

Boston Public Library / Metro Boston Library Network

Technology Plan

2008 – 2011

**Adopted by unanimous vote of the Trustees of the Public Library of the
City of Boston during the meeting held on November 13th, 2007**

Technology Plan
Boston Public Library/Metro Boston Library Network
July 1, 2008 – June 30, 2011

I. Introduction

Mission Statement for the Boston Public Library:

The Boston Public Library's mission is to preserve and provide access to historical record of our society, and to serve the cultural, educational, and informational needs of the City and the Commonwealth.

The Boston Public Library's mission has always been to connect people with information. In recent years, public access computers, the internet and online services have played a growing part in fulfilling the Library's mission.

Significant and continued monetary support and staffing resources are required for libraries to keep current technology viable and to incorporate new technologies at an accelerated rate. While it is an important element of our mission to acquire and implement new tools, it is equally important for the Boston Public Library to pause and review the overall technological infrastructure in place and to apply modifications, to improve efficiency in service delivery as well as is the management and maintenance of all systems. Libraries have moved rapidly to provide the Internet-based services that users demand. This plan will focus on the renewal, consolidation, revitalization and expansion of technologies to support delivery of rapidly evolving library services.

A recent study¹ by the American Library Association on public library funding and technology access cites three significant themes in its findings:

1. Technology is bringing more – not less – public library use
2. Library infrastructure (space, bandwidth and staffing) is being pushed to capacity
3. Libraries need more technology planning and dedicated technology support

The first two statements above aptly describe the current state of the technology environment at the Boston Public Library. This plan will address these themes and will also ensure that the Library has comprehensive technology planning and support for the period July 2008-June 2011. The plan will describe the Library's broad goals for meeting the increased demand for library services; and will then outline specific related objectives and activities to provide an evaluative framework and measurable outcomes.

¹ [American Library Association. \(2007\) "Libraries Connect Communities: Public Library Funding & Technology Access Study 2006 – 2007."](#)

This plan is created for the Boston Public Library (BPL)/Metro Boston Library Network (MBLN) which incorporates a central library, 27 branch libraries, remote storage facilities, the MBLN which consists of the Boston Public Library, 28 Boston Public School libraries, Chelsea Public Library, Malden Public Library, Newman School Library, Pearson Prentice Hall Library, Fisher College, Roxbury Community College and State Transportation Library, and Virtually Anywhere User Library Technology (VAULT) with the Timothy Smith Network. All of these network members facilitate the sharing of automation and technology resources, which in turn facilitates the sharing of collections. MBLN is a service of the Boston Public Library. The Boston Public Library is not just the “owner” and operator of MBLN, but the chief consumer of services as well. As the chart below indicates, BPL has the greatest number of workstations operating on the system and supports the greatest number of records and circulation transactions.

Member Library	Sites	Computer Stations	Items Owned FY07	Circulation FY07
Boston Public Library	32	1,330	4,476,859	2,868,158
Virtual Library Sites	13			n.a.
Chelsea Public Library	1	21	74,698	49,544
Malden Public Library	2	46	190,067	247,803
Boston Public Schools	28	75	329,873	30,239
State Transportation	1	5	21,536	n.a.
Roxbury Community College	1	5	37,058	11,965
Fisher College	1	4	28,034	2,178
Newman School Library	1	2	3,112	386
Pearson Prentice Hall	1	1	2,172	870

The Boston Public Library has a crucial interest in the vitality and technological capability of the Metro Boston Library Network. Therefore, this plan details much that is applicable to the entire network, and some that is specific to the Boston Public Library. This technology plan supports each member library’s goal of meeting the needs of its users and of the community as a whole. These needs encompass library operational efficiency, information on and access to library collections and physical resources, and the storage, retrieval and distribution to library users.

Much of this technology plan is derived from a strategic planning process undertaken by the Boston Public Library. Other parts encompass the vision of network members as expressed through the network’s Policy Advisory Group.

II. TECHNOLOGY STRATEGY

The library will maintain and upgrade existing technology following industry standards. The library will continuously survey the evolving technology landscape for appropriate applications and will prudently pilot promising new technology. Library users expect and demand a wider array of electronic resources and equipment. The library must work towards meeting this demand. Ease of use is a primary concern for both staff and patrons. Overall, the library aspires to be at the forefront of library technology practices.

While libraries of the future may be configured in dramatically different ways, the traditional roles that libraries and librarians have played will continue to be necessary, and will likely be more complex. Technology has allowed us to look at the key aspects of libraries and librarianship: information access, retrieval, storage, preservation and organization in new ways using constantly evolving, new tools. In order to leverage the tools that become available, our plan must reflect eagerness to embrace and try new and emerging technologies. Some key points that this plan addresses are:

- Library technologies promote efficiency and effectiveness in the delivery of Library services to the public, and increase Library use
- Electronic access to information has become increasingly important. The primary means of locating information is shifting from print to electronic.
- Use technology to provide the most appropriate information delivery system.
- Use technology to control cost and improve the efficiency of library operations.
- Use new technology initiatives to build on existing services and objectives
- Maintain flexibility to adapt new and changing technology to meet users' needs.
- Evaluate emerging technology for effective responsiveness to users' needs.
- Use technology to connect to relevant sources outside the library.
- Use technology to assist in the preservation of and access to at-risk, rare or fragile materials.
- Make information literacy a priority for both staff and public training initiatives

III. Goals and Objectives

GOAL I: Library users will perform public access computing tasks easily and efficiently

Public access computing and associated services including printing and wireless internet access are in high demand throughout the system. To provide these services without interruption or delay, the Library must constantly evaluate the use and placement of Internet-ready computers and the electrical and network infrastructure to support them. As computers and printers reach the end of their useful life, replacement hardware and software must be added systematically to keep pace with user demand.

The print and PC reservation system must be regularly maintained. User needs for new devices, hardware and software must be evaluated and implemented to enhance or improve existing services. Online documentation for library users will be developed.

Public and staff use of the wireless network is growing. The existing wireless network, first implemented in 2002, must be upgraded to meet the increasing demand. New wireless access points with wider signal ranges, faster speed, better security and centralized management will be purchased and installed at all locations by July 2008. Wireless access will be introduced to the Malden Public Library for the first time. With the increasing demand on wireless access, wireless printing will be introduced.

Objective 1: Improve Internet access by upgrading wireless networks

- Activity 1: Replace wireless access points from existing 802.11b standard to 802.11g or newer to increase speed and improve area of coverage by incorporating use of all signal ranges.
- Activity 2: Introduce wireless access to Malden Public Library for the first time.
- Activity 3: Review and update online instructions on connecting to the wireless network for library users

Objective 2: Increase the number of Internet ready computers at all locations as appropriate.

- Activity 1: Assess the use and placement of Internet ready computers.
- Activity 2: Add more computers to meet user demand.
- Activity 3: Evaluate electrical and network infrastructure to accommodate these computers
- Activity 4: Install routers and switches as appropriate

Objective 3: Make printing and reserving public access computers easy and more intuitive.

- Activity 1: Create printer replacement plan
- Activity 2: Evaluate current pay-for-print and PC reservation system.
- Activity 3: Select and install new print and PC reservation system.
- Activity 4: Test wireless printing
- Activity 5: Create online documentation for library users

Objective 4: Add hardware, software and services to meet user demand

- Activity 1: Purchase and install scanners
- Activity 2: Purchase and install MACS
- Activity 3: Investigate the demand for media viewing/listening stations.
- Activity 4: Investigate the demand for download stations
- Activity 5: Investigate the demand for E-book readers
- Activity 6: Investigate the demand for print-on-demand stations
- Activity 7: Investigate the demand for gaming hardware and software

Objective 5: Improve end user support for Boston Public Library hardware and software

- Activity 1: Increase support staff and turn-around time for computer repair to approach level of industry standard
- Activity 2: Continue staff training for computer applications and digital resources
- Activity 3: Analyze and improve the existing Help Desk support workflow to improve computer repair time.
- Activity 4: Explore automatic updates of necessary software upgrades.

GOAL II: Library users will easily discover and use library resources and services.

Consumers of library services, whether in-person or online, should easily locate and use information and materials relevant to their needs.

The web site, digital library and online public access catalog allow online users find information and materials like databases, downloadable audio, video and e-books, digitized images and born-digital content, and access to virtual reference. To provide better service, the Library must explore the maximum integration potential for *all* of these online services. The Library must provide consistent continuing education so that staff skills will remain up-to-date, thus ensuring a service delivery architecture which will reflect the best current knowledge in the information science profession.

The existing Library web site serves over 40 million hits per year but was built in 2001 using now-outdated technology. The site does not utilize a content-management system

of any type and is coded in static html. Users find it difficult to navigate; staff finds it difficult to maintain. The site must be completely redesigned to and redeveloped to meet current user needs.

The digital library program currently creates and acquires digital content. To produce content, items are digitally imaged, described, processed and stored for online retrieval. The Library's imaging lab has one digital camera and one flatbed scanner. More equipment will be necessary to increase production. As content production and acquisition activities increase, the Library must develop comprehensive planning for a repository, digital storage and long-term preservation. The Library must evaluate repository solutions and analyze storage and delivery infrastructure.

The public access catalog must be evaluated both as a component of, and as a separate function of, the current Integrated Library System (ILS). The ILS must be evaluated for its ability to support all user and staff functions. The Library will investigate a closed stack retrieval system to enhance users' access to research materials.

To meet the increased demand for online services the Library will continue to provide access to electronic databases to remote users. The Library will expand the collection of downloadable books, audio and video for delivery to various devices.

Information literacy services and training will be expanded. The Library seeks to provide opportunities for training covering simple "information literacy" skills like e-mail to more complex "information fluency" training, like helping users understand, navigate and effectively use the digital information landscape and digital resources. Hardware and software purchases may be made to support this effort.

In-person users must locate materials in buildings which do not always contain adequate or current signage, and must often wait in line at peak hours to check out materials. At the Copley Square location alone, over 100,000 items are checked out monthly. The Library will investigate the benefits to users of electronic signage and self-check-out machines to create a better user experience, and will implement where appropriate and feasible.

Objective 1: Improve the Library's web site and web service delivery

- Activity 1: Conduct digital strategy process to determine service goals
- Activity 2: Write Request for Proposal for redesign and redevelopment
- Activity 3: Explore funding opportunities and establish budget
- Activity 4: Create information literacy training for staff and users
- Activity 5: Investigate content management systems
- Activity 6: Explore opportunities to incorporate e-commerce applications

Objective 2: Increase digital content production

- Activity 1: Monitor developments in imaging hardware and software

- Activity 2: Monitor developments in compression technologies
- Activity 3: Install new lighting, processing stations and lab equipment as necessary.

Objective 3: Create access to BPL collections and other digital content

- Activity 1: Produce and acquire digital content
- Activity 2: Investigate repository solutions and create test repository
- Activity 3: Develop data models for content types and organize digital content
- Activity 4: Select and implement digital repository
- Activity 5: Provide adequate data storage to support digitization initiatives/preservation

Objective 3: Improve users' ability to search for and locate resources using the online public access catalog

- Activity 1: Assess the current Integrated Library System (ILS) and its ability to support all user and staff functions.
- Activity 2: Assess the current public interface of the online public access catalog
- Activity 3: Explore the maximum integration potential for online services including the public catalog, databases, and other digital resources.
- Activity 4: Compare and evaluate future releases of the current system/vendor with other systems and competitors.

Objective 4: Improve the efficiency of circulation transactions

- Activity 1: Install automated checkout machines at branches and Copley
- Activity 2: Investigate e-commerce solutions for customer transactions like payment of fines, fees, pay-for-print, etc.

Objective 5: Improve user's ability to navigate library building through electronic signage.

- Activity 1: Work with signage committee to evaluate user needs
- Activity 2: Investigate the feasibility of electronic signage
- Activity 3: Conduct cost-benefit analysis for electronic signage purchase
- Activity 4: Make recommendations on adaptation of electronic signage

Objective 6: Improve services to users with disabilities

- Activity 1: Improve computer access including adaptive hardware and software
- Activity 2: Ensure that web services and resources approach industry recommended standards

Objective 7: Investigate and pilot new library technology

- Activity 1: Monitor developments in delivery of e-books, MP3, streaming video and other digital formats.
- Activity 2: Monitor developments in delivery of digital content to handheld devices.
- Activity 3: Investigate RFID technology (radio frequency i.d.) and evaluate its use in specific library activities.

Objective 8: Provide support for public and staff information literacy and information fluency

- Activity 1: Provide equipment for trainings to branches including laptops, wireless mice, and other peripherals
- Activity 2: Work with the training committee to update training opportunities for general staff
- Activity 3: test and pilot training programs for the public

GOAL III. The technology infrastructure will be sustainable, redundant, and up-to-date.

The technology infrastructure must be thoroughly evaluated and, in places, updated.

The network server infrastructure requires a comprehensive review. Server hardware, software and configurations will be reviewed. When applicable, servers will be replaced or upgraded to provide reliable and improved efficiency in service provision and support. Proper backup support for these servers will be investigated and implemented as appropriate.

The housing of telecommunications equipment in the branches requires review. The purchase and installation of racks and cabinets will be required to provide proper security and environment for various telecommunication devices. In addition, two new capital projects, Mattapan Branch and Grove Hall/Burke High School, are underway. New racks, cabinets, wiring, switches and routers are required.

As the data center has reached electrical capacity a thorough review of the existing electrical service and power conditioning units is necessary. New UPS units may be added or upgraded to facilitate uninterrupted electricity to the telecomm equipment and servers in the event of power outages. The Library must investigate the consolidation of physical systems within the center. Server hardware, software and configurations will be reviewed. When applicable, servers will be replaced or upgraded to provide reliable and improved efficiency in service provision and support. Proper backup support for these servers will be investigated and implemented as appropriate. Virtualization will be implemented and used to build development and testing environments.

Objective 1: The Library's data center will be evaluated and updated

- Activity 1: Install and replace racks and cabinets with wire and cable maintenance
- Activity 2: Perform full assessment of the capacity of telecommunication closets
- Activity 3: Install new racks, cabinets, switches and routers where appropriate
- Activity 4: Review existing electrical service and power conditioning units
- Activity 5: Add new UPS units where necessary

Objective 2: The network server infrastructure will be comprehensively reviewed

- Activity 1: Review and upgrade DNS, DHCP, proxy filter server, Exchange servers and e-mail servers as necessary.
- Activity 2: Upgrade and/or replace existing file servers where necessary
- Activity 3: Investigate proper backup software and support for system servers

Objective 3: Consolidate physical systems in the data center.

- Activity 1: Investigate and apply virtualization.
- Activity 2: Investigate and implement the use of blade servers

Objective 4: Evaluate existing computer software and server operating systems

- Activity 1: Assess the features of Vista and determine appropriate implementation
- Activity 2: Investigate and implement Linux operating system on servers
- Activity 3: Investigate and upgrade existing email system to Exchange 2007
- Activity 4: Upgrade word processing package to Office 2007
- Activity 5: Investigate and implement the use of CAD software to support capital projects, planning and facilities management

GOAL IV: Communications services and infrastructure will be revised to meet staff and user needs

The existing telephone system has been in place since 1999. Infrastructure and cost for supporting or replacing existing "end of life" systems must be reviewed. Other telephone systems or solutions will be investigated to determine viable and cost effective alternatives to the existing system.

Library programs need more robust technology support. We will evaluate, implement and improve audiovisual support and infrastructure at various facilities. Also, we will investigate the use of instant messaging and live chat to improve virtual reference.

Communications to technology users, and communications to users about Library technology will be evaluated. Virtual reference services may be improved by implementing instant messaging and chat. Library marketing campaigns should be expanded to promote the technology services offered throughout the system.

Objective 1: Assess the functionality and support of the existing telephone system.

- Activity 1: Identify alternatives, including VoIP, to replace or upgrade the existing telephone system.
- Activity 2: Write request for Information
- Activity 3: Evaluate vendors
- Activity 4: Write request for proposal for telephone system
- Activity 5: Select vendor to replace or upgrade telephone system

Objective 2: Improve technology support for library programs

- Activity 1: Evaluate need for audiovisual equipment in meeting spaces
- Activity 2: Identify locations that require permanent audiovisual equipment installation.
- Activity 3: Identify the type and quantity of equipment appropriate for each space
- Activity 4: Create plan and budget for hardware, software and services
- Activity 5: Provide staff training for IPTV and videoconferencing equipment.
- Activity 6: Record lectures and workshops and provide streaming digital content to staff and public over LAN and web
- Activity 7: Continue assessment of and staff training for the Vocera mobile communications device.

Objective 3: Improve efficiency of Virtual Reference services

- Activity 1: Conduct needs assessment of virtual reference services technology
- Activity 2: Identify specific instant messaging and chat software programs for possible implementation
- Activity 3: Install and pilot instant messaging and chat in virtual reference
- Activity 4: Continue to evaluate “Web 2.0” services for Library service delivery

Objective 4: Evaluate Remote Management Software and Inventory Control

- Activity 1: Investigate and implement the use of RMS to improve tracking of hardware and software assets

Objective 5: Investigate advances in internet technologies.

- Activity 1: Conduct a feasibility study on the viability joining the Internet2 consortium.
- Activity 2: Monitor advances in internet security and identity management technologies.

Objective 6: Promote the library’s technological capabilities

- Activity 1: Work with Marketing Committee to develop public information and marketing message

Activity 2: Promote the technological capabilities of the library via marketing and direct outreach to users

GOAL V: The Library positions itself to keep its digital and analog assets safe and secure.

As part of the Boston Public Library's disaster recovery plan, data must be stored in an off-site location. Planning for the identification and procurement of technology to support such a center must take place. With the Boston Heritage Center project in process, work closely with the City and Capital Projects to design proper space and environmental controls to house equipment and tapes necessary for backing up critical data.

Objective 1: Prepare scope for off-site storage facility to house electronic and tape storage and offer public service.

Activity 1: Work with Capital Projects and the City to determine space within the facility

Activity 2: Ensure the use of the appropriate environmental control, electrical and security systems in the facility.

Objective 2: Design a method of transporting electronic files and physical tapes to the facility

Activity 1: Work with shipping department on transporting physical media

Activity 2: Investigate ways of transferring electronic data across the WAN

Activity 3: Procure the necessary hardware to store the data in the facility

Objective 3: Investigate enhancements to network security procedures

Activity 1: Investigate and implement technologies to further secure the BPL's network from intentional or unintentional misuse.

IV. Needs Assessment of Telecommunications Services, Hardware, Software and Other Services

*See Appendix B "Network Diagram"
And Appendix C "Network Inventory"*

A) Telephone

The current telephone system consists of a NEC 2400 PBX with approximately 250 telephone instruments and a NEC AD40 voicemail system at the main location in Copley Square. There are 28 NEC 1000 series PBX's with approximately 295 telephone

instruments at the remote sites. The NEC 1000's are currently at "end of life" and can only be repaired if parts can be found. In addition, we have 240 POTS analog lines along with 600 DID digital numbers. We are looking at changing over the existing system to I.P. Telephony.

B) Wireless Access & Internet Access

Currently over 1,500 workstations have internet access throughout the Boston Public Library / MBLN Network. There are one hundred and fifty seven 802.11b wireless access points deployed at BPL locations. It is anticipated that when wireless is upgraded to the 802.11g or better standard, fewer access points would be needed at existing locations while providing library users with better coverage and increased speed. The Malden Public Library will install wireless access points (currently none) while Chelsea's wireless coverage will be expanded..

C) Internal Connections

There are currently 20 telecommunication closets at the central library which are in need of battery backup and surge protection. Each of the 27 BPL remote sites has one closet and some need to be secured. This involves the installation of a cabinet, additional patch panels and cable cleanup. On the server front, BPL has over 90 servers. Many servers are of old technology, limited storage capacity, at end of life and need to be replaced.

D) Hardware

There are 1,330 public and staff computers and 193 printers. We aim to replace 260 computers in this fiscal year in keeping with the 5-year Technology Renewal Plan. With the Xerox printer contract ending in September 2007, we will implement printers with reasonable ongoing maintenance cost that will be compatible with the printing and reservation system.

E) Software

Presently, we run a mixture of Windows 2000 and Windows XP operating systems on computers. Standardization is critical to provide consistent and better performance and support. For servers, we are standardizing on Windows 2003 Server.

F) Network

The network is a mixture of ATM, frame and wireless circuits. With the increase in the demand for bandwidth we will be changing the ATM circuits to MPLS circuits. We will also be increasing the bandwidth on the existing wireless circuits from 2mg to 5mg.

G) Digital Content Production

The digital imaging facility currently houses one digital scanning back camera and one flatbed scanner, as well as peripheral equipment including post-processing stations. As industry standards for imaging production evolve, hardware and software for digital content production will be evaluated.

H) Data Storage

As production and acquisition of digital content increases, we will address the amount of storage necessary to house our collections.

V. Projected Budget

See Appendix A "Budget"

VI. Professional Development Strategy/ Staff Training needs and Plans

1. The MBLN and BPL maintain high-level technology training budgets to keep IT staff skills current and to develop new skills needed to support IT infrastructure and technologies defined in the plan.
2. Involve the MBLN Policy Advisory Group, Boston Regional Office, BPL Training Committee and BPL Management staff to strategize methods and procedures to ensure that staff can capitalize on new technology resources. Strategies will include determining what trainings are mandatory and which will be optional. Allocation of ongoing budget resources for training and development will also be addressed.
3. Staff are encouraged and required as appropriate to participate in professional development opportunities through in-house and external organizations (conferences, workshops, classes, etc.). Here are some examples of professional development opportunities:
 - o American Library Association and its Divisions and Chapters
 - o City of Boston Training
 - o Customer of Dynix, Inc. Annual Conference
 - o Internet Librarian Conference
 - o Library and Information Technology Association (LITA) National Forum
 - o Massachusetts Library Association
 - o NELINET
 - o Public Library Association Symposium and National Conference
 - o USAC E-Rate Training
 - o Various online interactive training, including in-house made videos
 - o Workshops from various training service providers
4. Provide training on electronic services, such as digital collections, reference services and document delivery.
5. Enhance technology documentation on the BPL website and Intranet.

6. Implement regular training on the Horizon automation system and services for staff. Continue to update customized Horizon documentation manuals that are available through the Intranet.
7. Provide training to Library staff so they may assist persons with adaptive technology service needs.
8. Continuously update training room and educational capacity with new training and instructional tools.

VII. Evaluation Process

The technology plan will be formally evaluated at six-month intervals to determine progress with each of the broad goals and individual objectives and activities.

BPL/MBLN will capture and evaluate usage statistics from various computer activities. Data collected will be compared to previous year's statistics. Comments will be solicited from library users via evaluations. Tickets requesting help submitted through the Helpdesk reporting system will be reviewed to identify any service adjustment requirements. Alternative technologies that could enhance services or be more cost effective will continue to be investigated and applied.

Various data sources will be collected and measured for each of the plan's broad goals. To evaluate our goal and objectives for improvements to public access computing, some of the measurements we will utilize are user surveys, reporting from staff in Hub and at branches, PC reservation and pay-for-print statistics, network monitoring and helpdesk reports. To monitor use of online content and resources, and analog content & resources, some of the metrics we will use are Google Analytics, Open Content Alliance download statistics, Overdrive statistics, vendor reports for databases and circulation statistics.

Our goals and objectives for the technology infrastructure, communications services and infrastructure, and planning for security of our assets will be measured by staff who regularly monitor storage and network performance, and who record purchases and implementations of services, hardware and software.

Authorized Signature:

_____ Date _____
Bernard A. Margolis
Library President