Reengineering in a University Setting

by

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ABSTRACT

In November of 1993, MIT decided to undertake a reengineering effort to help solve its budget problems. Many private sector firms had used reengineering in the late 1980's and 1990's to achieve dramatic cost savings and business process improvements. Reengineering then became popular among universities looking for similar improvements in the early to middle 1990's. Unlike other universities that attempted to reengineering one or only a few of their business processes at a time, MIT chose to reengineer many business processes across the Institute at one time. The initial goal of this effort was to reduce the annual operating budget by $40 million, most of which would be achieved through the reduction of anywhere from 400-600 jobs.

The purpose of my thesis is to present a case study of MIT's reengineering effort to date to highlight some lessons that can be learned from MIT's experience. Although it is not yet finished, MIT's reengineering effort has not achieved the results it initially hoped for. There have been some successful outcomes, but there have also been many challenges and obstacles, some foreseen and some unforeseen. Many people at all levels of MIT have complained that reengineering has been a painful process, making MIT a more stressful workplace and even making some administrative processes worse. At the same time, many people agree that MIT has many administrative problems which need to be fixed and reengineering is a good attempt to improve MIT's business processes.

My goal is to present a qualitative analysis of reengineering to highlight what has been done well and what has been done poorly. It is my hope that if another similar organization wishes to use reengineering to solve similar problems, they might be able to learn valuable lessons from MIT's experience.

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Mom and Dad, thank you for your love and support. This thesis and my successful completion of an MIT education are a reflection of the hard work you have done over the years to educate me. You are both graduating with me in my heart and in my soul.

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Finally, to all my friends, thank you for making these past 5 years the best of my life.

Contents

Methodology

In conducting my research, I collected data in three ways.

1. Interviews - I formally interviewed over 30 faculty, students, and staff at MIT. I mostly interviewed people heavily involved in reengineering as well as a few people not involved in but affected by reengineering.

2. Reading relevant documents - I read many documents containing information about various reengineering initiatives at different points in time. Most of these documents were created by various reengineering teams for the purpose of either reporting their findings and recommendations to others at MIT or keeping track of information internally for their Team. I also read articles written about MIT's reengineering effort in *The Tech, Tech Talk,* and *The Boston Globe.*

3. Observations from my direct involvement - I have been working on Student Services Reengineering since the summer of 1995. I have been a member of 4 different Student Services Reengineering teams and have attended many meetings related to various reengineering projects. I have kept a journal of key observations and comments I have heard.

My research and analysis has been purely qualitative and has been limited by two key factors. The first limiting factor is that not much, if any, conclusive quantitative data exists about the reengineering effort. Reengineering staff have not yet determined the overall costs and savings of the effort since it is not finished. Also, reengineering staff have not been able to determine the costs and savings yet within many of the reengineering projects for several reasons. Determining costs and savings has been difficult because few concrete estimates of pre-reengineering costs of services exist, it is hard to separate resources spent for reengineering from resources normally spent by departments on improving services, and many expected savings of reengineering investments have not yet been fully realized. My findings have been influenced by this lack of conclusive quantitative data. I have not been able to quantitatively show that reengineering has or has not achieved what it set out to do.

The second limiting factor is that I did not have the time and resources to interview a good cross-section of the MIT community not involved in reengineering to gather their input and opinions. I mostly interviewed people who worked on reengineering at all levels of the effort to gain a thorough understanding of what, how, and why reengineering was done. I formulated most of my findings about the views of people not involved in but affected by reengineering by reconstructing data I captured in my journal. Therefore, my research and analysis is limited by the fact that I did not collect data as rigorously from people not involved in reengineering as I did from people involved in reengineering.

However, to minimize this potential bias, I triangulated data from all three of my sources, whenever possible, to extrapolate the most accurate information.

Chapter 1. Background Information on MIT's Problems

To begin to understand why MIT decided to undertake a reengineering effort, it is first important to understand MIT's organizational history and development. MIT was founded in 1865 as a "polytechnic school of the useful arts." Dedicated to educating and training scientists and engineers, it became one of the most respected technical institutions in the country by the 1920's and 1930's. It truly became one of the elite technical institutions in the world around the time of World War II. In order to advance the research and development of military related technologies, the federal government pumped millions of dollars into research at MIT. This research support continued after World War II as the need for defense related research continued throughout the Cold War. However, as the Cold War began winding down in the late 1980's and the pressure on the federal government to scale back its budget increased, the amount of research dollars from public agencies including the DOD, DOE, NASA, and NIH began to decline.

At the same time, other financial pressures were hurting MIT's position. One was the increasingly high cost of tuition and MIT's commitment to a "need-blind" admissions process. Although MIT's cost of tuition has been rising steadily the past few years at about the same rate as inflation, it has not increased as much of the actual cost of an MIT education. MIT would like to be able to raise its tuition to cover the actual cost of education but is constrained by market forces. MIT is already very expensive compared to many of its competitor schools. Since there is a growing public concern about the rising costs of higher education and many of MIT's competitors have tried to keep tuition growth low, MIT has feared raising its tuition significantly. In addition to this, since MIT is committed to admitting students solely on their merit and not their ability to pay, MIT has committed itself to providing the financial aid needed by anyone who is admitted which has placed further demands on the budget.

Another recent financial pressure has been the change in indirect cost recovery for research. In the past, the federal government had always allowed MIT to charge for all the administrative functions that support research. However, the federal government has recently changed this recovery rate so that MIT can recover less costs of supporting research. Thus, this source of revenue has decreased.

Because of the many changing financial pressures on MIT, the Institute had an operating budget deficit of $4 million per year between 1975-1988. However, as these pressures increased, the budget deficit increased to a yearly average of $12 million between 1989-1993.[1]

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[1] *Tech Talk*, June 29, 1994.

In 1992, the budget problem was worsening so MIT's President commissioned four senior-level task forces to look at MIT's financial situation. Three of these task forces looked at ways in which expenses could be reduced and one looked at ways in which revenue could be increased. From these task forces, projects like changing the mail system, consolidating publishing services, and creating a new fee system for parking were initiated. However, these ideas did not appear to be enough to solve the budget problem. Most of the other task force recommendations were put into reports that sat on shelves and accomplished little.

In looking at other ways to improve its financial situation, MIT's senior administration realized that there were likely to be opportunities for saving money by improving all of MIT's administrative services to make them more efficient. Most of MIT's current administrative systems and processes were developed in the 1950's and 1960's to support the heavy amount of research that was being sponsored by the federal government.[2] Since there was such a great urgency to undertake research quickly and there were not many government restrictions on what research money could be used for, MIT did not give much thought to creating the most efficient administrative systems to support research. MIT just wanted to be able to support as much research as possible. Not only were many of MIT's administrative systems developed without much thought given to creating the greatest opportunity for efficiency, many of these systems were developed in a very decentralized way across campus. Most labs and departments developed their own systems and procedures based on their own needs. This caused large redundancies and inefficiencies across the entire MIT system.

Many of these systems were never dramatically improved so they no longer met today's needs. For instance, although the level of research and other support from the federal government decreased, the rules and regulations associated with the usage of research and other money have increased. This has caused MIT's administrative systems to become even more complex as they continually change in order to meet new external demands.

Finally in 1993, MIT decided that a comprehensive reengineering effort would be the method by which they would solve the financial problems of the Institute. MIT hoped that by simplifying these administrative services, they would be able to save money directly from less work being done and ultimately use fewer workers thus allowing for even more savings. They decided that reengineering would be the methodology used to achieve these goals.

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[2] *Tech Talk*, September 21, 1994.

What is unique about MIT that causes these problems to arise

There are three unique aspects to MIT which allow these types of budget and operating problems to arise. The first is that in carrying out their research, every faculty member runs what amounts to the equivalent of his own business. Each faculty member has unique administrative support needs for conducting his research. To allow faculty to perform research as best they can, they are given a lot of autonomy. Thus, it is easy for inefficient business processes to arise in an organization that is trying to support the unique needs of over 100 small "businesses."

The second unique aspect is that although the faculty are the governors of MIT, most of them are not involved in the day-to-day management of MIT. MIT is managed, for the most part, by administrators who are not faculty. Although most faculty and administrators are at MIT for the same reasons - to advance the educational mission of MIT - they often do not have the same view of MIT's problems and how they should be solved. For instance, faculty are more focused on the successful operation of their laboratory or department while administrators are more focused on the successful operation of their office. This can create non-cooperative working relationships when resources are tight and can lead to people developing systems in their own best interest which may not be in the best interest of MIT overall.

The third unique aspect is that although MIT has a yearly operating budget deficit, it has a very large endowment and receives many gifts each year which allow it to cover this yearly financial gap. Because of this, some people do not think it is necessary to do something like reengineering to cut costs. These people believe that as long as there is enough money coming in to cover costs then everything is fine.[3]

Reasons why MIT undertook reengineering

Different people have given many explanations for why MIT undertook reengineering. Although these reasons are very similar and related to each other, people involved in reengineering at all levels have not articulated one clear agreed upon reason for undertaking reengineering. As I will show later, the lack of a clear, mutually agreed upon reason for reengineering has hindered the successful execution of reengineering.

The first public reason that was given for why MIT undertook reengineering was to eliminate the budget deficit through eliminating hundreds of jobs by the end of Fiscal Year 1997.[4] At a town meeting in November of 1993, President Vest declared that MIT needed

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[3] Interview with Steering Committee Member, April 29, 1997.
[4] *Tech Talk*, November 22, 1993.

to reduce expenses by about $40 million per year, which would likely include the elimination of about 400 jobs. He stated that undertaking reengineering would help accomplish these cost and job reduction goals.[5]

A second reason given for why MIT undertook reengineering was to improve the inefficiencies and redundancies that currently exist in many business processes across the Institute. This reason supports the idea that new technology and management practices had created opportunities for MIT to become more efficient and that MIT was finally taking advantage of these opportunities. Because of MIT's decentralized and entrepreneurial culture, many inefficient business processes had developed over time. Now, people finally recognized an opportunity to improve the efficiency of these administrative processes. While this second reason is closely related to the first reason in that by simplifying business processes one can often achieve cost and job reductions, there are some differences. For example, in order to achieve a more efficient process one might have to invest more resources into technology to support the new process. This investment in technology might cost more than the efficiency gains achieved because the "pay-back" period (the time it takes for efficiency gains to outweigh the costs) might be too long.

A third reason given for why MIT undertook reengineering was to improve the effectiveness of services. Many administrative services do not provide their customers with the highest quality of service possible and some people have hoped that reengineering will improve the effectiveness of services. Again, it is sometimes possible to improve the effectiveness of a service while also reducing its cost and making it more efficient. However, improving the effectiveness of the service to the customer may not permit making the service less costly and more efficient. Therefore, it is possible for these three goals to conflict.

Finally, a fourth reason given for why MIT undertook reengineering is that change is episodic and this change happened to be called reengineering.[6] Some administrators believe that changes in market forces or improved technologies cause major changes at MIT every few years. Since no major administrative changes had occurred in many years to respond to new market forces and new technologies, change was overdue. When MIT was finally ready to undertake major changes, the most popular change methodology being used by other organizations to solve similar problems was reengineering. Therefore, MIT's senior administration chose to jump on the reengineering bandwagon. While proponents of this reason for undertaking reengineering believe that reengineering is something that is good for MIT, they do not believe that the concept and methodology of reengineering is

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[5] *Tech Talk*, December 1, 1993.
[6] Interview with faculty member, April 23, 1997.

drastically different from previous change efforts. They believe that every change effort hopes to make improvements through using improved technology and reorganizing. This effort happened to be called reengineering because it was the key buzzword at the time.

What other solutions were considered, why was reengineering chosen

Before choosing reengineering as the way to solve MIT's budget problems, MIT considered some other options. One option considered was Total Quality Management (TQM). TQM had been applied at MIT and achieved some marginal success. However, the senior administration believed that the way in which they had carried out TQM had not created the desired improvements. TQM had helped MIT achieve "incremental enhancements in departmental processes," but the senior administration believed that some of MIT's administrative processes needed more than just incremental change. To produce substantial improvements and savings, they believed that these processes needed to be totally redesigned as if they were being created for the first time.[7]

Another solution that was briefly considered was just freezing or cutting the budget and/or downsizing across the board. These ideas were not new because they had been used a few times over the past 20 years at MIT. In the early 1980's MIT had undertaken a budget cutting effort and eliminated around 400 jobs.[8] However, since the cutbacks forced remaining people to work harder to perform all the work that still existed, many departments, labs, and offices found ways to hire new people. Thus, there was no sustained long-term decrease in the number of employees on campus. In fact, the number of administrative personnel increased after budget cuts and freezes.[9] Budget cuts were undertaken again in the early 1990's and again they did not appear to have a long-term impact.

MIT's senior administration believed that budget cuts and downsizing were not good options to solve the budget problem since they had not proven effective in the past. Instead, they believed that what was needed was a dramatic change in the way work gets done to reduce the amount of work done by staff. This would allow for downsizing to occur in a long-term sustainable way. MIT's senior administration chose reengineering as the methodology to achieve the desired reduction of administrative work. Reengineering had been effective at reducing costs and improving processes that cut across offices and organizational barriers in some private sector firms like Hallmark Cards, Taco Bell, and

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[7] *Tech Talk*, March 30, 1994.
[8] *Tech Talk*, November 22, 1993.
[9] *The MIT Faculty Newsletter*, May/June 1995.

Bell Atlantic.[10] Since many of MIT's problems with administrative processes resembled those found in private sector firms, MIT believed it could benefit from undertaking the same approach that helped many private sector firms.

Why was reengineering never done before at MIT

Many ideas that were carried forward by reengineering were not new to MIT. Ideas like consolidating student financial and academic services and acquiring and implementing a new financial reporting system had been talked about and proposed for many years without significant action. In fact, projects like improving the mail system and changing the way physical plant does its work had already begun before reengineering was launched and then officially became reengineering projects once reengineering was proclaimed to be the way all administrative changes and improvements would be made.

So why was reengineering never done before at MIT? The best answer I have been able to identify is that reengineering was finally undertaken because the timing was right. The budget problem was getting dramatically worse just as reengineering was the hot, new business improvement fad getting lots of publicity for helping organizations solve similar problems. Although MIT had been suffering budget deficits for many years, these deficits had only been rising moderately each year so there had been no real sense of alarm and urgency to change. However, in 1992, some of MIT's senior administrators predicted that the annual budget deficit could grow from $12 million to $60 million in the next few years.[11] This prediction inspired the senior administration to take action.

At the same time, reengineering was becoming very popular as a way for firms to make dramatic budget and quality of service improvements. Dr. Michael Hammer, an MIT graduate and former professor and generally recognized as the "high priest" of reengineering, wrote the seminal article on reengineering in 1990. In 1993, Dr. Hammer teamed with James Champy, also an MIT graduate, a member of the MIT Corporation, and the chairman of a leading management consulting firm specializing in reengineering, to write *Reengineering the Corporation - A Manifesto for Business Revolution* which became a best-selling book all over the world.

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[10] Michael Hammer and James Champy, *Reengineering the Corporation: A Manifesto for Business Revolution* (New York, 1993), v.
[11] Interview with Steering Committee Member, 4/22/97.

Chapter 2. What is Reengineering

The term "Reengineering" was first coined and widely publicized by Dr. Hammer in his 1990 *Harvard Business Review* seminal article "Reengineering Work: Don't Automate, Obliterate." A common problem facing many organizations in the 1980's was that productivity was not improving despite an increase in the use of information technology. Dr. Hammer had worked in the mid-1980's with some other consultants and researchers on a project that studied how computer technology was affecting business strategy.[12] This study showed that companies that achieved increases in productivity did so by not only using more information technology but also by changing the way they organized their business processes. Dr. Hammer then coined the methodology for how to realize these productivity improvements through the use of information technology and the redesign of work processes as "reengineering." Many large management consulting firms like CSC Index, Andersen Consulting, and Gemini Consulting popularized reengineering by offering consulting services to organizations that wanted to undertake reengineering.

The official definition of reengineering given by Dr. Hammer is "the fundamental rethinking and radical redesign of business processes to bring about dramatic improvements in performance."[13] In more plain English, reengineering means redesigning a business process from start to finish in a way that maximizes the efficiency and effectiveness of the process through the use of improved information technology. One of the fundamental concepts implicit in this definition is that you redesign your organization from scratch; you think about how you would do things differently if you were to start over and wanted to have the most efficient and effective business processes in place. In order to do this, you must disregard all old rules and assumptions about how work needs to get done.

What is a business process? Dr. Hammer defines it to be a "group of related tasks that together create value for a customer."[14] Reserving a room for a meeting at MIT, for example, can be thought of as a business process. The customer (student, staff, faculty, or other) is only interested in actually being able to use the room at a certain time, but there are many tasks involved in delivering this outcome. First, the customer has to find out if a room is available at the time they desire, then they have to request to reserve the room, then someone has to input the customer's request into to a computer database to acknowledge that this customer will be the only one who can use the room at that time, and finally

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[12] "Next Big Thing, " *Wall Street Journal*, November 26, 1996, A13.

[13] Michael Hammer and Steven A. Stanton, *The Reengineering Revolution: A Handbook*, (New York, 1995), 3.

[14] Michael Hammer and Steven A. Stanton, *The Reengineering Revolution: A Handbook*, (New York, 1995), 4.

someone has to make sure the room is open and ready for use. All of these tasks make up the business process which delivers the desired outcome to the customer.

Within many current processes there are steps which add value or fail to add value to the customer. For example, in the room reservation process, confirming that only one customer has a room reserved for a certain time is work that adds value to the customer because it helps the customer get his desired outcome of being the only person to use a room at a certain time. Re-typing the customer's request information into the computer after the customer has already filled out this information on paper or in a different computer does not add value to the customer because the task is a duplication of a task that has already been performed once. The goal of reengineering is to eliminate as many non-value-added steps as possible in order to achieve a more efficient and effective business process.

What makes reengineering different from other improvement methodologies

Although there have been many popular business improvement tools and methodologies like TQM and downsizing used at MIT and many other organizations over the recent years, Dr. Hammer and others claim that reengineering is different. Dr. Hammer claims that reengineering is different from TQM in that TQM assumes the current process is sound and looks to undertake continual incremental improvement, whereas reengineering assumes the current process is not sound and looks to radically improve it by replacing it.[15] Furthermore, he says that TQM and reengineering work in tandem doing different things over time. TQM is applied to continually improve the process until the process's usefulness has expired, reengineering is then applied to create the new process, and then TQM and reengineering are applied in an alternating way over time as needed.[16]

Dr. Hammer claims that reengineering is unique in how it focuses on looking at every part of a business process no matter where in the organization it occurs. Reengineering does not aim to improve just the part of a business process done within one office or one department. Instead, the goal of reengineering is to improve an entire business process as it cuts across all offices and departments within an organization. It claims to accomplish this by redesigning the process to be most efficient and effective even if it means radically changing how work gets done in every related office and department.

What Dr. Hammer and other proponents of reengineering claim is the most unique piece of reengineering theory is that reengineering reverses the theories that have guided

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[15] Michael Hammer and Steven A. Stanton, *The Reengineering Revolution: A Handbook*, (New York, 1995), 97.
[16] Michael Hammer, *Beyond Reengineering*, (New York, 1996), 82.

work organization ever since the industrial revolution.[17] Most organizations and their business processes are currently focused on the completion of tasks, a result of the way work was organized during the industrial revolution. Work used to be focused on tasks because one did not have the ability to access and process many different pieces of information that were necessary to delivering the outcome of a process. Improved information technology allows people to have access to almost any information and data they need so people no longer need to focus on just one task within a process. People now have the capability of performing all the tasks needed to complete a process and their work should be organized accordingly.

While some of the jargon associated with reengineering like "radical redesign" is unique, the general concept of improving an entire process by eliminating every step that does not add value to the customer is not unique. The theories behind TQM are very similar to reengineering except for the dramatic effect of the word "radical." TQM theory focuses on shifting power and control from managers to front line workers and equipping these workers with the tools necessary to perform more value-added work, much like reengineering. Also like reengineering, TQM focuses on improving all parts of a process no matter where they occur.

Reengineering is different from downsizing despite what many people claim. Downsizing is reducing an organization's workforce; reengineering is changing the way work gets done within an organization. Although downsizing often occurs after reengineering is done and there is a need for a smaller workforce, reengineering is not downsizing. However, because many organizations including MIT have undergone reengineering for the purpose of downsizing, people have assumed that reengineering and downsizing are synonymous.

One unique concept behind reengineering is that it is the first business improvement methodology which is focused on the new role of information technology.[18] Many similar methodologies in the past have talked about how information technology can help reduce paper or help make transactions faster. However, using information technology to redesign the way work gets done is at the core of what reengineering is about.

What is the difference between undertaking reengineering in higher education and the private sector

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[17] John Micklethwait and Adrian Woolridge, *The Witchdoctors - Making Sense of the Management Gurus* (New York, 1996), 25.
[18] John Micklethwait and Adrian Woolridge, *The Witchdoctors - Making Sense of the Management Gurus* (New York, 1996), 28.

After achieving many dramatic business process improvements in the private sector, many organizations in the public and non-profit sectors began using reengineering as a way to improve their business processes. Most public and non-profit organizations have business processes very similar to those of private sector firms, but there are differences between the private and public and non-profit sectors which necessitate a somewhat different reengineering methodology. In *The Reengineering Revolution*, Dr. Hammer devotes an entire chapter to the unique aspects of reengineering what he calls "mission driven" organizations - universities, government agencies, and other public or non-profit organizations. These are the things he identified as being unique to reengineering mission driven organizations:

- You need to be clear about what the mission is and how you will know if you are doing it better.

- You need to be clear about what you are trying to achieve since there isn't necessarily an agreed upon bottom-line.

- You need to be clear about who are your customers. Only once you know them will you be able to design better business processes that deliver a more effective outcome to them in a more effective way.

- You need to be sensitive to the idealists and those who have different interests and missions within the organization.

In the example of a university like MIT, all these points are valid. However, the most important point not recognized by Dr. Hammer is the issue of decision making and power. In a private sector firm, the CEO can mandate layoffs and organizational changes from the top down; in a university, it is nearly impossible to issue such mandates. Powerful stakeholders like faculty, students, alumni, and others can thwart major changes. When reengineering a university, one needs to be especially sensitive to all stakeholders and seek out their approval for changes to happen. Achieving stakeholder buy-in can be a tedious and time consuming process, but if it is not done changes recommended by reengineering are not likely to be successfully implemented.

How does reengineering address people issues

Reengineering has been widely criticized for its negative effects on people. Reengineering has been blamed for causing serious morale problems and declining work performance as a result of the impact it has had on people, and many organizations claim that they have not been able to achieve their reengineering goals because they did not properly deal with the people issues involved in undertaking major change projects. Dr.

Hammer has publicly acknowledged that the initial theories and methodologies behind reengineering did not properly address people issues. He was recently quoted in a *Wall Street Journal* article as saying "I was reflecting my engineering background and was insufficiently appreciative of the human dimension. I've learned that's critical."[19]

The reengineering literature by Hammer and Champy reflects the fact that people issues were neglected. The focus of their books is mostly on the concept of what reengineering is, why it is important, and what does a reengineered organization look like. However, there is not a lot written about how an organization effectively undertakes reengineering. In fact, between the four books written by Hammer and Champy, there is only one chapter which addresses the people issues associated with undertaking reengineering.

What Hammer and Champy have failed to write about is the most critical factor to the success of reengineering, how do you get an organization and all the people in it to change the way they work. The reengineering literature gives the impression that reengineering takes place by top down orders which force people to work in a new way. People, however, are not like robots; they cannot be forced to change in this way.

Another important concept missing from the reengineering literature is how work-family issues relate to reengineering. The reengineering literature focuses a lot of attention on how jobs in a reengineered organization will be more meaningful. Hammer and Champy argue that since reengineering creates jobs more focused on completing everything related to a process instead of just one task within a process, these new jobs will be more rewarding to the employees. However, Hammer and Champy purely focus on what is most efficient and fail to consider how work-family issues affect people's work performance.

A paper by Prof. Lotte Bailyn of MIT's Sloan School of Management on "The Impact of Corporate Culture on Work-Family Integration" discusses the importance of considering work-family needs when undertaking reengineering. Prof. Bailyn argues that for a reengineering effort to be most successful in creating the optimal work process, work-family issues need to be taken into account in the redesign of work processes and jobs. She says that new jobs should not be structured solely around the needs of the organization. New jobs should also be structured around the needs of the individual outside the organization. If a new job does not take into account the individual's needs outside the organization, like family and other commitments, the individual will not be able to perform as well as expected and the reengineering effort will not have been successful.

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[19] *Wall Street Journal*, November 26, 1996, A1.

Hammer and Champy do not address this idea of integrating work-family needs into new jobs and thus have omitted an important part of what can make reengineering successful. They have also failed to address the work-family needs of the reengineering process. Reengineering can cause lots of stress and additional demands on people which affects both their work and their lives outside of work. If a person's life outside of work suffers from reengineering, he will likely develop negative views toward reengineering. Since reengineering is only as successful as the people who are willing and able to work in the reengineered organization, reengineering will not succeed if people are unhappy about it.

Chapter 3. How Did MIT Carry Out Reengineering

In planning and organizing MIT's reengineering effort, MIT's senior administration did not recognize the need to undertake reengineering differently than it is done in the private sector. In fact, when MIT decided that they needed to hire an outside consultant to help them lead the reengineering effort, they purposely chose a consultant who had mostly worked for private sector firms since they assumed this would help MIT achieve the reengineering successes achieved by private sector firms. To launch reengineering, the Senior Vice President for Operations was appointed the sponsor of the entire reengineering effort, the Vice President for Information Systems was appointed the program manager of the entire effort, and a Reengineering Steering Committee consisting of all of MIT's vice presidents, the executive vice president of the alumni association, and the dean of the School of Engineering was appointed to support the reengineering effort.[20]

The first reengineering activity that was undertaken was a high level analysis of which business processes at MIT offered the greatest opportunity for savings through reengineering. A Core Team of nine fairly high level administrators, most with information technology backgrounds, worked from March - May of 1994 with MIT's consultants on analyzing MIT's business processes. The Core Team was instructed not to look at any academic processes because reengineering was not supposed to touch anything academic. Although the Core Team did gather some input from faculty, students, and others, its work was dominated by administrators.[21]

By April of 1994, the Core Team had identified the following 5 business processes as the most ripe for reengineering based on the criteria of cost, impact on revenue, potential for improvement, significance of changes to MIT's future, and ease of implementation.[22]

1. Student support - all the services provided to students from before they are admitted to MIT and until they graduate.
2. Research acquisition - all the services performed between identification of a research opportunity and receipt of an awarded grant or contract.
3. Laboratory operations - functions that support the operation of a laboratory.
4. Management reporting - the process of providing reports that are necessary to managing a department, laboratory, center, or administrative unit.
5. Buying and paying for supplies - the process of acquiring and paying for research and administrative supplies.

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[20] *Tech Talk*, March 30, 1994.
[21] Interview with Core Team member, April 16, 1997.
[22] *Tech Talk*, April 6, 1994.

After hearing the Core Team's recommendations in May of 1994, the Steering Committee decided on the first 6 reengineering teams that would be assembled to create redesigns of the following business processes: management reporting, supplier consolidation, mail services, facilities operations, information technology, and the appointment process.[23] Later, more reengineering teams were assembled to address the areas of Student Services, Training and Development, and Human Resources.

Why I chose to analyze the Mail and Student Services Reengineering projects

In order to provide an in-depth analysis of the reengineering projects, I focused my research and analysis on the Mail Services Reengineering and Student Services Reengineering projects. I chose to look at these two processes for the following reasons.

1. The Mail Services Reengineering project was one of the initial reengineering projects so some of its recommendations have been implemented and there are some tangible outcomes to analyze. Also, like some other reengineering projects, it began before reengineering and was folded into the reengineering effort. This offered the opportunity to look at the effects of being labeled a "reengineering" project versus just being a change project. Finally, qualitative data was easy to collect since there were a small number of people involved in the reengineering work, it is a fairly simple process to look at, and there has been a lot written and talked about it because of some of its initial successes and failures.

2. The Student Services Reengineering project offered easy data collection because I have been heavily involved in the project for two years. Through my involvement, I have been able to collect a lot of qualitative data through attending many meetings, conducting many interviews, and collecting many documents. The Student Services Reengineering project also offered a unique opportunity to look at what can be learned from other reengineering projects within the same organization because it was the last reengineering project launched. Finally, since the Student Services Reengineering project is generally regarded as being one of the most successful reengineering projects at MIT, I was interested in finding out more about what has caused it to be perceived as successful even before it is finished.

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[23] *Tech Talk*, June 29, 1994.

Chapter 4. The Mail Services Reengineering Project

History of mail services

To best understand the Mail Services Reengineering project, one needs to first understand the recent history of mail services before reengineering started. Prior to reengineering, there were a total of 37 custodial staff responsible for all incoming and outgoing mail services. For incoming mail, mail staff were responsible for picking up mail from the post office, sorting it by building, then sorting it by office within each building, and then delivering it either bundled to an entire office or department or individually to someone's desktop. For outgoing mail, people would stamp mail with postage they bought or by running it through their postage meter, place it in a location to be picked up by mail staff, and then mail staff would deliver the stamped mail to the post office. While many customers viewed this system as being convenient, it did not appear to be the most efficient and cost effective way of handling mail.

When MIT's President commissioned the four task forces to look into the budget problems of the Institute, one of the opportunities for savings discussed by the Academic Council was making changes in the mail system.[24] MIT's senior leadership sensed that there was an opportunity to change the mail operation from the decentralized system that existed to a more efficient and cost effective centralized system. In August of 1993, before reengineering began at MIT, The Senior Vice President formed the Mail Review Committee to review all incoming and outgoing mail processes. The Committee's charter was "to determine how MIT can reduce its overall mail and postage costs; streamline mail operations; provide better service to the community; and take advantage of new technologies to achieve these goals."[25]

The Mail Review Committee, composed of staff from Information Systems, Custodial Services (who handled mail services at the time), the Purchasing Office, and some customers of mail services, worked for approximately 8 months until March of 1994 and made preliminary suggestions of creating a more centralized operation based on the following key findings.

1. MIT was losing money from operating nearly 150 postage meters all across campus. These meters represented a tremendous opportunity cost because the total credit sitting on all of them at any one time could be up to several hundred thousand dollars which was not earning any interest. The meters were also costly because they resulted in non-accurate postageing taking place - in fact, the local postmaster called MIT to ask why people at MIT

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[24] Interview with Steering Committee member, April 24, 1997.
[25] Interview with Steering Committee member, April 24, 1997.

were always overspending so much when sending out mail. Finally, the departmental labor associated with processing the mail and the custodial labor associated with handling it was not organized in the most efficient way.

2. New postal regulations would make it crucial for MIT to move to a more centralized operation both to meet new standards and maximize economies of scale.

3. Junk mail accounted for 50% of incoming mail and the only way to reduce it would be through a centralized mail services process. It was believed that outside mailers would be more likely to stop sending large quantities of junk mail if they had constantly updated mailing lists and received large requests to stop sending junk mail. A centralized process would allow one office to maintain accurate mailing lists and collect all requests to stop receiving junk mail.

4. There was no clearly designated process owner for all mail services. Therefore it was very hard to make any dramatic changes and ensure high quality service across the entire process. It was also hard to respond to market and regulation changes because there was not one person overseeing all mail services.

How Mail Services Reengineering began

By the time the Mail Review Committee was ready to issue its findings, reengineering had begun. Since the findings from the Mail Review Committee "looked and smelled like reengineering" - ideas like creating a process owner and redesigning a process to be more efficient across all organizational boundaries using improved information technology and other technology are common to reengineering projects - a Mail Services Reengineering Team was formed in 1994 as a successor to the Mail Review Committee. The Mail Services Reengineering team consisted of some members from the original Mail Review Committee and others and was sponsored by the Senior Vice President.

Following on the work of the Mail Review Committee, the reengineering team recommended 6 main goals for what a new mail services operation would need:
1. a process owner,
2. the ability to more easily respond to new external regulations and market forces,
3. the ability to take advantage of new equipment which would allow for much more efficient service,
4. the ability to capitalize on volume discounts,
5. the ability to reduce junk mail,
6. one central place to store all mailing addresses for increased efficiency.

In order to achieve these goals, the redesign team recommended that a centralized mail facility with distributed centers be created to replace the old system. The team also

moved quickly to create a new position of Manager for Mail Services and hired someone into this new position. This position was not expected to be an easy one as noted by a professional mail journal. When the job description was posted in *Business Mailers Review*, there were comments which said that the new MIT mail manager needs an "advanced degree in bureaucratic arts...needs to be a turf fighter...MIT is infamous for having over 200 postage meters, with many departments having their own postal and courier centers." Thus, it was clear to others that creating a centralized mail system at MIT would be quite a struggle because of MIT's past organization and culture. They were right.

The Mail Services Reengineering team recommended that the new redesign for incoming and outgoing mail services should work in the following way. A central mail facility would be created to receive and process all incoming and outgoing mail. Six Distributed Mail Centers (DMC's) were to be set up around campus to handle local mail needs. Outgoing mail would be placed in a DMC along with a bar-coded card that carried the office's account number for billing purposes. It would be picked up by mail services staff, taken back to the centralized facility, get scanned for billing purposes, be pre-sorted, get delivered to a vendor who would sort and stamp the mail with mail from other businesses to maximize bulk rate savings, and then MIT would receive a portion of the bulk-rate savings back from the vendor. Incoming mail would be delivered to the centralized facility, get pre-sorted by hand (new equipment and information technology will allow mail to be pre-sorted by machine but this has not yet been implemented), get delivered to the appropriate DMC, be put into mailboxes for each office served by the DMC, and someone from each office would have to go to the DMC to pick up their mail.[26]

While this new process was expected to be more efficient and offer quicker service, the reengineering team also hoped that the redesign of the incoming mail process would create an opportunity to reduce the amount of junk mail that gets delivered to campus. Nearly half of the nine million pieces of incoming mail received each year by MIT are junk. The reengineering team hoped that by making it easy for faculty and staff to designate certain mail as being junk and then being able to group all of this mail together at the central facility and ask all of these mailers to no longer send junk mail to MIT, they could reduce junk mail. Similar incoming mail process redesigns at Yale University and Lincoln Labs allowed junk mail to be reduced by nearly 50%.[27]

In addition to this procedure for reducing external junk mail, it was also hoped that new information technology would help reduce external and internal junk mail. The reengineering team believed that new information technology would allow MIT to maintain

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[26] Interview with Mail Services Reengineering team member, April 2, 1997.
[27] Interview with Mail Services Reengineering team member, March 31, 1997.

more accurate mailing lists and therefore reduce the amount of mail, particularly junk mail, sent to mailing addresses on campus that are no longer valid. The reengineering team also hoped to be able to use new information technology to encourage people to subscribe to and receive more internal publications and documents on-line which would dramatically cut down on the amount of mail, often junk mail, that flows through the interdepartmental mail process.

Challenges in implementing the Mail Services Reengineering recommendations

Although the redesign team created many apparently good recommendations, some of which have been implemented and are claimed to be producing savings, there have been many problems with the implementation of the recommendations. The first obstacle arose when the first change, the new incoming mail process, was implemented. The reengineering team decided that the new incoming mail process needed to be implemented before the new outgoing mail process could be put in place and begin saving money. So, even though the new incoming process would not save much money and was increasing the work of departments by forcing them to all pick up their own mail, it went ahead first. The reengineering team believed that about 6 DMC's would be sufficient for the entire campus but had to eventually create 36 to satisfy all the interests on campus. It took nearly one year to negotiate with people all over campus to get the space needed for all the DMC's and to work with all the effected offices to get the DMC's operating.

Once the new incoming mail process began operating, faculty and staff became extremely upset. One reason for their unhappiness was that they perceived the new incoming mail process as being slower, losing more mail, and being less secure than before. The other reason many were upset was that they stopped receiving desktop delivery of mail and instead had to get their own mail from a DMC.

Since reengineering's initial goals were to reduce costs and improve services, people were upset that what was really going on was that services were becoming worse and money was only being saved centrally by forcing more work on departments. In the October 1995 issue of *The Faculty Newsletter*, a faculty member openly criticized reengineering for doing more harm than good because new mail and other services were dysfunctional. He claimed that former mail staff were efficient in delivering mail to desktops and the new mail system did not really save money because now others wasted more time picking up mail. Also, he claimed that the new mail process caused security concerns because anyone could grab anyone else's mail in a DMC. Before, he claimed, there were no security concerns since the mail was delivered to everyone's desktop by

hand. Finally, he noted that many people were upset that the timeliness of mail delivery had decreased under the new system.

The Mail Services Reengineering team responded to this backlash in several ways. One way they responded was by reexamining the new mail process to make any needed improvements. In November of 1995, the reengineering team publicly announced that the new process was not meeting its timely delivery goals and staffing would be adjusted to make sure all timely delivery goals were met In order to address the security concerns, locked mail boxes were installed within each DMC for each office.[28]

Also in response to the negative community backlash, the Captain of the Mail Services Reengineering team publicly discussed the difficulties of implementing the reengineering recommendations. The Captain said that one community misperception was that everyone received desktop delivery of mail under the old system and now everyone had to get their own mail. The truth was that only 1/10 of MIT used to receive desktop delivery of mail and some entire buildings would receive only a big bundle of unsorted mail. So, although the new incoming mail process added work to some offices, it was reducing the work of departments overall across the Institute. He also said that MIT would not realize full benefits of the Mail Services Reengineering recommendations for about 5 years when all outgoing mail will be centrally processed, electronic communication will be used more, and junk mail will be cut in half. He predicted that the current cost of mail services, $6 million per year, would be cut by $1 million per year due to a "shift in labor from the department level to centralized level" eliminating about 10 out of 40 current positions and due to savings from other improvements. Department labor would be saved when people in departments don't have to process outgoing mail due to the removal of mail meters and the processing of all outgoing mail in a more efficient central facility. This would also allow MIT to take advantage of bulk rates, saving five cents per each of the 25,000 pieces of mail processed daily. And finally, there would be even more savings when junk mail is cut in half and there are less demands placed on the mail system.[29]

The third way the reengineering team responded to the community backlash was by meeting with offices and departments across the Institute to discuss the new mail process. Members of the reengineering team made presentations showing why the mail changes were made and how the Institute would benefit. The reengineering team's goal was to educate people both about the need for changes and how they should properly use the new mail system. However, they did not give people an opportunity to make major design recommendations since the new mail system was already being put in place.

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[28] *Tech Talk*, November 8, 1995.
[29] *The Tech*, November 17, 1995.

In January of 1996, the first cost savings associated with mail services reengineering were announced. The new Manager of Mail Services announced that centralized outgoing mail pilot programs with the Sloan School of Management, the Purchasing Office, and the Registrar's Office saved $2,200 over the summer.[30] This news helped make the case that mail services changes were a good thing for MIT.

On July 1, 1996 more news helped make the case for mail services changes. The U.S. Postal Service announced changes in mail standards and procedures for the first time in 25 years. These changes were an attempt to encourage automation and the maintenance of accurate and updated mailing lists for faster service and lower costs. It was predicted that MIT would need to purchase new software to maintain updated mailing lists as required by the new mail standards and procedures.[31]

The final action taken to address people's concerns about the mail system was the creation of an ad hoc resource group of mail services customers in October of 1996. Since many people were still unhappy about the new mail system, this group of "constructive complainers" was pulled together to address people's concerns and give anyone an opportunity to participate in making more improvements to the new mail system.[32] So far, mail services staff believe the ad hoc group has been a useful way to get input and address people's concerns.

Despite some of the accomplishments of Mail Services Reengineering, there are still many recommendations which have the potential to save a lot of money and have not been implemented. These include negotiating the direct delivery of incoming mail from the Post Office to each DMC, the purchasing of automated equipment and information technology that would allow MIT to better pre-sort incoming mail and fully process outgoing mail without having to send it to a vendor, an effort to reduce junk mail by improving mailing lists and encouraging outside firms to stop sending unwanted mail, and an effort to reduce internal mail through the use of improved information technology. While these are all still valid recommendations, the Mail Services Reengineering team has become too bogged down dealing with the community on the initial implementation efforts that they have not been able to focus on undertaking new implementation efforts.

Analysis of Mail Services Reengineering

The primary question that needs to be answered in evaluating the Mail Services Reengineering project is, "Has Mail Services Reengineering done what it intended to do?"

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[30] *Tech Talk*, January 24, 1996.
[31] *Tech Talk*, July 24, 1996.
[32] *Tech Talk*, October 2, 1996.

The answer to this question is "yes and no." Mail Services Reengineering's goals were to improve the efficiency and effectiveness of mail services while saving MIT about $1 million. Some goals of Mail Services Reengineering have been realized like saving some money centrally, reducing work needed by departments and offices to process outgoing mail, and more timely processing of incoming, outgoing, and interdepartmental mail. However, there have been many negative outcomes as well. These negative outcomes include a longer than expected implementation process, unrealized potential benefits and cost savings of new information technology and other improvements that have not yet been implemented, increased work on some departments and offices that no longer receive desktop delivery of mail, people so unhappy with the new mail system that they are circumventing it by processing their own outgoing mail, and people so unhappy about Mail Services Reengineering that they have hindered the progress of other reengineering projects.

Mail Services Reengineering, like other reengineering projects at MIT, had good intentions of finding ways to save money and make services more effective through reducing administrative inefficiencies, simplifying work, and using improved information technology. However, the Mail Services Reengineering team has faced many difficulties in implementing its recommendations, mostly due to a poorly managed change process. Although undertaking any organizational change effort can be complex and difficult, many of the Mail Services Reengineering project's difficulties could have been minimized or avoided. One key weakness of the Mail Services Reengineering team was that they did not follow principles of organizational change and alternative dispute resolution in their work. A better understanding and use of these principles in the change process could have helped the Mail Services Reengineering project's recommendations succeed and minimized the negative effects of the mail services changes.

Members of the Mail Services Reengineering team have said that the biggest factor which was an obstacle in implementing their recommendations and led to many negative outcomes of their project was their inability to issue mandates to force people to change. While mandates are one way to make a decision, the Mail Services Reengineering case shows that mandates are not always the most effective way to make a decision, particularly in MIT's organizational culture where power is very decentralized. The reengineering team basically tried to mandate that everyone use a new mail system and then had to back-off some of their implementation plans when they received heavy backlash from the community.

Based on what is known about organizational change and alternative dispute resolution, it is not surprising that the Mail Services Reengineering team encountered so

many problems and their project had so many negative outcomes. The reengineering team made many mistakes in the process of managing change and negotiating disputes. Their biggest mistake was that they wanted to be able to mandate change and approached the change effort with this mentality. They could have had much greater success with the project if, instead of trying to mandate change, they had negotiated change with all stakeholders by using alternative dispute resolution methods and principles. These methods and principles would have been helpful in the design of the reengineering process to minimize the chances of community backlash and would have been helpful in crafting proper responses to community backlash. The following are three key mistakes made and recommendations for what could have been done differently to improve the success of the project given what is known about organizational change and alternative dispute resolution.

1. Key stakeholders need to be involved in the decision making process from the beginning.

Faculty, students, and staff were not involved in any major reengineering decision making processes from the beginning and this was a mistake. Although some of these stakeholders provided information to the Core Team, none of these stakeholders were given an opportunity to participate in the Core Team's decision to recommend what should get reengineered. The reengineering leadership addressed this issue by saying that since reengineering's goals were to improve administrative processes and reengineering was not going to touch academic processes, it was not crucial for non-administrators to have much participation in the initial reengineering work.

The Mail Services Reengineering team also did not involve all stakeholders in their decision making process from the beginning. Although some stakeholders of mail services were on the reengineering team and the team gathered input from many stakeholders, the team did not invite all stakeholders to have meaningful participation in making a decision about the new mail system from the beginning. Omitting key stakeholders from the decision making process from the beginning caused problems when the first outcome of Mail Services Reengineering did not meet the stakeholders' expectations of reengineering.

Members of the MIT community were originally told that the purpose of reengineering was to save costs through simplifying administrative processes. However, stakeholders complained that the new incoming mail process was a clear example of how an administrative process had become more complex and more costly to them without showing any signs of saving money. The reengineering team responded to these valid complaints by saying that the new incoming mail process needed to be implemented before the new outgoing mail process could be implemented and save money centrally. The

reengineering team also said that the new incoming mail process was needed in order to be able to eventually reduce the amount of junk mail received at MIT and save more money centrally.

While the reengineering team believed that their actions and their responses were appropriate, they failed to recognize that a major cause of the conflict was that stakeholders were not included in the general reengineering and Mail Services Reengineering decision making processes. Stakeholders that were left out of the decision making process did not fully understand why reengineering was needed in general and why the changes in the incoming mail process were needed in particular, especially since the new incoming mail process was worse for them. Since the change in the incoming mail process was forced upon them without their involvement in the decision, stakeholders were backed into a position of arguing against the new system without being given an opportunity to understand what some of the future benefits might be.

A recommendation for how this problem could have been avoided is that faculty, students, and staff should have been invited to participate more closely in the reengineering effort from the beginning. These stakeholders should have been included in the decision making processes which led to the idea to undertake reengineering, the recommendations of the Core Team, and the recommendations of the Mail Services Reengineering team. If they had been more closely involved from the beginning, they would have better understood all the needs for changes, been able to offer input into all decisions, and likely better accepted all the changes. While it is easy to say that more stakeholders should have been involved in reengineering decision making processes from the beginning, the challenge is finding a way to actually make this possible - which leads to my next recommendation.

2. The process should have allowed for and encouraged all stakeholders to participate in a meaningful way.

The general reengineering effort and the Mail Services Reengineering team should have created a decision making process that allowed all stakeholders to be involved in a meaningful way. Some faculty, students, and staff were asked to participate in various aspects of reengineering but many were unable to because of the intense demands of the reengineering work. Most reengineering teams worked nearly full-time on reengineering while still having to do most of their routine work from their home offices. Since it is not realistic to expect that faculty, students, and most staff members have the time and energy to participate in reengineering the way it was structured at MIT, reengineering should have been structured differently to allow all stakeholders to participate from the beginning in a meaningful way.

The reengineering leadership made two major mistakes which kept all stakeholders from having the opportunity to participate in reengineering decisions in a meaningful way. The first mistake was that the reengineering leadership tried to get more stakeholders, especially faculty, involved in reengineering but failed to create the sense of urgency needed to encourage these stakeholders to get involved. The reengineering leadership gave many faculty, students, and staff the impression that they did not need to get involved in the reengineering effort because it was only focusing on administrative processes. They reinforced this impression by populating the Core Team with fairly high-level administrators. The reengineering leadership failed to properly let all stakeholders know that the outcomes of reengineering would greatly affect them and did not do enough to encourage them to get involved.

The second major mistake which kept many stakeholders from participating in reengineering decisions in a meaningful way was the demands asked of people who participated in reengineering. Most reengineering teams asked people to either fully contribute to the project or not at all. Since faculty, students, and most staff do not have the time and energy required to participate in reengineering, they were left out of the reengineering decision making processes.

Although it is hard to find ways to involve faculty, students, and staff in work like reengineering since they are already very busy, there should have been better attempts to involve them. One recommendation for how this could have been done is by creating advisory groups populated by all interested stakeholders for all the reengineering projects and one advisory group for the entire reengineering effort. Advisory groups could have met a few times a month to give stakeholders a chance to participate in the decision making processes without having to spend all the time asked to serve on a reengineering team. The advisory groups could have been structured to meet the time constraints of different stakeholders and could have been an opportunity for stakeholders to receive information they needed to be able to have meaningful participation in the decision making processes.

3. The reengineering process should have offered an opportunity for all stakeholders to explore mutually beneficial options.

While it would have been ideal if the Mail Services Reengineering team could have mandated that everyone change the way they use mail services, this is not very realistic. One cannot force people to change how they work. People change when they are given an opportunity to take advantage of a better option or when they want to avoid a worse option. While people working on Mail Services Reengineering believed that they were presenting

the MIT community with a better option for mail services, the community did not understand or believe this. Not surprisingly, they resisted the changes.

The mail team made a mistake by only presenting stakeholders one option for change and mandating that stakeholders had to accept it. They also erred by not giving people the choice to choose this option over the old system. The public was upset that the decision making process to create a new mail system did not properly solicit their input and approval.

Instead of solving the dispute over the new mail system by mandating change, the reengineering team could have benefited from negotiating change with stakeholders. The team should have addressed the concerns and interests of all stakeholders by trying to find ways of creating value for all stakeholders through negotiating tradeoffs. This could have been accomplished in the following way.

The reengineering team could have held conversations with key stakeholders to first help them understand the need for changing the mail system. Then, the team and stakeholders could have jointly explored all possible opportunities for a new mail system that would satisfy everyone's needs. Finally, a consensual decision could have been made by allowing all stakeholders to make tradeoffs of what they would and would not accept as part of a new system. For example, the Mail Services Reengineering team might have been able to create fewer DMC's if they agreed to continue desktop delivery.

An alternative dispute resolution process such as this could have had many benefits. One potential benefit is that stakeholders might have become educated enough about the weaknesses of the old mail system and the opportunities for improvements through a new system that they would not have resisted the new system. Another potential benefit is that the process could have created better solutions for a new mail system. Stakeholders could have had an opportunity to explore many options for a new mail system instead of being forced into a position of arguing either for or against the new system once it was already created without their input and approval. At the very least, an alternative dispute resolution process could have helped stakeholders feel more comfortable with changes if they knew they had a chance to give their input, they were comfortable with the fact that their input had been considered in a meaningful way, and they believed there was no better solution.

Because the reengineering team did not use an alternative dispute resolution process, they later had to make many presentations to angry offices about why the new mail system was created and convince people to change. Members of the reengineering team have acknowledged that most people were willing to buy-in to and often support the new mail system once the team spent time helping them understand why the new system is better than the old system. However, the reengineering team has not had the time and

energy to give this personal attention to everyone. Instead of meeting with stakeholders to address all their concerns after implementation had occurred, the reengineering team would have been more successful if they had spent time meeting with stakeholders to negotiate changes before implementing them.

While many of my recommendations might have been ideal ways to improve the general reengineering and Mail Services Reengineering processes, the benefits of my recommendations must be judged against the extra costs associated with their execution. Since reengineering can be a painful process, dragging it out through excessive alternative dispute resolution can cause excessive costs, complacency, decline in morale, and other problems. Also, an alternative dispute resolution process at MIT that tries to bring all stakeholders together at once would be next to impossible since there are hundreds of different stakeholders with different schedules and needs. However, I believe that my recommendations could have improved the reengineering process as long as they were implemented in a way that was balanced with the other needs and constraints of the reengineering process and MIT's culture.

Chapter 5. The Student Services Reengineering Project

History of student services

MIT's student services developed in a rather ad hoc manner over time. Most of the systems, procedures, and organizational designs that exist today were created in the 1950's and 1960's.[33] Prior to reengineering, different student services offices reported to the Senior Vice President for Operations, the Vice President for Administration, the Vice President for Financial Operations, the Dean of the Graduate School, and the Dean for Undergraduate Education and Student Affairs. There was not always strong cooperation between student services offices because of these different reporting lines, and some offices even competed with others in the delivery of similar services. These relationships made it hard to make changes to an entire process that involved more than one office. Thus, it was hard to get the most out of new information technology. Whoever owned the information technology did not always want to fully share it with other offices. When it came to developing new information technology, the "owning office" often gave precedence to its own priorities above those of other offices.[34]

One example of how related student services offices have not worked most efficiently together can be found by looking at the work done by the Student Financial Aid, Registrar's and Bursar's offices. Students and others have complained for years about the difficulties taking care of business that involves these three offices. For example, consider the time consuming process by which students get advance payments on their financial aid award in order to be able to pay room and board and other expenses. First, a student has to meet with a Student Financial Aid officer in the Student Financial Aid Office to request an advance payment on his financial aid award. Next, the student is given a written confirmation of this payment by the officer and told to go to the Bursar's office. After walking about 10 minutes to get to the Bursar's office, the student then meets with a counselor in the Bursar's office to receive a verification that he can receive the money. The student takes this verification upstairs in the same building (about a 2 minute walk) to the payroll office. Finally, he turns in this paper for a check. Overall, this process takes at least 20 minutes just to walk to and from all the offices involved, as well as waiting time at each office. There are also at least 3 paper forms processed and data entry work that gets duplicated. And, the three offices are only open from 9-5 so students sometimes had to skip classes to take care of their financial transactions.

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[33] Interview with Student Services Reengineering team member, April 17, 1997.
[34] Interview with Core Team member, April 26, 1997.

Although there were formal proposals as early as 1982 to reorganize the three offices in order to consolidate and improve many of their services, these proposals were not well received for various reasons.[35] Some were turned down because people in operations did not trust that people in the Dean's office would be able to effectively manage operational processes. Similarly, the Dean's office was unwilling to relinquish control of some services to operations offices for fear that the services would become driven by the bottom line and not their educational mission. Also, people had strong political agendas so they didn't want to cooperate/consolidate for fear of losing power.

Core Team recommendations for Student Services Reengineering

The first major initiative to bring student services more closely together and create more efficient and effective student services processes was initiated by reengineering. After reviewing all administrative services, the Core Team identified student services - particularly services involved in admitting, awarding financial aid, registering and tracking academic records, and billing students - as one of five key areas of MIT that should get reengineered. Reasons for reengineering student services were that many of these processes were paper driven and could be put on-line, there were many steps in these processes which took place in more than one office so there could be more efficient ways of reorganizing the processes, and student satisfaction with some of these services was low. The initial goal was to save around $5 million annually through creating new reengineered student services and reducing headcount in some offices by up to 30%.

The Core Team's initial vision for improved student services was the following. They believed that most student inquiries and academic and financial transactions could be handled directly on-line. They also believed that one central office could be created where some members of the Student Financial Aid, Bursar's, and Registrar's offices could work cross-functionally to take care of most students' complicated needs. The other members of the offices would stay back in their home offices to take care of other work needed to support the new student services processes.[36] Although this model would not dramatically change the organization, it would at least allow students to get improved services.

How did Student Services Reengineering get started

The Core Team recommended that Student Services Reengineering should be one of the first reengineering teams launched, but the Steering Committee decided to wait to launch Student Services Reengineering for several reasons. One reason for waiting was

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[35] Interview with MIT staff, May 1, 1997.
[36] Interview with Core Team member, April 25, 1997.

that the Steering Committee anticipated that the Student Services Reengineering project would be very complicated. They wanted other less complex reengineering efforts to go forward first to create community buy-in to change and to be able to learn from their mistakes. A second reason for waiting was that there were many vacant leadership positions in key student services areas when the Core Team released its report. The Steering Committee wanted to wait until these positions were filled to have appropriate people in place to help lead the project. Finally, the Steering Committee decided to wait to launch Student Services Reengineering until MITSIS (the MIT Student Information System) was fully developed. The Steering Committee did not want to disrupt the MITSIS development since it would likely play a major role in supporting new reengineered processes and it was needed to replace the old operating system which was no longer supported.

When they were finally ready to start, the Steering Committee decided that Student Services Reengineering would be sponsored by the Vice President for Administration, to whom many student services including the Registrar's, Bursar's, and Student Financial Aid offices reported, and that it should be led by a faculty member for political reasons. Undergraduate and graduate students were hired in the spring of 1995 to serve on the project to ensure student input and also for political reasons. An internal consultant who was an expert on reengineering was identified to serve as the project manager.

Over the summer of 1995, a planning team consisting of the faculty captain, the consultant, a fairly senior administrator from the Senior Vice President's Office, and the two students, worked on creating the project plan for how Student Services Reengineering would move forward. The planning team decided that 2 initial teams needed to be created. A Redesign Team (R Team) would redesign the processes recommended by the Core Team, and an Assessment Team (A Team) would assess all other student services for future reengineering opportunities. Once the new Dean for Undergraduate Education and Student Affairs was named in the summer of 1995, she was appointed as a co-sponsor of the Student Services Reengineering project, and the project began moving forward

The initial goals of the Student Services Reengineering project were given by the Core Team and the Steering Committee. These goals were to reduce costs (mostly through reductions in staff), improve the efficiency of the processes, and improve their effectiveness. In addition to these goals, members of the planning team also discussed that one of the goals of the Student Services Reengineering project should be to enhance the educational mission of MIT through improved student services. The hope was that by making the services more efficient, they would also become more effective and deliver better service to the customer. For instance, if a student and an advisor could have access

to the student's academic record on-line, then the advisor could look at the student's academic information at any time and do a better job of advising the student.

The planning team created a project plan for the work that needed to be done by the Redesign and Assessment Teams as well as some guidelines for whom they wanted on the teams. They populated the teams with people from student services and other offices after interviewing them. The goal was to bring together a mix of people with different backgrounds and personalities who could look objectively at all issues involved in reengineering student services. Once the team members were chosen, they kicked off in October of 1995 with a week of training on the fundamentals of reengineering at MIT.

How Student Services Reengineering teams did their work

The original model for how a reengineering team would operate was set up by the Core Team and the first reengineering teams. These teams did a lot of work behind closed doors. Some teams were located in the top floor of a building which was locked, and one team even sound-proofed their team room so that no one could hear what they were discussing. All of these initial teams were viewed as being very secretive which created a lot of community distrust and unhappiness with reengineering. To avoid the distrust and unhappiness, Student Services Reengineering decided not to operate in this way. Instead, they decided to work more openly and collaboratively with the community.

Since both of the teams were given broad goals, they spent some initial time clarifying their goals and ultimately changed some of the original goals set for Student Services Reengineering. For instance, the R Team decided to not pursue reengineering admissions, other than the part of the Admissions Office's work which transfers information about incoming freshmen to other offices. The A Team, meanwhile, decided they would evaluate processes for further reengineering not only based on the opportunity to save money and reduce headcount but, more importantly, based on what in the greatest need of being improved.

Both teams worked nearly full-time throughout the fall and winter communicating with the community to collect information and data and to build momentum and buy-in for change. They created many reports to explain what they were doing, what data they had found, and what ideas they had for how services could be reengineered. Although their community involvement work was strong overall, both teams acknowledged that the one weakness was how they involved the directors of offices in the work of the teams. The directors were specifically not asked to serve on the teams for fear of letting their political agendas and their power dominate the teams' work. This had the unfortunate consequence of creating an us versus them attitude between Student Services Reengineering and the

directors of the offices that were being reengineered. While this was not ideal, any other approach may have suffered the same problem.

Initial Student Services Reengineering recommendations

The R Team announced its recommendations in February of 1996. Their recommendations for redesigning academic and financial transaction processes were modeled after the banking industry's "pyramid" service model. This goal of this model is to create an environment in which the biggest percentage of a customer's needs (i.e., the base of the service pyramid) can be taken care of by the customer himself without any human help from service staff. This is typically accomplished through on-line transactions - e.g., using an ATM. The R Team identified about 80% of current student transactions could be done by students themselves with an improved on-line system. The R Team identified another 10-15% of transactions (the second level up on the banking pyramid) that could be provided through one-stop shopping by cross-trained generalists - like banking tellers - with access to new information technology that would allow them to complete many different transactions. Finally, the R Team recommended that the remaining 5-10% of customer needs (the tip of the banking pyramid) which take the most expertise and time to handle could be completed by specialists - like bank loan officers.

To provide this new structure of services, the R Team recommended the following new systems and organization. They recommended that a Student Services Center (SSC) be created where cross-trained staff would sit at the front to either handle quick one-stop shopping requests or perform a triage to determine which specialist the student should talk to. Behind the SSC, all the staff from the Registrar's, Bursar's, and Student Financial Aid offices should be co-located and organized in a new way to support new collaboration and more efficient process flow among the three offices. The R Team recommended that the capabilities of MITSIS be enhanced to put more processes on-line and eliminate a lot of paper used in the old processes. To provide students the ability to take care of more of their needs on-line, the R Team also recommended that the On-Line Student Information System (OLSIS) be enhanced and a Web version be developed (WEBSIS).

The A Team announced their recommendations shortly after the R Team. The A Team had originally identified 11 student service areas for further analysis, and then decided that 7 of these should be reengineered. Out of these 7, 3 were identified for immediate redesign: processes that support co-curricular (CCR) life - i.e., student activities, processes that support housing and residential life (HARL), and processes that support career assistance (CAR). While the original goal of reengineering overall and Student Services Reengineering was to save the Institute money, the only project of the

seven that announced any hopes of saving money was HARL. In fact, although CCR, CAR and others did announce that they would be able to simplify work processes to save some time for staff, most of the savings would be in student time. In addition, it was believed that to achieve these time savings, there would not be any cost savings.

What happened after the initial Student Services Reengineering teams

Once the R Team completed its work in the spring of 1996 and presented its recommendations to the Steering Committee and the community for approval, they went forward on implementing the recommendations. At this point, the directors and all members of Registrar's, Bursar's, and Student Financial Aid offices were brought into the change process more closely. FAST (Financial and Academic Services Transition) was launched to implement the recommendations of the R Team, and the FAST leadership team consisted of the leaders of the R Team along with the directors of the three offices. The leaders of Student Services Reengineering decided that the best way to actually make the changes happen was to involve everyone from the offices in the changes. The leaders realized that creating a new reengineered organization would not do any good if the staff in the new organization were not prepared to work in a new way. Thus, the leadership wanted everyone to be able to understand the need for all the changes, buy-in to the changes, and ultimately take ownership over the changes and their roles in the changes so that they would be prepared to work in the new organization.

One way in which they accomplished this ownership was by involving more members of the home offices on reengineering teams. The initial R Team had only one member from each of the Student Financial Aid, Bursar's, and Registrar's offices. However, FAST created several implementation teams which were populated with many members of the three offices.

Another key way in which Student Services Reengineering achieved buy-in was by holding a "Learning and Design Forum." The Learning Forum was an opportunity for all the members of the three offices to come together and learn about all the work that each of the offices does. This gave them a better understanding of how each office functions and ultimately how they are all interrelated. The Design Forum was an opportunity for all members of the three offices to be able to create the new processes and organization of the future. Although the R Team had come up with some initial process redesigns, the Design Forum allowed for a more detailed development of the redesigns as well as the development of a model of the new organization that would support these processes. Finally, an organizational consultant was hired to help FAST come up with an organizational design and human resources policy to support this organization.

The first outcomes of FAST were an improved MITSIS and OLSIS, and a pilot run of the SSC. MITSIS allowed staff in all the offices to do more of their work and share more information on-line, and OLSIS allowed students to look up a lot more of their of their academic and financial information and complete basic transactions, like changing their addresses, on-line. This reduced the number of students that needed to go to the individual offices to request this information. The SSC pilot was an attempt to create one-stop shopping for students with respect to their financial and academic services needs.

The final part of FAST implementation still being worked on is the new organization that will be created. The goal is to have an organization which co-locates the Registrar's, Bursar's, and Student Financial Aid offices more closely and is connected to the SSC both physically and functionally. This will efficiently support all student financial and academic services needs in one place.

Based on the recommendations of the Assessment Team, the Co-Curricular Redesign (CCR) team was launched during the summer of 1996 to redesign 5 identified processes that support student activities - scheduling space, planning and holding events, managing student group accounts, receiving resources for activities and events, and creating new student groups. Also during the summer of 1996, the Housing and Residential Life (HARL) team worked on creating a set of recommendations that would integrate the processes that support housing and residential life currently owned by two different offices. Both the CCR and HARL teams presented their recommendations to the community and the Reengineering Steering Committee in the fall of 1996 and are now working on implementing their ideas.

The final redesign team launched was the Career Assistance Redesign (CAR) team. This team was given the charge of recommending how to improve all the processes that lend career assistance to students across MIT. The CAR Team presented its recommendations in January of 1997 and is now working on implementing the recommendations.

Where is Student Services Reengineering today

One interesting aspect of Student Services Reengineering is how its leadership changed throughout the project. Student Services Reengineering was originally sponsored by the Vice President for Administration and the Dean for Undergraduate Education and Student Affairs, and reported to the Reengineering Steering Committee. However, this leadership changed over time. In the spring of 1996, while FAST was just getting under way and plans were being made to launch the CCR and HARL redesign teams, tragedy

struck MIT's senior administration as the Vice President for Administration died from a terminal illness.

This was an emotional blow to the offices being reengineered because they reported to him, but it was also an organizational blow because it left these offices without a supervisor. Shortly after the Vice President's death, senior administrators started talking with the offices formerly under the Vice President and other student services administrators about the need to reorganize the reporting relationships to accommodate these offices. Also, recommendations from both the Redesign and Assessment Teams made it clear that one thing which hindered various student services from working effectively and efficiently with each other was the many lines along which different student services reported.

MIT's President finally addressed these concerns when he announced a reorganization of all student services in October of 1996. This reorganization eliminated the position of Vice President for Administration and put all student services under the Dean for Undergraduate Education and Student Affairs. By having all of these offices report to one person, it would be easier to get all the offices to work better together and carry out the reengineering changes more smoothly.

In February of 1997, MIT's senior administration decided that the Student Services Reengineering projects going on throughout the Dean's office would no longer be directly managed by the Steering Committee. A leadership group was formed within the Dean's office to oversee the management of all Student Services Reengineering projects as well as other change initiatives going on within the Dean's office. Student Services Reengineering still has a strong connection to the Reengineering Steering Committee but it is being directly managed by the Dean's office.

There were two goals for this leadership move. The first goal was to no longer have seemingly external forces imposing change on the Dean's office. The new leadership group hoped to implement the change work more easily by being able to manage the change within the Dean's office and involve all the members of the office in the change work. The other goal was to allow the change work to happen more quickly by involving more people from the Dean's office. After hearing many concerns of staff members that reengineering was causing anxiety and stress, the leadership of the Dean's office decided that the anxiety and stress would occur whether the change process is fast or slow. So why not make the process fast to shorten the duration of the pains? The Dean's office changed the reengineering leadership and approach because they learned from other reengineering projects that imposing change upon an organization was not an effective way of making change happen. Instead, directly involving all stakeholders in the change was seen as a better way to successfully implement changes.

What were some outcomes of Student Services Reengineering

There have been some positive and negative outcomes from the Student Services Reengineering work. I will first discuss the negative outcomes. One negative outcome of the reengineering process was that many people have complained of being stressed by either working on Student Services Reengineering projects, working harder in their home offices to cover for those working on Student Services Reengineering projects, or anticipating the changes suggested by Student Services Reengineering teams. Another negative outcome is that morale has declined. Some people involved in or affected by Student Services Reengineering have been saying that they have never seen morale so low and that MIT's culture has changed from being open and friendly to being cold and isolated.

Despite these negative outcomes, there have been some positive outcomes as well. Some people that have worked on reengineering projects have said that they were liberated by the opportunity to think creatively, to solve problems, and to be able to change things that had frustrated them for many years. Many of them were tired of their old jobs which didn't challenge them or offer them opportunities to take much responsibility and ownership over many important decisions. The reengineering work gave them opportunities to do what many called more "meaningful work." At the same time, it opened their ideas to how rewarding and fulfilling work can be in the new world where processes are simplified so they do not have to do mundane, repetitive, and inefficient tasks.

One tangible outcome of Student Services Reengineering which has been very well received by many people is the new on-line process for completing RA and TA appointments. This new process has greatly reduced the paper and the work in completing this process by all stakeholders, it has increased the amount of information available to all stakeholders in the process, and it has made it possible for the process to be completed much more quickly than before. It is interesting to note that this project was started before reengineering started so it was not a typical reengineering project. However, all people involved in this project agree that it would have taken much longer to complete if it had not become a reengineering project. By becoming a reengineering project, it was able to get the resources and authority to bring the many stakeholders together to work on creating and implementing a new redesigned process.

Another successful tangible outcome of Student Services Reengineering is the initial pilot of the SSC. The SSC pilot has received a high level of praise from students. Many students have commented about how happy they are that they can take care of so many

things quickly and easily in one convenient location. Many students have also been using OLSIS and students are getting very excited about being able to pre-register for classes this spring on the Web.

How Student Services Reengineering learned from others

Because Student Services Reengineering was the last reengineering project launched at MIT, it was fortunate to be able to learn from other reengineering efforts. The leaders of reengineering took full advantage of this opportunity. Many people believe that Student Services Reengineering has been successful at working closely with all stakeholders to avoid obstacles to change because it learned well from other reengineering projects at MIT and other organizations. The first step in learning from other reengineers came during the teams' first week together. During this kickoff week, part of the teams' training involved listening to people from MIT and outside MIT who had been involved in reengineering projects talk about the "do's and don'ts" of reengineering. These reengineering veterans were able to give the student services teams valuable lessons learned from their experiences.

MIT's overall reengineering program also created opportunities for reengineering teams to learn from each other. Each Friday, captains of all the reengineering teams gather to talk about lessons they have learned and how these lessons could be helpful to others. They also are able to coordinate work to most efficiently use resources. From what the Captains of Student Services Reengineering learned at these meetings, they created more opportunities for team members to learn from other teams. For instance, the leaders of the Physical Plant reengineering effort were invited to share the lessons they learned with various members of the Student Services Reengineering effort.

When the new teams - FAST, CCR, HARL, CAR - were formed after the initial teams, the leaders of Student Services Reengineering made a strong effort to learn from past teams. Members of different teams met to share lessons learned and coached new teams on the "do's and don'ts" of reengineering at MIT. Also, one member of the Assessment Team was on the CCR Team, and two members of the Assessment Team were on the CAR Team.

Why were student services good or bad candidates for reengineering

Based on the facts that most student services had not been reorganized for many years and that improved information technology offered new possibilities to improve the quality and efficiency of services, there was a tremendous opportunity for these services to become more efficient. To become more efficient, processes needed to be redesigned with

improved information technology and supported by reorganized offices. Reorganization alone was not seen as a way to achieve the goals of Student Services Reengineering. Instead, reorganizing was seen as a way to allow the full benefits of new information technology and process redesigns to take place.

However, beyond the Registrar's, Bursar's, and Student Financial Aid offices, other student services do not appear to have been as good candidates for reengineering. CCR, for example, recommended some process redesigns to make these processes more efficient and effective. It is likely, though, that the amount of money that will be spent to create these new simpler processes will be more than the cost savings associated with simplifying the work. The CCR recommendations will save time and effort for students and some staff members; however, these were not necessarily the primary goals of reengineering.

Career assistance also does not appear to have been a good candidate for reengineering. Most of the recommendations from the CAR team were about changing working relationships and adding resources. The only recommendation that really looks like reengineering is the recommendation to redesign the steps students have to complete in the recruitment process by putting the formerly paper driven process on-line and making it accessible to students 24 hours a day. Although the implementation of the CAR team's recommendations will likely improve services to students and make some processes a little simpler, the new level of service will likely cost the Institute more money to support. Again, this was not the original goal of reengineering at MIT.

Analysis of Student Services Reengineering

Unlike Mail Services Reengineering, the initial implementation of Student Services Reengineering recommendations has not faced much resistance from stakeholders so far. Their are two main reasons for this. The first reason is that the initial implementation efforts, the new RA/TA on-line appointment process, the Student Services Center, enhanced MITSIS, OLSIS and WEBSIS on-line systems, have been "win-win" situations for most stakeholders. All of these efforts have improved the quality of services to customers by reducing the complexity of administrative processes and putting more control and capabilities closer to the customer. MIT is also benefiting from these efforts because, although a cost-benefit analysis has not been done yet, the reduction in the complexity of administrative processes will likely save money for MIT. These successes were achieved by redesigning administrative processes to maximize the potential of new information technology - the original definition of reengineering.

The second reason that the implementation of Student Services Reengineering recommendations has not faced much resistance is that the Student Services Reengineering team worked very hard to communicate and involve all stakeholders in the project. Most of the initial work of the Student Services Reengineering team involved extensive communication with all stakeholders to gather their input and involve them in the change effort. The Student Services Reengineering team created an advisory board of faculty, staff, and students to assist in the decision making process. And the team continually tried to educate and involve all members of the Student Financial Aid, Bursar's, and Registrar's offices in the reengineering work.

Despite these successes of Student Services Reengineering so far, there are many potential obstacles to successfully implementing all remaining recommendations. The first obstacle is the difficult task of reorganizing and downsizing the Student Financial Aid, Bursar's, and Registrar's offices. This work has taken longer than was originally expected and ultimately will not reduce headcount by 30% and the operating budget by $5 million as was originally hoped. Different reasons for not achieving the original goals include: the initial expectations were unrealistic, leadership at all levels of reengineering has not made tough decisions when necessary, and the inability to make major changes in academic departments. These all reduce the potential benefits of new administrative processes.

The second obstacle is the high potential cost of creating new administrative processes and reorganizing offices. The Student Services Reengineering team has not yet shown that savings from reengineering investments, particularly in new information technology, will justify the expenses. This is especially true in areas like co-curricular life and career assistance, where cost savings were never a goal for reengineering their processes. With the general reengineering effort receiving increased pressure from stakeholders across MIT to show that it is saving money, efforts that are not able to show potential cost savings are in danger of not being fully implemented.

The following are some key lessons learned from Student Services Reengineering and recommendations for how it could have been done better.

1. **Learning from other reengineering projects, particularly within the same organization, can help increase chances of success.**

Student Services Reengineering focused a lot of attention on learning from reengineering teams in other organizations, at MIT, and themselves. They used this knowledge to make improvements to their work at all stages of the project. In doing so, they were not afraid of deviating from the standard reengineering approach at MIT because they realized there was no standard approach that could be successful for every project.

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Instead, they focused on creating the best approach to fit the needs of the people and organization they would be helping change. The Steering Committee was wise in recognizing that the Student Services Reengineering project would benefit from starting after other reengineering projects at MIT and being able to learn from their mistakes. It is unfortunate that earlier reengineering projects did not also have others at MIT to learn from.

2. Involving the community is essential.

One of the key lessons Student Services Reengineering learned from other reengineering efforts was that communications and community involvement are essential factors in successfully carrying out a reengineering project. Many people have commented that Student Services Reengineering has been the most successful reengineering project at MIT because of all the community involvement work that was done. All the Student Services Reengineering teams communicated extensively with the community and gave the community numerous opportunities to have input into the reengineering work. The teams operated under the principle that they were not going to be the sole owners of making changes, instead they were going to facilitate change by using the expertise that existed among all stakeholders at the Institute. These teams followed this principle by working hard to involve all the people in the effected offices in the reengineering work. This helped create the best options for change, minimized the stress of reengineering since all stakeholders felt like they had more control over the process, and helped implementation move forward more smoothly since all stakeholders better understood and bought into the need for change.

3. Need to be clear and consistent about the goals of reengineering.

One potential threat to successful implementation that has already been mentioned is the fact that different Student Services Reengineering projects have different goals. Some projects are focused on creating more efficient work processes and saving money, but other projects are focused on improving the quality of processes without likely achieving any cost savings. There has been no assurance that appropriate resources will be given to all projects as recommended, nor has there been a commitment to sustain a higher level of spending in certain areas over time. The projects that are not focused on saving money, therefore, are in jeopardy of not being successfully implemented if appropriate resources are not allocated. If any of these projects do not succeed, many stakeholders are likely to have a negative reaction to Student Services Reengineering in general. The successful outcomes of other Student Services Reengineering projects might then get overshadowed by the project(s) that fail. Even if each of the projects succeeds by its own criteria, this

might not lead to overall cost savings within Student Services Reengineering. Many stakeholders would also become upset by this since the original goal of reengineering overall and Student Services Reengineering was to dramatically reduce MIT's operating budget.

It is hard to trust that all projects within a large effort, like reengineering MIT, will all stick to the same goals and not be influenced by personal agendas. However, allowing projects to deviate from the effort's original goals can hurt not only the projects themselves but the overall effort. Therefore, it is very important to be strict about holding all projects accountable to their original goals. This can be done by forcing each project to clearly articulate its goals before beginning, checking on the progress of each project over time, and evaluating whether each project's recommendations are aligned with its original goals before moving forward with implementation.

Chapter 6. How Reengineering Has Affected People

One of the most widely discussed reengineering topics here at MIT and elsewhere is its affects on people. Some of these impacts naturally occur anytime people are asked or forced to change and cannot be avoided. However, other impacts can been minimized or avoided with a better understanding of how to successfully implement reengineering. The following is a discussion of reengineering's effects on people at MIT, how MIT has dealt with these effects, and lessons to be learned from this.

Effects of reengineering on people at MIT

MIT's reengineering effort has affected people in a variety of ways. In order to best understand these impacts, I have decided to categorize them as either being "content" impacts or "process" impacts. Content impacts are those effects of the outcomes of reengineering like changing the roles of some jobs, creating new skill requirements for some jobs, and even eliminating some jobs. Process impacts are the direct impacts of the reengineering experience like additional stress, additional workloads, and cultural changes. I will discuss the two types of impacts separately.

Content impacts

As I already mentioned, MIT's senior administration launched the reengineering effort by declaring that they would be looking to eliminate about 600 jobs. They believed that new reengineered processes would require fewer workers. Large savings could then be achieved by reducing headcount. MIT did not lay out any specific plans up front for how this reduction would be achieved, nor in which departments and offices the reductions would take place. Instead, the leaders of reengineering said that reengineering would remove much of the non-value-added work from existing processes and thereby reduce number of employees needed for each process.[37] Thus, they implied that the headcount reductions would come from the areas that were going to be reengineered.

Not only did they say that reengineering would reduce the number of people working at MIT, the leaders of reengineering also said that many of the remaining jobs would change and new jobs would look much different.[38] One of the earliest indications of how jobs would be affected by reengineering came in October 1994 when the following criteria for successful employment in a redesigned environment were publicly announced: self-direction and self-motivation, teamwork skills, effective communication and conflict resolution skills, willingness to learn independently, capacity to manage change, ability to

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[37] *Tech Talk*, March 30, 1994.
[38] *Tech Talk*, November 22, 1993.

use technology, and ability to learn and use new management skills which emphasize more coaching and support and less commanding.[39] This list of desired skills demonstrates that the traditional jobs of the past in which employees were accustomed to taking many orders via a very rigid hierarchy would become obsolete, replaced by new jobs which would require people to be proactive and take more responsibility for their work and for improving their skills. Although this initial set of criteria was merely a prediction of what was likely to occur, many outcomes of reengineering projects later showed that this prediction was accurate.

Student Services Reengineering is a good example of how reengineering is dramatically changing many jobs. A sub-team was formed within Student Services Reengineering to specifically focus on the human resources needs of the new Student Financial Aid, Registrar's and Bursar's offices. This team helped identify the new roles and jobs that would be needed in these new offices, the skills of the people who would perform these roles and jobs, and the training and support needed to ensure these human resources principles were met. For example, some of the new roles created were a "team coach" (someone who helps a process team work more effectively), a "process owner" (someone who has full responsibility for ensuring that a process is completed efficiently and effectively from start to finish), and "cross-trained customer service staff" (people who deal directly with the customers to help them get all the services they need).[40]

Student Services Reengineering has not been alone in its creation of new jobs and roles. Interviews with people involved in the reengineering of mail and repair and maintenance services confirmed that the new jobs they put in place after completing their reengineering projects looked much different from the old jobs. These new jobs involved significantly more teamwork, self-responsibility, decision making, and use of technology (e.g., email, more automated equipment, etc.). The interviews also confirmed that the new job structures in these areas represented more career opportunities than the old job structures. There appears to be more room now than before to learn new skills and advance to jobs requiring more responsibility.[41]

In a report to the Academic Council of MIT on October 15, 1996 the following description of jobs in a "process-centered organization" (i.e., post-reengineering) was presented by the leaders of MIT's reengineering effort to show how all jobs will look in the future. "Jobs will become more: complex, substantive, challenging and difficult, empowered and autonomous, interpersonal and collective, whole, meaningful, satisfying,

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[39] *Tech Talk*, October 26, 1994.

[40] Interview with Student Services Reengineering team member April 17, 1997.

[41] Interview with Mail Services Reengineering team member April 2, 1997.

enriching, like careers."[42] This statement presented to the highest governing body of MIT showed reengineering's expectation and commitment to changing the content of all jobs at MIT.

Process impacts

In addition to all the content impacts, there have also been many process impacts felt by people across MIT. Although most people only focus on the negative process impacts like increased stress and increased workloads, there have been many positive process impacts as well. I will begin by addressing the negative process impacts.

The main complaint voiced by staff members across campus is that reengineering has made their lives worse. When asked to provide specifics, staff members have complained about three issues. One complaint is that reengineering has caused increased stress. Since it was announced that up to 600 jobs would be eliminated through reengineering, many staff have been worried about their job security. Staff say that this stress has caused them to perform poorly in their jobs because they spend time worrying and talking with others about their job security fears. It has also caused a disruption in their personal lives because they carry the stress home with them after work. Some staff have complained that stress from reengineering has caused them to have less energy at home to play with their children, take care of chores, and follow through with other responsibilities.

The second complaint is that people feel overworked. Whether they are working on reengineering projects, participating in reengineering meetings, or covering for co-workers who are busy working on reengineering, many staff have become upset by their increased workload. These overworked staff have struggled dealing with this increased workload effectively. One staff member even said that she has noticed more people getting sick than usual since reengineering started due to the fact that people are overworked and under high stress.[43]

Their third major complaint is that reengineering has hurt MIT's culture and sense of community. Many feel that an "us vs. them" mentality has formed between people who have been working on reengineering and those who have not. Employees have lost a sense of loyalty to MIT. They do not trust others here as a result of having their work scrutinized by other MIT staff and consultants. These cultural changes have apparently weakened the sense of cooperation between departments - as people feel they are being attacked by reengineering they withdraw and entrench themselves within their own offices. Overall,

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[42] "Reengineering Update - Academic Council," Internal reengineering report, October 15, 1996.
[43] Interview with staff member, March 31, 1997.

people are unhappy about the change in MIT's culture from being open and friendly to cold, non-cooperative, and too driven by the bottom-line.[44]

Despite these negative process impacts, there have also been many positive process impacts of reengineering. One positive impact stated by nearly everyone who has worked on a reengineering project is that their reengineering work was some of the most rewarding work they have ever done at MIT. Participants in reengineering projects have called their work challenging and exciting. These staff said that they do not always have the opportunity to work on solving tough problems and thinking creatively to design and implement new ideas. A lot of their regular work is routine and unexciting. Working on reengineering projects allowed them the opportunity to exercise their minds in a very gratifying way, and in the process of working on reengineering they were able to learn many new skills and attend various training programs. Therefore, working on reengineering was a great professional development experience as well. While these staff have acknowledged that they became somewhat frustrated and bored when they had to return to their home offices and take care of their routine work, many of them have used new skills they learned to improve their routine work and make it more rewarding.

Another positive process impact of reengineering was the broadened sense of community among some people.[45] Many of the reengineering project teams were populated by people from different offices so these teams provided a good opportunity to network. Through working on these teams, staff were given an opportunity to meet new people, make new friends, and learn more about areas of MIT they did not know about before. Reengineering helped make many new connections among people in different departments and created a new sense of community among some people.

A third positive process impact of reengineering was that people involved in reengineering have learned many new skills that they have been able to take back to their home offices and share with others. For instance, after serving on the initial student services reengineering teams, two members of the admissions office went back to their office and initiated their own project to reengineer the graduate admissions process.[46] Thus, reengineering and its tools and applications are spreading throughout MIT in many beneficial ways.

What is MIT doing to address the impacts of reengineering on people

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[44] Interview with staff member, April 4, 1997.
[45] Interview with staff member April 4, 1997.
[46] Interview with staff member, April 4, 1997.

MIT's senior administration recognized early on that reengineering would have a major impact on human resources at MIT. To prepare for the impacts of reengineering on human resources, the Reengineering Steering Committee created a set of human resources principles to "guide the implementation process and assure the fair treatment of MIT people." The basic principles were: there will be more career advancement opportunities; new skills will be needed; training will be provided; managers will be trained to become "coaches;" individuals and their supervisors need to take ownership over the individual's professional development; there will be a greater focus on performance goals, measurements, and evaluation, and people will be rewarded accordingly; attrition will be the desired way to achieve a workforce reduction, but when layoffs are necessary outplacement services will be provided; future hirings will be more competency-based; and existing staff will be given a preference to interview for new positions.[47]

While these principles were somewhat vague, they made two issues clear. The first issue was that major human resources changes would take place and MIT was trying to find ways to support these changes. The second issue was that jobs were going to be very different in the future from today. There would be more accountability, more performance reviews, new skills needed and more training offered, and more responsibility placed on workers and managers to perform well.

Some senior administrators and staff believed that in the past MIT's human resources practices were weak. Many staff at MIT were hired with little consideration given to assessing if their competencies were sufficient to fulfill all the needs of their job, and managers gave few, if any, performance evaluations. The typical solution to poor performance was just to hire someone else to fill in the parts of the job not being done well.[48] The human resources principles issued by the Reengineering Steering Committee made it clear these practices would no longer be the way of managing human resources.

The first formal activity undertaken by reengineering to support the human resources needs identified was the creation of the Training and Development Team in May of 1995. This team was chartered with the responsibility of providing training to the MIT community to enable people to work most effectively in the reengineered organization, ensure the successful implementation of reengineering projects, and support the human resources principles stated earlier by the Steering Committee. They announced that they would provide three types of training: technical training to use tools like email and other computer applications; business process training (e.g., how to process a grant or contract); and professional development like negotiation and facilitation skills. The Training and

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[47] *Tech Talk*, December 14, 1994.
[48] Interview with Steering Committee Member, April 24, 1997.

Development Team stated that the major factor critical to their success would be a commitment by senior management to the strategic importance of training and development. Thus, they gave a clear signal that improving the support to human resources would be an integral part of reengineering's, and ultimately MIT's, success.[49]

As the Training and Development Team talked to people across MIT about training and development needs, many people identified other human resources issues that needed to be addressed. To address all of these human resources issues uncovered by the Training and Development Team, the Human Resource Practices Design (HRPD) Team was created.[50] With the Human Resources Principles that were created in 1994 serving as the foundation for their work, the HRPD team was formed to take an overall look at human resources practices at MIT and create a sustainable environment needed to support the work performance necessary for MIT to fulfill its mission. The team's goal was to "identify and evaluate the human resource practices needed to select, prepare, motivate, develop, and support MIT employees to meet the needs of the changing work environments across the institute." These practices include hiring, evaluating, developing, and rewarding people. The vision for the final outcome of this effort was to "make MIT as excellent an employer as it is an educator."[51]

The HRPD team has been viewed as successful in their effort so far because they have worked within the MIT culture - they did their work in a way that felt natural to people at MIT. They talked to people across MIT at all levels to learn about human resources needs. Now, they are in the process of presenting these findings back to the community and to many administrative and academic leaders. The work of HRPD team has been well received so far by the MIT community because it was gathered from MIT people, by MIT people, and shared in an MIT way that is respectful of all the stakeholders who need to be included in the decision making process.[52]

Another human resources initiative, undertaken partially in response to reengineering and partially to help balance the budget, was an early retirement program offered in the fall of 1995 and winter of 1996. The senior administration realized that some staff members, particularly those who had been at MIT a long time and were used to only working in one way, would not be able to transition easily into a new way of working. The administration wanted to allow these people an opportunity to leave MIT gracefully before their jobs were changed or eliminated. Also aware that there was an aging problem among tenured faculty, MIT wanted to be able to help some of them leave gracefully to

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[49] *Tech Talk*, May 1, 1995.
[50] Interview with Steering Committee member, April 24, 1997.
[51] HRPD Team Home Page, updated July 19, 1996.

create new openings for junior faculty. So, MIT offered early retirement as a way for people to leave MIT. The result of the early retirement program was that 642 people, 414 of them staff and the rest faculty, retired. Although this was an attempt to reduce headcount at MIT, half of the administrative jobs that were vacated were quickly filled again, and there is a fear that eventually the other half of these jobs will also be filled again.[53]

Recognizing that the training and development needs of the MIT community were likely to be great, MIT opened a Professional Learning Center in April of 1996. This multipurpose training facility will allow for computer and software training as well as professional development activities. One senior administrator commented that MIT is the first among its peer universities to create such a facility to support staff training. By creating the Professional Learning Center, MIT has shown its commitment to training and development, and many other peer universities are envious.[54]

Although MIT has taken many steps to ensure that it supports the content impacts of reengineering, there has not been a sufficient infrastructure set up to support the process impacts of reengineering. There have been two groups charged with addressing the process impacts, but they have only been able to address some of the needs and did not offer any support until reengineering had been going on for more than one year. One group has been the Training and Development Team and the other group has been the Community Involvement Team.

First, I will discuss what the Training and Development Team has done to address the process impacts of reengineering. In addition to the classes offered to help people develop new skills, the Training and Development Team has offered many classes about living with change. Through these programs, the team has helped people recognize that stress and anxiety are natural responses to change and has taught people ways to effectively live with and work through the impacts of change. Training classes have been offered to managers and other leaders to help them help others effectively live through change. As helpful as these classes are, however, the team has only been able to reach a small portion of the MIT community.[55]

The Community Involvement Team was created to help communicate information about reengineering with the MIT community and involve the community in reengineering work as much as possible. Although their work has consisted primarily of writing press releases about important reengineering information, keeping the reengineering web page

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[52] Interview with Steering Committee member, April 24, 1997.
[53] Interview with Steering Committee member, April 24, 1997.
[54] Interview with Steering Committee member, April 22, 1997.

updated, and helping set up meetings for the community to participate in reengineering, the team has expanded the scope of its work. After hearing from many people that morale is low at MIT because of reengineering and other pressures, the team has begun working on ways of addressing the morale problem.

The Community Involvement Team's main initiative to address the morale problem is creating and maintaining a list of all community building resources. Both in response to the stress caused by reengineering and other stresses, many departments across campus have created community building activities like morning social hours, lunchtime gatherings featuring special speakers, and plant swaps. While some of these resources have developed as a response to reengineering, most were established before reengineering began. Since many people have articulated an increased need for these resources, the Community Involvement Team has worked to make these resources more widely known.

Unfortunately, the Community Involvement Team's efforts are hampered by two constraints. The team consists of only one person who works 4 days a week and a few part-time volunteers. Therefore the team has limited resources with which to do its highly needed work. The other constraint on the team is that since people are so busy with reengineering and regular work they are less likely to participate in or even spend time looking for community building activities.

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[55] Interview with Steering Committee member, April 24, 1997.

Chapter 7. Conclusion

Was reengineering a good thing for MIT to do?

The key question in evaluating MIT's reengineering effort is, "Was reengineering a good thing for MIT to do?" Depending on who you ask and on what day you ask them, reengineering has been viewed as both a good thing and a bad thing. Almost everyone agrees that many administrative systems and processes around the Institute were outdated and inefficient. Most, but not all, people at MIT also believe there is a serious budget problem. However, not everyone agrees that reengineering, or at least the way it has been carried out at MIT, has been the best way to improve MIT's administrative processes and reduce the operating budget. In fact, some people do not think it is realistic to attempt to save money while also improving services.

Reengineering is costing MIT a lot of money (around $40 million), not producing all the savings that were expected, and taking longer than expected to complete. Originally, reengineering was supposed to begin in late 1993 and end in the summer of 1997. It was also supposed to have helped MIT achieve a balanced budget by 1997. However, the reality is that reengineering will not likely be finished until sometime in 1998, and it will not achieve all the savings originally expected. But does this necessarily mean reengineering has not been successful?

After undertaking a qualitative analysis of MIT's reengineering effort so far and looking ahead to future outcomes, I believe that reengineering was a good thing for MIT for the following reasons.

Using Mail Services Reengineering and Student Services Reengineering as examples, the redesigns created by reengineering teams definitely appear to be more efficient ways of carrying out services. Processes within each of these services have been redesigned to minimize non-value-added tasks, and new information technology has been infused into the processes to improve their efficiency and effectiveness. By comparing the old process designs with the new process designs I believe that reengineering has been successful. It is not clear yet whether the new processes are more cost effective since the new technology and the reengineering project itself are very costly. Nonetheless, the new processes appear to use existing resources more efficiently than the old processes.

Another success of reengineering is that it is causing dramatic changes in the way people do their work at MIT. For the first time ever, people in many offices are being held accountable for what they do; people are beginning to use performance evaluations; offices are being forced to focus on providing good customer service; and staff are now, more than ever, offered valuable training and professional development opportunities. The attention

now being given to work performance issues has finally caused MIT to address its human resource management weaknesses. In the past, few people were hired based on a clearly defined set of competencies. Since MIT was doing so well financially for many years, they would just hire more people to fill the performance gaps. Then, when MIT finally decided to commit to improving the performance and productivity of its employees, they realized that they needed to improve the management of human resources across the Institute. This effort alone is likely to greatly improve the way work gets done at MIT.

Has reengineering been purely successful? No, not all of reengineering has been successful. Reengineering has been extremely costly to the morale of MIT. Many people have been put under a lot of stress by reengineering. People believe that some services have become worse as a result of reengineering. This has caused people unhappiness in their jobs and resulted in unhappy customers. The tension that always exists between faculty and administration has become worse as some faculty are upset with the administration because they believe the administration is hurting MIT by imposing reengineering on everyone.

Whether people believe reengineering has been successful or not, there are many lessons that can be learned from MIT's reengineering experience which could help other universities and similar organizations do a better job of undertaking similar changes. MIT is also in a position to learn from these lessons since there is more reengineering work remaining. Here are six key lessons to be learned from MIT's reengineering experience so far and prescriptions for how other organizations could put these lessons into practice.

1. Do a better job of dealing with the people issues.

Undertaking a widescale reengineering effort in a university has many impacts on people which need to be better understood and dealt with. Change will always cause people anxiety and stress, but I believe that many of the stresses caused by reengineering could have been avoided or minimized if MIT's reengineering leadership better understood how reengineering would impact people and had created mechanisms to deal with this. People's resistance to change has hampered reengineering's success. Therefore, MIT would have benefited from investing more resources into helping people deal with the changes because reengineering would have been more successful.

Some recommendations for what MIT, or others, could do to better deal with the people issues of reengineering are the following. One recommendation would be to slow the reengineering process. One of the principles of reengineering is that it has to be done fast to avoid losing momentum and fail making change happen. While reengineering does need to take place as quickly as possible to ensure that people do not become complacent

and lose the energy and desire to create change, it does not need to take place so quickly that key stakeholders cannot effectively contribute to the process and many people become overly stressed. Therefore, one should negotiate the pace of reengineering with all stakeholders involved instead of just mandating the pace.

Another recommendation would be to devote more resources to helping people do their reengineering work and their home office work. Many people on reengineering teams have had a difficult time doing their reengineering work while also doing their regular work back in their home office. This has caused increased stress on these people and co-workers in their home offices who have been forced to fill in the work not getting done. Reengineering work has greatly suffered from people being overburdened by too much work. Reengineering teams have not been able to deliver thorough analyses of the costs and benefits of their projects and have not had time to help stakeholders understand the need for changes. This has hindered the success of the reengineering projects. MIT should have invested more resources (maybe hired temps to help do work) in helping people do their reengineering and home office work. This would have allowed people to do both jobs more effectively and reduced the pace and pressure of reengineering. The costs of increased resources might have been off-set by running a more smooth reengineering process with less community backlash.

2. Be more sensitive about how decisions and changes work in the organization.

It is nearly impossible to mandate changes across MIT. Like most universities, MIT operates in a very decentralized way. Each faculty member, academic department, and administrative office operates somewhat autonomously. Trying to force reengineering top-down is not an effective way to make changes occur across MIT. Instead, each autonomous unit of MIT must be led through change in a way that is conducive to its culture. Each unit must be convinced of the need for change in a unique way that addresses its needs.

For example, people had a hard time adapting to mail services changes because they were not convinced of the need for change. Many people thought that the new mail system was causing an increase of work on people in decentralized units since they now had to pick up their own mail. The reengineering team claimed that although this is true, the new mail process allowed staff in decentralized units to spend much less time processing outgoing mail so the net affect on decentralized units was a decrease in work. In order to convince everyone they would not have to do more work under the new system, the

reengineering team should have helped educate everyone about what the net effect on people's work woûld be.

People also had a concern that the new mail system was less secure than the old system because of the fact that many people's mail would sit in a DMC. However, the reengineering team believed that the old system was less secure because most people did not fully know everything that happened to mail in the old system. Even though the new mail system was designed to be more secure than the old system, others did not know the old system was insecure in the first place. It would have taken lot of time and energy to educate everyone to want to change into the new mail system, but this might have made change go forward more smoothly.

A recommendation for how reengineering could have been more sensitive to MIT's decision making culture would be to work within as many existing decision making structures as possible to create buy-in for change. MIT's reengineering effort could have better utilized existing governance groups like faculty committees, the Academic and Administrative Councils, and student government to include all stakeholders in the decision making processes. This could have helped stakeholders understand and participate in making changes since they would have had an appropriate voice in the decision making process. If this was done properly, stakeholders would have been more accepting of the changes.

3. Think about costs and changes more systemically.

It has not been proven, but many people fear that although reengineering is claiming to save money centrally it is not truly saving money across the entire Institute. These opponents of reengineering believe that some new systems and processes have decreased administrative costs to centralized units but have caused an increase in administrative costs on decentralized units. They fear that this shift in costs is creating a net increase in administrative costs across MIT.

After the initial reengineering changes in mail services and laboratory supplies, a faculty member publicly criticized reengineering in *The Faculty Newsletter* for focusing only on cost and not on cost-effectiveness. He said that although the new mail system saves money from the general and overhead pool of funds, it will undoubtedly increase money spent by departments and sponsored research accounts because departments now have to get their own mail. He also stated that the closing of the lab supplies operation has caused many departments to start operating their own mini-lab-supplies-offices because the level of service to them has decreased. Therefore, there is a fear that if reengineering is not

done right centrally, decentralized units will have to spend more resources to get the level of administrative service and support they need.

This is a very serious concern which could thwart the success of reengineering. In order to deal with this issue, MIT should have done a better job of analyzing all costs associated with a process before reengineering to have better benchmarks of what reengineering could achieve. MIT did not spend much time analyzing the costs of current processes before reengineering them because one of the principles of reengineering is to disregard the old process when creating a new process. However, if one totally disregards the old process, one will not know what has been achieved through creating a new process. Therefore, MIT should have done a better job of determining pre-reengineering process costs and used these costs as a baseline to determine whether or not to spend resources implementing the recommendations of reengineering teams.

4. Work openly and closely with the community. Show everyone how they will be effected. Get everyone involved.

Reengineering has faced the most resistance from people who have not been appropriately included in the process. If more faculty, students, and staff were involved from the beginning, reengineering would not have faced so much resistance. MIT should have involved all these stakeholders in discussions about what the overall goals of reengineering should be, what the goals of specific projects should be, and how each project should be held accountable.

Some students and faculty have said that they would have liked to have more input into the reengineering process, although both have also acknowledged that they do not always have the time and energy needed to fully participate in reengineering as it has been structured. A better reengineering governance structure could have been created from the beginning which addressed the need to involve faculty and students in a way which responded to their limited time and energy. Students and faculty could have been given more input into redesign recommendations and been part of the overall reengineering decision making process. This would have created more buy-in along the way.

Since many of the full potential benefits of reengineering will not be realized unless changes take place in the Academic Schools and Departments, there should have been a better way to achieve buy-in from these areas up front. Deans, department heads, and faculty should have been convinced of the need for wholesale changes even in their areas. The reengineering leadership should have worked more closely with the faculty to identify faculty's needs and concerns with respect to any administrative changes.

5. Be clear and realistic about goals up front, and sustain these goals throughout all the projects or be explicit about why they change.

Reengineering is limited in what it can improve. It is not purely a win-win situation as some people hope, and it is not a panacea which will solve all of an organization's problems. Thus, an organization needs to be clear about the following: the scope of its reengineering effort - what is and is not suitable for reengineering, what will reengineering will help them achieve, and what tradeoffs they will accept when making changes - one cannot always improve quality and cost at the same time. MIT's reengineering goals have not been clear and consistent throughout the effort and this has caused problems.

In November of 1996, leaders of reengineering made a presentation to the Academic Council and said that the reasons for reengineering had changed over time in the following way. First, in 1993, the reasoning for reengineering was that MIT's administrative costs were too high. Then in 1994-1995, the reasoning for reengineering was because MIT's administrative processes were too complex which led to errors, rework, wasted efforts, poor results, and high costs. Finally in 1996, the reasoning given for reengineering was to improve MIT's work environment, improve its competitive position for research awards, and provide leadership in streamlining university administration.[56] The leaders of reengineering claim to have altered the reasoning over time as they became more aware of what problems existed at MIT and what reengineering could really help them achieve.[57] It is also likely that they altered the reasoning because of pressure from the community demanding quality improvements, not just cutbacks that save money.

Regardless of why the reasoning behind reengineering has been continually changing, the fact that the reasoning has not been consistent has had a negative effect on the success of the effort. Not everyone is aligned with and agrees with why MIT is doing reengineering. Interviews of over 30 people involved with and/or affected by reengineering have shown that not everyone believes in the same reasoning for reengineering and the goals it hopes to accomplish. This can be very problematic for several reasons.

One reason this is problematic is that to the general MIT community, all reengineering projects are the same. If one reengineering project's main purpose is to cut costs and ends up making work a little bit harder on some people, all of reengineering becomes viewed as being focused on saving costs through making work harder. This makes it hard for different reengineering projects to gather input from the community and

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[56] Internal reengineering report, "Reengineering Update - Academic Council," 10/15/96
[57] Interview with Steering Committee member, 4/22/97

promote change because people become pre-disposed to the idea that all of reengineering is an attempt to make everyone work harder.

Another negative effect of the lack of clear and common goals is that this allows more room for different reengineering projects to develop their own agendas. Many staff have seen reengineering as a great way to improve the way they do work. Through reengineering, they have been able to access new computers, training, and other resources which have improved their work environment and professional development. While these accomplishments are good and helpful, they also cost a lot of money. Since MIT is facing serious budget problems and reengineering was originally expected to help solve these problems, reengineering will look bad if it does not produce the cost savings that are expected. Members of the MIT community are likely to become very upset with reengineering for not producing the cost savings originally promised and might even demand that reengineering be stopped. This would make it much harder to undertake any other major improvement efforts in the future because people would be suspicious of what might take place during a change effort. Thus, the positive changes associated with reengineering could be ignored if it does not live up to its earliest goals of saving a lot of money.

6. Demonstrate successes up front so everyone will buy-in to changes.

The first two outcomes of reengineering that received much publicity were new mail and lab supplies services. Both of these efforts were not well received. People complained that the reengineered mail system was no better than the old system. In fact, they said that they now had to do more work to get their mail and this was taking time away from the more valuable work they should be doing. Although the senior administrators responsible for the reengineered mail system said that MIT was saving a lot of money from the new mail system, many members of the community believed that MIT had not really saved money since different people were now doing more work than before.

Many people, particularly faculty and graduate students were initially very upset about the reengineering of lab supplies. The result was that the lab supplies office on campus was closed. People working in labs complained that they were no longer able to get lab supplies they needed exactly when they needed them. Instead, they now had to wait longer to have these supplies were delivered. Again, although the senior officers praised the cost savings of the redesigned process, people in labs believed that the costs of doing their work were rising since they now had to wait for lab supplies sometimes to carry out their research.

The result of these reengineering projects going first was that other reengineering teams that followed carried a stigma of being out to make things worse, just like mail and lab supplies. This stigma kept them from carrying out their work effectively. For instance, when members of Student Services Reengineering teams initially began talking to different members of the MIT community to gather information about student services, they were repeatedly asked about what was going on with Mail Services Reengineering. Student Services Reengineering team members were constrained in their ability to carry out their work because the community held them accountable for mail services changes.