CUSTOMER SERVICE, PART II
by Jerry Michalski

Last month we examined customer service from the perspective of the call center looking inward, toward the company providing the service. We focused mostly on getting calls to the "right" agent, managing call-related information intelligently and leveraging problem-resolution information.

This month we turn our attention outward, toward the customers that companies want to serve. The call center is one of a variety of tools, channels and platforms to do this, the most recent of which is the Internet. The trick is to match the tools with tasks and user preferences. The first part of this issue covers applications that help customers serve themselves, such as diagnostic and problem-solving tools.

The second part covers how call centers are using the Net to change the way they interact with customers. Customer-service managers and call-center developers have seen what the Net can do, and they like it, even though the audience of Net users is still small compared to the number of phone users. Many corporate executives start to take the Net seriously when they see the compelling ways it is being used to serve customers.

The last part of this issue covers service rendered outside official channels, spaces and forums. This kind of service isn’t merely a cost center. It develops from spontaneous activity among people who want to help each other. Some people show up merely to get one question answered and never return; others hang around because they like the dynamics and the visitors -- and perhaps they find a role in the group they enjoy playing.

Boundaries that blur

These new capabilities and conversations are blurring two boundaries that have traditionally been quite well defined. The first is the one between companies and their customers. When one customer helps another troubleshoot and solve a problem with the company’s gear, who is providing service? When a happy owner of hiking shoes gives a prospective customer a spontaneous and glowing review of the gear, who is the sales person? (In section three we’ll examine what happens if the advice is flawed or the review is unflattering.)
Prior to the Net, these conversations occurred mostly at cocktail parties and barbecues, or in the break room at work. By offering myriad new ways for people to talk to companies and to each other, the Net is closing several feedback loops in the mass market that have been open. In smaller communities (by which we mean villages and extremely small towns), these conversations occur naturally and more frequently.

The effects go beyond sales and service. When a customer configures a product over the Net or -- better still -- offers constructive feedback that becomes a part of the next-generation product, who is the product designer? The customer becomes a co-developer.

The second boundary is the one that separates official support organizations from other departments inside their companies. Service is everyone's business. Some specialists spend full time on it, but they increasingly need to be linked to others. Back-office systems now offer better integration than ever. As companies make them more accessible to other departments and outsiders, the parties should end up talking more.

Long run, white-collar workers will use the tools that customer-service operations are using now. The tools will look different, but they will help people offer superior service to their customers.

**SELF SERVICE**

The routing, queuing and querying we described last month takes place inside call centers and the phone system. Companies use voice-response, intelligent-routing and database technologies to enhance their service offerings. Callers need to have only a phone, preferably touch-tone.

Banks, consumer-products companies and others have made many attempts to put more technology in callers' hands to let customers serve themselves. The most notable technology flops are screen phones and custom PC software for home banking or grocery shopping. Almost none of these efforts has succeeded. The hardware and software are generally useful only for the one task they were designed for, they take too much effort to use and in many cases companies charge for their use. Even Intuit, which built a tremendous personal-finance management franchise with Quicken, could attract very few takers to its electronic bill-payment service, which it recently sold to Checkfree.

The only large-scale success to date is France's Minitel, and it was stalled several years ago at a crucial point. Starting in 1983, France Telecom stopped printing phone books and seeded millions of terminals across France. It also built an infrastructure that allowed companies to create businesses online, so that customers could not only look up phone numbers but also shop, bank and more. Advanced as it was for its time, Minitel locked France into a system design that offered little more than VT-100-style terminal emulation: primitive-looking graphics, limited interactivity and zero client-side intelligence. Programming a service in that environment was -- and still is -- costly and difficult.

Now France has a higher penetration of home banking and shopping services than any other country, but it faces grave migration issues that may cause it to lag other countries in taking advantage of the current revolution.

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A platform's reach and flexibility are critical. Many businesses make money selling products through AOL, CompuServe and Prodigy, but they have to design differently for each service, and they are limited to each platform's features and tools (e.g., text-retrieval, ad spots and directories); its ability and willingness to publicize the vendor; and so on. This has restricted vendors' growth, but it was a good place to start. The commercial services were the first to have working transaction engines and complete business models for third parties. All of those pieces are now coming together on the Internet. The commercial online services are headed toward the Net, too, each at its own pace.

Assuming the Internet

The Net solves most of these problems, which is why it is such an appealing platform. Companies can assume that businesses will increasingly offer employees Net access, and that individuals will own and install their own machines and connections. Anyone can create and publish simple stuff on the Net, yet it offers professionals more power -- and it keeps getting stronger all the time.

The Net increases reach and reduces friction. Voice-response technology transformed businesses because it allowed them to be "open" around the clock without having staff on hand all the time. The Net allows not only far more complex automated interactions than voice response, but also global reach at no extra cost (other than translation).

Corporate applications that were previously hard to link to are suddenly accessible. Vantive's aggressive adoption of Web interface technology, which we described last month, allows its customers to present information to qualified outsiders without worrying about the client-side software. Netscape's AppFoundry program, positioned as a set of starter intranet applications, has the same potential. Other corporate application vendors are moving in this direction, too.

End-user software is undergoing a similar transformation. Standalone applications that become Net-aware turn into platforms for services. For example, Intuit's latest release of Quicken allows for far better integration between the client software and outside service providers, starting with banks but quickly moving to insurance agents, tax advisors and other professional service firms. These and many other initiatives will make navigating the Net easier, online conversations more natural, purchases less cumbersome and service more useful and transparent.

Unlike previous inexpensive devices with nonstandard development and delivery systems, Internet-based network computers should benefit from all these advances, which gives them a chance to establish a niche in the market. We are skeptical that they will advance beyond niche applications, but we also believe strongly in the future of enhanced network services with integrated communications.

A multi-channel future

Despite all the activity and enthusiasm about the Net, it still represents a small segment of the population, particularly in less-developed countries and less affluent neighborhoods. The telephone will remain the ubiquitous...
electronic access channel for some time to come, enhanced by voice-
response, fax-back, solution-sharing and other service-based technologies.

However, the Net has rapidly established itself as a peer channel for com-
municating with customers. It adds a series of new capabilities, including
Web forms, search tools, discussion tools and multi-user virtual spaces of
varying dimensionality (e.g., 2D, 2.5D and 3D spaces).1

The question for companies now is how best to integrate the old and the
new. David Isherwood, a call-center consultant with Chicago-based TSC,
says, "Companies are looking to set up as many channels as possible to fa-
cilitate customer self-service and use the call center as a proxy for in-
teractions perhaps as rich as real [face-to-face] ones. They also want to
migrate customers to the lowest-cost channel, unless they are high-value
customers."

Companies need to offer choices and make choices. That is, they need to
meet customers on their terms, matching their preferences, yet still
respect the economics of service, which dictates not spending resources on
unprofitable customers. The challenge is to make the mapping intuitive
while keeping costs down.

The Web can flip conventional wisdom about service. For example, on the
Web, you want visitors to stay on your Website as long as they want. If
many of them stay for a long time, you might even sell advertising to other
companies, as Netscape does on its mostly service-oriented Website.

Several companies have exploited the multi-channel world, either by inte-
grating various channels or by combining them in useful ways. Edify’s
Electronic Workforce, long a leader in multi-media fusion, now includes Web
capabilities. That means users can mix and match e-mail, fax, voice-
response and Web capabilities for input and output to serious back-end ap-
plications such as benefits enrollment and sales support.

NetPhonic’s Web-on-Call allows people to browse the Web using only a stan-
dard telephone. If they want to see a page, they can have its image faxed
to them anywhere. Another unconventional way to access Web information is
with AT&T’s new InternetPhone, which uses Unwired Planet’s HDML (Handheld
Device Markup Language) to optimize transmissions to the scant bandwidth
available over its radio frequencies. By displaying only necessary in-
formation on its tiny screen and bookmarking sites so that access is easy,
the InternetPhone becomes a handy service terminal.

Non-Web technologies are improving steadily. Nuance Communications has
speech-recognition technology that finally allows for natural-sounding con-

1 In the avatar issue, we described an online customer-service center that
included three-dimensional spaces with avatar robots and human agents who
could step in and out of the avatars to help visitors. That idealized sup-
port center could also meet visitors with other technologies, depending on
their preferences or situation (if your PC is broken, you’re not going to
look for tech support in a 3D VRML space!). See Release 1.0, 5-96, 11-95,
7-94 and 6-94.
tinuous speech, as long as the subject area is limited. Charles Schwab &
Co. is using Nuance's system to automate stock purchases and other ser-
vices. Clients can call and make natural-language statements such as,
"sell all my Microsoft shares" or "how much Chevron is in my account?" The
system confirms all transactions with the caller before executing them.

Re-use and design implications

The rich variety of channels makes development difficult, especially
when the development tools are all separate. Today, the scripting
and delivery environment for a high-volume voice-response system is
likely to be extremely different from the CGI programming interface
for automating a Website to perform exactly the same functions.
Changing a product offering or the sequence of steps through a deci-
sion tree across multiple media, then checking to make sure the
changed systems are valid and consistent can be a nightmare.

Each channel presents its own interface-design challenges. Voice-
response systems must limit how much information they present at
once, because it's hard to remember more than six or seven menu op-
tions. Web forms are better off capturing and processing larger
chunks of information. It's all easier to present and the transac-
tion turnaround times are significant.

Nevertheless, it is likely that business logic can be shared. This
may well be the next step in the evolution of three-tier client-
server systems.

Diagnostic and repair services

In a Webbed world, one of the items most in need of maintenance and repair
is the PC that people use to connect to it -- an ironic note to a complex
era. Several companies are now using the Web to automate this process.
They are probably harbingers of future repair services for other devices.
After all, when you drive a late-model Ford to your repair shop, the mechan-
ics can plug in and run sophisticated diagnostics right away. (In fact,
setting timing delay and other stuff is now a matter of changing software
settings and upgrading ROMs.) Eventually, we'll plug our cars into con-
nectors in our garages or use wireless links that report in as we drive past
a reporting cell. Onboard diagnostic systems will communicate with remote
expert systems over the Net, reducing repair times and perhaps preventing
some breakdowns altogether.

Windows 95 plus the Internet seem to have spawned a flurry of startups look-
ing to keep PCs trim and fit. Amazingly, they each take different, barely
overlapping pieces of the whole support puzzle. They will clearly move
toward each other over time, but for now, unfortunately, one might have to
use several at once, which only confuses matters. In the meantime, key
players such as Intel, Microsoft and IBM have been designing better system
support for automatic diagnostics and remote support.

Here is a quick tour of the PC-fitness companies. Several vendors target
software upgrades. Santa Monica, CA-based CyberMedia offers an Internet

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service called Oil Change that detects the commercial software applications and hardware drivers that are installed on a PC and compares them with a database at CyberMedia's Internet site. Oil Change retrieves selected updates, patches, drivers and plug-ins, then unpacks and installs them automatically. It also offers a handy "undo" feature, which can reverse any updates if it turns out they make things worse. The $40 annual subscription to Oil Change is available through retail stores and on the Internet.

Nathaniel Saal founded Manageable Software Services shortly after graduating from Yale. The company focuses on automatic, Web-based notification that upgrades are available for freeware, shareware and try-before-you-buy software, which includes important applications such as Netscape Navigator and Microsoft Internet Explorer, as well as the myriad plug-in and helper applications that go with them. The product, called Catch-UP, is free to users. Saal is currently contemplating a variety of revenue models.

As if these companies didn't offer enough approaches, Carlsbad, CA-based Netsync offers special technology it calls Version Re-Synchronization (VRS). Software companies that use VRS can deliver patches containing only the bits that have changed between versions to their applications, rather than forcing users to download whole new versions. Instead of downloading a nine-megabyte file to get a step upgrade, a user might need to receive only several hundred kilobytes. Netsync's Internet delivery system for these patches is called WebPatch, naturally enough. The system is free to both users and developers. Netsync will earn revenues from corporate licenses (as Netscape does) and later from selling upgrades.

Other companies are devoted to detecting and fixing system problems, system performance tuning and updating virus-checking software. SystemSoft's SystemWizard is a client-side expert system that can diagnose and fix configuration problems, such as errors in an autoexec.bat or config.sys file, faulty settings in the Win95 Registry or mismatched drivers. The program can also refresh its knowledge base and fetch files over the Internet. (Mac users have their share of compatibility and configuration woes, but none of these startups is focusing on the Mac market.) SystemWizard is free to end users; the Boston company sells the system to PC OEMs.

CyberMedia has a similar product called First Aid, which uses local AI to diagnose and fix many software and configuration problems. Users can update the knowledge base over the Net. CyberMedia has sold over 1.5 million copies of First Aid, which costs $40. Next month, CyberMedia will enhance First Aid with Inference's CBR engine and a crash-recovery capability that should offer more sophisticated troubleshooting and repair.

Veteran player Symantec has yet to take the initiative and define clearly the set of functions that constitute PC health in a networked world. In the interim, it has positioned Norton Utilities as a program exclusively for experts. Novices can use PC Handyman, which does configuration diagnostics and patch/driver updating with a local case-based reasoning engine. After that, the product family gets a bit messy. Users might also want Healthy PC, which combines virus protection and disk optimization. Or they might buy CrashGuard and AntiFreeze, utilities that help users recover their machines in case of a system crash; an Internet "find" function; and a few other items. Most of Symantec's products are Net-enabled through a LiveUpdate feature, which connects to Symantec's Website and downloads new items when invoked.

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If you don't want to deal with Symantec's messy lineup, you can try subscribing to TuneUp.com, based in Mountain View, CA, for roughly $4 per month. TuneUp specializes in virus detection and disk optimization by Net-enabling those two Norton applications. TuneUp will also send e-mail notifications (TuneUpdates) when packages that users register offer upgrades, but it doesn't automate the process of getting and installing the packages. The company recently struck a deal with HP to include its software with some of its PCs and printers; it is in negotiations with 25 others. One unusual and promising service that TuneUp offers is Internet-based file backup.

Above all, these companies are vying to establish market visibility, channels -- to software vendors, to end-users and to hardware vendors -- and a sustainable business model.

**INFERENCE'S REASONED APPROACH**

When companies want to make more information available to Web visitors, usually all they can offer is a FAQ (Frequently Asked Questions) file or a text-retrieval engine atop some technical documentation. Inference Corporation, an old hand in the expert-system game, now offers a tool that offers natural-language access with a far more powerful content-navigation technology called case-based reasoning (CBR; see *Release 1.0*, 1-92).

The idea behind CBR is to adapt solutions from previous similar problems, rather than try to engineer expert-system rules that will fit all potential problem situations. CBR2 is Inference's product family; CBR Express is the authoring tool; the CasePoint WebServer delivers the CBR engine to the Web. In use, the system looks like a simple text-search system. Users begin by typing in a natural-language question, and the CBR2 system responds by asking its own questions to refine the solution. The CBR system returns not only the best-fitting case it can find, but also near-neighbor solutions. Users don't need to know much to use Inference's system. The company believes this allows its clients to focus on the customer interaction, rather than on having technicians astute enough to use its tools.

Charles Schwab & Co, Broderbund, LucasArts, NCR and other companies have implemented support systems using Inference's CBR2 system. At Schwab, 210 employees use it to support Schwab's various PC software packages. Broderbund uses CasePoint WebServer to help users troubleshoot its games and educational packages on its Website. Inference is also working with Ziff-Davis Publishing to front-end its extensive tech-support database.

Inference is working with other companies to improve solution sharing. Ralph Barletta, Inference's chief scientist, is one of the key authors of the Solution Exchange Specification we described last month.

**Inference with a small "i"**

Many companies are trying to improve service by inferring visitor preferences from their online behavior. Other services ask visitors to fill out questionnaires or rate artists, then they correlate the results and make recommendations. We will cover these services in an upcoming issue.

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Personalized vs. personal service

Last summer, in the zine issue, we briefly noted the difference between personalized and personal service (zine rhymes with spleen; see Release 1.0, 6-95). Here, in a more appropriate setting, is a more detailed explanation.

Personalized service makes use of automation to customize things that customers see and hear. It takes myriad forms, such as a home-delivered Time Magazine that has your name integrated with the cover art, telemarketing sales pitches tuned to your prior shopping patterns and ads that reflect the search term you just used or the profile you filled out when you registered. There are many personalizable Websites, from the MSNBC home page to Wolff New Media's YPN.com (Your Personal Net). One of the earliest was CRAYON (CReAte Your Own Newspaper), a simple Website that allowed users to create a profile by selecting from a variety of online news resources, then return to the custom profile as a "front page" to news stories.

When it is done well, personalization improves the customer's experience and boosts sales. It reduces friction and transaction time and increases convenience. The fact that an order-taking clerk need only confirm your address instead of record it anew is itself a big benefit. That he also knows your shirt size and color preferences is usually a bonus, although too much familiarity can be a turn-off.

Enter personal service

What's puzzling about personalized service is that it doesn't always feel personal. After the first few times your name ends up in the greeting message online, you figure out that computers are managing the process. You may appreciate the convenience, but you don't necessarily feel a connection to the company. Some people find personalization intrusive. Strangely, personalization can seem impersonal even when a person is delivering it.

Service is personal when you feel the presence of the person or people delivering the service. You connect with them in some way, or perhaps you develop a relationship with a specific individual. Often this happens when the service representative does something spontaneous or funny. Personalized and personal service are not mutually exclusive. They are complementary.

Most companies shy away from personal service because they believe that labor is their most expensive resource. The mistake they make is thinking that personal service means one-to-one service. With the many new communication topologies offered on the Net, it is possible to create a variety of conversations that feel personal, yet involve many people at once. What matters is that the service provider's character or nature shine through.
THE SOUPED-UP CALL CENTER

Customers can't always help themselves. When they do need contact with an agent, what can improve the call itself? One place to start is by combining phone sessions with the Web, so the caller and the agent can discuss something they can both see. With the early systems now available, users initiate these calls from the Web by pressing software buttons that request phone contact with an agent.

Call me now

Early "call me" systems typically ask users to enter their phone number in a Web form so an agent can call them. With the phone number, the Web script then creates a transaction that is fed to an automatic outbound dialer. When an agent is available, the dialer rings the customer's phone, then patches the two parties together. The agents can receive information about the customers, including their Web session logs.

If the customer has only one phone line, the Web script will notify the caller to expect a call in ten minutes or so, long enough to disconnect. Then, of course, there is no way for the agent and the caller to use the Web during their call.

If the customer has an extra phone line or -- more interesting still -- Internet telephony, the agent can "shadow" the caller, or lead him to certain Web pages. Given that both parties are probably using PCs that can display Web pages and run Java applications, one can imagine many other interesting things they might do. More on that in a moment.

Two recent "call me" offerings are Edify's PageCall and AT&T's Project iA (instant Answers). PageCall does what one expects it to do: It takes a number from a Web form and passes it to an outbound dialer. AT&T's iA doesn't require agents to have PCs with Web access. The iA system can "whisper" details about the caller in the agent's ear before or during the call. Agents can use playbooks that map to the Web sites they need to know about. Their terminal can state, in shorthand, where the customer has been as well as other helpful details. That way they can simply pretend to follow the user around.

NETSPEAK, ROCKWELL AND THE FUTURE OF ACDS

Most voice-over-the-Internet vendors are competing on the quality of their digitized voice or are extending their products to include videoconferencing. Not NetSpeak, which has taken a more focused and ambitious approach. We first covered NetSpeak in the 1996 PC Forum preview issue, when we also thought of them as a normal Internet telephony vendor (see Release 1.0, 3-96; NetSpeak was in the Rumpus Room). We now think differently.

NetSpeak has created a series of client and server components that run on general-purpose computer hardware which, the company claims, can replace complex telephony gear such as ACDs and PBXes (Automatic Call Distributors and Private Branch eXchanges).

Enter Rockwell's Switching Systems Division, one of the senior players in the call-center game. Many of the largest call centers in the world use
Rockwell's Galaxy ACDs, which made the company a prime target. Recently, the company realized how important the Internet would be to call centers, so it started a search for a technology partner, which led it to NetSpeak.

The client software that NetSpeak has developed is quite different from other vendors' Internet phones. WebPhone draws on the company's expertise in writing Unix kernels and multimedia applications to provide multiparty bridging capabilities that enable functions such as multiple lines, voice-mail recording when one is on the phone and multiparty audioconferencing.

In addition, NetSpeak developed proprietary virtual circuit switching technology, which is controlled by the WebPhone API (WAPI). WAPI can manage a variety of lower-level Internet communication protocols, plus ISO videoconferencing protocols. NetSpeak's servers can manage directories, connect callers, process credit-card transactions and bridge the Internet telephony sessions to the traditional phone system. The Internet-based ACD capabilities make it possible to distribute calls to agents anywhere in the world, given adequate connections. All of these pieces comprise a toolkit from which NetSpeak builds Business WebPhone Systems of varying configurations.

In public, NetSpeak hasn't found a clear voice. It alternates between understating its capabilities and describing them in such grandiose terms that it appears the company has invented a solution to all communications problems, which is quite unlikely. The company's capabilities are impressive, but it doesn't explain them well. For example, claims that WebPhone is as easy to use as a normal telephone gloss over PC installation and configuration issues that are a part of any Internet phone product. These issues will be resolved over time.

NetSpeak is a blend of several cultures. Its founders worked for many years creating Unix kernel-based systems for IBM, Siemens and others. In April 1994, Shane Mattaway and Glenn Hutton founded the Internet Telephone Company to commercialize the insights they had gained from their contract work. They hit funding barriers and merged their company into NetSpeak, which was formed for this purpose by outside managers with solid telecom and business experience. Now the company has investments from Motorola and Creative Labs and is working with many phone companies and corporate accounts.

Rockwell is now demonstrating a pilot system that allows visitors to the FedEx Website to "call" agents through the Internet using NetSpeak's technology linked to Rockwell's traditional ACDs. In 1997, Rockwell plans to offer call-center systems that not only combine audio and Web technology, but also link to the conventional phone system in innovative ways and change the nature of the ACDs and PBXes that call centers use. This system is the first major effort we have seen to build a real telephony system atop Internet protocols. It will be interesting to see how this architecture affects Internet-based data architectures -- and how the two co-evolve.

Video service

Bandwidth is far from plentiful and free today, but there are times when video is a useful addition to a customer-service operation. Video-enhanced kiosks can extend a company reach. This is especially handy in an era of branch closings. NTT Software's InterSpace experiment combined three-
dimensional virtual spaces with video (see Release 1.0, 5-96). Video is also useful for working with high-value clients who expect high levels of service. Combined with remote management capabilities, video is much faster than getting a person somewhere physically.

Genesys Labs, a call-center systems developer,\(^2\) has extended its ISDN-based systems to accommodate video. Genesys' VideoACD can route a group of ISDN channels to an agent just as it would route a single line for a normal phone call. The multiple channels offer enough capacity for satisfactory digital video. Because the enhancement is minor, the rest of Genesys' system behaves normally (e.g., reporting, management, configuration). In early trials, Genesys found that video intimidated some customers, but it worked well when it was applied in appropriate situations.

**Shadowing, collaboration and remote control**

As we mentioned earlier, adding technology to the interaction between customer-service agents and callers has almost always failed. Now, with Internet connectivity becoming ubiquitous, there's hope for using some stuff. More specifically, a decade of hope that real-time groupware functionality would find broad use is likely to be fulfilled over the next three to five years, aided largely by the need to improve service.

Collaborative tools play an important role in the next generation of the browser wars. The two entries, Microsoft NetMeeting and Netscape Conference,\(^3\) include application sharing, whiteboard, shared audio and more. Screen sharing is especially helpful when the support call requires looking at something together, such as the HTML code for a Web page or the Java or VB code for a script or the settings for a recalcitrant mail application.

As application elements and browser components link up and get easier to use, our phone interactions will be richer. We will not hesitate to show people what we are talking about, because it will be easy. It will take a while for the various requisite elements to sort themselves out, though, which is why we expect broad use to occur in five years.

Microsoft has already experimented with augmented communications of this sort. Around the time of the Windows 95 launch, Microsoft had prepared a remote tech-support technology suite called AnswerStation. The system relied on modems that allowed parties to switch between voice and data (using Radish Communications' VoiceView protocol; see Release 1.0, 4-94), plus file-transfer and remote-control software to check the user's Win95 Registry for application and configuration information, then make repairs

\(^2\) Genesys was founded in 1990 to create client/server CTI applications. The company then expanded into higher-level applications such as call routing, agent management and outbound calling, out of which it created a standard suite of tools. Now it specializes in high-end, multi-site, heterogeneous call centers.

\(^3\) Netscape recently described Conference as part of Netscape Communicator, the upcoming major release code-named Galileo. Conference was formerly CoolTalk; it consists of technology that Netscape acquired with InSoft.
right away, instead of having to send the caller to a BBS or FTP site to get a file.

Several events thwarted these plans. The first VoiceView modems didn't support the protocol consistently, so interoperability was poor. At that time, the Internet took off and it became clear that managing voice and data over IP would be more significant (see below for more on IP's role). Microsoft is now retooling AnswerStation to run on the Internet. Today, second-level Microsoft support techs use NetMeeting to train the first-level staff.

Looking into other people's computers and making changes in their systems remotely opens a series of liability and privacy issues. Many corporate customers will require that the links be encrypted and that the data be guaranteed private. Companies will have to work out agreements and set expectations for enhanced remote service. The motivation to do this is high, given the costs of service.

**The future of CTI is IP**

Much of the voice/data integration we have described uses Computer-Telephony Integration (CTI) technology that links PBXes and ACDs to data servers and agent desktops. Call centers pioneered CTI primarily because even small reductions in average call length lead to big payoffs in aggregate. But the relative payoff of linking phones to databases in call centers is far greater than the payoff at the average desktop. That's why we believe that CTI will continue to evolve in call centers, but it won't make it big on desktops until the T part is happening over the same channel -- the Internet. The good news is that call centers are leading the way there, too, as demonstrated by the Rockwell/NetSpeak system.

There are many reasons why coordinating data and voice sessions is easier if both take place over the Internet. The major one is that addressing is simpler. Instead of managing a phone number -- including trying to capture it with CallerID and then querying a database for more information -- a video address and an application-sharing address, there's only one IP address to worry about; socket services take care of the rest. Socket services also make it easy for people to add other applications to their session (for more on socket services, see Release 1.0, 1-94).

Another nice feature of socket services is that sockets -- software entities -- are far cheaper than the hardware ports that traditional telephony and modem access require. Combining these points, when users can launch calls directly from Web pages, it eliminates the need for voice-processing cards that recognize touch-tone signals (sold by companies such as Dialogic and Natural Microsystems).

Of course, the quality of Internet telephony is still mediocre in most cases and most PCs are poorly equipped to become full-time telephones, particularly when they crash. The irony of Internet-based integrated systems is that the thing you're most likely to need help with is your integrated system. Never mind if you have to reboot the thing to solve your problem, and a nasty problem can easily require 20 reboots during one tech-support session.

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CUSTOMERS WHO SERVE

For years, companies have hosted support forums in a variety of online environments, from mailing lists or online-service forums and Usenet newsgroups. CompuServe has long been the locus of technology vendors' tech-support forums and software libraries, in which customers could find patches, drivers and so on.

There's a significant difference between company-hosted tech-support forums and open-topic forums. In chat rooms, on mailing lists and on bulletin boards, people post questions and share opinions on topics such as auto repair. People who enjoy car trivia and helping others participate in these groups and make them work. These discussions can take place in vendor-run forums, but they don't have to, and often they are more useful and credible when they're vendor-independent.

Vendors generally participate in these discussions by accident. The pattern goes something like this. An employee who likes to dink around online in her spare time trips across the discussion forum, notices what's going on and dives in. She identifies herself as an employee of Company X, but not on official duty. People enjoy her useful postings and welcome her into the group. Then one day her employers find out about the group and her participation and they respond the way Dogbert might recommend: They freak out and forbid her (and her colleagues) from participating in the group. The online discussion group figures this out, often from a last posting that says, "My bosses won't let me do this any more." The group then either complains bitterly or just forgets the matter and goes about its normal business -- it's hard to predict. Then Company Y enters the group and does it right. You can pick different plot twists and endings, but the basic elements are pretty consistent.

Some examples

On the new-list, an Internet mailing list where people announce new mailing lists, you can watch support groups form around every imaginable topic, from multiple sclerosis to genealogy, parenthood, Amiga ownership, carpentry and holistic pet care. Some of the lists are amazingly specific to a group or place, yet this process allows individuals with narrow interests to find one another and communicate.

The New York-based World Wide Web Artists' Consortium (WWWAC) runs a mailing list on which leading-edge developers discover, break and fix Web tools and tricks faster than vendors hear about them. Early on (which is only several months ago), many Web special effects were actually bugs that developers exploited. Several New York-area Web developers formed the WWWAC when they realized how hard it was to keep up to date on what was happening. They decided they would be better off collaborating than competing, so they formed the group in early 1994. (Details on the group and the list are at http://wwwac.org.)

Vendor representatives from The Palace, Netscape, NetObjects and others present regularly to the physical group at its bimonthly meetings. Many of those representatives also participate on the mailing list, which is always hopping with questions that range from how to manage color palettes to tool recommendations and whether Microsoft wants to dominate the world.

Release 1.0 23 October 1996
The Risks Digest at risk

With seemingly reckless abandon, Internet system managers post newly discovered security loopholes to a moderated, open, easily accessible Usenet newsgroup known as the Risks Digest. The idea is that sharing the problems and their fixes openly and quickly is a better way to stay ahead of troublemakers than keeping it all underground. This is only one example of the many kinds of discussions that occur on this channel. (Risks Digest is on Usenet at news:comp.risks; it is archived on the Web at http://catless.ncl.ac.uk/Risks.)

The Risks Digest, officially the Forum On Risks To The Public In Computers And Related Systems, deals with human safety, reliability, security and privacy in a wide variety of contexts. A recent survey estimates that over 100,000 people read the Digest on Usenet alone; it's impossible to know how many people actually see it. Messages posted to the list include explanations of how to hack cellular phones, position papers on the privacy effects of national identity cards and theories and explanations of recent events, such as the likelihood that an airplane crash was caused by its electronic flight-control system and how several now-defunct squirrels brought down a major Palo Alto Internet hub.

So far it works well, but the Digest is under extreme pressure. Peter Neumann, an expert in system stability and security for SRI International, started the Digest in 1985, under the aegis of the Association for Computing Machinery, the pater familias of computer-related organizations. Little has changed since then -- except for explosive growth that now threatens to overwhelm Neumann. He remains its sole maintainer and moderator, yet has no plans to change the way he runs the Digest, which requires his constant editorial guidance and administrative supervision. Dealing with the volume of new subscribers -- particularly those who send faulty mail addresses -- has become a critical problem. Neumann is a victim of a job well done, compounded by the increasing publicity the Digest receives and the growing breadth and sophistication of computer systems.

Loose networks of experts

On the WELL, the Sausalito, CA-based online service, the News conference always has a topic running titled "Experts on the WELL." You can post a question about practically anything to the "Experts" topic and as often as not somebody will reply with a pointer or even an answer. For participants, it's the ultimate trivia contest -- with real-life consequences. People actually use the information.

Imagine domain-specific "experts on..." forums everywhere, with referral mechanisms and directories to help people find the ones best suited to their topic and level of understanding. Teachers and scientists are already doing a form of tech support for students online by volunteering to help them with homework. A principal activity in Barry Kort's text-based MUD, MicroMUSE, is making math and science fun to learn for kids (see Release 1.0, 5-95). Obviously, these forums should be of great interest to education and training system developers.

These informal mechanisms can also be professionalized. GiGa Information Services has started a Net-based inquiry service along these lines called
ExperNet. There could also be loose federations of professional searchers, available for a fee. Every search engine ought to include an "I give up!" button, which could send the query log to a certified searcher with domain expertise. A referral mechanism that rewards people for forwarding queries to the best-qualified searcher would create a profitable service market.

The implications of text support

The Wall Street Journal of October 21, 1996, has two stories that eloquently illustrate points we would like to make. In the first story, a reporter tested the Web feedback loop that many people have begun to take for granted. He sent some relatively innocent questions to a series of well-known consumer-products companies over e-mail in order to see whether and how quickly they would respond.

The results were not surprising. With few exceptions, companies are completely unprepared to offer text-based service. (The most impressive responses to the Journal's unscientific test were from Whirlpool, L.L. Bean and Ford. We applaud them.) Companies have no historic traffic volumes to indicate how to staff such a function. They don't know how to answer questions efficiently and consistently, without freaking out their legal staffs.

Web netiquette suggests that companies offer feedback links on their Websites, but so far it's mostly lip service -- or perhaps fingertip service. Often the most visible mail tag on a Website is the Webmaster's, and answering customer-service questions isn't part of that job description. Worse, though, most companies haven't mobilized to do something useful with those incoming messages. (It's also amazing how many company Websites don't include simple information such as the main office address and phone number.)

Guerrilla warfare

The second Journal story is a humor piece about an e-mail message from a pseudonymous Miller beer aficionado, who claims that Miller's recent change to black cans has adversely affected the beer's taste. The mystical message writer purports to have conducted tests that prove diminished drinkability. To make things a bit more confusing, someone purporting to be from Miller concocted a reply to the message.

That episode seems to have run its course in good humor. How should a bank deal with a credible-sounding, publicly posted threat that someone has compromised its security system? Companies will have to develop response measures before such things happen. On a less dramatic scale, how should companies deal with competitors masquerading as ordinary citizens on their bulletin boards?

Once support gets out of official channels, it can get pretty funny, as evidenced by the Website www.nynexsucks.com, where people commiserate about their dealings with NYNEX. Participants include ordinary customers, business customers and NYNEX employees airing their own gripes or substantiating others' complaints.

This is, of course, a PR person's nightmare come true. It is also a PR opportunity. It would do NYNEX a world of good to jump in and do tech support there. But too many companies are concerned with how to do spin control and
marketing online. They need to respond, not control. They do not perceive
the need to change the way they treat customers and other outsiders online.

New roles, new rules

The new medium really does have profound consequences. It closes a feedback
loop that has always been left dangling. People can now talk to companies
in places where they can't be ignored or isolated. Irate constituencies can
find each other and join forces. These and other forces will help Net-based
communications change the dynamics and power relationships between companies
and their customers, their competitors and their business partners.

To cope with these shifts, companies will have to become more transparent to
outsiders. There are few buffers anymore: The garbage inside company walls
becomes visible outside. The good news is that companies that recognize
this trend and move with it will enjoy more customer loyalty and better re-
lationships with outsiders overall.

To get there, companies (and society) will have to address issues of trust,
representation and identity online. There is a flurry of activity around
secure transactions, but the other elements haven't been attended to nearly
as much. The issues are not just personal. Identity, for example, includes
corporate identity and brand value. When the Intel Pentium fiasco caught
fire on the Usenet, Intel's mishandling of the crisis caused far greater
damage to the corporate name and Pentium brand (remember all the Pentium
jokes?) than the math error itself could have.

Needed: new business models

More pragmatic issues need attention, too. What are the costs of doing sup-
port over e-mail, bulletin boards and chat rooms? Who is best suited to
doing that work? The call center?

TSC's Isherwood sees plenty of corporate appetite for offering e-mail sup-
port, but he's not sure call-center agents should do it. Most call centers
are paid or evaluated by the call. They have a huge investment in equipment
and training agents, which creates a huge need to fill idle time with other
work. Also, agents don't make much money, and usually only when they com-
plete a call or close a sale. Idle time costs them money, so they love to
have items in a queue that they can whittle at during their down time and
make extra money. Isherwood feels that conventional call-center agents
probably won't be well-suited for online interactions. He suggests hiring
journalists who are diplomatic and training them in customer service.

Finally, there is plenty of opportunity to improve the way customer-service
agents work with text. Agents could save time by selecting from canned
responses that are assembled intelligently and spend their time adding
custom elements.

White-collar customer service

If you look outside the call center with an eye toward service, everything
looks like an opportunity. We're all engaged in customer service in one way
or another. Sales is service -- except for the few minutes it takes to draw
up a purchase order. And service is about relationships. More and more,
the conversations that build those relationships will take place online. Companies should nurture them.

US companies are in a hurry to automate -- to remove labor content. Many customers will want people to remain a part of their service interaction. For example, they may never want to learn enough about the travel and frequent-flyer systems to book travel completely on their own, even with the smartest software agents assisting. They would prefer to enhance the way they work with live agents.

Your financial advisors may put your portfolio information online (e.g., Bulletproof.com’s portfolio-tracking Java applet), password-protected, alongside selected news stories and excerpts from (and pointers to) notable online discussions. The page would include a "call me" button that either rings your advisor right away, enters a request for her to call back within a guaranteed time frame or connects you immediately to a representative who should be able to help, but whom you probably won’t know -- all driven by how valuable you are to the bank and your personal preferences.

Want to redo your kitchen? Perhaps Ikea could customize Books That Work’s Design Your Own Kitchen and turn it into an interactive experience on the Net. You could work alongside a consultant or with friends of yours whose advice you’d like to have on the project.

Agents don’t have to be present all the time. Sitespecific, a New York Web development shop, uses a Web calendar to communicate with its clients. Sitespecific’s developers link all their client work to the calendar. The clients, running ordinary Web browsers, can see what Sitespecific did for them on any particular day by choosing dates and items from a pick list on the calendar. NetGravity’s ad-sales system allows clients to view Web pages in a way that displays the details of the traffic their own ads are exposed to. A hotel events manager could post an interface that allows her clients -- event coordinators -- to visualize, configure and manage spaces, meals and props remotely. Her clients could use the interface to communicate with all staff members.

It’s easy to carry these examples to other markets and other relationships. These content-, context- and conversation-enhancing vehicles -- we like to call them zines -- will become the basis for future competition.

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COMING SOON

- Agents, personalization and advertising.
- Collaboration and conversation tools.
- Navigation.
- The analog world.
- And much more... (If you know of any good examples of the categories listed above, please let us know.)

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23 October 1996
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RELEASE 1.0 CALENDAR

1996

Oct 31 - Nov 1  @Web Advertising '96 - New York City. Sponsored by Advertising Age. Call (800) 221-3806; fax (206) 285-0308; tlp@thunderlizard.com; http://www.thunderlizard.com.

November 6-8  UIST '96: Ninth Annual Symposium on User Interface Software Technology - Seattle, WA. Sponsored by ACM. Sun's James Gosling keynotes. Sessions include information, visualization, collaboration and VR. Call David Kurlander, (206) 936-2285; djk@microsoft.com; www.acm.org/uiست/.

November 16-20  @CSCW '96: Computer-Supported Cooperative Work - Boston. Organized by the ACM. Call (410) 269-6801; fax (410) 267-0332; cscw96-info@media.mit.edu; www.acm.org/sigchi/cscw96.

December 9-10  The Knowledge Advantage - San Diego. Sponsored by Ernst & Young Center for Business Innovation and the Strategic Leadership Forum. With John Seely Brown, Peter Drucker and Stan Davis. Call (617) 722-0320; peggy.quinn@ey.com.

1997

February 8-12  MILIA '97 - Cannes, FRANCE. Sponsored by Reed Midem Organisation. Contact Diana Butler or Pamela Dolan by fax, (212) 689-4348.

February 9-12  DEMO '97 - Indian Wells, CA. Sponsored by Apple Computer, AT&T, Gemini Management Consulting and HP. Now it's Chris Shipley's picks. Call (800) 633-4312; fax (415) 286-2750; mark_davis@infoworld.com.


March 11-14  CFP '97: Commerce & Communities - Burlingame, CA. Hosted by ACM, Stanford, and UC Berkeley. Seventh conference on computers, freedom and privacy. Send inquiries and suggestions for conference content to cfp97@cfp.org.

March 23-26  **PC (Platforms for Communication) Forum - Tucson, AZ. The twentieth annual; sponsored by us. The living web: models and metaphors. You read the newsletter; now meet the players. Call Daphne Kis, (212) 924-8800; fax (212) 924-0240; daphne@edventure.com; www.edventure.com.

* Events Esther plans to attend.
@ Events Jerry plans to attend.

Lack of a symbol is no indication of lack of merit.
The full, current calendar is available on our Website (www.edventure.com).
Please let us know about other events we should include. -- Susanna Stromberg

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