



**BETTER MANAGING THE DELIVERY OF SERVICES AND SUPPORTS TO
PEOPLE WITH DEVELOPMENTAL DISABILITIES
USING INFORMATION TECHNOLOGY**

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The Use of Information Technology (IT) is a must for Developmental Disabilities (DD) Agencies

Current developments are sorely testing the ability of the administrators of our DD systems and service agencies to manage the delivery of services and supports efficiently. Consumers and families are spread throughout our communities presenting system access, quality monitoring and support coordination challenges. The move from program-driven processes to individually-driven planning, budgeting, and procurement processes is exponentially increasing the number of plans, budgets, contracts, and related tasks to be managed. The numbers of persons states must serve is increasing significantly as an outgrowth of high demand stemming from demographic factors (e.g., the growing number of individuals who live with aging caregivers), wait-list reduction initiatives, and the rush of “waiting list” lawsuits being filed in states across the country. The Health Insurance Portability and Accountability Act (HIPAA), passed by Congress in 1996, requires agencies receiving Medicaid, Medicare or Private Insurance to comply with national standards governing the handling and transmission of electronic billing and records by October, 2002. These standards will demand substantial improvements in the information systems of most DD agencies.

Information Technology To-date

For a number of years now, DD agencies have been taking advantage of low-cost, off-the-shelf packages coupled with the declining costs of personal computers (PCs) to improve operations. Every agency has some type of accounting software. Most have some form of word processing software (Microsoft Word, Word Perfect), database software (Dbase, Access), and Spreadsheet software (Excel and Lotus) used for clerical, data management, and data analysis tasks respectively. Service agencies may also have more specialized packages for fund raising, billing, human resources, consumer management, and the like. State and local administrative agencies have developed a variety of reporting and analysis systems using spreadsheet and database packages.

While these software packages have helped improve the operations of administrative and service agencies alike, the software and personal computer (PC)-based systems have definite limitations. The software is **not integrated**. The software applications don't “talk to one another.” The same data entered in one system must be entered in others, and when the data changes in one system, it may well not change in the others. In other words time is wasted entering data multiple times, and data grows more inaccurate and inconsistent with time.

The software is **inflexible**. Data fields, screens and reports are largely pre-defined. Where agencies have uncommon data needs, customization is required. This can push the cost of some systems beyond the reach of most agencies.

The PC-based systems are **expensive to maintain**. The PCs are often scattered in different agency locations. They may be networked to share printers and other devices, share files and share an internet connection. In addition, the hardware may be of different makes and house different software. All add to the time and effort required to maintain the system. As agencies continue to grow their systems, the work and expense involved troubleshooting system problems and installing software upgrades on these geographically-dispersed machines can become prohibitively expensive.

The cost of data capture and cleaning is high. The typical pattern in service agencies is to first record information on paper, periodically transmit the paper to a central office, and then key

selected information into specialized software or into the off-the-shelf database management, spreadsheet, word or other application software used to generate reports. Trained administrative specialists are employed centrally to do the data checking and cleaning on entry. Sometimes this pattern is due to the absence of PCs or input devices in the field. Sometimes it's due to the absence of software with the built-in editing capacity needed to assure the integrity of data entered; still other times, to the fact that the data making-up particular reports comes from a number of non-integrated computer databases. Clearly, it would be more efficient were information entered only once by the responsible party.

Access is limited. User access to electronic records and other information in a system is oftentimes limited by the availability of PCs, terminals, or other devices by which staff and others in the field can connect. Agencies can't afford the software, hardware, training, and maintenance involved in connecting its scattered staff and locations. The demand for broader access is inevitable. Systems will be expected to address not only the internal demands of agency management and staff, but the many demands associated with agency activities and interests that extend beyond its walls. Among them, the demands of consumers and families to review their electronic records as well as information on service agency performance in the interest of informed choice, the need to coordinate and share information with other agencies and individuals involved in serving an individual, the need to obtain Medicaid eligibility information, service authorizations and to bill for services electronically. There is also the agency's need to order, pay, and account for expenditures for agency goods and services—bank--electronically, the desire of oversight agencies to perform “desk” audits of an agency's client records and financial accounts without having to travel on-site, and the need to distribute information of interest to the broader DD community electronically.

Functionality is limited. State and area-wide systems, even the newest systems, tend to be long on reporting and financial management capabilities and short on much of the time-saving, front-line functionality needed by DD administrative and service agencies. Examples of practical functionality include: mailing list management, scheduling, management of facility and vehicle maintenance, fund raising, individual planning/budgeting, billing, work flow management, the automatic generation of form letters, reminders, etc. triggered by date or events.

Information Technology Today

Information systems haven't been as integrated, flexible, functional, user-friendly, and efficient to operate and maintain as they might be. However, the systems coming out today are greatly improved in every one of these respects. Every one of these limitations stand to be ameliorated, even erased by key developments in IT: **Enterprise Systems, Input / Output Devices, Fourth Generation Databases, Internet-based Software, and Application Service providers (ASPs).**

Enterprise systems address the problems of system fragmentation and limited functionality. They are a combination of database management software (DBMS) and application software. They are organization-wide, integrated systems with considerable industry-specific or agency-specific functionality. These systems might be built using enterprise resource planning (ERP) software or by integrating a complement of database and application software packages. The original ERP software (e.g. SAP, PeopleSoft) was built for manufacturing enterprise. Enterprise software is now available in a number of industries. Enterprise software coming closest to fitting the needs of DD agencies is that in the health and behavioral health industries, e.g. MediTech and CMHC. However, the price of this software is still out of the reach of most publicly-funded DD agencies, and the functionality of especial value to DD agencies is wanting.

As enterprise systems grow into the DD arena and to include the functionality needed to better serve persons with DD, they will make sense for more and more DD agencies. Depending on the size and nature of an agency, such functionality might include activities such as client management, billing and claims management, mailing list management, staff and client scheduling, fund raising, payroll, human resources, vehicle and equipment maintenance, job shop operation, work flow management, the automatic generation of administrative actions (e.g. form letters and reminders) triggered by dates or events, and performance reporting. Thanks to the open-architecture of the fourth-generation software today, enterprise systems can already be built using a number of different pieces of software: for example, ABRA (human resources management), Great Plains (financial management), Danic Tools (client management), and building bridges to port data from one to another. Over time, given the ongoing consolidation in the software industry, such systems are likely to become the enterprise systems of tomorrow.

Input/Output (I/O) devices address the problems of data capture and access. There are now a number of more expedient means of entering data into the computer than keying. Users can input data from most anywhere; home, office, and on the road. Users can speak into the computer (or portable microphone) in a conversational manner using voice recognition software, have their words register in whatever software they choose, and expect the computer to comprehend nearly all of it. Service and support staff can record their progress notes in less time than it would take them to key them in or write them out.

Documents can be inexpensively scanned in one location and read in another. The image might be attached to a consumer's electronic record for easy reference. This can save the staff travel time now involved in porting signed authorizations and proofs from place to place.

Field staff might carry hand-held devices such as personal digital assistants (PDAs), mobile phones or combinations thereof (e.g. communicating Palm Pilots) to write, key, or call in information needed by central office for program management and billing, or to update their schedules and access selected consumer information. The information transfer between PDA and computer may be by wire, even wireless media. However, because of their limited memories, cramped display space, and slow input methods, hand-held devices are still limited in use. Because of the slow data transfer rates possible, and high price charged to access wireless devices, practical uses for wireless devices are hard to find.

Fourth Generation Databases address the problems of inflexibility, ease-of-use, and maintenance. Distributed relational databases have become increasingly sophisticated, easier to setup and maintain, and easier to integrate with application software to produce enterprise solutions. The most popular systems for very large organizations are Oracle and Informix; for mid-size and smaller organizations—the vast majority of DD agencies--Microsoft's SQL Server. Not long ago, setting up an Oracle or SQL database would take days and days as the system administrator would have to individually set and test upwards of fifty parameter settings adjusting as necessary to optimize performance. Today, the database might be setup in a day, maybe two, with the system setting the parameters automatically and dynamically to optimize system performance.

At the same time, the newer client/server application software built to use these databases, is written in fourth generation language (4GL), object-oriented code, with easy-to-use, icon-based, point-and-click screens--graphical user interface (GUI). The 4GL allow developers to fashion screens and databases that are extremely flexible. There are already a number of packages that allow agencies themselves to customize the database to meet their peculiar and ever-changing needs. The user is less dependent on the Vendor to make these changes, and can customize

without the usual risk of losing vendor support. Some of this software is “architected” to fit the needs of a variety of industries and agencies, e.g. Intersystems’ Cache. Other software is architected to for particular industries, (e.g. Danic Tools: health and human services).

Internet-based systems address the problems of system access and maintenance. Internet-based systems are the wave of the future. They use a standard language which allows computers of different makes and models to communicate with one another and to share text, graphics, images, sounds, and video information. These systems can run as virtually a private network over the internet with encryption and firewalls¹ providing the necessary security. The application (software and database) resides wholly or largely on the server and not on the PCs. However, anyone, anywhere with a PC browser, internet connection, and proper authority can use the system. The user-interface with internet-based applications is simple and the training, simplified.

Internet-based systems may be web-based or web-enabled. True web-based packages--applications written in open web-based code from the ground-up--are new and still limited in number. Their singular advantage is that users can have full use of the system through any browser. Another advantage is that both software and database reside wholly on the server, the headaches and costs associated with the installation, upgrading and support of software on the widely-distributed PCs and the many system malfunctions caused by erring users are avoided. The downside: web-based systems lack the flexibility and functionality of the 4GL systems.

Web-enabled systems are typically 4GL systems that have added a web-enabled user interface. The interface allows users much more control of the system than could be managed through a typical browser. All or part of the software resides on user PCs; the common database resides on the central server and is accessed over the internet via the user interface. In some cases, users may have full use of the system by using a more robust cross-application browser licensed by Citrix², or application-specific browser licensed by Microsoft, Lotus, Oracle or other vendor.

Web-based developers are busy adding functionality to their systems and configuring them for the user flexibility needed to compete against their web-enabled counterparts. The web-enabled developers are busy configuring their systems to reside entirely on the server in order to neutralize the access and maintenance advantages of their web-based counterparts³. Which will prevail? Because agency’s look for functionality first, because the web-enabled packages enjoy an established user and associated revenue base, and because the access advantage of the web-based packages has been effectively neutralized by the high cost and limited availability of the high-bandwidth telecommunication lines necessary to support functionally-rich systems, my bet is on the web-enabled packages.

Application service providers address the problems of system maintenance. The development of web-based and web-enabled applications that can be delivered and supported via the internet is leading to the establishment of application service providers (ASPs). ASP offerings typically include the installation, operation, upgrades, and support of application software--all for a fixed

¹ Firewalls are software / hardware schemes designed to protect internet users against unauthorized access to, and compromise of their systems by “outsiders.”

² A stand-alone Citrix server is required in addition to any servers required for the application software.

³ Microsoft, by far the client / server software in widest use, is going even further to web-enable its software. It is spending \$4.4 billion over the next year to develop and begin to introduce its XML-coded, web-based windows system, NET, next year. NET is being designed to web-enable programs written in non-web-based languages, e.g. C, visual basic, COBOL. Like Java, NET will allow programs to run on many different kinds of computers.

monthly fee. This can represent significant benefit and savings for agencies. Agencies avoid the hassles and cost of themselves recruiting and retaining technical staff, avoid the risk associated with maintaining and owning malfunctioning, obsolete hardware and software, and avoid having to manage the unforeseen crises that can arise.

At this time, the well-established ASPs are those offering function-specific applications across a number of industries (e.g. accounting, payroll), and those catering to the e-commerce industry. There are a few ASPs serving the human service and even the DD industries, but they are quite limited in scope, e.g. providing time tracking, billing or outcome measurement. Industry-specific (vertical) ASPs offering DD enterprise solutions will be arriving in the developmental disabilities arena, but not tomorrow. There are a number of reasons. First and foremost, the industry lacks the established web-based or web-enabled enterprise software that the ASPs must have. A handful of states have commissioned the development of web-enabled reporting and billing systems, but these lack much of the “enterprise” functionality needed by organizations delivering and persons receiving services and supports. Second, most DD agencies alone can’t afford what ASPs must charge today to cover the high costs of web-based software, bandwidth (where it is even available), and reliable and secure internet connections. Still, much the same as Mr. Perot’s Electronic Data Systems (EDS) emerged as an application service provider hosting Medicaid information systems, expect to see private entities arise to host DD information systems providing the functionality sought by DD authorities, providers, consumers, and other system stakeholders. Many DD authorities will find this the most economically feasible and administratively manageable approach to system development and operation.

Summary

Agencies must make greater use of IT in order to serve and support persons with DD in keeping with today’s individualized, inclusive policies, and in the face of related and growing administrative demands and staffing constraints. Information technology today is much advanced over that available only a few years ago, and will continue to improve. Agencies that know or learn how to make effective use of it will benefit themselves and those they serve.