Community Connections: Preserving Local Values in the Information Age

The Technology Opportunities Program

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Preface: The Fully Connected Community

It is my pleasure to introduce *Community Connections: Preserving Local Values in the Information Age*. The report is sixth in a series of "lessons learned" reports from the National Telecommunications and Information Administration's (NTIA) Technology Opportunities Program (TOP). *Community Connections* explores the use of technology in under served populations to help connect communities, enhance work skills and opportunities, and increase the capacity of community-based organizations. For the last six years, TOP has helped close the digital divide by funding innovative demonstration projects that bring the benefits of emerging information technologies to public service organizations.

Community Connections describes the fully connected community of the 21st century — a community that treats information as a vital community asset; empowers its citizens through information technology; builds a stronger sense of community through online training; and competes electronically in the global economy. America's strength has always been a function of the strength of its diverse communities; we have always tried to communicate to the rest of the world the central role that communities play in creating and strengthening true democracy.

Community assets, individual empowerment, a sense of shared ideals and goals, and competition – are all basic American traditions. And they take on heightened significance in the Information Age, as technology brings people and nations closer together. In the 21st century, community building via technology will not only help communities grow and prosper, but also will help erase

disparities and ease distances between populations, distances that have persisted since the inception of the Republic.

Throughout American history, we have always tried to devise ways to help communities help themselves. Americans have always supported those things that bring us closer together — whether it's canals, or railroads, or broadcasting, or information technology. In this new century, information technology holds the promise of overcoming the disparities of distance, of ethnicity, of wealth, of education – in ways that were only dimly dreamed of in previous centuries.

But it is always with the idea of community that we start. That is what *Community Connections* is about: how communities are starting to launch the *next* American revolution, which is really the *ongoing* American revolution.

Gregory L. Rohde
Assistant Secretary of Commerce
for Communications and Information

Introduction: Community Is the Key

The technological advances of the 20th century brought us vast new opportunities, but many also undermined one of our most prized possessions – our sense of community. With the telephone, the automobile, television, and the airplane, we could find work and friendships far from home, yet our ties to our immediate neighbors grew more tenuous. We could flee urban neighborhoods to less crowded suburbs, but we often left poverty and despair in our wake. We could produce enormous quantities of food and goods for national, and even global markets, but small farms – once seen as the foundation of our democracy – disappeared at a rapid rate. And some of our most cherished values – participation in civic life, collaborative problem-solving, a sense of being connected to those around us – seemed increasingly elusive.

Some believe that the personal computer and the Internet could extend these trends and suggest that technology separates us rather than unites us. Now that we can instantly connect with people anywhere in the world, what remains to hold our neighborhoods together? This report describes efforts by a wide range of people, from inner cities to some of the most rural reaches of the country, which demonstrate how technology builds community bonds. From rural Maine to urban California, from Montana's Indian Country to downtown York, Pennsylvania, communities described in this report are using information technologies not to escape local bonds, but rather to strengthen them.

The key element in all these efforts is, first and foremost, information itself. The first section of the report describes how communities are finding new ways to use information, much of it already existing in large government databases, to

empower themselves. Armed with tools that enhance our ability to understand the complex forces affecting our communities, Indian tribes in Montana and civic groups in South Central Los Angeles are transforming information into a tool that can promote their own objectives, not those of remote bureaucracies.

The second section of the report explores how communities are taking information-empowerment a step further. In both York, Pennsylvania, and Indianapolis, Indiana, community groups are experimenting with new technologies that enable local groups not just to analyze information collected from large outside databases, but also to generate their own information to serve their unique interests and concerns.

Of course, information technology can strengthen communities only if local groups and individuals know how to use it effectively. The third section of this report focuses on efforts to increase local capacity to use modern information technology. It describes how a community computing center is playing a central role in efforts to revitalize inner-city Oakland, California. Then, it discusses how a computer network has become an important information hub for communities in rural North Carolina.

Finally, the fourth section of this report examines how communities are combining all these elements – access to large outside databases, an ability to produce home-grown information tailored to serve local needs, and the essential training and infrastructure needed to create and share such information – to make their way in a global economy. This section describes how entrepreneurs in Appalachia are using information technology to gain a foothold in the new economy. And it discusses how small farmers in communities throughout the U.S. and Mexico hope to use similar tools to achieve economies of scale that may help them, and the communities where they live, survive in an increasingly competitive world.

The projects described here, all supported by the Technology Opportunities Program (TOP), represent just a small subset of the numerous community-building efforts underway around the country. But they contain valuable lessons for others interested in pursuing the same objectives. They reflect a fundamental American belief that many of our problems are best solved at the local level. And, though innovative and decidedly modern, they demonstrate anew an old truth – namely, that the bonds we have with neighbors and communities are the keys to successful and rewarding lives.

I. Information as a Community Asset

Access to timely and meaningful information is essential to any effort to shape public policy or address public concerns. Over the years, government agencies have amassed vast stores of information about communities, but often this information is not in a form that communities can readily use. New technologies vastly increase the ability of communities to gather and interpret information in government databases. Just as importantly, they reduce the cost of doing so. As a result, communities today are in a better position than ever to use information to answer local questions and serve local needs.

Two TOP-supported projects show how communities are beginning to seize this opportunity to chart their own future. One seeks to encourage Native American tribes to use Geographic Information Systems, powerful tools for understanding the many forces that affect the lives of their communities. The other uses similar tools to help community-based organizations in inner-city Los Angeles understand and combat the forces of urban decay.

Notes

Intertribal GIS Council: Mapping Indian Lands Across America

1996 was a watershed year in the history of the Confederated Salish and Kootenai Tribes. That year, the two Native American tribes, which occupy the Flathead Reservation in northwestern Montana, signed a compact with the federal government to take over responsibility for managing their own forest resources.

With their newfound autonomy, the tribes set idealistic goals for themselves. For years, the Bureau of Indian Affairs had managed forests on the 1.2-million acre reservation with one overriding objective: to maximize the tribes' income from logging. But the tribes adopted a complex set of goals. While eager to continue harvesting timber, they were equally determined to preserve the scenic beauty of the Mission Mountain range where most of their forests lie. They also wanted to maintain high water quality in mountain streams, protect fish and wildlife habitat, and care for prized plant life and historic sites. Ultimately, they aimed to restore tribal forests to the conditions that prevailed before Europeans settled North America.

Any one of those jobs would be daunting, but pursuing them all simultaneously represented an unbelievably complex undertaking. To accomplish the task, the tribes employed some of the most modern tools available – computers, sophisticated software, and mountains of data. Over a six-year period that began even before the tribes officially took charge of their forests, they analyzed the elevations of different parcels of forest land to identify areas where logging operations would mar the scenic view from population centers. Correlating what is known about animal feeding habits with maps showing vegetation, they determined areas that should be protected as important habitats for elk, grizzly bears, and other wildlife. They also

mapped historic sites and the locations of highly valued plant life to ensure that logging wouldn't jeopardize the tribes' cultural heritage.

The tribes were particularly concerned about forest roads, which can contribute to erosion and, in turn, diminish water quality and damage wildlife habitats. Using satellite technology, tribal employees mapped all the roads running through their forest land. By presenting this information on a map that also showed the reservation's streams and rivers, they determined which roads posed the biggest threat to water quality and fish habitat. They earmarked these roads to be abandoned or recontoured. Then, they plotted how to keep or build as few roads as possible to achieve their timber-harvest objectives. The results were dramatic: careful planning, combined with newer logging technology, will enable the tribe to conduct logging, on average, with just four miles of road per square mile of forest, compared to between six and eight miles of road per square mile of land previously.

Geographic Information Systems

The tribes' main tool in this elaborate planning process was a bundle of computers, software, databases and specialists collectively known as Geographic Information Systems. GIS enable users to combine disparate databases and present them simultaneously on maps, making it easier to analyze complex issues and demonstrate relationships between diverse phenomena. As the Salish and Kootenai tribes (**tlc.wtp.net/salish.htm**) are showing, GIS also helps communities set priorities and develop strategies for balancing diverse goals.

GIS is becoming a valuable tool in wide-ranging efforts by Native Americans to assume greater control over their own lands and lives. On reservations across the continent, tribes are using it to map their reservations, take stock of natural resources and cultural treasures, track leases and land records, monitor environmental conditions, and explore development possibilities – all in a quest to increase their autonomy. With GIS, says Sue Ball, an analyst for the Salish and Kootenai tribes' Department of Natural Resources, "the tribes have the tools to manage their own resources – and also the credibility that they are doing it in a modern way."

But while GIS technology is becoming more accessible, it still can be costly and difficult to use. As a result, although it is becoming a favorite tool for planners, especially in large urban areas, it has been slower to catch on in rural areas – and on Indian reservations in particular. Only about 100 of the 564 reservations in the U.S. currently have well-developed GIS programs.

Tribes that lack their own GIS capabilities must depend on federal agencies – including the Bureau of Indian Affairs, the Bureau of Land

Management and others – for data about their own lands, although such information can be seriously out of date. Moreover, outside agencies don't always collect all the information tribes need to manage the land according to their own values and priorities.

The Role of the IGC

In the eyes of tribal advocates of GIS technology, examples like this demonstrate the need for tribes to develop their own GIS capabilities rather than rely on federal agencies. In 1998, the Technology Opportunities Program awarded a grant to the Intertribal GIS Council (IGC), a national Native non-profit organization dedicated to promoting tribal self-determination by improving their management of geographic information. The council, which is based in Pendleton, Oregon, offers training in GIS technology and consults with individual tribes on GIS related projects. In addition, it has worked to develop uniform standards whereby individual tribes can collect data on their lands from government agencies, test it for validity, exchange it, and incorporate it into their own expanded databases.

The technology has taken hold with a number of tribes. On the Umatilla Reservation, tribal leaders have used it for everything from determining where to lease land for cattle grazing to studying housing-development patterns. On the Fort Peck Reservation in northeastern Montana, the Sioux and Assiniboine tribes have used it to determine where to encourage oil and gas exploration. The Yakima Indians in Washington State have used it to guide tribal land-acquisition decisions. And these are just a few examples; the number of tribes experimenting with the new technology is growing every day, according to William Northover, chief executive officer of the IGC.

Still, trying to persuade financially-strapped tribal governments to make the substantial investment required to develop full-blown GIS capabilities can be a tough sell – especially since abstract descriptions of the technology invariably fail to convey its power. "GIS speeds up our capabilities, makes us more efficient, gives us an ability to do more complicated analysis and shows a wider variety of information," notes Clayton Matt, the water-rights program manager for the Salish and Kootenai tribes. "But saying that is a lot less powerful than just demonstrating it."

GIS Proves Itself

Matt recalls that Salish and Kootenai tribal staff initially had a hard time persuading their leaders to invest in GIS systems. But the leaders finally agreed. One of the first maps the staff generated showed how much land on the reservation was owned by the tribe, by individual tribal members and by non-Indians. The map had an electrifying effect. It depicted a hollowed-out reservation, with the tribe owning much of the mountain land around the reservation's periphery while vast stretches of agricultural land in the center of the reservation had fallen into private ownership (the federal government allowed outsiders to homestead on the reservation early in the twentieth century). But many tribal members whose parents and grandparents had grown accustomed to setbacks, were pleasantly surprised to see that the tribe still owned substantial amounts of acreage (with recent land acquisitions, the tribe now owns about 60 percent of the land on the reservation.) What's more, the land-status map itself became a symbol of growing tribal autonomy. Previously, the Bureau of Indian Affairs had produced similar maps once or twice a decade. Now, the tribe could generate its own map virtually on demand, giving tribal members an up-to-date indicator of their autonomy.

After the tribe produced its first land-status map, demands for more maps that would show more information quickly mounted, Matt recalls. "Now, it's hard to meet all the priorities placed on [the tribes' mapping capabilities]," he says. Indeed, today, tribal staff can map more than 300 data sets, or "coverages." For instance:

- The tribe is using GIS technology to move toward an ecosystem-based strategy for managing their water resources. Combining maps that show streams with others that show land elevations, the Department of Natural Resources has identified eight separate watersheds within reservation boundaries. Using this data in combination with an extensive system for monitoring water quality, the tribes will be able to trace very quickly the source of any water pollution. They also are mapping land uses in each watershed to determine the relative impact of agricultural, housing and other activities on water quality – information that will serve as a guide to future environmental policies.

- When a commission set out to assess water-quality in Flathead Lake, Seth Makepeace, the tribe's hydrologist, conducted an extensive study of his own. The lake, which is the largest freshwater lake in the west, lies partly on the reservation. The commission included a wide range of stakeholders, including other local governments in the area, landowners and others. Using aerial photography and interviews, Makepeace determined the exact location of homes and businesses along the lake's 185-mile shore-

line that are not connected to sewage-treatment plants. He then mapped those findings along with data on the underlying geology of areas surrounding the lake to determine how much waste currently flows into the lake. The project cost the tribe $15,000, but the investment paid off when the commission agreed to use Makepeace's findings as its own baseline data.

- The tribes also have used GIS to assert their political rights. For years, they have battled non-tribal farmers over an irrigation system that captures water high in the Mission Mountain range and delivers it to farms in the valley below. Although the system was built by the Bureau of Indian Affairs, a group of non-tribal farmers sought to wrest control of it from the bureau, saying it actually had been built for their benefit. In response, CloAnn Villegas, the computer system manager for the tribes' Department of Natural Resources, developed a map showing that the intricate network of canals invariably served lands that had been allotted to tribal members, not opened to homesteaders. The system remains under the bureau's control. Villegas is vice-chair of the IGC.

- The tribes used GIS technology in a dispute between the tribe and state highway authorities. The state wanted to widen Interstate 93, a mostly two-lane road that runs through the reservation. But by mapping state data on highway accidents, Brian Mladenich, who at the time was the tribes' GIS manager, was able to demonstrate that the highway actually had just a few trouble spots, a finding that supported the tribes' claims that safety concerns could be addressed through selective improvements rather than a massive highway-building project.

Setbacks

With success stories like these multiplying, interest in acquiring GIS technology is growing in Indian country. But the Intertribal GIS Council has suffered some setbacks along the way. For instance, it initially had hoped to help tribes use GIS to develop integrated management plans covering all their natural resources. But many tribes lacked resources to launch such comprehensive efforts, so it was forced to help tribes with projects focusing on specific resources.

The Intertribal GIS Council also has been frustrated in pursuing one of its major objectives – to help tribes sort out the tangled state of Indian land ownership records. In the early days after reservations were formed, individual parcels of land were "allotted" to various tribal members. But because few Native Americans were inter-

ested in private property, and few ever bothered to write wills, the ownership of these originally allotted properties has become diluted over the years among countless heirs; today, it is not unusual for a single, 80-acre plot of land to have literally hundreds of owners. Many Native Americans own land, but don't even know where it is. In one, fairly typical case, IGC Chief Executive Northover determined that the owners of a parcel of land on the Umatilla Reservation each owned about "seven inches of dirt."

Some tribes would like to use GIS tools to identify the various Native American owners of different parcels of land, and then to work with the owners to consolidate ownership. Legal barriers have prevented them from doing so. But while the Intertribal GIS Council feels thwarted in its hopes of working with tribes to straighten out convoluted land-ownership patterns, its efforts to help tribes use the latest information technology to increase their autonomy is moving ahead on other fronts. For instance, the Council has hired staff to assist tribes in taking advantage of a new program launched by the Environmental Protection Agency. Called "Mapping Environmental Issues in Indian Country," it seeks to encourage use of GIS technology. Separately, the National Aeronautics and Space Administration (NASA) is encouraging tribes to use satellite imagery to enhance mapping efforts. The IGC, meanwhile, hopes soon to begin helping tribes develop standards for mapping health, education, employment, housing and other social data.

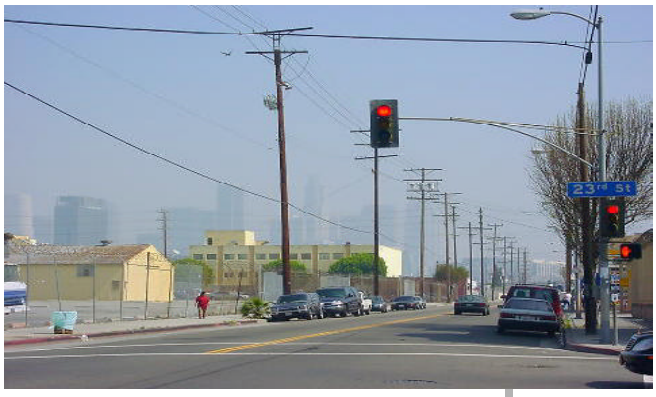
All this bodes well for Native Americans' efforts to achieve greater autonomy. Peter Gillard, the GIS program manager for the Salish and Kootenai tribes, keeps a running tab of his tribes' own progress toward that goal. Arrayed on the walls of his office at tribal headquarters in Pablo, Montana, are land-status maps showing how much of the reservation was in tribal hands at various times in history. The maps show tribal lands in green, while privately-held or "fee" land shows up in white. In the most recent maps, the green areas have grown.

Neighborhood Knowledge Los Angeles: Using Information to Rebuild Inner Cities

When Manuel Huerta, a student at the University of California at Los Angeles, went back to the neighborhood where he grew up, he found a gem he had always overlooked**.** Working with a team of students scouring his old neighborhood to identify cultural, educational, economic and other community assets, Huerta came upon the Boyle Heights College Institute. It had been providing tutoring and mentoring services to neighborhood youth for years, but few people knew about it, and even fewer were aware that it had seriously outgrown its space and was regularly turning away scores of students.

"I lived here all my life, and I never knew it existed," says Huerta, a film student at the University of California at Los Angeles. Determined to make their findings known, the team of UCLA students met with Los Angeles city council member Nick Pacheco. Almost immediately, a plan was hatched: the councilman would make his own, much larger offices available to the Institute, enabling the program to triple the number of students it could serve.

The Boyle Heights projects is a rudimentary example of "asset building," a new development strategy in which communities systematically identify their strengths and then devise strategies to build on them. Its use in the east side of Los Angeles grew out of "Neighborhood Knowledge Los Angeles," a 1998 TOP-supported project that uses geographic information systems – databases tied to maps – to help communities learn more about themselves. Under the direction of Neal Richman, associate director of the Advanced Policy Institute at the UCLA School of Pub-



lic Policy & Social Research, NKLA has become an important player in efforts by city government, non-profit organizations and individuals to change the face of some of Los Angeles' most troubled neighborhoods. In the process, the project is creating a new model for the relationship between a university and its community, and redefining the role of urban planners in the information age.

An Early Warning System

NKLA started with a simple, but far-reaching premise: the process of urban decay often begins with small, little-noticed changes. Long before buildings become strewn with trash, defaced by graffiti or abandoned, they run into troubles invisible to the outside observer; their owners, either deliberately or due to circumstances beyond their control, may fall behind on tax payments or utility bills. To get a handle on this process, researchers at the UCLA institute began collecting information on tax delinquencies, building code violations, unpaid utility bills, and certain other variables from disparate government databases, amassing them into a single, Internet-accessible database that serves as an "early warning system" for neighborhood activists and government officials combating urban problems.

Nobody would question the need to monitor housing conditions in cities like Los Angeles. U.S. Census figures showed that Los Angeles had 154,000 substandard apartments in need of major repair in 1995, 107,900 infested with rats, and 131,700 without working toilets, according to Gary Chapman, director of the 21st Century Project at the University of Texas at Austin. Chapman, who discussed NKLA in a column published by the *Los Angeles Times* in November, 1999, said Census data from 1997 also show that the number of Los Angeles rental units occupied by people living below the poverty level almost doubled between 1989 and 1995, climbing from 217,200 to 422,500.

Information compiled by NKLA may help turn this situation around. The website gets more than 1,500 hits a day from a range of government agencies and non-profit organizations. One active user, Concerned Citizens of South Central Los Angeles, searches the NKLA website for tax-delinquent properties, which it then acquires before they are put up for auction. The community-based organization, which is establishing a land trust to buy large numbers of properties to build affordable housing, says NKLA helps it identify properties quickly and look for clusters of such buildings that represent opportunities for larger-scale projects. The website is "our lifeblood," says Juanita Tate, the group's executive director. "They are an essential part of what we do."

Just down the street from Concerned Citizens, the Dunbar Economic Development Corporation uses NKLA to identify single-family homeowners who may be in financial trouble. When homeowners default

on mortgages, their houses often are tied up for months in foreclosure proceedings even after they move out. As a result, such houses can lie abandoned for considerable periods, in the process falling prey to vandals and drug-users. By identifying such properties early, the Dunbar EDC can help homeowners resolve their financial problems and keep their homes. And if that fails, the organization can acquire the properties before they become locked in legal proceedings. "We use NKLA as a tool for intervention," says Anthony Scott, Dunbar's executive director.

Improving City Services

The value of NKLA hasn't been lost on city officials. Garry Pinney, general manager of the Los Angeles Housing Department, says his inspectors use the website in setting priorities for its own building inspections. Deputy City Attorney Richard Bobb consults the website to determine the enforcement history of landlords – and thereby to identify property owners whose history of neglectful behavior warrants legal action. City health inspectors, aware that unpaid bills or building-code violations can indicate other serious problems such as rat infestations, also search NKLA for clues about which buildings they should inspect.

John Wickham, staff to the chief legislative analyst for the Los Angeles city council, believes NKLA will become a valuable tool for policy-makers too. A "Policy Room" section of the NKLA website enables users to conduct complicated searches that help paint a portrait of various neighborhoods. Instead of seeking to identify specific properties with problems, for instance, a user might ask, "Show me all of the zip codes in which more than 1% of the properties have code complaints still open, and less than 2% of the properties have building permits in the last 12 months." With tools like these, Wickham says, the city council can identify neighborhoods in trouble, and can use such information to set spending priorities and devise new policies; for instance, he says, it would be useful to determine which neighborhoods are most in need of new funds for parks.

While officials like Wickham believe NKLA will become increasingly useful as a tool to assess the health of various neighborhoods, many believe it already is justified by its contribution to increased efficiency, providing in seconds information that users once had to glean from numerous separate records maintained by separate agencies. Efficiency was on the mind of policy-makers who hired NKLA to create a new digital information system for the city's building-inspection program. Under the new system, inspectors are recording their findings on hand-held Palm Pilot computers, which they then download into a comprehensive database.

UCLA jumped at the opportunity to do this work, but it does not see itself as an adjunct to the city. Rather, it intends to continue playing an independent role and to serve the community directly. It has lobbied

the city, for instance, for permission to incorporate much of the new inspection data into the NKLA website. With this information, Richman argues, individual renters and tenants-rights organizations could track whether landlords are meeting their responsibilities – and whether the city is effectively enforcing housing codes. Says Richman: "It could become as easy to track the status of a code violation as it is to track a Federal Express package."

A New Relationship

Gayle Byock, an assistant chancellor at UCLA, says NKLA represents a new kind of relationship between universities and their communities. "We are experts at organizing and making sense of information," she says. "But communities are the experts at deciding how the information should be used." Juanita Tate at Concerned Citizens underscores this point. "They give us the tools," she says, "but they don't tell us what to do."

A newer line of work for NKLA, mapping community assets, could put the community even more in the driver's seat, offering it an opportunity to become its own information source as well as a key user of the database. This spring, groups of UCLA students and Power Youth, an organization set up by Concerned Citizens, began surveying two South Central neighborhoods to identify community assets ranging from stores and churches to music teachers and parks. The results are being posted on "I Am LA," a new section of the NKLA website.

Asset mapping represents a significant "new paradigm" in strategies for building up troubled neighborhoods, notes Byock. In the past, community developers tended to emphasize what was wrong with troubled neighborhoods, viewing them as places that need services from outside. But asset mapping identifies strengths communities already have, so that residents can seek to build on them. An asset map might point to new local business opportunities, for instance, or demonstrate areas that are ripe for retail development. They might identify space that could be used for community activities. Or, they might help residents find jobs and social services that exist in the community so that they don't have to take their business elsewhere. In the Boyle Heights area, for instance, students were able to identify a number of individuals who offer music lessons in their homes. In other places, asset maps have identified neighborhood people who care for children or the disabled. Local service providers ease transportation problems for working parents while keeping income in neighborhoods where it can be spent again on other community-building activities.

Asset mapping also has a less tangible, though equally important effect: it fosters community pride, which itself can be a key element in successful community-building. "Instead of just talking about our deficits, we're talking about what's right about our neighborhood," says Nevada

Dove, a leader in Power Youth. Indeed, students surprised themselves and their mentors with how many assets they found in just a short time after the "I Am LA project" began.

Elsa Casillas, a senior community organizer for the East LA Community Corporation, enlisted the UCLA students to identify cultural assets that could be used to build connections between a new museum and its surroundings. She suggested 30 different institutions the students should consider, but they came back with many more assets, including Casa del Musico, a music store that, unknown even to many nearby residents, offers guitar lessons and whose owner is a veritable fountain of information about what is going on in the neighborhood. "I was pleasantly surprised," Casillas says of the students' findings. "They gave us an opportunity to step back and look at our community in a different way. It's wonderful to look at how many resources we have."

Of course, asset mapping can – and does – occur without computers. But technology helps communities collect more detailed data and share it more widely. And it marks a significant departure for the planning profession and how it views computers, according to Bill Pitkin, director of planning, outreach, and evaluation at NKLA. "Historically, computer systems have enabled information to be tightly centralized within a cadre of technical experts," he notes. "The new technologies, however, make it possible to more easily distribute information and democratize the planning process."

High Hopes

Concerned Citizens of South Central Los Angeles has high hopes for its asset mapping effort. At the Dunbar Economic Development Corporation, Executive Director Anthony Scott envisions youth working together with senior citizens to record the rich history of the community, once a thriving jazz mecca. Melodie Dove, the lead youth organizer for the community-based organization, hopes Power Youth can use the system not only to find new recruits, but also to determine where young children live so that their homes can be targeted for lead abatement efforts.

But that's just the beginning. Power Youth could use its asset database to influence where future public investment – for schools and libraries, for instance – occurs in South Central. The organization first became a force to be reckoned with when it rallied citizens to demand an environmental clean-up at Jefferson Middle School. The first public school to open in the community in 30 years, Jefferson turned out to have contaminated soil and groundwater from the former home of a chrome-plating shop across the street. With Los Angeles planning to build some 100 to 150 new schools in the next ten years (including several in South Central), students believe they can influence future siting decisions – not only by

ensuring that other schools don't get built where there are environmental hazards, but also by finding locations where possible synergies could be created between schools and other neighborhood institutions or assets.

NKLA officials see this as a logical extension of the original neighborhood knowledge project – but a revolutionary one nonetheless. "Power Youth soon will be able to do what only experts could do previously," argues NKLA director Richman. "Soon, we're going to map the new infrastructure of the neighborhood," he says with satisfaction. "That's the kind of thing that in the past only high-level planners could do. Now, we're going to have kids acting as urban planners."

II. New Tools for Empowering Communities

While the Intertribal GIS Council and Neighborhood Knowledge Los Angeles have made effective use of information that already exists in various government databases, participants in both projects have learned that local communities have highly specific information needs that cannot always be met using outside information sources alone. As a result, both have sought to generate their own information to supplement what they can find from existing sources.

Two projects are developing new tools that will enable communities to generate their own information systematically. In York, Pennsylvania, the South George Street Community Partnership is equipping volunteers with hand-held computers to collect information from neighborhood residents that will shape a wide range of redevelopment activities. And in Indianapolis, Indiana University is developing a tool that will put GIS technology, once the sole domain of experts, into the hands of community-based organizations.

Notes

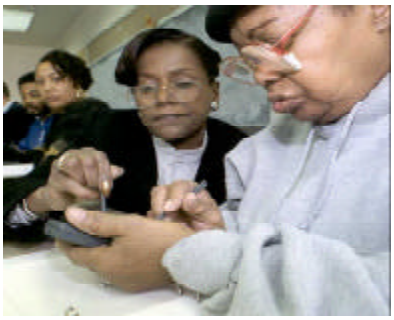
South George Street Community Partnership: Identifying Neighborhood Strengths and Weaknesses

Successful community development efforts depend on an abundant supply of information. What are a community's strengths and weaknesses? What are its needs? What are its residents' plans and expectations? Without answers to questions like these, government officials, service agencies, and community organizations would have to work in the dark, and their chances of devising meaningful solutions to community concerns would be slim. But reliable, timely, and comprehensive information is not easy to find, especially when budgets and manpower are limited.

Now, help is on the way. The Enterprise Foundation in Columbia, Maryland, has been developing tools that should enable communities to produce comprehensive information about themselves quickly and at surprisingly low cost. Working with the South George Street Community Partnership, a non-profit organization based in York, Pennsylvania, the foundation has devised a series of surveys that communities can use to gauge everything from the condition of buildings to the attitudes of residents. In addition, these surveys can be loaded into hand-held, "Palm Pilot" computers, which survey-takers can carry with them into the field, and subsequently downloaded into larger databases.

That means no more stacks of survey forms; no more days – or even months – of waiting while results can be tabulated and entered into a database; and no more watching information grow stale before it can ever be used. Under this new system, survey results literally will be available overnight.

Improved Planning



Better information should lead to better planning. "The biggest hurdle in any planning or community development effort is the enormous time lag between when information is collected and when it is analyzed," says Moustafa Mourad, director of the Enterprise Foundation's Planning Design and Development Department. "By using standardized forms and putting them on Palm Pilots, we have reduced the time lag to zero. That will be of tremendous value to any non-profit organization or government agency."

The South George Street neighborhood, a 60-block area with 5,700 residents, demonstrates why community organizations need a wide range of data – and why automating the process for collecting it makes sense. The neighborhood, two-thirds of whose residents are African-American or Latino, has considerable needs; more than a third of the residents live at or below the poverty level. But it has high expectations, too. Following a two-year planning process that involved 500 people, the South George Street Partnership developed a comprehensive "neighborhood transformation plan" that calls for action in six areas: housing, health and human services, education, public safety, economic development, and land use. Among the specific objectives in the plan are to increase home ownership, improve the general condition of property, identify the skills of residents, and link them to community needs so that people can find employment opportunities.

To pursue any one of these goals, the community requires a variety of information. To pursue them all at the same time requires automation. Enterprise and the South George Street Partnership have been working on that since receiving a TOP grant in 1997. Their efforts culminated in spring, 2000, when block captains and AmeriCorps volunteers fanned out through the South George Street neighborhood recording building conditions and land-use data and surveying residents to collect basic demographic data, identify community assets, and learn more about the views and opinions of people who live in the neighborhood.

Many Uses

While the data will have numerous uses, project participants have some clear priorities. One of the key interests of the Enterprise Foundation is helping residents find affordable housing. Foundation officials say a housing strategy must take into account not only the current supply of housing and the income level of residents, but also the attitudes of people

who live in the neighborhood. One particularly telling piece of information, suggests Armand Magnelli, program director at the foundation, is whether residents say they would stay in the community or leave if they felt they had a choice. If surveys show that many residents would move away, a program of simply building new housing might not help the community. In such a situation, community development strategies probably should focus first on addressing what issues would drive people away from the neighborhood, Magnelli says.

That, in turn, would require more information about what people like, and don't like, about the neighborhood. Should city leaders emphasize beautification, for instance, or is public safety a paramount concern? Knowing the opinions of residents can point to the most effective strategy. "Community development is a continuum," Magnelli says. "It starts with assessment. You can't just jump-start a housing program."

One clear priority is to identify the skills of residents and match them with jobs in the community. In addition, the partnership already has been gathering data showing community assets such as firehouses, churches and community centers, and mapping this data along with police records showing where crimes occur at various times of day. Armed with these two sets of information, the partnership can seek out neighborhood leaders – firefighters, church officials, and community center employees – and encourage them to keep a watchful eye on the streets during times when crimes are most likely to occur.

The city of York, for its part, is eager to obtain data on the condition of buildings. "Local governments are interested in defining strategies for the use of public funds," Magnelli observes. In some neighborhoods, rental properties may be in greater need of renovation than owner-occupied ones, while in other neighborhoods the opposite may be true. In some neighborhoods, a program to encourage landlords to spruce up rental properties may pay big dividends, while in another a better strategy might be to encourage home ownership. Political leaders might want to target their resources on neighborhoods that are in the greatest need. Or, they might choose to concentrate spending on neighborhoods where they believe they can have the biggest impact – such as a neighborhood with a substantial supply of vacant buildings that lies adjacent to one where housing demand is considerable.

"There are real strategic advantages to focusing limited public resources rather than taking a shotgun approach," Magnelli says. But that isn't possible without detailed information about different neighborhoods.

Beneficial Side Effects

Aside from gathering useful information, the simple act of conducting surveys can have a positive impact, project leaders say. "Surveys

give you the opportunity to become more involved with people, to let them know that you can help," says Magnelli. Survey takers, for instance, could tell residents during housing-related interviews about programs that might help them finance the purchase of a home. "Until you go to somebody's door, you don't have that opportunity," Magnelli notes.

Newt Miller, director of the York Community Access Network (YorkCAN), a program of the South George Street Community Partnership, adds that surveys also elicit constructive suggestions from people about how to improve neighborhood conditions – in contrast to less flexible positions that can emerge from heated community meetings. In response to a recent survey designed to address a controversy over lack of parking space in one section of the neighborhood, for instance, some residents offered off-street parking spaces on their own property to help alleviate the problem. "With surveys, you get people's opinions one by one, not just corporate opinion," says Miller. YorkCAN links community residents and businesses, and provides information on the community's revitalization effort, assets, and job listings, among other things.

The techniques being developed in York can be applied almost anywhere. The Enterprise Foundation has created a suite of survey forms allowing for the electronic collection of information on building conditions, land uses, basic household demographics, housing needs of neighborhood residents, code inspection and licensing matters, asset mapping, business opportunities, the availability of goods and services, employment needs, and residents' opinions concerning housing, employment, retail, education, and safety issues. The information from such surveys can be easily melded with existing databases, and if a particular community has its own ideas about what information it wants to collect, the Enterprise forms can be modified or entirely new survey tools can be developed, says Magnelli. Enterprise also is preparing a curriculum to train people in how to conduct the surveys and manage the data produced by them.

Finally, the value of collecting the data on hand-held computers shouldn't be underestimated. Palm Pilots themselves are inexpensive (they can be purchased for as little as $150 a piece), and people can be trained to conduct a basic survey with them in about half a day. And Magnelli sees one other advantage to collecting data on portable computers: the automated approach increases confidentiality. "Once the data is downloaded from the hand-held computer, it goes directly into the database," he says. "So you never have paper sitting on somebody's desk."

Indiana University's SAVI Project: Bringing GIS to Community Groups

If information is power, a community data and mapping project in Indianapolis is bringing power to the people.

The Social Assets and Vulnerability Community Connections Project, as it is known, offers Indianapolis residents and organizations a multi-layered menu of data about their community, all of it easily accessible in tables or plotted on maps via the World Wide Web. With support from TOP, the project soon will take a big step further, offering community-based organizations the opportunity to map their own data alongside federal, state, and local social indicators. The potential uses are almost limitless.

Imagine, for example, that a congregation decides to tackle homelessness. Through interviews, members of the church group learn that most of the homeless individuals in their community are single men who dropped out of high school. So they go on the Internet to the Social Assets and Vulnerability Indicators (SAVI) website at Indiana University; with just a few clicks of the computer mouse, they determine whether their neighborhood has a higher dropout rate than other communities in Indianapolis metropolitan area. If so, they have reason to look deeper for what causes students to leave school early in their community. But if other communities have similar dropout rates, the congregation may decide to seek to collaborate with other communities in seeking answers. In that event, members of the congregation may go back out in the field and ask homeless men where they grew up. Returning again to SAVI, they then can analyze youth programs and other services in those communities to see what more can be done to tackle the root causes of the problem.

Or, imagine that a social agency discovers that welfare mothers are having trouble holding jobs because they can't find day care for their children. It goes to SAVI and asks for a map showing all of the licensed day care providers in the area. Many of its clients rely on public transportation to get them to their jobs, so it also asks SAVI to add public transportation routes to the map and show the day care providers who are within a quarter-mile of a transit stop. That helps, but many of the agency's clients work non-traditional hours, making it difficult for them to rely on licensed day care providers. So the agency surveys the neighborhood, and feeds into the computer the location of baby-sitters who live close to licensed day care facilities or to clients' homes. With all this information, working parents in the neighborhood have new options for addressing their child-care needs. As a result, they stand a better chance of succeeding in the workplace.

Or, imagine that a civic association is vying for funds under a new city program to improve sidewalks. It first turns to SAVI for a map of schools, libraries, human-service agencies, and other institutions. It adds its own information on the location of additional public meeting places, and then maps which sidewalks in its neighborhood need repair, showing that many are in locations with heavy pedestrian traffic. Finally, the group turns to SAVI for some general data on the number of children in the neighborhood as well as general statistics on income, employment status, and other key demographic characteristics of the neighborhood, demonstrating that the neighborhood needs support.

Empowerment

In these hypothetical examples, and many others like them, the unifying theme is empowerment – helping community-based organizations acquire the ability to find and use information that traditionally has been

the exclusive domain of central planning agencies. "We see the need to empower neighborhoods," says Karen Frederickson, director of the community analysis group at the Polis Center, an arm of Indiana University Purdue University Indianapolis (IUPUI).

The center, working with the city of Indianapolis and the United Way of Central Indiana, launched the SAVI project in 1993. Since then, it has created an impressive database of social indicators and community assets. Now six million gigabytes strong, it is expected to grow to over 10 million gigabytes in the near future. Users can find welfare data, vital statistics, a wealth of information on the educational system (including enrollment statistics, teacher salaries, SAT scores), crime data (including information from the juvenile justice system), information on lending patterns collected under the Home Mortgage Disclosure Act, as well as information about libraries, churches, United Way programs, human-service providers, fire stations and police stations.

With each of the twelve major organizations that provide data, the Polis Center negotiated a memorandum of understanding governing how the information would be used and presented. These agreements spell out, for instance, the extent to which the data must be aggregated to protect the privacy of individuals.

Professionals say the value of the SAVI database has been proven many times over. For example:

- The Indianapolis Public School system used census, health, crime and other data from SAVI to support its successful application for a 21st Century Learning Center grant from the U.S. Department of Education.

- Metro Ministries used SAVI to determine where churches should plan programs that would complement existing social services.

- The Marion County Health and Hospital Corporation used census information and SAVI data to plan a Healthy Start program designed to reduce infant mortality.

- Community Centers of Indianapolis used SAVI data to demonstrate that access to transportation and day care were key factors determining whether welfare recipients could find and keep jobs. It also uses SAVI to plan where to offer summer youth programs.

- The Marion County Commission on Youth used SAVI to compile a comprehensive geographic picture of youth opportunities.

- The Indianapolis-Marion County Public Library used SAVI to determine new branch locations and patron use patterns.

- The City of Indianapolis used demographic, poverty, income, education, crime and community asset data to support its application for federal Empowerment Zone designation.

Innovative Technology

The Polis Center worked with Environmental Systems Research Institute, a Geographic Information Systems software company, to develop particularly robust tools for such searches. Typically, web-based GIS programs allow users to search a relatively small number of data sets, and to call up pre-programmed maps that display this data. But under the new process, called "interactive," or "dynamic" mapping, users can create their own, unique maps based on their own needs.

Compared to traditional web-based GIS mapping, this tool allows users to send more complex queries to more complex databases. And it soon will do something more: using templates prepared by the Polis Center, groups will be able to ask SAVI to map their own data alongside its existing databases. With that step, GIS will reach the grassroots.

Officials at the Polis Center see this as a logical extension of their work. Before SAVI reached the World Wide Web, the center made the tool available on college campuses, at 38 public access sites (mostly libraries), and also at "enhanced" access sites, where experts could help users design searches. The computers at all these sites had to be updated periodically with new CD-ROMs that carried the latest data. Now that the system is moving to the web, it can be updated more frequently, and can be reached by anyone with Internet access.

But that is just the beginning of the outreach process. The center also is designing a curriculum to train organizations in how to use the data. It also will employ two community facilitators to work directly with neighborhood-based organizations to clarify their concerns and figure out how to use technology to answer the questions they want answered.

"We recognize that many organizations will ask poor questions, and that the answers won't tell them what they want to know," says David Bodenhamer, director of the Polis Center. "Part of what the project is about is helping to provide training not just in the use of technology – we have tried to make that so simple it's just a matter of overcoming fear to use it – but also in how to think critically, to think about where the data come from and what data are appropriate for what kinds of questions. What do the data mean in terms of their intentions? Do the data support their perceptions or modify them? And do the data reveal where the potential for collaboration [with other organizations] exist?"

SAVI already is helping increase its users' data literacy by including "metadata standards" with each data set they can call up. When a user seeks to map a particular set of data, the website offers "background information" that tells where the data came from and explains its strengths and weaknesses. As neighborhood organizations seek to collect, map, and analyze their own data, they will have to develop their own metadata standards. And if they choose to enter their information into the permanent SAVI database so that it can be shared with other organizations, as the Polis Center hopes will happen, they will have to meet high standards.

"The big issue for us will be making sure that the data organizations have are good quality and reliable, and described so that they can be useful to other organizations," says Bodenhamer. The process won't be easy, he concedes. It will have to begin by building trust. "We want to help organizations that collect the data remain true to their mission, but if we can establish a relationship with them to satisfy their legitimate agenda, we hope we can work with them to develop data that will be helpful to other organizations in the community."

The success of that effort to build relationships, more than the massive new database and impressive new technology being developed to help people use it, will be the real test of the Social Assets and Vulnerability Community Connections Project, says Bodenhamer. Ultimately, he explains, "We are facilitating community building. Data is a necessary, but not a sufficient, condition; they often open the door, but never solve the problem. The best use of data is to provoke more questions, and in provoking more questions you begin to uncover different perspectives and values so that everybody begins to understand what really is at issue and how we can work together."

Making the Net Work

To take advantage of sophisticated new information tools such as those being developed by the Enterprise Foundation and Indiana University, community-based organizations must have well developed computer and networking capabilities. But many such organizations, especially those in rural areas, still lack these basic tools. From 1996 to 1999, the North Carolina Justice and Community Development Center tested one model for spreading technological capabilities to community organizations. Its website (**www.ncexchange.org/networker**) offers numerous practical suggestions for those attempting to meet this challenge.

When the project started, fewer than 21 percent of North Carolina non-profits were online, and only 33 percent of those connected were actively networking, according to the center. Moreover, it noted, community work and information technology were "two worlds colliding," in which "inhabitants speak different languages and often have different education backgrounds, political perspectives, skill sets, communication styles, and attitudes toward technology." To bring the two worlds together, the center created the job of "net worker," a circuit rider who would move from organization to organization, helping each assess its technology needs and then to acquire the hardware, software, and training needed to use it.

The project had some significant successes. A number of organizations that had virtually no technological capabilities acquired basic computer networks and networking skills, and the net workers developed a robust network among themselves that increased their effectiveness. But the project also had its share of frustrations. Perhaps most significantly, the net workers often found themselves torn between the demands of "host" organizations that paid their salaries and the various other community organizations they were supposed to help. The heavy demand by host organizations reflected both the complexity of developing networking capabilities and the enthusiasm that organizations developed once shown the value of the tool. But the conflicts, which led some net workers to worry that they were neglecting organizations that weren't their hosts, led a number of participants in the project to conclude that circuit riders should be employed by outside organizations so that their independence would not be compromised.

These and many more observations – on everything from assessing organizations' technological needs to nuts-and-bolts suggestions for how best to conduct computer training – make for interesting and worthwhile reading.

1. Technology, Training, Community Building

While sophisticated information tools like Geographic Information Systems are becoming easier for non-experts to use, communities won't be able to take advantage of these new technologies unless they meet certain prerequisites. Individuals need basic training in how to use technology, and they need the ability to communicate over computer networks. Despite the dramatic growth of the Internet, many individuals and communities still lack these essential capabilities.

In Oakland, California, a computer training center is showing how communities can help individuals acquire basic computer training – and, at the same time, revitalize neighborhoods. Across the country, in rural North Carolina, the Mountain Area Information Network has developed a strategy for bringing Internet connections – and a wealth of local information – to small communities that otherwise might see the information age pass them by.

Notes

The Eastmont Computing Center: A Training Facility Promotes Business Networking

For years, Charles M. Brown ran a successful business repairing the various types of equipment used to make and edit movies. But he came to a disheartening realization eight years ago: the machines he fixed were all being replaced by computers. "I saw the handwriting on the wall," he says. "My skills were not needed anymore. I was a dinosaur."

Rather than bemoan his fate, however, Brown, whose friends call him "C.B.," spent the next 18 months studying computer networking manuals. He also started visiting the Eastmont Computing Center, a community-based technology facility in central east Oakland, California. It was a mutually beneficial relationship; the center got valuable help developing and maintaining its network, while C.B. got a chance to hone his own new skills. "Here was a working system I could train myself on," he says.

Eventually, Brown took the required tests and became a Microsoft-certified systems engineer. But that's not the end of his story. Even though the Microsoft credential could be a ticket to a high-paying job, Brown mainly wants to teach. And not just anywhere: he wants to train students at the same center that served so well as his own training ground. "It can cost $10,000 to $12,000 to take all the courses and tests to be certified," he says. "But you don't need to spend that if you have the books, a system to work on, and somebody to guide you."

For Brown and a cadre of others, the Eastmont Computing Center is a launching pad into the digital age. With 68 computers and two, high-speed "digital subscriber line" (DSL) connections to the Internet, the center gives area residents free access to basic information tools. It also offers a variety of classes designed to help people develop

their information technology skills. That is no small matter in a part of Oakland where few residents have personal computers at home. But it hardly begins to describe the role the center is playing in its community. Much more than a collection of computers, the center is also a hotbed of entrepreneurship, self-help, and face-to-face networking – a gathering place where people are helping each other take charge of their own futures.

President Clinton has proposed spending $100 million in federal funds to create 1,000 similar community technology centers in low income urban and rural areas. The goal is to help such communities bridge the "digital divide." But as the Eastmont facility demonstrates, technology centers can do much more than introduce low income people to computers and computer networks. They also can help build stronger communities.

This doesn't happen by accident. From the outset – the Oakland center was launched with a TOP grant in 1997 – Director David Geilhufe and Operating Director Tony Fleming have sought not merely to provide access and training, but also to encourage people to assume responsibility for their own learning, to work together and then to stay in the community and help others. "Everything we do is designed to promote community building," says Geilhufe, who refers to the center as a "family."

In the process, Geilhufe, whose training is in international development, and Fleming, a former radio talk show host who seems to know everybody in the neighborhood, are learning valuable lessons about how low income communities can bridge the digital divide.

A New Kind of Mall

The computing center is based in the Eastmont mall, which itself is a symbol of east central Oakland's resurgence. Thirty years ago, the mall was a thriving retail hub on what then were the outskirts of Oakland. But when a new interstate highway opened, middle-class residents and retailers fled to emerging suburbs farther from downtown Oakland, sending the mall and its neighborhood into a tailspin. By the early 1990s, both had hit rock bottom. However, the mall's current owners, who acquired the hollowed out facility following foreclosure proceedings in 1993, had an idea about how to turn things around. The mall, isolated from the new freeway, was unlikely ever to return as a regional shopping center, but there still were plenty of people in the area, and these people needed a range of services as well as shopping opportunities. Why not make the mall a center for the community, they asked – one that would bring together retail outlets and public facilities, service agencies and public meeting space? That would bring people back to the mall, they reasoned, and the increased traffic eventually would lure some retailers back, too.

Thus, the mall was reborn as the Eastmont Town Center. The Oakland Public Library, which previously had operated a small kiosk in the

mall, built what is now its third-largest branch there. Alameda County opened a "self-sufficiency" center that provides a variety of job and welfare-to-work services. Planned Parenthood moved into other abandoned retail space. The Public Health Department established an office offering nutrition and other community health services. A senior citizens center moved in. The public transit system decided to make the mall a major hub of its system. The Oakland police agreed to open a new precinct station inside the facility.

The technology center is an integral part of the mall's comeback, according to Jack Sumski, president of the mall. "The city and larger retailers are all concerned about how well wired the facility is," he says. "The [computer center] shows them." The Oakland Citizens Committee for Urban Renewal (OCCUR), which opened the center to help residents of the surrounding low income neighborhoods acquire skills needed in a growing number of jobs, saw other advantages to placing the center in the heart of the resurgent neighborhood. "Technology can pull communities like this apart," notes David Glover, OCCUR's executive director. "We wanted the center to be in a place that would bring people physically together."

Two groups that began using the center almost as soon as it opened – senior citizens and kids – offer proof that the center is nurturing personal relationships. Seniors who came to the center quickly organized themselves as "SeniorNet." They found an instructor they liked, and insisted that he teach their classes. And they adopted a train-the-trainer strategy, whereby seniors who received training turned around and delivered training to others.

Kids also use the center as a social gathering place. Like the seniors, many youths come into the center with well-defined interests: they want to play games. But forget images of solitary youth sitting alone at home playing Nintendo. The computer lab at Eastmont can be raucous, as kids seek games on the Internet and then shout strategic ideas back and forth. Even kids who have games at home prefer to come to the center to play with their peers, says Jabari Adisa, who supervises the center's daily operations.

Putting Users in Charge

As part of its community-building strategy, center directors felt it was important to encourage users to set their own learning objectives. Seniors had no trouble with this task; they wanted a basic introduction to computers and the Internet, and instruction in word-processing, email, and in the financial software Quicken. They also showed interest in software that could help them trace their genealogies and construct family trees. "They want to be part of society," says Joan Adams, an educational adviser for the Pleasant Valley Adult School. "They don't want to be left

behind." Pleasant Valley, part of the Oakland Unified School District, pays for the seniors' instructor.

The center didn't resist the kids' interest in games. Besides being a good tool for learning some computer basics, games often lead kids to develop more advanced skills, notes Adisa. "After a while, they get bored with games and want to do something else, like learn how computers work or how to network," he says. When one youth tired of playing by himself and learned that different computers could be connected so that multiple players could compete simultaneously, Adisa readily agreed – but he said the youth first would have to learn how to create a rudimentary network among different Macintosh computers. Later, when kids started using the Internet to play games online, Adisa again required them to figure out on their own how to configure their computers and then find, download, and install the games.

Veda Guess, who teaches a programming course at the center, also has come to believe in the utility of games. "I started by showing them business programming, but they weren't too interested," she recalls. "So we switched to programming games." Designing games, she said, requires all the same skills – database management, graphic design, and basic programming – as more prosaic business applications. "You still have to use a programming language to create something," she says.

In general, centers that enable the public to dictate what they are taught wind up with essentially the same curriculum as centers that take a more top-down approach, according to Geilhufe. But they do so in a way that may make members feel more responsible for the organizations' success. At Eastmont, where all classes are free, students frequently teach others what they have learned. When Jorge Flores, a young Hispanic, finished a class at the center, for instance, he offered to teach a similar one in Spanish. Although he doesn't have a high-school degree, he has been a popular teacher – so much so that some English-speaking classes have asked him to be their instructor as well.

As many educators have found, turning trainees into instructors has great pedagogical value. "If you just take a class, you retain maybe 25 percent of what you learned, but if you have to teach it, you remember 90 percent," says Geilhufe. Meanwhile, students benefit as well. "The instructors have a personal touch," says Roscoe Drisdale, one of the center's first students.

Institutionalizing Past Gains

As the Eastmont Center nears its fourth year in operation, officials are moving to institutionalize some of the mutual support systems that evolved spontaneously in its early years. At the same time, they are working to make sure that students who have mastered introductory courses have ample opportunity to keep learning new skills. Under a new "tech scouts" program, for instance, youths who develop new skills will receive "badges." Those who collect enough badges will be able to move into paid internships, instructing others or performing various services to keep the center operating. In addition, the center will offer Cisco Networking Academy training, which combines online learning and hands-on experience leading to employment in the design, construction, and maintenance of computer networks. Geilhufe says adding the networking program is a key step in the center's strategy to offer neighborhood youth a complete "ladder" of training that leads to good jobs in information technology.

Expanding the range of educational opportunities also may be the key to reaching what Fleming calls the "missing demographic" in the center's users: working adults. In general, this group is more difficult to serve, both because adults have less time to come to the center and because they have more varied needs. To serve them better, the center is building a collection of computer-based training programs. Fleming has reviewed more than 300 electronic courses, and hopes to use them to offer virtually any subject a person might request. But he envisions doing much more than provide impersonal, pre-packaged instruction. He also is recruiting a range of working adults who have various information technology skills and can use the computerized courses to supplement their own instruction.

Taami Parker, who runs her own web design and electronic-commerce (e-commerce) consulting firm, may be a model. Parker, who is 32 years old, was originally trained in computer repair, and taught herself about website design and e-commerce before launching her own consulting business. Attracted to the Eastmont Computing Center by Charles Brown, who himself was drawn to the center by Fleming, she agreed to teach a course at the center in e-commerce. She also bought new "CourseWare" software to create a computer-based version of her class – a process she said would give her an opportunity to learn about the new software while helping the center capture her expertise for future use. Like many people who use the center, Parker isn't just giving. One day while visiting to prepare her course, she saw that the center would be offering a class on Cold Fusion, a high-powered web development and deployment platform for e-commerce and other business solutions. Excited by the opportunity to increase her own skills, she immediately signed up.

"For this mall to be a site of learning – it's amazing," says Parker, a lifelong resident of the Oakland area who has watched the mall's decline and now its resurrection. "It's a Phoenix rising."

Instructors like Parker clearly are drawn to the center more for psychic reward than financial gain. The center pays its teachers $10 an hour, and courses frequently run two hours – not enough for instructors to support themselves. Geilhufe says the salary is essentially a tool to "formalize" the volunteer relationship. Still, the benefits of being associated with the computing center can flow both ways. Not long after Parker signed up for her class, Albert Walls, a self-employed expert in telecommunications wiring, showed up at the center to discuss the possibility of teaching a class himself. Walls, who learned his skill in the Air Force, was eager to "give something back" to his community, and he noted that Pacific Bell, the local telephone company, is "really hurting" for people with his skills. The day he came in to see Fleming about his course, he met Charles Brown. Seeing an opportunity to join forces to offer one-stop shopping for clients who need to install or upgrade computer networks, the two almost immediately were engaged in conversation that could lead to new business opportunities for both.

Unmet Needs

Geilhufe and Fleming live for such moments when residents of east central Oakland find each other and build relationships that allow both for learning and new economic and social opportunities. "We want to offer enough services that people will stay in the community forever," says Geilhufe. But while making strides toward achieving that goal, the center is barely scratching the surface of what the community needs. The vast majority of the center's clientele – about 450 people use its services every week – still requires the most basic introduction to computers and the Internet, and that kind of training is not enough to find a place in today's information economy. Meanwhile, the ladder from there into information technology jobs remains only partially built.

Never lacking in ideas, the center officials do have a strategy for stepping up the effort to increase access and computer skills. Basic training should be moved even closer to people's homes – to churches and community recreation centers, argues Geilhufe, so that organizations like the Eastmont Center can specialize in moving people on up the higher rungs of the career ladder. The center tried to take a step toward achieving this model by forming a computer network with a group of churches. It hoped the network would become a means for sharing lessons learned and coordinating efforts. But Geilhufe and Fleming say it didn't work as planned. "We trained a lot of people in how to set up a community technology center, but then they weren't quite ready to cooperate," Geilhufe says. Instead, they started competing with each other for funds. As a result, Fleming adds, "we lost two years – and two years in this new economy is a lifetime."

Mountain Area Information Network: A Town Square in Cyberspace

Communities need public space – places where people can come together, where everybody can speak his or her mind, and where individuals and groups can learn about each other, celebrate what they have in common, and find ways of working together. But in today's sprawling, complex society, where can one find such public space?

Aside from shopping malls, which exist solely for commercial purposes, there often seems to be a dearth of such places. "You cannot pass out leaflets in a shopping mall, or stand up and give a speech," notes Wally Bowen, executive director of the Mountain Area Information Network (MAIN), an online network serving twelve rural counties in western North Carolina. "You could go to the town square to do that, but nobody would be there to listen."

According to Bowen, community networks like MAIN are filling the void. Established in 1995 with support from TOP, MAIN has grown to embody its far-flung community. It provides basic Internet access to more than 3,000 subscribers, most of whom otherwise would not have local dial-up access. It also hosts websites for 250 community-based non-profit organizations, carries news from local newspapers, publishes a community calendar, facilitates civic participation, and hosts forums where citizens can discuss issues ranging from gardening to current events. And while it seeks to transcend commercial interests, it is helping to promote small businesses – many of which could not afford to rent space in a typical shopping mall – by hosting a thriving e-commerce project known as the Blue Ridge Web Market.

With such activities, Bowen says, community networks are giving people a chance to "re-

claim public spaces we once enjoyed when we lived our lives more in public squares and town halls, before we started living the more privatized, commercialized existence we have today."

Yet even though community networks can point to many successes, their survival is far from assured. Many are struggling simply to make ends meet. And it is far from clear whether they will be able to hold on in today's rapidly-changing online environment, where even well-capitalized commercial ventures are not assured survival. That makes it all the more important to consider what impact institutions like MAIN are having, and to ask what communities – especially those in rural areas – would be like without them.

Gauging the Impact

MAIN asserts in the final report on its TOP grant that it has changed many lives. Non-profit organizations, in particular, say that the websites they established with MAIN's help have enabled them to raise funds and attract volunteers. Thanks to its web presence, for instance, the Old Buncombe County Genealogical Society was able to recruit and work with a former county resident who had moved to Seattle; the volunteer became one of the society's top researchers, using email to exchange information with the North Carolina organization. Similarly, the Buncombe County Friends for Animals says Internet access has greatly facilitated its operations. "Our online access through MAIN has been a godsend in the capability that is provided to communicate with fellow board members," reports Gordon Becker, a board member. "The board is composed of volunteers, mostly with full-time jobs, and this capability allows us to communicate with each other regarding committee assignments, meetings and BCFFA related activities without having to play phone tag."

Given its limited resources, MAIN had to show some ingenuity to help so many non-profit organizations go online. It accomplished the job by giving preference in training workshops on website design to people who were willing to help local non-profits build and maintain their own sites. Besides helping the non-profits, the arrangement has paid off for a number of volunteers, who have capitalized on the training by establishing their own web-design businesses.

Meanwhile, although the final returns are not yet in, MAIN's Blue Ridge Web Market has given small businesses a new outlet for their projects. One craft shop received a $24,000 commission in 1999 after a museum in Charlotte, North Carolina, saw its products on the web, according to Bowen. And an herbal soap-maker told the online publication, *Civic.com*, that the web market now accounts for about ten percent of his business.

MAIN's online discussion forums, meanwhile, have met with mixed success. "We have been disappointed by how little participation

these forums have attracted," Bowen concedes. While there have been some exceptions, many forums have languished because they haven't been adequately promoted, he believes. Some forums have attracted a high volume of postings, but in some cases they have encountered a different kind of problem: some have drawn a substantial number of "anonymous rumors and innuendo that occasionally bordered on slander and libel," according to the project's final report. MAIN, which remains committed to making the forums work, has addressed that issue by obtaining web-forum software that requires participants to register for forums. That will allow it to ban anybody who repeatedly posts offensive comments. The software also provides for some self-governance, allowing participants to rate the quality of individual postings on a scale of 1 ("skip it") to 10 ("must read").

While some online forums have had difficulties, the network has established itself as a potentially potent tool for community organizing. One group used MAIN to urge community residents to press for changes in a proposed cable-television franchise agreement in Asheville, North Carolina, for instance. Learning with just two days' notice that the city council was about to approve the accord, citizens organized an email campaign and constructed a web page showing how other communities had negotiated more favorable contracts with the same company. Public pressure led the council to pull back from the proposed agreement. Eight months later, it approved a revised version that will run for twelve years, instead of 17, and provided $340,000 for citizens to obtain equipment to produce and air programming on local topics and issues.

A Struggle to Survive

Such success stories are hardly news to those who have followed community networks. But financial uncertainties continue to cloud their prospects. "Community network projects like MAIN cannot survive by lurching from grant to grant, or by relying on government support," Bowen notes in the project's final report to TOP. "Like government support for the arts, government support for community networking is too easily viewed as a `luxury we cannot afford' if budgets get tight. Nor can projects like MAIN rely on the kindness and largess of the private sector for long-term sustainability, given the fact that private ownership and priorities will inevitably change over time."

MAIN has sought to ensure its financial survival by becoming a non-profit Internet Service Provider – a "rural Internet cooperative" in the model of the cooperatives that brought electric and telephone service to rural areas in the 1920s and 1930s. The network has amassed more than 3,000 subscribers, who each to pay $150 a year for Internet access. In turn, by aggregating their demand, MAIN has been able to connect some of the most remote and infrastructure-poor parts of the state.

The network's success did not come without a struggle. As in other places where non-profit Internet Service Providers have been established, commercial ISPs initially felt that MAIN represented potentially unfair competition. However, such complaints have diminished over time, according to Bowen. He cites several reasons. First, he says, MAIN helps commercial providers by "growing a market" for Internet access, especially among people who otherwise could not afford it but who later might "graduate" to a commercial provider. What's more, MAIN refers a substantial amount of website construction business to private businesses, and thus takes pressure off commercial ISPs who are "bombarded" with requests from local non-profits for free websites or discount dial-up access, Bowen says.

Although MAIN's principle objective is to offer its community a rich supply of local news and information, Bowen argues that it could not achieve that goal if it hadn't also become an access provider. Besides securing a solid source of revenue, serving as an Internet portal has enabled MAIN to attract a substantial audience for its website.

"Simply focusing on building a top-flight local-information website, without guaranteeing local traffic, would be like building a beautiful public park off the beaten track, while all the main thoroughfares and bus routes go to the local shopping mall and amusement park," Bowen says. "Some folks may make the extra effort to seek out the public park, but most folks will be drawn to the more accessible and familiar shopping mall/amusement park."

Can MAIN Be Replicated?

Although Bowen believes non-profit Internet cooperatives could succeed in urban as well as rural areas, it remains to be seen whether this model can ensure a place for community networks. Non-profit Internet Service Providers surely would face more opposition in urban areas, where there are more commercial ISPs. Moreover, it is unclear whether providing Internet access by itself will prove to be a viable revenue-producing activity in the long run; some analysts believe that the value of delivering an audience to advertisers and customers to e-commerce companies will become so great that companies will offer consumers Internet access for free just to get as many people online as possible.

Already, profit margins for Internet Service Providers are being squeezed, according to Bowen. "The dial-up, consumer ISP business can only be profitable, as a core business, in very large-scale enterprises," Bowen says. "Smaller ISPs, on the other hand, derive their profitability from a variety of web-hosting, web-design, network administration and high-speed, dedicated access offerings. The dial-up access business is so labor intensive, given the high level of tech support and 'hand-holding' required, that smaller ISPs cannot depend on it as their core business."

Bowen believes these underlying economic forces explain a merger trend among ISPs. (Internet of Asheville, the largest local ISP in western North Carolina, was sold to a larger ISP firm based in Florida, for instance.) But the trend, in turn, points to a serious social challenge for communities: As local Internet companies are bought out by national ventures supported by national advertising, what will happen to local voices and local content?

"The Internet is an ideal tool for helping to create and sustain civic participation and the collective `community memory,'" Bowen notes. But, he adds, "It's hard to imagine how local news and information-gathering could be profitable for the emerging media conglomerates. If this assessment is true, where will local news and information come from? And how will it find an audience?"

To Bowen, non-profit networks must fill the gap. "One of MAIN's most lasting achievements may be our efforts to encourage and enable civic participation, and to grow and preserve the local community memory," he concludes.

Whether he is right or wrong, he has posed some important questions that communities will be facing in the future.

Resources for Community Builders

Five years ago, the idea of using information technologies to promote community building was new and, to many, almost a contradiction in terms. But since then, numerous organizations have discovered myriad ways that these technologies can, indeed, strengthen local communities even as they bring people from diverse places around the globe closer together.

One of the best ways to connect with the growing number of community builders and to tap their ever growing body of experience and ideas is through the National Community Building Network (**www.ncbn.org**), which provides an extensive list of resources and a veritable Who's Who of community building efforts.

NCBN is, in part, the brainchild of the Urban Strategies Council (**www.urbanstrategies.org**). In 1994, TOP awarded the council a grant to develop a state-of-the-art needs assessment tool to help urban areas figure out how to use new technologies to support local community-building efforts. That project resulted in *The Community Builders' Guide to Telecommunications Technology,* which outlined ways that new technologies could support community-building efforts, explored key policy issues surrounding the use of technology, as well as the assessment tool.

The council, which is based in Oakland, California, has gone on to establish its own national technical assistance project, the Community Building Support Center (**www.urbanstrategies.org/cbsc_overview.htm**), which works with community-builders around the country to develop peer learning strategies and training modules. It also helped found the National Neighborhood Indicators Partnership (**www.urban.org/nnip**), a multi-city consortium of community-building intermediaries, universities and community foundations that seek to encourage the development and use of neighborhood-level information systems for local policy-making and community building. The partnership is convened by the Urban Institute (**www.urban.org/**). All are excellent sources of information and links.

IV. Local Communities in a Global Economy

Once communities acquire the new tools of the information age, they have many exciting new opportunities. They can offer their residents new avenues for social interaction. They can provide new means to become politically engaged. They can enrich themselves culturally. And they can find new strategies for achieving economic security. In this final section of this report, we look at one of these categories – the opportunity for local economic development.

In Appalachian Ohio, entrepreneurs are learning how to use the Internet as a tool for spawning home-grown businesses. Meanwhile, a Washington, D.C.-based nonprofit organization is helping small farmers to achieve economies of scale in production and to develop new markets for their produce. Both projects demonstrate that information technology can strengthen local communities at the same time it produces an increasingly integrated, global economy.

Notes

Appalachian Center for Economic Networks: E-Commerce, Local Markets, and Regionalism

Some view e-commerce as a nail in the coffin for local communities throughout America. The Internet may bring us the convenience of shopping from home, the argument goes, but at a considerable cost to our social fabric. When we can get everything from furniture to pharmaceutical supplies without leaving our homes, what need will we have for nearby manufacturers, farmers, or merchants? We may not even have to go to the grocery store anymore: "smart" refrigerators will automatically keep stock of our food supplies, and order from food warehouses when necessary.

If this scenario seems troublesome, consider the work of a group of entrepreneurs in Appalachia who are betting on a very different future. Rather than undermining local communities, these business people say, Internet-based commerce could produce an economic Renaissance in them. They base their view on at least two assumptions: first, that local networks will enable small, locally-based businesses to achieve efficiencies that only large, consolidated businesses could have realized previously; and second, that the Internet will give once-isolated producers access to markets they found all but impossible to reach in the past.

This is the theory of the Appalachian Center for Economic Networks, a 1995 TOP grantee that sees computer networking technology as an important ingredient in rural economic development. ACEnet, as it is known, has its work cut out for it. Its territory, southeastern Ohio, has languished for years as the coal-mining industry that once fueled the regional economy has declined. While much of the nation rides an unprecedented economic boom, unemployment remains stuck at double-digit levels in Appalachia, and about one-third of the people

in counties served by ACEnet have incomes below the poverty level.

Traditional economic development strategies, which seek to attract new industry to the region from other parts of the country, have largely failed to turn this situation around, partly because Appalachia's verdant hills offer neither the flat topography nor the infrastructure large industries generally require. So ACEnet has sought instead to foster home-grown, "micro-enterprises." Concentrating on the food industry, it operates a "kitchen incubator," a facility where small businesses can develop and bottle their own specialty food products – and receive advice on how to market them – without having to make the substantial capital investment usually needed to launch food-processing enterprises.

Grassroots Networking

Information technology is an integral part of ACEnet's strategy. But set aside images of exotic global marketing strategies. ACEnet is building its markets from the ground up, with a decided emphasis on networking its own neighborhood and region before trying to reach beyond them. The local emphasis grows out of observations ACEnet founder and President June Holley made in the early 1990s while studying successful economic development efforts in Europe and Japan. Business-to-business networking, she found, is a key factor in shaping the success of micro-enterprises.

"Revitalization is linked to a whole range of innovative relationships which small manufacturing firms have created with other firms," Holley wrote at the time. "Small firms gain significant degrees of flexibility, and are able to respond to high-value niche markets, through their ability to quickly form networks, alliances or partnerships. These networks are varied, and might include other manufacturing firms, larger firms, suppliers, and/or firms providing special services, such as design or marketing organizations."

ACEnet's kitchen incubator has helped bring some local businesses together in cooperative ventures. Two businesses that use the facility, Crumb's Bakery and the Casa Nueva (**www.casanueva.com**), a local restaurant and producer of its own line of salsas, have pooled their purchasing power to buy flour at bulk rates, for instance. But that hardly begins to describe the mutual support, advice, and assistance businesses pro-

vide each other under ACEnet's tutelage. The networking efforts are paying off: surveys show that local businesses that have built the most elaborate network of relationships with other companies and resource organizations invariably grow faster than ones that are less well connected.

To encourage more extensive networking among area businesses, ACEnet sponsors a local email list called Foodnet, which local food processors, food services, restaurants and others use to exchange ideas and develop common strategies. Cassie Holderman of Hopewell, Ohio, demonstrated how the process works one day this spring. In a long note to listserv members, she described plans to set up a booth to sell organic and naturally raised farm products and gourmet packaged food at an open air market in Columbus, about two hours' drive north of ACEnet's headquarters in Athens. Holderman offered to sell locally made goods at the market, and later in an online store.

The listserv enabled Holderman in one stroke to get word of her plans out to some 40 area food packagers and resource organizations who participate on the list. Without it, she would have had a hard time reaching that group. Even if she were able to obtain the names of all the participants, writing them letters would have been cumbersome and slow, and telephoning would have required numerous, expensive long-distance calls. (The high cost of long-distance telephone service is a significant barrier to success for small businesses in southeastern Ohio, according to Leslie Schaller, business director of ACEnet's Food Ventures. "That's the reason there is no distributor who will take food from here to Cincinnati," she says. But as email is becoming more widely available in the region, the chances of finding distributors who will take local products to that population center are improving, she says, concluding: "Technology enables small businesses to work in a way they couldn't before.")

Besides enabling Appalachian farmers to share information with each other, information technology makes it possible for them to learn from experts outside their region and to stay on top of national market trends. Schaller monitors websites maintained by numerous food-industry trade groups, and she facilitates a national Foodnet listserv, through which about 270 groups from around the country exchange ideas about microenterprise and food marketing (recently, the group held a month-long conference on kitchen incubators, for instance). Schaller frequently relays what she has learned to her clients on the local Foodnet.

ACEnet President Holley sees this work as an equalizing force for small businesses in her region. "Large corporations have their own research-and-development departments," she notes. "We are figuring out how to have our own distributed research and development."

Technology Strategy

Of course, Appalachian businesses cannot take advantage of information technology unless they acquire computers and learn how to use them. ACEnet has pursued a three-pronged strategy for helping its region bridge the digital divide. First, it has networked its own operations to show its business clients the advantages of being computerized. Second, it unfailingly encourages business people to get their own computers and get online. And third, it offers computer-training classes in area high schools and operates its own community technology center for people who don't have computers at home or in their offices. This "Computer Opportunities Program" has opened doors for students like Carrie Ferguson, who grew up in a poor home without even a telephone and now works as a computer trouble-shooter at Berea College in Berea, Kentucky. "My high school didn't even teach computers before the COP program," says Ferguson, who is pursuing at degree in psychology at Berea. "What I learned will be important to me whatever I do."

ACEnet hopes graduates of the COP program will set up their own micro-enterprises – and that some of their first clients will be start-up food businesses, which need their own computer systems and web pages. The program has been in operation just two years, but one graduate, Sarah Baxter, already has established her own consulting business. In addition, a student established a website for a gourmet dog food enterprise, and students created a website for the Daughters of the American Revolution chapter in Athens.

But trying to forge links between the COP and Food Ventures programs generally has been a "rocky road," says Heather Snedeker, ACEnet's COP instructor. Although the COP program seeks to teach entrepreneurship as well as computer skills (it encourages students to conduct online research to determine how various businesses market themselves, for instance), "kids are more interested in getting computer skills than in being entrepreneurs," Snedeker says. In addition, conflicting schedules, lack of time or lack of transportation have frustrated some efforts to forge business-student collaborations. And some entrepreneurs, for their part, have been reluctant to trust their fledgling enterprises to student web-designers.

To address these problems, ACEnet has decided to add a second year to the COP program to help students gain more advanced skills. And the program is expanding from three schools in the 1999-2000 academic year to seven in 2000-2001. To meet the higher enrollment, Snedeker will switch from working directly with students to training teachers, who then will pass on what they have learned to their students in the various schools.

While progress has come more slowly than some had hoped, businesses in Appalachian Ohio are beginning to move into the digital age. A growing number of ventures, for instance, now have websites, and are start-

ing to market their goods on the Internet. Some are drawn to e-commerce by the opportunity it gives them to charge retail, rather than wholesale prices. Others see technology as a means to maintain local ties even while entering bigger markets. Maureen Burns, who runs the Herbal Sage Tea Company (**www.herbalsage.com**) in tiny Rutland, Ohio, says she couldn't operate her business without the web. Success in retail trade used to be based on one thing – "location, location, location," says Burns, who previously owned a vintage clothing and tea business in Cleveland. "But now it's web page, web page, web page."

Burns estimates that she makes 90 percent of her sales on the Internet. But she is under no illusion that simply having a web page will guarantee business success. She set her business up in Rutland in 1997, but says her company still isn't profitable. She isn't giving up, though. She believes she can strengthen her business by developing a more sophisticated, highly interactive page that is both informative and creates a sense of community.

The Marketing Challenge

That is a time-consuming and expensive task, though. And it may not be the entire answer. Officials at ACEnet have given considerable thought to how small businesses like the Herbal Sage Tea Company can stand out and find customers in the vast sea that is the Internet. Once again, they believe the answer is tied, in part, to the idea of localism: often, they say, businesses should start by developing a network of local customers.

ACEnet has a lot of experience to support this conclusion. It was one of the participants in the Public Web Market (**www.civicnet.org/webmarket/**), an early experiment in e-commerce. The market was built on the premise that small businesses could attract attention by coming together in a large online market that collectively would offer consumers a wide range of products. The Public Web Market, which still exists, is credited with pioneering some valuable e-commerce tools. But except for a few lucky businesses, it was never commercially successful. ACEnet President Holley says the project lacked funds and never effectively marketed itself. But more important, she says, the diverse amalgam of businesses that participated – the market featured specialty food and crafts from North Carolina, New Mexico, and Hawaii as well as Ohio – was too varied to give the market a clear identity.

Today, ACEnet encourages businesses to look closer to home for their base markets. It publishes a "buy local" map on its website that shows residents of southeastern Ohio where they can purchase locally-made food products. Similarly, it helps Rural Action, another non-profit organization, operate an online farmer's market. Each week, Rural Action sends out a list of locally-produced goods to some 300 Athens-area residents who subscribe to its listserv. They can make orders online, and then pick up the

goods at ACEnet's offices each Wednesday.

In the early days of the Internet, an online e-commerce venture had to pursue a national audience because so few people were online, says Richard Civille, who built the Public Web Market. "Now, the level of penetration in rural communities is high enough that there's the potential to find a critical mass audience at the local level." Civille is executive director of the Center for Civic Networking, a non-profit organization based in Friday Harbor, Washington.

While emphasizing the importance of building a local base, ACEnet isn't turning its back on regional, national, or even global markets. Among other things, it helps its business clients design products that will have appeal in the rapidly growing market for organic and gourmet foods. But once again, its marketing strategy emphasizes local themes. Working with a group assembled by the Ohio Arts Council that hopes to forge a stronger regional identity and promote tourism in Ohio hill country, ACEnet is exploring ways to build the region's reputation as a source of distinctive, high-quality, specialty foods. Eventually, Holley believes, the effort will culminate in development of a regional brand that local food producers can add to their labels to show they are from southeastern Ohio.

Paw-Paws and Celebrity Salsa

It will take time and a lot of hard work to build such a regional identity, but some of ACEnet's food producers are committed to the effort. Consider, for instance, Chris Chmiel. After studying botany at Ohio University in Athens in the early 1990s, Chmiel found himself with little more than a small house trailer, some land south of the city, and a fascination with the paw-paw. This nutritious fruit, described as tasting something like a combination of mango and banana, grows naturally in 25 states east of the Mississippi River, but it has never been developed into a commercial product. Chmiel conducted an Internet search, and found an aging expert on the paw-paw who lived in Michigan, who taught him techniques for grafting paw-paw trees. He went to ACEnet, which helped him develop first a frozen paw-paw product and then a line of paw-paw jam, simmering sauce, and chutney. With some advice from students in the COP program, he developed a website (**www.integrationacres.com**) to sell his products online. And all the while, he didn't forget his local roots: he organized an annual paw-paw festival in Albany to stir local interest in the fruit – and thus begin to link it more closely to the region's identity.

Chmiel is convinced the growing public appetite for natural food, environmentally-friendly farming, and authentic regional cui-

sine eventually will ensure his business a bright future. Of course, building a business in the age of e-commerce comes more easily for some than others. Jorma Kaukonen, who won fame as a guitarist with the Jefferson Airplane rock group in the 1960s, runs Fur Peace Ranch (**www.furpeaceranch.com**), a guitar camp for adults, not far from Chmiel's home in Meigs County, Ohio. When he launched a website this spring to publicize the ranch and sell music videos, tapes and souvenirs, success came virtually overnight.

"Almost immediately, we were getting 56,000 hits a month," says Roman Warmke, the ranch's marketing director. Warmke estimates 450 people are using the website every day, and many are buying products.

With such a strong marketing tool, Kaukonen and Warmke started looking for additional products to sell. They settled on the idea of "Legends Limited," a new line of specialty food products, each carrying the name of Kaukonen or one of his many famous friends from the world of music. The first three products – including "Jorma's Outlaw Salsa," "Jack Casady's Merciless Mustard" (named for a fellow musician who formed the rock group Hot Tuna with Kaukonen), and a third to be named for G.E. Smith, the former head of the Saturday Night Live band – will be rolled out this year with a rush of publicity (and perhaps an inaugural concert).

Warmke expects to make all sales initially via the Internet, bypassing the often arduous struggle that lesser known food producers must mount to find food distributors willing to promote their products and grocery stores willing to give them shelf space. "Sooner or later, the grocery stores will come to us," he predicts.

But even easy success in e-commerce needn't mean the death knell to local communities. After all, in Ohio and many other places, commit-

ment to community reflects more than an economic strategy. At its root lie fundamental values that transcend economics. When Kaukonen and Warmke discussed who would produce and bottle the Legends Limited, the choice was a no-brainer: Casa Nueva, the salsa-maker in nearby Athens got the job. Says Warmke: “Jorma really believes in helping the local economy.”

The Rural Coalition: Using the Internet to Preserve Family Farms

In 1993, a group of small farmers in Alabama and Mississippi loaded freshly harvested watermelons, peas, okra, tomatoes, cucumbers, beans, squash, cantaloupe, corn, peppers, and peaches onto a rented refrigeration truck, and headed north. The next day, they reached Chicago, where a community-based organization called No Dope helped them unload their goods at a farmers market. Soon, residents of a nearby public housing project, many of whom undoubtedly could trace their roots to southern farms, flooded into the market to buy the inexpensive and unusually fresh fruit and vegetables. The farmers, for their part, left two days later with substantially higher profits than they could have earned delivering their produce to wholesalers and food brokers closer to their farms.

This story helped inspire an ambitious project by the Rural Coalition, a Washington, D.C.-based alliance of community-based groups dedicated to helping small and minority farmers. While it has become almost a cliché to say the Internet is producing massive change in the economy and society, the Rural Coalition's project seeks to use the Internet to achieve the exact opposite goal – to preserve a way of life that increasingly seems part of our past. If small-scale farmers could regularly connect more directly with consumers and with each other, the coalition argues, they could meet a real market need and, at the same time, increase their own income. In the process, they would learn more about food markets, and they might have opportunities to exchange information with each other on how to produce and market their goods more efficiently.

With support from TOP, the Rural Coalition set out to put this idea into action by creating a

new kind of "SuperMarket." Existing only in cyberspace, this market will carry – or at least describe in a comprehensive database – the output of literally thousands of family farms stretching from Maine to California to Mexico. Buyers will be able to see at a glance what family farmers have to offer. And the farmers will gain insights into the workings of a marketplace that many find mysterious and less than benevolent.

A Diverse Constituency

The coalition that is building this new market represents a diverse group. Among its members are the Federation of Southern Cooperatives, which represents 25,000 low income rural families; the Intertribal Agricultural Council, a non-profit corporation whose member tribes control 79 percent of the land held in trust for Native Americans; the Mississippi Association of Cooperatives, which represents primarily African-American producer cooperatives; Homeworkers Organized for More Employment (HOME), a cooperative based in Maine that helps sell crafts and other goods often made by people in their own homes; the Washington Association of Minority Entrepreneurs, which helps Hispanics get into the agriculture business; and the Hmong American Community, which assists members of a Cambodian ethnic group develop business and farming skills.

In recent decades, the small farmers represented by these groups have seemed to be an endangered species. But with innovations like the SuperMarket to bring them into the digital age, they may just stage a comeback. At least they will have a better a chance to become players in a lucrative and rapidly changing food industry, where technology is playing a transformative role. "The Internet can be viewed as the 21st century version of rivers, which in the 18th century gave U.S. farmers access to markets," says Robert Tse, a market analyst for the U.S. Department of Agriculture Foreign Agricultural Service. "Small farmers should be able to jump

the existing distribution channel and reach socially responsible buyers in the retail or processor area that purchase organic or sustainable farmed products."

As Tse's remarks suggest, the Rural Coalition believes the SuperMarket will appeal to a new, but increasingly important, kind of consumer. "Our market is the socially responsible consumer," says Debra Livingtson, the Rural Coalition's director of development. "Market data show that almost 70 percent of the people who shop in grocery stores would purchase organic or sustainably produced goods if they had a choice." Others have made similar observations. In a 1999 study by Cone Roper, for instance, 84 percent of survey respondents said they had a positive image of companies that supported a cause the consumer cared about, and 65 percent said they would switch brands to one associated with a good cause, assuming they would have to make no sacrifice in price and quality.

But the Rural Coalition isn't pinning its hopes on altruism alone. A growing number of Americans are buying natural foods – those that are minimally processed and free of artificial ingredients, preservatives, and other non-naturally occurring chemicals – for health reasons. Sales of naturally produced goods grew from under $2 billion in 1980 to $25 billion in 1998, according to a study by the Appalachian Center for Economic Networks. Moreover, ACEnet reports, the pace of sales growth is accelerating. In 1990, natural product sales climbed 7 percent. As the decade progressed, those sales climbed to more than 20 percent a year in 1994-1997, and surged 79 percent in 1998. ACEnet has produced a guide called *Collaborative Cause Marketing Handbook for the Speciality Food Industry* to help small-scale producers figure out ways to tap into this market.

The Rural Coalition, for its part, plans a big marketing effort once its SuperMarket is fully operational. To appeal to socially conscious buyers, Luis Sierra, marketing coordinator for the Rural Development Center in Salinas, California, envisions a SuperMarket website that not only will list products but also will describe the farmers who grew them – complete with pictures and regional histories of the areas where the various products were raised. In addition, the coalition will try to link to like-minded organizations as well as to increasingly important natural foods buyers. A possible partner is the Chefs Collaborative, an organization that represents cooks who are always on the hunt for high-quality, locally produced goods.

Educating Farmers

Educating the public to the value of goods raised by small farms will be only part of the Rural Coalition's effort. It also will have to spend a substantial amount of time helping farmers understand their markets better than they currently do. Many people won't buy unwashed greens, for instance, but will pay more for greens that are packaged and ready to eat.

One of the main goals of the SuperMarket project is to teach farmers about such consumer preferences. “This is going to give farmers the information they need to decide what they need to be growing,” says Rebecca Bond, manager of the project. “Instead of guessing, they are going to see how the market is moving. It will show them what is being purchased and when, what variety is being demanded, and what prices are. We think this will show our non-organic farmers how they can get higher prices by producing organic goods.”

Nevertheless, the farmers and farm cooperatives represented by the Rural Coalition will have to come a long way to start using their digital tools. “They need everything from how to use a mouse to understanding what the web is about, and why it makes sense to invest time, money, energy and resources to learn any of this stuff,” says Richard Civille, executive director of the Center for Civic Networking. The Rural Coalition began by training members in computer and Internet basics.

But the centerpiece of its project will be the massive database showing what coalition members produce. When fully developed, users will be able to use the SuperMarket website to find out in advance what various farmers expect to produce. When the goods are harvested, the database will show exactly what is available and in what sizes and grades. The website also will show the prices of the various products, as well as various packaging options.

The website recently launched a retail section so that farm co-ops can use it to make direct sales (**www.supermarketcoop.com**). The advantages of using the web are abundantly clear to those who have tried it. HOME, the Maine cooperative, cut its costs sharply by switching to web-based advertising rather than printing and mailing catalogues – and it realized a 30 percent gain in sales of jams and jellies. Sales of Christmas wreaths also soared.

Farmer-to-Farmer Networking

In general, though, the Rural Coalition doesn’t believe the success of the SuperMarket will depend on direct sales. While the Internet may present good retail opportunities to some producers, especially those who make non-perishable, packaged products that can be shipped easily, many small farmers lack the tools needed to get fresh foods to distant markets, and many wholesale buyers still want to see their produce before buying it.

The SuperMarket can benefit small farmers in countless other ways, though. Among other things, it can enable them to form partnerships that could lead to efficiencies currently available only to large-scale farming operations. Food buyers often buy seed for large farmers, for instance, but small farmers don't get such help; by banding together, small farmers in the Rural Coalition might gain enough clout to win similar treatment. Similarly, small farmers might be able to lock in sales with groups like the Chefs Collaborative in advance. "It may be that specialty buyers will be able to make arrangements with our farmers before the seeds go in the ground," notes Bond.

Joint marketing through the SuperMarket also could enable farmers in different parts of the country to increase the value of each other's goods. For instance, producers in the southern U.S. and Mexico could jointly market tomatoes, effectively extending their growing season; when tomatoes are no longer available in the U.S., buyers still could obtain them from Mexican producers – an opportunity that would appeal to many buyers looking for a steady supply.

Rural Coalition members say they have only begun to explore the possibilities for such collaboration. Father Randy Elridge, director of the Maine cooperative HOME, says he has discussed the idea of working cooperatively with a group of farm workers in Maine. Originally, Father Elridge sought out the farm workers as a possible market for jams, jellies, and crafts produced by members of his cooperative. But the farm workers were equally interested in using the SuperMarket to learn about job possibilities up north. With the network, the farm workers could learn exactly when goods are ready to produce, how much work there will be, what the growers would pay, whether the growers seeking workers are reliable, whether transportation to the job would be provided, and what medical and educational facilities might be available on the job. That could save them a lot of wasted travel to jobs that don't work out.

To Michael Drews, a consultant who developed the SuperMarket database, such discussions are not surprising. "There is no end to type of cooperation you can have when you all have the same database," says Drews. "This project is going to have ramifications that are totally unforeseen. People will devise uses we never thought of."

Small Business from A to Z

Running a small business has got to be one of the most difficult jobs in the world. Unlike big corporations, which have entire departments to handle various functions such as accounting, marketing, long-range planning and legal affairs, small businesses typically must rely on a handful of utility infielders – or, in the case of sole proprietorships, a single jack-of-all trades – to stay on top of all these matters.

The West Virginia High Technology Consortium Foundation (**www.wvnet.edu/~equalnet**), a 1997 TOP grantee, has created an online database to help small businesses with the many challenges they face. The site includes links to numerous websites offering information on everything from accounting to international trade. With a click of the mouse, businesses can call up information on anything from accounting to marketing, or from economics to legal issues.

Among other things, users can find websites that offer financial planning worksheets or databases on a wide range of sources of capital. They can connect to business-related information services or gather marketing tips, or they can join shared email lists. Companies interested in plunging into foreign markets can find interactive forums that explore the ins and outs of exporting goods to countries from Mexico to India. And they can collect accounting software and tax tips, link up with government agencies or find lawyers who can address small business legal issues.

Many of the links are to text based sites, but users also can view and listen to multimedia materials online with streaming software. For any small business, it's a resource worth looking into.

V. Conclusion: Technology Is a Human Product

It is often assumed that we are shaped by technology. But the fact is that technology is a human product. Our own values, which often predate technological innovations, are key factors in determining what kind of technology we develop and how we use it.

In this report, we have seen how communities all across America are seeking to ensure that powerful new information technologies strengthen, not weaken, the bonds between neighbors in rural areas, towns and city neighborhoods. From Indian country to inner-city neighborhoods, leaders are determined to make sure that local people – not remote agencies – have the technological tools to shape their own destiny. They have made good progress, and the gains of the future promise to be even more impressive as newer technologies make sophisticated information tools like the neighborhood survey and Geographic Information Systems ever more accessible and useful.

While all of the projects described here involve new technology, sponsors of these projects share a belief that technology is not an end in itself. The real goal, articulated by virtually ever person described in this report, is to build relationships between people. These relationships, which make collaborative effort possible, are the fabric of communities. The many partners involved in the effort, from universities and federal agencies down to grassroots organizations, all share a commitment to seeing this fabric grow stronger.

With this end in mind, the innovators working on projects discussed here urge communities to start by assessing their non-technological needs, and only then to consider how technology can help them achieve their goals. Similarly, they stress the

importance of developing human skills in tandem with deploying new technologies; as Indiana University's David Bodenhamer so eloquently explained it, helping individuals develop the analytical tools to understand what information they need, and to discern what the data they collect means, is at least as important as giving them the tools to gather it in the first place. Finally, leaders of the projects described here share a commitment to putting these tools into the hands of grassroots organizations and individuals.

Although the outlook is promising, these projects are, for the most part, still in their early stages. Only time will tell whether they flourish or disappear. But we can take hope from the fact that they reflect an abiding American commitment to local communities. With such tradition and dedication behind them, they have a very good chance of succeeding.

Appendix: Projects Featured in this Report

Intertribal GIS Council, Inc.
Tribal Non-profit Board of Directors
Start-End Date: October 1, 1998 – September 30, 2000
Total Project Cost: $230,134
Federal Share: $113,804

Contact: **Mr. William Northover**
29 Southeast Court, Suite 215
P.O. Box 1937
Pendleton, OR 97801
(541) 966-9097
igs@itgisc.org
www.itgisc.org

University of California at Los Angeles
School of Public Policy and Social Research
Advanced Policy Institute
Start-End Date: October 1, 1998 – September 30, 2001
Total Project Cost: $1,030,542
Federal Share: $500,000

Contact: **Neal Richman, PhD**
3250 Public Policy Building
Box 951656
Los Angeles, CA 90095
(310) 825-0577
richman@sppsr.ucla.edu
nkla.sppsr.ucla.edu/

South George Street Community Partnership Inc.
Start-End Date: October 1, 1997 – June 30, 2000
Total Project Cost: $637,188
Federal Share: $24,996

Contact: **Ms. Heather Wisdom**
506 S. George Street
York, PA 17403
(717)-854-8742
hwisnom@yorkcan.org
www.yorkcan.org

Mr. Armand Magnelli, Program Director
The Enterprise Foundation
10227 Wincopin Circle, Suite 500
Columbia, MD 21044
(410) 772-2460
amagnelli@enterprisefoundation.org

Indiana University
Start-End Date: October 1, 1999 – September 30, 2002
Total Project Cost: $1,067,487
Federal Share: $475,000

Contact: **Mr. David J. Bodenhamer**
The Polis Center
1200 Waterway Boulevard
Indianapolis, IN 46202
(317) 274-2455
intu100@iupui.edu
www.savi.org

North Carolina Justice and Community Development Center
NCexChange
Start-End Date: October 1, 1996 – May 31, 1999
Total Project Cost: $1,086,887
Federal Share: $543,443

Contact: **Ms. Ruby Sinreich**
PO Box 28068, 224 South Dawson Street
Raleigh, NC 27611-8068
(919) 856-2162
ruby@ncexchange.org
www.ncexchange.org

Oakland Citizen's Committee for Urban Renewal
Community Information Service, Inc.
Start-End Date: October 1, 1997 – March 31, 2000
Total Project Cost: $702,669
Federal Share: $351,018

Contact: **Mr. David Geilhufe**
7200 Bancroft Avenue, Suite 209
Eastmont Town Center
Oakland, CA 94605
(510) 382-0555
david@eastmont.net
www.eastmont.net

Land-of-Sky Regional Council
Mountain Area Information Network (MAIN)
Start-End Date: October 15, 1995 – November 15, 1998
Total Project Cost: $3,118,821
Federal Share: $800,000

Contact: **Mr. Wally Bowen**
34 Wall Street, Suite 407
Asheville, NC 28801
(828) 255-0182
wallyb@mainsrv.main.nc.us
www.main.nc.us

Urban Strategies Council
National Community Building Network
Start-End Date: October 15, 1994 – December 31, 1996
Total Project Cost: $200,000
Federal Share: $100,000

Contact: **Mr. Ed Ferran**
672 13th Street
Oakland, CA 94612
(510) 893-2404
www.urbanstrategies.org

Appalachian Center for Economic Networks
Start-End Date: October 1, 1998 – September 30, 2000
Total Project Cost: $675,512
Federal Share: $300,000

Contact: **Ms. June Holley**
94 North Columbus Road
Athens, OH 45701
(740) 592-3854
juneh@acenetworks.org
www.acenetworks.org

The Rural Coalition
Start-End Date: October 1, 1998 – September 30, 2000
Total Project Cost: $883,391
Federal Share: $438,954

Contact: **Ms. Lorette Picciano**
1411 K Street, N.W.
Suite 901
Washington, DC 20005
(202) 628-7160
ruralco@aol.com
www.ruralco.org

WVHTC Foundation
Start-End Date: October 1, 1997 – September 30, 1999
Total Project Cost: $1,411,587
Federal Share: $475,000

Contact: **Ms. Lydotta Taylor**
1000 Technology Drive
Suite 1000
Fairmont, WV 26554
(304) 366-2577
lmtaylor@wvhtf.org
www.wvnet.edu/~equalnet/index.html