

SYSTEMS APPRAISAL FEEDBACK REPORT

in response to the *Systems Portfolio* of

MICHIGAN TECHNOLOGICAL UNIVERSITY

October 14, 2009



**Academic
Quality Improvement
Program**

The Higher Learning Commission **NCA**

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EXECUTIVE SUMMARY FOR MICHIGAN TECHNOLOGICAL UNIVERSITY

The following are summary comments on each of the AQIP Categories crafted by the Appraisal Team to highlight **Michigan Technological University's** achievements and to identify challenges yet to be met.

1. Michigan Technological University provides evidence of its commitment to students and to educational excellence. The efforts of several programs that require assessment of student learning for their accreditation may have potential to expand and enhance assessment initiatives to other – if not all - programs and facilities. However, there is insufficient data to support the conclusion that the university has pursued this opportunity or tapped into that potential. Directly correlating institutional outcomes with Michigan Tech's strategic goals also may result in assessment strategies that can be used to inform initiatives designed specifically to lead to measurable improvement in the context of those metrics.

The university has an opportunity to expand upon the established methods for measuring 'student' satisfaction by identifying and implementing additional methods to collect and analyze 'stakeholder' feedback. The institution has demonstrated a commitment to prioritized stakeholder groups and appears to be making progress in establishing processes to ensure the needs of these groups are being met. The ongoing, systematic collection and analysis of data may assist the institution to reach its strategic goals related to its students and its stakeholders.

2. Michigan Technological University appears to have a clear sense of its opportunities in a resource constrained environment in the course of continuous quality improvement. The university has a clearly defined and communicated strategic plan which helps define its other distinctive objectives. The other distinctive objectives appear to be understood by those directly involved, and an opportunity to better communicate these and their impact university-wide has been identified. Multiple measures for Michigan Tech, along with comparison with other institutions, are provided, but it is unclear how these results are analyzed or used. The institution's results reflect activity, but need to reflect impact and benefit to its stakeholders. By strengthening the connection between results collected/analyzed and the process.

3. Michigan Technological University values its students as demonstrated in its well established methods for collecting and analyzing feedback concerning student satisfaction and needs. The reasonably high response rate to its various satisfaction surveys lend credibility to survey results, and can be seen as an accurate reflection of students' and stakeholders' sentiments

toward the university. However, the institution recognizes that some of their student data, such as indications that students feel their input should be more frequently sought and more carefully considered, can serve as the motivation to improve processes related to understanding student needs.

4. Michigan Technological University has appropriate processes for recruiting, hiring and ensuring the ethical practices of employees. Indicators of the value that the university places on its faculty, staff, students, alumni, and external publics are not reflected in its attempts to measure effectiveness in valuing people. Little information was provided about employee training and development, leaving it unclear what priority the institution places on these activities and whether it plans for improvement in this area. The development of a more comprehensive, overall philosophy and approach to valuing people may serve it well as Michigan Technological University addresses important issues of diversity and retention.

5. Michigan Technological University has established methods for communicating both internally and externally, utilizing committees and task forces to ensure student and stakeholder input is included when decisions are made. In addition, a number of non-academic units are using Kaizen teams to improve processes. However, it appears that the institution has not focused on collecting, analyzing and using data to measure effectiveness of current processes related to leading and communicating. Michigan Technological University may be strengthened by understanding how assessment empowers organizational understanding, improvement efforts, and cultural change. Understanding “why we do what we do” is central to healthy leadership and communication in any organization. The university has an opportunity to develop processes for measuring effectiveness, such as assessing the efficacy and value of Kaizen teams and Tech Talks as a way of demonstrating organizational culture change, and then using the results as models for other units to identify and implement process improvements.

6. Michigan Tech provides evidence that, in general, it recognizes the importance of continuous improvement in the area of processes related to support services. Furthermore, the university correctly suggests that its relatively small size and open approach to communications serve to promote a culture amenable to informal initiatives to improve and enhance institutional performance. It has begun utilizing two important principles for high-performing organizations, user-centered approach to identifying improvement efforts and team-oriented problem-solving. However, the university has an opportunity to identify and implement more formal process that

will complement and validate informal processes, and that will further integrate performance measures related to institutional operations within the strategic planning process. It appears that the institution has not focused on collecting, analyzing and using data to measure effectiveness of current support service processes. As Michigan Tech strengthens its infrastructure through its Kaizen teams and the use of Lean concepts, it has the potential to develop systemic plans for measuring and ensuring effectiveness through the use of data driven decision making in all of its units.

7. Michigan Tech University identifies itself as a technological university that understands the importance of data. It appears, however, that this may well be so commonly understood that the University has not established measurement processes to determine how well they are collecting, analyzing, and using data for planning and continuous improvement. Michigan Tech provides evidence that it recognizes numerous dimensions in which it has not taken full advantage of opportunities for making improvements in this regard, both in terms of measuring the performance of its processes and assessing their impact.

8. Michigan Tech shows evidence that it generally recognizes the importance of planning continuous improvement. The university has established a strategic plan with three major goals and a four-metric dashboard to show institutional performance. Furthermore, the university recognizes that its size and the quantitative orientation of many of its employees promote a culture that fosters informal initiatives to improve. Since each of the institution's units conducts its own annual planning, the university has an opportunity to ensure that planning is occurring consistently across the institution. It is unclear whether the planning conducted at the unit-level includes data collection and analysis to document performance and whether results are used to drive needed improvements. Regardless, the university has opportunities related to developing a more coherent and deliberate approach, particularly with regard to identifying and implementing an infrastructure that will further integrate performance measures with planning objectives. To the extent that Michigan Tech can leverage its institutional strengths, it will be able to make significant strides in planning continuous improvement.

9. As its faculty and administrative staff increase their focus on continuous quality improvement processes, Michigan Tech should be able to develop more effective external relationships that reflect the university's priority on multi-dimensional partnerships that advance its strategic goals. Additionally, it appears that the university has an opportunity to establish similar priorities for internal partnerships, as exemplified by its apparent success in establishing the Tech Talk

sessions. For both internal and external partnerships, the university has an opportunity to establish systemic, comprehensive processes of data collection and corresponding analysis protocols to identify and target process improvements related to building collaborative relationships.

Accreditation issues and Strategic challenges for **Michigan Technological University** are listed in detail within the Strategic and Accreditation Issues Analysis section of the Appraisal Feedback Report.

ELEMENTS OF Michigan Technological University's FEEDBACK REPORT

The *Systems Appraisal Feedback Report* provides AQIP's official response to your *Systems Portfolio* by a team of readers trained in evaluation. After appraisers independently reviewed your document, the team reached consensus on essential elements of your institutional profile, strengths and opportunities for improvement by Category, and significant issues for your institution. These are presented in three sections of the Feedback Report: Accreditation Issues Analysis, Critical Characteristics Analysis, and Category Feedback. These components are interrelated in defining context, evaluating performance, surfacing critical issues, and assessing institutional performance.

It is important to remember that the Systems Appraisal Team had only your *Systems Portfolio* to guide their analysis of your institution's strengths and opportunities for improvement. Consequently, their report may omit important strengths — if you were too modest to stress them in your *Systems Portfolio*, or if your discussion and documentation of them was unconvincing. Similarly, the team may have pointed out areas of potential improvement that are already receiving the institution's attention. Again, the team used its best judgment in identifying improvement opportunities. If some of these areas of potential improvement are now strengths rather than opportunities because of your own focused efforts, that is all to your credit. If the team was unsure about an area, we urged it to err on the side of giving your institution the best possible advice about where investing your efforts might pay off. If some of their advice comes after the fact, after you've already tackled an area, no harm is done.

Executive Summary. Summative statements agreed upon by the Systems Appraisal Team based upon the institution's achievements and challenges in regards to each of the nine AQIP

Categories. Strategic challenges for the institution are listed in detail within the Strategic and Accreditation Issues Analysis section of the Appraisal Feedback Report.

Strategic and Accreditation Issues Analysis: Strategic issues are those most closely related to your institution's ability to succeed in reaching its mission, planning, and quality improvement goals. Accreditation issues are areas where you have not yet provided evidence that you meet the Commission's *Criteria for Accreditation*, or where the evidence you have presented suggests you may have difficulties, now or in the future, in meeting these expectations. If accreditation is essential for your institution then any accreditation issues identified are, by definition, also strategic. The Systems Appraisal Team identified both of these kinds of issues through analysis of your Organizational Overview and the feedback it provided for each Category, as well as by reviewing the Index to the *Criteria for Accreditation* that you provided along with your *Systems Portfolio*. This list of strategic issues offers a framework for addressing ongoing improvement of processes and systems, serving as an executive summary of the Report's key findings and recommendations.

Critical Characteristics: Your Systems Portfolio's Organizational Overview provides context for the team's knowledge of your institution's identity, mission objectives, strategic goals, and key factors related to improvement. Critical Characteristics are those features most important for understanding the institution's mission, environment, stakeholders, competitive position, goals, and processes. Characteristics having the greatest relevance to each Category are identified in the Report.

Category Feedback: The Report's feedback on each of AQIP's nine Categories specifically identifies strengths and opportunities for improvement. An **S** or **SS** identifies strengths, with the double letter signifying important achievements or capabilities upon which to build. Opportunities are designated by **O**, with **OO** indicating areas where attention may result in more significant improvement. Comments, which are keyed to your *Systems Portfolio*, offer brief analysis of each strength and opportunity. Organized by Category, and presenting the team's findings in detail, this section is the heart of the Report. At the end of the list of strengths and opportunities for each Category is the team's consensus assessment of the institution's stage of development on that particular Category. This section consists of a series of statements reflecting the reviewers' assessment of the institution's current status in relation to critical quality characteristics: robustness of process design; utilization or deployment of processes; the existence of results, trends, and comparative data; the use of results data as feedback, and

systematic processes for improvement of the activities that the Category covers. Since institutions are complex, maturity levels may vary from one Category to another.

STRATEGIC AND ACCREDITATION ISSUES

In conducting the Systems Appraisal, the team attempted to identify the broader issues that present the greatest challenges and opportunities for your institution in the coming years. These are all strategic issues, ones you need to grapple with as you identify your institution's strategies for confronting the future and becoming the institution you want to be. The team also examined whether any of these strategic issues put your institution into jeopardy of not meeting the Higher Learning Commission's accreditation expectations.

Issues Affecting Compliance with the *Criteria for Accreditation*. An important goal for the Systems Appraisal was to review your institution's compliance with the Higher Learning Commission's *Criteria for Accreditation*. The peer quality experts who served on the team were all trained in evaluating colleges and universities using the Commission's *Criteria*, and the Systems Appraisal process they followed included careful steps to ensure the team used the *Criteria* as a major factor in their review. As the team reviewed your presentation of your institutions under each AQIP Category, it searched for accreditation-related issues and concerns. In addition, the team used the *Index to the Criteria for Accreditation* that you provided with your Portfolio to perform a comprehensive review of the *Criteria* and each Core Component to ascertain whether you presented compelling evidence that your institution complies with each of these Commission expectations.

The Systems Appraisal team concluded that Michigan Technological University has presented evidence that it complies with each of the Five *Criteria for Accreditation* and each of their Core Components. Although the Systems Appraisal does not in itself constitute a review for continued accreditation, the team's conclusion upon reviewing your Portfolio against the *Criteria* will serve as a telling piece of evidence during the Commission's next scheduled AQIP review of your institution for Reaffirmation of Accreditation.

Issues Affecting Future Institutional Strategies. The Systems Appraisal Team identified the following strategic issues to assist Michigan Technological University in prioritizing and taking action on the important broad challenges and opportunities it faces. From these you may discover your vital immediate priorities, shaping strategies that can lead to a quantum leap in the performance of your institution. Implementing these strategies may call for specific actions, so AQIP's expectation that your institution be engaged in three or four vital Action Projects at all times will help encourage your administrators, faculty, and staff to turn these strategic goals into real accomplishments. Knowing that Michigan Technological University will discuss these strategic issues, give priority to those it concludes are most critical, and take action promptly, the Systems Appraisal Team identified:

The institution will be strengthened by identifying how degree programs contribute to identified institutional learning outcomes. Alignment between program outcomes and institutional outcomes will enhance the institution's ability to understand how the core curriculum and the degree programs provide an integrated learning experience. As the university's "schools" contribute comparative data, it will demonstrate all the university's program strengths

Michigan Tech appears to operate more at a departmental or unit level rather than at a college-wide level when it comes to defining, planning, and implementing processes. It's unclear whether there is any sharing of best practices among departments/units or whether any college wide processes that impact upon all departments/units are in place. The institution has an opportunity to build systemic processes, using the most effective components of existing departmental/unit processes, to develop commonly understood and consistently implemented processes. As new college-wide processes are developed, data collection and analysis and use of data to determine appropriate improvements can be incorporated as necessary components of continuous process improvement.

Since Michigan Tech is currently revisiting and updating its strategic plan, the institution has an opportunity to more closely connect annual planning, Dashboard metrics, and its strategic plan so that each component is integrated into a comprehensive continuous improvement process.

USING THE FEEDBACK REPORT

The AQIP *Systems Appraisal Feedback Report* is intended to initiate action for improvement. It is therefore important that the Report produced by the Systems Appraisal Team stimulate review of organizational processes and systems. Though decisions about specific actions are each institution's, AQIP expects every institution to use its feedback to stimulate cycles of continual improvement. At the next Strategy Forum an AQIP institution attends, its peers will examine in detail how it is using the feedback from its Systems Appraisal.

An organization needs to examine its Report strategically to identify those areas that will yield greatest benefit if addressed. Some key questions that may arise in careful examination of the Report may be: How do the team's findings challenge our assumptions about ourselves? Given our mission and goals, which issues should we focus on? How will we employ results to innovate, grow, and encourage a positive culture of improvement? How will we incorporate lessons learned from this review in our planning and operational processes? How will we revise the *Systems Portfolio* to reflect what we have learned?

How an organization interprets, communicates, and uses its feedback for improvement ought to support AQIP's core values, encouraging involvement, learning, collaboration and integrity. Based solely upon an organization's *Systems Portfolio*, the Report reflects a disciplined, external review of what an organization says about itself. The report should help an organization identify ways to improve its *Systems Portfolio* so it functions better to communicate accurately to internal and external audiences. But the Report's chief purpose is to help you to identify areas for improvement, and to act so that these areas actually improve. These improvements can then be incorporated into an updated *Systems Portfolio*, guaranteeing that future Systems Appraisals will reflect the progress an institution has made.

Within a year following the Systems Appraisal, an institution participates in another AQIP Strategy Forum, where the focus will be on what the institution has learned from its Appraisal (and from its other methods of identifying and prioritizing improvement opportunities, and what it has concluded are its major strategic priorities for the next few years. AQIP's goal is to help an institution to clarify the strategic issues most vital to its success, and then to support the institution as it addresses these priorities through Action Projects that will make a difference in institutional performance.

CRITICAL CHARACTERISTICS ANALYSIS

The purpose of this section is to identify what team members understood to be the critical and distinguishing characteristics of your institution. They are the shared understanding of the most important aspects of Michigan Technological University its current dynamics and the forces surrounding it, and its internal momentum and aspirations, at least as team members understood them. This section also demonstrates that the Systems Appraisal Team recognized and knew what makes Michigan Technological University distinctive. Should you find some characteristics that you think are critical and missing from this list, you may want to clarify and highlight these items when you revise your *Systems Portfolio* and other literature explaining your institution to the public.

Item Critical Characteristic

- O1a Michigan Technological University is a public institution located in Upper Michigan's Keweenaw Peninsula. It is a medium-size university located in a relatively small, but not isolated community of Houghton, Michigan.
- O1b Michigan Technological University's goals for student learning and shaping its academic climate is to deliver a distinctive and rigorous discovery-based learning experience grounded in science, engineering, technology, sustainability, and the business of innovation. In addition it intends to provide dynamic experiential learning that integrates instruction, research, and innovation in undergraduate and graduate programs; develop undergraduate and graduate programs in new and emerging areas, and; provide exemplary student life activities.
- O1c General education goals include reading, communication, critical reasoning, balance, analysis and argument; the ability to apply multiple disciplinary perspectives in interpretation, analysis and creative program solving; respect for diversity and awareness of complex context in study and work; and knowledge of a broad range of topics and disciplines complimentary to the major.
- O1d In the fall of 2008 Michigan Technological University employed 1666 non-student employees; 445 of these are faculty and 1222 are staff. (Administrators are classified as faculty or staff depending on position and reporting requirements.) The gender distribution was approximately 45% female and 55% male. The vast majority of these

employees (85%) are declared to be white/non-Hispanic. Of those who declared, the next highest ethnic groups represented among the employees were international (3.7%) and Asian/Asian American/Pacific Islander (3.3%). Staff are classified as professional (46%), represented (30%), or non-represented (24%). Represented staff are members of one of three organizations depending on job duties; United Auto Workers (UAW), American Federation of State, County, and Municipal Employees (AFSCME), and Police Officers Association (POA).

- O2a Michigan Technological University's Research, Scholarship, Innovation, and Creative Work program assists faculty in identifying and pursuing external funding to support research, and supports faculty engaged in research. Eight research institutes and 14 research centers facilitate multi-disciplinary research activities.
- O2b Michigan Technological University's Plan promotes economic development through programs operated by the Technology and Economic Development (TED), including research support for, and information and technology transfer with, industrial partners.
- O3 Michigan Technological University views its primary competitors as the other state universities in Michigan, other technological institutions, and public and private institutions in the region. It recognizes that its competitors are based on the degrees rather than the institutional level.
- O6a The strategies in place to align goals with the Michigan Technological University Plan are: attract and retain bright, motivated, and adventurous students; construct and renovate technologically and ecologically superior facilities; and optimize the use of resources, laboratories, and equipment.
- O7a On a national level, Michigan Technological University participates in the Common Data Set and the Voluntary System of Accountability. Internally, the Compendium is a data resource available only to the Michigan Technological University community via secure web login.
- O7b Michigan Technological University's Dashboard is used to measure progress on the university strategic plan and make data for planning and improvements easily accessible.

- O7c Michigan Technological University has used Sungard BANNER since 1994 to manage key business processes. Data is access using web-based tools or custom-written database queries and applications.
- O8 Michigan Technological University faces financial, space, and human constraints including state funding decreases, limited space to house growing faculty staff needs, and staff increases. In addition, being land- and water-locked and located in a small town 200 miles from a major city with 200+ inches snowfall per year limits their ability to recruit and retain students and employees.
- O9 Michigan Technological University identified several key partnerships and collaborations including the Michigan Technological University enterprise Corporation SmartZone, national business and industry partnerships, and internal collaborations between the university and its multidisciplinary research institutes and centers.

CATEGORY FEEDBACK

In the following sections, each of which deals with strengths and opportunities for improvement for one of the nine AQIP Categories, selected *Critical Characteristics* are again highlighted, those the Systems Appraisal Team believed were critical keys to reviewing that particular AQIP Category. The symbols used in these “strengths and opportunities” sections for each Category stand for *outstanding strength* (SS), *strength* (S), *opportunity for improvement* (O) and *pressing or outstanding opportunity for improvement* (OO). The choice of symbol for each item represents the consensus evaluation of the Systems Appraisal Team members, and deserves your thoughtful consideration. Comments marked SS or OO may need immediate attention, either to ensure the institution preserves and maximizes the value of its greatest strengths, or to devote immediate attention to its greatest opportunities for improvement.

AQIP CATEGORY 1: HELPING STUDENTS LEARN

Helping Students Learn identifies the shared purpose of all higher education organizations, and is accordingly the pivot of any institutional analysis. This Category focuses on the teaching-learning process within a formal instructional context, yet also addresses how your entire

institution contributes to helping students learn and overall student development. It examines your institution's processes and systems related to learning objectives, mission-driven student learning and development, intellectual climate, academic programs and courses, student preparation, key issues such as technology and diversity, program and course delivery, faculty and staff roles, teaching and learning effectiveness, course sequencing and scheduling, learning and co-curricular support, student assessment, measures, analysis of results, and efforts to continuously improve these areas.

Here are the Key Critical Characteristics of Michigan Technological University that were identified by the Systems Appraisal Team as most relevant for its interpretation of its *Systems Portfolio* section covering Category 1, Helping Students Learn:

Item Critical Characteristic

- O1b Michigan Technological University's goals for student learning and shaping its academic climate is to deliver a distinctive and rigorous discovery-based learning experience grounded in science, engineering, technology, sustainability, and the business of innovation. In addition it intends to provide dynamic experiential learning that integrates instruction, research, and innovation in undergraduate and graduate programs; develop undergraduate and graduate programs in new and emerging areas, and; provide exemplary student life activities.
- O2a Michigan Technological University's Research, Scholarship, Innovation, and Creative Work program assists faculty in identifying and pursuing external funding to support research, and supports faculty engaged in research. Eight research institutes and 14 research centers facilitate multi-disciplinary research activities.
- O6a The strategies in place to align goals with the Michigan Technological University Plan are: attract and retain bright, motivated, and adventurous students; construct and renovate technologically and ecologically superior facilities; and optimize the use of resources, laboratories, and equipment.
- O7a On a national level, Michigan Technological University participates in the Common Data Set and the Voluntary System of Accountability. Internally, the Compendium is a data resource available only to the Michigan Technological University community via secure web login.

Here are what the Systems Appraisal Team identified as Michigan Technological University's most important strengths and opportunities for improvement relating to processes encompassed by Category 1, Helping Students Learn.

<i>Item</i>	<i>S/O</i>	<i>Comment</i>
1P1a	S	Michigan Technological University engaged in a highly participative process in redefining common learning objectives, and continues wide-spread involvement in maintaining oversight of the General Education component through the General Education Council and the Graduate Faculty Council.
1P1b	O	The General Education program underwent significant revision about ten years ago and was to be reviewed periodically. However, there is no indication of a systematic review process being established. There is an opportunity here to put into place a formal review process for the General Education program. Regularly scheduled reviews may offer an opportunity to address relevant matters in a more timely manner.
1P2a	S	The institution recognizes the unique nature of each of its programs allowing each program to determine its own learning objectives. Faculty curriculum committees oversee ongoing program review processes and recommend revisions for departmental faculty review and approval.
1P2c	O	While it is positive that MTU recognizes the independence of its programs to determine learning outcomes, academic assessment at Michigan Technological University may be strengthened by sharing best practices in assessment between units and developing a common framework and protocol that may enable regular, system-wide assessment to occur and ensure that institutional objectives are reached.
1P3	S	Initiatives and ideas for the development of new programs are identified through a formal, faculty driven process that is subsequently vetted through a comprehensive review by various stakeholders. External review includes environmental scans, occupational forecasts and advisory input. Internal review and approval requires alignment with the university's strategic plan, resource availability, capacity to offer the program/course,

- stakeholder needs, and the number/quality of competing programs/courses.
- 1P4a S Michigan Technological University is commended for the collaborative culture and multi-disciplinary learning approach, and for rewarding innovative research and teaching.
- 1P4b S Responsive academic programming is designed with the flexibility to allow a variety of curricular experiences, such as honors programs, research opportunities, co-ops with industry and internal experiences, to integrate learning goals, students' career needs, and realities of the employment market.
- 1P4d O While the institution declares that its programs are designed with the flexibility to allow for a variety of curricular experiences, it does not identify its process (-es) for designing responsive academic programming. The institution could benefit from a consistent process of program development.
- 1P5a S Michigan Technological University appears to have a well established set of admission standards and placement exams to aid in determining student preparation. Michigan Technological University determines the preparation required of students for the specific curricula, programs, courses, and learning they will pursue based on the university's prior experience. Expectations regarding student preparation and student learning objectives are communicated through the recruitment process, New Student Orientation, and during an initial counselor meeting. Additionally, these expectations address student accessibility by making materials available on-line, hard copy, and through face-to-face contact.
- 1P5b O The institution appropriately relies upon its faculty and prior experience to determine the preparation required of students, nevertheless, processes for making such determinations (how and how frequently) are unclear.
- 1P6 S The niche market permits Michigan Technological University to be quite explicit regarding program and degree requirements. This information is

delivered through the institutional web site and through personal interactions in the admissions and orientation processes.

- 1P7a S The institution uses first-year courses in its schools to help undergraduate students explore disciplines with a view to selecting their programs of study.
- 1P7b O Michigan Technological University has several services in place that help students make decisions related to programs of study but there does not appear to be a process for proactively identifying and supporting students who need additional assistance.
- 1P8a S Michigan Tech's selective admissions process reduces the need for remediation however, services for under-prepared students include discipline-specific preparatory courses and learning centers, peer mentoring, study groups, academic progress monitoring, campus resource referrals, and personal development seminars. Additionally, The ExSEL Program is designed to promote student success and offers academic support. The program is a comprehensive partnership between the Department of Educational Opportunity and the College of Engineering, College of Sciences and Arts, School of Business and Economics, School of Technology, and School of Forest Resources and Environmental Sciences aimed at increasing student success and retention. Under-prepared graduate students can be required to take advanced undergraduate courses or work independently with a faculty member.
- 1P8c O The institution might explore implementing a structured approach to identifying under-prepared students and directing them to a learning center since it appears that a student's election to use a learning center is student-driven.
- 1P9a S Faculty and students are encouraged to identify and understand student learning styles through assessments, supplemental instruction, and by training staff and faculty on learning styles and corresponding teaching methods.

- 1P9b O Michigan Technological University may benefit from the use of formal institution-wide processes to detect the learning style uniqueness of individual students. Further, the university has the opportunity to expand the inventory of instruments used in determining the learning differences of students. Incorporating some degree of consistent assessment in this regard has the potential to help inform the University about the range, degree and scope of those learning style differences in its efforts to meet student needs.
- 1P10a S The institution appropriately addresses the needs of international students and those requesting special accommodation/accessibility.
- 1P10b O Given Michigan Tech's strategic goal for a diverse student body, there may exist an opportunity for the university to identify additional student subgroups and their needs (beyond international and accessibility) with a view to meeting the special needs of more students.
- 1P10c OO Michigan Technological University does not provide evidence of having co-curricular development goals. Establishing goals for co-curricular development and aligning them with curricular learning objectives will ensure that efforts to support non-traditional subgroups are directed toward meeting institutional outcomes.
- 1P11a S Expectations for effective teaching and learning are communicated in a number of ways, including presentations by the provost, writings and sessions provided by the Center for Teaching, Learning and Faculty Development, and a University Senate policy on assessing teaching through portfolios and feedback from colleagues.
- 1P11b S A faculty Assessment Council is responsible for coordinating the collection of information and communications about teaching effectiveness and the achievement of learning outcomes.
- 1P11c S In addition to using student evaluations and the requirements of external agencies (accrediting bodies), the university's senate also has requirements for assessing teaching as part of the promotion/tenure

process. Support for instructors who rate lower on course evaluations is also provided.

- 1P11 O MTU's faculty and students would benefit from encouraging all faculty to "plan for improvement," not just those who receive a student evaluation score below a specified level.
- 1P12a S Though course delivery systems at Michigan Technological University primarily consist of on-site classrooms and laboratories, implementation of the latest technology (iTunesU, etc.) has provided an innovative approaches for a learning environment that is more accessible and more stimulating for both on-campus and online students.
- 1P12b O The institution utilizes a variety technologies to deliver instructions however, a process should be designed for determining the needs of the students in regard to technology and/or the effectiveness of these technologies.
- 1P13 O Michigan Technological University indicates that it relies on an external review process to ensure that its programs and courses are up-to-date and effective. There is no indication as to the regularity of the external review process for the non-accredited disciplines. Michigan Technological University may wish to develop a system wide approach which may utilize benchmarking and comparative data, strategic planning, and stakeholder groups to ensure current and effective programs.
- 1P14 S Michigan Technological University uses the same structured process for changing or discontinuing programs and courses as is used for designing new programs and courses (see 1P3).
- 1P15a S The library is to be commended for developing improved processes to "make the library more integral to the learning process."
- 1P15b O While the response indicates that a variety of methods for determining and addressing support needs of faculty and students are used, it's unclear what processes are used beyond the general measures of student satisfaction surveys, placement tests and informal communication

- between faculty and students. There appears to be no institutional process in place for determining the support needs of the University faculty. Michigan Technological University may wish to develop formal feedback opportunities to identify support needs of students and faculty.
- 1P15c O While the institution has some means for identifying the support needs of students and faculty related to student learning, development, and assessment, its commitment to resources and implementation of these improvements is unclear.
- 1P16 O Michigan Technological University acknowledges that their Student Affairs division has developed co-curricular goals, but they have not aligned with curricular learning objectives.
- 1P17 O Currently, assessment of student learning at Michigan Technological University has focused on program review and has been unit driven. Though program assessment of culminating work, where used, is an important aspect of ensuring student learning, Michigan Technological University has an opportunity to correlate student achievement of learning and development objectives across all units, thus ensuring that student achievement of expected (institutional) learning outcomes is central to awarding of a degree.
- 1P18a S The internal sharing of best practices is accomplished through the Assessment Council, which is chaired by the assistant provost and has a representative from each academic unit, the General Education Council, the JR Van Pelt/Opie Library, and Student Affairs. The Use of an Assessment Council for providing leadership in building appropriate assessments throughout the institution is commended.
- 1P18b O Michigan Technological University indicates that they have a faculty-driven process for assessing student learning at the course, program and General Education level, however, no examples or specific information is provided to fully explain these processes.
- 1R1a S The institution clearly identifies many of the numerous measures of student learning and development that it collects and analyzes.

- 1R1b O While Michigan Technological University lists a number of measure of student learning that are collected and analyzed, they do not indicate how often the results are collected and who is involved in the analysis.
- 1R1c O While Michigan Technological University routinely measures student-learning outcomes, opportunities exist to continue implementing measurement tools for assessing common student development objectives and extra-curricular activities. Formally assessing the institution's common student development objectives will offer an opportunity for the institution to improve this area.
- 1R2a S The institution demonstrates an ability to draw conclusions based upon its assessments of (some of its) general education courses. The GE courses, "Perspective on Inquiry" and "Revisions," provide informative data for determining the effectiveness of common learning objectives.
- 1R2b S The use of a student portfolio to assess learning in the core is a very good way to develop a data set that will allow the institution to track the effectiveness of the core over time.
- 1R2c O Michigan Technological University has an opportunity to strengthen their measurement and analysis of common student learning objectives by using the assessment process described for the "Revisions" course as a model for measuring all general education objectives.
- 1R2d O Assessment of common student development objectives that align with institutional objectives will enable effective decision making for program improvement.
- 1R3b OO While there are noteworthy efforts being made to assess student learning in the colleges of engineering and technology, there is no evidence to indicate that the other three colleges have similar or comparable initiatives in place at this time. The institution should look at how to develop similar tools for the non-nationally assessed disciplines.

- 1R3c O With specific regard to distance education, Michigan Technological University might consider surveys of online students to determine how well students are learning in this and other alternative delivery formats.
- 1R3d O Discussing additional metrics beyond self-assessment may offer the institution better results information regarding student learning.
- 1R4b O The measures listed are indirect measures of student satisfaction. The institution will be better served by implementing direct measures of learning as well as more direct measures of stakeholder satisfaction. Participation at career fairs and on-campus interviews may be more a function of employment needs rather than satisfaction with graduates' performance.
- 1R4c O While recruitment efforts indicate stakeholder satisfaction with Michigan Technological University graduates, other feedback from employers may provide greater understanding of program improvement strategies.
- 1R5a O Despite general student satisfaction with the institution's learning support processes, it recognizes the opportunity to improve its support services. A sample of the open-ended question results would have aided in this review.
- 1R5b S The use of a student satisfaction survey for support services seems appropriate.
- 1R6a S Results appropriately compare several of the university's accredited programs with competing institutions.
- 1R6b OO For a more accurate picture of its engineering students' learning, the institution has an opportunity to assess engineering students who do not voluntarily take the Fundamentals of Engineering exam. Comparative Data may be expanded beyond the fields of engineering and some physical sciences as well.
- 1I1a S Three recent examples of systematic and comprehensive improvements at Michigan Technological University include the classroom and facilities upgrade plan, standardization of course syllabi, and establishment of

common developmental outcomes. Michigan Technological University is commended for developing Action Projects in keeping with their Strategic Plan and that directly impact the quality of classroom instruction.

- 111b O As student development outcomes are formed, and assessment is built, the student development program will be able to integrate their work more fully with academic programs to enable Michigan Technological University to provide a holistic learning experience for its students.
- 112a S Michigan Technological University has a strong commitment to students and excellence in education; a climate for curricular innovation reinforced through rewards and recognition; and external accreditation of numerous programs.
- 112b O While the institution declares its commitment to creating a culture in which students learn, it has an opportunity to clearly identify improvements in culture and infrastructure based on appropriate data for improved performance results for helping students learn.

AQIP CATEGORY 2: ACCOMPLISHING OTHER DISTINCTIVE OBJECTIVES

Accomplishing Other Distinctive Objectives addresses the processes that contribute to the achievement of your institution's major objectives that complement student learning and fulfill other portions of your mission. Depending on your institution's character, it examines your institution's processes and systems related to identification of other distinctive objectives, alignment of other distinctive objectives, faculty and staff roles, assessment and review of objectives, measures, analysis of results, and efforts to continuously improve these areas.

Here are the Key Critical Characteristics of Michigan Technological University that were identified by the Systems Appraisal Team as most relevant for its interpretation of its *Systems Portfolio* section covering Category 2, Accomplishing Other Distinctive Objectives:

Item Critical Characteristic

- O1b Michigan Technological University's goals for student learning and shaping its academic climate is to deliver a distinctive and rigorous discovery-based learning experience grounded in science, engineering, technology, sustainability, and the business of innovation. In addition it intends to provide dynamic experiential learning that integrates instruction, research, and innovation in undergraduate and graduate programs; develop undergraduate and graduate programs in new and emerging areas, and; provide exemplary student life activities.
- O2a Michigan Technological University's Research, Scholarship, Innovation, and Creative Work program assists faculty in identifying and pursuing external funding to support research, and supports faculty engaged in research. Eight research institutes and 14 research centers facilitate multi-disciplinary research activities.
- O2b Michigan Technological University's Plan promotes economic development through programs operated by the Technology and Economic Development (TED), including research support for, and information and technology transfer with, industrial partners.
- O9 Michigan Technological University identified several key partnerships and collaborations including the Michigan Technological University enterprise Corporation SmartZone, national business and industry partnerships, and internal collaborations between the university and its multidisciplinary research institutes and centers.

Here are what the Systems Appraisal Team identified as Michigan Technological University's most important strengths and opportunities for improvement relating to processes encompassed by Category 2, Accomplishing Other Distinctive Objectives.

<i>Item</i>	<i>S/O</i>	<i>Comment</i>
2P1a	S	Michigan Technological University designs its key non-instructional processes to be aligned with its strategic plan and to support its instructional objectives. Moreover it strives to ensure that all applicable federal rules are followed when designing these processes and it employs a collaborative approach to establish strategic and operational plans to achieve its goals in this regard.
2P1b	O	The underlying rationale for exceptions related to operating within the existing university organizational structure is unclear.

- 2P2 S Michigan Tech's other objectives are established collaboratively and in conjunction with strategic planning with input from faculty, staff, stakeholders, advisory boards, and the administration using a wide variety of comparative data and diverse stakeholder groups.
- 2P3a S Expectations regarding non-instructional objectives are communicated within the applicable units through unit level retreats and meetings, advisory board meetings, through the existing committee communication structure, on the unit website, and in some print materials. Furthermore, expectations for some objectives, when appropriate, are shared with the university community and relevant stakeholders through a variety of communication methods including campus forums, the Michigan Technological University Dashboard, and university publications.
- 2P3b O Michigan Technological University may strengthen its communications of expectations to stakeholders outside applicable units by aligning the expectations to stakeholder feedback and instructional objectives.
- 2P3c O All institutional objectives, including major non-instructional objectives, will benefit from clear communication strategies which include the entire university community to ensure the appropriate focus, understanding, and support of university stakeholders.
- 2P4 O Michigan Technological University will measure effectiveness more powerfully when it measures the impact of the programs and services rather than the inputs and participation in the activities. The University will strengthen its reputation and community ties as it articulates such program results to stakeholders. The University recognizes that it has an opportunity to establish a process for a systematic, thorough review of these objectives.
- 2P5a S Typically, Michigan Technological University assesses the needs of faculty and staff relative to non-instructional objectives through direct meetings with various personnel, such as departmental chairs, school deans, and program directors. Additionally, the use of advisory boards

- and councils strengthens the quality of information and awareness necessary for good decision making in its strategic planning.
- 2P5b O The University has opportunity to expand its process of determining faculty and staff needs relative to these objectives beyond simply communicating needs in personal meetings. Where processes can be formalized for learning the needs of internal stakeholders, as they are for external stakeholders, particularly in light of the fact that most of the objectives operate within existing university structure, Michigan Technological University will be able to support change efforts more effectively in times of slim resources.
- 2P6 O Michigan Technological University recognizes this it has an opportunity for improvement in the form of developing a formalized systematic process for adjusting or realigning non-instructional objectives at the university level, rather than relying entirely on a unit-by-unit evaluation.
- 2R1a S Michigan Technological University regularly collects and analyzes measures that are specific to each major non-instructional objective, and to each unit that contributes to the achievement of a specific objective. The university attempts to ensure that the measures used for a unit are aligned with the mission of that unit.
- 2R1b O Michigan Technological University identifies several measures that it collects and analyzes regularly, but it's unclear how some of these measures indicate achievement of the non-instructional objectives.
- 2R2a SS Results related to each of the major non-instructional objectives are provided including funding sources and funding levels, number and demographics of participants, and program growth/decline. These data are consolidated within the four key contributors to institutional mission: Research, Scholarship, and Creative Work; Technology Transfer; Student and Community Enrichment; Community Outreach; and Economic development.
- 2R2b O In discussing the results related to accomplishing its distinctive objectives (research, scholarship, and creative work; technology transfer; student

and community enrichment; community outreach, and; economic development), the institution is inconsistent whether it presents conclusions based upon its analysis of the data.

- 2R3a S The institution provides results comparing its outcomes with peer institutions within Michigan and across the U.S. and generally ranks favorably against its counterparts. The results in student and community enrichment are comparable to the benchmarks that it uses (AITU, Carnegie Peers, NSSE).
- 2R3b O While the institution provides comparison results, it is unclear whether and how Michigan Technological University analyzes and uses these comparison results. As with the data in 2R2, there are opportunities for the University to improve how it compares itself to peer institutions. For example, a ratio between invention disclosures and licenses would be informative to the data in Figure 2.13. The response doesn't indicate that Michigan Technological University compares itself to other organizations for its Community Outreach or Economic Development objectives.
- 2R4a S Performance results strengthen the overall institution in a number of ways including, but not limited to, generating income; supporting retention of faculty, staff, and students; growing the local and state economies; providing a venue for students to learn about different cultures; and introducing students to STEM disciplines. The university confirms that these other distinctive objectives are designed to assist in the achievement of its instructional objectives, and that it recognizes the potential and existing contribution of these objectives to the achievement of instructional objectives.
- 2R4 b O The response highlights several ways that the distinctive objectives strengthen Michigan Tech, but there are no "results" to show evidence of the statements made; for example the University states that its "achievements in Economic Development and Technology Transfer grow the local and state economies." While this is likely and Michigan Technological University should be commended for this achievement, the

evidence is not provided for what is probably universally understood through anecdotal and historical experience. This example is repeated in statements made throughout this response: "growth in our research attracts and retains the best faculty, staff, and students," "creates job opportunities," "the community benefits from the increase in business," etc.

- 2I1a S The portfolio clearly identifies the greatest improvement in this category as being a change in institutional culture resulting in a general recognition of the importance of strategic planning and an acceptance of the strategic planning process. Michigan Technological University indicates that this culture shift was the result of "a concerted effort by the Executive Team to improve the Michigan Technological University Strategic Plan, by clarifying and condensing its focus to three strategic goals, and by continually presenting it as a framework for many discussions in the university community and with our stakeholders."
- 2I1b O This section could be strengthened by identifying improvements derived from the results section (e.g. lower technology transfer result, Fig 2.7).
- 2I2a O Michigan Technological University indicates that they have a culture of collaboration and effective resource use that supports continuous process improvement, but it is unclear how this helps the institution to improve and set targets.
- 2I2b O This section will be improved by identifying processes that may be improved to strengthen the infrastructure. The remarks indicate satisfaction with processes, though 2P6 indicated improvement was needed.

AQIP CATEGORY 3: UNDERSTANDING STUDENTS' AND OTHER STAKEHOLDERS' NEEDS

Understanding Students' and Other Stakeholders' Needs examines how your institution works actively to understand student and other stakeholder needs. It examines your institution's processes and systems related to student and stakeholder identification, student and

stakeholder requirements, analysis of student and stakeholder needs, relationship building with students and stakeholders, complaint collection, analysis, and resolution, determining satisfaction of students and stakeholders, measures, analysis of results, and efforts to continuously improve these areas.

Here are the Key Critical Characteristics of Michigan Technological University that were identified by the Systems Appraisal Team as most relevant for its interpretation of its Systems Portfolio section covering Category 3, Understanding Students' and Other Stakeholders' Needs:

Item Critical Characteristic

- O1a Michigan Technological University is a public institution located in Upper Michigan's Keweenaw Peninsula. It is a medium-size university located in a relatively small, but not isolated community of Houghton, Michigan.
- O1b Michigan Technological University's goals for student learning and shaping its academic climate is to deliver a distinctive and rigorous discovery-based learning experience grounded in science, engineering, technology, sustainability, and the business of innovation. In addition it intends to provide dynamic experiential learning that integrates instruction, research, and innovation in undergraduate and graduate programs; develop undergraduate and graduate programs in new and emerging areas, and; provide exemplary student life activities.
- O2b Michigan Technological University's Plan promotes economic development through programs operated by the Technology and Economic Development (TED), including research support for, and information and technology transfer with, industrial partners.

Here are what the Systems Appraisal Team identified as Michigan Technological University's most important strengths and opportunities for improvement relating to processes encompassed by Category 3, Understanding Students' and Other Stakeholders' Needs.

<i>Item</i>	<i>S/O</i>	<i>Comment</i>
3P1a	S	Michigan Tech's processes for identifying students' needs include, but are not limited to, student surveys, direct student involvement on committees and advisory board, one-on-one interactions, and observation.

- 3P1b O While faculty keep “current with the needs of industry” there is no clearly defined process as to how this takes place. The institution would be better served with a systematic process that would ensure the collection of the necessary data and analysis of the impact of these activities.
- 3P1c O MTU has identified an opportunity to identify needs of prospective and pre-college student stakeholders. The institution may wish to develop targeted feedback questions for its prospective students and pre-college students that are aligned to strategic goals and can be trended over time.
- 3P2 S MTU has processes in place to build relationships with students including students serving on university committees and boards, allowing students to provide input on the spending of the Memorial Union Support Fee, and connecting current student groups with City of Houghton officials and connecting current students with alumni that may provide jobs and professional advice.
- 3P3a S MTU provides evidence that it assesses the changing needs of stakeholders through personal interaction, such as students interacting with the City of Houghton to determine the city’s need for volunteers; and special programs and follow up with parents and families, such as events held when families visit their student on campus and phone and electronic follow up. Employer needs are managed by the Corporate Development staff and alumni needs are determined and analyzed by the Michigan Technological University Alumni Association. Furthermore, enhanced activities and services are aligned with the university’s strategic plan and its available resources.
- 3P3b O While the institution states that analysis is done in alignment with its strategic plan, the institution does not appear to have an overall/ comprehensive approach to analyzing, communicating and using data to make decisions based on stakeholder needs. It’s unclear whether the college’s executive level staff are involved in using data to support overall college and strategic planning or if data collection and analysis is only conducted at the departmental level.

- 3P4a S MTU builds and maintains relationships with stakeholders by providing them with timely and relevant information, seeking their input, and involving them in decision-making processes. Examples provided include relationships with government officials; maintaining an open door policy with the City of Houghton; and through the Keweenaw Business and Community Leaders Group.
- 3P4b O MTU has an opportunity to define processes, beyond those established with the government and local businesses, to address how the institution builds and maintains its relationships with other key stakeholder groups such as research collaborations and those listed in 3P3.
- 3P5 S MTU utilizes its strategic planning process to inform decisions related to targeting new students or stakeholder groups with educational offerings and services. Of primary consideration in this decision process are the potential impact of the educational offering or service, its probability of advancing institutional objectives, and the availability of necessary resources.
- 3P6 S Processes for collecting, analyzing and communicating student complaints include the Student Commission, an academic grievance process, and an ombudsperson. The university's use of a Student Commission as a formal venue for registering and responding to student concerns and complaints enables a proactive and transparent student life atmosphere, in keeping with their strategic student development goals.
- 3R1a S MTU's measures of student and stakeholder satisfaction include student satisfaction and usage surveys, student enrollment and retention, level of alumni donations and participation, and external stakeholder support and involvement.
- 3R1b O The Library measures student satisfaction by usage, and considers a high level of usage as being directly correlated with a high level of student satisfaction. While this interpretation may be accurate, there is the possibility that a student survey, such as including the Library in the existing satisfaction survey, would yield additional information.

- Establishing measures of effectiveness that directly correspond with established departmental objectives may extend the institution's understanding beyond perceived satisfaction and enable the university to understand whether it is achieving departmental, unit, and university goals.
- 3R2-3R3a S Student satisfaction results are provided for enrollment and retention with four-year trends, a sampling of graduate and undergraduate student satisfaction, and library usage; demonstrating its ability to analyze data that it collects. The results related to building relationships with students indicate that students feel a positive sense of belonging and welcome
- 3R2-3R3b O While results provided indicate general levels of satisfaction, students have indicated that there is room for improvement and that that they also feel their input should be more frequently sought and more carefully considered. The institution has an opportunity to establish consistent processes for communicating its interpretation of and conclusions drawn for all data presented.
- 3R4-3R5a S Stakeholder satisfaction results indicate favorable feedback from alumni and consistent levels of funding from the state of Michigan. Results related to building relationships with stakeholders include long-term involvement of external partners for the Youth Programs and increasing financial support of the Parents Fund, indicating that the institution understands their importance.
- 3R4-3R5b O MTU has an opportunity to collect and analyze performance results for all of the stakeholder groups that it has identified, such as advisory committees, to provide a more complete assessment of its performance in meeting stakeholder needs. More meaningful measures that relationships have been built will enable improvements in these efforts to be strategic.
- 3R6 O While comparison results are provided for student retention, from IPEDS, and anecdotal feedback from an alumni consultant, MTU has an opportunity to strengthen its collection and analysis of comparison data

related to student and stakeholder needs. The institution has an opportunity to further define what data is needed provide a more in-depth understanding of student and stakeholder needs. Expanding data collection and analysis beyond IPEDS and the other data sources they have indicated may provide the university with an opportunity to approach data collection strategically to provide direction for continuous process improvement that directly corresponds with student and stakeholder needs.

- 311 S Recent improvements related to responding to student and stakeholder needs include use of a consulting firm to assist with data collection and analysis of student characteristics and responses; participation in the National Student Clearing House to track admitted students that opt not to attend Michigan Tech; and Alumni Relations modifying their surveys to collect feedback that facilitates external comparisons. Participation in national data collection programs will likely allow the institution to obtain meaningful data for improvement efforts and provide more powerful and comparative data for more intentional comparisons in the future.
- 312 O While Michigan Technological University's culture promotes a sense of community among student, faculty, and staff; the university will likely benefit from establishing a common understanding of cultural strengths that support continuous improvement. This can then be used in the development of formal, regular and targeted feedback systems and processes that provide data that can be used to make improvements that directly correspond to student and stakeholder needs.

AQIP CATEGORY 4: VALUING PEOPLE

Valuing People explores your institution's commitment to the development of your employees since the efforts of all of your faculty, staff, and administrators are required for institutional success. It examines your institution's processes and systems related to work and job environment; workforce needs; training initiatives; job competencies and characteristics;

recruitment, hiring, and retention practices; work processes and activities; training and development; personnel evaluation; recognition, reward, compensation, and benefits; motivation factors; satisfaction, health and safety, and well-being; measures; analysis of results; and efforts to continuously improve these areas.

Here are the Key Critical Characteristics of Michigan Technological University that were identified by the Systems Appraisal Team as most relevant for its interpretation of its Systems Portfolio section covering Category 4, Valuing People:

Item Critical Characteristic

- O1a Michigan Technological University is a public institution located in Upper Michigan's Keweenaw Peninsula. It is a medium-size university located in a relatively small, but not isolated community of Houghton, Michigan.
- O1d In the fall of 2008 Michigan Technological University employed 1666 non-student employees; 445 of these are faculty and 1222 are staff. (Administrators are classified as faculty or staff depending on position and reporting requirements.) The gender distribution was approximately 45% female and 55% male. The vast majority of these employees (85%) are declared to be white/non-Hispanic. Of those who declared, the next highest ethnic groups represented among the employees were international (3.7%) and Asian/Asian American/Pacific Islander (3.3%). Staff are classified as professional (46%), represented (30%), or non-represented (24%). Represented staff are members of one of three organizations depending on job duties; United Auto Workers (UAW), American Federation of State, County, and Municipal Employees (AFSCME), and Police Officers Association (POA).
- O8 Michigan Technological University faces financial, space, and human constraints including state funding decreases, limited space to house growing faculty staff needs, and staff increases. In addition, being land- and water-locked and located in a small town 200 miles from a major city with 200+ inches snowfall per year limits their ability to recruit and retain students and employees.

Here are what the Systems Appraisal Team identified as Michigan Technological University's most important strengths and opportunities for improvement relating to processes encompassed by Category 4, Valuing People.

<i>Item</i>	<i>S/O</i>	<i>Comment</i>
4P1	S	Using several processes for different personnel categories, Michigan Technological University identifies the credentials, skills, and values required for faculty, staff, and administrators based on past practices, benchmarking, and experience.
4P2a	S	Michigan Tech's hiring processes have appropriate recruiting, evaluation methods, and credential confirming practices to ensure that candidates possess the required credentials, skills, and values.
4P2b	O	While the institution states that all of its hiring processes are in full compliance with state and federal laws, the specific controls for accomplishing and maintaining compliance are not discussed. Furthermore, there may be an opportunity for the institution to conduct background checks beyond those positions for which they are required.
4P3a	S	Michigan Tech's process for recruiting and hiring employees includes posting the position in multiple venues, establishing a search committee, committee evaluation of applications, possible reference checks, and phone interviews.
4P3b	S	The primary method of retaining employees involves meeting the economic needs of employees through compensation, recognition, faculty mentors, endowed positions, professional growth, on-site child care, and its Dual Career Assistance Program.
4P4	O	By offering a formal orientation for new employees, Michigan Technological University may be able to strengthen its organizational culture for the purpose of facilitating employees' assimilation into the university, increasing employee satisfaction, and ultimately enhancing retention.
4P5a	S	The university's Retirement Supplemental Voluntary Program and its Strategic Faculty Hiring Initiative appear to be effective in anticipating personnel changes for some specifically targeted demographic groups.

- 4P5b O While two examples of planning for personnel changes are provided, it is unclear how these examples serve as a personnel planning process. An opportunity may exist for the institution to develop a comprehensive process for anticipating personnel changes, resulting in a proactive approach to anticipating its needs for personnel.
- 4P6a S Michigan Technological University utilizes Lean to redesign some of its processes in an effort to streamline and reduce waste.
- 4P6b O As its Lean practices are developed and refined, Michigan Technological University can pursue the opportunity of using Lean methodology to improve its processes and activities across the institution.
- 4P7a S Michigan Technological University has established educational, procedural, and accountability protocols to ensure that its published, ethical policies are practiced across the institution.
- 4P7b O Although the institution has several ethical mechanisms in place, a prevailing ethical philosophy appears to be absent. Michigan Technological University may want to articulate its philosophy and values in order to proactively align its personnel policies with its organizational priorities and to reinforce its organizational culture.
- 4P8 O Michigan Technological University recognizes that developing a proactive approach to determining the training needs of employees and aligning its training efforts with its organizational plan is an opportunity for improvement.
- 4P9 O Michigan Technological University recognizes that it does not currently have a systematic and comprehensive approach to training and developing its staff, faculty, and administrators to contribute fully throughout their careers. Distinguishing between development and training and proactively planning for each may enhance retention.
- 4P10 O Required annual performance reviews of all employees may be an opportunity for training, control, and reinforcement of its continuous

- improvement culture, enabling better alignment of the institution's operations with its strategic plan.
- 4P11 O Michigan Technological University recognizes its opportunity for developing an employee recognition, reward, and compensation system that would be aligned with instructional and non-instructional programs and services. A deliberate approach to this may increase employee satisfaction, enhance retention, and achieve objectives.
- 4P12 O The university has an opportunity to identify additional ways of determining key issues related to employee motivation and satisfaction beyond its climate survey administered every five years. Less comprehensive and more frequent efforts at identifying those issues may be an effective, supplemental approach.
- 4P13 S Michigan Technological University appears to promote the satisfaction, health and safety, and well-being of its employees by providing an atmosphere of cooperation, engendering a sense of community among its employees, practicing an open door policy, providing for wellness and benefits, and maintaining a safe work environment.
- 4R1 S Michigan Technological University collects data related to valuing people gathered from its annual climate survey, exit interviews, comparing compensation data, and health and safety tracking reports.
- 4R2a S Performance results related to valuing people indicate that employees have a measure of satisfaction with their experience at Michigan Tech. The results shown provide a baseline from which the university can compare results of future climate surveys.
- 4R2b O While Michigan Technological University displays selected results, it is unclear upon what basis the results were selected and whether they are indicative of the university's employees in general.
- 4R2b O 4R3 OO Michigan Technological University does not provide direct measures of employee productivity. It claims to track several metrics but

- does not state objective results. There seems to be an opportunity to present relevant data that would align with the institution's goals.
- 4R4a S Michigan Technological University benchmarks compensation data against several other institutions as a driver for restructuring compensation.
- 4R4b O While Michigan Technological University redesigned its compensation structure, it is unclear how Michigan Technological University compared with other institutions and what re-alignment of compensation occurred since no data or evidence is provided.
- 4I1a S Michigan Technological University identifies a number of specific improvements related to valuing people that includes implementing a program supporting dual career families, providing on-site child care, installing an emergency notification system, hiring a director of institutional compliance and ethics, developing an institutional conflict of interest policy, enhancing safety training, and pursuing a grant to increase faculty diversity.
- 4I1b O While Michigan Tech's improvements are commendable, it is unclear whether these improvements are based on comprehensive, systematic performance results related to valuing people.
- 4I2 O Despite recognizing that a change in its culture is impacting its decisions, Michigan Technological University is not clear how its culture and infrastructure affect its selection of improvement initiatives. It seems that the institution has yet to fully consider the influence of its culture and infrastructure in selecting processes to improve and setting performance results for valuing people.

AQIP CATEGORY 5: LEADING AND COMMUNICATING

Leading And Communicating addresses how your institution's leadership and communication structures, networks, and processes guide your institution in setting directions, making decisions, seeking future opportunities, and building and sustaining a learning environment. It

examines your institution's processes and systems related to leading activities, communicating activities, alignment of leadership system practices, institutional values and expectations, direction setting, future opportunity seeking, decision making, use of data, leadership development and sharing, succession planning, measures, analysis of results, and efforts to continuously improve these areas.

Here are the Key Critical Characteristics of Michigan Technological University that were identified by the Systems Appraisal Team as most relevant for its interpretation of its Systems Portfolio section covering Category 5, Leading and Communicating:

Item Critical Characteristic

- O1a Michigan Technological University is a public institution located in Upper Michigan's Keweenaw Peninsula. It is a medium-size university located in a relatively small, but not isolated community of Houghton, Michigan.
- O1d In the fall of 2008 Michigan Technological University employed 1666 non-student employees; 445 of these are faculty and 1222 are staff. (Administrators are classified as faculty or staff depending on position and reporting requirements.) The gender distribution was approximately 45% female and 55% male. The vast majority of these employees (85%) are declared to be white/non-Hispanic. Of those who declared, the next highest ethnic groups represented among the employees were international (3.7%) and Asian/Asian American/Pacific Islander (3.3%). Staff are classified as professional (46%), represented (30%), or non-represented (24%). Represented staff are members of one of three organizations depending on job duties; United Auto Workers (UAW), American Federation of State, County, and Municipal Employees (AFSCME), and Police Officers Association (POA).
- O7a On a national level, Michigan Technological University participates in the Common Data Set and the Voluntary System of Accountability. Internally, the Compendium is a data resource available only to the Michigan Technological University community via secure web login.

Here are what the Systems Appraisal Team identified as Michigan Technological University's most important strengths and opportunities for improvement relating to processes encompassed by Category 5, Leading and Communicating.

Item	S/O	Comment
5P1	S	Michigan Tech's mission was originally established the state of Michigan in 1885, and revised a mission statement, vision statement, and set of guiding principles were developed in 2000. Review of the mission, vision and strategic plan takes place every three years enabling the university to engage its stakeholders in defining its core purposes and directions, thus strengthening both the university's stability and adaptability over time.
5P2	S	Michigan Tech's Executive Team sets directions through implementation of the Michigan Technological University Plan, which includes an expectation that all university-wide initiatives will advance the strategic goals, as measured using pre-defined dashboard metrics. In addition, each administrative unit has a mission statement that reflects how it supports the university's overall mission.
5P3a	S	Michigan Technological University uses a variety of venues in which the needs of students and other stakeholders, including alumni and corporate partners, can be identified and included in its planning processes, particularly with regard to the development and review of the Michigan Technological University Plan.
5P3b	O	Michigan Technological University may benefit from developing a more systematic and deliberate approach to gathering data and analyzing internal and external stakeholder needs. For example, while the university appropriately seeks student input into processes relating to the practical dimensions of student life, Michigan Technological University might consider collecting student input into other institutional processes such as academic and alumni affairs.
5P4	O	While the university points to several noteworthy initiatives that reflect current or future opportunities for the university, it's unclear what processes are used by Michigan Tech's leadership to consistently identify, evaluate and address these initiatives as part of a larger, intentional focus on continuous quality improvement.

- 5P5 S Michigan Technological University utilizes a variety of decision-making processes throughout the university depending on the scope of the decision, its impact and those involved in making the decision. A well-established system of committees, advisory boards, task forces and temporary committees provide a framework for decision making processes and reflect the high-performing organizational principle of involvement.
- 5P6a S A number of types of data and performance results used in decision-making by different departments/units are identified. Specifically, its lean initiative is data driven and is the basis for a number of performance metrics.
- 5P6b O Although Michigan Technological University identifies the data and results used, there is opportunity to assess whether the data and results collected are being used in decision-making or for process improvement.
- 5P7-5P8 S Communication at Michigan Technological University occurs between and among levels and units in a variety of ways, including printed and online newsletters, academic unit annual reports, a formal committee structure, the institution's web site and an internal electronic bulletin board.
- 5P7-5P8 O While communication venues for internal and external communication are in place throughout the organization, the efficacy of their function is unclear from this review. In addition, it's unclear how these communications deepen and reinforce the characteristics of a high performance organization.
- 5P9a OO While Michigan Technological University states that professional development opportunities are available, there does not appear to be a coherent, intentional process coordinated comprehensively at a university wide level. The university has an opportunity to enhance leadership development by more purposefully communicating and sharing leadership skills and best practices, beyond use of the current administrative committee structure, which may enhance the institution's ability to achieve its mission, vision, and strategic plan.

- 5P10 O The university's approach to presidential succession is consistent with typical university practices, as are the processes for replacing key administrative personnel and faculty. However, Michigan Technological University recognizes that an opportunity exists to develop a leadership succession plan across all units in the university.
- 5R1 OO While assessment of the university's leading and communication function seems to be a part of employee / administrator performance reviews, a direct targeted assessment of this important function would seem to offer a more accurate analysis. The institution has the opportunity to utilize other, perhaps external measures that contain industry benchmarks, to evaluate the performance of its leaders and communication strategies.
- 5R2a O While Michigan Technological University is commended for demonstrating transparency in communicating the Presidential evaluation to the campus, the university has an opportunity to develop a more descriptive evaluation of leadership performance beyond that currently in place to more clearly link effectiveness of leadership to organizational improvement and culture.
- 5R2b O The data provided by Michigan Technological University points to differences among groups of employees regarding their perceptions of their value to the institution. Those data might represent opportunities for focused efforts by the university to more effectively address the needs of specific categories of employees. In addition, exploring mechanisms for increasing response rates among faculty and staff may provide an opportunity for more complete data to be collected and analyzed.
- 5R3 O The University currently does not have a process for comparing results associated with leading and communicating with those from other organizations, and it recognizes this as a future opportunity for improvement.
- 5I1 S Recent improvements related to leading and communicating include the use of Kaizen teams to identify, break down, and reconstruct processes to make improvements in non-academic units, and the Tech Talk series

to increase and improve communication across campus. The use of Kaizen teams is an excellent example of how Michigan Technological University implements principles of high performing organizations and reflects the university's focus on AQIP practices. Tech talks may enable Michigan Technological University to achieve cultural change, because it communicates issues that have a high value for the organization. The popularity of the series suggests that personnel already have begun to own organizational priorities.

- 512 O Michigan Technological University states that it has not considered the influence that culture and infrastructure have on selecting processes to improve and setting improvement targets related to leading and communicating.

AQIP CATEGORY 6: SUPPORTING INSTITUTIONAL OPERATIONS

Supporting Institutional Operations addresses the variety of your institutional support processes that help to provide an environment in which learning can thrive. It examines your institution's processes and systems related to student support, administrative support, identification of needs, contribution to student learning and accomplishing other distinctive objectives, day-to-day operations, use of data, measures, analysis of results, and efforts to continuously improve these areas.

Here are the Key Critical Characteristics of Michigan Technological University that were identified by the Systems Appraisal Team as most relevant for its interpretation of its Systems Portfolio section covering Category 6, Supporting Institutional Operations:

Item Critical Characteristic

- O2a Michigan Tech's Research, Scholarship, Innovation, and Creative Work program assists faculty in identifying and pursuing external funding to support research, and supports faculty engaged in research. Eight research institutes and 14 research centers facilitate multi-disciplinary research activities.

- O6a The strategies in place to align goals with the Michigan Tech Plan are: attract and retain bright, motivated, and adventurous students; construct and renovate technologically and ecologically superior facilities; and optimize the use of resources, laboratories, and equipment.
- O7b Michigan Tech's Dashboard is used to measure progress on the university strategic plan and make data for planning and improvements easily accessible.
- O7c Michigan Tech has used Sungard BANNER since 1994 to manage key business processes. Data is access using web-based tools or custom-written database queries and applications.
- O8a Michigan Tech faces financial, space, and human constraints including state funding decreases, limited space to house growing faculty staff needs, and staff increases. In addition, being land- and water-locked and located in a small town 200 miles from a major city with 200+ inches snowfall per year limits their ability to recruit and retain students and employees.

Here are what the Systems Appraisal Team identified as Michigan Technological University's most important strengths and opportunities for improvement relating to processes encompassed by Category 6, Supporting Institutional Operations.

<i>Item</i>	<i>S/O</i>	<i>Comment</i>
6P1a	S	Michigan Tech utilizes a variety of methods to assess student and other stakeholder needs, and the degree of satisfaction with a variety of institutional operations. It appears that the university is aware of the importance of identifying opportunities to maintain and strengthen its commitment in this regard. Student needs are identified through surveys, personal interactions, inclusion on search committees and advisory groups, suggestion boxes, and soliciting feedback from student employees. Other stakeholder needs are identified through inclusion on advisory groups, online surveys, surveying parents/families following orientation, canvassing corporate representatives through well-developed relationships, and lunches with the Keweenaw Business and Community Leaders hosted by the president.

- 6P1b S Michigan Tech is commended for maintaining its responsiveness in the Accounting Department through its regular benchmarking exercises.
- 6P1c O While Michigan Tech utilizes a variety of activities to gather information from students and other stakeholders, it is unclear as to whether these activities are part of a purposeful process or simply independent activities. The University may benefit from auditing its service units to ensure that all service units have a response system in place for each of its stakeholders.
- 6P2a S Michigan Tech uses direct personal interactions, online surveys, suggestion boxes, specialized oversight groups, departmental liaisons, and advisory committees to identify the administrative support service needs of faculty, staff, and administrators. The institution appears to make good use of a (faculty, departmental, and academic) liaison structure and advisory committees in several departments throughout the institution enabling cross-departmental input.
- 6P2b O While Michigan Tech cites a number of useful and likely valuable initiatives related to identifying the needs of faculty with regard to a few areas of interest, such as research support and library requirements, it leaves significant aspects of faculty needs out of the discussion. Moreover, other than a reference to efforts related to technology, there does not appear to be any consistent or comprehensive process prioritizes or addresses the needs of administrative and support staff.
- 6P3a S Michigan Tech has developed key processes to contribute to everyone's physical safety under the leadership of Michigan Tech's Occupational Safety and Health Services (OSHS), its Crisis Response Team (CRS) and its Public Safety Department. Standard Operating Procedures (SOPS) have been developed for specific tasks and processes on campus, with ongoing training and routine reviews of these SOPs. The institution uses a variety of traditional and technological media to communicate important emergency response information to students, faculty, and staff.

- 6P3b O While Michigan Tech complies with safety regulations, the institution does not seem to have a prevailing safety philosophy to proactively guide its safety efforts and align them with the institution's mission.
- 6P4a S As a means to addressing needs, Michigan Tech recognizes the importance of customer service and has taken steps to offer direct contact with support service personnel to the publics that served. The institution tries to balance the personal touch with the use of technology.
- 6P4b O Though some identified units have clearly defined processes for measuring the effectiveness of their services, it is unclear that all units have addressed this issue. References to regular meetings and the meshing of personal contact/response with technology-based support are both useful and instructive, but not sufficiently descriptive to provide a clear sense of how the university actually manages those activities. Also, it is unclear whether or not the university has collected and analyzed data to verify that these services are meeting the needs they're designed to meet. The institution may benefit from a data driven unit by unit review of its ability to understand/assess whether these services are effective in meeting stakeholder needs. Perhaps there is an opportunity for the institution to develop and implement an over-arching philosophy.
- 6P5a S The use of web services, such as Tech Today, wikis, and email, as strategies for encouraging knowledge sharing, innovation and empowerment are helpful. (I thought we agreed to delete this one?)
- 6P5b O The university recognizes that there is room for improvement in terms of documenting support services. As Michigan Tech understands how various technologies can empower and enhance innovation, they will strengthen their workforce and university systems. Michigan Tech is encouraged to think beyond mastery of these technologies to seeing them as problem-solving venues. The thoughtful analysis of management processes that are the focus of 6P4 may provide a framework and rubrics that will be helpful in responding to item 6P5.

- 6R1 O While a number of departments/units at Michigan Tech use a variety of methods to collect data on support services processes, it's unclear how and how frequently this data is analyzed and whether all departments/units impacting on support services processes are expected to regularly collect and analyze data. Additionally, there is no reference made as to how the processes underlying those services are assessed. This item is asking how the university evaluates processes to ensure efficiency as well as effectiveness, and survey responses are but one, typically indirect, measure of those dimensions. The university may be strengthened by the use of direct measures of effectiveness and by identifying benchmarks which ensure quality in all its services.
- 6R2 O While the institution demonstrates that it can interpret data and draw conclusions from among the data presented for student support services processes, it does so in a limited way, simply presenting data without interpreting much of it. Of the four (4) result charts provided by the university, only Figure 6.2 reflected an attempt to measure process. The remaining charts represent satisfaction surveys, and while those representations are informative and indicate that students are "somewhat" satisfied with the support services provided by the university, they do not provide insights into the degree that the results correlate with specific processes, or the statistical significance of those results.
- 6R3 O The institution fails to demonstrate how its discussion here relates to performance results for administrative support services processes. The information on eCommerce activity is appreciated however, the university has an opportunity to intentionally collect and analyze data related to support services provided to staff, faculty and administrators to identify the effectiveness of current services and to identify potential improvements.
- 6R4 O Michigan Tech acknowledges that it currently does not have adequate processes in place with which to use information effectively for the purpose of improving services in support of institutional operations. There is an opportunity to establish more systematic processes to strategically use information and results to identify and implement process improvements.

- 6R5 O The university appropriately recognizes that its options for comparing its results with other higher education organizations is dependent on developing additional methods and strategies for measuring support services processes. Comparable results are an important component of continuous improvement and this should be given attention in the near future. The use of Student Voice (6R11) may make comparing data a little easier.
- 6I1a S Michigan Tech cites a number of improvements in institutional operations, most notably in the areas of information technology, electronic grade management, virtual calendaring, and in safety and security. The use of Lean and Kaizen teams to make improvements demonstrates a commitment to continuous improvement at Michigan Tech and will help the institution focus its efforts in the future.
- 6I1b O While a list of process improvement in this category is provided, it's unclear what data was collected and analyzed to determine the need for these improvements. The university has an opportunity to make documenting the continuous improvement components of data collection, data analysis, and how the results are used to identify and implement process improvements a priority across all college departments/units.
- 6I2 O While Michigan Tech indicates that the informal network within its smaller institution helps it to select processes to improve and set targets for improvement, it is unclear how this helps the institution to actually make improvements and set improvement targets. The institution has an opportunity to understand how the role of culture and infrastructure affect improvements in offering support services.

AQIP CATEGORY 7: MEASURING EFFECTIVENESS

Measuring Effectiveness examines how your institution collects, analyzes, and uses information to manage itself and to drive performance improvement. It examines your institution's processes and systems related to collection, storage, management, and use of information and data – at the institutional and departmental/unit levels; institutional measures of effectiveness; information and data alignment with institutional needs and directions; comparative information and data;

analysis of information and data; effectiveness of information system and processes; measures; analysis of results; and efforts to continuously improve these areas.

Here are the Key Critical Characteristics of Michigan Technological University that were identified by the Systems Appraisal Team as most relevant for its interpretation of its Systems Portfolio section covering Category 7, Measuring Effectiveness:

Item Critical Characteristic

- O2a Michigan Tech’s Research, Scholarship, Innovation, and Creative Work program assists faculty in identifying and pursuing external funding to support research, and supports faculty engaged in research. Eight research institutes and 14 research centers facilitate multi-disciplinary research activities.
- O2b Michigan Tech’s Plan promotes economic development through programs operated by the Technology and Economic Development (TED), including research support for, and information and technology transfer with, industrial partners.
- O7a On a national level, Michigan Tech participates in the Common Data Set and the Voluntary System of Accountability. Internally, the Compendium is a data resource available only to the Michigan Tech community via secure web login.
- O7b Michigan Tech’s Dashboard is used to measure progress on the university strategic plan and make data for planning and improvements easily accessible.
- O7c Michigan Tech has used Sungard BANNER since 1994 to manage key business processes. Data is access using web-based tools or custom-written database queries and applications.

Here are what the Systems Appraisal Team identified as Michigan Technological University’s most important strengths and opportunities for improvement relating to processes encompassed by Category 7, Measuring Effectiveness.

<i>Item</i>	<i>S/O</i>	<i>Comment</i>
7P1	O	While Michigan Tech clearly articulates its processes for selecting, managing, and distributing data and performance information to support instructional and non-instructional programs and services, it is unclear

- how it subsequently utilizes data in support of those dimensions of institutional operations
- 7P2 S Michigan Tech is able to distinguish the differences in processes at the unit-level verses the university-level in its selection, management, and distribution of data and performance information to support planning and improvement efforts. While a similar process is used, university-level planning and improvement is a high-level responsibility of the Board of Control, with input from the Executive Team and the Dean's Council. Related performance measures are displayed on the Michigan Tech Dashboard on the university's web site.
- 7P3 O The university cites various participants and cross-functional teams involved in determining the data needs of departments and units, and provides the context in which those determinations are made. However, there is an opportunity for Michigan Tech to describe the process by which those needs are evaluated and prioritized, particularly given that negotiations are often necessary in order to accommodate competing interests.
- 7P4a O MTU indicates that it analyzes, and internally and externally communicates, data at the organizational level as it relates to the four university-wide metrics in the Michigan Tech Dashboard. However, it's unclear what process (es) are included in this analysis, how goals are set, and how these measures are used to identify improvements.
- 7P4b S Michigan Tech measures its overall performance by assessing its progress on the objectives included in its strategic plan, utilizing the Michigan Tech Dashboard. Goals for each of the four university-wide metrics are displayed, together with longitudinal data. Additional performance measures are analyzed by the Board of Control, the Executive Team, task forces, other standing committees, AQIP Action Project teams, and individual units.
- 7P5 OO The university states that it relies on federal and state guidelines to inform the Executive Team and the Board of Control as to the needs and

priorities for comparative data and information. There is an opportunity for Michigan Tech to look within its faculty and staff for additional guidance and recommendations in this regard. Professional staff and well-informed faculty bring additional insights into best practices within their respective professions and disciplines, and that expertise has the potential to complement the work of the Executive Team and the Board of Control. Furthermore, Michigan Tech might consider determining how the selection of data goes beyond compliance reporting, and to identify data that measures unit and institutional effectiveness.

- 7P6 OO It is unclear what role the university's mission and philosophy/values play in the alignment of departmental and unit analysis of data and information with organizational goals. The university indicates that the Compendium, produced annually by Institutional Analysis, is the common data source used across the university. However, relying on a common source does not ensure that the resulting data represents the information needed by the units/departments, nor does it ensure the alignment of department and unit analysis of data and information with organizational goals. Such an alignment requires a coherent and deliberate effort to correlate department and unit data analysis with the objectives developed through the strategic planning process. Consequently, MTU has an opportunity to expand upon its use of one common data source to ensure that departmentally related metrics are aligned with institutional goals.
- 7P7 S Michigan Tech appears to have an appropriate commitment to and associated processes in place for ensuring the timeliness, accuracy, reliability, and security of information systems and related processes. The security of Michigan Tech's information systems and related processes are the responsibility of the university's Information Security Officer who utilizes secure locations, limited access, edit checks, verifying results among different databases, firewalls, intrusion-detection and prevention systems, and suspicious activities systems.
- 7R1 O The university appears to have appropriate methods for measuring the performance of many information management and technology-related

- dimensions of institutional operations. However, it acknowledges that it currently does not have a formal system for collecting and prioritizing possible application enhancements, and that it has an opportunity to develop protocols for measuring the effectiveness of its information and knowledge management system.
- 7R2 O Currently, Michigan Tech does not maintain records related to the effectiveness of its monitoring system, and it may also benefit from developing a consistent feedback system for ensuring that mission and vision are accomplished and users' needs are being met through the university's information management systems.
- 7R3 OO Since Michigan Tech does not currently measure the effectiveness of its knowledge management systems and processes, it lacks the means for comparing its results with other organizations. The university acknowledges that doing so will provide the university with useful, comparative insights into its strengths, as well as potential areas for improvement.
- 711a S Two significant improvements related to measuring effectiveness include establishment of the ASPIRE database as a space inventory, and electronic grade submission using Blackboard grade books.
- 711b O While the ASPIRE improvement addresses matters relevant to measuring effectiveness, it is unclear how the basis for pursuing this project was established beyond an interest in "...responding to concerns...". The university has an opportunity to migrate from drivers related to efficiency and accuracy to higher-level (strategic) drivers related to mission and values.
- 712 O With its culture being one that understands the importance of data, Michigan Tech has an opportunity to use this common value to build processes to measure the effectiveness of its information and knowledge management systems, and to use the subsequent results to prioritize and implement improvements.

AQIP CATEGORY 8: PLANNING CONTINUOUS IMPROVEMENT

Planning Continuous Improvement examines your institution's planning processes and how your strategies and action plans are helping you achieve your mission and vision. It examines your institution's processes and systems related to institutional vision; planning; strategies and action plans; coordination and alignment of strategies and action plans; measures and performance projections; resource needs; faculty, staff, and administrator capabilities; measures; analysis of performance projections and results; and efforts to continuously improve these areas.

Here are the Key Critical Characteristics of Michigan Technological University that were identified by the Systems Appraisal Team as most relevant for its interpretation of its *Systems Portfolio* section covering Category 8, Planning Continuous Improvement:

Item Critical Characteristic

- O6a The strategies in place to align goals with the Michigan Tech Plan are: attract and retain bright, motivated, and adventurous students; construct and renovate technologically and ecologically superior facilities, and; optimize the use of resources, laboratories, and equipment.
- O7a On a national level, Michigan Tech participates in the Common Data Set and the Voluntary System of Accountability. Internally, the Compendium is a data resource available only to the Michigan Tech community via secure web login.
- O7b Michigan Tech's Dashboard is used to measure progress on the university strategic plan and make data for planning and improvements easily accessible.
- O7c Michigan Tech has used Sungard BANNER since 1994 to manage key business processes. Data is access using web-based tools or custom-written database queries and applications.

Here are what the Systems Appraisal Team identified as Michigan Technological University's most important strengths and opportunities for improvement relating to processes encompassed by Category 8, Planning Continuous Improvement.

<i>Item</i>	<i>S/O</i>	<i>Comment</i>
8P1a	S	The university's strategic plan (Michigan Tech Plan) was adopted by its Board of Control in April 2006 after inviting public comment and including

- input from the university community. This plan, which is updated every two to three years, is currently under review for the purpose of developing a more regular review process consistent with its AQIP approach to accreditation.
- 8P1b S Michigan Tech's key planning processes include their strategic plan and ongoing planning which is conducted independently by each unit / department. Ongoing planning generally occurs annually, and each unit-level plan is aligned with the university strategic plan. Unit plans take into account available resources and often include prioritization of initiatives and development of more than one budget scenario.
- 8P2a S Michigan Tech selects long-term strategies to ensure alignment with its institutional mission and vision as well as consistency within the strategic plan. Its short-term strategies are selected by each unit, using criteria such as their mission, current level of performance, and input from student and other stakeholders.
- 8P2b O According to the Michigan Tech Plan, "(L)onger-term strategies are typically developed by units that are making progress toward achieving their strategic objectives, while units that are not making progress focus on shorter-term strategies with clear targets for acceptable performance." It appears that there may be an opportunity for the university to consider a potential correlation between unit performance and the degree of congruence among unit goals and institutional objectives.
- 8P3 S Michigan Tech's key action plans are developed by university-wide task forces and committees charged with addressing major institutional issues.
- 8P4 O Beyond using its budgeting process to align organizational strategies, Michigan Tech may have an opportunity to develop a more comprehensive and strategic approach that takes into account the needs of diverse units when planning to enhance continuous improvement on a broader scale across the university.
- 8P5a S Michigan Tech's dashboard displays institution-wide metrics reflecting progress on its strategic plan. The institution identified these metrics in a

process that included input from multiple internal groups and metrics used by comparable organizations.

- 8P5b O While Michigan Tech carefully considered the measures to display on its dashboard, its underlying rationale and criteria for metric selection is not apparent. It is unclear how unit plans are aligned with these metrics or how the metrics coincide with the Michigan Tech Plan. Furthermore, the absence of rationale suggests that perhaps there may be a better measure of progress available to the institution.
- 8P6 S The university has a clear process for reviewing, approving and aligning action plans and strategies. Michigan Tech indicates that each unit selects short-term strategies based on existing resources, ability to accomplish the objective, and potential impact. Long-term strategies, requiring additional resources, are taken to the Budget Team that prioritizes resource requests based on the strategic plan and unit performance.
- 8P7a S Michigan Tech considers risk in the planning process through risk management processes, including systematic and continuous identification of loss exposures, analysis of frequency and severity of exposures, application of sound risk control procedures, and financing of risk consistent with the university's financial resources.
- 8P7b S Michigan Tech has identified dimensions for assessing the safety of its campus and has volunteered to undergo an assessment by the Michigan Occupational Health and Safety Administration with a view to ensuring risk-averse working conditions.
- 8P8 O Addressing the changing requirements is left to individual unit leaders, lacking any overall coordination for the institution. The university acknowledges that it has an opportunity to develop a university-wide process to ensure that faculty, staff, and administrators have the capacity to address changing requirements, particularly in the area of succession planning.

- 8R1 OO Michigan Tech recognizes that it has an opportunity to develop processes for measuring the effectiveness of current planning processes. Planning process effectiveness measures are limited in scope and subjective in nature. More objective metrics may enhance the assessment of continuous improvement at the institution.
- 8R2 S Michigan Tech provides results that document its performance on the four metrics included in the Michigan Tech Dashboard, including incoming students' ACT scores, number of PhDs awarded, sponsored programs awards, and endowment value. Making its dashboard publically available reflects transparency at the university.
- 8R3 S Michigan Tech has clearly identified objective targets for its four key measures of strategic plan progress through the year 2012.
- 8R4 O While the university declares that it does not have a single peer or aspirant group against which to compare three dashboard metrics, it may have an opportunity to identify a few, relatively similar institutions for benchmarking purposes. While not statistically significant, this may, nevertheless, provide useful indications of performance and may be helpful, rather than relying entirely on internal, longitudinal data. Furthermore, instead of leaving it to each individual college, the university may benefit from seeking opportunities to benchmark the three university-level metrics.
- 8R5 O Michigan Tech has an opportunity to expand its processes for measuring whether planning is effective by considering measures beyond those that identify whether staff members are aware of or feel they had input into the strategic plan. They might consider including measures that indicate how the strategic plan impacts daily work decisions, and develop measures of its annual unit planning processes rather than just measuring the strategic planning processes.
- 8I1a S The university points to a number of improvements in the institutional planning process that it attributes to a cultural change in which strategic planning is more widely accepted. These improvements include: a

concerted effort by the Executive Team; hiring and charging the CIO with direct responsibility for planning continuous improvement for IT; establishing the Energy Advisory Group to work with the AQIP Carbon Neutral Action Project team and new Sustainability Enterprise Coordinator to fulfill the university's commitment to sustainability, and; developing computer-based tools that facilitate the collection, tracking, and distribution of data used to plan and measure continuous improvement.

- 811b O Survey results might suggest that the goal of wide-spread cultural change embracing a strategic planning process still requires significant effort to improve participation in the process, reflecting broader acceptance as a cultural value.
- 812 OO While the university's size and the intimacy of the local community are credited for promoting a culture of improvement, Michigan Tech does not indicate the degree to which it evaluates and improves the infrastructure needed to take advantage of that culture. It is not clear how the university's culture and infrastructure help it to select processes and set targets for improved performance in continuous Improvement.

AQIP CATEGORY 9: BUILDING COLLABORATIVE RELATIONSHIPS

Building Collaborative Relationships examines your institution's relationships – current and potential – to analyze how they contribute to the institution's accomplishing its mission. It examines your institution's processes and systems related to identification of key internal and external collaborative relationships; alignment of key collaborative relationships; relationship creation, prioritization, building; needs identification; internal relationships; measures; analysis of results; and efforts to continuously improve these areas.

Here are the Key Critical Characteristics of Michigan Technological University that were identified by the Systems Appraisal Team as most relevant for its interpretation of its *Systems Portfolio* section covering Category 9, Building Collaborative Relationships:

Item Critical Characteristic

- O1b Michigan Tech's goals for student learning and shaping its academic climate is to deliver a distinctive and rigorous discovery-based learning experience grounded in science, engineering, technology, sustainability, and the business of innovation. In addition it intends to provide dynamic experiential learning that integrates instruction, research, and innovation in undergraduate and graduate programs; develop undergraduate and graduate programs in new and emerging areas, and; provide exemplary student life activities.
- O2a Michigan Tech's Research, Scholarship, Innovation, and Creative Work program assists faculty in identifying and pursuing external funding to support research, and supports faculty engaged in research. Eight research institutes and 14 research centers facilitate multi-disciplinary research activities.
- O2b Michigan Tech's Plan promotes economic development through programs operated by the Technology and Economic Development (TED), including research support for, and information and technology transfer with, industrial partners.
- O7a On a national level, Michigan Tech participates in the Common Data Set and the Voluntary System of Accountability. Internally, the Compendium is a data resource available only to the Michigan Tech community via secure web login.
- O8a Michigan Tech faces financial, space, and human constraints including state funding decreases, limited space to house growing faculty staff needs, and staff increases. In addition, being land- and water-locked and located in a small town 200 miles from a major city with 200+ inches snowfall per year limits their ability to recruit and retain students and employees.
- O9a Michigan Tech identified several key partnerships and collaborations including the Michigan Tech enterprise Corporation SmartZone, national business and industry partnerships, and internal collaborations between the university and its multidisciplinary research institutes and centers.

Here are what the Systems Appraisal Team identified as Michigan Technological University's most important strengths and opportunities for improvement relating to processes encompassed by Category 9, Building Collaborative Relationships.

Item	S/O	Comment
9P1	S	Michigan Tech structures its collaborative relationships through a value-added philosophy resulting in agreements at the high school and

community college level, and in processes that enhance their graduate students' ability expeditiously to complete their degree programs.

- 9P2 O While Michigan Tech engages potential employers of its graduates through various channels such as advisory boards, sponsorships, co-ops, research opportunities, and the Career Center Partners Program. Developing a more systematic and deliberate/structured approach to collaboration with organizations (business and other educational institutions) that depend upon Michigan Tech students and graduates offers the university an opportunity to better serve the educational and placement needs of its students and to advance the institution's reputation.
- 9P3 O While the model collaboration from the entertainment sector demonstrates the "value-added" philosophy of the school, the university has an opportunity to develop a more comprehensive and strategic approach to collaborating with external service providers.
- 9P4a S Michigan Tech's assignment of a consistent point-of-contact with "gift-in-kind" donors indicates recognition of the fact that such "gifts" reflect collaborative and/or mutually beneficial relationships. MTU thus has developed processes to maintain the many existing relationships with organizations that provide materials and services as well as strategies for creating, prioritizing and building new relationships.
- 9P4b O In light of the university's many long-standing relationships with its vendors, an opportunity may exist for Michigan Tech to leverage those relationships to improve the quality of services in strategically significant areas of institutional operations.
- 9P5a S At the unit level, Michigan Tech is commended for including members of educational organizations, external agencies, consortia partners and the general community in its planning and decision-making processes.
- 9P5b O Michigan Tech has an opportunity to develop a more strategic, institution-wide approach to collaborative relationships.

- 9P6 O Michigan Tech generally relies on a variety of feedback systems for ensuring that the needs of collaborative partners are being met, including external advisory boards, Career Center information, Enterprise program surveys, and scheduled interviews. Its reliance on collaborators to initiate much of the communication for ensuring that their respective needs are being met represents an opportunity for establishing a more proactive approach to this function, and to more formally measure the effectiveness of the processes used to establish those partnerships.
- 9P7 O Michigan Tech recognizes that an opportunity exists to create a formal process for building relationships between and among departments, such as was initiated on an informal basis in the Tech-Talks Research series of sessions that provided faculty and staff representing various academic and research units the opportunity to share common research interests
- 9R1a S Michigan Tech works with a number of cooperating companies that participate in senior design projects, enterprise projects, advisory boards, and Career Services activities. The university utilizes a variety of techniques to measure internal and external collaborative relationships, including numbers of partners involved in different initiatives, and qualitative measures, including partner satisfaction.
- 9R1b O Despite the variety of collaborative relationship measures noted above, Michigan Tech appears to be selective in which relationships are measured in terms of its performance with collaborators. Also, its general reliance on informal anecdotal information does not provide the university with quantitative data that could help to identify areas for improvement with internal and external partnerships.
- 9R2 OO While Michigan Tech demonstrates the ability to draw conclusions from the data that it collects, it has an opportunity to consistently do so with all of the results that it presents, and to view data as an essential evaluative tool as it promotes improvements in both processes and results.

- 9R3 O Michigan Tech recognizes that comparing its results with other higher education institutions is an opportunity for building more effective collaborative relationships.
- 9I1 S Michigan Tech has made specific improvements in the realm of building collaborative relationships, including improving Corporate Development staff functions, increasing staffing, integrating public relations and fundraising, sponsoring the Tech-Talks Research discussion series, and adding a “thank you” step to its interactions with external collaborators.
- 9I2a S Michigan Tech recognizes the importance of its “small town” culture in encouraging faculty, staff, and administrators to become actively involved in the local community. Likewise, this sense of congruent interests also encourages participation by various elements of the external community to affect positively the impact and success of the university. Taken together, these dynamics result in the development of personal relationships that contribute to a strong sense of community and collaborative thinking.
- 9I2b O It is unclear how the university’s small, informal, and friendly culture and infrastructure help it to select specific processes for improvement, or to set targets for improved performance related to building collaborative relationships. The university has an opportunity to assess the impact of its technological orientation as it relates to academic culture, and to articulate a clear understanding of the connection between organizational infrastructure and organizational agility, and how culture and infrastructure might influence the establishment and maintenance of collaborative relationships.