IT Project Management and Reporting Guidelines

UNIVERSITY
OF
CALIFORNIA

Table of Contents

A downloadable version of this document is available on the University of California Information Technology Leadership Council website.

1. Introduction

The University of California (UC) is committed to ensuring that significant IT projects across all university locations are managed following established best practices. The UC IT Project Guidelines (Guidelines) establish high-level requirements for managing IT projects costing $5M or more. It seeks to promote a professional and consistent university-wide approach to IT project management. All locations are required to integrate these Guidelines into their local practices.

Audience

The Guidelines are not in any way intended to serve as an introduction to or overview of project management principles and best practices. Rather, they are designed for project management professionals – both managers and project team practitioners at all UC locations – responsible for directly performing or overseeing project management processes and activities. Such experienced professionals are positioned to readily interpret and implement these Guidelines.

Purpose

The specific project management processes and practices selected for inclusion in the Guidelines are those considered most critical for ensuring effective IT project management at UC. To this end, the information and advice presented emphasizes the importance of processes, people skills, good judgement, and effective communication. The Guidelines are designed to focus practitioners on essential project management processes deemed critical to success, and do not provide in-depth or prescriptive instructions.

The fundamental reason to pursue a consistent approach to IT project management across the decentralized university system is to ensure that university resources spent on significant IT projects – those projected to cost $5 million or more – are wisely managed. Indeed, policy established in 2017 mandates reporting to the UC Regents about all IT projects with an estimated or actual cumulative cost of $5 million or more. Regents Policy 5103 thus draws new focus to IT project costs, outcomes, and project management effectiveness. At the $5 million threshold, it becomes paramount that the university:

- Ensure adherence to professional project management practices to optimize the expenditure of public resources,

- Implement processes that support standardized reporting and the effective oversight of IT projects at the system-wide level,

- Provide useful information to Project Sponsors and Project Stakeholders, and

- Enable resource sharing and collaboration across locations to encourage optimal use of funding and development of expertise.

Structure and Resources

The content of the Guidelines was derived from a number of sources, including the California State Department of Technology. Further, project managers from UC campuses provided feedback and comment. The chapters of the Guidelines cover:

- Project scheduling and resource management,

- Cost reporting,

- Risk management,

- Change management and

- Vendor deliverable management.

Various templates are provided to illustrate how each process can be documented and managed, and should be treated as examples and resources. Project management practitioners are encouraged to leverage the templates by modifying them to fit the needs of their respective locations and projects.

Updates

While the Office of the President maintains the Guidelines, a community of IT project management professionals will be turned to for input and direction in updating the Guidelines periodically to align with industry best practices and with experience from implementation, ensure that the Guidelines maintain relevance and help the university meet its stated goals.

2. Regents Reporting Requirements

To ensure that the University of California Board of Regents is able to exercise necessary oversight for the university's significant IT projects, all University locations are *required* per Regents Policy 5103 to provide a status update to the Regents three times per calendar year on IT projects with an estimated or actual cumulative cost of $5M or more.

The $5M threshold:

- *Includes* costs for in-kind labor (e.g., existing staff) and billable labor (e.g., contractors, UC recharge labor)

- *Excludes* ongoing cost of operations

- *Excludes* savings projections

Two types of reports are to be submitted to UCOP for reporting to the Regents:

1. **Summary report** for each project with an estimated/actual cumulative cost between $5M and $25M. The template for the summary report contains only the following elements:

   a. Campus location

   b. Project name

   c. Budget (current approved)

   d. Begin date (current projected or actual)

   e. End date (current projected or actual

2. **Comprehensive report** for each project with an estimated/actual cumulative cost of $25M or more. The template for the comprehensive report utilizes a standard one-page report format and includes the following elements:

   a. Project Description and Purpose

   b. Overall Health Status

   c. Risk Status

   d. Budget Status

   e. Schedule Status

   f. Top Issues

   g. Scope Changes

   h. Recent Accomplishments

   i. Planned Accomplishments for Next Reporting Period

Each location is responsible for preparing its own reports. Completed reports **must be submitted using the templates provided** and are sent to the Office of the President for consolidation and submission to the Regents.

Additional instructions and submission deadlines are contained in the appendix.

Appendix Items

Regents Report Submission Timeline and Instructions

Report Period Ending Date	Date Report Due to UCOP	Regents Presentation Date
Dec 31	Feb 1	Mar 14/15 in-person
Apr 31	Jun 15	Jul 31 mailing only
Aug 31	Oct 15	Nov 30 mailing only

Refer to the [University of California Information Technology Leadership Council website](#) for report submission instructions and contact information.

Summary Report Template and Sample

Use the Summary Report template for projects with an estimated or actual cumulative budget between $5M and $25M.

Summary Report Template
Click here for a downloadable copy

Location	Project Name	Budget ($MM)	Start Date	End Date

Summary Report Sample

Location	Project Name	Budget ($MM)	Start Date	End Date
UC-wide	UCPath	$ 504	Oct 2011	Jun 2019
UC Irvine Health	UCePic - UC electronic Patient Information Collaboration	$ 82	Jul 2016	Nov 2017
UC Irvine	UCI Student Information System Replacement	$ 70	Jan 2015	Jul 2020
UC-wide	Redwood	$ 51	Jan 2015	Apr 2020
UC-wide	FireEye Cybersecurity Threat Detection & Intelligence	$ 23	May 2016	Dec 2017
UC Merced	Capital Projects (Downtown Campus Center & Project 2020): FF&E for active electronics	$ 22	Sep 2017	Sep 2020
UC Davis Health	EHR Hosting - Marshall Medical Center	$ 22	Jul 2016	Nov 2017
UC San Diego	Student Information System renewal	$ 19	Jan 2019	Jun 2020
UC Davis Health	ePic Beaker	$ 18	Jul 2015	Feb 2018
UC Davis Health	Materials Management	$ 16	Jan 2015	Mar 2018
UC San Francisco Health	Precision Cancer Medical Building (PCMB)	$ 16	Jun 2016	Apr 2019
UC Merced	Next Gen Network Upgrade	$ 12	Sep 2014	Sep 2020
UC Riverside	Banner: Student System Upgrade from IBM based to Oracle based platform	$ 11	Sep 2012	Oct 2016
UC San Francisco Health	UCSF Data Center Migration	$ 11	Nov 2015	Jun 2018
UC San Diego	Financial Information System renewal	$ 10	Apr 2016	Jun 2019
UC San Diego Health	ePic EMR Module additions	$ 8	Jul 2016	May 2018
UC Santa Cruz	Telecommunications Infrastructure Upgrade	$ 7	Apr 2016	Sep 2020
UC Health	Enterprise Imaging (VNA: Vendor Neutral Archive)	$ 6	Feb 2017	Apr 2018
UC-wide	Consolidated Financial Reporting replacement	$ 5	Oct 2017	Dec 2019
UC Merced	ENABLE: Campus data store & data warehouse to support campus-wide reporting strategy	$ 5	TBD	TBD
UC Merced	eProcurement	in planning	Dec 2017	TBD
UCLA/UCM/UCOP	Financial System Replacement	in planning	Jan 2018	Jul 2020

Comprehensive Report Template, Instructions, and Sample

Use the Comprehensive Report template for projects with an estimated or actual cumulative budget of $25M or more.

Comprehensive Report Template

Click here for a downloadable copy
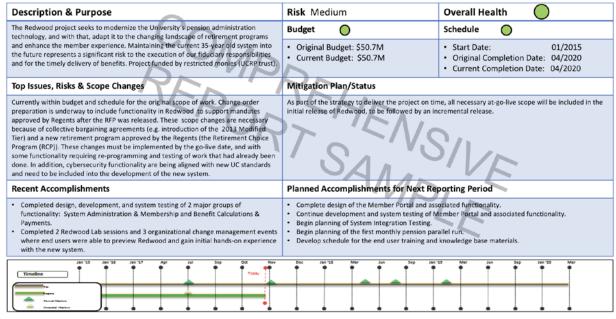
<Location> – <Project Name>, Sponsor: <name>

Description & Purpose	Risk <High, Medium, Low>		Overall Health ○○○
<Brief description of project and purpose/benefit>	Budget ○○○		Schedule ○○○
	• Original Budget: <$###.##M> • Current Budget: <$###.##M>		• Start Date: <mm/yyyy> • Original Completion Date: <mm/yyyy> • Current Completion Date: <mm/yyyy>
Top Issues, Risks & Scope Changes	**Mitigation Plan/Status**		
<Include the following components: • Overview of project performance • Changes in project scope • Changes in project cost • Changes in schedule • Significant project risks/issues>			
Recent Accomplishments	**Planned Accomplishments for Next Reporting Period**		

Prepared by: <name>; <email>

Reporting Period Ending: **<mm/yyyy>**

Comprehensive Report Sample

UCOP – Pension Administration Modernization Project (Redwood), Sponsor: Dwaine B. Duckett

Description & Purpose	Risk Medium		Overall Health ●
The Redwood project seeks to modernize the University's pension administration technology, and with that, adapt it to the changing landscape of retirement programs and enhance the member experience. Maintaining the current 35-year old system into the future represents a significant risk to the execution of our fiduciary responsibilities and for the timely delivery of benefits. Project funded by restricted monies (UCRP trust).	Budget ●		Schedule ●
	• Original Budget: $50.7M • Current Budget: $50.7M		• Start Date: 01/2015 • Original Completion Date: 04/2020 • Current Completion Date: 04/2020
Top Issues, Risks & Scope Changes	**Mitigation Plan/Status**		
Currently within budget and schedule for the original scope of work. Change order preparation is underway to include functionality in Redwood to support mandates approved by Regents after the RFP was released. These scope changes are necessary because of collective bargaining agreements (e.g. introduction of the 2013 Modified Tier) and a new retirement program approved by the Regents (the Retirement Choice Program (RCP)). These changes must be implemented by the go-live date, and with some functionality requiring re-programming and testing of work that had already been done. In addition, cybersecurity functionality are being aligned with new UC standards and need to be included into the development of the new system.	As part of the strategy to deliver the project on time, all necessary at-go-live scope will be included in the initial release of Redwood, to be followed by an incremental release.		
Recent Accomplishments	**Planned Accomplishments for Next Reporting Period**		
• Completed design, development, and system testing of 2 major groups of functionality: System Administration & Membership and Benefit Calculations & Payments. • Completed 2 Redwood Lab sessions and 3 organizational change management events where end users were able to preview Redwood and gain initial hands-on experience with the new system.	• Complete design of the Member Portal and associated functionality. • Continue development and system testing of Member Portal and associated functionality. • Begin planning of System Integration Testing. • Begin planning of the first monthly pension parallel run. • Develop schedule for the end user training and knowledge base materials.		

Prepared by: Esther Cheung Hill; Esther.Cheung@ucop.edu

Reporting Period Ending: **Sept 2017**

Comprehensive Report Template Instructions

Comprehensive Report Template Instructions

#	Instruction
1	Enter the campus location, project name, and sponsor.
2	Enter brief project description & purpose.
3	Keep the correct project risk level indicator, delete the 2 remaining. Refer to slide #6 for additional instructions.
4	Keep the correct stoplight, delete the 2 remaining. Refer to slide #7 for additional instructions.
5	Current approved budget. Keep the correct stoplight, delete the 2 remaining. Refer to slide #7 for additional instructions.
6	Current approved schedule. Keep the correct stoplight, delete the 2 remaining. Replace MM/YYYY with appropriate dates.
7	List top issues, risks and scope changes.
8	Describe mitigation plans/status for top issues, risks and scope changes.
9	Summary of accomplishments during this reporting period.
10	Summary of planned accomplishments for next reporting period.
11	Show timeline for entire project. Adjust bars to show planned versus actual/progress. Move "Today" to appropriate month. Change month/year if needed.
12	Include Reporting Period Ending MM/YYYY.

Comprehensive Report Template Instructions layout showing:
① <Location> – <Project Name>, Sponsor: <name>

Description & Purpose | ③ Risk <High, Med, Low> | ④ Overall Health ○○○
② | ⑤ Budget ○○○ | ⑥ Schedule ○○○
• Original Budget: <$###.##M> | • Start Date: <mm/yyyy>
• Current Budget: <$###.##M> | • Original Completion Date: <mm/yyyy>
| • Current Completion Date: <mm/yyyy>

Top Issues, Risks & Scope Changes ⑦ | **Mitigation Plan/Status** ⑧

Recent Accomplishments ⑨ | **Planned Accomplishments for Next Reporting Period** ⑩

⑪ (timeline Jan '17 – Jul)

Prepared by: <name>; <email>   ⑫ Reporting Period Ending: <mm/yyyy>

5

Comprehensive Report Template Instructions, continued

③ To determine the project **RISK** level use the matrix and thresholds below.

Assess risk to meeting *latest approved* budget, schedule and outcomes. Map each risk individually and set the overall project risk to equal the highest level risk mapped. Provide a description in the risk section of the report.

		Risk Probability		
		Unlikely (1-33%)	Likely (34 – 65%)	Highly Likely (66% - 99%)
Risk Impact	Major	MED	HIGH	HIGH
	Moderate	LOW	MED	MED
	Negligible	LOW	LOW	LOW

Risk Impact to the project budget, schedule and outcomes

Major — Risk presents a significant impact
- Cost increase 11% or more over current budget
- Schedule increase more than 11% over current schedule
- Significant discrepancies in desired outcomes

Moderate — Risk presents a moderate impact
- Cost increase between 5 – 10% over current budget
- Schedule increase between 5 – 10% over current schedule
- Moderate discrepancies in desired outcomes

Negligible — Risk does not present a material impact
- Cost increase less than 5% over current budget
- Schedule increase less than 5% over current schedule
- Minor discrepancies in desired outcomes

Risk Probability or likelihood of occurrence

Unlikely — Will probably not (1% - 33%) occur

Likely — Moderately likely (34% - 65%) to occur

Highly Likely — Almost certain (66% - 99%) to occur

Example – Setting Project Risk Indicator

Budget risk = HIGH if impact is *major* & probability is *highly likely*
Schedule risk = MED if impact is *moderate* & probability is *likely*
Outcome risk = LOW if impact is *moderate* & probability is *unlikely*
Project Risk = HIGH since this is the highest level risk mapped

6

Comprehensive Report Template Instructions, continued

Comprehensive Report Template Instructions, continued

4 Use Common **weighted average formula** to set **OVERALL HEALTH** indicator:

1. *Assign weights to Budget and Schedule Health Indicators:*

   Green = 5

   Yellow = 10

   Red = 15

2. *Determine the weighted average* by totaling the Budget and Health indicator weights and dividing by 2

3. *Set OVERALL HEALTH* based on weighted average:

   ○ Green, when weighted average is equal to 5 or 7.5

   ○ Yellow, when weighted average, equal to 10

   ● Red, when weighted average, is equal to 12.5 or 15

Example: Setting Overall Health Indicator

Schedule is green = 5

Budget is red = 15

Weighted average = 20 / 2 = 10

Overall Health Indicator = Yellow

Weighted Average Color/Values

		BUDGET HEALTH		
		green	yellow	red
SCHED HEALTH	green	5	7.5	10
	yellow	7.5	10	12.5
	red	10	12.5	15

5 **6** Use the following thresholds to set **BUDGET HEALTH** and **SCHEDULE HEALTH** indicators. When variance occurs provide *one-time* explanation in section 7. *One-time* means no need to repeat explanation in future reports.

○ Green   less than 5% over current approved budget or schedule

○ Yellow   5 -10% over current approved budget or schedule

● Red   11% or more over current approved budget or schedule

3. Project Development Guidelines

3.1 Integrated Schedule and Resource Plan

The Integrated Project Schedule (IPS) is a powerful time-based, planning, control, and communications tool. It provides a snapshot of both the project's progress at any given point in time, as well as a view of what lies ahead. It includes resource requirements and serves as the single master schedule that everyone uses.

Creating a well-developed IPS involves activities such as planning, identification, analysis, documentation, and prioritization of work. When properly executed, the IPS optimizes overall project execution by enabling activity tracking and reporting, data driven decision making, and work-stream coordination. In addition, it supports time and cost estimates, facilitates communications among personnel involved in project activities, and establishes a commitment to those activities.

Living Document, Care & Feeding Requirements

The IPS is a living document that once created, needs to be continuously updated to reflect the progress of, and changes to the project. To ensure its effectiveness as both a tool and a report, it is necessary to define processes and to allocate resources with the requisite skill sets to build, maintain, and report against it.

Master Plan Includes All Activities

As the master plan, the IPS serves as the single control point for the entire schedule and resource management process. This helps ensure that all sub-teams are driving toward the same completion dates and that resource coordination is optimized.

For the IPS to be effective, it needs to reflect all activities (and their interdependencies and resource requirements), regardless of whether they are the responsibility of the university, contractor, sub-contractor, vendors, or others.

Logical Sequencing

All activities and their interdependencies (predecessor and successor activities) should be logically sequenced. The sequencing is crucial as it supports usability, and demonstrates how well the project is structured - if it's realistic and executable, and if the planned tasks are achievable within time and cost constraints.

Resource Information

For the IPS to be accurate and valid, it must contain resource information. Knowing the amount and type of resource needed and the availability during the desired timeframe is crucial. When adding resource information, include descriptive data that clearly defines the skill mix and quantity of resources assigned.

Collaborative Creation

During the creation process, collaboration with major stakeholders is a key activity that helps ensure that the IPS is comprehensive and reflects all work-streams in totality.

Internal participants include core project team members, end users, and service support groups such as operations and purchasing. Outside collaborators may range from vendors to niche consultants and other external parties such as union representatives.

Project Management Team, Primary Users

Although the needs of all stakeholders are considered when the IPS is created, give extra attention to the requirements of its primary users – the project management team. This is the team who uses the schedule on a daily basis to manage the work effort and report on its progress.

Baseline after Stakeholder Approvals

All key stakeholders - including sponsors, business partners and resource owners –need to approve and sign off on the IPS. This ensures they have read the schedule, understand the dates and resource commitments, and cooperate. Confirmation that resources will be available as outlined in the schedule is also vital. The schedule should only be finalized after approval and commitment for the resource assignments outlined in it is received. Once approved, the schedule can be baselined and used to determine if the project is on course as planned.

Rigorous Ongoing Management

The greater the size and complexity of the project, the more important that a well-defined, well-managed IPS is in place. While using one will not guarantee success, operating without one or failing to keep it current will increase the risk of missing deliverables, dates and budgetary limits.

Maintain the discipline to manage the IPS on an ongoing basis. A well-managed schedule provides visibility into the project's health and facilitates an analysis of how changes to scope, schedule delays, unplanned resource consumption, or insufficient staffing levels could impact deliverables, timelines and budget.

The Schedule Management Plan

A Schedule Management Plan should be utilized to document the approach for managing all schedule-related activities and functions. It describes the general process for planning, scheduling, and integrating project work, as well as the mechanisms used for tracking and measuring accomplishments, analyzing schedule variances from the baseline, managing schedule updates, and reporting on progress. A sample template for a Schedule Management Plan is included in the appendix.

Appendix Items

Schedule Management Plan, Sample Template (MS Word)

3.2 Assessing Schedules for Reasonableness

The Integrated Project Schedule (IPS) reflects the project's execution strategy and is arguably the most important element of the project's management approach. As such, it is important to assess the schedule to ensure that is well-defined, achievable and that it accurately reflects the entire body of work necessary for successful project completion.

Initial and Ongoing Assessments

Performing an initial schedule assessment, once the baseline has been created, ensures that the project gets off to a good start. Thereafter, routinely assessing the schedule, and taking corrective actions as indicated, ensures that it remains a functioning tool throughout the project's lifecycle. A poorly maintained schedule can quickly degenerate into an ineffective, unreliable tool and it is best to catch this condition early on, before the project's ability to execute is affected.

Who conducts?

The schedule is best evaluated by a multi-functional team, led by project management with specific sub-teams focusing on the tasks and activities within their domains. For example,

- Project management focuses on the overall project approach

- Engineering focuses on the technical portions of the plan, including requirements, design, development and integration.

- Test focuses on the sub-system and system level testing and ensures test planning and test execution tasks are identified with proper durations and linkages

- Organizational change management focus on end-user communications, training and business processes

The schedule evaluation may be performed by either an internal or an external team.

Evaluation criteria

Standard evaluation criteria include verifying that:

- The schedule reflects the complete scope of work

- The schedule ties back to the work breakdown structure (WBS)

- The work for each WBS element is adequately covered

- The tasks are at the necessary level of detail for the project team to execute against

- The duration estimates make sense and are sufficient for the task

- The rationale provided for long durations makes sense

- The constraints, leads and lags are reasonable and justified

- The critical dates are identified and used in the plan

- The key events and achievements are represented as milestones

- The work is sequenced logically

- The interdependencies, predecessors and successors are correct and planned in a logical manner

- That a reasonable amount of contingency is built in

- The resource estimates (level of effort) are reasonable

- The resourcing across concurrent tasks make sense

- The resources are available during the needed timeframe

- The resource allocations are reasonable

- That resources are not over-allocated

- The risk associated with resources simultaneously working on other initiatives is acceptable

- That all vacation and holiday schedules are accounted for

- The budgeted resource hours are sufficient to complete the task

- The budgeted resource hours are reasonable compared to duration

- The critical path makes sense

- The overall schedule can be accomplished with an acceptable level of risk

- The schedule is structured such that it can be used to communicate progress, productivity and predictive future

3.3 Cost Reporting

Project cost reporting is an important component of project cost management. Decision makers need to know if project investments are good uses of UC resources in light of the benefits the project is expected to deliver. Throughout the project lifecycle, cost data is used to assess project status and to make informed decisions.

Periodic Cost Reporting

Project cost reports are to be provided to key stakeholders in alignment and agreement with the project's steering group.

The project cost report provides key stakeholders with a current evaluation of performance against budget and forecasts. Timely and accurate reporting helps prevent unexpected over/under run costs and provides information allowing for corrective action to be taken if indicated.

Essential Cost Report Components

The project cost report includes the following key elements:

- Actual costs compared to baseline budget

- Forecast of future expenses and savings

- Variance explanations and associated mitigation plans

- Confidence levels

- Assumptions (inclusions, exclusions)

- Funding sources

Project Budget Guidelines

Assumptions and Confidence Levels

Decision makers need to know the approximate accuracy of the estimate and key underlying assumptions so that they understand the degree of risk they are accepting when approving a newly proposed project or the continuation of one already underway. The accuracy of cost estimates can vary over the project's lifecycle depending on the degree of information available about the project at a given point in time. As the project progresses, it is reasonable to expect that the accuracy of the cost estimate will increase and that there will be a corresponding increase in the level of confidence in that estimate.

Estimate Realistically

Realistic cost estimates can help a project team and leadership gain a better understanding of a project's expenses and spend rate. Costs are often underestimated as a result of not following a structured approach for determining work and estimating associated costs.

Leverage a Cost Model

Project cost models can guide the project budget development process and help ensure that expense and savings projections are captured for all relevant categories over the life of the project. A sample cost model template is provided here.

Capture All Costs [1]

Projects often experience unanticipated costs or hidden costs. Be sure to consider all project work required and project resources when estimating costs, including:

- All project phases, e.g., assessment, development, pilot, business process design, training, post implementation stabilization/warranty, adoption/change management, etc., even if the effort is broken out into multiple sub-projects.

- All locations. This applies to projects with multiple locations/campus components. The cost report provides a comprehensive rollup of budget, spends forecasts and savings inclusive of all locations.

- UC staff labor expense when allocation to project work is 20% FTE or more

- One-time project costs

- Savings projections

- Cost Avoidance

- Revenue gains

Utilize Standard Cost Categories

- Standard cost categories include the following:

  - Compensation
  - UC Staff/employee
  - Contingency

- Non-Compensation

  - Consulting/Temporary Labor
  - Equipment (hardware, devices, etc.)
  - Software license/maintenance fees
  - Travel
  - Training
  - Other/Misc.
  - Contingency

Refer to the appendix for Accounting and Capitalization Guidance.

[1] When determining if a project meets the $5M threshold (subjecting it to these *Project Management and Reporting Guidelines*), **exclude** cost of ongoing operations, savings projections, cost avoidance and revenue gains.

Keep Track

Analysis of variances between planned, actual and projected expenses coupled with the identification of mitigation strategies are prudent cost management activities. Early detection of anomalies provide opportunities for corrective actions to be taken.

Reconcile actuals on a monthly basis. Keep track of actual costs by using a collection methodology that is timely and consistent with your location's GASB-based capitalization requirements.

Tracking costs includes:

- Recording actual costs by cost category
- Comparing actual costs to budgeted costs
- Retaining supporting data on actual costs

Cost Analysis and Forecasting

Cost analysis and forecasting should be ongoing activities throughout the lifecycle of the project. This will help bring about cost awareness, transparency, and enhance overall risk management as it relates to cost.

Communicate

Establish regular communication with project team members and key stakeholders to review and answer any cost and budget related questions. Good communication in this area also helps avoid risks.

Look for Warning Signs

Look for warning signs such as late or inaccurate cost reporting information, budget variances that are greater than 5% over current approved budget, actuals that are trending significantly higher than forecasts, and scope creep.

Appendix Items

I. Cost Model, Sample Template

II. Accounting and Capitalization Guidelines
   a. Accounting and Financial Reporting for Intangible Assets
   b. Capitalization of Property, Plant and Equipment

3.4 Risk Management

Risk management is an integral aspect of project management that, when performed effectively, contributes to project success.

A *risk* is any event that is likely to affect the project's ability to achieve its objectives. Some risks arise from external influences, such as acts of nature and adverse actions by others, e.g., vendors, clients, and government agencies. Many risks, however, result from internal factors, such as invalid assumptions, poor design choices, or overly optimistic plans.

Although most risks pose a threat to successful outcomes, there are instances of *positive opportunity* where the risk affect is desirable and where risk management is used to realize the potential opportunities.

Risk management is a continuous, proactive activity conducted throughout the life of the project. It refers to the processes and structures that are directed towards anticipating, identifying, and implementing strategies to defend against and benefit from risks. These processes and structures are defined and outlined in the the Risk Management Plan, which describes the project's risk management methodology. A sample Risk Management Plan Template is included in the appendix.

Risk Identification

Risk identification is the first step in the risk management process. Risk identification involves enumerating risks, determining which of them are likely to affect the project (either positively or adversely), and documenting their key characteristics.

Crucial to risk identification is the input of project team members and other stakeholders, end users, subject matter experts, customers, and sponsors. Team brainstorming sessions, helpful in jump starting this process, followed with ongoing encouragement to recognize and report potential risks as soon as possible, are important risk management activities.

Because new risks may become known as the project progresses, risk identification is an iterative process. Risk information can initially be gathered from the business case, accumulated lessons learned and an initial risk brainstorming session. There are other risk identification techniques, including reviewing project documentation, reviewing success criteria, brainstorming, interviewing, root cause analysis, and assumption analysis.

Risk Analysis and Prioritization

The main focus of risk analysis is to assess the likelihood of the risk event occurring and to determine its potential impact on the project. This includes understanding the cost of the risk response and the effect of those costs on the overall project budget.

Risk prioritization ensures that the risks with the greatest potential impact are addressed first.

Grouping risks into categories based on common features is a useful way to keep the information organized. Examples of risk categories include budget, schedule, and scope. Refer to the Risk Categories and Examples for additional examples.

Risk Response Planning

Risk response planning is the process of selecting the appropriate response strategy for each identified risk. There are strategies for both negative and positive risks. These include:

Strategies for Negative Risks:

- **Avoid:** Risk avoidance involves changing the project management plan to eliminate the threat posed by the risk. Some risks can be avoided by clarifying requirements, obtaining additional information, improving communication or acquiring expertise.

- **Transfer:** Transferring a risk requires moving, shifting or reassigning some or all of the negative impact and ownership to a third party. This does not eliminate the risk but gives another party the responsibility to manage it.

- **Mitigate:** Risk mitigation implies a reduction in the probability and/or impact of a negative risk. Reducing the probability and/or impact of a risk occurring is often more effective than dealing with the risk after it has occurred.

- **Accept:** Acceptance indicates that the project team has decided not to change the project management plan, schedule, approach or project scope, or is unable to identify another suitable response strategy. This can be the "right" choice if the probability of occurrence, or impact, is low.

Strategies for Positive Risks or Opportunities:

- **Exploit:** Exploitation may be selected for risks with positive impacts where the organization wishes to eliminate the uncertainty and ensure that the opportunity definitely happens.

- **Share:** Sharing a positive risk involves allocating some or all of the ownership of the opportunity to a third party best able to capture the opportunity for the benefit of the project.

- **Enhance:** Enhancement is used to identify and maximize key drivers of positive risks and thus increase the probability of the opportunity's positive impact.

- **Accept:** Accepting a positive risk or opportunity means being willing to take advantage of it, should the opportunity come along.

Risk Register

The Risk Register is a living document, a tool used to track risk information such as probability, impact, triggers, mitigation plans, contingency plans and ownership assignment. Keep the register current and use it during routine project management meetings to review and update status of active risks, and to capture newly identified risks.

A Risk Register can be created using a simple spreadsheet or a more sophisticated tool, such as a Microsoft SharePoint list. A sample Risk Register Template is included in the appendix.

Risk Monitoring and Control

Risk monitoring and control activities ensure that risk identification, risk analysis, and risk response activities are repeated throughout the project lifecycle. These activities result in periodic revisions to the risk priorities, response plans, and risk response actions that are underway:

- Monitor if a risk escalation trigger has occurred

- Monitor if risk response actions are as effective as anticipated

- Monitor if risk responses are implemented as planned

- Monitor for residual risks (element of a risk that remains once the risk assessment has been made and responses implemented)

- Monitor systematically to:

    o Assess currently defined risks
    o Determine actions to be taken
    o Evaluate effectiveness of actions taken
    o Report on the status of actions to be taken
    o Validate previous risk assessment (likelihood and impact)
    o Validate previous assumptions
    o Document new assumptions
    o Identify new risks
    o Ensure that the Risk Register is kept current
    o Ensure that the Risk Management Plan is updated when there are indications that modifications to the risk management process are needed
    o Account for changes affecting project scope, timeline and budget

Appendix Items

   I.   [Risk Management Plan, Sample Template (MS Word)](#)

  II.   [Risk Register, Sample Template (MS Excel)](#)

 III.   [Risk Categories and Examples (MS Word)](#)

3.5 Change Management

No matter how carefully a project has been planned, changes are inevitable. A change request is any request from a project stakeholder or team member that represents new requirements, changes in direction, or additional unplanned work that could impact the approved and baselined project schedule, budget, and/or scope of what is being delivered.

Project change management is the process through which requested changes are captured, evaluated and either approved, rejected or deferred. It provides a means for the project to adapt its plans, when necessary, to meet customer requirements. The goal is *not* to prevent all changes but rather to effectively manage changes and keep the project moving forward towards successful completion.

The project change management process supports good decisions and provides a history of the changes throughout the duration of the project. When decision makers understand how a proposed change impacts the project *prior to implementation*, changes that are unnecessary, or introduce unacceptable levels of risk, delays, or increased expenses can be avoided.

Likewise when a change is approved, it is done so with an understanding by key stakeholders of the resultant impacts to scope, cost, and schedule. New issues and risks introduced by the change are identified and managed. Project resources remain focused and are utilized most effectively.

Project Change Control Management Plan

The Project Change Control Management Plan defines the activities, roles, and responsibilities necessary to effectively and efficiently manage and coordinate the change process. It formally documents the procedures for efficient and prompt handling of all change requests, how they are to be requested, assessed, approved, monitored, and controlled. A formal, repeatable process minimizes the risk when introducing change to the project environment and helps preserve quality. A sample Project Change Control Management Plan template is included in the appendix.

Five Steps

The high-level project change management process consists of five basic steps:

1. **Request** Any stakeholder involved with the project can suggest a change to the project, if he or she believes it is needed to keep the project producing deliverables to the customer's specified requirements. The stakeholder provides relevant information on the nature of the change, ideally utilizing a Change Request Form. Although some may be initiated verbally, change requests should always be recorded in written format, in a Change Request Log that records all requests and their status (e.g., pending, approved, rejected, or deferred). Template samples for the Change Request Form and Change Request Log are included in the appendix.

2. **Review** The change request is reviewed to determine its high-level impact on outputs and benefits. If necessary, further clarification may be sought before deciding if it is worthwhile to perform a detailed assessment. The proposed change may be rejected without further evaluation, in which case the reasons for rejection should be recorded and the stakeholder informed.

3. **Assessment** All options relating to the change are captured and evaluated. The detailed impact on plans and schedules is estimated and a recommendation is made to approve, reject, defer, or request more information. Thresholds are set to determine whether the decision can be made by the project manager, sponsor, or other members of the management team. It is important to allocate sufficient time and resources to the assessment without distracting from the approved scope, budget and timeline.

4. **Decision** The decision is communicated to the team and stakeholders as outlined in the project change control management plan.

5. **Implementation** Relevant plans and schedules are updated if a change is approved and before the changes are made. These can include scope and charter, timelines, budget, requirements, designs, test and training plans.

If an unauthorized or emergency change is identified, it should be put through the change control process retrospectively. Since the cost and risk of implementing changes increases as the project progresses, it is best to make essential changes earlier in the project lifecycle. In certain circumstances, and towards the end of the project execute phase, it is appropriate to have a change freeze where no further changes to scope will be considered. At that point, changes to scope can be deferred until post-deployment and added as a future enhancement.

Appendix Items

   I.   Change Control Management Plan, Sample Template (MS Word)

  II.   Change Request Form, Sample Template (MS Word)

 III.   Change Request Log, Sample Template (MS Excel)

3.6 Independent Verification & Validation (IV&V)

Independent verification and validation (IV&V) is a "best practice" risk mitigation methodology within the technology industry to help improve work quality, guard against cost overruns and support project success. The main focus is to determine whether the user needs are met and to ensure that the final product is structurally sound and built to the required specifications. Of primary value is the early identification of high-risk areas, problems and opportunities which enable the organization to proactively mitigate risks and prepare contingencies.

In addition, IV&V provides project sponsors, managers, IT staff and stakeholders with an objective analysis that helps them deal with system development issues; offers improved visibility into the progress and quality of the development effort; validates the plans and work of third party integrators.

Who conducts?

IV&V is performed by a third-party organization not involved in the development of the product. Thus the product, such as a software, gets examined by an independent third party.

This independent entity can be within the UC organization or a separate external consultancy as long as it is technically, managerially, and financially independent of the development organization. Since the IV&V team has no loyalty to the sponsor, client, project or project team members, objective feedback and an unbiased assessment is assured.

What's involved?

The scope of IV&V processes encompasses systems, software, and hardware, as well as their interfaces. Typical activities include in-depth reviews of foundational project documents such as charters, scope statements, business cases and requirements; project status documents and project planning documents, risk and issue management, regulatory compliance plans, test plans, and acceptance criteria. IV&V frequently involves interviews with project sponsors, stakeholders, and members of various teams.

The IV&V team also determines whether project staff members are following planned processes, and whether contractor work meets project requirements. The IV&V team provides independent technical review and verification of project deliverables, as well as independent testing and auditing of project deliverables against requirements. This may include a special emphasis on deliverable quality assurance and reviews of information security control.

People related processes and associated risk levels can also be assessed through IV&V. This includes business sponsor commitment levels, development of workflow and business processes, organizational change management and go-live readiness.

Local Decisions

IV&V is a specific risk mitigation methodology that should be carefully considered by project sponsors and project leaders at the local level. IV&V is a value exercise that represents best practice in IT project methodology. Judicious use of "external to the project team" evaluation represents a strong practice that leads to consistently positive outcomes. The decisions on when to utilize IV&V and the scope of the IV&V efforts are best decided by the organization that is sponsoring the project.

These local decisions include:

- **Assessment of best value:** where and when to conduct

- **Frequency:** one time, at key milestones, ongoing

- **Type of independent team:** internal UC team versus external consultant

- **Source of funds:** to cover costs

- **Reporting structure:** typically under the direction of the project sponsor

Appendix Items

I. IV&V Plan, Sample Template

4. Contract Deliverable Expectation Document

The Deliverable Expectation Document (DED) pertains to IT contracts and provides a basis for the development and acceptance of project deliverables. It is a key Quality Management tool used to avoid miscommunication and ensure that the University and contractor (or participating parties) possess a mutual understanding about each deliverable's content and scope.

DEDs are typically short in nature and include the following information:

- Deliverables for each milestone

- A description of the scope of each deliverable

- A list or description of the contents of each deliverable

- All entrance criteria that need to be satisfied before development activities for each deliverable can begin

- All acceptance criteria that need to be satisfied before the University will accept each deliverable

- A development schedule that lists associated tasks and the completion dates for each deliverable

Who creates the DED?

DEDs are work products put forth by the contractor and are subject to the review and acceptance of the University. The DED should contain enough information for the University to have a full understanding of the product that the contractor will deliver. To minimize rework, they should be developed collaboratively with the University. Disagreements should be escalated to the Project Manager for resolution.

Content for DEDs may come directly from the Statement of Work, the contractor's proposal, the original procurement documentation, business and technical requirements, best practices, and accepted standards. Requirements in the contract are likely to only state the minimum that the contractor must provide; however, additional requirements that make logical sense or that are necessary for the scope of the deliverable should be included.

Because they are important contract documents that dictate what the resulting deliverable contains and what constitutes completed work, time and effort should be committed to making DEDs clear, concise, and comprehensive in terms of scope and quality criteria.

Leveraging the DED

DEDs are agreed upon by the University and contractor prior to starting any activity associated with the scope of the deliverable. Once a DED has been agreed upon, work to develop the deliverable may begin. Completed deliverables are submitted to the University for review and approval. The designated team or individual responsible for reviewing the deliverable will evaluate it based on the scope and acceptance criteria established in the associated DED. When the deliverable scope and acceptance criteria have been satisfied, a solid basis for payment is established and the University may formally accept the deliverable from the contractor.

Appendix Items

    I.   DED, Sample Template (MS Word)

Appendix

I. Regents Policy 5103

II. Regents Report Submission Timeline and Instructions

Report Period Ending Date	Date Report Due to UCOP	Regents Presentation Date
Dec 31	Feb 1	Mar 14/15 in-person
Apr 31	Jun 15	Jul 31 mailing only
Aug 31	Oct 15	Nov 30 mailing only

Refer to the University of California Information Technology Leadership Council website for report submission instructions and contact information.

III. Templates, Instructions & Examples

    a. Regents Reporting Instructions (MS PowerPoint)

    b. Regents Summary Report, Template (MS PowerPoint)

    c. Regents Comprehensive Report, Template (MS PowerPoint)

    d. Schedule Management Plan, Sample Template (MS Word)

    e. Cost Model, Sample Template (MS Excel)

    f. Risk Management Plan, Sample Template (MS Word)

    g. Risk Register, Sample Template (MS Excel)

    h. Risk Categories and Examples (MS Word)

    i. IV&V Plan, Sample Template (MS Word)

    j. Change Control Management Plan, Sample Template (MS Word)

    k. Change Request Form, Sample Template (MS Word)

    l. Change Request Log, Sample Template (MS Excel)

    m. DED, Sample Template (MS Word)

IV. Accounting and Capitalization Guidelines

    a. Accounting and Financial Reporting for Intangible Assets

    b. Capitalization of Property, Plant and Equipment

References

I. Project Management Framework, State of California Department of Technology

II. Integrated Project Management/Scheduling Handbook, Naval Air Warfare Center Training Systems Division (NAWCTSD)

III. Developing a Risk Management Plan, State of Tasmania, Department of Premier and Cabinet

IV. Project Management Book of Knowledge, 5th Edition (PMBOK)

V. Method123 Project Management Methodology

A downloadable version of this entire document is available on the [University of California Information Technology Leadership Council website](#).