Producing maps

- Wizards
- Map production
- 3D presentations
- Annotation
- Orthophoto
- Surface gridding
- Contouring
- Image mosaicing
- Data compression
- Geocoding
- Spatial analysis
- Raster to vector
- Land use classification
- Data integration
- Image analysis
- Radar processing
- Fast Fourier Transforms

Save time and money
Achieve results quickly with a minimum of repetition.

Use up-to-date tools
Create persuasive presentations with powerful, flexible tools.

Work in the field
Take your current geographical data into the field on a lap-top.

Print high quality maps
Output stunning maps at any size, and even in 3D.
ER Mapper - the standard

1. Powerful, quality tools
There is no doubt that the quality of presentation affects the impact of information. Whether you are creating maps for use in the field or supplements for board reports, you can create an accurate, polished result on your own desktop. With ER Mapper you get professional tools for both technical accuracy and aesthetic design.

- Build maps using cartographic-quality tools
- Paste images into Microsoft applications
- Create and utilize 3D images
- Bring your maps alive

“Users are able to produce professional looking maps that would make even the most demanding of cartographers drool with envy.”
-- Desktop Computing, The Star

2. Power that’s easy to use
With time always at a premium, ease-of-use is a necessity, not a luxury. ER Mapper gives you intuitive, drag-and-drop map items to make creating maps easier. You can also build company templates, and simply insert new imagery for each map you need, so you don’t have to do the same work over and over again.

ER Mapper #1 for mapping power

✔ Easy-to-use drag-and-drop map items
✔ Smart map items—North arrows that always point north, scale bars that automatically rescale to size
✔ No limit to file sizes
✔ WYSIWYG map creation
✔ Complete software package—no extras required

“We’re now using ER Mapper on virtually all of our projects, and getting a lot more information out of our data!”
-- Tim Warman, Senior Geologist, Caledonia Mining Corporation

ER Mapper #1 for flexibility

✔ Combine images, GIS, and database information
✔ Combine data from any number of sources at the same time
✔ Include multiple maps, text from files, 3D views, grids, scale bars, clip masks, titles, logos and images, classification keys, north arrows, title blocks, histograms, color bars and triangles, legends and projection details
✔ Include your own symbols and map items
3. Portable power

If you’re studying an area, you want to explore it in detail. That means looking at the area in different ways, not being stuck with the view on your printed map. With ER Mapper you can create views that suit you. And, with ER Mapper on a lap-top, you can take your mobile map viewer and editor out into the field with you.

- Annotate and enhance images
- Create different views on-the-fly without saving intermediate files
- Update your data in the field
- Experience full image enhancement functionality on a lap-top

“ER Mapper possesses incredibly powerful and easy-to-use tools for interactive map creation and editing.”
-- PE&RS magazine

4. Full resolution output

Too often, you create the perfect image on-screen only to be disappointed by the printed output. ER Mapper prints using a built-in PostScript print engine. This means you always get top quality maps, even if you’re using a non-PostScript printer.

- Supports Windows printing
- Strip prints maps too large for your printer
- Supports a wide range of printers and file formats
- Prints high resolution 3D images

“The output is really good quality, especially the annotation... ER Mapper is great for presenting our aerial photos in a map form.”
-- Mario Gismondi, Survey Graphics, Western Australia

5. Try for yourself

Evaluate ER Mapper with the free CD-ROM which contains:

- The complete ER Mapper software
- 14 day evaluation licence
- Online manuals
- Over 500Mb of sample data

Industry leaders using ER Mapper include:
Case study — Mapping the world

Application by Simon Lewis, Technical Manager, Dorling Kindersley Cartography, UK

Dorling Kindersley (DK) is a leading UK-based publisher of high quality illustrated non-fiction books and CD-ROMs for the adult, children’s, reference, lifestyle and educational markets. In 1992 DK Cartography was set up to create dramatic and ground-breaking new cartographic products. The largest of several projects published—The DK Atlas of the World—was published in the Autumn of 1997.

When we discovered ER Mapper back in 1994, it did not have the sophisticated map production and vector manipulation tools it now does. We were interested in it for two simple reasons—the ability to manipulate raster elevation data and display 3D terrain models. We used our own custom built software, DK Cartopia, to control our vector data and adopted ER Mapper as the raster tool of choice.

One of the advantages of being newcomers to the Cartography market has been that we have been able to exploit the explosion of newly available digital geographic information. The Digital Chart of the World is an instant example—a global 2Gb vector database at a scale of 1:1 million. Less well known, but probably of greater significance to us, was the timely creation of a global land terrain model by the EROS data centre of the USGS. At a resolution of a pixel every kilometre this enabled us to create digital terrain models for every map produced by DK Cartopia. ER Mapper was the tool we used to manipulate and style this DTM.

Using this terrain data in ER Mapper we were able to perform two very important tasks which saved many person years of work.

Firstly, using the classification tools, we divided the DTM into height ranges: 0-500m, 500-1000m, 1000-2000m, etc.

Then, we created a look-up table of carefully chosen colours to represent these contours and applied it. Instant coloured contours at the touch of a button!

The flexibility of the data and ER Mapper’s tools also meant that we are never stuck with one particular look or style—we change style frequently in the design of our maps and ER Mapper gave us the chance to try out various options without altering the underlying data. Furthermore, we can change the contour interval—even have feet instead of meters—or swap contour for graduated fades.

Secondly, the sun-shading algorithms in ER Mapper allowed us to create realistic relief shading for our maps.

Traditional hill-shading is an age-old and laborious task, and its practitioners have been known to turn very pale when shown the automatic sun-shade in ER Mapper.

It is probably hard to imagine in the modern digital age just how valuable and revolutionary the above two examples of using software such as ER Mapper are. Even a few years ago, changing the contours or hill shading would have meant a complete ‘back to the drawing-board’ revision (as it still does even for some digital cartographers). At DK we expect and welcome the opportunity to try out new styles and designs and have the flexibility of a database and software that allows it.

The focus of our interest in ER Mapper was originally solely in the 2D display, but we quickly discovered that there were 3D tools waiting to be exploited. The links we built between ER Mapper and DK Cartopia enabled us to take the maps we had created and visualise them in 3D in the 3D perspective viewer. We found that these dramatic 3D terrain visualisations gave an instant ‘feel’ for the geography of a region and we decided to include a 3D image, generated by ER Mapper, on almost every spread of the DK Atlas of the World.

It is fair to say that without ER Mapper DK Cartography products would be more expensive and slower to produce. Moreover, the actual book content would be poorer for the omission of the 3D terrain models. We are constantly looking ahead for new ways to exploit the systems we have set up, and multimedia and on-line markets are well-known to DK. We fully expect to have ‘virtual’ atlas products coming to market in the future which ER Mapper will have been instrumental in designing.
Case study — Airphoto mapping

Application by Mario Gismondi, Manager, Remote Sensing Dept., Survey Graphics, Western Australia

Project

Our project involved mosaicing orthorectified photography and producing orthophoto map sheets for our client, as well as 3D views over certain locations.

Data

The raster imagery we used was aerial black and white photography at 1:30,000 scale scanned into digital .bmp format. With this, we combined vector contours at 10m intervals, extracted using photogrammetry and available as .dxf files from AutoCAD or Microstation.

System

The project was carried out running ER Mapper 5.5 and NT 3.51 on a Pentium 166 machine with 128 Mb RAM and 4 Gb hard drive.

Steps

We started by importing our orthorectified digital airphotos and contour files into ER Mapper. The challenge was to successfully combine both the raster and vector data which is something that ER Mapper does well.

Next, the photos were geopositioned in ER Mapper and mosaiced by drawing vector regions specifying the areas to be retained and saving the regions in the respective photograph dataset header files. ER Mapper makes this process extremely user friendly and easy, as well as being fast and no-fuss.

Once the photography was mosaiced, we enhanced it using a transform to produce the final result. Again, this was done very quickly and, because ER Mapper doesn’t write every step out to disk, we could save any result that we thought might be good enough for final production in an algorithm or in a virtual dataset before making the final choice.

Once we had the image we preferred, we used ER Mapper’s excellent map composition system to turn it into a map. The annotation system is extremely easy to use as well as being very effective. Maps can even be pre-planned in a CAD package and imported into ER Mapper for final plotting.

The 3D ability of ER Mapper once again was very helpful and we easily produced a 3D image of the area under study. We used a simple regular XYZ DEM for the 3D data and produced a finely textured 3D image of the area of interest. The whole process of producing 3D maps and images of areas can even make a 2D novice into a 3D expert.

The final, yet still very essential, part of the process was the plotting. Plotting was very simple to prepare and successfully completed. We generated a hardcopy plot on an HP 650C DesignJet and also a TIFF file for our client. The quality of plotting was very high with smooth and crisp vector information (no chunky pixel text or lines) and clear high resolution raster information (even in 3D raster plots).

Conclusion

We are happy with the high quality output we achieved and the efficiency with which the mapping project was completed.
Making maps with ER Mapper

Here are a few tips to get you started with creating a map. These examples use sample data that is installed when you select either the “Typical” or “Full” ER Mapper installation options. If you have not received a CD-ROM please contact your reseller.

**Loading a starting image**

1. From the Standard toolbar, select the Open Algorithm into Image Window button.
2. In the Open dialog select, from your ER Mapper installation area, the ‘examples\Data_Types\SPOT_Panchromatic’ directory and the ‘Vectors_over_Greyscale.alg’ algorithm.

A Greyscale image with yellow vector roads over part is displayed.

The diagram on the left shows the page outline in red (page extents) and the image positioned in a blue frame (contents extents).

5. From the Size drop down list select US Letter.
6. From the Constraints drop down list select Auto Vary: Borders.
7. In the Scale text box, type in 80,000.
8. Click the Horz Centre and Vert Centre buttons. Then in the Borders Bottom text box type 2.75” (70mm).
9. Click Set Color and select white for the background.
10. In the Page Setup dialog select OK to accept the changes you made.

ER Mapper redraws the image window to show the page with the new aspect ratio and with the image repositioned.

**Setting up your page**

1. From the Common Functions toolbar click the Annotate Vector Layer button.
2. In the Open Map Composition dialog click the New button.

3. Make sure Vector File is selected and click OK.
4. ER Mapper will warn you that you have not yet set up your page. Click on the Page Setup... button to do this.

The Page Setup dialog opens.

Next we will add a number of map items to make a typical map.
Adding other images
You can include other images on the same page.
1. Select the Map Rectangle tool.
2. In the Map Object Select dialog choose the Algorithm Category.
3. Drag and drop the algorithm box on to the map.
4. In the Map Object Attributes dialog use the Algorithm Name file chooser to select the ‘examples\Data_Types\Landsat_TM’ directory and the ‘RGB_321.alg’ algorithm.
5. Turn off Fast Preview in the Map Object Attributes dialog box to view the algorithm.
Note that this is a link to the algorithm so that if you update the algorithm the included image will automatically be updated. You can add any number of images to the map.
6. Turn on Fast Preview in the Map Object Attributes dialog box as Algorithm map items can be slow to redraw on some computers.

Adding a grid
1. In the Map Object Select dialog choose the Grid Category.
2. Drag and drop an EN grid on to the map and press the Fit Grid button in the Map Object Attributes dialog to make the grid automatically fit the image.
3. Change the Grid Spacing X and Y to 1 km.
4. In the Map Object Attributes dialog change the Color to red and the Border Type to Checks.
5. Change the Min Label Point Size to 12 and the Max Labels Point Size to 16.

Adding a scale bar
1. In the Map Object Select dialog choose the Scale_Bar Category.
2. Drag and drop one of the scale bar choices on to the map. It is automatically drawn to correctly show the map scale and can be resized as you wish by dragging the corners of the item.
3. In the Map Object Attributes dialog increase the Labels Point Size to 10.

Adding a logo
1. In the Map Object Select dialog choose the Logo Category.
2. Drag and drop an ER Mapper logo on to the map.
3. Increase the size of the logo and move it to the bottom right of the map.

Adding a North arrow
1. In the Map Object Select dialog choose the North_Arrow Category.
2. Drag and drop one of the selection of North arrows on to the map.

Adding a Title
1. In the Map Object Select dialog choose the Title Category.
2. Drag and drop the first option on to the map.
3. Change the Title Point Size to 10.
4. Type in the Title, Author and other information in the Map Object Attributes dialog and then reposition and resize the object as you want.

Other examples
These examples showed you how to use page setup and map composition to create a map. To get some more ideas for using ER Mapper try the following:
Try loading the algorithms in the following directories:
- ‘examples\Functions_And_Features\Map_Objects’
- ‘examples\Functions_And_Features\Map_Production’

Note that these directories are not included in the “Typical” ER Mapper installation. To retrospectively install directories, run the ER Mapper Installation Program again, select the “Custom” option, and then choose only the required directories for installation. See the ER Mapper Installation Manual for more information.
You may also be interested in our Airphotos booklet which explains more about mosaicing, georeferencing and orthorectifying images.

Going on from here
Explore the other algorithms supplied with ER Mapper or you may use your own images. Read Chapter 3 ‘Basics’ in the ER Mapper User Guide for an explanation of how ER Mapper works, and check out relevant chapters in the Tutorial manual.
ER Mapper 6.0
Helping people manage the earth

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New features include:

✔ Free imagery plugins for GIS systems
✔ Orthorectification of airphotos
✔ Image display and mosaic wizard
✔ The Image Balance wizard
✔ The Geocoding wizard
✔ The Surface Gridding wizard
✔ The Contouring wizard
✔ Save as... to popular formats
✔ File open... directly from popular formats
✔ Image compression wizard
✔ Real time roaming and zooming
✔ Radar processing fully bundled

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