

Visualization of Analysis Results

with ArcGIS 10

Map Layout - Guidelines

General

Maps typically include a title, legend, scale explanatory text, directional indicator, sources and credits, a border, insets and locator maps. These map elements are systematically arranged around and upon maps. Early in the map making process the arrangement of all these elements, as well as the overall map layout have to be taken into consideration. Map layout is intuitive and various map layouts are common. But a good map layout will focus the reader on the content of the map. When map layout fails, the map reader will be distracted from the content by the map poor design.

Map layouts can be portrait or landscape. When choosing a layout to be used in a report, match the map layout to the text layout and be consistent so that the reader does not have to continually turn the report in order to see figures and text the right way up.

Title

The map title should be set in large bold text to stand out from other annotation on the map. It should be placed in such a way as not to be confused with other map text. The lettering size can be adjusted to suit the map size and to accommodate long titles.

Placement of the map

The placement of the map should be such that it does not intrude on the frame/title block, reference, index map and other elements.

North / South Orientation

On manually compiled maps, the orientation of the map may be adjusted to fit the page. As a general rule, orientation should be north-south with north at the top of the page. If any other orientation is used, remember to include a north arrow.

Map Extent

Information should be shown up to the neat line of the map, except for special cases such as when the boundary of a catchment is used as the edge of the map.

North Arrow and Scale Bar

Use a north arrow consistent in size and style with the rest of the map (in cases when title block is not applied) Place it above the scale bar and any scale numeral. A scale bar or numerical scale e.g. 1:50000 is essential. If a numerical scale is indicated, it should be in the fractional form, e.g. 1:1000000. Include 'fine tuning' blocks for a section of the scale bar. Use a 'rational' subdivision for the scale bar, for example 5, 10, 15, 20 rather than 12.5, 25, 37.5...

Legend

All features on a map must be explained in the reference. The map reference should be clearly separated from the map.

Placement of the Reference Elements

- Align graphics and type correctly, vertically and horizontally

- Group similar items together, e.g. hydrological features, transport lines, land cover types
- Leave enough space between symbols to avoid a cluttered appearance.
- Different types of features should be recognisable as such, e.g. area shading or single lines
- Place boxes around area features, but not around point or line features.
- Avoid using a zigzag symbol for a line feature - a straight line segment is preferred

Logos

- Place logos in the map reference area
- Group multiple logos together
- Avoid reducing logos to such an extent that they are indecipherable

Additional Information

Include the following information on the map: Date printed, mapper's name, and optionally the address, phone number, fax, email, etc. The projection and parameters, e.g. GCS WGS 1984, Datum WGS 1984, Units: Degrees.

Index Map

- Separate any index map clearly from the main map
- Use sparse labelling, but sufficient for orientation
- Use a north arrow (if necessary) and a scale bar

Guidelines for text

- Ensure sufficient contrast between the type and the background. Do this by choosing appropriate colours, and placing a mask around the text. If it is necessary, the text should not overlap other information
- Use the automatic text placement commands if necessary, to space text so that it does not overlap. In general, lettering should be written from the left, parallel to the lines of latitude
- If you are doing a manual layout, place the labels for fixed features and those most difficult to arrange first and fit the others in the remaining space. Writing positioned vertically on the map should read from the lower edge to the upper edge
- Text, which at any angle than vertical should read from, left to right.
- Avoid placing text at an angle of 45.
- Text crossed by the boundary lines is unacceptable
- If in doubt – use half of text size as spacing between your lines and annotations
- Be consistent in the use of fonts. Label map features of the same type in the same font. Do not mix fonts without reason. Adjust fonts to suit the size of the map
- If possible, place the names of point features such as towns to the right of the symbol. The second choice is to the left and the third is “in close association”. Text should be placed so that the symbol being annotated does not obscure the lettering
- **Linear Features:** As a rule, label linear features such as rivers above the feature in such a way that text is read from left to right. Do not make river names closely follow the curvature of the river, but align them along simple curves. Keep the words of a long description close together, so that the sense is not lost. The labels for long mountain ranges may be shown in spaced type but not so far apart that the sense is lost.
- **Areal Features :** If the feature is large enough the label should fall completely within it and be aligned horizontally. An elongated feature that is not horizontal may be

labelled parallel to its general orientation. Space type may be used for large features. Small aerial features should be labelled as for point features. Label from west to east along the grid lines, if possible. Annotation for a boundary should be aligned along and within the boundary.

Graphics and map symbols

- Area features should be large enough so that the reader can match the colouring or hatching with the reference
- Detailed coverages displayed at a small, overview scale may have to be generalised to achieve this. The larger the area being shaded, the lighter the colour (or coarser the hatching) that should be used
- Area shading should not obscure linear elements. Likewise, linear elements should be represented in such a way as to stand out against background shading
- When generalising map information, keep all mapped features at a similar level of generalisation.

The content of the above guidelines is from <http://makingmaps.owu.edu> and <http://www.dwa.gov.za/BI/Specs/MAP%20LAYOUT%20GUIDELINES.htm>

Map making in ArcGIS 10

Topic of this task: *Design of a map.*





Aim of this task: Design a map of one of the analysis results done in Task No.1 - 6. The result is a printable map with relevant map elements like title,

Requested results:

- Complete map layout with map features like title, north arrow, scale bar, legend, overview map, copyright information and a brief description of the map content.
- Technical report with a workflow description
- Prepare a short presentation of the generated map for the closing ceremony on Friday, 24th afternoon

Assistance:

Preparation of Overview map:

- Insert a second Data Frame for the overview map with Insert > Data Frame (see Fig. 1)
- File > Add Data (e.g. country boundaries) ... or 
- Define layout style of data with
 - Right mouse click on data set > Properties...  Properties...
 - Layer Properties > Label ... ☒ Label features in this layer
 - Layer Properties > Symbology
- Right mouse click on New Data Frame > Properties > Extent Indicators
- Add 'Layers' with  to 'Show extent indicator for these data frames' list
- Click Frame Button  to format the rectangle

Layout of the map

- Change to Layout View with View > Layout View ...
- Insert Title of the map with Insert > Title (see Fig. 1)
- Insert the same way Legend, North Arrow, Scale Bar, Scale Text
- Insert Text with a copyright information and a brief description of the map content
- Arrange a attractive design of the map

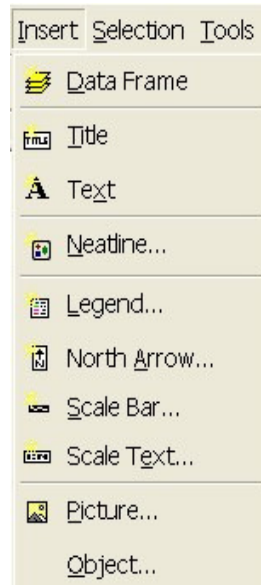


Fig. 1: Insert Menu

Export of the map

- File > Export Map
- Choose PDF as file format and edit the export options
- Plot the map for the presentation

Technical report and presentation

- TR: Description of workflow to generate the map with screenshots of the main tasks
- Presentation of max. 5 slides for the presentation of the map

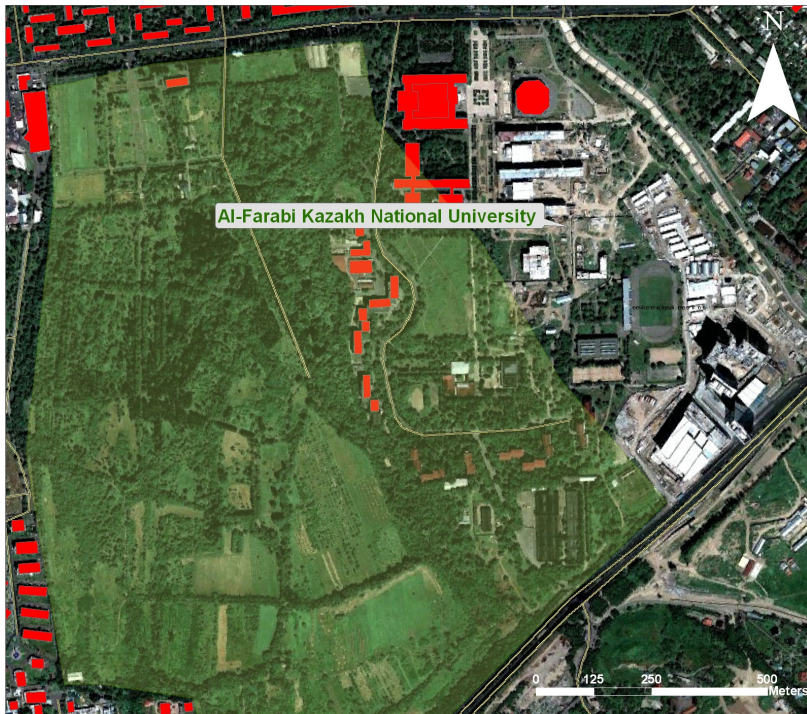
Map examples

Example 1: Botanic garden

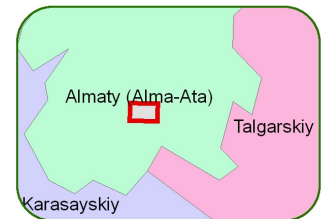
- Contains map elements like map, title, copyright, overview map, legend, coordinate system information, references
- Background: Aerial image out of Google Earth

Botanic garden, Almaty

Integration of Open Street Map data into a Google Earth aerial image.



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Legend

-  Buildings
-  Roads
-  Botanic garden

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree

References
<http://www.openstreetmap.org/>
<http://maps.google.com>

Example 2: Botanic garden

- Different map layout
- Change background image to Russian military map 1:50000
- Insert of Latitude/Longitude grid

