

A Time for Action

The government must enforce guidelines that protect buyers of digital spatial data

By Michael Sena

While not always successful and sometimes viewed as intrusive, federal laws and regulations governing honest disclosure of a product's contents or performance provide consumers with a measure of confidence that they're getting what they believe they're paying for. Unfortunately, for purchasers of digital spatial data produced by government authorities, similar protection is not available.

Long-established government policies of maintaining a disinterested, arms-length relationship with end users of digital spatial data, the absence of guidelines for measuring and labeling the accuracy of the data that is repackaged and distributed to end users, and the threat of removal of copyright protection for privately developed spatial data add up to a situation in which quantity is confused with quality and availability is confused with accuracy.

Digital spatial data is the product of and raw material for automated mapping systems and Geographic Information Systems. There are many different categories of digital spatial data—everything from geographically rectified aerial photos and satellite images to large-scale land parcel surveys. The category which has been the main focus of production by government agencies and the primary object of purchase is cartographic spatial data—data that can be used to produce maps on a computer or on paper. Availability of the

Contributing editor Michael Sena is president of Matrix Consultants (Boston).

data has spawned such industries as desktop mapping, vehicle routing, and emergency dispatching.

Several government agencies pioneered in the use of computer mapping tools to produce spatial data: The CIA developed World Data Banks I and II, small-scale digital cartographic databases of continental outlines, major transportation features, and country boundaries; the US Geological Survey is converting its medium- to large-scale maps to Digital Line Graph (DLG) format; and the US Bureau of Census created the DIME and Tiger street map files.

A Win-Win Situation?

These agencies have also led the way in a policy of reselling their data, charging a nominal fee for acquisition and placing few restrictions on its use. As long as the purchaser doesn't resell the data in its original form, the data can be repackaged and sold at any price the market will bear.

That the government shouldn't try to profit from the sale of spatial data developed with taxpayers' money is a strong argument in favor of setting a low price. Many Mac/PC mapping systems would not be possible today if developers had to pay a high price to acquire or license the data, or if they had to create the databases from the ground up. It's a win-win situation—but only for the government and the reseller, not necessarily for the end user.

A WDB I/II, DLG, or DIME/Tiger file is a time slice from the agency's database. A DLG file is accurate to the time of compilation, which could be several years prior to its final acquisition. A Tiger file can be years out of date. Some of these database resellers will improve the accuracy and offer updates to end users, but most data is resold as is, and the user is obligated to determine the degree of the data's accuracy.

"You get what you pay for" is an unacceptable excuse, for the agencies who sell the data and for the repackagers. Consumers, particularly the mass market who use the data in applications packages, have no way of relating price to quality, nor do they have an idea of the true cost of creating a detailed geographic database. For them, a few hundred or a few thousand dollars is a lot to pay, especially for defective goods.

The government seems intent on continuing to provide copies of its spatial data to the public without building in a way to pass on improvements in its accuracy. The USGS and the National Institute of Standards and Technology published last June a proposed Spatial Data Transfer Standard. The American Congress on Surveying and Mapping, in commenting on the proposal ("ACSM Bulletin," October 1991), points out, "One of the primary weaknesses of the proposed standard is its reliance on batch or one-time data transfer. [To] update a data file already purchased, a user [must] retransfer

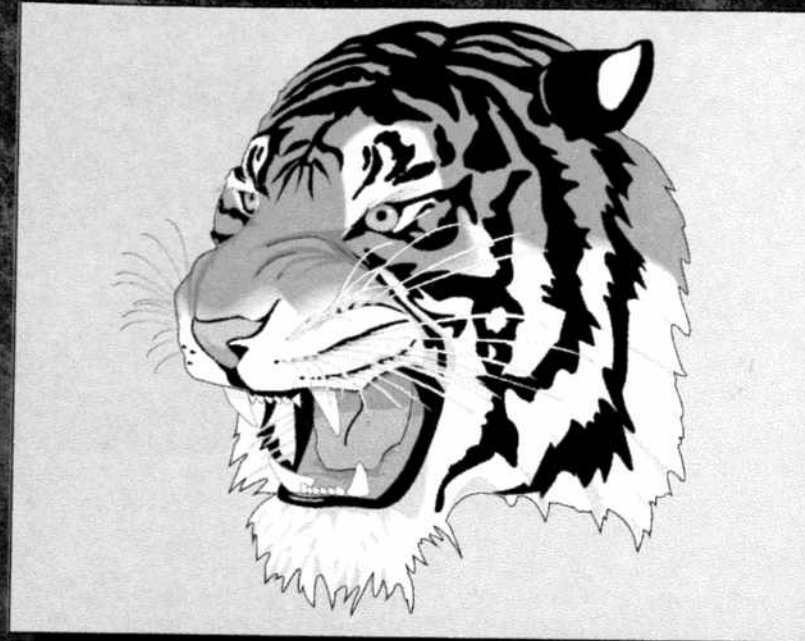
Output, cont. on p. 103

All the benefits of a laser printer

DESKTOP CONVENIENCE
RELIABILITY
LOW COST
SHARP, HIGH QUALITY OUTPUT
FAST PRINTING SPEED
PLAIN PAPER



C size



On a much larger scale.



\$1499

At last. A personal output device that combines the best features of a desktop laser printer with the ability to produce large format drawings. It's called ProTracer — a 360 dpi desktop printer/plotter that produces A, B, as well as C-size output.

ProTracer's speed and quiet operation come from the latest inkjet technology and an Intel i960 processor. Drawings that take up to half an hour to print on a pen plotter take only five minutes on ProTracer!

And, unlike other large format devices, ProTracer isn't limited to plotting. Start with the ProTracer base unit that incorporates resident IBM ProPrinter and Epson LQ-1050 emulations, as well as an ADI plotter driver for AutoCAD users. Then, depending on your needs, choose from a variety of optional accessories includ-

ing HP-GL® and PostScript® language emulation cards.

Optional Printer Accessories	
HP-GL emulation card	\$399
PostScript language emulation card	\$499
2 MB memory upgrade	\$299
4 MB memory upgrade	\$499
8 MB memory upgrade	\$899
Sheet feeder I (100 sheet)	\$149
Sheet feeder II * (100 sheet)	\$129
PacificTalk (AppleTalk interface module)	\$199

*Sheet feeder I is required for use

At Pacific Data Products, we're devoted to customer service. We offer a 60-day money back guarantee of satisfaction, one year and optional extended warranties, and free lifetime technical support. Should you require a replacement unit while under warranty, one will be rushed to you immediately to minimize your downtime.

If you'd like to expand your printing and plotting capabilities, call Pacific Data Products at (619) 597-4617, Fax (619) 552-0889.

PACIFIC DATA
PRODUCTS

Pacific Data Products, Inc., 9125 Rehco Road, San Diego, CA 92121. ProTracer is a trademark of Pacific Data Products, Inc. PostScript is a registered trademark of Adobe Systems, Inc. All other trade names referenced are the trademarks or registered trademarks of the respective manufacturer. Nozzle image courtesy of Autodesk Inc. Tiger rendering, artist unknown; picture part of public domain. ProTracer uses the latest in high technology innovation including PeerlessPage™, the advanced Imaging Operating System from Peerless. EUROPEAN OFFICES: Geneva Tel (41) 22 41 26 50, Fax (41) 22 41 06 82, France Tel (33) 1 39 23 20 00, Fax (33) 1 39 63 31 20, U.K. Tel (44) 442 231414, Fax (44) 442 23 65 40. © 1992 Pacific Data Products, Inc.

Index to Advertisers

ADVERTISER	PAGE NO.	CIRCLE NO.	ADVERTISER	PAGE NO.	CIRCLE NO.	ADVERTISER	PAGE NO.	CIRCLE NO.
ACM/Siggraph	100	45	International Data			Raster Graphics	35	17
Aldus	24,25	13	Engineering	97	42	Ron Scott	101	101
Apple Computer	10,11		Idek Iiyama North			Sharp Electronics	88	35
Ashlar	36	18	America	70	29	Silicon Graphics	C2,1	
Autodesk	29	15	Intel	51		Software of the Month		
			Intel	52,53	23	Club	101	100
CalComp	44	21	Intergraph	32	16	Sony	23	12
Chromatek	95	40	Intergraph	63	27	Sony Electronic Publishing		
Contemporary			Iris Graphics	12	7	& Photography	90	36
Cybernetics Group	15	8				Summagraphics	26	14
Custom Applications	64	28				Summagraphics	57	24
			Liant Software	58	25	Synergy Computer		
Digital Equipment	4,5					Graphics	21	11
Gig Netherlands	92		Management Graphics	78	32			
Gig Netherlands	93	38	Mayline/Hamilton	8	4	Trakit	73	30
			Mira Imaging	101	102			
Electrohome Electronics	17	9	Mitsubishi Electronics			Uniras	39	19
			America	87	34			
Graphic Controls	101	103	Mutoh Industries, Ltd.	61	26	Vancouver Film School	101	105
GW Hannaway & Associates	81	33				Versatec	9	5
			NEC Technologies	42	20	Visual Software	96	41
Hercules Computer Technology	C4	48						
Hitachi/NSA	18	10	Pacific Data Products	C3		Xerox Engineering Systems/Versatec Products	9	5
			Pixar	2	2			

*International only

For more information from the companies advertising in this issue, circle the appropriate reader service number on the card. The Ad Index is published as a service. The publisher does not assume any liability for errors or omissions.

Sales Offices

COMPUTER GRAPHICS WORLD

NEW ENGLAND, EASTERN CANADA
Paul McPherson, Sales Marketing Manager
One Technology Park Drive
P.O. Box 987
Westford, MA 01886
TEL: (508) 392-2172
FAX: (508) 692-2172

MID-ATLANTIC & SOUTHEAST
Daniel Ferro, Regional Manager
Buck Village Professional Commons
Executive Suite Seven, Office #9
1200 Bustleton Pike
Feasterville, PA 19053
TEL: (215) 953-6970
FAX: (215) 355-4395

MIDWEST, WESTERN CANADA
Phil Davis, Regional Manager
9501 West Devon, Suite 300
Rosemont, IL 60018
TEL: (708) 696-4350
FAX: (708) 696-4839

NORTHERN CALIFORNIA, NORTHWEST
John Sly, Regional Manager
Bill Cooper, Regional Manager
Boris & Sly Associates
1000 Elwell Court, Suite 234
Palo Alto, CA 94303
TEL: (415) 965-4334
FAX: (415) 965-0255

SOUTHERN CALIFORNIA, SOUTHWEST
Tom Boris, Regional Manager
Greg Cruse, Regional Manager
Boris & Sly Assoc.
2232 S.E. Bristol, Suite 109
Santa Ana, CA 92707
TEL: (714) 756-0681
FAX: (714) 756-0621

SOUTHWEST
Randy Jeter, Regional Manager
19627 Interstate 45 North, Suite 110
Spring, TX 77388
TEL: (713) 353-0309
FAX: (713) 288-8350

LONDON
David T. Round
Westmead House
123 Westmead Road
Sutton
Surrey SM1 4JH
TEL: 44-81-770-1100
FAX: 44-81-770-9779

PARIS
Daniel Bernard
Prominter
10, Rue Michelet - B.P. 279
78502 Sartrouville Cedex, FRANCE
TEL: 33-13-914-6780
FAX: 33-13-914-7014

MUNICH
Johann Bylek
Verlagsburo Bylek
Stockaekerring 63
D-W-8011 Kirchheim
Muenchen, FRG
TEL: 49-89-903-8806
FAX: 49-89-904-3526

TOKYO
Toshio Egusa
Publinetwork, Inc.
C407, 2-22-6, Tsukuda
Chuo-Ku
Tokyo 104
Japan
TEL: 81-33-536-5404
FAX: 81-33-536-5490

ITALY
Luigi Rancoti
Rancoti Advertising
Milano San Felice Torre 5
20090 Segrate, Italy
TEL: (02) 70300088
FAX: (02) 70300074

KOREA
Mr. Il Chul Kim
IC & Associates
804 Shamduck Building
131 Da-Dong, Chung-Ku
Seoul, Korea
TEL: 82-2-779-1539
FAX: 82-2-774-5399

TAIWAN
Mr. Summer Chien
ACER TWP Corporation
2/F No. 19-1,
Lane 231, Fu Hsing N. Rd.
Taipei 10445, Taiwan
TEL: 886-2-713-6959
FAX: 886-2-715-1950

SINGAPORE
Mike Seah
Bell Associated Agency
7500A Beach Road #06-322
The Plaza
Singapore 0719
TEL: 65-299-0413
FAX: 65-764-3950

HONG KONG
Mr. Tom Gorman
CCI Asia-Pacific Ltd.
Suite 905-Guardian House
32 Oi Kwan Road
Happy Valley, Hong Kong
TEL: (852) 833-2181
FAX: (852) 834-5620

Output, cont. from p. 104

the entire data set."

Wholesale data exchange is much easier for the sender than the extraction and processing of update transactions. It's also easier for data resellers to offer new databases than to track customers and provide them with updates. This forces users to forego improving the data themselves or to pass up new releases of the data if they have made major additions to the originally purchased data.

Perhaps the most flagrant disregard for the rights of end users to receive accurate spatial data is the prospect that spatial data will not be afforded the protection of a copyright. In 1991, the US Supreme Court ruled that phone companies cannot copyright listings in their white pages. Facts, the court ruled, aren't copyrightable. Since this ruling, cases have been heard in lower courts challenging the protection of copyright for maps.

Such an interpretation of copyright would be misguided if this law is intended to protect public interest. It may appear that copy-

OUTPUT

right laws shield the creator of original work and inhibit an individual from monopolizing facts that should be in the public domain, but these laws actually protect the creator and user of the creation. By identifying and protecting the source, it is also possible to attribute responsibility for the creation's contents. With spatial data, that responsibility extends to representations of geographic facts. That a database is copyrighted does not necessarily imply that it is truth. But in the absence of copyright, there is no way to reward the truthseeker or to punish the perpetrator of inaccuracies.

Truth in Labeling

It's time for the federal government to more actively protect the public interest with respect to spatial data. A truth in labeling regulation is an immediate need. All spatial database purveyors should state the currency of the data and

its measured degree of accuracy. An independent testing authority should be established to verify accuracy claims and ensure that the public is informed about varying levels of accuracy.

Spatial data transfer standards should be supplemented with exchange standards. Government and private database producers selling to the public should adhere to a transactional update standard that extends to the end user. End user software should be included in the initial database purchase which processes update transactions.

If current copyright laws are not adequate to cover digital spatial data, then new regulations must be adopted to provide assurances that database developers are accountable for their products. Incentives must be provided to private developers to increase the accuracy and precision of spatial data, above that which is currently available from government sources. The best incentive is the ability to sell data at a market price without fear that it will be copied. CGW

COMPUTER GRAPHICS WORLD

REPRINTS

- | | |
|--|---------|
| 1. Applications of Computer Graphics | \$12.00 |
| Cross selection of the varied applications using computer graphics, 32 pgs. | |
| 2. CAD/CAM | \$12.00 |
| Reaching out to solid modeling and industrial design, 32 pgs. | |
| 3. Computer Graphics in Animation | \$ 7.00 |
| The challenge of creating realistic characters, 16 pgs. | |
| 4. Business Presentation | \$12.00 |
| Business presentation to corporate animation, 32 pgs. | |
| 5. The Dawning of 3D GIS and Desktop Mapping | \$ 7.00 |
| As 3D GIS emerges desktop mapping systems solves strategic business problems, 16 pgs. | |
| 6. Landscape and Site Design | \$12.00 |
| Walk with computer graphics through architectural landscape & design, 32 pgs. | |
| 7. Graphics in Medical Research | \$ 9.50 |
| From research to treatment, 24 pgs. | |
| 8. Graphic Arts | \$ 7.00 |
| Developers are overcoming the complexities of color publishing and reproduction, 16 pgs. | |
| 9. Color Hard Copy Advances | \$ 5.00 |
| Joins the fast lane of computer graphics, 8 pgs. | |
| 10. The Market at Large | \$ 3.50 |
| The computer graphics market will grow to \$50 billion in the 90's, 4 pgs. | |

Please send me the following **COMPUTER GRAPHICS WORLD** Reprints. Enclosed you will find my check or money order for:

Reprint #	Title	Cost	Total
_____	_____	\$ _____	\$ _____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Please Complete:

Name _____ Subtotal \$ _____
Company _____
Title _____ Tax \$ _____
Address _____
City _____ St _____ Zip _____ Total \$ _____
Telephone _____

Make checks payable to: **COMPUTER GRAPHICS WORLD**
AZ, CA, CO, CT, DE, IL, KS, MA, NJ, NY, OH, OK, PA, TN
and TX residents add tax.

Return to: Pat Pizza
COMPUTER GRAPHICS WORLD
P.O. BOX 987 Westford, MA 01886 Telephone: (508) 392-2157

COMPUTER GRAPHICS WORLD (USPS 665-250) (ISSN-027-4159) is published monthly by PennWell Publishing Company, 1421 South Sheridan, Tulsa, OK, 74101. Editorial and Production offices at, One Technology Park Dr., Westford, MA 01886. Officers of PennWell Publishing Company: Philip C. Lauinger, Jr., Chairman and Chief Executive Officer; Joseph A. Wolk, President; L. John Ford, Senior Vice President; Carl J. Lawrence, Senior Vice President; Dr. Morris Levitt, Senior Vice President; John Maney, Vice President Finance; Steve Zimmerman, Vice President Corporate Services; Raymond Leung, Vice President, Planning & Business Development. Second-class postage paid at Tulsa, OK. COMPUTER GRAPHICS WORLD is distributed world-wide. Annual subscription prices are \$45, USA; \$56, Canada and Mexico; all other countries, \$63 airfreight to Europe; \$83 airfreight to Asia Pacific, surface to balance of world (for airmail service add \$35). To order subscriptions, call (800) 331-4463.

© 1992 COMPUTER GRAPHICS WORLD by PennWell Publishing Company. All rights reserved. No material may be reprinted without permission. Microfilm copies are available through University Microfilms, Inc., Ann Arbor, MI 48106. Authorization to photocopy items for internal or personal use or the internal or personal use of specific clients, is granted by PennWell Publishing Co. for users registered with the Copyright Clearance Center Transactional Reporting Service, provided that the base fee of \$100 per copy, plus \$0.35 per page is paid directly to CCC, 27 Congress St., Salem, MA 01970. The **COMPUTER GRAPHICS WORLD** fee code for users of the Transactional Reporting Service is 027-4159/87 \$100 + .35.

POSTMASTER: Send change of address form to COMPUTER GRAPHICS WORLD, Circulation Dept., P.O. Box 122, Tulsa OK 74101.