Metro

Information Technology Benchmarks and Opportunities

December 1999

A Report by the Office of the Auditor

METRO

Alexis Dow, CPA
Metro Auditor

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REGIONAL SERVICES

600 NORTHEAST GRAND AVENUE | PORTLAND, OREGON 97232 2736
TEL 503 797 1891 | FAX 503 797 1831

METRO

Office of the Auditor

December 6, 1999

To the Metro Council and Executive Officer:

We reviewed how Metro's Information Management Services (IMS) Division operations compare or "benchmark" against the information technology (IT) functions at more than 100 organizations. We identified top performers and the activities that contribute to their standing.

Benchmarking shows that Metro's information management team excels in certain areas, such as quick resolution to problems called into the help desk. It also shows that Metro lags in other areas, such as system redesign and development, standardization of IT resources, and user support and training. Greater emphasis in these areas is essential for Metro to develop the capabilities appropriate for an organization of its size and complexity and to provide adequate support to the large majority of Metro workers who rely on IT to fulfill their jobs.

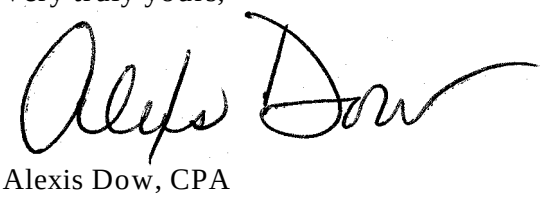
In the report we identify several areas for improvement and make specific recommendations for improving Metro's information management processes. These include:

- taking aggressive steps to simplify processes and standardize IT resources
- training end-users as a means to maximize IT investment
- defining and monitoring standards for all IT resources and activities
- developing a comprehensive IT risk management strategy
- continuously evaluating emerging technologies for value to Metro.

We reviewed a draft of this report with the Executive Officer and the manager of the IMS Division. The last section of this report presents the Executive Officer's written response.

We appreciate the cooperation and assistance provided by Metro staff as we conducted this review, particularly the staff from the Information Management Services Division.

Very truly yours,



Alexis Dow, CPA
Metro Auditor

Contractor: Arras Advisory Services

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Executive Summary

This report describes how Metro's Information Technology (IT) processes compare with those of more than 100 organizations.

Benchmarking shows that Metro's IT organization is excellent in certain respects, particularly quick resolution of problems called in to the Help Desk. At the same time, the division has been slow to develop the divisional configuration and capacities appropriate for an organization of Metro's size and complexity.

As it presently operates, Metro's IT group is absorbed with maintenance and enhancement issues related to the existing systems. While these activities are critical, the demands they represent severely constrain attention to higher level responsibilities such as system redesign and development. In addition, beyond the very efficient Help Desk program, there are limited resources available for the user support and training that would maximize the value of existing and future IT investment.

A large majority of Metro workers across several locations rely – in many cases heavily – on IT resources to fulfill their jobs. Continuing demand is foreseen in all areas of Metro. These factors require Metro to define and implement an IT strategy within the context of an overall organizational plan. Both high level and basic service needs then can be more readily fit into context and their relative importance weighted.

Best practices that may help Metro enhance its IT efficiency and effectiveness include:

- taking aggressive steps to simplify processes and standardize IT resources
- training end-users to maximize IT investment
- defining and monitoring standards for all IT resources and activities
- developing a comprehensive risk management strategy
- evaluating emerging technologies continuously for usefulness to Metro.

Metro is not the precise equivalent of the organizations in the benchmarking universe. However, the study employed well-defined procedures to ensure consistency and allow reasonable comparisons.

Metro budgeted about $3.2 million for IT in fiscal 1998. Approximately 18 staff are dedicated to IT operations.

Specific recommendations for Metro are detailed in this report.

Recommendations

We identified several ways for Metro to improve its IT processes, primarily through application of best practices. Below are our recommendations.

1. **Agree on the strategic role of IT in accomplishing Metro's mission. Preliminary steps include defining IT's role in accomplishing Metro's mission, its critical success factors and related key strategies.**

   Reliance on IT resources is very high in the Metro organization. Seventy percent of its employees qualify as 'end-users', which means that they depend on IT in order to fulfill 10% or more of their job requirements. Moreover, three key departments at Metro – Transportation, Accounting Services and the Data Resource Center – are by their nature necessarily heavy users of very sophisticated technologies.

   With so many end-users, Metro has a high level of penetration compared to other entities populating the study group. This serves to emphasize the importance of IT in the Metro environment and the thoughtfulness with which IT should be considered.

   Necessary preliminary steps include defining IT's role in accomplishing Metro's mission, IT's critical success factors and related key strategies. Without this perspective, it is difficult to evaluate the cost/benefit trade-offs involved in ongoing and future IT efforts. To assure a well-rounded view, include the senior IT executive in this process.

   Associated steps are identified below in the other recommendations offered.

2. **Enhance the effectiveness of the IT group. Some ways to work toward this goal include:**

   - **encouraging and enabling Metro's IT leadership to reorient its focus to include development of strategic capabilities including a process of evaluating and introducing emerging technologies applicable to Metro.**
   - **considering reconstitution of the senior IT manager as a Chief Information Officer (CIO) reporting directly to Metro's Chief Operating Officer and Executive Officer.**
   - **developing well-balanced standards of performance for the IT function.**

Efficiency is doing things right and effectiveness is doing the right things. Data and observation suggest that the Metro IT group is quite efficient, and has the potential for greater effectiveness.

Best practices suggest that the IT group take a lead role in IT risk management and organization-wide IT decision support, while maintaining the network infrastructure and critical enterprise applications.

A first step in moving toward best-of-class status would be to encourage and enable Metro's IT leadership to reorient its focus to include development of strategic capabilities, in addition to maintenance issues. This should include a continuous process of evaluating emerging technologies in terms of potential applications within Metro and for introducing emerging technologies to key end-user groups. Current staffing and funding levels dictate that almost 100% of Metro's IT focus is on maintaining and enhancing existing systems. The average company in the benchmarking universe divides its efforts evenly between new and existing systems. Achieving this reorientation well may entail additional IT staff and increased IT professional development.

An important element in establishing IT in an organization-wide leadership role is executive-level visibility, typically achieved through reporting relationships. IT's natural evolution and the dynamics of Metro suggest that it is time to consider reconstituting the senior IT manager as a Chief Information Officer (CIO) reporting directly to Metro's Chief Operating Officer and Executive Officer.

Another useful step would be the development of well-balanced standards of performance for the IT function. Activities for which the group is accountable should be reviewed on a regular basis. Examples of such standards and activities employed by other local governments in the Portland metropolitan area are listed in Appendix B.

3. Maximize the benefits of existing and future IT investment by providing adequate end-user training and support.

The hours of training Metro provides its end-users and its IT professionals is significantly below average. Translated into dollars, the combined support and training costs at Metro are $371 per end-user, compared with the average of $641. This shortfall in service capability also is highlighted in the August 20, 1999 Metro IT Survey Report recently released, in which many of the

respondents expressed a need for more training and more readily available technical support in order to meet deadlines and to avoid time spent troubleshooting technical problems.

Best of class companies have found that training needs can be met efficiently and cost-effectively in programs that provide on-line as well as classroom-based instruction. To be successful over time minimum training requirements for all end-users should be updated regularly.

Automating responses to frequently asked questions could free the Help Desk staff to address more complex problems. Metro's IT division has produced a website for this purpose and should publicize its existence more widely to encourage greater use of this resource.

4. Take aggressive steps to simplify processes and standardize IT resources, including specifying and documenting standards for the IT environment as a whole, as well as all aspects of the information systems. On-going communication of policies and standards across the organization and performance compliance reviews are important follow-up measures.

Every organization has a level of necessary complexity determined by its purpose as well as unavoidable constraints. The organization's IT environment must deal with these realities. Efficiency and cost are optimized when IT is designed and administered with simplicity and standardization as goals. Metro's IT group is in philosophical agreement with these goals.

A first step in achieving the optimal situation is to specify and document standards for the IT environment as a whole, as well as all aspects of the information systems, including hardware, software (applications and systems), suppliers, networking, communications, and database technologies and platforms, and development activities. At Metro, small pieces of the IT environment have been documented, but inadequate staffing, as well as the existence of autonomous IT user groups have been obstacles to a broad specification and documentation effort.

Once documentation is in place, on-going communication of policies and standards across the organization and performance compliance reviews are important follow-up measures.

Best of class organizations centralize information technology decision making, with local delivery. Depending on the organization, the working

relationship may be defined in service agreements. Where service agreements are used, the terms must be mutually acceptable. It is important to define the responsibilities of IT professionals and their operating unit counterparts.

5. Develop a comprehensive IT risk management strategy, including physical security, logical security, data integrity, system and component failure, and technical or market obsolescence.

Although Metro has a defined security policy for the organization, there is no comprehensive architecture planning process for the entire enterprise, nor is there a contingency plan for critical information systems.

Metro's IT group needs to develop a plan that addresses all business IT risks, including physical security, logical security, data integrity, system and component failure, and technical or market obsolescence.

Analysis of Key Benchmarking Indicators

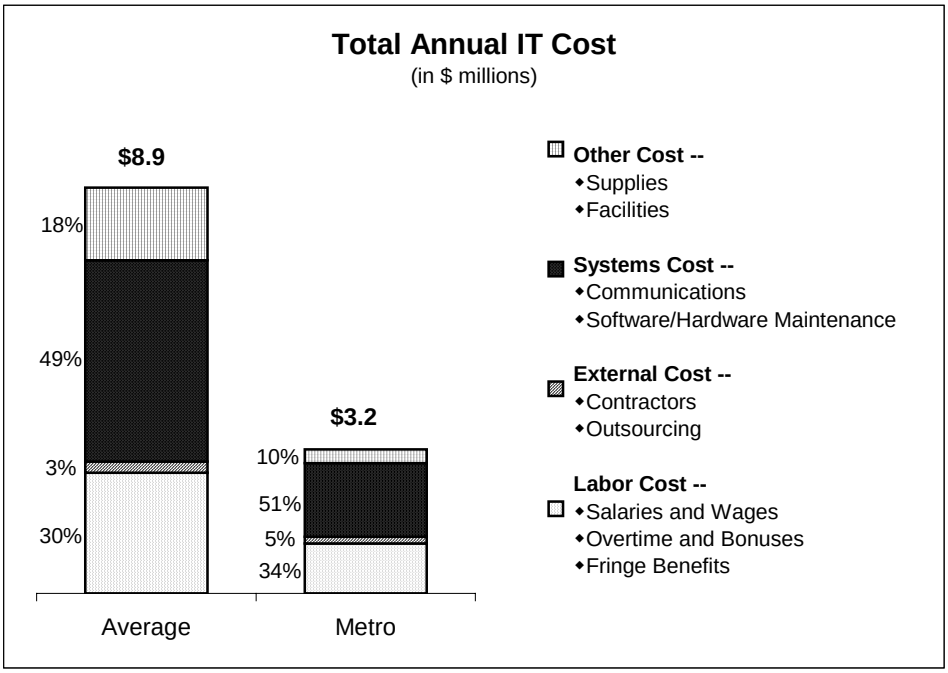
The Hackett Group's (THG) report on Metro's information management systems presents 42 charts or tables of comparisons between Metro and more than 100 organizations in the benchmarking universe. Their report appears as Appendix A. Information on The Hackett Group and benchmarking processes is described in the Background section of this report. With the assistance of the Information Management Systems Division staff, we selected the most significant processes for presentation in this chapter.

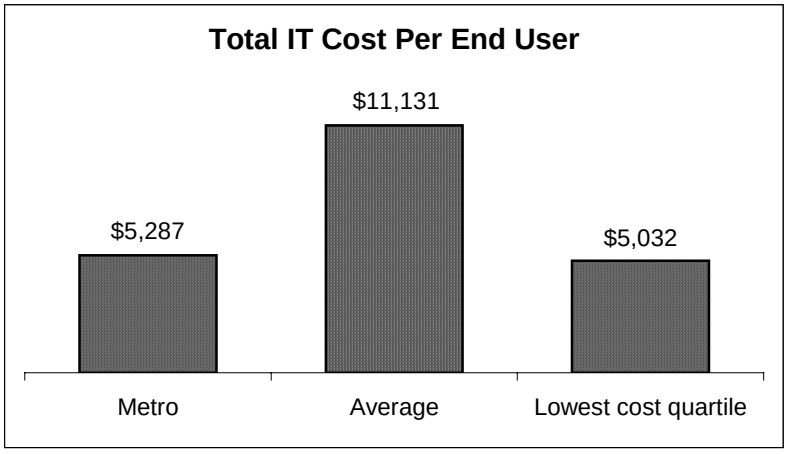
Total IT Cost	Benchmark 1
IT User Support	Benchmark 2
IT Staffing	Benchmark 3
IT Strategic Orientation	Benchmark 4
Formulation and Enforcement of Standards	Benchmark 5
IT Risk Management	Benchmark 6

Many of the comparisons summarized in this chapter show that Metro has opportunities to make some of its processes, procedures and functions more effective through the use of selected best practices.

Because many of the benchmarks are interrelated, some repetition occurs in the following comments.

1 Total IT Cost





Explanation

- Total costs include labor, external resources, systems and other costs. This figure does not include investments for hardware or software acquisition.
- Quartile placement with respect to IT cost is not in itself an indicator of excellence. The nature of the organization and the related matter of necessary IT complexity must be considered. It *is* important to have a complete understanding of the source of IT costs.
- In order to provide comparability among diverse participants in the universe studied, THG devised a common unit of measurement: the 'end-user'. An 'end-user' is defined as a person within the organization that uses IT at least

10% of their time to fulfill the requirements of their job. Casual users, such as people using HR kiosks, cell phones or pagers, are excluded.

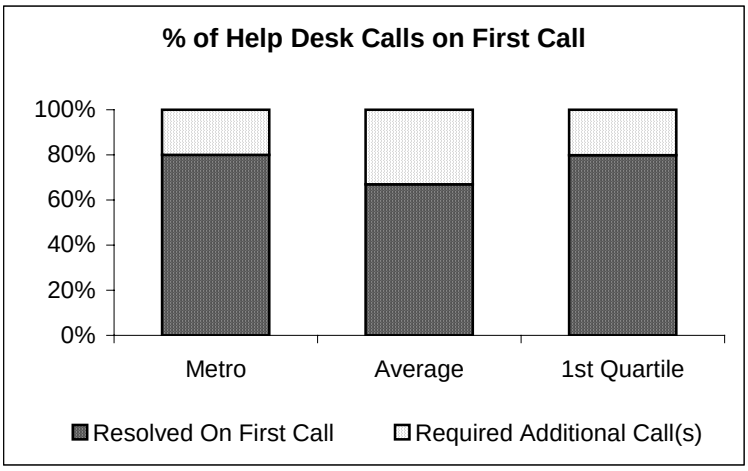
Benchmark Observations

- The breakdown of Metro's IT costs compare closely with the breakdown of IT costs among the average participants in the THG universe, with the greatest amount of resources allocated to operating and maintaining systems and labor.
- Metro placed within the second quartile of costs per end-user, with a per end-user cost of approximately $5,000. Average cost per end user is $11,131.

Best Practices That Can Further Close the Benchmarking Gap

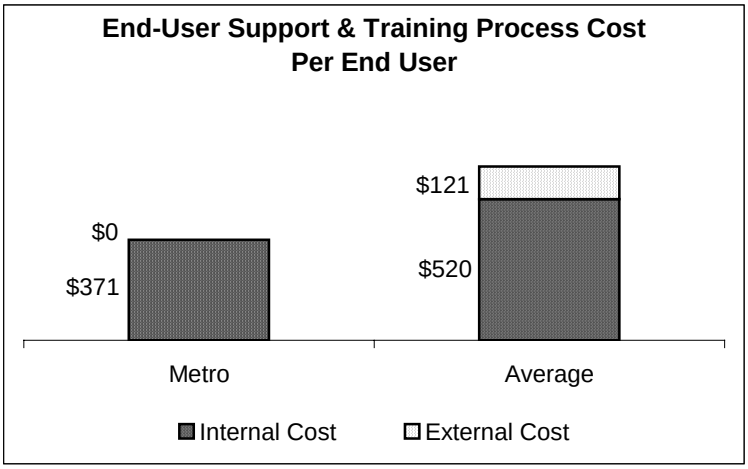
- Strive for simplification and standardization in all IT processes.
- Centralize decision-making for all Metro IT decisions, such as those concerning the PeopleSoft enhancements intended to maximize the original investment.
- Integrate IT plans with overall Metro plans and budgets. Know source of all IT costs.
- Know the total cost of IT ownership, not just the cost of acquisition.
- Automate processes where possible. For example, Metro currently has a beta version of Novell's Zenworks, which allows software upgrades to be initiated from a central point. This enables IT professionals to avoid visiting every desk. Metro is working toward full implementation of Zenworks.
- Consider redefining the IT leadership position as a CIO position.
- Determine the appropriate level of funding for needed IT activities and budget accordingly.

2 IT User Support



End-User Support and Training

	Metro	Average
Do you have IT- mandated IT training standards for all staff?	No	No
What is the average number of training hours per end user per year?	4	13
What is the average number of training hours per IT persons per year?	16	43



Explanation

- End-user support involves providing hardware and applications software services to the users of systems across the organization.
- Users also need to be trained in the use of software, productivity tools, hardware and peripherals, as well as telecommunications systems.
- A 'help desk' is staffed with professionals who field calls from users experiencing difficulties with IT resources. Dedicated staff and centralization of this resource is intended to assure quick, consistent resolution and also enables IT professionals to perceive patterns in user problems.

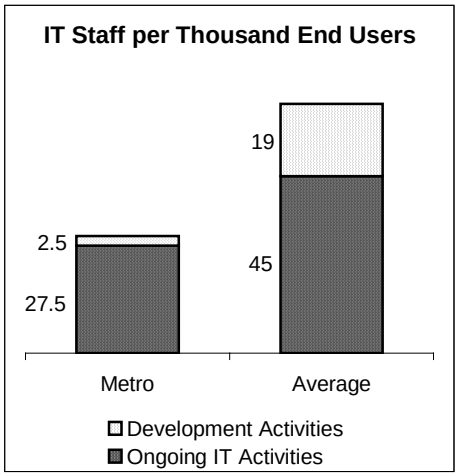
Benchmark Observations

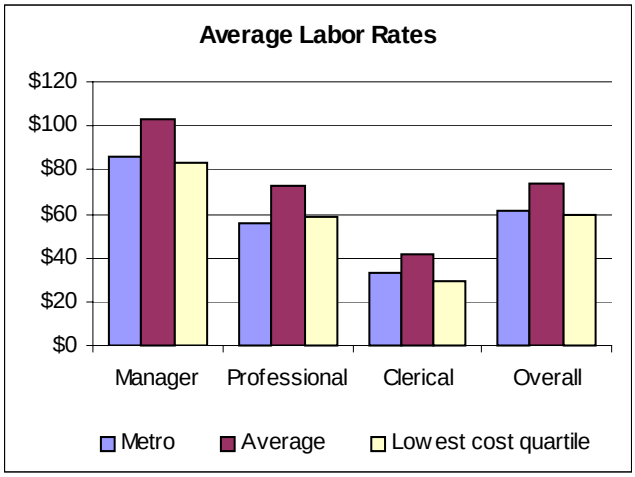
- Metro's IT staff is able to resolve 80% of help desk calls on the first call, which represents superior performance and is in line with first quartile organizations. Average performers are able to solve about 70% of help desk calls on the first call.
- The hours of training Metro provides its end-users or IT professionals is significantly below average.
- Combined support and training costs at Metro are $371 per end-user, compared with the average of $641.

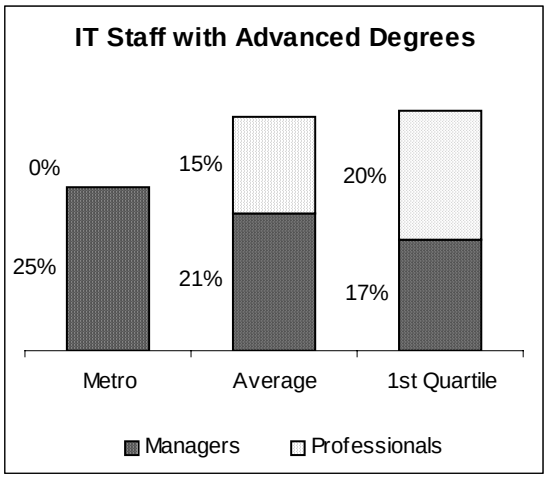
Best Practices That Can Further Close the Benchmarking Gap

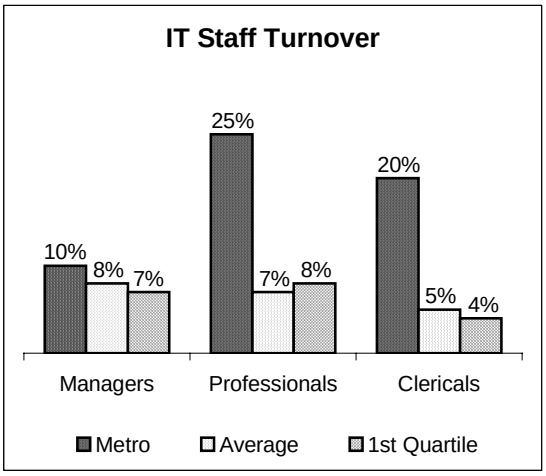
- Strive for simplicity and standardization in IT resources, by means of centralized design, packaged software, common standards for all applications, consistent installation practices, and scheduled maintenance.
- Make available online application software documentation and training materials for specific system developers and for end users, as appropriate.
- Define and regularly update minimum training standards for all users based on skill level and job requirements. Use a combination of computer-based and classroom-based training. Because of the complexity of certain Metro IT applications (e.g. Map making, transportation planning), as well as the intensity of IT use throughout the organization, Metro's legitimate user support and training costs can be expected to be high relative to that of the study population.
- Use automatic routing, standard scripts, and web sites as much as possible in addressing common problems to enable help desk staff to focus their effort on the most complex queries.
- Evaluate the nature and cause of help desk queries on a routine basis. Make adjustments in training programs based on call volume and pattern.

3 IT Staffing









Explanation

- Management consists of persons primarily responsible for leading a department and performing oversight, planning, administrative and personnel functions including any person that directly supervises staff.
- Professional persons primarily perform analytical and technical functions. They work in highly skilled positions and are normally exempt from overtime.
- Clerical persons primarily perform routine data entry, filing, typing and other related administrative tasks.

Benchmark Observations

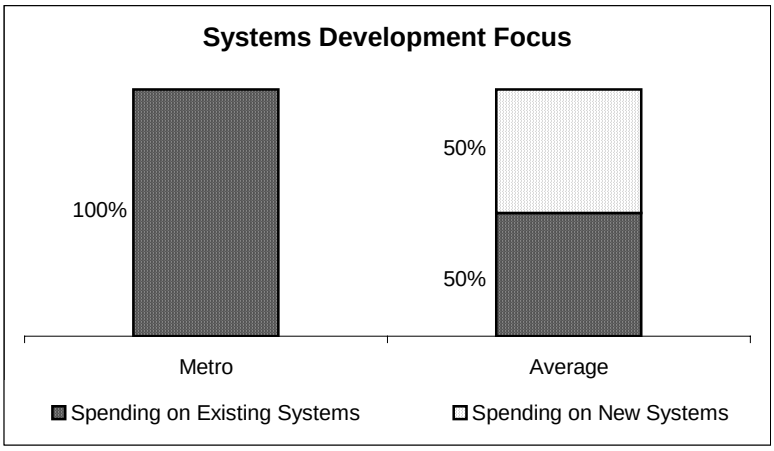
- Metro's total central IT staff is 18 people. The ratio of IT staff to end-users is less than half the average ratio.

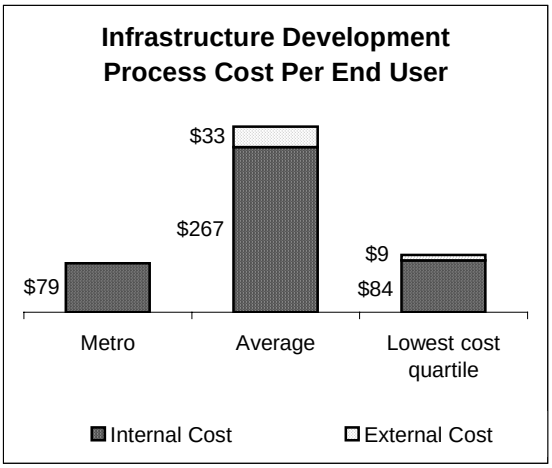
- Metro IT managers and professionals have more years experience than is found among their counterparts in average or first quartile organizations. (Appendix A, Item 13)
- No Metro IT professionals have advanced degrees, whereas 15-20% of their counterparts in the benchmarking universe have such degrees.
- Overall labor rates for Metro's IT staff are 23% less than average.
- Average and first quartile annual turnover is 7-8% for managers and professionals and 4-5% for clerical staff. Metro IT turnover is 10% at the manager level, 25% at the professional level and 20% at the clerical level.

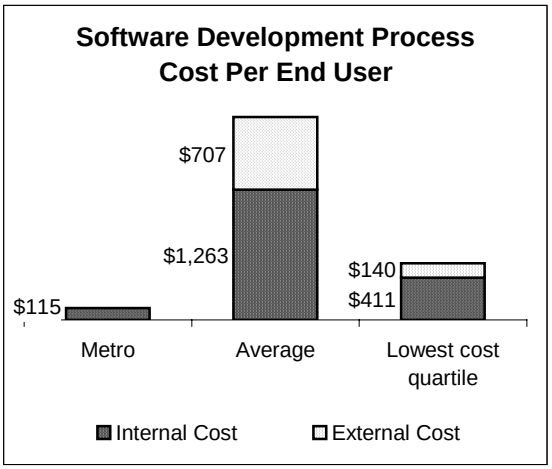
Best Practices That Can Further Close the Benchmarking Gap

- Define minimum IT staffing and staff training requirements to meet needs and establish a program for achieving them.
- Consider using additional external resources on a contract basis for peak workload or special skills.
- Investigate reasons for unusually high turnover and take actions to mitigate this situation.

4 IT Strategic Orientation







Explanation

- To have strategic orientation is to pursue targeted outcomes with a plan that integrates broad, long-term organizational considerations while seeking to balance multiple factors such as resource availability, foreseeable future needs and risk management imperatives.
- Strategic orientation is reflected in the focus of the IT division, organizational reporting relationships, the visibility and influence of the senior IT executive and the dependence of the organization on IT resources and services for its ability to function.
- "Every organization…has a competitive strategy, whether implicit or explicit… Left to their own devices, each functional department will inevitably pursue approaches dictated by their professional orientation and the incentives of those in charge. However, the sum of these departmental approaches rarely equals the best strategy." (Michael Porter)

Benchmark Observations

- Metro's IT division has developed a strategic plan, but without an explicit organization-wide strategic plan no tight integration of priorities or optimal resource planning can occur.
- Metro's IT effort is almost entirely focused on operations and maintenance of existing systems.
- Metro's development efforts are solely focused on enhancing existing systems, whereas the average company in the benchmarking universe divides its development efforts evenly between new and existing systems.
- At $115 per end-user, Metro spends far less than the lowest cost quartile ($551) and average ($1,970) organizations on software development processes.
- Metro spends $79 per end user on infrastructure development, which is just under lowest cost quartile company expenditures ($93) and less than a third of the investment made by average companies ($300).
- Metro's senior IT executive sits on the Information Technology Steering Committee and reports to the Chief Financial Officer. Although not uncommon, the trend is for the senior IT person to report to the Chief Operating Officer or Chief Executive Officer because IT increasingly is regarded as an essential means of proactively facilitating organizational goals and activities, in addition to being critical support for existing technology.

Best Practices That Can Further Close the Benchmarking Gap

- Make the IT strategy an explicit part of Metro's strategy and involve the senior IT executive in the formulation of Metro's strategic plan.
- Envision where IT should be at critical points in the organization's future and prepare an action plan with milestones.
- Develop IT performance measures linked to budgets and strategic plans.
- Consider giving IT management executive-level influence and visibility by making the senior IT executive report directly to Metro's Chief Operating Officer and Executive Officer.
- Clearly define the roles of the senior IT executive and other department counterparts with respect to IT management and operations. Among the decisions typically associated with a CIO is the setting of overall IT direction and standards.
- Define a continuous process for the IT staff to evaluate emerging technologies in terms of potential applications within Metro and for IT staff to introduce appropriate emerging technologies to key end-user groups.

5 Formulation and Enforcement of IT Standards

Standards

	Metro	Average
To what extent are company-wide data standards implemented in all systems?	Very Low	Moderate
Is there a company-wide standard for PC configurations?	No	Yes
Is there a company-wide standard for basic PC Software?	Yes	Yes
What proportion of total IT activity is governed by company-wide standards?	25%	66%
To what extent are standards enforced?	Very Low	High

Quality

	Metro	Average
Are formal quality assurance reviews mandated?	No	Yes
What percent of projects fail to meet quality standards?	N/A	19%

Explanation

- Development and maintenance of standards for the general information systems environment (hardware, software, networking, communications, databases, development projects) is considered an important aspect of risk management.
- Once specified, standards need to be communicated and enforced across the organization to ensure general use and common acceptance.

Benchmark Observations

- At Metro, only 25% of total IT activity is governed by an organization-wide standard and enforcement of those standards has been minimal.
- Data standards are implemented only to a very limited extent.
- Metro has an organization-wide standard for basic PC software, but no standard for PC configurations.

Best Practices That Can Further Close the Benchmarking Gap

- Centralize decision making about technologies and software.
- Specify standards for all aspects of the information systems, including hardware, software (applications and systems), suppliers, networking, communications, and database technologies and platforms, as well as development activities. For example, Metro currently specifies the speed and size of typical desktop Apple or personal computer features like RAM or hard disk size. In software, Metro's IT division provides service for Windows 95 and Windows NT, but not Windows 98.

- Communicate those standards across the organization and perform compliance reviews.
- Participate in industry or national standards setting bodies (e.g. ANSI, IFPUG) as a means of remaining current with respect to common standards and their effectiveness in practice.
- Develop and administer database standards to ensure data integrity.
- Research new tools and methods that serve this purpose.

6 IT Risk Management

Risk Management

	Metro	Average
Do you have a comprehensive architecture planning process for the entire enterprise?	No	Yes
Is there a defined security policy for the company?	Yes	Yes
Do you have a contingency plan for all mission critical information systems?	No	Yes
Has the contingency plan been tested in the past 12 months?	No	Yes

Explanation

- IT risk management ensures the integrity of information and calculations produced by the system and that of the information the systems share electronically among themselves. Additionally, it aims to provide assurance of adequate and consistent quality standards for all IT-related activities as well as appropriate access.

Benchmark Observations

- Metro has no comprehensive architecture planning process for the entire enterprise. This is the process for planning, designing and building the organizational structure of information systems.
- There is no contingency plan for critical information systems.
- There is a defined security policy for Metro.

Best Practices That Can Further Close the Benchmarking Gap

- Develop an overall risk management strategy that addresses all business IT risks, including physical security, logical security, data integrity, system and component failure, and technical or market obsolescence.
- Consider a dedicated risk management and analysis function with central management and oversight, but local delivery. Risk management and analysis team members should be part of all major applications software and infrastructure development activities.
- Ensure that all new applications meet IT architecture standards.
- Maintain a single standard virus protection tool, as well as a single standard set of project management, planning and tracking tools integrated with overall project management tools.
- Maintain on-line end-user and technical systems documentation, including design documentation.
- Define disaster recovery plans and programs.

Background

This report presents benchmarking comparisons of Metro's IT processes against processes in IT departments at over 100 private and public organizations. Although some of Metro's benchmarked IT processes compare favorably, other benchmarked processes suggest that Metro has opportunities to adapt and apply best practices from other organizations. We base our analysis on benchmarking research that our contractor, The Hackett Group (THG), has conducted since 1991.

Benchmarking – A Diagnostic Tool

Benchmarking is an analysis of comparative data that can lead to insights that promote positive change. It is the discovery of specific practices responsible for high performance and understanding how these practices work. It is not a complex or highly conceptual method of improving operational effectiveness and efficiency. Rather, benchmarking is a management tool that works.

Benchmarking began in the private sector where businesses learned that they did not have to create new approaches to change their operations to improve profits. They found that they could realize more significant and pragmatic operational improvements by taking aspects of more effective operations and modifying practices for their operations.

Benchmarking in the Public Sector

In recent years, numerous government benchmarking experiences demonstrate that it is an effective way of doing business in environments that are becoming more results-oriented. For example, federal agencies have made significant operational improvements through their implementation of the Government Performance and Results Act. At the state level, the Oregon Legislature passed a government efficiency bill that set expectations for benchmarks and performance measures. Agencies have reported significant operational improvements as a result of such measurements. Benchmarking in the public sector has led to (1) working smarter toward effective results; (2) building on the work, experience, failures and successes of others; and (3) enhancing agency accountability and public trust.

The Hackett Group (THG)

We performed our benchmarking survey through a contract with consultants at The Hackett Group, a widely recognized management consulting firm that specializes in benchmarking. THG's benchmarking studies have helped more than 1,300 organizations evaluate their operational efficiency and effectiveness, identify and adapt better approaches and implement positive change.

According to THG, it has the world's most comprehensive benchmarking database of organizations' key processes. THG's database represents a variety of organizations in private and public sectors in the production and services fields. The organizations against which we benchmarked Metro range in size from $200 million to nearly $43 billion in annual revenue, with IT department staffs as small as 13 and as large as 5,000. Although Metro is one of the smaller organizations, THG's benchmarking methodologies provide many comparisons that are relevant and applicable.

We present THG's summary benchmarking report on Metro's IT processes in Appendix A.

Metro's Information Management Service (IMS) Division

This division leads the delivery of enterprise-based technology services throughout the Metro organization. IMS is responsible for determining technology support needs and developing solutions by a combination of computer hardware and software applications. It then trains and supports technology users, maintains the equipment and assures the secure storage and transmission of information content. The scope of IMS's work includes network infrastructure development and support, monitoring of overall quality and standardization, as well as planning for future IT needs.

Metro budgeted about $3.2 million for IT in the fiscal year used for benchmarking purposes and has approximately 18 staff dedicated to IT operations.

Wide Area Network for Metro

Regional Land Information Support

File / Print services

Geographic Information System modeling

94 PC's

REM Sites

30 PC's

Garbage weighing system
Email / calendars
File / Print services
Work-order scheduling

Metro HQ

360 PC's

Microsoft Office
Email / calendars
File / Print services
Server backup
PeopleSoft (120 users):
Accounting
Human Resources
Purchasing

Backbone

Travel Forecasting Support

Firewall

E-Commerce Support

The Internet

E-mail
Web access

Oregon Zoo

120 PC's

OR Zoo Foundation database
Animal database
Email / calendars
File / Print services
Work-order scheduling

Objectives, Scope and Methodology

We conducted this work to determine how Metro's IT processes compare against a broad range of over 100 public and private organizations. Our objectives were to determine:

- The relative efficiency and effectiveness of Metro's IMS function.
- Where "benchmarking gaps" exist. A benchmarking gap is the relative difference in performance, efficiency or effectiveness between a specific Metro IT activity and others in the database.
- Where opportunities exist to narrow the benchmarking gap and enhance Metro's IT processes.

We worked with Metro's IMS division and THG in a multi-step benchmarking process. Our work included:

- Attending THG's orientation and training meeting were THG consultants elaborated on IMS process definitions and their questionnaire that asked 176 detailed questions on IMS processes for fiscal 99-00.
- Working with IMS Division staff to collect data and complete the questionnaire.
- Refining data on the completed questionnaire and verifying its accuracy and consistency.
- Conferring with THG consultants on findings and implications of Metro's IMS benchmarking.
- Analyzing the implications of benchmarking gaps between Metro's IMS and other IT organizations in the database.

We worked with the Information Management Services Division to refine the information presented in this report. Additionally, we reviewed the key issues that surfaced with IT experts at Port of Portland, Washington County and TriMet and pursued clarification on several points with THG.

We recognize that Metro is not 'typical' of the more than 100 IT organizations benchmarked by THG. THG's precise definitions and data gathering processes helped create comparability in spite of organizational differences within the database. Our consistent use of THG's methodologies enabled us to compare Metro's IT processes to similar processes of other organizations, regardless of size or type of industry.

Our benchmarking study collected data across the following three broad IT categories and ten IT processes.

Operational Support	**Investment**	**Risk Management/ Decision Support**
IT Operations	Infrastructure Development	Risk Management
End-User Support & Training	Application Software Development	Supplier Management
Application Software Maintenance		Standards/Tools Development & Administration
Project Accounting		Planning & Decision Support

We performed our work between April 1999 and October 1999 in accordance with generally accepted auditing standards.

Appendix A

THG Benchmark Report on Metro's Information Technology Functions

Hackett Benchmarking|solutions℠

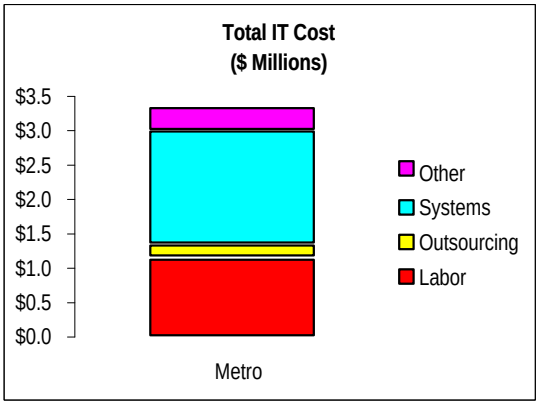
Appendix 1 -- The Hackett Group Benchmarking Report on Metro's IT Functions

Metro

Baseline

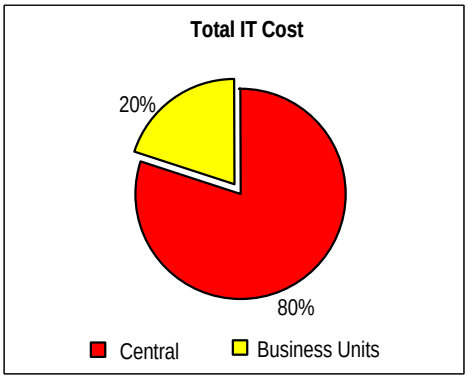
Item 1 Total IT Cost

	Metro ($ Millions)	Average ($ Millions)
Labor	$1.1	$2.7
Outsourcing	$0.2	$0.3
Systems	$1.6	$4.4
Other	$0.3	$1.6
Total IT Cost	$3.2	$8.9



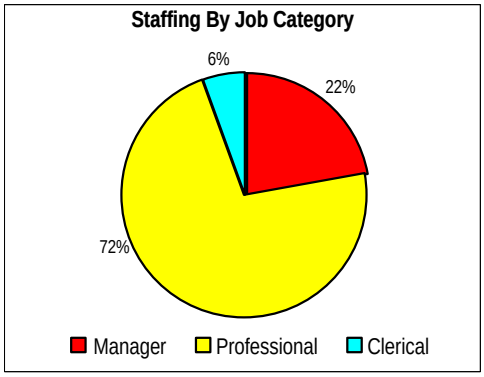
Item 2 Percentage Captured In Central IT Budget

	Metro	Average
Central	80%	50%
Business Units	20%	50%



Item 3 Staffing By Job Category

	Metro	Average
Manager	4	6
Professional	13	35
Clerical	1	1
Total Staffing By Job Category	18	42



Item 4 Annual Volumes

	Metro
Help Desk Calls	5,500
Major Projects	13
Users Supported	600
Locations Supported	4
PCs Supported	600

Technologies Supported

	Metro
Programming Languages	3
Operating Systems	5
Applications Supported	20
Platforms Supported	4
Database Platforms	4

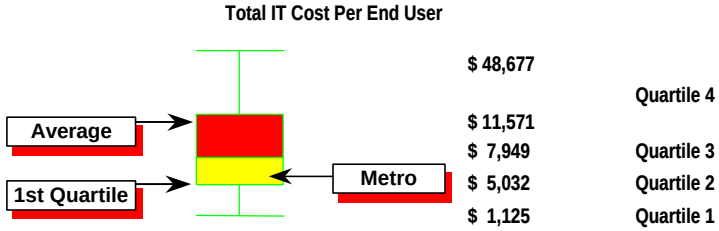
Item 5 IT Strategy And The Company

	Metro
To whom does the most senior IT excutive report?	CFO
Does the senior IT executive sit on the executive committee?	No
Senior IT executive time spent on external customer needs?	0%
Is the IT strategy an explicit part of the enterprise strategy?	No
How involved is the senior IT executive involved in formulating the company business strategy?	None
How critical is IT to the revenue of the company?	None
What impact does the loss of systems for a few minutes have?	Extreme

Item 6 Total IT Cost Per End User

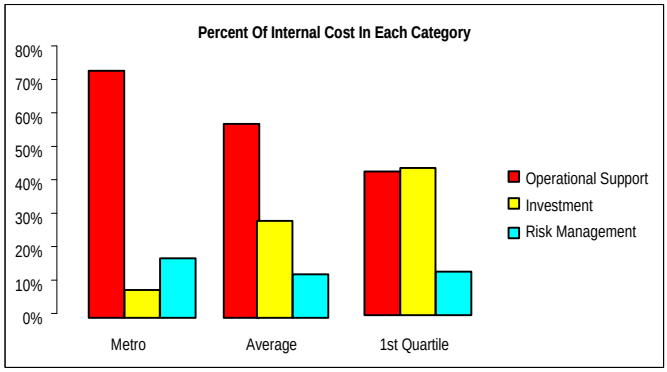
	Metro	Average	1st Quartile
Labor	$1,829	$4,786	$1,459
External	$250	$1,670	$101
Systems	$2,696	$3,562	$2,868
Other	$511	$1,113	$604
Total IT Cost Per End User	$5,287	$11,130	$5,032

Item 7 Overall This Places Metro In The Second Quartile



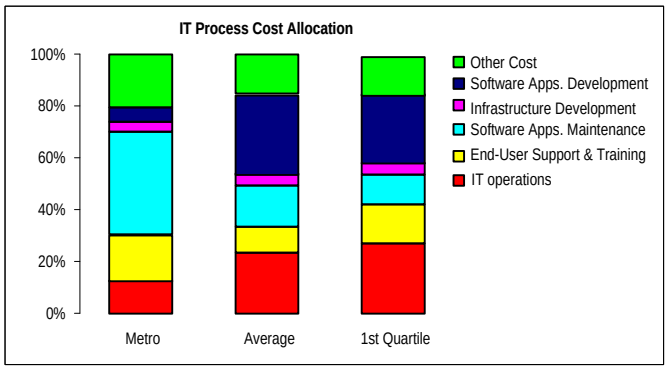
Item 8 Percent Of Internal Cost In Each Category

	Metro	Average	1st Quartile
Operational Support	73.89%	58.00%	43.00%
Investment	8.33%	29.00%	44.00%
Risk Management	17.78%	13.00%	13.00%



Item 9 IT Process Cost Allocation

	Metro	Average	1st Quartile
IT operations	13%	23%	27%
End-User Support & Training	18%	10%	15%
Software Apps. Maintenance	40%	16%	11%
Infrastructure Development	4%	5%	5%
Software Apps. Development	6%	31%	27%
Other Cost	21%	15%	15%



Embeddeness

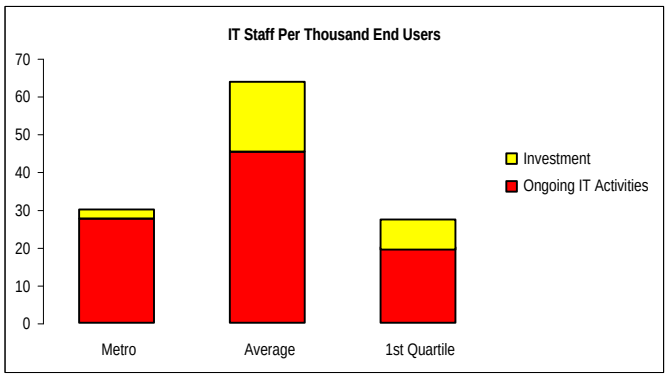
Item 10 Embeddedness Drivers

	Metro	Average
Revenue	$0.1 Bn	$3.2 Bn
Number of physical locations supported	4	150
Number of countries supported	1	8
Number of business units supported	11	12
Number of product lines	0	69
Number of employees	860	13,328

Organizational Effectiveness

Item 11 IT Staff Per Thousand End User

	Metro	Average	1st Quartile
Ongoing IT Activities	27.5	45	20
Investment	2.5	19	8
Total IT Staff Per End User	30.0	64	28



Item 12 Average Labor Rates By Staff Categories ($000)

	Metro	Average	1st Quartile
Overall	$61.0	$74.1	$59.4
Manager	$86.2	$103.1	$83.4
Professional	$55.3	$72.5	$58.5
Clerical	$33.4	$41.7	$29.7

Item 13 Staff Education, Experience And Turnover

	Metro	Average	1st Quartile
Advanced Degrees			
Managers	25%	21%	17%
Professionals	0%	15%	20%
Tenure/Experience	14	11	11
Average Turnover			
Managers	10%	8%	7%
Professionals	25%	7%	8%
Clericals	20%	5%	4%

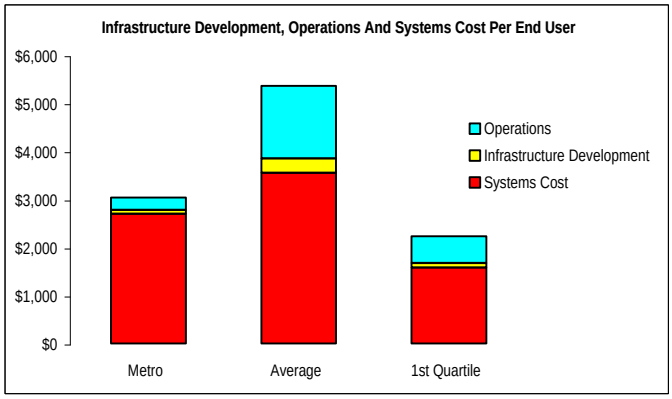
Item 14 Overall Staff Mix By Job Category

	Metro	Average	1st Quartile
Manager	22%	11%	9%
Professional	72%	84%	82%
Clerical	6%	5%	10%

Hardware/Operations

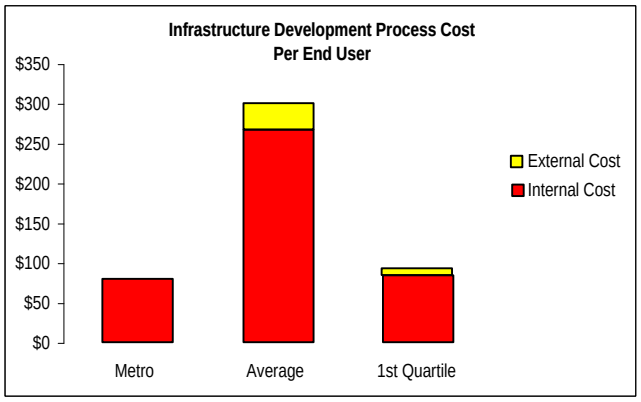
Item 15 Hardware/Operations Cost Per End User

	Metro	Average	1st Quartile
Systems Cost	$2,696	$3,551	$1,579
Infrastructure Development	$79	$300	$93
Operations	$264	$1,507	$557



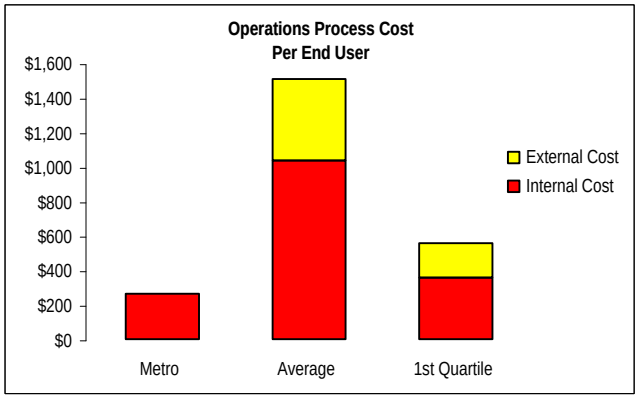
Item 16 Infrastructure Development Process Cost Per End User

	Metro	Average	1st Quartile
Internal Cost	$79	$267	$84
External Cost	$0	$33	$9
Total Infrastructure Cost/EU	$79	$300	$93



Item 17 Operations Process Cost Per End User

	Metro	Average	1st Quartile
Internal Cost	$264	$1,035	$356
External Cost	$0	$472	$201
Total Operations Cost/EU	$264	$1,507	$557



Item 18 End Users Per Data Center

	Metro	Average	1st Quartile
End User Per Data Center	200	1,222	3,343
Data Center(s)	3		

Item 19 Number Of Hardware Platforms Supported

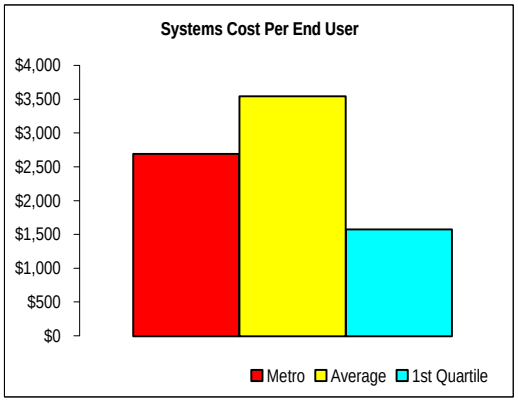
	Metro	Average	1st Quartile
Hardware Platforms Supported	4	5	3

Item 20 Number Of Operating Systems Supported

	Metro	Average	1st Quartile
Operating Systems Supported	5	7	6

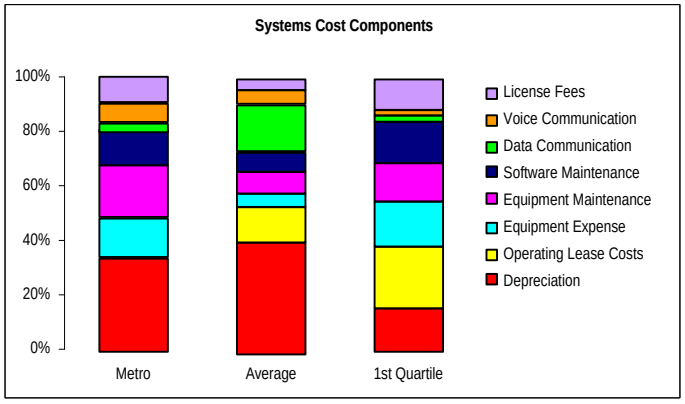
Item 21 Systems Cost Per End User

	Metro	Average	1st Quartile
Systems Cost/EU	$2,696	$3,551	$1,579



Item 22 Systems Cost Components

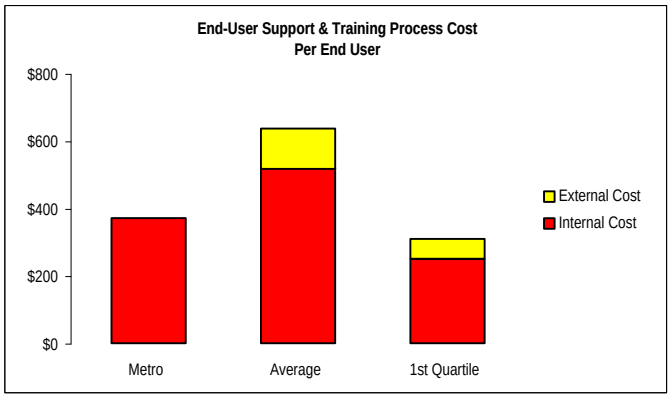
	Metro	Average	1st Quartile
Depreciation	34%	41%	16%
Operating Lease Costs	0%	13%	23%
Equipment Expense	14%	5%	17%
Equipment Maintenance	19%	8%	14%
Software Maintenance	13%	7%	15%
Data Communication	3%	17%	2%
Voice Communication	7%	5%	2%
License Fees	9%	4%	11%



End-User Support

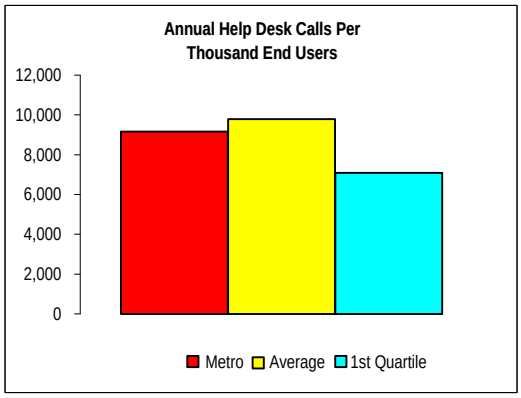
Item 23 End-User Support & Training Process Cost Per End User

	Metro	Average	1st Quartile
Internal Cost	$371	$520	$250
External Cost	$0	$121	$59
Total End-User Support Cost/EU	$371	$641	$309



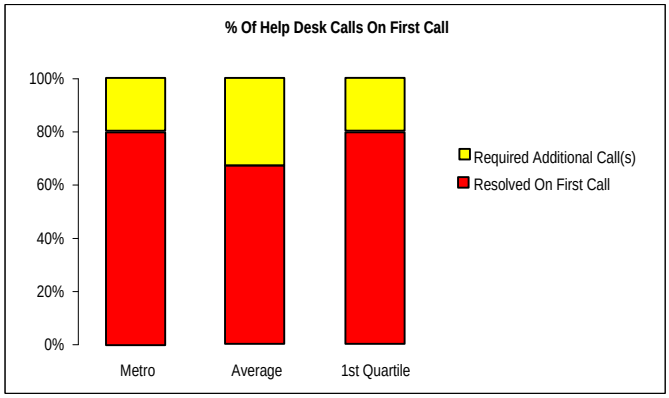
Item 24 Annual Help Desk Calls Per Thousand End Users

	Metro	Average	1st Quartile
Annual Help Desk Calls/ 1000 EU	9,167	9,800	7,100



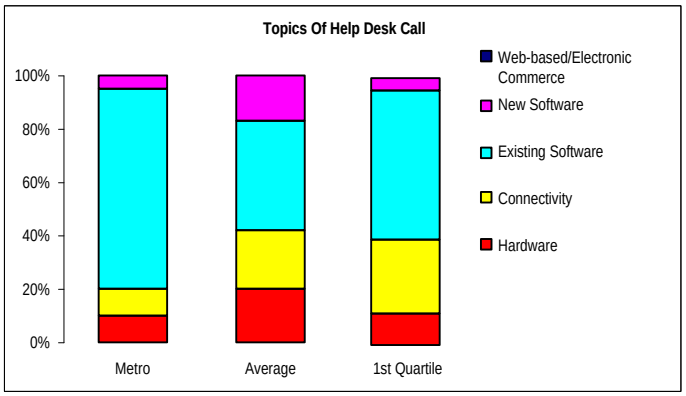
Item 25 Percent Of Help Desk Calls Resolved On First Call

	Metro	Average	1st Quartile
Resolved On First Call	80%	67%	80%
Required Additional Call(s)	20%	33%	20%



Item 26 Topics Of Help Desk Calls

	Metro	Average	1st Quartile
Hardware	10%	20%	12%
Connectivity	10%	22%	28%
Existing Software	75%	41%	56%
New Software	5%	17%	5%
Web-based/Electronic Commerce	0%	N/A	N/A



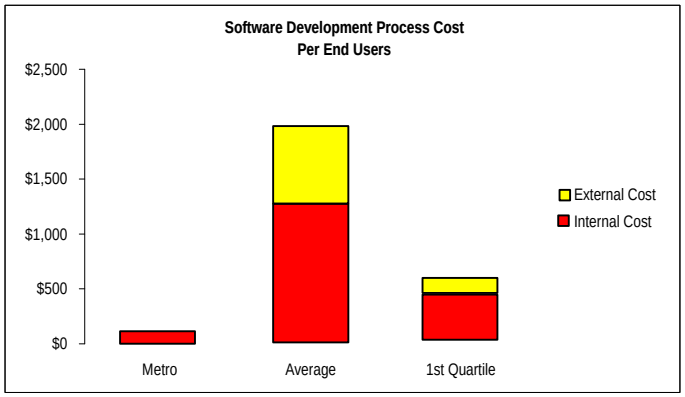
Item 27 End-User Support And Training

	Metro	Average
Do you have IT- mandated IT training standards for all staff?	No	No
What is the average number of training hours per end user per year?	4	13
What is the average number of training hours per IT persons per yea	16	43

Software

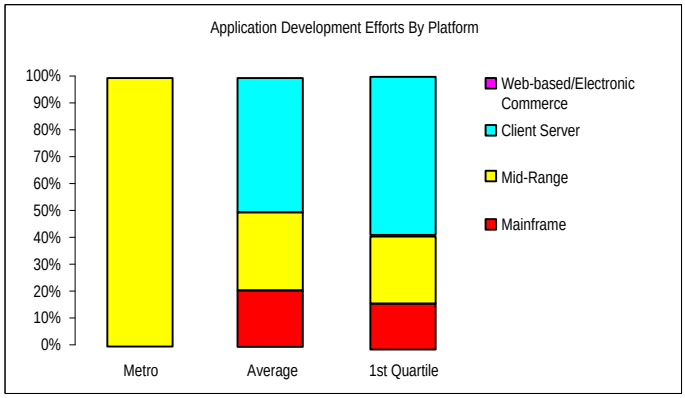
Item 28 Software Development Process Cost Per End User

	Metro	Average	1st Quartile
Internal Cost	$115	$1,263	$411
External Cost	$0	$707	$140
Total SW Development Cost/EU	$115	$1,970	$551



Item 29 Direction Of Application Development Efforts By Platform

	Metro	Average	1st Quartile
Mainframe	0%	21%	17%
Mid-Range	100%	29%	25%
Client Server	0%	50%	59%
Web-based/Electronic Commerce	0%	N/A	N/A

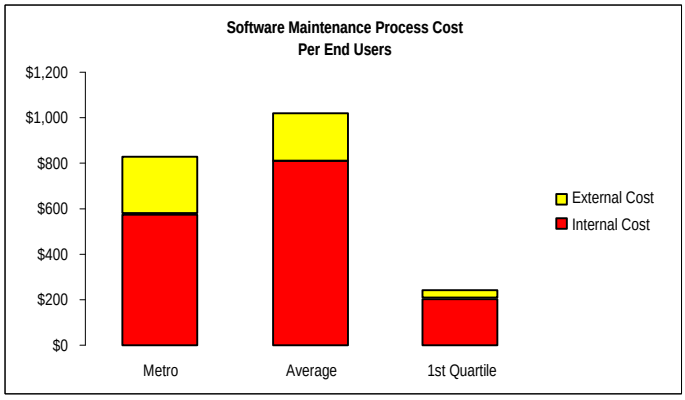


Item 30 Development Focus

	Metro	Average	1st Quartile
Building new custom systems	0%	50%	37%
Implementing new packages	0%	N/A	N/A
Integrating systems	0%	N/A	N/A
Enhancing existing systems	100%	50%	63%

Item 31 Software Maintenance Process Cost Per End User

	Metro	Average	1st Quartile
Internal Cost	$574	$810	$202
External Cost	$250	$210	$34
Total SW Maintenance Cost/EU	$824	$1,020	$236



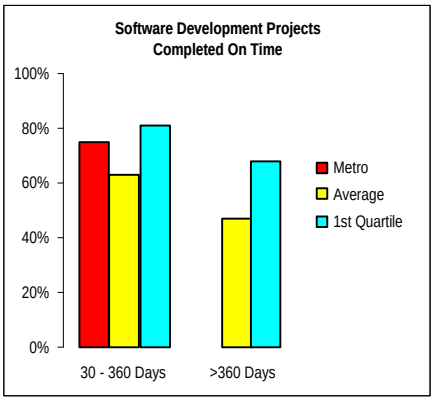
Item 32 Custom And Packaged Application Software

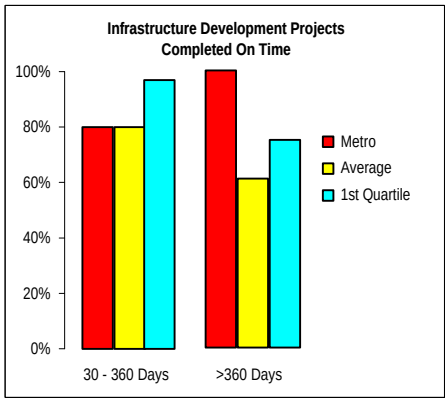
	Metro		Average	
	Custom App.	Packaged App.	Custom App.	Packaged App.
Product Development	0%	0%	73%	27%
Manufacturing/Operations	0%	0%	72%	28%
Marketing/Sales/Customer Service	0%	0%	64%	36%
Distribution	0%	0%	72%	28%
Administration	0%	0%	58%	42%

Project Management

Item 33 Software Development And Infrastructure Development Projects Completed On Time

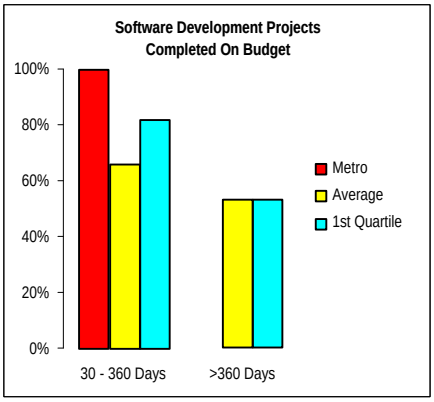
	Metro	Average	1st Quartile
Software Development Projects			
30 - 360 Days	**75%**	**63%**	**81%**
>360 Days	**0%**	**47%**	**68%**
Infrastructure Development Projects			
30 - 360 Days	**80%**	**80%**	**97%**
>360 Days	**100%**	**61%**	**75%**

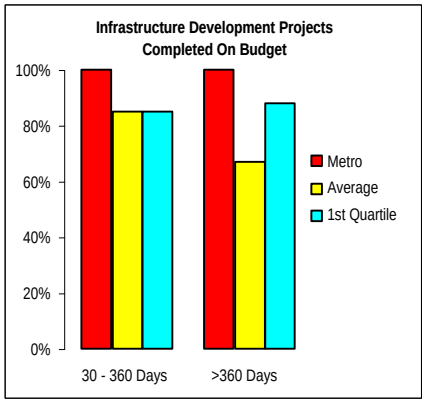




Item 34 Software Development And Infrastructure Development Projects Completed On Budget

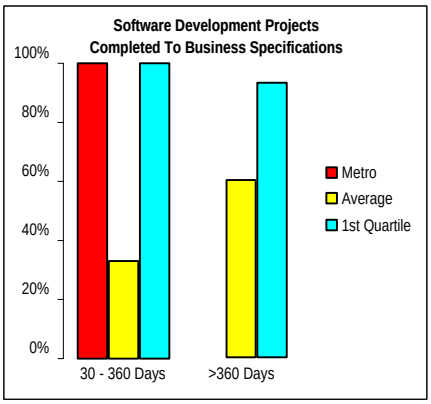
	Metro	Average	1st Quartile
Software Development Projects			
30 - 360 Days	**100%**	**66%**	**82%**
>360 Days	**0%**	**53%**	**53%**
Infrastructure Development Projects			
30 - 360 Days	**100%**	**85%**	**85%**
>360 Days	**100%**	**67%**	**88%**

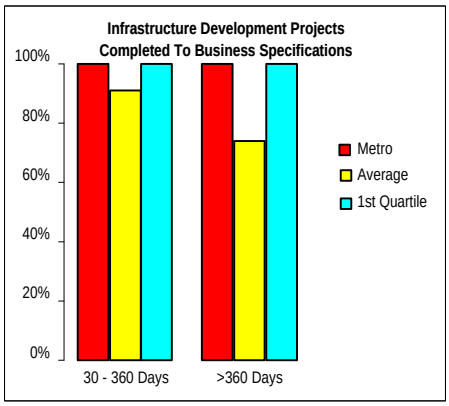




Item 35 Software Development And Infrastructure Development Projects Completed To Business Specifications

	Metro	Average	1st Quartile
Software Development Projects			
30 - 360 Days	100%	33%	100%
>360 Days	0%	60%	93%
Infrastructure Development Projects			
30 - 360 Days	100%	91%	100%
>360 Days	100%	74%	100%





Quality, Standards, & Risk Management

Item 36 Standards

	Metro	Average
To what extent are company-wide data standards implemented in all systems?	Very Low	Moderate
Is there a company-wide standard for PC configurations?	No	Yes
Is there a company-wide standard for basic PC Software?	Yes	Yes
What proportion of total IT activity is governed by company-wide standards?	25%	66%
To what extent are standards enforced?	Very Low	High

Item 37 Quality

	Metro	Average
Are formal quality assurance reviews mandated?	No	Yes
What percent of projects fail to meet quality standards?	0%	19%

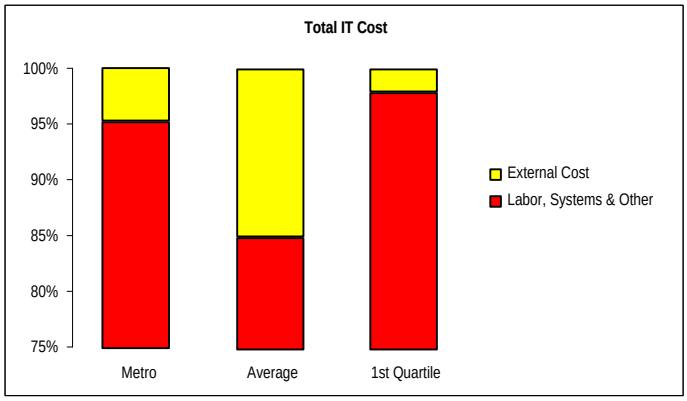
Item 38 Risk Management

	Metro	Average
Do you have a comprehensive architecture planning process for the entire enterprise?	No	Yes
Is ther a defined security policy for the company?	Yes	Yes
Do you have a contingency plan for all mission critical information systems?	No	Yes
Has the contingency plan been tested in the past 12 months?	No	Yes
How many computer audits of oeprational systems were completed in the past 12 months?	3	7

External Costs/Suppliers

Item 39 External Cost As A Percentage Of Total IT Cost

	Metro	Average	1st Quartile
Labor, Systems & Other	95%	85%	98%
External Cost	5%	15%	2%

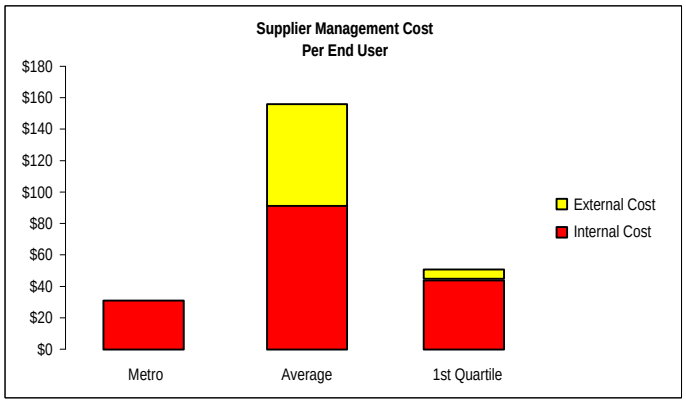


Item 40 Supplier Management FTE Per Thousand End User

	Metro	Average	1st Quartile
Supplier Mgmt FTE/1000 Eu	0.7	1.2	0.9

Item 41 Supplier Management Process Cost Per End User

	Metro	Average	1st Quartile
Internal Cost	$31	$92	$44
External Cost	$0	$65	$6
Total Supplier Mgmt Cost/EU	$31	$157	$50



Item 42 Supplier Management Utilization

	Metro	Average
To what extent are standard processes used to evaluate hardware and software purchases including investment criteria, technical standards, etc?	Very Low	Moderate
To what extent is a preferred supplier list established?	High	High
How frequently are supplier contracts reviewed?	More Often Than 1 Year	Annually
How many contracts were signed with third party suppliers last year?	3	31

Appendix B

Standards of IT Performance

Standards of IT Performance

IT performance measurement practice varies widely. THG best practices suggest having a defined set of key IT performance measures linked to budgets and plans. However, no specific guidelines or examples are provided.

IT groups at other local public sector agencies shared their perspectives on IT performance standards.

These IT groups all make efforts at self-monitoring which may include:

- staying abreast of what the industry overall and similar public organizations are doing in key areas
- subscription to Cutter's, an industry newsletter featuring metrics
- analysis of patterns in Help Desk calls
- periodic user 'customer satisfaction' surveys, like the one recently conducted by Metro's IT division
- periodic audits from the agency's audit staff
- careful individual personnel reviews

Each of the sources was actively working on the issue of performance measurement. Most felt that known tools had shortcomings, and that much depended on the role and authority of the IT group in a particular setting, as well as the overall organization's mission and goals.

Developing performance standards can be challenging. For example:

- measuring performance in terms of user satisfaction may yield mixed results; it provides a good understanding of whether users feel that they have the tools to do their jobs, but it does not reveal whether there might be overspending relative to the benefit to the organization.
- technical standards that specify something like 'lines of code written' are not particularly meaningful from the perspective of IT's overall strategic contribution.
- cost effectiveness is a familiar issue, but cost / benefit is not viewed as a prime standard.

Despite the difficulties of determining a fair and comprehensive set of performance measurements, the principle of maintaining such a discipline is valid. The quality, value and timeliness of IT services should be the focus of these measures and the availability of funding and the clarity of roles and responsibilities must be considered when reaching conclusions regarding performance.

Response to the Report

M E M O R A N D U M

600 NORTHEAST GRAND AVENUE | PORTLAND, OREGON 97232 2736
TEL 503 797 1540 | FAX 503 797 1793

METRO

TO: The Honorable Alexis Dow
Metro Auditor

FROM: Mike Burton
Executive Officer

DATE: December 6, 1999

Re: Response to Information Technology Benchmarks and Opportunities

Thank you for the opportunity to review and comment on the above document based on the work that Information Management Services Division (IMS) carried out with the Hackett Group. I recognize the value of benchmarking and the need to be constantly aware of "best practices" in the Information Technology (IY) industry. This becomes even more critical in an environment of constrained fiscal and personnel resources such as the one now facing Metro. While we may not be able to apply all of the best practices delineated within this report because of these constraints, a consistent focus on critical IT benchmarking elements can help Metro prioritize what are the critical success factors for the use of IT.

To emphasize our own efforts towards best practices, it is important to review the progress that IMS and other IT stakeholders at Metro have made in the months preceding the completion of this benchmarking study. On December 29, 1998 IMS presented a documented "Strategic Futures Plan for IT" that identified seven critical technology issues that Metro would need to address over the next few years. These included business process realignment; maintaining and enhancing the technology infrastructure; the world wide web and electronic commerce; telework/telecommuting; electronic document retention; electronic disaster prevention/recovery; and human resources.

This same strategically focused document presented seven goals and 26 objectives to improve the IT environment at Metro. Some of these goals and objectives have been accomplished, but Metro's IT Steering Committee (ITSC), which has been in existence for one year, is now in the process of reviewing the critical elements of Metro's IT strategy in light of Metro's mission. Recent accomplishments of the IT Steering Committee and IMS have included the drafting of a new IMS organizational matrix, retaining a consultant to review the enterprise architecture, creating an IT personnel career matrix to reinforce retention, and a web-based Help Desk to improve customer responsiveness. Further accomplishments are dependent on Council

authorization of IT funds, and the retention of existing skilled staff through consistent training and meaningful responsibilities within a strategic IT environment.

In the following portion of my response, I have restated your specific recommendations with my response:

1. **Agree on the strategic role of IT in accomplishing Metro's mission. Preliminary steps include defining IT's role in accomplishing Metro's mission, its critical success factors and related key strategies.**

Agreement with Recommendation: I agree that IT has a critical role in accomplishing Metro's mission.

Proposed Action Plan: I will ask the ITSC to review its "Strategic Futures Plan" to further define the role of IT in accomplishing Metro's primary missions. I will also ask the team to suggest critical success factors that will help to identify some of the key trade-off's that must be considered when allocating scarce resources across Metro programs and services. I will also ask my Chief Operating Officer (COO) to stay involved in this review process. The COO will review the ITSC recommendations and make immediate adjustments where necessary.

Proposed Timetable: I will ask the ITSC to complete their initial review and additional work by July 1, 2000.

2. **Enhance the effectiveness of the IT group. Some ways to work toward this goal include:**
   - **Encouraging and enabling Metro's IT leadership to reorient its focus to include development of strategic capabilities including a process of evaluating and introducing emerging technologies applicable to Metro.**
   - **Considering reconstitution of the senior IT manager as a Chief Information Officer (CIO) reporting directly to Metro's Chief Operating Officer and Executive Officer.**
   - **Developing well-balanced standards of performance for the IT function.**

Agreement with Recommendation: I agree with this recommendation. The ITSC has engaged a consultant to evaluate the enterprise architecture that will also include an assessment of emerging technologies and performance standards within Metro's heterogeneous IT environment. Some of these standards already exist, such as the hardware and software standards for desktop computing. The ITSC has also recommended that the central IT function report directly to the COO.

Proposed Action Plan: I will move forward quickly to implement the reporting relationships and staff realignments that have been recommended by the ITSC. I will ask that the ITSC to work closely with the COO on the issue of emerging technologies. I will also direct that the new IMS

group and the ITSC develop and implement a series of standards for IT performance that can be measured through surveys or analysis of performance. This will help the IT functions of the agency provide the best customer service possible in our constrained financial condition. Implementation of some of this work will be contingent upon available funding.

Proposed Timetable: Complete by September 1, 2000.

3. Maximize the benefits of existing and future IT investment by providing adequate end-user training and support.

Agreement with Recommendation: I appreciate and agree with this recommendation. However, our current constrained financial resources are forcing the entire agency to review its training and development priorities. IT is clearly an area that we must keep adequate funding for training and development. I intend to identify and address this deficiency in my proposed budget. This will allow a open and straight-forward discussion of this need as how it ranks with the other priorities of the Council and agency. Funding of this need will, of course, be dependent upon approval in the adopted budget for 2000/2001.

Proposed Action Plan: My proposed budget will include IT training resources and be clearly identified for discussion.

Proposed Timetable: July 1, 2000 contingent upon budget approval.

4. Take aggressive steps to simplify processes and standardize IT resources, including specifying and documenting standards for the IT environment as a whole, as well as all aspects of the information systems. On-going communication of policies and standards across the organization and performance compliance reviews are important follow-up measures.

Agreement with Recommendation: I agree with this recommendation.

Proposed Action Plan: I have asked to COO to work with the ITSC to simplify any processes, agency communications, and performance standards. I have also directed that the IMS document our existing standards and develop any further needed standards to help simplify and improve the delivery of services and hardware/software. ASD has recently enacted a new standardized purchase process for new desk-top hardware and software which is an example of how we can centralize IT decision-making but still have the local (or departmental) delivery of the actual products. Moving quickly and aggressively on your recommendations #2 will also more clearly define the roles and responsibilities of various IT professional staff throughout Metro.

Proposed Timetable: These efforts are ongoing and will continue to be an iterative effort.

5. Develop a comprehensive IT risk management strategy, including physical security, logical security, data integrity, system and component failure, and technical or market obsolescence.

Agreement with Recommendation: I agree with this recommendation.

Proposed Action Plan: Metro has comprehensive security measures in place. I will propose that Metro dedicate additional resources to this area and that we realign some of the responsibilities as the agency implements your Recommendation #2. Any new resources, of course, are subject to Council approval.

Proposed Timetable: Contingent upon budget approval, complete initial plan by December 31, 2000. This is also an on-going and iterative process.

General Observations about the Benchmark and Opportunities Report.

You and your audit team have focused upon an area of Metro's operations that is critical to our overall mission. You clearly recognized this fact in your audit. IT is continually changing and evolving. The effective life of certain technologies is now measured in months rather than years. As noted above, The IT structure and the utilization of the ITSC in key decisions facing the agency has been increased greatly in the last few months. This document will assist the ITSC in carrying out its information technology oversight responsibilities in a rapidly changing environment.

Metro Auditor
Report Evaluation Form

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Your feedback helps us do a better job. If you would please take a few minutes to fill out the following information for us, it will help us assess and improve our work.

Name of Audit Report: _____

Please rate the following elements of this report by checking the appropriate box.

	Too Little	Just Right	Too Much
Background Information	❑	❑	❑
Details	❑	❑	❑
Length of Report	❑	❑	❑
Clarity of Writing	❑	❑	❑
Potential Impact	❑	❑	❑

Suggestions for our report format:_____
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Suggestions for future studies:_____
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Other comments, ideas, thoughts:_____
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Thanks for taking the time to help us.

Fax: 503.797.1831
Mail: Metro Auditor, 600 NE Grand Avenue, Portland, OR 97232-2736
Call: Alexis Dow, CPA, Metro Auditor, 503.797.1891
Email: dowa@metro.dst.or.us