Coordinates of features are known, documents of interest have been viewed, and/or property attributes are known.

Phase: First

3. Field Survey Work: Someone under the direction of the lead surveyor or engineer that needs to find a feature (property corner, survey corner, government corner, road pin) in the field.

Actor: Surveyor or Survey Tech.

Goal: Find features of interest in the field and/or identify property owners to get permission to access their property.

Number of users: 1-2/county

Frequency: Daily/Weekly

Steps:

1. Search for a survey, property, corner, or use a traverse tool to find an area of interest.
2. List surveys, property owner, or corner from list
3. Select survey, property or corner from list
4. View survey attributes, property or corner attributes
5. View Map with photo, survey outline, property dimensions, etc
6. Identify coordinates where feature is
7. Adjust map view
8. Graphically select (drilldown/buffer) other nearby features
9. Produce maps and/or property report

** - During this process it would be nice to see where you are if you have GPS

Post Condition: Coordinate is known, feature has been found, or attributes about interested feature (corner, survey, or property) is known

Phase: First

4. Sign/Culvert Maintenance (View attributes): When in the field public works sign maintenance staff needs to view sign inventory information. This application can also be used to view bridge, culvert and other inventory information.

Actor: Public Works Sign Inventory Person

Goal: Update road feature inventory to ensure that it accurately reflects what is in the field.

Number of users: 1+/county

Frequency: Daily/Weekly

Steps:

1. Search for a road or graphically select an area
2. List signs in area
3. Geographically view an area and select signs in area
4. Select sign from list
5. View sign attributes (AOC IRIS attributes)

** - During this process it would be nice to see where you are if you have GPS

Post Condition: Sign inventory is known

Phase: First

5. Sign/Culvert Maintenance (change location): When in the field public works sign maintenance staff have the need to update sign location information. This most often occurs when a new sign is placed or replaced.

Actor: Public Works Sign Inventory Person

Goal: Update road feature location to ensure that it accurately reflects the field position.

Number of users: 1+/county

Frequency: Daily/Weekly

Steps:

1. Search for a road or graphically select an area
2. List signs in area
3. Geographically view an area and select signs in area
4. Select sign from list
5. View sign attributes (AOC IRIS attributes)
6. "Submit" a location change (id,x,y) to AOC IRIS

Post Condition: Sign inventory is current and IRIS is updated with a new location

Phase: First

6. Planning (Mailing List): Planners and clerical staff generate mailing lists to notify property owners within a specific distance of proposed development activity. This task also performed in support of public requests.

Actor: Planner or Support Staff

Goal: Develop a mailing list of property owners for the notification process.

Number of users: 2- 5+/county

Frequency: Daily

Steps:

1. Search for a property meeting specific parameters (Enter Name, street name, subdivision, house number, account, mapnumber, (cross street))
2. List properties
3. Select property from list
4. View property attributes (A&T attributes)
5. View Map with photo or property dimensions, etc
6. View Map with property owner labels
7. Adjust map view
8. Select a distance to buffer
9. Select properties within the specified distance and add to selected set.
10. Print a list to a mail merge file

Post Condition: Mailing list file is known

Phase: First

7. Planning (Site Review): Planners use the application to support the permit development application process.

Actor: Planner or Support Staff

Goal: Develop a mailing list of property owners for the notification process.

Number of users: 5+/county

Frequency: Daily

Steps:

1. Search for a property meeting specific parameters (Enter Name, street name, subdivision, house number, account, mapnumber, (cross street))
2. List properties
3. Select property from list
4. View property attributes (A&T attributes)
5. View Map with photo or property dimensions, etc
6. Adjust map view
7. Drill down and view other features such and identify overlap with other features such as the UGB boundary, Slopes, Soils, FEMA map, etc.
8. Produce maps and/or reports

Post Condition: Environment impacts are known and planner can update site review forms

Phase: First

8. Planning (Planning Test): Planners will perform a variety of tests to assist the public in determining land-use development alternatives. The template test is used to support research to see if a house can be built in a rural area. The template is a 160 acre square or rectangle that can be positioned on a property and rotated to best fit the local features. Once placed all properties

that are touched by the template are selected and the number of houses present are counted. The capability test is used to summarize the acreages for various soils to identify if a property can be built or not. This is a simple tool that intersects the selected taxlots with soils and summarizes the acreages for various soils types.

Actor: Planner or Support Staff

Goal: Complete planning test and identify impact on development alternative.

Number of users: 5+/county

Frequency: Weekly

Steps:

1. Search for a property meeting specific parameters (Enter Name, street name, subdivision, house number, account, mapnumber, (cross street))
2. List properties
3. Select property from list
4. View property attributes (A&T attributes)
5. View Map with photo or property dimensions, etc
6. Adjust map view
7. Measure lengths and areas
8. Graphically select (drilldown/buffer) other nearby features including soils (hi value), flood plains, city/ugb boundary, etc.
9. Perform selected test such as the hi-value soils test, forest capability test, template test, or soil capability test.
10. Produce maps and/or property report

Post Condition: Tests are complete and output created

Phase: Second

9. Public Safety Field Work: For a given area identify field locations and the relationship to other features of interest. (ie: Is the crime scene within the city limits or Where have the search and rescue teams been).

Actor: Public Safety Staff

Goal: Identify where field locations are relative to known geographic features such as city limits, property boundaries or others.

Number of users: 5+/county

Frequency: Rarely

Steps:

1. Enter or import GPS coordinates of locations.
2. Zoom to area centered on coordinates.
3. Drill down and view other features and identify overlap with other features such as the property boundaries, city limits, UGB boundary, Slopes, Soils, FEMA map, etc.
4. View attributes for other features.
5. Label map features or sketch features on map
6. Produce maps and/or property report

Post Condition: Support maps created

Phase: First

10. Health/Public Safety (Phone List): First responders use the application to generate phone lists to notify property owners within a specific distance of an emergency.

Actor: Public Safety or Health Staff

Goal: Generate a list of phone numbers to be autodialed.

Number of users: ??

Frequency: Rarely - During events

Steps:

1. Search for a property meeting specific parameters (Enter Name, street name, subdivision, house number, account, mapnumber, (cross street))
2. List properties
3. Select property from list
4. View Map with photo or property dimensions, etc
5. Adjust map view

6. Select a distance to buffer
7. Select properties within the specified distance and add to selected set.
8. Print a list to a text file

Post Condition: Phone call list created.

Phase: First

Use Case Group: External Business Use Cases (Interacting with the public)

11. Community Development and Assessor Phone/Counter Reception: The community development department and the assessor's Office have staff that answer questions on the phone or counter regarding property.

Actor: Support Staff

Goal: Provide information regarding property and development potential to the public. Answer questions as they come up.

Number of users: 5-10+ per organization

Frequency: Many times a day

Steps:

1. Search for a property meeting specific parameters
 - a. Enter Name, subdivision, house number, account, mapnumber, (cross street)
 - OR
 - b. Graphically select properties in an area (north side of Hwy 22 between Harmony and Perrydale roads)
 - OR
 - c. Graphically select a property by "running a legal" (traverse from starting point)
2. List properties
3. Select property from list
4. View property attributes (A&T attributes)
5. View Map with photo or property dimensions, etc
6. Adjust map view
7. Graphically select (drilldown/buffer) other nearby features
 - a. City, nearby taxlots, surveys, etc
8. Produce maps and/or property report

Post Condition: Information provided to the public.

Phase: First

12. Planning (Plot Plans): Planners use the application to "sketch" the planned development of a property. This often involves drawing simple shapes (points, lines, polygons) on a map and specific distances from property boundaries and other features.

Actor: Planner or Support Staff

Goal: Produce a sketch of a plot plan (building or development features) with dimensions to be used with a building application.

Number of users: 2-5+/county

Frequency: Daily/Weekly

Steps:

1. Search for a property meeting specific parameters (Enter Name, street name, subdivision, house number, account, mapnumber, (cross street))
2. List properties
3. Select property from list
4. View property attributes (A&T attributes)
5. View Map with photo or property dimensions, etc
6. Adjust map view
7. Measure lengths and areas
8. Graphically draw site plan objects such as driveways, building footprints, and septic drain fields
9. Produce maps to be used with permit application

Post Condition: Plot plans are produced

Phase: First

Use Case Group: Public Use Cases

13. General Public: The public uses several tools for locating property. This access is a fairly simple process that is focused on finding a simple property.

Actor: Anonymous Public

Goal: Identify basic geographic features such as property and obtain basic information. Most times we do not know what their specific goal is.

Number of users: 100+/organization

Frequency: Many times a day

Steps:

1. Search for a property meeting specific parameters (Enter Name, street name, subdivision, house number, account, mapnumber, (cross street))
2. List properties
3. Select property from list
4. View property attributes (A&T attributes)
5. View Map with photo or property dimensions, etc
6. Adjust map view
7. Measure lengths and areas
8. Graphically select (drilldown/buffer) other nearby features
 - a. City, nearby taxlots, surveys, etc
9. Produce maps and/or property report

Post Condition: Information provided and user leaves system

Phase: Prototype

14. Land Use Professional-Property Search: This is a person who is familiar with the land records available and is supporting a profession (Realtor, Developer, Surveyor, etc) and is searching for property specific information.

Actor: Anonymous Person

Goal: Identify basic property information and nearby features. Often we do not know the goal for this user.

Number of users: 20+/organization

Frequency: Many times a day

Steps:

1. Search for a property meeting specific parameters (Enter Name, street name, subdivision, house number, account, mapnumber, (cross street))
2. List properties
3. Select property from list
4. View property attributes (A&T attributes)
5. View Map with photo or property dimensions, etc
6. Adjust map view
7. Graphically select (drilldown/buffer) other nearby features
 - a. City, nearby taxlots, surveys, etc
8. Produce maps and/or property report

Post Condition: Information provided and user leaves system

Phase: Prototype

15. Land Use Professional-Survey Search: This is a person who is familiar with the land records available and is supporting a profession (Realtor, Developer, Surveyor, etc) and is searching for land records information. This person typically wants to obtain surveys, and deed record information for a property.

Actor: Anonymous Person

Goal: Identify land records associated with a property.

Number of users: 20+/organization

Frequency: Many times a day

Steps:

1. Search for a survey (Enter subdivision, surveyor, survey#, year, client)
2. List surveys
3. Select survey from list
4. View survey attributes (A&T attributes)
5. View Map with photo, survey outline, property dimensions, etc
6. Adjust map view
7. Graphically select (drilldown/buffer) other nearby features
 - a. City, nearby taxlots, surveys, etc
8. Produce maps and/or property report
9. Go to other land records systems and obtain additional information

Post Condition: Information provided and user leaves system

Phase: Prototype

Use Case Group: System Administration Use Cases

16. Data/Map Administration MapLayer Definition: This is a technical GIS user who will define how geographic features are rendered on a map.

Actor: GIS professional

Goal: Definitions of how map layers will be drawn on a map

Number of users: 1+/county

Frequency: Monthly?

Steps:

1. Create a layer
2. Identify geographic dataset associated with layer
3. Identify a
4. Select any preliminary filter (geographic or attributes)
5. Create classes for layers
6. Define cartography for layers
7. Assign layer to a layer group

Post Condition: System updated with modified map rendering options.

Phase: First

17. Data/Map Administration Query Definition: This is a technical GIS user who will define how a user will be asked questions (queries) for a specific map.

Actor: GIS professional

Goal: Definitions of how queries will be performed and what attributes will be visible as part of the queries.

Number of users: 1+/county

Usage: Weekly?

Steps:

1. Create query
2. Identify table that will support query.
3. Identify attributes/fields and display name that will be used for query
4. Identify examples for each field
5. Identify attributes/fields that will be listed for the user.
6. Identify attributes/fields that will be used as links to images, documents, maps, etc..

Post Condition: System updated with query information.

Phase: First

18. Data/Map Administration WebMap Creation: This is a technical GIS user who will define how a user will access a specific map.

Actor: GIS professional
Goal: WebMap is created

Number of users: 1+/county

Usage: Rarely

Steps:

1. Create a map and identify the site that the user will access for the map.
2. Identify map layers that will be viewable for the map
3. Identify query definition that will be used for the map.
4. Identify reference map, output types, legend types, scale bars for the map

Post Condition: Web site created

Phase: First

Other Use Cases

Pavement Condition : Many features in IRIS are identified by a start and end road mile such as pavement condition. Pavement condition is a number from 0-100 that identifies how good the pavement is. This information should be dynamically viewed on the map by matching the roadid, lomile/himile and condition to a feature class that contains the road id and mile point information.

3. Functional Use Cases

Functional use cases will describe specific functions each action will have. The following definitions will be used to describe each use case.

Name: Name of use case

Actor: Who

Scope: Description of system (business process) we are in.

Precondition: What must be true before the use case runs.

Post Condition/Guarantee: What must be true after the use case runs.

Success Scenario: What happens when nothing goes wrong.

Extension/Failure Scenario: What happens differently (if things go wrong).

Basic Features: The following are the basic features that will be accessible by "default" for the typical user.

1. Select "Primary Layer/Theme"

Description: Allow the user to select a layer for viewing and searching

Actor: Typical Web user

Scope: Part of web query process for typical user

Precondition:

- System is operating
- List of available themes is displayed

Postcondition (Guarantee):

- Layer has been selected
- Layer type is known
- Search Fields/Attributes are known
- Search Fields/Attribute examples are known
- Search Fields/Attribute formats & domains are known
- List Fields/Attributes are known
- Link Fields/Attributes are known
- Draw environment known
- Drill down features are known

Success Scenario:

1. User selects specific layer or theme

Failure Scenario:

None

2. Search by Field/Attribute

Description: Allows the user to search the selected layer by an attribute or field.

Actor: Typical Web user

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- Layer type is known
- Search Fields/Attributes are known
- Search Fields/Attribute examples are known
- Search Fields/Attribute formats & domains are known
- Draw layers are known
- Draw environment known
- List Fields/Attributes are known
- Link Fields/Attributes are known

Postcondition (Guarantee):

- Selected records are known

- List Fields/Attributes are displayed
- List link Fields/Attributes are displayed
- Selected geographic features are displayed

Success Scenario:

2. User selects specific attribute to search on
3. User enters value(s) to search on
4. Selection completed

Failure Scenario:

- 1a. If no attribute selected then all will be searched on
- 2a. If incompatible values entered an warning message will appear and no search done.
- 3a. If no records will be found then a warning message will be displayed.

3. Search by geographic area

Description: Allows the user to select a group of features from the selected layer by using the mouse.

Actor: Typical Web user

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- List Fields/Attributes are known
- Link Fields/Attributes are known
- Search method is known (circle, box, polygon)
- Draw layers are known
- Draw environment known
- Geographic area for searching is displayed.

Post condition (Guarantee):

- Selected records are known
- List Fields/Attributes are displayed
- Selected geographic features are displayed

Success Scenario:

1. User uses a mouse to select features in a given area.
2. Selection completed

Failure Scenario:

- 1a. If user goes outside of area it will ignore mouse movement outside of the map.
- 2a. If user selects more then a known limit an error will display and only first 50 will be selected?

4. Change geographic area for viewing with a mouse

Description: Allows the user to change to geographic area for viewing using a mouse to pan, zoom in or zoom out

Actor: Typical Web user

Scope: Part of web query process for typical user

Precondition:

- A geographic area is visible in the map window
- Draw layers are known
- Draw environment known
- Drawing parameters for layers are know (scales, etc)

Postcondition (Guarantee):

- New geographic area displayed

Success Scenario:

1. User selects mouse tool for display (pan/zoom in/zoom out)
2. Drag screen around for pan
or
3. Draw box for zoomin or zoomout
or
4. Click on point for zoomin or zoomout

Failure Scenario:

- 1a. If drag is out side of extent of graphic map then no pan will occur
- 2a. If zoomin or zoomout exceed limits of map then error message will display and nothing will happen.
- 3a. If zoomin or zoomout exceed limits of map then error message will display and nothing will happen.

5. Change geographic area for viewing with zoom/bar

Description: Allows the user to change the geographic extent of the viewing map area using a standard bar.

Actor: Typical Web user

Scope: Part of web query process for typical user

Precondition:

- A geographic area is visible in the map window
- Draw environment known
- Draw layers are known
- Drawing parameters for layers are know (scales, etc)

Postcondition (Guarantee):

- New geographic area displayed

Success Scenario:

1. User selects mouse tool for display (pan/zoomin/zoomout)
2. Drag screen around for pan
- or
3. Draw box for zoomin or zoomout
- or
4. Click on point for zoomin or zoomout

Failure Scenario:

- 1a. If drag is out side of extent of graphic map then no pan will occur
- 2a. If zoomin or zoomout exceed limits of map then error message will display and nothing will happen.
- 3a. If zoomin or zoomout exceed limits of map then error message will display and nothing will happen.

6. Change view to a known place or coordinate

Description: Allows the user to change the geographic extent of the viewing map area by zooming to a selected feature using its "common name". If user select "coordinate" they will be allowed to enter in an xy in a variety of units. Once entered the map will zoom to that location and place an "x" on the center of the screen.

Actor: Typical Web user

Scope: Part of web query process for typical user

Precondition:

- A geographic area is visible in the map window
- Draw layers are known
- Draw environment are known
- Drawing parameters for layers are know (scales, etc)
- A list of common places is available

Postcondition (Guarantee):

- New geographic area displayed centered on new area.

Success Scenario:

1. User selects an option to list common places
2. User selects a common place from a list
3. Screen centers on new common place

Failure Scenario:

- 3a. Common place is not found. A warning will appear and the geographic extent will not change.

7. Highlite Feature

Description: Allows the user to highlight the geographic feature that is in the list.

Actor: Typical Web user

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- List Fields/Attributes are known
- Link Fields/Attributes are known
- Search method is known (circle, box, polygon)
- Geographic area for searching is displayed
- Selected records are displayed
- Selected geographic features are displayed

Post condition (Guarantee):

- Selected geographic feature is highlighted

Success Scenario:

1. User uses mouse to point a record from the list
2. Record is highlighted in list and corresponding geographic feature is highlighted (colored a different color)

Failure Scenario:

None

8. Go to Hot Link

Description: Allows the user to press the mouse on a link in the list of selected feature attributes and transfer control to that link.

Actor: Typical Web user

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- List Fields/Attributes are known
- Link Fields/Attributes are known
- Search method is known (circle, box, polygon)
- Geographic area for searching is displayed
- Selected records are displayed
- Selected geographic features are displayed

Post condition (Guarantee):

- Control is transferred to a link.

Success Scenario:

1. User uses the mouse to point at an identified link from the select list for a specific feature
2. A new window is opened with that link.

Failure Scenario:

- 1a. If link does not exist an error is displayed and no window appears.

9. Export List

Description: Allows the user to export the list of selected features.

Actor: Typical Web user

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- List Fields/Attributes are known
- Link Fields/Attributes are known
- Search method is known (circle, box, polygon)
- Geographic area for searching is displayed
- Selected records are displayed
- Selected geographic features are displayed

Post condition (Guarantee):

- Text file is saved to local machine

Success Scenario:

1. User press the "export list" function

2. User is prompted for file location
3. File is saved as a tab delimited text file.

Failure Scenario:

- 1a. If nothing is selected user will get a warning message to select something first.
- 2a. If no location is selected user will get a warning message and control will be returned to application.

10. Print List

Description: Allows the user to print the list of selected features.

Actor: Typical Web user

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- List Fields/Attributes are known
- Link Fields/Attributes are known
- Search method is known (circle, box, polygon)
- Geographic area for searching is displayed
- Selected records are displayed
- Selected geographic features are displayed

Post condition (Guarantee):

- Text file is saved to local machine

Success Scenario:

1. User press the "print list" function
2. User is prompted to select printer
3. File is printed.

Failure Scenario:

- 1a. If nothing is selected user will get a warning message to select something first.
- 2a. If no printer is selected user will get a warning message and control will be returned to application.

11. Print Map

Description: Allows the user to print out the map.

Actor: Typical Web user

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- List Fields/Attributes are known
- Link Fields/Attributes are known
- Search method is known (circle, box, polygon)
- Geographic area for searching is displayed
- Selected records could be displayed
- Selected geographic features could be displayed

Post condition (Guarantee):

- Text file is saved to local machine

Success Scenario:

1. User press the "print map" function
2. User is prompted to select printer
3. Map is printed

Failure Scenario:

- 2a. If no printer is selected user will get a warning message and control will be returned to application.

12. Drill Down List

Description: Allows the user to produce a "report" of all features that are "nearby" or touching the currently high lighted feature.

Actor: Typical Web user

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- List Fields/Attributes are known
- Link Fields/Attributes are known
- Drill down features are known
- Search method is known (circle, box, polygon)
- Geographic area for searching is displayed
- Selected records are displayed
- Selected geographic features are displayed
- Selected geographic feature is highlighted

Post condition (Guarantee):

- A report or map? (in another window) is generated to show all nearby features

Success Scenario:

1. User presses a "drill down" button
2. A new window is opened with a report that shows nearby or overlapping features.

Failure Scenario:

- 1a. If no features are selected or no feature is high lighted a warning will be displayed and control sent back
- 2b. If no overlapping feature(s) is/are found the report will state so.

13. Buffer List

Description: Allows the user to change the selected features by "buffering" a selected distance around the selected list.

Actor: Typical Web user

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- List Fields/Attributes are known
- Link Fields/Attributes are known
- Search method is known (circle, box, polygon)
- Geographic area for searching is displayed
- Selected records are displayed
- Selected geographic features are displayed

Post condition (Guarantee):

- New selection set is created.

Success Scenario:

1. User presses a "buffer" button
2. A new window is opened that prompts the user to enter a distance
3. Selection is made
4. The selection set is modified.

Failure Scenario:

- 1a. If no features are selected or no feature is high lighted a warning will be displayed and control sent back
- 2a. If user enters an invalid distance a warning will be displayed and control returned to window.
- 3a. If selection is too large (should know this) then warning will appear that only first group will display

14. Display legend

Description: Displays the legend.

Actor: Typical Web user

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- Layer type is known
- Search Fields/Attributes are known
- Search Fields/Attribute examples are known

- Search Fields/Attribute formats & domains are known
- List Fields/Attributes are known
- Link Fields/Attributes are known
- Draw environment known
- Drill down features are known

Post condition (Guarantee):

- Legend is displayed.

Success Scenario:

1. User presses a "display legend" button
2. The legend appears

Failure Scenario:

15. Measure

Description: Measures location, length, and area

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- Draw layers are known
- Draw environment is known

Post condition (Guarantee):

- Measurement is made and displayed

Success Scenario:

1. User selects measure option (point, line, area) and measurement values
2. User makes measurement
3. Measurement result is displayed on screen

Failure Scenario:

Advanced Features: The following are the basic features that will be accessible by "default" for the typical user.

16. Display advanced functions

Description: Allows the user to view advanced functions

Actor: Typical Web user

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- List Fields/Attributes are known
- Link Fields/Attributes are known
- Search method is known (circle, box, polygon)
- Geographic area for searching is displayed
- Selected records are displayed
- Selected geographic features are displayed

Post condition (Guarantee):

- Advanced functions are accessible

Success Scenario:

1. User presses a "advanced functions" button
2. Advanced functions are displayed

Failure Scenario:

17. Change Draw Feature

Description: Allows the user to change if a feature in the legend is drawn on the map or not.

Actor: Typical Web user

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- List Fields/Attributes are known
- Link Fields/Attributes are known
- Draw layers are known
- Draw environment is known
- Legend is displayed

Post condition (Guarantee):

- Feature is drawn or not

Success Scenario:

1. User checks a box to turn drawing on or off for a feature
2. Map is redrawn

Failure Scenario:

18. Select Feature(s)

Description: Allows the user to select a feature class from the legend and select those features geographically on the map. This is very similar to "3. Search by geographic area" only the user is allowed to select the feature class from the legend.

Actor: Typical Web user

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- Draw layers are known
- Legend is displayed
- Search method is known (circle, box, polygon)
- Geographic area for searching is displayed

Post condition (Guarantee):

- List Fields/Attributes are known
- Link Fields/Attributes are known
- Selected records are displayed
- Selected geographic features are displayed

Success Scenario:

1. User selects which feature in the legend that will be identified
2. List and link fields/attributes for selected feature class are known.
3. User uses geographic search method to select features
4. Selected features are displayed as a list and highlighted.

Failure Scenario:

Drawing: The following functions can be used to draw graphics on the screen. These should probably be "advanced features".

19. Import GPS

Description: Imports the contents of a GPS file.

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- Draw layers are known
- Draw environment is known
- A industry standard "GPS" file exists

Post condition (Guarantee):

- Points or lines from the GPS file are displayed.

Success Scenario:

1. User selects GPS import function
2. User selects to draw GPS as points or line
3. User selects file to load from

4. GPS points are drawn

Failure Scenario:

- 3a. File is not in the correct format

20. Traverse

Description: Allows the user enter and manage coordinates on a web screen using traverse commands.

Actor: Typical Web user

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- Geographic area for searching is displayed

Post condition (Guarantee):

- A graphical sketch of a traverse appears on the web site

Success Scenario:

1. User uses mouse to point a link in a record from the list
2. A new window is opened with that link.

Failure Scenario:

- 1a. If link does not exist an error is displayed and no window appears.

21. Create Sketch

Description: Allows user to create sketch graphics on the screen

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- Draw layers are known
- Draw environment is known
- Sketch properties are known (default or otherwise)

Post condition (Guarantee):

- Points, Lines, Labels, Polygons are drawn on map

Success Scenario:

1. User presses sketch function button to start process
2. User adds sketch features with mouse

Failure Scenario:

1. Not valid to press sketch at this time as user has been prompted for something else
2. Sketch is hidden so will not appear

22. View/Hide Sketch

Description: Allows user to view or hide sketch features

Scope: Part of web query process for a typical advanced user

Precondition:

- Layer has been selected
- Draw layers are known
- Draw environment is known
- Sketch properties are known (default or otherwise)

Post condition (Guarantee):

- Points, Lines, Labels, Polygons are drawn on map

Success Scenario:

1. User selects menu list of what to hide or view
2. User toggles hide/view box
3. Map shows sketch features or not

Failure Scenario:

23. Save Sketch

Description: Allows user to save marker sketch feature

Scope: Part of web query process for a typical advanced user

Precondition:

- Layer has been selected
- Draw layers are known
- Draw environment is known
- Sketch properties are known and set to marker (default or otherwise)
- Sketch function has been pressed

Post condition (Guarantee):

- Sketch features (coordinates) are saved in a file

Success Scenario:

1. User select sketch function
2. User selects save sketch function by (right clicking mouse)
3. User selects save from right click menu
4. User is prompted for file location and enters file name
5. Coordinates are saved to the file

Failure Scenario:

2. Sketch function is not set so right clicking does nothing
- 3a. User goes to a location without write access so not valid to save
- 3b. User enters a file name that is not valid so file is not saved

24. Restore Sketch

Description: Allows user to restore sketch feature

Scope: Part of web query process for a typical advanced user

Precondition:

- Layer has been selected
- Draw layers are known
- Draw environment is known
- Sketch properties are known and set to marker (default or otherwise)
- Sketch function has been pressed

Post condition (Guarantee):

- Marker sketch features are returned to screen

Success Scenario:

1. User select sketch function
2. User selects restore sketch function by (right clicking mouse)
3. User selects restore from right click menu
4. User is prompted for file location and selects file
5. Coordinates are restored from the file
6. Map extent is set to extent of markers

Failure Scenario:

4. File can not be found so none are displaced
5. File is a bad format so nothing can be displayed

25. Delete Sketch

Description: Allows user to delete individual sketch features by pointing at them.

Scope: Part of web query process for typical advanced user

Precondition:

- Layer has been selected
- Draw layers are known
- Draw environment is known
- Sketch properties are known and set to marker (default or otherwise)
- Sketch features exist

Post condition (Guarantee):

- Selected Points, Lines, Labels, Polygons features are deleted

Success Scenario:

1. User selects sketch delete sketch function
2. User points at each feature and they are deleted

Failure Scenario:

- 2a. Delete sketch is not turned on so features can not be selected
- 2b. Feature is not found within target distance

26. Change Sketch Property

Description: Allows user to change graphic properties of a sketch. Feature type, color, size, etc.

Scope: Part of web query process for typical advanced user

Precondition:

- Layer has been selected
- Draw layers are known
- Draw environment is known

Post condition (Guarantee):

- Property of sketch feature is known color, font size, line width, color

Success Scenario:

1. User selects sketch property function
2. User selects properties to change
3. User exits menu and thus saving properties

Failure Scenario:

27. Sort List

Description: Allows a user to sort a list by a field.

Scope: List exists

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- List Fields/Attributes are known
- Link Fields/Attributes are known
- Geographic area for searching is displayed
- Sort fields are known
- Selected records are displayed
- Selected geographic features are displayed

Post condition (Guarantee):

- List is sorted by appropriate field

Success Scenario:

1. User press the 'sort field' (this field could be highlighted)
2. List is sorted

Failure Scenario:

- 1a. If field can not be sorted a message will appear

28. Abbreviate List

Description: Allows the user to show an abbreviated list

Scope: List exists

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- List Fields/Attributes are known
- Abbreviated list is known
- Link Fields/Attributes are known
- Geographic area for searching is displayed

- Abbreviated list fields are known
- Selected records are displayed
- Selected geographic features are displayed

Post condition (Guarantee):

- Abbreviated list is shown

Success Scenario:

1. User press the "abbreviate list" button
2. Shortened list is shown
3. Abbreviate list button becomes "unabbreviated button"

Failure Scenario:

- 2a. No abbreviated fields are known and nothing will change

29. Unabbreviated List

Description: Allows the user to show an un-abbreviated list

Scope: List exists and is displayed as abbreviated list

Scope: Part of web query process for typical user

Precondition:

- Layer has been selected
- List Fields/Attributes are known
- Abbreviated list is known
- Link Fields/Attributes are known
- Geographic area for searching is displayed
- Abbreviated list fields are known and show
- Selected records are displayed
- Selected geographic features are displayed

Post condition (Guarantee):

- Un-abbreviated list is shown

Success Scenario:

1. User press the "un-abbreviate list" button
2. Unabbreviated list is shown
3. Un-Abbreviate list button becomes "abbreviated button"

Failure Scenario:

- 2a. No abbreviated fields are known and nothing will change

30. Enter map using URL key

Description: Transfers control to this application from another by passing a field and key with a URL. This will bring up default layers and be zoomed in on the selected feature. Could be used to tie the application to other systems.

Scope: Start application from another system.

Scope: Part of web query process for typical user

Precondition:

- Key field and value are known

Post condition (Guarantee):

- Map is started and zoomed to feature for selected key

Success Scenario:

1. User calls application with key
2. Map application is started and zoomed to selecte feature.

Failure Scenario:

- 1a. Path to application is not known and error will result (external to this system)
- 1b. Key does not exist and returns error
- 1c. Value does not exist and map display entire county

4. Functional Use Case Relationships

The following table summarizes the relationship between the functional use cases and the business cases.

	1. Select Layer	2. Search by Field	3. Search by Geo	4. Pan/Zoom Mouse	5. Pan/Zoom Bar	6. GoTo Place	7. HiLite Feature	8. Hot Link	9. Export List	10. Print List	11. Print Map	12. Drill Down List	13. Buffer	14. Display Legend	15. Measure	16. Advanced Functions	17. Change Draw	18. Select Features	19. Import GPS	20. Traverse	21-26. Sketch Functions	27-29. List Functions	30. Start Map With Key
Business Cases																							
1. Field Appraisal	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	X	X
2. Survey Research	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X		X	X
3. Survey Field Search	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X			X			X	
4. Sign Maintenance	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X		X	X	X
5. Sign Change Location	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X				X	
6. Plan Mailing List	X	X	X	X	X	X	X	X	X	X	X	X	X	X								X	
7. Plan Site Review	X	X	X	X	X	X	X	X	X	X	X	X		X		X	X	X			X	X	
8. Plan GIS Tests	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X				X	
9. Public Safety Field	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X			X	X		X	
10. Phone List	X	X	X	X	X	X	X	X	X	X	X	X		X								X	
11. Counter/Phone Recpt.	X	X	X	X	X	X	X	X	X	X	X	X		X	X							X	
12. Plot Plan	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X			X	X	
13. General Public	X	X	X	X	X	X	X	X	X	X	X	X		X	X							X	
14. Land Use Prof Property	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X	X	X
15. Land Use Prof Survey	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X		X	X

The following illustrates dependencies between functions.

	1. Select Layer	2. Search by Field	3. Search by Geo	4. Pan/Zoom Mouse	5. Pan/Zoom Bar	6. GoTo Place	7. HiLite Feature	8. Hot Link	9. Export List	10. Print List	11. Print Map	12. Drill Down List	13. Buffer	14. Display Legend	15. Measure	16. Advanced Functions	17. Change Draw	18. Select Other Features	19. Import GPS	20. Traverse	21-26. Sketch Functions	27-29. List Functions	30. Start Map From Key
Functional Use Cases																							
1. Select Layer	X																						
2. Search by Field	X	X																					
3. Search by Geo	X		X																				
4. Pan/Zoom Mouse	X			X																			
5. Pan/Zoom Bar	X				X																		
6. GoTo Place	X					X																	
7. HiLite Feature							X																
8. Hot Link	X	X	X					X															
9. Export List	X	X	X						X														
10. Print List	X	X	X							X													
11. Print Map	X	X	X								X												
12. Drill Down List												X											
13. Buffer	X	X	X				X						X										
14. Display Legend	X													X									
15. Measure	X														X								
16. Advanced Functions																X							
17. Change Draw	X																X						
18. Select Other Features	X																	X					
19. Import GPS	X																		X				
20. Traverse	X																			X			
21-26. Sketch	X																				X		
27-29. List Functions	X	X	X																			X	
30. Start from Key	X																						X