



# Visually Map Your Data

MapInfo turns raw data into meaningful presentation graphics

Stan Miastkowski

In today's confusing world of graphics software, MapInfo 4.0 is a unique program. It actually lets you do something eminently useful with any data that contains street addresses or other geographical information. Although its name suggests a simple map generation program, MapInfo is much more. By linking a wide range of data to map files, it gives you a surprisingly new and effective way to look at data.

In a nutshell, MapInfo presents a map (e.g., of a town, county, state, or country) that ties into your database. MapInfo can, for example, pinpoint precisely where a company's customers are located. Or you could have MapInfo show all customers within a 50-mile radius from Chicago, show all customers who bought red widgets, and so on.

Essentially, MapInfo provides a graphical representation of any sort or search you perform on your database. The end result of a MapInfo session is a visualization of "what if." The range of potential applications is almost limitless.

MapInfo's maker, Mapping Information Systems, also offers several hundred different maps onto which you can plot your ASCII or dBASE III data. MapInfo comes with maps of countries, states, and U.S. ZIP codes, and the company also sells digital street maps of thousands of U.S. cities, maps of counties, and demographic/census data. Prices range from \$95 to \$7000. If you're ambitious, you can even scan in your own map.



MapInfo can produce thematic data maps such as this one of Manhattan showing average household income in various locations around the city.

## The Big Map

MapInfo is a large program; the minimum amount of hard disk space you'll need is 3 megabytes. Loading the national ZipInfo file that comes with the package requires another 2.2 megabytes. Then there are the optional maps, if you use them. Even though they're not bit-mapped graphical images (MapInfo stores its data in a dBASE-compatible file format), the very amount of data required means lots of megabytes. Individual map files take up as little as 1 megabyte to as much as 100 megabytes.

The basic MapInfo package comes on 10 packed 5¼-inch floppy disks. (Six 720K-byte 3½-inch floppy disks are also included.) MapInfo's automatic installation utility copies, combines, and unpacks the data. By the time I installed a tutorial, a demo package, and two maps

of Boston, Massachusetts, and Nashua, New Hampshire, MapInfo took up almost 20 megabytes of hard disk space.

Since MapInfo is a unique package, it takes a good deal of getting used to, and you have to learn many new terms and concepts. MapInfo's tutorial map package is well worth the trip, but it's only a small step along the way to getting comfortable with the package. The tutorial lessons are essential, but many of my questions were left unanswered, and I frequently got the message "This concept isn't covered in the tutorial."

After loading in maps of Boston and Nashua, I started up MapInfo and found that these cities weren't on the list of available maps. That's because MapInfo doesn't make maps available for use until it knows about them. You need to use an

*continued*



## MapInfo 4.0

### Company

Mapping Information Systems Corp.  
Hendrick Hudson Building  
200 Broadway  
Troy, NY 12180  
(800) 327-8627  
(518) 274-8673

### Hardware Needed

IBM PC, AT, PS/2, or compatible with 640K bytes of RAM, a hard disk drive with at least 3 megabytes of free space, and a CGA, EGA, VGA, or Hercules graphics adapter; a mouse is highly recommended

### Software Needed

DOS 2.0 or higher

### Documentation

User's guide; command reference

### Price

\$750

### Inquiry 884.

ADD command that's buried several menu levels down, and then the map will appear on the list. Surely the program's designers could have improved the user interface by having MapInfo automatically make new maps available.

### Layers of Complexity

Although you see a complete map on the screen, the package actually stores data in four different kinds of files. More precisely, each map consists of four layers of different information.

**Boundary files** are areas on the map that are completely enclosed by connected line segments. The most common types of boundary files are states, cities, towns, and counties. But depending on the type of map you're using and what data you've added to it, a boundary file can also contain data such as ZIP code areas, sales territories, or census information (to name a few).

**Map files** contain information about line segments. Streets, highways, and rivers are the most common; specialized applications can contain segments such as utility lines, cable networks, and railroads.

**Point files** contain information about related points. You'll use this file regularly when you import your own data to MapInfo; the program uses it to locate a position. Depending on your application, a point can be something as simple as a building, a city, or a customer location; or something more esoteric such as a utility pole or even pothole locations. Point

files are stored in dBASE III format; each point is a record, and each field contains the additional data (e.g., a customer name) associated with a record.

**Image files** are the key to MapInfo's presentation graphics feature. Using MapInfo's image-generating features, you can add titles, legends, icons, identifications, and distance scales to your finished map.

Once all the files are put together, what you see on the screen is a complete map that incorporates all the individual features. Depending on the map, you can move the cursor around on it, magnify sections, and locate points, boundaries, and so forth.

### dBASE and Geocoding

Although moving around MapInfo's existing maps is diverting, the key to the package's power is its ability to let you integrate your own data into a map. The MapInfo package includes MBase, a dBASE III-compatible database from FoxBASE. MBase is designed specifically for preparing data for use with MapInfo, and it doesn't include any programming capabilities. You also can't run conventional dBASE III programs in MBase. It does, however, let you use any dBASE III commands individually.

If you're familiar with dBASE III, you won't have any problems with MBase. If you're not, the learning curve for getting useful work out of MapInfo gets steeper. If the database you want to use with MapInfo isn't in dBASE III or ASCII format, you'll need to convert it. I used Paradox 3.0's export utility to convert a newsletter subscriber file to dBASE III format for use by MBase.

Just importing your data into MBase, however, doesn't make it usable by MapInfo. You still need to go through several steps of preparing the data for use with maps. The first step is creating a point file for the database. This involves adding x- and y-coordinate fields to each of the records in your database. Although the process isn't difficult, you have to be familiar with MBase to do it. (You can also incorporate the fields using your original database before importing it into MBase.)

Once your database contains a point file, the next and most crucial step is to "geocode" the point file. Geocoding, the primary tool for getting your data to actually appear on a map, is the process of assigning a coordinate (either latitude/longitude or x-/y-coordinates) to each data point. In most cases, MapInfo automatically does the geocoding. Which field you choose to geocode on depends

on your context. If you're using one of MapInfo's optional city maps, you'll want to geocode on the street address. But if you have clients scattered around the country, you'll want to geocode on the ZIP code.

Once you've chosen which field to geocode on, MapInfo goes through your database and assigns values to the x- and y-coordinate fields you created in the database. Then you're ready to use your database. Once I geocoded my newsletter mailing list. I overlaid it on the U.S. map, and it showed me graphically where subscribers were located. I could also locate individual points by typing in other data (such as a subscriber name). Conversely, I could also indicate a point with my mouse and have the full related subscriber data pop up on the screen.

This is just a small example of how you can build and use custom applications with MapInfo. There are numerous variations, and one of the most interesting is thematic mapping. A thematic map displays some kind of data other than geographical locations. MapInfo can represent data themes using a variety of symbols, fill patterns, and colors. The photo shows a MapInfo map of Manhattan giving average household income in various locations around the city.

Once you've created a point file from your own data, you can use a variety of tools to turn a plain-vanilla map into a full-fledged, thematically based presentation graphic. The process is something between using a presentation graphics package and a desktop publishing package. (You can even design your own text fonts and icons or customize the ones that are already included.) But once again, MapInfo's steep learning curve comes into play.

### A Resource-Intensive Program

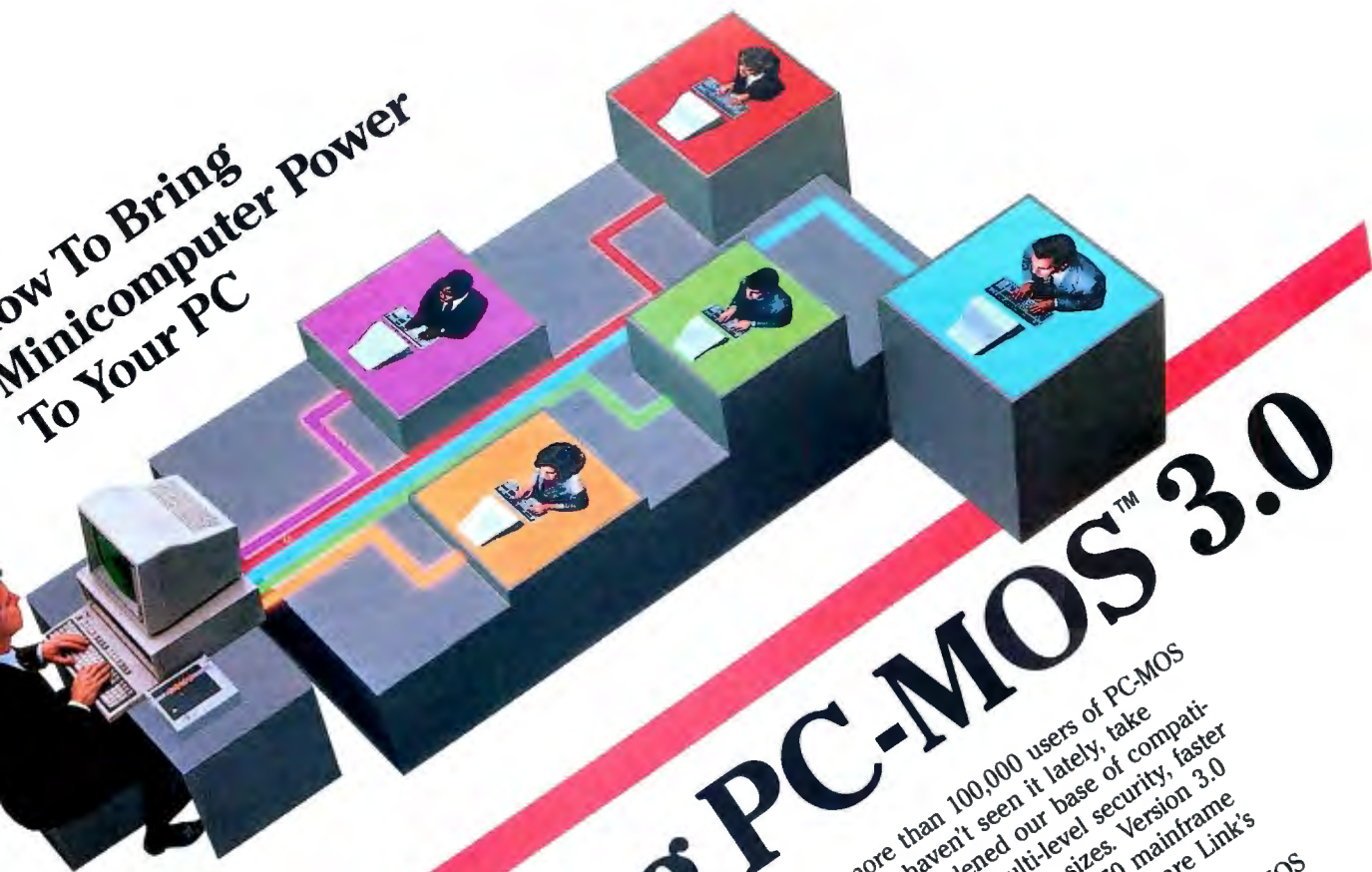
With all the data it has to handle, MapInfo is a very disk- and processor-intensive program. It's especially strenuous on your system's hard disk drive. On my 10-MHz AT clone, I used it with both slow-access (65-millisecond) and fast-access (18-ms) hard disk drives. The difference in performance was very noticeable with the faster drive. On a 33-MHz machine with a fast hard disk drive, MapInfo flew.

MapInfo also uses any extended or expanded memory that it finds in your system. This speeds up the package's response time considerably. But I also found MapInfo to be more than a bit finicky. I used 2 megabytes of extended memory in my AT clone as a disk cache

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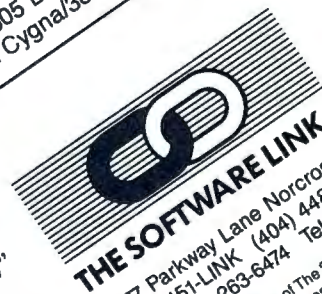
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controlled by Future Computing Systems' Fast, and MapInfo repeatedly locked up. When I turned off the cache, I had no problems.

MapInfo works with a wide variety of graphics hardware. Software drivers are included for everything from Hercules monochrome graphics through CGA (in black-and-white mode) all the way up to EGA and VGA. But although you can use it with older graphics standards, I found that VGA is really the only choice for se-

rious MapInfo work. Additional drivers are available for the ultrahigh-resolution IBM 8514/A and other not-so-standard graphics adapters.

On the output side, printer drivers are included for industry-standard dot-matrix and laser printers, including PostScript devices. Since mapping applications lend themselves especially well to plotters, drivers are included for most popular pen plotters, including those from Houston Instrument, IBM, and

Hewlett-Packard. Like the graphics drivers, MapInfo also has a wide range of additional printer and plotter drivers available at an extra charge.

The company has announced a network node pack (\$595) that lets multiple users work on maps at the same time.

### Following the Road Map

MapInfo is a unique and surprising package whose potential applications are limited only by the imagination. But like so many large applications, it is complex. One important difference between MapInfo and other applications is that it's virtually impossible to use just a part of it. To use MapInfo effectively, you must become familiar with the whole shooting match. That's not an easy job.

The program's designers could have made the learning process a bit simpler. There's no on-line help facility, and it's badly needed. In addition, MapInfo's user interface is quirky. Although some of the terms used in menus are initially daunting, they are necessary because of the singular nature of mapping concepts. However, main menus would be more useful if they dropped down instead of continually taking a large portion of the left side of the screen. (There's a full-screen option, but it's useful only for viewing a finished map.) A mouse isn't required for using MapInfo, but I found it a necessity for speeding up work.

The paradox of MapInfo is that the people who will find it the most useful are also the ones who are least likely to have the time and patience to live with its learning curve. A sales manager or city planner wants results immediately. Consequently, any office that's a serious MapInfo user will be better served by having one person who becomes the resident expert. For these real-world applications, MapInfo also sells MapCode (\$395), a programming package and compiler that can be used to generate custom (and easier to use) MapInfo applications. It could be the logical solution to MapInfo's problem.

Still, if you're willing to get past the learning curve and other oddities, you'll find MapInfo one of the most useful applications around. Early versions have found a loyal following in various fields. MapInfo has the capability of turning graphical "what if" into "that's it."

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