



Office of Continuous Improvement Annual Report Fiscal Year 2017

This report is a summary of the continuous improvement activities on the campus of Michigan Technological University for the 2017 fiscal year.

Pictured here: Students learning about personal kanbans in the academic course ENT3982 Continuous Improvement using Lean Principles

Mission Statement – Office of Continuous Improvement (OCI)

The mission of Michigan Technological University’s OCI is to provide exceptional value to the university by spreading a continuous improvement culture using Lean principles administratively, experientially, and academically through faculty, staff, students, and the Lean community.

“Lean has not only provided me best practices for my own professional work space, but it has provided my entire department a better way to work, a better way to communicate and a better way to continuously improve upon knowledge and skills. Lean is no longer something we "have" to do but something we WANT to do and is just part of our everyday work.”

-- Renee Hiller, Director of Human Resources

OCI Activities for Fiscal Year 2017

OCI conducts activities in three areas. First, it advises, encourages, and supports Michigan Tech students and the Leaders in Continuous Improvement (LCI) student organization on their Lean journey. Second, OCI provides consultation and education on Lean thinking to the academic units as they create a Lean culture and curriculum and to administrative units as they improve the efficiency and effectiveness of their processes. Third, it forms a central hub for training, coaching, and improvement activities to enrich and optimize the university workforce and the community. Safety is integrated into each of these three areas as a fundamental Lean objective. The work of OCI directly supports the major goals in Michigan Tech’s [Strategic Plan](#) by contributing to multiple subgoals. For an extended description of OCI activities, please see the Board of Trustees [Updates](#) on the Michigan Tech website.

1. Advise, encourage, and support Michigan Tech students and LCI.

- Provided advisor, support, and resources for LCI
 - LCI’s vice president received the Student Leadership Award “Exceptional Enthusiasm as a Student Leader”
 - LCI received the “Most Improved Student Organization” award
- Supervised student process improvement coordinators as they developed and delivered a student-to-student information session on Lean tools for time management and prioritization
- Assisted Auxiliary Services as they identified and supported projects for student teams in quality-related courses that teach statistical methods. This is a critical function due to the limited manufacturing industry in the region

- Provided Lean overviews to students in a Professional Development course for Chemistry majors, the student e-board for the Consumer Product Manufacturing Enterprise, and several classes in the School of Business
- Taught a Lean principles academic course in the fall and a culture of continuous improvement course in the spring
- Developed a new improvement website landing page with information focused on how students can engage with Lean at Michigan Tech (www.mtu.edu/improvement/students)
- Began every training and academic session explicitly connecting Lean and safety
- Connected guest speakers and visitors from Lean organizations with student groups
- Included students in campus Rapid Improvement Events
- Guided, supported, and trained student process improvement coordinators to work collaboratively with campus Lean facilitators

“[It] was a great experience. The class was very informative and the lessons learned were life changing.”

-- Mechanical Engineering undergraduate student, reflecting on their academic course on the culture of continuous improvement

2. *Provide consultation and education on Lean thinking to academic and administrative units.*

- Facilitated Rapid Improvement Events in support of:
 - The Provost’s Partner Engagement Program* and graduate student suspension appeals*
 - The Van Pelt and Opie Library’s archives, donations, resource cataloging, authorities, and student hiring
 - Human Resources’ employee termination*, short term disability*, and network drive*
 - Student Affairs and Advancement’s marketing projects* and Parade of Nations’ fundraising*, festival*, and parade*
 - Memorial Union Building’s custodial closets*
 - Information Technology’s service catalog* and basement work area aesthetics*
 - Research’s assignment of safety training* and proposal submission reporting statistics
 - Financial Service’s check requests*, cash receipting, and purchasing cards
 - Facilities Management’s Daniel Heights apartment maintenance and central receiving delivery
 - The Vice President of Administration’s business operations supply area*
 - Accounting Services airline ticket purchasing* and position roles and responsibilities*

*For more information on these improvements, see [Table 1, Curated List of Rapid Improvement Events](#), below

- Standardized the Lean overview for Rapid Improvement Events so every team member hears about the important connection between Lean and safety
- Facilitated a Strategic Planning session for the Engineering Fundamentals Department faculty and staff

“Each time, we left with something new; we always learned. [The rapid improvement event] provided clarity and insight into the process. We found creative ways to think and work more functionally and efficiently. The tools showed us how to better communicate which reduced stress on everyone.”

-- Team reflection from a Parade of Nations Fundraising rapid improvement event

3. *Develop and engage our workforce and community.*

- Organized a Higher Ed Lean Exchange (HELEX) by collaborating with Lean colleagues from University of Michigan and University of Illinois. HELEX was a day of dynamic discussions centered on advancing Lean in Higher Education. Participants included University of Michigan, Notre Dame, University of Illinois, Northwestern, and University of Waterloo in Ontario, Canada
- Hosted distinguished guests Jim Morgan, author of *The Toyota Product Development System*; Karyn Ross, author of *The Toyota Way to Service Excellence*; and Dan Vermeesch, Plant Leader and Lean Champion at Micron Manufacturing and Michigan Tech alum, all of whom provided workshops for the campus and community
- Hosted benchmarking visitors Jon Harry, Vice President of Operational Excellence at Northern Star Industries and Michigan Tech alum; and Lee Reid, CIO and Vice President for IT Services, and his colleague Ruth Johnson, Director of Auxiliary Services, from St Norbert College in De Pere, Wisconsin
- Supported the Van Pelt and Opie Library in the development and delivery of a Lean Library Tour for the campus and community and a “Lean into Spring” First Friday social
- Presented information on workplace organization to improve safety at a Michigan Tech Safety Liaison Meeting
- Selected as Reviewer for American Society for Quality (ASQ) World Conference proposals
- Presented at the Michigan Lean Consortium annual conference, the Network for Change and Continuous Innovation annual conference, and the Lean Educators Conference
- Delivered Lean-related workshops for Portage Health Systems’ executive team, Michigan Tech’s Financial Services and Operations annual retreat, Auxiliary Services’ Professional Development Day, and the Van Pelt and Opie Library Leadership Series

- Interviewed for the Karyn Ross Consulting newsletter
- Trained new cohort of 16 campus Lean Facilitators
- Established a Lean Facilitator Development Board to advise OCI on Lean facilitator training, development, certification, and deployment
- Encouraged several Michigan Tech employees as they presented their department's Lean improvements at conferences
- Delivered the Lean overview at Michigan Tech's New Huskies Employee Orientations
- Managed Copper Country Lean Group meetings
- Delivered Lean module for UAW Certification Program
- Delivered Lean Principles workshop to Michigan Tech employees
- Contributed to Lean community via social media, including Instagram, Twitter, and a blog with frequent guest bloggers
- Facilitated campus Rapid Improvement Events, as shown in [Table 1, Curated List of Rapid Improvement Events](#), below
- Supported monthly report outs for Auxiliary Services
- Integrated safety as a topic into daily huddles
- Provided continuing education and training to campus Lean Facilitators

“...my lenses have been changed to consider a problem an opportunity to make a difference in creating positive solutions in a no-blame culture.”

-- A Michigan Tech employee and Lean facilitator, when asked what one thing |
about Lean has impacted them the most

Office of Continuous Improvement
Table 1. Curated List of Rapid Improvement Events

Event Name	Sponsoring Department	Event Description	Results	<u>University Strategic Goals</u>
Reopening of Employee Termination	Human Resources	After initial improvement event, some errors continued when removing employees from the database. Countermeasures needed to be addressed in connecting to new training procedures, and errors needed to be fixed.	Reviewed and revised the termination checklist, making it more effective and useful. Created a standard for employees to be terminated from payroll after going 30 days without reporting hours. Enabled the ability to use the UL training system for student employees.	1.3.1 1.3.2
Standardize Process for Partner Employment in Academic Areas	Provost and Vice President for Administration – Advanced Matrix Process	A lack of a standard amongst departments and Partner Engagement services left partner hires without jobs that they felt they were promised, leading to a problem with retention rates.	Implemented a cost-share agreement, assigned a mentor, and increased communication across participating department chairs. Savings in terms of start-up funding and recruitment costs for faculty turnover could amount to \$400,000 per start-up package.	1.1.2 1.1.3 1.2.4
Short Term Disability	Human Resources	Due to a lack of standard work and poor communication between colleagues, employees, and supervisors, the short term disability process was done in an ad hoc manner with a lot of lead time, turnaround time, and waiting time. Because of the drawn out process, steps were missed or were duplicated, increasing the time even further for errors to be corrected.	Created a supervisor and an employee checklist, which lessened time spent by the manager, informed employees, and supervisors to process the leave. Created various template cards for short term disability leave, and a standard leave letter. Switched vendors which alleviated some waste. Time was better allocated—although not saved, it has been used on higher value activities and more productively.	1.3.1 1.3.3
Payroll Shared Drive 5S	Human Resources	Entering data into the shared drive was done without a standard creating an unorganized network drive.	Created a standard for naming, filing, and cleaning out the files in the shared drive. Reduced searching time and inventory which allowed for files to be located in a timely manner, making sure files aren't placed in incorrect locations, and eliminating unnecessary files. This reduced confusion and frustration.	1.3.1 3.1.5

Office of Continuous Improvement
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Event Name	Sponsoring Department	Event Description	Results	<u>University Strategic Goals</u>
Airline Ticket Purchase Process	Accounting Services	Employees had many options for purchasing airline tickets that required much follow up from accounting, leading to many errors and wasted time.	Reduced the number of follow-ups, corrections, and the monthly airline ticket bill. Saved 40 hours/month for financial services and other departments. Cut \$200,000 of advances per year.	1.3.1 1.3.2
MUB Custodial Closets 5S	Auxiliary Services	Custodial closets in the Memorial Union Building were cluttered and unorganized, leading to safety issues and decreased productivity.	Applied the 5S organizational tool to allow for more effectively used spaces. Staff saved time by not having to search for items. Established weekly audits and metrics to sustain improvement efforts.	1.3.1 3.1.7
Standards for Organizing Position Roles, Responsibilities, and Procedures	Accounting Services	When someone was unable to make it to work, their tasks were not accomplished for that day because of ambiguity in what each person's responsibilities were and lack of shared knowledge on how they should be accomplished.	Created an individual task list for where to find information, what to add to calendars, and date last updated. Created standard procedures and files for each department. Created a standard for how, where, and in what format job duties and procedures should be so that they are easy to locate and all in one place. Went from 6+ file locations to one. Greatly reduced the amount of time spent trying to locate a specific file.	1.3.1
Parade of Nations: Fundraising	International Program Services	It was hard for the Parade of Nation's committee to track sponsorship and small donations. This led to some "thank you" cards not being sent out. "Thank you" cards are important for maintaining good relationships with donors.	Lean tools were used to create a fundraising committee timeline, redesign the donation process, and assess priorities. By switching to accepting donations online, they saved money by reducing working hours, advertising needs, and waiting times.	1.2.1 1.2.2 1.2.5 1.3.1 1.3.3
5S Business Supply Area	Business Operations	Unorganized supply closets led to ineffective work and improper ordering of supplies, which often resulted in not having supplies when they were needed.	Applied the 5S organizational tool to the supplies cubical and set up a system for ordering supplies when they are needed. Weekly audits were developed to maintain the area. The changed made ordering supplies simpler and less time consuming.	1.3.1 3.1.7

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Event Name	Sponsoring Department	Event Description	Results	<u>University Strategic Goals</u>
UMC Project Editorial Process Kaizen	University Marketing and Communications	Employees had no system for completing tasks with consistency, and they lacked organizational flow.	Created a standardized process for how to go about a project from beginning to end and how these projects will be assigned. Reduced the level of confusion, time spent on following up with co-workers and customers, and time spent correcting errors. Created better communication within the department and reduced overburdening of one employee.	1.3.1 1.3.3
Service Catalog	Information Technology	Technology repair requests came in with incomplete information. This slowed response time and hindered the ability to solve issues in a timely manner.	Improved communication with campus through Tech Today and other sources which has led to better ticket routing. Better training and standards are being developed for staff. Improvements to the service catalog and portal is a slow process, but they remain a long-term goal that is steadily being worked towards.	1.3.1 1.3.2 1.3.3
Parade of Nations: Festival	International Program Services	The festival venue was often overcrowded due to the amount of people present. Set-up and take-down for vendors was time consuming and frustrating. It also required more volunteers and committee members, decreasing the amount of people available to assist with other aspects of Parade of Nations. Lack of flow in the venue also created safety issues and was a factor in decreasing attendance.	Developed a partnership with a local business to help with setting up and tear down, allowing for better use of people. Established a better flow for the venue making it more safe and enjoyable. By using an outside vendor for set up and tear down, the team has saved dozens of volunteer and staff hours that can now be used in different areas.	1.2.1 1.2.2 1.2.5 1.3.1 1.3.3 2.2.5
Suspension Appeal Form Process	Graduate School	Incomplete record-keeping led to duplicate information and unnecessary repetition of tasks. There was also ambiguity about when to involve outside parties in the process.	Created a standard work among colleagues and eliminated over-processing of shared job duties while streamlining the process. Reduced the number of steps in the process by 7. Reduced lead time and total time to complete a task.	1.3.1 2.3.1 3.1.4


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Event Name	Sponsoring Department	Event Description	Results	<u>University Strategic Goals</u>
Aesthetic Improvement of EERC Basement	Information Technology	Lack of workplace aesthetics led to lack of energy and excitement about coming to work for employees. This may have contributed to attendance issues, lack of collaboration, and decreased productivity.	Created a more aesthetically pleasing environment by installing fresh carpet, bright paint, artwork, and full spectrum lighting. This has increased the amount of collaboration and attendance at work.	1.2.1 1.2.2 1.2.5 1.3.1 1.3.3
Parade of Nations: Parade	International Program Services	Due to lack of flow, balanced work, storage units, and a lengthy registration form, the parade was disorganized and executed in an ad hoc fashion.	Roles and responsibilities within the parade were reviewed. By utilizing a Google registration form, and different organizational methods, individual workload and stress were lessened. By organizing flags differently, they were able to save \$45 per flag.	1.2.1 1.2.2 1.2.3 1.3.1 2.2.5
Assigning Safety Training to Students	Research	Due to lack of a standard, duplications are occurring when a student is employed at more than one location in the university and has to go through safety training for each. This also costs the university money for “seats” at the online training.	Reduced the amount of duplicate assignments by checking the status of the student. The team eliminated 11 steps of the process by reducing the duplications. Also reduced about 7 hours of work/semester just in correction time for one administrator.	1.3.1
Improving Check Request Process	Financial Services	Check requests were received with missing or incorrect information, taking longer to process and increasing the likelihood of errors.	Updated and revised instructions and wording on the check request forms. Provided new instructions to users and improved the communication with users. Created a standardized response and set standard response times to complete check request forms. Reduced the number of errors from 30% of check requests needing follow-up to only 10%. Reduced the amount of time spent on follow-ups from 30 minutes/week to 10 minutes/week.	1.3.1

This table contains Rapid Improvement Events selected from Item 2 in OCI Activities for Fiscal Year 2017, above.

Office of Continuous Improvement
Table 2. Alignment with University Strategic Goals

Strategic Goal Alignment: Michigan Tech has a strategic plan which helps align the daily activities of the university. Continuous improvement using Lean principles aids in this effort.

 Indicates a strategic plan subgoal supported by OCI.


[University Strategic Goals Website](#)

University Strategic Goals:

Goal 1: An exceptional and diverse community of students, faculty, and staff.


1.1: Exceptional academic and professional community.


1.1.1: Recruit, support, recognize, and graduate bright, motivated, and adventurous students.


 1.1.2: Attract, retain, and support faculty and staff by providing recognition, rewards, and competitive compensation.

 1.1.3: Provide professional development and leadership opportunities for students, faculty, and staff.


1.2: Diverse, inclusive, and collegial environment.

 1.2.1: Promote inclusiveness and collegiality through openness, engagement, mutual respect, and understanding of diverse perspectives.

 1.2.2: Provide a rich cultural environment and a welcoming campus.


 1.2.3: Develop and implement initiatives to increase the diversity of students, faculty, and staff.


 1.2.4: Pursue opportunities for dual-career faculty and staff.

 1.2.5: Enhance work-life blending for all members of our community.

1.3: Exceptional services and infrastructure.


 1.3.1: Promote a university-wide culture of safety, responsiveness, effectiveness, and efficiency.

 1.3.2: Provide exceptional technology, library, and laboratory facilities that support education, research and innovation.

 1.3.3: Create an aesthetic, sustainable, and effective infrastructure.

Goal 2: A distinctive and rigorous action-based learning experience grounded in science, engineering, technology, sustainability, business, and an understanding of the social and cultural contexts of our contemporary world.


2.1: Integration of instruction, research, and innovation to achieve the University Student Learning Goals.

 2.1.1: Provide research, service-learning, project-based, entrepreneurial, and international opportunities for students.

2.1.2: Promote mutual appreciation and collaborative opportunities across academic disciplines.

2.1.3: Continually review and update existing programs and develop new offerings in emerging disciplinary and interdisciplinary areas.

2.2: Transformative educational experience grounded in a residential-based technologically-rich learning environment.

 2.2.1: Encourage and support high quality, innovative, and effective instruction and experiences to enhance student learning.

 2.2.2: Contribute to students' development and application of critical thinking skills, creativity, leadership,

Office of Continuous Improvement
Table 2. Alignment with University Strategic Goals

collaborative skills, and ethical reasoning.

2.2.3: Enhance student learning through activities that promote long-term physical and mental health.

2.2.4: Foster healthy relationships and the ability to productively manage conflicts.

2.2.5: Enhance students' communication skills as well as information, technology, and global literacies.

2.2.6: Encourage social responsibility and the understanding of public policy issues.

2.3: Education that responds to the needs and challenges of the 21st century.

2.3.1: Expand Ph.D. and master's enrollments, degrees awarded, and scholarly productivity.

2.3.2: Improve access via non-traditional delivery of graduate programs.

2.3.3: Promote lifelong learning by providing opportunities for continuing education using appropriate delivery models.

Goal 3: Research, scholarship, entrepreneurship, innovation, and creative work that promotes a sustainable, just, and prosperous world.

3.1: Growth in research, scholarship, and creativity.

3.1.1: Increase external support for research, scholarship, and creative activities.

3.1.2: Recognize and reward our accomplishments and promote them both internally and externally.

3.1.3: Encourage and support interdisciplinary activities.

3.1.4: Cultivate a community of research inspiration, productivity, and excellence.

3.1.5: Increase development and optimize maintenance of shared research facilities, library resources, equipment, and infrastructure.

3.1.6: Facilitate coordination of research activities to address problems of social significance.

3.1.7: Improve efficient management and administration of externally funded activities.

3.2: Economic and social development and innovation.

3.2.1: Create a culture of responsible innovation and entrepreneurship and expand entrepreneurship in undergraduate and graduate programs.

3.2.2: Support workforce development and social engagement through collaborative outreach and technology transfer.

3.2.3: Encourage and support technology commercialization and start-up businesses.

3.2.4: Expand international and cross-cultural engagement with universities, industries, non-governmental organizations, and governments.