

Commonwealth of Kentucky

Strategic Information Technology Plan



Jointly developed in cooperation with:



and the

Kentucky Information Resources Management Commission

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Strategic Information Technology Plan

The Strategic Information Technology Plan for the Commonwealth of Kentucky has been developed to provide a framework and a set of strategies for the utilization and management of information technology within Commonwealth government. The plan is part of an overall effort in conjunction with the EMPOWER Kentucky project to enhance the use and management of information technology resources. There are several other documents which provide more detailed and more tactical approaches to these issues. These documents include:

- Emerging Technologies Report
- Commonwealth Information Technology Architecture and Standards
- EMPOWER Kentucky Integration Report
- Chief Information Officer and Information Technology Organization Report
- Information Technology Infrastructure (Network and Training) Project

Implementation of this plan and these additional efforts referenced above will provide the detailed tactical plans necessary to support the objectives defined in the plan and in the EMPOWER Kentucky Blueprint.

The plan is divided into five sections. Each of the sections is listed below with a brief description of its content.

I. Executive Summary

The Executive Summary provides a high level overview of the key components of the information technology (IT) plan. The summary provides an overview of each of the following sections except for the appendices.

II. Principles, Objectives and Strategies

This section defines five guiding principles for the use of information technology in the Commonwealth. Objectives are defined for each of the guiding principles and a set of strategies have been identified for each objective. All IT related projects must conform to these principles, objectives and strategies. Agency and department IT plans must conform to the principles and objectives.

III. Public Policy Implications

This section discusses the Public Policy issues related to the deployment of information technology within Commonwealth government.

IV. Plan Review and Key Implementation Steps

This section describes critical success factors for successful plan implementation and the key steps

necessary to implement the plan. Plan review and modification steps are included.

V. Appendices

The appendices include a glossary, the acceptable use policy for internet and email, the results of the internal assessment and recommended large project management guidelines.

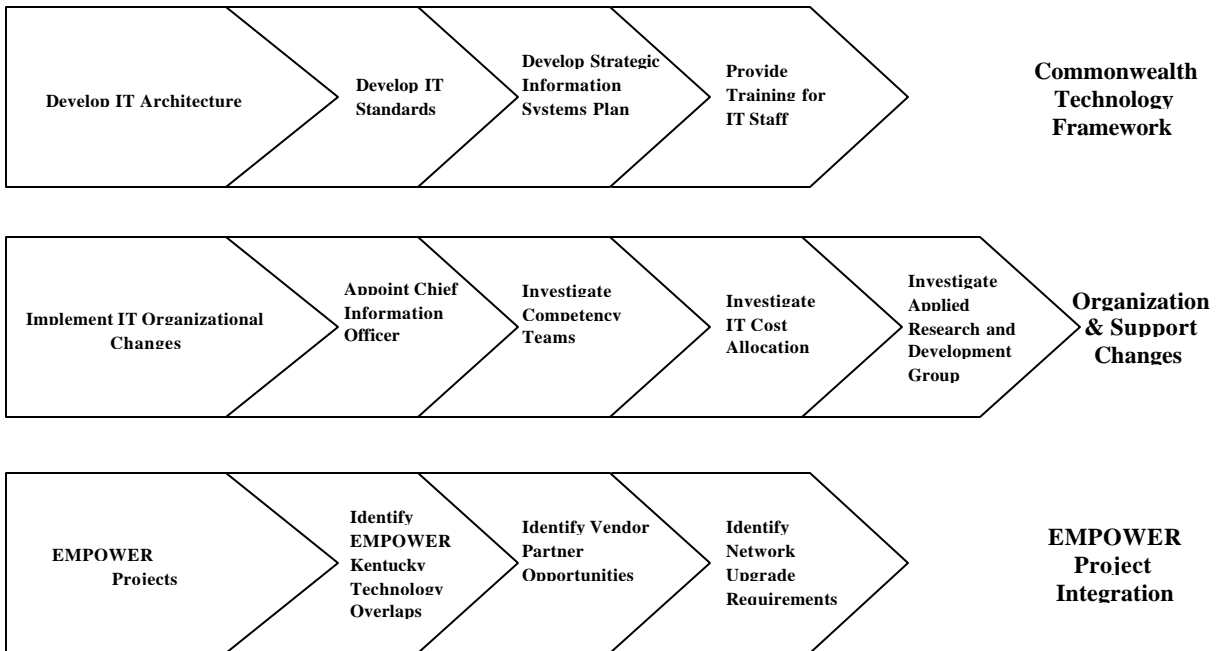
I. Executive Summary

Strategic Information Technology Plan Methodology and Approach

Background

The charter of the Kentucky Information Resources Management (KIRM) Commission provides for the development of an enterprise wide strategic plan for the use of information technology within Commonwealth government including the development of an IT architecture and standards. The EMPOWER Kentucky project identified a need to develop a strategic information technology plan including an information technology architecture and technology standards. EMPOWER Kentucky had previously conducted a study of emerging technologies and their utilization within the Commonwealth. This effort was followed by a further review of eight of the technologies identified as the most likely to be implemented in EMPOWER Kentucky initiatives and the impact of these technologies on the IT organization. These efforts supported the development of the Strategic Information Technology Plan.

Three key technology initiatives are necessary to support EMPOWER Kentucky and position the Commonwealth for the future, based on the direction established in the current technology work. While these initiatives were identified through EMPOWER Kentucky their scope is Commonwealth-wide.



This plan addresses the first of the three sets of initiatives, with separate reports planned for the other

initiatives. The EMPOWER Kentucky implementation funded the development of this strategic plan in cooperation with the KIRM Commission. While the plan development was funded by EMPOWER Kentucky the scope of the plan is much broader than the current approved and funded implementation projects of EMPOWER Kentucky and includes all IT activities within the Executive Branch of Commonwealth government. The plan was developed by a team of information technology leaders from Commonwealth government with assistance from the Deloitte & Touche Consulting Group.

While strategic plans have been developed in the past, this is the first effort by the Commonwealth to create a top-down enterprise level strategic plan including a process for updating the plan on a regular basis. Additionally, an information technology architecture and standards have been developed in a parallel effort and have been published as the Commonwealth of Kentucky Enterprise Information Technology Architecture and Standards. The Enterprise Information Technology Architecture and Standards document serves as a companion document to this strategic plan.

Purpose

The Commonwealth Strategic Information Technology Plan provides a framework for the effective management of IT in the Commonwealth. The primary role of information technology is to support the business objectives of the Commonwealth and to facilitate agency efforts to provide efficient and effective services to the citizens of the Commonwealth. The plan will guide agencies in the development of their technology planning, currently encompassed in the Information Resource Plan (IRP) process. Agency plans and ongoing activities will be reviewed for consistency with the strategic plan.

The plan also provides a foundation for an enterprise wide approach to the management of information technology. The Commonwealth is in an organizational transition from functional silos to a process oriented environment. Many future technology efforts will cross multiple cabinets with a single goal of providing services to the citizens of Kentucky. This environment requires technology which can communicate, interoperate and share data and resources while reducing the costs associated with training and support through the use of an enterprise architecture and standards for IT.

This plan is not intended to limit or stifle department or agency creativity but to provide a stable infrastructure and environment in which to solve common business problems faced by many agencies and to allow the agencies to collaborate on significant efforts. The plan is built on the assumption of an IT management model which utilizes the best features of both centralized and decentralized IT management, support and decision making.

The plan also provides a foundation for the development of the IT architecture and standards. The architecture and standards are critical to ensuring the ability of multiple cabinets or agencies to share resources including applications and data. The standards provide for interoperability, consistency and more effective management of training and support costs. Exceptions may be necessary and these will be based on a business case analysis.

Approach

The development of the strategic plan involved the following steps:

- Assessment of Strengths, Weaknesses, Opportunities and Threats of Current IT Environment
- Definition of Commonwealth Information Technology Guiding Principles
- Definition of Commonwealth IT Objectives
- Definition of Commonwealth IT Strategies
- Issuance of the Interim Report
- Review of Strategic Plans from Other States
- Definition of Architecture Directions for Architecture and Standards Team
 - Data Principles
 - Applications Principles
 - Development and Deployment Principles
 - Technology Principles
 - Infrastructure Principles
 - IT Management Model
- Definition of Public Policy Implications
- Definition of Critical Success Factors
- Definition of Strategic Plan Review and Implementation Steps

Technology Initiatives in Other States

As part of the Strategic Information Technology Plan, technology initiatives in other states were reviewed to gauge where Kentucky ranked in respect to these states. Although not comprehensive, it demonstrates that Kentucky is facing many of the same issues as other states and that the breadth and depth of current or proposed investment in information technology is equal to or larger than these states.

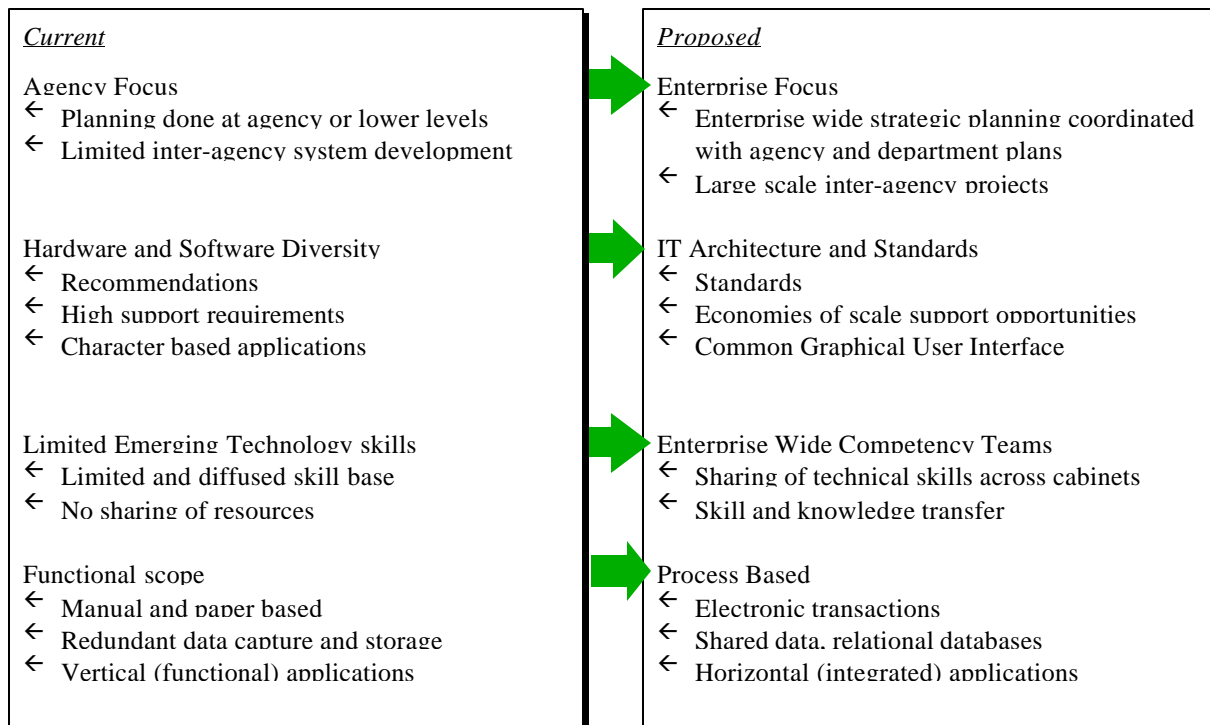
For example, California, Texas, Rhode Island, Tennessee, Montana and Michigan are evaluating and selecting new financial systems. Many others including Arizona, Florida, Massachusetts and Hawaii are considering new financial, human resources and payroll systems. Numerous large cities, who will spend equal amounts on financial systems similar to the expenditures Kentucky will incur, include New York City, Los Angeles, Chicago and Dallas. With many of the afore mentioned states and cities there have been significant investments in imaging, internet, mobile computing and relational database technology. In Massachusetts, imaging technology is being implemented in the courts, regulatory agencies and revenue. Pennsylvania is considering new procurement systems including electronic commerce and smart card components.

In the private sector, many large companies are focusing on enterprise-wide transformations of information systems and business processes. Citibank, Ford and Owens Corning are investing tens of millions in new financial systems operating in distributed, client/server architectures.

Many of these cities, states and private companies have similar sized IT budgets, technology constraints and resource limitations when compared to the Commonwealth of Kentucky. The challenges are similar and therefore, the ideas and solutions should go beyond the public sector and also consider what the private marketplace is doing to solve their IT problems.

Information Technology Vision

The vision for information technology (IT) use within the Commonwealth includes the development of an enterprise (Commonwealth) wide focus to the application of IT, a focus on the customer and an emphasis on using IT as an enabler in business process reengineering efforts. The following chart depicts the change in IT philosophy.



Information Technology can be used to provide higher quality services in a more cost efficient manner through process improvements include reducing cycle time, providing more timely and convenient access to services, and/or reducing the costs of government service. The EMPOWER Kentucky initiatives are examples of using technology to enable process improvements. As the Commonwealth changes its business processes to be more customer oriented and to provide effective cross cabinet services, Information Technology management must adjust accordingly.

Information Technology is not a “silver bullet” and expectations for the use of technology must be managed. Applying technology to an ineffective or inefficient process will produce only marginal results at best and may actually result in higher costs or less efficient service. The emerging technologies present many opportunities for agencies to revise their business processes and increase the level of customer service. IT planning must be tightly integrated with business planning in order to provide the

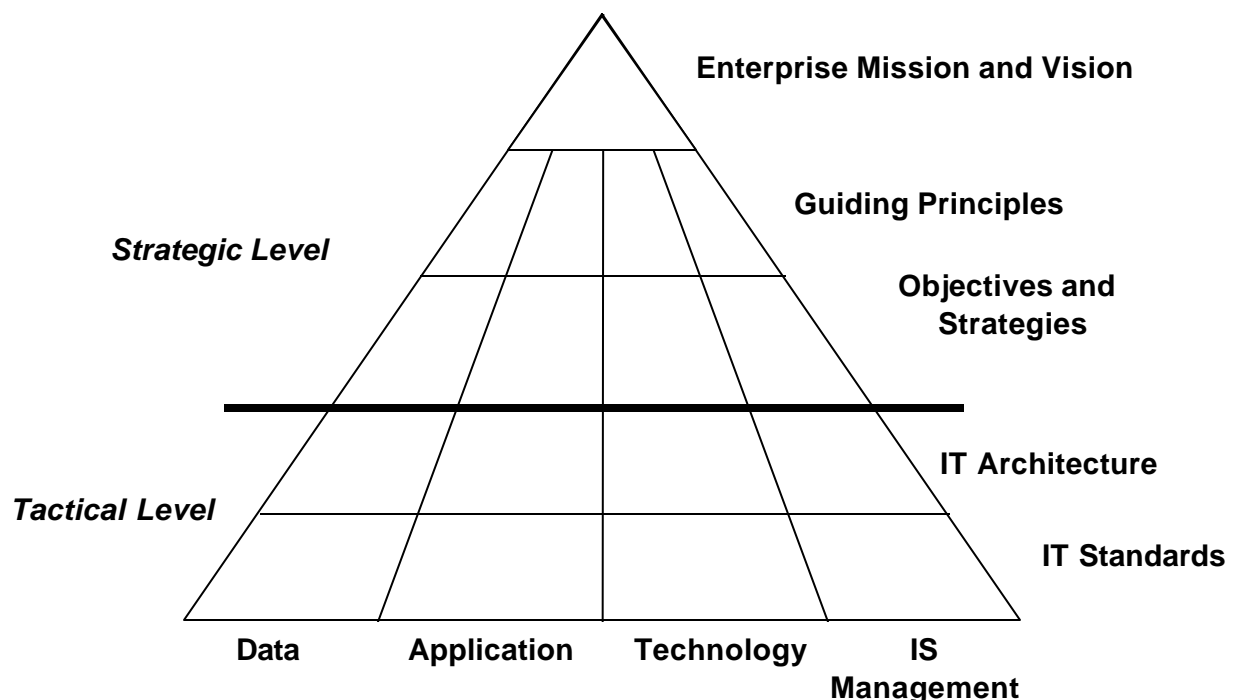
greatest amount of benefit.

The likely success of IT projects can be increased by careful and thorough planning which includes a cost/benefit analysis as well as a multi-year cost of ownership including hardware and software maintenance, ongoing training, support and operations. The initial investment in hardware and software is often a small portion of the expenditures necessary to successfully implement and support the technology. Training, support, upgrade and replacement are important and must be factored into the cost of ownership model and the budgeting process.

Throughout this document are references to changing the approach to IT to more of an enterprise wide activity. The term enterprise is used to denote the state government of the Commonwealth. While cabinets or agencies may be referred to also as enterprises, for the purpose of this plan the term enterprise will always refer to the Commonwealth government.

The strategic plan is part of an overall framework for the use of information technology in the Commonwealth. The IT standards support and provide more detail for the IT architecture. The IT architecture supports the guiding principles, objectives and strategies defined in the Strategic Plan. The strategic plan supports the enterprise in obtaining its business goals and objectives.

Framework for the IT Strategy, Architecture and Standards



The Commonwealth IT direction is spelled out in a series of documents including this Strategic Plan, the Commonwealth IT Architecture and Standards, and the EMPOWER Kentucky Integration Report. The IT Architecture and Standards development was guided by a set of principles for six key architectural areas including data, applications, technology, development and deployment, infrastructure and IT management. These principles were provided to the team developing the architecture and standards for their guidance. A more detailed discussion of these principles is contained in the IT Architecture and Standards document.

IT Architecture and Standards Guiding Principles

The following is a summary of the principles provided to the architecture and standards team for their use in development of the IT Architecture and Standards.

Data Principles

The Commonwealth will move from an environment where there is little or no data standardization and sharing to one in which data is commonly collected once and utilized many times. This will reduce duplication, inconsistencies and errors.

Applications Principles

The Commonwealth will move from “stovepipe” applications to systemic type applications. For example, the new systems for Simplified Administrative Services, Simplified Revenue and Simplified Access will each replace several legacy applications with an integrated application. An approach to managing the applications portfolio will be developed. A plan for the life of each application and its eventual replacement will be identified.

Technology Principles

The key technologies used by the Commonwealth will be built on a common architecture and standards. This will ensure the interoperability (ability to share information and resources) and communication among applications and systems while keeping support and training costs manageable.

Development and Deployment Principles

A common project management model will be developed. This model will include more participation by programmatic managers and senior management in the case of large projects. Reuse and sharing will be strongly encouraged across Cabinets and projects. The use of commercial applications rather than custom development will be emphasized.

Infrastructure Principles

The infrastructure will be managed from an enterprise perspective and will utilize the concept of shared

services where effective. The infrastructure will be leveraged to provide a solid foundation for large and small applications. An enterprise-wide mainframe data center (Commonwealth Data Center) and the use of the Kentucky Information Highway (KIH) as the wide area network are important architectural directions. The network topology will include TCP/IP as the protocol for traffic over the wide area network and ethernet will be the primary protocol for local area networks.

IT Management Model Principles

An enterprise wide focus to the management of IT will be developed. The implementation of the Chief Information Officer position will drive the restructuring of the organization model for IT management.

Internal Assessment

The strategic planning team performed a strengths, weaknesses, opportunities and threats (SWOT) analysis of the current IT environment in order to provide input into the development of the objectives and strategies included in this plan. The SWOT analysis was based on analysis done during the early portion of EMPOWER Kentucky and brainstorming sessions held with the planning team. The results were clarified, reduced and prioritized to produce the internal assessment. A more detailed discussion of each point is contained in Appendix C.

The Commonwealth faces many of the same challenges as other state and local governments including limited resources, the Year 2000 problem, welfare reform, recruiting and retaining IT staff, and staying current with technology advancements. The Commonwealth, for the most part, is supporting an aging applications portfolio. Three of the largest EMPOWER Kentucky initiatives (Simplified Access, Simplified Administration and Simplified Revenue) involve replacing, upgrading or enhancing legacy applications. A strategy for managing the application portfolio must be developed. Applications should be categorized as those that must be replaced, those that will be maintained and those that need significant restructuring or refurbishing.

The cost of complying with the objectives and strategies defined in this plan and with the IT architecture and standards being developed in concert with the plan will be significant in some cases. The implementation phase of the plan will include the development of an impact analysis which will identify potential costs associated with implementing sections of the plan. A business case analysis may indicate that it is not feasible to comply, at least in the short term, with some or all of these directions. New methodologies and approaches to budgeting for, and funding, IT initiatives will be identified and evaluated by the Chief Information Officer and cabinet IT leadership to minimize the cost of compliance.

Because of actions already taken, the Commonwealth does not face some of the challenges faced by many other states including the consolidation of multiple data centers, establishment of a wide area network, and significant troubled IT projects. The Commonwealth utilizes a single data center which can be leveraged even further to reduce support costs. The Kentucky Information Highway is viewed by many other states as a model for both public-private partnerships and a state wide communications backbone.

The following is a brief summary of the SWOT analysis.

Strengths

The Kentucky Information Highway, the KIRM Commission and the embracement of business process reengineering methodologies were among the strengths identified for the current environment. The strategic plan will build on these strengths. A high level list of the strengths includes:

- The Kentucky Information Highway and Kentucky TeleLinking Network
- KIRM Commission
- A base level architecture and standards including a structured methodology
- The elevation of IT within the cabinets including appointment of agency IRMs
- A single agency (Department of Information Systems) overseeing computing infrastructure and shared resources
- The current administration's commitment to technology.
- The embracement of Business Process Reengineering and similar concepts
- Proactive public policy in targeted areas
- Quality IT people resources

Weaknesses

The current Commonwealth procurement process, current Commonwealth personnel practices, lack of an IT architecture and lack of accountability with existing agency Information Resource Plans are among the weaknesses identified. Strategies will be identified to improve upon these areas. A high level list of the weaknesses includes:

- The IT procurement process
- Personnel practices for recruiting, retaining and rewarding IT professionals
- Comprehensive and consistent IT architecture
- Adequate investment in IT
- An enterprise asset management strategy
- Accountability with Information Resource Plans
- Training for IT managers
- The ability to respond to rapid change
- Business strategic and tactical planning
- Understanding of records management policies

Opportunities

Opportunities such as the emerging technologies, information highway capabilities and increased

management awareness of technology will be exploited by the strategies included in the plan. Major identified opportunities include:

- Emerging technologies including, but not limited to, internet, workflow, and electronic commerce
- Information highway capabilities including video conferencing, internet access, and distance learning
- EMPOWER Kentucky's emphasis on technology, process redesign and funding
- Shared central resources including the mainframe and centralized operations support
- State-wide electronic mail network.
- Partnerships with state agencies, federal agencies, local governments and vendors
- Increased management awareness of technology
- Enterprise licensing for software and leveraged buying for hardware and services
- Geographic Information Systems (GIS) standardized data (basemap)
- Providing enabling technology to field staff to support service delivery
- Improving technology where current use is limited
- "Off the shelf" software available to replace lengthy development
- Selected use of outsourcing similar to the private sector (as appropriate) to supplement existing resources or to provide skills which do not exist within Commonwealth resources
- Leveraging previous projects such as KETS and sharing resources among projects such as the proposed model courthouse

Threats

Threats, including the Year 2000 problem, antiquated laws and regulations and unmanaged expectations, must be acknowledged and planned for to ensure that they do not create an unsatisfactory information technology environment. These threats include:

- Antiquated laws and regulations related to information technology
- The Year 2000 problem
- Security of technology, applications, data and networks
- Inability to attract and retain the information technology resources with the required skill sets
- The budget process which often penalizes agencies for being efficient and saving money
- Inability to manage and meet users expectations
- The short technology lifecycle
- The reliance on networking/potential collapse of internet
- Proprietary products
- Federal mandates and legal rulings affecting existing systems, new acquisitions and funding availability

- A lack of customer acceptance and confidence, resistance to change, hidden agendas

Information Technology Guiding Principles

The following principles are key statements of direction related to information technology and its ability to serve as an enabler to meet the needs and goals of the Commonwealth government. These guiding principles are intended to provide an environment in which the Commonwealth can achieve its objectives related to providing high level customer service. The principles are interrelated and meant to provide a cohesive approach to IT. While objectives and strategies are defined for each principle they must be viewed within the context of the total environment described in this section of the plan.

- Support the business objectives of the Commonwealth government
- Conduct Commonwealth business electronically
- Treat information as a strategic resource
- View technology investments from an enterprise perspective
- Ensure electronic access to information and services while maintaining privacy

Principle One: Support the business objectives of the Commonwealth government

The primary role of information technology is to support the business objectives of the Commonwealth. Information technology can enable improvements in business processes including reduction of costs and cycle times. Technology has a limited value when not applied to the business objectives and goals of the organization. IT planning, budgeting and management must be closely integrated with the business planning, development and management to ensure that IT is being applied effectively and efficiently.

This planning should include business recovery planning. As processes become more dependent on technology it is critical to develop a continuity plan to be utilized in the event the technology is not available. Effective business recovery planning can mitigate the damage from a short term technology outage or a long term problem caused by a natural disaster.

Current Status: This plan is the beginning of a new process for IT planning in the Commonwealth. Currently, there is little integration of IT planning with business planning or with the budgeting process. There is an opportunity for significant improvement in this area. EMPOWER Kentucky has provided a model for utilizing information technology to improve key business processes.

Principle Two: Conduct Commonwealth business electronically

Commonwealth business can frequently be transacted more efficiently and effectively utilizing information technology to support the process. Electronic commerce technologies including the World Wide Web (WWW), electronic data interchange (EDI) and electronic funds transfer (EFT) can speed the process of business transactions and reduce the amount of manual intervention required. The

WWW can also be used very effectively for publishing documents.

Electronic mail is already in wide spread use within the Commonwealth but can be used more effectively for communication and to reduce the production of paper documents. Electronic forms hold the promise of additional opportunities to reduce the amount of paper being collected and processed. Electronic forms can also increase the accuracy and timeliness of the data.

Current Status: While there are some examples of electronic commerce in use in the Commonwealth it is relatively limited at this point in time. There are a number of significant initiatives on the horizon including Electronic Benefits Transfer and the use of EDI in the new integrated financial system.

Principle Three: Treat information as a strategic resource

Information is a critical asset of, and owned by, the Commonwealth. It must be managed from an enterprise perspective to ensure accuracy, integrity and availability. This includes developing a methodology or structure for sharing data across functional, technical and organizational boundaries. Agencies and departments act as custodians or stewards of the data and facilitate the sharing and reuse of the data. Only the data necessary to support the business objective should be collected. Data should be collected once and used many times. Duplication increases the likelihood of erroneous data and of having different values for the same piece of data.

There are many terms for data used for decision making including decision support systems, executive information systems and data warehouses. While these technologies can provide significant benefits to decision makers they can only be effective if the data is timely, accurate and consistent.

Current Status: This is the area which requires the greatest amount of attention by the Commonwealth. Currently, there is very little sharing of information among applications or systems. There are no standards for data definition or usage. The IT architecture and standards will begin this process but the process must continue beyond the level of detail to be included in the architecture and standards document. The creation of standard data definitions, formats and values will require the participation of both IT professionals and functional experts.

Principle Four: View technology investments from an enterprise perspective

Technology investment decisions should be made from an enterprise perspective and not that of a single cabinet or agency. An enterprise wide focus is necessary to ensure that the Commonwealth's limited IT resources are being utilized in the most effective manner. Many major business processes in the Commonwealth cross two or more cabinets. A strong technology infrastructure is required to support both enterprise wide applications as well as cabinet or agency specific projects.

A strong IT architecture and standards are required to ensure the interoperability, compatibility and shared usage of technology resources. The architecture and standards provide a foundation for building IT applications.

New IT projects must identify the impact on the enterprise and on the customer. The customer may already be interacting with one or more other Commonwealth IT applications. These existing systems can be leveraged to reduce costs and provide improved service to the customer.

Current Status: The development of the architecture and standards along with a relatively strong infrastructure (data center, wide area network, electronic mail) makes this principle the strongest currently. The implementation of the CIO model for the management of IT within the Commonwealth will further the development of an enterprise focus to the management of IT.

Principle Five: Ensure electronic access to information and services while maintaining privacy

Information is of little value if access to the information is not readily available. Providing efficient electronic access to information requires a strong infrastructure and a standard set of navigation methods and tools. Providing access to information is often a double-edged sword. The Commonwealth must balance the need for easy access to information against the privacy and security requirements of the information. Adequate privacy of personally identifiable information must be included in all electronic access methods.

Current Status: The Commonwealth continues to increase the amount of information and services available electronically but the additional possibilities for electronic access and services are almost endless. The challenge will be to provide adequate privacy and security and at the same time make access widely available. Currently, the vast majority of citizens of the Commonwealth do not have access to the internet.

Public Policy Implications Related to the Information Technology Plan

Technology and the ability to utilize it, have eclipsed current Commonwealth policies and procedures

designed to address concerns over use and misuse, access, security, management and costs. Without a proactive and articulated set of guidelines, the best interests of government and the people are not well protected. Private industry can build and manage statewide networks, provide the information tools, and develop many of the applications that use the networks. Public agencies will be responsible for most of the information resources management and service delivery concerns. In the ever more complex, technological and bureaucratic information environment of the next decade, the issue of access, digital records, security, privacy and electronic government will certainly require much more attention from our legislative leaders and policy makers.

Several of the more prominent public policy issues are outlined in the detailed Public Policy section. These issues include:

- Equitable Access
- Electronic Records Management
- Privacy
- Security
- Network Literacy and User Training for Access Services
- Intellectual Property Rights
- Adherence to Standards
- Cost and Pricing
- Public - Private Partnerships with Business Constituents
- Telecommuting
- Impact on Other Government Agencies
- Incentives or Mandates for Electronic Commerce

Plan Review and Key Implementation Steps

Critical Success Factors

The following have been identified as factors that are critical to the successful implementation of the Strategic Information Technology Plan. Each of the factors must be achieved in order to maximize the potential benefits of the plan.

- Senior Management Commitment and Leadership
 - Cross cabinet cooperation and coordination
 - Sustained commitment to Business Process Reengineering
 - Willingness and commitment to share information and standardize data
- Implementation of CIO position
- Satisfactory resolution of Year 2000 problems
- Agency Participation in Setting IT Directions

- Compliance/Adherence to IT Architecture and Standards
- Changes in Personnel Practices
- Managed Expectations for IT Initiatives
- Cultural Change
- Enabling Legislation
- Education/Training

Key Implementation Steps

The following steps are necessary for the implementation of this plan:

- Plan Acceptance and Adoption by Senior Management and the KIRM Commission
- Appoint a Strategic Plan Implementation Team
- Implementation of the CIO Position
- Executive Orders and Policy, Procedure, Regulatory and Statutory Changes
- Acceptance and Adoption of Commonwealth Information Technology Architecture and Standards
- Prioritization of Plan Objectives and Strategies
- Development of Detailed Work Plans
- Reengineering of the IT Planning Process
- Monitor Plan Implementation, Assess Results and Modify Plan

II. Principles, Objectives and Strategies

The following section provides the details of the strategic plan. Each of the five guiding principles has a set of objectives defined to support the principle and each of these objectives has a number of strategies defined to assist in obtaining the objective. These principles, objectives and strategies are to provide guidance to agencies and departments in the creation of their information resource plans. The implementation of the strategic plan will prioritize the strategies identified in this section and assign specific tasks to specific individuals to ensure attainment of the objectives.

Technology Objectives and Strategies Related to Principles

Principle One: Support the business objectives of the Commonwealth government

1. Objective - Provide competitive service delivery through effective IT investment

Strategies

1. Integrate IT planning with the development of business objectives to ensure alignment of IT and business goals. IT planning and business planning must be integrated to ensure that limited IT resources are being used to support the main goals and objectives of both the agency and the Commonwealth.
2. Link the IT budgeting and funding process to the business objectives as defined by cabinet leadership. IT resources will be allocated based on the priority of Commonwealth business objectives.
3. Create an IT environment which supports rapid response to changing business needs. Create a flexible and responsive IT environment which is capable of responding to the rapid change in technology to meet current and changing business needs.
4. Utilize performance measurements and review processes to judge the effectiveness of IT projects. Information gathered from post-implementation reviews will be very valuable in the development of future projects.
5. Develop a plan for managing the IT applications portfolio. Identify opportunities to direct funds towards new technologies rather than maintaining legacy applications.
6. Review the cabinet and agency IT strategic planning process and resulting plans to ensure alignment with business planning processes and the IT strategic directions and architecture.

2. Objective - Assess business processes for effectiveness before applying information technology solutions

Strategies

1. Adopt Business Process Reengineering (BPR) as part of the systems development lifecycle. The systems development lifecycle will be modified to include business process reengineering prior to any actual systems development work being performed.
2. Continue implementation of an infrastructure including network, hardware, software and organizational components capable of supporting EMPOWER Kentucky initiatives. The infrastructure and training must support and sustain the EMPOWER Kentucky initiatives.
3. Continually examine best practices of other agencies, governments or private sector organizations for potential application to Commonwealth process improvements.

3. Objective - Ensure that adequate and effective business recovery procedures are established

Strategies

1. Establish Commonwealth, Cabinet and/or Department level business recovery plans which identify potential risks and the steps to be taken if the risk would occur. These plans should include the required IT resources and environments, manual processing, critical application and data recovery, facilities support and key management contacts and communication plans. Business recovery plans will be developed for all levels of IT activity. Standard templates to assist in the development of business recovery plans will be created and distributed.
2. Review and test business recovery plans on an annual basis. Business recovery plans will be reviewed and tested to ensure their ability to respond to a business interruption in a satisfactory manner.

Principle Two: Conduct Commonwealth business electronically

1. Objective - Utilize electronic commerce technologies to reduce costs and improve service

Strategies

1. Utilize electronic transactions, as opposed to manual transactions, for conducting normal internal business processes such as using direct deposit rather than printing a paper check.
2. Adopt enterprise-wide standards for Electronic Data Interchange (EDI), Electronic Funds Transfer (EFT), electronic signatures, interactive voice response and World Wide Web (WWW) based transactions. These standards will facilitate transacting business utilizing electronic means thus reducing cycle time and transaction costs.
3. Establish requirements for business partners to exchange business transactions electronically. The electronic exchange of data will reduce paper processing and cycle times.
4. Establish an Electronic Commerce infrastructure and coordinating organization which will support Commonwealth business objectives.

2. Objective - Promote increased use of electronic communicationStrategies

1. Maximize the usage of electronic mail and workflow to improve communication and improve service and accountability. Electronic mail will be used to reduce the number of paper memos and the amount of time necessary to communicate with employees, citizens, and business partners located across the Commonwealth and around the world.
2. Use Interactive Voice Response (IVR) technologies for routine information dissemination, constituent services and business transaction processing. IVR will increase citizen access to routine information while freeing up employees to perform more value-added services.
3. Use Internet/Intranet technologies for information access and dissemination, constituent services and business transactions. The internet/intranet will be used to provide employees, citizens and business partners access to Commonwealth information and also to support conducting business with citizens and commercial firms.
4. Use video conferencing technology to hold meetings and conduct agency business. Video conferencing will enable employees, citizens and business partners to participate in meetings, hearings and training without traveling long distances. Travel time and costs will be reduced for the Commonwealth, citizens and business partners.

** The current Acceptable Use policy for e-mail and the internet is attached as Appendix B. All users of the internet and e-mail are bound by these policies.*

3. Objective - Enable Commonwealth business to be conducted electronicallyStrategies

1. Update statutes, regulations and policies to allow acceptance of electronic business transactions in lieu of paper forms. Statutes which currently stipulate that information be provided in paper format will be modified to allow, encourage or require suitable electronic alternatives.
2. Update statutes, regulations and policies to allow acceptance of electronic signatures. The acceptance of electronic signatures will enable business process improvements that utilize the electronic exchange of information.
3. Integrate electronic record management into business processes. Policies, procedures and processes will be created to ensure accountability and support full lifecycle management of electronic records.

4. Objective - Convert paper forms, publications and manual processes to electronic formatsStrategies

1. Reengineer processes to utilize electronic forms for business transactions. A standard template or set of questions will be developed to identify alternatives for paper forms. Prior to implementing an imaging application the process should be evaluated to determine if the data can initially be captured and stored electronically through the use of electronic forms, word processing or a spreadsheet.
2. Utilize electronic publishing and distribution such as CD ROM and the WWW for large documents. The cost of producing documents will be reduced as well as increasing accessibility and ease of maintenance.

5. Objective - Support the use of the virtual office through telecommuting and other mobile technologies.

Strategies

1. Update statutes, regulations, policies and procedures to enable telecommuting. Policies and procedures which inhibit telecommuting will be modified or eliminated in order to provide an enabling environment for doing business in an information economy.
2. Provide infrastructure, processes and productivity measures to support telecommuting. The infrastructure, policies and procedures necessary to support and encourage telecommuting while managing productivity will be developed.
3. Develop management support for telecommuting. The potential benefits of telecommuting in attracting and retaining employees in addition to savings on facilities will be communicated to Commonwealth managers.
4. Share infrastructure resources such as office space, network access and printing services among agencies. Locations will be created where field staff can utilize and share desk space, a network connection and access to printing services.

Principle Three: Treat information as a strategic resource

1. Objective - Organize and utilize information as an enterprise asset

Strategies

1. Develop enterprise wide processes to move data collection and validation to the source and reduce data duplication. Information should be shared and exchanged electronically to avoid transcribing and manual re-entry of the data. These processes will identify the process steps where key information is collected and modify other processes to utilize that information rather than collect it again. This will improve data accuracy, allow sharing of data and improve services to constituents and Commonwealth financial management.
2. Establish and enforce standards for common data element definitions and descriptions. These standards will support the reduction of duplicate data, improve data accuracy and support management reporting and analysis.

3. Develop a data administration function including the definition of the role of enterprise data custodians. Data custodians will be responsible for managing designated types of Commonwealth information to ensure its integrity, quality and consistency and to restrict its accessibility to authorized personnel. Data is an asset of the Commonwealth and must be managed as such.
4. Establish effective electronic records management policies and procedures. These policies and procedures will ensure that Commonwealth data is maintained, protected, archived and disposed of as appropriate. The differentiation between “data” and “records” needs to be articulated and communicated.
5. Protect information through effective security and authentication policies and procedures. Policies will be developed which will facilitate the sharing of information while protecting the validity and retention of the data.

2. Objective - Provide timely access to decision support information

Strategies

1. Define and implement decision support data requirements. These requirements will provide Commonwealth employees with the ability to view key information required for decision support in a standard format.
2. Develop standards for end user reporting tools. These standards will support robust end user reporting tools and reduce Commonwealth costs for training and support.
3. Develop standards for Data Warehousing to ensure compatibility. Data warehousing applications will utilize data from many different systems or applications. The data warehousing standards will support the combining of data from disparate systems.
4. Provide access to data to the provider of that data. For example, data is gathered by counties or district offices and provided to Commonwealth agencies but access is not made available to the offices or individuals who provided it.

Principle Four: View technology investments from an enterprise perspective

1. Objective - Provide leadership to encourage the effective use of technology

Strategies

1. Revise and publish the strategic plan, architecture and standards for IT on a consistent basis. These documents will be revised to reflect the Commonwealth government’s approach to the utilization of information technology, changing business objectives and changes in the information technology marketplace.
2. Provide ongoing education and awareness of IT capabilities for programmatic managers. Methods and tools for communicating with non-IT managers regarding the capabilities, opportunities and expectations of IT in supporting the business objectives will be developed.
3. Develop a customer service approach and philosophy among IT leadership and managers. Utilize tools and techniques such as customer surveys, service level agreements, open electronic forums and

electronic discussion groups to assess customer satisfaction with IT services and support.

4. Develop an applied research and development function within Commonwealth government. This function will enable the Commonwealth to stay abreast of emerging technology developments and to prototype innovative applications.

5. Participate in state and national standard setting and regulatory efforts. Participation in these groups provides the Commonwealth with the opportunity to influence the direction of standards and to receive advance notice of the future direction of IT.

6. Recognize and promote champions for the success of IT and adoption of “best practices” for IT use. Champions for the successful utilization of IT in enabling business process improvement will be identified and utilized in communications on effective IT practices. Best practices in IT use and management from both the public and private sector will be identified and communicated to Commonwealth management.

7. Provide proactive information dissemination on technology news and introductions. The Emerging Technologies document will be updated on a consistent basis.

2. Objective - Leverage the existing information technology infrastructure

Strategies

1. Provide a shared, reliable and secure technology infrastructure that facilitates the development and operation of applications and systems to support the business objectives of the Commonwealth.

2. Provide enterprise network support to ensure compatibility and quality. The network is a critical portion of the technology infrastructure. An enterprise approach to network design, development and maintenance which encompasses both wide area and local area network standards will ensure network compatibility and improve network service.

3. Provide enterprise support for services such as server administration to ensure a standard level of service. These services will take advantage of economies of scale and maximize the utilization of very scarce technical resources, reduce training costs and improve service delivery.

4. Establish a uniform intelligent client workstation orientation with a common look and feel and network connectivity capabilities. This will reduce training requirements and improve end user productivity.

5. Provide enterprise electronic mail support and services. Electronic mail is a critical service for communication among Commonwealth employees and with external agencies, customers and constituents. The enterprise support and services will ensure proper connectivity, compatibility and capacity planning.

6. Implement an enterprise strategy to provide dial-up access through a local or non-toll call into the Commonwealth wide area network (WAN) to support Commonwealth business being conducted in a mobile computing environment.

7. Continue mainframe support for legacy applications until the applications are replaced or redeployed. The role of the mainframe will migrate to that of a server in a client/server environment. The mainframe may serve as an application, database or internet server or any combination or permutation.

3. Objective - Share technology resources

Strategies

1. Develop an architecture and standards which enable and encourage resource sharing and promote opportunities for reusability and portability. These standards will include development methodologies and tools which will promote resource sharing, shared training, and reduced support costs.
2. Manage on-going costs by sharing support resources. Economies of scale will be employed to reduce support costs by sharing expensive and limited technical support resources across organizational boundaries. Policies and procedures will be developed to operationalize this resource sharing as a standard management practice.
3. Manage the asset lifecycle. Tools and techniques will be selected and implemented to support the management of information technology resources through their lifecycle from acquisition through final disposition.
4. Develop an applications portfolio for Commonwealth government. This portfolio will assist in reducing redundancy of applications. Before a new application is developed the portfolio should be examined to determine if a similar application already exists which may meet some or all of the identified needs. Applications will be shared or replicated rather than duplicated.

4. Objective - Ensure appropriate acquisition of information technology

Strategies

1. Procure technology goods and services in accordance with the architecture and standards. Applying the standards in the procurement process will reduce or eliminate the need for additional approvals and reduce the cycle time necessary to purchase hardware, software or services which are in alignment with the Commonwealth's information technology architecture and standards.
2. Evaluate commercially available software, including the integration of multiple packages, as the initial step in the business requirements process and perform a cost/benefit analysis which includes a multi-year total cost of ownership calculation. The primary approach for commercial software implementations will be to implement the software in an unmodified version. Existing business processes should be reviewed for modification prior to modifying the software.
3. When custom development is necessary, a cost /benefit analysis will be performed which includes a comparison of internal development versus external development.
4. Negotiate enterprise wide license and volume purchase agreements for standard software, hardware and services. These enterprise wide agreements will ensure compatibility, eliminate redundancy, reduce costs and shorten the purchasing cycle.
5. Support best values through the use of a bid template which evaluates the value of the technology procurement on factors other than just the lowest price.
6. The Commonwealth should distinguish commodity products from non-commodity products in the information technology field and then simplify the acquisition of commodity items, such as PCs, printers

and office automation software, through the use of catalogs and master contracts.

7. Establish vendor performance reporting capabilities. Information on vendor performance will be shared with other agencies and communicated to procurement staff.

8. Develop shared risk opportunities with vendors. Partnerships will be developed with vendors where the vendor participates in the risk and shares in the rewards if the project is successful. For example, the vendor may forego upfront fees in return for a per transaction fee as part of a long term agreement.

9. Link IT budgets to the planning process. IT budget requests must link to the IRP and to the agencies business plan. IT budget requests must conform to the IT architecture and standards unless a case by case exception has been granted.

5. Objective - Implement a new organizational structure for information technology

Strategies

1. Hire a Chief Information Officer (CIO) reporting to the Governor's office to provide IT leadership. The CIO will work closely with agency IT leaders, DIS and KIRM to provide leadership for the effective use of IT in the Commonwealth. The EMPOWER Kentucky initiative is facilitating the creation and filling of the CIO position along with a design for the organization and management of IT within the Commonwealth. The overall IT management model will be a hybrid version containing aspects of both a centralized and a decentralized management structure.

2. Revise personnel policies, compensation schedules, regulations and procedures to ensure recruitment and retention of highly skilled information technology professionals. The market for IT professionals is extremely competitive and will likely remain that way for the next several years. Changes will be made to facilitate the recruitment, development and retention of top quality IT professionals.

3. Support outsourcing of IT services as a viable option to meet business objectives.

4. Develop a standard methodology and toolset for project management. This approach will include more participation by programmatic managers and will assist in developing and managing expectations for the project. (See Appendix D for a more detailed description of the recommended project management direction.)

5. Explore alternatives to the current funding model for information technology support including the use of chargeback mechanisms. The current model may not accurately reflect the priorities of the Commonwealth in terms of the application of technology.

6. Create competency teams for critical emerging technologies. The competency teams will provide cross agency support to emerging technology initiatives. The use of the competency teams will also serve as a knowledge transfer device to increase the number of Commonwealth IT staff with the desired technical skills.

7. Provide and promote ongoing training to ensure a competent and well trained workforce. A training curriculum will be developed that will provide training on emerging and current technologies to IT professionals across the Commonwealth. A commitment will be made to continuing application and technical education for Commonwealth employees. The training will be aligned with the Commonwealth's IT Architecture and Standards. Each cabinet should set annual education targets for employees which include a minimum number of hours of training.

8. Establish a consistent agency leadership model for IT management. A high level position will be identified within each cabinet with responsibility for IT leadership.

9. Establish agency IT leadership, as designated by the previous strategy, as the accountable party for the agencies conformance with the IT architecture and standards and the review of the IRP.

6. Objective - Forge partnerships with agencies, vendors and other government entities

Strategies

1. Evaluate potential partnerships with local governments through projects such as the “model courthouse” and Simplified Access. These partnerships will provide improved services, an expanded IT infrastructure and potential cost savings for both state and local government units.
2. Evaluate potential partnerships with public and private sector organizations and vendors utilizing concepts such as applied research, competency teams and shared hardware and software resources.

Principle Five: Ensure electronic access to information and services while maintaining privacy

1. Objective - Provide access to information resources to Commonwealth employees and citizens

Strategies

1. Provide consistent and widespread access to key information resources including the internet and external database resources, while addressing confidentiality and privacy concerns. Increased access to information will improve service to Commonwealth citizens and enable employees to be more productive.
2. Adopt common navigation methods, indexing schemes, tools and standard naming conventions to ensure responsible and appropriate access to information. Adopting these standards will make it easier for citizens and employees to quickly find their desired information.
3. Expand internet connectivity to ensure public access to information through projects such as the Library Internet Access project. These projects will provide increased access to Commonwealth government and other information sources for the citizens.
4. Establish standards, guidelines and methods to protect the privacy of individuals.

III. Public Policy Implications

The implementation of the Strategic Information Technology Plan will result in public policy issues which will need to be resolved before the plan can be fully implemented. These issues may have a technology basis but are much wider in scope and impact. Technology and the ability to utilize it has eclipsed current policies and procedures designed to address concerns over use and misuse, access, security, management and costs. Without a proactive and articulated set of guidelines, the best interests of government and the people are not well protected.

Public agencies will be responsible for most of the information resources management and service delivery concerns. In the ever more complex information environment of the next decade, the issue of access, digital records, security, privacy and electronic government will certainly require much more attention from our legislative leaders and policy makers. Several of the more prominent issues are outlined in the section that follows.

Providing Equitable Access

Providing equitable access is a fundamental and sustaining necessity for equalizing opportunities in both the public and private sector, especially those entities in isolated or limited environments. This issue includes access to other organizations, citizens and groups via the internet, as well as access to information resources. Kentucky has a significant number of households without access to a personal computer or the internet. Many of the homes that have a computer do not have any type of connection to the internet. Access must be enabled and secured whether in urban, suburban or rural areas or whether in rich or in poor neighborhoods. Points or methods of access must be provided to residents of homes without personal computers or intelligent devices to prevent the limitation of access due to economic status. All commercial establishments and workers must have access to the opportunities for electronic commerce, telecommuting or other electronic transaction opportunities.

Recommendation: Provide increased citizen access to electronic resources through programs such as the Library Internet Access program and by expanding access to the Kentucky Information Highway to all eligible jurisdictions. At this time, access to KIH is restricted by statute. These restrictions should be reviewed in light of the increased dependence on the KIH for conducting electronic business.

Electronic Records Management

The whole of this strategic plan is directed at making government more efficient, more responsive to citizen needs and more accountable to them. In this regard, it is the content which is captured in the data, records, information and documents created, maintained and disseminated by our information systems that has value. It is also the ease of access to this content and the assurance of privacy for

individuals which makes the careful planning and use of these technology systems, in concert with manual based systems, of value.

Fundamental to the success of IT planning and implementation is the understanding that government workers have of the function and use of these core resources - data, records, information and documents. There seems to be a general mixing and matching of these terms, even in law (Freedom of Information Act, Open Records Act, Fair Data Practices Act in some states), so to administer, manage, share, protect and dispose of them properly, the focus must be on the ultimate function and use of the content in them.

Intuitively, one can say that it takes good data management and practice to properly manage records in order to comply with public policy and produce information in some kind of document, but what does that mean? One thing it means is that there must be consistency between these terms as used by government workers and a clear understanding of public policy (Open Records Act policy applies to data, information and documents) or they won't be compelled to conform to public policy in a manner expected by the citizenry. With the ubiquity of technology and a major movement to the desktop, this becomes even more critical than it has been in a more hard copy environment and the relationship between hard copy and electronic cannot be easily separated on a content basis.

Recommendation: Build public access and privacy protection into electronic records management systems. Provide proactive training and education on electronic records management issues, policies and procedures.

Privacy

Privacy is an important issue that will become more critical as more application areas involving sensitive information about individuals or organizations are electronically collected and stored by state agencies, e.g., health care, government services (income tax returns, for example), driver's licenses, and education at the same time there is an increased emphasis on providing easy access to Commonwealth information. While privacy concerns are easily appreciated, other less apparent areas are affected as well. Some users are concerned that the use of electronic technology provides an easy way to monitor what people are reading, researching or "doing".

The Commonwealth does not currently have any statutes clearly protecting the privacy of individually identifiable information.

Recommendation: Adopt statutes and regulations consistent with federal privacy legislation and/or Kentucky specific privacy concerns.

Security

Information security -- which includes confidentiality, information integrity, information access and information authenticity -- is an important issue in all applications and in review of the many potential threats posed to the security of inter-linked information systems by malicious pranksters or criminals skilled in computer use. The use of relatively new techniques such as encryption and digital signatures must be evaluated. In some cases, legislation may be required to enable the use of these security technologies. Security is critical to the support of electronic commerce initiatives. Business partners must be convinced that their electronic transactions will be secure.

Recommendation: Review and modify security policies as needed to support expanded electronic access to Commonwealth information.

Network Literacy and User Training for Access Services

User training -- learning how to use the new technologies and applications -- will require new approaches in the workplace, the classroom, and public facilities. Understanding the education and training requirements of advanced information technology applications is a challenge in itself. Increased video conferencing and distance learning applications through two-way interactive video will substantiate the awareness building and training need to frequently operate and use this technology. In support of the expanding computing and communications infrastructure, government will need to provide resources for both basic and applied IT training, as well as providing financial assistance for IT education and training. Issues related to user acceptance trends impact this development of “computing literacy” particularly in areas that extend computer-based information services to new groups of users who may have been noticeably “computer-skeptical” in the past (e.g., shop floor workers, doctors and the elderly).

Recommendation: IT leadership and Commonwealth training resources work together to develop a curriculum for IT training for Commonwealth employees and evaluate options for providing basic literacy training for citizens.

Intellectual Property Rights

Intellectual property rights is an important issue in those areas where government and individual intellectual creations (software, images, books) are accessible -- and subject to copying -- either directly or via high-speed networks. Libraries are the most obvious areas where this is a concern, but other application areas such as education and government services also are involved. Determining whether a public agency should copyright software created for public business is problematic and fraught with uncertainties. Issues related to agencies being compensated for their work while still providing for public “fair use” under the proper circumstances will be a key determinant of the quality and availability of government information.

Recommendation: Require Commonwealth employees involved in the development of intellectual property to sign an intellectual property statement regarding Commonwealth ownership of all intellectual property created or developed while working for the Commonwealth.

Cost & Pricing

Cost and pricing -- how much a new application costs, how much the user is charged for the service, and who pays any difference between cost and price -- will be key issues in nearly all applications areas. Like information products and services, most applications will have high initial development costs and low replication or usage costs. As a result, it can be economically efficient, as well as socially beneficial, to maintain low prices for applications to stimulate their use, so long as the operation costs for each new user are recovered. However, this approach can result in prices that differ from the real costs for which applications developers -- both public and private -- must recover. Included are initial costs as well as the costs of serving users through some combination of higher prices or subsidies.

Recommendation: Develop policies and procedures relative to charging additional fees for expedited services based on the use of technology. Evaluate funding mechanisms which are based on a charge-back system to determine fairness and appropriateness.

Public - Private Partnerships with Business Constituents

As the development of a secure IT infrastructure necessitates large expenditures and commitments, public policies must address the right mix of public and private sector participation. Partnerships must be obtained to protect the investment of both sectors. Appropriate incentives for the private sector must be offered to sustain competition and investment for IT research and development. Similarly, perspectives and approaches must be endorsed by both sectors to sustain a progressive IT environment and to allow a satisfactory technology transfer process. Effective IT management involves maintaining innovative and responsive policies to allow the maximum benefits of timely deploying these rapidly changing technologies.

Recommendation: Review and modify existing policies, procedures, regulations and statutes related to public-private partnerships to provide adequate incentives for the private sector while guarding the Commonwealth's resources.

Telecommuting/Hoteling

Estimates of the number of employees in the United States who now work through telecommuting is in the range of three to four million. This number is estimated to grow to nine to sixteen million within the next five years. Telecommuting can provide significant benefits to the Commonwealth but it raises a number of public policy issues. Telecommuting may require changes to policies regarding employee work locations, how employee performance is measured, the roles of supervisors and the provision of

hardware for home use. The perception of Commonwealth managers and the general public with regard to telecommuting must be addressed. These groups must be educated as to the benefits available with telecommuting and the success that many organizations, including other state governments have enjoyed.

A related technique which is receiving a great deal of attention in the private sector is a concept known as hoteling. Hoteling makes effective use of limited and expensive office space by sharing that space among many employees. This concept works very effectively with employees who travel or are away from the office a significant portion of their time. The hoteling concept is, as expected, very similar to checking into a hotel. The workers call ahead to reserve space for the period of time that they will be in the office. The space is reserved and the necessary services such as telephone and network connection are made available.

Recommendation: Pilot telecommuting and hoteling techniques to provide additional data on the costs and benefits of these alternative work environments. Address policy, procedure, regulation and statutory changes related to KRS 18A and KAR 2:095 which may be required to allow telecommuting and hoteling.

Impact on Other Government Agencies

A number of Commonwealth IT objectives and strategies may impact other government agencies, especially local government units, who need to communicate electronically with the Commonwealth. The approach to interfacing with local government agencies must be coordinated to reduce the potential impact on the agency.

Recommendation: A local government representative should be included on the permanent Commonwealth IT Architecture and Standards team. Increased local government participation on KIRM and its subcommittees should be encouraged. The Commonwealth Strategic Information Technology Plan should be provided to local government units.

Incentives or Mandates for Electronic Commerce

Electronic commerce can play a significant role in enabling process improvement but in order to maximize the benefits the Commonwealth may have to mandate that businesses conduct business transactions electronically or provide incentives for constituents to participate in electronic commerce. There may be individuals or agencies who have a stake in the current processes who will be affected negatively by moving to electronic processes such as agencies who currently receive compensation for processing manual transactions.

Recommendation: Increase agency use of electronic commerce by allowing agencies to mandate or require that certain business transactions be electronic and to provide incentives to businesses and private citizens to conduct business electronically with the Commonwealth in situations where mandates are not acceptable.

IV. Plan Review and Key Implementation Steps

Critical Success Factors

The following have been identified as factors that are critical to the successful implementation of this plan. Each of the factors must be achieved in order to maximize the potential benefit of the plan.

Senior Management Commitment and Leadership

The continuation of the senior management commitment to key areas including:

- Cross cabinet cooperation and coordination
- Sustained commitment to Business Process Reengineering
- Willingness and commitment to share information and standardize data

Senior management provides focus, direction and leadership which is essential to the participation of other Commonwealth employees in these objectives. The participation by senior management in these efforts provides leadership by example.

IT leadership and senior management must maintain frequent and open communications to ensure that IT leadership understands the business plans, goals and directions while keeping senior management informed of current and future trends in technology.

Implementation of CIO Position

The Commonwealth Chief Information Officer (CIO) position is critical to the cross cabinet efforts and to bring a sharp focus to the use of information technology within Commonwealth government. The CIO is the authoritative point on Executive Branch IT issues and will provide leadership and advice to other key constituencies. An advisory board will be created from cabinet IT leadership to work closely with the CIO to develop and implement IT policies, procedures and standards.

The CIO will work closely with KIRM to define IT policies and issues on a broader scale which includes Universities, local governments and private sector.

Satisfactory Resolution of Year 2000 Problems

The Year 2000 problem presents a very serious management risk and the Commonwealth must be aggressive in addressing these problems. If significant Year 2000 problems arise, significant resources may have to be diverted from other projects. Services such as the Gartner Group predict that a substantial percentage of applications will not be Year 2000 compliant by the end of 1999.

Commonwealth IT and programmatic leaders must work closely together to ensure that Year 2000 issues are adequately addressed.

Agency Participation

Active agency participation in implementing the strategies defined in this plan is required in order to achieve the desired goals and objectives. The focus of the plan is a more systemic and less “stove pipe” approach to the implementation of IT. This approach will require active participation by all departments and agencies.

Programmatic and IT management must share a common and cohesive vision of technology’s capability to enable business objective attainment. They must also share a high level vision of the future of technology.

Compliance/Adherence to Standards

An IT Architecture and a set of IT standards have been developed. The architecture and standards are designed to ensure that information can be transferred between different networks, or different hardware and software systems, with accuracy, reliability and security. The standards provide for interoperability across a range of disparate systems. The development of standards is of limited value if those standards are not adhered to. The Commonwealth must address the issue of how to ensure adherence to the standards.

Changes in Personnel Practices

The recruitment and retention of top level information technology professionals is critical to the success of this plan. Changes in personnel practices, including compensation, are necessary in order to support the recruitment and retention of IT professionals. These changes include streamlining the process for identifying, interviewing and hiring IT professionals, providing flexible career and compensation options and basing decisions for staffing levels on business cases. Large IT projects may result in the reduction of some non-technical positions but require additional technical support. A process for converting these positions into technical support positions should be identified. Current practices result in frequent transfers by IT professionals from one Commonwealth agency or department to another. These transfers may benefit the employee but cause problems for the agencies. Caps on personnel positions are forcing agencies to use more expensive outside resources to perform tasks that could be done more efficiently with Commonwealth employees. Support for telecommuting will also require changes in current personnel practices.

Managed Expectations for IT Initiatives

One of the factors that most often has a negative impact on large IT related projects is unmanaged expectations. This is a problem experienced by all large projects and not an issue unique to government organizations. If the expectations for a project, system or application are not realistic the effort is doomed to mediocrity at best. This is frequently a significant problem for large projects which may take several years to deliver the entire benefits promised with multiple milestones or production releases along the way. Project leadership often paints a picture of the expected benefits at the conclusion of the project without adequately explaining the anticipated benefits at each major milestone in the project. Users and management become frustrated when they do not see the benefits promised at the first

production release. IT and programmatic leaders must work together to define realistic expectations during the project lifecycle and to communicate these expectations to all stakeholders and customers. Both IT and programmatic management must remain engaged throughout the project.

Cultural Change

Organizational learning closely parallels user acceptance and training. Many applications in the future will involve the development of new ways for doing the job and will require re-engineering the business or mission (social workers using expert systems, electronic commerce and telecommuting, for example). New ways of functioning, distinctly different from current practices, will be required to achieve the greatest benefits from high speed networking applications in many areas. This learning will not always be easy to achieve and will require: a change in organizational culture; new roles and missions for many people; and retraining of individuals—some with professional and career skills learned over a lifetime, so that they will be more able to make the transition to the workplaces of the Information Age.

Enabling Legislation

Enabling legislation will be required to achieve some of the objectives defined in this plan. The required legislation includes legislation to establish the Chief Information Officer position and to modify, as appropriate, the legislation defining the roles of DIS and KIRM. Modifications to KRS 18.A and associated regulations may be required to support telecommuting. Legislation to support and enable electronic commerce including the use of electronic signatures may be required. Some initial electronic commerce legislation was passed during the May 1997 special session of the legislature.

Education and Training

Training is frequently one of the first victims of cost cutting or budget reductions within a large technology project. The reality is that the money saved by not providing adequate training is most often lost in less efficient employees or processes as a result of being under-trained or not trained at all.

Education of IT users and customers must be an ongoing activity. Many people fear change and must be convinced that there is some reward for them before they will embrace the change. IT and agency leadership must continually work to educate users and customers as to the benefits of IT.

Key Implementation Steps

The primary responsibility for the successful implementation of the plan will reside with the CIO, the KIRM Commission and cabinet programmatic and IT leadership. The following steps are guidelines which will need to be expanded into a detailed implementation plan by the CIO and implementation team. The plan will be revised on an ongoing basis and maintenance steps will be defined.

- Plan Acceptance and Adoption by Senior Management and the KIRM Commission

The plan will be reviewed with senior management and the KIRM Commission prior to its publication.

- Review and Adoption by KIRM Commission
- Review with Cabinet Leadership

- Review with full Cabinet
- Distribution to Information Resource Managers
- Review within each Cabinet
- Distribution to Constitutional Offices, Judicial Branch, Legislative Branch and Higher Education
- Distribution to local governments

Task Leader: Secretary McCarty

Timeframe: July 1, 1997 - September 1, 1997

- Implementation of the CIO Position

The CIO position is important to the overall plan implementation. An EMPOWER Kentucky initiative is underway to implement this critical position.

- Creation of CIO position in the Governor's Office
- Recruitment of CIO
- Development of Organizational and Governance Options
- Selection of a CIO
- Development of initial IT Organizational and Governance Structure

Task Leader: Secretary Luallen

Timeframe: May 1, 1997 - October 1, 1997

- Appoint a Strategic Plan Implementation Team

A team consisting of IT and programmatic leadership from across the Commonwealth should be appointed to lead the implementation of the plan. The team should be chaired by the CIO.

- Develop charter for implementation team
- Identify potential team members
- Identify required effort and commitment
- Confirm team membership

Task Leader: Chief Information Officer

Timeframe: October 1, 1997 - November 1, 1997

- Executive Orders and Policy, Procedure and Regulation Changes

The required changes to policy, procedures and regulations will be identified.

- Identify changes needed for CIO implementation
- Identify changes needed for Personnel practice changes
- Identify changes needed for electronic commerce initiatives
- Issue required Executive Orders
- Develop new statutes or modifications to existing statutes for next General Assembly
- Revise policies, procedures and regulations

Task Leader: Implementation Team

Timeframe: August 1, 1997 - December 31, 1997

- Acceptance and Adoption of Commonwealth IT Architecture and Standards

The IT Architecture and Standards are an integral portion of the Strategic Plan.

- Review Architecture and Standards with agency Information Resource Managers
- Review Architecture and Standards within each Cabinet
- Modify Architecture and Standards as needed
- Review and adoption of Architecture and Standards by KIRM
- Create permanent, broad-based architecture and standards team
- Implement process for review and revision of Architecture and Standards

Task Leader: Secretary McCarty

Timeframe: July 1, 1997 - October 1, 1997

- Prioritization of Plan Objectives and Strategies

The tasks identified in the plan need to be prioritized.

- Identification of criteria for prioritization
- Prioritize objectives and strategies
- Validate results with Commonwealth leadership

Task Leader: Implementation Team

Timeframe: August 1, 1997 - September 30, 1997

- Development of Detailed Work Plans

Detailed work steps to implement the strategic plan will be developed including assignment of the tasks to the responsible party. The detailed work steps will include an impact analysis which will identify the impact on fiscal and personnel resources and the need to reallocate existing resources.

- Review prioritized objectives and strategies
- Develop work plan steps and deadlines
- Assign tasks and resources

Task Leader: Implementation Team

Timeframe: October 1, 1997 - January 1, 1998

- Reengineer the IT Planning Process

The plan has identified a number of issues surrounding the existing IT planning process. The current process must be reengineered in order to meet the objectives defined in the plan.

- Map existing IT planning process
- Map existing business planning processes
- Identify goals and objectives for IT planning process
- Identify opportunities to integrate IT and business planning
- Design new IT planning process
- Review new planning process with the Cabinet and KIRM
- Implement new planning process

Task Leader: CIO

Timeframe: January 1, 1998 - April 1, 1998

- Monitor Plan Implementation, Assess Results and Modify Plan

A methodology must be developed to monitor and assess progress towards the goals defined in the

plan. The implementation will be monitored by the implementation team on an on-going basis. The implementation team will meet on a regularly scheduled basis to review the current status and make adjustments to the plan as required.

- Develop metrics for evaluating plan implementation
- Collect data related to plan metrics
- Solicit input for plan revisions
- Evaluate metrics and revise plan
- Publish plan implementation results
- Publish revised plan

Task Leader: CIO

Timeframe: July 1, 1997 - Ongoing

V. Appendices

Appendix A.

Glossary

Authentication - A security measure using the data encryption standard (DES) which verifies that the EDI transmission and message were not tampered with or altered.

Client/server - Client/server is an architecture in which the client (personal computer or workstation) is the requesting machine and the server is the supplying machine. Servers can be high-speed microcomputers, minicomputers or mainframes. The client provides the user interface (usually graphical) and may perform some or all of the application processing. Client/server means that the processing is split between the client and the server. A database server is a computer that maintains the databases and processes requests from the client to extract data from, or to update, the database. Client/server architecture means that the server is used for more than just a remote disk drive to the client.

Competency Teams - Competency teams are temporary teams formed to address a particular technology opportunity. The teams will cross cabinet and agency boundaries and include staff with expertise in the technology being addressed.

Computer Telephone Integration (CTI) - Computer telephone integration can be described as any application which utilizes the telephone and the computer to gather or deliver information. It is the automation of the handling of telephone calls; answering the phone, greeting the caller, and responding to a request - all without a human operator. Interactive Voice Response (IVR) systems are an example of an computer/telephone integration.

Electronic Commerce - Electronic commerce (EC) integrates communications, data management and security to allow organizations to transact business and exchange information through electronic means. Electronic commerce differs from traditional commerce primarily in the way information is exchanged and processed. Core technologies for EC are Electronic Data Interchange (EDI) and electronic funds transfer (EFT). EC may also be represented by other technologies including telephony response, fax processing, electronic forms and bar coding.

Electronic Data Interchange (EDI) - EDI is the electronic exchange of instructions and documents

between companies. Currently two standards exist for EDI, ANSI X12 and UN/EDIFACT although it is anticipated that these standards will merge in the near future.

Electronic Funds Transfer (EFT) - The electronic transfer of funds and related payment information between banks or other financial institutions.

Electronic signature - A code or symbol that is the electronic equivalent of a written signature. Digital signature technology represents the code in an encrypted format that may be legally used to conduct business via electronic communication.

Fax technology - Fax broadcast allows users to transmit information via facsimile technology to any fax machine or fax-enabled computer in the world with routing and scheduling features. Scheduling allows for broadcast during evening hours to take advantage of lower communication rates. Through the fax broadcast application, businesses can have an unlimited number of distribution lists (with hundreds of numbers per list) to automatically broadcast a document to many recipients. Each fax is tracked and logged to provide a report on delivery status. Fax-on-demand is an easy to use, cost-effective fax and voice processing system which integrates touch-tone (telephone) and facsimile technology to help organizations be more responsive. Customers can call and select the information/documents they require, and have the information immediately transmitted to their fax machines. Email-to-fax is a low-cost option for users that need to distribute an email message to recipients that only have fax technology. Usually provided by a service firm, this application faxes an e-mail message to any fax machine on the recipient list.

Geographic Information Systems - Geographic information systems are a combination of hardware, software and data (both attribute and geographic) and trained people all working together to manage information to help make better decisions. Together, they provide powerful tools for automated cartography and the analysis of information. It is a technology that has a wide range of uses in all sectors of the economy - for natural resources management, transportation planning, inventorying landcover, economic development analysis, customer market analyze, utility siting and tracking crime.

Groupware - Software which runs on a network that allows members of a organization or project team to communicate electronically with one another, while coordinating their individual work assignments on a joint (often large) cooperative project. Groupware was originally introduced to describe a category of application software designed to provide electronic support for groups of individuals working collectively toward a common objective.

Imaging - Imaging involves the multi-user ability to store, search, retrieve, manipulate, display, and print digital representations, i.e. 'images', of objects by computers. An image can include, but is not limited to, digital representations of paper forms, certificates, photographs, maps, charts, and reports. General attributers of imaging systems include: Workflow Software, Imaging Database, Image Library and Optical Character Recognition (OCR).

Integrated Voice Response (IVR) - IVR allows clients to make menu selections by selecting options using the numbers on a touch tone telephone. Customers can listen to pre-recorded information,

answer company surveys, change their addresses, make a credit card payment, and conduct database inquiries easily.

Kentucky Tele-Linking Network (KTLN) - KTLN is a Kentucky distance learning video conferencing project using compressed video to link Kentucky's eight (8) state universities to over 100 elementary and secondary schools (K-12) and government agency sites. KTLN uses fractional T-1 lines provided by the Kentucky Information Highway.

Mobile Computing - Mobile computing uses portable computer devices, such as laptop computers, notebook computers, and personal digital assistants to connect to the business computer network. The connection is made using wireless technologies, such as, cellular telephone or mobile radio, as well as, dial-up access or physically connecting to a network and allowing access to the business computer system where information is stored. Mobile computing may also be viewed as simply allowing the data collected outside the office environment to be stored on a portable computer.

Reengineering - The radical redesign of the business processes for dramatic improvement. Process is a complete end-to-end set of activities that together create value for a customer.

Telecommuting - Where an employee performs job responsibilities away from the normal work location (usually at home), utilizing information technology tools to support their work. Remote computer connectivity from home to the office is usually a major element of telecommuting. Telecommuting is a successful concept with many advantages for the employer, employees and society.

Value-added network (VAN) - An messaging service provider that transmits, receives, and stores EDI and other electronic messages for trading companies, as well as providing a wide variety of other messaging related functions.

Video Conferencing - Video conferencing allows individuals at separate locations to see and hear each other, conduct meetings, and work together using interactive television- like video and audio technology. Images of documents can also be exchanged, and personal computers can be used to share files or let participants work together on documents or projects. The Kentucky Tele-Linking Network provides an infrastructure of sites utilizing compressed video technology for interactive sessions. Satellite conferencing offers the ability to broadcast to many downlink sites with audio response.

Wireless Communication - Wireless communication allows both voice, data and radio transmission in an untethered environment. Wireless technology includes portable radio systems, microwave, paging, cellular telephone, digital data transmission, personal communication systems (PCS) and infrared networking.

Workflow - Workflow has its foundation in the idea that business processes are actually sets of tasks done in a prescribed order that incorporate information from various sources. Workflow software allows the traditional paper process to move from workstation to workstation and to be accomplished electronically.

Appendix B.

Internet and Electronic Mail Acceptable Use Policy

Policy Number: DIS-060 Effective Date: 5/15/96

Policy Maintenance Responsibility: The Division of Support Services, Technical Publications Section and Security and Recovery Services Branch, and the Division of Network Services, Customer Support Branch share the responsibility for the maintenance of this policy.

Policy:

The Department of Information Systems (DIS) furnishes the communications backbone for users of the Commonwealth Integrated Network (CINS). This Acceptable Use Policy represents a set of guidelines to be followed when using CINS or any other networks which are used as a result of the CINS connection, such as Internet and E-mail.

In compliance with the laws of the Commonwealth and the guidelines provided herein, employees of the Commonwealth of Kentucky are encouraged to use the Internet and E-mail to their fullest potential to further the State's mission, to provide service of the highest quality to its citizens, to discover new ways to use resources to enhance service, and to promote staff development.

Supervisors should work with employees to determine the appropriateness of using the Internet and E-mail for professional activities and career development during work hours, while insuring that employees do not violate the general provisions which prohibit using the Internet and E-mail for personal gain.

In accordance with the federal Electronic Communications Privacy Act of 1986, employers can monitor electronic messages upon notification. Employees should have no expectation of privacy associated with the information they publish/store on the Internet and E-mail.

Supervisors are encouraged to identify Internet and E-mail training needs and resources, to encourage use of the Internet and E-mail to improve job performance, to support staff attendance at training sessions, and to permit use of official time for maintaining skills, as appropriate.

In summary, state employees should use the Internet and E-mail, when appropriate, to accomplish job responsibilities more effectively and to enrich their performance skills. The Internet and E-mail afford unprecedented opportunities for conducting research and disseminating (publishing) job-related information.

Responsibilities:

- State employees have an obligation to use their access to the Internet and E-mail in a responsible and informed way, conforming to network etiquette, customs, and courtesies.
- Agencies are responsible for the content of the published information and for the actions of their employees. The Kentucky Information Resources Management Commission's policy on Electronic Mail as Public Record should be observed.
- As with other forms of publications, copyright restrictions/regulations should be observed.
- Commercial uses by agencies should be cleared with DIS to make sure they do not violate the terms of DIS's agreement with our Internet provider. No reselling of access is allowed.
- Employees should be aware that their conduct/information they publish can reflect on the reputation of the Commonwealth. Therefore, professionalism in all communications is of the utmost importance.
- Employees should represent themselves, their agency or any other state agency accurately and honestly through electronic information or service content.

Unacceptable Uses:

Since the Internet and E-mail constitute an uncensored world-wide network of networks which provides for peer-to-peer communications between participants, they also have great potential for misuse.

Use of Commonwealth of Kentucky Internet and E-mail resources is a privilege which may be revoked at any time for inappropriate conduct. Repeated abuse of acceptable use policies will result in revocation of access and notification of agency management. Examples of inappropriate conduct include, but are not limited to:

- Use of the Internet and E-mail for personal gain or personal business activities as defined in a commercial sense such as buying or selling of commodities or services with a profit motive.
- Use of the Internet and E-mail for unlawful activities.
- Use of abusive or objectionable language in either public or private messages.
- Knowingly and repeatedly visiting pornographic or illegal sites or disseminating or soliciting sexually oriented messages or images.
- Misrepresentation of oneself or the Commonwealth.
- Sending chain letters.
- Soliciting money for religious or political causes, or advocating religious or political opinions.

- Using official dissemination tools to distribute personal information.
- Disseminating or printing copyrighted materials (including articles and software) in violation of copyright laws.
- Other activities that could cause congestion and disruption of networks and systems; i.e. unnecessary Listserv subscriptions and mail attachments exceeding 1.5 mb in size are examples of activities which cause network congestion.

Appendix C.

Internal Assessment

Strengths

The current information technology environment within Commonwealth government has a number of important strengths. These strengths include:

- The Kentucky Information Highway and Kentucky Tele-Linking Network
- KIRM Commission
- A base level architecture and standards including a structured methodology
- The elevation of IT within the cabinets including appointment of agency IRMs
- A single agency (Department of Information Systems) overseeing computing infrastructure and shared resources
- The current administration's commitment to technology.
- The embracement of Business Process Reengineering and similar concepts
- Proactive public policy in targeted areas
- Quality IT people resources

The Kentucky Information Highway (KIH) provides a state-wide network backbone. The KIH is a partnership between the Commonwealth government and Kentucky's twenty local telephone companies. The Kentucky Tele-Linking Network (KTLN) is a distance learning video conferencing project using compressed video to link Kentucky's eight (8) state universities to over 100 elementary and secondary schools (K-12) and government sites.

The Kentucky Information Resources Management Commission (KIRM) was created by legislation in 1994. The Commission provides general direction and a focal point for information technology. The Commission's diverse membership provides a forum for IT policy issue discussions. The Commission has adjunct councils including the Communications Advisory Council (CAC) and Geographic Information Advisory Council (GIAC) and has a close working relationship with the Capital Planning Advisory Board (CPAB).

The base level architecture which includes the Kentucky Information Highway and the Department of Information Systems (DIS) services provide a strong portion of the infrastructure necessary to support the future vision of the use of information technology within the Commonwealth.

The elevation of IT within the cabinets including the appointment of Information Resource Managers (IRMs) is an important component in creating an environment where IT can enable achievement of

business objectives.

DIS provides enterprise support for key infrastructure components such as the network backbone and mainframe services. A strong infrastructure is critical to the success of IT projects. A solid network design and implementation is a necessity in today's information technology environment. The mainframe computer's role may be somewhat different in the future but it can be an integral part of an information technology architecture. Client/server computing and the mainframe are not mutually exclusive technologies.

The current administration's commitment to the use of IT to increase productivity, improve customer service and/or reduce operational costs is critical to the success of future large scale projects with significant IT initiatives such as the EMPOWER Kentucky projects. Large scale IT projects require top level commitment and support to succeed.

The use of business process reengineering techniques to ensure that IT resources are allocated to solving the base problem and not just automating the existing manual process is important to the success of future projects. The real benefit in business process reengineering is to enable process improvement rather than just automating the existing process. Technology can often enable a significant reduction in cycle times or costs when combined with a properly engineered business process.

Proactive public policies anticipate the impact of information technology and provide a framework for future efforts. Examples include the development of the Information Resource Plans (IRPs), electronic records management policies, open records policies and appointment of Information Resource Managers (IRMs).

The existing IT professionals employed by the Commonwealth provide a quality base to build from in the movement to new and emerging technologies. The Commonwealth will need to continue to invest in the training and professional development opportunities for the IT professionals to keep their skill levels current.

Weaknesses

The current information technology environment also has weaknesses which make it difficult to perform at the desired level. These weaknesses include:

- The IT procurement process
- Personnel practices for recruiting, retaining and rewarding IT professionals
- Comprehensive and consistent IT architecture
- Adequate investment in IT
- An enterprise asset management strategy
- Accountability with Information Resource Plans
- Training for IT managers
- The ability to respond to rapid change
- Business strategic and tactical planning

- Understanding of records management policies

The current procurement process creates difficulties in obtaining information technology products and services in a timely and cost effective manner. There are too many review and approval steps and relatively simple procurements can take months. The technology environment is changing rapidly and pricing for items such as personal computers changes almost daily. A procurement system must support the acquisition of technology in a cost effective and timely manner while ensuring adherence to standards.

The personnel system creates difficulties in attracting and retaining information technology professionals with the required skill sets and capabilities. The marketplace for IT professionals is extremely competitive and will likely remain so throughout the remainder of the decade. There is a high level of movement of IT professionals among agencies. This type of career advancement is not in the best long term interests of the Commonwealth and frequently not in the employees best long term interests. The personnel system must be flexible enough to provide for the recruitment and retention of top information technology professionals including flexible working arrangements such as telecommuting.

The lack of a comprehensive and consistent IT architecture creates an environment where systems are developed that do not share common characteristics. This increases costs to the Commonwealth for support and maintenance and reduces the opportunities to share resources and information. An information technology architecture for Commonwealth government will be developed as part of the EMPOWER Kentucky implementation.

The lack of an sufficient investment in IT often results in less than satisfactory solutions. IT expenditures must be viewed as an investment rather than just another cost. A cost/benefit analysis should be performed as part of large IT procurements. The cost/benefit analysis must include a five year total cost of ownership model to reflect the long term costs and benefits of the procurement.

The lack of an enterprise asset management strategy results in the ineffective utilization of assets and inadequate planning for upgrade or replacement of those assets. The Commonwealth has a substantial investment in information technology assets and those assets must be managed effectively including planning and budgeting for upgrade and replacement of hardware and software resources.

There is no follow-up with Information Resource Plans (IRPs) to determine the effectiveness of the plans. The process does not include a mechanism to determine which initiatives were funded and implemented nor the end result of those initiatives. This information is critical to understanding what is truly happening within the Commonwealth regarding the use of information technology.

There is a need for additional training for IT managers in project and personnel management techniques. Many managers have excellent IT skills but have never received any formal training in customer service or project management skills and techniques. Future projects will be larger and more complex and Commonwealth IT professionals with excellent project management skills will be required. While a certain level of project management expertise can be provided by outside resources the Commonwealth

must take ownership for these projects and have the necessary skillsets.

There is a lack of ability to respond to rapid change. Underlying business processes are not designed to support rapid change. Processes have been designed to provide for control and accountability rather than flexibility and customer service. The environment is often risk averse.

The lack of business strategic and tactical planning limits the integration of IT planning with the business goals and objectives. The Commonwealth does not have a comprehensive and consistent methodology for strategic and tactical planning. The IT organization must understand the goals and objectives of the agency in order to provide the most effective support.

The lack of adherence to records management policies and procedures creates situations where electronic records are not being managed and archived in an adequate fashion. This can lead to a loss of important Commonwealth information. This information is an asset of the Commonwealth and must be managed as such.

Opportunities

There are a number of opportunities in the environment which can enable to Commonwealth to provide a higher level of service and/or reduce costs. These opportunities include:

- Emerging technologies including, but not limited to, internet, workflow, and electronic commerce
- Information highway capabilities including video conferencing, internet access, and distance learning
- EMPOWER Kentucky's emphasis on technology, process redesign and funding
- Shared central resources including the mainframe and centralized operations support
- State-wide electronic mail network.
- Partnerships with state agencies, federal agencies, local governments and vendors
- Increased management awareness of technology
- Enterprise licensing for software and leveraged buying for hardware and services
- Geographic Information Systems (GIS) standardized data (basemap)
- Providing enabling technology to field staff to support service delivery
- Improving technology where current use is limited
- "Off the shelf" software available to replace lengthy development
- Selected use of outsourcing similar to the private sector (as appropriate) to supplement existing resources or to provide skills which do not exist within Commonwealth resources
- Leveraging previous projects such as KETS and sharing resources among projects such as the proposed model courthouse

The emerging technologies present opportunities for the Commonwealth to take advantage of

technologies that in many cases are in wide spread use in the marketplace and can be implemented very cost effectively. The Emerging Technologies report produced during the first phase of EMPOWER Kentucky (<http://www.state.ky.us/agencies/emgtech/index.html>) identifies twenty emerging technologies and includes important information on each technology.

The Kentucky Information Highway and video conferencing infrastructure (KTLN) present some excellent opportunities for the Commonwealth to reduce costs and improve service. There is excess capacity for some video conferencing resources that can be leveraged with little or no additional costs.

The EMPOWER Kentucky emphasis on process redesign should promote other departments and agencies to redesign their processes before implementing new or improved technology applications. The process redesign efforts may reduce costs or cycle times and improve customer service. Technology enablers can be identified which will support the redesigned business process.

Shared enterprise services provide an economies of scale opportunity. For example, the mainframe can be used as a database server in a client/server configuration and potentially reduce costs for server hardware, software and maintenance. The marginal cost of using the mainframe resources may in many cases be lower than that of obtaining new hardware, software and support services.

The state wide electronic mail network provides the Commonwealth with a tool which can be used effectively to communicate with state employees, customers and constituents and significantly reduce the amount of paper and time used for communications. Documents can be distributed through electronic mail which reduces preparation costs, delivery costs and elapsed time.

There are many opportunities available to form partnerships with other Commonwealth agencies, federal agencies and private sector organizations. These partnerships lead to shared risks and rewards. This increases the buy-in for project participants and increases the likelihood of success.

The increased awareness of information technology capabilities by programmatic managers provides the Commonwealth with an opportunity to identify technology enablers to assist organizations in achieving their goals and objectives.

Enterprise licensing and service agreements can provide the Commonwealth with the opportunity to reduce software, hardware and service costs. Enterprise agreements can provide for standard versions of hardware and software and provide significant price advantages over single purchase prices.

The GIS basemap provides a common reference of geographic data that can be used by agencies across the Commonwealth.

The improvements in mobile technology present significant opportunities to apply technology to the work done by staff in the field. These opportunities can improve accuracy, reduce cycle time and improve efficiency. Mobile computing can reduce the use of paper forms and provide instant access to important data.

Many agencies operate in a very manual environment. This provides an opportunity to make large gains at very reasonable costs especially in areas where key infrastructure components such as the network are already in place.

There is an increasing amount of sophisticated and adaptable software available from commercial software vendors at reasonable costs. These software packages are often less expensive than custom development. Depending on the complexity and size of the application the implementation, maintenance and support costs may also be lower than for a customized application.

The growing use of outsourcing by public sector organizations can take advantage of the vendors economies of scale. This is particularly true in areas where it does not make good business sense for the Commonwealth to perform the service directly.

There are substantial opportunities to leverage resources from projects such as KETS or to cooperate on future efforts such as the “model courthouse” to leverage technology across a variety of applications and uses. These projects may provide hardware, support resources or network connectivity that can be used for other purposes at a minimal or no additional cost.

Threats

There are also threats in the environment which can cause the Commonwealth IT function to perform at an inadequate level. These threats include:

- Antiquated laws and regulations related to information technology
- The Year 2000 problem
- Security of technology, applications, data and networks
- Inability to attract and retain the information technology resources with the required skill sets
- The budget process often penalizes people for being efficient and saving money
- Inability to manage and meet users expectations
- The short technology lifecycle
- The reliance on networking/potential collapse of internet
- Proprietary products
- Federal mandates and legal rulings affecting existing systems, new acquisitions and funding availability
- A lack of customer acceptance and confidence, resistance to change, hidden agendas

Laws and regulations which may inhibit the use of information technology to improve a business process must be modified or eliminated. This includes situations which require paper forms to be processed.

The “Year 2000” problem must be addressed by Commonwealth agencies well before the beginning of the Year 2000. These problems can have catastrophic results if they are not addressed. The “Year

2000” problem is not strictly a mainframe issue and all systems must be evaluated to determine the potential impact.

The advent of technologies such as the internet and electronic commerce bring with them security concerns. These concerns can be addressed adequately but they will require a concerted effort and understanding of the underlying security issues.

Information technology professionals are a scarce resource and the Commonwealth must remain vigilant in their effort to attract and retain these employees. The Commonwealth must also maintain excellent relationships with their information technology vendors who provide information technology professionals on a per project basis.

The current budget process provides a disincentive for managers to save money. It is important to review the budgeting and funding processes to provide incentives for managers to employ technology to reduce costs and improve service.

Unmanaged expectations for information technology can cause projects to fail. Expectations for the project need to be clearly and frequently communicated to all participants and stakeholders. Any project can fail if the expectations are not realistic.

The short span of the technology lifecycle can present a threat to the success of IT initiatives within the Commonwealth. The technology lifecycle in many areas is measured in months. The Commonwealth must be cognizant of these lifecycles in their planning efforts and asset management approaches.

The reliance on the network for most IT projects and services can present a threat if the network design is not reliable and does not provide adequate capacity (bandwidth). A consistent approach to network design and a well defined set of standards can improve network reliability. Planning for future network bandwidth requirements must be a proactive effort. As use of the internet continues its meteoric rise the capacity must keep pace. The Commonwealth does not have the ability to manage the internet capacity issues.

The use of proprietary products can present difficulties in leveraging and sharing resources. Proprietary products can also become a problem if the vendor goes out of business or discontinues support resulting in support and upgrades being unavailable. The risks with proprietary products can be mitigated with careful planning.

Federal mandates and legal rulings can change priorities and present unrealistic deadlines which force cabinets or agencies to make decisions which are not based on a solid business case. A cost/benefit analysis should be performed to understand the options in order to make an effective business decision.

A lack of customer acceptance can threaten the success of any IT initiative. The customer must be involved from the earliest stages of a project to increase the likelihood of success. Newer system development and deployment methodologies include substantial customer involvement.

Appendix D.

Large Project Management

Large IT projects are very complex and carry with them a high level of risk. A substantial number of these projects end in failure or with less than optimal results. The risk associated with these projects can be minimized with an effective project management methodology which includes adequate risk management reviews and a modular approach to development and deployment. This appendix defines a project management approach to be used in Commonwealth government for large IT projects.

All large projects (over \$1 million in total expenditures or 12 months total project time or multiple cabinet efforts of over 12 months) will be approved by a Governor's Cabinet level steering committee prior to project start-up. A business case including a cost/benefit analysis will be presented to the steering committee. This business case must include a review of the existing business process for potential improvement or redesign and a review of the associated business rules for validity. A risk assessment will be included as part of the business case. The risk assessment will identify each risk, the scope of the risk and the cost of risk avoidance alternatives.

Processes and procedures for approval of large IT projects will be developed which include cabinet leadership in the decision process. These projects should be governed by a project management model which includes both process and technical project leaders.

The source of funding for the project should not be a factor in deciding whether the project has merit. The decision should be based on the business case. A poor business decision made because special funds are available may cost the Commonwealth much more in the long term.

Funding for large IT projects should be done on a project basis rather than a cabinet basis. The funding approach, as well as the technology, must be integrated across organizational entities.

The business case must also identify at least a three year (preferably five) cost of ownership model which includes ongoing operational costs and anticipated maintenance and upgrade costs for both hardware and software. These costs must include the costs for initial and on-going technical and functional training as well as additional costs for providing technical support for end users.

The business case should identify the primary customers and the other Commonwealth systems and government business processes with which these customers interact. This evaluation should include a list of data that is already being collected from the customer. Opportunities for technology or data integration will be identified in this process.

An outside review which includes a risk assessment and the creation and review of project performance metrics will be performed at least quarterly on large projects. This risk assessment will be done by a

team outside of the implementation team. The risk assessment team will be made up of representatives from other cabinets or agencies and possibly external resources depending on the scope of the project. At the conclusion of each project, whether completed or not, a post-mortem will be performed to determine what was done well and what could be improved in the next project. This information will be shared with IT leaders across the Commonwealth.

Training is a critical portion of any IT project. Project budgets will be reviewed to ensure adequate funding for training and implementation over the life of the project. Projects without adequate funding for training and implementation activities will not be allowed to go forward.