**MONTGOMERY COLLEGE**

# DATA ASSET MANAGEMENT PLAN

June 2021

**Data Asset Management Executive Advisory Committee**
**Montgomery College | 9221 Corporate Boulevard | Rockville, MD 20850**

# CONTENTS

## MC
**MONTGOMERY** COLLEGE

# ENROLLMENT FACTS

## 21,260
Total Number of Credit Students

**3,931**
First-Time College
New Students

**65.6%**
Fall to Fall
Retention of
New Students

**971**
High School
Dual Enrollment

**24.4**
Average Age

**45.8%**
■ Male Students

**34.4%**
■ Full Time Students

**9.0**
Average Course Load

| | |
|---|---|
| Black | 26.3% |
| Hispanic | 25.5% |
| White | 22.0% |
| Asian | 11.7% |
| Foreign/Unknown | 10.7% |
| Multi-Race/ Native American and Pacific Islander | 3.9% |

# EXECUTIVE SUMMARY

Data asset management provides oversight and vision to institutional data and the information systems, software, and hardware that makes data assets available. Everyone in the Montgomery College community has a vested interest in accurate and reliable data because it is the foundation to ensuring the institution's viability. As such, data asset management will be vital to moving the College's MC2025 Strategic Plan forward. To achieve this, it is critical that we intentionally assess and enhance the delivery of meaningful data while addressing data pain points such as accuracy, availability/periodicity, consistency, integrity, security/sensitivity, and compliance.

The large quantities of data that Montgomery College collects supports administrative operations, instructional delivery, and student success, which all serve as pillars to the College's mission and everything we do. This Data Asset Management Plan (DAMP) lays out the institutional vision for the College's progress toward improved data asset management during Fiscal Year 2020 and 2021 and outlines the next steps for Fiscal Year 2022 and 2023, which is the stabilization period for data asset management. The DAMP will be refreshed every two years or as needed.

The purpose of the data asset management program is twofold: 1) to define how we collect, analyze, store, and secure data; and 2) to use this data to build an environment in which decisions are informed by relevant and accurate metrics. The data asset management program also strives to engage key College stakeholders and constituents in the development of strategies to enhance our culture of evidence and to enhance data literacy across the College to make better data-informed decisions.

This plan consists of four goals to fully implement the data asset management program. The first of these goals is to build our institutional capacity related to data management. The second goal focuses on data integration across the College and embeds this work within each division. The third goal ensures that we work toward common understanding and use of data by increasing the data literacy of all members of the College community. The final goal is to improve decision making as a result of the improved access to and understanding of data.

The chief analytics and insights officer will be accountable for implementing the DAMP and has decision-making authority on behalf of the president. The chief analytics and insights officer will be supported by the chairs of the Executive Advisory Committee (EAC) and the data stewards, with input from all members.

The College is focused on building a culture of evidence and inquiry among our employees where data is seen as a fundamental asset. "As an institution, the routine practice of using data-informed decision-making to close achievement gaps and improve student outcomes in a continuous cycle of improvement is a goal towards which we are striving."[1]

"Mastering our data will be key to our ability to most effectively serve students, to our future growth, and to our continued improvement as an institution. Particularly important will be our ability to meaningfully disaggregate our data by race, gender, and other factors in order to discern gaps and thereby help bring about greater equity in our academic programs and services…. So, a focus on data asset management will therefore be critical to the work ahead of us."

–Milton H. Nash, Ph.D.
Dean of Mathematics, Statistics, and Data Science and Co-chair, Subcommittee 1, President's Advisory Committee on Equity and Inclusion

[1] https://www.achievingthedream.org/focus-areas/culture-of-evidence-inquiry

# BACKGROUND AND RATIONALE

What impact does data analytics have on the organization's priorities and strategic initiatives? "Analytics can save higher education. Really."[2] Those were the provocative words written in an August 2019 joint statement by the Association for Institutional Research (AIR), EDUCAUSE, and the National Association of College and University Business Officers. The statement was intended to motivate higher education leaders to use data analytics to guide their priorities and strategic initiatives.
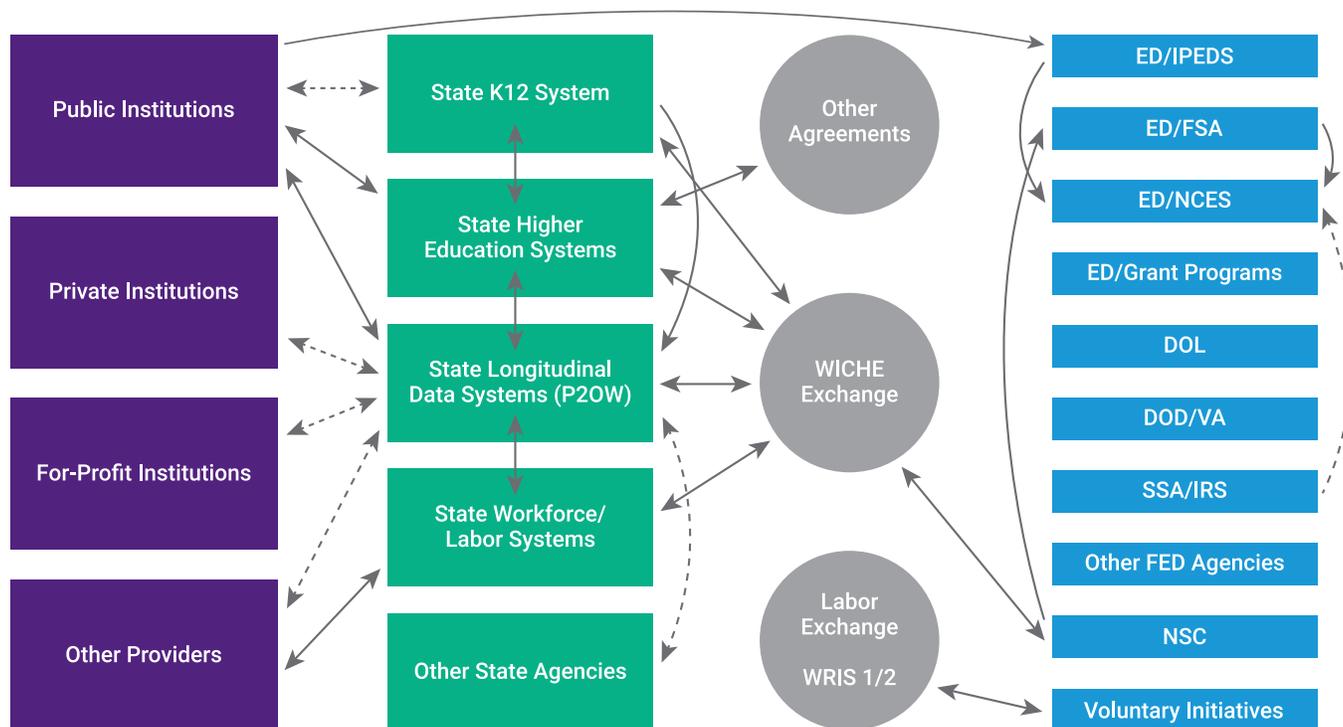
Due to the coronavirus (COVID-19) pandemic, organizations across industries are experiencing unprecedented challenges, enhancing the critical need for accurate and timely data. Gartner, a leading global IT research and advisory firm, indicates that "[g]iven the shift in how organizations are working, consistent and reliable flow of data across people, teams, and business functions is crucial to survival."[3]

According to *Inside Higher Ed*, it is imperative for institutions of higher education to increase and improve the state of data use in decision making. From a recent survey conducted by *Inside Higher Ed*, only 23 percent of institutions indicate that they are using data very effectively to inform campus decision making.

Managing the data infrastructure (as referenced in the chart below) is challenging on a national level for postsecondary education. "Currently, there is not a singular, well-planned, and coordinated national postsecondary data system. Instead, there is a patchwork of individual data systems built for different purposes, governed by different statutes and regulations, owned and operated by different entities, and using different data definitions."[4] This is a very familiar challenge for many colleges and universities, Montgomery College included.

## Current Postsecondary Data Infrastructure
### Incomplete, Duplicative, Disconnected Systems Increase Burden and Decrease Utility

[2] https://changewithanalytics.com/wp-content/uploads/2020/02/Joint_Analytics_Statement_2020.pdf

[3] Gartner, "10 Data Management and Governance Actions to Reset, Increase Impact and Enable Remote Work," Ted Friedman, May 6, 2020.

[4] http://www.ihep.org/sites/default/files/uploads/docs/pubs/postsecondary_education_data_ecosystem.pdf, p.1

> "In the case of higher education, the demo-cratization of data analytics has fueled unprecedented—and often overwhelming—demands for information."
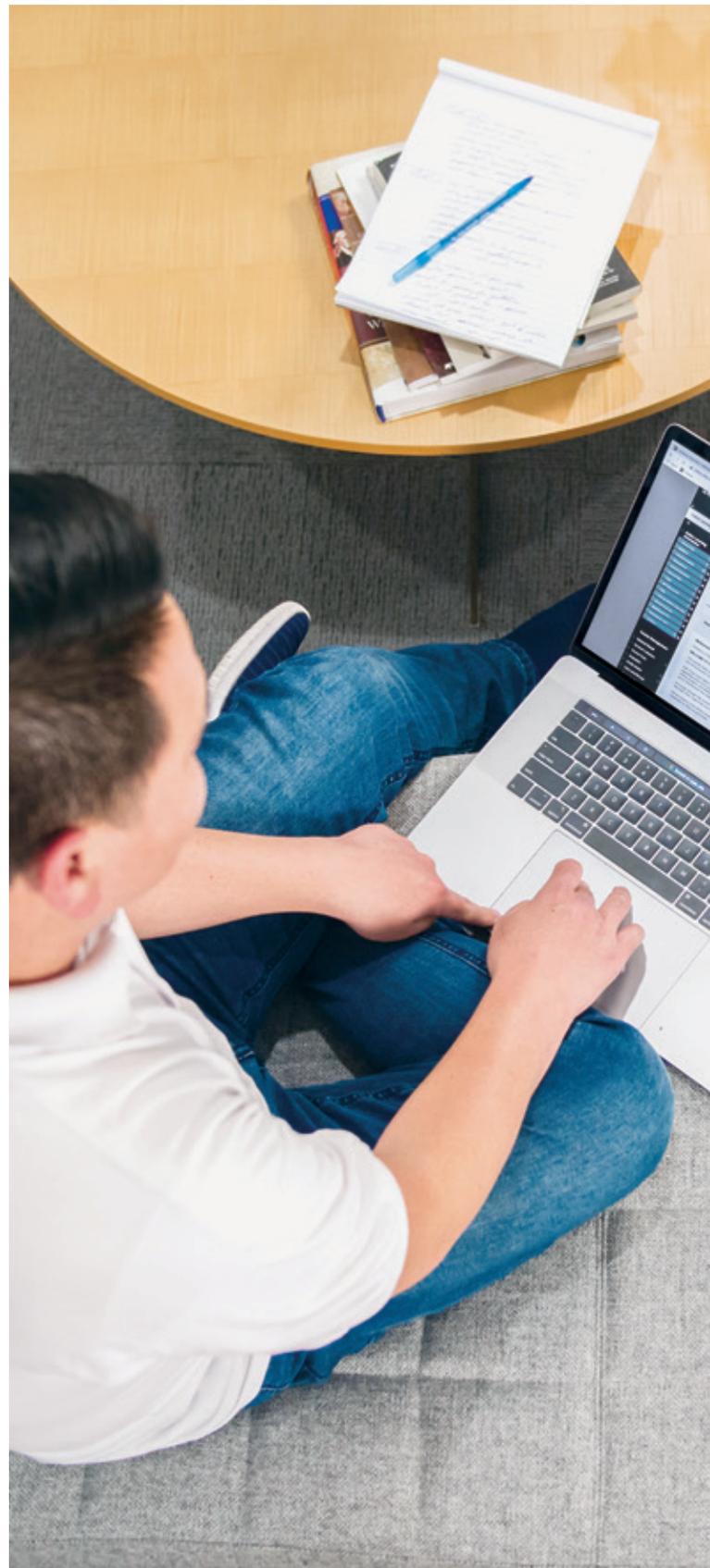
> –Jonathan S. Gagliardi and Jonathan M. Turk, The Data-Enabled Executive: Using Analytics for Student Success and Sustainability, American Council on Education (retrieved: https://www.acenet.edu/Documents/The-Data-Enabled-Executive.pdf)

Montgomery College is not alone in trying to navigate data in this ever-changing higher education space—what some might view as VUCA (volatile, uncertain, complex, and ambiguous) or raplex (a rapidly changing, complex, and unpredictable environment).[5] During uncertain times, data is key to necessary scenario planning—a data driven business methodology—that McKinsey & Company recommends for addressing an uncertain future.[6]

Montgomery College's data journey has been years in the making. While some innovations, such as our Outcomes Assessment program, Resource Planning Toolkit, and Student Success Score Card were in place to aid our efforts in programmatic and student outcomes review, our focus on student success data began in earnest with our participation in Achieving the Dream (ATD). We recognized that we must create a culture of evidence where there is a routine practice of using data-informed decision making to close achievement gaps and improve student outcomes in a continuous cycle of improvement.

The Institutional Capacity Assessment Tool (ICAT), created by ATD, was administered internally in 2016 to all employees and showed that "Data and Technology" registered at only a moderate level of capacity and was the lowest item for the College.

In 2019, Montgomery College hired iData, a consulting firm specializing in data governance and integration for higher education, to assess the current state of data management at the College. The firm conducted interviews with multiple data users from functional units across the College. Interviewees included College employees who use data for decision making and those who process and manage the data. At the end of the assessment process, iData prepared a final report that included their findings and

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[5] https://wcetfrontiers.org/2020/05/08/fall-and-beyond-he-in-the-age-of-covid19/

[6] https://www.mckinsey.com/industries/public-and-social-sector/our-insights/coronavirus-how-should-us-higher-education-plan-for-an-uncertain-future

"In my experience, once Montgomery College embraced the ethos of utilizing data to improve student success, there was a shift in attitude such that faculty now desire access to data to make both broad changes in curriculum as well as granular decisions about how best to improve equity in student success in their classes. The College now embraces the need for data literacy and data acumen for all stakeholders, because real data provides insight into our real student experiences and student needs in real time."

–Rachel Saidi, Associate Professor and Data Science Certificate Program Coordinator Mathematics, Statistics, and Data Science Department

suggested recommendations for the College to move data management processes forward. The report from iData validated the internally recognized challenges for Montgomery College:

1. There is widespread interest in becoming a data-enabled institution. Decision makers and users need direct and easier access to data.

2. Central coordination of different and varied data sources is not in place, and this leads to confusion, distrust, and reluctance to rely on data for decision making.

3. Data is not managed as an enterprise asset and therefore is not yet effectively used and leveraged. Planning around data management is inadequate, but evolving.

4. Existing data sources are not effectively indexed. Data terminology is not consistent among College units, and few, if any, protocols exist to standardize data understanding and usage.

5. Inconsistent use of different data analysis tools needs management, additional structural support, standardization, and greater visibility.

The top recommendations from iData are prioritized succinctly in the chart below.

# iData Top Recommendations

| Process Focus | Priority: Immediate | Priority: High | Priority: Long Term |
|---|---|---|---|
| Management and Governance | Establish a Data Governance Council<br><br>Define Data Management Process Ownership | Create a Data Management Strategy Checklist<br><br>Establish a Data Stewardship Program | Establish a Data Quality Program<br><br>Provide Data Management and Analysis Consulting<br><br>Organize Data Analysis Support Services |
| Tools and Systems | Create a Data Collection Inventory<br><br>Create a Calendar of Data Deliverables and Reports | Create Data Warehouse Technical Documentation<br><br>Create a Report Repository<br><br>Develop Data Request Tracking System | Address Shadow Databases<br><br>Select and Transition to Official Data Analysis Tools |

In the spring of 2020, a **Data Asset Management Council** was formed with the input of senior vice presidents and is comprised of constituent decision makers across the College. The Data Asset Management Council has two groups—the Executive Advisory Committee (EAC) and the data stewards.
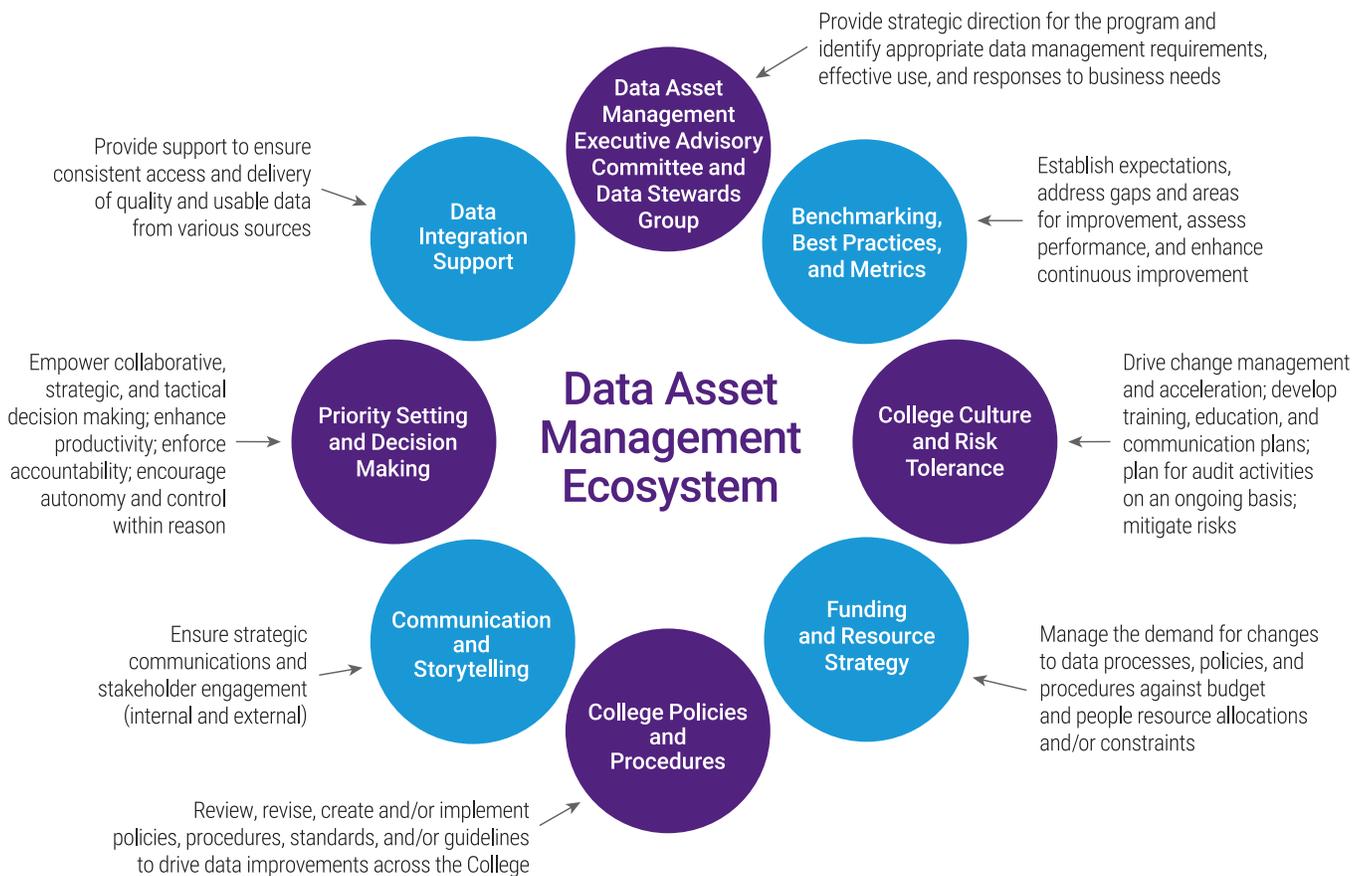
The **EAC** has representation from senior leadership, appointed by each senior vice president and the president's office. It is charged with setting institutional priorities of data quality and data driven decision making. The EAC will have the authority, interest, and resources necessary to:

- Define management responsibilities around various data collections.

- Create and track actions related to data.

- Oversee institutional business processes and policies about data to maximize the usefulness of Montgomery College's data resources.

- Identify and work to eliminate silos and barriers to data management throughout the College.

- Recommend institutional policies and procedures for the storage, accessibility, and management of institutional data.

Also in the spring of 2020, a **Data Stewards Group** was formed. This group comprises people who are subject matter experts about the data utilized in their unit or area, who can provide background on current and future data needs for that unit.

There are several facets to developing a strong support system for this important effort:

- Data Asset Management Council (Data Asset Management Executive Advisory Committee and Data Stewards Group), as noted above

- Benchmarking, best practices, and metrics

- College culture and risk tolerance

- Funding and resource strategy

- College policies and procedures

- Communication and storytelling

- Priority setting and decision making

- Data integration support



Provide strategic direction for the program and identify appropriate data management requirements, effective use, and responses to business needs

Provide support to ensure consistent access and delivery of quality and usable data from various sources

**Data Integration Support**

**Data Asset Management Executive Advisory Committee and Data Stewards Group**

**Benchmarking, Best Practices, and Metrics**

Establish expectations, address gaps and areas for improvement, assess performance, and enhance continuous improvement

Empower collaborative, strategic, and tactical decision making; enhance productivity; enforce accountability; encourage autonomy and control within reason

**Priority Setting and Decision Making**

**Data Asset Management Ecosystem**

**College Culture and Risk Tolerance**

Drive change management and acceleration; develop training, education, and communication plans; plan for audit activities on an ongoing basis; mitigate risks

Ensure strategic communications and stakeholder engagement (internal and external)

**Communication and Storytelling**

**Funding and Resource Strategy**

Manage the demand for changes to data processes, policies, and procedures against budget and people resource allocations and/or constraints

**College Policies and Procedures**

Review, revise, create and/or implement policies, procedures, standards, and/or guidelines to drive data improvements across the College

"Lack of data quality and availability can cause employees to spend a significant amount of time on non-value-added tasks."

–Bryan Petzold, Matthias Roggendorf, Kayvaun Rowshankish, and Christoph Sporleder, "Designing data governance that delivers value," McKinsy Digital, June 26, 2020 (retrieved: https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/designing-data-governance-that-delivers-value#)

In charting a path forward, Montgomery College will be guided by the following principles from the Data Governance Institute.[7]

| Guiding Principles | |
| --- | --- |
| **Integrity** | Practice integrity when dealing with each other; be truthful and forthcoming when discussing drivers, constraints, options, and impacts for data-related decisions. |
| **Transparency** | Establish transparent processes that will be clear to all participants and auditors regarding how and when data-related decisions and controls were introduced into processes. |
| **Auditability** | Document data-related decisions, processes, and controls; documentation to support compliance-based and operational auditing requirements. |
| **Accountability** | Clarify accountabilities for cross-functional data-related decisions, processes, and controls. |
| **Stewardship** | Define accountabilities for stewardship activities that are the responsibilities of individual contributors, as well as accountabilities for groups of data stewards. |
| **Checks-and-Balances** | Define accountabilities in a manner that introduces checks-and-balances between business and technology teams as well as between those who create/collect information, those who manage it, those who use it, and those who introduce standards and compliance requirements. |
| **Standardization** | Introduce and support standardization of enterprise data. |
| **Change Management** | Support proactive and reactive change management activities for reference data values and the structure/use of master data and metadata. |

[7] http://www.datagovernance.com/goals-and-principles-for-data-governance/

The key results of this Data Asset Management Plan are:

- Treat institutional data as a key institutional asset.

- Use data to enable better decision making.

- Reduce operational friction.

- Protect the needs of data stakeholders.

- Train the College community to adopt common approaches to data.

- Build standard, repeatable processes between units.

- Reduce costs and increase effectiveness through coordination of efforts among units.

- Identify, prioritize, track, and resolve critical data issues.

- Ensure transparency of processes across multiple data platforms.

- Ensure timely access to consistent, accurate, and reliable data.

- Provide data literacy and data education training workshops.

- Communicate data asset management efforts to the College community.

- Create a report clearing house for use by the College community.

Creating a sound plan for data governance is an exercise in patience, and requires that the time be spent on developing and maintaining consensus and buy-in. Such a process should not conclude in the creation of a rigid plan. Instead, it should result in a malleable framework for the definition and common use of analytics across the institution.[8] To that end, these are the primary goals of the DAMP:

1. Build institutional capacity for the use of data.

2. Ensure data integration.

3. Enhance data literacy.

4. Improve priority setting and decision making.

The DAMP has been developed to intentionally align with and advance the MC2025 Strategic Plan. The strategies are created to promote a culture of collaboration and information-sharing within the College, by clearly defining roles and accountability, while allowing the College to remain flexible and agile through the use of data. In addition, the DAMP has been developed to improve the data literacy of all data citizens. Data citizens are all members of the Montgomery College community and they will need to understand some aspects of data. The level of data sophistication varies from person to person based on their background and role at the College. This plan is designed to help data citizens enhance their understanding and access and build a shared community of data use. In order to help students on their path to success, and to be a positive force for change in our community, we must understand who our students are, what they desire, what they need for success, and what they look to us to provide. Data asset management will allow us to unlock the answers to these questions, explore additional questions, and better position the College to fully realize its mission, vision, and values.
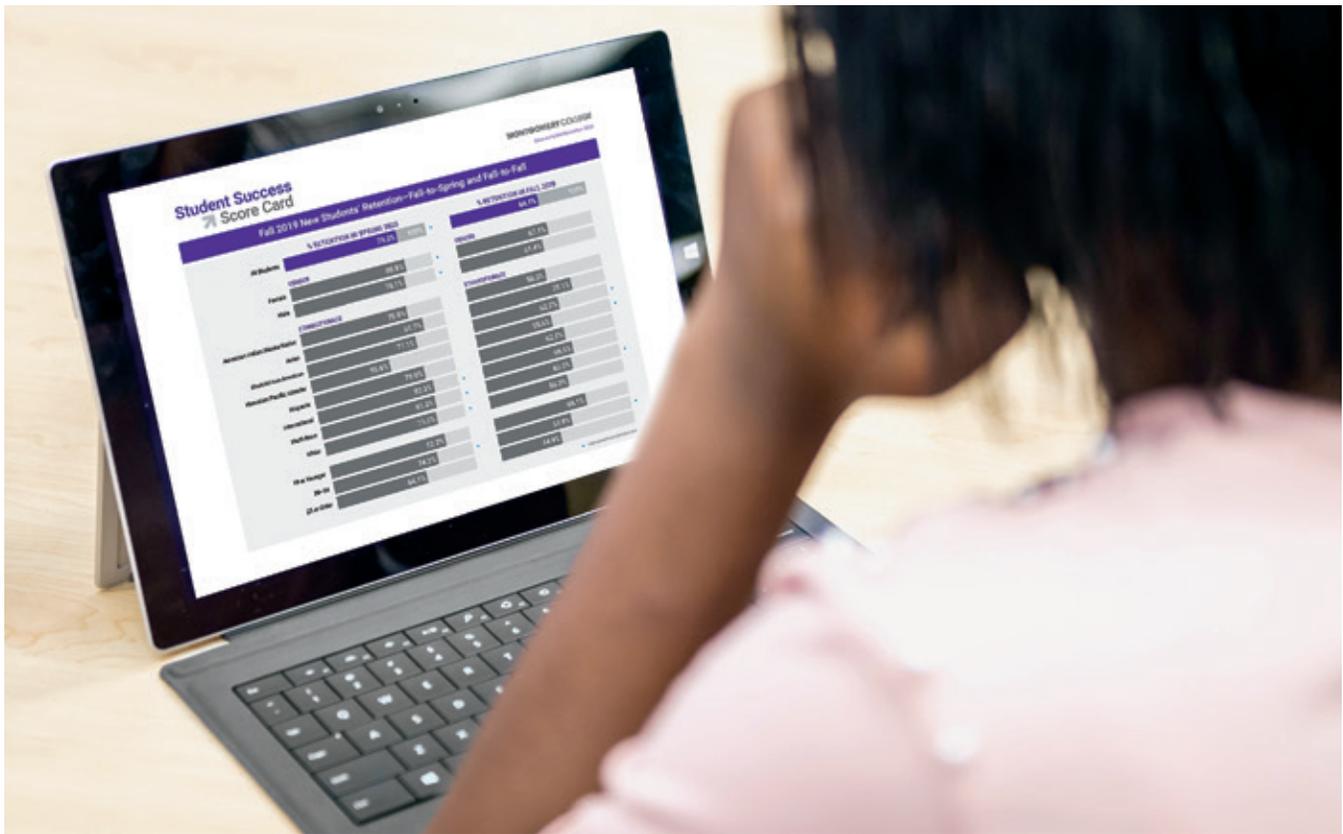
"We all have a responsibility to seek out, understand, and use data. Data—and the story it tells—can help us drive student success."

–Amy Tutt, Government Relations Operations Director Office of the President

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[8] https://www.acenet.edu/Documents/The-Data-Enabled-Executive.pdf

# DATA ASSET MANAGEMENT PLAN DEVELOPMENT TIMELINE

| | |
|---|---|
| **Fall 2019 Milestones**<br><br>• iData hired by the College to assess current state of data management.<br>• iData conducts interviews with College employees.<br>• iData report and recommendations presented to the President's Executive Cabinet. | In 2019, Montgomery College hired iData, a consulting firm specializing in data governance and integration for higher education, to assess the current state of data management at the College. The firm conducted interviews with functional units at the College and with employees who use data for decision making and those who process and own the data. At the end of the assessment process, iData presented their findings and recommendations to the President's Executive Council and to those who were interviewed during the assessment process. |
| **Spring 2020 Milestones**<br><br>• Data Asset Management Council created with two groups—the Executive Advisory Committee (EAC) and the Data Stewards Group.<br>• EAC charged with recommending institutional priorities of data quality and data-driven decision making.<br>• Data stewards charged with providing background on current and future data needs for their units. | In the spring of 2020, a Data Asset Management Council was formed with the input of senior vice presidents and is comprised of constituent decision makers across the College. The Data Asset Management Council has two groups—the Executive Advisory Committee (EAC) and the Data Stewards Group. The Council will have the authority, interest, and resources necessary to 1) Define management responsibilities around various data collections; 2) Create and track actions; 3) Oversee institutional business processes and policies about data to maximize the usefulness of the College's data resources; 4) Recognize and work to eliminate silos and barriers to data management throughout the College; and 5) Establish and implement standard definitions for data, data policies, storage, accessibility, and supporting the next layer of data management—data stewards. |
| **Fall 2020 Milestones**<br><br>• EAC and data stewards begin outlining components of the Data Asset Management Plan (DAMP).<br>• Research on best practices conducted.<br>• Periodic updates shared with senior leadership. | During the fall semester, the EAC and data stewards worked separately in their committees to outline the scope of their work. The EAC met multiple times to review the work progress and begin identifying elements that would go into the final Data Asset Management Plan. Periodic updates were provided to the senior leadership team, the president, and to the College community. |
| **Spring 2021 Milestones**<br><br>• Data Asset Management Plan developed.<br>• Data Systems Map completed and reviewed.<br>• Data stewards began work on the data dictionary. | The draft Data Asset Management Plan was shared with the EAC, the data stewards, and the Data Asset Management Council. The Data Systems Map was completed and reviewed by the EAC and senior leadership. Data stewards began the process of developing the data dictionary. The draft DAMP was revised and refined for presentation to senior leadership and eventual approval from the president. |

The College's Data Asset Management Plan is broken into four main goals. The first goal is to build institutional capacity for data asset management. Building institutional capacity is to ensure we have the staff, technology, processes, and policies in place as a foundation upon which we can build increased data sophistication and usage at the College. The second goal is to ensure data integration. This goal is to reduce the data silos across the College and to reduce data discrepancies when data comes from different units or is embedded in different technologies across the College. The third goal is enhancing data literacy, which provides professional development opportunities to all data citizens, recognizing that they all start from different backgrounds and have many different needs for the College's data. The final goal is to improve priority setting and decision making at all levels of the College.

As we move towards more robust predictive and prescriptive analytical abilities, we need to evolve our ability to measure the impact of these models in terms of student success, improved efficiencies, and costs. These four goals together represent a robust and visionary journey for the College over the next two years but are required to position MC as a post-COVID institution that is ready to face the changing landscape of higher education.

"Decision makers require speed and ease of access to available and relevant data to analyze, derive meaning, and take appropriate action…"

–Elizabeth (Liz) Greaney
Chief Business/Strategy Officer
Administrative and Fiscal Services

# GOAL 1
# BUILD INSTITUTIONAL CAPACITY FOR DATA ASSET MANAGEMENT

"If your data is ungovernable, then the analytics you're running atop it will be untrustworthy at the end of the day."

–Alex Woodie
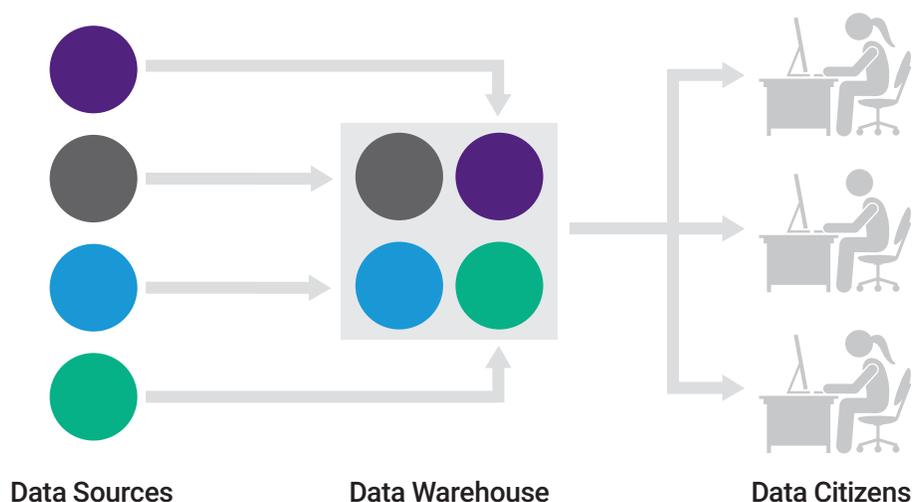"Five Tips for Winning at Data Governance," February 1, 2018, Datanami (retrieved: https://www.datanami.com/2018/02/01/five-tips-winning-data-governance/)

Building the proper foundation for success and ensuring institutional readiness is critically important to the success of Montgomery College's data asset management program. Data asset management is not a quick project nor just a project at all; it is a program that requires people, an institutional culture shift, processes, and technologies to manage and resolve data issues and ultimately unleash the power of the College's data. Both the *Economist* and *Forbes* state that data is now the world's most valuable resource. Hence, the ultimate goal is for MC is to build its institutional capacity to manage data as an asset, build its institutional knowledge, and leverage meaningful data insights to ensure evidence-based decision-making that will enhance student success. This requires a comprehensive, coordinated, and transparent long-term approach. It will also require that we articulate and codify these approaches in the College's

policies and procedures to provide clear guidance as we move forward.

The first step in building our institutional capacity is to develop data asset management policies and procedures. Providing a clearly outlined framework for how we govern the acquisition, storage, and use of data will determine what access various users at the College will require.

Additionally, prioritizing the acquisition of a data warehouse and other technology tools is critical to improving the College's use of data. While purchasing a robust data warehouse is key in this process, we must begin by clearly mapping out the data collection, transfer, and storage processes before new technology can be of use. In order to address iData's finding on the challenge of central data collection, it is critical to consolidate as many existing data systems as possible into the new data warehouse. Using Fiscal Year 2022 to work on processes so that we are ready to acquire a warehouse in Fiscal Year 2023 will require agreement among stakeholders and an urgency to this work. Collaboratively leveraging technology and any accompanying training is critical in responding to our current data challenges around institutional capacity.

In addition, the College needs to identify what reports or other documents are routinely generated and a clear timeline for



Data Sources          Data Warehouse          Data Citizens

both vetting the documents and posting them internally. The College already produces a large number of external reports to meet our compliance requirements, and internal demand for data has increased exponentially while our capacity for responding has been diminished with a reduction in Office of Institutional Research and Effectiveness (OIRE) staffing. As the iData report observed, one best practice to consider and implement is the streamlining of data requests that come to OIRE. Many of the ad hoc data requests that come in require work outside of OIRE, so expanding the data request to involve more units is crucial. The data stewards are in the best position to help determine which areas should respond to data requests; relying on the data citizens to determine which areas of the College house the data they are interested in obtaining is simply unrealistic. The data stewards, which has members from multiple units, can better leverage staffing for these requests as well as see what areas have the highest demand for data. Additionally, this allows a platform for discussing common data elements and to determine the best approach to complex data requests. Any issues on coordination or policy clarification can be addressed by the EAC.

One final key capacity building strategy, then, is to identify commonly requested data points, create a common data explanation, and then make this available on the College website. During Fiscal Year 2022, the focus will move to having consistent, well-documented technical data definitions to allow different business units to look at the same datasets with common definitions. Once the technical data definitions are in place, it will be possible to focus on the public-facing data explanations for these commonly used data points.

## Key Strategies

1. Develop first drafts of Data Asset Management and Data Governance policies and procedures.
2. Prioritize data warehouse acquisition.
3. Conduct process mapping and acquire data warehouse and accompanying training.
4. Establish a data dictionary.
5. Engage the Office of Information Technology (OIT), OIRE, and data stewards to work through technology solutions.
6. Expand institutional data capacity via staffing, skill sets, and professional development in OIRE and elsewhere to meet the projected needs of the institution.
7. Streamline data requests.

# GOAL 2
# ENSURE DATA INTEGRATION

"Montgomery College has taken strides to include data findings as a primary component in all conversations and decision-making that impact students and the College community.… These data integration practices and data governance ensure our success and our sustainability—benefiting students and our institutions."

–Clevette M. Ridguard, Ed.D.
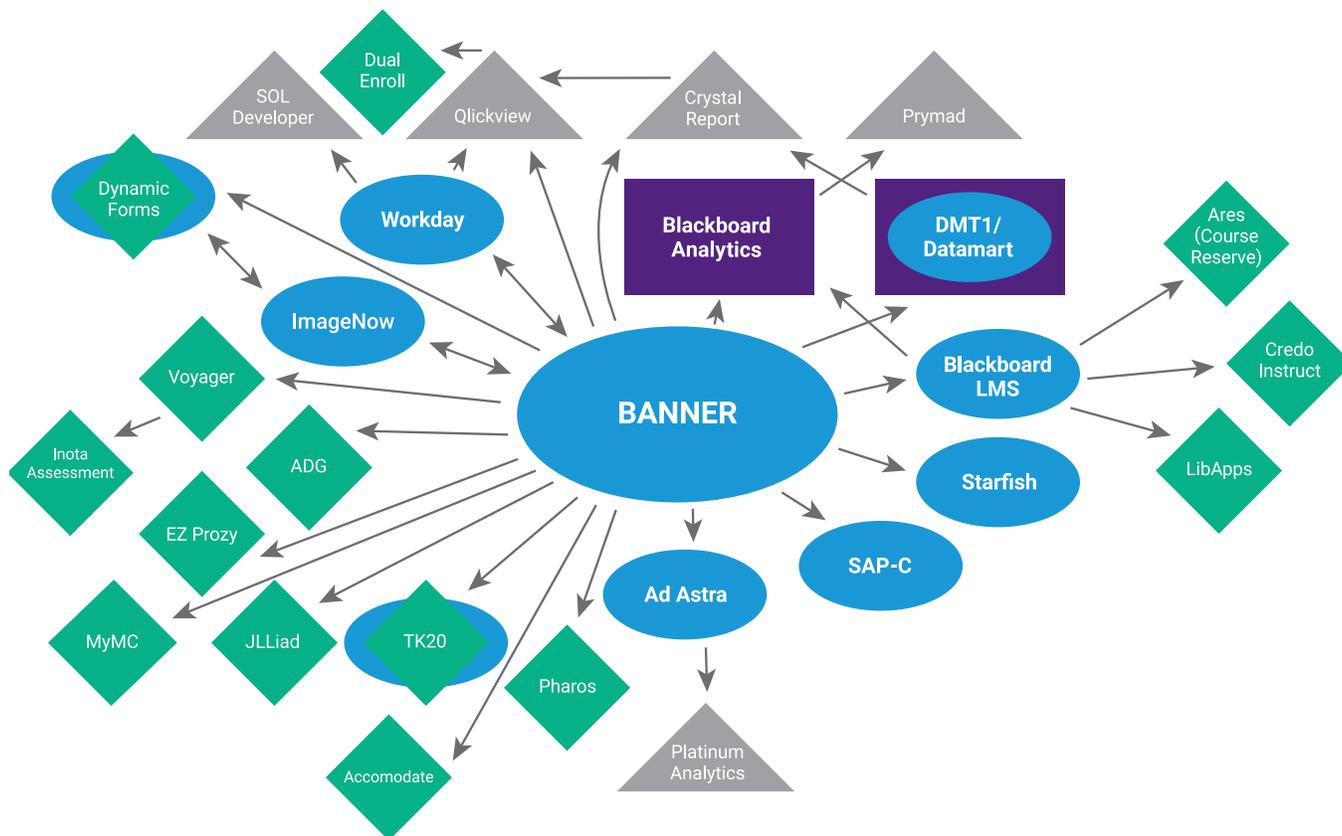Governance and Presidential Projects Program Manager
Office of the President

Data that is separated in functional silos diminishes the opportunity to integrate data, adequately assess the activities designed to help the institution achieve its goals, and to modify those activities if goals are not being met. Each unit at the College should have a plan to manage their data in a consistent, unified manner aligning with the DAMP. Additionally, as divisions update their master and strategic plans, embedding data asset management strategies within those plans will ensure that the College continues to see data management as a collegewide initiative and not simply the domain of OIT or OIRE.

Planning and decision making require access to historical data to assess where the institution has been, and access to accurate, real-time data to make current operational decisions. The goal is to have relevant predictive models available, but that goal requires an institutional focus on using our data in more sophisticated ways. As new master and operational plans come online, these plans should be imbued with data that justifies actions and leads to better assessment. That integration will help the College make data-informed decisions that reflect the resiliency and recovery necessary to prepare for a post-pandemic economy.

According to the iData report, not only are our current systems complex, they have been underfunded and overburdened. This requires that the College utilize system mapping to better measure and manage data flow and risk. In addition to having common language and datasets, the College should ensure that employees who need to discuss data across departments have access to the same data that is integrated across systems and understand which data is identical across platforms and which are similar but not identical. A robust and continually updated data systems map outlining the flow of data from system to system is necessary for current and future employees to understand down-stream impacts of updates to data definitions and policies.

Security of these systems are paramount. General training regarding data security has already begun, but targeted training and stated levels of data access by position will result in a system that is easier to defend and explain. The security levels outlined in the College's Policies and

# Data System Flow Map



| | Originates Data<br>A system that holds data not found elsewhere. | | Data Repository for Reporting<br>A system used to retain and configure data for use in reporting. | | Accessory System<br>A system that retains data for a unique application. | | Reporting Tool<br>A tool that pulls data for the purpose of generating reports. |
|---|---|---|---|---|---|---|---|

Procedures, and operationalized by OIT need to permeate our culture of evidence and become routine practice for all data citizens regardless of each members level of data integration.

## Key Strategies

1. Establish Montgomery College Divisional Data Asset Management Plans.
2. Embed data into Master Plans.
3. Develop a robust data systems map to track data across the College.
4. Fully implement a data security protocol that clearly defines access.

"As we approach data as an institutional asset with significant value, we must position ourselves to protect that asset.... Through the process of identification and classification of the College's data assets, we can create a structure to safeguard those assets through intentional access, storage, and sharing policies, enforced by appropriate technical controls."

–Nell Feldman
IT Security Manager
Office of Information Technology

# GOAL 3
# ENHANCE DATA LITERACY

The use of data in decision making by Montgomery College data citizens (faculty, staff, and administrators) will continue to be important and will evolve in sophistication. To ensure better data-informed decision making there are two key components: 1) having access to timely, accurate, and relevant data and 2) having sufficient data literacy and fluency skills to use this data effectively.

The Strategic Data Project at the Center for Education Policy Research at Harvard University interviewed multiple leaders and analysts at various higher education institutions. Their goal was to explore these institutions' data needs and understand why some have excelled in the use of data while others have not used the full potential of data. They discovered the difference was not the technology they had access to but rather the human capital. They noted that if higher education uses data to inform organizational prior-ities and strategic initiatives, they must employ or train staff to understand strategic data to inform policies and institutional change. Therefore, investment is needed to ensure that staff at MC can understand, interpret, and implement data results. All decision makers must possess basic knowledge in interpreting data and asking key questions.

"Without an institutional framework, we run the risk of grabbing (using) data from various sources and coating the data with our own interpretations without having a clear understanding of what we are using…. a clearer understanding of how we manage our data will allow us to better use the information to help our students."

–Cassandra R. Jones, Ph.D.
  Director of Assessment
  Academic Affairs

Professional development is key to developing and sustaining a culture of data literacy, accelerating change management, and mitigating risk. The diagram at the bottom of the page illustrates the mindset and stages of professional development that is necessary to see a change in culture.

Professional development cannot be a one-and-done approach; there must be sustained activity built around several areas: 1) understanding what data are available; 2) understanding how to use the collected data; and 3) demonstrating the data are relevant to the College's mission. To this end, the College will develop and publicize a data production and reporting calendar that includes reports from across the College. Having all the relevant data and information in a central location will allow for an easier education of where the College's data citizens can find the most up-to-date and relevant information.

While having easier access to published data will be beneficial to all data citizens and especially to the College's decision makers, access is insufficient without clear explanations and timelines. As part of the professional development process, it will be critical to help data users understand the myriad of sources of the data and the nuances required of different reports. For example, graduation rates are determined differently for federal and state reporting with numbers varying considerably from report to report. Having data stewards develop user-friendly explanations of this data, separate from the technical data definitions, is essential in making sure that this increased access to data does not cause confusion.
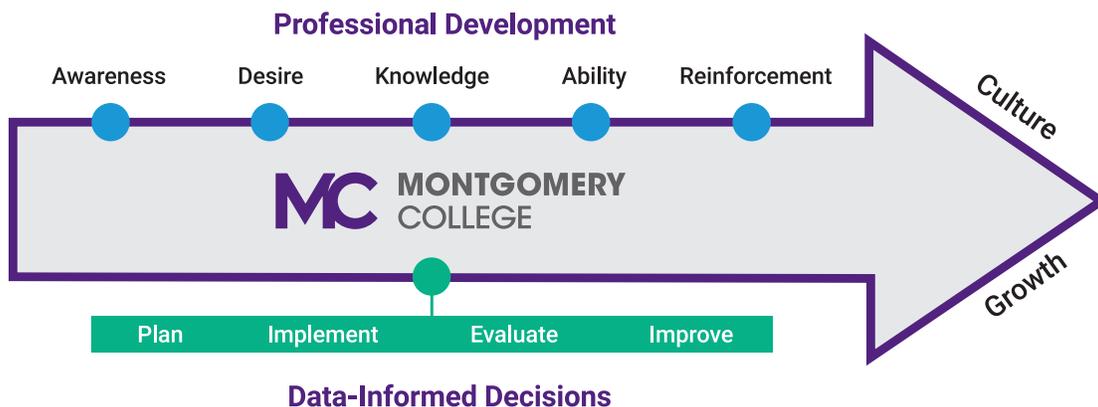
"Data asset management will help us develop more trust in our data, and deter us from over reliance on anecdotal information as we learn more about students and their needs, experiences, and behaviors."

–Kimberly McNair, Ed.D.
Director of College Access and Enrollment
Student Affairs

Having a clear timeline of when routine reports will be published will allow data stewards and data citizens to anticipate when updates will be available and help manage workflow. Ideally, this will have the additional benefit of reducing the requests for ad hoc data as data citizens will more easily be able to find relevant data.

## Key Strategies

1. Partner with ELITE and WDCE to design and facilitate training and education programs, including badging.

2. Expand reporting calendar to include a broader range of published reports.

3. Engage key stakeholders and data stewards to document and explain public data elements and how they are determined.

# Professional Development's Role in Supporting Institutional Growth and Change



**Professional Development**

Awareness · Desire · Knowledge · Ability · Reinforcement

Culture

Growth

MC MONTGOMERY COLLEGE

Plan · Implement · Evaluate · Improve

**Data-Informed Decisions**

Adapted from *Prosci's ADKAR Change Management Model* (Prosci, n.d.).

# GOAL 4
# IMPROVE PRIORITY SETTING AND DECISION MAKING

The rationale for data analytics is easy to understand. They help us not only know our students better but allow us to anticipate student behaviors as well as forecast budgetary and other resource needs. Analytics allow the College to analyze funding needs and build a more responsive and sustainable budget, not simply based on past experience but with the ability to forecast future trends. From student recruitment to class scheduling to cost control to graduation, transfer, and job attainment, every College function can benefit from more robust data analysis. For several years, MC has been progressing to use data analytics to inform how we operate. Progress has been uneven; some units are more at ease with the notion of utilizing their data while others struggle to acclimate. Understanding and improving how we use data to set priorities and make decisions in all areas is the next leap forward to diagnosing differences and creating a consistent data-driven approach to decision making.

"In the ever-changing world of higher education, one aspect remains the same: the importance of using data to make informed decisions and build a culture of evidence. Data is the foundation for developing pathways to increase student success, employee support, and offers insight on how the College can continue to be a resource and pillar of service to the community."

–Benita Rashaw, Ph.D.
Student Affairs Operations Director
Student Affairs

The College on average is presently straddling a line between the diagnostic and predictive phase of data use, as shown in the Harvard Strategic Data Project graphic on the right. As an example, the use of predicative analytics in scheduling to determine overall need for the number of sections and seats for classes has helped the College deal with overall reduced enrollment while keeping the appropriate number of sections for programs and courses that have seen growth during this time. The College's goal of being at the prescriptive phase can be used to actively take steps that impact a student's behavior towards enrollment. With the absence of a crystal ball, using data as a tool to address a problem and make changes is the only way to predict the future.

Unfortunately, creating reliable predictive analysis is not easy nor cheap. Identifying resources, both in terms of human capital as well as technological are required to move the College toward our goal of prescriptive analytics. While there will be long-term savings from having accurate predictions there will be short-term investments needed. At the center of all analytics is the data source so making sure that we have clean, accurate data that we can use as a basis for any future modeling is essential. Further, we need to update our business processes related to data ingestion and storage to make sure that our data is future-proof as we work towards building predictive and prescriptive models.

Building models to predict student behaviors and institutional needs is substantial work, but can be dangerous without assessment and evaluation processes in place. Too often models have been implemented in higher education that have had unintended consequences. It is crucial that models built at Montgomery College have proper oversight and vetting to insure ethical use and to make sure the prescriptive models are used to help inform decision makers, and that decisions are not made by these algorithms. Keeping decision making in the human hands is crucial as we invest in more robust modeling. Determining the impacts of changes to our systems as a result of these models is a crucial step in monitoring the success of these models. It is equally important to monitor the costs, financial and manpower, invested in these systems to determine if we are achieving the efficiencies we hope.

# Harvard Strategic Data Project

| Descriptive | Diagnostic | Predictive | Prescriptive |
|---|---|---|---|
| **Hindsight** What happened? | **Insight** Why did it happen? | **Foresight** What will happen? | **Action** How can we address the problem? |
| **Primary Use** Compliance | **Primary Use** Self study | **Primary Use** Planning and support for decisions | **Primary Use** To change behavior |
| **Example** What were our attrition rates? | **Example** Attrition rates based on student subgroups | **Example** Who is likely to drop out? | **Example** Targeted interventions for students |

## Key Strategies

1. Analyze funding needs and secure budget and resources.
2. Develop and refine basic data processes to aid in executing data asset management, resource sharing, and collaboration.
3. Determine the impact of changes to the system(s) of record, the cost to make changes, and the level of effort required.

"[The] continuous need to identify data from various perspectives has cultivated and continues to foster a culture that is responsible for its actions, accountable to our students, and promotes an equitable and inclusive environment for everyone connected to this college."

–Rachel N. Bonaparte-Hagos, Ed.D., Interim Director, Institute for Part-time Faculty Engagement and Support, and Chair, President's Advisory Committee on Equity and Inclusion
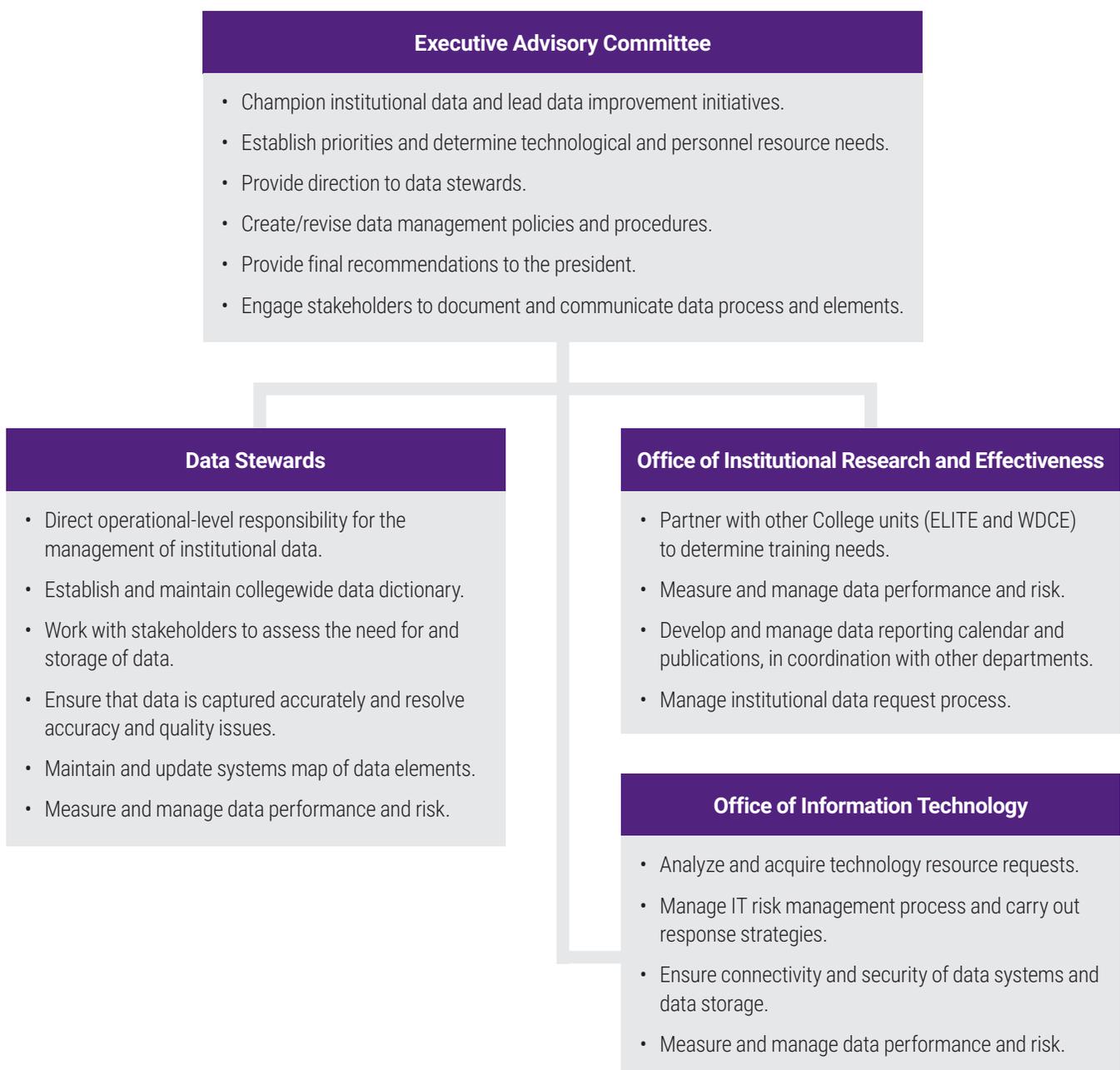
# DATA ASSET MANAGEMENT PLAN SUMMARY

| Goal | Action Plan | Timeline | |
|------|-------------|----------|---|
| | | **FY22** | **FY23** |
| **Build Institutional Capacity** | Develop first drafts of Data Asset Management and Data Governance policies and procedures. | X | |
| | Prioritize data warehouse acquisition. | X | X |
| | Conduct process mapping and acquire data warehouse and accompanying training. | | X |
| | Establish a data dictionary. | X | X |
| | Engage OIT, OIRE, and data stewards to work through technology solutions. | X | X |
| | Expand institutional data capacity via staffing, skill sets, and professional development in OIRE and elsewhere to meet the projected needs of the institution. | X | |
| | Streamline data requests. | X | |
| **Data Integration** | Establish Montgomery College Divisional Data Asset Management Plans. | | X |
| | Embed data into Master Plans. | X | X |
| | Develop a robust data systems map to track data across the College. | X | X |
| | Fully implement a data security protocol that clearly defines access. | | X |
| **Data Literacy** | Partner with ELITE and WDCE to design and facilitate training and education programs, including badging. | X | X |
| | Expand reporting calendar to include a broader range of published reports. | X | |
| | Engage key stakeholders and data stewards to document and explain public data elements and how they are determined. | X | |
| **Priority Setting and Decision Making** | Analyze funding needs and secure budget and resources. | X | X |
| | Develop and refine basic data processes to aid in executing data asset management, resource sharing, and collaboration. | X | X |
| | Determine the impact of changes to the system(s) of record, the cost to make changes, and the level of effort required. | X | X |

# DATA ASSET MANAGEMENT PLAN DECISION MAKING FRAMEWORK

Building the proper foundation for success and ensuring institutional readiness is critically important to the success of Montgomery College's data asset management program. Montgomery College data citizens must mutually agree on and understand the common vision of using data to guide decision making for the data asset management program to be successful. The data stewards must recognize and leverage the interrelationship and connection between data across the institution to be effective in their roles. Units, such as OIRE and OIT, must work collaboratively to manage data performance, maintain integration and data validation as well as reduce risk. The EAC must lead and oversee this work to ensure that it remains a focus of the College with the goal of creating a culture of evidence and inquiry.

## Executive Advisory Committee

- Champion institutional data and lead data improvement initiatives.
- Establish priorities and determine technological and personnel resource needs.
- Provide direction to data stewards.
- Create/revise data management policies and procedures.
- Provide final recommendations to the president.
- Engage stakeholders to document and communicate data process and elements.

## Data Stewards

- Direct operational-level responsibility for the management of institutional data.
- Establish and maintain collegewide data dictionary.
- Work with stakeholders to assess the need for and storage of data.
- Ensure that data is captured accurately and resolve accuracy and quality issues.
- Maintain and update systems map of data elements.
- Measure and manage data performance and risk.

## Office of Institutional Research and Effectiveness

- Partner with other College units (ELITE and WDCE) to determine training needs.
- Measure and manage data performance and risk.
- Develop and manage data reporting calendar and publications, in coordination with other departments.
- Manage institutional data request process.

## Office of Information Technology

- Analyze and acquire technology resource requests.
- Manage IT risk management process and carry out response strategies.
- Ensure connectivity and security of data systems and data storage.
- Measure and manage data performance and risk.

# MEASURABLE OUTCOMES

To work toward our shared vision of creating a culture of evidence and inquiry, it is important that we have clearly defined assessment strategies to evaluate the progress of the data asset management program. It is not only important to assess the implementation of the DAMP, but to also measure the changes seen in the College's culture. To that end, there are three metrics against which we will measure our progress.

1. Mapping our progress against the timeline laid out in the DAMP. At the end of each fiscal year, we will determine progress of each of the action items laid out in this plan. As technology and needs change the plan will be updated every two years with an updated timeline.

2. Enhance use of data at the institution, as measured by the Achieving the Dream ICAT. All data citizens were allowed to voice their thoughts on whether relevant data exists to inform decisions and if the College uses that data to make informed decisions in the fall of 2016. This assessment instrument should be re-administered in fall of 2021 and every two years thereafter as a verifiable way of measuring progress on the College's journey toward creating a culture of evidence and inquiry.

3. Use a five-level capability maturity model matrix to measure our work. Annually, the EAC should be responsible for updating a capability maturity model matrix in the areas of:

   a. Personnel

   b. Procedures/process: centralized location

   c. Procedures/process: standard procedures

   d. Data definitions

   e. Data availability

   f. Data reliability

   g. Reporting timeliness

   h. Reporting format and structure

# CONCLUSIONS

From an operational perspective, data will enable the College's employees to work, think, and act more effectively and strategically achieve objectives. Data asset management will contribute to the College's competitive advantage and contribute to the development of the College's post-COVID-19 business model. Most importantly, data asset management will help ensure defensible, data-informed decision-making abilities at all levels of the College.

A well designed and executed plan will address the College's immediate needs and ultimately yield:

- Standardization and consistency

- Increased trust and confidence in data

- Improved decision support

- Better training and capacity building

- Enhanced ability to leverage best practices

- A common language for sharing and interpreting data across the College

The DAMP provides a clear vision and bold plan to reach the ideal future state of having a culture of evidence and inquiry, one that values data and sees data as an asset. The DAMP establishes the guiding principles around data processes, data standards, and data architecture with an eye on measuring data quality and the remediation of data quality issues to deliver meaningful data to the collegewide community. In order to fully realize the potential of a data asset management program at MC, it will require that we implement and monitor policy changes to ensure appropriate information gathering, interpretation, and sharing.

The implementation of the data asset management program will allow us to achieve four critical goals. The first of these goals is to build our institutional capacity related to data management. The second goal focuses on data integration across the College and embeds this work within each division. The third goal ensures that we work towards common understanding and use of data by increasing the data literacy of all members of the College community. The final goal is to improve the decision making as a result of the improved access to and understanding of data.

Data asset management is only going to become more important to achieving the College's mission moving forward. The College's deliberate and intentional use of data will facilitate the digital pivot needed in a post-COVID world and lead MC towards increased data maturity. Effective data asset management contributes to better financial performance and represents a manifestation of our institutional value of stewardship. This plan calls for the best use of people, tools, and processes to ensure compliance. It tightens data collection, storage, usage, and management procedures. And, more importantly, improves quality, accessibility, measurability, and key stakeholder satisfaction with data.

It is important that we have clearly defined assessment strategies to evaluate the progress of data asset management at Montgomery College. To that end, there are three metrics against which we will measure our progress.

1. Mapping our progress against the timeline— are we meeting planning milestones on time and within budget?

2. Enhanced used of data at the institution, as measured by ICAT—does relevant, reliable, and well-defined data exist to inform decision making?

3. Use of the 5-Level Capability Maturity Model to evaluate our work—are we advancing to a more prescriptive and anticipatory use of data?

The College's work around closing the achievement gap and deep focus on student success, through multiple innovations (e.g., the Student Success Score Card, initiatives to reduce the DFW rates, and participation in the Achieving the Dream network) have resulted in better outcomes for our most vulnerable students. It is imperative that we continue to amplify this work and scale strategies and practices that have demonstrated success by honestly assessing and removing barriers that prevent all learners from meeting their educational and career goals. As we prepare our students and workforce of today and those of tomorrow for the challenges they will face in a complex world, the DAMP will position the College to embrace transformational opportunities, advance our strategic plan, and confidently respond to the changing landscape of higher education by proactively and strategically leveraging our data assets to manage affordability, determine what we should sustain, and what we should stop doing, while finding new ways to ensure student success and fulfill our mission, vision, and values.

Education can unlock the doors of opportunity for everyone in our community. But it must be relevant, timely, accessible, and consequential, particularly in a post-pandemic economy. To fully realize our mission to empower students to change their lives and enrich the life of our community, we must have a robust data asset management program that is designed to collect data at various points along the student experience and to translate that data into meaningful information that yields insights about the past and the future. This will require a collaborative effort between multiple College units to optimize the data process for all users and identify strategies for improvement and innovation.

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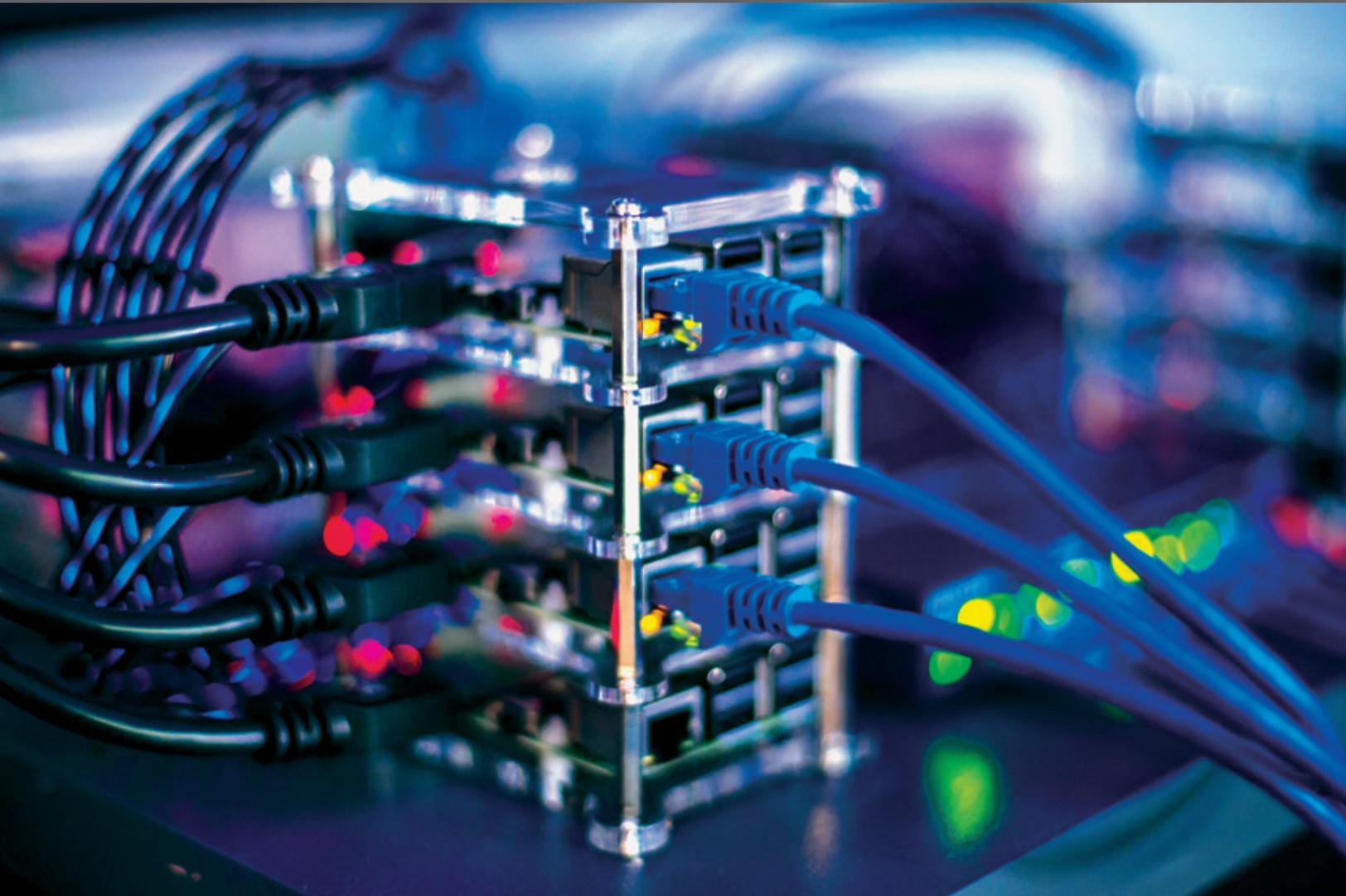Office of Institutional Research and Effectiveness

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With gratitude to **Deborah Morris**, senior research analyst for the Office of Institutional Research and Effectiveness, for serving as chair of the Data Stewards Group prior to her retirement.

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