Unfilled Promises

It's nearly half a year since a tsunami reduced coastlines of 11 countries on the Indian Ocean to rubble. Roads, bridges and houses still need to be rebuilt. Fresh water still is a concern. Eric Rasmussen thinks military and humanitarian organizations can respond better, faster and smarter, the next time disaster strikes. How? Using cheap, portable technologies like a "Pony Express" truck that can bring an Internet connection to almost any spot on Earth.

PHOTO ILLUSTRATION BY BRIAN HUBBLE

CASE 165

BY DAVID F. CARR

A DISSECTION

STRONG ANGEL TEAM BASE CASE

Organization: A virtual team that include military, medical, humanitarian and technology experts.

Web Address: www.strongangel.telascience.org

Business: Define better ways of using communications technology to support collaboration between military and humanitarian organizations during emergencies.

Project Manager: U.S. Navy Cmdr. Eric Rasmussen, M.D.

Budget in 2004: About $330,000 from the Defense Advanced Research Projects Agency.

Challenge: Identify computer and communications technologies that can withstand harsh conditions—in Iraq or the aftermath of a tsunami. Push them from experimental to practical usage.

BASELINE GOALS:

- Increase number of significant relief agencies that can tie into Strong Angel network, from 20 in 2004 to 50 or more in 2007.
- Boost use of electronic collaboration tools, from 13% of relief organizations after December 2004 tsunami to 50% during next emergency response.
- Increase number of humanitarian specialists in Strong Angel online contact list, from 175 today to 500 by 2007.
- Convert Strong Angel project team from 10 part-time workers in 2005 to permanent organization with full-time staff by 2007.

Human remains lay scattered amid rubble

and the stench of decay in Banda Aceh, the region hardest hit by the Dec. 26 tsunami. Three Pentagon observers had come to study how well the U.S. military was communicating with humanitarian groups trying to feed and house millions of displaced Indonesians.

But the military's training, computer networks and procedures were tightly controlled. They were geared for sending helicopters, ships and soldiers to war—not for helping civilians in a disaster zone put a roof back over their heads.

More than two weeks had passed since tidal waves swept 300,000 people to their deaths in Thailand, Malaysia, Sri Lanka and eight other countries surrounding the Indian Ocean. About two-thirds of the dead and missing were in Indonesia's Aceh province, where homes on a 150-square-mile strip of coastline had been crushed, and many of those inside were drowned or washed out to sea. More than 500,000 survivors were homeless.

The expedition's leader was Cmdr. Eric Rasmussen, a Navy doctor who had participated in humanitarian operations following a 1999 earthquake in Izmit, Turkey, as well as in wars in Bosnia, Afghanistan and Iraq.

Even before he left Indonesia's capital, Jakarta, for Banda Aceh, Rasmussen had assembled a long list of logistical problems linked to communications breakdowns. On Jan. 9, in an e-mail to the United Nations, various humanitarian agencies and the acting Assistant Secretary of Defense, Linton Wells II, at the Pentagon in Washington, D.C., among others, he wrote:

Much of the work here is being done by cell phone, VHF radios and personal conversations. There is no Instant Message system, there is no collaborative space, and there is no consistent update of the information flowing around the theater. It's almost as if Third Fleet's Joint Operations Center had never existed.

Why was a doctor putting lack of a "collaborative space" so high on his list?

Because in its absence, aid workers were wasting time up in helicopters, surveying areas of the disaster zone that others had already assessed. With more sharing of information, they would already have been packing those helicopters full of food for the hungry and tents for the homeless.

Perhaps no one would die as a result—most fatalities occurred within minutes of the disaster—but that lack of "collaborative space" would cause needless misery for survivors, not to mention more wear and tear on relief workers.

STRONG ANGEL

Rasmussen had spent much of the past five years preparing for just such an event as this.

In 2000 and 2004, he had organized a series of exercises called "Strong Angel," designed specifically to address ways the U.S. military could better assist emergency humanitarian relief efforts in disasters worldwide. The second set took place on a bed of crushed lava in Hawaii meant to simulate the austere conditions that might be found in the Iraqi desert—or in the aftermath of a natural disaster.

The collaboration between military, academic and international relief organizations drew on diverse strains of influence, such as the Burning Man Festival, an annual arts gathering that coordinated itself through a high-speed wireless network in Nevada's Black Rock Desert, and the ready availability of "cheap and cheerful" technologies such as "cantennas," which could put a powerful directional antenna in anyone's hand for less than $50.

Rasmussen and colleagues inside and outside the military

had been promoting the idea that the restoration of roads, bridges, ports, water, sanitation and other basic human needs could be planned for, practiced on and responded to quickly through the smart use of such cheap technology.

But here in Aceh, in a real crisis, Rasmussen saw relief efforts rendered inefficient by a lack of basic information—where the water, medicine, wood and other supplies were needed most, and how to get them there.

The scope of this series of tidal waves made the response particularly challenging.

Only a few other calamities—a 1970 cyclone in Bangladesh, a 1976 earthquake in China, and the famine in Ethiopia in 1984 and 1985—had cost more lives. The rush to offer assistance only complicated communications and coordination. More than 100 relief agencies, including CARE and the International Medical Corps, converged on the disaster area. Combined with military hospital units from many nations and an assortment of U.N. agencies, coherent management of the overall operation would prove close to impossible.

Observing along with Rasmussen and trying to suggest ways to make the mission work better were Dave Warner, a collaborator on Strong Angel and other projects, and Dan Engle, a retired Navy networks architect and independent consultant.

When not on a humanitarian mission, Rasmussen is a full-time doctor at a Navy hospital in Bremerton, Wash. But he also manages projects for the Defense Advanced Research Projects Agency (DARPA) and the Center for Robot Assisted Search and Rescue, which sent mechanical searchers into the ruins of the World Trade Center. He has taught medicine at the U.N. Office of the Coordination for Humanitarian Affairs in Geneva, and lectured on how to examine torture victims. The U.S. Agency for International Development (USAID) has him on the short list of people it calls to coordinate the humanitarian response to disasters around the world.

All of these roles—military man, doctor, humanitarian and technologist—surfaced in the Strong Angel exercises. In particular, the second set, held last July in Kona, Hawaii, emphasized technologies that could support electronic collaboration either on a battlefield or in a disaster zone. One ground rule: Participants had to rely solely on satellite and wireless communications gear they could carry.

The system they pieced together during the weeklong exercise included a Web site and a system of synchronizing folders—a "collaborative workspace" known as a Groove network—that could have sped up road clearing and the delivery of fresh water in Banda Aceh. That much was clear to Nigel Snoad, chief information officer of the U.N. Joint Logistics Centre (UNJLC) and a Strong Angel II participant.

Summoned back from vacation, Snoad had arrived in Indonesia on Dec. 28. He acted as a logistics coordinator, fielding calls asking basic questions like how to get a plane into Banda Aceh, how to get a car, and which roads were open.

At one point on Jan. 2, he shut off his cell phone for a half-hour to talk to a relief worker. When he switched it back on, he found 58 voice mails waiting. "It was driving me insane," he says.

IN THE MUD

If the tsunami mission could have deployed the kind of inexpensive but effective networking found on the lava beds of Strong Angel II, relief efforts in Aceh would have included:

PLAYER ROSTER

STRONG ANGEL

Eric Rasmussen
Commander, U.S. Navy
Led the 2000 and 2004 Strong Angel exercises. A Navy physician and researcher for the Defense Advanced Research Projects Agency (DARPA), his expertise is in the application of information technology to medicine -and language-translation software. Words he lives by? From his father, a Norwegian resistance fighter imprisoned during World War II by the Nazis: "Never let the bad guys win."

Dave Warner
Independent Consultant
Warner was in charge of Strong Angel's telemedicine experiments, which looked at the field use of biosensors and other technologies in emergency situations. He is a former Army drill instructor turned medical neuroscientist, freelance technology researcher and self-described "California tree-hugger."

Dan Engle
Principal
NextNet Consulting
A networking specialist who retired in 2003 from the U.S. Navy. Investigated communications breakdowns affecting the Navy's participation in the tsunami relief effort. He once served as the first deputy director of the Navy's Network Centric Innovation Center, a group within the Navy that assesses network technologies for practical applications.

Dennis McGinn
Vice President
Battelle
This retired vice admiral and one-time commander of the U.S. Navy's Third Fleet championed the idea of the Strong Angel exercises. He tapped Rasmussen to lead the effort, knowing that he had served in disaster response missions and had contacts who could pull together U.N. agencies and relief organizations. He joined Battelle, a technology R&D firm, in 2003.

Linton Wells II
Acting Asst. Secretary/CIO, U.S. Department of Defense
A former destroyer squadron commander with a Ph.D. in international relations, Wells was one of the key supporters of Strong Angel and approved Rasmussen's trip to Indonesia.

PARTNERS

Mark Prutsalis
Consultant, Crisis Response Team
IBM
During Strong Angel II, he went into the field to work on the DARPA Translingual Information Detection, Extraction and Summarization research project, which tested language translation software. He was also in Indonesia as part of IBM's Crisis Response Team.

Ted Okada
Senior Humanitarian Systems Architect
Groove Networks
Part of the team in Strong Angel II supporting Groove Virtual Office, collaborative software that lets people share documents over the Internet using everyday desktop and portable computers. A mathematician by training, he has spent about 20 years working with various humanitarian agencies, figuring out, among other things, how to use geographic information systems to plan and organize humanitarian missions.

Robert Kirkpatrick
Senior Sales Engineer
Groove Networks
Worked with Rasmussen in Iraq fielding collaborative tools based on Groove software for tasks such as assessing the quality of health care, nutrition and other aspects of life following the invasion. At Strong Angel II, he developed data collection and analysis forms for matching offers of aid with requests for help during an emergency.

Milton Chen
Chief Technology Officer
VSee Lab
During Strong Angel II, he showed how videoconferencing software could be used to improve convoy security. With cameras attached to the hoods of convoy trucks, drivers would be immediately alerted if a vehicle ran into trouble—an attack or a simple pothole—allowing other trucks to avoid the situation.

Nigel Snoad
Chief Information Officer
United Nations Joint Logistics Centre
Served as the coordinator in the first weeks of the tsunami response for the U.N. logistics operation on the ground in the Aceh region of Indonesia. In 2004, he represented UNJLC at Strong Angel II and later that year was operations center information manager for Triplex, an international disaster preparedness exercise run by the U.N.

Eric Rasmussen assesses the tsunami damage.

RASMUSSEN HOPED TO PROVE THAT HIS IDEAS ABOUT AUSTERE NETWORKS COULD MAKE A DIFFERENCE IN INDONESIA—AND IMPROVE FUTURE RELIEF EFFORTS.

- **Voice, video and data networks** that could be installed in any improvised office space—or tent.
- **Wireless communications,** linked to the Internet by satellite, and shared freely among military and civilian relief workers.
- **"Virtual" workspaces** for organizing deliveries of services and materials that non-technical relief teams could create, on the fly.
- **Synchronization of documents** that required only the occasional ability to get online.
- **A "Pony Express"** system of communications vehicles that could bring network access to users, as needed.

Rasmussen wasn't surprised to find that few of the technologies tested in July in Hawaii had found their way to Indonesia six months later. But he still hoped to prove austere networks could make a difference in Indonesia—and, in so doing, improve future disaster relief efforts.

In particular, he hoped to test tools developed with the help of software supplier Groove Networks that could wirelessly replicate databases wherever they might be found.

After all, what could be more important than matching offers of assistance from around the world to requests for help? Or finding the doctors, logistics experts or other specialists who had come to the scene to help, but were not hooking up with the people who could put their services to use?

But getting into the Groove products was not easy.

Shortly after arriving in Banda Aceh, Rasmussen found himself standing in deep mud at a makeshift airfield that had been created out of a drenched soccer field. Forget communicating from one computer to another. With helicopters roaring overhead, just carrying on a face-to-face conversation with Gregg Nakano, the head of the USAID Disaster Assistance Response Team (DART), was difficult.

The DART leader, who had worked with Rasmussen in Iraq, was charged with supervising the distribution of emergency aid, primarily through private charities like CARE and Save the Children. But he faced the same limitations: He was limited to cell phone communications—no access to Web sites, no e-mail, no radio communications.

He was scrounging for detailed maps and aerial photos that would show where the roads were still passable, and thus food and clean water could be sent by truck instead of helicopter.

In the Strong Angel model, any member of DART's relief team or any other relief organization would have maps or photos on their hard drive, for ready access.

With Groove, members of the network can see designated files on each other's laptop or desktop computers. When any member makes a change to any of the designated files, other members' copies of the files automatically update each time they connect to the network.

There are other ways to share files, like posting them to a public Web site. But in Aceh, the maps and photos were bottled up on servers aboard Navy ships such as the *U.S.S. Lincoln*, an aircraft carrier whose helicopters were being used to distribute food, medicine and other urgently needed goods. Only military personnel—offshore—had access to the most current information.

While on board ships operating off the coast of Aceh, Engle had been hearing similar complaints about lack of information sharing from Navy pilots.

Particularly in the first days of the mission, the pilots found themselves repeatedly flying the same "assessment missions" up and down the Indonesian coast for different relief organizations because the photos and observations brought back by one weren't shared with the next.

"While we were flying these assessment teams around for all these different organizations, we could have been flying food and water," Engle says.

In the meantime, Navy pilots swarmed the half-flooded soccer field, with seven helicopters doing the work of 30. Female soldiers, ankle-deep in mud, lugged 40-pound bags of rice, loaded them onto choppers, then turned around and did it again. And again. Only their muscles could speed up the relief effort, reducing each flight's turnaround time.

With a collaboration "space" and the network to support it, reports from observers could have been available to all.

"The problem was there was no such place, and no plan for that," Engle says.

At least Banda Aceh had a working cellular network, although it was frequently overloaded. Farther afield, where fishing villages had been wiped off the map and survivors huddled around campfires, even the cell phone wasn't an option.

Rasmussen instead had brought along a phone that operates as either a cell phone or a satellite phone, working with the orbiting relays of Thuraya Satellite Telecommunications of Abu Dhabi. In fact, he had brought extras, which he gave to the relief workers who needed them most.

That experience in Aceh reaffirmed for him that the "social network" between relief workers, doctors, government officials and military officers was more important than the electronic one.

Finding a single person like Snoad here, familiar to him from the Strong Angel exercise, let him make connections with other key players and get more work done than he could have otherwise, regardless of the technology at hand.

"Technology is not the point," says Rasmussen. "It is simply the facilitation technique."

GOTCHA! TRANSLATION SOFTWARE

Just as the U.S. government and international relief agencies must compensate for a dearth of human translators, *global businesses may be able to use software to help workers speak—or least hear and read—each other's language. Language translation software at least should help workers get the gist of a policy or product update, in their native tongue. However, "machine translation" software that autonomously translates any given text from one language to another can be error-prone.*

PROBLEM: Machine translations can produce text that is garbled or hilariously inaccurate.
RESOLUTION: Test the precision of your translated text by sending a phrase on a round trip through the translation engine. For example, a sentence that appeared recently on the *Baseline* Web page—"Why should we rely for patches on the company that made the holes in the first place?"—turns into something about a "lean piece of cloth" when translated into Korean and back by the Babelfish.altavista.com Web site, which uses software from Systran, a French machine translation firm. Simplify; make more straightforward; try again.

PROBLEM: Basic translation software often fails to pick up on intended connotations. For example, the word "chip" can mean entirely different things to semiconductor researchers and snack food distributors.
RESOLUTION: Find translation software packages tailored to support your industry or topic domain. Systran's Enterprise and Premium Language Translation Software packages include 20 industry-specific dictionaries. When the computer dictionary is turned on, for example, the word "server" will be translated into a word that means computer server, not waiter or waitress.

PROBLEM: Even industry-specific translation software can fail on sentences that use idioms, slang or jargon that the software hasn't been trained to recognize.
RESOLUTION: Make sure writers and editors use simple declarative sentences and a limited vocabulary when creating a manual or other document that will be translated into many languages. Translation software produces better results when it handles short, simple sentences.

PROBLEM: Machine translation is considered too bleeding-edge for many business applications, such as providing financial, supply chain or shopping services to overseas customers.
RESOLUTION: Look into workflow and content management software that can assist human translators. For example, some content management software packages, such as those from Trados, feature "translation memory," which stores equivalent blocks of text in multiple languages. The translation between languages is accomplished by humans, not software, but these reusable chunks of content can be called up and used when, for example, a customer service representative is going through a brochure, warranty or other business document with a customer.

—D.C.

A big reason he had come to Banda Aceh was to fill in the gaps of his wish list for information on what was happening on the ground; he had been collecting information from various relief organizations he met along the way.

There were no secrets here. There was information that could be, and should be, shared freely online—updated maps, satellite imagery, and aerial photos of the roads and likely areas where survivors might be found—but much of it was bottled up offshore, in the server rooms of Navy ships.

The reasons weren't entirely technical. Diplomacy often dictated that the U.S. release information to the Indonesian military rather than directly to relief organizations.

So, once Rasmussen managed to navigate the bureaucratic maze, he found himself acting as the highest-speed connection in this emergency network. He would fly out to the *Abraham Lincoln,* burn a CD with maps, photos and other key data on it, fly back to shore and share it.

Warner makes a techie joke of the experience. "What's the bandwidth of a kilo[gram]'s worth of CDs?" he asks. "Pretty good, but kind of bursty."

SATELLITE MISCOMMUNICATIONS

Strong Angel II had run on a free wireless network, connected by satellite to the Internet. Something like that would have been very useful in Banda Aceh. In fact, the French organization Telecoms Sans Frontiers (Telecommunications Without Borders) was trying to set it up, but the satellite connection it shared was limited to the bandwidth of a dial-up modem.

The U.N. was having its own problems establishing a high-bandwidth satellite connection.

One problem, Snoad says, was that communications kits for rapid deployment were optimized to work with the satellites over Africa, where the U.N. has seen the most frequent humanitarian emergencies in recent years. The kits were not adjusted for satellites hovering above the Indian Ocean.

Meanwhile, the U.S. had brought plenty of bandwidth ashore, but it was not the kind of bandwidth that could be shared with outsiders.

Limited to a single military transport plane for his gear, the Marine Corps officer setting up the onshore network brought communications equipment that supported the military's classified Internet protocol network, SIPRNet—which is only meant to create a secure, private network.

No one could fault him for following standard operating procedures, Engle says, since maximum security is the military's default mode. But one recommendation he made upon his return was that the military develop a different "fly-away kit" of network equipment for use in humanitarian operations, where information sharing is more important.

"Other than food and water, communications infrastructure should be one of the first things considered," he wrote in his preliminary report to the Pentagon on Feb. 16.

PROJECT PLANNER
CALCULATE THE COST OF SETTING UP AND RUNNING A SATELLITE NETWORK (SEE NEXT PAGE).

Back on Jan. 8, when the

Calculating Costs of a **SATELLITE-BASED NETWORK**

PROJECT OVERVIEW

Your network is as valuable to your large energy company as the oil rigs scattered around the globe that pump out your revenue. Not having these remote cash cows online continues to be a business problem.

You can no longer rely on an end-of-the-week satellite phone call for updates and forecasts from these remote—yet essential—outposts. The solution? Connect your rigs to the rest of the enterprise via satellite. You already have much of the know-how you need, since your company was a leader in establishing the satellite technology that now lets your gas stations send data to you in seconds.

For this project, plan to roll out the network to 10 of your oil rigs. Start with a satellite dish at your hard-wired corporate network hub, which will transmit data to and receive it from dishes at the remote sites. Programmers and database administrators will iron out any integration bumps and make sure the necessary applications and data operate correctly on the new network channel. Heavy-duty satellite modems will send data to and from the local area networks at each site; plan for a wireless LAN at each rig.

You'll want a satellite service provider that can guarantee upload speeds of at least 512 kilobits per second. Managing traffic from 11 sites on a shared satellite channel can be tricky, so plan to install a network control station to keep the flow going.

To read the details behind this planner and fill in your own numbers, buy the spreadsheet from WWW.BASELINEMAG.COM/MAY05.

STARTUP: 6 months

ITEM	DESCRIPTION	QTY	COST
SOFTWARE AND SERVICES			**$ 21,800**
Satellite service	Multisite 1.5 Mbps/256 kbps connection (four months)		10,800
Network control software	Enterprise application to manage satellite traffic		11,000
HARDWARE			**$ 186,800**
Servers	Basic Wintel servers for remote sites	10	24,000
Laptops	Wireless workstations for remote staff	20	40,000
Satellite dish	1.8-meter dish for each point on network	11	52,800
Satellite modems	Input-output controllers to port data to and from dish	11	38,500
Wireless bridge	Cisco mobile wireless router	10	26,000
Wireless access points	Cisco Aironet Series wireless access point kits	10	5,500
LABOR			**$ 373,600**
Project management	Company and consulting project leads	3	137,200
Network and integration	Network architect and admins, and programmers	10	155,600
Hardware support	Installers and vendor consultants	8	80,800
TRAINING	1 day of training for remote staff	41	**$ 24,800**
TRAVEL	Remote-site visits by rollout team		**$ 60,000**
STARTUP COSTS			**$ 667,000**

OPERATIONS: Annual

ITEM	DESCRIPTION	QTY	COST
SOFTWARE AND SERVICES			**$ 28,050**
Satellite service	Multisite 1.5 Mbps/256 kbps connection		26,400
Annual support	Software support fees		1,650
HARDWARE			**$ 53,500**
Annual maintenance fees	Hardware support fees		13,500
Laptops	Additional workstations for remote staff	20	40,000
LABOR			**$ 69,600**
Network and integration	Network support and maintenance	6	32,000
Hardware support	Hardware support and maintenance	5	37,600
OPERATING COSTS			**$ 151,150**

TOTAL COSTS = $818,150

BASELINE CREATED THIS PROJECT PLANNER BASED ON RESEARCH AND PUBLICLY AVAILABLE PRICING. THIS PLANNER DOES NOT REFLECT ANY SPECIFIC IMPLEMENTATION. COSTS VARY ACCORDING TO THE NUMBER OF ASSETS AND COMPLEXITY AND SIZE OF PROJECT.

READING THE PLANNER: Line items sum upward to the boldface total for each section. Those figures, added downward, comprise the total cost within each of the four boxes.

Produced by **Sean Nolan**. Icons by **Heather Jones**.

A Baseline Project Planner

Linking far-flung sites Like its hard-wired counterpart, a satellite network works best when no one notices it. Proper planning—from hardware to connectivity to integration—is the key to a reliable system. In the example below, a satellite network is the go-between for a single corporate data hub and 10 remote sites running wireless networks.

Hub Key servers and data storage boxes reside here. Anything available on the network—from sales forecasts to health-plan information—is available to all sites.

Satellite Courtesy of a service provider, you'll share a spot with hundreds of others on this orbiting device.

Dish A 1.8 meter satellite dish at all sites will provide the required range, durability and reliability.

Modem Connects to the dish via cables that handle incoming and outgoing data. The modem sends and receives data from the dish and makes it available to the local area network through the server.

LAN A wireless router connects to the modem and distributes data to staff via a wireless LAN.

Staff Wireless laptops allow staff to check data, send data or simply access the Web. Everything from output forecasts to supply restock orders can be handled on the network.

Control Station A single network control station coordinates traffic across all sites. Key tasks include batching data and requests to the satellite so that traffic doesn't slow down. The control station also logs data usage of each site so it can better anticipate demand patterns over time.

observer team stopped at the joint command center in Utapao, Thailand, en route to Indonesia, Engle was struck by the lack of what the military calls "situational awareness."

Generally, that refers to a military commander's understanding of what is happening on a battlefield, based on the information available at a particular moment. For example, the Navy uses its WebCOP software to give its crews a "common operational picture" from wherever they are, through a Web browser. The system constantly updates maps of a given region, superimposing locations of friendly and enemy forces, to help commanders make better decisions.

A humanitarian mission ideally would have a common operational picture of where food, water, transport planes and trucks are, and where they needed to go. What Engle instead saw at this military command center was a single PowerPoint slide. Projected on the wall was the status of available transport aircraft, among other items. But the data was static, not updated on the spot.

"I would have expected more, frankly," Engle says.

But the U.S. military's battlefield collaboration and decision-support tools aren't well suited to a humanitarian operation, where information needs to be shared broadly. Tools like WebCOP are designed for use in command centers with high-bandwidth networks, whereas the ideal situational awareness tool for a humanitarian operation would be accessible to team leaders in the field with only sketchy network access.

This was essentially what the Strong Angel team tried to construct in Groove Virtual Office, and which Rasmussen and his collaborators from Groove transformed into a virtual emergency operations center after the tsunami.

GROOVE, THE HUMANITARIAN TOOL

Groove was founded by Ray Ozzie, best known for creating Lotus Notes. Ozzie, now one of Microsoft's three chief technology officers after his company was acquired in April, wanted to create a new kind of collaboration software for workers from many different organizations, who might spontaneously form teams to complete specific tasks.

Rather than relying on technology staff to set up databases and file servers for shared work, Groove users can establish "workspaces" on their own personal computers and invite others to participate.

A workspace for a given project can be assembled easily from templates for sharing information and files, or it can be custom built.

Data is replicated directly on personal computers. Servers in a network play only a coordinating role. To save bandwidth, only changes to a document are transmitted over the network. In the process, the application encrypts (and decrypts) information so it can operate securely on public airwaves or land lines. No firewalls needed.

When Rasmussen discovered Groove, he saw a tool for bridging the divide between military and civilian participants in a humanitarian mission. He convinced Ozzie that his company should help adapt it for that purpose. Because it wouldn't be running on any one organization's servers, a Groove application would put everyone on a level playing field, Rasmussen reasoned. That would make civilian organizations more likely to participate than if the U.S. military owned and operated the system. Meanwhile, Groove's encryption made it more acceptable on his side of the divide.

Nigel Snoad in a helicopter aiding the relief mission.

THE MISSION'S 'COMMON OPERATIONAL PICTURE' WAS A SINGLE POWERPOINT SLIDE. 'I WOULD HAVE EXPECTED MORE, FRANKLY,' ENGLE SAYS.

Rasmussen brought Groove's software with him to the military's joint command center in Tampa, Fla., in November 2002, when he was helping organize a humanitarian response to the coming U.S. invasion of Iraq. He carried it with him into Kuwait and then Iraq in the spring of 2003.

Working over a long-distance hookup and across time zones with Groove developers, he came up with an assessment form to measure whether the Iraqi people's quality of life, compared with international norms for health and nutrition and other measures, was rising or falling. The form could be shared and synchronized by relief organizers after the U.S. invasion.

He then gave the form away to humanitarian workers who could use it, encouraging them to download Groove's free trial version.

The Strong Angel II team developed more Groove applications for humanitarian use, including an early version of databases for tracking requests for help and offers of assistance. Following the tsunami, Rasmussen asked his friends at Groove to assemble those tools and any others that might be useful into one package that could assist the relief effort.

Rasmussen got a chance to demonstrate the usefulness of Groove shortly after he arrived in Jakarta. He checked in at the U.N. command post, met friends from the World Food Programme, and heard about the trouble they were having establishing a satellite link to Aceh.

Rasmussen popped open his laptop and saw a green icon next to the name of Enrica Porcari in his Groove contact list.

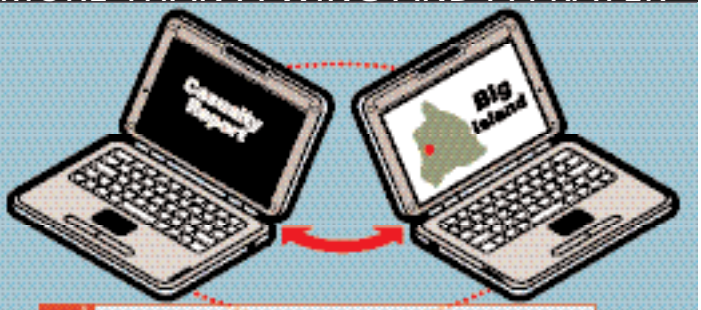
That meant Porcari, who was both a Strong Angel participant and formerly a WFP field director for telecommunications and emergency operations, was online. Better yet, she was close by, working in Malaysia, just across the Strait of Malacca from Aceh.

Though she was now CIO of another U.N. agency specializing in sustainable agriculture, the Consultative Group on International Agricultural Research, she knew emergencies, knew the region, and knew telecommunications. The gist: She

FIELD COMMUNICATIONS: MORE THAN A WING AND A PRAYER

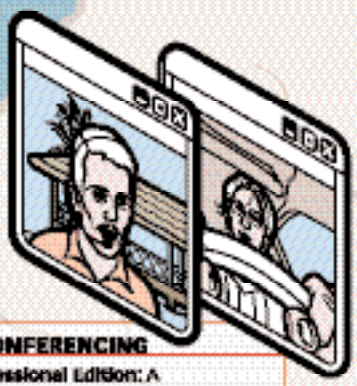
Communications are critical to any operation—but especially important in the humanitarian response to a natural or man-made disaster, where there is an urgent cry for food, shelter and medical care. Needs must be assessed, supplies allocated, and transportation and distribution arranged quickly. But the communications barriers can be high. In most disasters, substantial portions of an area's communications network might be knocked out; in remote locations, international relief agency teams might not speak the local language.

Strong Angel was a series of exercises designed to address ways the U.S. military could better communicate and assist emergency relief efforts. Here is some of the hardware and software the Strong Angel team used during the exercises. —**David F. Carr**



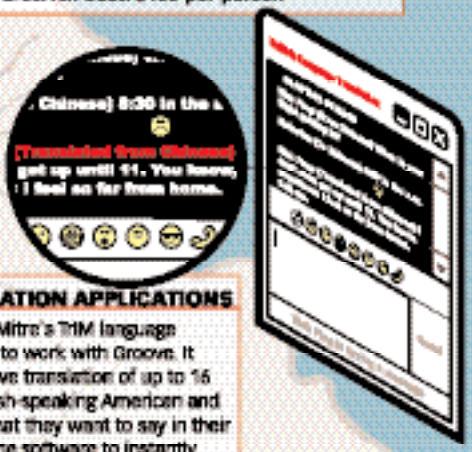
SECURE SHARED WORKSPACE

Groove Networks' Virtual Office: A software and communications system that allows distributed workers to locate and communicate with each other; they can send and receive encrypted reports and policy documents from the field. The system also allows files to be shared in a network workspace without the help of a network administrator or access to a central server. **Cost: $135 per person**



VIDEOCONFERENCING

VSee Lab's Professional Edition: A videoconferencing and work collaboration software that makes it possible for each car in a convoy to have a better picture of what's ahead or behind. When hooked up to a camera on the hood of a truck, it can alert members of a convoy when that truck runs into trouble. The technology does not require a central server and has minimal bandwidth requirements. **Cost: $599** when used in a closed system, like a convoy, **$39 per month** per person when used via the Internet



MACHINE TRANSLATION APPLICATIONS

Babylon Chat. A version of Mitre's TRIM language translation software adapted to work with Groove. It allows simultaneous interactive translation of up to 16 different languages. An English-speaking American and an Arab, for example, type what they want to say in their native language and rely on the software to instantly translate their messages. **Cost: Provided at no charge by Mitre,** a government-funded research lab

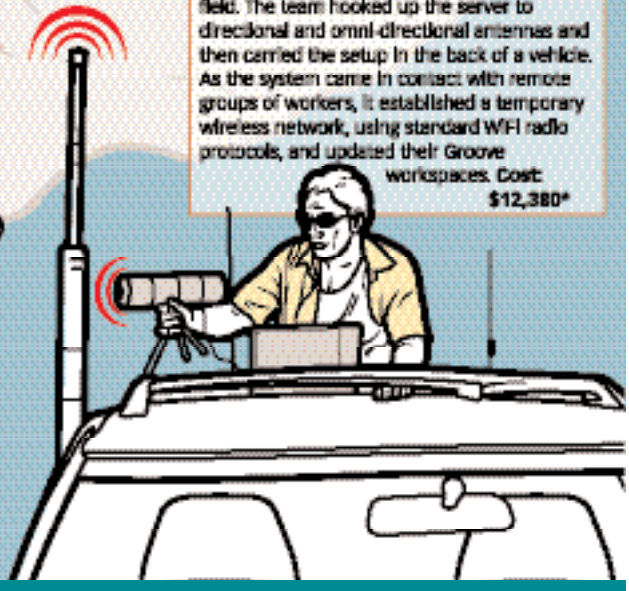
DATA UPDATES

Groove Networks' Relay Server: Used by the Strong Angel II team to get data updates to the field. The team hooked up the server to directional and omni-directional antennas and then carried the setup in the back of a vehicle. As the system came in contact with remote groups of workers, it established a temporary wireless network, using standard WFI radio protocols, and updated their Groove workspaces. **Cost: $12,380***

ACCESS DEVICES

Thuraya Hughes 7101 satellite phone
A satellite phone that also can function as a cell phone in most regions. Relief workers can tap into the cellular network if one is available or connect with a satellite if the mobile phone system is knocked out.
Cost: $650

Panasonic's Toughbook CF-73: A strong, rugged laptop computer that will hold up in a war zone or disaster area. To test its durability, the Strong Angel II crew buried one in sand and crushed lava. They left it there through a rainy night, dug it up the next afternoon, and played a DVD on it. **Cost: $3,300**



NOTE: PRICES CALCULATED WITH NON-PROFIT DISCOUNTS. SOURCE: TECHNOLOGY VENDORS, STRONG ANGEL II PARTICIPANTS, *BASELINE* RESEARCH

*INCLUDES THE COST OF HARDWARE (LAPTOPS, CAMERAS, ANTENNAS), SERVER SOFTWARE AND A RENTED CHEVY BLAZER

had a lot of expertise to offer the WFP in Jakarta, and yet the food relief agency had no idea where she could be reached.

Rasmussen sent an instant message, got her cell phone number, and within minutes had recruited her to help figure out both the satellite networking problems and more basic practicalities like locating translators who knew the languages spoken in Aceh.

It took Rasmussen longer to find someone at the Jakarta command center who could sit still long enough for a full demo of the Groove application. Finally, he pinned down a U.N. logistician and gave him the guided tour. But before he was finished, his victim's eyes glazed over.

"He finally said to me, 'Uh, now there's Groove under here somewhere, right?'" Rasmussen recalls.

Looking at the application anew, Rasmussen realized he had pushed the Groove developers to layer on too many menu items and tabbed windows. The easy-to-use features of Groove, such as directories of who belonged to a given Groove network, were buried. The whole thing had to be radically simplified, he realized, if it was to get used.

Making apologies, Rasmussen retreated to his hotel room and woke up Groove's Robert Kirkpatrick in Boston, 12 time zones away.

They talked through the changes on Skype, a service that allows calls to be made around the globe to other Skype users. All he needed was a headset and some voice-over-Internet Protocol software on his laptop.

When Kirkpatrick and Rasmussen were finished with their redesign session, they had stripped away everything that was nonessential, trimming the table of contents that greets users from 28 links to five major categories—Discussion, Contacts, News, Files and Toolbox—with subheadings for the specific tools created for logistics support and field assessments.

By eliminating clutter, they found room for some explanatory text at the top of the page about how to use the member directory and online collaboration features. The basic feature that allowed Rasmussen to wow his WFP friends when he first arrived in Jakarta—the ability to connect people to each other—was the most important of all, they decided.

Before departing for Banda Aceh the next day, Rasmussen took the revision back to the U.N. logistics specialist he had tried to train and asked him to take another look. After that, it did get some operational use. But it was late.

In retrospect, he wishes he could have gone to Indonesia sooner, perhaps allowing him to introduce Strong Angel-style capabilities while the mission was still being organized.

Snoad, the U.N. Joint Logistics Centre CIO, confirms that Rasmussen's Groove tools were used in the tsunami response, "although not to anything like their proper potential."

Engle says he thinks Groove-like sharing makes most sense as a supplemental tool in an emergency, for occasionally connected users, rather than as the main way to maintain "situational awareness" during a massive humanitarian response. His laptop, for instance, kept crashing when he tried to access the tsunami response workspace because Rasmussen had packed too much into it, he says.

Whatever the technology, the right time to introduce such capabilities is during the planning for future emergencies, Snoad says. The point is "getting the international community to be more organized and professional, not just about the tools but the approaches as well—and recognizing that it matters."

FROM EXERCISE TO REALITY

Within the U.S. military, such recognition is growing. In Afghanistan and Iraq, military invasions were followed by reconstruction missions involving the Pentagon, humanitarian relief agencies and the United Nations, designed to convince the people of those countries that the U.S. wasn't hostile to them, only to their former leaders.

Even before those conflicts, the military was participating in humanitarian missions with increasing frequency, says retired Vice Admiral Dennis McGinn, who instigated the first Strong Angel exercise back when he was commander of the Third Fleet. He kept championing the idea that the military needed to practice for humanitarian operations, just as it did for war, when he went to the Pentagon as Deputy Chief of Naval Operations, in charge of warfare requirements.

"It's gotten better over the years, but it's far from where it needs to be," McGinn says.

In the 2000 Strong Angel exercise, Hawaiian citizens were recruited to play the part of refugees, and participants in the exercise practiced caring for them while simultaneously watching for terrorists in their midst. Rasmussen had the contacts to pull together a diverse group of participants from the World Food Programme, other U.N. agencies, and charities such as the Red Cross, as well as the militaries of Australia, Japan and other nations.

In 2004, Rasmussen brought a similar group of international organizations together with the U.S. Army, Navy and Marine Corps and the Coalition Provisional Authority for Strong Angel II.

Groove played a major role in that exercise because Rasmussen planned to make its software the centerpiece of the Strong Angel collaboration system, integrating it with a variety of other technologies, including the following:

- **TrIM, translation software for instant messaging developed by Mitre, a federally funded research lab.** A version that worked in 24 languages was integrated into Groove's instant messaging system to create "Babylon Chat." Among other things, English- and Arabic-speakers could type and receive messages in their own language.
- **Geographic positioning technology**, which could immediately identify on a master map the location of every participant in an exercise who called in with coordinates.
- **Low-bandwidth videoconferencing**, using software from San Jose-based startup Vsee Lab.

Rasmussen and Warner also turned to technician Clif Cox, known for his expertise at setting up high-speed wireless networks at the Burning Man Arts Festival, known for "radical self-expression" symbolized by the torching of a giant wicker man. Cox and cohorts set up camp in Nevada's Black Rock Desert to operate what Rasmussen calls "the best austere environment communications network you will ever see."

Among other things, the Burning Man crew extended the range of the camp's WiFi network by taking advantage of the local landscape and setting up a transmitter on top of the Kauhola Point lighthouse.

The combination of Groove and wireless networking led to the creation of the Strong Angel "Pony Express." To make the network truly mobile, they drove around the island in a Chevy Blazer dispensing doses of connectivity to a remote spot with a directional antenna. Specifically, they used a cantenna, a simple WiFi directional antenna originally designed

NOTHING GOOFY ABOUT **KEEPING DISNEYLAND SAFE**

PHOTOGRAPH BY HULTON ARCHIVE

It took 200 "first responders" from the Anaheim police and fire departments, the California National Guard, the FBI and Disneyland's in-house security staff less than three hours to transform the "happiest place on Earth" into every parent's worst nightmare.

More than two dozen casualties lay motionless just a short distance from the Mad Hatter's Tea Cups and the Sleeping Beauty Castle. More than 50 people merely injured by stray bullets or shrapnel from some type of explosive device were running scared. Others just slumped to the ground, unable to move or breathe.

In the chaos, policemen, firefighters, paramedics and security personnel, who had no idea what they were up against, scrambled to evacuate guests and employees, care for the injured and track down and kill the perpetrators.

The drill culminated with policemen killing two of the three suspected terrorists. The third suspect, finally cornered by SWAT team members near an auditorium where Mickey Mouse and his sidekick Goofy usually entertain hundreds of kids, eventually took his own life to conclude the mock attack.

Just past midnight and working on adrenaline, Sgt. Rick Martinez of the Anaheim Police Department gathered with his colleagues in a warehouse on the resort to assess responders' performance. His goal: reduce casualties if an event such as this were actually to take place one day inside a venue that is not only Orange County's most important economic resource, but also its de facto identity to the rest of the world.

"Mostly we realized that we have to improve the way we communicate among ourselves as the circumstances change," Martinez says. "There's no room for second-guessing yourself in the middle of something like this."

The drill, conducted on a brisk February evening, represents a small piece of a countywide effort by law enforcers and Orange County businesses to not only prepare for disasters—man-made or otherwise—but find new ways to use information systems to save lives and the economy of a county that generates more than $142 billion in entertainment, merchandise retailing, professional services and manufactured goods a year.

The impact actually would be much wider. "If some type of terrorist attack were to take place at Disneyland, the impact on the theme park industry and tourism in the U.S. in general would be enormous," says John LaRosa, research director at Tampa, Fla.-based Marketdata Enterprises. "You'd see an immediate plunge in attendance at all theme parks and, just like the airlines after Sept. 11, it probably would be at least two years before people would return to these venues. It would be devastating."

Though the economy of Orange County is diverse with extensive real estate, banking, manufacturing and technology interests, tourism is the lifeblood of the region and Disneyland is its heart. Visitors to Disneyland dump more than $3.6 billion into the county's economy each year. It provides more than 65,000 jobs to local residents, and guests contribute more than $325 million a year in taxes to the county coffers.

MUM'S THE WORD

On a typical summer weekend, more than 70,000 guests populate the 54 hotels and motels sprinkled within the 2.2 square miles of The Resort District, as it is called. The fact that both the Department of Homeland Security and the FBI have identified Disneyland as a possible terrorist target resonates throughout the community, even if The Walt Disney Co. refuses to publicly discuss how or even if it has improved security since 9/11.

"This is one topic that we just don't talk about," says Disneyland spokesman Bob Tucker. "This is a special place. As a matter of policy we don't talk about [terrorism]. It has everything to do with protecting the image and magic for children. Nobody wants their children to read that Mickey Mouse is hunkering down in his bunker worrying about the happiest place on Earth being blown up."

While no one expects a tragedy of the magnitude of the tsunami that devastated Southeast Asia (see p. 32) to occur in Orange County, local business and civic leaders are taking few chances.

The cornerstone of Orange County's disaster-preparedness effort is a new software system developed by Plano, Texas-based Electronic Data Systems Corp. called the Enterprise Virtual Operations Center (EVOC). Anaheim is the first city to install the software, which EDS developed specifically in response to the 9/11 attacks in New York and Washington, D.C.

"What happened on 9/11 was a defining moment," says Steve Hutchens, EDS' director of homeland security solutions. "We all learned that local fire and police departments needed a better

way to share data among themselves."

The software went live in June 2004, creating an on-screen war room that first responders can use during a catastrophic event. The program pulls together data from multiple agencies and sources to give all participants immediate access to incidents, as well as names and features of responders such as bomb-sniffing canine units or hazardous-materials specialists. All the information can be viewed on large desktop monitors, laptop computers and even the 4-inch screens of handheld devices.

Having information such as how many police squad cars are within one mile of the event, or whether traffic is backed up on Harbor Boulevard or Magnolia Avenue, available instantly and simultaneously to the police chief, the fire chief, the mayor and the city manager allows for efficient and immediate response when a disaster occurs. In practice, it would reduce duplicate efforts, alert first responders to impending or potential dangers as they approach a site, and give respondents defined roles—such as which units will enter a building and which will be responsible for closing down a particular street and establishing a parameter presence—when they arrive on the scene.

The software gives firefighters and street cops detailed information they've never had at their fingertips before. For example, the software is connected to more than 200 digital cameras installed at major intersections, large venues such as the Anaheim Convention Center and critical public utility sites such as electricity substations and water and sewage locations. On the move, a cop can view a digital image of the traffic or the building in question. Also, most Anaheim squad cars are now equipped with digital cameras, so cops can transmit images back to the system of what is going on, right in front of them.

When a 911 call comes in to police dispatch, the recorded message can be transmitted to the cop or firefighter en route. The department also can tell an officer that a call from 1100 W. Katella Ave. is near a Coco's restaurant. The officers even get a map of the restaurant, parking lots and other businesses nearby. Also on display: major power sources in the area, major water and gas lines, and locations of entrances and exits of large buildings.

"It gives everyone more knowledge and tells everyone involved what a particular patrol unit is doing at any given time," Martinez says. "In the past, we could never have collected or shared this much information in such a short period of time."

The software sits on two separate servers in the Anaheim area, helping ensure that police chiefs and commanders can view the response at any time from any laptop anywhere in the world. In the past, this information—spotty and incomplete as it was—could only be accessed from the main police station. If an earthquake had leveled the police headquarters, there'd be no there, there.

All the decision makers determining which streets need to be cleared for emergency responders or which hospitals should receive victims need not be in the same room or even on the phone. Say two patrolmen are inside the California Adventure theme park investigating a fatality on a roller coaster, and two others are en route. The system will keep track of where they are connecting from. The software also notes every resource allocated, such as which fire station is dispatching emergency medical help and what detective is available to work the case. At any time, all participants who are logged in can tell who's going where and when.

"It makes such a huge difference to have not only the depth of the information but the ability for everyone to see it in one place," says Capt. Steve Sain of the Anaheim Police Department. "Already we see the benefits of collaborating and sharing our data with other agencies."

According to Sain, the software has made it easier for police to determine which officers to send to a particular crime scene when multiple events are occurring at the same time. In the past, he says, there might be a bank robbery occurring at one location and a patrolman close to the bank might be dispatched to respond to another less-important call farther away. Now, everyone has a complete view of the entire field of officers and firefighters.

ON ALERT AT THE MALL

The EVOC system allows for multiple applications used by private-sector businesses to be incorporated in this countywide view as well.

Shirley Ono, administrator of business continuity for the 144-store Macy's West division, says the department store operator's preparation for any disaster in Orange County has increased substantially since 9/11. Store managers conduct full-scale evacuation drills twice a year at the company's major retail locations at both the South Coast Plaza and Santa Ana Main Place shopping centers.

"We've had extensive terrorism and disaster training programs implemented at all our stores," she says. "Partnerships with Anaheim Police and the Orange County emergency response teams have increased not only our managers' awareness but the way we share information among ourselves and with these agencies."

Macy's implemented a software system called E-Team for store managers to report significant events at any location; the information can then be shared throughout the Macy's organization and with Orange County first responders.

"Anything from a flood in a parking lot to a power outage can be put into the system," Ono says. "That information is available to anyone and is cataloged for reference down the road. So when a major event does occur, we know exactly who to contact for help and they know exactly who to contact within a particular store in an emergency."

Similar plans to keep businesses in operation in the event of a disaster have been implemented at such major Orange County corporations as Toyota Motor Sales, Yamaha Corp. of America and The Capital Group Cos., as well as major arenas like Arrowhead Pond and Angel Stadium.

"The key for all these businesses in Orange County is they're willing to commit the time and resources to plan ahead in case of a major disaster," says Judy Bell, president of the Disaster Survival Planning Network. "Understanding how long it will take to resume the critical business applications and who is needed to make them work is crucial."

Back at Disneyland, Anaheim police now occasionally stop and take pictures with tourists at the park's main entrance. That show of force, in a friendly fashion, is something that would never have occurred prior to 9/11. Before that day, Disneyland requested that police maintain as low a profile around the resort as possible.

"There's no question that Disneyland is very sensitive about how the public perceives the safety of the park," Sgt. Martinez explains. "But it's up to us as a community to make sure that the perception of safety and happiness is a reality. It's not easy making this the happiest place on Earth." —LARRY BARRETT

by hobbyists who used a foil-lined Pringles potato-chip can to focus the radio beam. In place of a junk-food container, they used a commercialized version, the Super Cantenna, which costs about $50.

These connections are designed only to last a few minutes, so the key to making the Pony Express work was the Groove Relay Server loaded on a laptop in the back seat of the Blazer.

The relay server, which normally runs in a data center, is the part of the Groove system responsible for storing temporary copies of updates to a workspace. Without it, the updates might not be available when other members logged in to receive them.

By the time the Pony Express would complete a circuit of remote locales on the island and return to the Strong Angel base camp, it had sent and received updates from all the otherwise disconnected users in the exercise.

Once it finished updates from workers at the base camp as well as people able to use the camp's Internet connection to synchronize information with workspace participants in other physical locations, the Pony Express was ready to start its rounds again.

Something like the Pony Express could have been useful in Indonesia, not so much for those in Banda Aceh as for the humanitarian workers farther out in the field. With roads often impassable, the delivery vehicle might have been a helicopter, but the general concept is the same. "There's a lot of interest in this right now," Rasmussen says.

The DOD's Wells says Rasmussen's approach is gaining currency within the Pentagon, which continues to advance "network-centric warfare" that provides better information to commanders in the field, as action takes place.

The Strong Angel approach is more radical, though, because it suggests extending the decision-making network beyond the military's own boundaries to include other organizations, such as humanitarian relief agencies. That would require changes to the codified set of rules that govern military operations, he says.

But recent events might make that more plausible. "The combination of the Iraq experience and Afghanistan suggests to a lot of people that the time is right" for making communications a fundamental part of emergency responses worldwide, Wells says.

The approach Rasmussen has been promoting "is now coming to be recognized as a valid mission," he says. "Instead of a few folks laboring in the wilderness, it's being recognized as a valid, operational thing" to consider cheap, easy-to-use communications as much a fundamental requirement of disaster relief as bags of food or carts of medicine.

ROADBLOCK: WARY PARTNERS

Armed services hunt down and destroy enemies. Humanitarian groups save the lives of those in peril. Their missions may seem antithetical. But overcoming differences in agenda and culture is crucial in grand collaborations such as disaster relief. One of the Strong Angel project's main goals was to find ways to improve communications between military and humanitarian organizations, so both can focus on helping those in need.

GO.BASELINEMAG.COM/MAY05

DOSSIER: GROOVE NETWORKS

REDMOND DRAFTS A TEAM PLAYER

Groove Networks never earned a penny in profits. The eight-year-old startup had a tough time convincing big companies to buy its software. But now that Microsoft owns it, **Groove's application could become a standard part of every new computer installed by businesses around the world.**

The company was founded by Ray Ozzie, the cerebral engineer who in the late 1980s led the development of Lotus Notes, a landmark piece of software that helped employees inside an organization work together on documents and tasks.

With Groove, his idea was to create collaborative software that would help people easily work together over the Internet to share documents in secure, private groups. The key: People didn't need technical expertise or assistance from their information-technology department to get going. **Groove's software, Ozzie says, "just works, no matter where you are."**

For example, say your legal department was negotiating a contract with an overseas supplier. Using Groove's software, if a participant made a revision, the changes would be automatically updated to the desktops of everyone involved.

Passionate customers of Groove say nothing else fits the bill. **"It's been a lifesaver of a tool,"** says Greg Lush, chief information officer of The Linc Group. The Houston-based firm, whose subsidiaries provide facilities maintenance services to industrial customers, was formed in late 2001 from three Enron business units after the energy company declared bankruptcy.

Lush and his team used Groove's software to manage the consolidation of the units' 1,600 employees, in 109 offices, onto a single set of information systems. "We had multiple e-mail systems and multiple networks. It was a nightmare," he says. "Groove was the only tool that let us cross those barriers."

FACT FILE

MAIN OFFICE: 100 Cummings Center, Beverly, MA 01915

PHONE: (978) 720-2000

TICKER: Acquired this year by Microsoft (NASDAQ: MSFT)

URL: www.groove.net

EMPLOYEES: 190

FOUNDED: 1997

BUSINESS: Selling software that lets groups of people share documents over the Internet.

MAIN PRODUCTS: **Virtual Office** software synchronizes data automatically and lets people exchange instant messages; the data is encrypted so it can't be read by someone outside the group. A separate version provides features for managing projects.

EXECUTIVES: Ray Ozzie, founder and chief executive officer of Groove, is now a chief technical officer at Microsoft; David Scult, Groove's president and chief operating officer, is now a general manager in Microsoft's Information Worker Business unit.

KEY COMPETITORS: IBM's Lotus unit, Novell

FINANCIALS

Total funding: $155M

Major investors: Accel Partners, Intel Capital, Microsoft

Annual revenue (est.): $20.8M in 2004

Sales growth: 40%, 2003 to 2004

Acquisition price: $120M in cash

KEY CUSTOMERS

Government: U.S. Dept. of Defense, U.S. Dept. of Homeland Security

Manufacturing: Steelcase, Tyco Healthcare Group

MILESTONES

1997: Founded by Ray Ozzie

2000: Raises $41M in third-round funding

2001: Ships first software

2001: Receives $51M in funding from Microsoft

2003: Closes $38M in funding

2004: Releases Virtual Office 3.0

2005: Bought by Microsoft

SOURCES: GROOVE NETWORKS, BLOOMBERG NEWS, EXPERIAN

Since it shipped its first product in 2001, **Groove claims that more than 20,000 companies, government agencies and other organizations have purchased the software**. The company would not disclose the number of people actively using the software, but, according to Ozzie, it's in the millions.

Then, earlier this year, Groove decided it wouldn't go it alone anymore: In March, **Microsoft bought it for $120 million in cash**. As of April 8, Ozzie and 190 of Groove's 200 employees started working for Bill Gates. Microsoft, which piped $51 million into Groove in 2001, says it will continue selling Groove's Virtual Office software for the time being. The company also says it plans to weave Groove's technology into the Office suite of business-productivity desktop and server software.

Groove founder Ray Ozzie

What drove the deal? For one thing, **Microsoft probably realized "they'd never get their money back unless they bought Groove,"** says John Parkinson, chief technologist for the Americas region of Capgemini, a consulting firm that uses Groove. (Ozzie says his company was "not too far away from profitability.")

For Groove, Microsoft's unparalleled reach—its software sits on millions of desktop computers worldwide—could solve the smaller company's major shortcoming: its lack of broad distribution. **"The biggest problem with Groove is that somebody on the other end needs to have Groove, too,"** says Glen H. Johnson, director of the U.S. State Department's office of verification operations. At times, he says, the agency's partners couldn't easily get Groove Virtual Office approved for use on their networks because of the long testing procedures some required.

But **some customers worry that Microsoft will ruin a good thing by treating Groove as peripheral** to its Windows and Office franchises. "I think a lot of Groove users are nervous about what might happen, that the value of the product will be diluted a bit," says Jeff Tucker, assistant vice president of information systems at Marlborough Savings Bank in Massachusetts.

Ozzie thinks such concerns are baseless. "I have no reason to believe—none—that Microsoft didn't buy us to invest in the growth of what we've done, as opposed to changing it to something radically different," he says.

To him, Microsoft's takeover ensures his baby will live on, and could let it achieve the widespread adoption Groove was unable to muster by itself. "We weren't on a path to achieving ubiquity," he says. "But Microsoft Office is ubiquitous."

Groove was held back, Ozzie asserts, because it was a small fish in a huge pond. While the company regularly sold software to small groups in big corporations, Groove won only a few multimillion-dollar deals. "It's very difficult for a small, independent vendor to make headway in today's buying environment," he says. "Corporate I.T. buys from the big incumbents—Microsoft, IBM, Oracle."

Now that he's sold out to one of the biggest software behemoths in the world, Ozzie may never bang his head against that wall again. —TODD SPANGLER

THE TECHNOLOGY

GROOVE NETWORKS AND NAPSTER, the famous music-swapping service, are the two highest-profile examples of peer-to-peer networking: systems that exchange data directly from individuals' computers, rather than pulling it from a server.

For Groove customers, that design means they can rapidly get a team of a dozen or more people working together "without some heavy I.T. infrastructure," says founder Ray Ozzie. On the flip side, when Groove's application first came out, the ad-hoc file sharing it facilitated struck some CIOs as chaotic, since their staffs couldn't centrally manage employee access privileges or the data being shared. The company later offered server software to allow customers to do that.

But Groove's real secret sauce, according to John Parkinson, chief technologist for Capgemini's Americas region, is how efficiently it replicates data from machine to machine—technology that has its origins in Ozzie's work on Lotus Notes.

When synchronizing a set of files, Groove's software sends only the exact pieces of data that have changed since the last time they were compared. Other products use a similar technique, but Groove's software is more efficient at updating files among hundreds of machines because it combines multiple changes into a single transmission, says Parkinson: "It's the best replication technology in existence." —T.S.

REFERENCE CHECKS

U.S. STATE DEPARTMENT
Glen H. Johnson
Dir., Office of Verification Operations
johnsongh@state.gov
Project: Agency distributed Groove to 250 people last year to coordinate planning in Iraq for the transition of power to the provisional government.

THE LINC GROUP
Greg Lush
CIO
greg.lush@thelincgroup.com
Project: Houston maintenance services company uses Groove to manage projects, synchronizing documents stored on Microsoft's SharePoint Web collaboration server.

CALIFORNIA DEPT. OF JUSTICE
Ed Manavian
Criminal Intelligence Bureau Chief
(916) 319-9282
Project: Agency uses Groove to share intelligence with 150 law enforcement groups nationally and plans to hook up 500 state police departments.

ORGANIZATION OF AMERICAN STATES
Kevin Newmeyer
Program Director
knewmeyer@oas.org
Project: Washington, D.C.-based intergovernmental alliance shares antiterrorism information via Groove among 15 country liaisons in North and South America.

MARLBOROUGH SAVINGS BANK
Jeff Tucker
Assistant VP, IS
(508) 460-4102
Project: Community bank in Marlborough, Mass., lets about 40 workers exchange instant messages, schedule appointments and share files with Groove.

MARION WEINREB & ASSOCIATES
Michele L. Jasper
Dir., Operations
mjasper@gmpsrus.com
Project: Medical consulting firm based in Baltimore uses the Groove software to share contracts and other documents internally rather than sending them via e-mail.