MARKHAM **REPORT TO General Committee - Finance and Administrative**

TO:	Mayor and Members of Council
FROM:	Andy Taylor, Commissioner Corporate Services James Allen, Chief Information Officer
PREPARED BY:	James Allen, Chief Information Officer John Swan, Manager, Client Delivery, ITS
DATE OF MEETING:	2006-March-6
SUBJECT:	Information Technology Strategic Plan

RECOMMENDATION:
THAT the report dated March 6, 2006, entitled "Information Technology Strategic Plan" be received;

AND THAT the final report by IBM Canada Ltd. which defines the proposed Information Technology Strategic Plan, entitled "Town of Markham IT Strategy" and dated October 18th, 2004, (attached) be received and endorsed;

AND THAT Staff proceed with recommendations 1 and 2 from the IT Strategic Plan, funded through the 2005 ITS Capital Budget, Account #049-5350-6764-005, at an estimated cost of $75,000;

AND THAT Staff develop a business plan for a portal solution, in conjunction with the Region of York, funded through the 2006 ITS Capital Budget, Account #049-5350-7300-005, at an estimated cost to Markham of $75,000;

AND THAT remaining costs for the implementation of recommendations from the IT Strategic Plan, estimated at $3.0 to $3.5 Million, be considered as part of the Capital Budget process from 2007 until 2011;

AND THAT Staff report back to Council for funding requirements for other projects that are derived from the recommendations of the IT Strategic Plan.

PURPOSE:
The purpose of this report is to obtain Council's endorsement of the ongoing vision and model for Information Technology Services in the Town of Markham as proposed in IBM Canada

Ltd.'s final report for the Information Technology Strategic Plan. IBM's final report is attached under separate cover.

BACKGROUND:

To ensure that Information Technology (IT) solutions continue to be clearly aligned with, and driven by, the business needs of the Corporation, the Town of Markham's Information Technology Strategy must be periodically reviewed. To this end, Council authorized the Chief Information Officer (CIO) in January of 2004 to engage IBM Canada Ltd. to review and develop an Information Technology Strategic Plan for the Town.

During their engagement, IBM examined how the Town of Markham currently realizes the value of Information Technology, articulated a preferred future state closely aligned with the Town's Corporate Mission, and identified key ongoing principles and priorities required to effectively achieve strategic goals.

IBM's approach sought to make certain that IT was aligned with the Town's corporate vision and strategy and was well positioned to address the challenging business requirements of the Town.

Current state information and feedback from stakeholders was analyzed to identify strengths, weaknesses, opportunities and threats. Gap analysis was conducted through comparisons to industry standards and leading practices used in similar municipalities. As a result, key focus areas were confirmed, requirements were identified and strategies were developed with the goal of achieving an improved future state for IT. Key findings regarding strategic priorities were identified, along with recommendations to address them.

IBM documented the details of their findings and recommendations for the Information Technology Strategic Plan in the attached "Town of Markham IT Strategy Report", dated October 18th, 2004. This report was presented to the Finance and Administration Committee at their meeting of November 22nd, 2004. At this time, concerns were raised over the costs and benefits of specific aspects of the report.

In order to address the concerns raised, IBM endeavored to provide cost/benefit approximations, but it was determined that more conclusive information was needed and that a Business Value Assessment (BVA) approach should be undertaken. The BVA approach was presented to the Information Technology Committee of Council (ITCC) on March 29th, 2005 and approval was granted to proceed. The BVA focused on the portal recommendation, since it represented the greater part of the estimated costs related to the proposed Strategic Plan. The Portal BVA was completed, and the results were presented to ITCC on November 21st, 2005 (see Appendix B). Staff reviewed the results, and as well consulted with other stakeholders at the Town and other municipalities.

DISCUSSION:

The foundation of the Information Technology Strategic Plan for the Town consists of six key recommendations, summarized here:

Recommendation 1: Adopt Enterprise Architecture Principles and Policies
Enterprise Architecture optimizes the ways in which all the individual IT systems within the Organization function together. The report indicates 32 guiding principles that will help to ensure that implementations of IT capabilities and technologies are consistent and have an enterprise view leading to more efficient and cost effective solutions. These principles are to be applied to the IT decision-making process as technology solutions are evaluated, selected and implemented.

Recommendation 2: Optimize Business Architecture
Business Architecture is a high level model of all the business functions that the Town requires to carry out its mission. A comprehensive and optimized view of business functionality as it relates to technology will be invaluable to facilitate communication and decision making.

Recommendation 3: Plan Portal Implementation "Access to everything, everyone, anytime, anywhere"
A portal is technology that provides all the functionality of a traditional website, but also allows for a single point of easy access to applications, opportunities for collaboration, application integration, content management and a consistent look and feel for all functionality.

Recommendation 4: Initiate an Information Management Program
Information Management establishes a consistent structure and standards to treat information as an important corporate asset. Development of an Information Management Program will enable the Town to effectively support the rapid expansion of data needs, address increased requirements for information accessibility, and bring together information from separate areas to achieve maximum corporate value.

Recommendation 5: Implement IT Process Best Practices
Best Practices facilitate improved consistency and efficiency. The industry standard framework for IT Best Practices is the Information Technology Infrastructure Library (ITIL), which is a systematic, process-based approach to managing and providing IT services.

Recommendation 6: Refine the IT Governance Model
The Town's current IT Governance Model consists of a number of governing committees and management groups that contribute in varying degrees to the decision making and approval processes. This model should be reviewed and roles clarified to enhance effectiveness and ensure that appropriate decisions can be made in a timely manner.

The fundamental principles put forth in the proposed Strategic Plan have begun to provide value in influencing our guiding vision. For example:

- The Enterprise Architecture guiding principles are being used to assist in IT decision making.
- The Portal Business Value Assessment has been completed.

- An understanding with York Region has been established to work together to define an Enterprise Architecture framework.
- IT Best Practices are being applied to essential service processes.
- More efficient IT Governance is being supported through improvements to the 2006 IT Business Case approval process.
- Implementation of portals at other municipalities is being investigated and reviewed.

Our current environment has been built over a number of years through the acquisition of different solutions that were based on departmental requirements. This condition has led to an IT infrastructure that is difficult to adapt to increased business changes. As a result, the systems within our current environment are difficult to integrate, redundant and inconsistent. Managing such an infrastructure is difficult and will become cost prohibitive.

To address these issues and position us for the future, we believe that the Town must adopt a new model for "realizing the value of IT"; a model that is less incremental and less silo-ed, one that is more agile, and responsive. This can only be achieved by adopting enterprise architecture, including recommendations on Enterprise Architecture Principles and Policies, Business Architecture, and Information Management.

Rapidly increasing demand for the delivery of IT services supports the need for Best Practice process improvements in Service Request Management, Project Portfolio Management and Application Portfolio Management to facilitate cost effective, improved service provision.

Portal technology has the potential to provide a streamlined environment that could increase the productivity of the enterprise, drive higher satisfaction and greater efficiency, and significantly expand convenient access to Town services and resources.

Architecture is an important consideration when planning and designing a portal environment. Recommendations 1, 2 and 4 are critical components of the Town's Enterprise Architecture and it is important that this architecture be developed ahead of the portal implementation. If the portal is not properly architected before it is built, then components, or possibly, the whole portal might need to be rebuilt. Although this architecture work might be viewed as a delay in terms of getting a portal operational, it is critical that the work be done using the proper steps. Another key benefit that will be achieved through proper architecture and portal design is the integration of systems and data. This will lead to more streamlined and efficient access to IT business solutions.

Costs for portal implementation over a 5 year period were estimated by IBM to be approximately $3.6 million (actual costs would vary depending on the vendor and solution chosen). The potential benefits identified by the Portal BVA included productivity improvements that would provide estimated efficiencies of $2.3 million per year when portal implementation is completed.

Currently there are a number of Committees that are involved in making IT decision or setting IT direction. There is a lack of clarity with respect to the roles and responsibilities of these committees. To ensure ITS strategies and services delivered are fully aligned with the needs and

vision of the Town and all of its business units, the current ITS governance needs to be reviewed. This review should include consideration for the introduction of Enterprise Architecture into our approach to realizing the value of IT, implicitly requiring a more corporate / less silo-ed, more strategic / less tactical style of decision-making and oversight.

It is the conclusion of staff that the recommendations of the proposed Strategic Plan will result in an IT model that is more robust, integrated and responsive to the ongoing business priorities of the Town.

FINANCIAL CONSIDERATIONS:

Funding was approved in the 2005 and 2006 ITS budget for some preliminary work related to the ITS Strategic Plan. The budget allocated for IT Strategic Plan was $100,000 in 2005 and $75,000 in 2006. The BVA was funded from the 2005 account at a cost of $25,000. Staff recommends that the remaining funds be allocated in the following manner:

1. The outstanding balance of $75,000 from the 2005 account will be allocated to undertake recommendations 1 and 2 from the IT Strategic Plan, which deal with the adoption of the architectural principles and development of the business architecture. They are important components of the overall Enterprise Architecture.
2. The 2006 budget of $75,000 will be allocated to the development of a business plan for a portal solution. This is the initial phase of recommendation 3 from the IT Strategic Plan and staff has already received Council endorsement to work with the Region on a common portal solution. These funds will cover Markham's share of the overall cost of developing this business plan.

Remaining costs required to complete the implementation of all the recommendations from the IT Strategic Plan, estimated at $3.0 to $3.5 Million (see Appendix C), should be considered as part of the Capital Budget process from 2007 until 2011.

Staff will report back to Council for funding requirements for any other projects that are derived from the recommendations of the IT Strategic Plan.

BUSINESS UNITS CONSULTED AND AFFECTED:

Input for the Strategic Plan was gathered from all areas of the Town, including the Mayor, Deputy Mayor, Councillors, CAO, Commissioners, senior management and representatives from all internal departments through an extensive interview program conducted by IBM.

ATTACHMENTS:

Appendix A - Town of Markham IT Strategy Report
Appendix B - Portal Business Value Assessment
Appendix C - IBM Costs Estimates (Over 5 Years)

James Allen
Chief Information Officer

Andy Taylor
Commissioner of Corporate Services

Appendix A

IBM Canada Ltd.
3600 Steeles Ave. East
Markham, Ontario
L3R 9Z7
(905) 316-5000

November 16, 2004

James Allen,
Chief Information Officer,
Town of Markham,
Lower Level, 101 Town Centre Blvd.,
Markham, Ontario,
L3R 9W3

Dear James,

We are pleased to submit this report of our recommendations concerning the Town of Markham's Information Technology Strategy.

Over the past few months, we have developed an appreciation of the challenges that must be addressed to realize the value of IT for the Corporation. We have benefited from frank perspectives and friendly encouragement by staff and management.

Our major recommendations and the initiatives that flow from them are intended to provide the roadmap for IT evolution over the next few years.

We look forward to working with you, your management team and others within the Town to successfully implement our recommendations.

Sincerely,

David Milne
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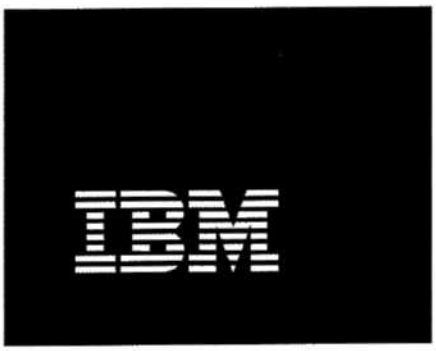
IBM Business Consulting Services



Town of Markham
IT Strategy

November 16, 2004

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1.0 Executive Summary

High expectations

As with many municipalities, the Town of Markham is encountering a political and economic climate characterized by constraints on resources, strong pressure to avoid tax increases, and increasing demands for both the scope and quality of services. Annual budget issues regularly raise the spectra of service and program adjustments.

Since 1997, The Town of Markham has branded itself as "Canada's High-Tech Capital". This reflects "the pre-eminent position of the Greater Toronto Area (GTA) as the fourth largest high-tech centre in North America; the position of Markham as the municipality with the highest concentration of high-tech firms in Canada".

In 2003, the Engage 21st Century Markham strategy outlined a 20-year vision for the Town of Markham:

> "Markham - the leading Canadian municipality embracing technological innovation, celebrating diversity, characterized by vibrant and healthy communities – preserving the past, building for the future".

Aligned with this vision is the Town's Corporate Mission:

> "Working with the Community to provide high quality municipal services that meet, if not exceed, the expectations of Town residents and businesses".

We believe that the vision and the mission reflect and reinforce high expectations for the effective and progressive use of Information Technology. To address these client and employee expectations, we believe that the Town of Markham must adopt a new model for "realizing the value of IT"; a model that is less incremental and silo-ed, one that is more agile, responsive, and architected.

A new model for IT

The new model is intended to leverage the considerable structural investment that the Town has made during the Core Services Review and Core Services Implementation.

The current Business Unit structure consists of 13 external, client-facing units and 9 internal units. Business Unit Profiles identify the services delivered by each unit, and the resources required for service delivery. Each Business Unit Profile identifies Key Performance Indicators (KPI's), measuring financial performance, operational excellence and staff and customer satisfaction by unit

At this time, the development of the Business Unit Profiles is an evolving process in the organization. As the Town becomes more experienced with this undertaking, it is expected that the Business Unit Profiles will become a critical component in tracking the organization's accomplishments.

Our experience is that a Critical Success Factor for realizing the value of IT is Business-IT alignment across the vision/strategy/plans/projects/expectations spectrum. A powerful alignment mechanism is Enterprise Architecture.

Architecture defines the standardization and integration requirements of an enterprise's operating model. Business Architecture is clarity about clients, value propositions, structures and integration/autonomy. IT architecture is clarity and organizational consensus around technology, data and process standards.

As organizations mature, they come to conceptualize their technologies and business processes in terms of well-defined components. An enterprise architecture provides a roadmap for introducing technology, data and process standardization to maximize overall benefits. Traditional IT management practices have focused on maximizing the benefits of individual applications and business units. Overtime, the result became expensive to maintain and a constraint on enterprise strategies.

We believe that the Town of Markham's Business Unit structural model should be complemented by an enterprise architecture discipline in order to clarify the balance between unit autonomy and corporate integration, and to provide the framework for the introduction of progressive and high-value IT initiatives.

The two areas for priority focus will be 'non-silo-ed' access by citizens, businesses and employees to everything, everyone, anytime, anywhere, and an information strategy to achieve maximum corporate value from the Town's islands of data.

Operational excellence in IT

During our engagement, we identified or participated in a number of 'immediate action' requirements and opportunities, some with strategic aspects. Where appropriate, we brought these forward to confirm that they were known. Examples include internal client dissatisfaction with the service request process for digital devices, mixed client satisfaction with client advisory services, client uncertainty about the status of annual plan requests, and desktop pricing concerns at Markham Public Library.

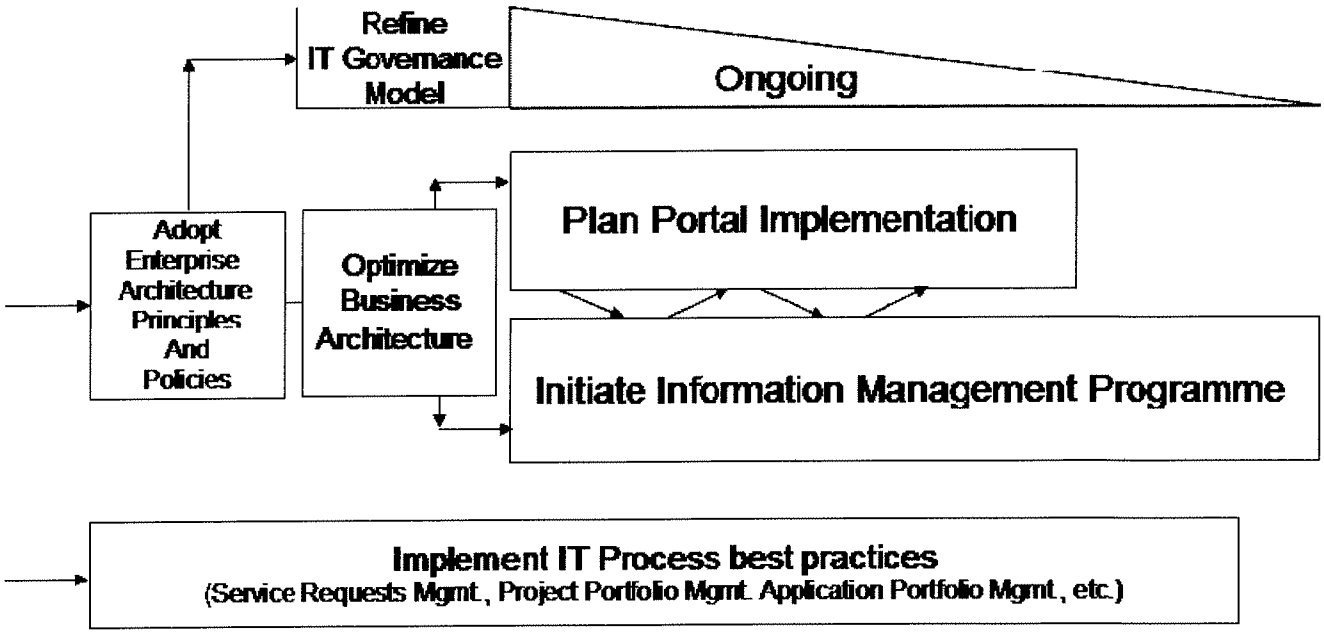
Coincidentally with our engagement, the ITS department was substantially re-organized, with new management assignments into all positions directly reporting to the CIO, and the creation of a Manager, Strategic Initiatives reporting to the CIO, plus temporary (contract) staffing in the Client Advisor team.

We believe that in addition to the improvement that is intended by these personnel actions, ITS needs to adopt best practice processes and refine the current IT Governance model.

In summary, our recommendations are:

Recommendation 1:	**Adopt Enterprise Architecture Principles and Policies**
Recommendation 2:	**Optimize Business Architecture**
Recommendation 3:	**Plan Portal Implementation – Access to everything, everyone, anytime, anywhere**
Recommendation 4:	**Initiate Information Management Programme**
Recommendation 5:	**Implement IT Process best practices**
Recommendation 6:	**Refine IT Governance Model**

A roadmap to illustrate the implementation of initiatives to address our recommendations is provided below:



Section B of this report provides an expanded background context to our engagement plus additional details on what we did and what we found. The rationale for each recommendation is amplified in section C. Initiatives to follow through on each of these recommendations are outlined in Section D.

The Appendices provide drafts for key artifacts of a proposed Town of Markham Enterprise Architecture, in order to crystallize the concepts and provide a starting point for moving ahead.

2.0 Background, Findings and Conclusions

Today's public sector leaders in Canada are finding that it is increasingly challenging to manage and develop relationships with citizens and businesses while ensuring high client satisfaction, improving operational efficiency and managing service delivery costs effectively all at the same time. Moreover, citizens' expectations of their experience with their municipal government are increasingly set by the quality of commercial interactions they have in banking and merchandising with the private sector.

However, what we have observed in many governments at all levels is a reactive and sometimes "siloed" approach to customer service. The net result is that most governments are currently not achieving a balance between individuals' and businesses' requirements, the quality of the citizen's experience and the cost of delivering it. While point solutions to improving interactions with stakeholders may be effective, there is a risk that they do not fit with each other or with the municipality's wider business vision. The result may be wasted tax dollars, duplicated effort and an increasingly inconsistent citizen experience.

The intent of the Information Technology Strategy engagement was to examine how the Town of Markham currently realizes the value of IT, to articulate a preferred future state, and to roadmap the key initiatives that would be required to transform. Our six step approach was founded on recognition of the critical importance of Business-IT alignment and the value of Enterprise Architecture.

We conducted an extensive interview program, meeting for one hour with the Mayor, Deputy Mayor, most Councillors, the CAO and Commissioners, most senior management, and IT leaders. We reviewed documentation such as the Delcan Corporation Waterworks Audit, the Markham Public Library strategy, Council's Strategic Priorities – 2004 to 2006, the ITS Operations Review, and previous IT strategies. Key findings include:

Key Finding: High Expectations

The Town of Markham's branding as:

> "Canada's High-Tech Capital",

the 20-year vision for the Town of Markham:

> "Markham - the leading Canadian municipality embracing technological innovation, celebrating diversity, characterized by vibrant and healthy communities – preserving the past, building for the future".

and the Town's Corporate Mission:

> "Working with the Community to provide high quality municipal services that meet, if not exceed, the expectations of Town residents and businesses".

And the Council's strategic priority combine to create a strong demand from the 22 Business Units for technology solutions to operational problems.

EXTERNAL
Fire & Emergency Services
Operations
Waterworks
Waste Management
Asset Management
Recreation
Cultural Facilities
Economic Development
Libraries
Building Standards
Engineering
Planning & Urban Design
Bylaw Enforcement & Parking Control

INTERNAL
Contact Centre
Secretariat Services (Clerk)
ITS
Finance Services
Corporate Quality
Corporate Communications
Human Resources
Legal Services
Strategic Services

Our involvement in the Business Unit Planning process confirmed our understanding of the demand side of the Town's current IT state. Business Units working with ITS have together identified almost 50 project requests prior to and during the Business Unit Planning process. If all are approved, Business Unit funding required would total $3.6 million, plus $1.0M to augment current FTE's in ITS with supplemental (contract) IT resources.

With reference to the Gartner report "Old Opinions about IT Spending in the New E-World" 3 August 2000 the following points are of relevance.

- Firstly is that the IT level of spending today that supports the business model will be insufficient to support the same industry as the core business models change because of e-business (i.e. e-Government).
- In the Municipal / Local sector of Public Administration, Gartner's survey for 2000 reflects that 3.35% (average over 1999-2001)and 2.66% (average over 1999-2001) of enterprise-operating budget for IS Operational and IT Capital Budgets are spent respectively. Alternatively, the total budget for IS & IT can be expressed as an average of $3873 per municipal employee.

Local Government	1999	2000	2001 (est.)
IT Operating Budget as % of Enterprise Operating Budget	3.19	3.36	3.51
IT Capital Budget as % of Enterprise Operating Budget	2.70	3.12	2.15
Average IT Operating Budget per Employee	$4,127	$3,814	$3,678

Source: Gartner

More recently, the Gartner 2003 IT Spending and Staffing Survey reported:

Local Government	2002	2003	2004 (est.)
IT Operating Budget as % of Enterprise Operating Budget	4.56	4.28	4.37
IT Capital Budget as % of Enterprise Operating Budget	1.28	1.04	1.37
Business Unit IT Spending as % of Enterprise Operating Budget		2.33	
Average IT Operating Budget per Employee		$4,114	$4,321

Source: Gartner

Gartner encourages the use of the IT Operating Budget statistic as the basis for comparison, because the Capital budget tends to be more volatile (e.g. a major server acquisition occurs infrequently).

	2002	2003	2004 (est.)
Town of Markham IT Operating Budget as % of Enterprise Operating Budget (From 2004 Business Unit Profile)	2.84	2.78	2.58

Key Finding: IT Services, Capabilities and Capacity Perceptions

Headed by the Chief Information Officer (CIO), the ITS Department has been structured until recently into three divisions, namely Client Delivery, Application & GIS, and Technology. Utilizing a client delivery model, the current structure is intended to enable the divisions to work together to deliver services that are intended to exceed clients' expectations. The implementation of IT best practices is planned. Full service technical support is provided with limited out-sourcing. Client Delivery acts as a focal point for client contact and works with Application & GIS, and Technology Divisions to prioritize requests and organize strategies to deliver solutions.

Client Delivery Division - Client Delivery works with clients in all Town's departments to address and implement information technology needs and applications that enhance Town's service delivery. This Division is also responsible for establishing and implementing service improvement programs, and proactively addressing client requirements. The User Helpdesk is located in this Division.

Applications & GIS Division - Applications & GIS works with departments and other internal ITS divisions to evaluate, acquire, implement, and support enterprise-wide software and services. This Division is also responsible for setting up the Town's web site. It is also responsible for setting GIS standards and providing a wide range of GIS services to the Town.

Technology Division - Technology works with all Town's departments to ensure that all platforms of technologies are able to cohabitate in the Town's standard computing environment. Technology currently supports all network infrastructure, telecommunications, computers, and desktop productivity hardware and software.

The following table summarizes the feedback from the users of ITS concerning the various services that are offered. **Red** indicates a frequent negative perspective, yellow a mixed perspective, **green** a positive perspective, and colourless indicates the absence of feedback.

Note that these perspectives are based on interviews conducted prior to the recent re-organization of the ITS department which included new management assignments into all positions directly reporting to the CIO, and the creation of a Manager, Strategic Initiatives reporting to the CIO, plus temporary (contract) staffing in the Client Advisor team.

Client Advice - Strategic	
Client Advice – Tactical / Project	
Desktop (Rollout)	
Help Desk Support	
Business Case Analysis Technology Acquisition & Support	
Application Acquisition & Support	
Internet/Intranet Development	
GIS Related Services	
Database Development & Support	
Network Development & Support	
Telephony Development & Support	
AV Support	
Project Management	
Process Analysis	

There was some feeling that there was a degree of imbalance in the service provided to various Commissions.

Key Conclusion: IT Processes

Uniformly, we received positive feedback concerning individuals and IT skill levels. We concluded that the underlying ITS service delivery processes were the root cause of the negative perspectives. In addition, we believe that capacity planning is a secondary area for improvement to address user perceptions regarding IT services.

Key Conclusion: IT Capacity

Within ITS, there is concern about workload and whether there is sufficient staff capacity to meet client and corporation expectations. Gartner statistics indicate a capacity shortfall. We believe that the priorities for addressing this concern are

1. Tighter alignment between Business Unit and ITS plans and budgets, both during Business Unit Planning and on an ongoing basis after the plan/budget is set, leveraging a strengthened ITSC (see below).
2. More disciplined service request and service delivery processes to screen unnecessary work and to avoid scope creep/churn.

   Note that these processes would apply to any decentralized service delivery resources (e.g. Intra/Internet, GIS, "super-users").
3. Diligent resource estimating and project tracking to ensure capacity requirements are proactively-understood and addressed in a timely

manner. Additional focus on proactive "on demand" resolution of resource shortfalls, possibly leveraging preferred supplier relationships.

Note that any decentralized service delivery resources (e.g. Intra/Internet, GIS, "super-users") would be included.

4. Clear, agreed priorities for all items in the project portfolio so that the implications of new projects and/or project changes can be identified and resolved promptly.
5. Responsive executive decision-making to balance supply and demand for IT resources and to ensure an optimum mix of permanent and temporary staff.

Key Finding: Enterprise Architecture

Putting an IT Architecture Plan in place has a number of benefits:

- Increases the compatibility of solutions developed in different organizations across the enterprise
- Enables the sharing/reuse of IT solutions, thus leveraging IT investments
- Provides common processes and methods
- Enables increased productivity and lower learning curve for users and developers, thus leveraging existing skills
- Improves flexibility of the IT infrastructure in responding to changing business needs
- Provides a rational process for managing the introduction of new technologies into the enterprise

No Enterprise Architecture has been developed for the Town of Markham. No architectural principles, policies, guidelines have been adopted. No architecture management processes are in place. No overall information management strategy has been developed, although some aspects have been established for geo-spatial data by the Centre for GIS. One unique aspect is that the Business Owner role and the IT Information Owner role are combined and located in ITS.

Key Conclusions: Portal Implementation, Information Management

Based on our development (and initial validation) of draft architecture principles and draft architectural models for Business Capabilities, Application Function, Information, and Technology Framework we have concluded that the priorities for action are

1. Architecture adoption
2. Portal development
3. Information management

Key Finding: IT Governance, Business-IT Alignment

To ensure ITS strategies and services delivered are fully aligned with the needs and vision of the Town and its all business units, the current ITS governance structure includes two staff committees to foster cross communication among Commissions on IT issues and integration of systems:

Information Technology Steering Committee (ITSC) - ITSC is a forum for key senior Directors with a keen interest in the development of information technology to support the Town of Markham's vision, mission, values and goals. The Committee reviews the status of all ITS projects and ensures that these projects meet their business objectives as identified in their business case, including financial savings and service improvements.

We believe that the ITSC's current effectiveness is limited. Our observation is that the current agendas lead to an over-emphasis on project status reporting and an under emphasis on strategy, policy and capability debate. Functional perspectives are provided to the CIO for his decisions, but decision-making from an overall corporation perspective has been declined by the functional representatives. The root cause may be the absence of mechanisms to ensure that each member has clarity about the priorities and plans of the areas they represent. The root cause may also be the absence of incentives to take positions that may adversely affect unfamiliar areas.

Markham Technology Advisory Committee (MTAC) - MTAC is a forum for all "super or power users" that provides guidance and feedback to the ITS Department on the delivery of information technology services. Activities focus around operational enhancements/issues and includes communication of IT projects and other initiatives that impact client departments. The intention is to ensure that IT and its key users understand each other's priorities and that these priorities are considered when tasks are being assigned to Information Technology Services Department staff.

In addition, an **IT Sub-Committee (ITCC)** of the Finance and Administration Committee of Council is in-place to provide oversight to strategic IT matters.

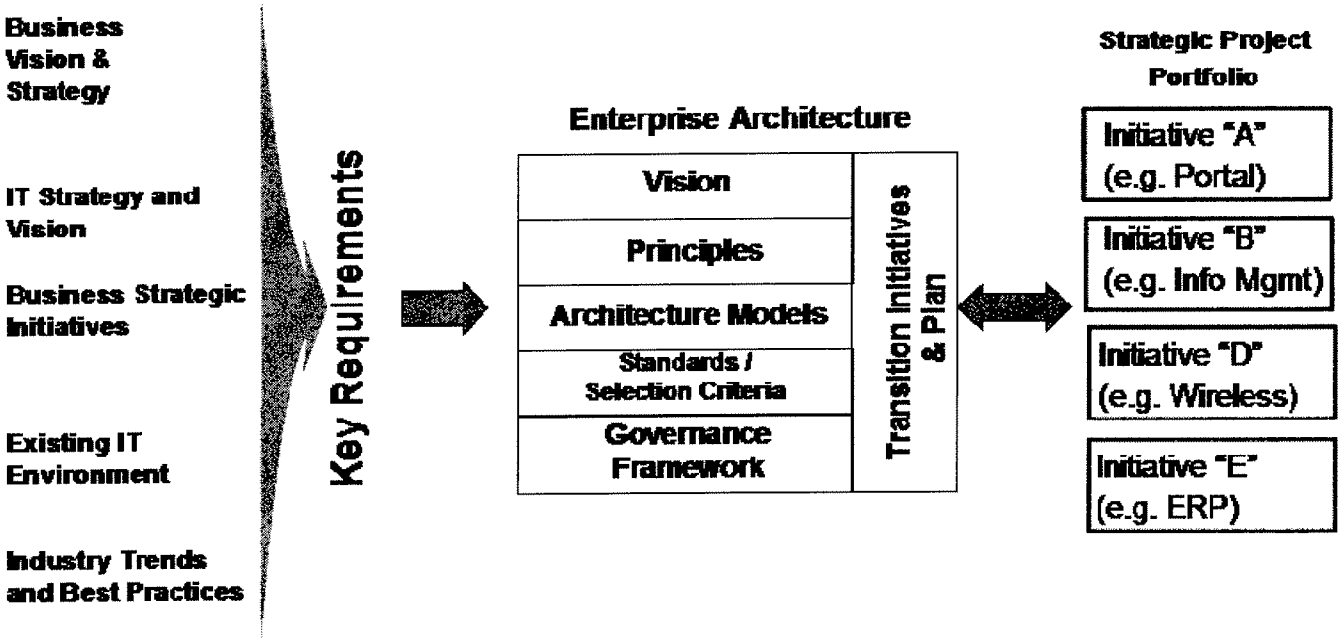
The 2004 iteration of the evolving Business Unit Planning process included an increase in cross-unit information sharing and a specific focus on IT support requirements, possibly stimulated by the IT Strategy engagement. It is expected that decision-making about Business Unit programmes will precede and guide the budgeting process. This decision-making will provide a firmer framework for ITS core and discretionary planning and 2005 budget development.

We believe that the roles of the ITSC and the ITCC should be refined and clarified in light of the strengthened Business Unit Planning process. This refinement should include consideration of the introduction of Enterprise Architecture into the Town of Markham's approach to realizing the value of IT, implicitly requiring a more corporate / less silo-ed, more strategic / less tactical style of decision-making and oversight.

3.0 Recommendations

Recommendation 1: Adopt Enterprise Architecture Principles and Policies

Enterprise Architecture Development helps organizations realize maximum value from their IT investments through the development of clearly defined technology architecture and the improvement of Enterprise IT management processes. An Enterprise Architecture plan communicates the common vision and enables IT to support business requirements and successfully leverage new technologies as they are introduced into the organization's business environment.



Key objectives of Enterprise Architecture are:

- Align business and IT objectives and resources
- Speed decision-making through established principles, models, standards, and processes
- Improve communication, prioritization, and governance of initiatives
- Speed time-to-market by reducing lead time for installing and testing technology (have the technology ready before it is needed)
- Reduce integration problems through compliance with the architecture
- Reduce cost by retiring duplicate or outdated assets
- Provide a foundation for skills development
- Follow an established roadmap for infrastructure development

Underlying an Enterprise Architecture are principles, policies and guidelines which must be agreed by business unit executives, corporate leadership and IT management.

We have drafted an initial set and gained the concurrence of IT management:

Guiding Principles

1. IT Assets are business enablers and will be deployed to support Town of Markham strategies and plans.
2. The scope of the Town of Markham's Architecture (EA) Principles, Standards, Models, Guidelines, Processes and Plans will extend across the Town of Markham.
3. The preferred decision-making sequence for IT Solution delivery will be:
   a) Reuse existing IT Assets,
   b) Acquire / purchase new IT Assets,
   c) Build new IT Assets.
4. The Town of Markham will optimize the number and diversity of IT Assets / Solutions employed across the organization.
5. Town of Markham will be proactive and innovative in its use of IT Solutions while minimizing the risk.
6. Town of Markham will acquire and / or develop IT Solutions according to defined and approved standards. When possible, commercially accepted international and industry standards (either de jure or de facto) will be adopted.

Management and Organization Principles

7. IT Assets are critical resources to the Town of Markham and will be managed through their life-cycle (e.g. planning, acquisition, use, maintenance, disposal, long term preservation).
8. IT Solution delivery will not be conducted in isolation from the Town of Markham CIO.

Data Management Principles

9. All primary data will have a single, documented business owner, who will be responsible for defining rules for its usage and protection.
10. All primary data will be captured once with high integrity at the source, stored once in a single version, and made available (shared) in a timely and reliable fashion to those who need it (and are entitled to it). Updates will be made only to the primary version of the data. Managed replication of primary data will be allowed when it is proven necessary for response time, availability or ease of use.
11. Secondary (derived) data will be stored and used separately from primary data. The data derivation processes (a.k.a. transformations) must be clearly identified. Use of Secondary data will be clearly delineated, and the implications understood by its users.

IT Solution Delivery Principles

12. Acquired (e.g. purchased) applications which are vendor maintained (i.e. supported and enhanced) will only be customized for integration, regulatory reasons, or when of significant and direct value to the citizens.
13. IT Solutions will be consistently partitioned into distinct layers of responsibility (i.e. services) where each layer depends only on the layer(s) below it. The foundational layers within an application (known as "tiers") will be: user interface, business logic, data access logic, and data.
14. All IT Solution delivery will be guided by an overarching defined method (delivery framework) and will utilize a consistent set of solution delivery tools.

User Access Principles

15. All applications used by a defined community of users will have a consistent user interface that is appropriate for the usability requirements of that community.
16. For each of its defined communities of users, the Town of Markham will establish a common base client workstation configuration, including user interface, data management, application services, connectivity and hardware.
17. Location and time will not restrict user access to the processes and data required by users to perform their roles.

Technology Principles

18. The Town of Markham will adopt new technologies that:
    a) Are demonstrably robust and reliable
    b) Provide sufficient scalability to support growth
    c) Have broad industry acceptance,
    d) Have committed available support, and
19. Technology acquisition decisions will be made following established architectural evaluation criteria.

Privacy Principles

20. Town of Markham, citizens, and stakeholders will be able to trust that the IT Solutions that the Ministry uses protect privacy and provide reliable information.
21. Personal Information may be obtained with the consent of the subject or by the authority of law. Applications will limit the collection of personal information to that which necessary for the business objectives being supported.
22. Applications will not disclose, make available or otherwise use personal information for purposes other than those stated to the subject, except with the consent of the subject, or by the authority of law.

23. Applications will provide means to keep personal information accurate, complete and up-to-date for its intended purposes. Means for the recording of consent status and changes to it will be provided when appropriate.
24. Applications will provide the information necessary for subjects to gain access to, or request correction of, their personal information. Such information will include how to contact the person accountable for privacy measures for the given application.
25. For each application, a designated person will be accountable for privacy protection measures. Accountability will be supported by appropriate privacy monitoring and control capabilities (e.g. audit trails).

Security Principles

26. Security is a business issue that, in addition to provision of security technologies, must extend into what people do and how they do it. This will be addressed through the definition of Security Policies, Procedures and Processes, followed by Training and Awareness initiatives that ensure adoption and implementation.
27. The level and cost of security controls will be appropriate and proportionate to the value of IT assets and to the severity, probability and extent of potential harm.
28. Security design will apply "Security Zones" and "Security Layers" to achieve a consistent and appropriate level of Security and risk acceptance across the Town of Markham. IT Solutions will be composed of multiple Security Layers that are placed into appropriate Town of Markham Security Zones.
29. Constantly changing security threats and risks will be addressed with "active" security measures and appropriate resources.

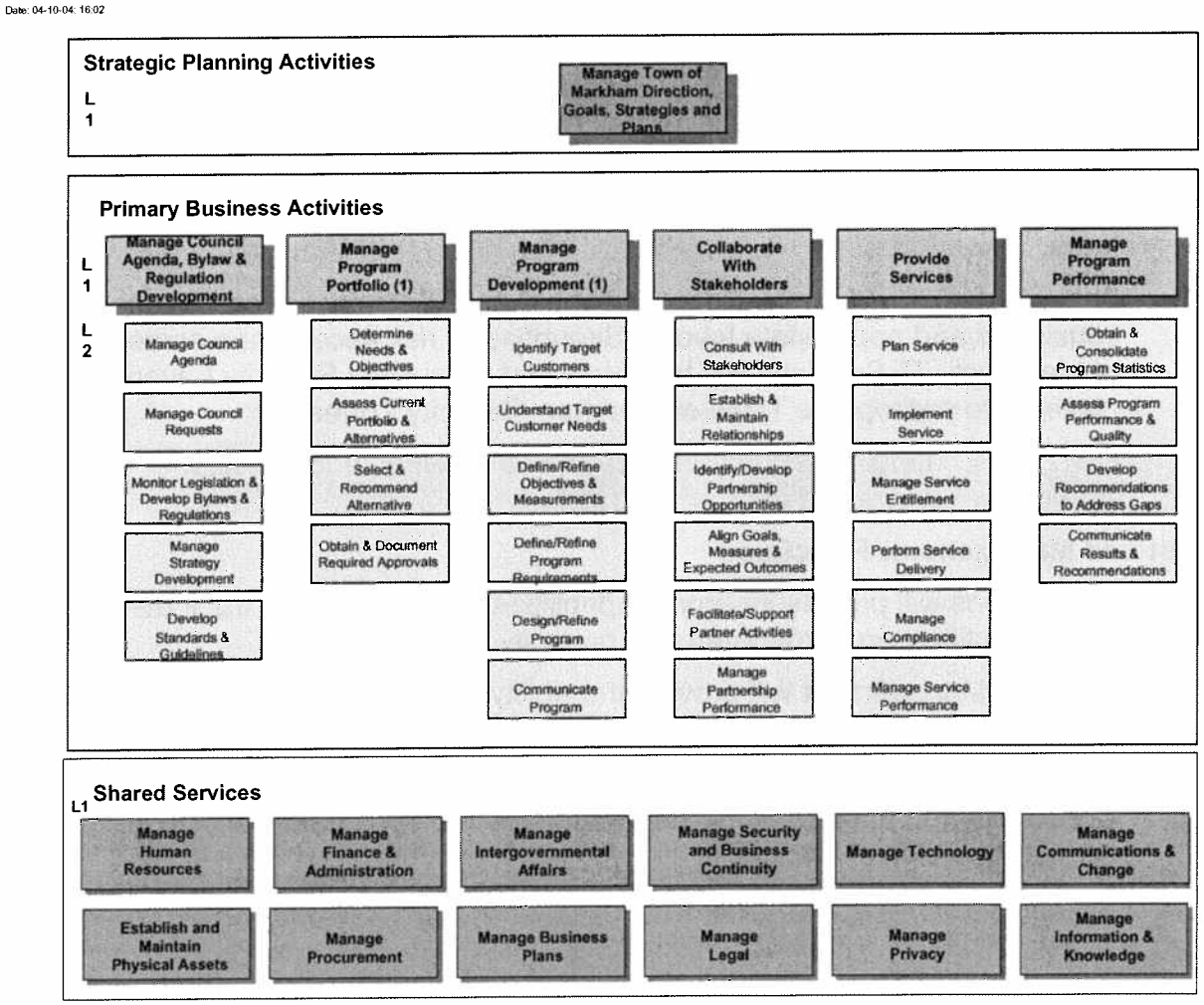
Systems Management Principles

30. IT Solutions will provide inherent capabilities to measure and track performance, security, utilization, throughput and capacity.
31. Systems Management will provide the ability to coordinate and inform from a remote location. Systems Management will be oriented towards centralized management over IT Assets.
32. Consistent and appropriate systems management processes will be adopted across the Town of Markham.

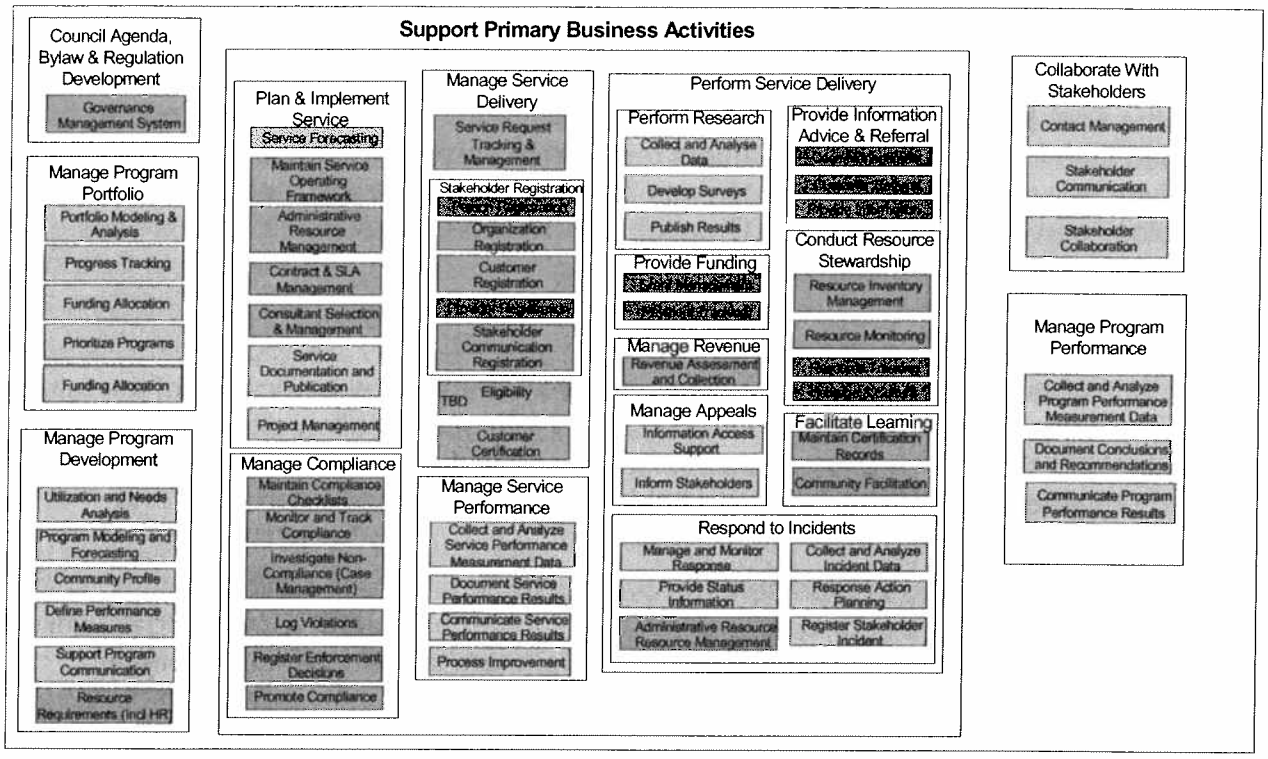
Recommendation 2: Optimize Business Architecture

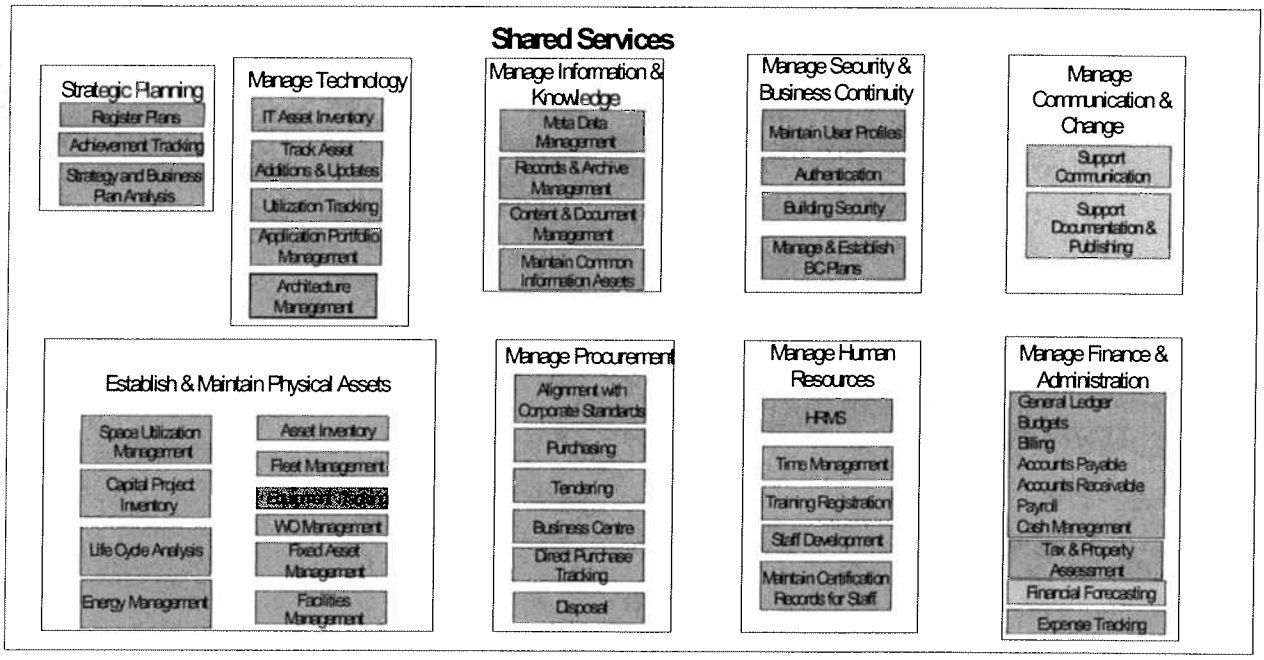
We have developed a high level model of the business capabilities that the Town of Markham requires to carry out its missions. This model is derived from similar models developed for other jurisdictions and has been validated with selected individuals.

The power of this model is that it reduces the emphasis on organization structure and service uniqueness and increases the emphasis on possibilities for process standardization across the municipality. With appropriate debate, it enables decision-making and communication about Business Unit autonomy and enterprise integration. With appropriate agreement about the envisioned Business Architecture, the model guides the development of the IT Architecture.



We have leveraged the draft business capabilities model to develop a draft application model which would provide the basis for a gap analysis with today's application support and the determination of requirements for future acquisitions/replacements. This model was validated in a workshop with selected individuals.


Support Primary Business Activities
Council Agenda, Bylaw & Regulation Development
Governance Management System
Manage Program Portfolio
Portfolio Modeling & Analysis
Progress Tracking
Funding Allocation
Prioritize Programs
Funding Allocation
Manage Program Development
Utilization and Needs Analysis
Program Modeling and Forecasting
Community Profile
Define Performance Measures
Support Program Communication
Resource Requirements (incl HR)
Plan & Implement Service
Service Forecasting
Maintain Service Operating Framework
Administrative Resource Management
Contract & SLA Management
Consultant Selection & Management
Service Documentation and Publication
Project Management
Manage Compliance
Maintain Compliance Checklists
Monitor and Track Compliance
Investigate Non-Compliance (Case Management)
Log Violations
Register Enforcement Decisions
Promote Compliance
Manage Service Delivery
Service Request Tracking & Management
Stakeholder Registration
Organization Registration
Customer Registration
Stakeholder Communication Registration
TBD
Eligibility
Customer Certification
Manage Service Performance
Collect and Analyze Service Performance Measurement Data
Document Service Performance Results
Communicate Service Performance Results
Process Improvement
Perform Service Delivery
Perform Research
Collect and Analyse Data
Develop Surveys
Publish Results
Provide Funding
Manage Revenue
Revenue Assessment and Collection
Manage Appeals
Information Access Support
Inform Stakeholders
Respond to Incidents
Manage and Monitor Response
Provide Status Information
Administrative Resource Management
Collect and Analyze Incident Data
Response Action Planning
Register Stakeholder Incident
Provide Information Advice & Referral
Conduct Resource Stewardship
Resource Inventory Management
Resource Monitoring
Facilitate Learning
Maintain Certification Records
Community Facilitation
Collaborate With Stakeholders
Contact Management
Stakeholder Communication
Stakeholder Collaboration
Manage Program Performance
Collect and Analyze Program Performance Measurement Data
Document Conclusions and Recommendations
Communicate Program Performance Results


Shared Services
Strategic Planning
Register Plans
Achievement Tracking
Strategy and Business Plan Analysis
Manage Technology
IT Asset Inventory
Track Asset Additions & Updates
Utilization Tracking
Application Portfolio Management
Architecture Management
Manage Information & Knowledge
Meta Data Management
Records & Archive Management
Content & Document Management
Maintain Common Information Assets
Manage Security & Business Continuity
Maintain User Profiles
Authentication
Building Security
Manage & Establish BC Plans
Manage Communication & Change
Support Communication
Support Documentation & Publishing
Establish & Maintain Physical Assets
Space Utilization Management
Capital Project Inventory
Life Cycle Analysis
Energy Management
Asset Inventory
Fleet Management
WO Management
Fixed Asset Management
Facilities Management
Manage Procurement
Alignment with Corporate Standards
Purchasing
Tendering
Business Centre
Direct Purchase Tracking
Disposal
Manage Human Resources
HRMS
Time Management
Training Registration
Staff Development
Maintain Certification Records for Staff
Manage Finance & Administration
General Ledger
Budgets
Billing
Accounts Payable
Accounts Receivable
Payroll
Cash Management
Tax & Property Assessment
Financial Forecasting
Expense Tracking

Recommendation 3: Plan Portal Implementation – Access to everything, everyone, anytime, anywhere

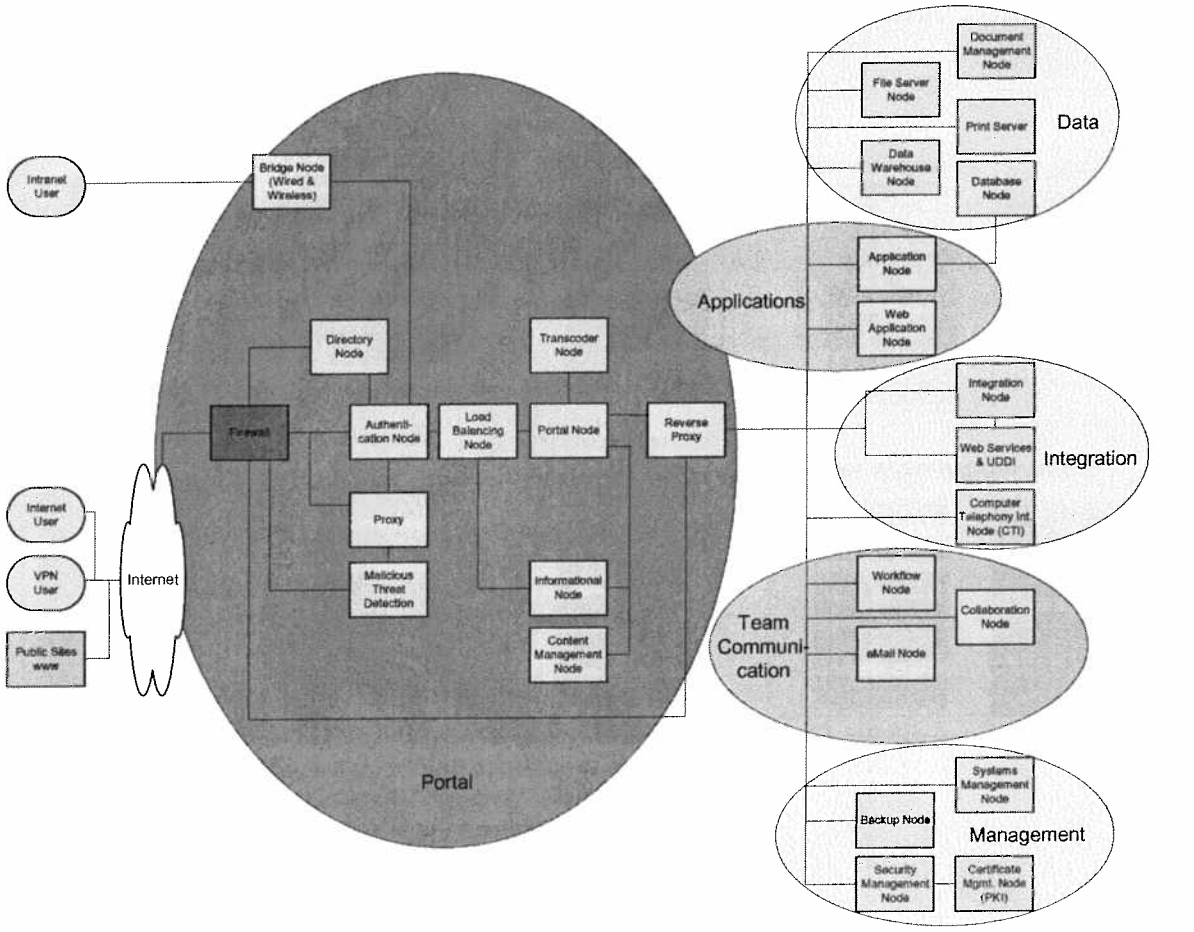
Using the draft business capabilities model and the draft application framework we have identified the IT capabilities and enablers required to implement the desired business objectives and capabilities. This Enterprise Technology Framework defines the technology services and functions (IT capabilities) required to support the business applications and data, including Common Application Services, Common Data Services, Common System Services, Network Services, Security Services, Platform Services, as well as the management tools used to support the delivery of IT service.

The draft framework does not represent a complete functional specification of the future IT requirements. Rather, it defines them at a sufficient level to allow alternate potential technologies and solution paths to be evaluated and investment decisions to be made prior to proceeding with the design and implementation of specific hardware and software components and application systems.

A Node Diagram is used to represent the overall shape and feel of a Technology Architecture. Nodes are definitions of logical "computer platforms" required to deliver the business functionality identified in Town of Markham's business requirements.

ToM Target Enterprise Architecture - HL Conceptual / Logical Diagram

Last Revised: November 16, 2004, 12:33



Our analysis of the draft Node Diagram leads us to the conclusion that Portal functionality providing "access to everything, everyone, anytime, anywhere" (i.e. all authorized services and information... for residents, businesses employees and other jurisdictions... around the clock... from any location or appropriate mobile device).

The existence of portals is generally understood by most, but the concepts, technologies and methodologies are still a mystery. Portals are an e-government framework that enables different levels of functionality and interactivity to members based on preferences and business rules. Portals provide a single point of contact and better 'context' around work activities and add value through customized, authorized connections and personalization.

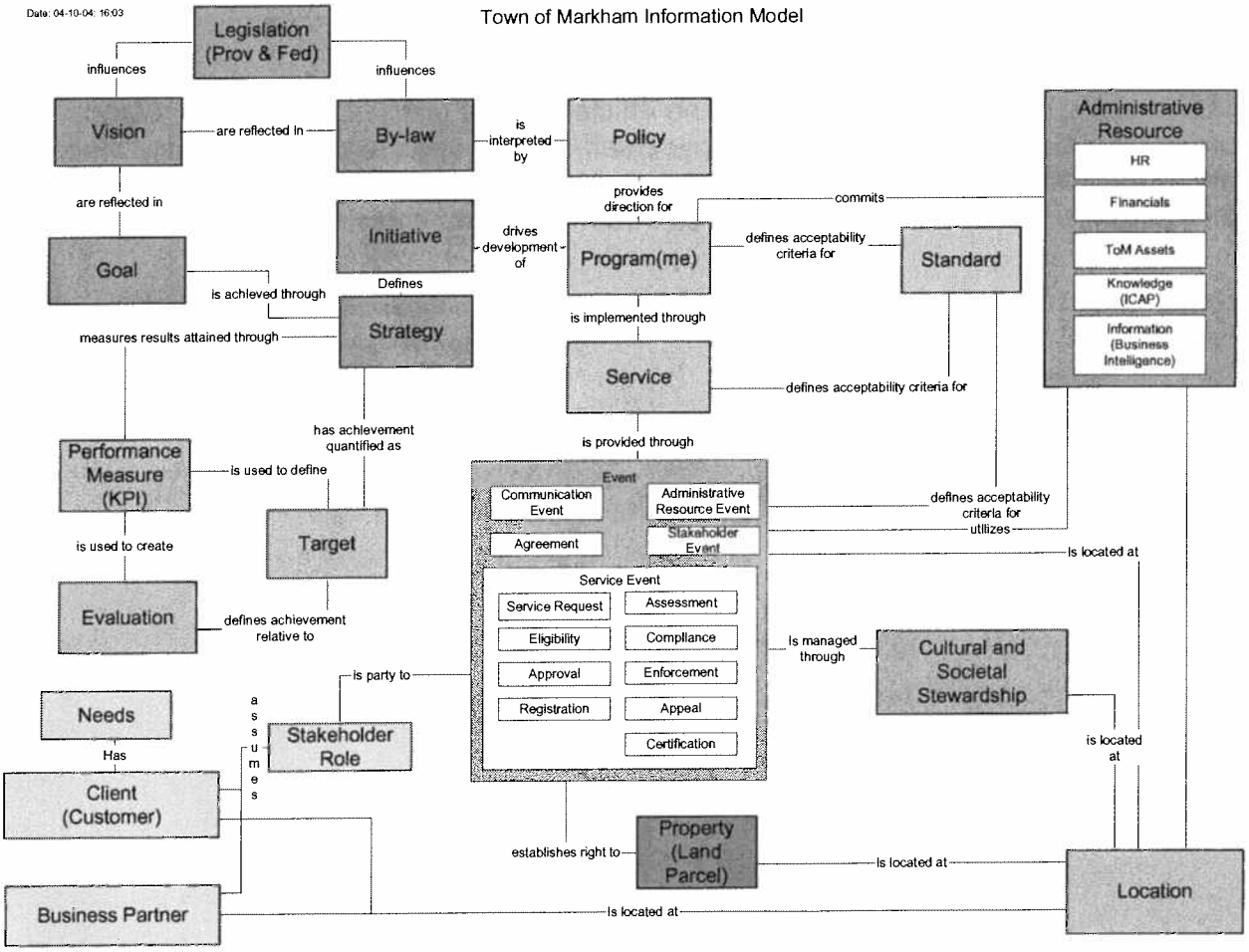
The paradigms of portals are taking a foothold as a critical infrastructure component in the e-government platform. Jurisdictions are pursuing portal initiatives addressing four segments: employees (G2E), citizens (G2C), business clients and partners (G2B), and other jurisdictions (G2G).

The intent is to dramatically increase the efficiency and productivity of the enterprise, by providing a rich environment for employee self-service tools to drive higher satisfaction and greater efficiency and by building an environment where employees, customers, and partners can have access to shared information and knowledge.

Recommendation 4: Initiate Information Management Programme

The intent is to treat the Town's information as an enterprise resource and to enable decision-making based on consistent and current information and knowledge. Today, the Town's data resides in islands, with few linkages and considerable redundancy. Manual re-keying of data into local management information tools leads to inconsistent viewpoints about common items.

We have leveraged the draft business capabilities model to develop a draft information model which would provide the basis for a gap analysis with today's data support and the determination of requirements for future acquisitions/replacements. This model was validated in a workshop with selected individuals.



This model will give direction to an evolutionary migration of the current islands of data to a more integrated set of information with clearly defined policies for use. It also shows the relationships between the various types of information, thus allowing for a better understanding of the impact of various packages, especially in the area of integrating various solutions.

These are the potential cost savings associated with reduced effort of systems and business professionals in collecting and collating data, in addition to eliminating the ongoing support and maintenance costs of existing management information systems over time.

Previously mentioned Data Management principles need to be made into business-as-usual operating practice:

- All primary data will have a single, documented business owner, who will be responsible for defining rules for its usage and protection. This implies that:
  - The "business owners" of data will need to define rules for the usage and protection of the data they own.
  - There will need to be coordination between business and technical people to understand the costs and benefits of proposed "rules".
- All primary data will be captured once with high integrity at the source, stored once in a single version, and made available (shared) in a timely and reliable fashion to those who need it (and are entitled to it). Updates will be made only to the primary version of the data. Managed replication of primary data will be allowed when it is proven necessary for response time, availability or ease of use. This implies that:
  - A policy for ensuring classification of data (as either "Primary" or "Secondary") is required.
  - High performance and highly reliable data sharing mechanisms required.
  - Inventory and cataloguing of primary data is required. Those wishing to use primary data must have clear instructions on how it is to be accessed. Information Management Frameworks may address the coordinated access and use of data.
  - Backups and/or archives of data can be considered Primary data for purposes of this principle. They are handled as "point-in-time" managed replicas of primary data.
- Secondary (derived) data will be stored and used separately from primary data. The data derivation processes (a.k.a transformations) must be clearly identified. Use of Secondary data will be clearly delineated, and the implications understood by its users. This implies that:
  - A policy for ensuring classification of data (as either "Primary" or "Secondary") is required.
  - Further Policies and guidelines for Secondary data management must be formulated.
  - Metadata will be very important. Metadata is likely more important in the area of secondary data in order to clearly indicate to users the transformations that have occurred.

We recognize that some aspects of the proposed Information Management Programme have been established for geo-spatial data by the Centre for GIS. For example, two key data stewardship roles have been put in place, the Business One for an information group and the IT Information Owner. However, a unique aspect is that the Business Owner role and the IT Information Owner role are combined and located in ITS. As the overall Information Management Programme is developed, attention should be paid to the experiences with promoting, delivering, and overseeing geo-spatial data.

The Information Management Programme may call for data warehouses which require data to be structured in a way that provides information to directly support business analysis. Turning data into information requires organizing it and storing it so that it is understandable to the business users who need it. Once the Town's operational data is clean and in one accessible area for business users that need it, the data becomes a strategic asset and a real source of differentiation. This enables intangible benefits to individual users through a higher level of empowerment, and to the organization as a whole through sharing of valuable information.

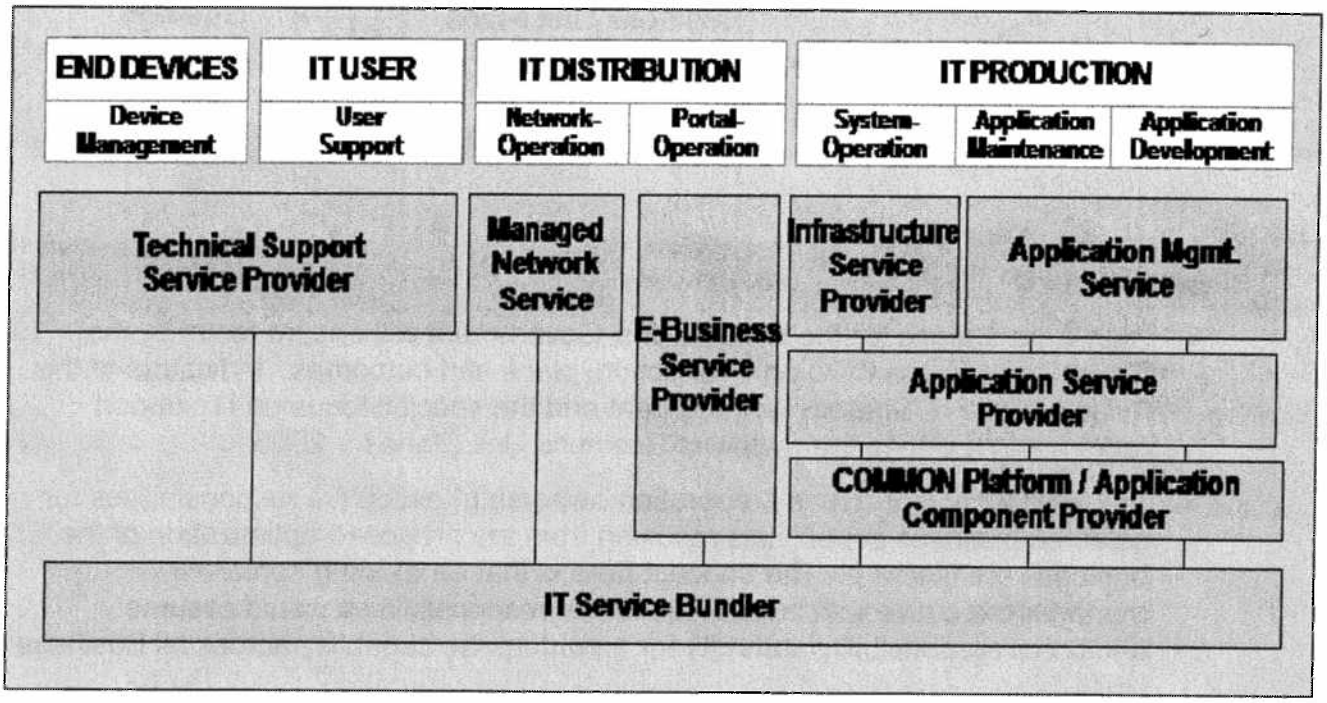
Data Migration / Integration will occur over time. The proposed examination of Storage Area Network technology should complement the Strategy and the Migration.

Recommendation 5: Implement IT Process best practices

We view the IT function as a series of services to the enterprise. Each of the client services outlined below is perceived to be satisfactory by the client when

- There is clarity about what is offered …the nature of the service overall (e.g. technical support helpdesk for approved software and hardware), and the specifics of the service characteristics (e.g. wait-times before acknowledgement of request for service, response times for various types of assistance).
- There is agreement about the level of service to be required and provided (sometimes formalized into a service level agreement).
- Expectations for service are met.
- In the case where multiple services are required, the interpersonal relationships across all the services are maintained.

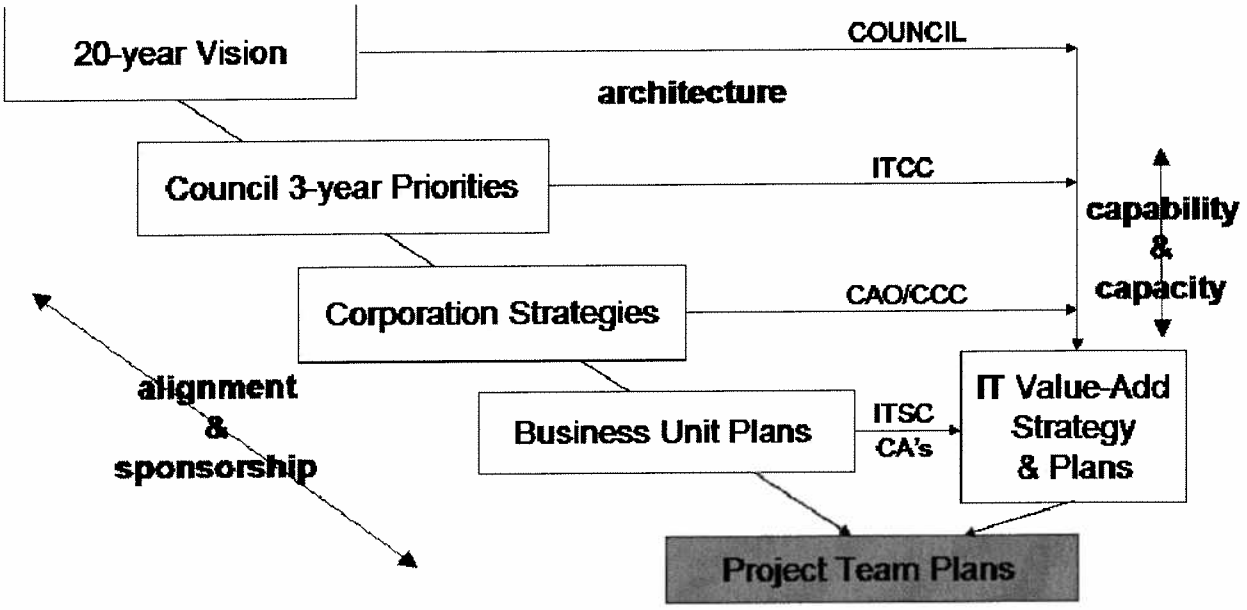
In addition the IT function needs to manage the assets underlying the services.



Our assessment is that priority for IT process improvement should be given to Service Request Management, Project Portfolio management, and Application Portfolio management. Over time, all ITS services should be based on best practice processes (e.g. ITIL). Of course, all process implementations should address appropriate measurements.

Recommendation 6: Refine IT Governance Model

The chart below was presented to the Business Unit Planning meeting on Tuesday September 16, 2004. It is intended to highlight several opportunities for improvement in the current IT governance processes, and the change implications that will result from adopting an Enterprise Architecture approach to realizing the value of IT.



We anticipate:

- High expectations for the benefits of e-Government will ensure focus by the Council and by the CCC on IT direction, plans and outcomes. Indicators of this focus are this IT Strategy engagement and the specific focus on IT support requirements during the review of Business Unit Plans for 2005.
- The introduction of "cross-corporation ownership" executive responsibilities for selected business capabilities resulting from the proposed optimization of the business architecture. The concept here is that an existing senior manager/executive with current functional responsibilities would assume additional responsibility/authority for an enterprise capability across all Business Units.
- The introduction of "cross-corporation ownership" executive responsibilities for selected information resulting from the proposed information management programme. The concept here is that an existing senior manager/ executive with current functional responsibilities would assume additional responsibility/authority for an information group across all Business Units.
- Continuing high expectations and high demand for IT initiatives against a back-ground of fiscal constraints and more disciplined processes.

- The introduction of enterprise architecture responsibilities and the need for architecture compliance decision-making.
- Strengthening collaboration between internal clients and ITS client advisors.
- Strengthening collaboration between/among internal clients leading to fewer, more comprehensive solution initiatives.

Any one of these would require adjustments to be made to the current IT Governance model… all of these together will require an evolution over time to a substantially different model, through a series of intermediate models coordinated with the evolution of the Business Unit Planning Process, the adoption of an Enterprise Architecture and the move to an Information Management Programme.

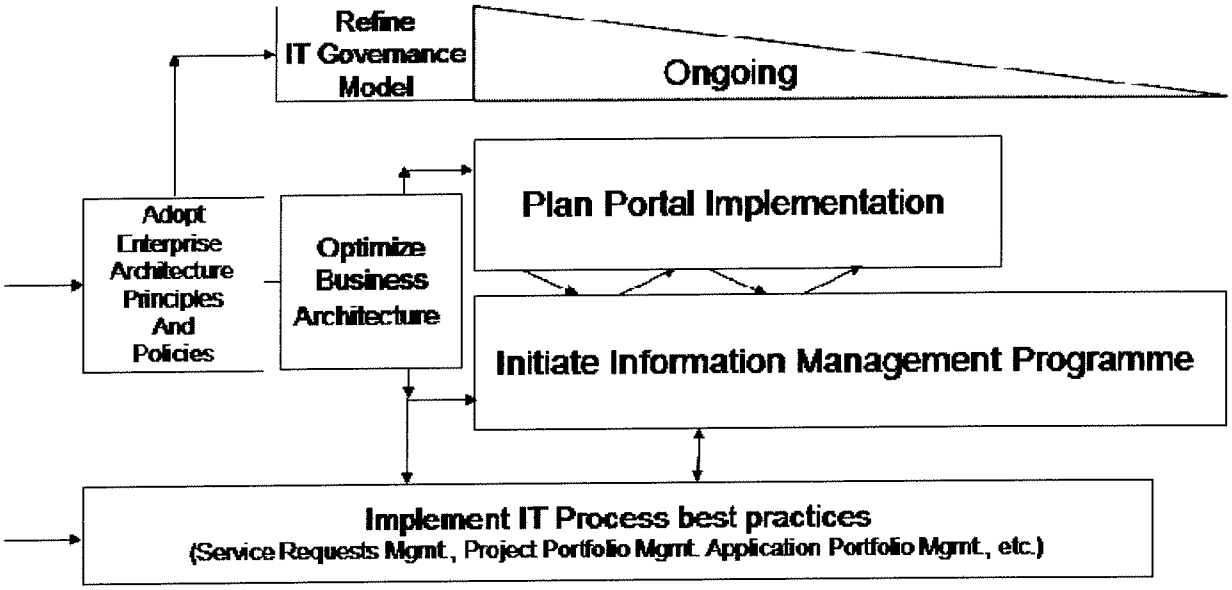
As an example of these changes, we anticipate that the Business Unit Planning and Budgeting processes are likely to provide a firmer, more broadly understood base plan for IT in 2005. ITSC members are likely to have a better starting point from which to oversee IT projects and priorities. Nevertheless, ITSC members will need to establish ongoing mechanisms to ensure they stay abreast of changing needs and priorities of the Business Units they represent, perhaps leveraging the strengthened Client Advisor capability within ITS or by creating cross-commission IT forums.

As further examples, the introduction of cross-corporation responsibilities as noted above would require these to be reflected in the terms of reference of the ITSC. The ITSC mandate would also require including the enterprise architecture lead/role.

We believe that external support throughout this transformation will be valuable. We see the support including assistance in examining alternate designs, assistance in gaining stakeholder buy-in, and assistance in coaching/mentoring individuals as roles and expectations change.

4.0 Initiatives (Work in Progress)

For each recommendation, we have developed a preliminary description of an initiative to address the recommendation. These follow the diagram below which is intended to show the interrelationship between the initiatives.



Initiative 1: Adopt Enterprise Architecture Principles and Policies

Enterprise Architecture principles guide how IT supports the business. The purpose is to ensure that implementation of IT capabilities are consistent and have an enterprise view leading to more efficient and cost effective solutions.

This will be done through a multi-step buy-in process through one or more workshops at each management level to gain agreement to each of the proposed principles based on the Motivation / Implication thoughts, and the participants' view of the appropriateness of the principle to the Town of Markham. This inc;ludes agreement to add or remove principles.

The suggested sequence of the workshops is: CIO, ITS Management, ITSC, Department Heads Forum, CCC, ITCC, and the Council

This has already been started within IT and the ITSC

Initiative 2: Optimize Business Architecture

Following Initiative 1

To attain effectiveness in the execution of business processes today's organizations are identifying similar processes that cross the enterprise. This would lead to common business processes where applicable, and a similar IT support for the same. Overall the

impact would be more efficient, cost effective execution of the processes which would benefit both the enterprise and its stakeholders including businesses and residents.

The Optimize Business Architecture Initiative will consist of Multi-session workshops at the CCC level to dialogue the preliminary business capabilities model and cross-Business Unit standardization opportunities followed by Council agreement. This will be followed by Department Heads Forum sessions to gain acceptance and consider implications, enablers and transition with potential updates to the architecture.

Based on the workshops and forums the draft Architecture models will be updated and in selected areas evolved to the next level of detail, followed by approval by the CCC

Finally an ongoing implementation program, focusing first on Compliance and Communication processes will be initiated, followed by the Vitality process

Initiative 3: Plan Portal Implementation – Access to everything, everyone, anytime, anywhere

Following Initiative 2, supported by Initiative 4.

Governments today are faced with the challenge of bringing together the many "islands of automation" needed to support the explosion of service expectations in the citizen-centric e-government world.

Organizations are finding that the need to leverage the value of the internet is driving them to re-examine the decentralized nature of their systems and operations. This results in the 're-assembling' of disparate enterprise applications through the definition of an enterprise view of information and architectures. This also results in re-examining the strategies for delivering information and transactions to citizens, businesses, employees and other jurisdictions. Frequently this re-examination leads to strategies to strengthen collaboration between all stakeholders and to break down barriers of time and location.

The Portal Implementation Initiative is a multi-phase, multi-year effort intended to place the Town of Markham in a leadership position in providing access to everything (that is appropriate), by everyone (who is authorized), anytime (that is justifiable), anywhere (that is required to deliver the High Tech Capital of Canada promise).

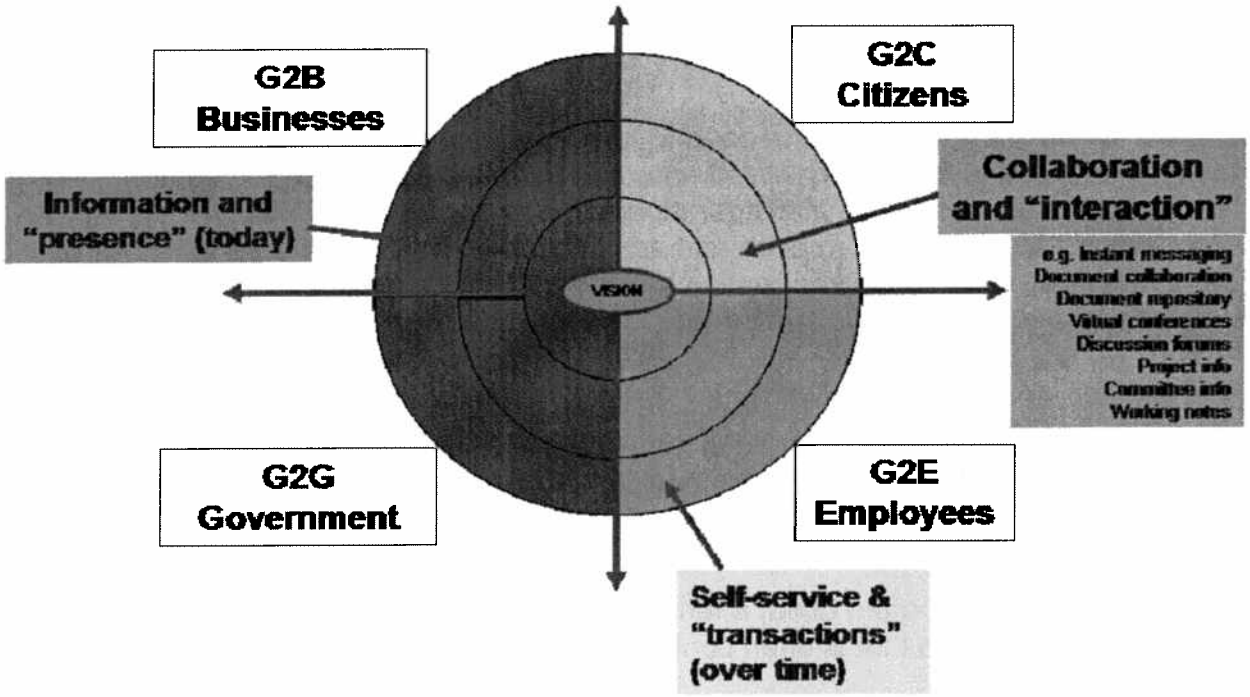
Portal is a term that is often used, a term that is often misused, a term that is often misunderstood, a term that is often confusing. Portals have been created to enable:

- Access to specialized marketing information
- Teamwork, joint planning and decision making
- Finding, evaluating and selecting suppliers
- Supporting customers anywhere, anytime
- Attending education, learning and building networks
- Finding, evaluating and buying products and sharing knowledge
- Researching and collaborating with specialists

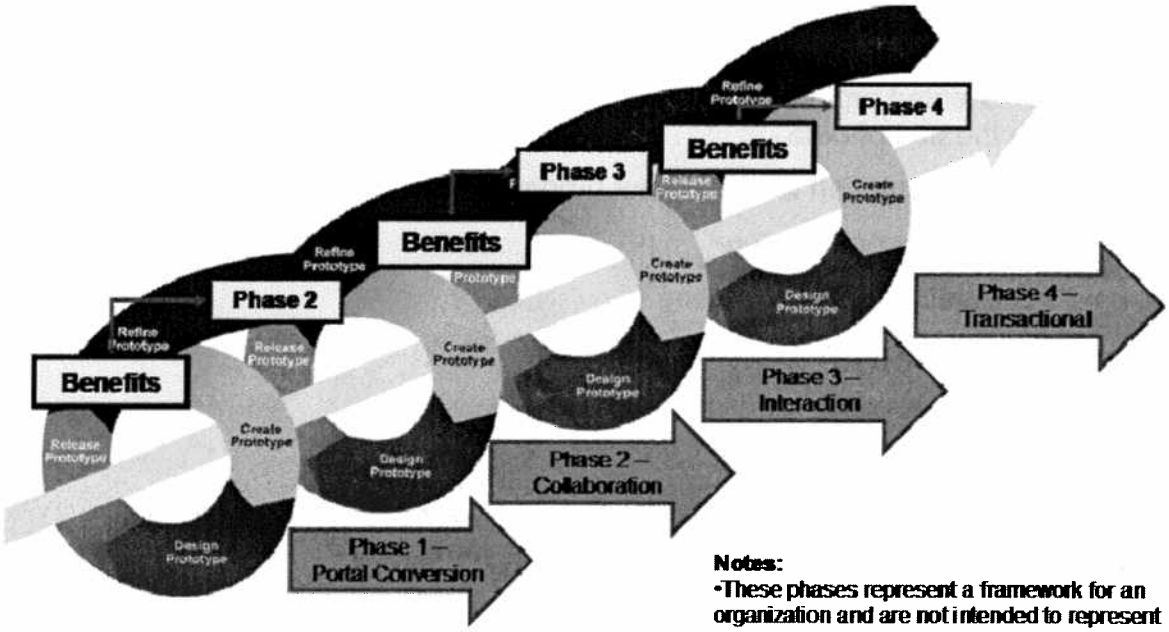
- Making new contacts and selling a specialist service
- Broadcasting and communicating business strategy and key messages

In each case, the intent has been to move from ad hoc, inconsistent approaches to ones that are integrated and managed. With generally available Portal technology, organizations can leverage Portal benefits across multiple opportunity areas with a common support structure.

Today, the Town of Markham's Internet presence and Intranet are primarily information providers. Over time, organizations evolve beyond this first stage to support interaction, collaboration and transactions. This evolution requires a phased approach so that the Town of Markham can attain benefits throughout the journey while managing the scope, sophistication and complexity of each phase. The scope, sophistication and complexity will result from business choices about audience served, and value choices regarding the level of information, interaction, or transactional support. To minimize risk, we would recommend internal deployment before external, maximizing the use of existing content and leveraging pre-developed functionalities in the selected Portal technology.



The phased approach should be designed to maximize the benefits of each phase and establish a baseline for the next phase while allowing the flexibility to adapt to changing priorities and minimizing risk.



We expect that the Portal implementation Initiative may proceed as follows:

Phase 0	Discovery & Roadmap
Phase 1	Conversion to Portal technology, migration of internal and external content, basic collaboration tools for internal users
Phase 2	Initial internal self-service transactions, basic collaboration tools for external users, mobile device support for staff
Phase 3	Initial external self-service transactions, expanded collaboration tools for internal users, basic collaboration tools for external users, mobile device support for residents
Phase 4	Expanded transaction portfolio, expanded collaboration tools for external users, linkage to other jurisdictions

Initiative 4: Initiate Information Management Programme

Following and supporting Initiative 2, interacting with Initiatives 5 and 6

Governments today are faced with the challenge of bringing together the many "islands of information" needed to support the explosion of data needs in the citizen-centric e-government world.

Organizations are finding that the need to leverage the value of the internet is driving them to re-examine the siloed / decentralized nature of their systems and operations. This results in the 're-assembling' of disparate enterprise applications through the definition of an enterprise view of information and architectures. This also results in a redefining of the roles and responsibilities for corporate / central IT groups.

In order to support these requirements, organizations are developing comprehensive Information Architecture (IA) and Information (Data) Models (EIM), and establishing central, program-oriented organizations to manage them and to manage user accountability for the use of data.

The recommended Information Management programme would address:

- Information Architecture
- Information (Data) Modeling
- Data Management organization
- Data Stewardship and governance

Information Architecture consists of:

Data Repository Architecture – Definition of the key data repositories within the Enterprise including individual application data repositories, centralized consolidated data repositories and data distribution repositories.

Data Integration and Messaging Architecture – Definition of the architecture for adding and updating data in a consistent manner, identifying changes in data in operational systems, transforming data in a consistent manner and moving data across applications and into a centralized repository.

Metadata Architecture – Definition of the architecture for how to maintain information about data and its uses. Metadata describes how and when and by whom a particular set of data was collected, and how the data is formatted. Metadata is essential for understanding information stored in data stores.

The purpose of the Information Architecture is to define how data will be moved among and between operational and informational systems. The Information Architecture must be closely integrated with the Application Architecture and the Technology Architecture. Since many applications require access to the same data and can create the same data, it is essential that a consistent approach be defined.

Information (Data) Modeling will refine and document the entities and relationships in the preliminary Information Model. The project will review data models in existing applications and repositories and focus on building out the entities and relationships from a top-down perspective, with emphasis on the requirements of the Portal Initiative.

Designing an evolving **Data Management organization will involve** specifying roles and responsibilities, positions and identifying areas where it would be beneficial to hire additional skills. Roles that would be considered include:

Data Analyst/Administrator (A person involved in Data Architecture work, typically at the logical level.

Database Administrator (A person involved in the physical design and organization of data resources across one or more database management systems.

Information and Data Stewardship policies traditionally aim to assign ownership for enterprise data directly to the business, which either generates or uses that data. It defines the IT rules of engagement (who owns what?) with respect to data management needs and the inter-departmental work guidelines. However, overall stewardship of the corporate IA / EIM should be the responsibility of the CIO.

Success in stewardship programs requires determination. Business people are often uncomfortable owning data. Business people are often without the background, training and toolsets needed even to view the data, and to understand it in the context of their business processes. This problem has been addressed successfully through a combination of tight partnership between technology professionals and business personnel, a carefully chosen set of tools, and a strong commitment from senior business management. This combination may take a substantial amount of time to assemble.

Nevertheless, the challenges of data stewardship need to be resolved within the Town's IT Governance approach, and the following key concerns addressed:

Data quality

Metadata capture and maintenance, and delivery requirements

Development of data requirements at a consistent level of detail and quality

Refinement and maintenance of an Enterprise Information Model

Initiative 5: Implement IT Process best practices, initially focusing on

- Service Request management… to enable client advisors and Business Units to track and manage responsiveness
- Project Portfolio management… to enable all stakeholders with timely information about individual project schedules and resources, and to enable broad oversight and decision-making that optimizes value delivered. Linked to Business Unit / ITS planning which is addressed in Initiative 6. Critical to the success of agile capacity planning for staff and contracted ITS resources.
- Application Portfolio management… to monitor application "fit" with changing user / business needs (leveraging MTAC), to track application product capabilities (in-use, required, planned), to optimize maintenance, to plan for replacement.

We understand that a project to address IT Process best practices was proposed during Business Unit Planning. The executive expectation was that process improvement could be contained within the departmental budget and staffing. We believe that external coaching could accelerate the deployment and buy-in within ITS. The goal would be to increase the pace

Initiative 6: Refine IT Governance

Following Initiative 1, and creating mechanisms to oversee all other Initiatives

This initiative is intended to address four aspects of IT Governance at the Town of Markham. First and foremost is to implement adjustments that result from the adoption of an Enterprise Architecture Model. In addition, continued improvement in the alignment of Business Unit and ITS planning, effectiveness of ITSC, and clarification of the roles and responsibilities of ITSC and ITCC will be addressed.

The processes defined within **Architecture Management Framework** (Appendix B) are fundamental to enabling the Town to make conscious decisions about IT, the acquisition of IT assets and the design and implementation of new systems / solutions to meet business needs. One of the key uses of this framework is the identification and definition of new architecture processes, roles and responsibilities, which do not currently exist in the Town environment, but are fundamental to the effective implementation of the strategic aims of the business.

In order to increase the chance of a successful implementation and adoption of the Enterprise Architecture, strong Architecture management processes for Architecture Compliance, Vitality, and Communication and associated areas of responsibilities need to be defined and implemented. Priority will be given to the Compliance and Communication processes.

The strength of these processes will be greatest when Architecture Compliance, Vitality and Communication become 'business-as-usual' aspects of the oversight provided by ITSC and ITCC. In addition, our current thinking is that the responsibilities of the Manager, Strategic Initiatives will be expanded to include operational support of these processes.

In 2004, a new iteration of the evolving annual Business Unit (including ITS) Planning process provided a significant opportunity to increase the alignment between Business Unit Plans and ITS Plans, before entering into 2005 Budget Planning.

To continue this evolution and increase the opportunity for alignment, this initiative would include:

- Continuous improvement workshops based on the 2004 iteration aimed at ensuring that there is sufficient time for ITS to receive Business Unit ITS requirements and coordinate them into an ITS response.
- Periodic checkpoints in 2005 with ITSC, Client Advisors, etc. to assess whether the 2004 iteration in fact had a positive impact on alignment
- Design workshop(s) for the 2005 iteration to integrate IT Planning improvement suggestions from the workshops and checkpoints into the approach to planning for 2006.

In addition, this initiative would include leveraging the IT Process best practice Initiative to provide management information about planned/unanticipated Business Unit project requests and approved project outcomes to improve oversight and decision-making by ITS management, the CIO, ITSC and ITCC.

Lastly, this initiative would integrate the individual changes above into a coherent set of committee responsibilities, agenda frameworks, meeting schedules, etc.

Appendix A: Architectural Principles, Policies, Guidelines

The Architectural Principles, Policies and Guidelines define the underlying general rules that the Town of Markham will use to utilize and deploy all business and IT resources and assets, across the enterprise.

Policy - a high-level statement of how things will be managed or organized, including management goals, objectives, beliefs and responsibilities. Policies are normally defined at an overall strategy level or reflect the law and givens, which must be adhered to - this is especially true in the case of Security and Privacy policies

Principle - defines the underlying general rules, which an organization will use to utilize and deploy all business and IT resources and assets, across the enterprise e.g., 'IT systems will be designed to be capable of rapid expansion in line with unpredicted business growth.'

Principles include defined motivation and implication statements:

- The benefit statements highlight the value to the business of implementing the principle - and therefore provide a basis for justifying all related activities
- The implication statements provide an outline of the key tasks, resources and potential costs to the business of implementing the principle.

Many different types and levels of Principles can be defined:

- Guiding principles (normally 6 - 12) which provide an overall framework for decision making
- Business principles
- IT principles (applications, data, technology, security, network, user interface, system management, development)
- Management and organizational principles
- Principles for outsourcing
- Principles for solution suppliers

Guideline - a general statement of direction, a desired future state that is not necessarily mandated. Guideline statements are similar in content to principle statements, but without the associated motivation and benefit statements.

To be effective, all principles, policies and guidelines should be defined and agreed by both senior business and IT executives.

Once they have been agreed and published, the principles and policies provide a framework, which can be used to explain and justify why certain business and IT decisions are being made, or need to be made.

ARC 309 - Principals - Policies and Guidelin

Appendix B: Architecture Management Framework

An **Architecture Management Framework**, defines the processes, roles and responsibilities required to manage, use and update an enterprise-wide Architecture (covering business processes, applications, data and technology) within the Town of Markham's IT environment. The Architecture Management Framework defines how the Enterprise Architecture (and all its component parts) will be managed and updated in response to changes in business needs and available technologies.

The processes defined within this framework are fundamental to enabling the Town to make conscious decisions about IT. One of the key uses of this framework is the identification and definition of new architecture processes, roles and responsibilities, which do not currently exist in the Town environment, but are fundamental to the effective implementation of the strategic aims of the business. These new management processes are used to enable the business to make conscious decisions about IT, the acquisition of IT assets and the design and implementation of new systems / solutions to meet business needs.

In order to increase the chance of a successful implementation and adoption of the Enterprise Architecture, strong Architecture management processes for Architecture Compliance, Vitality, and Communication and associated areas of responsibilities need to be defined and implemented.

ARC 312 - IT Arch. Mgmt Framework - v1

Appendix C: Business Capabilities Model

The **Business Capabilities Model** depicts an integrated framework of the Town of Markham's capabilities independent of the organizational structure. It depicts the strategic capabilities and associated enablers of the Town's business, their interrelationships and their combined roles and significance in supporting value exchanges with external clients and stakeholders.

This model provides an analytical framework for the enterprise, and enables the executive team to:

- Identify the capabilities and enablers in the scope of a transformation initiative.
- Identify those capabilities required to support the strategic (or current) value propositions and strategic opportunities and initiatives of the business
- Identify the critical enablers (resources) comprising knowledge, organization, process and technology enablers, required to deliver the integrated framework of capabilities
- Identify capabilities which are rare, unique or difficult to imitate and consequently provide strategic control points leading to sustainable competitive advantage
- Expose supporting capabilities whose value and significance might be invisible or under appreciated by senior management
- Identify the nature of relationships between capabilities, whether positive and reinforcing, or negative and impeding.
- Identify the cause and effect dependencies between capabilities
- Identify the opportunities to increase business returns available from current capabilities
- Identify capabilities which are common across value exchanges or lines of business
- Provide a basis for assessing the proficiency of a business to deliver on its value propositions
- Identity capabilities whose modification or elimination would raise the proficiency of a business
- Prioritize investment in building, enhancing, modifying and retiring capabilities
- Optimize the distribution of costs, resources and management focus to high impact capabilities and enablers

BUS 416 - Capability Model Definition - v0.

Appendix D: Application Function Model

The **Application Function Model** identifies and defines the major groups of application function that are required in order for the Town to meet its business objectives. It identifies the natural boundaries and partitioning of these functions, and shows how these different partitions, or groups, are related to each other. As such, the model represents the optimal set of applications (or application groups) required to support the enterprise.

These groups will be independent of the current or future organizational structure and will owe their structural integrity to the affinity they have with other functions in the same group. Each group represents a discrete set of business function, with each business function belonging to one and only one grouping.

The Application Function Model is used:

- To ensure future applications are aligned with the business strategy
- As a basis for the planned integration of all the architectural elements, each element being designed and scoped within the context of previous and future projects.
- To provide an architectural framework against which the function of the existing legacy systems can be mapped - this will highlight certain strengths and weaknesses in these applications and will govern the evolution of these systems.
- To define and develop reusable "components" (Component-based development) and promotes the enterprise-wide sharing of processes - by describing the major groupings of business function in a non-redundant representation. The Application Function Model is therefore an important input to the definition of component models
- As a basis for the evaluation of packaged solutions
- As a basis for partitioning business function - this helps development teams handle the complexity of the enterprise, whilst maintaining a single, comprehensive view of the enterprise.

Note: At the current time, the mapping of "Current Applications" to required Application Functions is underway within ITS. It is expected that "Fit" will be completed over time through discussions with users.

ARC 302 -
Application Function M

Appendix E: Information Model

The **Information Model** represents the strategic information requirements of the Town of Markham. It depicts, in both graphical and textual form, the structure and content of the key categories, or "subject areas" of persistent data that need to be managed by the enterprise.

The main reasons for developing an Enterprise Information Model are:

- To provide a strategic overview and understanding of the major high-level groups of information needed to manage the business and support the processes in the process definitions.
- To provide architectural parameters and boundaries for subsequent data analysis and data design activities. It sets the baseline.
- To provide high-level planning constructs with respect to the data / information needs of the enterprise.
- To enable and support a proper alignment between the key information requirements of the business & its partners, with the goals and objectives of the enterprise.
- To enable the senior management team to explore the constraints on the business and opportunities for, and implications of change.
- To provide a useful vehicle for communication and ownership.

The draft Information Model for the Town of Markham is based on the draft business capabilities model and similar information models for other governments (local, provincial and federal). The draft model was extended and validated through a workshop with selected individuals.

This model will give direction to an evolutionary migration of the current islands of data to a more integrated set of information with clearly defined policies for use. It also shows the relationships between the various types of information, thus allowing for a better understanding of the impact of various packages, especially in the area of integrating various solutions.

ARC 307 - Enterprise Information Model - v

Appendix F: Enterprise Technology Framework

The **Enterprise Technology Framework** is used as a repository for all information about the IT capabilities and enablers required to implement the desired business objectives and capabilities. An Enterprise Technology Framework defines the technology services and functions (IT capabilities) required to support the business applications and data, including Common Application Services, Common Data Services, Common System Services, Network Services, Security Services, Platform Services, as well as the management tools used to support the delivery of IT service.

It does not represent a complete functional specification of the future IT requirements. Rather, it defines them at a sufficient level to allow alternate potential technologies and solution paths to be evaluated and investment decisions to be made prior to proceeding with the design and implementation of specific hardware and software components and application systems.

The Enterprise Technology Framework work product is used to:

- Provide a total repository of information about the technology (IT enablers and capabilities) required to support both the various parts of the business, and the achievement of the overall business goals and objectives – provides a framework for making IT investment decisions
- Provide a repository of agreed technology, standards, products and components that can be selected at system design time and implemented
- Reduce the amount of time spent by individual development projects in the evaluation and selection of products and components
- Provide pre-defined combinations of implementable components, standards and interfaces
- Ensure individual systems can be integrated effectively, including the sharing of common services, functions, 'middleware' and data
- Provide a known technology base for service delivery planning (capacity, performance, availability) and measurement, to meet future business requirements
- Provide the basis for the specification of the required ('to be') IT systems
- It helps to identify opportunities to enhance the current or new information technologies that can be adopted with beneficial impact on the desired IT environment

Note: At the current time, the "Current Implementation" information has been completed only for the Markham Public Library.

ARC 308 - Enterprise Technology Framewo

Appendix B

Town of Markham

Portal
Business Value Assessment

IBM Canada

November 25, 2005

Executive Summary

This report summarizes the results of a Business Value Assessment (BVA) that investigated the potential use of portal technology at the Town of Markham.

The first part of the BVA focused on identifying the functionality / capabilities that would be provided by a portal. This work was conducted through the use of workshops with Town of Markham employees and the ITCC. The workshops accomplished the following:

- A significant number of valuable portal capabilities were identified
- The capabilities were rated and prioritized

The second part of the BVA dealt with identifying benefits – both quantitative and qualitative. This work involved conducting workshops with Town of Markham employees and the CCC. Throughout the workshops, we observed that views of potential benefits become more positive as individuals more clearly understand Portal capabilities.

In addition, the costs of designing, developing, and deploying a portal solution were calculated. A high-level implementation approach was also developed in order to identify when the costs and benefits might occur over the next five years.

A Return on Investment (ROI) analysis was performed using the quantitative benefits and costs of a portal solution. Overall, the results showed that a portal infrastructure would provide a positive contribution.

We have concluded that there would be enough value to warrant the deployment of a portal infrastructure and from a financial perspective, the portal would provide a positive contribution.

We recommend that the Town of Markham proceed with the implementation of both an internal and an external portal solution. It is our experience that a committed senior level champion will be critical to the success of this implementation.

Table of Contents

1 Introduction

IBM Business Consulting Services was engaged in 2004 by the Town of Markham to lead the development of a refreshed IT Strategic Plan. During the reviews by Council, IT Sub-Committee of Council, CCC, Department Heads Forum and IT Steering Committee, IBM was asked to provide additional information regarding the costs and benefits associated with delivering the recommendations in the Plan.

IBM proposed further analysis of the financial benefits with the participation of Town staff. IBM recommended focusing the additional analysis on the Portal recommendation, since it represented a significant percentage of the overall cost and is expected to represent the largest benefit in terms of efficiencies, savings and customer service. IBM recommended the Business Value Assessment methodology and this was approved at the IT Committee of Council.

The recommended Portal Initiative was envisioned as a multi-phase, multi-year effort intended to place the Town of Markham in a leadership position in providing access to everything (that is appropriate), by everyone (who is authorized), anytime (that is justifiable), anywhere (that is required to deliver Markham's "High Tech Capital of Canada" promise).

The strategic intent is to exploit commercially available Portal technology, and

- Accelerate the delivery of improvements to Markham's current internal and external web content,
- Introduce collaboration tools for internal Town staff and external users, and
- Leverage self-service transactions and mobile devices

The strategic outcome of the Portal Initiative is a single point of personalized interaction with the Town's applications, information, processes and people. A portal is composed of many portlets, each of which is separately developed, deployed, managed and displayed independently of other portlets to any authorized users. Each user's portal experience is customized, depending on job role, security settings, access device, and personal choices (e.g. layout or language). Portals are implemented to improve customer service and to improve operational effectiveness.

A good example is the Miami/Dade County Portal which was recognized in 2004 by the Center for Digital Government. Some of the outcomes that Miami/Dade achieved include

- 11,215 building permits and re-inspections were booked online, generating total revenue of US$1,175,000 for the county
- On-line ordering of recycle bins increased by more than 200 percent to 8,053
- On-line property searches are up by 140 percent to 1.8 million
- Processed 60,000 electronic payments totaling more than $4 million in revenue
- Visitors to the portal increased by 50 percent in the first year

A number of municipalities in Canada and Ontario have launched Portal Initiatives with a range of strategic intents from community enhancement to e-government self-service for citizens.

A Business Value Assessment (BVA) is designed to help organizations decide whether they should deploy portal software in their environment. A BVA addresses the following three questions that typically need to be answered before a decision can be made:

- What should our organization do with a portal?
- What would the portal experience be for my organization?
- How do I financially justify a portal?

The deliverables that are produced in a complete BVA are:

- A prioritized list of portal capabilities (produced from a "Value Alignment" workshop with Line of Business representatives)
- A customized "Day in the Life" demo that illustrates the portal experience in their particular business environment.
- A "Return on Investment (ROI)" analysis that lists the costs and benefits of developing and deploying a portal solution in their organization.

To be successful, the Portal Business Value Assessment project required the active involvement of each of the Town's business units. Specifically, each business unit nominated a representative to participate in BVA workshops and meetings. The facilitated workshops were intended to align the Portal with the highest priority areas of business value, and to quantify the benefits that could be realized by the Town. Each business unit was asked to select an open-minded individual who is very familiar with the operations of their unit.

The following is a list of the workshops that were conducted:

- September 28 – Value Alignment Workshop – Portal capabilities identified and prioritized
- October 18 – ITCC Review – Additional capabilities identified
- October 21 – Portal capabilities reviewed and prioritization refined. Benefits identified
- November 3 – Benefits identification completed.
- November 10 – CCC Review – Workshop results and implementation phases reviewed
- November 21 – ITCC Review – Results reviewed

The following Town of Markham staff members participated in the workshops:

- Edmund Yuen (Human Resources)
- Glen Walker (Human Resources)
- Joy Cinq-Mars (Fire & Emergency Services)
- Shayne Mintz (Fire Emergency Services)
- David Rushton (Markham Public Libraries)
- Mohammed Hosseini-Ara (Markham Public Libraries)
- Dave Merriman (Recreation)
- Lisa Sillito (Recreation)
- Bonnie Armstrong (Theatre)
- Cathy Joyce (Strategic Services)
- Alan Laver (Operations)
- Noris Dela-Cruz (Waterworks)
- Jane Gallant (Waterworks)
- Dereje Tafesse (Operations)

- Bob Penner (Asset Management)
- Hilda Wong (Contact Centre)
- Grace Sanchez-McCall (Corporate Communications)
- Shane Manson (Finance)
- Nasir Kenea (Information Technology Services)
- Darren Ciastko (Economic Development)
- Robert Tadmore (Planning and Urban Design)
- John Wright (Building Standards)
- Chris Bird (Building Standards)
- Robert Fazio (Engineering)
- Lloyd Fernandez (Engineering)
- Peter Veiga (Waste Management)
- Blair Labelle (Legislative Services)

From the discussions in the workshops, the following items were identified (and presented in this report):

- A prioritized list of portal capabilities
- The benefits associated with each one of the capabilities

In addition to the above items, the costs of designing, developing, and deploying a portal solution were calculated. A high-level implementation approach was also developed in order to identify when the costs and benefits would occur over the next five years. The costs were then combined with the benefits to create a Return on Investment (ROI) analysis that is also presented in this report.

To find the various materials that have been created, please refer to the following list of chapters in this report:

1. Introduction
2. Potential Portal Capabilities
3. Portal Benefits
4. Implementation Phases
5. Portal Costs
6. Return on Investment Analysis
7. Conclusions and Recommendations

Another significant deliverable from the BVA is a Day in the Life demonstration (including scripts) that shows what the portal experience could be for both residents and employees. No special software (other than a web browser) is required to run the demo. An outline of what is shown in the demo is included in the Appendix A of this report.

2 Potential Portal Capabilities

The first part of the Business Value Assessment involved identifying how the Town of Markham would use a portal – basically, what would be the most valuable portal capabilities. This was determined by first conducting some interviews with selected staff members to understand their goals and the barriers that were hindering them from reaching those goals. Using this information, a preliminary list of portal capabilities was developed by IBM.

Next, all workshop participants received basic portal education to ensure that the full range of potential portal capabilities were understood. The list developed from the interviews was then reviewed, refined, and prioritized in a half-day workshop (September 28). The list was then reviewed by the ITCC and some additional capabilities suggested. The team thought about these items in the second half-day workshop (October 21) and revised the list and its prioritization.

It should be noted that the Town of Markham is considering two separate portal implementations – an internal solution for employees and an external facing version for residents. The capabilities identified were for either one or both implementations.

2.1 Portal Capabilities List

Below is a list of the portal capabilities that were identified along with a short description of each one.

- **People Finder** - Internal use only. It would provide a variety of different ways to find people in the organization. This could be by Name, by Role, by Location, by Phone Number, etc.
- **Document Management** - Internal use only. Enables employees to store and find the documents they need. Would only be for general use documents, not drawings.
- **Web Conferencing** - Internal use only. Allows employees to meet on-line and avoid having to travel for meetings.
- **Team Spaces** - Internal use only. Provides teams with a central area to store thoughts, discussions, documents, etc. Allows teams to avoid using e-mail to store project work. Tends to be less formal than Document Management.
- **Instant Messaging** - Internal use only. Provides another tool to enable employees to connect with the people they need to work with.
- **Alerts** - Internal and external. Provides a mechanism to let people know about an important situation or event. Not used to gather the people who need to address the situation, just let everyone know that something is happening. Makes the communication quicker when compared to other methods (phone and e-mail).
- **Project Status & Other Dashboards** - Internal use only. Provides a simple view of the status of the project (e.g. green, yellow, red). Could also be used for other metrics.
- **Knowledge Management** - Internal use only. Used to help store the collective knowledge of the organization. A step beyond Team Workplaces which are used by specific teams. Less formal than Document Management.

- **e-Learning** - Internal use only. Allows people to take a course at their computer instead of inside a classroom. The person can start and stop the course in sync with their schedule.
- **Web Content Management** - Internal and external. Provides tools to allow the owners of information (usually not the IT department) to update the intranet and Internet sites. With fewer steps to publish content, the web sites tend to be more up to date and users do not have to wait as long to see the information.
- **Search** - Internal and external. Is used to find the information that people are looking for. Can be used across a variety of different sources – Document Management, Team Workplaces, web content, etc.
- **Council Reporting Tools** – Internal use only. Provides a tool to help collect and organization the material that is provided to council.
- **Access to Other Systems** - Internal and external. This entails extending a wide variety of existing systems to users who would use them on an occasional basis. It includes:
    - **Access to Amanda**
    - **Access to GIS**
    - **Access to Hansen**
    - **Access to TMS2000**
    - **Access to CLASS**
    - **Access to CARe**
- **Access to HR Information** - Internal use only. Provides additional HR information to the users. The information could be general, or specific to the individual.
- **Access to Finance Information** - Internal use only. Provides up to date financial information for each department.
- **On-Line Permits** - External. Provides the ability for residents to request permits on-line. May not be appropriate for complex permits such as a building permit. Perfect for simple items such as a dog license.
- **On-Line Payments** - External. Provides a mechanism for residents to provide payments on-line.
- **Outbound Communications** - External. Provides residents with information that is specific to their interests.

2.2 Capability Prioritization

While it is useful to know that there are a significant number of capabilities that could be implemented, it is necessary to know how they compare against each other since some are more important than others. To help prioritize the capabilities, each one was rated against three different criteria.

Below is a summary of how the ratings were conducted. Please note that for the BVA, only a high-level ranking of the capabilities was required. In order to help avoid any lengthy analysis, the scores for each of the criteria were limited to a 0, 0.5, or 1.

1. Business Value Impact – To what extent does the capability contribute towards the following goals (0 – no/small, 0.5 – medium, 1 – high)?
    - Quality Community & Environmental Focus
    - Economic Development & Managed Growth
    - Fiscal Stewardship & Infrastructure Management
    - Organizational Excellence

2. Ease of Implementation – For each of the following criteria, how difficult will it be to deploy the capability (0 – no/small, 0.5 – medium, 1 – high)?
    - Culture (will it clash with the existing culture?)
    - Organizational Structure (will the organizational structure need to change?)
    - Business Processes (will business processes need to change?)
    - IT (what is the technical difficulty?)

3. Communities Impacted – Which communities would use the capability?
    - Political & Executive & Management (1 point)
    - External Facing Services Staff (1 point)
    - Internal Facing Services Staff (1 point)
    - Customers (3 points)

The table on the following page lists the scores for each capability.

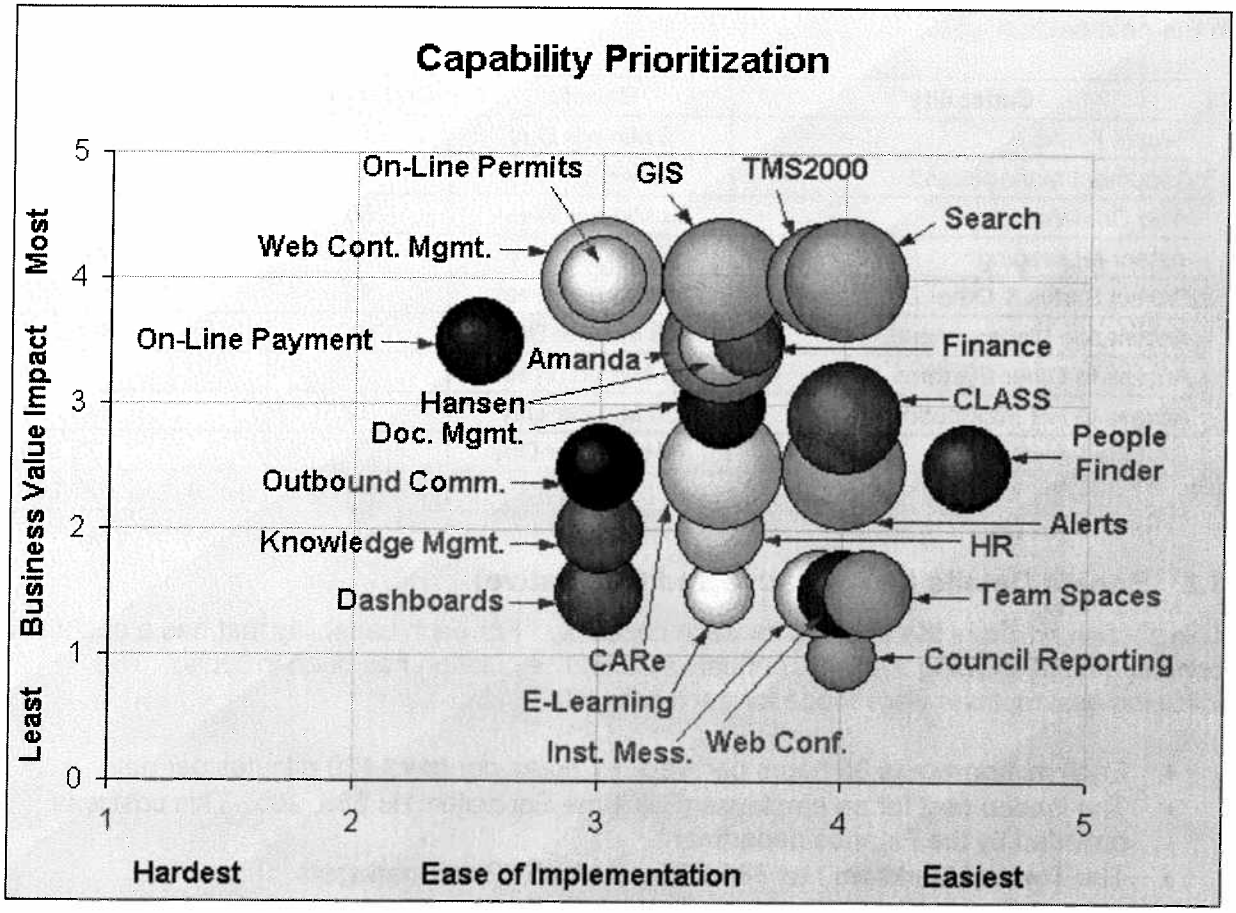
Portal Capability	Short Name	Quality Community & Environmental Focus	Economic Development & Managed Growth	Fiscal Stewardship & Infrastructure Management	Organizational Excellence	Business Impact Rating	Culture	Organization	Process	IT	Ease of Implementation Rating (5 - Total)	Number of Communities Impacted	Political & Exec. & Mgmt	Ext. Services Employees	Int. Services Employees		Customers (3 Points)			
Search	Search	1	1	1	1	4	0	0	0.5	0.5	4	6	1	1	1		3			
Access to TMS2000	TMS2000	1	1	1	1	4	0.5	0	0	0.6	3.9	5	1	1	0		3			
Access to GIS Information	GIS	1	1	1	1	4	0.5	0	0.5	0.5	3.5	6	1	1	1		3			
Web Content Management	Web Cont. Mgmt.	1	1	1	1	4	1	0	0.5	0.5	3	6	1	1	1		3			
On-Line Applications & Permits	On-Line Permits	1	1	1	1	4	0.5	0.5	0.5	0.5	3	3	0	0	0		3			
Access to Finance Information	Finance	0.5	1	1	1	3.5	0.4	0	0.5	0.5	3.6	2	1	0	1		0			
Access to Amanda	Amanda	1	1	0.5	1	3.5	0.5	0	0.5	0.5	3.5	6	1	1	1		3			
Access to Hansen	Hansen	1	0.5	1	1	3.5	0.5	0	0.5	0.5	3.5	3	1	1	1		0			
On-Line Payments	On-Line Payment	1	0.5	1	1	3.5	0	0.5	1	1	2.5	3	0	0	0		3			
Document Management	Doc. Mgmt.	0.5	0.5	1	1	3	0.5	0	1	0	3.5	3	1	1	1		0			
Access to Class	CLASS	1	0	0.9	1	2.9	0	0	0.5	0.5	4	5	0	1	1		3			
People Finder	People Finder	0.5	0.5	0.5	1	2.5	0	0	0.5	0	4.5	3	1	1	1		0			
Alerts	Urgent Alerts	1	0	0.5	1	2.5	0	0	0.5	0.5	4	6	1	1	1		3			
Access to CARe	CARe	1	0	0.5	1	2.5	0.5	0	0.5	0.5	3.5	6	1	1	1		3			
Outbound Communications	Outbound Comm.	0.5	0.5	0.5	1	2.5	0.5	0.5	0.5	0.5	3	3	0	0	0		3			
Access to HR Information	HR	0.5	0	0.5	1	2	0	0	0.5	1	3.5	3	1	1	1		0			
Knowledge Management	Knowledge Mgmt	0.5	0.5	0.5	0.5	2	0.5	0.5	0.5	0.5	3	3	1	1	1		0			
Team Spaces	Team Spaces	0	0	0.5	1	1.5	0.5	0	0.4	0	4.1	3	1	1	1		0			
Web Conferencing	Web Conf.	0	0	0.5	1	1.5	0.5	0	0.5	0	4	3	1	1	1		0			
Instant Messaging	Inst. Mess.	0	0	0.5	1	1.5	0.5	0	0.6	0	3.9	3	1	1	1		0			
e-Learning	e-Learning	0.5	0	0.5	0.5	1.5	0.5	0.5	0.5	0	3.5	2	0	1	1		0			
Project Status & Other Dashboards	Dashboards	0.5	0	0.5	0.5	1.5	0.5	0	1	0.5	3	3	1	1	1		0			
Council Reporting Tools	Council Reporting	0	0	0	1	1	0.5	0	0.5	0	4	2	1	0	1		0			

With the three sets of scores, the different capabilities could be charted and compared visually. This was done using Excel and the results are shown below. Please note that the size of each bubble represents the Number of Communities Impacted.

When comparing the capabilities against each other, it is important to remember the following:

- The closer to the top, the higher the business impact (helps achieve more goals).
- The closer to the right, the easier it will be to implement

The capabilities that should be implemented first lie in the upper right-hand corner (strong business impact and easy to do). Capabilities that should be developed last, or possibly not at all, lie in the bottom left-hand corner (low business impact and hard to do).



3 Portal Benefits

Once the portal capabilities were identified, the Business Value Assessment shifted to determining the benefits of both an internal facing (for employees) and external facing (for residents) portal solution. Within the workshops, the participants were asked to specify the benefits for each one of the portal capabilities. The results were a mix of quantitative and qualitative benefits. While both types of benefits are useful, quantitative benefits are used in the ROI analysis and so they are more important to the BVA. The section below summarizes the quantitative benefits while the following section lists all the benefits (quantitative and qualitative) for each capability.

3.1 Summary of Quantitative Benefits

The following quantitative benefits were identified. Further details for each benefit are provided in the next section.

Capability	Benefit	Community	Value (Annual)
People Finder	5 Min per Day	400	$406,025
Document Management	15 Min per Day	200	609,037
Web Conferencing	30 Min per Week	50	60,904
Instant Messaging	5 Min per Day	400	406,025
Project Status & Other Dashboards	30 Min per Week	92	112,063
Knowledge Management	15 Min per Day	200	609,037
Access to Other Systems	60 Min per Week	1	2,436
Access to HR Information	20 Min per Day	12	48,723
On-Line Permits	6 Hours per Day	1	73,084
			Total $2,327,333

3.2 Benefit Details (Quantitative and Qualitative)

This section provides the benefits for each capability. For each capability that has a quantitative benefit, a table showing the item, annual value and calculation has been included. The following assumptions were made for each calculation:

- Each person works 35 hours per week / 7 hours per day / 420 minutes per day
- The loaded cost for an employee (Full Time Equivalent) is $85, 265. This cost was provided by the Finance department.
- The Town of Markham has 884 FTEs of which 92 are managers

3.2.1 People Finder

- 1 to 5 minutes / day, more effective if linked to connection. Maybe 4 minutes / day
- More useful to newer staff - ½ hour / week.

Benefit	Value (Annual)
5 Min per Day	$406,025
Calculation	
(5 min per day / 420 min per week) * 85,265 FTE cost * 400 employees	

3.2.2 Document Management

- Very difficult to find 'old' documents… occasionally ½ day
- Up to 30 minutes per day for internal staff.

Benefit	Value (Annual)
15 Min per Day	$609,037
Calculation	
(15 min per day / 420 min per day) * 85,265 FTE cost * 200 employees	

3.2.3 People Finder

- 1 to 5 minutes / day, more effective if linked to connection. Maybe 4 minutes / day
- More useful to newer staff - ½ hour / week.

Benefit	Value (Annual)
5 Min per Day	$406,025
Calculation	
(5 min per day / 420 min per day) * 85,265 FTE cost * 400 employees	

3.2.4 Web Conferencing

- Worst case week 2 hours plus mileage, more average ½ hour / week
- Also increase participation in unattended meetings.

Benefit	Value (Annual)
30 Min per Week	$60,904
Calculation	
(30 min per week / 2100 min per week) * 85,265 FTE cost * 50 employees	

3.2.5 Team Spaces

- Save paper and personal / server e-mail storage,
- Develop new procedures, policies… benefits appear in Doc Mgmt.

3.2.6 Instant Messaging

- Reduces e-mail/telephone backlog. Can check availability before calling
- Improves admin staff efficiency in scheduling meetings
- May avoid the need for a meeting by immediately resolving issues
- 5 minutes per day.

Benefit	Value (Annual)
5 Min per Day	$406,025
Calculation	
(5 min per day / 420 min per week) * 85,265 FTE cost * 400 employees	

3.2.7 Alerts

- No time savings from a creation level. May save some time because it is one place. The inbox is full of extraneous stuff.
- Would help if the category of the alert is related to your profile.
- May reduce public inquiries – have more self-service.

3.2.8 Project Status & Other Dashboards

- Primarily for managers
- Alternative to one hour status discussion by mgmt team weekly
- In general 30 minutes / week.

Benefit	Value (Annual)
30 Min per Week	$112,063
Calculation	
(30 min per week / 2100 min per week) * 85,265 FTE cost * 92 employees	

3.2.9 Knowledge Management

- More than just finding a document. Helps to provide consistent documents and save time doing it. Results in better quality. Helps create consistent approaches to problem solving.
- Helps bring new people up to speed – knowledge transfer. Help them save them an hour per week for a month.
- Could be covered by the Document Management numbers, but maybe more – 15 minutes / day extra.

Benefit	Value (Annual)
15 Min per Day	$609,037
Calculation	
(15 min per day / 420 min per week) * 85,265 FTE cost * 200 employees	

3.2.10 E-Learning

- Able to take more training, more flexible when you do it. Makes it easier for new people – orientation.
- You can measure that people are really learning.
- Reduce the travel associated with training.
- Can move the knowledge back into the training. Sets up standard procedures.
- Web-based training is already being provided. More convenient to being in the portal.

3.2.11 Web Content Management

- There is already a tool that is going to be deployed.
- Would be handy to have the Web Content Management tool available through the use of the portal – makes it easily available to the users.
- May be able to save license renewal if the portal provides a tool.

3.2.12 Search

- Helpful in that it goes beyond searching just Document Management, Teamspaces, Knowledge Management, web content.
- Benefit is x times individual portlet specific searches.

3.2.13 Council Reporting Tools

- Should be part of the paperless agenda project.
- Could include a dashboard that is separate from the paperless agenda.

3.2.14 Access to Other Systems

- Can also include Single Sign-On with this discussion. 2 minutes per day? May be greater because you go in off and on. Maybe 6 to 8 minutes per day.
- Would be handy to have the systems. Could also include databases that the library subscribes to.
- Would probably have more people using the system if they had access to it.
- Getting a couple of requests per week – ½ hour per request. Just one person responding to requests..

Benefit	Value (Annual)
60 Min per Week	$2,436
Calculation	
(60 min per week / 2100 min per week) * 85,265 FTE cost * 1 employee	

3.2.15 Access to HR Information

- People can't get the information today.
- Save time responding to inquiries – 20 minutes per day for an HR person to respond.

Benefit	Value (Annual)
20 Min per Day	$48,723
Calculation	
(20 min per day / 420 min per week) * 85,265 FTE cost * 12 employees	

3.2.16 Access to Finance Information

- Really a problem with the finance system. Portal is useful for making it available.

3.2.17 On-Line Permits

- Less time doing data entry (the client does it). Able to embed a lot of validation (they can't identify a property that does not exist).
- Probably save Building Permits 6 hours per day (everyone would use on-line)..

Benefit	Value (Annual)

6 Hours per Day	$73,084
Calculation	
(6 hours per day / 7 hours per day) * 85,265 FTE cost * 1 employee	

3.2.18 On-Line Payments

- This would save people from handling cash. Maybe do not need as many people at the counter. Fewer separate counters would be required.
- Single cash management system via the portal would be very useful.
- A couple of hours each day per library.
- Big benefit for residents. No need to travel to make a payment.

3.2.19 Outbound Communications

- Useful for the call centre
- Useful for cultural centres to keep the people informed and hopefully help generate revenue.
- Can be a challenge to keep the e-mail addresses current, but if the people are coming in to the portal on a regular basis, then they will keep their e-mail current.

4 Implementation Phases

Due to the large number of portal capabilities, it would not be possible to set up either the internal facing (employee) or external facing (resident) portal in a single release. Consequently, the implementation will need to be split into a number of phases. With respect to this report, it is important to define these phases so that the flow of costs and benefits over the years can be incorporated into the ROI analysis.

When considering which portal is more important – the internal or external, the discussion swung between the followed two points:

- The Town of Markham needs to focus on providing services to its residents and so the external facing portal is very important.
- The Town of Markham needs to ensure that it is operating in an efficient manner and so the internal facing portal is very important. This point was supported in that most of the identified quantitative benefits are associated with this portal.

In trying to resolve these two opposites, it was decided that a mix of internal and external should be developed in 2006 and expanded each year.

The following table summarizes recommended implementation phases for both the internal and external portal solutions.

Phase / Year	External	Internal
Phase 1 / 2006	• Re-platform • Access to TMS2000 • Free Permits • Self-Service CARe	• Re-platform • "Out-of-the-box" Collaboration Tools
Phase 2 / 2007	• Authentication • Basic Self-Service • Simple Payments • Alerts • Outbound Communication • Community Content Publication • Community Collaboration	• Dashboards • Alerts • People Finder • HR Self-Service • Access to Finance Information • "Federated" Search • "Guest" Collaboration • Knowledge Management
Phase 3 / 2008	• Tax Account Status • Payments...Tax, Permits, etc. • CLASS integration • AMANDA integration • Personalization	• Access to Additional Information • E-Learning integration
Phase 4 / 2009		• PDA Assessment (Including External)

Please note: The remainder of this Business Value Analysis is based on the assumption that the phases are carried out in succeeding years and that the first phase is accomplished in 2006. Timely decision-making to proceed with a strategic Portal Initiative, prompt completion of all required pre-start-up activities (e.g. vendor selection), and disciplined program management would be necessary to achieve the timeline used for analysis.

4.1 Impact on Benefits

With the various portal capabilities being implemented in different phases, the benefits associated with each of the capabilities will start in either 2006 or 2007.

The table below lists the benefits that will start to flow in 2006.

Capability (Starts in 2006)	Benefit	Community	Value (Annual)
Document Management	15 Min per Day	200	609,037
Web Conferencing	30 Min per Week	50	60,904
Instant Messaging	5 Min per Day	400	406,025
			Total $1,075,963

The following table the benefits that will begin in 2007.

Capability (Starts in 2007)	Benefit	Community	Value (Annual)
People Finder	5 Min per Day	400	$406,025
Project Status & Other Dashboards	30 Min per Week	92	112,063
Knowledge Management	15 Min per Day	200	609,037
Access to Other Systems	60 Min per Week	1	2,436
Access to HR Information	20 Min per Day	12	48,723
On-Line Permits	6 Hours per Day	1	73,084
			Total $1,251,365

There are two other factors that will also affect the benefits that can be expected to flow from the portals:

1. **Benefit Realization** – It will take some time for the portal users to become comfortable with the new functionality and use it to its full potential. During this time, the benefits will be lower than what has been calculated. In order to avoid being too optimistic, the following has been decided:
    - The realization rate for the first year will be 30%
    - The realization rate for the second year will be 70%
    - The realization rate for subsequent years will be 100%

2. **Benefit Growth** – Since the benefits are tied to employee cost, it can be assumed that as this cost increases over time (people receive raises), the benefits should also increase. Based on the assumption, the following has been decided:
    - The benefits will grow by 2.5% in each year after 2006.

Combining the phasing of the benefits with the above factors yields the following table that calculates the expected benefits for each year.

Starting		2006	2007	2008	2009	2010	Totals
2006 ($1,075,963)	Growth Rate	0%	2.5%	2.5%	2.5%	2.5%	
	Realization Rate	30%	70%	100%	100%	100%	
	Net Benefits	$322,789	$772,004	$1,130,434	$1,158,695	$1,187.662	**$4,571.583**
2007 ($1,251,365)	Growth Rate	0%	2.5%	2.5%	2.5%	2.5%	
	Realization Rate	0%	30%	70%	100%	100%	
	Net Benefits	$0	$384,795	$920,301	$1,347.584	$1,381.273	**$4,033.953**
	Totals Benefits	**$322,789**	**$1,156,798**	**$2,050,735**	**$2,506.278**	**$2,568.935**	**$8,605.535**

5 Portal Costs

The following costs were identified. Further details for each cost are provided in the sub-sections below. The rationale for each of the cost estimates has been reviewed with the Town's CIO, James Allen and his direct reports.

Category	2006	2007	2008	2009	2010	Totals
Software	$512,202					**$512,202**
Hardware	$85,560	$52,368				**$137,928**
Services	$499,422	$711,411	$485,171	$36,716		**$1,732,720**
Training	$18,750	$18,750	$7,500	$5,000		**$50,000**
Software Maintenance		$102,528	$105,604	$108,772	$112,035	**$428,939**
Hardware Maintenance				$8,000	$5,000	**$13,000**
Town of Markham Staff	$135,265	$138,647	$142,113	$145,666	$149,307	**$710,997**
Totals	**$1,251,199**	**$1,023,704**	**$740,388**	**$304,154**	**$266,342**	**$3,585,786**

5.1 Software

With both the internal and external portals being undertaken in 2006, all software acquisition costs would occur in that year. Below is a breakdown of the costs:

Internal / External	Cost
Internal	$357,600
External	$154,602
Total	**$512,202**

5.2 Hardware

Hardware purchases would be divided between 2006 and 2007. The additional hardware in 2007 would be used to provide higher availability. Below is a breakdown of the costs:

Internal / External	2006	2007	Totals
Internal	$42,816	$31,728	$74,544
External	$42,744	$20,640	$63,384
Totals	**$85,560**	**$52,368**	**$137,928**

5.3 Services

Services would accompany each one of the phases. Please note this is a preliminary estimate for budgeting purposes only and that further analysis would be needed in order to identify firm cost estimates for each phase.

Internal / External	2006	2007	2008	2009	Totals
Internal	$267,421	$408,605	$196,426	$36,716	**$909,167**
External	$232,001	$302,806	$288,746	-	**$823,552**
Totals	**$499,422**	**$711,411**	**$485,171**	**$36,716**	**$1,732,720**

5.4 Training

Training would be spread over a number of years and would not be differentiated between the internal or external portals. It was estimated that a total of $50,000 of training would be required with an emphasis on the earlier years.

2006	2007	2008	2009	2010	Total
$18,750	$18,750	$7,500	$5,000	-	**$50,000**

5.5 Software Maintenance

Software Maintenance would begin in 2007 (one year after the purchase of the software) and would continue through 2010. It is expected that the costs would increase by 3% each year.

Internal / External	2007	2008	2009	2010	Totals
Internal	$71,608	$73,756	$75,969	$78,248	**$299,581**
External	$30,920	$31,848	$32,803	$33,787	**$129,358**
Totals	**$102,528**	**$105,604**	**$108,772**	**$112,035**	**$428,939**

5.6 Hardware Maintenance

Hardware Maintenance is included with the initial purchase of the hardware for a period of three years. Three additional years can be purchased at a cost of $1,000 per server. With the hardware purchases split between 2006 and 2007, the hardware maintenance costs would occur in 2009 and 2010.

Internal / External	2009	2010	Totals
Internal	$4,000	$3,000	**$7,000**
External	$4,000	$2,000	**$6,000**
Totals	**$8,000**	**$5,000**	**$13,000**

5.7 Town of Markham Staff

It is expected that one staff member will need to be dedicated to maintaining the portal technology (Technical Administrator). In addition, ½ FTE will be required to manage the portal initiative (Program Executive). Their loaded costs are assumed to be the average FTE cost of $85,265 for the Technical Administrator and $50,000 for the Program Executive. It has also been assumed that the costs will increase at a rate of 2.5% per year after 2006.

Staff	2006	2007	2008	2009	2010	Totals
Tech. Admin.	$85,265	$87,397	$89,582	$91,821	$94,117	**$448,181**
Prog. Exec.	$50,000	$51,250	$52,531	$53,845	$55,190	**$262,816**
Totals	**$135,265**	**$138,647**	**$142,113**	**$145,666**	**$149,307**	**$710,997**

6 Return on Investment Analysis

Now that the benefits and costs have been identified for each year, it is possible to calculate the Return on Investment (ROI). In addition to determining the net difference between the total benefits and the total costs, the Internal Rate of Return (IRR) and the payback period can also be calculated.

Here are some explanations for those people who are not familiar with an ROI analysis:

- Internal Rate of Return (IRR) – The equivalent interest rate that you would realize if you could to invest the costs and receive back the benefits. In comparison, depositing the money with a bank will provide a return of between 1% and 6%. Most organizations will not invest in a project if the IRR is less than what they could earn if they placed their investment with a financial institution.
- Payback Period – The length of time between the start of a project and the point when the cumulative returns are greater than the cumulative investment. Although this is frowned up as "not a proper financial measure", many people like to use it.

There is often an issue with the benefits that are used in an ROI analysis. There are many people who question whether the benefits will truly be realized and consequently, they should be discounted in the analysis. There are others who maintain that so long as the benefits were carefully estimated, there is no reason to reduce them.

To help satisfy both sets of people, two scenarios have been created with different levels of discounting. Please note that the costs were not reduced in either of the scenarios.

1. No Discounting of Benefits
2. Benefits Discounted by 25%

The following table summarizes the results over a five-year period. The sub-sections on the following pages provide more detail on each scenario and some graphs illustrating the cash flows. Overall, both scenarios show that the value provided by the portal solutions is very positive.

Scenario	Discount	Benefits	Costs	Difference	IRR	Payback
1	0%	$8,605.535	$3,585,786	**$5,019,750**	**67%**	**31 Months**
2	25%	$6,454,152	$3,585,786	**$2,868,366**	**42%**	**39 Months**

Analysis Notes:

1. In the first year that a benefit can be realized (i.e. the portal capability that provides the benefit has been implemented), only 30% of the benefit is counted. In the second year, only 70% of the benefit is counted. In the third and subsequent years, 100% is counted.
2. Benefits were increased by 2.5% each year.
3. Software Maintenance costs were increased by 3% each year.
4. Town of Markham Labour costs were increased by 2.5% each year.

6.1 Scenario 1 – No Discounting of Benefits

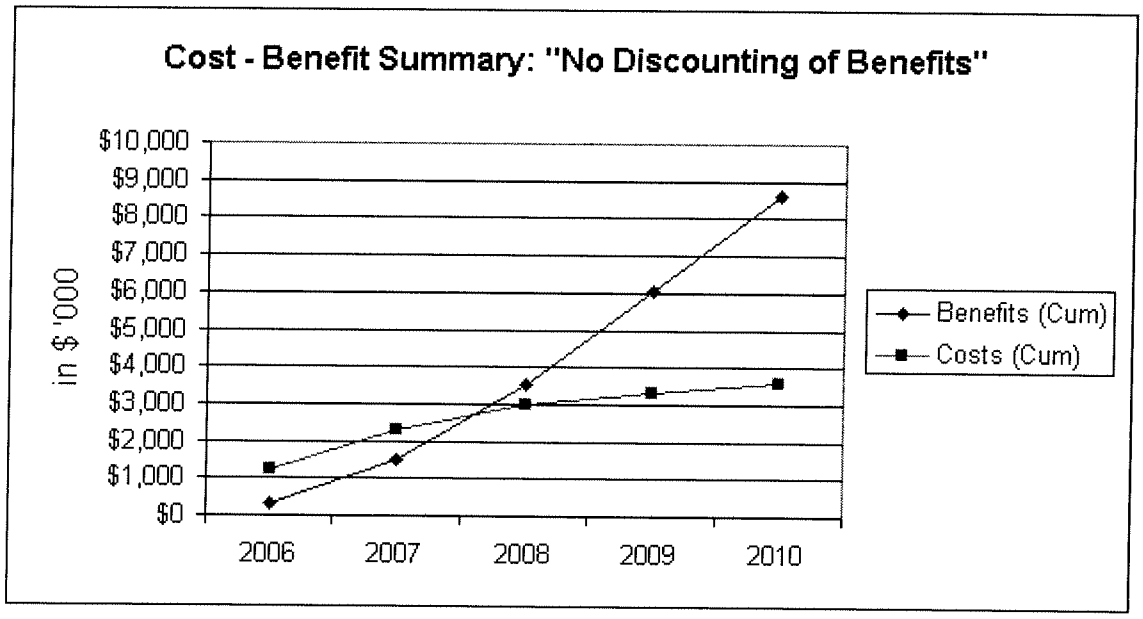
The following table shows the benefits and costs over a five-year period:

	2006	2007	2008	2009	2010	Totals
Benefits	$322,789	$1,156,798	$2,050,735	$2,506.278	$2,568.935	**$8,605.535**
Costs	$1,251,199	$1,023,704	$740,388	$304,154	$266,342	**$3,585,786**
Cash Flow	**($928,410)**	**$133,095**	**$1,310,347**	**$2,202,125**	**$2,302,593**	**$5,019,750**

The following is a list of highlights from the calculations

- Overall, the **benefits exceed the costs by $5.02 Million** over the five-year period.
- The **Internal Rate of Return** was calculated to be **67%**
- The **Payback Period** was calculated to be **31 months**

The following graph illustrates the cash flows over the five-year period:



6.2 Scenario 2 – Benefits Discounted by 25%

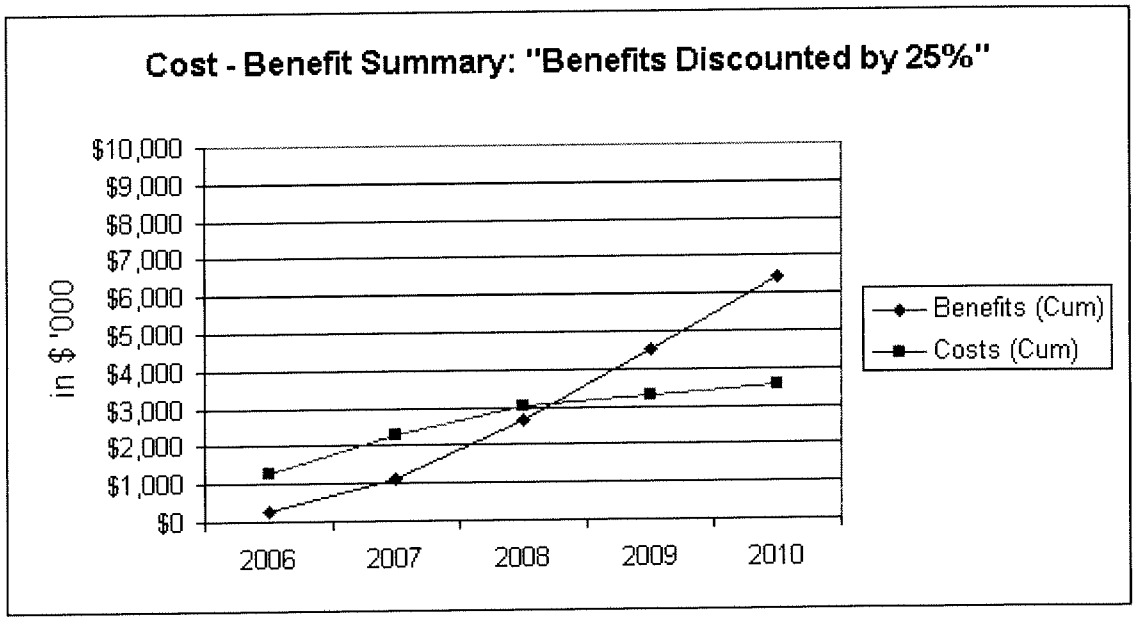
The following table shows the benefits and costs over a five-year period:

	2006	2007	2008	2009	2010	Totals
Benefits	$242,092	$867,599	$1,538,051	$1,879,709	$1,926,701	**$6,454,152**
Costs	$1,251,199	$1,023,704	$740,388	$304,154	$266,342	**$3,585,786**
Cash Flow	**($1,009,107)**	**($156,105)**	**$797,663**	**$1,575,555**	**$1,660,359**	**$2,868,366**

The following is a list of highlights from the calculations

- Overall, the **benefits exceed the costs by $2.87 Million** over the five-year period.
- The **Internal Rate of Return** was calculated to be **42%**
- The **Payback Period** was calculated to be **39 months**

The following graph illustrates the cash flows over the five-year period:



7 Conclusions & Recommendations

Overall, our conclusion is that the Town of Markham would be well served by undertaking a phased Portal Initiative comprised of:

- An external facing portal focused on providing services to residents,
- An internal facing portal focused on enabling staff to operate with improved efficiency and effectiveness. Note that most of the identified quantitative benefits are associated with this portal.

The two portals would use common technology to implement a significant number of capabilities that would be used by a large number of users.

From a financial perspective, the Portals would provide a substantial positive contribution, as well as increased satisfaction for staff and citizens.

With respect to next steps, the Town of Markham needs to recognize the challenges that our experience tells us are commonplace:

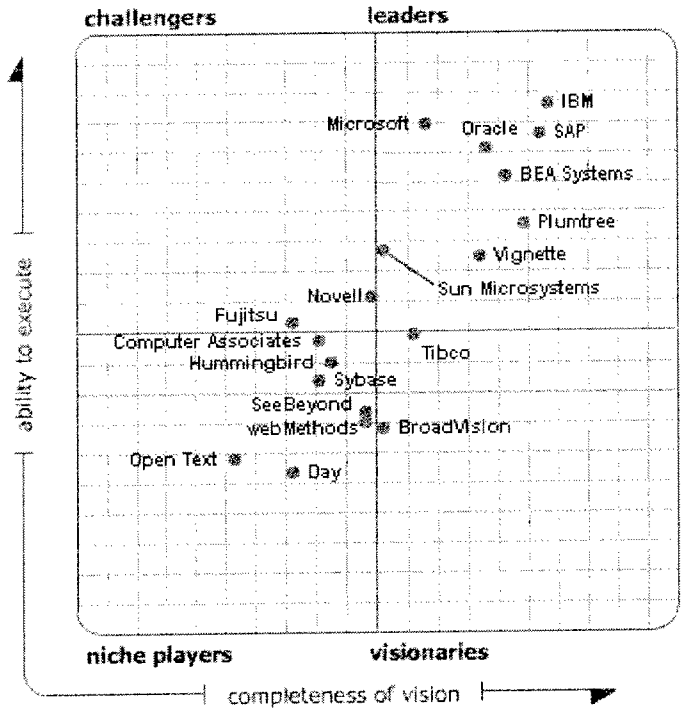
- A portal provides a platform for integrated service delivery across corporate functions and business units
- Therefore, there is not *one* owner of all business applications, or a *natural* owner within most organizational structures
- Portal governance will establish a *structure of shared ownership* and accountability for strategy, development, and operations

A solid governance approach led by a committed senior level champion will be a critical success factor to realizing the Portal benefits that have been identified in the Business Value Assessment. Two key factors in the governance approach will be the ability to gain benefit commitments from business units and the ability to measure achievements.

Two major decisions are on the horizon: the selection of a portal technology vendor and the selection of a portal implementation services provider. Effort will be required to become familiar with the various portal products in the marketplace. Additional effort will be required to learn about the track records and partnering styles of an array of portal services providers.

As initial guidance to these efforts, the following chart from Gartner Research shows the leading portal vendors.

Magic Quadrant for Horizontal Portal Products



Source: Gartner (May 2005)

Appendix A – Day in the Life Demonstration Outline

As mentioned in the Introduction, a Day in the Life demo was created that shows what the portal experience could be for both residents and employees. No special software (other than a web browser) is required to run the demo. Both the demo and the associated scripts have been provided to the Town of Markham.

Below is an outline of the functionality that is provided in the demo. On the following pages are screenshots of the "Home" pages of both the Internal (employee) and external (resident).

A. **David Moore – Resident.** Uses a variety of on-line functions:

- Conducts a property inquiry
- Submits a request for a Fire Safety Inspection
- Looks at the status of some building permit applications
- Looks at his tax account
- Looks at his requests

B. **Christine Lanza – Resident.** Uses a variety of on-line functions.

- Reports a problem - missing parking sign
- Looks at her pet registrations
- Looks at her requests
- Edits some of the web content that she is responsible for

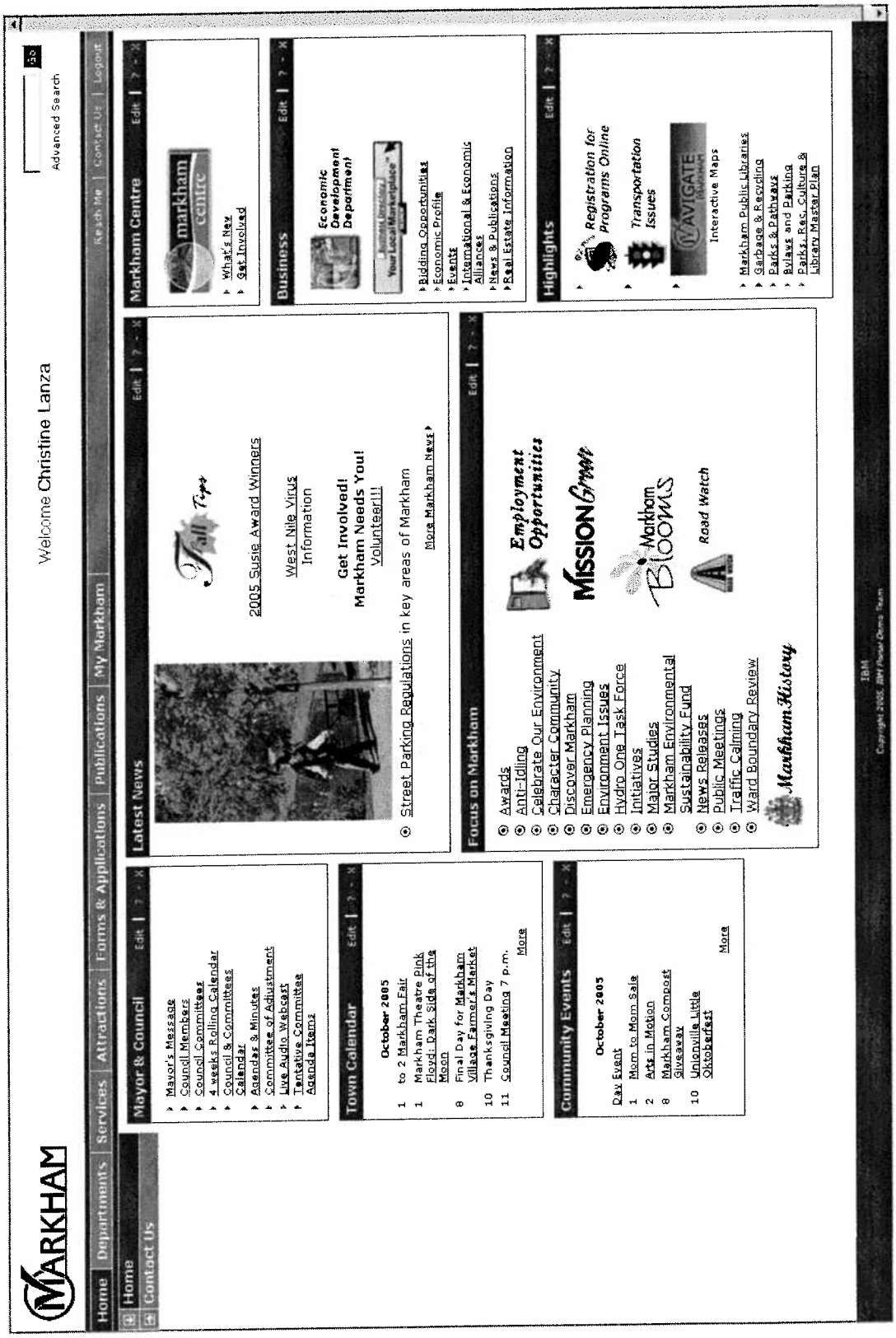
C. **Michael Chiu – Employee.** Needs to prepare for a Fire Safety Inspection.

- Uses the Amanda portlet to check on a property
- Uses People Finder to find a person
- Uses Instant Messaging to connect with a person
- Participates in a web conference.

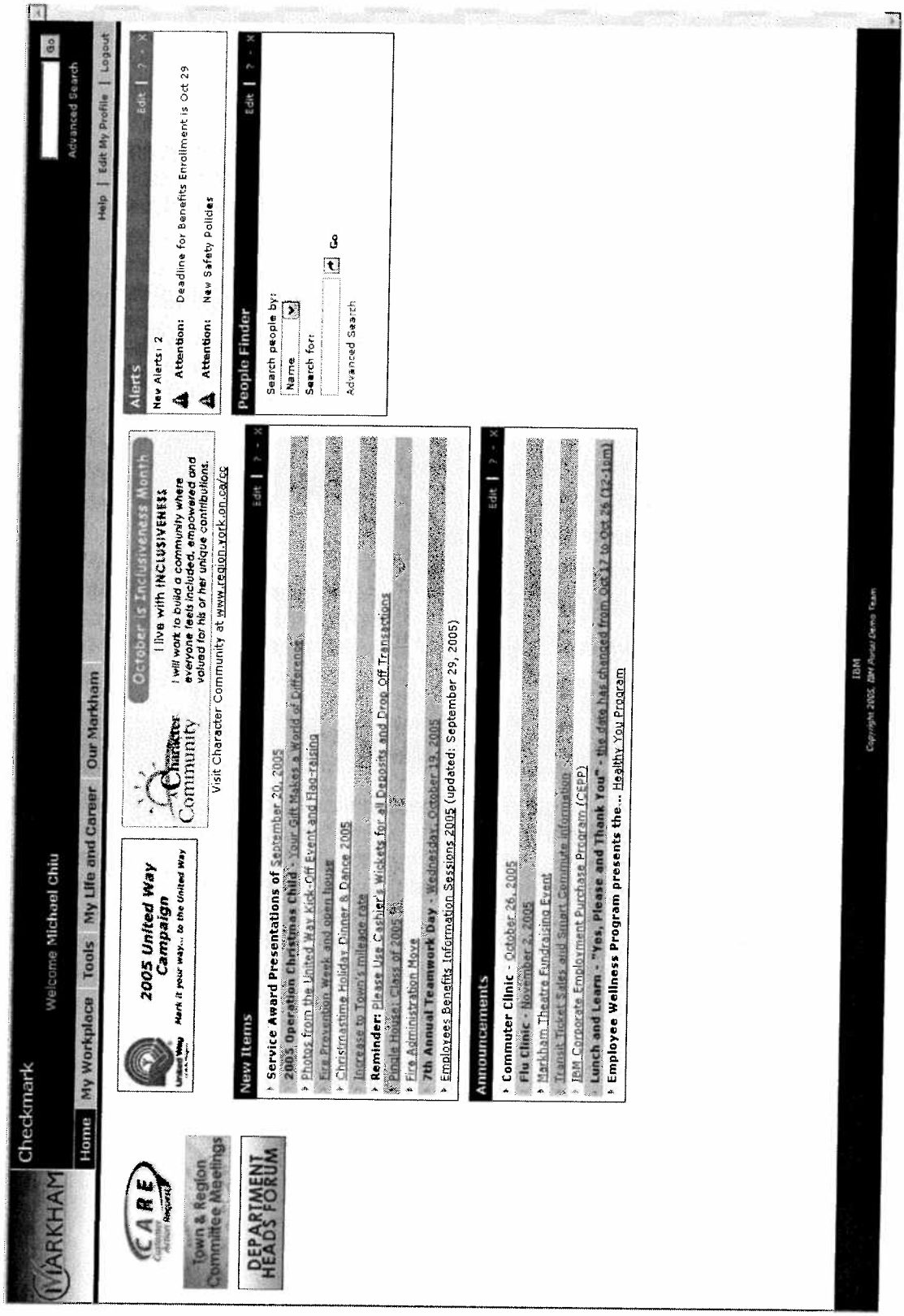
D. **Brenda Collins – Employee.** Needs to create a report for council.

- Uses the Amanda portlet to find information on dog bites
- Uses the Document Management system to find other documents on the subject.
- Posts her completed report to a Team Workplace.
- Updates the Status Dashboard.
- Looks for some financial information for her department
- Is contacted (via Instant Messaging) by a co-worker

Below is a screenshot of what the portal experience might be like for a resident (external).



Below is a screenshot of what the portal experience might be like for an employee (internal).

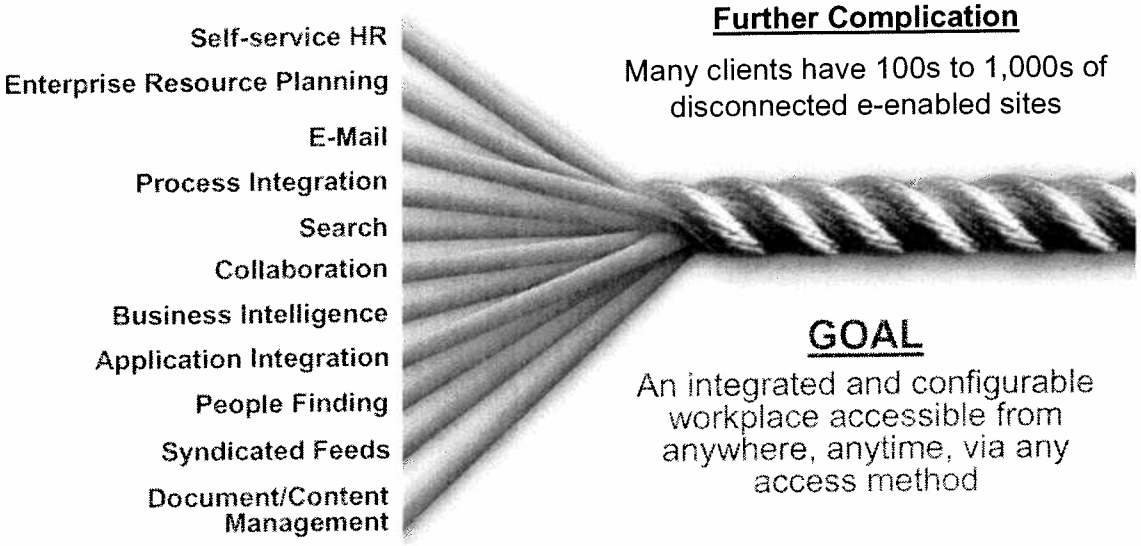


Appendix B – An Introduction to Portals

This appendix provides a short introduction to portals for those people who are not familiar with this technology.

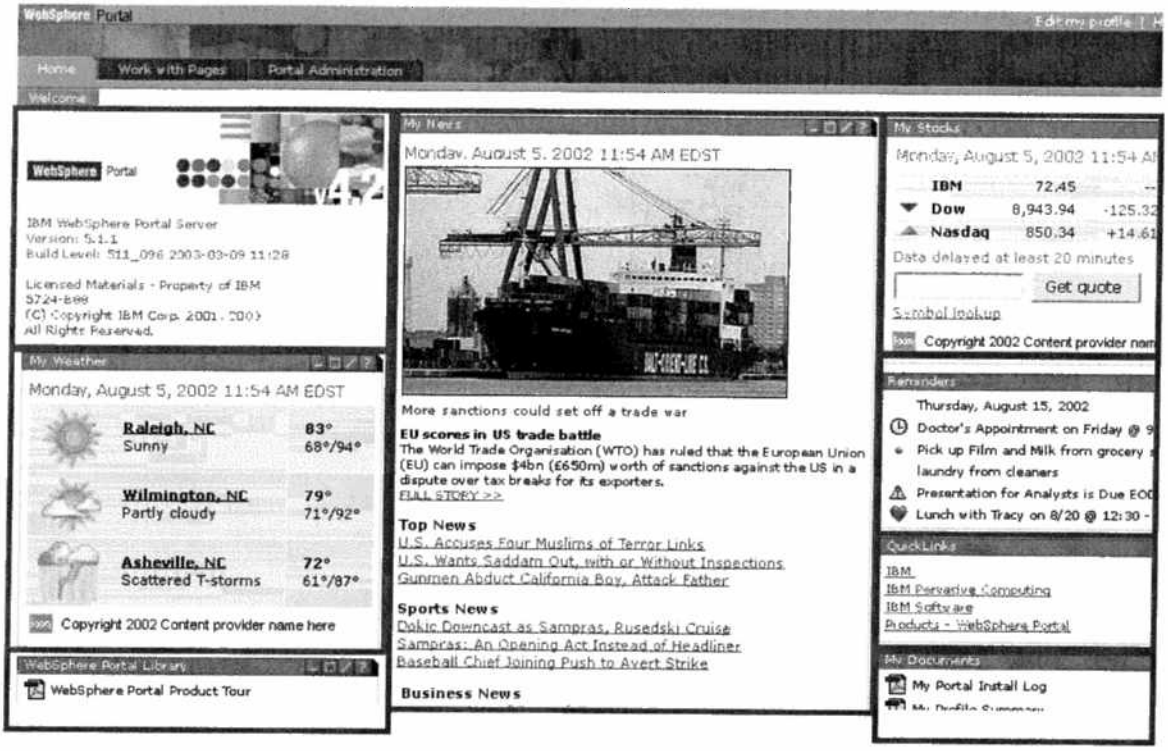
The Current Dilemma

Many organizations have a wide variety of information and applications that are provided to internal and external users. It is a confusing world for the users in that it is difficult for them to find the things they need, even if they know that it is out there. What would be better would be to provide the users with everything they need in one place.



The Portal Principle

Portals are designed to provide a single point of personalized interaction with enterprise apps, content, processes and people. A portal combines a wide variety of information and applications (whatever the user needs) into a site that the users navigate with a web browser. Each portal page looks just like a web page except that it is broken into a collection of "portlets". Each portlet is a separate application that can be developed, deployed, managed, and displayed independently of the other portlets. A portlet can be placed anywhere on the page. The diagram on the following page illustrates how a portal page is comprised of portlets (each one has been highlighted with a red border).



Combining a wide variety of different information and applications (that come from different sources) would normally be a very hard thing to do. However, this is accomplished by the portal software which pulls the various pieces together into a single page.

With a portal, it is now possible to deliver everything that a user would need into a single location. It is also easier to add new functionality since all that needs to be done is to add more pages and portlets to the portal. Another benefit of the portal is that it can manage the logging in process for each application that is presented in the portal. Consequently, once a user has logged into the portal, they have logged in to everything. This concept is called "single sign-on".

Please note that portals do not necessarily provide the same set of pages and portlets to every user. They are often enabled to deliver a highly personalized experience, depending on the user's:

- User's job role
- Security settings
- Administrators
- Personal settings
- Device
- Language

Organizations often find that they have different user communities with different needs and consequently, they will set up more than one portal. The Town of Markham is a good example in that the applications and content that the residents require is different from what the employees need. To address these differences, it has been decided that the Town of Markham should set up an "External" portal for the residents and an "Internal" portal for the employees.

Costs (over 5 years)…

RECOMMENDATION	Total estimated 5 year Costs
1. Adopt Architectural Principles	$25K
2. Optimize Business Architecture	$75K
3. Portal / Access – Discovery/Roadmap	$75K
3. Portal Access – Phased Implementation	$2.5M - $3.0M
4. Information Management Program	$275K
5. IT Processes	$225K
6. Governance	$50K