Information Technology Review for the Town of Oxford

March 2017

Edward J. Collins, Jr. Center for Public Management

McCORMACK GRADUATE SCHOOL OF POLICY AND GLOBAL STUDIES

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SCOPE AND METHODOLOGY

The Town of Oxford hired the Edward J. Collins, Jr. Center for Public Management (the Center) to perform an Information Technology Review (IT Review). The purpose of this review is to provide direction to the Town as it makes decisions about how to enhance the contribution of information technology in town operations.

The engagement involved several tasks, all of which contributed to a sound basis for the IT Review.

- Review of background material;
- Inventory of current systems and resources;
- Interviews of key staff;
- Development of the review; and,
- Presentation and discussion of findings and recommendations.

This document brings together the findings and recommendations generated by the project team.

Specifically, the IT Review includes:

- Findings and recommendations;
- Articulation of a strategy for Oxford to take as part of its effort to enhance IT as a critical function in the delivery of Town services;
- Priorities among actions which Oxford ought to take with respect to the objectives consistent with Oxford's vision or other circumstances; and
- Short-range and longer term actions that Oxford should take to strengthen its performance.

Methodology

The Center's research was guided by the following principles:

- Understand that every municipality and district is unique and reflect that uniqueness in the recommendations;
- Obtain diverse points of view on all issues;
- Focus on the current situation and future opportunities, and refrain from passing judgments on past occurrences; and
- Make recommendations that are pragmatic and adaptable.

BACKGROUND

Organization/Staff

The MIS Department reports to the Town Accountant. Staff are located in the Town Hall and consist of the Director and the recently-hired Assistant MIS Director. The current MIS Director joined the Town in 1980, the MIS Department in 1985, and became Director in 2005. The experienced (10 years) former Assistant MIS Director previously transferred to the School Department.

Network, server and firewall support is outsourced to Global Data Systems and radio network support is provided by LB Communications.

Computer Hardware/Servers

The Town has 16 Windows servers (primarily Dell servers with some Hewlett Packard units) located in the Town Hall server room. The server room is environmentally controlled, has battery backup facilities, and is tied into the building's electric generator. The department is in the process of moving to a virtual environment (30% of the servers are now virtualized).

There are 143 desktop, 56 laptop (including public safety units), and 14 tablet computers supported. A complete inventory record for all equipment is maintained.

System Software and Utilities:

- Microsoft Windows 2007
- Microsoft Windows Server 2008 and 2010
- Dameware (remote control and systems management/log-in software).
- Veritas (file and storage management software).
- VMware (Virtual system software)

Locally Hosted Application Software

- GEMS Financial Management System, Harris Computer Systems.
- MS-GOVERN, Tax Billing, Appraisal and Land Management System (licenses, permits, inspections), Harris Computer Systems.
- ARC GIS by ESRI.
- My Senior Center (Senior center management software)
- IMC Police RMS (Record Management and Dispatch software), Tri-Tech Software Systems.
- EZ Facility (Fitness facility scheduling and management).
- Mailer +4, Melissa Data (Mailing Software).
- Autocad (Computer Aided Design Software), Autodesk
- CodeRED (Emergency mass notification software), Emergency Communications Network.
- RRC Personal Property Appraisal Software, Real Estate Research Consultants, Inc.
- Secure Check Printing, AP Technology, LLC.
- Microsoft Office (Version 2007)
- Microsoft Outlook (Exchange 2007)

- Adobe (PDF) Software

Cloud Based (SaaS) Application Software

- Maps-Online and PeopleForms, PeopleGIS
- CM Mars (Regional library consortium services)
- Attendance Enterprise (Time and attendance system), InfoTronics, Inc.
- ImageTrend (ambulance billing).
- IamResponding (responder tracking software).
- FileNexus (Document management and storage), Loris Services, Inc.
- Virtual Town Hall (Web-site hosting), Virtual Towns and Schools.

Networks, Data, and Voice Communications

All Town buildings are linked via a fiber-optic network. The internet service provider is Integrity/Charter Internet Services.

Voice communications uses a NorStar system installed in 1985. Verizon is the voice communications vendor.

Backup/Disaster Recovery Measures

Incremental changes to Town Hall server-based data/files are retained and written to magnetic tape daily. Changes to Fire, Police and Library server based files are backed up nightly.

Each week, a full backup of all data bases/files (including Police, Fire and Library data bases/files) is written to magnetic tape and sent to an offsite repository, along with the week's daily incremental change tapes. Software programs are included in the weekly full backup.

The daily change tapes combined with the full back up from the previous week, allows data to be recovered up to the previous day.

Computer Use Policies

A documented social media use policy is in place.

Recent Initiatives

Implementation of Attendance Enterprise, a time and attendance system.

Other

The MIS Director is the primary support for the enterprise GEMS and MS Govern software systems.

SUMMARY OF RECOMMENDATIONS

Page	FINDINGS AND RECOMMENDATIONS *Oxford Informational Technology Review*
	Finding 1: Information Technology reporting relationships do not reflect the department's importance to Town operations. The department name (Management Information Systems (MIS)) is dated, reflecting a 1960s era organization.
	Recommendation 1.1. In recognition of the wider role of IT in all Town operations, the department responsible for information technology should report to the Town Manager.
	Recommendation 1.2. The department's name should be changed to Information Technology (IT) or Information Technology Services (ITS).
	Recommendation 1.3. Relocation of offices to a space with a conference area and reflecting an independent department should also be considered.
	Finding 2: Since the town and district information technology departments are separate, opportunities to collaborate and share resources can be missed.
	Recommendation 2.1 The potential benefits of collaboration between Town and District Information Technology resources should be explored.
	Finding 3: There is no long-term information technology vision/strategy or plan for technology upgrade, replacement, or growth beyond current equipment replacement budget projections.
	Recommendation 3.1 Oxford needs to put in place and update annually a comprehensive information technology plan linked to the Town's capital improvement plan.
	Recommendation 3.2 The IT leader must be an advocate for IT and recommend the best solutions for the town, not limited first by anticipated or potential budgetary constraints.
	Finding 4: There is no clear process to determine what IT activities should be undertaken.
	Recommendation 4.1. Create an Information Systems and Technology Steering Committee, Planning Council, or Advisory Committee to provide feedback and better align IT strategy with the strategic goals of the Town.
	Finding 5: The business continuity/disaster recovery process needs review and there is no formal written comprehensive plan.
	Recommendation 5.1 The disaster recovery process should be reviewed and a disaster recovery plan developed.
	Finding 6: Removed due to security reasons.
	Finding 7: The current voice system is not serving the needs of the Town.
	Recommendation 7.1 Replace the system with a modern VOIP (voice over internet protocol) system.
	Finding 8: Computer use policies are not all signed off by end users.
	Recommendation 8.1 Computer use policies should be written and acknowledged/signed off annually by end users via paper form or electronically.
	Finding 9: There are system process efficiencies/improvements currently in place.
	Recommendation 9.1 Continue the progress made and press forward with full implementation of the time and attendance system across all departments, in addition to other ongoing initiatives.

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FINDINGS AND RECOMMENDATIONS

Finding 1: Information Technology reporting relationships do not reflect the department's importance to Town operations. The department name (Management Information Systems (MIS)) is dated, reflecting a 1960s era organization.

The MIS Department reports to the Town Accountant. The department name does not reflect a modern IT organization.

Recommendation 1.1. In recognition of the wider role of IT in all Town operations, the department responsible for information technology should report to the Town Manager.

Recommendation 1.2. The department's name should be changed to Information Technology (IT) or Information Technology Services (ITS).

Recommendation 1.3. Relocation of offices to a space with a conference area and reflecting an independent department should also be considered.

Finding 2: Since the town and district information technology departments are separate, opportunities to collaborate and share resources can be missed.

Due to limited resources, staff size and knowledge base; the MIS Department has outsourced network, server and radio network support. There is significant IT technology expertise in the district IT department.

Recommendation 2.1 The potential benefits of collaboration between Town and District Information Technology resources should be explored.

Short Term (6 - 18 months)

The Center recommends the Town consider collaboration between the Town and School IT Departments to draw upon expertise in the School IT Department in the area of network and server support. This may offer the opportunity to reduce the dependence on external resources and reduce cost.

Radio network support requires unique skills and should remain as an outsourced service.

Longer Term

The Center recommends the Town consider consolidation of all Town and School IT resources into a central IT department. Consolidation of IT resources may offer better service and potentially lower costs through overall professional management, planning, software support redundancy, standardization of equipment and procedures, backup/disaster recovery measures, and purchasing.

The ability to recruit, retain, and develop skilled personnel is enhanced with a central department. Cross training of staff across various application systems will reduce the risk of support loss from staff turnover. The ability to develop stronger expertise in important technical areas such as networking, software support, web design, and voice and data communications is enhanced with a larger organization.

Finding 3: There is no long-term information technology vision/strategy or plan for technology upgrade, replacement, or growth beyond current equipment replacement budget projections.

Since implementation initiatives and funding can extend over multi-year periods, the planning horizon should reflect that and extend beyond a year. However, the Director, having lived under budgetary constraints for some time, tends to limit plans to what is expected to be approved.
In addition, no periodic (monthly) formal reporting is done during the year.

Recommendation 3.1 Oxford needs to put in place and update annually a comprehensive information technology plan linked to the Town's capital improvement plan.

The technology plan will form the framework for making rational, consistent choices regarding information technology. The Center recommends a three-year planning horizon, with major department needs considered and input sought, broken down by yearly increments, updated annually, and locked in by funding. Results against plan should be reported monthly. The plan should be reviewed and approved by the IT Steering Committee (see Recommendation 4.1) and the Town Manager.

Recommendation 3.2 The IT leader must be an advocate for IT and recommend the best solutions for the town, not limited first by anticipated or potential budgetary constraints.

Finding 4: There is no clear process to determine what IT activities should be undertaken.

The selection and prioritization of initiatives and allocation of limited IT resources are critical to the success of IT and its deployment going forward.

The IT function can face unlimited demands for service while dealing with limited resources. Individual departments press for services (or projects) which may or may not result in the highest and best use of limited IT resources for the Town as a whole. The IT Director acting alone may not have the full overall perspective to choose the best course of action.

There are other Town resources with IT expertise and experience that could provide technical guidance and insight.

Recommendation 4.1. Create an Information Systems and Technology Steering Committee, Planning Council, or Advisory Committee to provide feedback and better align IT strategy with the strategic goals of the Town.

An information systems and technology steering committee is a governance body that reviews, monitors, and prioritizes major IT activities/projects from a cross-functional perspective. The two key concerns of a technology steering committee are:

- Alignment - The committee helps ensure that IT strategy is aligned with the strategic goals of the Town.
- Ownership - The units represented on the committee should have ultimate ownership over the larger IT strategic decisions that impact their organizations and processes.

The mission of this committee would be to provide guidance, overall perspective, and direction to the IT Director, in effect to act as a board of directors to guide the planning and deployment of IT resources through actions such as:

- Review and endorse IT plans;
- Review proposed IT Policy changes;
- Review technological recommendations;
- Prioritize major projects, advise/resolve conflicts related to priorities and limited resource allocations;
- Assess/advise on the impact of changes;
- Support/sponsor major projects and initiatives;
- Monitor major projects and service levels;
- Monitor the future deployment of GIS technology Town-wide.

In addition, the committee will provide guidance and insight from other internal resources with IT experience and knowledge.

The membership of the committee should consist of key managers who are directly affected by the technology and the impact of changes being considered or could offer guidance. Specific recommended members (others selected by the town manager) are:

- The Town Accountant/School Business Manager.
- The School IT Director for technical guidance, particularly in network technology.
- The Assessor with background from past IT employment.
- The DPW Director with GIS systems responsibility.
- Public Safety representative(s).

The committee should have regularly scheduled meetings with agendas issued in advance and results/minutes published. More frequent meeting may be involved when acting in a project steering capacity, especially when nearing deployment stages. The Center recommends the committee be chaired by the Town Manager or end user department member appointed by the Town Manager (possibly on a rotating basis).

Finding 5: The business continuity/disaster recovery process needs review and there is no formal written comprehensive plan.

In the event of an outage, application of daily data base changes (via magnetic tape) combined with the full back up from the previous week allows data to be recovered up to the previous day. A day's transactions would need to be re-entered and a potentially time consuming file restoration process would be involved if the outage occurs later in the work week.

A full restoration test has not been performed i.e. restoring the last weekly full system data backup file and then applying backup daily incremental transactions/changes to bring the system to currency. Selected files have been restored.

Recommendation 5.1 The disaster recovery process should be reviewed and a disaster recovery plan developed. The Center also recommends consideration of facilities to support real-time (or near real-time) logging of transactions to another site that supports prompt recovery of operations with limited or no re-entry of data in the event of an outage.

Some of the potential options could be:

- Subscription to a cloud based service.
- Construction of an up-to-date data center (with sufficient servers, data storage and environmental facilities) in the Police building, consolidating all Town servers. This would take advantage of available space in a secure facility with electric generator backup. The Town server room could then serve as the secondary backup facility. This would also solve the current air conditioning issues for servers at the Police facility as improved air conditioning facilities would have to be installed as part of the data center.
- As a further action to insure recovery in the event of a disaster affecting both sites, consideration of facilities to backup systems periodically via the cloud or via media stored offsite.

Continue the move to virtualization with the resulting flexibility and increased resource capacity utilization benefits coming with the movement. This will support testing of a full system restoration.

The Center also recommends the Town develop and publish a formal comprehensive written business continuity/disaster recovery plan by reviewing its back-up and disaster recovery processes to ensure they provide the ability to quickly restore lost data, and that back-ups are maintained in geographically disparate locations that share few, if any, common risks.

Finding 6: Removed due to security reasons.

Finding 7: The current voice system is not serving the needs of the Town.

The 1985 system is aging and does not have features inherent in a modern voice communications system. This was a frequent complaint heard from Department Heads during the study.

Recommendation 7.1 Replace the system with a modern VOIP (voice over internet protocol) system.

Consideration of a similar system at the School District may carry benefits with a common town-wide solution.

Finding 8: Computer use policies are not all signed off by end users.

A documented social media policy is in place (new employees sign upon hire). A security password/access policy exists (e.g. 90 day passwords changes) but is not published, a formal acknowledgement/sign off by end users is not done.

Recommendation 8.1 Computer use policies should be written and acknowledged/signed off annually by end users via paper form or electronically.

Finding 9: There are system process efficiencies/improvements currently in place.

The Town has recently implemented an electronic time and attendance system, currently in place for all departments except public safety and the schools. This allows direct, timely, straight-forward electronic capture of time worked and maintenance of accrual information. Gathering time directly from employees electronically can more likely assure accurate time reporting and payroll expense. Current plans by the Town Accountant/School Business Manager are to extend the system to the school administrative staff.

A high (95%) percentage of employees are using direct deposit. Direct deposit advices are not printed and distributed but accessible on the Employee Self Service website. Employees can request/cancel time off via the Employee Self Service web site.

There is significant integration of data/systems as MS Govern and GEMS are from the same vendor (Harris). Integrated parcel related information, e.g. taxes, permits, inspections is in place.

The MIS Director has created and maintains detailed high quality (procedure narratives and color screen images) end user manuals (60+) for the software systems in use including the GEMS and MS Govern systems.

Electronic purchase requisitions are in use.

Assessing, Collection and Treasury processes and systems are up to date, including remote capture check deposit facilities.

Recommendation 9.1 Continue the progress made and press forward with full implementation of the time and attendance system across all departments, in addition to other ongoing initiatives.

Use of the same system in the School District will also eliminate the time consuming manual tracking of accrual information.

The Center encourages continued progress in integration of parcel based data across regulatory departments. Tablet access for field based employees is supported with the new version of MS Govern, the Center encourages moving in that direction.

Electronic purchase requisitions are in use but much of the process thereafter through payment is paper based. The Town should consider expanding use of electronic features that are available in the GEMS product e.g. scanning of documents, emailing or direct faxing of purchase orders and electronic access to status of approvals.

The Center encourages the continued maintenance of the quality end user manuals currently in place.

OTHER SYSTEM-RELATED OPPORTUNITIES FOR IMPROVEMENT/OBSERVATIONS

Loss of the well regarded and ten year experienced Assistant MIS Director (transferred to the School District) was the most frequently mentioned concern by departments. Replacement staff is now in place.

The Town should consider a Recreation System for online registration, payment and tracking of revenue vs. costs by program.

DPW is moving to a PeopleGIS solution for work orders and Facilities maintains a well documented manual and spreadsheet solution to track work requests and completions. The Center recommends a common solution for work orders that would also track time and material costs where appropriate.

DPW would like to obtain an electronic vehicle maintenance system to track the amount it spends on maintenance by piece of equipment and key vehicle data such as mileage and age, which is now a lengthy paper research process in preparation for replacement justification.

There appears to be no regularly scheduled training for application systems. The Center recommends sending selected staff to the GEMS/MS Govern end user annual conference to discuss use with other users and be updated on potential new features. This is important as Oxford is the only GEMS/MS Govern site in Massachusetts (with the larger customer base being in the mid-west).

RECOMMENDED APPROACH GOING FORWARD

Given the time required, ability to absorb the changes and fund the above recommendations, the Center recommends the following overall approach:

Short Term Actions (6 to 18 months)

- Establish the IT Steering Committee.
- Change the MIS Department organizational reporting and name.
- Develop a 2 - 3 year IT plan.
- Pursue collaboration between District and Town IT Departments in the area of networks and server support.
- Continue the roll out of Attendance Enterprise.

Longer Term Actions (funding required)

- Pursue an improved data backup/disaster recovery solution.
- Replace the voice system.
- Relocate the network switching equipment.
- Consider additional software needs/actions as stated in Key Finding 10.
- Consider Town/District IT organization consolidation.

The improved data backup/disaster recovery solution and replacement voice system may be good candidates for potential funding through the Community Compact Information Technology Grant Program.

ABOUT THE CENTER

The Edward J. Collins, Jr. Center for Public Management in the McCormack Graduate School of Policy and Global Studies at the University of Massachusetts Boston was established in 2008 to improve the efficiency and effectiveness of all levels of government. The Center is funded by the Commonwealth and through fees charged for its services.

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