

MDA19-112

Assessment of Selected Project Delivery Processes

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EXECUTIVE SUMMARY

Background

MD Anderson's Division of Operations and Facilities Management provides facilities and operational support to fulfill MD Anderson's mission to treat and prevent cancer. Facilities Management operates under the responsibility of the Vice President and Chief Facilities Officer. There are more than 1,200 facilities employees who provide services to 15 million square feet of facilities located in Houston, Texas and surrounding counties and in Bastrop County, Texas. Facilities Management services include Environmental Health Safety (EHS), Sustainability and Emergency Management (EHSSEM), Facilities Administration (FA), Facilities Finance (FF), Facilities Planning, Design and Construction (FPDC), Patient Care and Prevention Facilities (PCPF), and Research and Administrative Facilities (RAF). FPDC manages funds and projects designated by The University of Texas System for improvements to MD Anderson facilities.

Assessment Results

The following summarizes the observations based on the procedures and detailed testing activities performed for in-scope FPDC processes:

- 1. Enhance Project Management Systems:** Project data is fragmented across many different applications limiting the ability to compile and synthesize project data into a single collaborative platform.
- 2. Establish Project Risk Management Framework:** FPDC does not have a structured risk management framework or defined risk management processes for institutional projects and major capital projects.
- 3. Improve Project Close Out Processes:** Project closeout durations are extended due to a cumbersome purchase order (PO) close process.
- 4. Optimize Project Status Reporting:** Project reporting does not utilize standard reporting templates and is not consistent across FPDC.
- 5. Define Project Delivery Process:** Current 7 Step delivery process is designed to fit a major capital project but is not yet scalable for use on institutional projects.

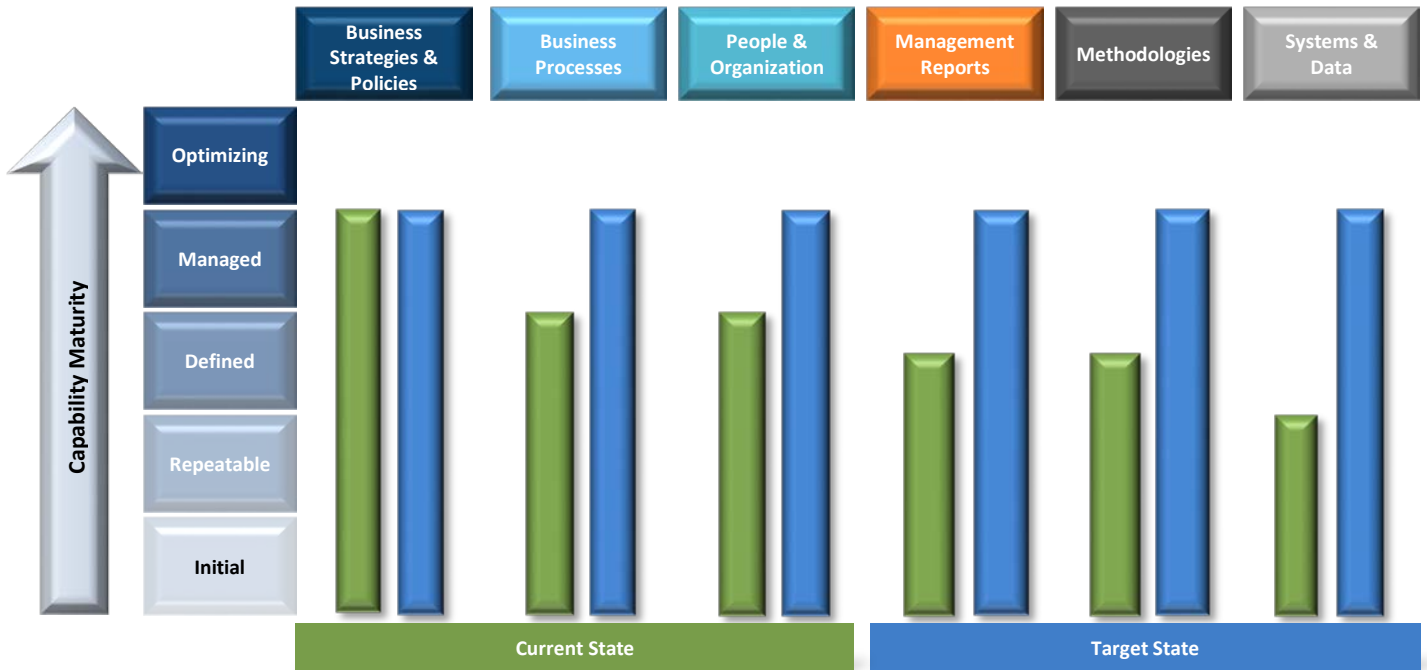
Maturity Analysis

In addition to the review of critical processes and controls, the Six Elements of Infrastructure (Six Elements) framework was utilized to assess the key components of institutional projects and major capital projects delivery processes. The Six Elements are most prevalent to an organization and are common to each process or function, and are comprised of:

- Business Policies
- Business Processes
- People and Organization
- Management Reports
- Methodologies
- Systems and Data

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The Six Elements framework was used in conjunction with the Capability Maturity Model (CMM), which defines the degree of formality and optimization of frameworks, to assess FPDC’s current project delivery processes. Based on the current maturity level of existing processes and results from testing performed, FPDC rates as “Defined” across most of the elements on the CMM with the exception of Systems and Data which is ranked at a “Repeatable” maturity level. The following model depicts the current state maturity ratings across each of the Six Elements for FPDC.



Based on the analysis, FPDC appears to have adequate processes and controls in place to deliver institutional projects and major capital projects. However, the systems and tools to drive the project are highly inefficient and redundant resulting in increased effort associated with data entry, routing, updates and driving workflows related to institutional projects and major capital projects. The following recommendations are intended to elevate the maturity of FPDC processes. Their alignment with Detailed Observations resulting from the assessment is noted below.

Recommendations for Potential Improvement

1. Policies

- FPDC has a FM Division 7-Step Project Delivery process that is designed to lead the project Manager through the delivery of a construction project. Currently the 7-Step process fits a major capital project and is not scalable to be used on an institutional project. FPDC should consider outlining a project delivery process for institutional projects to streamline and standardize the project delivery process. (*Observation #5*)

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2. Processes

- FPDC should incorporate a project risk management framework that requires project risks to be managed throughout the project lifecycle on institutional projects and major capital projects. *(Observation #2)*
- FPDC should review the Project Closeout process to reduce redundant activities that prolong the closeout process. MD Anderson should evaluate the processes around project closeout and strategically reduce activities during the Project Closeout process. *(Observation #3)*

3. People & Organization

- FPDC offers new employee training, and has published a guidebook for key processes, design guidelines and a forms library for all project related forms. However, most of the information processing is manual in nature where the documents are pulled from the library and then manually routed for completion. These types of manual activities are inefficient and can be reduced or automated through process and/or system enhancements. *(Observation #1)*

4. Management Reports

- FPDC has multiple reports that range from system generated to manual reports for Construction inspections, Financial, Compliance, Project Condition and Status. FPDC can enhance the reporting by providing consistent performance metrics, document status and risk assessments for major capital projects and institutional projects. *(Observation #4)*
- FPDC should create department repository for third-party audit reports that can be easily accessed by FPDC management. *(Observation #1)*

5. Methodologies

- FPDC should utilize the Project Management system for automation of project data internally within MD Anderson. Currently, this feature is available to construction contractors, architect and consultants on a project but is not available for routing of internal documentation. *(Observation #1)*

6. Systems & Data

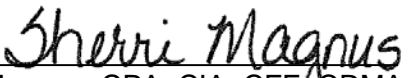
- FPDC should evaluate the need for a dedicated Project Management Information System to automate manual activities associated with maintenance of the project data related to institutional projects and major capital projects. *(Observation #1)*
- FPDC should assess document collaboration within Project Management Information System so that maintenance of offline files on local computers and network drives is eliminated. *(Observation #1)*

Management's Summary Response:

Management agrees with the observations and recommendations and has developed action plans to be implemented on or before August 31, 2020.

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The courtesy and cooperation extended by the Facilities Planning, Design and Construction is sincerely appreciated.



Sherri Magnus, CPA, CIA, CFE, CRMA
Vice President & Chief Audit Officer
August 30, 2019

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DETAILED OBSERVATIONS

Observation 1: Enhance Project Management Systems**RANKING: High**

Project data is fragmented across many different applications limiting the ability to compile and synthesize project data to form actionable, real time data analysis for overall project information. Additionally, critical project documentation is not consistently maintained within Project Workspace, which is the system of record.

FPDC strives to consolidate project data into a single collaborative platform known as the Project Workspace. However, due to the manual routing of forms and the volume of project-related data outside Project Workspace, the ability to harvest real time project data is a challenge. As a result, instant visibility into change management, invoice status or schedule related data is not available to produce reliable, real-time analytics and forecasts. Additionally, critical project documentation maintained outside of the system of record could be lost or misplaced.

A leading Project Management Information System (PMIS) offers a fully integrated suite of project management tools, effective data integrity and collaboration with other external project management tools. A PMIS should have capability for automated workflows, fillable forms, document library and collaboration. Additionally, it should provide a consistent process for organizational efficiency and productivity by managing the tasks and steps involved.

Recommendation:

FPDC management should perform an assessment of the current Construction Project Workspace platform to determine whether it can meet current and future needs. Management should explore the feasibility of enhancing the current application to ensure efficiency and proper retention of project documentation.

Management's Action Plan:

Executive Leadership Team Member: Shibu Varghese and Spencer Moore

Division/Department Executive: Karen Mooney

Owner: Jim Waters

Implementation Date: February 28, 2020

A request has been made to through the IT governance process to purchase and implement a project management information system (PMIS.) It has been approved but is awaiting funding. The project is not expected to be funded in FY20. The FPDC controls team is facilitating a PMIS needs assessment to vet the current system against current needs and market trends.

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Observation 2: Establish Project Risk Management Framework

RANKING: Medium

Construction Project Risk Management is a robust risk analysis process that predicts the uncertainties in projects and minimizes the occurrence or impact of these uncertainties. FPDC can enhance its current construction management activities by establishing a Project Risk Management framework.

An effective Project Risk Management framework provides:

- Clear risk identification and mitigation strategies
- Consideration of unforeseen events so that project progresses as planned
- Timely communication of project issues to stakeholders
- Evaluation of the impact on project objectives such as scope, time, cost, and quality
- An effective team building tool, as team buy-in and acceptance is assured by involving right people to delegate actions or ownership of risks.

Recommendation:

FPDC should establish a Project Risk Management framework for continuous risk identification, evaluation and mitigation on institutional projects and major capital projects. The framework should include:

- A risk register for each project to identify and track risks and issues;
- A risk management process that should be incorporated in the FPDC's current 7 Step Project Delivery Process; and
- A risk repository for all potential project-related risks that can be experienced on a project. This risk repository should be updated and evaluated on a recurring basis to ensure its viability on future projects.

In addition, the Project Risk Management framework should be scalable based on the size and complexity of the project.

Management's Action Plan:

Executive Leadership Team Members: Shibu Varghese and Spencer Moore

Division/Department Executive: Karen Mooney

Owner: Jay Miranti

Implementation Date: August 31, 2020

FPDC will develop a project risk identification and mitigation process that will be incorporated into the project delivery process. The process will be adaptable to large and small projects. A risk register will be developed that could capture such things as:

- Risk item number
- Date opened
- Risk description – including severity or impact of risk
- Proposed mitigation strategy
- Cost to mitigate
- Action notes
- Date closed

The process would be initiated in planning and preconstruction, communicated through the Core Team process or identified project advocate where applicable for minor projects for decision making and action. The process will be owned by the project directors, principal project managers, and project managers assigned. Documentation would reside within Project Workspace or future PMIS and be continuously updated as risks are identified, acted upon, and closed throughout the project lifecycle. Project Management will engage Project Controls in an effort to leverage current capabilities within Project Workspace. In doing so, risk identification and assessment on similar future projects can be informed through historical records

Observation 3: Improve Project Close-Out Processes

RANKING: Medium

A project closeout process provides assurance that all project work has been completed and approved per contractual requirements. The current project closeout process is driven by the Project Closeout Checklist, which details each task that a Project Manager (PM) must complete before the project can reach a “Closed” status.

Current closeout activities related to open commitments are not being consistently performed, or in the case of final invoice confirmation from the vendor, create potential risks.

Current Financial Closeout Activities

1. Review Open Commitments Report to determine status of POs
2. Confirm submission of final invoice with vendor
3. PM issues notice to Facilities Finance to close open commitments
4. Facilities Finance changes status of project to “Closed”

- Purchase Orders (POs) were not closed for two projects (Mays Clinic Periop Sterile Processing Center and Clark Clinic Redevelopment). A confirmation was received from vendors that the POs were completely invoiced and could be closed out; however, the POs remain open with available funds of \$105,076.
- Additional data analysis revealed multiple “closed” projects that had 49 open POs with available funds of \$409,346.
- Projects were not closed timely, awaiting final invoice confirmation from the vendor, and remained open up to thirty-seven (37) months, with an average closeout duration of nine (9) months. As a result, the related POs remained open, increasing the risk that inappropriate invoices may be paid. This also creates inefficiencies as project managers must continue to provide status updates on these projects.

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Recommendation:

FPDC and Facilities Finance should reevaluate the project closeout process to ensure projects and related POs are closed timely.

Management's Action Plan:

Executive Leadership Team Members: Shibu Varghese and Spencer Moore

Division/Department Executive: Karen Mooney

Owner: Jim Waters

Implementation Date: August 31, 2020

FPDC and Facilities Finance will assemble an interdepartmental team to review and update the project close-out process and reaffirm expectations. The team will be charged with revising process documents to the extent needed and with proposing and documenting business rules and practices that will ensure projects are more timely closed.

Observation 4: Optimize Project Status Reporting

RANKING: Medium

Project status reporting is inconsistent in format and content and is not always timely. As a result, management may not have complete and timely information for decision-making.

FPDC has developed a robust library of project report templates to manage projects. These reports are automatically populated in a one-page project status report that includes key information such as cost summaries, commitments, project health, project listing, project activity log and project schedule. However, these templates are not consistently used because of informal requirements outlined by each Project Director for the monthly project status updates. The automated Project Status Report available on Project Workspace is not utilized resulting in non-standardized Project Status Reports for FPDC Management.

Project status reporting is used to monitor the status and health of active projects. Project reports and data should be easily accessible, actionable, and standardized and communicated effectively and timely to FPDC management.

Recommendation:

FPDC should optimize project status reporting by establishing a formal project status reporting template that includes leading practice project status report information such as:

- Financial status;
- Risk register;
- Change order status; and
- KPIs.

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Additionally, FPDC should establish a frequency/due date for status reports. Finally, management should require that standard report templates be consistently used.

Management's Action Plan:

Executive Leadership Team Members: Shibu Varghese and Spencer Moore

Division/Department Executive: Karen Mooney

Owner: Jay Miranti and Suzanne Dorantes

Implementation Date: August 31, 2020

FPDC will assemble a team to standardize the frequency of when projects update are required and look at templates for report automation. It is the goal to not have manual reports, but rather all reports to be generated from data within Project Workspace. NOTE: this effort cannot be completed without support and dedicated assistance from IT (EBS department.) If that does not occur, this goal will not be achieved.

Observation 5: Define Project Delivery Process

RANKING: Medium

FPDC's 7-Step Project Delivery processes are documented to include actions, responsible facilitators, activities, division development process, documentation and outline input from other key stakeholders. Currently, these processes are designed to fit a major capital project and are not scalable for use on an institutional project.

Lack of a non-scalable 7-Step process can result in inconsistent project delivery and selection of an inappropriate project delivery method. Additionally, this may result in the, inability to provide training related to legislative and regulatory requirements, tolerance for risk, level of schedule detail, or desired level of involvement for FPDC's resources on an institutional project.

Recommendation:

FPDC should consider outlining an institutional project delivery process in order to streamline and standardize the process. The current project delivery process for major capital projects could be scaled down for institutional projects to define the activity, participant, process and the corresponding documentation required for each activity.

Management's Action Plan:

Executive Leadership Team Members: Shibu Varghese and Spencer Moore

Division/Department Executive: Karen Mooney

Owner: Suzanne Dorantes

Implementation Date: February 28, 2020

In FY19 Institutional Principal Project Management began a process to modify the current 7 Step Process to better fit the current Institutional Projects group project portfolio as well review the established process against current business practices. A training presentation was developed to on board new Institutional Project PMs and a new visual representation of the 7 Step Process was created and presented to the Institutional PM group July 2019. The next step is to review process with internal FPDC stakeholders (i.e. FPS, A/E) which is planned in second quarter of FY20.

APPENDIX

Objective and Scope

The scope of the audit was to perform a review of select project processes within Facilities Planning, Design, and Construction (FPDC), Facilities Finance (FF), and Facilities Administration (FA) to assess existing controls and processes, identify potential control gaps, and evaluate the consistency of delivery across various projects.

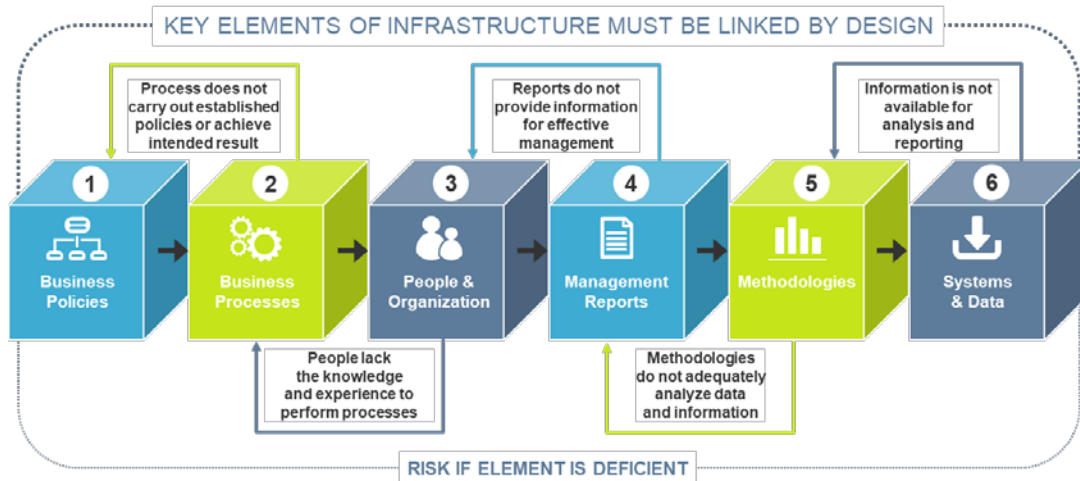
The objective of this audit was to review and assess the design of critical processes and controls utilized by FPDC for the delivery of major capital projects and institutional projects at MD Anderson Cancer Center. To achieve these objectives, Internal Audit performed the following steps:

- Reviewed policies, procedures, e-manuals and practices governing facilities planning, design, construction, operation, maintenance, and support operations for institutional projects and major capital projects
- Conducted meetings to understand the existing processes related to Project Reporting, Planning, Execution, Record Retention, Scheduling and Project Closeout
- Reviewed sample contracts, subcontracts, invoices and other third-party agreements as necessary to assess processes and test control design and effectiveness
- Selected four (4) institutional projects and four (4) major capital projects to test effectiveness of key controls
- Reviewed a sample of third-party audit reports for construction projects to evaluate key themes in audit findings identified during contract audit work
- Assessed the current maturity level of the processes and procedures in place for governance, project controls, project completion, turnovers and project delivery utilizing the Capability Maturity Model (CMM) and Six Elements of Infrastructure (tools used for categorizing issues to understand where opportunities for improvement may exist)
- Reviewed potential gaps and observations with Internal Audit leadership
- Developed a roadmap for remediation of key issues, items or areas of concern and reviewed with Facilities Management and Internal Audit
- Provided guidance to enable management to enhance project delivery, including risk mitigation and control.

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Maturity Analysis Methodology

The Six Elements of Infrastructure identifies the key components that must be considered to effectively manage risk within an institution. An overview of how these Six Elements are linked to the key objectives of this review is provided below.

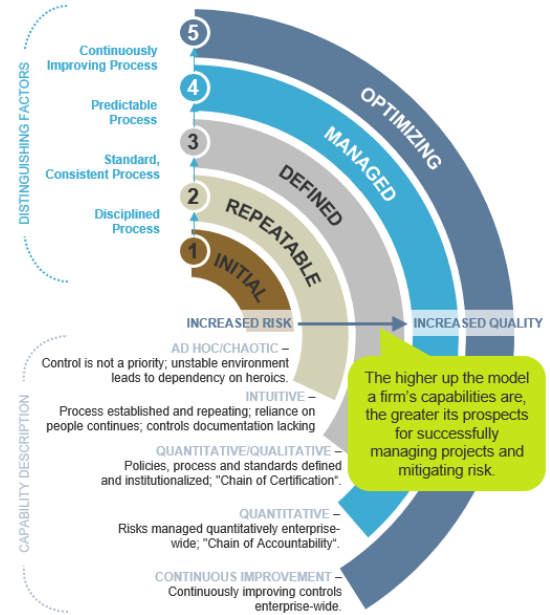


The six elements of infrastructure were assessed to categorize inefficiencies and understand where gaps are occurring within the existing FPDC processes. The six elements are common to each process or function and include:

1. **Business Policies:** Policies include specific guidelines as well as the more general principles that apply to all aspects of FPDC.
2. **Business Processes:** Primary means of executing FPDC strategies and policies. Processes contain inputs, activities and outputs that are integrated with FPDC processes.
3. **People and Organization:** Key tasks are assigned to FPDC Project Managers with the requisite knowledge, skill, and expertise. This also includes definition of roles and responsibilities of risk-monitoring functions.
4. **Management Reports:** Actionable and easy to use reporting functionality designed according to the information needs of stakeholders.
5. **Methodologies:** Organization of key tasks and a working body of knowledge within a logical, well-structured framework.
6. **Systems and Data:** Provide relevant, accurate, and on-time information and should meet FPDC's requirements, and be flexible enough to allow for future enhancement, scalability and integration with other systems.

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The Six Elements are commonly used in conjunction with the Capability Maturity Model (CMM) to determine the needed improvements in process. The Capability Maturity Model (CMM) is a framework that assess the current capabilities. This analysis also provides the input for rating the level of maturity using the CMM. Together, the six elements and CMM provide the basis for performing a maturity analysis.



Based on our current assessment, criteria for ranking each element is outlined below:

	Business Strategies & Policies	Business Processes	People & Organization	Management Reports	Methodologies	Systems & Data
Optimizing	Fully aligned and integrated construction project strategies, policies, procedures, and controls.	Leadership highly integrated; project execution processes allow for controlled exploitation of opportunities.	Optimized project management teams with continuous training. Streamlined communication.	Excellent project information used for optimizing project execution; continuous risk assessment.	Procedures allow for optimal use of project data with little manual involvement; heavy reliance on system automation.	Fully integrated suite of project management systems; excellent data integrity and use of external sources.
Managed	Strategies and policies effectively defined such that they support a controlled and standardized project delivery across the Institution.	Formal, effective processes; risk management integrated in project delivery and across all project execution processes.	High performance project management teams with continuous training; minor labor inefficiencies exist. Streamlined communication.	High quality project reports available and include in-depth performance metrics and risk assessments.	Systematic automation of project data analysis and workflow routing; continuous improvement to meet project demands.	Effective project management tools; systems support business processes. Strong data integrity and project documentation storage.
Defined	Defined project delivery strategies supported by standardized and enforced policies. Minimal inconsistency across the Institution.	Effective, aligned, well-defined, and controlled processes for institution-wide project execution.	Project team and organizational structure defined; some labor inefficiencies exist; Proactive training available.	Project reports and timely data available for project activities; routine reporting with established frequency.	Reliance on systems to automate analysis of project data and monitor performance; Mostly automated data entry and workflow routing.	More effective project management system; effective data integrity and project documentation storage.
Repeatable	Some strategic focus on project delivery; outdated or informal policies; minimal consistency across the Institution.	Project execution processes are established but inconsistently performed and monitored.	Project team and organizational structure established; Project Management training received as needed.	Project reports available for select projects; functional-level performance monitoring.	Mostly manual manipulation and analysis of project data; potential for systematic errors. Some automated workflows.	Project management systems are interfaced and functional; some access to project documentation; limitations to system capabilities.
Initial	Strategies and policies not created for project delivery; resulting in ad-hoc and inconsistent execution across the Institution.	Informal project execution processes that are loosely defined; non-standard processes.	Project teams require additional training and organizational structure is unclear and/or not fully documented.	Project reports not readily available or defined; poor data integrity; performance not always measured.	Completely manual manipulation and analysis of project data; manual data inputs and no workflow automation.	Disparate and basic project management systems; non-uniform data standards; no integrated tool to access project documents.

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