

SCANFAX

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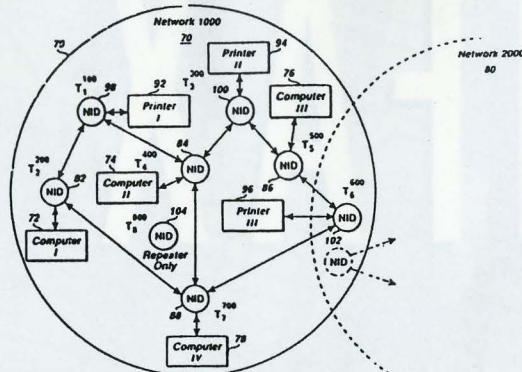
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Press One for...
Computer-telephony integration

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May 1999

Volume 51, Issue 5

SCANFAX

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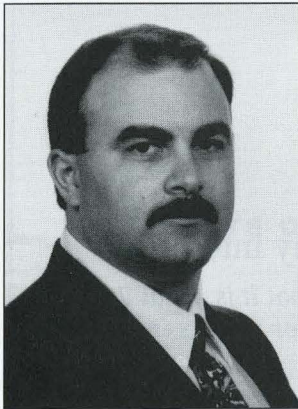
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Chairman's Message



Howard W. Penrose
IEEE Chicago Section,
Chairman

In 1998, we introduced the new *Scanfax* magazine, published by Slack Attack Advertising. The purpose has been to take the burden of publishing our newsletter and finding commercial support for it away from our IEEE Chicago Section volunteers. Instead, we have a professional advertising firm publishing the magazine and selling the advertising, so we can focus on other local issues. To date it has been a success.

In 1997, as you may remember, *Scanfax* was a 5-1/2" x 8" inch, one- and sometimes two-color newsletter. We had difficulty finding advertising and support for the newsletter, to the point where it was costing us over half our budget to produce it. At that time, we entered into an agreement with Slack Attack Advertising. Slack Attack presented several scenarios to us concerning the eventual "break-even" status of the newsletter in three to five years. Now we are producing a 2-color, 16-page magazine with meeting notices, advertising and feature articles, for approximately what we had to spend for the original newsletter. In addition, we actually passed the point where the section began to see some offset to the costs.

This does not mean that we are through. It does mean that our Slack Attack partners have been putting forth a valiant effort following through on our advertising leads, as well as developing many of their own. Our partners need our help. Please contact Slack Attack at 608-222-7630 with any advertising leads you can think of. Slack Attack Advertising will do the rest. If you wish to become an advertiser and supporter of the Chicago Section,

please contact Slack Attack so they can discuss pricing with you.

Reporting to the Chicago Section is another area that I wish to quickly discuss. Over the past several years it has become a challenge to ensure that meeting reports (L-31) and year-end financial reports are submitted to the Section. It is an absolute must that these are provided to the treasurer and secretary. If we do not report the information to Piscataway, NY, we lose funding.

For instance, this year several chapters did not provide enough, if any, L-31's. The Section lost \$250 per chapter that did not report. This means either that there were no meetings, or that the information was not turned in. This becomes more serious as the region must consider dissolving these chapters due to inactivity. From the standpoint of reporting our financial statements, particularly with those chapters that have separate bank accounts, the following are required, by law, to the IRS through Piscataway: The end-of-year balance; an account history; and financial documentation. In addition, IEEE & section financial by-laws require that the section treasurer and the Piscataway accountant, have their signatures on the bank accounts. Both the secretary and treasurer worked very hard this year to ensure that our fiscal and training reporting documentation was delivered on time. By being delivered by the established due date, we are able to take advantage of a special rebate bonus which is important to our budget.

If there are any questions, please contact me.

Press One for... Computer-telephony integration

By: Christine M. Sloat, P.E.

I love technology. Don't get me wrong, I am not at all technically competent and definitely not trained or educated in a computer-related field. I certainly do not have the credentials that some of the Chicago Section IEEE members have. But I still love technology... love to try new things... and I am certainly addicted to reading and learning about the fantastic new directions that the "age of the microchip" is taking us into! I am the type that, if the infamous genie in the bottle ever granted me three wishes, my first wish would be to live forever so that I could experience all of the fantastic things that man will create over the next millennium.

So, when the editorial staff at *Scanfax* asked me to do an article on computer telephony integration, I was ecstatic! *Computer telephony integration*... sounds high-tech... cutting-edge... wave of the future... great stuff for an information junkie like myself. So, off to the Internet and other contacts to learn all about it... Then reality struck! There is a TON of information out there on computer telephony integration (CTI), and I mean a TON! And enough descriptive terms to make even an information junkie's head spin... convergence, TAPI, TSAPI, architecture, AIN, interactive, publishing, intelligent transfer, answering and call routing, and more! Even more overwhelming, and exciting, is the number of companies and entrepreneurs ready to leap onto the CTI bandwagon

with products and services.

Since the Chicago Section is made up of engineers from a variety of backgrounds, I know that not all of us are closely involved with the issue. And, with limited space, we just can't cover it all. Trust me, the information that I retrieved so far could fill a rather large tome! So, with those constraints, we will simply provide an overview of CTI... what it is, what it aspires to be, and news from some of the major players in the CTI industry.

What is CTI?

In very simple terms, CTI (computer-telephony integration), or sometimes referred to as "computer telephony," is the use of computers to manage telephone calls. The best examples of CTI are the computerized services of call centers, you know, the ones that direct your call when you phone into a business... "press one for..." It's also sometimes used to describe the ability to use a personal computer to dial and manage calls (a computer as a personal call center).

CTI applications provide the ability to do one or more of the following:

- Authenticate callers – Caller I.D. capabilities
- Recognize a voice, either for authentication or for message forwarding
- Using live, recorded voice, or touch-tone entered input, determine how to process a call (for example, by forwarding it to the appropriate person or department)

Yes, it is frustrating when you reach a business and are asked to "press one for..." to get through to a real live person. However, for businesses which receive a large volume of calls, these systems route those calls to a location close to the solution that the customer is searching for.

Continued on page 4.

- Provide interactive voice response (IVR) to callers
- Match the number of a caller with a customer record and display it for reference when talking to the caller
- Manage voice or video conferences
- Collect and display pending live calls or messages that have been left by callers
- Receive fax messages and route them to appropriate fax machines
- For outbound calling such as telemarketing, pre-dial callers
- Based on call input, initiate a "smart agent" application to provide help with the caller's request

Some of the terms used when talking about CTI include Advanced Intelligent Network (AIN), a telephone service "architecture" that separates CTI services from call switching and can make it easier to add new services. Or, Windows Telephony Application Program Interface (TAPI) and Novell's TSAPI-programming interfaces intended to

make it easier to create applications that enable telephone services on a personal computer or in a local area network.

CTI - Good for Business

One of the current buzz words for business is "value added service." These services are intended to give businesses the edge in a highly competitive marketplace. CTI applications are used to help businesses provide a more personalized customer service, as well as increasing productivity, reducing costs and improving the all important bottom-line.

The telephone is often the primary means of communication in business: placing orders, checking airline schedules, querying prices, reviewing account balances, and recording and retrieving messages. Yes, it is frustrating when you reach a business and are asked to "press one for..." to get through to a real live person. However, for businesses which receive a large volume of calls, these systems route those calls to a location close to the solution that the customer is searching for.

According to AT&T research, 27-percent of callers that cannot get through to a company's 800 number will take their business elsewhere. CTI can make sure that calls get through.

Often, a telephone call links a service representative to a caller, asking questions, entering responses into a computer, and reading information to the caller from a terminal screen. Automating this process by linking computer and telephone systems, businesses lower costs, provide better customer service, increase the number of services available, and extend hours of operation. Coupling phone and computer systems can identify incoming calls, route them to the appropriate person, and deliver the caller's file on a computer screen to the person answering the call — before the call is answered.

Today, the majority of CTI applications are being built for call centers. A call center is a customer business center where initial access is by telephone. Agents working in call centers provide services over the telephone. The typical CTI call center makes use of products and services from several different sources: public and private networks; voice switches, automatic call distributors, hardware and software from computer vendors, specialized business applications from software suppliers, and components such as voice response units, voice mail systems, call sequencers, predictive dialers, and fax machines.

The BIG Picture

New integration offerings are being added to the CTI picture on a very fast-paced basis. Some of the newer or emerging technologies include Interactive Voice Response — the ability to input and retrieve information from a computer database via a touchtone phone. Fax publishing — the ability to request that fax information be automatically forwarded to the caller via touchtone phone. And, two-way message notification — the ability to link voice mail and electronic mail systems so that users can collect all messages — voice and data — via a single source.

Applications that link voice, voice mail, e-mail, data, fax, graphics, and video, computer-telephone integration are moving to the desktop environment as well. The overall concept is that we will soon use Apple or Windows-type, mouse-driven graphics on a single PC or workstation for voice, voice mail, e-mail, data, fax, graphics, and video transactions. For example, access an on-screen directory from a CTI desktop, point and click, and then the computer dials the number. On screen is the name of the person the caller is talking to as well as the name of the person on hold. How about the convenience of an automatic call log, an important feature for professionals who bill their time. And, similar to the call center concept, individual workers could access account records on the desktop computer screen during the call.

Now add voice mail and e-mail benefits. With desktop CTI, all voice mail instructions will be on the screen in the form of icons and pull down windows. Here is a high-tech

solution for the business traveler: you are out of town on travel and call into your CTI PC and hear a synthesized voice say that in addition to your six voice mail messages, you have three e-mail messages. If the message is short, perhaps a text-to-speech feature in the system "reads" the e-mail to you. Or if you prefer hard copy of the e-mail, you quickly move through an interactive voice response menu to have a copy faxed to you at your hotel. Then suppose you would like to respond to the e-mailed fax but not in writing. You fax the copy back to the colleague who sent it to you with a voice-annotated message. His PC flashes an icon informing him that a voice mail message accompanies the e-mail message.

There is a lot of talk in the industry about "shrink-wrapped" applications, off-the-shelf desktop CTI software packages. The idea is to be able to walk into a store and buy software packages that let individuals and companies conduct their multimedia activities on any PC.

Industry Applications

The sky appears to be the limit for the number and type of organizations that could benefit from the use of CTI systems, in present or future forms. Here are just a few possibilities (list from the *Alliance of Computer-Based Telephony Application Suppliers*):

- **Transportation:** A truck driver calls in to his dispatcher, inputs his rig's identification number, the computer receives the caller's telephone number through ANI, checks it against a database, and determines the trucker's location... automatically.
- **Travel:** Travelers use CTI to check flight schedules, status, availability, make reservations, and purchase tickets.
- **Education:** CTI handles students' inquiries about class availability. Then, students register by touchtone phone.
- **Health Care:** CTI tracks patient information, automates hospital room assignments, and validates insurance coverage. Patients call and

Continued on page 8

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LUNCH MEETING

Phil O'Connor, President, New Energy Ventures-Midwest L.L.C.

About the Speaker:

Phil O'Connor is President of NEV-Midwest L.L.C., a member of the New Energy Ventures family of companies, the leading non-utility provider of electric services in the rapidly deregulating utility industry. Prior to establishing NEV's Midwest operation in July 1998, Phil had been a partner in Coopers & Lybrand Consulting, providing strategic advice and expert witness services for utilities and insurance companies. In 1993, Phil merged the firm he had founded, Palmer Bellevue, into C&L.

Phil has a long record of public service in addition to his business and consulting work, having served as Illinois' chief utility regulator, chairing the Illinois Commerce Commission. Prior to that, he was Director of the Illinois Department of Insurance and had been Deputy Director for Research and Urban Affairs.

Since leaving state government full time in 1985, Phil has chaired the State Task Force on Health Care Reform and the Task Force on Human Services Consolidation. In 1998, he was named by the Illinois Director of Insurance to Chair the Interim Board of the Illinois Insurance Exchange.

Phil also has extensive political experience, serving as Political Director of Governor Jim Thompson's successful third-term election campaign in 1982, and chaired Governor Jim Edgar's successful 1994 re-election campaign. Phil is currently a member of the Illinois State Board of Elections.

A native of California, O'Connor attended the University of San Francisco, the

Loyola University of Chicago-Rome Campus of Liberal Arts in Italy, graduated magna cum laude from Loyola University of Chicago, and received his Masters and Doctoral degrees in Political Science from Northwestern University.

About the topic:

Phil O'Connor, former Chairman of the Illinois Commerce Commission, will share his views on the far-reaching impact of utility deregulation. What new surprises are in store for the Midwest power industry? Who will be the future employers of power engineers? To whom will suppliers and consultants be providing equipment and services? Come and hear answers to these questions and more.

Location:

Chicago Bar Association, 321 South Plymouth Court (Near Jackson & Dearborn), Chicago, IL 60604.

Time: Social: 11:30 am.
Lunch: 12:00 pm.
Presentation: 12:15 pm.
Adjourn: 1:00 pm.

Reservations:

Lunch tickets can be purchased in the lobby bookstore (\$10.50). Please call the IEEE Business Office at (800) 898-IEEE to make your reservation.

For more information, please visit the Chicago Chapter IEEE PES web site: www.ece.iit.edu/~flueck/chicago_pes/



IAS/IES

Changes in the City of Chicago Electrical Code

Wednesday,
May 12, 1999

IEEE CHICAGO,
FOX VALLEY SUBSECTION,
COMPUTER SOCIETY

Internet Collaboration Standards

Wednesday,
May 26, 1999

IAS/IES LUNCH MEETING

Timothy Arendt, Chief Electrical Inspector, City of Chicago

Harold C. Ohde, Instructor, Electrical Joint Apprenticeship and Training Trust

About the topic: The City of Chicago was one of the first municipalities to develop and enforce an electrical code. This electrical code continues today as part of the Chicago Building Code. The 2000 edition of the Chicago Building Code is due to be issued at the end of 1999. Tim and Harold will review the electrical section revisions that are pending for the next edition of the Chicago Building Code, and the reasons for those revisions. A time for questions will follow the presentation.

About the speaker: Timothy Arendt is certified by the International Association of Electrical Inspectors (IAEI) as an Electrical Inspector. He has acquired increasing responsibility for electrical inspectors in the City of Chicago and is now Chief Electrical Inspector for the city. He has a Bachelors degree from Lewis University and a Masters degree in Industrial Relations from Loyola University. He has held a number of positions in the IAEI, including Western Section President, and is currently Secretary/Treasurer of the Chicago Division. He is a member of Local Union No. 134 of the IBEW.

Location:

Como Inn, 564 N. Milwaukee Ave, Chicago, IL.
Directions: The Como Inn is located on Milwaukee Avenue just off the Kennedy Expressway (I-90/94) near Grand Ave. and Halsted St.

Time: Social: 11:30am.
Dinner: 12:00pm.
Presentation: 12:15pm.

For reservations:

Cost: \$20 includes the presentation and your choice of a chicken or pasta four course dinner. Please call the IEEE Business Office at (800) 898-IEEE or (630) 724-0200 with your entree preference on or before April 19.

NOTE: For P.E. licenses that require continuing education for renewal, attendance at IEEE Technical Meetings is acceptable as one Professional Development Hour (PDH) per meeting.

The upcoming 1999 IEEE - IAS meeting dates are: Sept. 22, Oct. 20, and Nov. 17.

EVENING MEETING

Richard Straka, Lucent Technologies

About the Speaker: Rich Straka is employed as a computing resource architect at Lucent Technologies in Naperville. He has related experience in process development using Unix(R), document standards using SGML, database development, and architecting/implementing large-scale computing environments via open-standards.

About the topic: This talk on collaboration standards covers the most popular internet-based protocols, product software and architectures for applications such as electronic mail, group calendaring, audio/video conferencing and remote workgroup collaboration.

Attendees will learn about protocols such as IMAP, MAPI, LDAP, iCalendar, T.120, products like Netscape Communicator, Microsoft Outlook and NetMeeting and CU-SeeMe and how best to set up and use these tools.

Location:

Wyndham Garden Hotel, 1837 Center Point Circle, Naperville, IL 60563

Directions: The Wyndham Garden Hotel is located just off Diehl Rd. between Washington Blvd. and Naperville Rd.

From I-88, take the Naperville Rd. exit. Turn right off the ramp onto Naperville Rd. Make a right at the first stop light onto Diehl Rd. Turn right onto Center Point Circle.

Time: Cash Bar and Networking:
6:00 pm.
Dinner: 6:30 pm.
Presentation: 7:30 pm.

Reservations:

Please call the IEEE Business Office at 1-800-898-IEEE (4333). They will provide the dinner entree selection and cost. As always, the presentation is free and non-IEEE members are welcome. For more information, contact David Schumacher at (630) 224-6471.

Calendar of Events

DATE	EVENT
May 4, 1999	IEEE Chicago Section EXECUTIVE COMMITTEE MEETING
May 12, 1999	IEEE, PES IMPACT OF UTILITY DEREGULATION
May 12, 1999	IAS/IES CHANGES IN THE CITY OF CHICAGO ELECTRICAL CODE
May 26, 1999	IEEE, Fox Valley Subsection, Computer Society Chapter INTERNET COLLABORATION STANDARDS

obtain test results from a database maintained by lab technicians.

- **Financial Institutions:** Via their touchtone phone, any timer, customers review savings and checking account balances, recent transaction history, mortgage rates, and CD rates. Brokerage firms use CTI to quickly check stock prices, provide stock quotes to clients, or review clients' portfolios.

- **Emergency Services:** A 911 operator uses ANI to verify the caller's location and then the computer automatically identifies the closest avail-

able unit to respond and passes the information to all affected stations and mobile units.

- **Government Agencies:** Federal, state, and local governments can design a CTI application that lets individuals check the status of their tax refund, social security benefits, motor vehicle registration, voter registration, etc.

- **Service Industries:** To track calls and bill them properly to clients, a law firm takes files from the phone system and moves them directly to the accounting system, eliminating

the lawyers' costly participation in the account reconciliation process.

- **Utilities:** A Southern California gas utility provides voice response prompts in Spanish to let callers transfer directly to Spanish-speaking customer services agents. Callers can also use the voice response unit to indicate an emergency call and receive quicker attention.

News from CTI Players

One of the larger players in the CTI industry is Lucent Technologies, employer to many of IEEE Chicago Section's members. In a press announcement released in early February 1999, Lucent previewed a breakthrough solution enabling a business to combine multiple call centers into one system. New products and services such as the one announced by Lucent serve as a good example of future directions for CTI applications.

Lucent said it designed the ATM-based solution to enable customer care resources in separate locations to work together without boundaries. Examples include connecting calls immediately to the best-equipped agent no matter where in the world they are. Databases and administration tools will be extended easily among sites rather than being duplicated at multiple locations.

The solution combines Lucent's CentreVu® customer care applications software and some of the company's most powerful enterprise networking solutions. It will create a complete system delivering, to an enterprise, one customer care center even as its call center sites are spread around the world. The solution is ideal for call centers with multiple locations that want to take advantage of public and private high-speed converged networks.

As part of the ATM-based platform, for example, Lucent plans that its CentreVu® Advocate, which selects and routes incoming calls using predictive algorithms, will be able to handle calls among separate locations as if they were one site. This makes agents from the entire enterprise available to serve customers.

Similarly, Lucent's CentreVu® Call

Management System, which provides call center operation performance measurement tools, will, from a centralized site, use graphical tools to manage all agents connected via the ATM backbone. For CTI applications, customer records in one city will be instantly accessible by agents in other locations. Enterprises will no longer need to concentrate on integrating or linking databases and CTI applications.

Testing of Lucent's ATM-based call center solution is underway with select customers. Controlled introductions are expected to begin during the fourth quarter of 1999. General availability is scheduled for the first quarter of 2000.

The Future

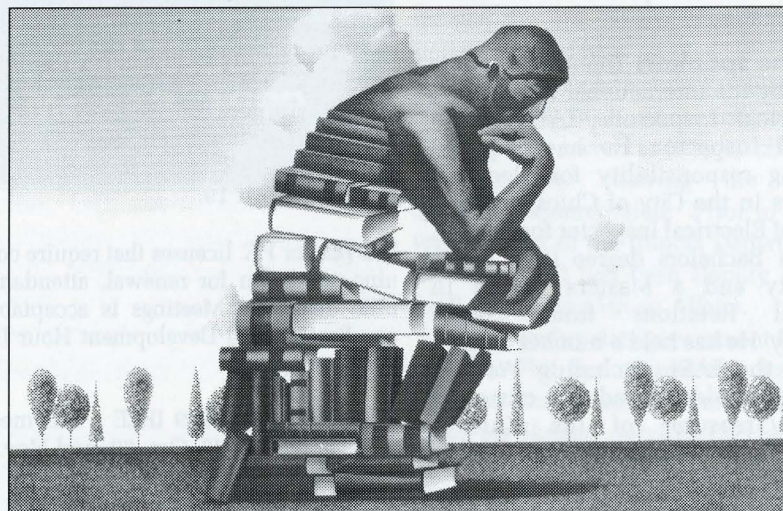
As I said in the beginning of this article, information abounds about the current and future possibilities associated with CTI. Even this rather lengthy article only touches the surface.

Where does CTI go from here? Wow... not an easy question to answer. The only certain thing is that

changes and advances will occur at a phenomenal rate. Do a search on the web for CTI, or watch Internet sites like Lucent for news. And the next time you have to "press one for...", remember that, with the push of a button, you are involving yourself in

one of technology's ongoing revolutions! ■

Christine M. Sloat, P.E. is president of Copper Creek, a consulting group in Reedsburg, Wisconsin. She may be reached at (608) 524-1397



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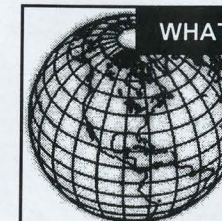
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For additional information, contact Professor Joel Goldhar, 312-906-6526.

Kenwood Communications introduces GPS-based vehicle location system



"The base station automatically gathers information from the vehicle without any extra work or technical know-how on the part of the drivers."

Bringing added efficiency and security to fleet vehicle monitoring and management, Kenwood Communications introduced its Automatic Vehicle Location (AVL) system, featuring the KGP-1A mobile receiver-modem and KGP-1B base station modem. Combining Global Positioning System (GPS), two-way radio and personal computertechnologies, the system allows fleet managers to instantly and automatically track all vehicles in real time. Locations of monitored vehicles appear on the base station PC screen, along with status information.

"The information the system provides can improve customer service and lower overhead," said Tom Wineland, Kenwood Communications' president. "The base station automatically gathers information from the vehicle without any extra work or technical know-how on the part of the drivers."

The AVL System: Compact and Effective

Kenwood Communications' AVL system offers many benefits for the fleet owner and manager. When a vehicle is sent to a new location or on an unfamiliar route, it can be used to guide the driver, monitoring the vehicle's progress and giving instructions via the radio.

The system promptly handles requests

for on-call vehicles, such as taxis or courier services, immediately identifying the nearest available vehicle. The system also facilitates vehicle management by automatically generating reports detailing each vehicle's usage over a given time period.

The monitoring station can access CPS data from tracked vehicles at any time or the mobile units can be programmed to automatically transmit location data at pre-set intervals, such as every minute or half hour.

The system can also be connected to sensors and switches that provide the base station with vehicle status data, such as whether the vehicle is in transit, sitting idle, loading or unloading cargo. Control signals can also be sent from the base station to the mobile unit to trigger vehicle-based controls, such as flashing the headlights or honking the horn.

The base station computer screen displays the current position of one or more vehicles in any one of four modes, including single vehicle, multiple vehicles, specific group of vehicles and vehicles in a specific district.

In emergencies, drivers can easily, and inconspicuously, transmit an emergency signal to the base station. In addition, the transceiver microphone in the vehicle can be activated from the base station to enable remote audio-monitoring of a situation.

Ken Communications' AVL system includes the TK-760/860 FM mobile transceiver, the KGP-1A Mobile GPS receiver-modem unit, the KGP-1B base station modem unit, and the KCT-20 serial interface cable which connects the KGP-1A to the mobile transceiver, and the KGP-1B to the base station transceiver.

Completing the AVL system is compatible software, such as the RasTrac MXTM tracking and fleet management package by Manning NavComp. Manning NavComp has extensive experience in military tracking technologies and now offers a versatile, Windows-based tracking and fleet management package to the commercial market. Kenwood Communications will announce additional software packages developed by other vendors as they become available.

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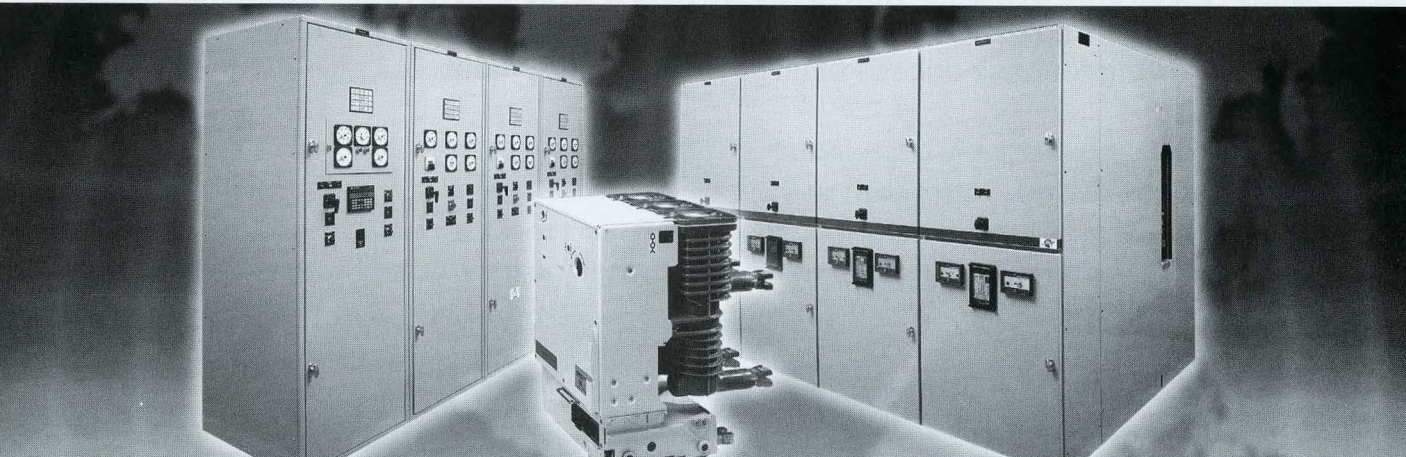
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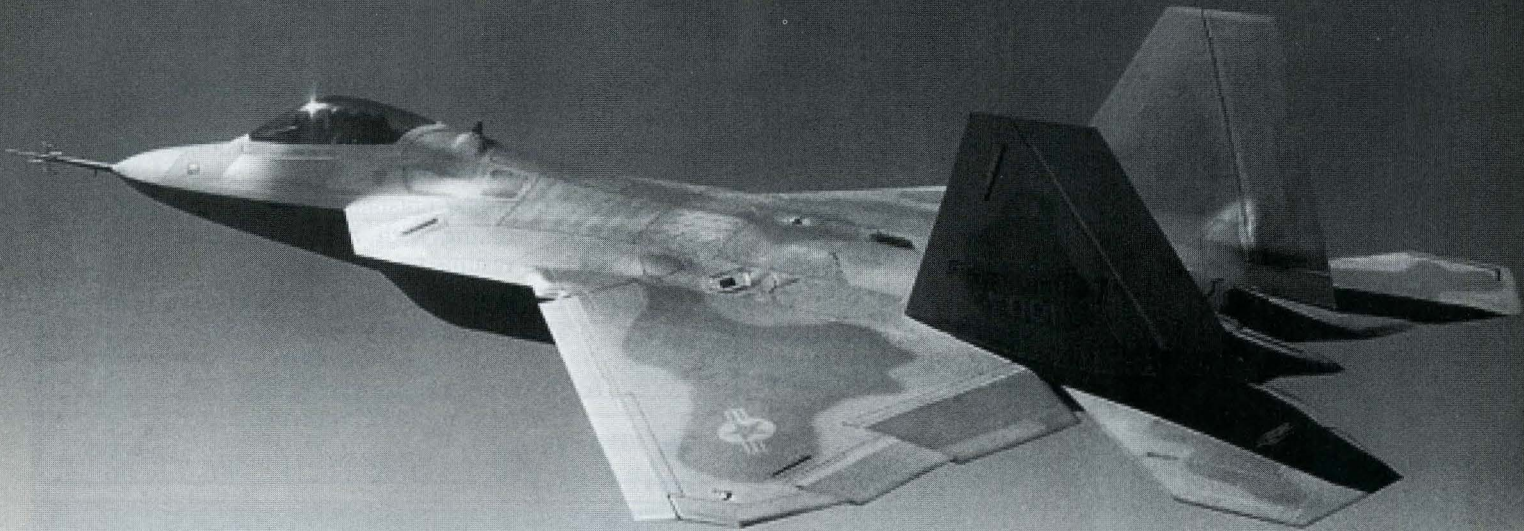
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