TECHNOLOGY CONVERGENCE AND SOCIAL WORK: WHEN CASE MANAGEMENT MEETS GEOGRAPHIC INFORMATION

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Abstract: *Two information management technologies, case management systems and geographic information systems may merge. This will foster better service planning and delivery to people in need. This may also result in continued agency mergers and mission revisions.*

Keywords: services, planning, geographic information system, case management system, convergence, future

INTRODUCTION

Fifteen years ago, David Macarov (1991) wrote a courageous book predicting future trends in social work practice. In it, he provided speculative forecasts about how technology would influence and direct social work practice. Macarov suggested that the uses of computers for research, agency management, case management, policy planning , and direct services to clients would increase, resulting in time saving and increased job effectiveness. Increased worker surveillance, shifting power relationships between and within agencies, recording and records practices, and practice issues such as confidentiality concerns might also result. Macarov's forecasts have been remarkably accurate. Technology is indeed shaping the many faces of practice. Computers are now common fixtures on worker's desks. Case management systems (CMS) are proliferating and supplanting paper records. Geographic Information Systems (GIS) are beginning to emerge as assists for practice (Vernon, 2003). The web is being used more and more to retrieve and circulate information (Vernon and Lynch, 2000).

Let's explore how two types of information management systems may merge within the next decade. Specifically, case management systems and geographic information systems may evolve, converge, and become pivotal in how social service organizations operate.

TWO EMERGING TECHNOLOGIES

One of the most important technologies to emerge within the past decade has been case management systems. These programs – there are many – automate data entry and tasks and compile case record information throughout the agency. They have become common within the industry. This makes service provision, tracking, billing and evaluation *within the agency* far easier than in times past. Case histories and records, once entered, can help keep track of what has been done and what yet needs to be accomplished. At the organizational level, CMS can produce aggregate summaries that are extremely useful for personnel evaluation, service planning, reports to funders, and many other managerial tasks.

Yet at this time, CMS systems are idiosyncratic and unique to each agency. Some have been custom built and nursed along for decades. Others are proprietary, and written in

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"closed code" so they cannot be modified by the end user. Still others are generic and "out of the box". Different computing platforms abound. Some still run on DOS, others on Unix, Linux, Windows, MacOS, and heaven only knows what else. Moreover, the investment in a CMS system is considerable. In addition to purchasing the software the agency must build the technology infrastructure within the organization and train personnel to use it. As a result, the industry has many agencies that have invested in "legacy" systems that vary considerably, and agency directors are unlikely to reinvest in new systems when the older ones work.

These CMS systems cannot communicate with each other. While legacy systems have been hard-won through extensive investments, these hold little collaboration and integration abilities *between agencies.* As a result, coordination of services between agencies cannot be facilitated by most case information management systems. "Wraparound" interventions are not supported. Clients must go through the same vetting process for every new agency they must access. They must tell their stories again and again in order to be considered for services, a "revolving door" experience that is demeaning and discouraging. This contributes to the often fragmentary, frustrating and spotty nature of service delivery to the people who need them the most. Thus, while services to clients *within* the agency may be well managed with good oversight, a repetitive, disjointed and disappointing maze awaits both providers and consumers when efforts to coordinate services between agencies are attempted. Frontline workers often provide what is readily available as opposed to what is needed. Opportunities for effective interventions are lost because the constellation of services and eligibility requirements within the community remain opaque to clients, workers and providers.

Enter the web. The idea of making CMS compatible across agencies is beginning to emerge within the industry (Kunkel and Yowell, 2001). While incompatible systems cannot readily communicate with one another owing to major platform, age and technical differences, almost all can be connected to the Internet. If one can program the agency's CMS system to access the web through what are termed "last mile programming efforts, then the potential for communication between agencies becomes substantially enhanced.

Pioneering efforts to accomplish this have been underway in Indiana for about five years, culminating in the Central Indiana Community Network (CICN).[1] Developed by Bitwise Solutions, Inc., this system is similar to historic urban community prototypes described by Hile and others (1997) but more complex by an order of magnitude. Similar to post-TANF welfare-to-work computer support systems (La Prad and Sand, 1997) the network provides the ability to collect, update, collaborate, and share social service and workforce development data in a secure environment that is accessed through a common, easy to use, world wide web-style user interface. The CICN project leverages the best of today's web browser-based technology. Moreover, the CICN system is scalable, meaning that tiny agencies can participate just as easily as huge service organizations. A basic CMS package is included for agencies that do not have them. Its interface can be easily mastered within a few hours, making the employee training investment modest. Finally, the CICN system has an "open architecture."

CICN promises unified inter-agency consumer service planning and delivery. Families in need will have electronically coordinated access to a comprehensive array of services:

emergency assistance, quality affordable child care, remedial education, health care, substance abuse treatment, basic social services, assessments, case management, legal counseling, mental health services, domestic violence assistance, housing assistance, work based employer centered job training, transportation assistance, job readiness placement and retention services, recreational and cultural activities, and nutrition programs. Nothing of this scale has ever been attempted in the human service infrastructure of Central Indiana, or anywhere else to this author's knowledge.

Of critical importance, once entered into a CICN networked agency, the clients need not endlessly repeat their stories. The revolving door of continually having to reapply to each new agency for help will finally open. Clients only need to be vetted once.

A second technology is also maturing: Geographic Information Systems (GIS).

GIS systems are becoming commonplace. We find them popping up in many places, such as when the cashier in a store asks us for our zipcode so the merchant can track its market or when we hit the web for driving directions to East Overshoe. GIS technology makes it possible to render precise geographical maps of myriad factors from multiple databases. In essence, GIS software makes it possible to graphically link *where things are* with *what things are* (ESRI, 2002). While many applications in urban planning have been developed over the last two decades, social workers are beginning to discover how powerful this medium can be for planning social services (Vernon, 2003). Enter SAVI.

The Social Assets and Vulnerabilities Indicators (SAVI) project, begun in 1994, is a vast web-delivered community information system for Central Indiana. It is one of the largest and most comprehensive systems of its type in the United States. It is publicly accessible through the web (http://www.savi.org) as well as though selected public libraries, service organizations, and government agencies. The system permits the pooling of data from participating public and private providers, and has the ability to create maps from several thousand social indicator variables. Sponsored by The Polis Center at Indiana University Purdue University Indianapolis (IUPUI), SAVI allows the visitor to specifically create and tailor GIS maps for very specialized purposes. The system can dramatically enable a visitor to discover if public transportation is available for pregnant Hispanic teens within a specific township towards locating a health clinic and hiring bilingual outreach workers. An evaluator or researcher wanting to establish baseline data for a county employment initiative can do so with relative ease. A funder can discern where, exactly, a new HIV clinic or WIC program should be located.

All chosen variables – one can enter as many as desired—can be layered and color-coded, making it possible to create very complex maps with multiple facets and dimensions that can be easily interpreted. Layers can be switched on and off or reordered. SAVI offers fast mapping, profiles for different communities within its eleven county area, comparison and trend abilities, and supports individualized user accounts. The sources for data in SAVI—there are about forty—are provided, making it possible to determine how reliable the GIS map and its resulting information may be. (Vernon, 2003) Moreover, SAVI also has an open architecture, and is capable of bringing in data via web services from servers that are external to the host system. (Sharon Kandris, SAVI Project Manager, personal communication, January 4, 2005).

Let us make the assumption that systems such as CICN and SAVI will become widely diffused and adopted in many communities over the next few years. This seems plausible: As the usefulness for these systems become apparent – better case resolution and better service planning – more and more communities will want to use them.

What may happen if these two different types of information management systems merge? Given that on the horizon we have the ability for agencies to pool client information through programs such as CICN and also the ability to graphically trace emerging trends and characteristics for populations at risk through programs such as SAVI, a beguiling possibility emerges: What if these two information technologies converge? This seems likely in the near future: Open computing architectures foster convergence.

CONVERGENCE

Both SAVI and CICN have open architectures. The great advantage to this is that anyone can design programs that can be relatively easily combined together, resulting in technological convergence into a hybrid. Technology convergence has been with us since Paleolithic hunters learned to haft stone points onto wooden sticks. It is still with us as anyone who owns a combination cell phone – PDA-camera-MP3 player can attest. In computing, architectures are often intentionally designed for convergence (Audin, 2004).

Why should case management and geographic information systems converge in the first place? Several factors may drive these two technologies into a single hybrid. While CMS systems promise immediate benefits to workers and consumers, the ability to generate service utilization reports is a valuable planning tool for agency administrators. A GIS-enhanced ability will allow leaders to gain a far more fine-grained and exquisitely detailed understanding of service needs that will be invaluable for planning service delivery.

This potential will not be lost on funders. Both public funders such as states and third-party payers value efficiency in cost-benefit planning. A merged community-level CMS-GIS ability will make fiscal decisions far easier than the current state of the art. Economically, the ability to deliver comprehensive wrap around services will become cheaper. The advantages of potential savings and need for smaller investments in social services will certainly be an incentive to develop and adopt community-wide CMS-GIS systems. As a prediction, state legislatures may clamor for merged systems in order to maximize service allocations. Insurance firms, given rising health care costs, will certainly be interested in maximizing services in a more efficient manor. In short, funders will drive convergence.

A second, subtler factor may also drive CMS-GIS convergence: Evidence-based practice. This movement has been ongoing for several years and we are beginning to see it become prominent in social work practice and education (Cournoyer, 2004; Gambrill, 1999; Howard., McMillen, and Pollio, 2003). Presuming the success of this paradigm, current and future agency leaders will want to have evidence-based information to ground their decisions. Funders and managers will be able to discretely analyze accurate service delivery and geographic patters with ease. They may come to rely on CMS-GIS systems as the authoritative source for informed decision-making. A combined CMS-GIS system will provide evidence.

A third factor is risk management. Many sectors within the social services are influ-

enced by litigation that arises from malpractice problems and events. The incorporation of technology into practice brings a new dimension. The development process for the CICN project is a case in point. The project's steering committee lost one full year of time because of the need to resolve how the system could be made HIPAA compliant. Distance-based interventions across state lines as well raise liability issues concerning licensure and liability. At present, the National Association of Social Workers and Association of Social Work Boards are developing guidelines and practice standards for technology.[2] A CMS-GIS system offers demonstrable accountability. Worker actions, client outcomes, and community demographics, when combined, will yield risk-perspectives that make risk management planning easier for both the service and insurance industries.

While other factors may certainly enable convergence, the political economics, educational initiatives, and liability concerns may force the convergence of these two types of information systems.

WHAT MAY RESULT?

Consider what the resulting industry may look like. All participating agencies will now share common databases that clearly and easily map service delivery and needs. Funders will have the ability to readily discern and evaluate the merits of grants and requests. Administrators, socialized into requiring evidence, will have the ability to provide it. Liability issues should become more easily resolved.

I think that two trends will emerge: Greater coherence in agency missions and mergers between agencies. If the dominant agencies in an area—those with the capital to adopt a community-wide CMS-GIS—are all sharing the same data, then the discrete mission of each one will become more publicly visible. The enhancement of service coordination will make mission salient: Agencies will want to revise missions to better conform to community characteristics and needs because these will become better understood. Collaterally, smaller agencies that do not participate may have to conform and revise missions as well in order to cooperatively contract with the better-resourced agencies.

Coupled with this will be more mergers between agencies. A CMS-GIS system will readily uncover service duplications in the community, perhaps with clarity on an order of magnitude more that what is presently possible. Agencies that are providing similar, compatible services will find that merging forces may be fiscally more advantageous. This is nothing new: Agencies have been doing this for some time because of dwindling human services funds. Community-level CMS-GIS systems will make mergers more feasible because they will provide grounded data that will facilitate merger consideration.

At the risk of being wrong, I predict that within five to ten years, networks of agencies will be sharing client information that is coupled with localized and highly sophisticated geographic information. This converged and synthesized hybrid information technology will yield extremely powerful tools for helping people in a far more efficient and fiscally responsible ways. I hope I am at least as accurate as David Macarov was.

Footnotes:

1. Information about the CICN project and a slide demonstration if the system is available at http://www.cicn.org. The writer has been a member of the Steering Committee for the CICN project since 2000, and is the principle investigator for the project's evaluation.
2. The writer is a member of this taskforce. The resulting standards should become available in late 2005.

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