

Table of Contents

TABLE OF CONTENTS

I. Executive Summary	1-1
II. Assessment Results	
• Overview	2-1
• Strategic IT Issues	2-2
• Strengths	2-3
• IT Service Delivery	2-5
• IT Decision Making	2-15
• Applications	2-20
• Technical Infrastructure	2-23
III. Strategic Direction	
• Overview	3-1
• Linkage of Strategic Issues and Recommendations	3-2
• IT Mission and Strategies	3-5

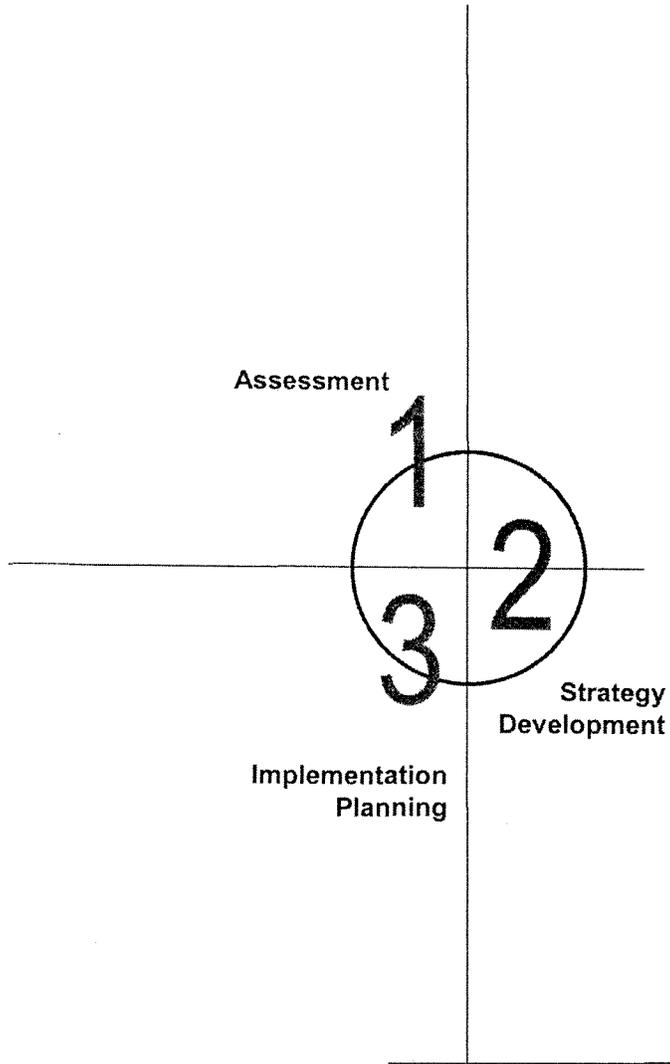
III. Strategic Direction (cont.)	
• Recommended IT Service Delivery Approach	3-7
• Recommended Application Strategy	3-20
• Recommended Technical Infrastructure	3-27
• Recommended IT Decision-Making Approach	3-29
IV. Implementation Plan	
• Overview	4-1
• Project Summaries	4-3
• Project Costs	4-8
• Project Workplan/Schedule	4-13
• Critical Success Factors	4-14
• Benefits	4-15

Table of Contents

TABLE OF CONTENTS

Appendices

- A. List of Participants A-1
- B. Project Descriptions B-1
- C. Customer Satisfaction Survey Results C-1
- D. Best Practices Overview D-1
- E. Business Function Model E-1
- F. IT Staffing Model Definitions F-1
- G. Gap Analysis G-1



[executive summary]

Town and School of Brookline
Information Technology Strategic Plan
January 23, 2002

INTRODUCTION

In July of 2001, the Town and School of Brookline engaged Pacific Technologies, Inc. (PTI) to prepare a strategic information technology (IT) plan. PTI conducted this exercise in partnership with a project steering committee consisting of directors and managers from across the enterprise¹. PTI supported the effort through quantitative analysis (including a customer satisfaction survey) and a series of interviews, focus groups, and workshops. Overall, more than 200 stakeholders participated in the process.

The body of this report summarizes the findings, strategic recommendations, and projects to implement the recommendations, along with associated budget estimates and timelines. In addition, the data collected to support the findings and recommendations are detailed in the report appendices.

PTI's approach to strategic technology planning examines four critical dimensions of IT:

- **Service Delivery** – the IT organizational structure and staffing approach to supporting applications and infrastructure
- **Applications** – the software used to support Brookline business functions
- **IT Decision Making** – the processes and participants responsible for making IT investment decisions
- **Technical Infrastructure** – the hardware, networks and operating systems that support the applications

These four dimensions serve as a common thread through the project's three major phases:

- 1 **Assessment** – PTI conducted an evaluation of Brookline's IT position across the four dimensions outlined above and identified major strategic IT issues that the enterprise must resolve
- 2 **Strategy Development** – Leveraging the information collected in the assessment, PTI developed recommendations for addressing those issues in partnership with the project steering committee
- 3 **Implementation Planning** – Based on the strategies developed in the previous phase, PTI and the project team created a costed

¹ "Brookline" and "enterprise" in the context of this report refer to the combined Town and School of Brookline. Where "Town" or "School" are used alone, the reference is to that particular aspect of the enterprise.

workplan describing management, application, and technical projects required to achieve Brookline's technology objectives

The remainder of this chapter summarizes the results of the planning work as follows:

- The "Big Picture"
- Strategic Issues and Associated Recommendations
- Projects, Costs, and Timing
- Conclusion

THE "BIG PICTURE"

Sometimes it's easy to "lose the forest for the trees" in planning efforts such as this and miss the "big picture." With that in mind, this section presents the major conclusions from this strategic IT planning effort.

The assessment found that, while the Town and School independently have made commendable progress in deploying their respective IT infrastructure and applications, Brookline as a whole faces these primary IT concerns:

- **Enterprise-wide IT leadership is lacking**
- **Separate Town and School IT organizations reduce service delivery efficiency**
- **Some core cross-departmental functions are not well automated**
- **IT investment decisions are not made on a Brookline-wide basis**
- **Teachers and School management are dissatisfied with integration of Instructional Technology into the curriculum**

To address these concerns – and to meet future needs – PTI recommends the following key strategies:

- **Create a central IT department, led by a Chief Information Officer (CIO), with two additional positions providing shared IT support to Town and School departments. Police, Library, Public Works, and the School will continue to provide their own department-specific application support, subject to review by the CIO**

INFORMATION TECHNOLOGY STRATEGIC PLAN

Chapter 1:
Executive Summary

- **Invest in Maintenance Management and Internet/intranet automation** to support core enterprise functions and to extend application functionality out to staff and the community
- **Create an annual IT decision process**, similar to the annual CIP process, with increased departmental and community input
- **Consolidate servers to a data center**, managing all of Brookline's technology as an enterprise resource with common standards
- **Develop a strategic plan for Instructional Technology**, enhancing education at all grade levels

STRATEGIC ISSUES AND ASSOCIATED RECOMMENDATIONS

At the conclusion of the assessment, PTI identified several strategic issues surrounding IT at Brookline:

- **What major application investments are required over the next five years to meet Brookline's business needs?**
- **How can Brookline make its IT infrastructure better integrated and easier to manage?**
- **What improvements to IT decision making are needed?**
- **What changes, if any, should be made to the current IT organization and staffing?**

These questions served as a focal point for the strategy development work. The following expands upon these issues, presents specific recommendations to address them, and outlines benefits attendant to the recommendations.

WHAT MAJOR INVESTMENTS ARE REQUIRED OVER THE NEXT FIVE YEARS TO MEET BROOKLINE'S BUSINESS NEEDS?

The assessment found some core municipal functions without supporting automation, including Human Resources and Maintenance Management. The steering committee agreed that automation of these core functions is a strategic priority.

Brookline has implemented several core application packages in recent years. The assessment found that these applications are fundamentally sound, but should be extended to achieve additional functionality.

While the Town and School have made significant strides in use of the Internet, the project team agreed that additional investments are desirable to enhance delivery of e-Government services to the community. A similar investment in intranet technology would give Brookline staff improved access to enterprise data and applications.

To address these issues, and to meet future needs, PTI recommends the actions outlined below.

Invest in the following key applications:

- **Maintenance Management** – automates preventive maintenance, work scheduling, materials ordering and related activities for the many departments that maintain fleet, facilities, and infrastructure – *improving efficiency and lowering life-cycle costs of Brookline's assets*
- **Instructional Technology** – while this plan did not directly review the computers and curriculum-specific software used in the classroom, School management and teachers indicated that better integration of these learning tools into the curriculum is a top priority – *improving the education of Brookline students at all grade levels*
- **Management Reporting** – summarizes critical performance indicators derived from all core applications – *allowing management to make more timely and informed decisions*

Extend the functionality of these existing applications:

- **MUNIS financial management system** – While MUNIS helps automate core financial functions, many departments are unable to use all available features. Additional training and business process alignment will allow staff to better utilize the capabilities of MUNIS. In addition, migrating School administrative staff to PC's will allow them to access to this enterprise application
- **Human Resource Management/Training** – modernizes the automated support of Brookline's most valuable asset in serving the community – *the people who work for the Town and School*
- **Permits Plus permit and licensing system** – Departments that use this system are pleased with the resulting customer service and efficiency improvements. Nonetheless, to achieve the benefits of Town-wide workflow automation, remaining departments involved in permit and licensing processes must use the system as well
- **Pentamotion student administration system** – While this system currently meets central School administrative needs, the key to functionality and efficiency improvements will be extension of the

INFORMATION TECHNOLOGY STRATEGIC PLAN

Chapter 1: Executive Summary

application to the classroom so that teachers can directly access student schedules, grades, and records

- **Document management system** – Replace/upgrade the current system with a higher-capacity, up-to-date system that can be utilized cross-departmentally

Invest in Internet-enabled applications to provide e-Government services to the community, including:

- Access to homework and student schedules
- Online registration for Brookline classes and facilities, including parks and playgrounds
- Maps and geographic information based on the GIS system

Invest in intranet-enabled applications giving Brookline staff easy access to:

- Submission and tracking of help desk problems
- Provision of computer-based training courses
- Human resources information
- Updates to annual benefit enrollment
- Integrated staff and facility scheduling

Benefits include:

- **Improved staff efficiency due to better automation of core functions**
- **Easier and more convenient services to the community via the Internet**
- **Enhanced maintenance management capabilities – leading to lower life cycle costs for assets**
- **Greater desirability of Brookline as a place to work**
- **More informed management decisions**

HOW CAN BROOKLINE MAKE ITS IT INFRASTRUCTURE BETTER INTEGRATED AND EASIER TO MANAGE?

Brookline's IT infrastructure is split between Town and School – reflective of the separate IT organizations – leading to inefficiencies in service delivery, duplicate skill sets, and barriers to information sharing across the enterprise. To address these issues, Brookline should:

- **Consolidate servers to a data center** – Consolidation is key to achieving economies of scale in systems support. The High School, Sperber Education Center, or Municipal Service Center are the best current locations, but plans for remodeling Town Hall should also consider possibly moving the data center there
- **Manage Brookline's technical infrastructure as a single, shared resource** – This initiative will maintain consistent equipment and software levels, and reduce barriers to information sharing across departments
- **Upgrade the WAN/LAN at schools** – Stable, high-speed WAN connections are critical to an effective data center. Completing the LAN upgrade at remaining schools will remove a key barrier to deployment of instructional technology in the classroom
- **Instructional Technology** – While the scope of this work does not include recommending the specific number or type of computers to be used in the classroom, we anticipate that the Schools' Instructional Technology strategic direction could require substantial investments in this area
- **Establish an enterprise database standard** – This initiative places a strategic emphasis on Brookline-wide information management – addressing the "data silos" that exist today – by moving toward a common database standard and migrating packages to the new standard where possible
- **Fully fund life-cycle replacement for major IT assets** – This expands on the current funding mechanism to include file servers, routers, and major applications

Benefits include:

- **More efficient IT service delivery, freeing up IT staff resources to focus on application and customer services**
- **Easier sharing of information across Brookline**
- **Deployment of needed applications to classrooms and remote locations**
- **Greater IT skill depth as support staff are able to focus on fewer functions**
- **Efficient, up-to-date systems and hardware**

INFORMATION TECHNOLOGY STRATEGIC PLAN

Chapter 1:
Executive Summary

WHAT IMPROVEMENTS TO IT DECISION MAKING ARE NEEDED?

The assessment found that IT investment decisions are not consistently made on an enterprise basis, with departments able to “end-run” the existing process. The steering committee agreed that IT decision making should be elevated to a formal process, akin to the annual CIP process, for prioritizing Brookline’s IT investments. To accomplish this, Brookline must:

- **Implement the recommended decision-making process** presented in Chapter 3
- **Define the key roles and responsibilities** of the CIO, Town/School Departmental Committee, and IT Advisory Committee in this new process
- **Coordinate IT planning** based on priority business needs, utilizing a well defined evaluation criteria
- **Conduct post implementation project reviews** to assess and address “lessons learned”
- **Re-assess GIS needs** to evaluate and optimize the current GIS configuration, and to support new user requirements

Benefits include:

- **Informed enterprise-wide IT decisions, with departmental input**
- **Better coordination of the planning and review effort**
- **Ongoing innovation to enhance and support current technology initiatives**

WHAT CHANGES, IF ANY, SHOULD BE MADE TO THE CURRENT IT ORGANIZATION AND STAFFING?

The assessment found that Brookline lacks the enterprise-wide leadership needed to optimize IT investments and their ongoing support. Separate IT organizations lead to service delivery inefficiencies in help desk and PC support, training, application support, and system services. However, decentralized application support works well for the School and some Town departments.

Significant changes in current IT organization and staffing are required to address these issues. Specifically, PTI recommends the following activities:

- **Elevate the IT support function at Brookline to a department supporting shared IT needs** – this allows organizational units to concentrate on their core competencies, with departments focused on their specific mission and IT focused on supporting the technical infrastructure and enterprise automation
- **Create a CIO position at a senior department head level in the organization** – the CIO will provide Brookline-wide IT leadership and vision, guide departmental application services, and manage the central IT department
- **Develop a Memorandum of Understanding between the Town Administrator and School Superintendent** – defines the governance and oversight of the CIO and the central IT department
- **Add a Customer Services manager position** – this manager will develop and supervise the organizational unit providing a Brookline help desk, PC support, training coordination, and related services
- **Add one network support position, and transfer two support staff and one manager from School IT to the central IT organization** – these changes are needed to staff a consolidated data center managing Town and School IT infrastructure. Support provided by the data center will free other IT staff to focus on application support and customer services
- **Establish an IT help desk** – provide a single point of contact to track and resolve IT problems
- **Formally charter the IT Advisory Committee (ITAC)** – this group will provide a community perspective and outside expertise to assist the CIO in developing Brookline’s IT future
- **Charter a Town/School Departmental IT Committee** – Chaired by the CIO, this group will ensure that departments receive needed service levels from the central IT department, and that departmental applications support follows central IT standards

Benefits include:

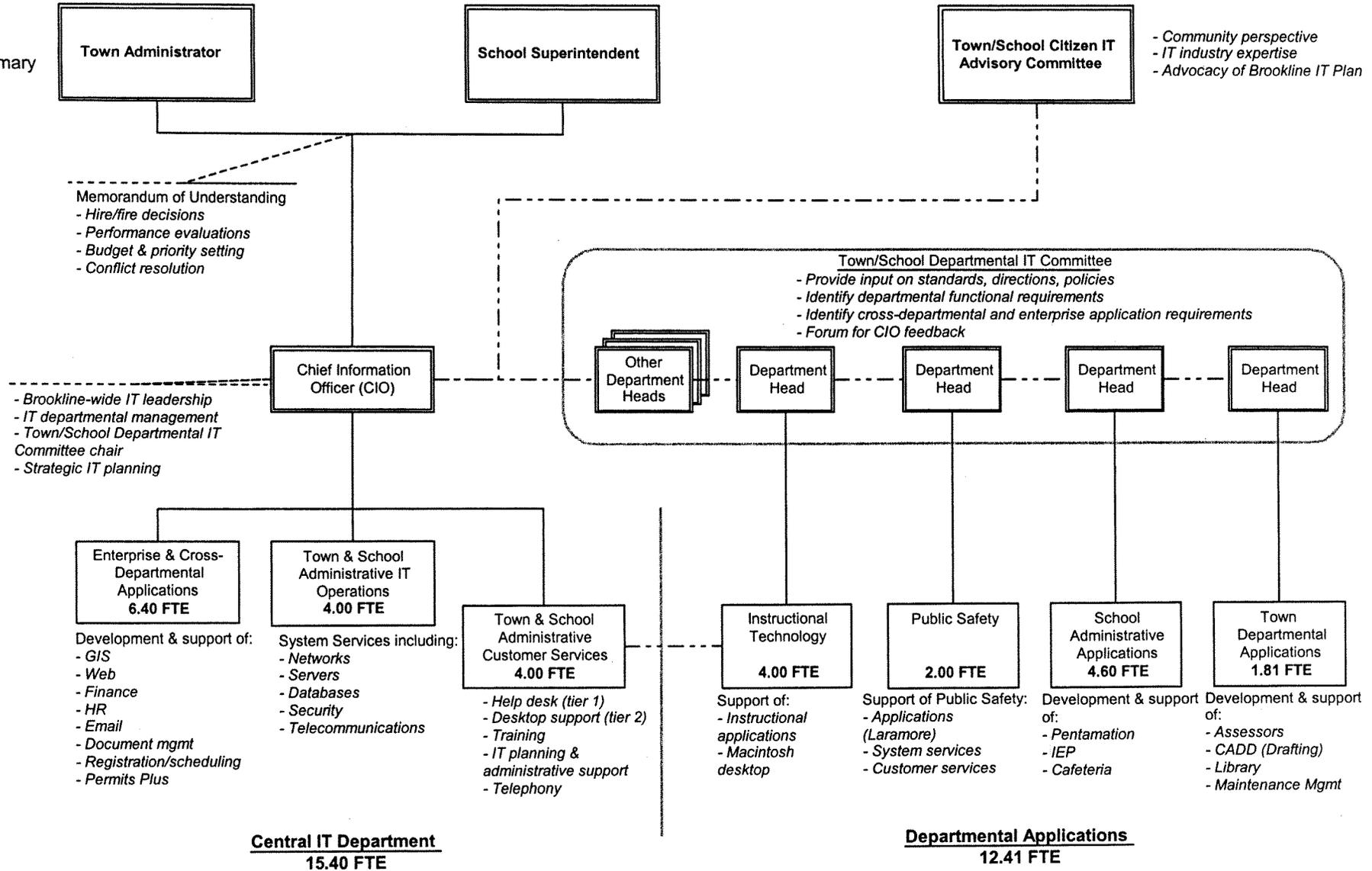
- **Enterprise-wide IT leadership and vision**
- **Increased IT service delivery efficiency and effectiveness**
- **Enhanced IT customer service**
- **Greater community involvement in Brookline’s IT future**
- **Improved information flow across applications and between departments**

The diagram on the following page depicts the recommended IT organization.

**INFORMATION
TECHNOLOGY
STRATEGIC
PLAN**

RECOMMENDED BROOKLINE IT ORGANIZATION

Chapter 1:
Executive Summary



PROJECTS, COSTS, AND TIMING

The following pages present the project costs and timing associated with implementing the recommendations in this plan. Costs presented are one-time and annual recurring costs. A Gantt chart that provides the recommended timeline for implementing the projects follows the cost table. Chapter 4 includes more detailed annual tables, and Appendix B contains complete project descriptions.

PROJECT COST SUMMARY

This plan asks Brookline to significantly increase its funding of information technology. Specifically, over the next five fiscal years, the plan:

- Recommends \$16.0 million in total IT-related projects
- Includes \$4.2 million currently planned for in the operating budget and CIP
- Requires a net increase in funding of \$11.8 million

Of the \$16.0 million in recommended spending, 80% is related to five major projects:

- \$5.7 million for life-cycle replacement of Town and School IT assets, ensuring efficient, up-to-date systems and hardware
- \$3.0 million for increasing the number of desktops in the classroom to meet future requirements for an improved student-to-desktop ratio
- \$1.5 million to implement the organizational recommendations establishing a central IT department supporting Brookline-wide needs
- \$1.4 million to upgrade networks in the schools, bringing instructional technology capabilities to every classroom
- \$1.1 million for upgrades to instructional software appropriate to each grade level in Brookline

PROJECT COSTS

The table below presents low and high range estimates of the one-time costs for each of the recommended projects. It also presents the estimated annual recurring cost of each project, based on the high-end capital cost.

**TOTAL PROJECT COSTS
(costs in thousands)**

		One-time Costs Low-end	One-time Costs High-end	Recurring Costs
Management Projects				
M1	Implement organizational recommendations	0	15	315
M2	Implement IT decision-making process	0	20	N/A
M3	GIS needs re-assessment and system evaluation	15	40	N/A
M4	Develop and implement IT policies and procedures	0	30	N/A
M5	Develop delivery and coordination framework for IT training	0	45	N/A
M6	Establish IT help desk	17	32	5
M7	Develop a plan for integrating Instructional Technology into curriculum	0	150	N/A
M8	Establish and fund life-cycle replacement for IT assets	0	15	1413
M9	Conduct annual review and update of IT Strategic Plan	0	0	N/A
Application Projects				
A1	Implement human resource system	0	85	10
A2	Implement a maintenance management system	142	270	18
A3	Establish a management reporting platform and develop key reports	16	76	3
A4	Extend MUNIS functionality to all departments	19	49	N/A
A5	Complete implementation of Permits Plus	0	60	6
A6	Deploy Pentamation to teachers and community	26	56	N/A
A7	Implement Internet priorities	0	270	43
A8	Implement intranet priorities	0	75	N/A
A9	Upgrade classroom applications	366	706	136
A10	Replace/upgrade document management system	544	790	32
Technology Projects				
T1	Establish a data center	50	175	N/A
T2	Upgrade WAN/LAN in schools	1,350	1,350	24
T3	Implement an enterprise database	230	660	106
T4	Migrate school administrative staff to PC platform	30	37	N/A
T5	Upgrade classroom computing platform	0	0	986
Total		\$2,805	\$5,006	\$3,097

1. Costs do not include internal labor, except for project M1, which incorporates benefits-inclusive compensation for CIO and new IT staff, and project T3, which includes funding for a database administrator.
2. Recurring costs for projects M1 and M8 are for FY2007, reflecting expected step increases (M1) and increases in the number of computers on lease (M8). Recurring costs for FY2003-2006 are somewhat lower than the figures shown, and are reflected in the five-year totals shown on page 1-9.

**INFORMATION
TECHNOLOGY
STRATEGIC
PLAN**

The table below presents the total project costs reduced by the amounts currently planned by the Town.

TOTAL PROJECT COSTS – MINUS CURRENTLY PLANNED FUNDING
(costs in thousands)

Chapter 1:
Executive Summary

		One-time Costs Low-end	One-time Costs High-end	Recurring Costs	
Management Projects					
M1	Implement organizational recommendations	0	15	193	1,2
M2	Implement IT decision-making process	0	20	N/A	
M3	GIS needs re-assessment and system evaluation	15	40	N/A	
M4	Develop and implement IT policies and procedures	0	30	N/A	
M5	Develop delivery and coordination framework for IT training	0	45	N/A	
M6	Establish IT help desk	17	32	5	
M7	Develop a plan for integrating Instructional Technology into curriculum	0	150	N/A	
M8	Establish and fund life-cycle replacement for IT assets	0	15	796	2
M9	Conduct annual review and update of IT Strategic Plan	0	0	N/A	
Application Projects					
A1	Implement human resource system	0	85	10	
A2	Implement a maintenance management system	142	270	18	
A3	Establish a management reporting platform and develop key reports	16	76	3	
A4	Extend MUNIS functionality to all departments	0	30	N/A	2
A5	Complete implementation of Permits Plus	0	60	6	
A6	Deploy Pentamation to teachers and community	26	56	N/A	
A7	Implement Internet priorities	0	105	43	2
A8	Implement intranet priorities	0	60	N/A	2
A9	Upgrade classroom applications	366	706	136	
A10	Replace/upgrade document management system	544	790	32	
Technology Projects					
T1	Establish a data center	50	175	N/A	
T2	Upgrade WAN/LAN in schools	600	600	24	2
T3	Implement an enterprise database	230	660	106	1
T4	Migrate school administrative staff to PC platform	30	37	N/A	
T5	Upgrade classroom computing platform	0	0	986	
Total		\$2,036	\$4,057	\$2,357	

1. Costs do not include internal labor, except for project M1, which incorporates base compensation for CIO and new IT staff, and project T3, which includes funding for a database administrator

2. Costs for projects M8, A4, A7, A8, and T2 do not include funds currently planned for these projects

**INFORMATION
TECHNOLOGY
STRATEGIC
PLAN**

This final table summarizes the net increase in funding needed for the next fiscal year, and for the next five fiscal years, to support the recommended projects

**PROJECT COST SUMMARY
(costs in thousands)**

Chapter 1:
Executive Summary

		FY 2003		
		GROSS	PLANNED	NET
Management Projects				
M1	Implement organizational recommendations	273	113	160
M2	Implement IT decision-making process	20	0	20
M3	GIS needs re-assessment and system evaluation	40	0	40
M4	Develop and implement IT policies and procedures	30	0	30
M5	Develop delivery and coordinaton framework for IT training	45	0	45
M6	Establish IT help desk	32	0	32
M7	Develop a plan for integrating Instructional Technology into curriculum	0	0	0
M8	Estalish and fund life-cycle replacement for IT assets	179	164	16
M9	Conduct annual review and update of IT Strategic Plan	0	0	0
Application Projects				
A1	Implement human resource system	0	0	0
A2	Implement a maintenance management system	0	0	0
A3	Establish a management reporting platform and develop key reports	0	0	0
A4	Extend MUNIS functionality to all departments	0	0	0
A5	Complete implementation of Permits Plus	0	0	0
A6	Deploy Pentamation to teachers and community	0	0	0
A7	Implement Internet priorities	270	165	105
A8	Implement intranet priorities	0	0	0
A9	Upgrade classroom applications	0	0	0
A10	Replace/upgrade document management system	0	0	0
Technology Projects				
T1	Establish a data center	0	0	0
T2	Upgrade WAN/LAN in schools	150	150	0
T3	Implement an enterprise database	0	0	0
T4	Migrate school administrative staff to PC platform	37	0	37
T5	Upgrade classroom computing platform	0	0	0
Total		\$1,076	\$592	\$484

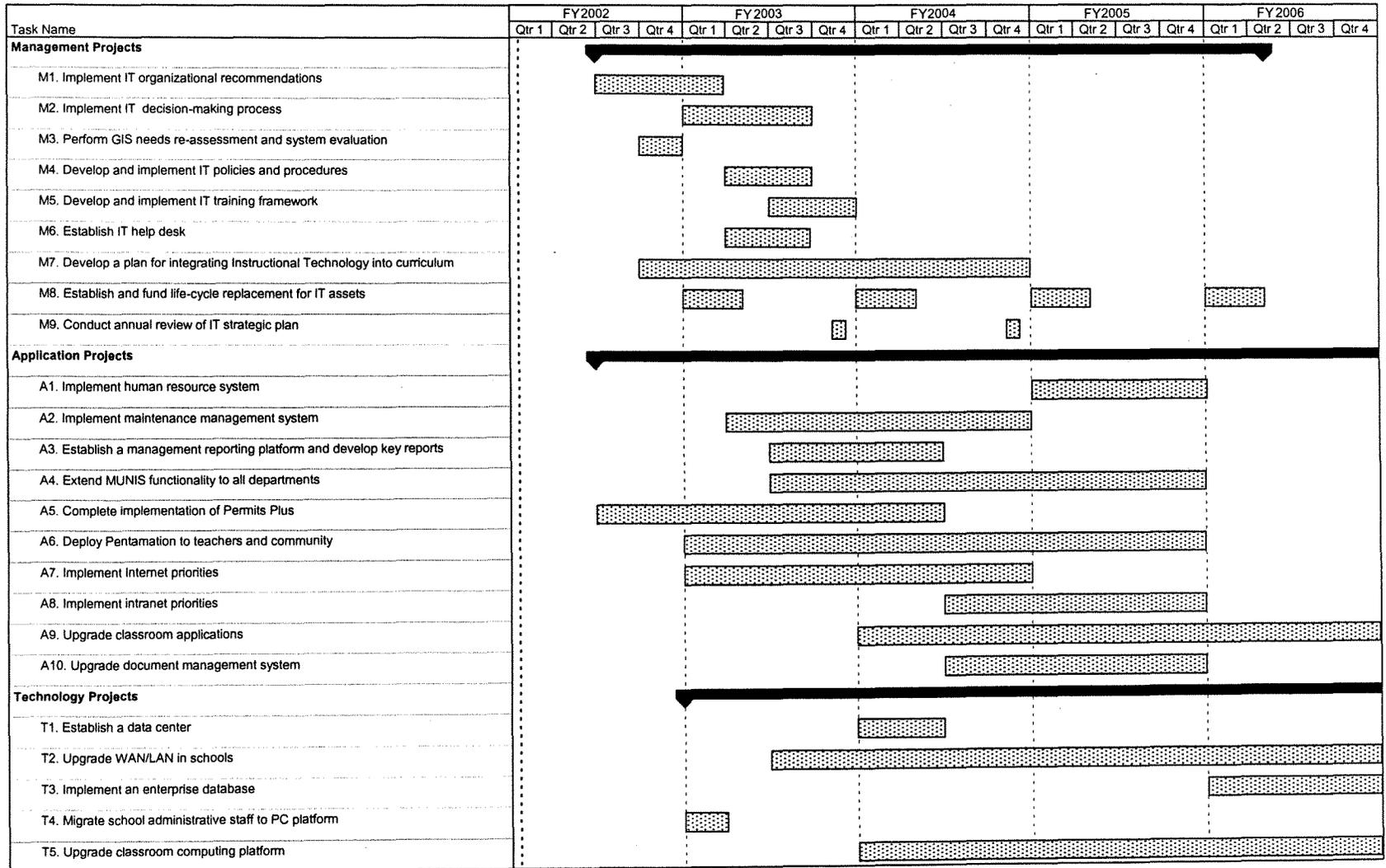
FY 2003-2007		
GROSS	PLANNED	NET
1,469	589	880
20	0	20
40	0	40
30	0	30
45	0	45
52	0	52
150	0	150
5,662	2,561	3,100
0	0	0
104	0	104
324	0	324
86	0	86
49	19	30
78	0	78
56	0	56
443	297	146
75	15	60
1,114	0	1,114
854	0	854
175	0	175
1,422	750	672
766	0	766
37	0	37
2,958	0	2,958
\$16,008	\$4,231	\$11,776

**INFORMATION
TECHNOLOGY
STRATEGIC
PLAN**

RECOMMENDED PROJECT SCHEDULE

The diagram below represents the timeline to implement the recommended projects.

Chapter 1:
Executive Summary



CONCLUSION

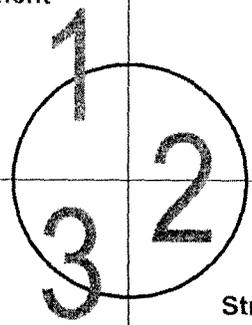
In many respects, this planning effort – though comprehensive – represents the “easy part.” The real work lies ahead: translating recommendations into *results*. The implementation plan presented in the previous section requires a substantial IT investment. To accomplish these projects, Brookline must commit to the requisite resources, including additional funding for the purchase and deployment of applications, the acquisition of required technical infrastructure, and the appropriate staff to implement and support them. **Beyond that, the strategic plan belongs to Brookline. Staff and community members must support this plan and see it to fruition.**

Earlier in this executive summary, we presented recommendations and attendant benefits associated with addressing each of the major strategic IT issues surfaced by the analysis. Overall, implementing these strategic recommendations will result in the key benefits presented below:

BROOKLINE-WIDE IT PLAN BENEFITS

- **Enhanced services to the community**
- **Innovation and leadership for Brookline's IT future**
- **Improved productivity through investments in key applications**
- **A solid foundation for e-Government enhancement efforts**
- **Improved IT decision making with an enterprise view**
- **Increased staff satisfaction with IT service**

Assessment



Strategy
Development

Implementation
Planning

[assessment results]

Overview

ASSESSMENT

2

This chapter documents the results of our assessment of Brookline's IT service delivery, IT decision making, software applications, and technical infrastructure. It presents:

- ◆ Strategic IT Issues
- ◆ Strengths
- ◆ IT Service Delivery Review
- ◆ IT Decision Making Review
- ◆ Application Review
- ◆ Technical Infrastructure Review

NOTE: This assessment represents a point in time — it reflects a “snapshot” of the state of IT during the period in which the analysis occurred

Strategic IT Issues

ASSESSMENT

2

Strategic IT issues identify the most important challenges that must be addressed by this plan. The following strategic issues are the results of the assessment:

- 1 What major application investments are required over the next five years to meet Brookline's business needs?**
While many applications at Brookline are fundamentally sound, several key applications do not meet minimum user needs — or do not exist at all.
- 2 How can Brookline make its IT infrastructure better integrated and easier to manage?**
Separate networks and diverse desktop standards make internal communications and data sharing more difficult, and increase the workload of IT staff.
- 3 What improvements to IT decision making are needed?**
Major IT investment decisions tend to be departmentally focused, without considering the advantages of a Brookline-wide view.
- 4 What changes, if any, should be made to current IT organization and staffing?**
The Town and School maintain separate and distinct IT organizations, resulting in a number of service delivery inefficiencies.

Strengths

ASSESSMENT

2

Projects of this nature often tend to focus exclusively on areas of concern. Through the course of the assessment, a variety of IT strengths surfaced which are worth noting — and building upon. These include:

- ◆ **Geographic Information Systems (GIS) are highly regarded by users and were recently recognized nationally for excellence**
- ◆ **Police have a highly functional and well-integrated application suite from Laramore Systems that should be easily extensible to Fire and EMS when these services move into the newly renovated public safety building**
- ◆ **The Pentamation system largely meets the School's central administrative needs for student services, medical records, etc.**
- ◆ **The School's cafeteria management system works well, although it is not integrated with Pentamation or with the Brookline's finance system (MUNIS)**
- ◆ **Users are generally satisfied with the MS Office tools (Word, Excel, etc.) provided**
- ◆ **Brookline has done a good job at providing e-Government transactions for utility bill payment, property tax payments, and recreation registration and payment. The Town is one of a small number of communities in the state that offers such services to its citizens**

Strengths (continued)

ASSESSMENT

2

- ◆ **The School (and to a lesser extent the Town) has made an extensive investment in networks, servers, and communications equipment**
- ◆ **The Town and School have several areas of IT skill strengths:**
 - The Police Department is quite satisfied with the support from its own IT staff
 - Web services provided by the Town are well regarded
 - GIS services also receive favorable comments from many departments
 - In-house support provided for the Macintosh is viewed positively by School administrative staff
- ◆ **Overall IT staffing levels seem on par with local towns and school districts of comparable size**

[IT Service Delivery:] Overview

ASSESSMENT

2

IT service delivery refers to the activities performed by IT staff to provide applications, technology, and support to the Town and School. The analysis included organization structure, staffing levels, and skills assessment.

This section presents an assessment of IT service delivery as follows:

- ◆ Findings
- ◆ Current IT Organization
- ◆ Current IT Staffing Levels
- ◆ Skills Assessment

IT Service Delivery: Findings

ASSESSMENT

2

This section summarizes key IT service delivery findings:

- ◆ Town and School maintain separate and distinct IT organizations, as do several departments, resulting in service delivery inefficiencies
- ◆ Brookline's approach to IT operations is largely informal, leading to:
 - IT and *non-titled IT staff*¹ managers who are in the background of IT operations — diverted from management and planning
 - Lack of clearly defined responsibilities within the IT organizations
 - Service delivery that is more reactive than it is planned
- ◆ End-users have not utilized the training made available to them, resulting in applications not being used to their full potential:
 - Staff expressed lack of understanding of many features in Permits Plus
 - Users found it difficult to understand and navigate MUNIS and Harper's Payroll
 - No formal program exists to train new hires in Brookline IT basics
- ◆ Training for IT staff development has been budgeted, but many staff feel that more training is needed
- ◆ Many staff see the lack of an IT help desk as an issue:
 - There is no single point of contact for problem resolution
 - Trouble calls are not logged and tracked to identify common concerns and solutions
- ◆ Service is available only during normal business hours, and often takes longer at remote locations

¹ *Non-titled IT staff refers to individuals who spend at least 10% of their time on IT job duties but do not have IT job titles*

IT Service Delivery: Findings (cont'd.)

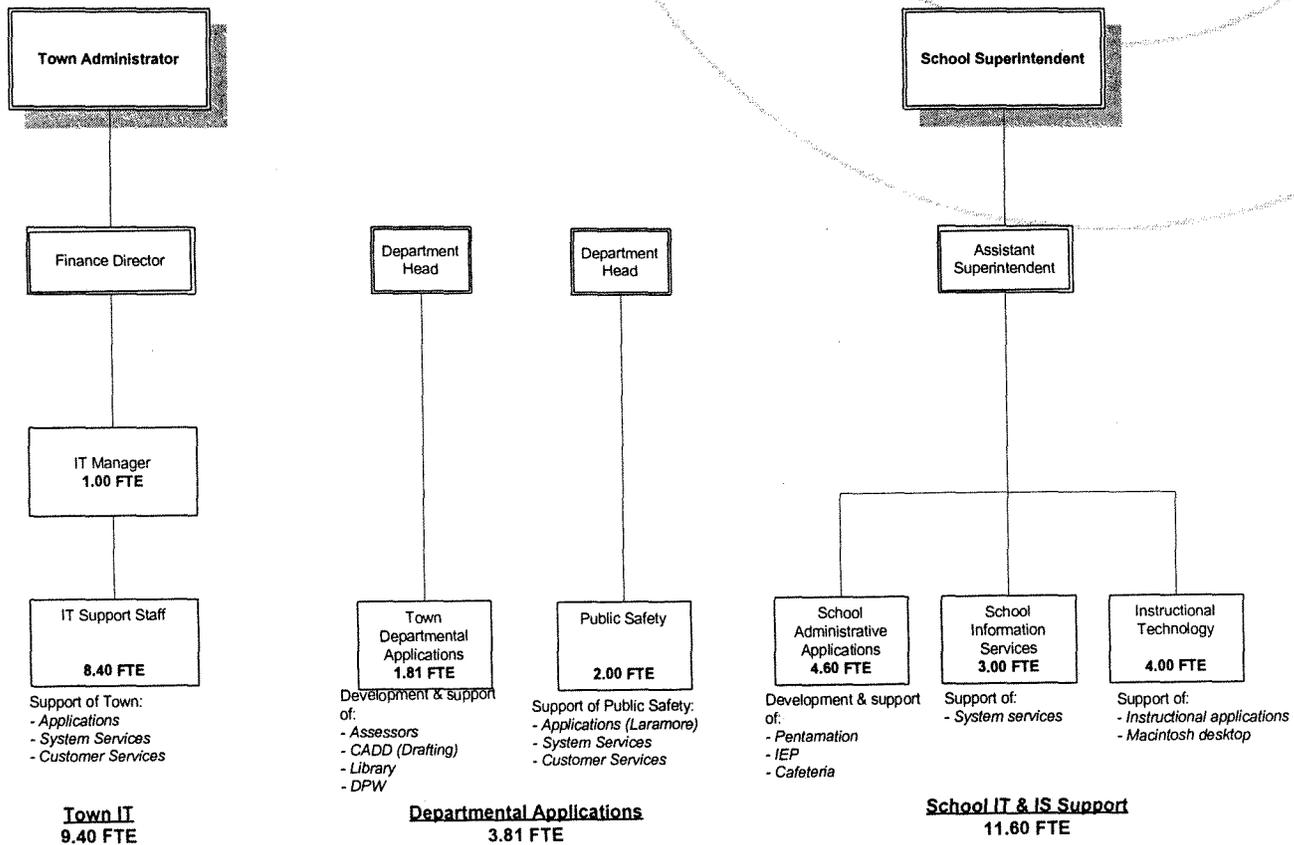
- ◆ **Instructional staff are quite dissatisfied with instructional technology support in the classroom**
- ◆ **Desktop computer services are understaffed as measured by the ratio of PC's to support staff:**
 - Town ratio is 275:1 — *PTI typically sees ranges of 100:1 - 150:1 for municipalities*
 - School ratio is 777:1 — *we have fewer data points for this, but found a range of 250 - 550:1 for Oregon school districts in 1998*
- ◆ **Some services suffer from “too many cooks¹” delivering similar support:**
 - Help desk and PC support
 - Application support
 - Training
 - Server and database administration
- ◆ **Non-titled IT staff tend to come from management:**
 - Providing IT support takes time from their departmental management responsibilities

¹ *Note: “Cooks” compares the number of staff delivering a particular service to the total amount of effort for that service — for instance, 24 individual staff provide some help desk support at an aggregate effort level of 1.57 FTE.*

IT Service Delivery: Current IT Organization

ASSESSMENT 2

The chart below presents the organizational structure for IT staff as of November, 2001:



IT Service Delivery: Current IT Staffing Levels

ASSESSMENT

2

- ◆ In developing the findings delineated on the previous pages, PTI evaluated the IT staffing levels across 5 functional areas:
 - Customer Services — functions related to the support of the desktop environment
 - System Services — functions related to managing and maintaining hardware and network resources
 - Business Application Services — functions related to developing and maintaining software in support of Town and School needs
 - IT Planning — functions related to the development of long-term IT vision
 - IT Administration — functions related to the management of IT
- ◆ The staffing matrix on the next page defines the staffing levels by functional area across all School and Town departments, *including the levels for non-titled IT staff*
- ◆ Page 3-15 presents a matrix of recommended future staffing levels
- ◆ Appendix F contains definitions of the service areas and associated functions listed above

IT Service Delivery

ASSESSMENT

2

FTE Totals	Town IT Staff	Department IT Staff	School IT Staff	Town Non-IT Staff	School Non-IT Staff
Customer Services	1.64	0.90	3.62	1.30	0.65
Help Desk (Tier 1)	0.50	0.17	0.80	-	0.10
Desktop PC support (Tier 2)	0.39	0.25	1.33	-	0.10
Business application support	0.56	0.34	0.43	0.60	0.30
Training	0.19	0.14	1.06	0.70	0.15
System Services	2.14	1.21	4.22	0.08	0.20
Network connectivity (WAN/LAN)	0.24	0.12	0.77	-	-
Server administration	0.30	0.39	0.77	0.01	0.05
Data center operations	0.81	0.14	0.48	-	0.05
Database administration	0.56	0.15	1.47	0.05	0.10
Security administration	0.10	0.18	0.59	0.02	-
Telephone systems support	0.13	0.09	0.12	-	-
Mobile computing support	-	0.14	0.02	-	-
Business Application Services	3.41	0.77	2.51	0.69	0.20
Application development	1.96	0.17	0.25	0.30	-
Small application support	0.30	0.13	0.61	0.27	0.10
Internet/intranet support	0.79	0.12	0.39	-	-
Requirements analysis	0.11	0.06	0.43	0.02	-
Custom application maintenance	0.11	0.19	0.44	-	0.05
Package application maintenance	0.14	0.10	0.39	0.10	0.05
IT Planning	0.32	0.24	0.92	0.28	-
Strategic planning	0.10	0.12	0.12	0.20	-
Research and development	0.11	0.09	0.07	0.05	-
Disaster recovery/planning	0.07	0.03	0.05	-	-
Governance coordination	0.04	-	0.08	0.03	-
IT Administration	1.89	0.69	0.93	0.14	-
Asset management	0.06	0.12	0.15	0.02	-
IT procurement	0.17	0.15	0.27	0.05	-
Project management	0.57	0.20	0.11	0.05	-
Standards and policies development	0.13	0.02	0.06	-	-
Administrative support	0.81	0.15	0.17	0.02	-
Departmental management	0.15	0.05	0.17	-	-
FTE TOTAL	9.40	3.81	11.60	2.49	1.05

Town	
PC Support Ratio	
PC's	360
PC Support	1.31
RATIO	274.81
Server Support Ratio	
Servers	29
Server Support	0.69
RATIO	42.03
Percent of Effort	
Customer Services	19.23%
System Services	25.36%
Application Services	31.64%
IT Planning	4.24%
IT Administration	19.53%

School	
PC Support Ratio	
PC's	1758
PC Support	2.33
RATIO	754.51
Server Support Ratio	
Servers	76
Server Support	0.82
RATIO	92.68
Percent of Effort	
Customer Services	31.21%
System Services	36.38%
Application Services	21.64%
IT Planning	2.76%
IT Administration	8.02%

IT Service Delivery: Skills Assessment

ASSESSMENT

2

The findings over the next several pages identify strengths and weaknesses of IT staff across the five functional areas:

Customer Services — *functions related to the support of the desktop environment*

- ◆ **Lack of a formal help desk corresponds to skill gap around help desk and PC support services:**
 - No help desk supervisory skills are in place
 - Staff are not trained in standard help desk and PC support procedures
- ◆ **There are currently no skills in place to provide IT training oversight and structure**
- ◆ **Current IT staff are capable of learning help desk, PC support, and training coordination skills**
- ◆ **Given the appropriate guidelines and resources, department staff are capable of delivering Brookline-specific application training**

[IT Service Delivery: Skills Assessment (cont'd.)]

ASSESSMENT

2

System Services — *functions related to managing and maintaining hardware and network resources*

- ◆ School IT staff have strong System Services skills
- ◆ The Town lacks staff with specific skills focused in this area, so this service is partially outsourced; although Town managers and application support staff attempt to meet service needs, this is not their area of IT expertise
- ◆ Town phone support is provided by staff without in-depth technical skills in this service area
- ◆ The variety of application-specific databases spreads data management responsibilities across numerous staff, resulting in a lack of in-depth database administration skills¹
- ◆ Town IT staff are not fully trained on the version of UNIX used by MUNIS

¹ So long as Brookline relies on its current application architecture, with a mix of database types and versions (e.g., Informix for Pentamation and MUNIS, Access/97 for Harper's, Access/2000 for internally developed applications), these skills will remain dispersed across application support staff.

IT Service Delivery: Skills Assessment (cont'd.)

ASSESSMENT

2

Application Services — *functions related to developing and maintaining software in support of Town and School needs*

- ◆ Web skills meet Town needs; School does not have staff with skills focused in this area
- ◆ Town GIS staff are highly skilled
- ◆ Town and School application support staff generally perform well at supporting packaged applications, and have the capability to learn new package support skills
- ◆ Police Department support staff skills meet public safety needs
- ◆ In-house application development skills are adequate for the currently predominant application tool – Microsoft Access – which is appropriate, given the trend toward acquiring packaged applications for major functionality and filling in application gaps using developer-friendly tools such as this one

IT Service Delivery: Skills Assessment (cont'd.)

ASSESSMENT

2

IT Planning and Management — *functions related to the development of long-term vision and management of IT*

- ◆ Town and School lack enterprise IT leadership, planning, and management skills
- ◆ Town and School have the requisite skills to manage Operations (Systems Services) and Applications Services
- ◆ The requisite IT skills are not currently in place to manage a Customer Services function
- ◆ Police Department, School Administration, and Instructional Technology have adequate IT management skills to meet departmental needs
- ◆ Brookline lacks the specialized project management skills needed to procure and implement major packaged solutions — given the infrequency of such projects, most municipalities of similar size use contractors for these skill sets

Note: The skills assessment for the IT Planning and IT Administration functional areas were consolidated due to similarity of skill requirements.

IT Decision Making: Overview

ASSESSMENT

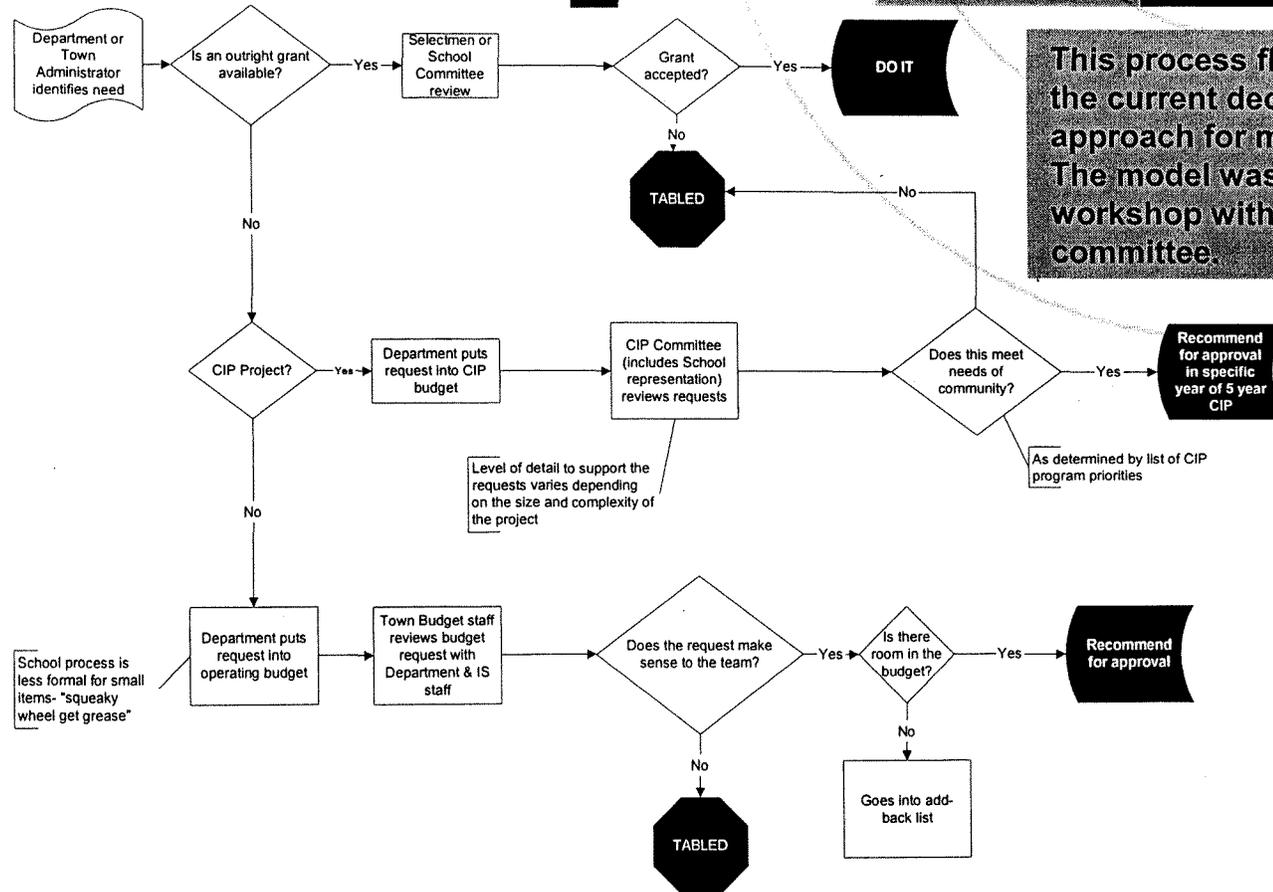
2

IT decision making refers to the processes used to set priorities and make technology investments.

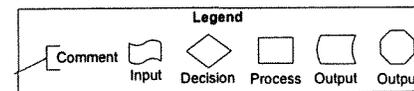
This section presents our assessment of these processes as follows:

- ◆ Current Decision Making Model
- ◆ Current Roles and Responsibilities
- ◆ Findings
- ◆ Budget Summary

IT Decision Making: Current Decision Making Model



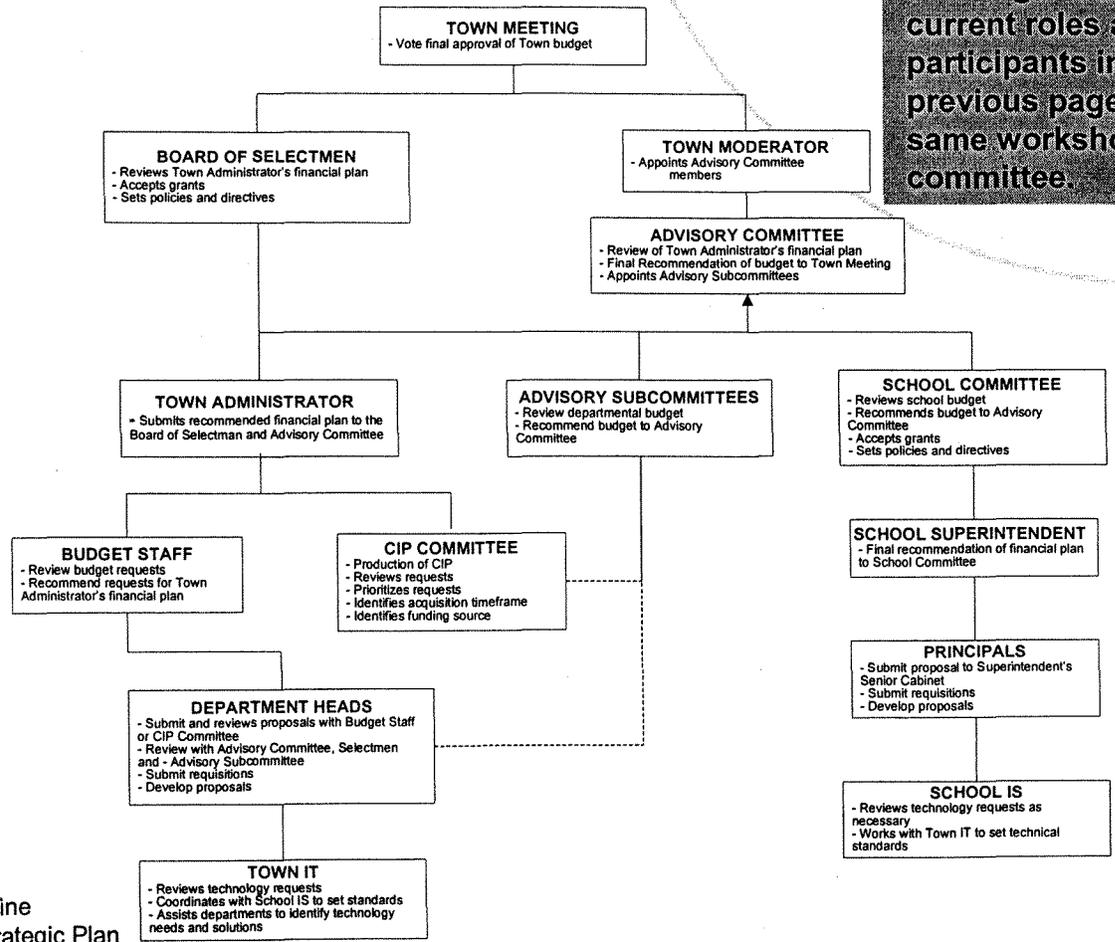
This process flow diagram depicts the current decision making approach for major IT acquisitions. The model was developed in a workshop with the project steering committee.



IT Decision Making: Current Roles and Responsibilities

ASSESSMENT 2

This organization model depicts the current roles and responsibilities of the participants in the process shown on the previous page, and was developed in the same workshop with the project steering committee.



[IT Decision Making: Findings]

ASSESSMENT

2

This section summarizes PTI's IT decision-making findings.

- ◆ **IT initiatives are not reviewed on an enterprise-wide basis to identify:**
 - Economies of scale across departments
 - Potential interfaces to existing systems
 - Alternative or existing solutions
- ◆ **Departments can “end-run” the process to buy systems on their own, leading to:**
 - Unanticipated IT support costs
 - Increased IT support needs with no increase in staff
 - Potential impact to existing system resources (e.g. network traffic)
- ◆ **The process is cumbersome, with too many participants**
- ◆ **There is no post-implementation review to incorporate “lessons learned” into future decisions**
- ◆ **GIS steering committee works well, but needs improved coordination with outside agencies**
- ◆ **The School lacks an Instructional Technology strategic plan**

IT Decision Making: Budget Summary

PTI analyzed IT spending across several areas. This section summarizes Brookline's 2002 IT operating budget.

- ◆ In PTI's experience, municipal IT operating budgets typically range from 1.5% to 3.0% of overall operating budget
- ◆ Brookline falls within the low end of that range, with 1.9% of all operating funds allocated to IT operating spending
- ◆ These numbers do not include capital expenditures

	FY02 Operating Budget	FY02 IT Expenditures	IT as % of Budget
Town	\$67,202,528	\$1,317,386	1.96%
School	69,996,896	1,323,786	1.89%

Notes

1. All figures are adjusted to account for Town spending on behalf of the School
2. Capital expenditures as defined in the 2002 budget document are excluded
3. The labor portion of the expenditures is derived from PTI's staffing analysis, and includes departmental IT staff along with non-titled IT staff

Applications: Overview

ASSESSMENT

2

***Applications* refer to the software that supports daily business activities.**

This section briefly summarizes PTI's findings regarding Brookline's primary software applications. Please see Appendix G for the detailed gap analysis derived from our review of Brookline's application portfolio.

Applications: Findings

The maintenance management function, typically automated in a municipality of Brookline's size, currently has no supporting application.

Certain cross-departmental applications, while operational, have been implemented with unresolved issues:

- ◆ **MUNIS**: The financial system lacks automated interfaces to other enterprise systems and is not fully configured for decentralized, departmental use (e.g., receipting, requisitions).
- ◆ **Human Resources**: The School uses the HR capabilities of Harper's to centrally track credentials. Overall, departments have chosen not to implement HR functionality, especially its decentralized aspects.
- ◆ **Permits Plus**: This system is not yet deployed to all staff involved in permit and license approval processes (e.g., Fire, Town Clerk, parts of Public Works & Planning). Additional features such as workflow, which would automate the distribution of work inter- and intra-departmentally have not been implemented.
- ◆ **Payroll**: Many departments report duplicate data entry into spreadsheets that track time at the departmental level. The interface to MUNIS requires manual intervention.
- ◆ **Document management**: The system in place is used only for scanning accounts payable invoices and associated checks. In addition, minimal disk space is provided for the application requiring frequent offloading to CD ROM. Given the age and capacity constraints, the current system would not be expandable to meet Brookline's needs outside of the Accounts Payable function.

Applications: Findings

ASSESSMENT

2

The assessment also noted these School-specific application issues:

- ◆ **Pentamation:** As noted, this application meets central administrative needs well. It has been recently Web-enabled for teacher access to grades, attendance, etc. However, it is not yet Web-enabled to provide parent access to student schedules, homework, grades, etc.
- ◆ **Instructional Technology:** Review of the applications used to support curriculum delivery was specifically excluded from the scope of this study. Nonetheless, interviews, focus groups, and survey data indicated dissatisfaction in this area. The dissatisfaction appears to stem from issues with technology deployment and support in the classroom, rather than with the instructional software tools themselves.

Technical Infrastructure: Overview

ASSESSMENT

2

Technical Infrastructure refers to the system components (computers, networks, servers, databases, etc.) that provide connectivity and support the applications.

This section presents assessment results regarding the Brookline's technical infrastructure as follows:

- ◆ Findings
- ◆ Architecture Diagram

Technical Infrastructure: Findings

This section summarizes PTI's technical infrastructure findings.

- ◆ There are separate networks for Town, School, Police, and Library
- ◆ Servers are located in Town Hall, the schools, Police, Library, and several remote sites
- ◆ A mixture of PC and Macintosh computers exists in School administration and the high school computer labs
- ◆ The fragmentation of Brookline's technical architecture as noted above leads to:
 - Increased effort required to manage networks, servers, and desktop computers
 - Impediments to cross-departmental communication and sharing of applications
 - Increased skills required to support a complex environment
- ◆ The First Class email system meets Brookline's current email needs:
 - Well regarded by users
 - Provides good PC and Mac functionality at a lower cost than market-leading systems
 - A few minor implementation issues still surround the system (e.g., requires users to log in frequently to check email, generally not used to coordinate individual calendars)

Technical Infrastructure: Findings

ASSESSMENT

2

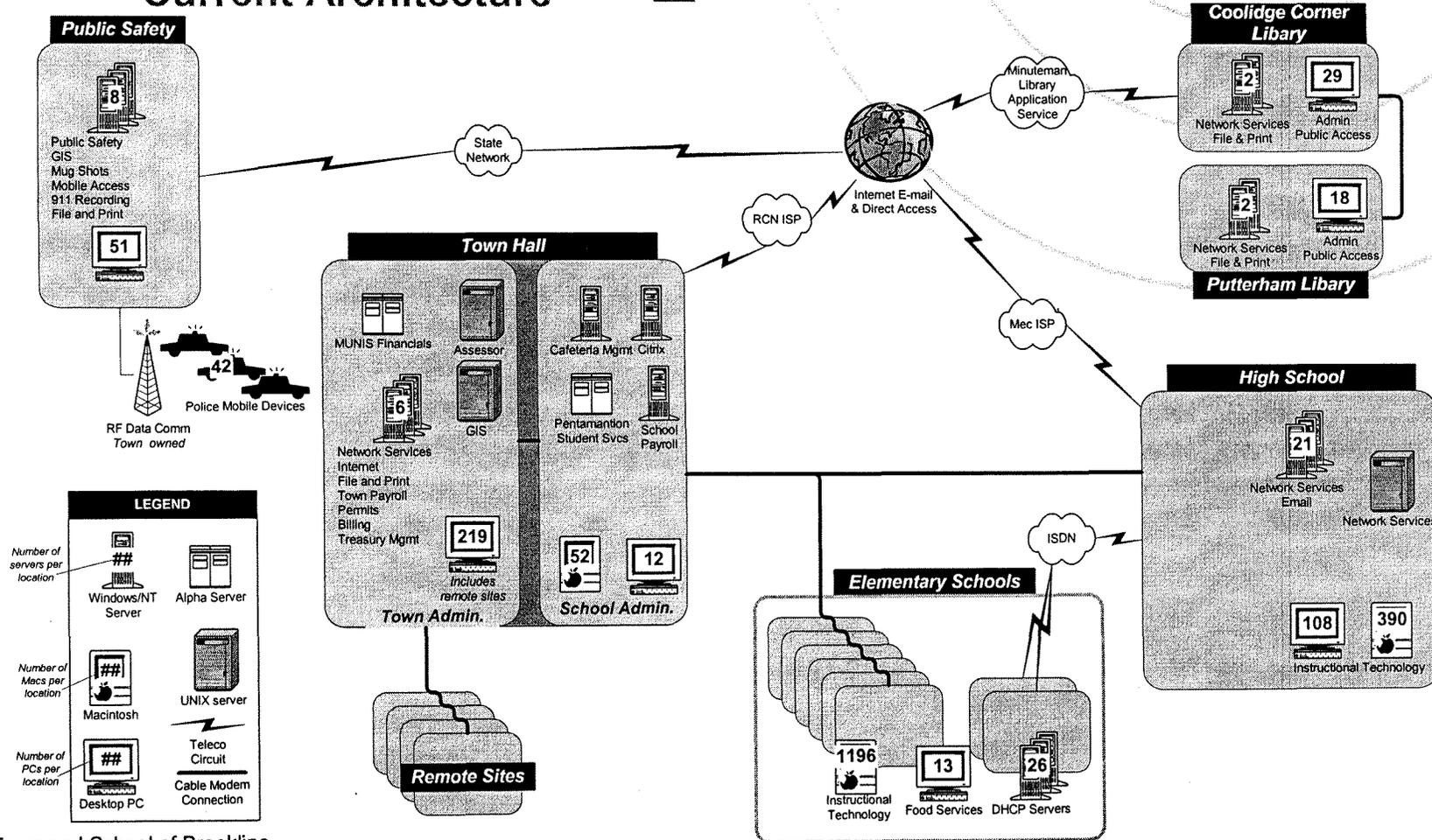
- ◆ **There are several databases in use at the Town and School:**
 - MUNIS and Pentamation use Informix
 - In Police Department, Mug Shots uses SQL Server and Laramore uses Microfocus C-ISAM
 - Other Town applications use a mix of Access/97 and Access/2000
- ◆ **Existing telephone systems largely meet Town and School needs:**
 - Staff seem satisfied with the system and its voice-mail capabilities
 - There have been some reliability issues in the past at remote sites, but these appear to be resolved with the improved cable service

The diagram on the following page presents a high-level depiction of Brookline's current technical architecture.

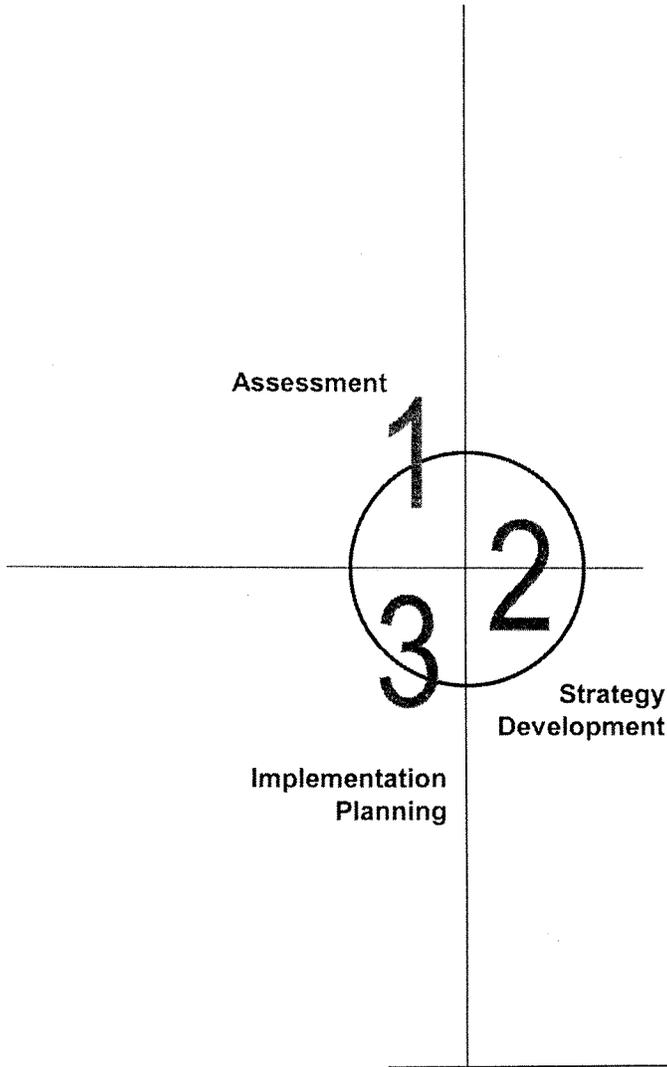
Technical Infrastructure: Current Architecture

ASSESSMENT

2



Town and School of Brookline
Information Technology Strategic Plan
January 23, 2002



[**strategic
direction**]

Town and School of Brookline
Information Technology Strategic Plan
January 23, 2002

Overview

STRATEGIC DIRECTION

3

The preceding findings and issues led to the strategic recommendations detailed in this chapter, presented in the following sections:

- ◆ Linkage of Strategic Issues and Recommendations
- ◆ IT Mission
- ◆ Recommended IT Service Delivery Approach
- ◆ Recommended Application Strategy
- ◆ Recommended Technical Architecture
- ◆ Recommended IT Decision-Making Approach

Linkage of Strategic Issues and Recommendations

This table highlights the report's major recommendations, and their linkages to the strategic IT issues. Additional recommendations are presented throughout the remainder of this chapter.

STRATEGIC IT ISSUES	KEY RECOMMENDATIONS
<p>① What major application investments are required over the next five years to meet Brookline's business needs?</p>	<ul style="list-style-type: none">◆ Invest in the following key areas not currently automated:<ul style="list-style-type: none">• Maintenance Management• Management Reporting◆ Extend implementation of the following applications to achieve additional functionality:<ul style="list-style-type: none">• Human Resource Management/Training• MUNIS• Permits Plus (e.g., workflow enablement)• Pentamation (e.g., support for K-8 teachers and principals)• Document management (e.g., upgrade equipment and extend to more departments)◆ Use the Internet and intranet to enhance delivery of application services to the community and staff◆ Upgrade classroom applications as determined by the School Instructional Technology strategic plan

Linkage of Strategic Issues and Recommendations

STRATEGIC DIRECTION

3

STRATEGIC IT ISSUES	KEY RECOMMENDATIONS
<p>② How can the Brookline make its IT infrastructure better integrated and easier to manage?</p>	<ul style="list-style-type: none">◆ Consolidate servers to a data center◆ Manage Brookline's technical infrastructure as a single, shared resource◆ Upgrade WAN/LAN infrastructure at schools◆ Standardize on an enterprise database platform for new applications◆ Upgrade classroom computers as determined by the School Instructional Technology strategic plan◆ Fully fund life-cycle replacement for major IT assets
<p>③ What improvements to IT decision making are needed?</p>	<ul style="list-style-type: none">◆ Implement a new decision-making process for future IT investments◆ Promote a Brookline-wide approach to IT investments◆ Develop charters for ITAC and cross-departmental committees◆ Assess and address "lessons learned" through post-implementation reviews◆ Perform a GIS needs assessment and system evaluation◆ Develop a strategic plan for Instructional Technology

Linkage of Strategic Issues and Recommendations

STRATEGIC DIRECTION

3

STRATEGIC IT ISSUES

④ What changes, if any, should be made to current IT organization and staffing?

KEY RECOMMENDATIONS

- ◆ Elevate the IT support function at Brookline to a department that supports shared IT needs
- ◆ Create a CIO position at the senior department head level in the organization
- ◆ Formalize the ITAC's role in providing community input and IT oversight
- ◆ Charter a Town/School Departmental IT Committee
- ◆ Develop a Memorandum of Understanding between the Town Administrator and School Superintendent defining the governance and oversight of the CIO and the central IT department
- ◆ Establish an enterprise IT help desk
- ◆ Within the central IT department, organize 3 divisions:
 - Operations: supporting implementation and maintenance of Brookline's computers, systems software, and connectivity
 - Applications: providing, maintaining, and supporting the use of enterprise software needed to meet the operational, management, and reporting requirements of the organization
 - Customer Service: supporting help desk, PC's, desktop applications, and IT training coordination

IT Mission

STRATEGIC DIRECTION

3

An *IT mission* articulates a concise statement of purpose for IT within an organization. *IT strategies* define the primary activities required to accomplish the mission. PTI developed the following IT mission statement and supporting strategies with the project team:

IT Mission
**Use technology to enhance delivery of Town
and School services to the community.**

Supporting IT Strategies

- ◆ Effectively automate core functions of the Town and School
- ◆ Efficiently deliver IT services
- ◆ Promote a Brookline-wide approach to IT investments driven by clearly defined objectives
- ◆ Provide a reliable, secure, and adaptable technical architecture
- ◆ Deliver excellent customer service to Brookline staff and community members
- ◆ Continually enhance, update, and apply innovative technology to support interaction with the Brookline community

Strategic Recommendations

STRATEGIC DIRECTION

3

Aligned with the preceding IT mission and strategies, the following outlines supporting strategic recommendations across the four key planning dimensions:

- ◆ IT Service Delivery
- ◆ Applications
- ◆ Technical Infrastructure
- ◆ IT Decision Making

[Recommended IT Service Delivery Approach]

The service delivery recommendations on the next several pages address the following:

◆ **IT Organizational Structure:**

- Aspects addressed by the recommended organizational model
- Diagram of overall staffing levels and reporting relationships
- Key organizational changes needed to achieve the recommended model
- Benefits of the new structure

◆ **Staffing Allocation by IT Function:**

- Summary staffing tables for central and departmental IT staff within the recommended structure
- Discussion of major shifts in service effort for each of the five IT functional areas

◆ **Service Delivery Guidelines:**

- Changes to IT service delivery needed to address current issues
- Factors that will shape future changes to IT service delivery

IT Service Delivery Recommended Organizational Structure

STRATEGIC DIRECTION

3

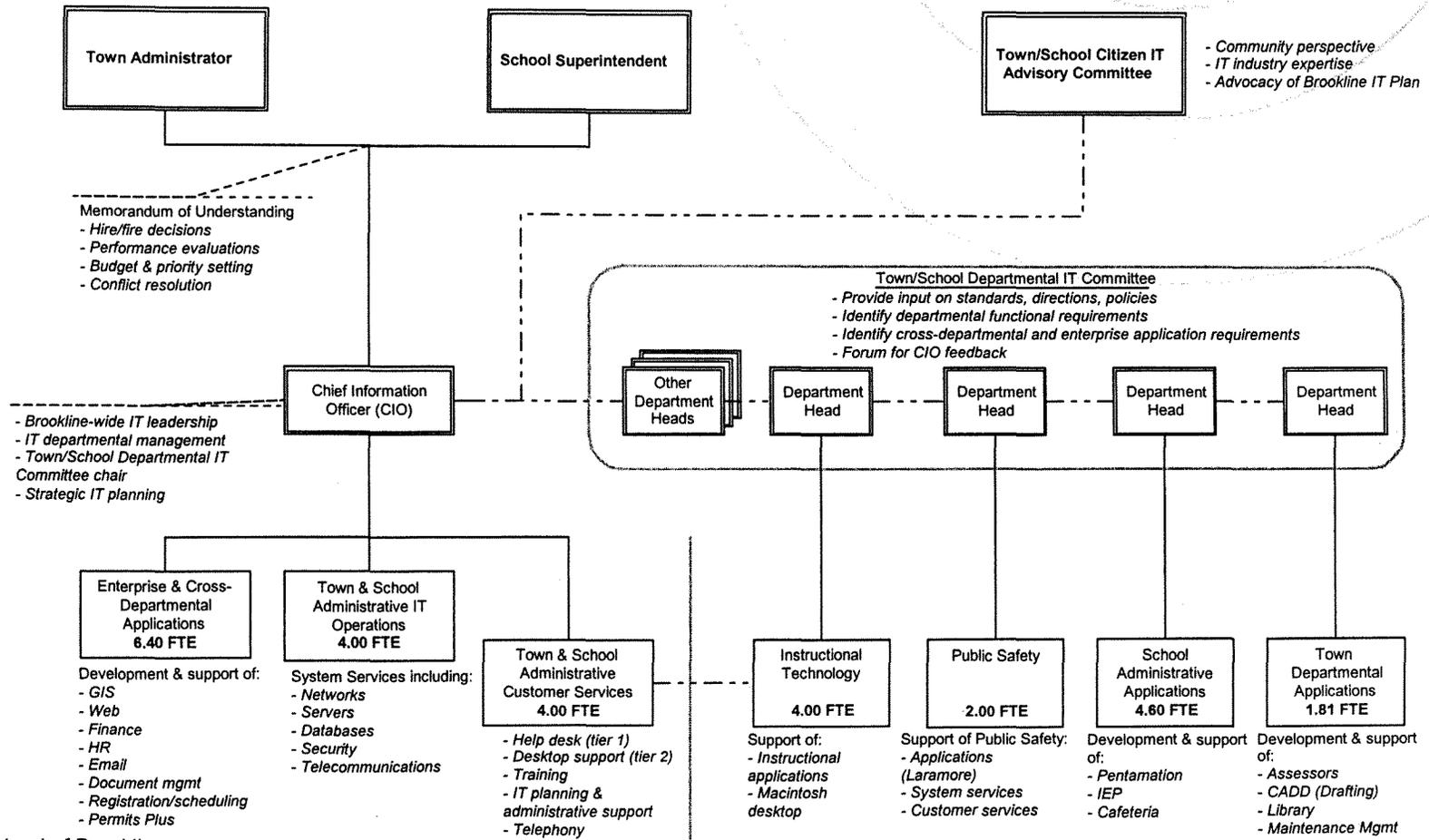
These key findings drove the development of the organizational structure presented on the following page:

- ◆ **Brookline's approach to IT operations is largely informal**
- ◆ **There are service delivery inefficiencies in the areas of:**
 - Help desk and PC support
 - Training
 - Application support
 - System services
- ◆ **Brookline lacks the enterprise-wide view needed to optimize IT investments and ongoing support**
- ◆ **Decentralized application support works well for the School and some Town departments**

IT Service Delivery Recommended Organizational Structure

STRATEGIC DIRECTION

3



Town and School of Brookline
Information Technology Strategic Plan
January 23, 2002

Central IT Department
15.40 FTE

Departmental Applications
12.41 FTE

3-9

IT Service Delivery Recommended Organizational Structure

STRATEGIC DIRECTION

3

The following are key changes necessary to achieve the recommended model:

- ◆ **Elevate the IT support function at Brookline to a department supporting shared IT needs:**
 - Central IT department focuses on supporting technical infrastructure, shared applications and data, and common help desk
 - Accordingly, departments are better able to focus on department-specific services and application needs
- ◆ **Create a CIO position at a senior department head level in the organization:**
 - Provides Brookline-wide IT leadership and vision
 - Guides departmental application services via the Town/School Departmental IT Committee
 - Manages the central IT department
- ◆ **Add a Customer Services manager and a network support position to meet IT service needs**
- ◆ **Alter the current ITAC committee to include citizen involvement in the CIP approval and annual update of the IT strategic plan**
- ◆ **Charter a Town/School Departmental IT Committee:**
 - Includes all major departments, chaired by CIO
 - Ensures that departments receive needed service levels from the central IT department
 - Ensures that departmental applications support follows central IT department standards
- ◆ **Develop a Memorandum of Understanding (MOU) between the Town and School defining the governance and oversight of the CIO and Central IT Services:**
 - Phase I MOU establishes framework for shared recruitment of a CIO
 - Phase II MOU details role of CIO, shared oversight and governance, and operational aspects of the central IT department

IT Service Delivery Recommended Organizational Structure

STRATEGIC DIRECTION

3

The following presents additional detail on the central IT organization:

- ◆ **Operations provides centralized support for networks, servers, phones, etc.:**
 - Transfer 2 staff and 1 manager from School IT
 - Additional IT network support position augments team to operate consolidated data center
- ◆ **Applications supports enterprise and cross-departmental applications:**
 - Use current Town IT staff to form division
 - Includes application, Web, GIS staff
- ◆ **Customer Service provides help desk, PC support, training coordination, and IT administrative support:**
 - Customer Service manager develops this organizational unit
 - Staff with Town IT administrative and customer service personnel

IT staff effort will shift to the three functional areas outlined above. These are discussed in more detail in the section on IT staffing allocation by function on page 3-13.

IT Service Delivery Recommended Organizational Structure

STRATEGIC DIRECTION

3

Brookline can expect these key benefits as a result of implementing the recommended IT organizational structure:

- ◆ Promotes Brookline-wide view of IT
- ◆ Increases IT service delivery efficiency and effectiveness as a result of:
 - Economies of scale
 - Better definition of roles
 - Increased skill depth and specialization of IT staff
- ◆ Establishes a Brookline-wide IT help desk
- ◆ Improves the flow of information through better cross-departmental and enterprise application support
- ◆ School and Town departments retain control of department-specific applications
- ◆ Organizational units concentrate on their core competencies:
 - Departments focus on their specific mission
 - IT focuses on supporting the technical infrastructure

IT Service Delivery

Staffing Allocation by IT Function

STRATEGIC DIRECTION

3

This section summarizes the recommended allocation of IT staffing effort. The allocation is organized by the same IT functions used in the assessment. The recommendations are based on:

- ◆ Detailed, individual staffing analysis
- ◆ Current industry practices
- ◆ PTI's extensive experience in IT organizational design

Ultimately, the final staffing allocations will be determined by the CIO in consultation with Town and School departments.