

IT Assessment & Strategic Plan Report

OTTAWA COUNTY MICHIGAN | OCTOBER 2012

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1. Introduction

1.1 PROJECT BACKGROUND

In 2004, an independent assessment of the Ottawa County IT Department, then known as Management Information Services (MIS), was conducted. The 2004 assessment resulted in a number of recommended changes that have been successfully implemented, resulting in significant progress in the use of technology and in the performance of the IT Department. Since the 2004 study, additional organizational changes have occurred affecting staffing allocation in the IT Department, and expanding the Community Mental Health IT team. With the changes, the responsibilities of IT have expanded. With changes in economic conditions, technology and service delivery methods, and emerging trends, Ottawa County has initiated an IT assessment initiative to determine a vision for the future that will act as the foundation for future County IT investment and change.

1.2 SCOPE OF REVIEW

The County of Ottawa (“the County” or “Ottawa County”) engaged Plante & Moran, PLLC (Plante Moran) to conduct an objective analysis of the current structure of Information Technology (IT) across the organization. The analysis includes a complete organizational review and evaluation of the County’s current IT service delivery and organizational structure which supports the core business functions of the County, the personnel/staffing requirements necessary for the support of systems, development of a gap analysis that will enable the County to create a roadmap to a more effective model of IT for the County, creation of a Strategic Plan around emerging technologies, and a review of the governance structure employed to support the operational mission of Information Technology. We also compared the County on its IT function and operations to other local governments of similar scope and complexity. In this report, we will deliver an IT assessment of the current organization, a plan for future governance of IT, a strategic plan of emerging technologies, and a tactical IT plan that will improve the technology offerings of Ottawa County.

1.3 PROJECT APPROACH

The IT assessment for Ottawa County generally encompassed the following three areas:

- Organization
- Administration
- Technology

The visual on page 4 depicts the comprehensive nature of this assessment, along with some key questions that must be considered:



1.4 PROJECT SCOPE

During project initiation activities, our consultants worked with Ottawa County to refine the scope of the assessment in connection with the three IT assessment areas. The following table, which is broken down by each of the three areas, shows each of the topical areas for review:

Organization	Administration	Technology
<p>Governance:</p> <ul style="list-style-type: none"> ■ Organization structure ■ Organization benchmarks ■ Succession planning ■ Staff compensation <p>Support:</p> <ul style="list-style-type: none"> ■ Staff complement ■ Staff development ■ Job descriptions ■ Staff competencies ■ Performance evaluations ■ Recruiting ■ External service providers ■ User liaisons ■ Steering Committee role ■ Service Level Agreements <p>User Satisfaction:</p> <ul style="list-style-type: none"> ■ Responsiveness ■ Effectiveness ■ Communication <p>IT Leadership:</p> <ul style="list-style-type: none"> ■ Technical ■ Business ■ Behavioral <p>Cost:</p> <ul style="list-style-type: none"> ■ Cost allocation model ■ Capital and operating ■ Cost of services 	<p>Delivery:</p> <ul style="list-style-type: none"> ■ Project mgt. approach ■ SLA reporting ■ Problem reporting ■ Helpdesk administration ■ Network / workstation management ■ Software deployment ■ Performance reporting ■ Vendor management ■ Methods / tools ■ Application development ■ Patch management ■ Outsourcing ■ Operating procedures <p>IT Strategy:</p> <ul style="list-style-type: none"> ■ Current plans ■ Project prioritization ■ Technology procurement ■ Budgeting ■ Project portfolio mgt. ■ Business case development ■ Standards ■ Planning process <p>Policy:</p> <ul style="list-style-type: none"> ■ User policies & procedures ■ IT policies & procedures ■ Business continuity planning ■ Security Management 	<p>Internet:</p> <ul style="list-style-type: none"> ■ Remote access ■ Web site & security ■ Content management ■ Web strategy <p>Data:</p> <ul style="list-style-type: none"> ■ Data ownership ■ Data integrity ■ Data security ■ Data warehousing ■ Data backup <p>Network (LAN/WAN):</p> <ul style="list-style-type: none"> ■ Servers ■ NOS ■ Cabling ■ Network electronics ■ Storage ■ Security <p>Applications:</p> <ul style="list-style-type: none"> ■ Software applications ■ Security ■ Reporting ■ Interfaces ■ Databases ■ Platforms and tools <p>End-User Computing:</p> <ul style="list-style-type: none"> ■ Workstation strategy ■ Office automation ■ Operating system ■ Refresh

1.5 PROJECT WORK PLAN

Our project work plan was organized into the following set of activities intended to achieve the project objectives. The major activities performed included:

Develop Project Charter

At the start of the project, project goals and objectives were confirmed to provide a framework for the following areas of focus:

- Project overview
- Goals and objectives
- Project stakeholders
- Project influences
- Scope plan (both in and out of scope items)
- Project staffing

The major goal of this step was to ensure that the results of the project were consistent with the County's objectives for conducting the project.

Collect and Review Documentation

Plante Moran reviewed existing documentation compiled by the County to gain an understanding of the County's technical, financial, business, and organizational environments. Documents included the following:

- Scope of services provided and technologies supported by IT
- IT staff job duties, responsibilities, and job descriptions
- Expenditures on technology (hardware, software, networking, services, line charges, support, maintenance, etc.)
- Cost allocation methodology
- IT organization chart
- Technology plans and projects listing
- Technology inventories for the following areas:
 - Hardware/software/technologies inventory
 - Network infrastructure and diagrams
 - Applications
 - Specific documentation related to the Managing For Results (MFR) project

Conduct Central and Department IT Staff Interviews

Met with the IT support staff individually and in small groups, to review their areas of support and other organizational, administrative, and technology support components. Distributed a confidential questionnaire to the IT staff that was intended to gather information in the following areas:

- Job duties and responsibilities
- Job requirements and resources
- Organization structure
- Work volume
- Communication/working relationship
- Other comments/suggestions
- Supplemental questions

Review and Assess Technical Environment

Reviewed major IT installations. Major steps included:

- Technical surveys
- Interviews with IT support staff
- Review of major platforms, applications, and IT standards

Benchmarking

Compiled the results from best practices research and conducted applicable comparisons with the County including the following areas:

- Departmental structure and staffing patterns
- Information technology funding levels and the allocation of those funds
- Alternate service delivery options
- Other areas deemed necessary

User Survey

Conducted an online end-user survey that was offered to the entire organization to enable the users to have a voice in what their IT experiences have been in the past and what they would like to see in the future. Topical areas that were covered were:

- Direction and leadership
- Support received
- Technologies employed by the County
- Training

Conducted Meetings With Staff Within the County Departments in Order to:

- Identify interactions with IT
- Identify satisfaction with IT
- Solicit feedback regarding project prioritization and governance
- Discuss the departments' perceptions as to how IT can improve
- Assess how information is gathered for IT requests
- Discuss how the scope of department IT initiatives are defined, and how the initiatives are justified, approved, funded/budgeted, and prioritized
- Discuss the approach taken to align IT initiatives with department priorities
- Discuss the typical approach to project management

Prior to these meetings, departments received questionnaires to provide departmental input specific to their area. We also conducted direct user feedback surveys via an online user survey. Our analysis also included discussions with IT managers and supervisors regarding user satisfaction.

Plante Moran conducted these meetings with department heads at the County, to confirm our understanding of their expectations for the engagement and to solicit their input regarding IT performance in connection with County department's goals and objectives. During these meetings, Plante Moran also discussed user satisfaction with IT services and service levels.

Conduct Gap Analysis

Plante Moran consultants utilized our proprietary gap analysis methodology, industry best practices knowledge-base, and the information collected and reviewed during the previous steps in order to conduct a gap analysis. This gap analysis, which is presented in this report, compares Ottawa County's performance in the topical areas outlined earlier to industry best practices. As a result, our gap analysis includes the following, organized by topical area:

- Maturity rating
- Priority
- Level of effort
- Observations
- Opportunities

Conducted a Shared Services Meeting With Local IT Leaders

Met with various other Ottawa County area local entities, villages, and the Ottawa Intermediate School District for the purpose of determining collaboration opportunities.

- Developed a list of possible areas for collaboration
- Started a dialogue with the other local units on the possibilities of shared services items
- Made recommendations on how best to proceed with compatible initiatives

Conduct Preliminary Assessment

Based on the interviews and information collected via questionnaires, benchmarking, and the user satisfaction survey, we compiled the following:

- Major findings
- Issues and opportunities list
- Preliminary benchmarking results
- User satisfaction survey results
- Preliminary recommendations

Using this information, we conducted an onsite visit with IT management as well as department heads and customers at the County in order to validate the information collected and to share preliminary results in order to gain support for our recommendations.

Review IT Governance Model

We assisted in the development of an IT Governance Model that included the following areas:

- Recommendations regarding IT policy
- Recommendations regarding IT procedures
- Recommendations regarding IT standards
- Project identification, review, and prioritization
- Annual technology budgeting
- Project review process for departmental, line of business, and enterprise applications

Develop an Information Technology Road Map

Conducted research on emerging technologies in the market place and determined which of those are the best fit for the County.

- Market research
- Gartner white papers
- Input from management and staff

Develop IT Assessment Report

We developed this IT Assessment Report based on the information collected, validated, and analyzed in the previous steps.

2. Summary of Findings & Recommendations

This section of the report focuses on major findings, observations, and recommendations. Detailed observations are organized by topical area in the Information Technology Assessment section.

2.1 SIGNIFICANT FINDINGS

The Ottawa County Information Technology Department continues to mature into a highly functional IT environment. In the time that has passed since the last assessment, the Department has made significant progress in the areas of leadership, technology, policies, and procedures. There are still, however, areas even within those improved areas that it can develop further. There are areas such as desktop application deployment and email that are now beginning to hold back the growth of the department into future technologies. Further efficiencies in automation can better free staff to perform tasks related to transforming the County, rather than maintaining it. Overall, the IT Department appears ready to implement the best practices and remain a leader in the state in technology.

The services provided by IT, like most County IT departments, can be categorized into three major areas:

1. Customer Support – This refers to services that are very visible to the end-user, and can be easily described as “day-to-day IT Support”. This includes Helpdesk, super users, and some aspects of telephone support.
2. Infrastructure Support – This refers to those services that are typically not visible to the end-user. These services include technical support of the data center, communications equipment, and interfaces between systems.
3. Application Support – These services are not only visible to end-users, but are often integrated into user departments. This includes assisting users in identifying appropriate technologies, selecting and implementing systems, and in redesigning business processes to achieve greater productivity. The services provided in this category range from creatively evaluating new technologies to support of specialized applications (e.g., Equalizer, the application that supports the Equalization department).

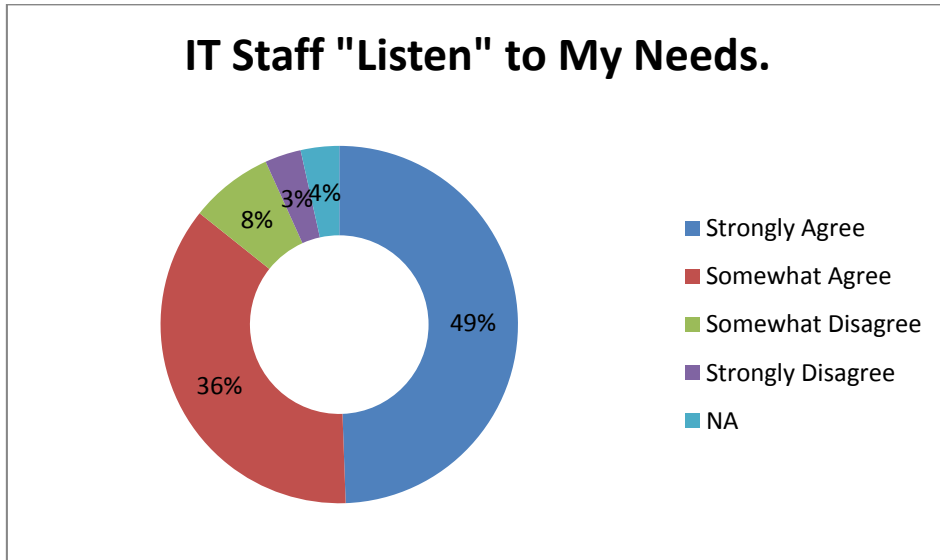
2.1.1 Major Strengths and Weaknesses

Major strengths and weaknesses are highlighted below:

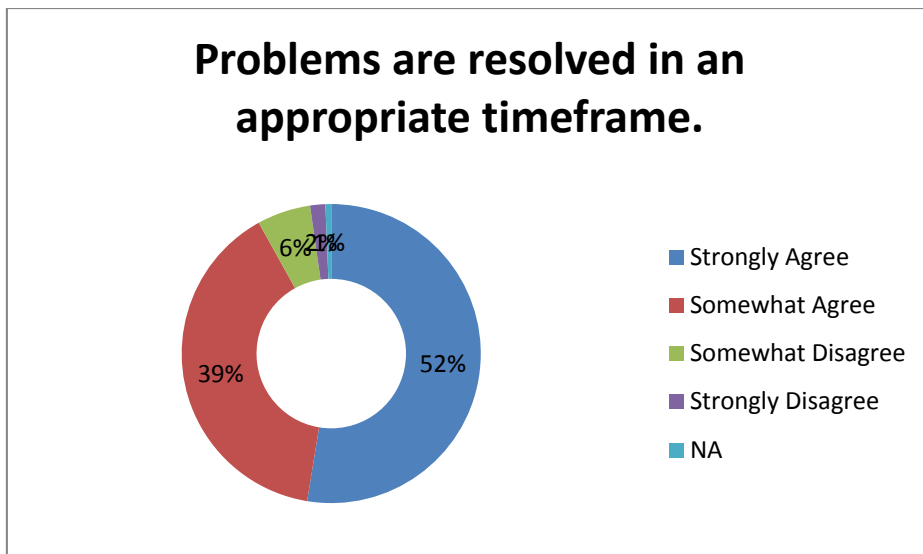
Strengths	Weaknesses
<ol style="list-style-type: none"> 1. Improved Leadership/Executive Support 2. High Customer Satisfaction 3. Dedicated Staff 4. High IT Value to Cost Ratio 5. Existence and Involvement of TAG (Technology Advisory Group) 6. Improving Project Portfolio Management 	<ol style="list-style-type: none"> 1. Uncertainty Around the MICA Justice System Re-Deployment Project 2. Cross Training for IT Staff 3. Inter-team Relationships 4. Lack of Desktop Automation 5. Reactive Customer Service 6. Legacy Email System

2.1.2 End-User Survey Results

An online end-user survey was conducted as part of the assessment. There were 595 employees that took advantage of the opportunity to participate in the survey, which was held over the course of 3 weeks. The following are some highlights of the results:



Staff commitment to a good customer service environment is apparent with this graph and the dedication of the staff has kept the customers engaged. IT staff are continuing to provide good customer service, with 85% of respondents feeling at least somewhat listened to. This is an improvement of 13% over the 2004 Plante & Moran IT Study results from the prior IT study.



End-user support efforts are appreciated by the customer base. Approximately 91 percent of end-users are satisfied with the length of time that it takes to resolve a problem. This is an 11% improvement over the 2004 Plante & Moran IT Study results.

The complete set of End-user survey results will be provided to the County under separate cover and are not included inside this report.

2.2 SUMMARY OF RECOMMENDATIONS

Ottawa County views Information Technology (IT) as an important investment and has made significant investments in its infrastructure and related technologies. The County has remained committed to IT funding, even during the economic downturn and the completion of the last strategic plan that had been used to guide investments. With respect to investing in and leveraging technology, we find Ottawa County committed to receiving an appropriate return from the dollars invested in IT.

Ottawa County has not been immune to the economic downturn of recent years. During this time, each position was re-evaluated when a vacancy occurred to determine if the position was needed, resulting in some positions not being filled with permanent staff. Ottawa County also decided to hold open some positions pending the outcome of this study, which has resulted in at least one long-term vacancy. Overall, it has been concluded that while Ottawa County IT is staffed at approximately the proper level when all vacancies are filled, it could benefit from a re-alignment of resources.

The state of the technology being used in the County is largely adequate and performing as designed. There are several areas that were singled out for improvement, one of the most important being desktop management practices and the lack of software deployment tools. Another significant item is the use of the email system and the lack of support for the new technologies that need to integrate into it. These two items will significantly impact the County's ability to implement some of the more significant changes recommended in this plan.

We offer several recommendations that should assist in enhancing IT and achieving a best practices model.

1. **Implement Organizational Changes.** Various suggestions are included in this report regarding positions and responsibilities within IT. These are intended to improve alignment between resources and intended results. As noted, there are incremental position increases suggested in our recommendations, but given current economic conditions, the plan focuses on a smoothing of resources.
2. **Implement the Tactical Plan.** There are several tactical projects that need to take place to ensure that the organization is prepared to implement new technologies and to better be a pro-active partner with customers.
3. **Enhance IT Governance.** High functioning IT departments are aligned with management. We offer several recommendations to enhance the existing IT governance structure to ensure that IT priorities continue to align closely with the County Administrator and the Board of Commissioner's expectations and initiatives.

3. Information Technology Operational Plan

3.1 INTRODUCTION

The following technology plan was designed to prepare Ottawa County's IT department to be able to move forward, implement needed future technologies, and to better streamline the IT operation. This plan builds upon the work completed as a result of the 2005 IT planning efforts.

The Plan focuses on three key strategies:

1. **Re-align Resources in the IT Department.** The current structure of the IT department was put into place with the last assessment that was completed in 2005. Since that time, there have been organizational changes, changes in technology, and changes in best practices that dictate a shift in the way that services can be most effectively delivered.
2. **Create a Tactical Technology Plan.** Areas of need within the County have been highlighted to prepare for the adoption of new technologies.
3. **Expand the Role of the Technology Advisory Group.** In order to best leverage the County's existing and future investment in IT, priorities must be aligned with management. The IT governance process is designed to ensure alignment of IT priorities, reinforce cost control strategies, and to maximize the return on future IT investments.

3.2 STRATEGY 1: IMPLEMENT ORGANIZATIONAL CHANGES

IT Re-alignment. As part of the assessment, Plante Moran was asked to review, assess, and make recommendations with respect to the IT organizational structure with consideration of staff performing information technology-related duties in other departments. A copy of the current IT Department organizational chart can be found in Section 5, under "Organizational Structure". The proposed staffing changes are intended to reflect the transition of the department to provide an enhanced business partnership relationship with the County departments it serves. As the organizational transition is implemented, similar to what was done as a result of the 2004 MIS Assessment, the County may wish to consider renaming the department from the "IT Department" to another name (e.g. Department of Technology and Innovation) in order to better identify the group through the transition. Some of the proposed staffing changes can be made using contract staffing or contract services versus adding a permanent position. Below, we highlight the divisions in the proposed organization and describe the transition of the positions from the current IT Department organizational structure. A corresponding diagram of the proposed structure follows. Sample position descriptions for the new or modified positions are included in the Appendix for the County to consider, during the transition process.

- **Administration:** The administration area of the Department is comprised of the Director and the Departmental Administrative Assistant. No changes are recommended for this area.
- **Infrastructure Services:** The proposed new Infrastructure Services division is comprised of the current "Technology and Infrastructure" and "User Services" team. There will be one Manager of Technical Infrastructure that will be accountable for the entire area, but is supported by both the PC Technician III and the Network Administrator III that will help direct the day-to-day operations. The Manager of Technical Infrastructure will also help to set the technical direction of the County. The following is a list of organizational change recommendations within the new Infrastructure Services group:

Desktop Services: The Desktop Services area will support the desktop break/fix functions, help desk, and other user-related services. Generally the unit works well as

structured today, but there are a few changes recommended. The help desk function needs to be staffed with individuals who have intermediate level PC troubleshooting skills and the ability to accurately take call information and transcribe that information into the ticketing system for routing. When determining the staffing for this next version of the help desk from the current group of employees, this skill level suggestion should be kept in mind. Additionally, these employees should remain on the help desk and not rotate their assignments. The PC Technicians should be divided into 3 skill levels, with the Level III acting as the employee accountable for the desktop and as the lead technician for the other technicians. These technicians may or may not rotate, though it is preferable that each of them have a “specialization”, such as court technology, application distribution, basic networking, etc. Reduced staffing in this area is possible by instituting the recommended automation of the desktops as outlined in the Tactical Plan. Because of the nature of these changes and that no personnel changes should be required; the help desk changes could be implemented first with a change of assignment.

Network and Telephony: The Network team is understaffed today as compared to other similar organizations. The recent retirement of the Manager of Technology and Infrastructure leaves a single Network Administrator in the area. We recommend the transformation of the now vacant management position to become a full-time, advanced technical resource and the addition of a lower level network position to support day-to-day operations, bringing technical staffing in the Network area to three FTEs. We also recommend that the positions be tiered so that employees have a possible career path to a higher position and to create a technical leader in this area. The telecommunications position should remain unchanged.

Future staffing of both the Desktop Services area and the Network and Telephony area could be accomplished through internal positions or by using selective sourcing companies to augment the staff. Further investigation should be performed by IT and County management to determine the best way to meet the needs of the County.

- **Project Management:** The proposed Project Management Coordinator role creates an opportunity to become a crucial part of the Ottawa County organization. Although the area of Project Portfolio Management is listed as a strength in the department, the project management responsibilities are informally performed by the IT Management Team today. The focus of project management in the department needs to expand from a focus on portfolio management and be modified, expanded, formalized, and promoted to help foster the expansion of the methodologies throughout the staff of the department. Instituting a position in the department to lead these initiatives will help to ensure positive project outcomes and an improved management of departmental resources. The primary responsibility of this new position will be to maintain the project management portfolio, equip the staff with a best practice project management methodology, and to ensure that commitments to end-users are met. The Project Management area should report directly to the IT Director and be modified so that there are no operational responsibilities to the positions, providing some independence from the staff resources that are required to do most projects. This is currently a best practice seen in well performing IT Departments so that the IT Director can have high visibility into the current projects of the department and can offer advice and intervention as needed.
- **Applied Technology:** The Applied Technology division is the most complex of all of the areas due to the variety of functions that reside within it. Also, it is here that the greatest

amount of change is proposed to occur and will be the source of future opportunities for innovative improvement and transformation. The most significant changes are the changes to positions that enable the addition of Business Analysts. These positions are the “forward” looking, customer management positions that learn the customer’s business and are able to make better recommendations about what technologies will be the best fit for them. The complete position descriptions for these, and each of the other proposed classifications, are included in the Appendix. The following are the recommended changes, by division:

CMH: The CMH area operates almost independently of centralized IT and is run very efficiently. We recommend that the CMH IT staff be left as they are, with the exception of moving the reporting relationship to the Manager of Applied Technology due to the amount of work that is done on the application in CMH, in order to garner additional application resources, as needed. The CMH IT Coordinator may remain on the CHM management team, if desired.

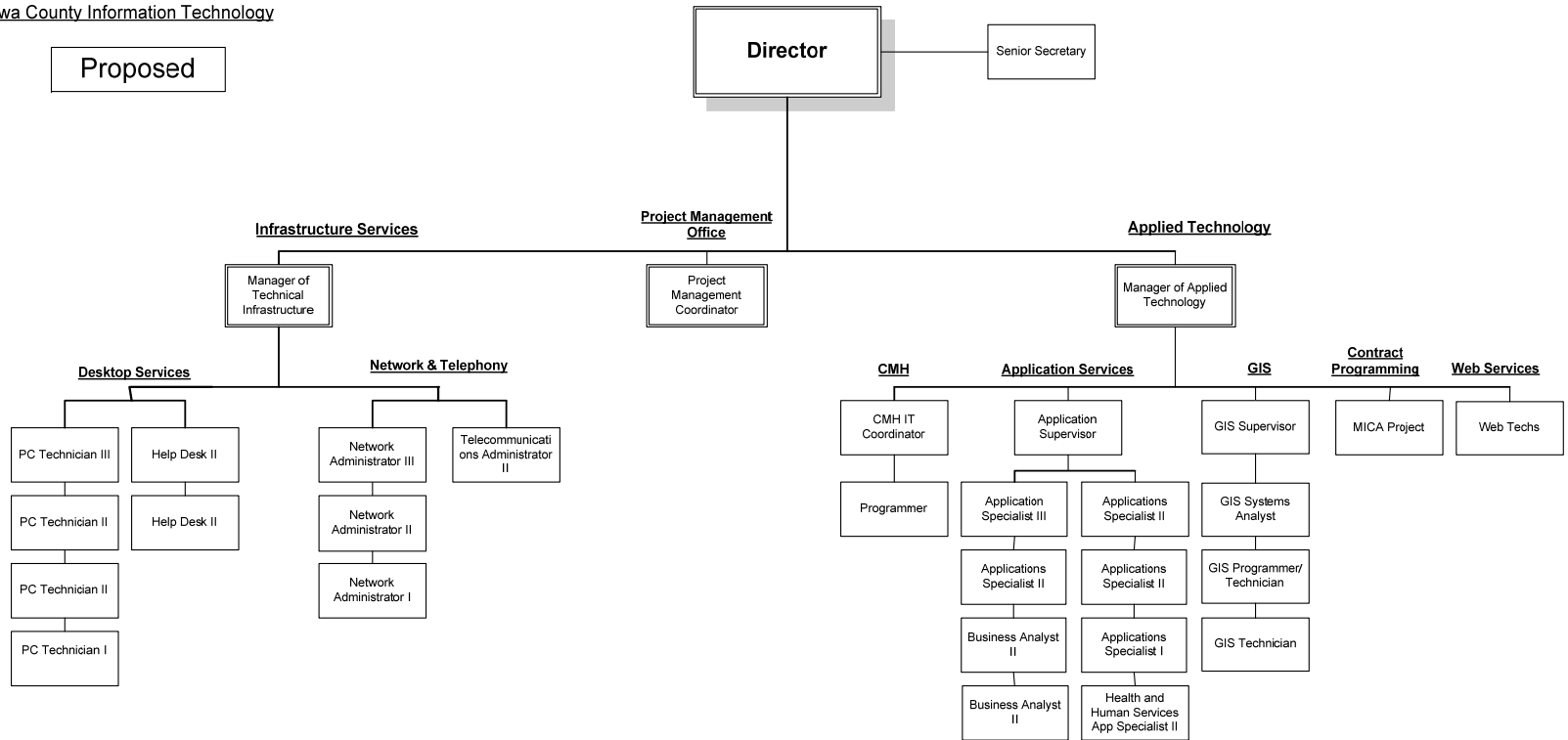
Application Services: The Application Services division will play a large role in the direction and success of the department. We propose that this team is where newly created “Business Analyst” positions should be organized within the IT organization. IT Department management should review and conclude on the specific allocation of the eight positions, but we suggest that as the County implements this new role, one “Business Analyst” should initially be dedicated for large departments, such as Public Health and Courts and the other Business Analyst should focus on the remainder of the departments. Based on the success of the role, the use of Business Analysts may be increased over time. To the extent office space may be available in the larger departments, the Business Analyst’s ability to be effective can be enhanced when they become embedded with the end-users they serve. They both can be used to select and implement new off the shelf software packages and focus on integration between systems to maximize the value they provide. The remaining Application Specialists listed will be responsible for supporting business applications and reporting.

Geographic Information Services (GIS): The GIS area of the IT Department currently works the most efficiently of any of the other areas of the Department. End-users provided consistently strong feedback regarding the services offered by this team and identified they are able to provide relevant solutions to their department. Since GIS is fundamentally a software application, we propose moving this team under the new Manager of Applied Technology, retaining the methodologies that the customers appreciate, and providing the opportunity to leverage their success to the other Applied Technology functions. This also will allow the County to trade the GIS manager position for the Manager of Applied Technology position for no net staffing addition. We are not recommending any changes to the job descriptions of the GIS staff.

Contract Programming: The IT Department has made the decision to outsource most of the larger programming projects, such as the current MICA justice system re-development project. As the County concludes on the future strategic direction of the justice system components based on our recommended approach in the Tactical Plan highlighted on the next page; any future contractors engaged for these projects should report to and be managed by the Manager of Applied Technology.

Web Services: Web Services is an area that continues to be an area for great growth. The contractors who are hired for this area should report to the Manager of Applied Technology who should direct the contractor to continue to manage web usability, create applications in conjunction with the department's proven needs, work with departments on keeping content current, conduct end-user training on the use of the system, and help them determine their needs for a continued positive web presence.

Ottawa County Information Technology



Proposed IT Org Chart w/Functional Areas by reporting structure

30 Positions

Summary of Changes

The Ottawa County IT Department is slightly understaffed today; however the most critical need in the Department is a smoothing of resources so that responsibilities are better assigned to and being managed by the most appropriate resources. The changes that are proposed address that goal but are dependent on the simultaneous and coordinated implementation of the other recommendations in this report. We recognize that the IT Director will need to phase these adjustments in overtime and as budget allows for the hiring of people to fill the new positions. The following chart summarizes the breakdown of the changes:

Discipline	Current Staffing	Adjusted Staffing	IT Staff Change
Infrastructure Services Mgmt.	0	1	1
-Network/Systems/Telecom	3	4	1
- Desktop Services	8	6	-2
Project Management Mgmt.	0	1	1
Applied Technology Mgmt.	0	1	1
- CMH	2	2	0
- Application Services	8	9	1
-GIS	5	4	-1
Administration	1	1	0
- Administrative	1	1	0
Total	28	30	2

3.3 STRATEGY 2: CREATE A TACTICAL TECHNOLOGY PLAN

The department has completed the recommendations from the 2004 Technology Plan and wishes to establish new objectives that can be used to move the department forward. As technologies and processes change rapidly in the IT world, the following adjustments need to be made to position the department to more easily select and adopt new technologies in the future.

- 1) **Determine Future Plans for the Justice System (e.g., MICA).** “Many Integrated County Applications” (or MICA) is a County software application development project to replace the 30-year old “custom” Court, Sheriff Records, Jail, and other records systems that began in 2008 with a planning and visioning effort. Since that time development has begun along with efforts to identify and improve the business processes of all departments that will receive the application. To date, scheduling software for court proceedings, employee time entry, daily activity reporting for the Sheriff, and some parts of the jail module have been completed, along with the implementation of many process improvements. Overall, the organization is pleased with the product that is being produced by the contract vendor; however during interviews with the affected justice departments, a theme emerged that many were concerned about how long the effort is taking and the uncertainty of future development plans. Referring to the current project management project plan, the planning effort for project activities through May of 2014 has been established; however, the plan is limited to the jail and ticketing module. There is no plan at this time that shows what the eventual completion date of this entire justice system project will be and what the final cost is going to be. It appears that approximately \$300,000 per year is being spent on this project.

Unfortunately, there is no easy answer as to what direction to take on this project. The software development process is a solid process and the departments are happy with what is being developed. At the end of development, the County expects to have a fully customized product that will be completely integrated into their work processes. We have the following concerns with the project:

- The project plan is incomplete: the stakeholders and project team do not have an understanding of the time remaining.
- Because of the lack of a timeline, all costs cannot be tabulated. A return on investment analysis cannot be performed.
- The current Justice system that is being used has been patched and augmented over the years and is now unable to support new and changing requirements of the business.
- There is no plan for maintaining the new system going forward after the development is complete. There are inevitable changes that will need to be made due to evolving business needs and changing state requirements.

The following recommendations for going forward with this effort have been reviewed and agreed to by the County's Technology Advisory Group, through the project visioning activities:

- Immediately re-focus internal efforts to conduct the project management activities required to plan out the remainder of the project so that a more complete timeline of the process can be established and an estimated total cost of ownership can be developed.
- After the project is better planned out and the County can assess when the project can be completed, a fuller cost estimate can be prepared for the consideration of the "Criminal Justice New Application Committee".
- Concurrent with the expanded MICA planning and assessment effort, the County should critically explore other vendor provided packaged systems as an alternative to the MICA system. The software market has standardized applications available that may meet many of the needs of the departments for similar or significantly less investment. Such offerings from Tyler Technologies, New Dawn Technologies, New World Systems, and other vendors may include:
 - Sheriff Records Management System
 - Jail Management System
 - Case Management Systems

Consider the advantages and disadvantages of packaged vs. custom software, further detailed in the Appendix. Through this process, the County should be cognizant of the fact that its 30-year old Justice System users have a long history and luxury of the County investing significant resources and IT programming staff to meet their specific requirements with highly customized software. Through this effort to evaluate the marketplace, current Justice system users will likely find the vendor packaged solutions to be less integrated and have less Ottawa County specific functionality.

Review the advantages and disadvantages of packaged vs. custom software, further detailed in the Appendix. The evaluation should consider whether reasonable alternatives can be deployed with standardized software, focusing the County's efforts on integrating them, through the effective use of business analysts, expansion of the County's current ECM capability, as well as future Business Intelligence initiatives.

- The state of Michigan has made strides in its JIS replacement project. One of the modules has gone live in some test counties and the others are in development with

an apparently reasonable project plan. Ottawa County should collaborate with court staff in Berrien County to gain specific insight about the merits and challenges with the newly deployed system in their environment. While this may only solve the Court's needs, it may be an opportunity to minimize the deployment of custom software and more quickly deploy externally supported functionality.

- 2) **Increase Support for Courtroom Technology.** In the last several years, there have been significant changes to technologies that are used in the various courtrooms throughout the County. Aside from working with the vendors that have installed these systems, the County's IT Department doesn't have much experience working with these systems and therefore has difficulties with them when they require service. The IT Department needs to assign responsibility for these systems within their staff and work in partnership with court staff to ensure that they are operational when they are needed. These systems should also have an appropriate replacement schedule assigned to them.
- 3) **Reduce Manual Support Efforts by Implementing Desktop Automation Tools.** Much of the effort spent by Computer Support Specialists deals with the patching, updating, and installing of software onto desktop machines. Today, systems exist that can distribute software seamlessly and quickly throughout an organization, giving the user a better overall experience and reducing the demands on the support staff. The reduction in the Desktop Services area is dependent on a system such as Symantec Altiris, Microsoft System Center Configuration Manager, or LANDesk being selected, procured, installed and implemented.
- 4) **Transition to a Modern and Supportable Email Platform.** We recommend planning for the replacement of the Lotus Notes system on the IBM iSeries (formerly called "AS400"). In many of the user interviews, departments mentioned the email system as a source of contention. Various complaints ranged from the speed of the interface to the lack of compatibility with newer systems and software. In practice, many of the native integrations that are easily performed on newer smart phones, tablets, and other mobile devices are made much more complicated with Lotus Notes than with one of the modern messaging platforms. However, replacing the email and calendaring system is not as easy as just selecting a new system. The County has, for many years, used the Lotus Domino development environment that is part of the Notes server to create nearly 100 applications that the County is now dependent on, so those must be replaced and their functions taken over by other applications that exist or by development of web based programs. The IT Department has been aware of the need to perform this activity, but it hasn't been made an active project to date. It is our recommendation that the list of applications be confirmed, the extent of use be established for each, and the future of each application be mapped out so that a true project plan can be developed to be able to move forward with replacement of the email system with something that is more easily used for new devices. Some of the recommended systems that the County should investigate are Exchange 2010 on premise or Microsoft 365 and Google's Gmail offerings that are hosted in the cloud. It is reasonable to expect that a replacement messaging platform can be deployed while efforts are underway to incrementally transition the custom Lotus Domino applications over time.
- 5) **Expand Deployment of Active Directory to Improve Supportability of Users.** Active Directory (AD) is being used to today for network authentication, file services, and limited Group Policies. The capabilities of AD should be additionally leveraged for print services, authentication into applications, remote access, and security. The current implementation of AD has not been leveraged as it should have for many reasons, the biggest of which is staff's ability to spend time on it and learn it given all of the other responsibilities. We recommend implementing Print services first, as that will also alleviate help desk calls from customers, and then a larger effort to integrate more applications to authentication so that the County can move toward "single sign on". Single sign (e.g. federated identify management) on uses network authentication through AD instead of having applications each have their own

databases of allowed access, so that the users credentials are “passed” through or they are allowed to use their network passwords to gain access to ancillary applications, such as the financial or email system. Many customers lamented the fact that they had differing user names and passwords for systems and that it was a challenge to remember them all. It is also a security issue in that if the County is using AD for authentication, when an employee leaves, the ID can be removed in one place, rather than in each separate application. This, too, will reduce help desk calls.

- 6) **Enable Staff to Work More Effectively by Re-implementing Remote Access.** Most of the staff interviewed claimed to have remote access when the question was asked. Upon further investigation, it was identified that what they had was remote access to email, but not applications or network drives. A few of those interviewed had some ability to access AS400 applications, but complained about the process that was required to access it and the speed of the access once it was activated. We recommend that the County select a product (or re-implement the VPN that exists) that provides secure, comprehensive access to County resources when working offsite. Along with this new ability, IT will need to work with Human Resources to develop a Remote Access Policy to outline what regulations need to be written to ensure security of the county’s data. It should be noted that although this will give employees the technical ability to work from home, the issues of the procedures and processes required to work remotely, what County liabilities exist, workman’s compensation issues, and the responsibility of equipping the employee with tools need to be solved before it should be implemented. The immediate basis for this recommendation is for field workers who might benefit from access to County technical resources while out of the office and for technical support problem solving.
- 7) **Mitigate Risk by Cross Training IT Staff.** There are several single points of failure that exist in the IT staffing plan that create serious exposure for the County. The areas of main concern are around the OnBase Application support and the infrastructure area. The proposed staffing model is intended to provide some relief in these areas, giving some extra coverage to the areas of need.
- 8) **Determine Future Mobile Platform.** The current standard for mobile phones in the County is RIM’s Blackberry platform. While this platform has served the County for many years and is one of the technologies that integrates into the existing email system, the Blackberry system is a closed, proprietary system that makes it difficult to integrate into external systems. As technology advances, the industry is making mobile applications available for users to interface into County systems. As the mobile industry moves forward, it looks more and more as though Google’s Android, Apple’s iOS, and, to a lesser extent, Microsoft’s Windows Mobile are forecast to continue as leaders in the mobile technology market. This is being shown today by the lack of applications or “apps” being made available on the Blackberry platform. It is often not supported by even the most popular companies. The County should assess what its security needs are today to determine the feasibility of a move off of the platform. Increasingly, organizations are finding that the complicated and expensive Blackberry infrastructure that is needed to service and support these devices, while providing stellar security, is not completely necessary as there are alternatives available to make the County more flexible, yet still secure. Additionally, if “bring your own device” projects are initiated in the future, most consumers who are given a choice of devices are not choosing Blackberry as their preferred platform, so other infrastructure changes to accommodate the more popular “Active Sync” will have to be made anyway.
- 9) **Implement or Refine an Ottawa County Technology Knowledge Base.** IT Department staff identified that a single repository to store common technology problems does not currently exist. The County’s help desk software and ECM system capabilities should be assessed for their capabilities or the County should establish a mechanism to track documentation to help IT staff solve the most common, re-occurring problems.

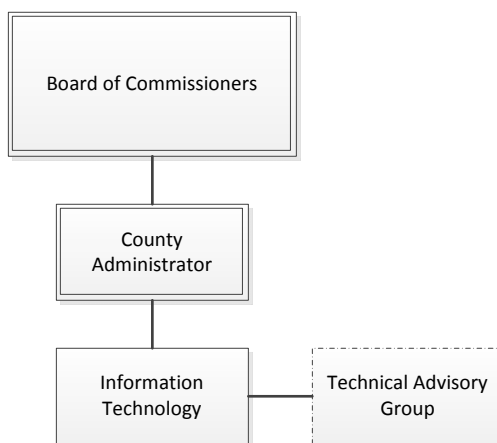
3.4 STRATEGY 3: EXPAND THE ROLE OF THE TECHNOLOGY ADVISORY GROUP

We recommend augmenting the Technology Advisory process that is currently in place in the County. The Technology Advisory process is the system by which the current and future use of IT is directed and controlled. Because accelerated and pervasive technological change is likely to continue to be a dominant feature of the future environment for organizations, an appropriate and effective governance structure is critical for directing the County’s future investment in technology. The ability of the County to manage change will determine the ability to manage IT investments well. That, in turn, will be dependent on the County’s ability to integrate the best IT governance practices into decision-making processes.

- 1) **Current Technology Advisory Process.** In early 2011, the IT Governance process was modified, creating the “Technology Advisory Group” that includes enhanced organizational leadership with the following responsibilities:
 - Develop and maintain the group’s mission and responsibilities.
 - Ensure that County Goals are supported.
 - Assist the IT Director in developing and maintaining a County Technology Plan for the purpose of maintaining a strategic perspective.
 - Review current resources and ensure that an appropriate mix of resources is maintained to meet the County’s current and future operational requirements.
 - Develop procedures for requesting capital investments and criteria for evaluating requests.
 - Review requests for capital investments and recommend priorities for these investments.
 - Ensure that the County leverages existing resources to meet requirements.
 - Require reports of approved investments and monitor each investment’s value.
 - Make recommendations to the County Administrator and Board of Commissioners regarding technology investments.

The list of responsibilities is a solid representation of the governance requirements, but is somewhat lacking in how it is accomplished and who is accountable for what responsibilities. In the next section, we provide recommendations on the makeup and clarification to the operation of the group, to simplify the group’s operations.

- 2) **Future Technology Advisory Process.** The current iteration of the Technology Advisory Group is a strong foundation to a best practices governance effort. In this section, changes are outlined to better clarify the group’s role in Information Technology matters as well as an augmentation to the membership of the group to better represent the County departments.



The County should consider being more inclusive related to the membership of the group and include representation of a group of elected officials from the County. As one of the responsibilities is to help to form policies and standards for the County, the elected officials who do not report to the County Administrator need to be able to have a voice in the technical direction of the County. Absent a meaningful voice, there could be problems in the various elected officials implementing their own technical projects and standards, absent IT input. This is not a desirable situation for the County's IT department because often times, IT is still obligated to maintain the technology and that responsibility is made difficult because of the lack of standardization with the rest of the County. Including additional members will help to reduce the incidence of this occurring. We also recommend specifically that the Human Resources Director be added to assist in assessing the Human Resources impact of technology decisions. Many of the technologies that are being recommended, such as remote access and mobile devices, have direct impact on human resource issues and their perspective needs to be considered.

The IT governance model recommended for consideration by the County is listed below. The cost of this recommendation is nominal, but the benefits to Ottawa County can be significant. It clearly lays out the 6 areas of involvement along the top and the various management, staff, and team's responsibilities along the side. The governance model has been successfully used in multiple governmental jurisdictions throughout the United States.

These benefits will include:

- IT policies to allow for full implementation and integration of systems and data
- IT standards and protocols to encourage efficiency
- Enhanced IT decision making and greater clarity for IT staff
- A prioritization and decision-making process that includes all stakeholders

**Ottawa County, MI
Proposed IT Governance Structure**

	IT Policies & Procedures	IT Standards	Annual Technology Planning	Annual Technology Budget	Departmental and Line of Business Projects`	Enterprise Projects
Board of Commissioners	<ul style="list-style-type: none"> Approval of Policies and Procedures 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Review and approve technology plans Approval as part of the budget 	<ul style="list-style-type: none"> Review and approve budgets and requests to County Board Approval of funding 	<ul style="list-style-type: none"> Approve funding for major projects 	<ul style="list-style-type: none"> Approve funding for projects
County Administrator or Representative	<ul style="list-style-type: none"> Communicate IT procedures Countywide 	<ul style="list-style-type: none"> Communicate standards Countywide 		<ul style="list-style-type: none"> Review and approve budgets and requests to County Administrator 		<ul style="list-style-type: none"> Authorize and support enterprise level projects
IT Leadership Team	<ul style="list-style-type: none"> Review and recommend IT procedures to the Technology Advisory Group 	<ul style="list-style-type: none"> Enforce IT standards 	<ul style="list-style-type: none"> Review and update, as needed, the Information Technology Strategies in terms of relevance and priority Participate in annual planning process 	<ul style="list-style-type: none"> Develop and maintain the project prioritization criteria and weightings Review, rank and prioritize ad hoc committee project requests to the Technology Advisory Group. 		<ul style="list-style-type: none"> Initiate a Leadership Team subcommittee to evaluate enterprise initiative feasibility Monitoring of enterprise projects

	IT Policies & Procedures	IT Standards	Annual Technology Planning	Annual Technology Budget	Departmental and Line of Business Projects`	Enterprise Projects
Technology Advisory Group	<ul style="list-style-type: none"> • Approve IT procedures 	<ul style="list-style-type: none"> • Approve IT standards 	<ul style="list-style-type: none"> • Recommend to County Administrator, as needed, the strategic technology imperatives in terms of relevance and priority 	<ul style="list-style-type: none"> • Approve ROI model • Review and approve project prioritization criteria and weighting • Review, rank and prioritize ad hoc committee, CIP and non-CIP project requests 	<ul style="list-style-type: none"> • Provide oversight to major projects 	<ul style="list-style-type: none"> • Give life to potential Countywide initiatives that may originate from multiple sources • Initiate subcommittee to evaluate Countywide initiative feasibility • Conduct periodic monitoring of Countywide projects.
IT Director Office	<ul style="list-style-type: none"> • Recommend policies and procedures to the Leadership Team for approval 	<ul style="list-style-type: none"> • Recommend IT Standards to Leadership Team for approval • Identify IT standards that need to be developed. • IT Director to participate on Leadership Team and Technology Advisory Group 	<ul style="list-style-type: none"> • Draft updates to the Strategic Plan • Draft updates to the Tactical Plan 	<ul style="list-style-type: none"> • Develop recommended IT budget • Consider Collaboration Opportunities (Alliance Partners) • Benchmarking Trends 	<ul style="list-style-type: none"> • Approval of all Tactical Plan items and IT projects based on Standards, IT Strategic Plan and Tactical Plan 	<ul style="list-style-type: none"> • Approval of all Tactical Plan items and IT projects based on Standards, IT Strategic Plan and Tactical Plan

	IT Policies & Procedures	IT Standards	Annual Technology Planning	Annual Technology Budget	Departmental and Line of Business Projects`	Enterprise Projects
Ad-Hoc Committee (Line of Business)	<ul style="list-style-type: none"> Understand the relevance of developed IT policies and procedures to the technology standards function As needed, develop IT procedures in areas deemed necessary by the Leadership Team 	<ul style="list-style-type: none"> Understand the relevance of developed IT standards as it applies to the subcommittee's charge Review deviation requests from County IT standards and recommend to the Leadership Team 		<ul style="list-style-type: none"> Develop ROI and budget requests for Line of Business and Enterprise Projects 	<ul style="list-style-type: none"> Identify Departmental and Line of Business Projects and articulate benefits Provide strong leadership/support for approved projects 	<ul style="list-style-type: none"> May provide project oversight to multi-departmental projects
Department IT Liaison Staff	<ul style="list-style-type: none"> Understand the relevance of developed IT policies and procedures to their Line of Business (LOB) Communication channel between central IT and departments 	<ul style="list-style-type: none"> Understand the relevance of developed IT standards as it applies to their IT initiatives Initiate requests to deviate 	<ul style="list-style-type: none"> Review and update, as needed, technology goals applicable to the LOB 	<ul style="list-style-type: none"> Review and rank departmental IT initiatives 	<ul style="list-style-type: none"> Often first line of support for departmental applications 	<ul style="list-style-type: none"> *Often first line of support for enterprise software where the department "owns" the software expertise
User Groups	<ul style="list-style-type: none"> Understand the relevance of developed IT policies and procedures to the application which is the focus of the User Group 	<ul style="list-style-type: none"> Understand the relevance of developed IT standards as it applies to the application 	<p>Assist in the prioritization of projects</p>		<ul style="list-style-type: none"> Often first venue for consensus on system decisions 	<ul style="list-style-type: none"> Often first venue for consensus on cross functional decisions for enterprise systems

	IT Policies & Procedures	IT Standards	Annual Technology Planning	Annual Technology Budget	Departmental and Line of Business Projects`	Enterprise Projects
Central IT Staff	<ul style="list-style-type: none"> As needed, develop IT policies and procedures in areas deemed necessary by the Leadership Team Identify areas where IT procedures need to be developed Participate in the development of IT procedures Implement recommended and approved IT procedures 	<ul style="list-style-type: none"> Assist with the development and communication of IT standards for those areas that are deemed as core to the County IT function Initiate requests to deviate 	<ul style="list-style-type: none"> Provide input to Plan 	<ul style="list-style-type: none"> Work with departments in developing project ROIs Provide staff capacity input to the Leadership Team 	<ul style="list-style-type: none"> Coordinate with department IT staff, or perform directly 	<ul style="list-style-type: none"> Support enterprise projects Coordinate with Department IT staff
Department IT Staff (e.g. CMH)	<ul style="list-style-type: none"> Review and provide feedback on draft IT policies and procedures Participate in the development of IT procedures that impact their area of operation Implement approved IT procedures, as appropriate Adhere to and support the developed IT procedures 	<ul style="list-style-type: none"> Review and provide feedback on draft IT standards Adhere to and support the developed IT standards Initiate requests to deviate 	<ul style="list-style-type: none"> Provide input to Plan 	<ul style="list-style-type: none"> Participate in development of project ROIs Identify IT initiatives for the upcoming fiscal year 	<ul style="list-style-type: none"> Coordinate with central IT Implement department level projects where appropriate 	<ul style="list-style-type: none"> Coordinate with central IT

Additionally, to support and enable the governance model, we recommend implementing or enforcing the following project best practices:

- 1) **Project Request Process.** We highly recommend formalizing and consistently communicating a standard process for initiating and reporting on project requests and conveying a clear definition of what constitutes a project.

Customers indicate that presently there is often little to no feedback between the time that a project is requested and when IT is beginning work on the project. The following items should guide the development of the processes:

- A. A clear consistent mechanism such as web-based form, for initiating a project request.
 - B. A consistent method and approach for prioritizing project requests. IT governance will play an important role in this process.
 - C. A mechanism for reporting information regarding the project request back to the project requestor. Consider a web-based reporting tool, such as the County's intranet, and institute both push (e.g., email) and pull (e.g., intranet web pages) mechanisms to disseminate this information.
 - D. A clean transition between request, approval, and initiation processes.
- 2) **Cost Benefit Analysis / Return on Investment Strategy.** As part of the overall governance process, a cost benefit analysis and return on investment (ROI) discipline for new projects must be initiated. By performing the due diligence to project what the County's return will be before agreeing to implement the requested technology, expectations will be set that will serve as a baseline for the project, which should be monitored over time to see if the baseline return was achieved or even exceeded. Any proper ROI model must consider capital, human and operating (on-going) costs in the analysis. Additional considerations for factors to consider in a cost benefit analysis and samples can found in the Appendix. Currently, this is not used in all technology projects. A good example of where this strategy should have been used is in the MICA Criminal Justice programming project.

4. Emerging Technologies Assessment

4.1 INTRODUCTION

In this section, emerging technologies are evaluated in terms of their value and potential applicability to Ottawa County. Many of the technologies are in use in other local governments today, while others may not be mature enough in their development to be a good use of County funds and effort at this time. Each recommendation identifies a possible value to the County, but further investigation would be required to determine the specific timing and appropriate level of County investment. Specifically, we recommend that the County evaluate these initiatives through the new project vetting process, including the ROI model that will become a part of the enhanced technology governance model.

4.2 MOBILE COMPUTING

Mobile computing refers to the use of hardware, software, and communication technologies that are designed to be easily transportable. They are most closely associated with examples such as smart phones, mobile PCs, feature phones, and tablet computers. Within recent years, using the fast moving consumer market as an example, the number of mobile computing device types has been proliferating, the price point has been decreasing and the overall adoption of mobile computing has been expanding at an unprecedented pace. Gartner forecasts that the number of mobile computing installations will exceed the number of traditional PC installations by 2014. With this trend, technology companies, in general, are shifting their focus away from designing technologies solely based on full PC platforms, toward developing mobile solutions. While it is not an immediate shift, over time, the prevalence of mobile computing options will impact how County staff work and how County IT support resources may support these technologies. Mobile devices are powerful as they can be “aware” of the context of their user’s interaction with them, including location, movement, and orientation. Also, because of their native persistent data connectivity, comparatively limited storage, processing power, and display capabilities, they are often closely linked to the simultaneously emerging market of “cloud” systems. While “anywhere, anytime” access that cloud computing offers is a powerful method of enabling people to gain access to and process information, it will be increasingly complex for organizations such as Ottawa County to provide, manage and support these devices because of the number of platforms available and the demands that they users place on availability of information.

A. Examples of Mobile Devices:

- iPhones and iPads
- Android smart phones and tablet computers
- Blackberry devices
- Windows mobile devices
- Mobile PCs

B. County Uses or Considerations - Today, certain County field workers have laptops and/or County supplied Blackberry devices which are used for limited information access and/or communication and collaboration. Others, who perform field work using paper forms, must perform electronic data input or informational inquiries after returning to the County facilities. In general, there was an interest in seizing the opportunity to expand the use of mobile computing technologies to improve customer service and staff efficiency during the project’s visioning activities with the Technology Advisory Group. During the meeting, team members expressed interest in expanding the use of mobile computing.

C. County Constraints – Currently, in some departmental areas of the County, there may be a management culture which suggests that staff must be in the office so that their work can be monitored and that they are dedicating the appropriate amount of time to their duties. The

County would need to increase education about the potential value of these devices and develop controls to provide an adequate level of assurance that County staff are performing primarily County functions, while remotely using these devices. The expansion of the County's use of mobile computing would additionally force the County to plan for security of constituent data, as well as make a series of policy decisions about the ownership of the devices and what impacts it would have to staff work agreements. The County would also have to make decisions as to the level of support that County IT staff would provide to County staff for use of these devices. Beyond these basic administrative considerations for deploying mobile computing technologies, the County should be aware that as today's market is currently focused largely on consumer devices, there are only a limited number of specific applications which are focused on local / County government processes and applications. Today, Ottawa County's primary mobile initiative is based on its existing deployment of email functionality on County provided and supported Blackberry devices. As mentioned earlier in this report providing mobile email via Blackberry is currently considered in the market to be the more expensive mobile email solution. At one time, Blackberry provided great value and a technical advantage to the County, however today the market is shifting away from the Blackberry solution in favor of more modern, less proprietary system. Other mobile computing options do have certain levels of support for the County's current email platform, however mobile solutions for Lotus Notes are more complex and difficult to implement than "Active Sync", which is used on more mainstream email platforms such as Microsoft Exchange, Microsoft's online email offering, Office 365, and Google.

- D. Recommendation and Timing** - County business analysts should evaluate the applicability of emerging functionality which may become available via mobile technologies and consider their value to various County departmental users. Going forward, as government software providers begin to develop specific County applications that Ottawa is using, the relevance of mobile device use at the County will increase. Additionally, consider the adoption of a "Bring Your Own Device" program (described below) to mitigate certain aspects of the complexities to support mobile devices and to reduce costs.
- E. Costs** - Individual device costs vary based on the form of the device and features and currently may range from \$100 to \$3,000.

4.3 BRING YOUR OWN DEVICE

The "Bring Your Own Device" (BYOD) movement is questioning the traditional model whereby employers provide employer-owned computing tools to employees to perform their work duties. It redefines it so that employees would be empowered to bring their own computing devices to the workplace and use them for certain work functions. BYOD is closely interrelated to the mobile computing market and as such, planning and consideration for BYOD should not be limited to personal computers but additionally should include staff's uses of smart phones, tablets, BlackBerrys, etc. BYOD suggests that as price points for computing technologies, specifically mobile computing devices, have been decreasing over time, personally owned smartphones, tablets, and other devices are becoming embraced and more often owned and used by employees in their personal lives. Today, people generally own a greater number of computing devices than they have historically and, with this increased ownership and use, employees are increasingly forming strong personal preferences toward specific devices. BYOD suggests that there are reasons to consider opportunities for employee-owned devices in the workplace for staff to perform their work duties. An example of this is that ultimately, BYOD offloads aspects of the management of non-strategic devices away from County IT and therefore can mitigate some of the complexities of management and support of mobile devices that today, are shouldered by County IT. To enable this shift of ownership of computing devices to allow access to internal County resources by employees, the management and support of

these computing devices must be carefully planned out and executed. This planning can be accomplished through a series of policy related decisions which the County would need to evaluate and consider. These considerations are further described below:

A. Examples of Segmented BYOD Approach:

County Group	Sample Approach
Field workers with a specific County mobile application (e.g. a specialized work order system)	<ul style="list-style-type: none"> • County-owned device • County supported device
Formal BYOD policy for County (non-union) knowledge workers with existing County Blackberry's	<ul style="list-style-type: none"> • Employee-owned device • County support for various functions: <ul style="list-style-type: none"> ○ Email ○ Calendar ○ Documents • Full County IT support for supported functions • Limited County IT support for non-supported functions (e.g. device operating system, GPS mapping, to do lists, etc.)
Informal BYOD for other County staff	<ul style="list-style-type: none"> • Employee-owned device • General Wi-Fi data access or sanctioned specific functions such as email • Limited County IT support

B. County Uses or Considerations - BYOD is an approach that the County should consider in the intermediate term after the email platform transition is complete to mitigate the relatively high costs for providing mobile email via Blackberry. Any future County support for a BYOD program would ultimately expand the number of mobile users who have access to resources while in the field performing their work and may escalate the speed with which these staff are able to adopt new technologies. This is based on the fact that the consumer market of mobile devices progresses at a faster rate than those used in the business market.

C. County Constraints – BYOD would add complexity to electronic discovery issues which may be a part of legal proceedings. Additionally there are employee privacy implications which will need to be considered. In certain instances, the County IT team may be supporting employee-owned devices and as such may have an opportunity to be exposed to confidential, personal employee information. Additionally, BYOD raises outside of working hours use and overtime labor implications as employees become more easily accessible outside of their traditional work schedules. Finally, as it would rely on the employee ownership of the device, the County would find difficulties in mandating employee device use for County work functions via a BYOD program and some employees may not own or be able to obtain a device because of lack of funds or credit issues. Employees would need to be able to “opt in” to the program in most cases.

D. Recommendation and Timing

- a. Proceed with BYOD evaluation, considering what opportunities are possible.
- b. Mobile device support for Lotus Notes email is complex outside of using a web browser on a mobile device, so initial formal BYOD adoption at Ottawa County may be most appropriate to do in conjunction with or after an email transition to a more mainstream platform such as Microsoft or Google.
- c. Much as with an automotive mileage reimbursement policy versus providing a vehicle, separate out the decision on whether to allow employee-owned devices from the liability for the telecommunications expense of that device.
- d. Consider the policy to be the strategic tool to manage BYOD adoption, and as a tactical tool use any employee stipend for reimbursement.
- e. As with the examples above, segment users into different groups based on their needs and develop/deploy multiple management approaches. Departments / managers with budgetary responsibility should be involved in the decision as to what category each employee is classified into.
- f. Develop a BYOD policy which considers the following areas:
 - i. Who qualifies?
 - ii. What devices supported?
 - iii. Who buys/owns device?
 - iv. What service expenses will be covered?
 - v. What service level agreement (SLA) will there be?
 - vi. What is the security policy?
 - vii. What rights will the County/employee have as it relates to employee privacy?
 - viii. What time blocking rules might be developed to address after hour labor implications?
 - ix. What are the County/employee rights for electronic discovery?
 - x. What are the limitations for reimbursement?
 - xi. What penalties are there for non-compliance?
 - xii. What costs are born by the employee/County at termination?
- g. Engage County staff to assist with SLA's for personal device support by County IT.
- h. Consider a phased approach toward deployment based on segmented user groups and progressively evaluate and readily reconsider adjustment to the policy and service levels.

- E. Cost Impacts** - Initial cost considerations focus on the effort to develop and deploy a preliminary BYOD policy, but additionally may include potential employee reimbursement for voice/data plans ranging from \$20– \$80 per month per employee. Direct costs for some of the supporting technologies, such as mobile device management (MDM) tools or specific applications are variable based on future policy decisions but those costs would include both capital and ongoing operational expenses. While there would likely be a low return on investment if BYOD were to force deployment or expansion of a virtual desktop environment solely for use by BYOD user devices, there would likely be a high return on investment for replacement of the Blackberry email and calendaring functionalities, after an email platform transition project occurs.

4.4 GREEN IT

Green IT is the study and the use of computer resources in an efficient way. It is mentioned often in trade publications and at various conferences as good for the overall environment and sometimes as a way to cut costs in an organization.

A. Examples of Green IT Initiatives.

- Virtual Computing – In computing, much of the capacity of a server is usually utilized by a single application, yet because of system architectures separation is almost always demanded by software manufacturers to prevent problems. In its simplest terms, virtualization takes many servers and places them onto one physical server as separate entities. There is also an iteration of this technology that replaces desktop PCs with small appliances that allow servers in the data center to do all of the processing. These are green efforts because of the possible power, cooling, and space savings that these initiatives can bring.
- Power Management – Windows Computers are capable of having the times and situations when they go into power saving modes set by a system policy. Some of these settings are integrated into Active Directory, which the County already uses and some of the more advanced possibilities, such as automatically shutting down groups of computers at a certain time, turning on computers in the middle of the night for updates, or booting up groups of computers in time to start the work day require add on software which in theory, should have a return on investment.
- Responsible Recycling – All recycling programs that are used by companies and governments are not environmentally friendly in their processes. There are documented instances when recyclers will strip off valuable items from donated computers and deposit the remaining “junk” in a landfill. Other times, the equipment is sold to a foreign country that has less stringent standards and the equipment is mined for valuable parts without proper safety gear, exposing workers to lead and mercury. Responsible recyclers ensure that all of the computer gear is re-used or disposed of in an environmentally safe and responsible manner.
- Alternative Energy – Some companies and governments are utilizing renewable power, such as wind or solar energy for powering part or all of their data centers. This reduces reliance on coal and other such types of energy. In some cases grants are available to help defray costs and make more attractive return on investments.

B. County Uses or Considerations - Today, the County is already using server virtualization and responsible recycling in its IT operations. There are some savings opportunities associated with applying power management settings on PCs. In the future, consideration should be given to evaluating the capital on operational cost implications and benefits of a virtual PC environment. While reducing the amount of power generated, there are savings that can be made through staff time spent performing maintenance tasks and reduced user downtime. Many governments are just now testing this technology, but some entities like Muskegon County have replaced a significant portion of their desktops with it.

C. County Constraints - In terms of size, Ottawa County is of a size that is probably too small to leverage large savings by using Green IT. Some impact could be made by implementing Power Management, but there are more pressing issues and the Technology Advisory Group recommended against further efforts in this area.

- D. Recommendation and Timing** - The County should review and analyze what power settings are available via group policy for putting computers to sleep or turning off monitors after periods of non-use. This should be made part of the recommendation to take advantage of Active Directory in the Tactical Technology Plan and could be completed in the next 12 months.
- E. Costs** - There is no cost related to implementing the power management settings that are included in Active Directory, aside from staff time.

4.5 SOCIAL MEDIA EXPANSION

Social Media is a variety of new and growing Web-based platforms, applications and technologies that enable people, government, and businesses to socially interact with one another online. The County is already testing and using social media in several departments to more effectively interact with constituents.

A. Examples of Social Media.

- Departmental or County Facebook pages and applications – A department can easily set up an online presence to distribute notices and seek feedback on initiatives with constituents. Facebook provides a large audience of citizens that the County could interact with at little to no cost.
- Crowd Sourcing – Crowd sourcing is a concept that allows a large group of citizens to have input into a process or policy instead of relying solely on staff and the input of a few citizens that attend public forums. For instance, Santa Cruz, California, is using crowd sourcing for gathering ideas on budget reduction items and Austin, Texas, is collecting ideas on how the city can help prepare itself for the 21st century economy. Peakdemocracy.com and other online tools provide the forum platform to solicit input.
- YouTube Channels – Organizations today can create “channels” on the youtube.com website that separates out their content from other sometimes unrelated content on the immense, post your own video site. The Michigan Department of Community Health has a large presence on the site with its own “channel”.
- Administration or elected official use of Twitter – Twitter is a user subscribing messaging service that limits its messages to 140 characters. It is widely used by celebrities, elected officials in other communities, and by the general population. Twitter could be a medium used by various County departments to communicate current events to their constituents, statuses on special projects, or to convey the County position on local issues.

- B. County Uses or Considerations** - Facebook is already being used widely today by Parks and Recreation and the Legal Self Help Center. Public Health has expanded presence that includes Flu Granny, Beach Watch, and Food Network. Parks’ expanded uses include notification to the public about various events and classes that are available to residents. It also gives residents an opportunity to ask questions of the department. Some examples of how YouTube could be used: simply using self-produced items about Health Department issues such as how to prevent the spread West Nile virus or about awareness of immunizations. Other possibilities are posting archives of Board of Commissioner or other meetings or video tours of the County’s many parks.
- C. County Constraints** - The County has begun utilizing a “Social Media Champion” that is aware of and coordinating all of the County’s activities around this area and has a policy in place to guide the activities. The new role and policy are being rolled out to the organization.
- D. Recommendation and Timing** - The County should investigate and promote using social media avenues for generating discussion of issues and for informing an ever increasingly “wired” constituency. Some of these items are in use today, and it is recommended that work begin immediately on policies, procedures, and guidelines for this area.

- E. Costs** - Aside for employee time, these efforts are largely free of charge. There would be startup costs of less than \$10,000 if the decision was made to produce content for YouTube. Video equipment, editing software, and training for a few employees would need to occur to make the self-produced videos somewhat professional in appearance.

4.6 CLOUD COMPUTING

Cloud Computing is a type of computing that relies on sharing computing resources through a third party that are usually accessed over the internet rather than using local servers or personal devices to handle/store applications.

A. Examples of Cloud Computing

- **Server Hosting** – Services exist today to let the County have virtual “servers” that are hosted elsewhere, but which appear to be an on-premise resource to users. Examples of companies that provide these types of services are Amazon, EC2, or Rackspace. These types of computing resources can be attractive as they will scale up with demand, so that hardware is never too small. It is often useful to use hosted servers when there are a few instances of large demand (but mostly) little demand for the resources the other times. A disadvantage to this model is that there is a monthly, ongoing charge for the service and it is based on the amount of data used in a period. The key potential advantage of the service is that there is no capital investment on the vendor’s hardware that is being used.
- **Online Backup** – The advantages of online backup may be attractive to the County in that many IT departments, as with Ottawa’s, struggle with how to transfer backed up data to a safe, offsite location in case of a disaster. Often Counties have to purchase twice as much hardware to get a truly replicated backup infrastructure and then, because of the geographical reality of counties, the offsite backup is much too close to be effective. There are services today that exist such as ibackup and Iron Mountain that show promise in solving this problem.
- **Software as a Service (SaaS)** – The SaaS concept has been around in computing for quite a few years now. Software vendors offer programs that would normally reside in the County’s data center on expensive servers over the internet for the users of the County to access.

B. County Uses or Considerations - Many vendors are offering this as an option in their offerings and they should be looked at whenever new software is being considered. As an example, many Human Resources departments are utilizing this type of software because of the robust features that it can offer, such as online time entry from the internet and “E-Hiring” modules. Some financial software companies are beginning to offer this also. Use of these services helps to take a burden off of the County’s IT department as there is no server that needs to be maintained and most technical problems are solved by the vendor.

C. County Constraints - If cloud computing becomes widely used, the current internet connections will need to become more robust and have automatic failover to secondary connections. There is also an IT employee consideration in that IT employees are sometimes wary of services that take servers and services away from their control. Care needs to be taken so that the IT employees are receptive and actively involved in the hosting of items in the cloud.

D. Recommendation and Timing - Server hosting has limited applicability to the County today. Some municipalities are hosting their GIS infrastructure in the cloud because of the large swings in demand for those services. ESRI, the provider of the County’s GIS software is actively helping municipalities in the switch to this type of hosting.

E. Costs - Cloud computing offerings usually require no capital investment, but there is always an ongoing fee for the use of the software. The customer loses the ability to use the software if

the contract is not renewed. Provisions should always be made in the contract that the data belongs to the County.

4.7 SELECTIVE SOURCING

Selective Sourcing is the practice of seeking resources or subcontracting outside of an organization for select parts of IT functions. Selective Sourcing should not be confused with outsourcing, which is contracting outside of an organization for ALL of its IT functions.

A. Examples of Selective Sourcing

- **Email** – This is probably the most popular and most debated of the selected sourcing items. Counties and cities are deciding that because of the cost and importance of email, they are choosing to host it with companies that specialize in providing email, such as Microsoft 365 or Google's Gmail service. When reviewing the costs of email, the County would need to assess the total cost of ownership of the solution. Providing email service to County users would require not only a single email server, but redundant servers, spam filters, antivirus servers, Archiving systems, and a substantial amount of employee time to keep the system running and to perform maintenance. Many Counties now consider this to be a commodity service that can easily be handled by companies that specialize in providing email to customers. However, some law enforcement stakeholders hesitate to move sensitive email outside of the County's data center for fear that it may be intercepted or stolen.
- **Web Security Services** – Services such as ZScaler provide various security services to the County without the presence of any of the servers, equipment, and effort. Services such as web filtering, data loss prevention and Web 2.0 controls, such as site filtering and control over how much data individual users are consuming are among those offered.
- **Local Providers for infrastructure and PC Support** – In today's IT environment, infrastructure, such as networks and servers, are considered to be a commodity that staff spend a good amount of time monitoring, improving, and expanding rather than serving users directly. The current trend in the industry is to outsource the more technical work of the IT Department so that resources can be freed up to interactively work with end-user departmental staff and enable transformation of their business operations into those that better use technology, while either keeping the number of staff constant or actually being able to see reductions.

B. County Uses or Considerations – The tactical plan from the prior section identifies email replacement as a high priority initiative. The cloud option for email should be given high consideration, if the security concerns of the County can be satisfied. Additionally, the County should strongly consider the use of selective sourcing when considering implementing the components of this plan. The proposed staffing plan proposes adding 2 FTE to the organization, which normally would be added directly to direct hire County staff. Using this model provides the opportunity to leverage external IT service providers to get the same result. The County could very quickly bring in resources that are experts in the technologies used by the County, such as Cisco and Microsoft, which are widely used in the industry.

C. County Constraints – As mentioned above, the internet connection that the County has will need to become more robust if more services are being accessed on the internet. Additionally, staff considerations need to be recognized and need to be made part of any initiative that involves transferring of systems and servers that were once their responsibility to an outside vendor.

- D. Recommendation and Timing** – The County should consider all options available to it when deciding the best course of action to replace the email system and in deciding how to fulfill the recommended staffing plan. There are many governments that are moving in this direction, and Ottawa County should similarly take the opportunity to learn from them to maximize the County's experience.
- E. Costs** – The costs vary in this area depending on what products are chosen. A formal bid would be the best course of action to obtain the most favorable pricing from vendors. The pricing for email is similar to the pricing structure used in SaaS. There is generally no capital outlay for the service and there is always a monthly charge for its use. Email charges vary, but \$3-\$5 per month, per mailbox is currently a typical range. Such estimates can increase as additional options, such as email archiving or in opting to use an online office productivity suite, are considered.

4.8 IT SHARED SERVICES

IT Shared Services are possible through Intergovernmental, cooperative agreements that allow for the provision of IT services from one jurisdiction to another.

A. Examples of IT Shared Services

- IT Consortium – Governments have formed separate IT Entities to support several organizations, while remaining independent so that equal treatment can be given to all organizations.
- Application Sharing – Architecting either a custom or a vendor application so that the County or another local entity is acting as the service provider. The application costs and infrastructure can then be shared among 2 or more local entities, enabling smaller communities to have technology that they otherwise couldn't afford; while at the same time saving the other entities money. This is most often seen in GIS, document management systems, and best-of-breed applications designed for a specific line of business.
- IT Support Services – Often IT departments of larger entities contractually provide IT services to smaller ones, essentially becoming their IT department. The larger organization benefits from additional income and the smaller entity benefits by having government IT experts instead of general IT professionals. This IT Support Services model can be observed locally today: the Ottawa Area Intermediate School District is acting as the IT department for several local school districts in its area.

- B. County Uses or Considerations** – As part of the IT Assessment project activities, an IT Shared Services meeting was conducted with lead organizational managers (i.e., City Managers, Village Supervisor, etc.) and IT professionals from several Ottawa County local municipalities as well as the Ottawa Area Intermediate School District (OAISD). During the meeting, representatives from each entity introduced the capabilities of their organization and explained what their IT operations consisted of. Capabilities of the organizations varied widely and many included smaller units of government that often had no IT presence outside of an occasional contractor. Despite not having the need for full-time IT help, these communities have IT needs, and are mostly using the spare time of staff members or turning to outside help to accomplish their IT goals. The following communities or organizations participated in this meeting:

- Ottawa County
- Georgetown Township
- City of Holland
- Village of Spring Lake
- Ottawa Area Intermediate School District

- Holland Township

Throughout the collaborative IT Shared Services review process, the participants reviewed various collaboration opportunities and assessed their preliminary interest as well as potential feasibility. The IT Shared Service opportunities identified by the Ottawa area local public sector entities are detailed below. Those which the group selected as most important are identified in *italics*:

- ***Partnering on Telecom Acquisition and Support*** - Many of the attendees had immediate telecommunications needs as all had some sort of multi-line telephone systems that were either just replaced, that needed assistance in the administration of the system, or had an aging system and wanted to collaborate with other units with the intent of defraying some cost. Some of the attendees planned to participate in an upcoming detailed study of telecommunications collaboration feasibility. Not all of the entities were identified for inclusion in that study.
- ***Improve User Support Through Helpdesk/User Services*** - Aside from the City of Holland, the County, and OAISD, the other local units did not have onsite, professional desktop support. There was an expressed interest in partnering in this particular area in order to raise the service levels that the entities without in-house support were receiving.
- ***Leverage Current Fiber Network as the Foundation for Future Collaboration*** - The County and some of the neighboring municipalities have unused fiber that could be used to (1) advance connectivity between local units and (2) to be able to serve remote sites that some of the attendees had. Connectivity between the local units is a key factor in being able to move IT partnerships forward because most of the efficiencies that are gained are through remote access for support and application sharing, both of which require speedy connectivity between governments.
- ***Organize Efforts to Expand Fiber Network Through Merit*** - Merit Networks is an Ann Arbor based non-profit company that formerly was part of the University of Michigan. Merit has thousands of miles of fiber optic cables installed throughout the state of Michigan and is a major provider of internet and phone connectivity to universities, governments, and not for profits entities. Currently, Merit is having separate conversations with most of the local units in the County, trying to design and build a fiber optic network through Ottawa County to connect into the rest of the state. To build on the above initiative, as well as simplify the effort of solving the connectivity issues, the County's local units should come forward as one entity to be able to take advantage of the benefits that Merit connectivity can bring, solve some of their own communication problems, as well as gain connectivity between the governments to foster collaboration.
- ***Increase Buying Power for IT Commodity Procurement*** - There are opportunities in collaborative purchasing between the municipalities. All of the attendees procure PCs, printers, and consumables, such as paper or printer toner. Leveraging the buying power of multiple governments could provide discount pricing to all of the entities and would be somewhat easy to implement. Ottawa County is utilizing Kent County's reverse auction system today.
- ***DRP/Incident Response*** - None of the entities present had a model disaster recovery program that could be used as a guide for others. The local units identified that a collaborative effort could help them develop templates so that plans could grow out of that effort.
- ***Video Surveillance and Security*** - There appeared to be pain points in most all of the participant's entities around video surveillance technologies, processes, and

installation. OAISD had the most experience in this area and could possibly serve as a champion for future efforts.

- **Collaboration to Improve Management and Security of Mobile Devices** - Most of the participants struggled with policies and the implementation of security in the now fast moving area of mobile phones and tablets. Concerns about data being stolen and misused were prevalent among the local entities. Opportunities in this area include collaboration around developing sound policies for mobile security and for exploring what technologies are available for mobile device management.
- **Cell Phone Policy/Management** – There are differing procedures among the entities related to cellular phones and how they are paid for and managed. Several entities provided phones for employees that wished to move to a stipend type system, while others that already have a stipend system struggle with how to manage the entity's data on a personally owned device. There are possibilities in this area for joint policy development so that all entities have them available for use, if they were to choose to utilize them.
- **Economies of Scale in Website Hosting** – Most of the smaller entities used a third party company for hosting their websites. The participants identified that some of the larger entities might be able to offer the other local units a better overall experience and price than what they were receiving today.
- **Explore Opportunities to Consolidate to a Common BS&A Platform**– BS&A software is a Michigan based software company that is ubiquitous in its presence in local government's Tax and Equalization departments in State of Michigan. The company is very willing to help in combining local unit's data into single instances so that the application is shared among many of them, rather than each having their own installation and maintenance. BS&A is also making inroads with its municipal financial system product that some of the entities in the County are using. There is a possibility for synergies there as well.
- **Coordination of IT Training Resources to Improve Staff Effectiveness** – Several participants identified that there were opportunities available in the area of training. Most agencies use many of the same software packages, such as Microsoft Office, Active Directory, ESRI GIS, and BS&A Software. All of them had employees who could benefit from additional training. The County's Human Resources team has robust resources and a mature model for training management. A collaborative training effort could benefit many of the local units that might not be able to provide essential IT training service, as well as provide incremental revenue to the County.
- **Improve Entities, Ability to Affect Change by Formalizing Project Management Standards** – Project Management Offices are offices that are typically inside of organizations that develop project management standards and templates, monitor projects within an entity, make sure that the current resources are available at the proper time and make sure that the list of projects is kept up to date. Unfortunately, these are usually only available in larger entities. The local municipalities identified that nearly all entities could benefit from such services and that it might be possible to have this type of office if they were to collaborate. For the County, we have separately recommended a PMO function for the IT Department. To the extent that the County continues to pursue future IT Shared Services opportunities, this PMO resource would be appropriate to organize such efforts.
- **Leverage Document Management Capabilities to Improve Staff Efficiency** – Most of the participants had some level of need for the basic storage and retrieval of documents and there were a few that had the desire for an advanced workflow. The

County is in a unique position to be able to provide this service and collect revenue from the contracting out of its OnBase System with just minor modifications, and is already doing so on a limited basis with Park Township.

- **Formalize Inter-Local Communication to Progressively Evaluate IT Shared Service Opportunities** – As measured through a follow-up survey process, all participants of the IT Shared Services session agreed that the meeting effort was a valuable use of their time and identified that they learned valuable information about the other organizations which may impact their future decisions. There was strong interest in having ongoing meetings between the entities to make the others aware of any opportunities that arise from various technology projects. It was also identified that the membership of the group should be expanded to include other local units and public works entities.
- C. County Constraints** – The County has the most services and applications to offer possible partners because it is the largest entity and it has many common businesses with the villages and townships. However, OAISD is also a likely partner that may be able to offer services to the County in some fashion. Any future agreements would have to occur at the leadership level. With the level of staffing and the configuration of the staffing that exists in the department today, the employees feel stretched in their ability to improve County systems. The employees would view any contracting with other entities as additional work on top of their County responsibilities. The recommended organizational changes and tactical technology plan will help to manage these items and will help to alleviate some of the workload that is experienced today.
- D. Recommendation and Timing** – The County should take a leadership role in expanding cooperation and collaboration among its municipal partners. There are opportunities to both leverage systems that the County has already made investments in, such as OnBase or BS&A and to generate revenue that help to defray the costs of running an IT operation. In some cases, enough revenue may be able to be generated to fund positions inside of IT, alleviating the cost of those positions from the County, while being able to leverage some of the additional resources that the additional staff bring to IT.
- E. Costs** – Costs will vary widely, depending on what initiatives are created. In the case of the County, it would be expected that cost savings would be generated over time. Additionally, these partnerships could be used as examples of intergovernmental collaborations to possibly receive EVIP funding from the State of Michigan or other approaches.

5. Information Technology Assessment

5.1 MANAGEMENT SUMMARY

The overall goal for implementing technology is to enhance existing business processes performed by individual departments and processes that are performed across the County. Technology is intended to enhance these business processes by:

- Making them more efficient
- Making them more effective
- Improving decision-making
- Providing enhanced customer service to both internal and external customers
- Improving access to information
- Reducing costs

As such, one of the goals in conducting this IT Assessment is to provide a coordinated, planned approach toward the deployment of technology with the intention of supporting the business goals of the County and implementing its information technology plan.

Please note that for each observation, we have included the maturity rating of the item and the risk to the organization. The following scales have been developed to measure the maturity and risk for the various IT assessment areas:

Rating	Maturity Description
★★★★★	Best Practice in the Industry
★★★★☆	Mature or Fully Implemented
★★★☆☆	Progressing/Fair
★★☆☆☆	Improvements Identified
★☆☆☆☆	Needs Significant Improvement

Risk	Level
Low	▲
Moderate	▲
High	▲

The table below provides a summary of maturity and risks associated with the assessment areas identified for the IT review:

Observation/Recommendation	Maturity	Risk
Organization		
Governance:		
Organization structure	★★★★★	▲
Succession Planning	★★★★★	▲
Leadership and Management	★★★★★	▲
Management and Support:		
Staff Development	★★★★★	▲
Job Descriptions	★★★★★	▲
Staff competencies	★★★★★	▲
Performance evaluations	★★★★★	▲
User liaisons / communications	★★★★★	▲
External Service Providers	★★★★★	▲
Steering Committee Role	★★★★★	▲
Service Level Agreements	★★★★★	▲
Administration		
Project mgt. approach	★★★★★	▲
Helpdesk administration	★★★★★	▲
SLA reporting	★★★★★	▲
IT standards	★★★★★	▲
System management	★★★★★	▲
Change management	★★★★★	▲
Application maintenance/support	★★★★★	▲
Application development	★★★★★	▲
Technology procurement	★★★★★	▲
Project portfolio management	★★★★★	▲
IT Outsourcing	★★★★★	▲

IT policies and procedures	★★★★★	▲
Observation/Recommendation	Maturity	Risk
Business continuity/disaster recovery	★★★★★	▲
Technology		
Remote access	★★★★★	▲
Security Management	★★★★★	▲
Web Strategy	★★★★★	▲
Network (LAN/WAN):		
Servers, storage, & backup systems	★★★★★	▲
Network services and support	★★★★★	▲
Telecom	★★★★★	▲
Workstation management	★★★★★	▲
Data center management	★★★★★	▲
Technology – Enterprise Applications		
GIS	★★★★★	▲
Departmental applications	★★★★★	▲
End-user Computing		
Workstation Strategy	★★★★★	▲

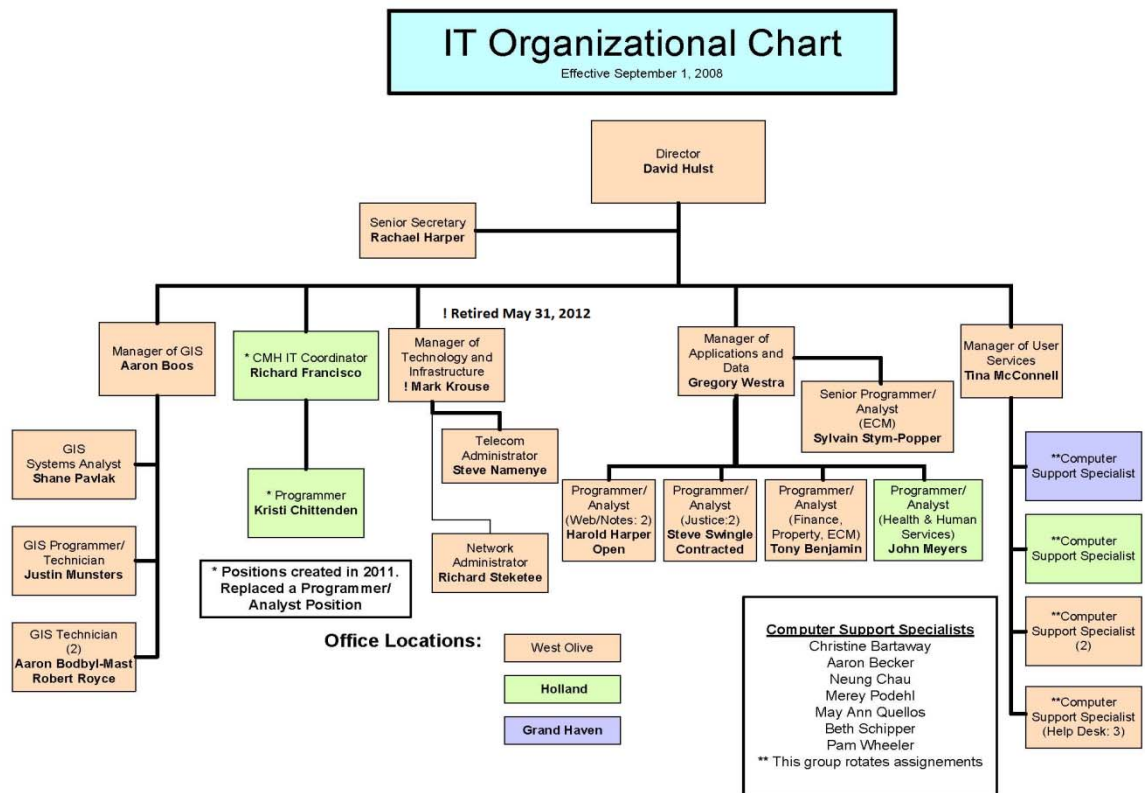
5.2 IT ASSESSMENT – ORGANIZATION

	Maturity	Risk
5.2.1 Organization Structure	★★★★★	▲

Observations:

- The existing IT Department’s organization structure, identified in the chart below, was developed and implemented in order to address the environment which existed during the 2005 IT Assessment effort. It has subsequently been adjusted over time.
- There appears to be nearly adequate staffing, but some areas are understaffed while others could have resources moved out of them if efficiencies are made.
- There are open management positions that need to be filled to in order to have a well-rounded team in place.

Current Organizational Structure:



Opportunity:

- Provide the appropriate level of training to support the staff in the transition and implement the proposed staffing model in Section 3 that is presented for optimal efficiency in the organization. Refer to the Appendix for sample position descriptions which the County may wish to consider during the transition.

	Maturity		Risk
5.2.2 Succession Planning	★★★★★		▲
Observations:			
<ul style="list-style-type: none"> Communication and documentation are in place for most applications, and management seems to do a good job in anticipating where vacancies may occur and planning for them. Prior to the departure of the Manager of Infrastructure and Technology, his duties were documented and distributed throughout the organization because they were going to wait for this study to be completed before filling the position. He was also made available for an interview for this report prior to his departure. 			
Opportunity:			
<ul style="list-style-type: none"> The organization could improve cross-training employees in general, but expanded cross-training is most critical in the application area. OnBase is the area most in need of cross training at this point, though some efforts are being made to do this. The infrastructure area is currently understaffed and requires additional resources so that staff member's skillsets have some sort of back up to prepare for employee absences or vacancies. 			

	Maturity		Risk
5.2.3 Leadership and Management	★★★★★		▲
Observations:			
<ul style="list-style-type: none"> The IT Director is well liked and respected by the staff in IT and in the departments. Feedback throughout the County suggests the IT Director has a noteworthy ability to execute plans as decided by Administration and the Technology Advisory Group. There are vacancies in the management team in Infrastructure area that are affecting the operation of the IT Department. It is noted that the County has deferred filling this position, pending the outcome of this plan. 			
Opportunity:			
<ul style="list-style-type: none"> Move forward with filling the Infrastructure Manager role according to the Section 3. 			

	Maturity		Risk
5.2.4 Staff Development	★★★★★		▲
Observations:			
<ul style="list-style-type: none"> Training budgets appear to be unequal in their distribution. It is normal for some inequalities to exist, but the budget for User Services does not meet the needs of the staff and as a result, they report that their skillsets are falling behind. Because of the support needs of the business, it is difficult for staff to make time in their schedules for traditional classroom training that takes them out of the office. 			

	Maturity		Risk
5.2.4 Staff Development	★★★★★		▲
Opportunity:			
<ul style="list-style-type: none"> Re-analyze the allocation of training dollars to provide opportunities where the greatest needs are located. Consider using alternate approaches to provide support staff the opportunities to participate in training. Consider developing a training approach for each support staff to be trained become a designated expert in an application who can support advanced end-users. Explore possible training opportunities with the Ottawa Area Intermediate School District as it already has a program established. Efforts need to be made to deepen the technical skills in the Infrastructure. Benefits can be realized in this area by obtaining additional resources to facilitate staff specialization. All IT staff should have some level of Project Management Training. 			

	Maturity		Risk
5.2.5 Job Descriptions	★★★★★		▲
Observations:			
<ul style="list-style-type: none"> Job Descriptions exist for all employees and positions, but don't necessarily reflect changing job duties, specifically in the Applications area. 			
Opportunity:			
<ul style="list-style-type: none"> Sample Position Descriptions have been provided in Appendix B to align with the proposed organization re-alignment. 			

	Maturity		Risk
5.2.6 Staff Competencies	★★★★★		▲
Observations:			
<ul style="list-style-type: none"> Stakeholders expressed a concern that there is minimal cross-training between help desk staff on specialty items. There is a perception that the IT Department is unable to be nimble enough to leverage emerging technologies because of limitations within current applications, processes, and skillsets. Several end-user departments indicated they believe the County currently doesn't have adequate programming resources to implement new projects while concurrently maintaining current systems. 			
Opportunity:			
<ul style="list-style-type: none"> Develop a standard learning path for the help desk to ensure all staff are able to support each application. Identify applications, processes, and unleveraged skillsets that are preventing new 			

	Maturity		Risk
5.2.6 Staff Competencies	★★★★☆		▲
<p>technologies from being considered, such as Lotus Notes and Domino skills and technologies.</p> <ul style="list-style-type: none"> Evaluate ongoing programming resource requirements and take into consideration while planning and prioritizing future development projects. 			

	Maturity		Risk
5.2.7 Performance Evaluations	★★★★★		▲
<p>Observations:</p> <ul style="list-style-type: none"> Evaluations exist and are in use in the department. The sample provided included a numeric weighting system, accommodations for both supervisory and employee comments, and an area for the supervisor to note improvement plans. <p>Opportunity:</p> <ul style="list-style-type: none"> None noted. 			

	Maturity		Risk
5.2.8 User Liaison/Communication	★★★★☆		▲
<p>Observations:</p> <ul style="list-style-type: none"> Stakeholders noted that it would be desirable to assign IT department staff to serve in a business analyst role, developing relationships and understanding department issues/processes. Departments would like to cultivate their own internal IT talent to help with routine requests to help alleviate demand on IT staff. A few departments indicated that there have been situations where technology decisions were not reached or communicated in the most efficient manner. End-user departments acknowledged that they generally do not have a clear understanding of each IT team member’s role and responsibilities. Several departments, notably the Sheriff, would like to meet with IT at least quarterly to talk about technology initiatives in the department. Departments say they don’t understand the Cost Allocation Plan charges that they receive. <p>Opportunity:</p> <ul style="list-style-type: none"> Consider assigning staff to each department to serve as a primary contact and to proactively recommend technology solutions to departmental issues. These roles are outlined in the proposed organization structure. Evaluate starting a formal IT Liaison program for select customer department employees that can be used to develop departmental personnel into resources that the IT department can utilize to help alleviate demand on IT staff. Develop a clear decision-making process with defined escalation points to improve turnaround time of department requests. Consider implementing quarterly meetings with customers to discuss initiatives and to monitor 			

	Maturity		Risk
5.2.8 User Liaison/Communication	★★★★★		▲
<p>their service level satisfaction.</p> <ul style="list-style-type: none"> • Increase communication to ensure all departments understand the delineation of responsibilities within IT. The use of the Technology Advisory Group can help to disseminate decisions and their rationales to departments. • Develop materials that explain how the costs are arrived at and discuss it with Department Heads at County Leadership meetings. Offer to meet individually with departments that have issues after the general education session. 			

	Maturity		Risk
5.2.9 External Service Providers	★★★★★		▲
<p>Observations:</p> <ul style="list-style-type: none"> • The County uses contract staffing as a technique to supplement staffing in areas that can best be served by an outside agency. An example of this is the programmer that is on contract to maintain the old financial system. The system is in the process of being replaced and it is a legacy technology, so it is in the County’s interest to have a temporary resource performing these tasks, rather than a full-time employee. • WebTecs is the external firm providing the County with web based products and services. The County’s departmental employees and stakeholders provided consistently positive feedback regarding the contractors performing the work, and the quality of the solutions they develop. • Solid Design Software Solutions, the contractor hired to design and program the MICA system is producing quality deliverables and is following best practices in conducting process redesign prior to developing the new system. However, the timeline for completing the software is uncertain and the project plan is incomplete. <p>Opportunity:</p> <ul style="list-style-type: none"> • As recommended in the tactical technology plan, revisit the intention for MICA and determine the best course of action to replace the legacy software. • Further leverage contractors using the Selective Sourcing examples as cited in Section 4. 			

	Maturity		Risk
5.2.10 Steering Committee Role	★★★★★		▲
<p>Observations:</p> <ul style="list-style-type: none"> • The Technology Advisory Group is in place and meets on a quarterly basis. The committee is doing many of the tasks that are seen in best practices of governance and is an appropriately effective team. 			

	Maturity		Risk
5.2.10 Steering Committee Role	★★★★★		▲
Opportunity:			
<ul style="list-style-type: none"> Further refinement of the existing Governance Structure and duties as outlined in Section 3 will serve Ottawa County well into the future. 			

	Maturity		Risk
5.2.11 Service Level Agreements	★★★★★		▲
Observations:			
<ul style="list-style-type: none"> A service level agreement (SLA) exists which establishes some basic expectations for the provision of services from the Ottawa County IT Department and its departmental customers. Compliance is reported to users and management on a regular basis. Individual SLAs with departments, with specific targets for unique situations, do not exist. The Emergency Operations Center may require GIS support during a disaster. Stakeholders noted that they are often not receiving advance notification that systems will be unavailable for planned application or server maintenance. 			
Opportunities:			
<ul style="list-style-type: none"> Items such as support coverage and what advance notice is given for outages should be added to the SLA, not only system uptime and customer satisfaction. Appendix E offers an example of a more comprehensive version of an SLA or what can be termed a “Partnership Agreement”. Where appropriate, progress towards the collaborative development of individual departmental SLAs that can be used to capture special arrangements with departments for unique situations. For example, the Clerk’s SLA might reflect that extended phone coverage and technical support will be provided on an election day. 			

5.3 IT ASSESSMENT – ADMINISTRATION

	Maturity		Risk
5.3.1 Project Management Approach	★★★★★		▲
Observations:			
<ul style="list-style-type: none"> Departments identified that there is often a limited degree of stakeholder participation during phases of new projects, but are most affected by not being aware of the timing of projects. It was noted that several projects, such as MICA, have deviated from the planned schedule for various reasons including limited resources, technology limitations, and unclear roles and responsibilities. While stakeholders indicated that there are frequent notifications following an initial project request, there is limited feedback as the request continues through the project planning and prioritization process. 			

	Maturity		Risk
5.3.1 Project Management Approach	★★★★★		▲
<ul style="list-style-type: none"> Questions regarding roles and responsibilities have arisen for projects lacking formal governance structure, such as smaller projects like server replacements that often don't have project teams because of their size. Stakeholders noted that they often don't understand IT's exact role and responsibility on a project or the primary IT staff member managing each project. 			
Opportunity:			
<ul style="list-style-type: none"> Increase end-user involvement during each phase of project implementation, particularly requirements gathering and documentation, to ensure solutions meet all County needs and to increase buy-in when the system is launched. Establish a formal project management office to balance resources and ensure projects remain on schedule. Identify specific milestones and opportunities to increase project request feedback through the entire planning and prioritization process. Develop a workflow to establish a formal governance structure when all projects are initiated. Clearly define IT's role, responsibilities, and the primary manager for each project through Project Charter every time. Develop a more interactive project request process so the departments know the status and timing of their projects. Increase staff awareness of PMI principles through the use of the Project Management Manager position. Develop methodologies that employ PMBOK and train users in that application. The Project Management coordinator should be involved in establishing standards and templates, working to institute scalability in project management approaches, even for small projects. 			

	Maturity		Risk
5.3.2 Help Desk Administration	★★★★★		▲
Observations:			
Item	Response		
Help Desk System	Numara Footprints		
Workstation Management Software	None		
End-users Supported	1200		
Computers Supported	1163		
Technician to Computer Ratio	166:1		
Annual Ticket Volume	~13,000		
<ul style="list-style-type: none"> The IT Department has structured an employee rotation schedule in the Help Desk function, which as it is being executed, is creating a situation where an End-user may receive two 			

5.3.2 Help Desk Administration	Maturity		Risk
<p>different answers to the same question, on different weeks. It appears that there is an inadequate level of internal communication and documentation for problem resolutions. This has created inefficiencies in the Help Desk, does not promote cross-training, and extends the duration for which end-users must wait for problem resolution.</p> <ul style="list-style-type: none"> • There is noticeable tension between the User Services staff and the Programming staff. The Help Desk believe that the Programmers often give them undesirable work with little guidance and the Programming staff believe that the helpdesk needs to be told things repeatedly and doesn't document what they are told. • Stakeholders in the end-user departments believe help desk staff were very approachable and willing to help, however indicated they often require multiple attempts to resolve issues. • Departments complained that PC technicians often show up unannounced and users feel interrupted to have their PC repaired. They request some sort of scheduling or notification prior to arrival, especially in direct customer service environments where customer service is directly affected when a computer is unavailable. • While the current help desk call tracking software system provides frequent status notification to the requestor, it does not provide self-service functionality allowing users to view the current status and any comments related to the progressive issue resolution activities. • End-users often contact help desk staff directly rather than utilizing the help desk telephone number and ticketing system. There is some ability to enter in a ticket electronically via email, but there is no direct access for end-users to enter tickets inside of the application, so staff intervention and transcription is necessary. • Many departments noted that when a ticket was opened they receive too many notifications about receiving, creation, assigning, and status of the tickets. Most wanted to know it was created and then didn't need any further information until someone had actually performed work on it. • End-users are currently contacting programming staff directly to report bugs and enhancement requests for custom applications. • Several departments complimented the help desk on their speedy service. • There is a lot of time spent managing the delivery and supply of "General Supplies", such as toner and ink cartridges. 	★★★★★		▲
<p>Opportunity:</p> <ul style="list-style-type: none"> • Discontinue the current help desk rotation process in order to deliver more consistent services to end-users. • As referred to in the Tactical Plan, institute a useable knowledgebase for staff to refer to so that repeated problems can be solved more readily. • Develop criteria and a process for work to be transferred from one area to another. Ensure that the work being moved is appropriate for the team that is completing it. If the decision is made to transfer work, ensure that full documentation accompanies the move. • Work to foster a better relationship between the Applications Staff and User Services. Some suggestions may be a mentoring program for employees to "shadow" other staff to gain a better understanding of their work, team building exercises, or form a joint committee to formalize the interactions between the two groups. • Work to make the ordering of printer consumables the same process that exists for ordering office supplies. Departments should be able to procure what they need without the help of IT. This will free up a lot of time for the help desk staff. 			

	Maturity		Risk
5.3.2 Help Desk Administration	★★★★★		▲
<ul style="list-style-type: none"> • Develop learning paths for help desk staff to ensure skills are maintained for current systems. • Consider a help desk call tracking system with a self-service component. • Encourage all County users to utilize the help desk system rather than calling support staff directly to ensure the prompt resolution of issues. • Develop a formal system to receive and track bugs and enhancement requests. • Scale down the number of notifications that users receive when they first open a ticket. 			

	Maturity		Risk
5.3.3 SLA Reporting	★★★★★		▲
<p>Observations:</p> <ul style="list-style-type: none"> • A comprehensive annual report is developed each year and the statistics are reported publicly. 			
<p>Opportunity:</p> <ul style="list-style-type: none"> • None identified. The format of the annual report should be considered best in class based on current operations. • The only opportunity is to ensure that as IT operational approaches mature in the future, that the annual report be evaluated to report performance and metrics for the IT function. 			

	Maturity		Risk																				
5.3.4 IT Standards	★★★★★		▲																				
Observations:																							
Standards for IT Hardware and Software at the County are as follows:																							
<table border="1"> <thead> <tr> <th>Equipment</th> <th>Standard</th> </tr> </thead> <tbody> <tr> <td>Servers</td> <td>Dell</td> </tr> <tr> <td>• Workstations</td> <td>HP</td> </tr> <tr> <td>Printers</td> <td>HP</td> </tr> <tr> <td>Network Equipment</td> <td>Cisco</td> </tr> <tr> <td>Directory Services</td> <td>Microsoft Active Directory</td> </tr> <tr> <td>Workstation OS</td> <td>Windows 7 (Upgrade from Windows XP is still active)</td> </tr> <tr> <td>Server OS</td> <td>Windows Server 2008 R2</td> </tr> <tr> <td>Office Productivity</td> <td>Microsoft Office</td> </tr> <tr> <td>Cellular Platform</td> <td>Sprint (Sometimes Nextel) Blackberry</td> </tr> </tbody> </table>				Equipment	Standard	Servers	Dell	• Workstations	HP	Printers	HP	Network Equipment	Cisco	Directory Services	Microsoft Active Directory	Workstation OS	Windows 7 (Upgrade from Windows XP is still active)	Server OS	Windows Server 2008 R2	Office Productivity	Microsoft Office	Cellular Platform	Sprint (Sometimes Nextel) Blackberry
Equipment	Standard																						
Servers	Dell																						
• Workstations	HP																						
Printers	HP																						
Network Equipment	Cisco																						
Directory Services	Microsoft Active Directory																						
Workstation OS	Windows 7 (Upgrade from Windows XP is still active)																						
Server OS	Windows Server 2008 R2																						
Office Productivity	Microsoft Office																						
Cellular Platform	Sprint (Sometimes Nextel) Blackberry																						
<ul style="list-style-type: none"> • There is an increasing desire for mobile tools such as iPads and smartphones within departments. • Standards are in place and adhered to stringently. 																							
Opportunity:																							
<ul style="list-style-type: none"> • Evaluate mobile device polices and consider updating to reflect current expectations for mobile hardware and functionality. • Review standards at least annually and make adjustments as technology, the market and user requirements dictate. 																							

	Maturity		Risk
5.3.5 System Management	★★★★★		▲
Observations:			
<ul style="list-style-type: none"> • Management systems for the desktops are lacking. • Group Policies through Active Directory are not being leveraged to their full potential. • Printing is being accomplished peer to peer, without the use of print queues or driver distribution from the server. 			
Opportunity:			
<ul style="list-style-type: none"> • The tools that are natively in place need to be used to help manage the environment. An 			

	Maturity		Risk
5.3.5 System Management	★★★★★		▲
<p>extraordinary amount of time is spent implementing, installing, and supporting systems that have the capability to be managed through tools.</p> <ul style="list-style-type: none"> Some tools, mostly related to the desktop are not owned by the County. The department needs to go through a selection process and select a product that will fulfill their needs. Some examples of products to look at include Microsoft System Center Configuration Manager, Symantec Altiris, and LANDesk. 			

	Maturity		Risk
5.3.6 Change Management	★★★★★		▲
<p>Observations:</p> <ul style="list-style-type: none"> Documentation and support procedures for new applications are not always developed. It was noted that there have been several application launches where help desk staff was not trained prior to go-live. An example of this is the Financial System or modules within MICA. <p>Opportunity:</p> <ul style="list-style-type: none"> Develop a workflow to create internal documentation and support procedures for new custom and commercial off the shelf (COTS) applications. Increase level of help desk staff training during all application implementations before go-live to be prepared to support end-users with the new system. 			

	Maturity		Risk
5.3.7 Application Maintenance / Support	★★★★★		▲
<p>Observations:</p> <ul style="list-style-type: none"> There are single points of failure in the support of certain critical systems at the County. The OnBase System as well as the backup staffing for the network and servers are the most critical areas. Other areas include Lotus Notes, the old and new Financial System, and in areas of Court Technology support. In the case of Court Technology support, there isn't any expert on staff. End-user departments indicated there is a tendency for the IT Department to employ a more reactive approach to addressing department issues. Contract staffing is being used to support systems that are close to the end of their production at the County. There isn't a general reporting tool in place for IT use for customers, such as Crystal Reports or SQL reporting services. These are generally useful tools for the introduction of Business Intelligence data to the organization or for creating reports from disparate sources. There are over a 100 applications that are on the Domino Server. The internal support resources for Domino are being reduced over time through attrition. 			

	Maturity		Risk
5.3.7 Application Maintenance / Support	★★★★★		▲
Opportunity:			
<ul style="list-style-type: none"> Proactively identify and introduce emergent technology to end-user departments that can resolve known issues, improve business processes, and enhance customer service. Implement the staffing and technology plan so that resources may be freed up to be able to create some back up for the applications and technologies that need support. The list of Domino applications should be confirmed, the extent of use should be established for each, and the future of each application be mapped out in anticipation of the email replacement. The replacement email messaging platform can be deployed while efforts are underway to incrementally transition the custom Lotus Domino applications over time. 			

	Maturity		Risk
5.3.8 Application Development	★★★★★		▲
Observations:			
<ul style="list-style-type: none"> The MICA justice system development project does not have a comprehensive timeline estimated for its completion. Stakeholders noted that applications have been launched that were not tested which encountered errors. An example of this was the conversion of the Drains application from Access to the web application. There were many problems that had to be solved after it went live. Stakeholders indicated there is a tendency for the departments to prefer custom developed applications to commercial-of-the-shelf (COTS) systems. IT Staff have expressed concern for their long-term their supportability. 			
Opportunity:			
<ul style="list-style-type: none"> The County should consider the recommendations in Section 3 to determine the best course of action going forward on the MICA application. Develop an improved formal testing and acceptance process for software development. Establish clear post go-live support procedures for new systems. Update system selection processes to include an cost-benefit / ROI analysis to determine if a COTS application will offer greater long-term value. Consider the advantages / disadvantages of packaged COTS vs. custom software, further detailed in the Appendix. Additional considerations for factors to consider in a cost benefit analysis and samples can found in the Appendix. Analyze and consider the long term implications of future upgrades for project requests which include customization of COTS solutions. 			

	Maturity		Risk
5.3.9 Technology Procurement	★★★★★		▲
Observations:			
<ul style="list-style-type: none"> Most procurement is done through the departmental administrative assistant. IT staff 			

	Maturity		Risk
5.3.9 Technology Procurement	★★★★★		▲
<p>members give the specifications and the specific product information to her and she orders the product.</p> <ul style="list-style-type: none"> • There is a perception that the IT Department is resistant to implementing certain technologies requested by departments. • CMH reports that the approval and purchasing process was lengthy, resulting in large lead times for items such as laptops in some cases. • It was noted that the IT Department is not leveraging its centralized knowledge of multiple departments needs to the fullest potential. An example of this would be knowing that the Health Department has a Fax Server that it uses and another department mentioning the need for that type of service and IT, knowing what most departments use, being able to facilitate the conversation instead of procuring a second system that performs the same function. • It was noted that greater coordination is possible between the IT Department and department-specific software vendors. Currently, each department mostly manages its software vendors. <p>Opportunity:</p> <ul style="list-style-type: none"> • Consider an increased level of flexibility to new technology and business processes identified by end-user departments. Provide clear explanations to end-user departments that support decisions and the current environment. • As a common link between departments, IT Department staff should find methods to encourage departmental collaboration and identify opportunities for departments to leverage each other's systems and processes. • Consider improving vendor/IT communication by encouraging IT Department staff to develop a direct relationship with software vendors rather than relying on department stakeholders to facilitate coordination. • Work to shorten approval times and perhaps maintain a small stock of items to facilitate replacement where it makes sense. 			

	Maturity		Risk
5.3.10 Project Portfolio Management	★★★★★		▲
<p>Observations:</p> <ul style="list-style-type: none"> • The project portfolio is handled by the IT Director. He manages the list and works with the Technology Advisory Group, as well as County Administration to prioritize it. • The current project planning and prioritization process does solicit stakeholder input, but end-user departments indicated the need to be inclusive of a greater number of departmental representatives so that all stakeholders are represented. <p>Opportunity:</p> <ul style="list-style-type: none"> • The proposed organizational changes would move this function to the Project Management Office and the provided governance structure will provide more input on project prioritization. • Increase stakeholder representation during the project planning and prioritization process. 			

	Maturity		Risk
5.3.11 IT Policies and Procedures	★★★★★		▲
Observations:			
<ul style="list-style-type: none"> The IT Department has a robust and nearly complete collection of policies and procedures established. 			
Opportunity:			
<ul style="list-style-type: none"> There are some “new to the industry” policies that need to be developed, such as a “Bring Your Own Device” policy. You should also work with Human Resources on Remote Access procedures. A recommended list of policies has been included in Appendix A, for which the IT Department should review. It should also consider expanding the existing polices where appropriate through leveraging the recommended IT governance structure described in Section 3. 			

	Maturity		Risk
5.3.12 Disaster Recovery (DR)	★★★★★		▲
Observations:			
<ul style="list-style-type: none"> There is a basic disaster recovery plan mostly in place and parts of it have been tested. Fiber exists between Grand Haven and West Olive to allow for advanced replication of services in the future. Departments expressed concern that there is a large amount of undocumented institutional knowledge of various custom developed applications. The Emergency Operations Center requires internet service to operate all functionality during a disaster. 			
Opportunity:			
<ul style="list-style-type: none"> Further development of the disaster recovery plan should be undertaken. The plan should provide Business Continuity items for keeping essential services running in the event of a disaster and Return to Operation (RTO) Objectives as developed in conjunction with your key end-user departmental stakeholders. The plan should be updated annually. Develop a plan to document detailed support information for each application. Consider utilizing redundant internet service providers to ensure a consistent network connection during a disaster. 			

5.4 IT ASSESSMENT – TECHNOLOGY INFRASTRUCTURE

As a part of this assessment, a high-level review of the technical components was provided. While our assessment identifies some opportunities that can improve the technical environment, the County recently made significant investments in technology (infrastructure, network, servers, etc.). Through proper leadership, appropriate enforcement policies and procedures, standardization, training, and project management, the IT environment can be further improved.

	Maturity		Risk
5.4.1 Remote Access	★★★★★		▲
Observations:			
<ul style="list-style-type: none"> • Access to email and Calendaring is provided to some staff. • Easy access to network resources and most applications is not available to users. • Staff believe they lack adequate remote access applications and documents. • Drains would like access to BS&A Drains systems, drain maintenance databases, as well as GIS information in the field. 			
Opportunity:			
<ul style="list-style-type: none"> • The tactical technology plan in Section 3 advises replacement or reconfiguration of the current VPN solution. Access to all of the feasible network locations and servers should be provided to users, if they meet the requirements that will be established. • Consider an updated remote access approach and increased functionality. 			

	Maturity		Risk
5.4.2 Security Management	★★★★★		▲
Observations:			
<ul style="list-style-type: none"> • Most every system has its own security schema. Users complain that user names and password requirements differ between applications, meaning users sometimes have to track 6 or more logins and passwords. Lotus Notes is the most difficult to manage. Lotus is significantly difficult as evidenced by the fact that passwords cannot be changed regularly without a manual configuration effort by IT Department staff at each workstation. • The state of Michigan contracts for penetration testing on a monthly basis with a third party and provides the reports to the County. • New employee login and security request forms are overwhelming and complicated for users. Many forms are required if they need access to multiple applications. 			
Opportunity:			
<ul style="list-style-type: none"> • A project needs to be initiated to determine how to simplify and unify logins and passwords to disparate systems. Nearly all of the modern systems integrate into Active Directory for authentication, although with the County's custom programs that benefit will not be able to be leveraged. In those that can't integrate into Active Directory, where possible the login names of the users should be changed to match the Active Directory login name to assist the users in managing their access. • Simplify the login request process for network and application logins. Consider putting them 			

	Maturity		Risk
5.4.2 Security Management	★★★★★		▲
online as a workflow to help the users fill them out.			

	Maturity		Risk
5.4.3 Web Strategy	★★★★★		▲
Observations:			
<ul style="list-style-type: none"> The current web strategy and its execution is being led by WebTecs, a contractor for the County. The company has made significant contributions to the County’s web presence by keeping the website looking fresh and incorporating Web 2.0 features, such as commenting, videos, and interactive user commerce applications. The Sheriff has the opportunity to create fillable forms for customers to use when filling out standard forms. It would help the office process them more easily. 			
Opportunity:			
<ul style="list-style-type: none"> Business Analysts should work with WebTecs to learn the methodology that the vendor uses to develop application specifications. Some reworking of requirements to fit their methodology normally takes place if the County performs that analysis. Examine initiatives that would expose information that the public would find useful from inside of applications. Use the web to deliver that data. Some examples of this include Open Government initiatives that publish financial data, such as check registers and budget to actual money spent reports, restaurant inspection reports, or select crime data. Begin to plan on integrating Web 2.0 initiatives, such as public commenting, Facebook integration, and video into the web environment. 			

	Maturity		Risk
5.4.4 Infrastructure – Servers, Storage, & Backup Systems	★★★★★		▲
Observations:			
<ul style="list-style-type: none"> Server virtualization is being used whenever possible, so there has been a large reduction in servers over time. The County is using “backup to disk” for its backups. The BS&A Software experiences performance issues due to reaching server capacity approximately every four to six months. This requires staff in end-user departments to notify the IT Department for resolution. Many features of AD and Windows are not implemented because of lack of knowledge in the products because there is no time to learn the technology to an advanced level. 			
Opportunity:			
<ul style="list-style-type: none"> This area of the IT Department is especially understaffed due to the retirement of the Manager 			

	Maturity		Risk
5.4.4 Infrastructure – Servers, Storage, & Backup Systems	★★★★★		▲
<p>in May.</p> <ul style="list-style-type: none"> • Deeper knowledge and specialization is needed in this area to maximize the investments that are being made. • Proactively monitor BS&A server performance and mitigate storage capacity issues before performance is affected. Consider engaging end-users and BS&A to identify if data archival capabilities exist within the system and collaborate with the end-users to analyze if such functions may assist the overall system value. • Follow the Active Directory (AD) recommendations in the Tactical Plan in Section 3 to increase staff training on AD and expand the AD deployment for print services, authentication into applications, remote access, security, etc. 			

	Maturity		Risk
5.4.5 Infrastructure – Network	★★★★★		▲
Observations:			
Item	Response		
Network Infrastructure	Cisco		
Security Infrastructure	Cisco		
Wireless Network Infrastructure	Cisco		
Remote Access	Cisco		
Directory Services	Microsoft Active Directory		
# Sites on Network	7 sites with additional buildings		
Network Monitoring	Cisco Works		
Web Content Filtering	Barracuda		
<ul style="list-style-type: none"> • It was noted that there are network performance issues between the Grand Haven City Hall and the Fillmore complex. • The Sheriff reports slow access at many of the seven substations. In some cases they cannot even login to the network. • Departments indicated that Wi-Fi access is limited in select remote locations and that providing Wi-Fi access to guests and vendors is cumbersome because user accounts and passwords must be created. • As noted in previous sections, the Infrastructure area of the IT Department is understaffed. It is supported by the same employee that provides support for the servers and backup systems. These systems are completely different from one another and require a different skillset to support. 			

	Maturity		Risk
5.4.5 Infrastructure – Network	★★★★★		▲
<ul style="list-style-type: none"> • Wi-Fi in the Grand Haven court and conference rooms is not working properly. 			
Opportunity:			
<ul style="list-style-type: none"> • Evaluate bandwidth requirements and upgrade network infrastructure as required, including Wi-Fi at remote locations. • Integrate the wireless network into Active Directory for authentication of employees and create a second, secure public access network for guests. The wireless system that the County owns is capable of accomplishing this. • Implement the recommended organizational changes to enable proper support of this area. 			

	Maturity		Risk
5.4.6 Infrastructure –Telecom	★★★★★		▲
Observations:			
Observations on various aspects of the telecom environment are provided below:			
Item	Response		
Telephone System Infrastructure	Nortel		
Voicemail Infrastructure	Avaya Call Pilot		
911 Capability	No, but it is a scheduled funded project.		
# Locations Served	12		
<ul style="list-style-type: none"> • The system was recently upgraded to allow for Voice over IP (VoIP) capabilities and it positions the County to utilize the currently installed system for many years. • The recently implemented phone system does not allow departments flexibility to update their greeting in some cases. • There is currently no workflow for phone moves which often results in outdated directories including caller-ID. • Through the IT Shared Services meeting conducted as part of the project with several local public sector organizations, the County learned that there is a strong interest from many nearby local agencies to collaborate on telecommunications issues with the intent of defraying some cost. Each of the entities who participated in the meeting had immediate telecommunications needs as all had some sort of multi-line telephone systems that were either just replaced, that needed assistance in the administration of the system, or had an 			

	Maturity		Risk
5.4.6 Infrastructure –Telecom	★★★★★		▲
aging system. <ul style="list-style-type: none"> Departments would like the ability to use video conferencing in the County to facilitate contact without travel. 			
Opportunity:			
<ul style="list-style-type: none"> Develop a workflow for departments to update their greeting. Establish a workflow for phone moves, ensuring the directories and caller-ID lists are updated. Being that the County has made recent investments in a VoIP system which may be able to be leveraged to other agencies, consider taking a lead role in coordinating participation in the upcoming detailed study of telecommunications collaboration feasibility. 			

	Maturity		Risk												
5.4.7 Workstation Management	★★★★★		▲												
Observations:															
Detailed observations on various aspects of the workstation environment are provided below:															
<table border="1"> <thead> <tr> <th>Item</th> <th>Response</th> </tr> </thead> <tbody> <tr> <td>Workstation Environment</td> <td>HP, with some Dell</td> </tr> <tr> <td>Workstation Operating System</td> <td>Windows XP and Windows 7</td> </tr> <tr> <td>Update and Patch Management</td> <td>Windows Update</td> </tr> <tr> <td>Workstation Inventory Method</td> <td>Manual</td> </tr> <tr> <td>Software Metering</td> <td>None</td> </tr> </tbody> </table>				Item	Response	Workstation Environment	HP, with some Dell	Workstation Operating System	Windows XP and Windows 7	Update and Patch Management	Windows Update	Workstation Inventory Method	Manual	Software Metering	None
Item	Response														
Workstation Environment	HP, with some Dell														
Workstation Operating System	Windows XP and Windows 7														
Update and Patch Management	Windows Update														
Workstation Inventory Method	Manual														
Software Metering	None														
<ul style="list-style-type: none"> There are no full versioned, automated systems in place for workstation management. There have been tests by employees on free products that have limited capabilities, but largely the management of the workstations are manual and take significant staff time to manage. Departments noted that new PCs deployed often do not have the proper applications installed or configuration settings. Several departments noted that the PC replacement process should be improved to better document department-acquired software and locally-stored data to prevent data loss. It does not appear that anyone has taken responsibility to be the “owner” of the desktop. This person would be responsible for configuration, master images, updating methodologies, and standards. These responsibilities are currently spread over several employees in the IT Department. End-users repeatedly expressed frustration about receiving messages about products needing to be updated and not having the ability to accomplish it. The only fix for these messages is a manual upgrade by an IT Department staff member. 															

5.4.7 Workstation Management	Maturity		Risk
<ul style="list-style-type: none"> End-users expressed the desire to have access to the County’s Sametime installation. 	★★★★★		▲
<p>Opportunity:</p> <ul style="list-style-type: none"> Procure and implement a PC management system such as Microsoft System Center Configuration Manager or Altiris to manage patches, application updates, and application installations, as well as remote imaging of desktops. Consider developing images for each type of PC deployed to ensure consistency. Develop a workflow for PC replacement that ensures department-acquired software and locally-stored data are transferred. Implement the recommended organizational changes, where the PC Technician III is the “owner” of the desktop. Implement Microsoft Software Update Service for patching of PCs instead of forcing all of the machines to go to Microsoft’s website for updates. This will also save bandwidth. Design and implement Group Policies for workstations that will help to manage the PC fleet without placing an undue burden on the users and the IT Department staff. Creative management can minimize user frustration, while maximizing security. Investigate expanding the use of Sametime throughout the County. 			

		Maturity		Risk
5.4.8 Data Center Management		★★★★★		▲
Data Center Characteristic	County Data Center			
Leased/Owned	Owned.			
Access Security	Yes.			
Raised Floor	Yes, 12".			
Camera Monitors	No.			
Temperature	Not noted.			
Cable Management/Cable Tray/Ladder	Yes, orderly wiring.			
Fire suppression	Water.			
UPS	Yes, 80% utilization.			
Generator & Emergency Stop	Yes, tested at least bi-weekly.			
Electrical Circuits Labeled	Yes.			
A-B Corded Servers	Yes.			
General Conditions	Clean and orderly.			
Data Cable Labeled	Yes.			
HVAC (Dedicated)	Yes.			
HVAC (Redundant)	Not identified.			
Temp/Humidity/Water Sensor	No.			
Observations:				
<ul style="list-style-type: none"> The data center has ample space for the operation and has room to expand if needed. The network connection from the data center to the separate network room is 2GB. The Network room is accessible by a conventional key only. Access to the data center appears to be limited and secure. 				
Opportunity:				
<ul style="list-style-type: none"> Investigate replacing the water fed sprinklers in the data center with a “computer room” friendly dry system. 				

5.4.8 Data Center Management	Maturity		Risk
<ul style="list-style-type: none"> Investigate upgrading the link to the switch room to the computer room to 10GB. Expand the use of the computer room access control system to include the network closet that houses the phone systems and the network switches and equipment. 	★★★★★		▲

5.5 IT ASSESSMENT – APPLICATIONS

An understanding of the County’s software application systems was necessary to appropriately accomplish the scope of the IT Assessment. A detailed analysis of major departmental or all enterprise applications was not within scope; however, some major enterprise applications were examined in the effort to assess how well applications are deployed and managed across Ottawa County. An “enterprise” application is defined as an application that is used by more than one department and can often be leveraged by the entire organization. OnBase is an example of an enterprise application.

	Maturity		Risk
5.5.1 GIS	★★★★★		▲
Observations:			
<ul style="list-style-type: none"> The Applications area of the IT Department doesn’t always consider GIS integration when selecting software with a department. This creates a situation where features aren’t utilized or optimized when applications are implemented. Examples include implementing applications in the Health Department, where there are multiple opportunities to map the population for communicable disease outbreaks or to track dead birds for West Nile Virus. The Manager of GIS expressed interest in being involved in more departmental meetings to have a better understanding of the operation of the department as a whole. While there are no user groups within the County that concentrate on GIS and GIS technology possibilities, many departments commented on the proactive nature of how GIS meets with them and how they often bring solutions which are helpful to departmental operations. GIS staff perform all of the software installations regarding GIS on user PCs. There is currently not a test system environment for ARC SDE, however plans exist to create one when the systems are virtualized. The GIS area is producing \$85,000 - \$100,000 annually on the sales of its services to local units and from the sales of map and data sales. Drains would like to Geo-tag complaints to be able to map where the calls are coming in from. 			
Opportunity:			
<ul style="list-style-type: none"> Involve GIS staff earlier in the selection of new software applications. There is an opportunity for them to provide valuable insight on how GIS functionality may be integrated into new departmental software applications in order to increase the value to staff and constituents. Create a GIS steering committee that helps to form the vision for GIS within the County. There should be a leadership representative from departments that heavily rely on GIS, such as Parks and the Sheriff’s office, select local unit customers, as well as some technical representation from IT. This committee would act much like the Technology Advisory Group in shaping policy and priority around GIS projects. Implement the Organizational changes recommended in Section 3 that will more tightly integrate GIS with the Applications group. There will be an opportunity for GIS staff to mentor Applications staff providing practical knowledge and experience on how to be a more proactive partner with end-users, and in turn, upgrading the overall value that the IT Department provides to the County. Document and transfer the installation of the desktop software to the User Services team after the software distribution is implemented. 			

5.5.2 Departmental Applications	Maturity		Risk
	★★★★★		▲
<p>Observations:</p> <ul style="list-style-type: none"> • There is currently no standard process or policy to manage department-acquired software licenses. • Many departments outside of the current justice system users wish to utilize OnBase. • Reporting tools such as Crystal Reports or Microsoft SRS are not being used extensively for analyzing departmental information. • Fiscal Services seems pleased with the implementation efforts of the Munis System. 			
<p>Opportunity:</p> <ul style="list-style-type: none"> • Add resources to the OnBase system to further expand the use of the imaging portion of the system and to develop workflows for other areas outside of the Justice System. Accounts Payable and Receivables, Drains, Jail, Corporation Counsel, Parks, Clerk, Jury, and District Court all mentioned having needs for an OnBase application or workflow. • Establish a clear workflow and policy regarding department-acquired software. • As the County may dedicate internal resources toward business analyst activities, increase efforts to explore opportunities with Business Intelligence tools to improve decision making capabilities and the value of the information tracked throughout the various County systems. Business Intelligence tools may be helpful to add automation to currently manual performance measurement activities associated with the County’s budgeting process or to report historical, current or predictive information in department operations. 			

5.5.3 End-User Computing/Workstation Strategy	Maturity		Risk
	★★★★★		▲
Observations:			
Item	Response		
Workstation Refresh	3-4 Years		
Office Automation	Microsoft Office		
Email/Collaboration	Lotus Notes		
<ul style="list-style-type: none"> Stakeholders noted that Lotus Notes is cumbersome to use and limits functionality within other systems due to lack of integration. Several end-users noted several simple items that could improve efficiency such as offering phone headsets or wireless keyboards to certain staff. Stakeholders noted there are currently limited collaboration and data sharing tools available. 			
Opportunity: <ul style="list-style-type: none"> Follow the Email recommendation in Section 3 to evaluate the County’s overall current functional requirements and determine if Lotus Notes continues to be a viable solution. Consider developing a program encouraging employees to request any specific low-cost technology items that could improve efficiency or customer service. Consider implementing a collaboration tool such as Microsoft SharePoint. 			

Appendix A - Sample Policies

Sample Policy	Policy Purpose/Content
Antivirus Policy	This policy defines how organizational resources are protected against intrusion by viruses and other malware. At a minimum, the policy identifies how servers and workstations are scanned, signature updates, email virus and malware scanning, email attachments, etc.
Patch Management Policy	This policy is required to establish a minimum process for protecting the organizational computers on the network from security vulnerabilities. This policy will determine how updates are done for both servers and workstations and who is responsible for performing the updates along with specifying the tools used to perform system updates.
Remote Access Policy	This policy defines standards for connecting to the organizational network and security standards for computers that are allowed to connect to the organizational network. This policy should also specify how remote users can connect to the main organizational network and the requirements for each of their systems before they are allowed to connect.
Incident Response Plan (IRP)	The IRP defines what constitutes a security incident and outlines the incident response phases. At a minimum, this should address what constitutes an incident, incident response goals, incident planning, and the incident response life cycle.
Data Management and Retention Policy	Data retention policy defines the types of data and their retention requirements. In addition the retention policy describes the procedures for archiving the information and guidelines for destroying the information.
Portable Storage Policy	A policy should be developed that either prohibits the use of USB drives or allows their usage with proper encryption standards.
Password Policy	This policy is a designed to enhance compute security by encouraging users to employ strong passwords and use them properly.
User Access Policy	This policy defines the users who have access to and control of sensitive or regulated data. This policy is designed to minimize risk to organizational resources and data by establishing privileges for users of data and equipment on the network to the minimum allowable while still allowing users to perform job functions without undue inconvenience. This policy should be very specific and refined based on the needs of the organization.
Infrastructure Refresh Policy	The purpose of a refresh policy is to ensure technology (network, servers, storage, backup, telecom, workstations) do not become obsolete. A comprehensive policy can be created or individual policies can be developed for each area.
Help Desk Policy	This policy identifies the proper method for requesting assistance from the IT helpdesk. This will assist IT in providing enhanced service, developing appropriate software training needs, and assessing the suitable level of staff needed to handle the volume of requests.
Change Management Policy	The purpose of the change management policy is to manage changes in a

Sample Policy	Policy Purpose/Content
	rational and predictable manner so that end-user and other IT staff can plan accordingly. A formal written change request must be submitted for all changes, both scheduled and unscheduled.
Security Penetration Testing Policy	This policy is designed to establish a protocol to routinely evaluate the security of the County's IT network systems by simulating an attack from a malicious source.
Computer and Internet Usage Policy/Acceptable Use Policy	The policy is set of rules applied by the County's that restrict the ways in which the network, internet access and other systems may be used in order to mitigate the risk of inappropriate use.
Data Backup Policy	The purpose of the data backup policy is to protect data in the organization to be sure it is not lost and can be recovered in the event of an equipment failure, intentional destruction of data, or disaster.
Email Usage Policy	This policy can be incorporated within an Acceptable Use Policy (AUP) and is intended to address appropriate use of email and or other communications systems, as well as ownership of both the systems and the communications themselves.
Social Media Policy	This policy is intended to address the purpose of social media in the County, identifying responsibilities of the citizens and staff, encouraging and providing guidelines in consideration of the expected audience.
IT Asset Management Policy	The purpose of the IT asset management policy is to join financial, contractual and inventory functions to support life cycle management and strategic decision making for the IT environment.
Mobile & Personal Device Policy	The purpose of the mobile & personal device policy is to ensure compliance with federal regulations governing privacy and security of information, and to protect confidential data in the event mobile electronic data device loss or theft. The policy also defines the appropriate usage of these devices when used to access the County's resources.
Compliance Policy	This policy is intended to present how The County defines compliance (e.g. HIPAA, etc.) and the compliance function's role and responsibilities regarding the management of compliance risks.

Appendix B - Sample Position Descriptions

HELP DESK SUPPORT

SUMMARY

Under the direction of <enter title>, provide help desk support services to users of the organization's computer assets in order to ensure a positive impact on customer satisfaction through consistent, high quality interaction.

ESSENTIAL DUTIES & RESPONSIBILITIES

- Become proficient in functionality of supported hardware, software and computer resources. Maintain awareness of upcoming functionality changes and attend training as appropriate.
- Pursue certification in applications that are critical to the organization's daily operations (i.e. Microsoft Office, Microsoft Outlook, business applications, etc.)
- Receive and/or make telephone calls to respond to and resolve user inquiries and issues. Gather data from user about their issue and lead user through diagnostic procedures to determine the nature and source of each issue or request. Work with callers to resolve issues. Follow procedural guidelines to respond to and/or research user questions.
- Escalate requests or issues to Level 2 resources as appropriate. Collaborate with appropriate resources as required for effective and timely resolution of user requests or issues.
- Maintain clear, concise, consistent record of user issues by entering each in a help desk tracking system. Maintain ownership of user requests including documentation and communication of resolution to the user.
- Document and submit frequently asked questions and resolutions to the Help Desk Knowledgebase.
- Escalate customer satisfaction issues to the department management.
- Design, develop, and implement technology outreach programs such as user groups and newsletters.
- Coordinate all user training related to information technology.
- Assist other departmental staff with maintenance and operation of the organization's computer assets.
- Participate in regular Help Desk meetings.

MINIMUM ENTRANCE REQUIREMENTS

- Thorough knowledge of computer operation, Microsoft Office, and Microsoft Outlook.
- One or more years of job-related experience in information technology and/or customer service.
- Excellent troubleshooting skills, as well as good analytical/problem solving skills.
- Excellent interpersonal skills with the ability to communicate with and understand the needs of non-technical users.
- Strong organizational skills with ability to manage multiple tasks.
- Ability to function in a collaborative environment and generate trust with co-workers.

The above duties are intended to describe the general nature of work being performed by employees in this classification. The statements are not meant to be construed as an exhaustive list of duties and responsibilities of employees in this job classification.

PC SUPPORT TECHNICIAN

GENERAL SUMMARY

Under the direction of the Manager of Technical Operations, installs, maintains, troubleshoots personal-computer equipment and software. Troubleshoots problems and arranges for the technical support as needed.

RESPONSIBILITIES AND DUTIES

- Installs new software on personal computers.
- Install or replaces personal computer hardware and peripherals (i.e. computers, terminals and printers).
- Performs initial troubleshooting and personal computer-related equipment; arranges for additional technical support as needed.
- Conducts routine maintenance on personal computers and peripherals.
- Participates in the planning and implementation of personal computer upgrades, enhancements and expansions.
- Provides help desk support by identifying, investigating and researching end-user questions and problems; refers user to technical service personnel for services, repairs, training and follow-up as appropriate. Logs activities for use by IS management. Provides office automation support.
- Schedules and provides office automation training sessions as appropriate to meet end-user needs.
- Maintains inventory of personal computer related hardware and software.
- Performs other duties as assigned.

KNOWLEDGE, SKILLS & ABILITIES REQUIRED (Minimum):

- The job requires knowledge normally acquired through the completion of an Associate's degree in computer science, information technology or related field.
- One or more years of related job experience is required.
- Working knowledge of personal computer hardware and software including specific applications such as Microsoft Office and Microsoft Outlook.
- Interpersonal and communication skills necessary to answer technical questions in non-technical terms and troubleshoot/solve problems for various levels of end-users. The incumbent is also required to provide training to end-users.
- Analytical ability to identify and resolve information technology problems.
- Ability to understand technical documentation and specifications related to computer systems.
- Ability to adapt and respond to multiple priorities and demands.
- Ability to work as a member of a team.

NETWORK ADMINISTRATOR

SUMMARY

Under the direction of Manager of Technical Operations, plan, design, implement, document, and maintain the organization's computer systems and associated security. This includes long-range planning and budgeting for the network, coordination with management staff on network hardware, software, and system needs, daily operation and maintenance of the network, troubleshooting and testing, as well as protection of the organization's computer and information assets.

ESSENTIAL DUTIES & RESPONSIBILITIES

- Maintain the following systems for maximum availability and reliability:
 - Local and wide area networks
 - Frame relay communications
 - Mail server and services
 - Firewall and anti-virus security
 - Internet connectivity and services
 - Windows servers
- Provide on-going network management functions including configuration, security, optimization, capacity planning, system recovery, and performance tuning.
- Develop functional data recovery systems and techniques.
- Perform on-going Risk/Performance analysis for the organization's LAN, WAN and Servers.
- Schedule and monitor backup of network data. Periodically restore files, applications, and the entire system on other network hardware to test backup facilities.
- Manage anti-virus updates for all of the organization's computer assets (PCs, laptops, servers), and resolve any virus related issues that occur.
- Establish user-ids, user directories, and user file access rights based on the organization's Information Security Policy. Provide on-going user-id maintenance and support.
- Develop network operating procedures to include security and integrity controls, as well as backup and recovery procedures.
- Establish and enforce policies, procedures, and standards regarding LAN, WAN, security, and use of the organization's computer and information assets.
- Maintain system and support documentation regarding LAN, WAN, Internet connectivity, and security.
- Solicit quotes for LAN, WAN, and internet hardware, software and services. Prepare bid documents, evaluate bids, and recommend contract award.
- Develops a change management system for planning, coordinating, and monitoring changes to network resources to ensure that changes are made with minimum disruption to service levels. Responsible for managing all network change activities.
- Provide training and assistance to users in area of expertise.
- Coordinates with departmental staff on network related issues such as application program interfaces, system performance and user training.

MINIMUM ENTRANCE REQUIREMENTS

- Thorough knowledge of computer network hardware, software, and operating procedures as would normally be acquired through completion of a Bachelor's degree in computer science, information technology, or related field.
- Five or more years of job-related experience with multi-site network computing systems and a working knowledge of communication protocols and test procedures.
- Ability to plan, manage, and implement highly complex hardware and software systems.
- Ability to express ideas effectively, verbally and in writing.

The above duties are intended to describe the general nature of work being performed by employees in this classification. The statements are not meant to be construed as an exhaustive list of duties and responsibilities of employees in this job classification.

APPLICATION SPECIALIST

SUMMARY

Under the direction of Manager of Applied Technology, this position is responsible for maintenance and support of Enterprise and Business applications. The position requires extensive interaction with the user community in order to ensure that the organization is effectively utilizing its application investment.

ESSENTIAL DUTIES & RESPONSIBILITIES

- Collaborate with users to understand their business needs and match available technology to those needs in order to ensure effective utilization of the organization's application investment.
- Facilitate supplemental user training for the business applications mentioned above.
- Perform daily application administration duties such as: company updates, control record updates and maintenance, application file maintenance, period updates, and report distribution.
- Troubleshoot and resolve application questions and/or issues. Escalate to vendor resources as appropriate and coordinate resolution efforts/communication between vendor and users.
- Establish expertise in the applications' report writing tools. Document report requests and develop as appropriate.
- Document and evaluate user requested enhancements to applications. Obtain approval for enhancement as appropriate, and act as a user liaison with programming resources throughout the development.
- Research functionality available in existing applications to determine whether its implementation would be beneficial to the organization. Obtain approval and coordinate implementation as appropriate.
- Monitor application release notices for desired functionality. Prepare justification and obtain approval for application upgrades as appropriate.
- Plan, schedule, coordinate, and conduct activities related to an application upgrade in order to ensure minimal disruption of application availability.
- Maintain application documentation and assist user departments with documentation of procedures that involve use of the application. Review documentation for required changes upon each application upgrade.
- Maintain knowledge of the vendor marketplace and technology developments in order that recommendations can be made to management as additional applications/tools become available that satisfy the organization's information needs.
- Participate on Vendor advisory boards and panels in an effort to improve the product and its application to Ottawa County.
- Analyze user needs and develop functional specifications for custom software and/or modification of packaged software applications.

MINIMUM ENTRANCE REQUIREMENTS

- Extensive knowledge of applications, as well as working knowledge of general business processes.
- Prior job-related experience in information technology and/or application support.
- Excellent troubleshooting skills, as well as strong analytical/problem solving skills.
- Excellent interpersonal skills with the ability to communicate with and understand the needs of non-technical users.

- Strong organizational skills with ability to manage multiple tasks.
- Ability to function in a collaborative environment and generate trust with co-workers.

The above duties are intended to describe the general nature of work being performed by employees in this classification. The statements are not meant to be construed as an exhaustive list of duties and responsibilities of employees in this job classification.

PROJECT MANAGEMENT COORDINATOR

GENERAL SUMMARY

Formulates and defines scope and objectives of development/modification based on both user needs and a thorough understanding of business systems and industry requirements. Devises or modifies procedures to solve complex problems considering computer equipment capacities and limitation, timeframe, and form of desired results. Includes analysis of business and user needs, documentation of requirements, and translation into proper system requirement specifications. Not only possesses full technical knowledge of most phases of system analysis, but also considers the business implications of the application of technology to the current and future business environment. Acts as a team leader for projects as well as obtaining signoff of the test results and delivery/handoff to the business users of modifications and application development efforts.

RESPONSIBILITIES AND DUTIES

- maintaining the Project Management Portfolio of the department
- supervising entire projects from start to implementation
- preparing functional and code specifications and translation of business process requirements to technical requirements
- supervising test runs of planned programs and procedures in order to evaluate results and to revise programs
- analyzing user needs and developing functional specifications for custom software and/or modification of packaged software applications
- evaluating new software packages
- developing logical and physical data models
- understanding and enforcing system and database security
- developing functional data recovery systems and techniques
- ensuring application problems are addressed in a timely manner
- perform proactive research relative to technological developments available to users
- assisting in the preparation and delivery of training for end-users and operations; and assisting in the development of user documentation on application systems created/modified
- developing and training IT staff in departmental Project Management methodologies

MINIMUM ENTRANCE REQUIREMENTS

- A minimum of three (3) years of project management of application design/modification experience required.
- At least two (2) years of business analysis and process redesign required.
- Background in programming or application implementation and maintenance
- Requires Bachelor's Degree in Computer Science, Information Systems or a related field.

The above duties are intended to describe the general nature of work being performed by employees in this classification. The statements are not meant to be construed as an exhaustive list of duties and responsibilities of employees in this job classification.

BUSINESS ANALYST

GENERAL SUMMARY

The Business Services Analyst is responsible for assisting Department Heads and the IT Director in departmental support and software management practices and procedures in the County's computing environment including being responsible for developing and maintaining the various department standards and procedures that insure practical and efficient business operations. Planning, organizing and conducting detailed management analytical studies to define problems, identify deficiencies and improve solutions which impact the enterprise's effectiveness, and provide the basis for management decision.

RESPONSIBILITIES AND DUTIES

- Develops, edits and maintains operating procedures and standards manuals.
- Build familiarity with departmental operations while looking for ways to improve performance through enabling technologies.
- Serves as a consultant to the enterprise in work measurement, system assessments or return on investment analysis.
- Provides assistance to departments outside of Information Technology to improve internal procedures and software implementations that may be advantageous to the enterprise or the department.
- Coordinates or conducts training sessions to implement new or improved systems and procedures.
- Conducts meetings on all levels of management for purposes of presentations, reviews, approvals of recommendations, etc.
- Performs at or above the County's Information Technology performance standard
- Assumes additional responsibilities as assigned.
- Recognizes and identifies potential areas where existing software installations require change, or where new ones need to be procured and adapted, and make recommendations in these areas.

MINIMUM ENTRANCE REQUIREMENTS

- BS or BA level degree in computer science, business administration, operations engineering or related field
- 5 years of supervisor, administrative or systems procedures analysis experience, three in the business services area are required as well
- Experience in areas of operations (i.e. work simplification, work measurement techniques/skills)
- Ability to express complex technical concepts effectively, both verbally and in writing
- Analytical and organizational skills
- Ability to work independently with limited supervision
- Knowledge of office automation, Information Technology techniques and practices, forms and records management

Ability to work well with people from different disciplines with varying degrees of technical experience. The above duties are intended to describe the general nature of work being performed by employees in this classification. The statements are not meant to be construed as an exhaustive list of duties and responsibilities of employees in this job classification.

MANAGER OF APPLIED TECHNOLOGY

SUMMARY

The Manager of Applied Technology is responsible to perform highly responsible administrative and technical work in the development and operation of municipal information systems; to supervise the work of professional and technical staff involved in a variety of information system technology activity. It is the intent of this position that it be under the leadership of the Information Technology Director

ESSENTIAL DUTIES & RESPONSIBILITIES

- Recommend and implement policies, procedures, and standards relating to information system and technology activities.
- Manage the design, procurement, development, installation and maintenance of systems to meet the needs of user departments; determine information requirements and further define the nature of projects.
- Assign work to subordinate personnel, providing instructions and answering questions; coordinate the scheduling and completion of work by determining operational priorities and resolving work load problems; review work for accuracy and completeness; evaluate work techniques and methods for conformance to established standards.
- Provide technical guidance and assistance to subordinates (i.e. Business analysts or Application Specialists), to department users and to consultants in the development and implementation of systems and applications.
- Work with the IT Director to develop policies, rules and procedures for the effective operation of the department, including establishing goals and objectives and priorities.
- Advise, and otherwise provide assistance to the IT Director, and other County personnel regarding information systems related issues, applications, services or equipment; supervise and participate in the training of County personnel in the uses and capacities of information systems and technical equipment.
- Conduct research and perform analysis; prepare and present reports regarding project feasibility, equipment utilization, project development, and the cost of applications.
- Assist the IT Director in preparing and administering the divisional budget; monitor and approve expenditures with budget limits; provide input regarding staff needs, equipment, materials and supplies.
- Develop return on investment (ROI) documents and Total Cost of Ownership (TCO) reports on all new technology investments.
- Manage the relationships between Project Management Personnel and work to develop project objectives and timelines with the Project Management Office.
- Work with departmental liaisons and department heads to determine what technology meets their needs and how to support them achieve their business goals.
- Attend conferences, meetings or other functions as the department representative; may provide information or participate in discussions regarding information systems activities.
- Participate in the selection of subordinates; plan and implement employee training; evaluate employee performance; initiate disciplinary action.
- Maintain professional currency in information systems technologies.
- Assumes additional responsibilities as assigned.

MINIMUM ENTRANCE REQUIREMENTS

- BS or BA level degree in computer science, business administration, management or related field.
- 5 years of supervisor, administrative or systems procedures analysis experience, three in an Applied Technology area are required as well.
- Experience in areas of operations (i.e. work simplification, work measurement techniques/skills).
- Ability to express complex technical concepts effectively, both verbally and in writing.
- Analytical and organizational skills.
- Ability to work independently with limited supervision.

Ability to work well with people from different disciplines with varying degrees of technical experience. The above duties are intended to describe the general nature of work being performed by employees in this classification. The statements are not meant to be construed as an exhaustive list of duties and responsibilities of employees in this job classification.

Under general supervision, provides long-term architectural strategy and operational direction for planning, designing, implementing and maintaining the organization's information technology infrastructure. Works with internal departments / units to identify opportunities to improve and refine services to meet their needs.

MANAGER OF TECHNICAL INFRASTRUCTURE

SUMMARY

Under general supervision, provides long-term architectural strategy and operational direction for planning, designing, implementing and maintaining the organization's information technology infrastructure. Works with internal departments / units to identify opportunities to improve and refine services to meet their needs.

ESSENTIAL DUTIES & RESPONSIBILITIES

- Recommend and implement policies, procedures, and standards relating to information system and technology activities.
- Responsible for operations and infrastructure including disaster planning and recovery, network operations (including backups), equipment and hardware selection.
- Plans, manages and controls the activities of computer operations exclusive of the application implementation and tailoring function.
- Develops and establishes department standards and procedures, and assigns work to the operations staff.
- Prepares activities and progress reports.
- Maintains familiarity with current and emerging network hardware, network operating system software, cable plant alternatives and recommendations.
- Plans, organizes, assigns, directs, reviews and evaluates the work of professional, technical and support staff directly and through subordinate supervisors. Selects personnel and provides for their training and professional development. Interprets applicable regulations and County policies to subordinates.
- Participates in/manages the investigation, selection and operation of information systems.
- Represents the department and the County in meetings with vendors, other governmental agencies and business and professional organizations.
- Responsible for developing standards and implementing policy and procedures and developing competent budgets.
- Participate in the selection of subordinates; plan and implement employee training; evaluate employee performance; initiate disciplinary action.
- Work with the IT Director to develop policies, rules and procedures for the effective operation of the department, including establishing goals and objectives and priorities.
- Responsible for coordination and monitoring of staff development of subordinates..
- Manages efforts of staff to support Help Desk and business liaisons related to technical operations..
- Directs the maintenance of accurate records and files. Prepares or directs the preparation of reports, correspondence and other written materials.
- Conducts studies related to the area of assignment. Analyzes information, evaluates alternatives and makes recommendations. Prepares narrative and statistical reports of findings. Develops, revises and implements policies and procedures.
- Attend conferences, meetings or other functions as the department representative; may provide information or participate in discussions regarding information systems activities.
- Performs other related duties as assigned.

MINIMUM ENTRANCE REQUIREMENTS

- BS or BA level degree in computer science, business administration, management or related field.
- 5 years of supervisor, administrative or systems procedures analysis experience, three in an Technical Operations area are required as well.
- Experience in areas of operations (i.e. work simplification, work measurement techniques/skills).
- Ability to express complex technical concepts effectively, both verbally and in writing.
- Analytical and organizational skills.
- Ability to work independently with limited supervision.
- Ability to work well with people from different disciplines with varying degrees of technical experience.

The above duties are intended to describe the general nature of work being performed by employees in this classification. The statements are not meant to be construed as an exhaustive list of duties and responsibilities of employees in this job classification.

Appendix C – Benchmarking Detail

Ratios:	Livingston County, MI	Washtenaw County, MI	Kalamazoo County, MI	Ingham County, MI	Frederick County, MD	Augusta, GA	Peer Median	Ottawa County
Total Cty Expenditures / Constituent	\$510	\$584	\$822	\$693	\$2,522	\$3,401	\$758	\$854
Total IT Expenditures / Constituent	\$16	\$24	\$6	\$10	\$74	\$48	\$20	\$20
Total IT Expenditures / Cty Staff	\$5,267	\$6,148	\$1,852	\$2,704	\$5,655	\$3,855	\$4,561	\$4,571
Total IT Expenditures	\$2,896,776	\$8,275,000	\$1,523,914	\$2,860,571	\$16,966,204	\$9,731,140	\$5,585,888	\$5,147,082
Total IT Expenditure Budget / Cty General Fund	7.1%	8.2%	2.2%	4.0%	3.9%	7.8%	5.5%	8.0%
Total IT Expenditure Budget / Cty Budget	3.1%	4.1%	0.7%	1.5%	2.9%	1.4%	2.2%	2.3%
Central IT Staff Budget / Central IT Budget	42%	68%	98%	83%	65%	60%	67%	52%
Central IT HW&SW Budget / Central IT Budget	42%	22%	0%	11%	25%	32%	23%	22%
Central IT Services & Outsourcing / Central IT Budget	4%	9%	0%	1%	0%	5%	2%	12%
Central IT Training / Central IT Budget	1%	1%	2%	0%	1%	1%	1%	1%
Central IT Other / Central IT Budget	11%	0%	0%	4%	9%	2%	3%	14%
Central IT Staff/Total County Employees	2.5%	1.8%	1.5%	1.7%	2.0%	1.8%	2%	2.2%
Cty Users / Central IT Staff Person	40	56	65	59	51	55	55	45
Cty Users / Total IT Staff Person	39	42	65	59	48	55	51	45
Total IT Staff	14.0	32.0	12.6	18.0	63.0	46.0	25.0	25.0
Number of Devices / Central IT Staff	121	202	249	204	111	131	167	172
Number of Devices / Total IT Staff	118	151	249	204	104	131	141	172
Central IT Expenditures / Cty Staff	\$5,267	\$4,346	\$1,238	\$2,035	\$3,314	\$1,877	\$2,675	\$3,656
Central IT Salaries / Central IT Staff	\$89,623	\$166,667	\$79,432	\$98,905	\$110,017	\$62,094	\$94,264	\$84,920

Appendix D - Sample Service Level/Partnership Agreement

A Partnership Agreement Information Technology And XXXX Department

PURPOSE AND OBJECTIVE

This Partnership Agreement ensures that Ottawa County Information Technology (IT) and XXXXXX Department jointly deliver the level of service and support required for the smooth operation of computer and telephone systems.

The IT Department and XXXXXXXXXXXXXXXX Department have jointly created this Partnership Agreement to help both parties understand each other's needs, priorities, and concerns. This document, presents the service conditions and expectations of the Agreement, IT performance measurements, IT reporting requirements, roles and responsibilities and other important service information.

Modifications to this agreement will be made at the direction and agreement of both parties. Following the implementation of this agreement, periodic joint reviews will drive future enhancements.

It is understood that the agreement remains in force until it is explicitly replaced or terminated by either party.

XXXXXXXXX, Director
XXXXXXXXX Department

XXXXXXXXXXXX, Director
Information Technology

Date

Date

1. Technology Support Plan: Core Business Technologies

List core business technologies here, such as Office Suite, Email, etc.

	Support Responsibilities		
	Department/Liaison	IT	Vendor or Other Outside Entity
	<ol style="list-style-type: none"> 1. Identify Technology, Telecomm and Web Liaisons 2. Develop work plans for liaisons that include the liaison role 3. Provide release time for training of liaisons to perform duties 4. Provide release time for training of department staff on core technology applications they use 5. Adhere to BOC policies and IT standards around the use of technology 6. Communicate future technology needs through the Internal Consulting Group and bi-annual Planning Process 7. Use the Infrastructure Resource Allocation Process 8. Use Core Technologies whenever possible 9. Participate in process reviews related to technology projects 10. Consult with IT on all new technology plans and projects 11. Work with IT to develop a Total Cost of Ownership for all new projects 12. Develop Business Continuity Plan for departmental business if technology is unavailable 13. Initial diagnosis of problems and reporting to IT or vendor if additional help needed. 14. Communicate with IT about any new staff moves, adds or changes at least two weeks before the change is needed (more if the change is large). 	<ol style="list-style-type: none"> 1. Consulting on: <ol style="list-style-type: none"> a. New technologies b. New Projects c. Peripheral Products 2. Initial diagnosis of problems after liaison review 3. Technology liaison coordination, development and coordination, backups of data on central system 4. Installation, configuration and maintenance of central disk storage system 5. Installation, configuration and maintenance of servers 6. Installation, configuration and maintenance of desktop and laptop computers and standard peripheral equipment 7. Develop, maintain and monitor desktop standards – hardware, software and peripheral equipment 8. Database Maintenance to ensure integrity of data and efficient operation of applications 9. Installation, maintenance and recurring cost of data circuits for wide area network and phone systems 10. Develop downloads of data for outside entities so these can be routinely done by departmental staff or perform downloads if they are routine 11. Entry and maintenance of network users – logons and security access 12. Installation and configuration of printers on the network 13. Install, set up and maintain County web servers for web-enabled applications 14. Collaborate with outside entities to set up required connectivity to outside systems 15. Develop, maintain and test a Disaster Recovery Plan 	<ol style="list-style-type: none"> 1. Develop Application Upgrades 2. Complex Problem Resolution 3. Database Upgrade Maintenance

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	<p>15. Communicate with IT regarding new staff via the Day One process</p>	<p>to protect County computer and telecommunications resources</p> <p>16. Security of network, telephones and data</p> <p>17. Support of federal and state regulations (i.e. HIPAA, HUD) as related to technology</p> <p>18. Technology Plan development, budget and implementation</p> <p>19. Hardware replacement plan development, budget and implementation</p> <p>20. Telecommunications system installation and support</p> <p>21. Meet or exceed Response and Availability Standards of XXXXXXXX</p> <p>22. Licensing, maintenance and support costs for core applications</p> <p>23. Maintain a test environment for ERP</p>	
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2. Technology Support Plan: Widely-Used Applications

Examples: Adobe Acrobat, Adobe Distiller, Crystal Reports, Instant Messenger, Omni Page, Photoshop, Project, Visio, etc.

Support Responsibilities		
Department/Liaison	IT	Vendor or Other Outside Entity
<ol style="list-style-type: none"> 1. Provide opportunities for training of liaisons to support applications 2. Provide opportunities for training of department staff on applications they use 3. Initial diagnosis of problems and reporting to entity which supports the application if additional help needed. 4. Simple Report Generation 5. Consult with IT if needs for applications change 6. User and application security, if exists 	<ol style="list-style-type: none"> 1. Consulting on applications to meet County needs 2. Installation and configuration of application on departmental desktops and laptops 3. Purchase and maintenance costs of licenses for applications 4. Contracts for and cost of maintenance/problem resolution services 5. Contracts for and cost of training necessary outside the Professional Development and mini-grant process 	<ol style="list-style-type: none"> 1. Problem Resolution 2. Training – should be done through Professional Development Program or mini-grant process whenever possible 3. Complex Report Generation

3. Technology Support Plan: XXXXX Department

Significant Departmental Applications

	Support Responsibilities		
	Department	ITS	Vendor or Other Outside Entity
New System-Future	<ol style="list-style-type: none"> 1. Training of Daily Users 2. Day-to-day operations 3. Understanding of System and Business Rules 4. Data Ownership 5. Report Creation/Generation 6. Application Security <ol style="list-style-type: none"> a. who has access to what in the applications b. add/delete users 7. Initial Problem Diagnosis 8. Problem Resolution 9. Vendor Relationship 10. Printer Configuration 	<ol style="list-style-type: none"> 1. Backups 2. Troubleshooting Assistance 3. Server Administration 4. Package and Install application on PC 5. Network/Server Security 6. Database Administration 7. Coordinate connectivity issues with vendor 8. Software maintenance and licensing costs 9. Server maintenance and replacement costs 	<ol style="list-style-type: none"> 1. Develop Application Upgrades 2. Apply App Upgrades to Development 3. Problem Resolution 4. Develop database upgrades and changes 5. Coordination connectivity issues with County IT

4. Technology Support Plan: Other Applications

List Applications Here

	Support Responsibilities		
	Department/Liaison	ITS	Vendor or Other Outside Entity
	<ol style="list-style-type: none"> 1. Provide opportunities for training of liaisons to support application 2. Provide opportunities for training of department staff on application 3. Initial diagnosis of problems and reporting to entity which supports the application if additional help needed. 4. Consult with ITS if needs for applications change 5. User and application security, if exists 	<ol style="list-style-type: none"> 1. Consulting on applications to meet County needs 2. Packaging, installation, upgrade and configuration of applications on departmental desktops, laptops and servers as applicable 3. Server maintenance, where applicable 4. Internet connectivity and browser 5. Data backup for data stored on central disk storage 6. Coordination with outside entities to provide needed connectivity 7. Installation and problem resolution of telephone lines and data circuits, where applicable 8. Purchase and maintenance costs for licenses 9. Contracts for and cost of maintenance, support and problem resolution services 10. Contracts for and cost of training services outside the Professional Development or mini-grant process. 	<ol style="list-style-type: none"> 1. Problem Resolution 2. Training – should be handled through the Professional Development program or mini-grant process whenever possible.

Appendix E - Custom vs. Packaged Software

The following matrix further outlines the advantages and disadvantages of both homegrown and packaged commercial off the shelf (C.O.T.S.) software:

Software Approach	Advantages	Disadvantages
“Home-Grown” or Highly Customized Software Applications	<ul style="list-style-type: none"> ◆ The functionality of the application can be developed to exact County requirements. ◆ The County has a greater level of control over the design, functionality, technical specifications to the applications, and can control modifications to it, on an ongoing basis. 	<ul style="list-style-type: none"> ◆ There is a risk that if the County loses internal development staff, that the technical understanding of the application, and the ability to maintain it, would be greatly reduced. ◆ Overall, custom developed applications are typically significantly less cost effective, long term. ◆ Limited internal development staff may not have the capacity to be as technically innovative as a vendor organization with deeper resources.
COTS (Commercial Off The Shelf) Vendor Supported Packaged Software Applications	<ul style="list-style-type: none"> ◆ The County may benefit because pre-packaged applications often have industry best practices embedded within them. ◆ Potential to receive ongoing enhancements. The County may benefit from the research and development performed by the vendor. ◆ Ability to receive support from the vendor, who likely has deeper technical resources. ◆ Overall, they are typically more cost effective, long term. ◆ Potential to participate in vendor user groups and identify practical best practice processes in use by peer organizations. 	<ul style="list-style-type: none"> ◆ May not fit exact County requirements, requiring the County to change business practices to work within the parameters of the application, in order to minimize application customization. ◆ Necessitates a requirement to maintain and manage a vendor relationship. ◆ System requirements generated by other users of a vendor supported solution, may not be consistent with the County’s, thus, the prepackaged solution may have additional unused functionality which may cause configuration and / or performance issues.

Appendix F –Cost Benefit Analysis / ROI

1. Cost Benefit Analysis Overview

The goal of performing a technology cost benefit analysis is to determine whether the benefits, both quantitative and qualitative, outweigh the costs for implementing a technology project. In performing a cost benefit analysis, there are different financial analyses that can be calculated through quantification of the projects cost and benefit estimates. Some of the more prevalent metrics used by different organizations include:

- **Return on Investment (ROI):** Average recurring net benefit divided by the total capital outlay.
- **Payback Period:** The average length of time required to recover the cost of the investment.
- **Net Present Value (NPV):** The total net benefit (or cost) of the project expressed in current dollars.

2. Hard vs. Soft: Direct and Indirect Costs and Benefits

When quantifying the costs and benefits, consideration should be given to both “hard” and “soft” costs and benefits. For purposes cost benefit analysis, these terms are defined as follows:

- A. **Hard Costs:** Those costs directly attributable to the project that will result in the direct outlay of money. Typically these are budgeted cost items.
- B. **Soft Costs:** Those costs or use of resources directly attributable to the project that do NOT result in the direct outlay of money. Typically these are not budgeted items.
- C. **Hard Benefits:** Those benefits directly attributable to the project that will result in direct savings or revenues and impact actual expenditures or revenues.
- D. **Soft Benefits:** Those benefits or resource efficiencies directly attributable to the project that do not result in the direct saving of money or direct inflow of money.

3. Specific Examples and Types of Costs and Benefits

Each technology project will have its own costs and benefits, unique to that specific project. No two projects will have the same costs and benefits. There are however, various types of costs and types of benefits that may be common between various projects. Each project should be analyzed on its merits. Some considerations may include:

Hard Costs

- 1) **Technology/ Vendor Costs:** All project implementation costs paid to a technology vendor(s), including:
 - a) Direct Technology Costs, initial investment including hardware, software, licensing, etc.
 - b) Services Costs, including initial and recurring design, installation, configuration, training, data conversion, vendor project management, reporting, product modification or customization, technology integration and interfacing, initial project training, etc.
- 2) **Increased Internal Staffing:** Costs paid to hire additional internal staff (e.g. project team backfill staffing during project implementation or staffing for maintenance and support of the technology once the project has been fully deployed). Also, staff overtime costs or staff rewards attributed to the project.

- 3) **Related Infrastructure Improvements:** Any necessary infrastructure improvements that may have to be made in conjunction with the project to make the project successful
- 4) **Ongoing Training Costs:** Anticipated future training costs for existing or new staff.
- 5) **Project Related Travel Costs**
- 6) **Other Miscellaneous Hard Costs**

Soft Costs

- 1) **Internal Project Staffing Costs:** Costs associated with internal staff time involved in the implementation of the technology project, such as:
 - a) Project "End user" staff time associated with project
 - b) Internal IT staff time associated with the project
 - c) Project Management
 - d) Change Management
- 2) **Documentation**, both technical documentation and procedural documentation.
- 3) **Project Workspace**, such as establishing a training area.
- 4) **Project Contingency:** Based on the comfort level with the identification of project costs, consideration should be given to whether to include a project contingency to account for unanticipated requirements which may arise during the course of project deployment. Project contingencies are often estimated as an additional percentage of identified project costs.
- 5) **Other Miscellaneous Opportunity or Soft Costs**

Hard Benefits

- 1) **Reduction / Elimination of Current Costs:** Benefits associated with a reduction to current technology, including:
 - a) Consolidation / replacement of existing systems
 - b) Reduction in dedicated IT staff
 - c) Reduction in outside contracts for maintenance or support
 - d) Elimination of document or storage costs
 - e) Other direct savings
- 2) **Revenue Enhancement Opportunities:** Consideration should be given to whether or not there is a potential to generate additional revenue through the deployment of a technology project by providing enhanced service levels or access to information. This may include potential:
 - a) Tariffs – such as 911 surcharges
 - b) User Fees – land record fees, convenience fees, etc.
 - c) Shared savings from collaborative arrangements – such as a shared PSAP or revenue enhancement such as charging another local unit for an IT service provided
- 3) **Process reengineering:** Typically end user savings that can be budgeted, attributable to technology enabled productivity gains.
- 4) **Other Budgeted or Quantifiable Benefits**

Soft Benefits

- 1) **Improvements to Staff Efficiency:** Benefit associated with reduction of a staff person's time performing a particular function based on the deployment of the technology project,

with the assumption that staff efficiency will allow for reallocation of staff time to other more value added activities. Examples may include:

- a) Elimination of duplicate effort and manual tasks
- b) Direct entry / self-service / appropriate, secured access to information
- c) Cost avoidance
- d) Better Resource Control:
 - i) Centralization of functions, to gain efficiencies of process and economies of scale.
 - ii) Better use of high cost resources, such as enabling management staff to delegate non-value added activities to lower cost staff.
- 2) **Enhanced Decision Making** : In many cases users will identify improve information access as a key to enabling better quality decisions.
- 3) **Improved Data Integrity / Quality / Security** : Benefits associated with mitigating or minimizing security concerns or data quality issues.
- 4) **Enhanced Constituent Satisfaction** : May include a broad spectrum of constituent benefits such as speed of services, access to information, self-service options, etc.
- 5) **Enhanced Service Effectiveness**: May include a broad spectrum of staff benefits such as ability to reengineer services, staff safety (particularly in the public safety areas), staff self-service options, etc.
- 6) **Other Soft Benefits**

4. Additional Cost / Benefit Considerations:

In evaluating the specific hard and soft costs and benefits for a particular project, the following concepts should be considered:

- a. **Stakeholder Input**: Look for grass roots input and feedback on costs and benefits. Often, the direct stakeholders can not only assist with identifying types of costs and benefits, but frequently can provide input that will assist with quantifying those costs or benefits.
- b. **Quantify County-wide, Not Departmentally**: Where possible, look to quantify costs and benefits across the County. Many enterprise applications provide costs and benefits to multiple departments. In some cases, technologies can benefit multiple organizations (e.g. Multiple cities, city and county, etc.).
- c. **Estimates**: Estimates are perfectly appropriate for a cost benefit analysis and should be considered just that, estimates. Estimates can always be challenged and will vary based on the individual doing the estimating. Estimates for hard costs and benefits may be comparatively easier to establish as they are more often based on empirical data. Soft cost and benefit estimates are arguably, more challenging. For technology purchases, vendors often can assist with identifying benefits, but effort should be taken to quantify these benefits as an internal effort. To estimate internal staff efficiencies, look, where possible to quantify sample savings on a micro level (transaction basis) and then extrapolate.
- d. **Unquantifiable Costs and Benefits**: Some soft costs and soft benefits are unable to be reasonably quantified. Examples may include risk reduction, opportunity cost, value to the constituent, quality improvement, etc. For such items, they should be understood, documented, and considered in conjunction with the quantifiable cost benefit calculations and metrics.
- e. **Phase In of Benefits**: Potential savings projections should be estimated considering their long term potential benefit. It is not always likely, however that all of the potential savings will be completely and fully realized. Additionally, with technology projects the potential savings will likely be less, initially, as the system is implemented; however may increase over time, as users accept the implications of the technology project and implement re- designed work processes to

take advantage of new system capabilities. As such, it may be appropriate to phase in the benefits over time, by applying a percentage to the benefit estimates.

- f. **Grouping of Related Projects:** Circumstances may be that a series of related projects performed together, or over time, may yield a combined positive cost benefit. Where appropriate, consider combining multiple related projects defined separately in other technology planning efforts, into one, for cost benefit purposes. Then, consider the implementation schedule and phasing when projecting costs and benefits.
- g. **Implementation Schedule:** Consider the timing of deployment of the project costs and benefits.
- h. **Recurring Costs:** Include any necessary maintenance and support costs, such as licensing, maintenance agreements, upgrade cost implications for upgrades to COTS solutions, etc. that would result to retain the benefits of the project over time.
- i. **Replacement:** Where necessary, build in a hardware replacement cycle (hardware depreciation set aside) for any expected hardware upgrades.
- j. **Process Redesign:** It is recommended to undergo process redesign / reengineering in conjunction with technology project implementation, as appropriate, to maximize the realization of benefits of the technology project.
- k. **Use Loaded Staff Costs:** Any hard or soft costs or benefits that reflect staff utilization or reductions, should use the fully loaded employee cost, including salaries, benefits and any related fringes. Often, organizations will determine an average annual employee cost used for all cost benefit efforts.
- l. **Inflation:** Acknowledge reasonable inflation increases over time in cost benefit analysis and apply these inflation increases to ongoing costs.



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