

# **CYCLE TIME REDUCTION AND THE STUDENT REGISTRATION PROCESS At Washington University**

**FOREWORD** By  
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All the tools for quality improvement are based upon common knowledge. To rally everyone around quality is the best way of managing a company or institution. The key to a successful quality improvement program is not in the tools themselves, but rather in the robust, persuasive use of those tools within the everyday conduct of business. Educational institutions are more like businesses than most educators will admit. Washington University's willingness to accept monumental change to a well-established procedure such as student registration shows that the internal dynamics of the University are consolidated toward a goal of total customer (student and staff) satisfaction.

**PREFACE** By  
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At a University, major policies are decided by consensus. We recognized that the process of student registration had emerged piecemeal over the years without true direction and much inefficiency. Additionally, the process encompassed the University's lifecycle and educational goals. To undertake revising such a totally pervasive process required the attention of all levels of support and academic staff. Senior University officials not only had to consent to the review process, but needed to provide management insight and active involvement to make the new process work. Change is always tough. The empowerment issue gave meaning to the hard work undertaken by all the committee members.

Ever thought about completely revamping the foundation of your business? Or to choose a process that affects every employee and every customer that has anything to do with your company? Sounds like fun? Probably not. However, many companies find that essential processes in their business are outdated, unwieldy or just plain inefficient.

Many articles have appeared about re-engineering, Total Quality Management (TQM), efficiency studies, time management reports and other methods or techniques used to reduce processing cycle time to increase profits. Most of these theories are directed toward businesses which manufacture something! Can any of these theories be applied to non-manufacturing environments?

Motorola, one of the world's leading corporations and a recipient of the Malcolm Baldrige Award, has found that their Cycle Time Reduction methodology works equally as well in manufacturing and non - manufacturing processes: *many processes in all organizations can benefit from the application of this methodology.* In fact, Motorola University's Applications Consulting Team has recently met with great success in reducing the *cycle time* for the student registration process at Washington University in St. Louis, Missouri and Curtin University in Perth, Western Australia.

Realizing the need for an effective, easy to use methodology, Motorola University has developed a tool that is

useful in any type of organization and in every department -- from accounting to marketing and even college class registration. Cross Functional Process Mapping (CFPM) achieves cycle time reduction (CTR), that is, reducing the time it takes for one cycle to be completed (for example, from the time a student registers to the time all classes are actually scheduled). Reducing cycle time has obvious benefits in cost, efficiency, and customer satisfaction.

In order to just survive, businesses need to be as streamlined and as flexible as possible. Not surprisingly, though, you seldom see companies rebuilding essential processes. Why not? Perhaps one of the most common reasons is the immensity of the challenge - how do you change "the big picture"? If you are Motorola you found out the hard way by trying to keep pace with the competition while concerned with product obsolescence, inventory levels, new product development and manufacturing costs.

After researching customers' wants and needs, Motorola discovered that most complaints about Motorola's service had to do with time-related issues. This research led to Cross Functional Process Mapping to reduce total Cycle Time. After achieving significant results within their own company, Motorola knew their customers and suppliers could also benefit by learning this methodology. Motorola University's Applications Consulting Team (ACT) was formed to facilitate and teach Cycle Time Reduction through Cross Functional Process Mapping.

The major step in Cycle Time Reduction is determining which steps in your process add value in the eyes of the customer. Motorola has found that the best way to do this is to eliminate unnecessary and non-value added work. The final judgment on what is valuable is asked not of the staff, but of the customer.

With the goal of improving services to students on campus, Washington University created the University Management Team to research the wants and needs of the students. Faculty and staff at Washington University, an independent, medium sized institution founded in 1853, now with 11,500 students, found that the area of campus life with which students were dissatisfied and offered the most opportunities for improvements was the registration process. In fact, registration is one of the few processes that affects every student and involves many staff members on campus. The University has had 20 Nobel Laureates associated with it, is decentralized with 2 campuses and 8 schools: Arts & Sciences, Architecture, Art, Business, Engineering and Applied Sciences, Law, Medicine, and Social Work plus University College, a part of Arts & Sciences, which offers night classes to enrolled students and to the community at large. Each School has separate Deans and separate registrars. "We selected registration as our test process because we wanted something that involved all of the schools in the University, had maximum exposure, would really improve campus life for the students and was something that would have high value for our students," said Dr. Stuart D. Yoak, University Registrar.

Accordingly, the Management Team began to search for a method to improve the registration process. After exploring a number of methodologies, then Provost, Dr. Ed Macias, suggested Motorola's ACT and Cross Functional Process Mapping. "At a University, everything is done by consensus, and everyone needs to buy into all major decisions. Because of this we needed a vehicle that would provide consensus. Cycle Time Reduction is that vehicle," said Richard Roloff, Executive Vice Chancellor.

And so, Washington University began, in the summer of 1994, without the outlay of any significant amount of capital, the task of revamping the registration process with an implementation target date of April, 1995 for the Fall '95

semester. Dennis Martin, Associate Vice Chancellor and Director of Financial Aid, said, "Although there was skepticism as to whether this could actually work, there was also a keen sense of anticipation, that this would really be a jump start for change."

The first step is the 'As Is' map which details every step and identifies all of the issues in the current process. This session is led by two Motorola ACT facilitators. Unlike re-engineering, as defined by Michael Hammer, which starts over from scratch, Cycle-Time Reduction builds on past successes and strengths and deletes weaker parts of the process.

Cross Functional Process Mapping at Washington University involved creating teams whose members are selected from every department involved in the registration Cycle including students, upper administration, administrative staff and faculty. With 40 people on the team, the group may seem to be overly large at first glance, but "the division between the groups disappeared within the first hour. People knew that they had a once in a lifetime opportunity to improve a major part of their jobs. Not only that, they had the opportunity to speak and have their ideas carefully considered. It is also important to have every department represented so that everyone can get all their issues out on the table," said Roloff. Added Shirley Baker, Vice Chancellor for Information Technology and Dean of the University Libraries, "It was an eye-opener to have students as part of the mapping sessions. It is very interesting to find out that you don't know as much about what they actually want as you think you do."

The University registration process was complicated by inefficiency and excess paperwork. Because Washington University is decentralized, it was difficult to coordinate each school's courses and registration information. Each of the eight schools (undergraduate, graduate, and professional) had their own registration process, their own rules, and their own course book. Without coordinated oversight, the process gradually grew into a very complex manual registration system that had students registering and paying for courses in advance while not getting their schedule until the beginning of the semester. Among other items, the 'As Is' mapping identified the number of redundant process loops and the number of times students were required to hand in paper forms and the work load the administrative offices performed in checking and correcting these forms which left room for operator error.

Both students and staff were unhappy with this system. Students felt that they didn't find out their schedule soon enough, they didn't like having their schedule canceled if they didn't pay in time, there was no university wide course listings and they disliked the whole manual registration process -- particularly the add/drop process.

The cross functional team forms the backbone of the mapping sessions because "it is really important to get this mix of people together and to give them a structured environment in which to solve our problems," said Baker. Added Roloff, "The process allowed broad participation. Everyone who touched the process in any way was welcome. This led to broad buy-in, as did our promise that anyone involved in the mapping would not lose their employment with the University even though their position might be eliminated as a result of the mapping." Yoak concluded, "The mapping set of techniques gave us the ability to come together and work cooperatively. It gave us a tool to work through a complex process and empowered the team members to recognize what needed fixing. It gave us the confidence to construct and implement a new system."

The 'As Is' mapping led by facilitators Charles Loew and Don Midgett lasted four days. When they were

finished, the team had identified many issues that they felt needed to be resolved in order to improve the registration process. Associate Vice Chancellor Martin remarked, "It was actually very illuminating to see the 'As Is' process in all of its glory." Macias, currently the Executive Vice Chancellor and Dean of Arts & Sciences added, "The 'As Is' map was actually the high point of the mapping sessions. Rather than being overwhelmed by the enormity of the problem, it was very exciting to see everything as it really was." "The 'As Is' map brought us to a critical realization -- the existing registration process was filled with loops and redundancies. It was clear that nobody had designed it; it had just evolved piece by piece over many years," said Yoak.

An outside facilitator who can ask the really hard questions and who has no loyalties to the current processes is essential. "Our facilitator, Charles Loew, had the perfect balance between taskmaster and leader; he created a conducive environment that allowed everyone to loosen up while being straight forward and clear about our goals. He really strengthened the group's sense of community. There was a real spirit of working for the good of the University, not just for the individual schools. It was very exciting because the group became something bigger -- an *esprit de corps developed*," said Martin. Roloff agreed, "The key is to have a facilitator who has a broad background, who can keep everyone on track and on schedule and who will, therefore, produce outstanding results."

The 'As Is' and 'Should Be' mapping sessions are held about a month apart to allow all of the information from the 'as is' session to be digested, considered, and discussed. This gives the team members the opportunity to go back to their individual departments to find out if there are any other issues that were not covered in the initial mapping. Yoak remarked, "The 'As Is' mapping session allows everyone to voice their concerns and complaints. However, you don't work on solving them until the 'Should Be' is mapped. In between the sessions, we collected suggestions and ideas from others (faculty, staff, students) who were not on the process mapping team to be used in the upcoming 'Should Be' mapping session."

A month later the original team and the Motorola facilitators returned for the second mapping session at which brainstorming among the team members tries to get all possible ideas onto the floor. "When we gathered again for the 'Should Be' session we had collected over 315 suggestions for improving and changing the registration process. By consensus we narrowed these down to nine Key Principals. These became the basis for the 'Should Be' design and enabled us to develop a detailed implementation process.", Yoak commented.

These nine key principals stated the need for a registration system that was on-line and in real time; that provided confirmation of classes selected; that provided a uniform class listing of all courses offered; that had a "shopping period" that eliminated pre-registration, manual registration, late registration, and the add/drop period; separated registration and payment; integrated advising into the process; assigned class rooms; provided an on-line student record and degree audit system; and that standardized processes and moves toward a paperless system.

During the 'Should Be' mapping session, a list of action items was created which defined what needs to be changed in order to move from the 'As Is' state to the 'Should Be' vision. Cycle Time Reduction produces dramatic results. Depending on execution and the level of management support, a reduction of 50% or more is typical. Because of the need for changing paradigms, it is extremely important for this project to be completely supported by all levels of management, particularly senior management. "The keys to really making this process work are a sensible procedure; a

strong facilitator; clear, easily understood goals; an understanding that this project has top priority; and the absolute support of the University leadership," said Macias. Baker concurred, "You can't make significant changes without support and leadership from the top."

The Action Item Owners form sub-teams which complete the action items. The smaller sub-teams mainly consisted of faculty and staff not on the original team. This helps gain wider employee support of the new process. In all, over 250 members of the Washington University community worked on the registration process project. Also at this time a list of any "stoppers" is also created. "Stoppers" are the items that the team thinks might prevent the team from implementing the full 'Should Be' action items. All stoppers become the senior management's action items.

Action items are ranked by priority to ensure that they are completed in the most effective manner. Upon completion of all action items, the organization will have achieved their 'Should Be' vision. "Following our sessions, a strong team leader takes over the day to day interfacing with the other team members," comments Loew. To help the team leader implement the 'Should Be' map, a Motorola Team Leader's Guide is used. Full of tips, maps, forms, and examples of each step, it is an invaluable resource for the person leading the implementation process.

Upon reviewing the 'Should Be' map, the Team discovered it had:

- eliminated four separate processes (pre-registration, manual registration, add/drop period and late registration) and replaced these with a single, computerized open registration period. For most students this reduced the time of registration from days to around 10 minutes each semester.

- eliminated 11,600 manual forms which in the previous semester had to be processed.

- eliminated the need for students to stand in long lines at manual registration stations and the need for staff to operate these stations.

- reduced the overall number of separate process steps in registration from 176 to 16. This meant that students no longer had to walk from office to office handing in paper forms.

- eliminated the production of 11 separate course listing catalogs and centralized these into a single all-university course listing.

Even with all of these improvements, it is difficult, but very important, to keep the team's motivation high. All team members worked on the registration process in addition to their usual jobs. Some found it hard to spend many additional hours on a project, but Macias said, "Actually it was rewarding to set aside the time to work on the problem. We knew that we had to do it better, to provide better service, so we just did it. Really, it was a reward, not a punishment, to have the opportunity to make a significant difference in such an important part of university life."

As a result of the Cross Functional Process Mapping, Washington University created a registration process that is completely computerized. All of these changes happened within a 10 month period. "No one can believe how quickly it went. CFPM enables rapid change as long as you go into it with trained facilitators and you have strong support from the top leadership," said Yoak.

April 17, 1995 -- the first day for on-line registration at this 117 year old university -- came and went without any major problems, as reported in the University's *Student Life* newspaper. The University established 120 'Student Access Terminals' throughout all campuses. The newspaper reported that current students estimated three to five minutes

on-line as the average to register. And comments of *"Is that it?"* and *"Am I done?"* were common from the students upon leaving the terminals. First time freshmen and transferring graduate students stated they spent around 10 minutes on-line to register for the Fall semester.

From these reports, both students and faculty were thrilled with the changes. "The results are really amazing. We're still working out some bugs, but we have already eliminated over 2,500 pieces of paper (mostly the add/drop slips) that used to come through the Dean's office. Now zero pieces of paper come through for the add/drop process. And, the whole process was achieved at warp speed for a University. We had no reason to believe that we could achieve so much in such a short time," said Macias. "We continue to meet with small focus groups of students from all schools and all grade levels to continue to measure the students' reactions. They have been very positive and enthusiastic about the on-line registration process. They have also been very helpful in updating us on changes that we should make in the future," said Yoak.

At Australia's Curtin University, they also found their registration process was in need of re-work. "We didn't have a clear direction of what we were trying to achieve. We found that the system was a mass of piece-meal amendments with no clear strategic direction. We wanted a system that was user responsive; that was proactive, not reactive," said Hugh Frost, Divisional Manager, Academic Affairs Division at Curtin University.

They too looked at a number of consultants before choosing Motorola's Application Consulting Team. "We looked at conventional consultants to help us revamp our registration process. However, we wanted a tool that would give ownership, the ability for internal follow-on, and one that allowed the answers to come from within. This was provided by Motorola and Cycle Time Reduction," said Frost.

Curtin University also found that making significant change is not an easy task. The 'As Is' map finally gave the Curtin University team an understanding of what the registration process really looked like. They noted that CFPM was a catalyst for change that created a collective "synergy within a framework of acceptance and innovation". However, Frost added that it is important to have communication with all departments and to insure that the process is achievable within the given timeframe. Paula Zaura, Motorola's facilitator, help keep the Curtin team motivated toward the end goal.

As you can see, Cycle Time Reduction through Cross Functional Process Mapping, although originally created for use in the manufacturing arena, can achieve results in every type of institution function and has obvious benefits when implemented properly and supported by management. "Currently, every business or institution, whether it is a manufacturer or a University, is struggling to do more with less. In this customer-driven marketplace, we need to find a way to change, to re-invent, and to improve if we want to stay competitive," said Macias. Added Frost, "Cycle Time Reduction is in effect a shock treatment. Its real strength is to create dissatisfaction among the people who administer it. The process puts people in the right frame of mind so that they start to think differently, more innovatively. Instead of being defensive, they begin to realize that they can actually do something. That is, there are no barriers, and collectively they can make a difference."

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