Information Technology
Annual Report

For the year 2013

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Executive Summary

In December of 2012, City Council approved the funding for year one of a three year CTSP (Corporate Technology Strategic Plan). The following pillars are those that constitute the plan for leveraging the City's technology investment and corporate strategic goals:

      I.   Open Government Data/e-Government
     II.   IT Governance
    III.   IT Sustainability
    IV.   Service Delivery Standards

The overarching goal of the Corporate Technology Strategic Plan is to provide better service to the public through technology innovation. The three year plan is focussed on rebuilding the foundation of our information systems to enable full integration, for example, the digitization of City information. This will enhance service delivery and access to information to the public through multiple channels.

This Annual Report is the third such offering and most comprehensive report to date. Its intent is to provide a snapshot of current progress, indicate positive or negative trends within key performance areas, and introduce new concepts for future direction on investment and use of technology.

The report utilizes a number of baseline measures to support the performance ratings. The measures, detailed information concerning their application, and basic concepts have been included in the report. The sources of these standards are as follows:

- Industry Standards
- Municipal Comparators
- Best Practices
- Maturity Models
- Previous Ratings

Furthermore expanded detail on existing indicators provides deeper insight on progress for initiatives that support the goals of the CTSP and CSP (Corporate Strategic Plan). Some of the key changes are as follows:

- **Operations Framework:** The report introduces COBIT 5, a globally accepted IT governance framework that contains principles, practices, analytical tools, and models to help increase the trust-in and value-from information systems.

- **Total Cost of Ownership (TCO):** TCO is a vital concept in technology cost management, specifically in ICT (Information and Communication Technologies) cost management. TCO combines methodologies, models, and tools to help organizations better measure, manage, and reduce costs that improve the overall value of IT investments.

- **Application Management:** Defined as the ability to support strategic and business initiatives by focusing resources on key enterprise systems, this KPI has been expanded to include 7 sub-KPIs within this performance area.

The report has summarized departmental performance as a dashboard and scorecard. The scorecard compares past and current results and predicts future performance ratings. The dashboard includes 18 KPIs of which 17 were used in previous years and has trending based on historical performance. The dashboard utilizes the following performance model to indicate status:

- Red (Indicates performance below acceptable benchmarks)
- Yellow (Indicates 'caution' as performance is acceptable but still below standard benchmarks.)
- Green (Fully meeting or exceeding benchmarks)
- Trending indicators +(positive), -(negative), Blank(stable) are used when performance model colours have not changed.

Based on the results provided in the report's dashboard, the IT function at the City of Guelph must still be described as a "Solid Utility" (resource and cost centre). However, significant improvements have been made within the pillars of service delivery and governance. These support the transformation of the IT department from a Solid Utility to a Partner Player (Enabler of Technology), contributing to the success of all departments.

The results are summarized as follows:

➢ 6 Indicators have moved from a status of Red to Yellow.
➢ 10 indicators have remained in their same status but are trending in a positive direction
➢ 1 new indicator is trending in a positive direction
➢ 1 indicator is trending in a negative direction

These results are significant. The goal of the CTSP is to set the foundation on which new functionality, processes, and technology can be built. The strategies outlined in the CTSP for 2013 have been initiated to improve and/or reverse negative trends. Improvements to the IT model in the following foundational areas have added to capacity, sustainability, accountability, and service:

✓ Implementation of the IT governance framework.
✓ Development of Application Steering Committees and User Groups.
✓ Implementation of IT Hierarchy as defined in CTSP
✓ Acquisition of additional resourcing
✓ Development of more complete service standards
✓ Investigation of new technologies and their application
✓ New Project Intake procedures and reporting methods

The major projects scheduled for 2013 focused on discovery by documenting existing processes, defining new requirements, and outlining the path for change. These projects have provided an avenue for the business to provide direction to the IT Department and help it align itself with the growing needs of the organization. The following projects have been completed or initiated in 2013:

✓ H/R Process Assessment (Time and Attendance)
✓ AMANDA Functional Assessment
✓ WAM Functional Assessment
✓ CLASS Workplan
✓ GIS Technology Plan
✓ New Mobility Strategy
✓ Data Warehouse Workplan

While celebrating the successes of the past year, the Annual Report more importantly outlines upcoming initiatives and concepts that support Workplans for 2014. The following projects are scheduled to start in 2014:

Foundational:
➢ Information Management
➢ AMANDA Application Upgrade
➢ GIS Application Upgrade
➢ JDE Enterprise Upgrade
➢ CLASS upgrade

Process
➢ Resource and Capacity Planning
➢ Customer Service Business & Technology Plan

Transformational
 ➢ Mobility Project
 ➢ Data Warehouse/Business Intelligence
 ➢ Open Government –technology enablers

The Annual Report concludes by introducing a number of key concepts that speak to the efficient utilization of technology moving forward that include:

 ➢ Total Cost of Ownership (TCO)
 ➢ Bring Your Own Device (BYOD)
 ➢ Cloud Computing

These concepts and many more are key to the success of the organization. The need to produce more results with fewer resources is a never-ending challenge. These initiatives represent just a sampling of new and innovative concepts being investigated by IT.

The results from 2013 are more than promising. The significant gains made in all areas supporting the four pillars clearly indicate the commitments of the department to partner with the business, introduce new technology, and enable outstanding success and efficiency throughout the organization.

Introduction

Vision

"To transform the Information Technology Department from a Solid Utility to a Partner Player aligned with the business needs of the Organization."

Increasing Costs and/or Resources

Partner player

Trusted supplier

Solid utility
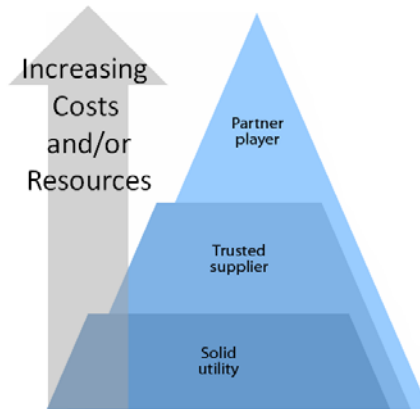
IT is integral to how we do business: IT organization is expected to closely partner with the business to help identify, plan and deliver significant business transformation initiatives - plus be a trusted supplier.

IT delivers critical functionality and services: IT organization is expected to deliver application projects on time and on budget, based upon the operating units requirements and priorities - plus be a solid utility.

Keep the lights on: The IT organization is expected to provide cost effective-dial tone reliability with transparent costs.

To understand the scope and complexity of a modern day "IT Partner Player", we have provided a defacto governance model based on *COBIT® 5 provided by InfoTech. The objective of IT is to manage the department modeled around a World Class Operations Framework.

World Class Operations Framework

Strategy & Governance

IT Management & Policies | IT Strategy

IT Governance | Enterprise Architecture

INFO-TECH research group

World Class Operations

Application	Infrastructure	Operations

Value & Performance

	Application	Infrastructure	Operations		**Innovation**
Benefits Delivery	Requirements Definition	Availability & Capacity	Management Operations		Technology Innovation
Performance Measurement	Solution Identification & Build	Management	Change Management		Business Process Innovation
Stakeholder Relations	Application Maintenance	Asset Management	Incident Management		Product Innovation
	Application Portfolio Rationalization & Mgmt.	Configuration Management	Problem Management		

	Data Management	Service Delivery	Security & Risk		

Cost & Quality

	Data Management	Service Delivery	Security & Risk		**Compliance**
Cost & Budgeting	Data Architecture & Design	Service Desk	Risk Management		Manage Business Process
Resource Planning	Data Quality	Service Management	Security Management		Internal Controls
Manage Quality	Information Lifecycle Planning		DR & Business Continuity		External Compliance
	Data Analysis				

Organization & People

Organization Design

Leadership, Culture & Values

Manage Human Resources

Manage Knowledge

Vendor & Project

Vendor Management

Manage Project Portfolio

Manage Programs & Projects

Organizational Change Management

*COBIT®5: Control Objectives for Information and Related Technologies

Mission Statement

"Enabling City departments to provide better service to the public through technology service and innovation"

Mission Goals

➢ Provide reliable, secure, and easily accessible IT systems to meet the business needs of the organization
➢ Develop and support IT programs, project management, and service excellence
➢ Partner with the organization to define and enable innovative business capabilities
➢ Deliver exceptional business value through technology leadership

Organizational Structure

The following represents the organizational structure of the Information Technology Department effective December, 2013.
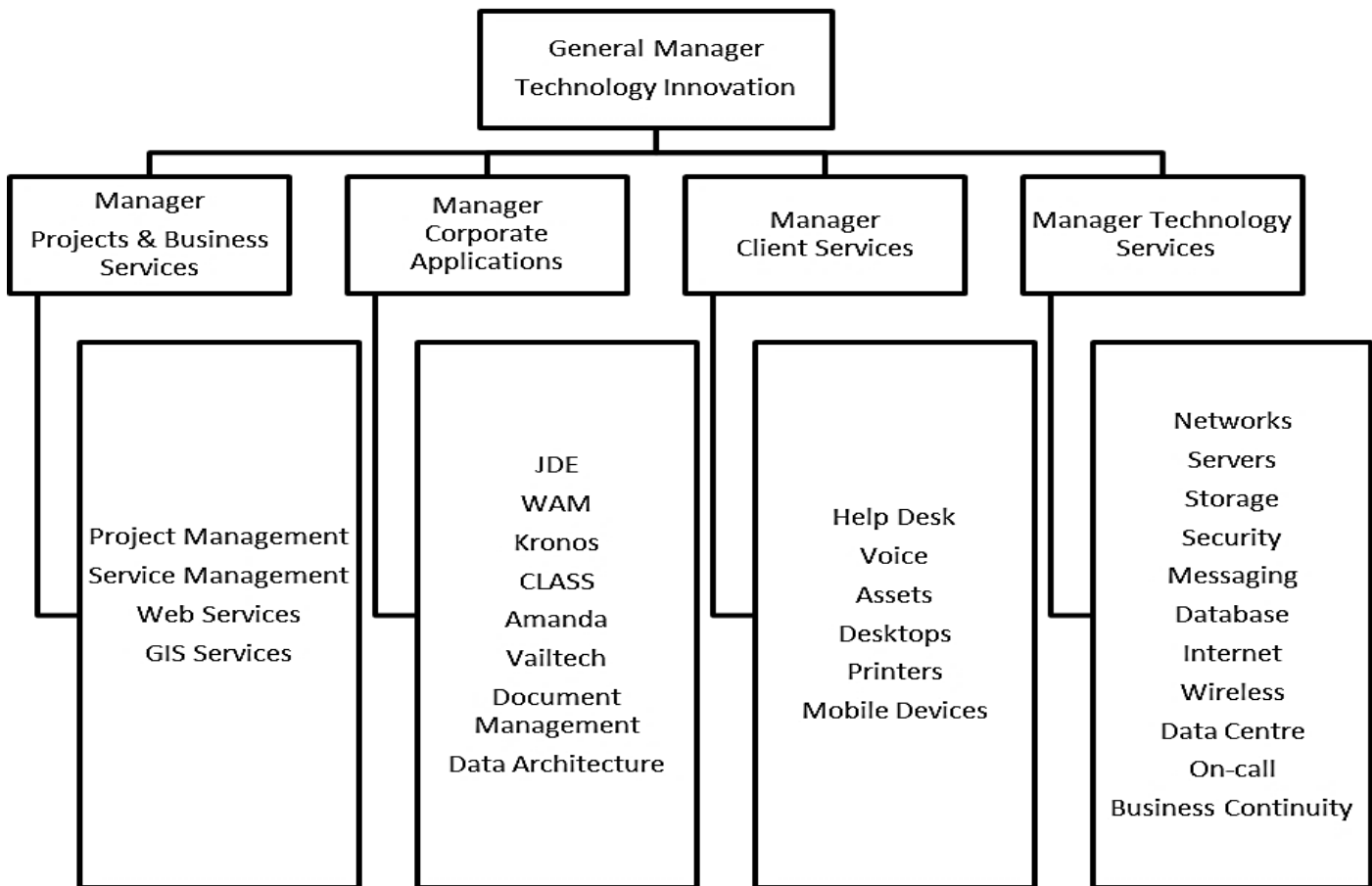
Key Initiative Summary for 2013

This table is a summary of the department's key initiatives throughout the year 2013. It consolidates the 2013 CTSP initiatives with future plans set in the 2012 IT Annual Report, resulting in a high level representation of the 2013 IT Workplan.

CTSP Initiatives	Status	Comments
Governance Framework	Completed	The Technical Standards Team was established, completing the framework
Reorganize IT Department	Completed	IT Management and four divisions are in place
Enhance Help Desk	Completed	Incident Management process was improved
HR Payroll and WAM Assessments	Completed	Final reports ready in early 2014
Kronos Time Management	Completed	Electronic paystubs implemented in April 2013
Mobile Computing Strategy	Completed	RFP created and several responses received, Mobile Device pilots to continue in 2014
GIS Plan	On Schedule	Project end date is July 2014
Open Government Plan	On Schedule	Transferred project ownership to City Clerk's Office
Information Management Plan	Planning	Open Government Action Plan will provide input to the Information Management Plan
Data Warehouse Plan	Planning	Data Architect hired in late 2013, infrastructure planning is underway
Collaboration Tools	On Hold	Lack of resources and budget, completed cost/functionality comparison
Initiatives from 2012 Annual Report	Status	Comments
Business Continuity Plan	On schedule	Draft plan completed (Phase 1), continue with implementation (Phase 2) in 2014
Joint Wireless Phase 1	On Schedule	Project end date is December 2014
ITIL Change Management Process	On Hold	This will enhance service delivery, CTSP funding is scheduled for 2015
Email and File Archiving	On Hold	Infrastructure installed, require Electronic Data Retention Policy, continue in 2014
Content Indexing and Search	On Hold	Infrastructure installed, delayed due to lack of resources, review in 2014
Major Initiatives from 2013 IT Workplan	Status	Comments
Voice Upgrade (City's Phone System)	On Schedule	Project end date is June 2014
Guelph Hydro Phone System	On Schedule	Project end date is March 2014
Active Directory Upgrade	On Schedule	Analysis and Design (Phase 1) complete, Implementation end date is March 2014
End-Point Security	Cancelled	Redirected funds to Business Continuity Plan, re-visit in 2014

Information Technology Dashboard and Scorecard

Information Technology Dashboard

As illustrated below by the Information Technology Dashboard, several KPIs (Key Performance Indicators) have been aligned into four categories to illustrate progress toward achieving the performance goals of the department. Items in the dashboard marked by GREEN indicate that the City of Guelph is reporting metrics that compare positively to benchmarks. YELLOW and RED indicate items that are not currently in line with benchmarks. PLUS and MINUS signs indicate the direction that these indicators are trending. For example, Workforce Competency is currently yellow and performance is trending in a positive direction. The absence of a trend sign means there is no change in performance over the previous year.

Information Technology Dashboard 2013

IT Performance 2011   IT Performance 2012   IT Performance 2013

IT Governance	2011	2012	2013	Service Delivery	2011	2012	2013
Strategic Alignment	yellow	yellow +	yellow +	Customer Satisfaction	yellow	yellow +	yellow +
Business Value Delivery	yellow	yellow	yellow +	Customer Partnership	yellow	yellow	yellow +
Risk Management	red	yellow +	yellow	Business Process Support	red	yellow +	yellow
Resource Management	red	yellow +	yellow	Infrastructure Availability	green	green	green
Performance Measurement	red	red	red				

IT Sustainability	2011	2012	2013	IT Innovation & Learning	2011	2012	2013
Applications Management	red	red	yellow	Workforce Competency	yellow	yellow	yellow +
Project Performance	red –	yellow +	yellow	Advanced Technology Use	yellow	yellow	yellow
Financial Management	yellow	yellow +	yellow +	Methodology Currency	yellow	yellow	yellow
Compliance	red	red	yellow	Employee Retention	yellow +	yellow +	red
Total Cost of Ownership (new KPI in 2013)		yellow					

Information Technology Scorecard

Governance

Measure	2013 Target	2013 Result	2014 Target
Strategic Alignment	Maturity Level 3	• Maintained Level 2 (Committed Process), progress made in IT Governance and Project/Portfolio Management, CTSP is now a corporate priority	Maturity Level 3
Business Value Delivery	Maturity Level 2	• Achieved Level 2 (Basic), Business Value is evident but not tracked, require KPIs for both IT and business units	Maturity Level 3
Risk Management	Maturity Level 2	• Maintained Level 2 (Competent), created a new IT Business Continuity Plan, require an IT Risk Policy and Process	Maturity Level 3
Resource Management	Maturity Level 2	• Maintained Level 1 (Work Visibility), additional FTE's hired, healthy resource distribution, require Resource Approval Workflow to move to next level	Maturity Level 2
Performance Measurement	Maturity Level 2	• Maintained Level 1 (Ad-hoc), limited progress, require the merging of IT and business KPIs	Maturity Level 2

Service Delivery

Measure	2013 Target	2013 Result	2014 Target
Customer Satisfaction	80%	• Approached target, 78% of support calls completed within target times, FCR (First Call Resolution), requires more surveys and feedback to better understand clients	80%
Customer Partnership	Maturity Level 2	• Maintained Level 2 (Standardizing) trending positive by the formation of user groups and steering committees, require a Customer Partnership plan,	Maturity Level 2
Business Process Support	Maturity Level 2	• Maintained Level 2 (Managed), requires identification of process owners and IT/Business collaboration	Maturity Level 2
Infrastructure Availability	99.90%	• Achieved overall availability of 99.85%, began monitoring at the service level in addition to the network	99.90%

Sustainability

Measure	2013 Target	2013 Result	2014 Target
Applications Management	Maturity Level 2	• Achieved target of Level 2 (Developing), completed major application assessments, reorganized Corporate Applications Division, plan to follow CTSP recommendations	Maturity Level 3
Project Performance	50% completion of all projects	• The target did not differentiate between projects on the workplan and those that came up throughout the year. Moving forward the IT PMO will commit to adhering to the ITGC communicated workplan	75% adherence to workplan
Compliance	Maturity Level 2	• Achieved target of Level 2 (Repeatable), requires a Compliance Manager to enforce standardization/unified data protection policies across infrastructure & endpoints	Maturity Level 3
Total Cost of Ownership	Not a KPI in previous years	• This is a new KPI and when we assessed the IT Department recently we are at Level 2 out of 5, where most calculations are basic and manually performed	Maturity Level 3

IT Innovation & Learning

Measure	2013 Target	2013 Result	2014 Target
Workforce Competency	Maturity Level 3	• Maintained Level 3 (Defined), identified skills gap to support business needs, no P-CMM (People Capability Maturity Model) assessment performed	Maturity Level 3
Advanced Technology Use	Maturity Level 4	• No maturity model used this year, plan to replace with "Adoption Rate" as the KPI for 2014, internal infrastructure is very advanced but slow adoption of "Big Picture" opportunities	Maintained current rating
Methodology Currency	100% compliance	• Progress made on further implementation of ITIL, PMBOK, and COBIT. Require more focus on CMMI, SDLC, and Six Sigma(quality) methodologies	100% compliance

Business & Service Excellence

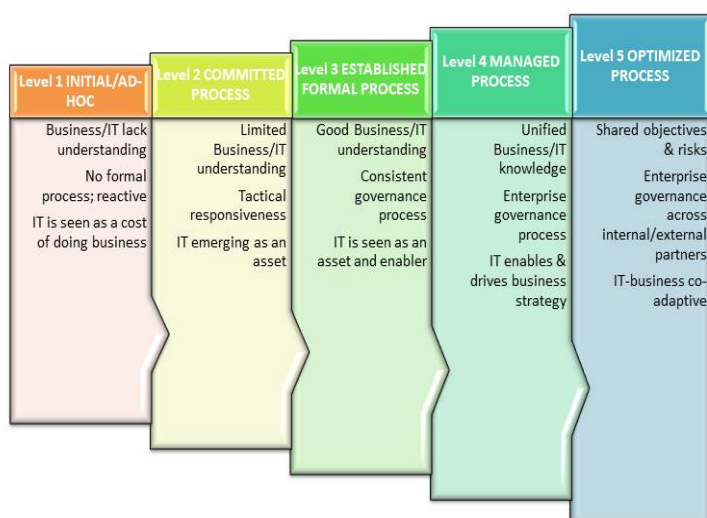| Measure	2013 Target	2013 Result	2014 Target
Financial Management Against other Cities	Match OMBI spending	• Achieved the target of matching OMBI, IT operating and capital spending as a percentage of total City budget was increased from 1.7% to 1.8% which is very close to OMBI figures spending	Match OMBI
Financial Management Against IT Industry	Increase investment in IT	• Very positive results when compared against 40 peer organizations, capital and operating investments were increased in 2013 due to CTSP funding approval	increase investment in IT
Employee Retention	5% turnover	• Did not meet target due to 16.7% turnover rate in IT Department	5% turnover

Detailed Analysis

Category: IT Governance

KPI: Strategic Alignment

The IT Department remains at Level 2 (Committed Process) for the strategic alignment performance indicator. The maturity model used is a more accurate reflection of IT's current state as an "Emerging Asset". The potential is there however more communication and coordination is required between the organization's goals and those of the department. Looking at the four Business-IT Alignment domains, Project/Portfolio Management and Enterprise Governance have been addressed; however Knowledge Transfer and Communications require considerable improvement. In 2014, IT will coordinate a CIO/CAO Alignment survey to begin a structured process that moves strategic alignment to a higher level.

Strategic Alignment Maturity Summary

Level 1 INITIAL/AD-HOC	Level 2 COMMITTED PROCESS	Level 3 ESTABLISHED FORMAL PROCESS	Level 4 MANAGED PROCESS	Level 5 OPTIMIZED PROCESS
Business/IT lack understanding	Limited Business/IT understanding	Good Business/IT understanding	Unified Business/IT knowledge	Shared objectives & risks
No formal process; reactive	Tactical responsiveness	Consistent governance process	Enterprise governance process	Enterprise governance across internal/external partners
IT is seen as a cost of doing business	IT emerging as an asset	IT is seen as an asset and enabler	IT enables & drives business strategy	IT-business co-adaptive

Business - IT Alignment Domains

*Source: Dr. Jerry N. Luftman, Global Institute for IT Management

KPI: Business Value Delivery

The IT Department is at maturity level 2 (Basic) when benchmarked against Martin Curley's framework. This model has 5 levels compared to Gartner's® model which has only 3 levels. By integrating four IT capability maturity frameworks, Curley has made it much easier to determine where your IT organization is rated when it comes to adding value to the business. To become a "Partner Player" aligned with the business, the department must move to at least Level 4 (Advanced) and possibly Level 5 (Optimizing) over the coming years. TCO (Total Cost of Ownership) can be demonstrated with existing financial data; however comparisons to other options are essential and lacking. The largest IT project in 2014 will be the implementation of Transit's Technology Plan. Success will require the full battery of IT resources like infrastructure, project management, and application integration. If internal costs are tracked, and less than an externally hosted solution, the business value of IT can be quantified.

Maturity Levels	Major Strategies			
	Managing the IT Budget	Managing the IT Capability	Managing IT for Business Value	Managing IT Like a Business
5. Optimizing	Sustainable Economic Model	Corporate Core Competency	Optimized Value	Value Centre
4. Advanced	Expanded Funding Options	Strategic Business Partner	Options and Portfolio Management	Customer/ Service Focus
3. Intermediate	Systemic Cost Reduction	Technology Expert	ROI & Business Case	Customer/ Service Orientation
2. Basic	Predictable Performance	Technology Supplier	TCO	Technology/ Product Focus
1. Initial	Beginning			

*Source: Martin Curley, Intel/National University of Ireland

KPI: Risk Management

The IT Department is at the "Competent" level of maturity after running the detailed level questionnaire provided by IACCM (International Association for Contract & Commercial Management). This model has 4 levels of maturity compared to Gartner's 5 levels. Project risk is managed within project plans only and security risks are assessed at the divisional level. There is no IT Risk Policy or processes in place to formally assess the risks associated with the business and IT. The CTSP had outlined plans to address this gap but no progress was made in 2013. In 2014, IT Management needs to take a formal approach driven and funded by the CTSP to move to a higher level. In particular an IT Risk Manager role needs to be assigned to ensure progress for this KPI.

	Level of Maturity			
Attribute:	**Novice**	**Competent**	**Proficient**	**Expert**
CULTURE	Risk averse Lacking awareness / understanding Lacking strategy Lacking commitment	Patchy, inconsistent Some understanding / awareness Cautious approach, reactive	Prepared to take appropriate risks Good understanding of benefits across most of organisation Strategy mapped into process implementation	Proactive Intuitive understanding Belief, full commitment to be the best
PROCESS	Where present tend to be inefficient informal, ad-hoc	Inconsistent No learning from experience Standard approach / generic.	Consistent approach but scalable Tailored to specific needs	Adaptive Proactively Developed Fit for purpose Best of Breed
EXPERIENCE	None; nothing relevant	Basic competence	Proficient Formal qualifications	Extensive experience Leading qualifications Externally recognised high competence
APPLICATION	Not Used	Inconsistent – major projects only Process driven Inadequately resourced	Consistently applied Adequately resourced	Proactively resourced Across entire business Flexible Measured for improvement

*Source: IACCM Business Risk Management Working Group

KPI: Resource Management

Using the RMMM (Resource Management Maturity Model) from Instantis®, a rating of Level 1 out of 5 was achieved in 2013. Reports are not available for IT Management to determine the individual workload of staff, especially for operational tasks. There is also no RAW (Resource Approval Workflow) process which means staff take on assignments or project tasks without formal management approval or tracking. To move to Level 2, IT Management must gain better visibility into their staff's current workload by adopting a basic resource management model. In 2014 IT will upgrade to the latest version of their Project &Portfolio Management software which provides resource approval workflow.

Resource Management Maturity Model	Level 1 Work Visibility	Level 2 Controlled Assignment	Level 3 Governed Capacity	Level 4 Schedule-Driven Availability	Level 5 Granular Management
Project Roles	Resources have differentiated roles	Resources have differentiated roles; roles have properties for cost rate etc.	Resources have differentiated roles, possible inclusion of skills	Resources have differentiated roles and skills	Role to activity typing with RACI model; Training, certification tracking
Resource Cost	Planned cost at project level; Actual cost from timesheets at project level	Planned cost at project and time level; Actual cost from timesheets at project level	Also, plan vs. actual comparison, budget constraints	Planned cost at phase level; Actual cost from timesheets at phase level; EVM (Earned Value Management)	Planned cost at granular activity level; Actual cost from timesheets at activity level; Full EVM
Resource Approval	None, ad-hoc, first come first served; line manager only	Resource Approval Workflow (RAW) at project level; approval based on	RAW at project level, possibly multiple per project; approval based	RAW at phase level	RAW at all activity levels

		availability and importance	on priorities		
Capacity Planning	None	Balanced utilization across resources	Resolve availability constraints by delaying, cancelling proposals, projects based on priority	Project phase schedules drive more detailed resource availability views; capacity planning can delay projects	Resolve availability constraints by delay/shift at activity level with PM involvement
Governance	*de facto* by line manager	Resource or line manager; mostly First In First Out demand management	Governance body Prioritizes portfolio, Oversees capacity planning/demand mgmt.	Governance body actions rely on up-to-date project phase schedule information	Governance body actions rely on up-to-date full project schedule information
Business Value	Who is working on what; Overutilization made visible	Controlled and balanced resource utilization, availability.	Higher priority projects resourced; resourcing responsive to changing business needs	Enhanced ability to resource excess demand with existing capacity	Maximized ability to resource excess demand with existing capacity

*Source: Instantis® - Premier provider of Project Portfolio Management Software as a Service

Staffing levels were increased in 2013 with the addition of 4 FTEs (Full Time Equivalent) which were approved by Council during the 2013 budget process. Two Corporate Application Analysts, one Data Architect, and one Project Manager for ERP (Enterprise Resource Planning) were subsequently hired. These FTE's will bolster the department's ability for a successful implementation of the CTSP.

IT Staff (FTE)

2007	2008	2009	2010	2011	2012	2013
27	27	29	27	28	28	32
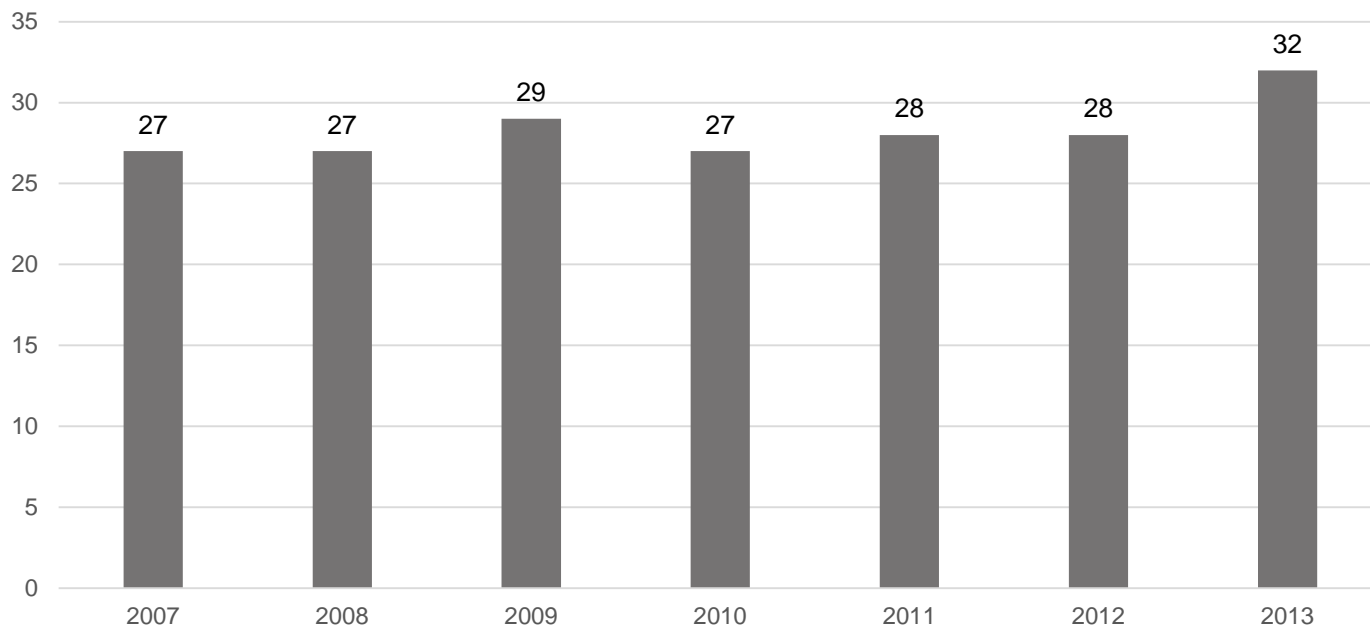
Growth of IT staff over last 7 years   *Source: Internal – IT Management

Resource Distribution is demonstrated in the next graph as the allocation of IT staff time on support calls by service area. In 2013 there was a more even distribution with Corporate & Human Resources as the highest number of calls. This is a healthy indication that service areas are utilizing the Help Desk for support.

## Resource Distribution
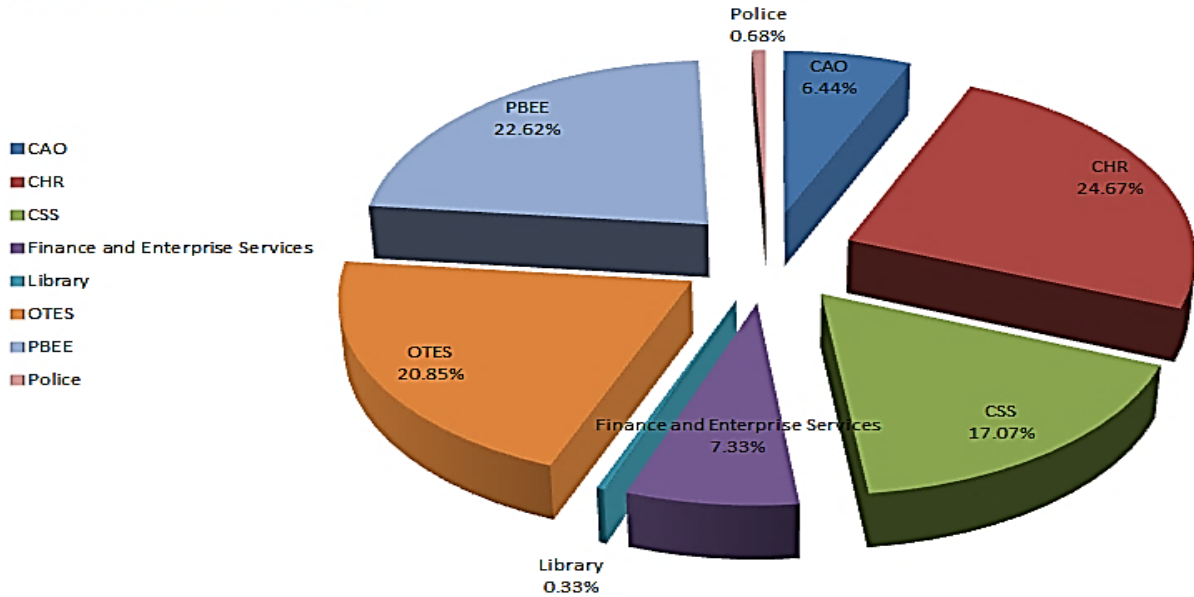
IT Resource Usage by Service Area
*Source: Internal HEAT Incident Management System

KPI: Performance Measurement

The IT Department is still in the early stages of performance measurement and is rated at Level 1 (Ad-hoc) using SmartKPI's maturity model. This level is characterized by piecemeal tracking of performance measures rather than an integrated and comprehensive approach. Only a few KPIs (Key Performance Indicators) were tracked outside of the IT Annual Report. The CTSP did identify an initiative to define key business KPIs however no progress was made in 2013. The department continues to formally track only "Utility Provider" statistics like the IT Service Desk and Infrastructure Availability. In 2014, IT needs to work with the whole organization to define appropriate business KPIs, which can be visualized for easy comprehension by key business leaders.
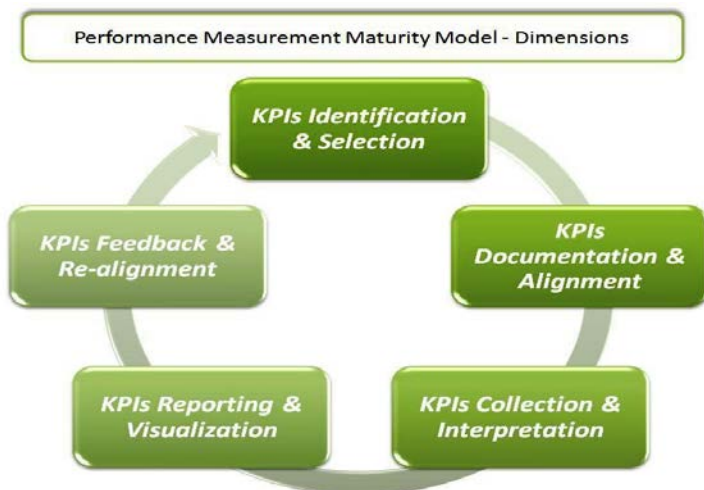
When using the model provided by SmarkKPIs we are at level 1 (Ad-hoc)
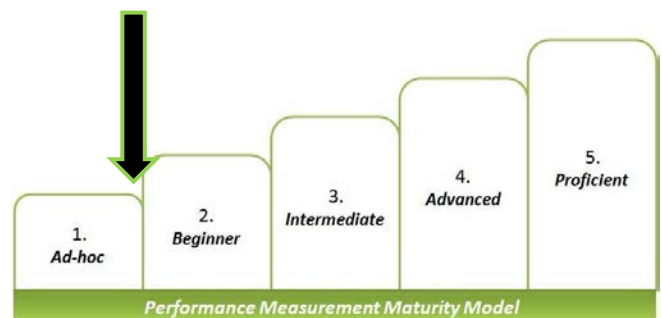
*Source: The KPI Institute

Category: Service Delivery

KPI: Customer Satisfaction

This table breaks down assignments by division and indicates that IT is not meeting the industry standard of 85% resolved on time. Overall the departmental statistic of 77.65% warrants a rating in the middle (Yellow) range of the performance scale and is trending in a positive direction, which is a modest improvement over 2012.

Summary for 2013	Assignments Resolved	Resolved on Time (Target 85%)
IT Department	14202	77.65%

*Source: Internal HEAT Incident Management System

The percentage of IT Service Desk calls dropped was 3 times better than the industry average of 10%. The FCR (First Call Resolution) statistic identifies the percentage of Service Desk calls that are solved on first contact with the client. The department did not meet the target of 50%. In 2014, IT needs to provision Help Desk staff with more tools and privileges so they can increase their ability to close calls without assistance from other IT resources.

2499 Service Desk Statistics for 2013		
Total Issues Handled (phone calls, Emails)	Percentage of Calls Dropped (Target <10%)	FCR (First Call Resolution) Target 50%
14202	3.32%	33.78%

Source: Internal HEAT Incident Management System

In 2014, IT will engage its clients at a deeper level with two more satisfaction surveys. The first one (End User Satisfaction Survey) will be targeted at the staff level and will include feedback from the service and application level. The second one (CIO Business Vision Benchmarking) will be targeted at the business leaders to determine how dependent they are on IT, and if IT is meeting those needs.

KPI: Customer Partnership

The IT Department was rated at Level 2 (Standardising) using the Public Service ICT Partnership Maturity Model. This framework aligns closer to public sector organizations than the model used in last year's report. In 2013 there were numerous meetings between IT Management and General Managers throughout the City. The formation of application user groups and steering committees also enhanced partner relationships. To summarize and move to an upper level, the IT Department must consolidate all these activities into a Customer Partnership Plan, which is inclusive of all the processes in the 5 levels. The plan needs to be inclusive of all business units within the City that depend on IT services. It should also cover partnerships with external providers like managed services, equipment suppliers, and IT staffing providers.

Public Service ICT Partnership Maturity Model

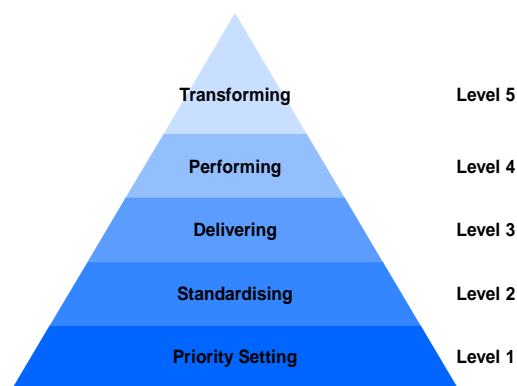Level 5: Continually improved based on an evidence-based understanding of its needs & resources.

Level 4: Establish quantitative objectives for managing and monitoring the quality and performance of partnership activities

Level 3: Tailor from the partnership's standard processes to a particular activity. This includes creating the processes, policies & resources specific to that field.

Level 2: Plan and deliver according to the partnership's objectives. This includes institutionalising, resourcing and monitoring its processes, groups and activities.

Level 1: Define the objectives of the partnership and the processes that enable the delivery of the activities required to meet them. (Current Level)
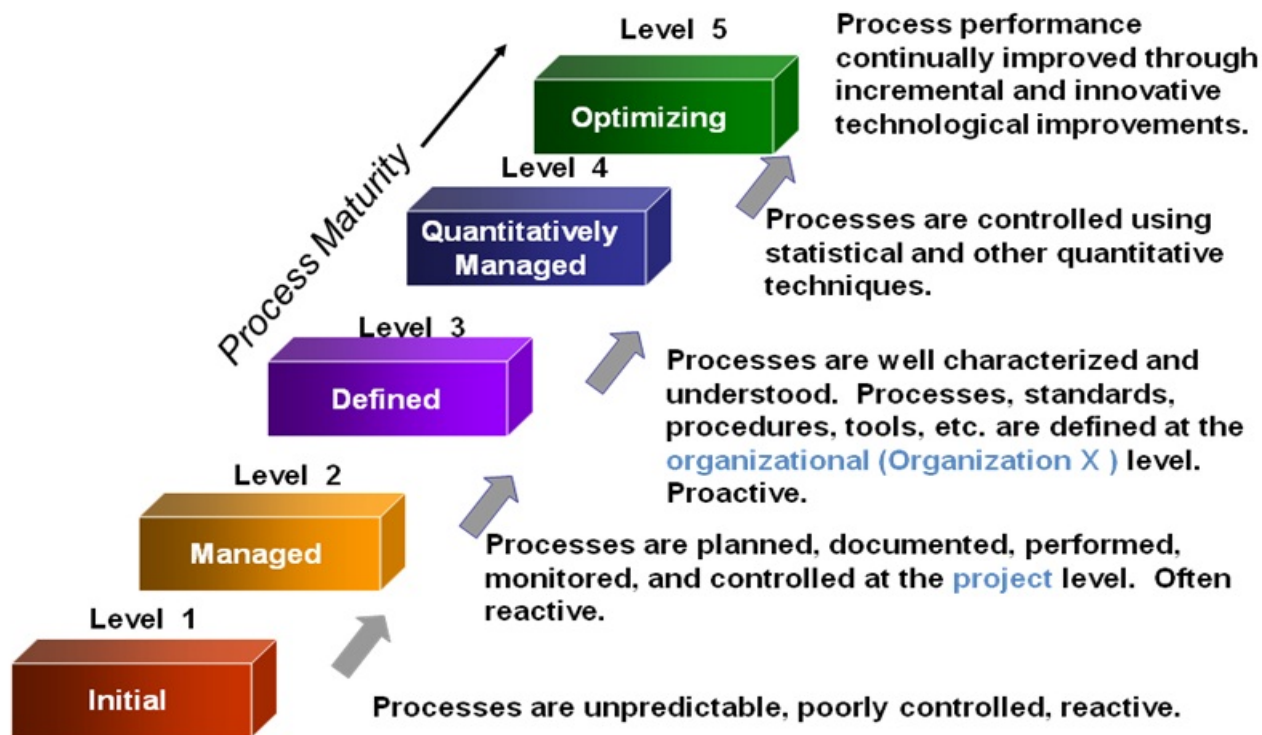
Transforming	Level 5
Performing	Level 4
Delivering	Level 3
Standardising	Level 2
Priority Setting	Level 1

*Source: Kent Public Service

KPI: Business Process Support
The IT Department was assessed at Level 2 (Managed) which translates into a dashboard colour of Yellow for Business Process Support using an evaluation toolkit provided by Infotech. This year we are using a less complex model than Gartner's and demonstrating our progress using the CMMI (Capability Maturity Model Integration) model. The CMMI Institute characterizes Level 2 as having processes that are proactive at the project level but remain reactive at the organizational level. Progress was made in 2013 by performing assessments for Amanda and HR/Payroll initiatives that analysed "As is", "To be" and "How to get there". To move to the next level there needs to be more collaboration between IT and the entire organization when analyzing and creating business processes. Identifying process owners would be the first step to balance process excellence with functional excellence needs.

Level 5
Optimizing
Process performance continually improved through incremental and innovative technological improvements.

Level 4
Quantitatively Managed
Processes are controlled using statistical and other quantitative techniques.

Level 3
Defined
Processes are well characterized and understood. Processes, standards, procedures, tools, etc. are defined at the organizational (Organization X) level. Proactive.

Level 2
Managed
Processes are planned, documented, performed, monitored, and controlled at the project level. Often reactive.

Level 1
Initial
Processes are unpredictable, poorly controlled, reactive.

Process Maturity

*Source: CMMI Institute/Carnegie Mellon University

KPI: Infrastructure Availability
In 2013 we broke down the Infrastructure Availability KPI into two main categories, Networks and Services. This allows us to display how well our network communications is managed compared to our servers/applications infrastructure. To put availability into context, a table is provided.

Note: Availability of networks and services is typically measured in terms of 9's.

| Uptime	Termed As	Amount of Downtime per Year
99%	Two nines	3.65 days
99.9% (City's Target)	Three nines	8.76 hours
99.99%	Four nines	52.5 minutes
99.999%	Five nines	5.26 minutes

Networks Availability: The availability of the City's network infrastructure remained very high at an average of 99.81% in 2013, approaching our target of 99.9%. The majority of downtime was due to external factors like fibre cuts during construction and service provider outages. We have learned through experience that City-owned fibre can be controlled and maintained as well or better than network service provider fibre. In 2014 IT will continue the trend to increase the number of site offices that connect with City-owned fibre. The two main advantages are monthly bandwidth cost savings and the ability to increase bandwidth to speeds of 10Gbps (10 Giga-bits per second). Since the City also owns and can share Traffic ducts with IT, there is a golden opportunity to connect our two data centres with high speed fibre.

Networks Availability

Location	Availability
Centennial Arena	
Centennial Pool	
City Hall	
Civic Museum	
Clair Road Emergency Services Centre	
Court Services	
Court Services Annex	
Eastview Landfill	
EMS - Arthur	
EMS - Elmira Road, Guelph	
EMS - Fergus	
EMS - Harriston	
EMS - Hillsburgh	
EMS - Mount Forest	
EMS - Rockwood	
Evergreen Seniors Centre	
Exhibition Arena	
Farmer's Market	
Fire – Elizabeth Street	
Fire – Speedvale Ave	
Fire – Stone Road	
Fire Station Main	
Guelph Hydro	
Guelph Police Service	
John McRae House	
Market Square Pavillion	
Operations (Public Works)	
Operations and EMS 65 Delhi Street	
Parkades (East and West)	
River Run Centre	
Riverside Park,	
Sleeman Centre	
Transit - Main	
Transit Terminal (Downtown)	
Victoria Recreation Centre	
Waste Resource Innovation Centre	
Wastewater Services	
Waterworks	
West End Recreation Centre/Fire Stn D	

Horizontal axis: 96, 96.5, 97, 97.5, 98, 98.5, 99, 99.5, 100

*Source: Internal – Solarwinds Orion® Network Performance Monitor

Server/Service Availability: This new category demonstrates how well we manage our production servers and the services that run on them. They are located at the City Hall and Clair Road data centres. Server availability average was 99.9% in 2013 compared to 99.81% in 2012. Fault tolerant hardware, proactive monitoring, and sound data centre management continue to be key to this success.

■ Average Service Availability
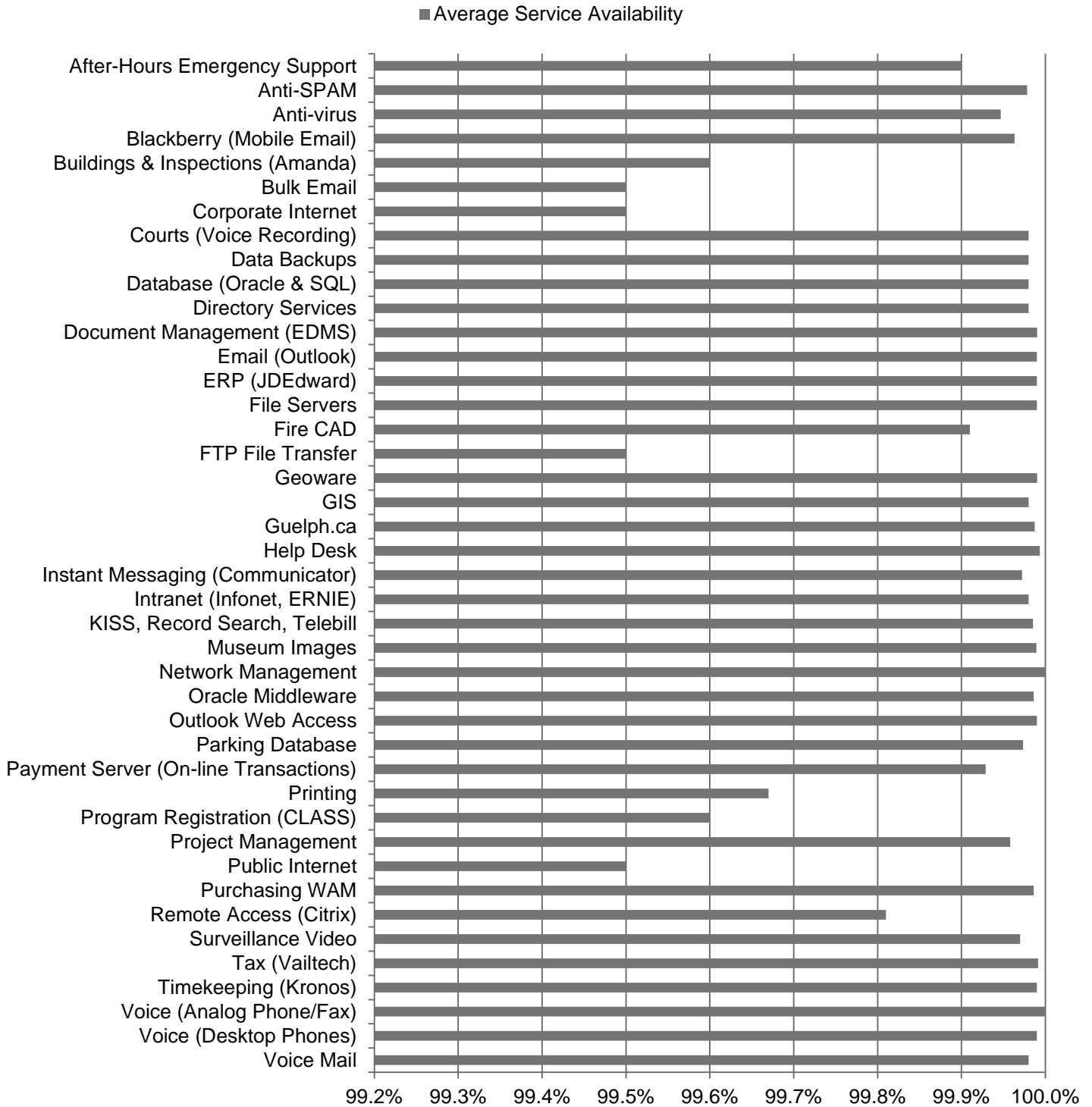
*Source: Internal – Solarwinds Orion® Server and Applications Monitor

Category: IT Sustainability

KPI: Applications Management
Application Management is fast becoming the primary venue where technology can enable the success of departmental and organizational goals. The ability to focus resources on strategic initiatives that provide business value is crucial to the success of Information Technology and the strategic initiatives of the Corporation as a whole. Creating value requires the following 7 key areas (sub-KPIs) to be included in any Application Management Strategy as identified in the 2012 CTSP (Corporate Technology Strategic Plan).

Application and Technology Governance   Business Process Assessment/Improvement and Collaboration

Change Request Management   Project Management   Application Lifecycle Management

Financial/Budget Management   Integration/Data Governance

Application Management Sub-KPIs

Application and Technology Governance: All initiatives for Application and Technology governance were completed in 2013. The Establishment of the ITGC provided the overall review of Technology initiative. The creation of the AMANDA, CLASS, ERP, GIS and WAM steering committees all for setting of priorities and determining direction at an application level. In addition, the creation of user groups associated with each application strengthens decision making by informing steering committees on issues, opportunities and areas for improvement. This sub-KPI is rated as green.

Business Process Assessment/Improvement and Collaboration: The targets outlines in the CTSP for 2013 focused on the requirement assessments and Fit-Gap analysis of the major enterprise applications in use at the City. Some challenges were experienced in resourcing as the hiring of the Manager of Corporate Applications took longer than expected and there was an unforeseen departure of the Manager, Projects and Business Services. It should also be noted, that the timelines outlined in the CTSP were determined without consultation with the business areas. New timelines that reflected the capacity of both IT and the business areas have now been identified. Though not completed in 2013, all but one assessment had started, and those which were not completed had target dates of Q1 and Q2 of 2014. This sub-KPI is rated as yellow.

Change Request Management: A number of improvements have been made to the intake of request to modify current functionality available through the enterprise application. The intake process provides for scoping and ensures all requests are vetted through the appropriate steering committees and ITGC as required. It should be noted, the change request process though fully reviewed and approved, will undergo continuous review to guarantee if effectiveness to the business and IT. This sub-KPI is rated as yellow.
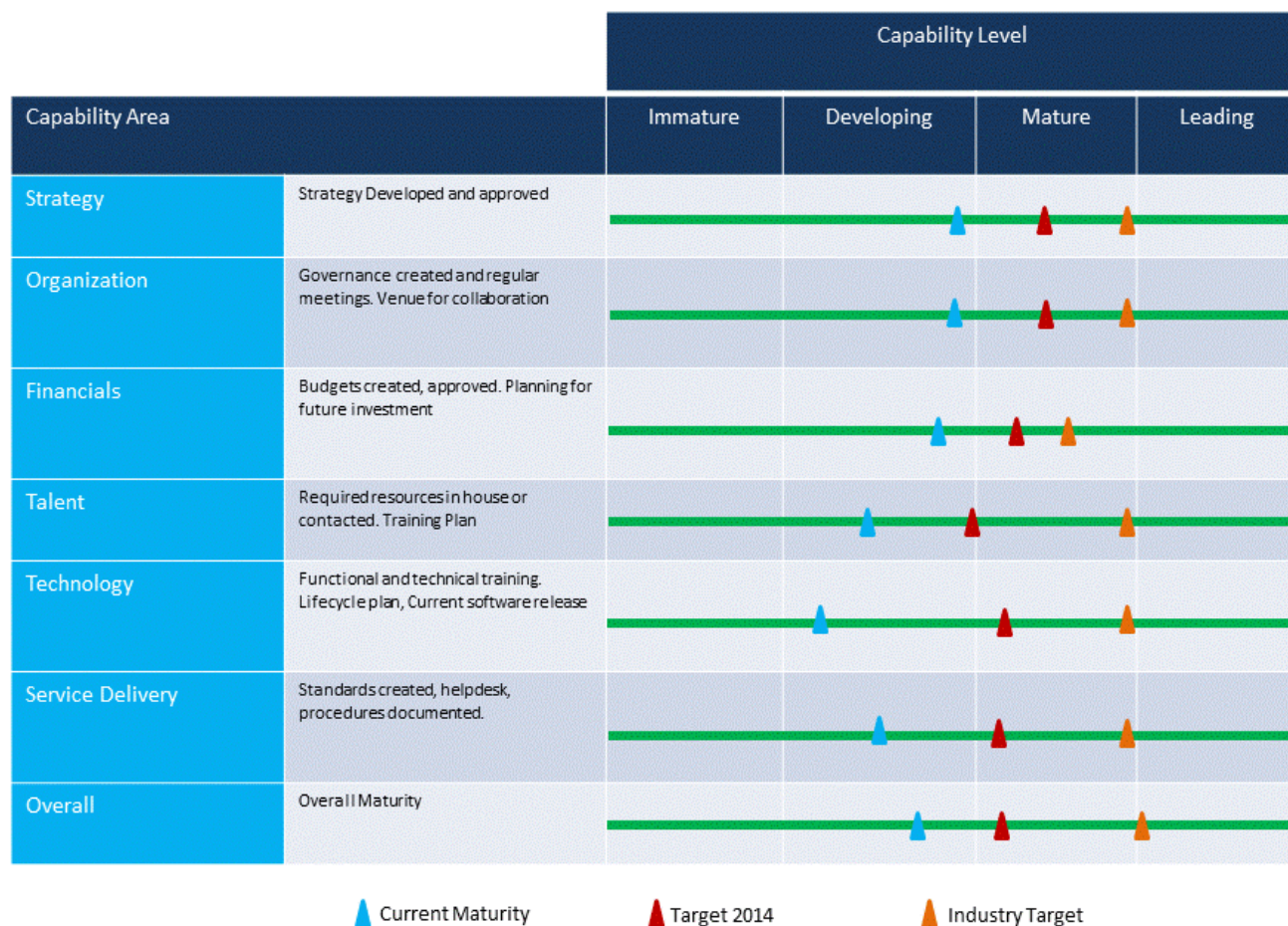
Project Management: New project management initiatives have been introduced to facilitate the tracking of project progress. These initiatives must be supported by additional measures that will be introduced in 2014 to allow for more detailed tracking and resource planning. This sub-KPI is rated as yellow.

Lifecycle Management: Lifecycle management continues to be an issue with all enterprise applications significantly behind their current release levels. Issues with support, functionality and the inability to utilize new technologies are direct results of this situation. The re-implementations of all enterprise software are targeted for 2014. Projects to upgrade all enterprise applications are either completed or in the planning stages with 4 of 5 scheduled to complete in 2014. The effect of poor lifecycle management on the day to day operations of the corporation is a critical issue. This sub-KPI is rated as red.

Financial/Budget Management: The CTSP recommended 3.4 million dollars be allocated to facilitate the implementation of the recommendations of this strategy. Changes to the total CTSP budget approved will be managed in 2014. This sub-KPI is rated as green.

Integration/Data Governance: A significant addition the enterprise environment is the development of a data warehouse application. This initiative will utilize the experience of the Corporate Data Architect hired in 2013. The data warehouse is a 3 year plan to assemble data from all enterprise system into a searchable repository. This project is currently on track, but, may experience some delays as it is influenced by the progress of other initiatives. This sub-KPI is rated as yellow.

Applications Management Overall Rating: Consolidation of the ratings for all 7 sub-KPI's results in a maturity level of Level 2 "Developing" when assessed against the following "Applications Maturity Model". This translates into a dashboard rating of Yellow.

Capability Area		Capability Level			
		Immature	Developing	Mature	Leading
Strategy	Strategy Developed and approved				
Organization	Governance created and regular meetings. Venue for collaboration				
Financials	Budgets created, approved. Planning for future investment				
Talent	Required resources in house or contacted. Training Plan				
Technology	Functional and technical training. Lifecycle plan, Current software release				
Service Delivery	Standards created, helpdesk, procedures documented.				
Overall	Overall Maturity				

▲ Current Maturity   ▲ Target 2014   ▲ Industry Target

Please Note: Areas recently addressed will be allocated to developing as additional adjustments may be required

*Source: Deloitte South Africa

KPI: Project Performance

In 2013, the IT PMO continued to refine its business area processes. These included the move to one intake form for Business Service Requests and Project Requests. This allows for a single point of contact from the business and aligns the PMO with ITIL best practices. In addition the PMO has fully adopted the Project Management Institute's PMBOK® methodology, ensuring that we follow internationally recognized practices. In the previous two years we reported on project completion rate however this year we have switched to a maturity model. A rating of Level 3 (Implement) was achieved with some elements of Level 4 (Monitor) already in place. This results in a KPI rating of Yellow trending in a positive

direction. In 2014 the IT PMO will focus on the development of project standards, internal training on those standards and project management best practices.

Figure 4: PwC's PM Maturity Model

Maturity Level:

Level 1 Sporadic	Level 2 Initial	Level 3 Implement	Level 4 Monitor	Level 5 Optimize
Sporadic use of PM. Formal documentation and the knowledge of the standards of PM are lacking. There is no curriculum or infrastructure for PM training, and organizational support is lacking.	A formally approved PM methodology has been launched. Basic processes are followed in a limited manner; not standardized across all projects. Project participants are informed about PM standards, but do not apply these standards appropriately. Lessons learned are not gathered on a regular basis.	A PM methodology is developed, approved and used. Project participants are informed about PM standards. Most projects are implemented using these standards. Management supports the use of standards. Focus on individual projects.	An integrated project life cycle methodology is used. Application of the standard set is monitored and fixed for all projects. Projects support the strategic plan. Project benefits are tracked. Inernal training is in place. PMO is established.	A regular analysis and renewal of the existing PM methodology is conducted. Lessons learned files are created. Knowledge management and transfer processes are standardized, and followed. Processes are in place to improve project performance. Management focuses on continuous improvement.

Source: Insights and Trends: Current Portfolio, Programme, and Project Management Practices - The Third Global Survey on the Current State of Project Management, Pricewaterhouse Coppers (PwC), 2012

KPI: Financial Management

We have changed the name of this KPI from Financial Performance (ability to generate revenue) to Financial Management (planning, directing, monitoring, organizing, and controlling of the monetary resources). This is the first time we have used a maturity model to evaluate the financial management of the department. The assessment is at the organizational level however it can be applied at the departmental level to provide a different perspective than OMBI and Infotech benchmarking. Overall the department achieved a maturity rating of Level 3 out of 5 but will have challenges to improve without the help of the Finance Department.

Overall Assessment

FINANCIAL MANAGEMENT MATURITY MODEL

	Practice	Outcome
Level Five	The organization has in place financial management practices that are leading edge and allow it to anticipate both challenges and key opportunities, in order to optimize its performance.	The organization anticipates and responds to the challenge of changing circumstances and looks ahead to anticipate significant events. It delivers programs to time, cost and planned level of quality, with very few exceptions. It seeks efficiencies and improves the services it delivers while minimizing potential increases in costs. There is a sophisticated understanding of the organization's cost base in terms of understanding the key drivers of different services and products.
Level Four	The organization has in place professional financial management practices which enable it to cope effectively in challenging times and will identify some opportunities to improve its performance.	The organization responds to challenge in good time and looks ahead to anticipate most significant impacts. Most programs are delivered to time, cost and planned level of quality. It understands the impact of change on the costs and performance of different programs and is able to deliver cost efficiency programs.
Level Three	The organization has in place financial management practices that are adequate in supporting the business under stable circumstances, and enable it to develop but will not be sufficient in challenging times.	The organization manages well when the environment is familiar and stable. It may be significantly challenged by unforeseen events, or by machinery of government changes or new initiatives. Programs are not always delivered to time, cost and planned level of quality due to difficulties in anticipating and responding to risks in a timely manner. The organization will achieve cost reduction through a combination of efficiency programs and budget cutting.

| Level Two | The organization has in place financial management practices that are basic and allow it to function on a day to day basis but do not support the organization to develop. | The organization is aware of a number of issues with the current financial management processes, which have been highlighted by sources such as external and internal audit. It becomes aware of potential overspends too late to be able to bring them back into line. Some of the major projects are regularly over time and cost and are of less than expected quality. The organization reacts to reductions in funding by budget cutting due to a lack of understanding of the impact of changes on the costs and performance of programs. |
| Level One | The organization has some financial management practices in place but they are inadequate in that there are many gaps which affect the day to day running of the organization. | The organization receives funding and spends it with little awareness of how to drive improvements in efficiency or of the results it may obtain from the expenditure. Budgets are frequently over-spent with limited understanding of the causal factors and no remedial action planned. Projects frequently overrun in costs and time and the intended benefits (if they are defined) are often not delivered. It may have major project failures, and is at risk of suffering from fraud. |

NAO National Audit Office

OMBI (Ontario Municipal Benchmarking Initiative) Comparisons

The City's IT cost per employee increased by 9% when compared to 2012. The first contributing factor was the increase of IT capital budget from the CTSP. The second factor was because calculations of total municipal staff were done at a point in time (end of 2013) and the headcount was actually lower than in the year 2012. OMBI 2013 IT statistics will not be available until October 2014 so the comparison was done against 2012 data; however the City still lags behind the OMBI median.

Operating and Capital Costs for IT Services per Staff Supported with Active IT Account (Single Tier) Note 1: OMBI data for 2013 not available

Year	2010	2011	2012	2013
City's IT Cost per Municipal Staff Member Supported	$3378	$3957	$3481	$3733
OMBI Median	*$4028	*$4994	*$4995	$

*Source: OMBI – 2012 Performance Benchmarking Report: IT Services

The City's percentage of IT investments compared to the City's total budget is very well aligned with the 2012 OMBI median. We achieved the benchmark set by OMBI.

Operating and Capital Cost in IT Services as a Percentage of Municipal Operating and Capital Expenditures (Single Tier) Note 2: OMBI data for 2013 not available

Year	2010	2011	2012	2013
City's Percentage of Investments in IT Services	1.2%	1.3%	1.7%	1.8%
OMBI Median	*1.0%	*1.2%	*1.8%	$

*Source: OMBI – 2012 Performance Benchmarking Report: IT Services

InfoTech Comparisons

The next two tables were derived from a benchmarking tool (MeasureIT Benchmarking Report) provided by InfoTech. This is a much broader comparison since there are 40 peer organizations as opposed to 8 in OMBI data.

We identified below the median in all 3 staffing metrics which warrants a sub-KPI rating of Yellow. Our target for 2014 is to move closer to the median.

The following table identifies how your high level staffing metrics compare to those of your peer group.

Metric	Your Metric Value	Median	# of Peers
IT Staff to all City Staff Supported	1.55%	1.93%	40
IT staff to all Staff Supported	1.55%	2.00%	40
Annual gross revenue to IT staff	$7.1M	$11.0M	40

We identified below the median in the first 3 staffing metrics as indicated in the table below. IT Capital Budget to IT Staff was higher than the median because of the increased CTSP capital budget in 2013. Our target for 2014 is to move closer to the median.

The following table identifies how your high level budget metrics compare to those of your peer group.

Metric	Your Metric Value	Median	# of Peers
IT Operational Budget to City Staff	$1,993.00	$3,691.91	40
IT Operational Budget to IT Staff	$128,580.63	$151,818.18	40
IT Capital Budget to City Staff	$582.32	$716.94	40
IT Capital Budget to IT Staff	$37,633.35	$26,431.03	40

KPI: TCO (Total Cost of Ownership)

TCO is a vital concept in technology cost management, specifically in Information and Communication Technologies (ICT) cost management. TCO combines methodologies, models and tools to help organizations better measure, manage, and reduce costs and improve the overall value of IT investments. Past studies and experiences have proven that a financial comparison of technology solutions based solely on purchase price and service costs is fundamentally flawed. Other operational factors, including the costs to manage and maintain these assets, as well as reliability and downtime costs, have a far greater financial impact on most organizations than just the system's acquisition cost. The introduction of cloud computing has further complicated the analysis as trade-offs between investment in infrastructure must be weight against third party offerings. This concept attempts to include service levels, security, availability and redundancy as factors in determining TCO.

Factors Included in a Total Cost of Ownership Model a)System pricing and acquisition b) Service contracts c) Installation and training d) Operational costs (Energy/consumables), e) Ongoing management, maintenance and support (Resources/Salaries), f) Reliability/Redundancy, and g) Opportunity Savings (Outsourcing expertise/Cloud).
TCO Maturity Model

The TCO maturity model describes the availability and integrity of cost data, the manner of collecting and maintaining the data, and the degree of effort/assistance needed to calculate TCO with a reasonable level of validity. The specific value of the TCO maturity model is threefold. Firstly, it confirms the continued refinement of the TCO concept in a world where technology and its peculiar cost configurations are highly dynamic; secondly, it recognizes that different communities have different levels of readiness for understanding and managing ICT costs; and thirdly, it has been developed to provide a mechanism for future measurement and benchmarking to benchmark the impact of various scenarios and planned projects.

TCO Maturity Model
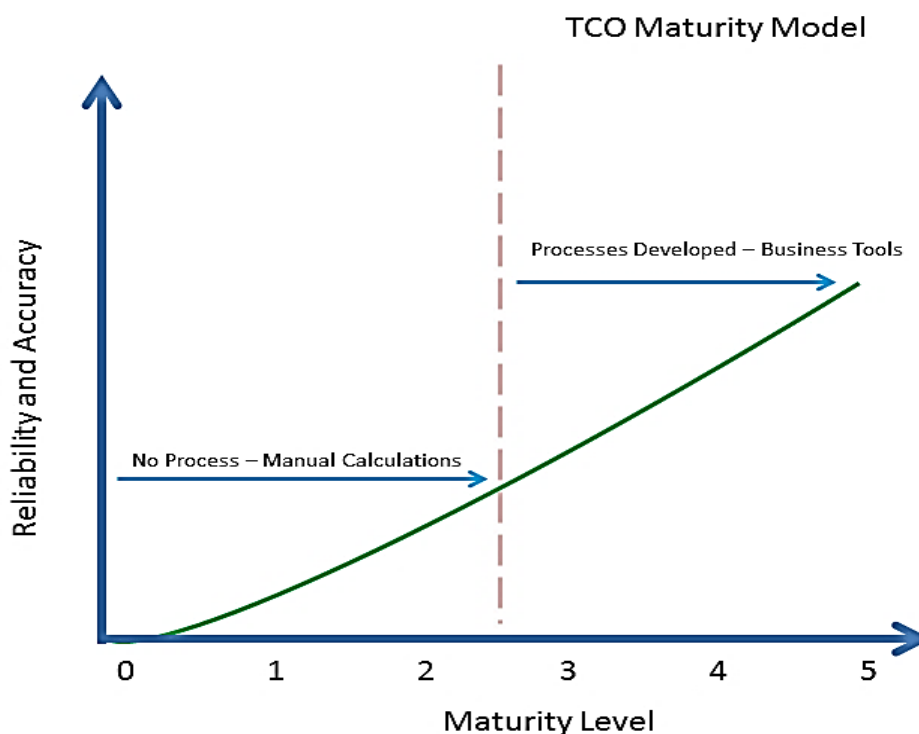
Maturity Level
Level 1: Little or no awareness of the need for or benefits of a management program that includes a TCO approach. TCO efforts involve searching for data or making educated guesses.
Level 2: There is some awareness of the value of a TCO approach. TCO methodologies are simplified using basic cost of acquisitions and support costs. Application of this approach is random or limited to major projects.
Level 3: The Benefits of a TCO approach are fully acknowledged. TCO methodologies and tools have been identified and standards addressing when and how to applying these processes have been introduced.
Level 4: TCO processes have matured to the point where organizations routinely and independently conduct TCO assessments. They obtain highly reliable metrics which have been vetted by the organization and incorporate them into budgeting and planning.
Level 5: TCO assessments are routinely communicated to stakeholders, executives and senior management. Results from these assessments are routinely included in the decision making process. Assessment values are regularly compared with peer groups to vet effectiveness of processes.

We identify at a level 2 in 2013 as the TCO approach was limited to major initiatives and we did not use a standard process to calculate. Moving to a level 3 maturity in 2014 will require the development of standard processes and education within the IT department. The corporation will need to be aware of the concept of TCO and how it can benefit the City.

Total Cost of Ownership – Expenditure Distribution for 2013

Category	Operating	Capital	Totals	% Of Total	Typical Industry Standard
Infrastructure/Hardware	658,650	1,098,545	1,757,195	26%	20%
Support Management/Maintenance	3,044,486		3,044,486	46%	43%
Software	864,663	100,327	964,990	14%	17%
Outside Services	230,548	178,450	408,998	6%	8%
Administration	463,834		463,834	7%	6%
Staff Training	68,421		68,421	1%	6%
Totals	5,330,602	1,377,322	6,707,924	100%	100%

Category Descriptions

Infrastructure: Hardware costs associated with new purchases or upgrades.
Support: Salaries and benefits, associated with internal support and maintenance.
Software: purchases of new software, additional modules and yearly support and maintenance expenditures.
Outside Services: All technical, process and functional services recruited from outside sources.
Administration: All clerical and additional costs that do not fall into other categories.
Training: All costs associated with improving the knowledge and skills of internal support staff.
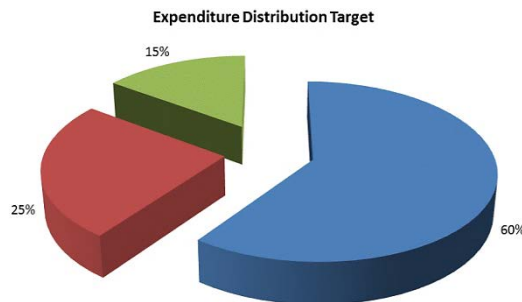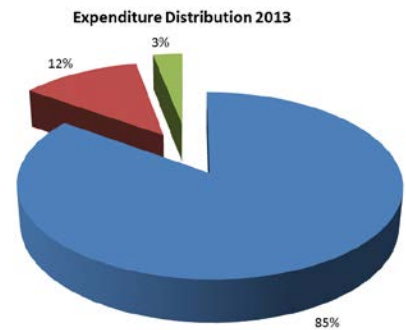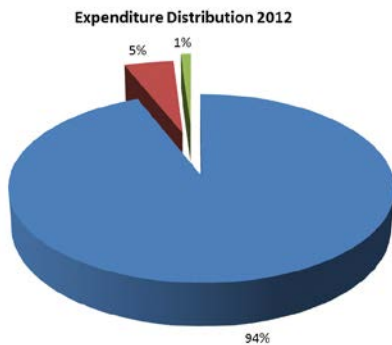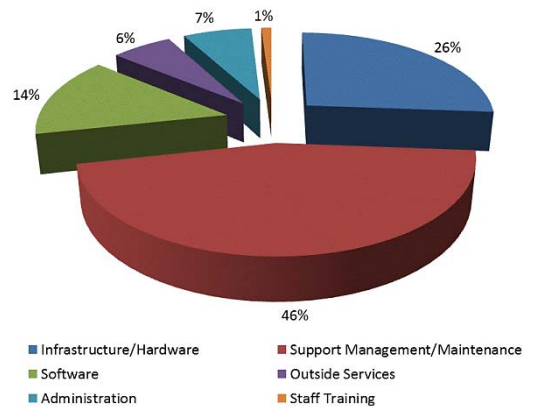
Foundational
Growth
Transform

KPI: Compliance

The IT Department did reach its goal in 2013 of a maturity Level 2 (Repeatable) out of a possible 5 (Optimized). We passed the external quarterly audits and the PCI-DSS SAQ (Payment Card Industry – Data Security Standard Self-Assessment Questionnaire). Despite this success, audit requirements remain managed on a case-by-case basis using repeatable but intuitive procedures and practices, with limited involvement from business stakeholders. This is reflected in the typical audit response, which can be characterized by a costly and inefficient cycle of testing, failing, fixing and retesting. To progress beyond this level, the IT Department must identify assets that are in scope for the audit process and begin to focus on standardization, enforcing unified data protection policies across servers, networks and endpoints. The formation of the "Technical Standards Team" in 2013 addressed the first stage of the process and will continue in 2014.
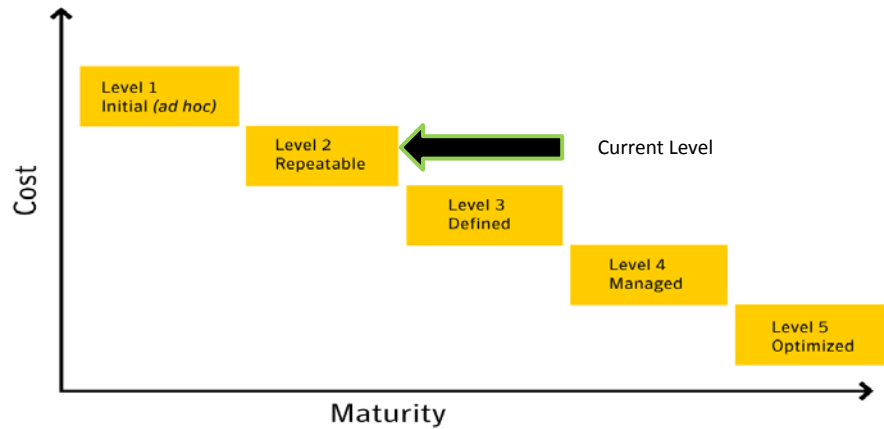
Category: IT Innovation and Learning

KPI: Workforce Competency

The goal of any department is to have a minimum of an "Agile Workforce" as depicted in the graphic to the right, provided by Kronos®. This allows for the redistribution of staff when priorities shift while maintaining a high level of productivity. The IT department is definitely at the "Skilled Workforce" phase which maps to Level 3 (Defined) of the People CMMR Maturity Model, provided by the SEI (Software Engineering Institute).

*Source: Kronos Global Workforce Management Solutions

In 2013, IT Management created a consolidated roles and responsibilities matrix for all members of the IT Department. Training needs for staff and management were then defined to meet those roles. Although the training budget remained the same as 2012, other options like webinars, training credits, vendor/staff and knowledge transfer were used. In 2014 it will be vital for staff to engage in cross-training, job-shadowing, and brainstorming sessions to become enablers of the business. Taking advantage of the Corporate Leadership Training and LEAP (Licensing, Education & Accreditation Program) will be considered as additional options. The challenge will be moving to the "Agile" phase or Level 4 (Predicable).

*Source: Software Engineering Institute, Carnegie Mellon University

KPI: Advanced Technology Use
This departmental KPI can be split into two sub-KPIs, "Internal Infrastructure" and Industry or "Big Picture" technologies. Overall a combined dashboard rating of Yellow is warranted. To move to a higher rating that positions IT as a "Partner Player", adoption of more "Big Picture" technologies is required.

Internal Infrastructure (Sub-KPI)
The City has a very advanced internal IT infrastructure and warrants a rating of Yellow; however there are some gaps. The need for a collaboration platform like SharePoint was identified in the CTSP but no progress was made in 2013. In 2014 there will be a review or our existing collaboration environment and recommendations on whether this is a candidate for a cloud-based solution.

➢ Digital storage has been enhanced by the implementation of "Block Level Deduplication" that can have a space savings of up to 20:1. Compared to "File Level Deduplication" which has a maximum of 5:1 storage space savings.

➢ Security on mobile devices has been enhanced by implementing BlackBerry's Secure Container technology, which encrypts data in a separate partition on the device.

➢ Virtualization of servers is based on vmWare®, the global leader in virtualization and cloud infrastructure. The City utilizes the most recent version with advanced features like vMotion (ability to move live virtual machines from one hardware server to another without interruption) and Distributed Virtual Switch (centralizes administration and improves security by providing private VLANs)

➢ Wireless infrastructure is now managed by Cisco Prime Infrastructure, their most advanced wireless administration platform.

➢ The network directory service that is used to authorize all accounts and computers in the corporate network was upgraded to the latest Microsoft version. Active Directory 2012R2 makes the network directory ready for any advanced Microsoft technologies that depend on it.

➢ The City's desktop phone service was upgraded to the latest version of Cisco's UCM (Unified Communications Manager). This enables the City to take advantage of the latest in collaboration and communication technologies.

Big Picture (Sub-KPI)
The City is rated at Yellow for this sub-KPI as progress was made in some of the key areas. We are ahead of most municipal organizations for mobile device management including BYOD (Bring Your Own Device). The foundational elements of Big Data will begin in 2014.

➢ Mobile Device Diversity and Management is one of the top ten strategic technologies identified by Gartner® and several other IT research companies. The City has implemented the infrastructure to manage the full range of devices including all models of BlackBerry, Android based devices including Google Nexus, and Apple's iPads and iPhones. In 2014 IT will initiate a pilot BYOD exercise with an accompanying policy.

➢ Hybrid Cloud is not a technology but the proactive design of private clouds (City's Network) with a hybrid future in mind. Infrastructure designers within the City are already accommodating requests that require a mix of internal and cloud services.

➢ Cloud/Client Architecture is a technology that used in-the-cloud real-time databases that are maintained by vendors. Two examples are already in use at the City; one for blocking SPAM emails and one for Internet content filtering. These are security advance warning databases used to block threats before they even reach our network.

➢ 3-D Printing is the manufacturing of a three-dimensional product from a computer driven digital model. Although there has been no adoption at the City, there is opportunity in departments like Planning and Emergency Response.

➢ IoE (The Internet of Everything) is all about adding connectivity and intelligence to almost every device. A great example of this is the RFID (Radio Frequency Identification) chips embedded in recycling bins, which the City will soon be adopting.

➢ Personal Cloud is the concept of moving the "Primary Hub" of services away from any single device and moving it to the cloud. Users will have a collection of devices to access content and services from anywhere/anytime/anydevice. Security and management of the services will no longer be an IT function.

➢ Mobile Apps and Applications were identified by Gartner as one of the top ten strategic technologies in 2014. Basically, apps will grow and applications will shrink. There has been an increase in the development of mobile apps at the City that must continue in 2014 and beyond.

➢ Big Data is defined as "a collection of data so large and complex it becomes difficult to capture, manage, and process using traditional software tools". Another challenge is to handle the velocity at which the data comes in. Big data originated from social media giants like Google, Facebook, and Linked-In. More recently one of the largest collectors of Big Data is government agencies. The ability to unlock the hidden knowledge of vast amounts of structured and unstructured data will be key to the success of many organizations which has led to a new class of technologies and tools such as Hadoop, NoSQL, and Exadata.

As outlined in the CTSP, the City has launched a series of information technology initiatives in order to be better prepared for Data and Information Management. Data Governance, Master Data Management (MDM), and Data Warehousing have been identified as the core for building a strong service oriented infrastructure. Other initiatives on the horizon include better utilization of the Enterprise Content Management solutions for managing unstructured data/documents. These new initiatives are based on the Service Oriented Architecture (SOA). This SOA approach provides proper management of data integration, data distribution, and allows new information services to be incorporated, thereby promoting the concept of Information as a Service (IaaS). These first steps should position the City to combat the information challenges and better utilization of the Data Asset.

➢ Smart machines: The smart machine era will be the most disruptive in the history of IT with new systems that begin to fulfill some of the earliest visions for what information technologies might accomplish. Doing what we thought only people could do and machines could not is now finally emerging.

➢ Web-scale IT is a pattern of global-class computing that delivers the capabilities of large cloud service providers within an enterprise IT setting by rethinking positions across several dimensions. Large cloud services providers such as Amazon, Google, Facebook, etc., are re-inventing the way in which IT services can be delivered. Their capabilities go beyond scale in terms of sheer size to also include scale as it pertains to speed and agility. If enterprises want to keep pace, then they need to emulate the architectures, processes and practices of these exemplary cloud providers. Web-scale IT looks to change the IT value chain in a systemic fashion. Data centers are designed with an industrial engineering perspective that looks for every opportunity to reduce cost and waste. This goes beyond re-designing facilities to be more energy efficient to also include in-house design of key hardware components such as servers, storage and networks. Web-oriented architectures also allow developers to build very flexible and resilient systems that recover from failure very quickly.

KPI: Methodology Currency

IT Management continues to use six key methodologies that are critical to the success of the department. These include COBIT® for IT governance, ITIL® for service delivery, PMBoK® for project management, SDLC® (Software Development Life Cycle) for applications management, P-CMMI® for IT workforce competency, and Six Sigma® for quality. In 2013 COBIT® was utilized as the basis of the IT Governance model and for improvements in the IT Audit process. PMBoK® was further implemented in the IT-PMO. Recommendations from the P-CMMI were used to initiative an inventory of skills and identify training gaps. Funding was deferred from the CTSP for further ITIL® implementation however this will be revisited in 2015.

KPI: Employee Retention

In 2013, the IT Department had 2 involuntary terminations and 3 resignations resulting in a turnover rate of 16%. This is much higher than the Corporation's turnover rate of 5%, and is rated at the low end of the performance scale (Red). These departures also dropped the average number of years' experience with the City from 6.7 years in 2012 to 5.6 years in 2013.

Average Years with City	Division
7.61	Technology Services
5.91	Client Services
5.31	Projects & Business Services
2.72	Corporate Applications
5.62	IT Departmental Average

*Source: Internal – IT Management

The organization recognizes that Employee Engagement is a key factor in staff retention and has a formal program in place. The IT Department attended facilitated exercises to determine the top 3 factors influencing engagement. Focus groups for Learning & Development, Work Processes, and Resourcing were formed and action plans were developed and monitored for each group with positive results.

In 2014 the IT Department must embrace more areas that will enhance our ability to retain staff. Succession Planning, Alternative Work Arrangements, and the empowerment of staff to make decisions are areas where improvement is needed. Leaders need to be aware of what keeps job satisfaction high by meeting with individual staff more frequently to keep a pulse on engagement and job satisfaction.

Divisional Analysis

Client Services Division ...where the customer meets IT

Mandate

The Client Services Division`s mandate is to plan, implement, manage and maintain the corporate desktop, printing, telephone, and converged infrastructure to ensure that they meet the business needs of the corporation by:

- ✓ Providing Level 1, 2 and 3 technical support for all desktop, printing and telephony issues.
- ✓ Engineer and maintain the corporate distributed desktop architecture and mobile device fleet.
- ✓ Manage and maintain the corporate phone system.
- ✓ Providing a Technical Service Help Desk for the entire corporation.
- ✓ Implement convergence technologies involving access control, security camera systems, and building automation.

Key Accomplishments for 2013:
- ✓ 2499 Service Desk received and acted on more than requests 11,247 queries received over the phone and through email
- ✓ Resolved 14437 technical services assignments originating from these queries
- ✓ Upgraded the corporate desktop management system to Microsoft SCCM (Systems Centre Configuration Manager) 2007
- ✓ Created Corporate Windows 7 Image
- ✓ Completed testing of Windows 7 Image by IT and Pilot users
- ✓ Introduced Paperless Rico Reports at POA which will lead to cost savings
- ✓ Transitioned POA Dockets from specialized dot matrix printing to multifunctional printer and create digital copies
- ✓ Upgraded 350 Machines of 950 to Windows 7
- ✓ Began Rollout of AutoCAD 2013 products
- ✓ Completed stakeholder review for a new radio and vehicle location system, RFP creation was competed in 2013
- ✓ Facilitated expansion of City of Guelph Voice phone system to Guelph Hydro
- ✓ Created, Issued and awarded RFP for implementation of replacement voice system at City and Hydro

Technology Services Division....building and securing the IT infrastructure

Mandate

The Technology Services Division's mandate is to provide a reliable, secure, easily accessible, and high performance IT infrastructure to meet the business and service needs of the organization by:

- ✓ Designing quality network, server, and IT security systems that accommodate and protect the City's electronic information
- ✓ Deploying, maintaining , and replacing systems according to industry best practices for IT life cycle management
- ✓ Developing and implementing IT policies, procedures, and processes that safeguard the City's IT investments
- ✓ Supporting departmental and corporate technology initiatives through network integration and automation

Key Accomplishments in 2013
- ✓ Upgraded the City's Blackberry Enterprise platform to support the new generation of version 10 devices.
- ✓ Designed and implemented an MDM (Mobile Device Management) solution to include Apple and Android devices.
- ✓ Reformatted and modernized the City's Responsible Computing Policy to reflect IT industry changes.
- ✓ Prepared the framework and draft outline for a new IT BCP (Business Continuity Plan)
- ✓ Prevented 1Million SPAM messages from reaching users' email inboxes.
- ✓ Facilitated the transfer of 2.8 million messages that were external to the organization (received and sent)
- ✓ Managed a messaging system that transferred a total of 5.1 million messages (internal plus external).
- ✓ Migrated City's virtual server platform to the most current version of vmWare vSphere
- ✓ Implemented the SAN (Storage Area Network) to IBM's V7000 virtualized disk storage platform

- ✓ Upgrade the Enterprise Data Management system to the latest version.
- ✓ Increased Virtualisation to 95% of servers in Internet facing environments
- ✓ Completed the IT Annual Report for the year 2012
- ✓ Hired a replacement for the Network Security Specialist position
- ✓ Upgraded Sleeman Centre POS (Point of Sale) terminals to use 7" Nexus tablets running Android operating system
- ✓ Designed and installed wireless network at Waterworks Place to provide Corporate and Public wireless coverage
- ✓ Extended the municipal fibre optic network to River Run and Sleeman Center for increased speed and reliability
- ✓ Deployed hardware and server infrastructure to allow for complete automation of outdoor parks watering system resulting in a reduction of water usage and increase in manageability.
- ✓ Commissioned network connectivity to new EMS Station in Hillsburgh for corporate Phones, computers and wireless laptops.

Corporate Applications Division....supporting the applications of the organization

Mandate
The Corporate Applications Division is responsible for supporting the applications the corporation uses as a municipal services provider by:

- ✓ Providing application support for bookings, permits, licensing, on-line maps, and geospatial data
- ✓ Acting as a gateway between the City and external sources for geospatial, parcel, and ownership data
- ✓ Facilitate advisory groups, steering committees, and user groups in support of application governance

Key Accomplishments in 2013
- ✓ Creation of IT Governance framework, Application Steering Committees and 5 User Groups
- ✓ Initiated functional assessments for AMANDA, H/R, and WAM
- ✓ Upgraded the Class Program Registration Application Server
- ✓ Upgraded the On-line Payment Server
- ✓ Hire Data Architect to lead Data Warehousing and Information Management initiatives
- ✓ Coordinated a community survey to determine the type of information the public wants
- ✓ Created initial data governance and guidelines for improved data management
- ✓ Initiated the TD (Toronto Dominion) bank conversion in conjunction with the Tax Department

Projects and Business Services ...New Name, Better Service
This IT Division is comprised of three sections; GIS (Geographical Information Systems), IT-PMO (Project Management Office), and Web Services.
GIS Mandate: To provide leadership and support to City departments through GIS technology services and innovation.

Key Accomplishments in 2013
- ✓ Obtained GIS consultant and initiated the GIS Technology Plan
- ✓ Re-established the GIS Steering Committee and GIS User Group
- ✓ Completed Program Registration/Facility Usage for Programs Mapping Project
- ✓ Migrated water valves data from 5 GIS layers into 1 Water Valves GIS Layer with pick lists
- ✓ Created a new Flow Meters GIS Layer for Water Services with pick lists
- ✓ Create 2 new GIS layers for Engineering Services to track Sanitary Fittings and Storm Fittings
- ✓ Provided data to support the Guelph Stormwater Funding Study
- ✓ Completed poll boundary study and implemented changes to support the 2014 election

Project Management Office Mandate: To develop project and program management strategically focusing on Governance, Financial, Risk, Resource, Quality, and Scope management. The team is responsible for project prioritization, process improvement, and strategic project planning with IT and City staff.

Key Accomplishments in 2013
- ✓ Rollout of new Project and Business Service Request on-line intake tool
- ✓ Establishment of ITGC reporting tools, templates, and schedule
- ✓ Provided IT status reports to the ITGC Executive team for major projects
- ✓ Awarded contract for JDE HR assessment and WAM assessment
- ✓ Completed the Guelph.ca web site redesign

Web Services Mandate: To develop and support the City's public web site (guelph.ca) and internal Intranet. The team fosters new web technologies and the development of e-business strategies utilizing social media like Facebook, Twitter, and YouTube.

Key Accomplishments in 2013
- ✓ Designed and built the new Guelph.ca website using WordPress and migrated 20,000 pages to the new platform
- ✓ Developed a new web authoring model and trained web authors in basic WordPress and web page accessibility
- ✓ Developed and implemented a waste collection lookup tool. Guelph residents enter their street number and name to find out what day waste is collected, and when their address will be transitioned from bags to carts.
- ✓ Migrated the Emergency Operations Control Group, Guelph Cooperative Purchasing Group, Guelph Youth, and Guelph Wellington EMS web sites to the Guelph.ca platform

Trend Monitoring

IT has several trends that are tracked and reported through software utilities, the IT Help Desk system, IT Service Request Forms, and Project Management software. These are identified by an asterisk * whereas other trends are obtained by abstract or intuitive means. In 2014 each trend should be analyzed from an infrastructure, service, process, and financial impact. This is vital to keep pace with the demands of the business by implementing solutions and process improvements in a timely manner.

- ✓ City of Guelph Twitter followers have increased to over 25,000 compared to 15,000 in 2012

- ✓ 43.81% increase in mobile phone traffic

- ✓ 60.47% increase in tablet traffic

- ✓ 18.08% decrease in desktop traffic

- ✓ Increased demand for BYOD (Bring Your Own Device) with access to email, calendars, and contacts

- ✓ Mobile device support is steadily increasing as our fleet of Blackberries, tablets, cell phones, and notebooks increases. This is indicated in the following chart which depicts growth over the last 6 years.*

Mobile Device Growth Since 2007
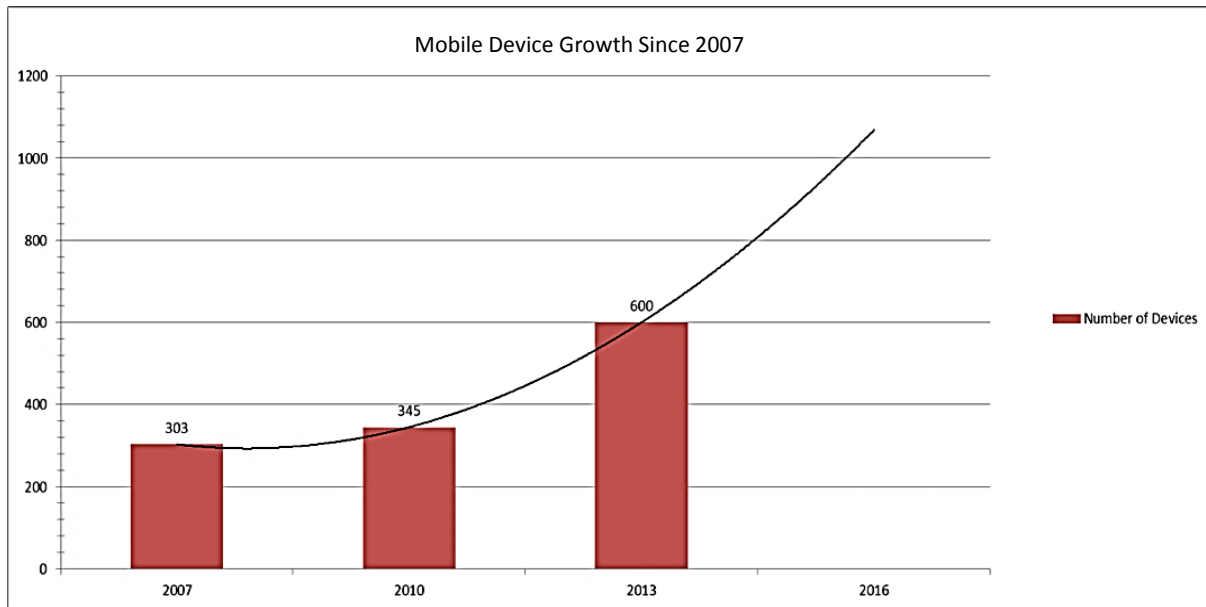
*Source: IT Asset Control

✓ Networked data growth continues to increase as indicated by the graph below. In 2013 we experienced a 50% increase in raw network data growth as depicted in the graph below.*
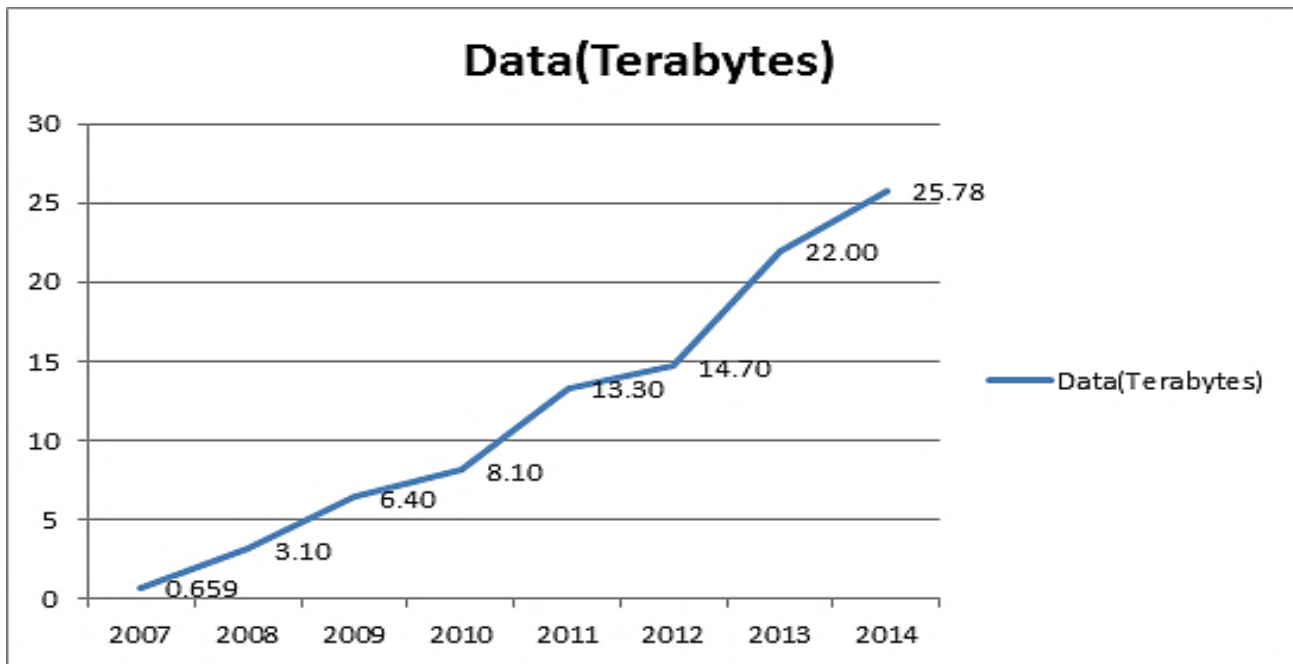
*Source: Enterprise Backup System

✓ Wireless connections from both City owned and personal devices have grown exponentially over the past year. Since IT opened "Public" wireless to all floors in City Hall, the use of wireless devices by staff, visitors, and contractors have increased from a peak of 84 to a peak of 127. The simplification of access for the public significantly reduced support calls resulting in greater satisfaction among users. Smartphones, tablets, and notebooks now have high availability to the Internet.

Associated Client Count in the Network
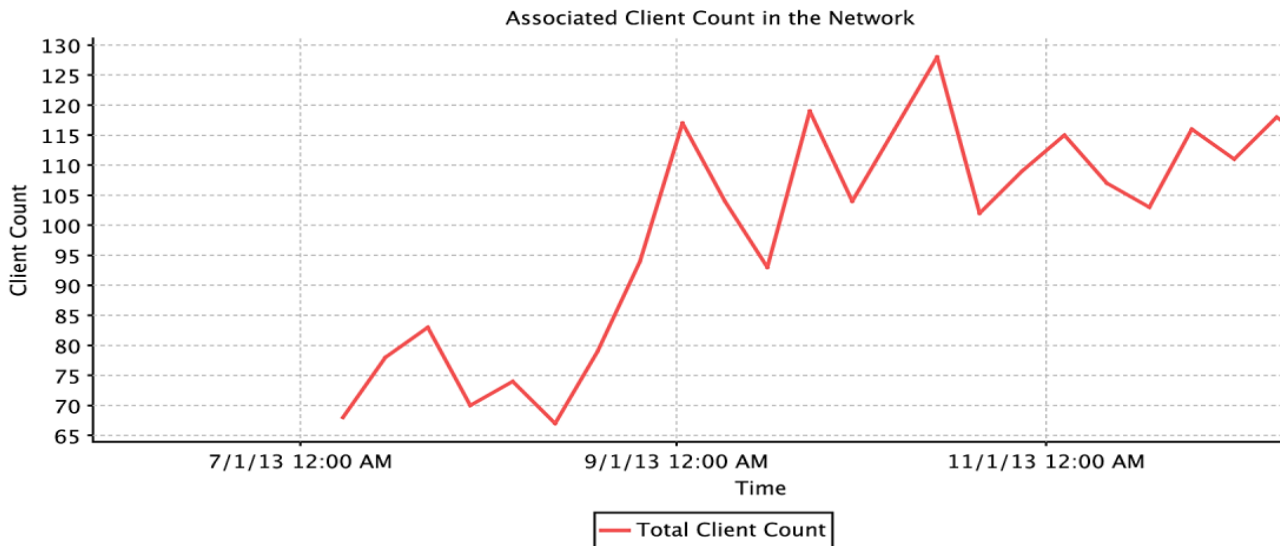
*Source: Internal Cisco Prime Infrastructure

2014 and Beyond

2104 IT Workplan

| CTSP Initiatives for 2014	Description	Target
Eclipse Upgrade	Migration of in-house project and portfolio management application to the cloud	Mar 2014
WAM Assessment	Review current business processes, identify future requirements, develop fit-gap analysis of current systems and recommend future plans	Jun 2014
GIS Technology Plan	External consulting firm developing 5 year plan for City GIS systems	Jun 2014
GIS ArcPoint Upgrade	Upgrade of all ArcGIS products across the City	Jun 2014
JDE Financial Upgrade	Implementation of JDE Version 9.2 to address process changes determined from JDE H/R Assessment and Process Review, then address support restrictions.	Sep 2014
Data Warehousing	Data mart for Capital assets will be the first data warehousing initiative	Sep 2014
Information Management	Business Intelligence Rollout	Nov 2014
Amanda Upgrade	Implementation of AMANDA version 6 to comply with assessment requirements and support restrictions.	Dec 2014
Mobile Device Management	Continued deployment of smartphones and tablets for mobile workforce	Dec 2014
Business Continuity Plan (Phase 2)	Implementation and testing phase to reduce IT and organizational risk due to disaster	Dec 2014
Email Archiving	Control growth of email system based on upcoming Data Retention Policy	Dec 2014
Help Desk Improvements	Improve quality of service with more efficient Client/Help Desk interaction, Improve FCR (First Call Resolution) by providing more tools to Level 1 and Level 2 support staff	Dec 2014
Transit Technology Plan	17 month project to implement the IT infrastructure and integration needs for Transit	Jul 2015
Mandatory Initiatives for 2014	Comments	
2014 IT Annual Report	IT management will prepare the yearly performance report for the year 2014	Apr 2014
Anti-SPAM	Implementation of the CSL (Canadian Anti-SPAM Legislation)	Jul 2014
2014 Election	IT resources will coordinate the election's networking and computer deployment needs	Nov 2014
Strategic Initiatives for 2014	Comments	
Bylaw Security Access System	Modernization of security system for City Hall, Courts, Waterworks, and River Run	Jun 2014
BYOD (Bring Your Own Device)	Pilot project that allows staff to use their personal mobile devices for business purposes	Dec 2014
Joint Wireless	Project to replace the corporate radio and automatic vehicle location system	Dec 2014

TCO (Total Cost of Ownership) Study

TCO is a financial concept that combines the initial acquisition costs for a product with the operational costs of using the product over its expected life. Past studies and experiences have proven that a financial comparison of technology solutions based solely on purchase price and service costs is fundamentally flawed. Other operational factors, including the costs to manage and maintain these assets, as well as reliability and downtime costs, have a far greater financial impact on most organizations than just the

system's acquisition cost. The introduction of cloud computing has further complicated the analysis as trade-offs between investment in infrastructure must be weight against third party offerings. This concept attempts to include service levels, security, availability and redundancy as factors in determining TCO. The factors included in a Total Cost of Ownership Study would be initial system cost, service contracts, installation/training, energy consumption, ongoing management/maintenance, and downtime costs.

BYOD Predictions

In 2013 an internal City Staff survey revealed a surprising interest in the BYOD (Bring Your Own Device) initiative. 66% of users surveyed indicated that they would be willing to transition from using a City owned mobile device to using their own personal device. The City would not incur any more costs than under the present policy; however the administration and support resources would be reduced. This translates into time savings for IT staff and the freedom of users to choose any device they wish. It will also be convenient for staff to carry only one device for business and personal use. The City has the infrastructure to support this and in 2014 will pursue a pilot with several users and a BYOD Policy. Cost savings for the BYOD program will depend on program uptake by City staff. If made mandatory, BYOD can save the city at least $130,000 annually.
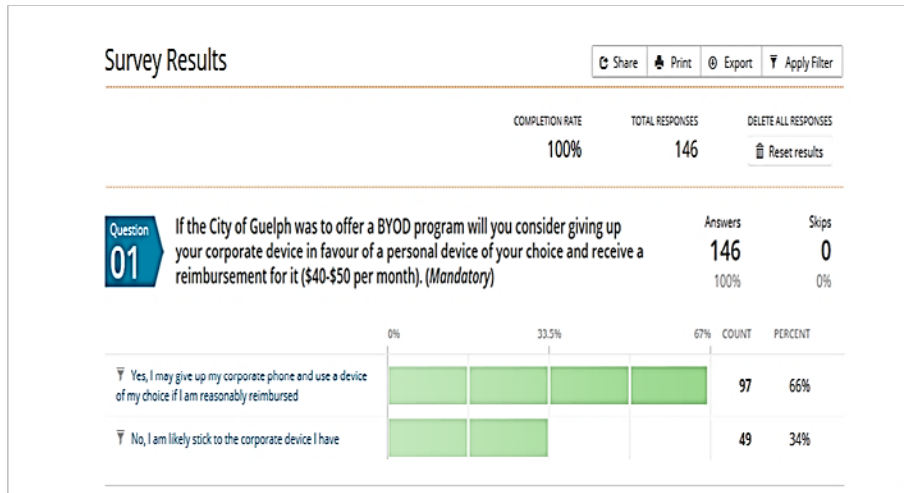
Cloud Computing

This graphic depicts the natural progression of computing platforms in the Information Technology industry. The City used mainframe computer technology up to the mid-1990s. It then switched to Client Server architecture with Microsoft Windows running on Intel servers where it remains today. Both of these platforms require data centres to operate which require enormous amounts of power, cooling, security, and maintenance. With the advent of Cloud Computing, companies like Google, Amazon, and Microsoft can use economies of scale to make their services more affordable for their customers.
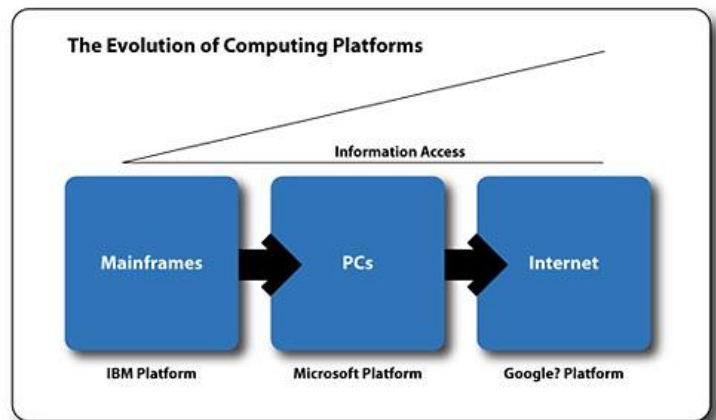
However, the City has a large investment in networking, storage, servers, virtualization, and OS (Operating Systems); and two modern data centres. So the speed of adoption must depend on a balance between internally managed and outsourced (Cloud) services.

The City has successfully migrated several services to the Cloud including Bulk Email, Project & Portfolio Management, Emergency Management Planning, On-line Surveys, and Dynamic DNS (Domain Name Services), there are other potential services in 2014 that are under consideration like CRM (Customer Relationship Management), Internet Voting, and Office Productivity applications.

It is not recommended that the City simply begins adopting Cloud computing as a cost saving initiative. A logical approach is to continue with the recommendations of the CTSP to form a stable baseline of IT services. In 2014, IT management will take measured progress of Cloud Computing, perform a deeper analysis of the TCO (Total Cost of Ownership) of the services they provide, and then

choose whether internally hosted or a cloud based solution is more practical and economical. Performance, functionality, reliability, support call resolution time, and business planning must be part of the overall process and final decision.