UNM | *Office of the CIO*

UNM IT Project Management Standard

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Effective Date:
Responsible Executive: UNM Chief Information Officer (CIO)
Responsible Office: UNM CIO
Contact: IT Director, Project Management Office

Purpose of the IT Project Management Standard

The purpose of the information technology (IT) Project Management standard is to provide guidelines for the consistent management of technology projects at the University. The IT Project Management Standard identifies minimal best practices for completing the right projects:

- On time
- Within budget
- To scope

Effective project management ensures that the project is aligned, that is, the resulting system(s) will help achieve business objectives and that the sponsoring organization realizes a planned return on investment in software, hardware, human resources and capital. The standard details minimal best practice, artifacts and documentation to ensure that the project have clear benefit, is executed in a predictable manner and accountable to UNM leadership for outcomes.

Project and Project Management Definitions

A project is a temporary endeavor undertaken to create a unique product, service or result. A project is **temporary** in that it has a defined beginning and end in time, and therefore defined scope and resources. A project is **unique** in that it is not a routine operation, but a specific set of operations designed to accomplish a singular goal.

The Project Management Institute (PMI) defines Project Management as "the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements."[i1] Project success is defined as producing well-defined, achievable deliverables according to plan (time and budget) to meet an agreed-upon set of requirements (relating to boundaries of the effort, project scope, stakeholder and customer satisfaction, governance criteria, and quality of deliverables). Disciplined project management entails formalized steps that initiate, plan, execute, control and close a project based on articulated and preferably quantified functional/business objectives.

> **Example**. The UNM Information Technologies Department (UNM IT) under the Chief Information Officer conducts IT projects using the following processes and templates. http://it.unm.edu/dashboard/projects. The service is defined in the UNM IT service catalog: http://it.unm.edu/servicecatalog/asset_list.php?type=2&a_id=149&dept=266&origin=az.

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[1] Project Management Institute (PMI) definition of project management: http://www.pmi.org/About-Us/About-Us-What-is-Project-Management.aspx.

Who is affected by the IT Project Management Standard?

This IT Project Management standard applies to any UNM organizational entity (i.e. branch, division, college, school, department, business unit, or other UNM-affiliated organization that conducts an IT project), hereinafter referred to as a "department".

Scope of the Standard

The standard addresses the following Supplemental Service named by the IT Strategic Advisory Committee:

- Project Management

The standard addresses project work related to the deployment of significant, technology-enabled functionality in support of business, research or academic operations. Examples of projects includes in the scope of this standards are:

- **Informational,** in support of (usually) non-operational staff decision-making, such as the Operational Data Store (ODS), providing information to stakeholders such as the sunshine portal, digital signs, etc.
- **Applications** in support of transactional UNM business processes, such as recruitment, advising, etc.
- **Infrastructure** projects required to provision applications and information, such as networking, platforms, databases and other technology components
- **Facilities based**, enabling buildings and other designed spaces to benefit from technology that becomes part of the building (or furniture) and supports technology enabled activities

Excluded from the standard are:

- Work that can be completed in standard, published maintenance windows of system unavailability. Examples might include and are not limited to applying system updates, security patches or small projects.
- Management or operational practices involved with or applied to other organizational or business situations to ensure project success.
- Work related to maintaining existing functionality in technology-based systems or operations, such as standard changes, or often-repeated small projects.
- Specific types of execution, management approaches or techniques that can be applied to types of projects or phases of a project, such as but not limited to Agile software development, Earned value management (EVM), Extreme Project Management, Business process modeling (BPM), Critical path management, Scrum, among many others.

Responsibilities Concerning the Standard

- **Departments that conduct IT projects:** Departments providing IT project management or leveraging IT resources are accountable to document their practices for managing projects in alignment with the standard. Request review of the standard in order to make changes.
- **Office of CIO**: Ensure currency, correctness and appropriate periodic review of the Standard by facilitating review and update of the standard as requested or needed.

Process for Review

The process to review an update the standard is defined and published on the Standards page of the CIO website at http://cio.unm.edu/standards/standards-development.html:

- Requests for review and update of the standard can be submitted to the Office of the CIO. The CIO may independently, or upon request of the administration, also determine if review and update is appropriate for the standard.

Compliance
- This standard has been developed under and is subject to all UNM policies, some of which are cited in the References.
- UNM IT is available to consult with departments on applying project management methods or techniques on specific projects.
- The UNM Administration, Internal Audit, or UNM IT may determine the compliance of departmental project approaches in complying with this standard.

IT Project Management Standard Specifications

The following standard does not specify templates or forms, however examples of those used by UNM IT can be found at http://it.unm.edu/dashboard/projects.

Evaluate and Initiate Project
- **Characterize the Project**. Define the project in terms of size, complexity and risk in order to identify and assign the appropriate level of management attention to and overhead support for the effort. For larger projects with many resources, the coordination and management effort levels are greater than for smaller projects.
- **Assess Value** Assess the value of the project to the University or the department. The following rubric has been useful to UNM IT in priority setting by quantifying value on a 0-5 scale, where the sum of 0=Low total value and 35=High total value. Although considering value rationalizes the evaluation process for projects, priority setting and sequencing of projects remain management decisions. (UNM IT templates can be found at http://it.unm.edu/dashboard/projects.)

Alignment	Degree to which the project supports UNM in fulfilling strategic goals	0=No strategic impact (e.g. operational project) 3=Indirectly supports objectives of UNM 2020 5=Directly supports objectives of UNM 2020
Meets or Supports Compliance (Regulatory)	Whether an existing or future compliance or regulatory requirement exists that the system will support (e.g. EPA per Safety & Risk Services)	0=No compliance requirements 3=Meets anticipated future compliance or regulatory requirement 5=Meets existing compliance or regulatory requirement
Business Efficiency	Degree to which the project will measurably increase UNM's ability to conduct business efficiently, e.g. reduction in costs or handoffs, or improved functionality	0=No measurable business efficiency 3=Provides at least one measurable business efficiency 5=Provides numerous measurable business efficiencies
Strategic Impact (ECAR-derived success factor)	What is the scope of the strategic impact of this project? How far reaching are the direct benefits?	0-3=Low: departmental, multi-departmental or UNM-wide 2-4=Medium: departmental, multi-departmental or UNM-wide 3-5=High: departmental, multi-departmental or UNM-wide
Impact on Student Experience	Degree to which the project will affect student experience and educational quality	0=None 2=Secondary, not student-facing 3=Some direct student impact 5=Significant direct student impact
Critical Infrastructure / Deliverables	Do other critical projects depend on this project to deploy foundational infrastructure or other deliverables?	0=Infrastructure / deliverables support existing services and projects 3=Infra / deliverables support development of new services or projects 5=Infra / deliverables are critical to the development of new services or projects which have high value for UNM
System Health	Degree to which the project addresses a system or systems that have outlived the expected lifespan. Factors include vendor support, maintainability, scalability &	0=Replaces healthy and highly functional system; or vendor support in place 3=Replaces moderately healthy or adequately functional system; or approaching vendor end-of-support

	functional depth	5=Replaces a least healthy or poorly functional system; or de-supported by vendor

- **Assess Risk** Asses the risks associated with conducting the project. The following rubric has been useful to UNM IT in priority setting by quantifying risk, on a 0-5 scale in each category where the total value of 0=High total Risk and 35=Low total Risk. Although considering risk and value rationalize the evaluation of projects, priority setting and sequencing of projects remain management decisions.

Compatibility w/ Enterprise Systems	Ease of integrating project deliverables with current systems	0=The project is incompatible with existing enterprise systems 3=The project integrates with existing enterprise systems, but new interfaces are required 5=The project seamlessly integrates with existing enterprise systems and UNM has similar interfaces in production; or integration is not required.
Familiarity with Technology	Degree to which the technology is proven and support requirements are known	0=The technology is both new AND unproven at UNM 3=The technology is either new OR unproven at UNM 5=The technology exists today in UNM IT enterprise production environment
Complexity	Complexity describes the initial level of understanding of the deliverables and requirements of the project. The complexity of a project will often be constrained by other criteria, such as impact, available resources, or timing dependencies.	0=Deliverables and requirements have elements that are complex and not well understood 3=Deliverables and requirements are mostly understood 5=Deliverables and requirements are well understood
Institutional Commitment	UNM readiness and capacity for the project and management commitment to sponsor the project	0=No stakeholders (UNM or UNMIT) have appropriate skilled or trained resources, capacity or commitment 3=Some stakeholders (UNM or UNMIT) have appropriate skilled or trained resources, capacity and commitment 5= All stakeholders (UNM or UNMIT) have appropriate skilled or trained resources, capacity and commitment
Project Interactions and Dependencies	Whether the project directly affects other projects and or is dependent on other projects' success	0=This project has extensive known interactions with other initiatives OR considerable dependencies on other projects or initiatives 3=This project has limited known interaction with other initiatives and limited dependencies 5=This project has no know interaction with other initiatives and limited dependencies
Community Impact	How easily the project deliverables will be accepted and used by the community or end-users	0=Project changes the way we do business and directly impacts a majority of the community 3=Project requires small changes or the change is limited to a small identifiable community 5=Project does not change the way we do business and thus should be easily accepted by end-users and / or the community as a whole
Urgency	A firmer project deadline could affect the number of resources required to complete the work, the cost, scope, quality and risk involved	0=Project has aggressive deadlines and/or a legislative or compliance-related end-date 3=Project has a flexible end-date 5=Project has no required end-date

- **Identify stakeholders** (or representatives of stakeholder groups) who will benefit from or be impacted by the project and the desired level of their engagement for the project. Name at minimum the following roles on the project:
  - Executive Sponsor
  - Key Stakeholders – Individuals or groups in the University whose support is essential to the success of the project.
  - Users – who will have direct use of the technology or service being implemented
  - Beneficiaries – who will benefit from but not directly use the technology
  - Project Team members are identified as roles rather than names

- **Identify Roles** of those engaged in the project, that is, determine who performs the following:
    - o Advice and decision-making on project strategy and business value
    - o Decision-making on IT investment, technical design
    - o Management of functional resources and provides functional leadership
    - o Management of technical resources and provides technical leadership
    - o Ensuring appropriate stakeholder engagement
    - o Approval of the various project artifacts in the course of the project
    - o Go/no-go decisions on the project
- **Define projects and associated investment/value (Business Case)** The Business Case informs the management decision on applying resources to the effort. It ensures that the effort is worthwhile and leads to the stated business objective. There is no prescribed length or format, but at a minimum it should address:
    - o **Functional Objectives.** The business/functional/technical objective that inspired the technical solution. Ideally these are measureable objectives and the unit has a baseline.
    - o **Technical Service Objectives.** The technical objectives for the project should be declare the specific functionality and services that will be delivered to the function being supported.
    - o **Scope.** The scope section should set boundaries for the project. Typical aspect included are: defining the set of users (local, departmental, enterprise as an example).
    - o **Alternatives or Approach.** If there has been substantive analysis of the alternative solutions or the organization has a firm idea of the solution, this should be documented in the business case. Define options and associated costs well enough so they can be compared to the order of magnitude of the benefit and thus justify the investment.
    - o **Cost/Budget** The business case is made BEFORE an approach solution is solidified; therefore the options and costs necessary to implement the solution are also not solidified. Estimate and include both upfront (one-time project costs) and sustaining (recurring operational) costs.
    - o **Value/Benefit.** The value of the achieving the functional objectives, both quantitative and qualitative, should be captured. Ideally the value and cost should be viewed over a time horizon that demonstrates a payback, or return on investment.
    - o **Risk.** The risks associated with accomplishing the project and operationalizing the functions/systems should be identified—anything that can get in the way of realizing the value of the investment.
    - o **Planning Resources.** Identify the resources required to develop and complete a project plan.
- **Minimum required project artifacts include**:
    - o Business Case
    - o List of Stakeholders and Roles

Define the Project (Plan)
- Develop and document a plan that identifies tasks, deliverables or activities; who is responsible for them, the schedule for completion. At a high level, this plan identifies milestones; at a detailed level, it is a complete work break down structure.
- Project Plan includes:
    - o **Project scope** – what is included or not in the project
    - o **Project schedule** – milestone and completion dates
    - o **Project budget** – One time for the life of the project, and an estimate of recurring costs.
    - o **Execution Resources** – specific resources required to execute the project
- Consider including other specifications related to the project
    - o **Project team** and organization, and their roles and responsibilities
    - o **Functional goals**, objectives and success criteria
    - o **Conceptual design or systems architecture**
    - o **Information Security**: Permission to use and handling of classified, protected information per UNM Data Governance. See: http://data.unm.edu.
    - o Iterations of Design and **acceptance criteria**:
        - o Business process design and acceptance, use cases
        - o Service design and acceptance

- o Technical design
- o Security specification
  - o **Risk management** plan: How risks are monitored and managed is documented
  - o **Procurement Management** Plan: how components will be procured as well as how make/buy decisions will be made. UNM IT's FastInfo provides guidelines on reviewing purchases: https://unm.custhelp.com/app/answers/detail/a_id/7486/kw/purchasing%20review.
  - o **Communication Plan** (see below)
- **Minimum required project artifacts associated with the Plan include**:
  - o Project Plan with high-level milestones, scope, specific resources and budget
  - o High-level system architecture

Conduct the project per the Plan (Execute and Control)

The activities planned will **vary depending on the size and type of project** and conventions and specific forms used the organization's development standards. This section lists common activities, many of which are done iteratively:

- Complete **business analysis**
  - o Finalize, vet and affirm **objectives/requirements** with stakeholders
  - o Document any necessary **business processes and use cases**
  - o Finalize and **prioritize functional requirements**
  - o Understand/document **technical service requirements**
    - Availability
    - Capacity
    - Continuity
    - How incidents, changes, releases and requests will be managed (service model)
    - How the service will be measured and monitored to ensure ongoing utility /warranty
    - How features and capabilities will be communicated to users (service catalog)
- During the early part of project execution, iterate, document and complete **detailed system design**, which may include the following tasks for any type of IT projects:
  - o Solidify **system functions**
  - o Define the **system architecture**. That is, identify and document the context and changes made in the technical environment and interfaces.
  - o **System flow**. Define network, platform, facility or data flow, end-to-end. Identify storage and integration points in the new system flow (See Application Development standard for application specifics).
  - o Design and document the **business processes/work flow** such as:
    - Standard operating procedures/documentation and knowledge management
    - Roles and responsibilities and the training that may be required
    - Information/reporting in support of business controls, analysis and decision-making
    - Data conventions/definitions
  - o Develop and detail **technical specifications**, as appropriate to address
    - Core code
    - Interfaces
    - Configuration
    - Data management/constraints
  - o Design and document surrounding and supporting **IT processes**:
    - Standard Operating Procedures
    - Knowledge management
    - Roles and responsibilities and the training that will be required
    - Reporting
    - Supplier management
- The design drives the subsequent **system development or construction** activities of standing up the technology and services in the execution of the plan. Typical activities include but are not limited to:
  - o Develop testing plans

- o Prepare and sequence platforms work
- o Ensure the network is prepared and users have been informed of planned service interruption during changes.
- o Configure and program (code)
- o Unit and integration testing
- o Design new business process
- o Develop training
- o Develop communication plan
- **Communication.** The minimum requirement for communication is the publication of monthly status report. Optionally address the following as appropriate:
  - o Unique requirements for each stakeholder group
  - o Exposure of key artifacts to stakeholder groups
  - o Meetings, open forums or face-to-face sessions
  - o Marketing
  - o System launch events
- **Implementation**. Most projects have one or more "go-live" points where functionality is put in place. It is often helpful to detail these go-live activities as a formal phase of the project. Frequently it is at this point that many non-technical components come to the fore, such as:
  - o Test and acceptance of the system
  - o Finalization of any business process and technical documentation needed for proper use and maintenance
  - o Training of system users, granting access to eligible users
  - o How changes and releases to the system and or process will be handles (when there is no team)
  - o End-user **support documentation**
    - ▪ Define how incidents are to be triaged, troubleshot, resolved, referred or escalated.
    - ▪ Define how requests for the service will handled and delivered.
    - ▪ Update the knowledge base related to the project deliverables.
    - ▪ Provide online, searchable information related to project deliverables impacting the users.
    - ▪ Define early-life support for the technology
  - o Describe how the overall system will be managed and monitored to ensure ongoing utility
- **Minimum required project artifacts include**:
  - o Periodic (recommend monthly) Status Reports that address schedule, budget, issues, risks,
  - o Security Review: Validation of the security plan, architecture and/or information specification.
  - o Functional sign off on acceptance testing

Close the Project
- Once the functionality is successfully live, responsibilities are transitioned to operational personnel and the project team is disbanded. A well-planned and designed project should enables a project to close soon after go-live. The close of a project usually includes:
  - o Confirming that all project tasks have been completed
  - o Confirming that all operational responsibilities have been assigned
  - o Confirming that all acceptance criteria have been handled
  - o Formal communication to stakeholders
  - o Documentation and sharing of lessons learned
  - o Archiving project documents
  - o Releasing team members
  - o Assess success of the plan by the incidents, requests and changes that occur post implementation.
  - o Determine if desired efficiencies and effectiveness were accomplished by the project.
  - o Determine if the project accomplished the desired objectives; was it the right project?
- **Minimum required project artifacts include**:
  - o Final project status report, presentation, demo or the like.

o   Formal closure from the Executive Sponsor in the form of written confirmation that the project is completed to satisfaction.

References

- **UNM Policy Manual Section 2500-2599**: Electronic Management Systems, especially 2500, Acceptable Computer Use: http://policy.unm.edu/university-policies/2000/2500.html; 2550 for Information Security: http://policy.unm.edu/university-policies/2000/2550.html; and Security Controls and Access to Sensitive and Protected Information 2520 http://policy.unm.edu/university-policies/2000/2520.html
- **University Counsel advises on Copyright & Fair Use**: http://counsel.unm.edu/resources/copyright-matters.html
- **Accessibility/ADA guidelines** are offered by Accessibility Services for students http://as2.unm.edu/, and the Physical Plant https://iss.unm.edu/PCD/university-planning/facility-access-ada.html.
- **Guidance for complying with the Family Educational Rights and Privacy Act (FERPA)** are provided by the Registrar: https://registrar.unm.edu/privacy-rights/ferpa.html.
- **FERPA**. Guidance for complying with the Family Educational Rights and Privacy Act (FERPA) are provided by the Registrar: https://registrar.unm.edu/privacy-rights/ferpa.html.
- **Project Management Institute (PMI)**. http://www.pmi.org/About-Us/About-Us-What-is-Project-Management.aspx
- **UNM IT Project Management Process and Templates.** http://it.unm.edu/dashboard/projects/index.html.
- **Information Security Program** http://it.unm.edu/security/.
- **UNM Data Governance**. http://data.unm.edu/.
- **Purchasing Review.** https://unm.custhelp.com/app/answers/detail/a_id/7486/kw/purchasing%20review.

Glossary of Project Management Related Terminology

Activity – a set of tasks or work in an organization that turn defined inputs into defined outputs. Often an alternative term for Activity is Task.

Applications – A program or set of programs running on a computer that perform a business function. ITIL defined Applications as "software that provides functions which are required by an IT service. Each application may be part of more than one IT service, and run on one or more server."[ii]

Artifact – Some evidence, often a document, that signifies result of an effort, a project, a phase or an activity.

Change – Part of ITIL Service Transition. "The addition, modification or removal of anything that could have an effect on IT services. The cope should include changes to all architectures, processes, tools, metrics and documentation, as well as changes to IT services and other configuration items." A standard change is a pre-authorized change that is low risk, relatively common and follows a procedure or work instruction – such as a password change.

Close – The set of activities surrounding the completion and end of a project.

Continuous Improvement – Projects that address the addition of features, functionality, or security of a service while it is operational.

Execute & Control – The set of activities and tasks related to managing and completing the deliverables identified in a project plan.

Executive Sponsor – The Executive Sponsor is the individual who has ultimate authority over the project, provides project funding, resolves issues and scope changes, approves major deliverables and provides

high-level direction. This person also champions the project within the organization, and represents the project outside the organization.

Facilities – Related to physical buildings or structures, including but not limited to walls, heating, ventilation and air conditioning (HVAC), windows, roofs, furniture, electrical or technology infrastructure.

Functional (as in Team, Lead, or Manager) – This term has different meanings in different contexts. In IT project management, the distinction is often made between technical (IT) and functional (business/administrative) staff, leads or managers. In the Service Desk context, functional refers to the technical teams to which a ticket is escalated for resolution.

Infrastructure – The substructure that supports a superstructure. In technology, this can refer to, but is not limited to, networking or computing platforms that support applications. In urban planning this can refer to, but is not limited to roads and power grids that support business, government and residences.

Initiate – A phase of a project that includes project definition (including but not limited to a problem statement, a business case, approach options, initial cost estimates, general design, etc.).

Maintenance – Maintenance refers to the set of organizational processes and activities required to conserve the operation or functionality of a system asset, while compensating for wear and tear, in order to extend useful life. Examples may include, but are not limited to, applying patches, making minor upgrades, or upgrading underlying hardware or operating systems.

Milestone – a scheduling event that signifies the completion of a major deliverable or set of related deliverables or phase. There is no work associated with a milestone, but it is a flag in the workplan to signify that some work has been completed or a checkpoint has been reached.

Phase – A distinct stage, state or part of a process, program, project or periodic phenomenon, that is relatively complete or distinct in itself. A phase is a major logical grouping of work on a project or a major deliverable or set of related deliverables.

Plan – A written account of intended future course of action aimed at achieving specific goal(s) or objective(s) within a specific timeframe. It explains in detail what needs to be done, when, how and by whom, often including best case, expected case, and worst case scenarios.

Project – A planned set of interrelated tasks to be executed over a fixed period and within certain cost and other limitations. See the Project Management Institute (PMI) definition in references that qualify a project as also having unique deliverables.

Requirements – A description of how a project or service should act, appear or perform. Requirements generally refer to the features and functions of the deliverables on a project. They are part of defining the project scope. They can be changed after approval through a scope management change process.

Resources – In project management, this generic term relates to organizational costs such as direct, indirect and overhead expenses associated with executing a project or delivering a service. One-time and recurring resources are important in determining total cost of ownership. Examples of direct expenses might include purchasing a server, licensing software or hours of staff time; indirect expenses might include time of a Service Desk to support a new application; overhead might include management oversight time or staff time to conduct inventory on equipment.

System – A set of interrelated, detailed methods, procedures and routines, manual and automated, created to carry out a specific activity or business function. The term is very general and requires additional qualifiers or context for clear meaning.

Systems Architecture – Systems architecture is the conceptual model that defines the structure, behavior and more views of a system. An architecture description is a formal representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system. It can comprise system components, the externally visible properties of those components, and the relationships between them. Organizations define systems architecture in different ways including:

- The fundamental organization of a system embodied in its components, their relationships to each other and to the environment, and the principles governing its design and evolution.
- A representation of a system, including mapping of functionality onto hardware and software and human interaction with these components.

- The design and contents of a computer system which may include a detailed inventory of current hardware, software and networking capabilities, a description of long-range plans and priorities for future purchases, and a plan for upgrading and/or replacing dated equipment and software.

Stakeholder – Those individuals or groups without whose support the organization or function would cease to exist, and whose engagement is essential to the success of a project. A stakeholder is a person who has interest in an organization, project or IT service, etc. They may include customers, administrators, management, partners, employees, students, parents, etc.

Steering Committee – A Steering Committee is usually a group of high-level stakeholders responsible for providing guidance on overall strategic direction. They do not take the place of an Executive Sponsor, but help spread the strategic input and buy-in to a larger portion of the organization.

Task – The smallest unit of work on a project that has a defined duration, that has a logical relationship with other tasks on the project, that consumes resources, and that has an associated cost. Often an alternative term for Task is Activity.

Work Breakdown Structure (WBS) – A project network-modeling step in which the entire project is subdivided into specific, manageable work elements (tasks). The WBS displays the relationship of each task to other tasks, to the whole and the end product (goal or objective). It shows the allocation of responsibility, identifies resources and time required at each stage for monitoring and managing the project. The WBS is also called an activity decomposition chart. This is distinguished from the project work plan in that it does not show the schedule of WHEN the tasks will be completed.

Workplan (schedule) – A workplan tells how to complete the project, describing activities required, the sequence of work, who is assigned to the work, how much effort is required, when the work is due, and other information of interest to the project manager in managing the project and determining if the project is on schedule.

[ii] https://www.axelos.com/Corporate/media/Files/Glossaries/ITIL_2011_Glossary_GB-v1-0.pdf ITIL Glossary of Terms published by Axelos.