

Information Audit and Environmental Scanning
for Information Managers (INFM 732)
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**Critical Analysis of the Technology Strategy at the
University of Maryland**

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Executive Summary

The Division of Information Technology (a.k.a. DIT) at the University of Maryland – College Park manages and monitors all networking and computer equipment for the University of Maryland – College Park campus. DIT also issues and enforces network usage policies, computer use policies, and provides server resources. In addition, they are a strong and secured academic resource provider (ELMS, ARES, SIS, Testudo, etc.) used by students, faculty, and staff across the campus. DIT strives to provide the University of Maryland with the state-of-the-art-and-beyond IT resources to enhance the University's standard of excellence in education and research.

Due to this extensive mission of the DIT to provide high-quality technical resources to the university community, they are not able to provide the necessary innovative technologies because of a number of factors. The greatest factor being just the vast size of the university as a whole. Other factors include federal and state privacy and security regulations, shifts in organizational focus, rate of new technical developments, organizational structure both in DIT and the greater university, and the opinions/experience of internal personnel. The combination of these factors greatly limits the innovation within the services provided by DIT, and thus prevents the necessary action on written values, goals, and vision of DIT.

Therefore, a few recommendations are offered to reduce or eliminate several of these problems. The most critical recommendation is to be more proactive in understanding the awareness level of DIT's customers. This will enable DIT to better understand the effectiveness of its efforts; thus, providing more accurate data in order to ensure a continued focus on technology by the

university. Another recommendation is a shift to a more team-oriented organizational structure within DIT, which will also provide the necessary collaboration to improve the rate of incorporation of new technologies and increase the security of the network. In addition, this would provide for faster and more accurate information transfer and retention within DIT.

Ultimately, DIT believes that they are an IT leader, but in fact they are not very innovative as compared to other organizations, even including some departments within the greater university that have chosen not to utilize DIT services. However, DIT is like a coin with two sides - positives and negatives - and as such needs to be more active in scanning the environment to improve the innovation of university technology. Additionally, even though DIT has an extensive auditing process, it is neglecting to audit its own internal information flow. This information will provide invaluable data as to why things are not going as desired.

1. Introduction

DIT works with different service organizations on campus to provide IT services to enhance student experience and serve as motivation for student's advancements, improvements, and innovation to build tomorrow's leaders, which will be integral to their achievement. In addition, DIT provides readily available technology that supports a range of academic practices, from the traditional classrooms to blended and flipped classrooms, by collaborating with UMD faculty to utilize IT in the classroom. DIT also provides cyber infrastructure to the UMD research community. This enables the researcher to easily access high-performance computing resources.

Other general and administrative services DIT provides include, but are not limited to: email, wired and wireless network access, on- and off-campus computer connections, high-performance computing, web services for course registration and financial aid information, and web services for payroll and other administrative functions. Additionally, the division manages the Terrapin Technology Store and discount programs for computers, software, and cellular phone services and equipment. “The Division of IT is leading the way in providing the University of Maryland with state-of-the-art-and-beyond IT resources to enhance the university's standard of excellence in education and research” (About - Division of Information Technology, 2013).

2. Objectives

The purpose of this project is to get an overview of how environmental scanning and information auditing is conducted within a large organization. Therefore, this project focuses on the environmental scanning and information auditing practices of DIT related to operational and security networking technologies.

2.1. Environmental Scanning Issues

- Why the network refresh project is not utilizing the latest networking technologies
- Lack of utilization of the latest software as soon as it is released

2.2. Information Auditing Issues

- Lack of action on written policies
- Inconsistency between written vision and actual practices

3. Methodology

We conducted a 1-hour, personal interview with Gerry Sneeringer, the Director of IT Security, at DIT. This interview focused on the internal auditing practices and the utilization of external information within DIT. In addition, we also conducted an analysis of publicly available information from the DIT website. More interviews were requested to obtain more data, but these requests remained unanswered. However, even given this deficit of operational data, the collected data and combined professional expertise of the project team allowed for an overview picture of the environmental scanning and information audit practices of DIT.

4. Summary of Findings

Though DIT strongly abides by their core values (About - Division of Information Technology, 2013) summarized below, they do fall short in executing many functions at the communications and management level.

- Committed to the strategic vision and the strategic IT planning process.
- Committed to the implementation of the recommendations and action items in that plan.
- Working in collaboration with the university community.
- Dedicated to building a holistic IT environment across the campus, working together with all who support the use of IT.
- Committed to open, transparent, communications in our interactions, not only with our colleagues across campus, but also with our fellow DIT employees.
- Graciously and thoughtfully accept critique from others, and contend professionally to reach the best possible decisions, and then once these decisions are discussed, vetted, and finalized, we will embrace them as a team.

- Committed to the hallmark of a highly successful organization residing in the respect, collegiality, and care we have for each other in our professional interactions.

This lack of execution on the written core values not only tarnishes the image and reputation of DIT, but it also causes some university departments to look for other options to fulfill their technological needs. Additionally, DIT does not actively monitor and control their organizational critical success factors. This greatly hinders their ability to effectively understand what they are missing.

Also, the lack of SWOT analysis in the organization as a whole is keeping them aloof of major factors like weaknesses, threats and opportunities, which if taken care off, can prove to be very beneficial for the progress of the department. Therefore, a SWOT analysis was conducted on DIT (shown below), which helped in exposing many issues within the organization as a whole. It also helped us identify its internal strengths and weaknesses, as well as its external opportunities and threats.

Strengths	Weaknesses
➤ Large customer / consumer base. ➤ Builds custom software for better control. ➤ Extensive audit process. ➤ Provides a wide range of services within the university.	➤ Lack of critical resource management. ➤ Not utilizing the latest software / hardware. ➤ Irregular SWOT analysis process. ➤ Lack of awareness among university community, particularly undergraduate students. ➤ Lack of funding/grant control

Opportunities	Threats
➤ Better promotion of DIT services. ➤ Expand scope of business outside the university perimeter. ➤ New technological developments.	➤ Other technical service providers. ➤ Economic instability. ➤ New and continuing data and system security challenges. ➤ Changes to university leadership.

5. Major Issues

There were a number of issues found in both areas, environmental scanning and information auditing, that need to be addressed; however, we will only focus on a few of these issues as each issue described below encompasses several other issues.

5.1. Change Management Process

This is a slow process due to the mindset of 'if it ain't broke don't fix it', or as stated by Gerry, "we use a lifecycle mindset". This mentality is one that limits the utilization of new technologies for various reasons such as financial limitations, political restrictions/policies, and the opinions/experience of the DIT staff. This is partly attributed to the fact the DIT is a very hierarchically structured organization (see Organizational Structure of the Division of Information Technology in Appendix) that is also part of the larger hierarchical structure of the University of Maryland, which is explained in more detail in the next section. This structure greatly increases the time to approve and implement changes. In addition, it can also be attributed to the laws, policies, and regulations that the State Government enforces on the university, which needs to

be strictly abided by all the divisions within the university. These enforce further limitations on various factors as mentioned above.

According to the DIT, if there is any change in the organization, all members of the university are informed. This is due to an assumption by the DIT that their communications are being received and read by the university community. While in reality, not many people know about the changes being done (see DIT Information Survey in Appendix). This lack of 'communication connection' between the community and DIT is also the cause of several complaints about the quality of services offered by DIT.

5.2. Hierarchical Structure

Due to the bureaucratic nature of the public university system in Maryland, there is a great deal of political power struggle in addition to having to follow federal and state regulations and policies. Because of this structure, decisions are made at the highest levels both inside DIT, such as the Director of IT, and at the university level, such as the university president and the provost. In addition, changes to the university leadership, such as a new university president, also changes the direction and financial support provided to DIT. This increases the time required to make a decision and act on that decision.

5.3. Privacy and Security

University of Maryland is renowned as a research university due to the availability of vast research related resources. These resources are limited to external researchers due to security

issues or strict controls in place. These resources are a valuable source of knowledge which can be helpful in various important researches. Resources like the High-Performance Computing Cluster (HPCC) is a campus resource housed and maintained by DIT. The cluster is available for production use by campus researchers and includes services such as Research Data Center and Storage. With the involvement of the outside community, the other possible issue will be the security of personnel data. Controls are in place and access to these are therefore limited to some extent, and this restricts the effective utilization of these resources.

6. Recommendations

In order to correct or reduce the issues described above, a number of recommendations are outlined below. These recommendations are targeted towards particular attributes of the issue described in the previous section, but can also provide the means to increase both productivity and innovation within DIT.

6.1. Change Management Process

If there is a change in DIT, and they believe the university community knows about the change, they should conduct surveys to determine the actual percentage of the university community that is aware of the change. Based on the survey results, they can take steps to further promote the change. For example, when the DIT sends an e-mail to the university community, many do not read them. However, if they mark the e-mails as important and make the subject heading more appealing or relevant, more people would be more likely to read them.

Another aspect of change management that is critical to the success of DIT, is the utilization of innovative technologies. As stated in DIT's core values, they strive to provide "state-of-the-art-and-beyond IT resources" (About - Division of Information Technology, 2013). However, as evidenced in the Network Refresh Project currently underway, DIT is implementing sub-standard technologies. These technologies are not leading-edge, but are actually behind the current standards. This not only means a reduction in the effectiveness of those resources, but also increases security risks to university data. This was also validated in the interview with Gerry when he stated that they do not want to utilize the leading-edge technologies due to security vulnerabilities possible. However, this is in direct contradiction to DIT's written mission. Therefore, it is strongly recommended that DIT rethink this duality in its internal philosophy before continuing to move on.

6.2. Hierarchical Structure

A solution to the organizational structure is to have a flatter organization where DIT would more team-oriented and have one manager for each team. Each manger would directly contact the head of DIT and get the decision immediately. Moreover, having a flatter organization can save a great deal of time and possibly reduce the cost for hiring and training more employees. In addition to this, a flat organization supervises employees less while encouraging their involvement in the decision making process; thus, increasing innovation within DIT and the services they provide.

6.3. Privacy and Security

Incorporating a special team to test and validate new standards-based technologies, especially in network infrastructure and software, to provide more "innovative and leading-edge computing services", will not only improve the quality of service provided by DIT, it will also improve the security of the university network and resources. The utilizing of standards-based technologies, will provide a more secure and maintainable infrastructure than the current custom setup. Though this will limit the customizability of the software, it will greatly improve the effectiveness and maintainability of the services, as well as reduce the dependence on particular personnel that may take their knowledge and leave.

Another benefit to utilization of standard-based technology is a vast network of other technology professionals that may have solutions to problems faced by DIT personnel. This will greatly reduce the time required to solve problems. Additionally, DIT personnel can network with these other professionals in order to innovate and improve current standard technologies to expand the technical frontier.

7. Conclusion

Though DIT believes that they are an IT leader, they are like a coin with two sides - positives and negatives. Through our research and interview with DIT, as well as our professional experience dealing with DIT services, we have found many flaws in the organization. The recommendations provided must be addressed with careful consideration. Though DIT is doing well so far, not many students/faculty are aware about the different services available to them by the DIT, however, a

majority of them are quick to point out the shortcomings of the provided services. In addition, DIT makes many assumptions, but when flaws in their assumptions are brought to their attention they do not address them or even acknowledge the flaw.

Furthermore, they need to upgrade to the new standards which can be more relevant to maturity. For them to function well, DIT has to conduct a thorough environmental scan on their consumers such as the students, faculty, and researchers as well as on the latest technology available that can be used by the UMD community. Moreover, an information audit related to the information flow within DIT is recommended as it takes time for them to get a decision due to their organizational structure. Combining the benefits of all these recommendations will provide more improvements than just trying to patch all the problems, and will improve the image of DIT as a leading-edge technological organization.

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Appendix

Project Proposal

Project Title

Critical Analysis of the Technology Strategy at the University of Maryland

Organization Overview

The Division of Information Technology (a.k.a. DIT) at the University of Maryland – College Park manages and monitors all networking and computer equipment for the University of Maryland – College Park campus. DIT also issues and enforces network usage policies, computer use policies, and provides server resources. In addition, they are a strong and secured academic resource provider (ELMS, ARES, SIS, Testudo, etc.) used by students, faculty, and staff across the campus. DIT strives to provide the University of Maryland with the state-of-the-art-and-beyond IT resources to enhance the University's standard of excellence in education and research.

Project Rationale

This project is to better understand the decision-making process of acquiring and managing technology within the setting of a large research university. This includes understanding why certain technologies are used, and why others are discarded or not implemented. This project will also provide an understanding of how internal and external factors impact this decision-making process. These factors can include federal regulations, interdepartmental policies, security issues, vendor selection, new technological growth, etc.

Beneficiaries

The University community as a whole – students, staff, faculty, researchers as well as others – will benefit from this project because the project will provide insightful information to the DIT to better improve their high-quality services provided. Additionally, this project will also provide insight into another perspective of technology management and execution.

Project Methodology

Our project will focus on both the aspects discussed in the course – Information Audit and Environmental Scanning. We are planning to conduct an environmental scan of the external factors affecting the DIT as a whole, and then focusing on a smaller sub-group within DIT in order to understand the information audit process and challenges involved. Based on the information we acquire through our various data collection methodologies (interviews, literature review, etc.), we also plan to state probable solutions to their challenges as well as other related findings.

Questions for Interview with Gerry

Environmental Scanning: (External)

- Could you please define what DIT is/does?
(goals, products and services offered, and what defines organizational success, etc.)
- How's the organization structured in terms of the flow of information from external sources to internal use? (Integration of external information for internal use)
- What kind of external environmental factors affect the decisions of DIT?
- Recently DIT got into a partnership with Microsoft (and Adobe), thus enabling free software downloads for students. With reference to this, how do you select your partners? Are there any specific selection criteria?
- What trends (new tech) do you believe can be incorporated into the DIT department?
- How do you go about marketing your business / products? Which is the most successful form of marketing?
- Are there departments on campus that do not utilize the services of DIT, and why? (level of service utilization) Are there procedures/process being discussed to better collaborate with these departments?

Information Audit: (Internal)

- Can you describe the internal information flow? (what kind/type of information is collected, how it is managed, who is involved, and how is it maintained)
- What are your organization's critical resource requirements, how do you identify these resources, and is there a defined process for backup/retrieval of this information?
- What type of confidential information is handled, how is its confidentiality preserved, and what external (or internal) factors dictate the use/storage of this information?
- Do you conduct occasional / annual information audit? If yes, how do you initiate the process, who is involved, and what methods are utilized?
- How do you identify your most critical (and least critical) information sources?
- Do you have a quick reaction team which can help the unit during crisis? (Including collection of information from non-routine sources)
- How is information change managed? (including use of new sources, methods, tools, etc.)

Additional Questions:

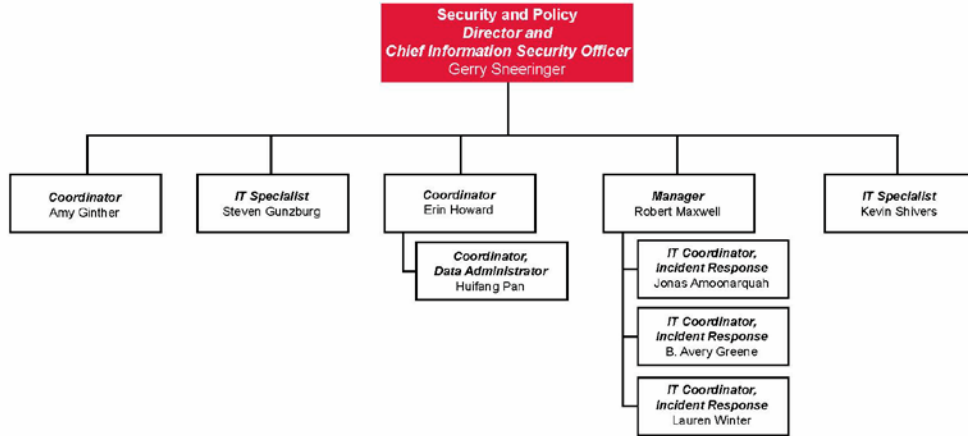
- Are the guideline and principles fixed / permanent for the functions of the DIT? Are there any possibilities for changes? If yes, what is the process (internal / university)?
- Has DIT conducted a SWOT? How often?
- How is DIT structured? (Hint: Horizontal units and Vertical units or say the departments?)
- What are the means of communication you use to spread information in the organization? Which method do you think is the best of all and why?
- Who all are involved in the decision-making process at DIT? Is there a process of checks and balances in the operation of DIT? How does the control system in DIT function? Does it involve an individual or a group of people?





Security and Policy

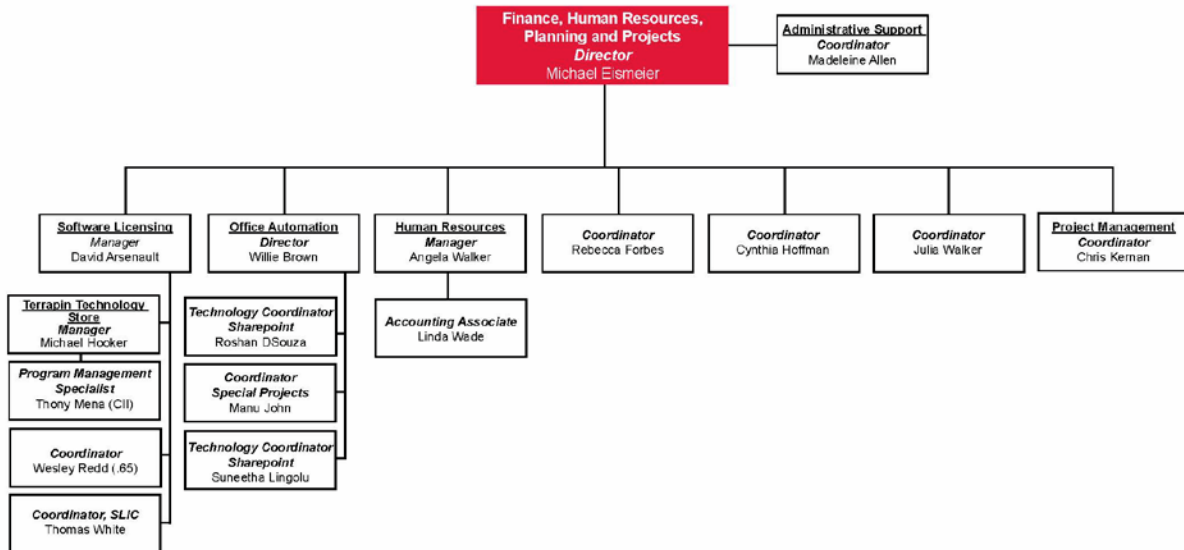
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February 07, 2013

Finance and Human Resources

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November 6, 2013

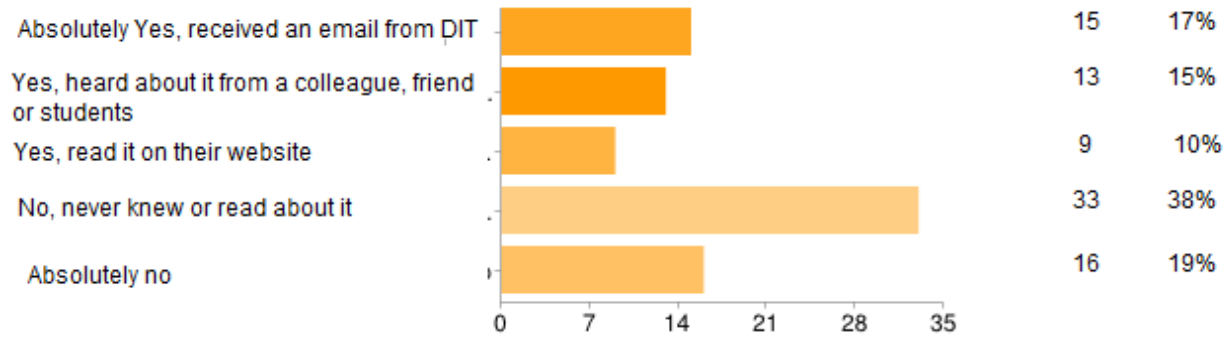
Communications and Marketing



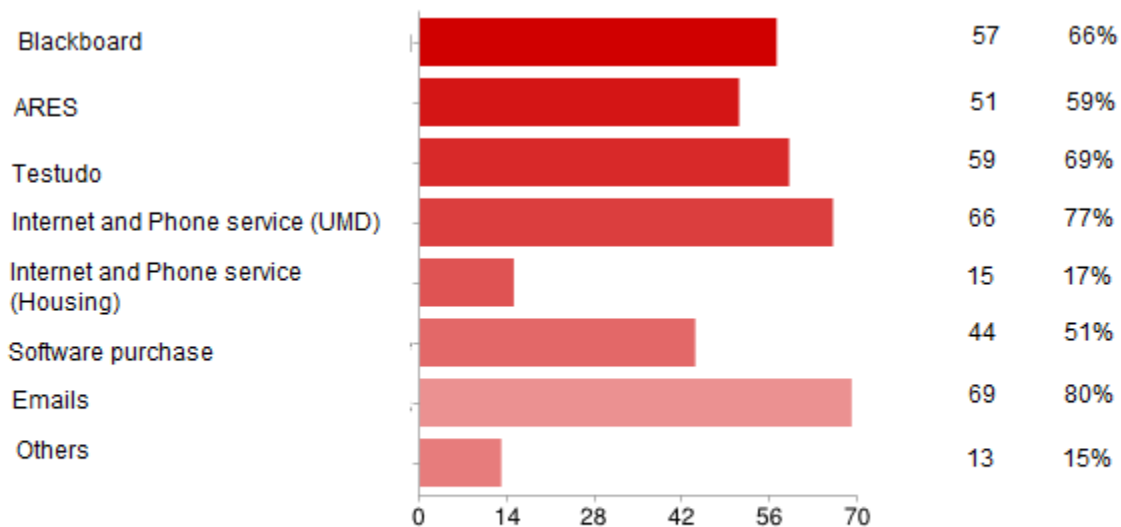
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DIT Information Survey

On February 22, 2012, Office of Information Technology (OIT) officially changed their name to the Division of Information Technology(DIT). Were you aware or informed about this change?

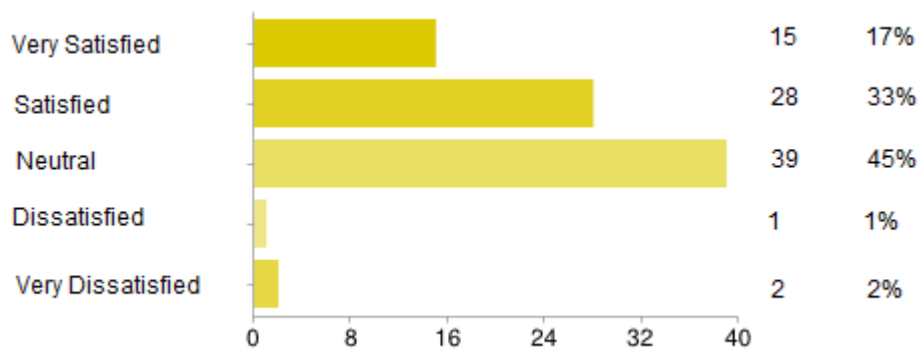


From the below list of services offered by DIT, which are the services you use.



People may select more than one checkbox, so percentages may add up to more than 100%.

How satisfied are you with the content of information (listed on the DIT website) related to various services and troubleshooting issues.



What do you think about the new Strategic Development plan developed by DIT

