



**Auditor of State
Betty Montgomery**

HAMILTON COUNTY
BOARD OF MRDD
PERFORMANCE AUDIT

MAY 22, 2003



Auditor of State Betty Montgomery

To the Hamilton County Board of MR/DD and the citizens of Hamilton County:

In October of 2002, officials of the Hamilton County Board of MR/DD requested that the Auditor of State conduct a performance audit of information technology resources and operations. Following discussions with the Superintendent and Director of Operations, four areas were identified for review: planning and management, staffing and organization, hardware and networking, and software and systems integration. These components of technology augment the Board's ability to accomplish its mission of supporting people with disabilities and their families.

The Hamilton County Board of MR/DD has a relatively advanced technical environment that enhances the level of service provided to clients. The performance audit contains recommendations that, if implemented, could provide operational and business practice improvements. Some of these recommendations include expanding planning and communication activities, measuring the results of technology within the agency, increasing and reallocating staff, formalizing policies and procedures, and employing emerging technologies, such as commercial case management software and wireless networking utilities. While the recommendations contained within the performance audit are resources intended to assist in refining operations, Board officials are encouraged to assess overall operations and develop other recommendations independent of the performance audit.

This report has been provided to the Hamilton County Board of MR/DD and its contents discussed with appropriate officials and management. The Board has been encouraged to use the results of the performance audit as a resource in improving its overall technical and business operations and service delivery.

Additional copies of this report can be requested by calling the Clerk of the Bureau's office at (614) 466-2310 or toll free at (800) 282-0370. In addition, this performance audit can be accessed online through the Auditor of State of Ohio website at <http://www.auditor.state.oh.us/> by choosing the "On-Line Audit Search" option.

Sincerely,

A handwritten signature in cursive script that reads "Betty Montgomery".

BETTY MONTGOMERY
Auditor of State

May 22, 2003

Executive Summary

Project History

The Hamilton County Board of Mental Retardation and Developmental Disabilities (HCMRDD) engaged the Auditor of State's Office (AOS) in October 2002 to conduct a performance audit of its technology operations. HCMRDD has expressed an interest in reviewing its technology practices and future capacity needs with a focus on improving agency effectiveness through enhanced technical capabilities. This performance audit provides an independent assessment of HCMRDD's technology operations and service levels and provides recommendations for improving service delivery and tracking through increased and enhanced use of technical resources.

Overview of HCMRDD

The State of Ohio created county boards of mental retardation in 1967 through the passage of Senate Bill (SB) 169. In 1980, SB 160 expanded the scope of service of the county boards and added "developmental disabilities" to their title and responsibilities. HCMRDD provides services to approximately 10,000 individuals (and their families) living within Hamilton County.. Since 1974, when Hamilton County voters passed the first Mental Retardation Services Levy, the number of individuals served has increased more than 1000 percent. HCMRDD currently provides services in the following areas:

- **Early Intervention Services** identifies and provides service to infants and toddlers who are 0-2 years and may be at risk or delayed in development.
- **Early Childhood Services** provides individualized services for children ages 3-5 and their parents.
- **School Age Services** are designed for clients ages 6-22 who receive instruction in functional academics, vocational skills and practical skills for living in communities. Occupational, physical and speech therapy services are also provided.
- **Adult Services** provides support to individuals 16 years of age and older through work training and experience at HCMRDD's adult centers.
- **Residential Services** provide high quality residential options to individuals of all ages with mental retardation and other developmental disabilities.

In addition to managing and providing its own direct programs and services, HCMRDD also arranges contracts for services from more than 80 agencies including the Jewish Vocational Service and Goodwill Industries.

HCMRDD uses information technology to manage client records, agency funds, Medicaid billing and provider services. Compared to other boards of MR/DD, HCMRDD appears to have above average information technology resources. Also, HCMRDD has developed a strong working relationship with the Hamilton County Data Center which allows HCMRDD to use County technology resources and expertise.

HCMRDD uses an Oracle platform to support its client records database. The agency uses Microsoft office for standard office functions and Gatekeeper for Medicaid billing. However, HCMRDD has several other software packages that are not fully utilized. Finally, the agency maintains a large number of adaptive service software applications to allow its individual clients to use the agency's technology resources and develop individual care plans.

HCMRDD's Information Systems Department (ISD) is staffed with eight full time equivalent (FTE) employees, including an MIS manager. ISD has also had a consultant working on site for several months. HCMRDD has made solid and consistent efforts to improve its technological environment, but these efforts have had mixed success. While HCMRDD has many of the technical resources needed to make advancements, project success has been hindered by inadequate planning and communication. Improvements in planning and coordination will heighten HCMRDD's ability to use technology to reduce costs, increase responsiveness, and implement a greater range of field operations.

Conclusions and Key Recommendations

The following are the key recommendations of the performance audit:

- **HCMRDD should strive to better create and track management data. This includes measuring the performance of various functions of ISD and also implementing software programs that track and compile data consistent with HCMRDD's needs.**
- **HCMRDD should implement long-term planning activities for information technology initiatives. A technology steering committee should be appointed to develop and update a strategic technology plan and procedures for various technical activities, such as hardware replacement.**
- **HCMRDD should purchase a commercial service and financial management system from an external vendor to increase the efficiency and effectiveness of service delivery, improve internal decision-making processes and reduce costs.**

- **HCMRDD should consider increasing staff in ISD and restructuring the department. The new department should be headed by a Chief Information Officer (CIO) or Director of Technology and should have a focus of flexible service delivery and project management.**
- **HCMRDD should enhance training opportunities for technical and non-technical staff. Minor adjustments to the in-house training program could help HCMRDD ensure it is meeting the needs of its end users. The capabilities of ISD staff could be improved with additional professional development activities and opportunities, such as training, certification, and attending technology user group meetings.**
- **HCMRDD should develop policies and procedures for the procurement, tracking, and replacement of hardware. Minimum hardware specifications should guide decisions on replacement and ensure that only adequate technology is in place. A formal procurement policy will prevent the purchase or installation of technology that is incompatible with HCMRDD’s network and support system.**
- **HCMRDD should expand use of the intranet, Internet and email among staff. ISD and the technology steering committee should continuously seek ways to improve the network environment and communication capabilities at HCMRDD. Technical expansion and changes should be accompanied by appropriate technology use policies.**
- **HCMRDD should work to maintain its positive working relationships with external reporting entities, such as the Hamilton County Auditor and the Ohio Department of MRDD. As technology becomes available to streamline reporting requirements and procedures, HCMRDD should be proactive with these agencies in developing solutions to mitigate reporting inefficiencies.**
- **HCMRDD should explore uses of web-based applications and wireless networking technology. Enhancements in these areas could improve communication and reporting to internal and external parties, including clients, families, providers, and oversight or reporting entities.**

Objectives and Scope

AOS has designed this performance audit to evaluate internal technology operations at HCMRDD. Based on discussions with HCMRDD personnel, the following areas were identified to be assessed in the performance audit:

- **Planning and Management**, including a review of performance measurement and strategic planning activities.

- **Staffing and Organization**, including a review of staffing levels and mix, job descriptions and evaluations, and opportunities for training and certification.
- **Hardware and Networking**, including an assessment of personal and administrative hardware and network capabilities, as well as a review of procurement and asset management procedures.
- **Software and Systems Integration**, including an assessment of software adequacy and its appropriateness in relation to business and service needs.

Methodology

To complete this report, auditors gathered and assessed a significant amount of information pertaining to the selected audit areas, conducted interviews with various individuals associated with HCMRDD, and assessed available information from other agencies. The auditors also distributed a survey to 124 HCMRDD employees representing all departments and all levels of staff and received 74 responses, for an approximate response rate of 60 percent. The auditors also spent a significant amount of time gathering and reviewing other pertinent documents and information, such as best practices in MRDD administration and technology operations.

The performance audit process involved significant information sharing with management from HCMRDD, including preliminary drafts of findings and recommendations as they were developed. Furthermore, periodic status meetings were held throughout the engagement to inform HCMRDD of key issues impacting the selected areas, and present proposed recommendations to improve and enhance operations. HCMRDD management provided written comments on the various report sections, and those comments were taken into consideration in the reporting process.

The Auditor of State and staff express appreciation to the Hamilton County Board of Mental Retardation and Developmental Disabilities Superintendent and HCMRDD staff for their cooperation and assistance throughout the audit.

Planning and Management

Technology activities at HCMRDD are planned, implemented, and managed by the Information Systems Department (ISD). This section of the report examines the planning and management functions of ISD, as well as the overall management of technology at HCMRDD. Recommendations are made to improve the efficiency and effectiveness of HCMRDD's technical operations and to ensure the implementation of technical initiatives consistent with the service and business needs of the agency.

Technology planning provides agencies with a blueprint for future technology use and development. A strong planning element helps identify required resources, establishes timeframes for completion, and identified responsible parties. Planning, supported by agency management or a technology committee, can reduce costs and improve information technology service delivery. Similarly, technology management helps agencies ensure that information systems are integrated and adequately supported. While HCMRDD uses information technology to support a variety of functions, integration of software and better utilization of available functions could improve information technology use within the agency. Likewise, more coordinated planning and greater senior management involvement in the agency's technology plan would ensure implementation of appropriate systems in a timely manner.

Recommendations

- R1 HCMRDD should develop a method to obtain and analyze the results of internal performance. The ISD should, in conjunction with agency management and end users, develop performance measures to adequately capture its performance and help identify areas of strength and weakness. The results of performance measures should be used to develop goals and objectives for improving internal performance.**

HCMRDD does not currently have methods in place to determine the productivity of the ISD. HCMRDD's Quality Assurance Department conducts occasional surveys to assess the performance of various departments and the level of employee satisfaction with internal services. However, this data is not used to develop specific measures or goals for improving internal performance in all departments.

Performance measures are defined as a system of client-focused, quantifiable indicators that tell an organization if it is meeting its goals and objectives. These same measures form a basis for management to plan, budget, and structure programs and control results. Establishing performance measures can ensure that the ISD is meeting its own goals as well as those of the MRDD and its external clients. HCMRDD should be vigilant in developing, updating, assessing, and reporting performance measures for all facets of operation and should ensure that goals established for performance measurement are consistent with the agency's strategic plan.

Performance measures should be designed and implemented to reflect organizational goals and objectives. Knowledge Management (KM) is a strategic business process that enables and improves other critical business processes, focusing on factors affecting an agency's ability to achieve strategic objectives. The Government Performance and Results Act (GPRA) enacted in 1997 applied KM to program effectiveness in Federal agencies. GPRA requires agencies to develop strategic plans and performance metrics to link success in achieving strategic objectives to funding. This is consistent with the individual budgeting concept currently being piloted by HCMRDD.

Performance measures are also an important component of establishing trust and accountability. The implementation of a performance measurement system is an evolutionary experience in which measures will likely improve with experience. Initially, technology staff should focus on common indicators. According to the Department of Navy's Metric Guide to Knowledge Management Incentives, performance measures have several objectives:

- Make a business case for implementation;
- Guide and tune the implementation process by providing feedback;

- Provide a target or goal;
- Measure, retrospectively, the value of the initial investment decision and the lessons learned;
- Develop benchmarks for future comparisons and for others to use; and
- Facilitate learning from the effort.

Three primary classes of business objectives are used to characterize KM initiatives and to help design the proper mix of performance measures:

- **Program and Process Management:** This includes strategic organizational objectives such as leveraging best practices and improving program offerings. This component is designed to address issues such as ensuring consistency across the organization and proactively preventing duplication of effort.
- **Program Execution and Operations:** This includes objectives such as connecting people with experts, transferring expertise instantaneously, and getting the right operational knowledge to people in the field when they need it.
- **Personnel and Training:** This includes personnel and learning issues such as acquiring and retaining talent and improving quality of life for employees.

Each measure is designed to answer a different question. It is not always necessary to use all types of performance measures to determine if a business objective is being achieved. Good performance measures need to be specifically defined and identified. Clear explanations are necessary to indicate what is being measured, the source of the information, and how the value is calculated.

When developing a performance measurement system, it is important to select appropriate measures that will be of the most use to an agency. After a review of many high-performing organizations, the National Performance Review identified several key factors in designing and using performance measures. These factors include using a few focused measures aligned to strategic objectives, measuring critical characteristics of the business processes, and recognizing measures only as valuable tools and not the products of the agency.

The perspectives of the customer, department, organization, and individual in an enterprise are critical to its success and need to be incorporated into that success. The implication of this for KM metrics is critical – when thinking about metrics, it is important to identify who is likely to use the performance measurement information. Potential users include strategic decision makers, special project decision makers, funding and approval stakeholders, government agencies involved in approval or regulation, or customers. Measures should be in terms that are familiar to the stakeholder.

For this reason, several different metrics may need to be captured to meet an initiative. There is no single, correct set of measures for KM initiatives, and most KM initiatives will require a combination of measurement types and classes to effectively communicate with key stakeholders.

Measures applied to the ISD should focus on meeting the needs of the end users and maintaining continuity of services. Some common technology indicators that could be used include the following:

- Number and topic of help desk calls received during the reporting period;
- Percent of help desk calls resolved with certain time periods;
- Operating and maintenance expenditures per workstation;
- Percent of operating budget allocated to information technology;
- Percent of users who rate services of each of the systems as good or excellent rather than fair or poor;
- Amount of service downtime due to technology problems; and
- Employee satisfaction with available technical resources.

Responses received from surveys focused on the installation of new and up-to-date equipment (specifically at the schools), advanced training for computer users, implementation of computerized progress notes, the ability to pilot software before it is implemented agency-wide, additional knowledge of adaptive technologies, and additional database features. HCMRDD's ISD should use the initial survey results to help formulate appropriate performance measures.

R2 HCMRDD should develop an in-depth written strategic technology plan that addresses both short and long-term technology needs. The plan should be developed in conjunction with agency management, internal, and external users. The plan should include objectives, costs, deadlines, and responsible parties and should be reviewed and updated on an annual basis.

HCMRDD does not have a long-term strategic technology plan. Long term planning contributes to the organized and systematic development of goals and objectives and the identification of the necessary funding sources. Without a written strategic plan, efforts and funding may not be focused on projects offering the best return on investment in the long term. Available funding may be dissipated into small projects that do not yield the largest return on investment.

The Information Systems Audit and Control Association (ISACA) has partnered with the IT Governance Institute to issue *Control Objectives for Information and Related Technology* (COBIT), a set of management and auditing guidelines for information technology. According to COBIT, the plan should describe long-term objectives and

how technical staff, funding and resources will help achieve these long-term objectives. The plan should also be presented to management who must fully support the goals and objectives stated within the plan and ensure that adequate funding is provided. In addition, COBIT recommends the establishment of an annual review and revision process that will allow the strategic technology plan to evolve with internal and external changes. The strategic technology plan should be completely revised every three to five years and updated annually to revamp all pertinent information, since technology is a rapidly changing environment. Effective strategic planning establishes sound leadership with a staff focus as well as more effective process management to accomplish the goals outlined in the plan. The following basic steps should be taken to develop the plan:

- Identify and analyze the business environment that the strategic technology plan must support;
- Define key goals and objectives of HCMRDD and establish measurable success factors for those areas;
- Evaluate how existing hardware and software applications support the long-term goals and objectives of HCMRDD;
- Research significant industry trends for technology and government;
- Determine what technology is needed to help HCMRDD achieve its long-term goals and objectives;
- Identify user requirements for service-related and financial software applications, as well as e-mail and Internet software;
- Clarify internal training issues, such as basic computer skills development for all staff, and establish an internal process for scheduling more in-depth software training for particular staff members;
- Establish management reporting lines of communication with the Chief Information Officer (see **staffing and organization**) and the Superintendent; and
- Develop an implementation plan.

Technology planning can create a computing environment that facilitates more efficient use of staff time. The result of this process should be a step-by-step action plan detailing how HCMRDD expects to meet its long-term goals and objectives given the existing technical architecture. The planning process will also open lines of communication throughout the agency since technology affects the organization as a whole.

The following elements should be included in specific project action plans for technical initiatives:

- A timetable;
- Funding requirements and sources;
- Individuals responsible for implementation;

- Staff development requirements;
- A statement of expected benefits;
- Best practices to determine goals; and
- Benchmarks to determine progress in meeting stated goals.

The timetable should be realistic in estimating HCMRDD's commitment to the implementation of new technologies. A sound methodology will help HCMRDD implement high quality applications with less risk and at a lower cost. The plan, along with the budget, should also address the following issues:

- Upgrades and future replacements of computer equipment;
- Software needs;
- Implementation of new technologies;
- Increased communication with providers and individuals; and
- Staffing requirements.

Through improved planning effort, HCMRDD will be better able to manage its information technology resources and the implementation of new hardware and software. Several of the identified deficiencies could be corrected through increased planning.

R3 HCMRDD's senior management should appoint a planning or steering committee to oversee the initiatives of the ISD. The committee should be involved in planning and performance measurement efforts and should serve as the contact point for employee suggestions and ideas for improvement.

HCMRDD currently has an informal technology steering committee consisting of the MIS manager and representatives from some other departments within the agency. This committee has no formal power to change policies and procedures or to institute new initiatives. Surveys revealed that users do not know who to contact when they have a suggestion or idea for improvements.

A Technology Steering Committee (Committee) should play an integral role in technology decision-making within the agency. Committees are often used to regulate technology purchases for standardization and compatibility, formulate direction, serve as an advisory panel, reject or execute requests, and plan future technology initiatives. Committees also help department heads implement new policies and procedures and monitor projects from inception to completion. Finally, Technology Steering Committees prioritize projects based on available funding and the greatest return on investment.

The HCMRDD Technology Steering Committee could be expanded and used to develop, maintain, coordinate, and support cost-effective technology service delivery. According

to COBIT, committee membership should include representatives from all departments and all levels of management, as well as IT staff whose knowledge and technical proficiency is respected. A technologically proficient citizen, client or provider could bring different experiences and perspectives to the committee, and a representative from the Hamilton County Communications Department could help to ensure consistency with County networks and initiatives. Representatives from area businesses could expand the technical capabilities, knowledge and contact base. Businesses are frequently willing to visibly participate in the community to maintain contacts and goodwill. The committee should meet regularly, keep minutes to reflect the planning process, and report to senior management.

Initially, an outside consultant or facilitator may be needed if there are preconceived notions about the ISD. This will also allow for an objective party to facilitate positive communication and provide an avenue of change in the organizational culture of HCMRDD. Implementation of a strong, active Technology Steering Committee will help HCMRDD and its ISD to better manage current technology issues and better address future technology changes.

R4 HCMRDD should strive to improve communication between the ISD and technology end users and management. Current and new technologies should be used to improve communication between the ISD and internal and external customers.

Communication between the ISD and its technology end users within the agency is not effective or efficient. There are many instances where the ISD is not included in decisions regarding the design, process, implementation or products used when developing technology within the agency. In some cases, seeking input from ISD could have reduced costs or staff time. On the other hand, employee suggestions and ideas are not readily transmitted to the ISD and the ISD has limited decision making authority in the selection and implementation of information technology resources.

Agency-wide use of email and the intranet could provide a basis for improved communication procedures. Implementing technology policies and procedures also could increase the communication of requirements and expectations to the users (see the **hardware and networking** section). New technologies, such as web-enabling and wireless, could also be used to increase the communication between all users and the ISD via the Internet, email and web-based applications (see the **software and systems integration** section). Implementation of help desk software would allow users to have their problems logged into a network that can produce information that will better serve them in the areas of support and training.

The development of a Technology Steering Committee, as discussed in **R3**, could provide an outlet for all users to direct their technological comments, questions, and concerns. The addition of a Chief Information Officer (CIO; see **R6**) could provide the ISD direct representation at the director-level of the agency. Communications could then be filtered through a knowledgeable individual who could ensure that ideas were congruent with HCMRDD's overall goals and objectives and that the most efficient and effective technology was being used. Finally, having ISD representatives attend all meetings in which technology is an issue would provide users with the ability to streamline processes and hear about newly available technologies.

Improved communication between the ISD and other agency employees and departments would help ISD better plan for and address user concerns. Likewise, departments could benefit through using ISD resources to reduce the time and effort required to perform certain operations. Finally, increased communication between users and the ISD could improve the end user experience through increased support and improved ISD attention to end user needs.

- R5 HCMRDD should purchase a commercial case management and financial management system from an external vendor to increase the efficiency and effectiveness of administrative practices, to improve decision making processes and to improve service delivery. The ISD should terminate efforts to develop a system in-house and instead, rely on an external vendor to provide the software required by the agency.**

Based on interviews and a survey conducted by AOS, HCMRDD users are generally frustrated and dissatisfied with current case management and financial management applications. The applications for case management and financial management were developed in-house and are not easily extended, customized, or enhanced. Users also expressed frustration with the time it has taken to develop the in-house system and a lack of confidence in the future development of the Individual Data System (IDS).

Based on the gaps identified in the current system and the availability of commercial software systems that would address the Board's functional needs, purchasing an off-the-shelf system would enhance HCMRDD's operations upon implementation. However, prior to purchasing a system, HCMRDD would need to clearly identify managerial, functional, and technical requirements. These requirements, after thorough exploration, can then be used to form criteria to examine the functionality of the current system compared to that offered by commercially available products. The information compiled to date for the development of IDS could be extremely valuable in identifying functional requirements for a purchased system.

COBIT notes the importance of conducting a thorough analysis before acquiring or creating a new application or system. The analysis involves the following steps:

- Defining requirements;
- Identifying alternative sources;
- Studying technological and economic feasibility of the different options;
- Performing a risk analysis of each option;
- Preparing a cost/benefit analysis; and
- Making the final decision to build or buy.

One model for making the build versus buy comparison of two systems having the same functionality is provided by the Global Environmental Management Initiative. **Table 2-1** provides a model to compare issues as one step in the analysis to make the final build or buy decision.

Table 2-1: Build or Buy Comparison

| Issue | Build | Buy |
|---------------------------|---|---|
| Development Cost | 100% HCMRDD | Shared across organizations who purchase the system |
| Support Cost | 100% HCMRDD | Shared across organizations who purchase the system |
| Standards | Individually determined by the HCMRDD | Determined by developer and market |
| Unique features | Individually determined by the HCMRDD | Determined by developer and market |
| Human resources | Board must employ or buy skill to develop and maintain application | Managed by developer to meet requirements |
| Cost of technology | 100% HCMRDD | Shared across organizations who purchase the system |
| Risks | Project overruns, changing requirements, unable to hire or retain skilled personnel | Poor vendor support Obsolete products – failure to upgrade |

Source: Global Environmental Management Initiative

The decision making process needs input from a variety of staff. The National Center for Education Statistics recommends the involvement of the following individuals when examining issues and making a recommendation:

- Individuals that are familiar with the functional requirements (this will likely involve key staff from various departments);
- Individuals that are familiar with the current system’s capabilities; and
- Someone that has previously been through the system implementation process.

It may also be necessary, at first, to use an outside consultant to objectively facilitate the process. This could help to eliminate any preconceived notions about solutions and

ensure a complete and accurate analysis. Some of the benefits to buying an existing system include the following:

- The tools already exist and have many of the needed functions.
- Many of the systems allow some customization to meet specific needs.
- The existing systems are largely debugged.
- The vendor can provide training, user manuals, and ongoing support.
- The vendor is regularly updating and improving the product.
- There is a user community that can be a resource for solving problems.

A survey conducted by the Gartner Group, an international information technology consulting and research firm, concluded that the dominant trend in human services is toward the purchase of software applications.

With a decision to buy, consideration must be given to the procurement process with established criteria for acceptable work products. The Substance Abuse and Mental Health System Administration has developed a list of such requirements for use by human services agencies. Other issues for consideration in the build versus buy decision include the flexibility required to address likely changes as a result of internal and external environmental changes. HCMRDD needs a system that will meet today's needs but is flexible enough to address any changes that may occur in the MRDD field. Finally, an implementation plan with clear timelines and deliverables must be identified, agreed upon, and then monitored. Any new hardware or software should be assessed in terms of impact on the performance of the overall system.

Greengard notes that while buying appears more expensive up-front compared to in-house development, outsourcing can trim costs over an extended period. The savings come from not incurring expenses related to upgrades and breakdowns. As of December 2002, HCMRDD had incurred approximately \$2.2 million in personnel costs for staff to develop IDS, and only four modules of IDS were operational. The cost for a commercial system, based on the information in **Appendix A**, would be less than \$1 million. This does not include costs for training, installation, or support time. However, HCMRDD will not have to monitor system performance as closely for an off-the-shelf system as it would with an in-house system. The reduced monitoring function would free ISD staff time for other activities. Monitoring could be delegated to the vendor with support levels specified in the contract between the vendor and HCMRDD.

If HCMRDD decides to continue with the development of in-house system, it should still conduct the analysis described above. A detailed implementation plan with objectives, work steps, and timelines will be required. HCMRDD should consider its implementation plan in terms of cost, which includes the costs of future planning, staff training, writing documentation, debugging issues, and implementing future changes.

The plan should also consider that the more comprehensive and complex the homegrown design becomes, the more dedicated development resources are required, the greater the chances that the project will face delays or failure, and the more difficult future maintenance and adaptations will be. Other issues with building an in-house system that should be addressed are the changing completion criteria during the project, inability of the system to tolerate change during and after implementation, or the agency's requirements outgrowing the system's functionality before it is complete.

The main advantage of developing an in-house system is that it is designed to fit specific needs without any extra features. The drawback is that the agency essentially becomes the vendor of the software application. HCMRDD would need to develop a user manual, a procedural manual, and technical documentation for its system in addition to providing ongoing training and support if it continues to build its system in-house. HCMRDD would also need a written plan for the ongoing management of the in-house system, including a staffing plan to address turnover in computer services. Any in-house system would quickly become useless without a knowledgeable staff that can maintain and operate it.

Regardless which option is chosen, the Board needs to examine its human capacity for handling the implementation and support of the solution. COBIT stresses that performance of all computer services resources should be continually monitored, reported upon, and compared to capacity load limits so that corrective actions can be taken prior to affecting system performance. Workload forecasts must be prepared to identify trends and provide information needed to plan for future needs, and HCMRDD planning would need to address these areas.

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Staffing and Organization

This section focuses on organizational issues such as staffing and personnel management policies and practices. ISD has 7 full time equivalent (FTE) employees and a consultant, all of whom report to a management information systems (MIS) manager. The MIS manager reports to the Business Service Director.

Throughout this section, functional staffing and personnel management methodologies are adapted from various sources, including COBIT and the Gartner Group, and applied to HCMRDD's business and service needs to identify optimal personnel management scenarios. Recommendations are made regarding appropriate staffing levels and distribution, reporting structures, and professional development activities.

Assessments Not Yielding Recommendations

Performance Evaluations: HCMRDD's performance evaluation process was assessed but did not warrant any changes or yield any recommendations. HCMRDD uses a 360 degree evaluation process for all staff, garnering input from supervisors, peers, subordinates if applicable, and any external contacts, such as clients or providers. Employees receive evaluations on a regular basis, and feedback is used to guide personal and professional growth.

Recommendations

- R6 HCMRDD should consider adding a director-level technology position. The position, either a Chief Information Officer (CIO) or Director of Technology, should oversee all aspects of technology at HCMRDD and should report directly to the Superintendent.**

HCMRDD is the only board among the State’s 10 largest boards that does not employ a CIO. Currently, the ISD is under the Business Services Director. This organizational structure dilutes communication between the Superintendent, ISD, and the rest of the agency. COBIT states that executive-level representation of technology staff is necessary to ensure that information technology is aligned with business and service needs. This alignment comes from direct communication between technical managers and service managers and involves technical staff in the decision-making process.

According to COBIT, a CIO should have knowledge or experience in the following areas:

- Personnel management;
- Project Management;
- MRDD service delivery;
- Information technology capabilities;
- New and emerging technologies;
- Change management and facilitation; and
- Communication.

An executive-level CIO could improve HCMRDD’s technological priority-setting and strategic management and could help to eliminate problems identified by HCMRDD staff pertaining to communication and business alignment of information technology resources.

- R7 HCMRDD should increase and reallocate technology staffing to meet the current technology support needs of the agency. Due to changing business and service needs, HCMRDD should shift staffing resources from software development and management and network development and management. HCMRDD should also consider increasing ISD staffing to ensure that all user needs are met.**

ISD is staffed with 8 FTEs (including the MIS manager) and one consultant for special projects. All ISD employees have assigned daily responsibilities and also assist with special ongoing or urgent projects (see **Chart 3-1** for current staffing assignments and organization). Staff members are expected to balance their time between daily

responsibilities and special projects, which has caused some service deficiencies, specifically in the area of technical support. Respondents to an AOS survey indicated that ISD provides a high level and quality of service when time permits. However, ISD representatives are frequently unavailable due to other job functions, reducing the level and quality of service provided to HCMRDD's end users. This stems from insufficient staffing and a relatively inflexible organizational structure (see **R8**).

HCMRDD has approximately 80 technology end users for every FTE in the ISD (1:80). *Workforce: HR Trends & Tools for Business Results* has documented IT staffing ratios for agencies the size of HCMRDD ranging from 1:14 to 1:40. The median IT staffing ratios for all organizations examined was 1:27. HCMRDD would need 24 IT staff to obtain this ratio. However, to obtain the low-end staffing ratio of similar sized agencies, HCMRDD would need only 16 staff in ISD, although this represents an increase of 100 percent from current staffing levels.

To determine actual staffing requirements for HCMRDD, the *Workforce* statistics and functional staffing recommendations from COBIT and the Gartner Group were compared to the actual business and service needs of HCMRDD. Based on these assessments, HCMRDD should be able to enhance technical services by reallocating ISD staffing and, potentially, increasing the total number of FTEs. This figure assumes the installation of a vendor system for processing client service and financial data and the further development of a wireless network for accessing this data. The following positions should comprise the ISD, based on current and projected service needs and survey responses:

- **Chief Information Office (CIO)** – The CIO would serve as a liaison between HCMRDD's Superintendent, ISD staff, and the rest of the agency and assist in setting the overall direction for HCMRDD's technology (see **R6**).
- **MIS Manager** – The MIS manager should oversee the daily technical aspects of ISD, such as network administration and PC support and should work with the project manager to prioritize projects for staff and implement the strategic direction established by the CIO.
- **Project Manager** – The project manager would be responsible for special ongoing projects, such as managing relations with providers and vendors, and for implementing and managing new projects and initiatives. It is very important for the project manager to work well with the MIS manager and the Help Desk/Training Coordinator to ensure that all user needs are met.

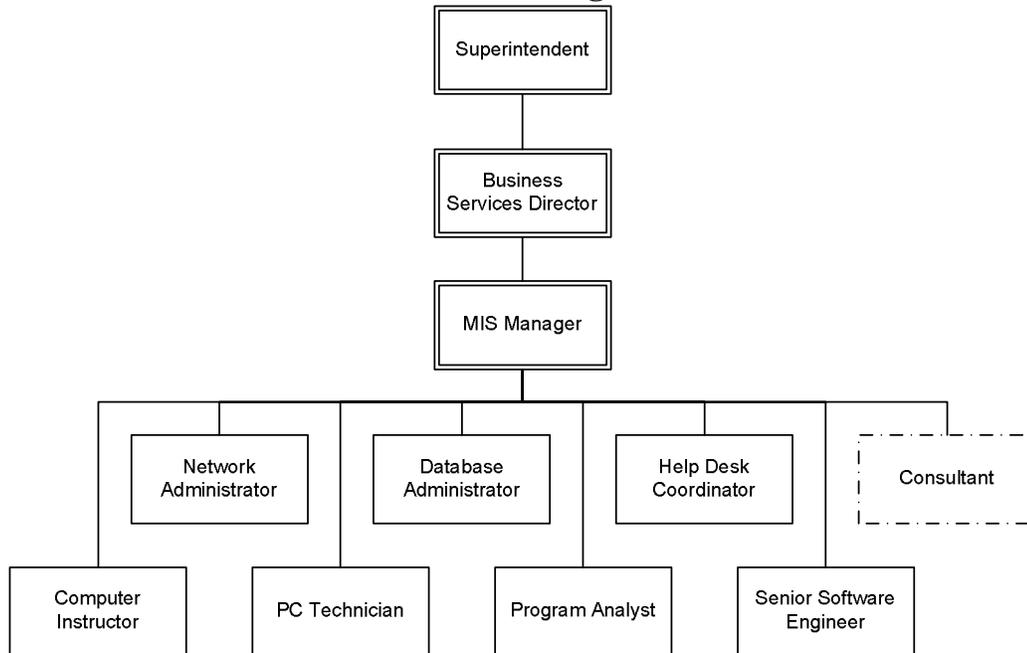
- **Software Specialist** – The software specialist tests, documents and coordinates software needs with end users and would work to integrate data within the agency and to create reports that cannot be generated by end users.
- **PC Technician** – The PC technician should maintain records for all personal computer equipment, including PCs, laptops and printers. The PC technician could also prepare and maintain the minimum hardware specifications and replacement policy. Finally, the PC technician should perform repairs and upgrades of computer equipment and must maintain a close relationship with the help desk associates.
- **Security & Wireless Specialist (SW Specialist)** – The SW specialist could be required to ensure the efficient and secure transfer of sensitive data to and from HCMRDD. The SW specialist should stay abreast of advancements in technology and networking and should maintain a positive working relationship with the network administrator and RSI specialist. The SW specialist could also be responsible for Health Insurance Portability Accountability Act (HIPAA) compliance.
- **Network Administrator** – The network administrator would be responsible for the software side of network administration, such as maintaining and upgrading network and email systems. The network administrator could also be the contact person for Public Affairs for the update and maintenance of the website.
- **Routers, Switches & Infrastructure (RSI) Specialist** – The RSI specialist must be proficient in router and switch configurations and would be responsible for maintaining and troubleshooting HCMRDD’s local and wide area networks.
- **Help Desk/Training Coordinator** – The help desk/training coordinator would be responsible for all direct user support, including help desk support and technical training. The coordinator could also coordinate internal and external training for ISD staff. Linking the help desk and training functions will ensure that training addresses user needs and maximizes the efficiency of HCMRDD employees in using technical resources.
- **Help Desk Associate** – Two help desk associates working overlapping shifts could be responsible for providing user support via telephone or email using help desk software (see **R23**). The help desk associates could also be responsible for compiling help desk statistics from the software and monitoring performance measures. In the future, HCMRDD may want to consider adding a third help desk associate to better serve remote locations.
- **Trainer** – The trainer should provide training to users in HCMRDD’s training lab and also on an individual basis as needed.

ISD’s current staffing distribution reflects HCMRDD’s commitment to developing and managing internal data and systems. If HCMRDD continues the development of IDS instead of purchasing a vendor system (see **R5**), its staffing needs will be more consistent with current assignments. Purchasing a vendor system and subsequently shifting staffing resources would allow HCMRDD to focus on improving networking and communication capabilities for clients, providers and client service personnel working in the field.

R8 HCMRDD should restructure the organization of the ISD to accommodate the CIO and to increase the capacity to deal with both current responsibilities and unforeseen or major projects.

ISD staff members currently spend most of their time on daily activities with some staff time dedicated to initiatives such as the development of IDS. ISD has struggled to maintain an acceptable level of service for HCMRDD users while working on other projects and initiatives, such as IDS and wireless development. The current organizational chart for ISD is shown in **Chart 3-1**.

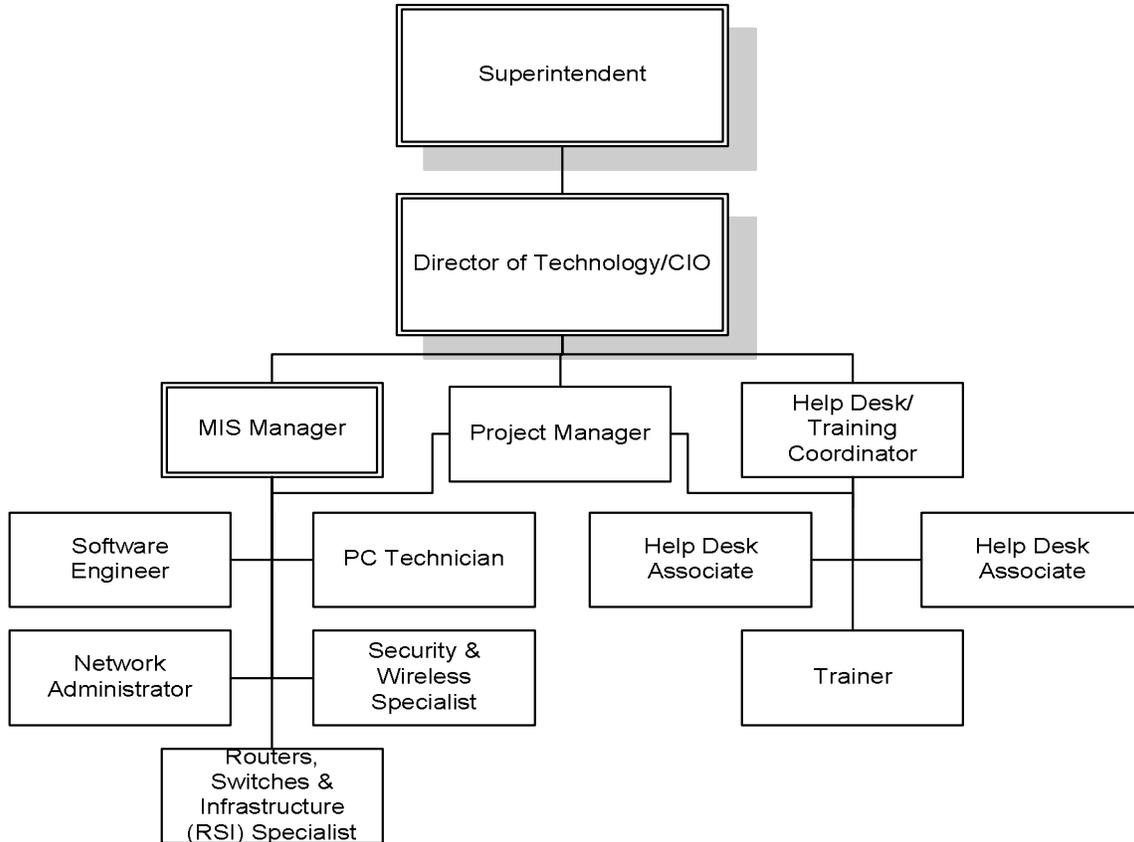
Chart 3-1: HCMRDD Organizational Chart



The flat organizational structure of ISD creates a silo effect that inhibits the flexibility and capacity of ISD to handle unforeseen or major projects. ISD staff work together on some initiatives, and the MIS manager works to coordinate services among groups of staff. However, project management is usually handled on an emergency basis, rather

than a proactive basis, which can shift attention away from projects yielding the highest long-term return. HCMRDD could enhance its strategic direction in the area of technology by developing a strategic technology plan (see **R2**) and appointing a CIO (see **R6**). Once a strategic direction has been established, it should be administered by a more flexible organization, such as that shown in **Chart 3-2**.

Chart 3-2: HCMRDD Proposed Organizational Chart



The organization shown in **Chart 3-2** maintains the same number of levels in the organizational hierarchy while shifting the focus of the ISD from basic service provision to service coordination and enhancement. Using this structure, the MIS manager administers the daily technical functions of the ISD, and the help desk/training coordinator ensures adequate training and support for end users. The project manager works with staff teams to implement special projects and manage ongoing initiatives. A review of HCMRDD business processes and survey results revealed the following additional projects that the project manager could oversee:

- Preparation to meet HIPAA compliance;
- A proactive assessment of providers' needs;
- Intranet expansion to include up-to-date forms, addresses, phone numbers, etc.;
- IDS development or vendor system implementation;
- Continuing education, certifications, and training on new technologies; and
- Training for individuals, teachers and staff on specialized software packages.

The ongoing management of these and similar projects could improve the level of service provided by HCMRDD, and in some cases, ensure compliance with applicable laws, such as HIPAA. Working to address the needs of providers, clients and employees with technology would enhance and streamline service delivery, and improving training opportunities can increase staff skill sets and morale. Ongoing functions for the project manager may shift to address the changing needs of HCMRDD.

R9 HCMRDD should update job descriptions for all technology positions so the duties and required knowledge and skills more accurately reflect the basic functions needed to support ISD's operations.

Most job descriptions for ISD staff were last updated in 1995, although some have been revised when positions were vacated or filled. Maintaining accurate job descriptions for technical positions is essential due to the constantly changing environment. For example, HCMRDD did not have a wireless network in 1995, and the PC technician did not have network management responsibilities. A limited wireless network is now in place, and the PC technician plays an integral role in its development and maintenance. Not having detailed job descriptions can hinder HCMRDD's ability to attract qualified candidates for vacant positions, a problem that has been acknowledged by senior staff. In addition, staff cannot be appropriately evaluated without updated, accurate criteria for assessment.

According to the Society for Human Resource Management, up-to-date job descriptions foster a greater understanding of duties and responsibilities and provide a reliable and defensible foundation for performance evaluations and other compensatory procedures, such as promotions and salary adjustments. Job descriptions should include the position title; a summary of duties; requirements for knowledge, skills and abilities; and qualifying education, training, and experience thresholds, which may be different for each position. For example, a CIO may need a college degree and applicable experience while a network administrator may need appropriate network certification and experience. HCMRDD should include these requirements in job descriptions and should consider them when trying to fill vacancies. By ensuring that job descriptions are up-to-date, ISD employees will have a better understanding of their job parameters and the expectations associated with their positions.

R10 The ISD should take steps to ensure that technical training is meeting the needs of HCMRDD users. These steps should include modifying the training survey and incorporating training requirements into new software implementation plans and procedural or project planning.

HCMRDD has an in-house computer training lab and a staff trainer for technology. The trainer issues a monthly schedule of training classes, including evening and occasional weekend classes, and is also available for individual lessons and consultations. Training sessions are open to all interested employees. After each training session, the trainer distributes a survey to session attendees regarding the effectiveness of the training. In discussions with the trainer, a few deficiencies were noted regarding the survey. First, it does not encourage respondents to identify other training classes that could potentially be of value. This information could be extremely helpful for the trainer in developing subsequent monthly training schedules. Additionally, since the survey is distributed and collected immediately after the training session, it can not indicate the effectiveness of the training once the skills have been applied to actual job duties.

To increase the value of HCMRDD's computer training program, ISD should modify the survey to include open-ended questions regarding user training needs. Asking users directly is one of the most effective methods for identifying an agency's training needs. Respondents to an AOS survey conducted at HCMRDD indicated that some employees did not feel their technology-related needs had been identified by appropriate personnel. Directly inquiring about user needs and developing training programs to meet those needs could improve the efficiency of HCMRDD's operations and improve morale among technology users.

HCMRDD should also consider sending follow-up surveys to training attendees to determine the effectiveness of training once the information has been applied to actual work processes. According to HCMRDD's trainer and an AOS survey, follow-up surveys could determine if training attendees retain the information and are able to apply it after returning to their normal job activities. Relying solely on point of service surveys prevents HCMRDD from gathering specific data linking training to actual job effectiveness. Follow-up surveys could be distributed several weeks after training, asking respondents to identify any follow-up questions, issues, or any ideas for improving the quality of the training. Using inter-office mail to distribute and collect the surveys could help HCMRDD minimize the costs for this concept.

There are other methods for identifying and addressing the training needs of staff. When procedural changes or software implementations are planned, a component of that planning should include providing adequate training to all affected users. Including training requirements in project planning can help the planning team develop a more

holistic and accurate picture of resource requirements and timelines while ensuring that users receive any training necessary for a smooth transition.

Another method of identifying training needs involves help desk statistics and performance measurement. In **Chart 3-2** in **R7**, the trainer reports to the help desk/training coordinator. This reporting structure facilitates the easy transfer of data from the help desk associates to the trainer. As help desk associates identify common problems and issues on a monthly basis, they can forward these issues to the trainer so appropriate training sessions can be scheduled to address the problems.

Improved identification of training needs and increased opportunities to resolve potential training issues will improve user satisfaction and the overall efficiency of information technology use within HCMRDD. Through the proposed organization structure, the CIO will be in a better position to encourage participation in training.

R11 HCMRDD should enhance the professional development opportunities for technical staff. This should include training but can also include other options such as certifications, subscriptions and memberships in professional organizations and user groups.

The professional development of ISD staff is generally limited to private, individual initiative. In 2001, HCMRDD cut the training budget of ISD due to funding constraints. In 2002, approximately \$5,000 was budgeted for training, but ISD staff felt too busy to schedule or attend training. Some staff members have kept abreast of industry practices and advancements on their own, but HCMRDD could do more to facilitate this development.

Training and certification are important components of professional development in the technology industry because of the rapid advancements and changes in the field. Training on new concepts or methods can help governmental units creatively solve problems and increase operational efficiency. Although some certifications can be costly to obtain, they can lower costs in the long run by eliminating the need for expensive outsourcing or contracting and increasing the abilities of in-house staff. Training programs are available through a variety of organizations ranging from programming to networking and project management. HCMRDD could tailor training to individual and business needs based on evaluations, professional development plans, and employee surveys. A variety of certifications are also available, ranging from software to networking. As HCMRDD uses predominantly Microsoft products and services, some appropriate certifications could include Microsoft Certified Systems Engineer (MCSE) or Microsoft Certified Systems Administrator (MCSA).

An increase in the professional development budget will be required to provide training or certification opportunities for all ISD staff. According to the American Society for Training and Development (ASTD) and Developmental Dimensions International (DDI), as reported in their State of the Industry Report for 2003, training budgets should be approximately 1.9 percent of total expenditures. The average number of training hours for training-eligible employees is 29.3 hours. However, staff members that obtain professional certifications may need additional training hours to maintain the certifications. Some certifications, such as Certified Information Security Manager (CISM), require up to 40 hours of professional development on an annual basis.

In addition to training and certification, subscriptions and professional memberships could also improve the professional development of ISD staff. Organizations such as the Information Systems Audit and Control Association (www.isaca.org), the Gartner Group (www3.gartner.com/Init) and the Center for Digital Government (www.centerdigitalgov.com) offer informational services and opportunities to network with peers for subscription fees. Free periodical subscriptions are also available to some governments. Publications such as *Government Technology* (www.govtech.net), *Government Computer News* (www.gcn.com) and *InfoWorld* (www.infoworld.com) grant free subscriptions to some government IT professionals. Finally, there are some organizations focused exclusively on the use of technology in the human service field, such as the *Journal of Technology in Human Services* (www2.uta.edu/cusssn/jths/) and the Centre for Human Service Technology (<http://www.chst.soton.ac.uk/>).

User groups offer another venue for networking with peers and creative problem solving. Users of various software packages or types of hardware (private and public sector) host periodic meetings to discuss the strengths and weaknesses of the technology and develop creative solutions to address any problems. These meetings provide some cost-effective alternatives to maintenance and replacement as well as professional networking opportunities. Organizations that do not attend user group meetings must resolve technology problems without the help or support of peers and may miss out on more cost-effective alternatives. HCMRDD representatives currently attend meetings regarding technical issues in Hamilton County and meetings of technical staff from MRDD boards statewide. HCMRDD and ISD should work with technology vendors to learn more about hardware and software user groups.

Hardware and Networking

This section of the report examines HCMRDD's management and use of hardware and networking resources. Recommendations are made in a variety of areas, including hardware specifications and purchasing practices, inventory management, and future technologies. If implemented, these recommendations should improve the quality of HCMRDD's technical infrastructure and improve the efficiency and cost-effectiveness of infrastructure management activities.

HCMRDD has implemented adequate hardware and networking capabilities to manage current agency operations. However, additional opportunities to improve connectivity and the effectiveness of the agency's hardware and network exist. Currently HCMRDD operates with 13 servers but the agency plans to consolidate the servers to a single server at the main board office. This will require full implementation of the planned network between the board office and the schools. Also, HCMRDD has been required to negotiate with the County Data Center to implement some initiatives. In particular, web based programs required special consideration to be implemented on the County network. Although there are opportunities to improve the administrative hardware used by HCMRDD, the network is well developed and follows model processes.

Recommendations

- R12 HCMRDD should develop minimum hardware specifications to ensure that only appropriate hardware is in use throughout the agency. ISD staff should use the specifications to develop and maintain a formal technology replacement plan for subsequent years.**

ISD maintains an inventory of all technology equipment and its vital information in a spreadsheet. This spreadsheet is used to develop the yearly budget for the department. With this information, the budget can reflect each piece of equipment that needs to be replaced and the estimated replacement cost. HCMRDD's schools are currently using slow, out-of-date computers, which causes increased help desk traffic and, according to the survey conducted by AOS, decreased user satisfaction with the technology environment. HCMRDD could improve its user satisfaction and help desk service levels by ensuring that all hardware meets minimum specifications for quality and performance.

The Technology Steering Committee (see the **planning and management** section) should develop a policy that explicitly details minimum hardware specifications that support the business and service goals of HCMRDD. The policy should also be applied to any donated equipment, and should specify the conditions that would entail removal, maintenance, or acceptance of donated equipment. The policy needs to be monitored and updated on an annual basis since technology is fast-changing. The replacement of equipment should be detailed in the strategic planning process (see the **planning and management** section).

- R13 HCMRDD should implement a purchasing policy for all technology purchases that requires approval from the CIO. The purchasing policy should be linked to the minimum specifications to ensure that only appropriate hardware is purchased. The policy should also be extended to donated items.**

HCMRDD has an informal policy requiring the MIS manager to sign off on all purchases affecting information technology, including hardware and software, but the policy is not enforced. The Billing Department also tries to keep track of all purchase orders that are processed for technology items, but not all purchases are processed through the Billing Department. For example, Parent-Teacher Association (PTA) purchases are not subject to this policy. A classroom in one of HCMRDD's schools that did not have a computer received two computers around the same time-- one from HCMRDD and one from the PTA. Because HCMRDD does not have a procedure for approving technology purchases, the PTA purchased a computer that is not compatible with HCMRDD's

network. According to the ISD, this computer has caused more frequent and significant problems than other computers in the schools because of the compatibility issues.

A technology procurement process could have prevented some of these problems. Minimum hardware specifications (see **R12**) that apply to donated equipment could also ensure consistency in this type of situation. The Technology Steering Committee should be responsible for formulating and implementing the policy, which should be submitted to the MRDD Board for approval and inclusion in the policy manual. Based on this policy, the Steering Committee should develop a procedure for purchasing any information technology materials with the CIO's approval.

R14 HCMRDD should revise its proposal process to incorporate all the elements of a model request for bid. At a minimum, requests should include submittal requirements and selection criteria, although other elements can improve the efficiency and effectiveness of the procurement process.

HCMRDD purchases most technology through state or county contracts or uses advertising services to invite bids and proposals. COBIT suggests that major technology purchases should only be made after the definition of specific statements of functional and operational requirements. These requirements should be enumerated in a request for proposals (RFP) or an invitation to bid. DMG-MAXIMUS, a public sector consulting firm specializing in IT contracting, outlines the following elements of a good bid or request for proposal:

- A full range of informal, formal and multi-step proposal options such as requests for information, qualifications, proposals, and bids;
- Comprehensive proposal guidelines (i.e., comprehensive checklists of submittal requirements for vendors);
- Pre-proposal conference guidelines (e.g., non-mandatory pre-bid conferences for projects of \$500,000 to \$999,999 and mandatory pre-bid conferences for projects with a projected budget of \$1 million or greater);
- Procedures for receiving, documenting and reviewing unsolicited proposals;
- Standard evaluation criteria, suggested weighting factors, and scoring guidelines for assessing proposals and documenting contract award decisions;
- A mechanism (e.g., additional presentations) or added criteria (e.g., location, incumbency or value-added services) to help resolve close decisions;
- Standard vendor communication procedures, such as sample letters for successful and unsuccessful proposals or a vendor subscription service offering online access to proposal data, policies & forms;
- Suggested evaluation team composition to ensure objectivity and adequate representation of affected departments;

- Standard award procedures including a formal notice to proceed, any necessary special instructions, and a mandatory contract planning conference before a project begins; and
- Mediation/conflict resolution procedures for resolving conflicts between HCMRDD and vendors or suppliers.

DMG-MAXIMUS also suggests developing a checklist for preparing RFPs, invitations to bid and other contract solicitations. HCMRDD should consider including the following elements in each of these documents:

- Introduction, including an overview of the project and general information about HCMRDD and its objectives for the proposal;
- Statement of services, identifying the project scope and technical specifications;
- Submittal requirements, including minimum vendor qualifications and proposal content;
- Proposal selection process, including a project schedule and the evaluation criteria;
- Proposal requirements, such as standard terms and conditions; and
- Appendices that document administrative information, the award process and historically-underutilized business forms, if applicable.

A model proposal process will help ensure that potential bidders fully understand the scope of work, evaluation criteria, and all other critical elements associated with the project. Ultimately, more effectively structured proposal mechanisms will maximize competition and result in better pricing and contractor performance.

R15 HCMRDD should implement a detailed fixed asset policy to ensure consistent record keeping for technology equipment. The fixed asset policy should be used to track the location and vital information for all information technology hardware.

HCMRDD does not have a formal fixed asset policy for technology equipment. The implementation of laptops for field staff will require a formalized fixed asset policy and tracking system to establish accountability and responsibility for technical assets. Fixed assets are specific items of property that: (1) are tangible in nature; (2) have a life longer than one year; and (3) have a significant value. The City of Knightdale, North Carolina includes the following components in its fixed assets policy:

- Control (marking and tagging);
- Proper classification;
 - ♦ Land and Improvements;
 - ♦ Buildings;
 - ♦ Equipment and Machinery;

- ♦ Vehicles;
- ♦ Construction Work in Progress;
- ♦ Infrastructure (GASB 34);
- ♦ Additions and Modifications to Existing Assets;
- Procedures;
 - ♦ Purchasing, including Bids;
 - ♦ Donations;
 - ♦ Tagging; and
 - ♦ Depreciation.

A fixed asset management and tracking system can ensure that all equipment and resources are accounted for and can be recovered when necessary. The tracking system should identify, by name and location, the person in possession of each piece of equipment. To ensure the accuracy of the system, HCMRDD could require employees to verify their equipment inventory one or two times per year.

R16 HCMRDD should develop a comprehensive computer, email and Internet use policy that addresses the use of HCMRDD technology equipment by staff.

HCMRDD does not have written policies and procedures governing the use of agency technology. HCMRDD has an employee manual applying basic principles and guidelines, but there are no policies dealing explicitly with the use of technology equipment and resources. Policies and procedures for software installation and computer, Internet, and email usage should be included in the manual, due to the importance of these functions to overall agency operations and to safeguard the investments made in these resources. These policies would provide users with guidelines, approved by the Board, for the users' responsibilities in protecting equipment. The absence of the policy exposes HCMRDD to the risk that employees will use equipment for improper or inappropriate personal use or install software that creates compatibility problems or violates licensing agreements. The policy should address the following issues:

- Personal use of HCMRDD equipment;
- System security and management of passwords;
- Copyright laws;
- Sabotage and vandalism;
- Employment termination and cancellation of privileges; and
- Software license violations (see the **software and systems integration** section).

A comprehensive policy will make HCMRDD staff aware of the potential dangers computer equipment, software, email, and the Internet are exposed to in a network environment and minimize the abuse of privileges.

R17 The Technology Steering Committee, in conjunction with ISD, should expand the use of email, intranet and Internet throughout the agency.

Email and Internet access for HCMRDD staff is granted at the discretion of supervisors. Universal email access for all systems users, including providers and clients, would lend itself to better communication within HCMRDD, as well as with clients and providers. Implementation only for a limited number of users restricts the effectiveness of the available technology and its potential applications. Savings could be realized in time, efficiency, and paper costs if HCMRDD increased staff access to these resources.

As long as Internet and email use policies are adhered to and monitored, the Internet can be a valuable tool for most employees. There are software packages available that not only track user-accessed sites, but also prevent access to inappropriate materials. Training may be required to ensure that these resources are used effectively and appropriately.

Although HCMRDD has intranet capability, its functionality in the agency is limited. Surveys indicated an interest among employees to access forms, templates and general information from any workstation through the intranet. Currently, the templates and forms are not consistently maintained, and changes are not made in a timely manner. This results in users taking time to correct the forms and templates before each use. Effective use of the intranet could facilitate better communication and higher efficiency throughout the agency. Uses for an on-line intranet could include the following:

- MRDD telephone and address directories;
- Strategic plans;
- MRDD policies and procedures;
- Handbooks and other reference materials;
- Technical memos on commonly asked computer or software questions and problems;
- Standard MRDD forms and templates such as payroll, evaluation, address change requests, fax cover sheets, training requests and letterhead;
- Employee newsletters; and
- Bulletin boards where staff can share information.

Since the availability of intranet capabilities exists, better use of this technology would facilitate the sharing of immediate, up-to-date information with reduced paper costs, postage, and time. Department heads should encourage employee use, and ISD should offer structured training programs for all employees that have access to the technology.

- R18 HCMRDD should continuously review new technology to enhance operations. Prior to implementing any new technology, HCMRDD should conduct a cost/benefit analysis to determine if the technology is consistent with the agency's overall business needs and the strategic technology plan.**

The following items represent some areas of emerging technology or access to current technology that may be beneficial to HCMRDD. This is not a comprehensive list but does highlight areas of technology that relate to some of the Board's priority areas.

Personal Digital Assistant (PDA) is a handheld device that combines computing, telephone/fax, Internet and networking features. A typical PDA can function as a cellular phone, fax sender, Web browser and personal organizer. PDAs are available in either a stylus or keyboard version. With the stylus version, the PDA incorporates handwriting recognition features. Some PDAs can also react to voice input by using voice recognition technologies. Some HCMRDD staff currently use PDAs to track payroll for the General Assembly, and service facilitators may find PDAs to be useful as they work in various remote sites throughout the county. As part of the strategic technology planning process, HCMRDD could continue to seek ways to use these mobile devices to improve service delivery. Other possibilities could be using PDAs for taking attendance or monitoring transportation usage.

Tablet Personal Computer (PC) is a mobile computer that can be placed flat on a table or held on one arm while the user enters data with a pen. The Tablet PC can easily be used to take notes during a meeting which may be helpful to service facilitators or case managers. Most Tablet PCs are approximately the size of a thin and lightweight notebook computer and weigh three pounds or less. This technology combines the mobility of a PDA with the full functionality of a personal computer.

- R19 HCMRDD should explore how network technology could be used to improve business practices. Prior to implementing any new technology, HCMRDD should conduct a cost/benefit analysis and determine if the technology is consistent with the agency's overall business needs.**

HCMRDD has been developing wireless networking capabilities at some locations. With the potential implementation of a web-based system for processing client and financial data, secure wireless networking capabilities will become increasingly important. The Gartner Group has identified the following issues for consideration before implementing a wireless network:

- Define underlying principles or goals in advance;
- Involve staff in the process;
- Be prepared to manage change from a human resource perspective;

- Define performance measures to understand and monitor trends after the wireless implementation; and
- Revisit the process after a predetermined amount of time to determine if goals were met or if the old process is still running parallel.

Further development of web-based applications and wireless technology should be done as part of a comprehensive strategic plan for technology (see **R2**) to ensure an adequately coordinated and planned implementation. Web-based applications can have a positive impact on HCMRDD's ability to conduct its business in a more efficient manner, but only if a thorough assessment occurs prior to implementation with needed resources being identified and timelines set for each phase of implementation. Wireless technology can complement various HCMRDD initiatives and provide increased access and flexibility. Some additional networking options are enumerated below.

- **Virtual Private Network** (VPN) is a private network that uses a public network, such as phone lines or other communication media, to connect remote sites or users. Instead of using a dedicated, real-world connection, such as leased lines, a VPN uses "virtual" connections routed through the Internet from the organization's private network to the remote site or employee. A well-designed VPN can greatly benefit an organization by providing the following advantages:
 - Improve security;
 - Reduce operational costs versus traditional wide-area networks;
 - Reduce transit time and transportation costs for remote users;
 - Improve productivity;
 - Simplify network topology; and
 - Provide broadband networking compatibility.
- **Wireless Fidelity** (Wi-Fi) is a wireless technology that enables computers to send and receive data anywhere within the range of a base station. This technology is several times faster than cable modem connections. Wi-Fi networks use radio technologies defined by IEEE 802.11 to provide secure, reliable and fast wireless connectivity. A Wi-Fi network can be used to connect computers to each other, to the Internet and to wired networks. Wireless environments offer both increased mobility and flexibility. HCMRDD has developed wireless networks at some locations. This technology may also be useful as the Board works toward some of the goals outlined in its 2003 Annual Plan, such as developing mobile work crews, improving daily communication when an individual is involved in a transition process, and increasing communication with stakeholders, clients, and providers.

- **Geographic Information Systems** (GIS) are tools used to gather, transform, manipulate, analyze, and produce information related to the surface of the Earth. This data may exist as maps, 3D virtual models, tables, or lists. GIS can be as complex as whole systems that use dedicated databases and workstations hooked up to a network, or as simple as "off-the-shelf" desktop software. GIS is used to locate landmarks and hazards, plot destinations, and design emergency routes. GIS may be useful to the HCMRDD for planning transportation routes over PDAs.
- **911 Radio Towers** Use of 911 radio towers for wireless services is not a new technology but an opportunity for communities to use existing towers to obtain wireless services. HCMRDD may want to explore this option with Hamilton County administrators to see if it would be cost effective for different county entities to collaborate in accessing wireless services and whether there would be cost savings in contracting with a wireless provider and granting them space on existing 911 towers.

These new technologies are not immediate needs for the Board but should be explored in future technology plan development. As the Board reviews and plans for the possible use of new technology, the planning needs to address the needs of computer services staff to obtain needed training and experience with these new technologies.

Issues from other aspects of an organization may surface while working on technology issues. If organizational issues are not resolved, such as inadequate planning and poor communication, these issues will take root in the design of new tools and become part of institutional procedures and habits. This shifts staff concerns from insufficient technology to incoherent or insensible technology systems. If employees believe that technology can solve all the organization's problems, it will be easy for technology to take the blame for problems or difficulties. Before introducing new software applications, the Board needs to stabilize the network environment and establish procedures for proper network management. Without this element of planning, new software or network initiatives will not address existing problems or deficiencies.

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Software and Systems Integration

This section of the report focuses on HCMRDD's software environment. Recommendations address areas such as personal and administrative software as well as reporting requirements for internal and external parties. Additional assessments include the level of automation of various procedures and operations and recommendations for increasing efficiency.

The selection and implementation of software plays an important role in the efficiency of an organization. Appropriate software facilitates business process automation while inappropriate, outdated, or overly complex software may hinder an agency's ability to serve its customers in the most effective manner. HCMRDD has selected several software packages, most of which greatly enhance the agency's ability to meet customer needs. However, in several cases, the full functionality of the software goes unused. Software features, including email and intranet applications, could greatly enhance current operations if they were used in conjunction with existing applications.

Recommendations

R20 HCMRDD should ensure staff are sufficiently trained on all available software and should conduct periodic needs assessments for employee training.

HCMRDD has a technology training facility and a staff training coordinator. Training is provided on most software applications, but interviews and survey data indicated some unmet training needs. For example, a number of employees use Microsoft Access to manipulate data downloaded from various systems to compile reports and statistics but do not understand its complete functionality. The training coordinator indicated that training classes for Microsoft Access would not be as effective as individual training sessions for this software due to the variety of uses and needs. Training for some staff on Microsoft Access could improve the data tracking and report generation capabilities of HCMRDD. However, depending on the capabilities of IDS or a vendor package to streamline various processes or operations, the use of Microsoft Access may not be needed in such a capacity. Under those circumstances, users would still need training on specialized software for specific needs, whether developed internally or purchased from a vendor.

HCMRDD also lacks a good system to track the training needs of users. The training coordinator develops a training schedule, and employees can sign up for any training classes for which they have an interest. Although employees complete an evaluation for training classes, this evaluation does not allow employees to suggest additional training classes or identify areas where additional training is needed. HCMRDD could identify training needs by adding this question to its training class evaluation form and can also make this a component of employee performance evaluations and professional development plans.

R21 HCMRDD should establish a level of security that prohibits users from installing unapproved or inappropriate software on HCMRDD-issued personal computers. This security should include automated internal controls and security features coupled with appropriate policies and procedures.

There are a number of software packages installed on agency computers to meet users' daily needs, such as Microsoft Office for word processing and spreadsheet capabilities. There are also a number of specific, service-related programs installed on some computers, such as educational software for the schools and VOCshop to process data for the workshops. Although it is discouraged, staff can also install personal programs and software on MRDD-issued equipment. These purchases and installations are not processed through the ISD and can cause issues relating to compliance, compatibility, inventory, liability, software licensing violations (see the **hardware and networking** section) and support expertise. Some operating systems, such as Windows NT and 2000,

do not allow users to install software without an administrative password, and HCMRDD is working to ensure that all PCs receive an upgrade to one of these systems. This would prevent users from installing unauthorized software on their HCMRDD-issued PC. Another method of identifying unapproved software is to conduct periodic PC audits. At intervals established by the Technology Steering Committee or ISD, PCs could be chosen at random for inspection by ISD staff to look for unapproved software installations.

The Technology Steering Committee should develop a policy and subsequent procedures to prevent personal installations on HCMRDD computer equipment unless approved by the CIO (see the **hardware and networking** section). The policy should enumerate the enforcement mechanisms and ramifications for installing unapproved software on HCMRDD computers and equipment.

R22 HCMRDD should strive to increase communications with the County Auditor's Office to strengthen current relationships and streamline accounting and reporting procedures.

HCMRDD currently maintains a positive relationship with various Hamilton County departments, and continuing these relationships can benefit all involved parties. The County's financial accounting system, Performance by KPMG, is the required reporting format for all of HCMRDD's financial data. However, the information entered into Performance is not sufficiently detailed to facilitate outcome tracking and other needs of HCMRDD.

Surveys indicated that an ideal system would account for and track all funds spent and all services provided per client. Based on the individual budgeting concept currently being piloted at HCMRDD, this level of detail is necessary to effectively monitor the results of various service areas. Performance tracks this information at a higher level, forcing HCMRDD to use a separate system to keep track of the more detailed information, and then reenter the higher level information into Performance.

While building an interface to the Performance system could be an easy solution, few county auditors in the State are willing to allow such data sharing, and many other boards face similar situations. Great Plains and Infallible software both have financial packages that are used as an interface in the few counties that do allow them. Representatives of the Hamilton County Auditor noted that any needed information could be input and retrieved. A training session can be set up with the auditor, free of charge, to review the features and capabilities of Performance.

R23 HCMRDD should consider developing formalized help desk procedures and purchasing a help desk software package.

HCMRDD has a formal help desk, but ISD does not have sufficient staffing or software to effectively provide this type of assistance (see the **staffing and organization** section). According to survey data, HCMRDD's technology users sometimes call or fax several different people before their problem is resolved. This causes unnecessary downtime for employees and has affected all departments. Additionally, service has been inconsistent at times due to priorities and the time available by technology personnel.

There are many software packages available for help desk services at prices that depend mainly on the quantity of users and selection of available options. Some available options include warranty tracking, service billing, contract management, scheduling, PC configuration and training. The provision of centralized help desk services affords technology users a simple and direct path for resolving technology-related problems. Because technology is a support service at HCMRDD, its focus should be on meeting the needs of the users, which includes efficient and effective help desk services.

The creation of a formalized help desk with specialized software should enhance the overall level of service provided to MRDD technology users, while decreasing the amount of time lost due to technology-related problems. Additionally, help desk software can collect and track data related to the number of calls received and how they were resolved, facilitating the performance measurement process discussed in **R1**.

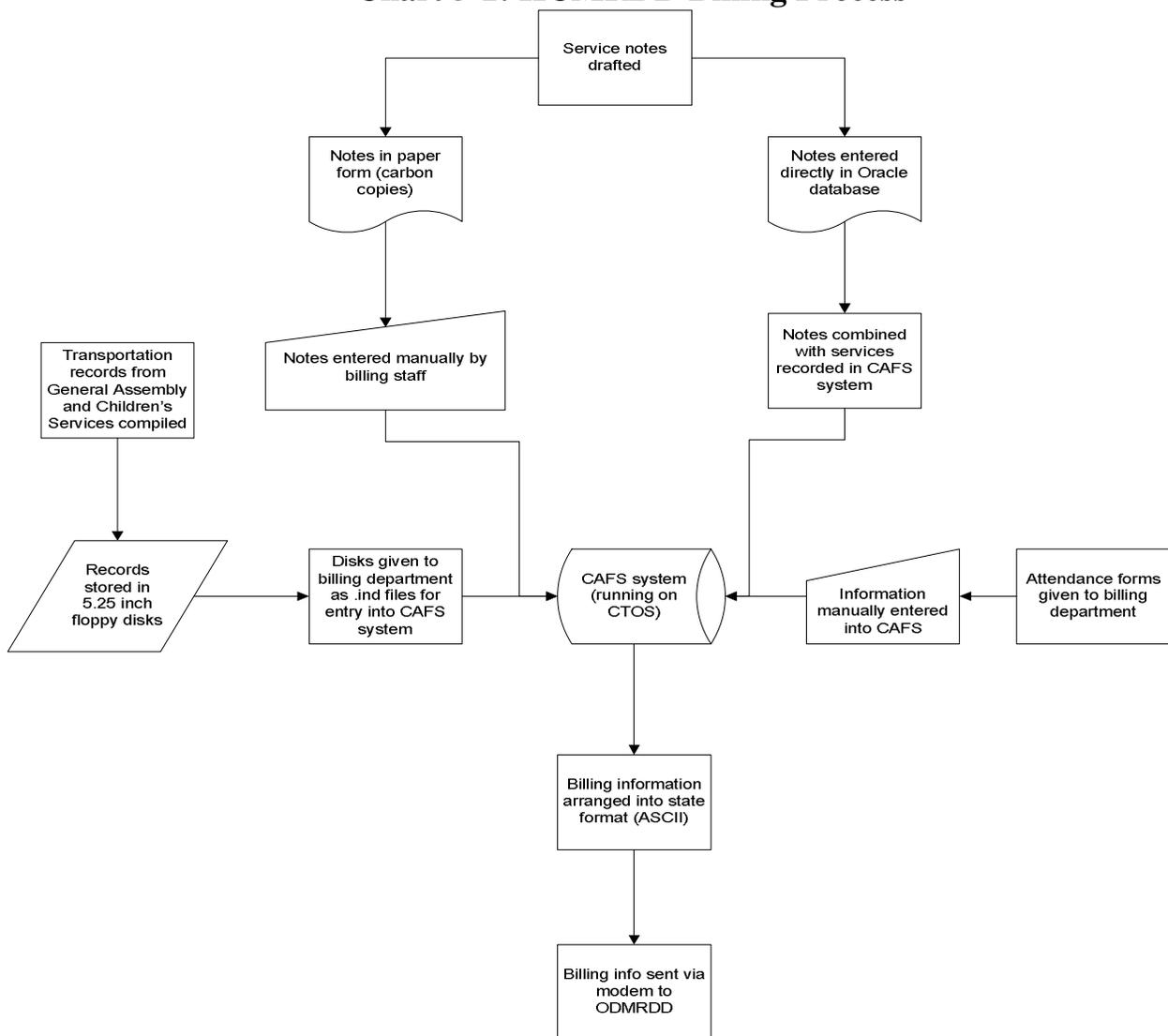
R24 HCMRDD should develop a common set of standards and procedures for software procurement.

HCMRDD does not currently have standards for procurement of software. Most purchases made by ISD go through an established, though informal, process, but other departments sometimes make purchases without using this process. According to COBIT, management should develop and implement a central procurement approach describing a common set of procedures and standards to be followed in the procurement of hardware, software and technical services. Products should be reviewed and tested prior to making a final purchase decision. For example, HCMRDD has the ability to test some software packages before committing to purchase. This consideration may be available from more vendors and could ensure that software meets the needs of the agency. HCMRDD should also subject software purchases to the technology procurement policies and procedures discussed in the **hardware and networking** section.

R25 HCMRDD should develop consistent, compatible systems that minimize duplicative and manual processes and increase service efficiency. This could be done by ensuring that software is interrelated and that data can be communicated between systems as needed.

The current system for tracking service provision involves data in IDS and the Convergent Technologies Operating System (CTOS). An example of how the current system structure impacts HCMRDD business processes can be seen in the HCMRDD billing process, which is documented in **Chart 5-1**.

Chart 5-1: HCMRDD Billing Process

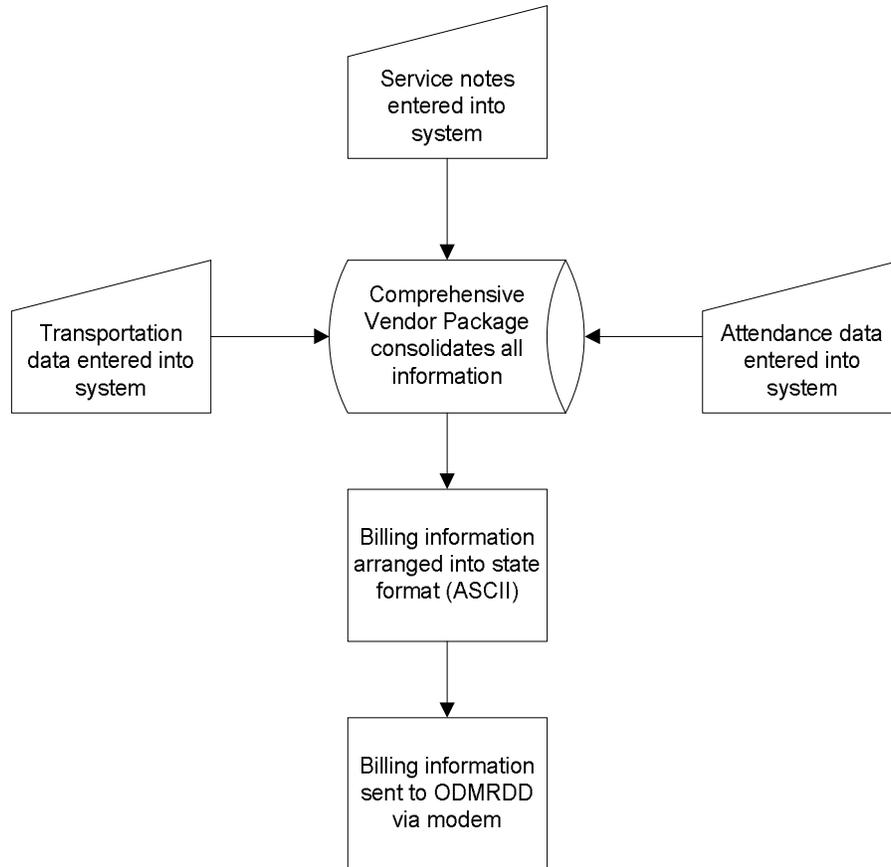


Source: HCMRDD personnel

As shown in **Chart 5-1**, information for billing comes from three types of input and from four different sources. Transportation records are developed from enrollment data taken from the Client Pupil Information System (CPIS) and combined with the transportation records created at the schools and workshops. This combined data is imported into the transportation data management system and used to create transportation billing records and various statistical reports. The transportation data management system uses COBOL to combine and process this data. The system involves the manual entry of some data, such as services provided, and does not have a graphical user interface, relying instead on character-driven commands.

Progress notes, completed by direct service staff, are recorded directly onto hard copy carbon forms, or electronically into IDS. The carbon copies are then submitted to Business Services staff to be manually entered into the CAFS system. Notes that are entered electronically into Oracle must then be converted into a format that is recognized by CTOS. Attendance records for those clients receiving active treatment who are eligible for Medicaid are hand-delivered by the employees who handle the waiver information and entered manually by Business Services staff.

The billing process provides an example of the inefficiencies created by maintaining inconsistent and incompatible systems for the provision and tracking of services. Developing or purchasing an integrated package of applications for service delivery could streamline office procedures. Such a system could automate many of the steps in the billing process that are currently performed manually. The billing process with a vendor-supplied system for service delivery could look more like **Chart 5-2**.

Chart 5-2: Proposed Billing Process with Vendor System

As shown in **Chart 5-2**, a better integrated software environment could dramatically streamline various office procedures that are currently performed using a combination of manual and electronic procedures. In addition to meeting external reporting requirements, the process in **Chart 5-2** would more easily facilitate the sharing of data between departments for more holistic planning and could produce better reports for management decision making.

R26 HCMRDD should reconfigure administrative software systems to improve service delivery, provide information that enables better decisions, and conduct business processes more efficiently and effectively.

Every organization has a legacy of investments in technology that has created the current environment. The Gartner Group notes that the business value of technology comes from the ability to conduct business processes more reliably, faster, and at lower cost, to

improve service delivery and to provide information that enables better decisions. As demonstrated by the billing process, HCMRDD's current administrative software system does not support its ability to conduct business processes more reliably, faster, or at a lower cost.

Currently the Board uses an amalgamation of different administrative software systems. A number of the systems in use are noted in **Table 5-1**.

Table 5-1: Compilation of Current HCMRDD Software Systems

| Software | Department | General Uses |
|---|---|---|
| Microsoft Office applications (Word and Excel) | All | Word processing, and data analysis |
| PageMaker and PhotoShop | Community Relations | Create publications – newsletters, brochures, and pamphlets |
| Performance System | Business Services | Accounting and finance services |
| Individual Data System | All | Track demographics for reporting requirement (IIF) to ODMRDD; contains intake information; and newest module includes progress notes. |
| Gatekeeper | Business Services | Payment and Authorization for Waiver Services (PAS) |
| PeopleTrack | Personnel Services | Payroll and tracking human resource information, |
| Network Simplicity Meeting Room Manager software | All | Reserve meeting rooms |
| Outlook | All | Email |
| BoardMaker¹ | Children's Services | Create a customized "board" with pictures and commands that children can use to communicate |
| Voc-Shop² | Adult Services | General Assembly payroll |
| Oracle Lite | Community Resources and Children's Services (will also be used by Adult Services) | Platform that enables web based applications. Being used for online access to progress notes. |

Source: HCMRDD

¹ Children's Services also has additional software available for educational purposes including Laurent and Cause and Effect software.

² HCMRDD recently purchased this software and, at time of audit, payroll was still processed on CTOS.

In addition to the software listed in **Table 5-1**, HCMRDD is using CTOS, a character-based, multi-processing, multi-user operating system. This operating system is used to process the Community Alternative Funding System (CAFS) that provides Medicaid reimbursement for services provided by habilitation centers. Transportation data is processed on CTOS and billing data is then input into the CAFS system. In addition to CAFS billing, CTOS is also used for the Client Pupil Information System that contains enrollment data for the schools and adult centers. Additionally, the payroll for General

Assembly is still processed using CTOS although the Board has purchased new software for this function.

Numerous concerns and gaps in the HCMRDD software systems were identified from interviews and the AOS survey. For example, certain discrepancies were noted with the CAFS system. First, CAFS has limited data entry capabilities. If an individual receives Occupational Therapy for half of a month, and enters an Intermediate Care Facility (ICFMR) the other half of the month, information for that client can only be entered based on one of these services. Therefore, HCMRDD cannot bill for the entire month and loses some reimbursement money. Another deficiency is that the system can only hold one month's data at a time. At the end of each month, that month's information is archived. Therefore, HCMRDD does not have the ability to easily compile historical data and run comparisons or trend analyses. Some other software-related problems noted include the following:

- **Report generation:** When staff members need data reports, they must submit requests to computer services. Various communication barriers have created a separation between user requests and the information needed by ISD to create complete reports in the required formats.
- **Technology resources at the schools:** Schools are in need of additional adaptive and assistive hardware and software.
- **Remote access:** HCMRDD employees at remote sites cannot access needed client information from the database. Staff expressed frustration about the limited capabilities for retrieving and formatting data.
- **Forms management:** Staff report that forms are posted on the intranet, but they are difficult to access, not updated in a timely manner, and not user-friendly. Problems include the need to have computer services process all form changes, and the lack of an auto-populate feature.
- **CTOS system:** This operating system is no longer supported and replacement parts are not available. Data must be stored on double-sided, double-density 5.25 inch floppy disks, which are no longer available from most vendors.
- **Software integration:** Current software systems do not effectively share information. One example involves the transportation log, which does not interface with General Assembly payroll. Since the two systems are not integrated, errant data could cause someone to be inappropriately paid.

- **Software functionality:** Not all staff are familiar with the functionalities of existing software systems. One example involves PeopleTrack, in which some staff have spent significant amounts of time trying to manipulate data. Although training has been provided to all staff using PeopleTrack, some have forgotten how to perform specific tasks and have opted to use other programs, such as Microsoft Access, to track and monitor data.

Feedback from interviews and the AOS survey indicate that HCMRDD employees are frustrated with the current state of technology at HCMRDD and that there are numerous gaps between what staff need and what they currently receive. Approximately 67 percent of survey respondents were unaware of recent technological initiatives being undertaken by HCMRDD. Employees are also unaware of current efforts to improve the system and are unaware of plans for future system enhancements. Planning and communication techniques discussed in the **planning and management** section of this report could improve staff awareness of technical initiatives. HCMRDD needs to assess the needs of staff across departments and evaluate current and potential software systems against a set of criteria. The criteria should be derived from the objectives of improving service delivery, providing information for improved decision making, and conducting business processes more efficiently and effectively.

R27 HCMRDD should explore uses of web-based applications and wireless technology to enhance communication capabilities with providers, individuals, families and stakeholders. Any future uses of these technologies should be incorporated into the strategic technology plan.

Current communication between HCMRDD and providers occurs through a number of different means. Some providers submit electronic billing information while others submit hard copy documentation. HCMRDD has a web site that serves as a vehicle to share information with the provider network and with the community at large. However, the web site does not facilitate the sharing of information with providers. Web-based applications could be useful for making referrals to providers and verifying the status of referrals. The Cuyahoga County Board of Mental Retardation and Developmental Disabilities is currently developing a web-based application that could be used for this type of communication with providers. Likewise, the Hamilton County Department of Job and Family Services has used web-based technology to communicate with providers participating in the County's managed care network.

Web-based applications reside in a server at a centralized location and are accessible over the web using any computer, as long as it has a web browser and an Internet connection. The application itself is not resident on the remote computer but in the server at the centralized location. Web technologies allow individuals to access data when and where they need it. This technology can facilitate communication between geographically

dispersed staff. Effective use of web-based applications is heavily dependent on a fast and reliable network. Some network options that would facilitate the use of web-based technologies are discussed in **R19**.

Web-based applications may also play a key role in providing clients access to their individual plans and budgets. The role of technology in addressing this need is being explored by other County MRDD Boards. While technology can facilitate access to this information, careful planning is required to make this information available through a web-based application. The planning would need to evaluate the necessary security to ensure compliance with all state and federal requirements, such as HIPAA. This is an issue that could be addressed through the Ohio Association of County Boards of Mental Retardation and Developmental Disabilities' Technical Alliance Committee.

HCMRDD has regionalized service provision and has increased expectations for staff to provide services in community settings. In making these changes, HCMRDD has purchased laptop computers and cell phones for staff. These changes increase the need for administration in the central office to have accurate records on services being provided and staff activities. While laptops were distributed to facilitate community-based service provision, other technology was not in place to fully utilize the hardware provided. Staff had to make notes for themselves in the community and then return to the office in order to access forms and submit progress notes. The result is a duplication of efforts that detracts from direct service time. HCMRDD has just begun to use web-based applications for staff entering service documentation. This application became operational in January 2003 and is still in an early stage of implementation. This technology will enable staff to enter progress notes from any remote site that has Internet access.

R28 HCMRDD should ensure that its software environment supports required external reporting and provides the level of internal reporting needed to increase the efficiency and effectiveness of administrative practices.

HCMRDD is currently meeting external reporting requirements. Various data sets are shared with ODMRDD, The Ohio Department of Education (ODE), Hamilton County, and contract providers. HCMRDD inputs data directly into some external systems such as the county's accounting and finance system. HCMRDD also has the capability to transmit electronic files to external entities including ODMRDD.

Many of HCMRDD's external reporting requirements are to ODMRDD, which has been recently developing web-based applications to meet those requirements. ODMRDD provides basic computer needs and Internet connections to county boards that access the applications using assigned passwords. An example of this is ODMRDD's Major Unusual Incident reporting system.

Another example of ODMRDD's use of this web-based technology is the reporting of average daily membership required by ORC §5126.12. ODMRDD has recently developed a web-based application for this reporting requirement that allows boards to transmit the information in a single, easy to use format. Before the development of this system, information had to be manipulated through several programs in order to be usable by ODMRDD. HCMRDD has taken steps to be compatible with this technology.

HCMRDD needs to review its current software environment in light of changes being made at the state level to ensure that it can continue to meet its reporting requirements in the most efficient manner possible. While the Board is meeting its reporting requirements, it is not able to efficiently utilize all of the information made available by ODMRDD. This inefficiency is seen in HCMRDD's inability to process electronic remittance advices (ERA) that are provided by ODMRDD. HCMRDD staff indicated that since the agency is still utilizing the CTOS system for billing, they are unable to use the ERAs and instead rely on a manual process using paper remittance advices. A billing specialist then manually enters those billings that are denied into an excel spreadsheet to be resubmitted and tracked until they clear the billing process.

Another significant issue for HCMRDD is the absence of internal management reports. Supervisors do not have access to real time data that would enable them to monitor service trends, staff productivity, or clinical documentation such as individual service plans. As a result, supervisors have developed individual manual systems to track important dates and staff schedules. HCMRDD's current software systems do not provide the type of daily management information that the administration needs to monitor quality of care issues or resource allocation.

Improvements in administrative software systems to meet both internal and external reporting needs will increase internal efficiency and allow HCMRDD to redirect staff time to direct client services. See **Appendix A** for a comparison of the functionality of commercial software systems currently in use by other MRDD Boards.

Appendix A provides a comparison of various vendor-supplied software packages designed specifically for Ohio’s county MRDD boards. The vendors enumerated in the table have worked directly with county MRDD boards to ensure that the software meets the unique service and reporting requirements of these agencies. While HCMRDD can use this information to help facilitate a decision regarding software, it should first secure bids from each organization in a manner consistent with Ohio law. HCMRDD may also benefit from using state term contracts.

Comparison of Vendor Packages

| Software | Financial | Clinical | Employment | Billing | Cost Estimate |
|---|---|---|--|--|--|
| Creative Socio-Medics (Avatar Suite) | | Clinician Workstation (CWS) <ul style="list-style-type: none"> ● service planning ● progress notes ● note review ● diagnosis ● workflow notifications ● assessments ● end user form modeling ● reports ● library versatility | | Managed Care Organization (MCO) <ul style="list-style-type: none"> ● contact tracking ● service request management ● authorization ● case management documentation ● capitation revenue management ● cost by service codes ● claims processing ● interface capability with general ledger/accounts payable systems | Initial estimate of \$647,500 that includes product licensing for CWS/MCO - \$1,500 to \$2,000 based on 250 users, third party database: \$500 per concurrent process for 75 concurrent processes, and annual support and maintenance, usually 20-22% of license fees. CSM offers ASP deployment so HCMRDD could acquire services on monthly basis at a rate of between \$105 and \$120 per named user. ¹ |
| Infallible | <ul style="list-style-type: none"> ● department-level expense and revenue tracking ● annual state cost reports ● personal budgets ● payroll | Individual Service Plans | Payroll for workshop; Reports include average hourly earnings, Title XX and productivity | CAFS billing and documentation; Consumer demographics | Vendor did not provide cost estimate. |

| Software | Financial | Clinical | Employment | Billing | Cost Estimate |
|---|---|---|---|---|---|
| <p>Primary Solutions (Gatekeeper)</p> | | <ul style="list-style-type: none"> ● demographic information ● IIF information with new XML format ● position on waiting lists ● service planning ● pre-defined level of care documents ● autopopulating forms ● on-line progress notes with automatic billing | <ul style="list-style-type: none"> ● track schedule by activity, productivity history and wages ● job activity and cost tracking by customer, site, and payroll activities ● inventory control ● payroll ● billing. <p>Employment:</p> <ul style="list-style-type: none"> ● track employment/training opportunities ● information on hours, wages, benefits and support costs ● comparison between current and prior jobs | <ul style="list-style-type: none"> ● PAS forms ● individual budgets ● redetermination dates and expiring authorizations <p>Fiscal year cost reports:</p> <ul style="list-style-type: none"> ● separate reports for each funding source ● average per diem costs by individual. <p>Payment:</p> <ul style="list-style-type: none"> ● import or key provider billings ● process payments ● detailed reports of services authorized versus services paid | <p>Initial cost for 750 licenses would be approximately \$128,750. <u>Does not include installation, training or support.</u> Annual license fee would be approximately \$35,000 per year. In addition, each concurrent user database license costs \$125 (one time cost only).</p> |
| <p>MCGiX Corporation (ProviderGateway)</p> | <p>Track provider contract and tie to budgets. Creates interface to internal accounting systems</p> | <ul style="list-style-type: none"> ● intake/eligibility ● provider referral and response ● service planning ● progress notes ● service authorization ● personal budgets ● MUI reporting | | <p>Creates CAFS and Title XX billing files, and creates a file for unbilled charges</p> | <p>\$912,970 includes software licenses for 750 users, training, data conversion and installation. If HCMRDD chooses to have MCGiX host the system, the cost increases to \$926,570.</p> |

| | | | | | |
|-----------------------------------|---|---|--|--|---------------------------------------|
| Vertex Systems Corporation | <ul style="list-style-type: none"> ● receivables and payables ● purchase order management ● requisitions | <ul style="list-style-type: none"> ● individual information ● demographics ● intake ● service billing ● statistics ● service plans ● outcomes and status | Handles all productivity calculations, job labor costing, benefit tracking | Centralize processing decision for billing, calculates services delivered and verifies rules for billing | Vendor did not provide cost estimate. |
|-----------------------------------|---|---|--|--|---------------------------------------|

Source: Software vendors

Notes: Functionality listed is not a comprehensive list of the functions available in each package. The software systems listed are available in components so it is not necessary to purchase the entire system.

¹ Cost estimate for CSM based on number of staff estimated to use clinician workstation.

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Appendix B: HCMRDD Employee Survey Responses

| Statements | Responses | | | | | |
|--|---|--------------------------------|---------------------------------|--------------------------------|----------------------------------|-----------------------------|
| 1) How long have you been employed with HCMRDD? | 1 Less than 12 months | 2 1 – 5 years | 3 6-10 years | 4 Over 10 years | Average Response | |
| | 6 | 28 | 8 | 31 | 2.9 | |
| 2) If you have been employed with HCMRDD over five years, how would you rate the progress you have seen in technology and technical applications at HCMRDD during your tenure here? | 1 None | 2 Very little | 3 Moderate Amount | 4 Large Amount | 5 Phenomenal Amount | Average Response |
| | 0 | 5 | 18 | 20 | 1 | 3.4 |
| Comments: | Respondents generally indicated that technology has advanced within the last five to ten years, although some respondents pointed out that many more advancements are possible. A few respondents have seen technology purchases but have not seen commensurate improvements in internal processes and service levels. | | | | | |
| 3) How often do you use a personal computer, for any reason, during your workday? | 1 Entire day | 2 Few times a day | 3 Few times a week | 4 Rarely or never | Average Response | |
| | 12 | 34 | 11 | 16 | 2.4 | |
| 4) How much do your primary job duties rely on technology or computers? | 1 Very much | 2 Mostly | 3 Some | 4 Very little | Average Response | |
| | 20 | 13 | 29 | 11 | 2.4 | |
| 5) Currently, I feel that the computer and technology available to me are adequate to enable me to fulfill my job duties efficiently. | 1 Strongly Agree | 2 Agree | 3 Neutral | 4 Disagree | 5 Strongly Disagree | Average Response |
| | 10 | 31 | 15 | 8 | 6 | 2.6 |
| Comments: | Some respondents to this question enumerated specific technical deficiencies, such as computer availability and software functionality. Most comments, however, expressed the need for consistency across the agency in technical skills and priorities. For example, some supervisors encourage staff to attend computer training, while others may not value those skills or encourage attendance at training sessions. | | | | | |
| 6) I think that more advanced technology would enable me to perform my job with a higher level of effectiveness and efficiency. | 1 Strongly Agree | 2 Agree | 3 Neutral | 4 Disagree | 5 Strongly Disagree | Average Response |
| | 17 | 28 | 23 | 3 | 1 | 2.2 |
| Comments: | A comprehensive information system and a higher level of automation of daily activities were frequently noted on this question. | | | | | |

| | | | | | | |
|---|--|------------------------|----------------------|---------------------------|--------------------------------|-------------------------|
| 7) If you have ever contracted the MIS help desk due to a computer issues, how satisfied were you with the amount of time it took for your problem to be resolved? | 1 Very Satisfied | 2 Satisfied | 3 Neutral | 4 Dissatisfied | 5 Very Dissatisfied | Average Response |
| | 8 | 18 | 6 | 7 | 1 | 2.4 |
| Comments: | Respondents were generally pleased with the level of service provided by the help desk, although several staff reported difficulty in getting assistance from non-help desk ISD staff. | | | | | |

| | | | | | | |
|---|---|------------------------|----------------------|---------------------------|--------------------------------|-------------------------|
| 8) If you have ever contacted the MIS help desk due to computer issues, how satisfied were you with the level of expertise offered to help resolve your problem? | 1 Very Satisfied | 2 Satisfied | 3 Neutral | 4 Dissatisfied | 5 Very Dissatisfied | Average Response |
| | 7 | 18 | 9 | 3 | 0 | 2.2 |
| Comments: | Most respondents were, again, very pleased with the level of service received from the help desk. However, several staff discussed the use of “quick fixes” to resolve recurring technical problems that could be eliminated by addressing the root causes. | | | | | |

| | | | | | |
|--|--|--------------------------------|--------------------------------|-------------------------------------|-------------------------|
| 9) How many of the programs on your computer do you understand? | 1 All applications | 2 Most applications | 3 Some applications | 4 Almost no applications | Average Response |
| | 7 | 23 | 33 | 1 | 2.4 |
| Comments: | Respondents understand the applications pertaining to their job activities. They do not understand applications that they have not used, although most respondents feel they would receive adequate support and training for new applications. | | | | |

| | | | | | | |
|---|--|------------------------------------|-----------------------------------|-----------------------------------|-----------------------------|-------------------------|
| 10) When was the most recent computer training session offered by HCMRDD that you have attended? | 1 Within the last week | 2 Within the last month | 3 Within the last year | 4 More than a year ago | 5 Never attended | Average Response |
| | 2 | 16 | 30 | 14 | 11 | 3.2 |
| Comments: | Several respondents to this question indicated that they would like to take more technical training classes, but they were prevented from doing so for a number of reasons, including class availability and lack of supervisory approval. | | | | | |

| | | | | | |
|--|---|------------------------------|--------------------------------|---------------------------|-------------------------|
| 11) How would you rate the quality of the information presented in the particular course you attended that was offered by HCMRDD? | 1 Extremely relevant | 2 Mostly relevant | 3 Slightly relevant | 4 Not relevant | Average Response |
| | 18 | 31 | 9 | 2 | 1.9 |
| Comments: | Comments for this question were overwhelmingly positive. One respondent, after attending a training class, was motivated to purchase a computer for home use. | | | | |

| | | | |
|--|---|------------------------------|-----------------------------|
| 12) What was the main reason you attended the course offered by HCMRDD? | 1 Required to attend | 2 Chose to attend | Average Response |
| | 23 | 35 | 1.6 |
| Comments: | Most respondents decided on their own to attend training, although some of these decided partially based on encouragement from others, including supervisors. | | |

| | | | | | |
|---|---|----------------------------------|--------------------------------------|----------------------------|-----------------------------|
| 13) To what level do you think additional training could help you use technology more effectively at work? | 1 Definitely beneficial | 2 Might be beneficial | 3 Probably not beneficial | 4 Waste of time | Average Response |
| | 31 | 24 | 9 | 5 | 1.8 |
| Comments: | For the most part, responses indicated an interest in training on any new software or procedures. Some respondents had an interest in specific training, such as advanced Excel, Oracle, and assistive/adaptive technology. | | | | |

| | | | | | |
|---|--|-----------------------------|------------------------------|-------------------------------|-----------------------------|
| 14) How aware are you of the most recent initiatives of the technology/MIS department at HCMRDD? | 1 Very aware | 2 Somewhat aware | 3 Generally aware | 4 Not at all aware | Average Response |
| | 4 | 21 | 34 | 12 | 2.8 |
| Comments: | Most respondents have a “grapevine” understanding of technical initiatives, although one respondent was not aware of the existence of a technology department. | | | | |

| | | | | |
|--|---|---------------------------------|----------------------------|-----------------------------|
| 15) How receptive is the agency to your technology needs? | 1 Very receptive | 2 Somewhat receptive | 3 Not receptive | Average Response |
| | 18 | 41 | 5 | 1.8 |
| Comments: | A majority of respondents want HCMRDD and ISD to be not only more receptive, but proactive in identifying user needs. | | | |

| | | | | | | |
|---|--|------------------------|----------------------|---------------------------|--------------------------------|-----------------------------|
| 16) How satisfied are you with your opportunity to express ideas or concerns regarding technology at HCMRDD? | 1 Very Satisfied | 2 Satisfied | 3 Neutral | 4 Dissatisfied | 5 Very Dissatisfied | Average Response |
| | 12 | 25 | 28 | 6 | 1 | 2.4 |
| Comments: | Respondents to this question feel they are able to share ideas about technology, but they are frustrated when no action is taken. A system for identifying and addressing user needs could be helpful. | | | | | |

| | | | | |
|---|--|---------------------------------|------------------------------|-----------------------------|
| 17) If you were to make a suggestion for new technology implementation or improvements, what do you feel is the probability of those suggestions being considered? | 1 High Probability | 2 Medium Probability | 3 Low Probability | Average Response |
| | 9 | 41 | 19 | 2.1 |
| Comments: | Some respondents do not know who to contact with technical suggestions. Others feel that the probability of suggestions being heard and acted upon is contingent upon the organizational rank of the person making the suggestion. | | | |

| 18) When concerns or ideas are expressed, how often do you feel that action is taken? | 1 Always | 2 Almost always | 3 Sometimes | 4 Almost never | 5 Never | Average Response |
|--|---------------------|--------------------------------|------------------------|-------------------------------|--------------------|-----------------------------|
| | 3 | 13 | 45 | 9 | 1 | 2.9 |

19) If there were no constraints such as budget or timeframes, what is/are the major technology enhancement(s) you would really like to see at HCMRDD? Why?

- Community Resources database that is current, easily accessible to staff and relatively easy to use.
- Faster, more versatile computers, preferably laptops.
- Additional assistive/adaptive technology and trained staff to facilitate its use.
- Remote working capabilities, including options for networking and printing.
- More computer training on all computer programs.