COMMONWEALTH OF VIRGINIA

Information Technology Resource Management (ITRM)

Project Management Guideline

Virginia Information Technology Agency (VITA)

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Reviews

- This publication was reviewed and approved by Nelson Moe/CIO of the Virginia Information Technology Agency.
- Agency and or peer review was provided for agencies and other interested parties via the VITA Online Review and Comment Application (ORCA).

Publication Version Control

Questions related to this publication should be directed to the Project Management Division.

This following table contains a history of revisions to this publication.

Table 1 Table of Revisions

Version	Date	Revision Description
Original	10/28/2004	Base Document (COV ITRM Guideline GOV2003-02.2)
Revision 1	1/23/2006	Updated Table of Contents page references; (publication designator updated to: ITRM Guideline CPM 110-01)
Revision 2	11/16/2006	Corrected and Updated Preface (re-designated CPM 110-02)
Revision 3	03/14/2011	Extensively revised all content and implemented Commonwealth Project Governance Assessment methodology per legislative mandate. (ITRM Guideline CPM 110-03)
Revision 4	6/15/2017	This document has been completely rewritten; the existing content areas have been rewritten, new content areas have been created, new templates have been added, and the order of sections have been revised. (ITRM Project Management Guideline CPM 110-04)
Revision 5	11/15/2021	Revised after implementation of Planview as the application supporting the Commonwealth Technology Portfolio (CTP).

Identifying Changes in This Document

- See the latest entry in the revision table above.
- Vertical lines in the left margin indicate the paragraph has changes or additions. Specific changes in wording are noted using italics and underlines; with italics only indicating new/added language and italics that are underlined indicating language that has changed.

The following examples demonstrate how the reader may identify requirement and recommend practice updates and changes:

EXA-R-01 Example with No Change – The text is the same. The text is the same. The text is the same.

EXA-R-02 Example with Revision – The text is the same. *A wording change, update or clarification is made in this text.*

EXA-R-03 Example of New Text – *This language is new.*

~~**EXA-R-03 Technology Standard Example of Deleted Standard** – This standard was rescinded on mm/dd/yyyy.~~

Examples of Technology Component Standard Table changes: No vertical line will appear beside updated Component Tables. Here a revision is indicated by a date and an action in the title of the table.

Table ###: Example Table Change **Technology Component Standard** *Updated: [date]*
Strategic:
No change. No Change. *This is a change. This is a clarification. This is an addition.*
Emerging:
No change in this bullet and second bullet moved to strategic
Transitional/Contained:
No change
Obsolescent/Rejected:
No Change

Table ###: Example Table No Change **Technology Component Standard** *Reviewed: [date]*
Strategic:
No change
Emerging:
No change
Transitional/Contained:
No change
Obsolescent/Rejected:
No Change

Table ###: Example New Table **Technology Component Standard** *New: [date]*
Strategic:
New standards
Emerging:
New standards
Transitional/Contained:
New standards
Obsolescent/Rejected:
New standards

Table ###: Example Table Rescinded Technology Component Standard *Rescinded: [date]*	
	Strategic:
	~~Rescinded standards~~
	Emerging:
	~~Rescinded standards~~
	Transitional/Contained:
	~~Rescinded standards~~
	Obsolescent/Rejected:
	~~Rescinded standards~~

Preface

Publication Designation

ITRM Project Management Guideline CPM 110-04

Subject

Project management guidelines for information technology projects in the Commonwealth of Virginia.

Effective Date

September 1, 2021

Supersedes

ITRM Project Management Guideline CPM 110-03

Scheduled Review:

This guideline shall be reviewed on an annual basis.

Authority

Code of Virginia, §2.2-225 (Powers and duties of the Secretary of Technology (SoTech)

Code of Virginia, §2.2-2007 (Powers of the CIO)

Code of Virginia, § 2.2-2010 (Additional powers of VITA)

Code of Virginia, §2.2-2008, Additional Duties of the CIO relating to PMD

Code of Virginia, §2.2-2015 Authority of CIO to modify or suspend information technology projects; project termination.

Code of Virginia, §2.2-2016 (Authority, on behalf of the CIO, Division of Project Management, to review and recommend Commonwealth information technology projects proposed by state agencies and institutions.)

Code of Virginia, § 2.2-2017 (Powers and duties of the Division

Code of Virginia, §2.2-2018.1 Project and procurement investment business case approval.

§ 2.2-2020. Procurement approval for information technology projects.

Code of Virginia, § 2.2-2021 (Project Oversight Committees

Scope

This guideline is applicable to all Executive Branch state agencies and institutions of higher education (hereinafter collectively referred to as "agencies") that are responsible for the management, development, purchase and use of information technology resources in the Commonwealth of Virginia. This guideline does not apply to research projects, research initiatives or instructional programs at public institutions of higher education.

Purpose

This guideline establishes the direction, processes, and structure for the use and management of information technology projects and resources by executive branch agencies.

Chief Information Officer of the Commonwealth (CIO)

Develops and approves statewide technical and data policies, standards and guidelines for information technology and related systems.

Virginia Information Technologies Agency (VITA)

At the direction of the CIO, VITA leads efforts that draft, review and update technical and data policies, standards, and guidelines for information technology and related systems. VITA uses requirements in IT technical and data related policies and standards when establishing contracts; reviewing procurement requests, agency IT projects, budget requests and strategic plans; and when developing and managing IT related services

Information Technology Advisory Council (ITAC)

Advises the CIO and Secretary of Technology on the development, adoption and update of statewide technical and data policies, standards and guidelines for information technology and related systems

Executive Branch Agencies

Provide input and review during the development, adoption and update of statewide technical and data policies, standards and guidelines for information technology and related systems. Comply with the requirements established by COV policies and standards. Apply for exceptions to requirements and standards when necessary.

Related ITRM Policies, Standards, and Guidelines

Current version of ITRM Project Management Standard CPM 112-03

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1. Overview

1.1 Background

This guideline addresses the COV Project Management Guideline. It offers a comprehensive and uniform process for managing information technology projects in the Commonwealth of Virginia. This guideline establishes the direction, processes, and structure for the use and management of information technology projects and resources by executive branch agencies.

1.2 Definition of Key Terms

Guideline – a document that provides information on optional activities related to an area of control. Activities in guidelines are considered to be best practices but are not required.

1.3 Glossary

As appropriate, terms and definitions used in this document can be found in the COV ITRM Glossary. The COV ITRM Glossary may be referenced on the VITA Policies, Standards and Guidelines web page at http://www.vita.virginia.gov/default.aspx?id=6442473032

1.4 Objective of the Commonwealth Project Management Guideline

The primary objective of the Commonwealth Project Management Guideline is to provide guidance on the application of the COV Project Management Standard and the use of common industry best practices in the management of IT projects within Virginia Executive Branch Commonwealth agencies.

The guideline is consistent with best practices established by the Project Management Institute (PMI) and documented in the Project Management Body of Knowledge (PMBOK) and other project management bodies of knowledge.

Project managers may tailor the use of this guideline to meet the unique requirements for management of projects within their agencies. Because the guideline is largely based on commonly accepted project management best practices, agencies should approach use of this guideline, project by project, through a deliberate decision-making process that clearly establishes the necessity and value of the contemplated changes or tailoring decisions. Project managers must assess individual project characteristics and determine how best to apply the guideline and implement associated processes. This guideline differs from the PM Standard in the selective nature of how the Project Mangers uses the guidelines in their projects. A Project Manager must follow the PM Standard and its policies, the Standard is a requirement for state projects.

1.5 Applicability to Commonwealth Agencies and Institutions of Higher Education

The PM Guideline is recommended to all Commonwealth Agencies and Institutions of Higher Education that are responsible for the management, development, purchase, and use of information technology investments in the Commonwealth.

1.6 Overview of Project Management within the Commonwealth

Overall, Commonwealth Project Management is comprised of a project lifecycle, a governance process, and associated procurement and security processes. These processes and lifecycle mainly consist of; standards to adhere to, forms that will need to be completed, required reviews and approvals and a set of structured processes.

Traditionally projects are organized around phases that contain a set of planned activities and are sequenced in a way that provides for organizational structure. Within the Commonwealth of Virginia there are 4 project phases that will need to be followed, they are; Initiation, Detailed Planning, Execution and Control, and Closeout. Each project phase has a set of required forms that will need to be completed in Planview CTP (Commonwealth Portfolio Technology application) and approved before a project can be permitted to transition to the next phase. Plus there will be a set of formal gates with CIO and SOC (Secretariat Oversight Committee) required approvals. It's the intent of this Guideline to provide details around these 4 project phases and how best to follow them with your projects. Section 4 of this Guideline will provide additional details. As with most projects in the Commonwealth there are an associated set of Security and Procurement Standards that will also need to be followed. The PMD Consultant, CAM, VITA website, or Procurement and Security teams can all be points of reference for you in these additional areas.

Commonwealth projects have a required strategic planning process that must be completed prior to being permitted to begin the first project phase of Initiation. The strategic planning process involves the Select phase. These phases are managed by VITA's ITIM (Information Technology Investment Management) Division. Additional details around these phases are covered in section 4.1.

1.7 Why Projects Succeed or Fail

Projects succeed or fail for many reasons, this section is not meant as an all-inclusive list, nor will it contain everything you will need to know on this subject. However, its intent is to familiarize the reader with the beginning signs of failure and provide some pitfalls to avoid or mitigate the potential of failure.

When determining if a project is beginning to show signs of failure a PM must first understand the areas for measurement of success, these are; scope, schedule, cost, quality, resources and risk. Signs of failure in any one of these areas or signs that any one of these may be in distress should be an early indicator to a PM that their project is beginning to show signs of possible failure.

1.7.1 Factors of Success

- Define project scope in detail, outlining what's not in scope as well.
- Have a scope document, charter, and business requirements documented and approved by both the project team and business sponsors.
- Work with business on establishing an executive sponsor and functional sponsors from other impacted business groups.
- In the beginning of a project document roles and responsibilities for each team member, ensuring that these are approved by the team and their associated managers.

- Create a change control process and any project changes to scope, schedule, and budget needs to be run through this process.
- All change controls have an impact analysis done on them as part of the CR process
- Project resources should be devoted to the project effort, however if they split their time with other efforts than an understanding should be articulated so everyone knows what there % split of time will be for each.
- Under promise and over deliver.
- Create realistic schedules and budgets.
- Identify risks, and put in place plans to avoid or mitigate risks.
- If a problem does come up do not bury it, ignore it, or keep it quiet in hopes that it will go away, remember that bad news does not get better with time.
- Adhere to the organizations project management processes.
- Perform sufficient system testing, regression testing, performance testing, and user acceptance testing. Clear, understandable, and documented test cases should be used.
- Plan, plan, and do more planning.
- Create project schedule with project team member input, have them approve it, then perform monitoring and controlling around the project schedule activities.
- Create milestones, a governance process, perform reoccurring project reporting (dashboard with metrics, weekly project team meetings, monthly executive sponsor meetings, perform reoccurring project status update emails).
- Take meeting notes, send them out after the meeting, use them to start each meeting
- As a PM you need to assume more than a note taking role. Try to figure out ways to get involved in activities (performing some light UAT, documenting requirements, owning test case creation & monitoring of results, own some open issue resolution).
- Resolve issues early on in the project and if new issues appear resolve them quickly. The frequency and severity of issues should die down as the project processes.
- Avoid having the project team and project manager assume new projects that exceeds bandwidth.
- New requests for project need to be waitlisted, prioritized, and placed on a project pipeline list.
- If using contract labor provide for management and oversight to a level that provides for success.
- It takes less time to go through the process than to attempt to avoid it.
- For vendors, tie their contract payments to actual project milestones being met and system functionality being deployed.
- As a PM always remain calm, calculating, and professional, never add to the drama
- Organizational Change Management Plan that ensures end-user buy-in and stakeholder involvement.
- Projects are prioritized within the organization.

1.7.2 Reasons Why Projects Fail

- Scope is not well defined.
- Poor requirements gathering.
- Lack of business support.
- Costs are not understood or managed well.
- Project resources are unable to devote time to the project.
- Project resources are not committed to the project.
- Resources are fighting with each other have separate agendas and are not working well together.

- Risks are not understood nor is there a plan to avoid or mitigate the risks.
- Organization is not projectized nor do they embrace project management structure and approach.
- Project Manager is not organized, is unable to devote sufficient time to the project, and is not following a project management structure.
- Activities, milestones, and assigned resources are not well understood by the team; there exists no clear path.
- Scope creep, changing requirements, and many change requests.
- Poor communications.
- Bad stakeholder management.
- Unreliable estimates.
- Lack of or poor project team planning sessions.
- Poor monitoring and controlling.
- Unrealistic schedules.
- Failure to understand impacts of change.
- Miscommunication over the scope of work.
- Inexperience
- Overselling
- Turnover
- No change control process.
- No end-user buy-in or Stakeholder management.
- Not adhering to Commonwealth Standards.
- There may be too many projects in flight and the resources committed to these projects are scarce and stretched too thin.

2. Commonwealth Project Life Cycle

Project Phases

Commonwealth of Virginia utilizes 5 project lifecycle phases; Select, Initiation, Detailed Planning, Execution and Control, Closeout. Most project governance processes are focused on these phases. When managing a project, a PM will most likely need to use additional project phases like; Defining, System testing (Unit, Regression, End to End), User Acceptance testing (UAT), Deployment, Rollout, Sun setting old application, and Day 2. A project phase is a series of tasks and activities that align to a specific goal.

If an Agile methodology is used the associated ceremonies (Sprint Planning, Daily Stand-Up, Sprint Review, and Sprint Retrospective), releases, sprints, user stories, etc. will need to be incorporated into the governance process and the more traditional waterfall Commonwealth project management methodology.

ITIM Select is a phase that precedes the Commonwealth's project life cycle.

2.1 Select (ITIM Select Phase, Investment Business Case)

The Commonwealth recognizes that there are a set of activities that occur within an agency that provides for the identification of a need and the rationalization process associated with setting a direction. It's this rationalization process that is encompassed in the Select phase to establish the Investment Business Case (IBC).

In the Select Phase, the focus is to capture a preliminary scope, understanding of how to solve the need must be performed, identification of the benefits, a sizing of the budget and funding, resources, technical feasibility, governance and oversight, and risk and complexity assessment.

2.2 Project Initiation Phase

Project Initiation is the first phase in the project lifecycle and is the predecessor to the Detailed Planning Phase. In the Initiation Phase, IT projects identified in an approved Agency Strategic Plan are transitioned from a proposed project to an active project. The main focus of this phase is the development of a Charter, establishing project costs and budget, creating a high level project schedule, and receiving PIA (Project Initiation Approval).

The preferred IT solution is compared with other alternatives in the CBA (Cost Benefit Analysis) and BCAA (Business Case Alternative Analysis) and presented in the Project Charter, which formally communicates the existence of the project, serves as the basis for detailed project planning, appoints the Project Manager, and with the Charter Sponsor's approval and the Commonwealth CIO's approval, authorizes the expenditure of resources. The Project Charter also establishes the initial Budget, Schedule and Scope baselines and establishes the membership of the Internal Agency oversight Committee (IAOC). Documents resulting from the Initiation Phase activities in addition to the Organization Chart are the foundation for planning documents developed in the Detailed Planning Phase.

2.2.1 Project Scope (Description) Statement

The first activity in the initiation phase is to better define the project by revising and elaborating on the project scope statement that was originally started in the Investment

Business Case. The project scope statement is a formal, detailed statement that describes the characteristics of the product or service expected from the project and how it will be delivered. It explains what the project does. The project description should provide as much detail as is available and be sufficient to allow decision-makers to decide whether to move forward with the project.

The Product Scope Description is a customer-oriented description of what your project will deliver. This is the product, service, or result described in the requirements and should provide as much detail as is available and be sufficient to allow decision-makers to decide whether to move forward with the project.

- **Project Deliverables**: This includes any product-specific deliverables and the supporting deliverables such as the project plan and project status reports.
- **Product Acceptance Criteria**: The criteria that will be used for determining if the product, service, or result has met the requirements. This should also include the evaluation process that will be used to accept the product.
- **Project Exclusions**: Identifies any elements that are excluded from the project. This section is important for managing stakeholder expectations.
- **Project Constraints**: Lists any constraints that will limit the project team's options. For example, this could include a pre-determined budget, customer schedule requirements, or contractual provisions.

2.2.2 The Procurement Plan

Procurement planning is the process of identifying and planning for the purchase of products, goods, and services required by a project. A project may require the acquisition of labor, software, hardware or other components. These can be procured by using one or more of the purchasing vehicles available to agencies, including individual Request for Proposal (RFP), Invitation for Bids (IFB), orders from statewide contracts already established or by other means.

The very beginnings of procurement should start with the agency adding the proposed purchase to their strategic plan. This can be accomplished by completing IT investment management required forms in CTP. The ITIM Division will facilitate the required VITA staff reviews and CIO approval on behalf of the agency. Once the procurement is incorporated into the strategic plans a Procurement Governance Request (PGR) can be completed in CTP. This form requires a VITA staff review and subsequent CIO approval. For the PGR process PMD will administer this on behalf of the agency. If the agency needs to issue an RFP both the PBA and PGR's will need to be approved prior to the RFP being released. If the procurement is $1 million and over VITA will need to review and approve the RFP prior to its release.

2.2.3 Project Charter

The project charter is a governance document that creates the framework of the project and authorizes the project team to move forward. The project charter describes the project in detail and ensures that its goals, objectives and deliverables are consistent with the agency's Strategic Plan and the IT Summary therein, as well as the Commonwealth Strategic Plan for Technology and other regulatory documents.

As a formal project deliverable, it identifies project objectives, provides a project description, defines the approach, and supplies other top-level planning information which taken together establish the scope of the project. The project charter provides decision

makers with information necessary to make project initiation decisions. The project charter is the end result of the Initiation phase.

Specifically the document defines: what is to be done, why it is to be done, and how it is to be done. The charter defines the project scope, schedule, costs, business objectives, major risks & issues, constraints, milestones and dependencies. The Project Charter form, along with instructions, is found in CTP and is required for Commonwealth level projects.

The person who prepares the project charter does not need to be a Project Manager, it can be prepared by the project sponsor, a project stakeholder, a program manager or a combination of these.

The project charter is prepared from information provided in: the project Business Case and Alternatives Analysis form, scope statement, CBA, high level business requirements gathered from subject matter experts, meetings with business users and impacted customers, possible vendor demonstrations, and an RFI. During preparation of the project charter, the information developed during project analysis should be refined and structured to formally present the recommended project solution.

There may be times when the project charter must be reviewed by the project team and other stakeholders. These reviews provide a forum for information exchange and are often timelier than written question-and-answer. Once all reviews are completed, the project charter is presented to the decision maker or decision-making body for a determination on whether the project will go forward. If the project charter is approved, the project charter is completed and signed.

2.2.4 Charter Level Project Costs

To develop the initial budget estimate, the applicable cost factors for each element must be estimated.

The major cost factors are:

- Internal Staff Labor Cost
- Services (External) Cost
- Development Tool Cost
- Software Tool Cost
- Hardware Cost
- Materials and Supplies
- Facilities
- Telecommunications
- Training
- IV&V
- Contingency
- Other (i.e. PMD consultant costs)
- Pre-project initiation costs

PMI defines project cost estimating as "Estimate costs is the process of developing an approximation of the monetary resources needed to complete project activities"

2.2.5 Rough Order of Magnitude (ROM)

It's best to view cost estimates in terms of ROM, Rough Order of Magnitude.

- Early estimates of costs in the initiation phase will have higher % of range, + or – 80%
- Objective of the Initiation phase when completing the charter is to obtain at least an 80% accuracy for your project costs
- While during later phases in the planning or defining phases the range should be lower to + or – 10%

2.2.6 Determining Project Costs

Generally at the early stages at this point of your project not all of these items will be available so this is more of an all-inclusive list rather that a complete list. If available, inputs to help develop project costs may include:

- Cost management plan – describes how costs will be managed
- Human resource management plan – describes types of resources, groups, skills, how long they will be needed, internal vs contract
- Scope statement – describes what the project is going to accomplish, should list some high level requirements, can include what's out of scope, should provide a roadmap for how the project will be executed
- WBS (Work Breakdown Structure) – lists high level work packages and groups effort by a common set of efforts, paints a picture of what needs to be done
- Schedule
- Risks log
- Market conditions
- Entities cost estimating policies
- Cost estimating templates
- Historical information – an archive of prior projects, lessons learned, old project costs to be drawn upon
- Lessons learned
- Your own experiences and judgments

2.2.7 Tools & Techniques for Estimating Costs

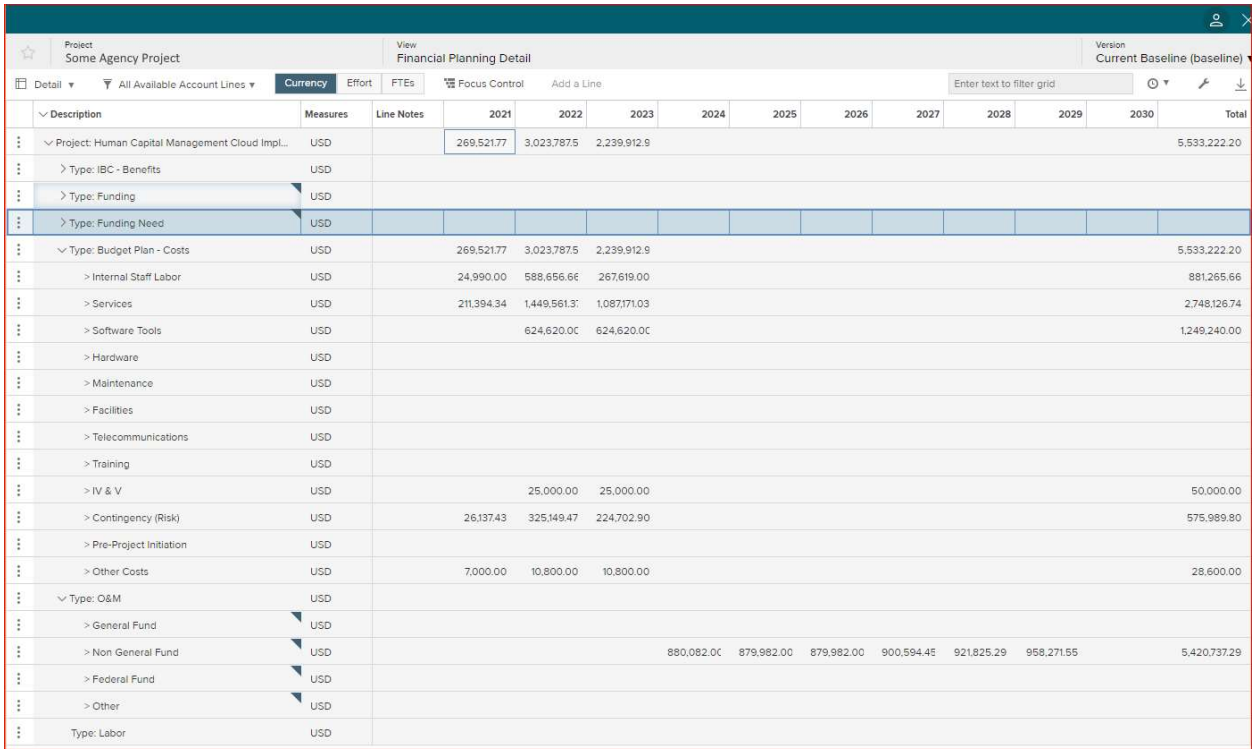
Here is a list of resources, tools, and techniques that van be used for estimating project costs and budgets:

- Expert judgment
- Reaching out to SME's within the project team and outside of the team but within the agency can yield great results
- Analogous estimating
- Uses similar prior projects to help determine costs
- Uses actual costs of previous projects along with expert judgment to account for currents projects differences
- Parametric
- More accurate than analogous and associates a specific calculation and relationship of variables to develop a cost estimate.
- Uses formulas to determine costs; determining construction costs by a $ factor and then multiplying that by the square footage, or using lines of code and cost per line to calculate development costs
- Bottom up
- Estimating individual components of work then adding those up

- Three-point estimating
- Most likely, Optimistic, Pessimistic
- Some project management software tools have templates and formats for determining project costs

2.2.8 Cost Estimating Examples

The method used to develop estimated costs can vary by the above mentioned techniques however the costs still need to be documented and listed in a format that can be easily understood and recalled, such as in the following examples.



Project: Some Agency Project | View: Financial Planning Detail | Version: Current Baseline (baseline)

Detail ▾ | All Available Account Lines ▾ | Currency | Effort | FTEs | Focus Control | Add a Line | Enter text to filter grid

Description	Measures	Line Notes	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Project: Human Capital Management Cloud Impl...	USD		269,521.77	3,023,787.5	2,239,912.9								5,533,222.20
> Type: IBC - Benefits	USD												
> Type: Funding	USD												
> Type: Funding Need	USD												
Type: Budget Plan - Costs	USD		269,521.77	3,023,787.5	2,239,912.9								5,533,222.20
> Internal Staff Labor	USD		24,990.00	588,656.66	267,619.00								881,265.66
> Services	USD		211,394.34	1,449,561.3	1,087,171.03								2,748,126.74
> Software Tools	USD			624,620.0(	624,620.0(								1,249,240.00
> Hardware	USD												
> Maintenance	USD												
> Facilities	USD												
> Telecommunications	USD												
> Training	USD												
> IV & V	USD			25,000.00	25,000.00								50,000.00
> Contingency (Risk)	USD		26,137.43	325,149.47	224,702.90								575,989.80
> Pre-Project Initiation	USD												
> Other Costs	USD		7,000.00	10,800.00	10,800.00								28,600.00
Type: O&M	USD												
> General Fund	USD												
> Non General Fund	USD					880,082.0(	879,982.00	879,982.00	900,594.45	921,825.29	958,271.55		5,420,737.29
> Federal Fund	USD												
> Other	USD												
Type: Labor	USD												

Figure 1 Financial Planning Detail (Planview)

	Monthly Maintenance Costs	Monthly IT Support/Sustain	Yearly Costs	One Time Costs	Total Costs All
NG	$ 8,660	$ -	$ 103,920	$ 10,000	$ 113,920
IT Agency	$ -	$ 18,750	$ 225,000	$ 475,000	$ 700,000
Application Provider	$ 11,000	$ -	$ 132,000	$ 2,250,000	$ 2,382,000
Combined	$ 19,660	$ 18,750	$ 460,920	$ 2,735,000	$ 3,195,920
NG					
Server - Database Production - If SQL	$ 700		$ 8,400		
Storage	$ 1,400		$ 16,800		
Server - Database Test - If SQL	$ 700		$ 8,400		
Storage	$ 700		$ 8,400		
Server - Application Production	$ 580		$ 6,960		
Storage	$ 280		$ 3,360		
Server - Application Production	$ 580		$ 6,960		
Storage	$ 280		$ 3,360		
Server - Application Test	$ 580		$ 6,960		
Storage	$ 280		$ 3,360		
Server - Application Test	$ 580		$ 6,960		
Storage	$ 280		$ 3,360		
Server - Utility	$ 580		$ 6,960		
Storage	$ 280		$ 3,360		
Server - Interface	$ 580		$ 6,960		
Storage	$ 280		$ 3,360		
NG Set-up Costs to assist with server and application deployment				$ 10,000	
IT Agency					
Project Management				$ 150,000	
BSA				$ 75,000	
IT Support				$ 100,000	
Data Migration				$ 100,000	
Integration Points & Applications				$ 50,000	
Ongoing Support Agency IT					
IT Ops - 2 FTE's Additional		$ 12,500	$ 150,000		
IT Ops - Existing FTE Repurpossed		$ 6,250	$ 75,000		

Figure 2 Cost estimate example 1

Application Provider				
One-time Licensing Costs				
Base Site License				$ 75,000
Licensing Module				$ 40,000
Enforcement Module				$ 30,000
Dashboard Reporting Module				$ 40,000
Archival Document Database				$ 20,000
Mobile Application				$ 40,000
Ad-Hoc Reporting Module				$ 30,000
Named User Licensing:				
200 Internal System Users				$ 200,000
100 Mobile Application users				$ 50,000
Annual Support and Maintenance Application	$ 8,000		$ 96,000	
Annual Support and Maintenance Database	$ 3,000		$ 36,000	
Implementation Costs				$ 1,275,000
Data Migration				$ 250,000
Integration Points & Applications				$ 200,000

Figure 3 Cost estimate example 2

POSSE Software
One-time Licensing Costs
Base Site License - $50,000
POSSE ABC Licensing Module - $20,000
POSSE ABC Enforcement Module - $15,000
POSSE Dashboard Reporting Module – 20,000
POSSE Archival Document Database (PADD) - $10,000
POSSE Mobile Application - $20,000
POSSE Ad-Hoc Reporting Module - $15,000
Named User Licensing:
175 Internal System Users (includes mobile/field users) - $151,250
- ($950/user for 0-100 users. $750/user for 101-500 users)

Estimated: 100 Mobile Application users - $35,000
- ($350 per POSSE Mobile Named User)

Total One-time Licensing Costs - $336,250

Annual Support and Maintenance - $67,250/yr
- (20% of One-time Licensing Costs)

Professional Services
Based upon the high level understanding of VA ABC requirements and scope, size of the agency, and experience with previous ABC implementations
Estimated One-Time Implementation Costs - $1.25 - $1.5 Million

Figure 4 Cost estimate example 3

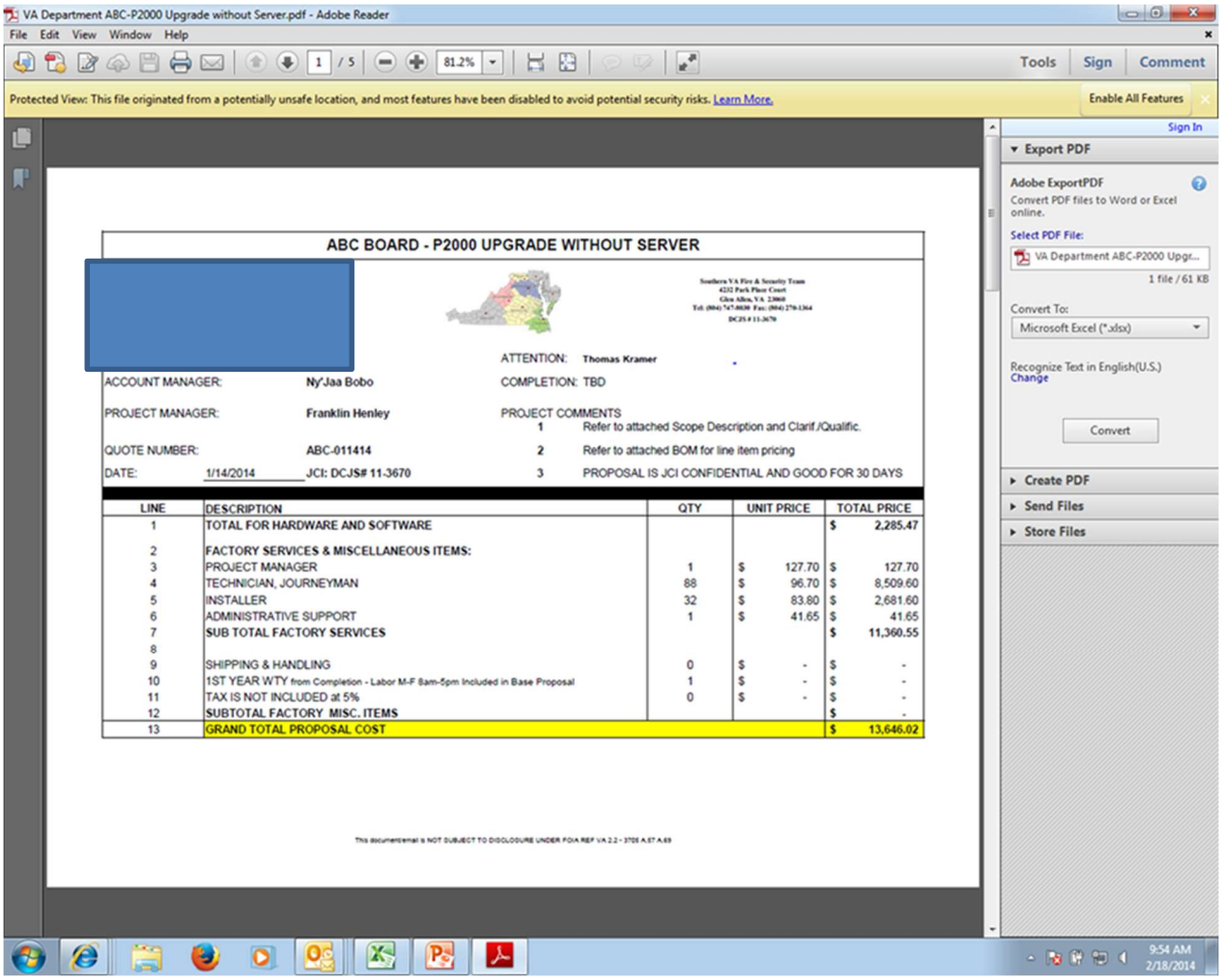


Figure 5 Vendor cost sheet example

2.2.9 Feasibility Studies

Decision makers must make the most of scarce resources and at the same time respond to ever increasing demands for improved performance and new technology. The importance of investment management in information technology continues to increase. The failure rate of many IT investments raises legitimate concerns about the value of those investments. As a result, IT investment proposals often require a rigorous business case to justify new IT investments. The business case, and associated feasibility studies, will include methods of assessing the costs and returns expected from the investment. These methods include the Cost/Benefit Analysis (CBA) and Business Case and Alternatives Analysis (BCAA).

Generally, feasibility studies help to determine if potential solutions are viable and provide a basis of comparison and selection between alternatives. Technical feasibility studies focus on the technology of the solution and are used to determine a preferred IT solution from a technology perspective. An economic feasibility study, such as a Cost/ Benefit Analysis, determines if a solution is economically sound and cost effective. Based upon these analyses, a technology solution is proposed in the next step of the initiation process, and the results of the technical and economic feasibility studies are used to justify the proposed technology solution.

As part of the feasibility study, the technical architecture around the proposed solutions need to be considered. A technical feasibility study determines if there are technology solutions available that can deliver the required product or service. The technical analysis also identifies the probability of success for any given solution based upon established criteria. Understanding both the current technical architecture and the maturity of the proposed technology increases the probability that the chosen technology will be a good fit for the organization, and tends to prevent the initiation of projects that use inappropriate technology, and thus are likely to fail. Research and analysis of technical solutions may use data available from external sources such as technology publications or research organizations, in addition to vendor information and consultation with VITA Enterprise Architecture and Security.

2.2.10 Cost Benefit Analysis (CBA)

Cost/Benefit Analysis is a systematic approach to estimating the strengths and weaknesses of technology alternatives that satisfy agency business requirements. This guideline will help individuals prepare cost/benefit comparisons with recommendations on how to gather information, present costs, determine benefits, identify risks, and draw economically sound conclusions.

Successful IT Investment Management decision-making begins with the identification of benefits and costs. These two factors are essential items regardless of the nature of the investment, metrics applied, or approach used to value them. Investments in the public sector are undertaken for:

- Expansion or improvement in service or function of agency.
- Reduction of operating costs/increasing revenues.
- Research and development.
- Mandate.

Benefits should clearly answer the question, "What does this investment provide the customer, public, or agency?" Whether expressed in qualitative or quantitative terms, benefits should relate directly to the fulfillment of specific, expressed needs.

As of January 1, 2017, the CBA.xlsx Excel spreadsheet has replaced the CBA form in the Commonwealth Technology Portfolio (CTP). The CBA tool is available in the VITA website in the PMD section under "Tools & Templates". Project Managers are to complete the CBA.xlsx (Save As… your own version) and upload the spreadsheet into CTP when complete.

Analyze at least three scenarios:

- "Do Nothing"
- Alternative (Alt.) 1
- Alternative (Alt.) 2
- Alternative (Alt.) 3… is available if needed.

The Period of Analysis for all alternatives under consideration is (a) the project duration, plus (b) six years of from product implementation ("rollout"). Use Fiscal Years (July 1 – June 30).

Ideally, the chosen solution will have benefits which outweigh costs: but oftentimes mandates may override purely financial analysis. As a result of the CBA, it may reveal that none of the alternatives have net benefits, yet still, the CBA is useful in comparing which alternative costs less and is the best financial alternative.

Note that the CBA is "silent" on several valid decision criteria:

- Non-monetary measures.
- Customer satisfaction.
- Probabilities of success.
- Political considerations.

However, based upon these intangible analyses, a solution is proposed in the next step of the process. (BCAA)

2.2.11 Steps for Performing a CBA

Before a CBA can begin, the project scope, high level deliverables, and some technical information needs to be known, or assumed. Essentially a project needs definition before costs can be estimated.

If an agency wants to learn what types of applications, functionality, and costs are currently out in the market place, a Request for Information (RFI) can be released, along with holding informal non-binding vendor demos. These are usually done during the CBA and BCAA processes.

Along with estimating costs, benefits must be estimated. This is best developed in consultation with the business side of the agency, having them articulate cost savings, revenue generation, or efficiency gains associated with the project.

Note that sometimes an agency commits to delivering a project due to a legislative mandate, executive order by the Governor, or some sort of legal or regulatory action. If this is the case, then there may not be an associated dollar benefit to match up against the project costs. Complying with the mandate then becomes the benefit. Still, the CBA can be useful in comparing the Total Cost of Ownership (TCO) between multiple alternative solutions.

The CBA tool provided by PMD is to be used to document each alternative project costs, and then 6 years of O&M.

Once the costs and benefits are estimated for each alternative, an analysis will need to be performed to determine the best solution. This process of comparing alternatives should have a structure to it and includes both IT and agency business members. The technical team will evaluate the alternatives from a technology perspective and technology costs while the business team should be focused on the cost comparison and possibly intangible (non-monetary) benefits between the alternative solutions.

2.2.11.1 Estimate and Document Project Cost

Project costs

- 12 budget categories in CTP (and CBA.xlsx)
- Project (implementation) costs

Operation & Maintenance (O&M) Costs:

- (Additional) Staffing Costs
- 3 staffing categories in CTP (and CBA.xlsx)
- Other Operational Costs

- 9 budget categories in CTP (and CBA.xlsx)
- Six years from product rollout

Estimated costs are the potential resources consumed by the technology being considered; the cost categories include:

- Internal Staff Labor
- Services
- Software Tools
- Hardware
- Supplies and Materials
- Facilities
- Telecommunications
- Training
- IV & V
- Contingency (Risk)

If the technology warrants, the cost categories can be further subdivided, such as:

- Scope statement
- WBS
- Schedule
- Risks register
- Market conditions
- Your organization's cost estimating policies
- Cost estimating templates
- Historical information
- Lessons learned
- Your own experiences and judgments

Here are some tools and techniques for estimating costs:

- Expert judgement
- Analogous estimating
- Uses actual costs of previous projects along with expert judgement
- Parametric
- Uses formulas to determine costs
- Bottom up
- Estimating individual components of work then adding up
- Three-point estimating
- Most likely, Optimistic, Pessimistic
- Some project management software tools have templates for determining project costs

2.2.11.2 Total Cost of Ownership (TCO)

Total Cost of Ownership is the price of implementing a project plus the costs of operation & maintenance over a given time period. When choosing among alternatives, decision-makers should look not just at an investment's short-term cost, but also at its long-term cost, which is the total cost of ownership.

All Implementation Cost + O&M (for a given time period) = TCO

Historical contract data for an agency can be used to estimate the future purchase price of hardware, software, and services. If contracts were used to provide system support in the past, they can give you the costs for leasing and purchasing hardware and hourly rates for contractor personnel. Contracts for system support services for other systems in your agency can provide comparable cost data for the development and operation of a new system. Adjust the cost to reflect current year price levels. Document all adjustments for future reference.

2.2.11.3 Benefits

Every proposed IT project for an agency should have identifiable benefits for both the agency and its customers. Identifying these benefits will usually require an understanding of the business processes of the agency and its customers. Some benefits realized by the agency are flexibility, organizational strategy, risk management and control, organizational changes, and staffing impacts. For example, new IT projects may allow some personnel to perform two different jobs with little or no extra training; or the new system may allow organizational changes that reduce the number of managers, or the new system may allow some jobs to be eliminated. These benefits are often measured in terms of productivity gains, staffing reductions, and improved agency effectiveness. Possible benefits to customers include improvements to the current IT services and the addition of new services. These benefits can be measured in terms of productivity gains and cost savings, but the customers must be the ones to identify and determine how to measure and evaluate the benefits. Customer surveys are often needed to identify these benefits. At a minimum, the customers should be interviewed to identify the potential impacts of new or modified systems.

Consider the potential impact of a new or modified system in terms of:

- Accuracy -The degree of conformity of a measured or calculated value to its actual or specified value.
- Availability -The degree to which a system, subsystem, or equipment is operable and in a committable state at the start of a mission
- Compatibility - Capability of two or more items or components of equipment or material to exist or function in the same system or environment without mutual interference.
- Efficiency - measure of speed and cost.
- Maintainability - the ease with which a software system or component can be modified to correct faults, improve performance, or other attributes, or adapt to a changed environment.
- Modularity - the extent to which a system is made up of pieces independent in their own right, which makes for the easy assembly of simple autonomous parts into complex structures, is a hallmark of new software; software that's built for networking.
- Reliability - The probability that a functional unit will perform its required function for a specified interval under stated conditions.
- Security - A condition that results from the establishment and maintenance of protective measures that ensure a state of inviolability from hostile acts or influences.

2.2.11.4 Questionnaire for Benefit Data Collection

The audience for these questions should be the project sponsor, manager and other stakeholders.

1. What are the agency's/function's/group's major goals and strategies?
2. How will your agency change over the next five years?
3. Who are your customers/constituents? What do you provide to your Customers/constituents?
4. What is your "service"? How do your activities fit in with delivering that service?
5. What is success to you and to your stakeholders? How is that success measured?
6. What are the step-by-step activities that occur in your group to get your "service" to your "customer"?
7. How does your group interact with other groups? Who are you dependent on and who is dependent on you for success?
8. How many people are involved in your group? How many projects, activities? What is the average project time?
9. What are your average costs of labor and other factors?
10. Where do you see the most problems in accomplishing your job (in your group department, agency)?
11. What are the major problem areas you plan to address this year? How do you rank them in importance?
12. How does this problem hurt your group, department, agency, etc.? Are you losing time, money, quality, etc.? How much? What is the impact to your group and your agency?

2.2.11.5 Determine Tangible Benefits

Tangible benefits originate from increased revenue, cost reduction, and cost avoidance. They measure, in dollar savings, the impact of an alternative on people, equipment, time, space and facilities, and support materials.

2.2.11.6 Questionnaire for Benefits Verification

The audience for these questions should be the project sponsor, manager and other stakeholders.

1. What benefits do you expect to see from these proposed changes? Can you see [specific benefit] occurring?
2. How much improvement do you expect in time, quality, cost reduction for labor, materials, etc., cost avoidance for labor, etc., revenue?
3. Will all the benefits occur in your area [direct benefits] or will some occur in other areas [indirect benefits]?
4. Do you agree that this proposal can help you address your problems?
5. Do the benefits look right to you and do you believe that this solution will generate benefits in the estimate ranges?
6. Here are some additional benefits that we have uncovered. Do you think you could see any of these occurring with this investment?
7. Are there any potential benefits missing from the list?
8. Are there any additional expenditures that you may need to make if you implement this solution that I am proposing?
9. How would you use any time benefits achieved by this investment? To lower labor costs, increase revenues or a mixture of the two?
10. I have made a summary sheet of the expected amount of benefits that we agreed could result from this investment, could you please help me estimate the dollar value for each of these?
11. What percentage of each of the benefits we discussed earlier do you feel could be attributed to the proposal?

12. Do these benefit estimates look okay? If not, how would you change them?
13. What is high, low, most likely levels of benefits you would expect to see from implementing this proposal?
14. Do you feel that you have all the information you need and that your managers need to understand the value of this proposal to your business?
15. Do you understand the strategic impact of this investment; how it will change the way you do business, and how to manage it to achieve your desired goals and benefits?
16. How can we prove the value of this investment to your senior managers?

2.2.12 Analysis

Compare Alternatives

CBA.xlsx automatically calculates (cumulative and total):

- Project costs
- Operations & Maintenance costs
- TCO
- Benefits:
  - Cost Savings
  - Cost Avoidance
  - Increased Revenues
- ROI
- Graphical depictions
- Breakeven point

2.2.12.1 Return on Investment (ROI)

ROI is a financial accounting measurement for determining the value of making a specific investment. ROI is a ratio of the net benefits to the total cost of an investment for the same specific period. In other words, ROI is the difference between the cost of a project and the financial benefits that the completed project provides. The two principle concerns with ROI are that the calculations do not account for the time value of money and the calculations assume a consistent annual rate of return. ROI is a useful measure when comparing alternatives using the same cost and benefit criteria for the same period.

The formula for calculating ROI is: ROI % = [(Benefits - Costs)/Costs)] x 100

Note that CBA.xlsx calculates ROI automatically.

The difficulty inherent in calculating the ROI for an investment arises from the problems associated with identifying of all the benefits received, and all of the costs incurred. ROI may be calculated for any time period, but the commonwealth requirement is for six years of operations, beginning when the new solution is implemented.

Not all projects have a positive ROI. A negative ROI may be acceptable if the project is meeting a legal, regulatory, or statutory requirement. A negative ROI may also be acceptable if the project is establishing a platform for future growth and stability, or the project is needed to update technology infrastructure.

2.2.12.2 Breakeven Point

Breakeven Point is the year when the ROI changes from negative to positive. It represents when the IT investment "pays for itself". Obviously, the sooner the breakeven point occurs,

the better. On the CBA.xlsx, examine the ROI over the six years of analysis, and observe when the ROI becomes positive. Note that the ROI might not become positive in six years, but still the quicker breakeven point suggests a stronger financial measure.

Note that the CBA.xlsx is found on the PMD website, and a detailed instruction sheet for CBA.xlsx is included; see https://www.vita.virginia.gov/policy--governance/project-management/project-management-templates-tools/.

2.2.13 Business Case and Alternatives Analysis (BCAA)

The Business Case and Alternatives Analysis (BCAA) form is provided to assist in the analysis of the business need, analysis of potential solutions, and identification of the best solution. The BCAA form is a companion form to the uploaded CBA. It provides the written explanation around why a solution was chosen and the reasons why the other options were not chosen. It is the documented explanation around the decision-making process for choosing a solution. While the CBA focuses solely on the financial analysis, the BCAA captures other factors influencing the ultimate decision for the chosen solution. The BCAA is a CTP form and requires agency head and AITR approvals. The best order of completion is the CBA, BCAA, and then the Charter.

During the BCAA process, the project manager should identify different potential solutions that fit within the project approach. In some situations, there is a single apparent solution; however, with the increasing popularity of COTS applications there can be multiple solutions that an agency can choose. Each solution should be described so that it is clearly differentiated from other proposed solutions. The Commonwealth Project Management Standard requires consideration of three (3) solution alternatives, one of which should be a status quo or "Do Nothing" alternative.

The BCAA form in CTP prompts the user to identify different potential solutions that fit within the project approach, and the chosen solution is documented and justified in comparison with the other alternatives. Each solution should be described so that it is clearly differentiated from other proposed solutions.

Once solutions are identified for consideration, a set of decision criteria must be selected. The decision criteria should reflect key factors that will determine whether a solution is feasible, and which solution will best deliver the project objectives. The same decision criteria must be used to analyze each solution to establish a common basis for comparing the different solutions.

Select criteria most appropriate to your organization and maintain a consistent approach throughout the analysis of all solutions.

Recommended decision criteria include:

- Business Process Impact
- Technical Feasibility
- Maturity of Solution
- Resources Required
- Return on Investment
- Costs associated with the old and new applications
- Technical infrastructure and operating systems needed to support the applications
- The agency's ability to host the application versus other hosting options

The end result of the completed BCAA serves as an artifact documenting the decision-making criteria and ultimate justification for selecting the chosen solution among other alternatives considered.

2.2.14 Project Initiation Approval Risk and Complexity Assessment

This is the assessment that is performed just prior to the Commonwealth providing approval to begin the project. Unless there have been any changes to scope, schedule, and costs the project category will most likely not change from what is was during the last assessment. An assessment is important to perform at this point as there has been additional planning around the project since the last assessment and a greater level of understating about what needs to occur in order to deliver the scope is now known.

This assessment has 31 risk questions and 25 complexity questions plus revisits what was entered during the Select assessment. These combined scores and an assessment by the PMD specialist that will determine the PIA project category of 1 – 4.

2.2.15 Project Manager Qualification

Selection of the right project manager is a critical task. The demonstrated knowledge, skills, and abilities of a project manager have a direct impact on the probability of success of any project. The Commonwealth Project Manager Selection and Training Standard identifies the experience and training required of the managers of Commonwealth information technology projects.

The Commonwealth has established a qualification criteria for Project Managers working on specific projects, for greater details around the Project Manager selection and training please see the Project Manager Selection and Training Standard CPM 111-03.

2.3 Detailed Planning Phase

After receiving Project Initiation Approval (PIA) the project team begins the process of planning for the resources, communications, schedule, budget, and efforts for the project. The project plan is the primary artifact developed during the planning phase and communicates project activities in terms of: what tasks will be performed; who will perform the tasks; when will the tasks be performed; what resources will be applied to accomplish the tasks; and how the tasks will be sequenced.

What is a Project Plan?

A project plan isn't just a formal approved document that is used to guide both project execution and project control (PMBOK), it is actually a combination of numerous component plans that are developed during the Detailed Planning Phase. The project plan is used to guide execution and control of the project. It forms the basis for all management efforts associated with the project. The project plan can also be used to communicate with project stakeholders and gain support and understanding of the project. The Project Manager and project team develop the project plan through execution of the project planning processes and present the plan to management for approval.

Information documented in the project plan evolves as the project moves through multiple iterations of the planning process. Changes made to any component of the project plan can affect other plan components and thus requires the review of all planning documents. The main body of the project plan provides a summary of the project plan with details provided

in appendices that represent specific components of the project plan depending on the Risk and Complexity category of the project.

The project plan can include the following:

- Budget Plan
- Change and Configuration Management Plan
- Communications Plan
- Planning Risk Assessment
- Planning Complexity Assessment
- Planning R/C Summary
- Project Plan
- Performance Plan
- Procurement Plan
- Project Schedule
- Project Scope and Business Objective Worksheet
- Quality Management and IV&V Plan
- Resource Plan
- Risk Management Plan

2.3.1 Budget Planning

Budget planning is the determination of the estimated costs and available funding associated with a defined set of activities during a specified time period. The steps associated with budget planning are highly dependent on both the estimated duration of tasks and the resources assigned to the project. The Budget Plan is dependent upon the project schedule, the resource plan, the quality management plan and the independent validation and verification plan, and the risk management plan.

Budget estimates are refined in the Detailed Planning Phase and baselined with approval of the project plan. Budgeting serves as a control mechanism where actual costs can be compared with and measured against the baseline budget. When a project schedule begins to slip, cost is affected. When project costs begin to escalate, the Project Manager should revisit the Project Plan to determine, whether the scope, budget, or schedule needs adjusting.

2.3.2 Project Scope and Business Objective Analysis

The scope and objectives of the project were defined at a high level in the project initiation phase. The Project Manager and team members developing the project plan may not have been involved in the project initiation phase. Before project plan development begins, the Project Manager and team must develop a thorough understanding of the project scope and the project objectives.

A detailed project scope identifies what the project deliverables are, such as:

- Where, when, and to whom the deliverables are distributed
- What process or technology solution is proposed
- Who (group, organization, or key person) performs the work
- When and where the work is performed
- When, where, and to whom the project will deliver the intended product or service

2.3.3 Work Breakdown Structure

A Work Breakdown Structure (WBS) is a hierarchical representation of all the discrete products, services, activities, tasks, and subtasks that comprise a project. The WBS represents the total scope of the project. Using a WBS, the project scope is broken down into progressively lower levels of detail. The lowest level of the WBS is a work package.

On large projects, it is often difficult for a single person or group to develop the WBS. In such cases, when defining the first tier of the WBS, the Project Manager should identify the organization or person responsible for each Tier I activity. Those responsible can then assist with the decomposition of the Tier I deliverables. Assignment of responsibility for high-level WBS activities ensures management is responsible for the entire project scope.

The WBS is decomposed into discrete tasks or work packages that are to be accomplished during the project. A project WBS normally is decomposed to at least three levels or tiers of tasks. Projects are decomposed to a level that represents a distinct package of work.

After the WBS is decomposed to the lowest level (the work package), responsibility is assigned for each element. Individuals assigned to an element are responsible for planning, controlling, and executing the specific task.

A collection of activity, task, and subtask descriptions is referred to as a WBS dictionary. The purpose of the WBS dictionary is to clearly describe each element of the WBS to facilitate planning and management of the element. The description includes what is to be delivered, attributes of the product or service delivered, and, in some cases, what is not included within the element. Defining what is not included ensures that the responsible individual does not allow additional scope to be added to the project. The WBS dictionary can be used to communicate scope to contractors or subcontractors, often forming the basis for a statement of work.

The process of defining and sequencing activities and tasks represents a further refinement of the WBS. Activity sequencing involves dividing the project into smaller, more manageable components, identifying the dependent relationships between activities and tasks, and specifying the order of completion.

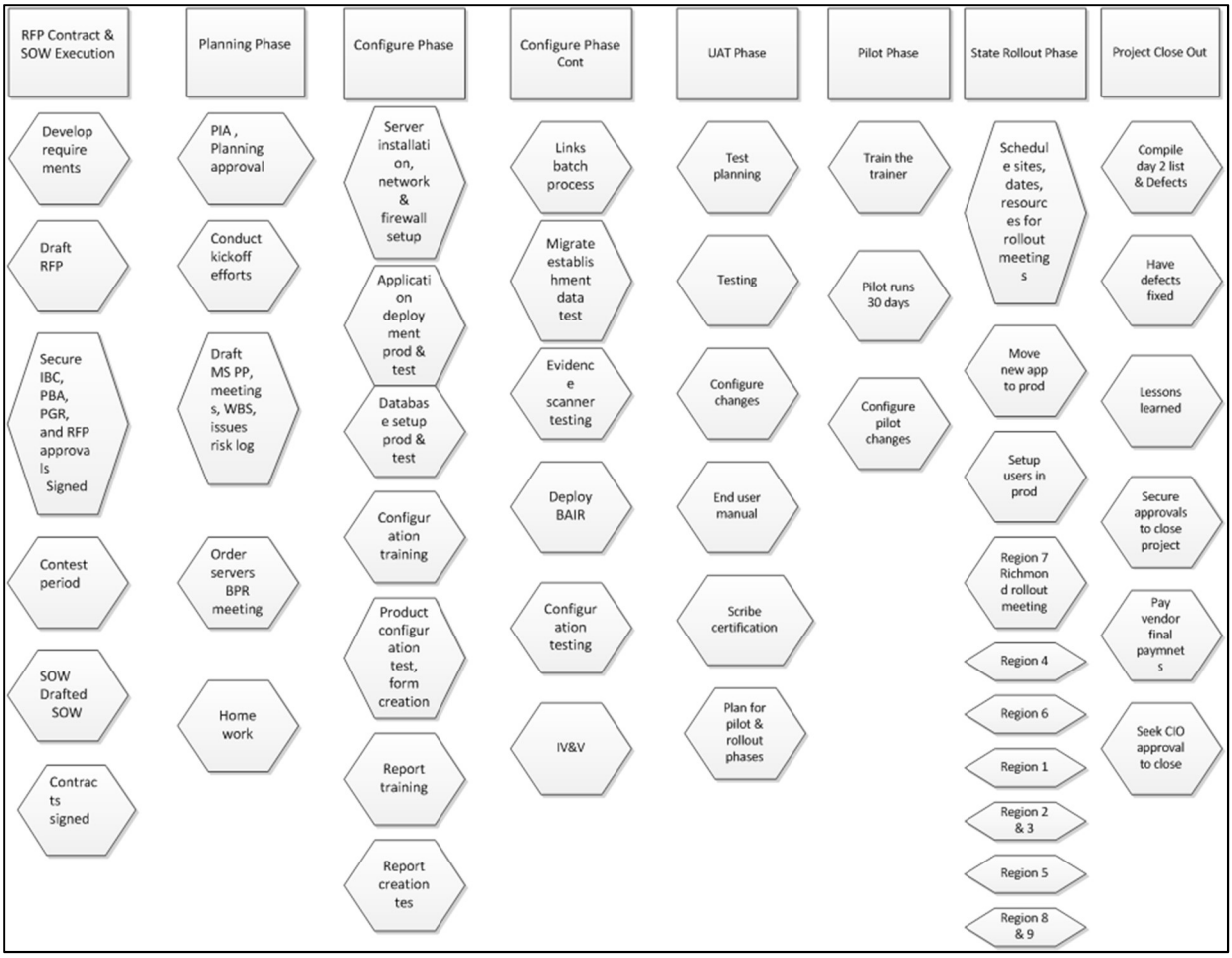


Figure 6 WBS Examples

2.3.4 Resource Planning

Projects have a limited number of resources and most times they are matrixed, shared, and distributed. The project charter allocates resources (at a high level) to the project. One of the Project Manager's primary roles is to find a way to successfully execute a project within these resource constraints. Resource planning involves identifying a team that possesses the skills required to perform the work (labor resources), as well as identifying the tools, equipment, facilities, and other resources needed by the team to complete the project. A Project Resource Plan form is available in CTP.

Here are some steps to follow in securing project resources:

- Determine the resource pool that is needed
- Estimate the skill requirements that will be needed by the project team
- Identify resource costs and if they can be obtained from internal groups or they need to come from outside
- Identifying risks associated with a resource or group of resources
- Determine the size of the project team
- Discuss the needed resources with the project sponsor
- Discuss the needed resources and if they can be obtained by the project steering committee, IAOC, or agency leadership team

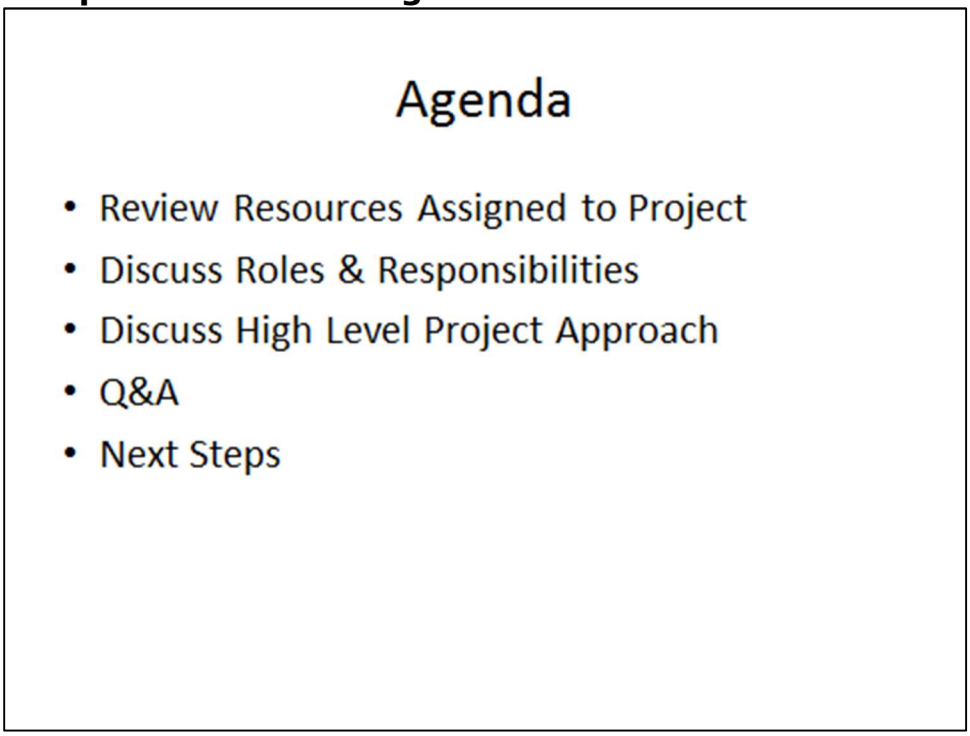
- Once approval is provided seek out the functional manager for each resources and discuss how to engage those resources in to your project.

2.3.5 Project Kickoff Meeting

A project kickoff meeting can occur at a few different times depending on the project itself. However within the Commonwealths PM process it's best to have a formal kickoff meeting right after PIA. A kick off meeting enhances execution by focusing the team on the project and by defining a starting point for beginning project execution.

The kick-off meeting provides an opportunity for communication and establishing the commitment of executive management, team members and stakeholders to the success of the project. The focus of the meeting is communications, identification of team members and stakeholders, reviewing the project scope and business objectives, identifying the challenges, and identifying the next step in getting the project underway. At this point, team members and team leads should have copies of the forecasted high level schedule.

Sample Kickoff Meeting Presentation

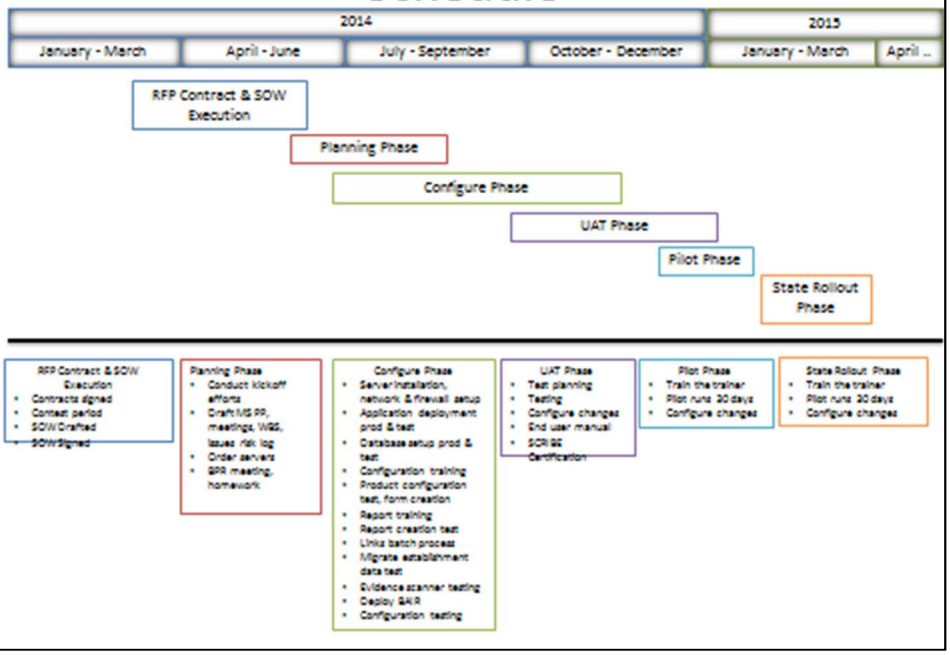


Group	Resource	Role
IT		
Project Manager		Manages project
BSA/Scrum Master		processes, manages daily scrum efforts
Lead Developer		Enables application deployment, environments, and batch processes
Developer		Enables application deployment, environments, and batch processes
QA Tester		System tests configurations
IT Operations - Configuration/PST		Perform IT configurations
DBA		Enables database prod, dev/tst
CM		Enables application deployment, environments
Infrastructure		Standup servers
Tech Writer		Document configuration changes
Infosec		Consultant
Enforcement		
Executive Sponsor		Provides governance, final decision maker, reviews progress and receives updates
Product Owner		Provides governance, key decision maker, reviews progress and receives updates, works closely with project team
Product Manager		A project team main point of contact, part of daily project team
Subject Matter Expert Supervisors		
Subject Matter Expert Agents		A project team main point of contact, part of daily project team, provides requirements, performs some configuration, performs UAT
Enforcement Operation Application Support		Performs Enforcement configuration within the project & Once deployed provides for Agent support and Enforcement configuration

Project Approach

- 5 Phases
  - Planning
    - Map current process and system
    - Develop project plan
    - Understand server requirements & order servers
    - Establish tasks and schedule for configuration phase
    - Training
  - Configuration
    - Standup servers
    - Load application & establish prod, dev/test environments, and databases
    - Perform multiple rounds of configuration & testing
    - Training
  - UAT
    - End to end testing
    - User acceptance testing
    - Perform additional configuration
    - Training
  - Pilot
    - Up to 10% of agents using system with live data
    - Maybe a single region or select agents within multiple regions
  - State Wide Rollout
    - Agent training
    - Regional visits
    - Directly supported by internet resources on site at each region
- Vendor will assign technical resources, PM, configuration specialist, and BSA

Schedule



Next Steps

- Sign SOW
- Directly engage vendor and start project with them
- What day next week is best for a full vendor kickoff meeting, Tuesday, Wednesday or Thursday?
- Wednesday 1pm – get agenda from interact
  - Project approach/interaction model
  - Resources are
  - Define training
  - Previous timelines
  - What are security spec – email to mark
  - Do you need email accounts – info sec
  - Review software arch – another meeting
  - Send team rfp response - me
- Confirm server requirements
- Order servers
- Begin planning phase

Q&A

2.3.6 Project Schedule

The Project Schedule provides for an opportunity after project initiation approval to further elaborate the activities, milestones, dependencies, assigned resources, duration, start and end dates, tracks completion of tasks, and helps to identify critical path. The process of developing the project schedule follows sequencing of activities and resource planning.

The project schedule should be detailed enough to show:

- Each WBS element to be performed
- Each project phase, sequential
- Associated activities
- Resources scheduled for each task
- Start and end date of each task
- Expected duration of each task
- Required predecessor task(s)

2.3.6.1 Developing a Schedule

Developing a schedule is an interactive process. For large, complex projects, an overall master schedule is developed with sub-schedules for activities or task that provide additional detail necessary for management of the project. During the life of the project, actual progress is measured against the approved schedule baseline. (A schedule baseline is defined as the original approved schedule, plus or minus approved changes.) Changes to the schedule baseline are controlled through a defined change control process addressed later in the methodology.

Schedule development and maintenance have the following objectives:

- To create an initial high level schedule
- Building out an initial schedule to show all associated activities
- Baselining of a schedule, having it reviewed and approved by the project team and sponsor
- Providing an accurate status of the project to control the project work effort
- Providing a means for understanding the impact of change on the schedule baseline
- Creating transparency into the project activities, task sequence, who is performing what, in what order, and tracking progress through each project phase to completion
- Provides for an archive of what occurred and a possible jumping off point for the next project of similar size, scope, and complexity

2.3.6.2 Inputs for creating a project schedule include

- Project scope statement
- Work breakdown structure
- Charter
- Requirements document
- Organizational culture & structure
- Resource availability
- Project management software
- Templates
- Organizational PMOs, governance processes, tools templates
- SME meetings
- Expert judgement

- Prior projects of similar size, scope, duration, and budget
- Lessons learned from prior projects
- Issues and risks log
- Vendor inputs

2.3.6.3 Dependencies & Sequencing

An important part of sequencing activities within a project schedule is associated with understanding activity dependencies.

Here are some types of dependencies to be aware of:

- Those that are contractually required, physical limitations, and legally required
  - Best practices, a desire for a specific sequence
  - Some relationship exists between the project and an external factor
  - Some factor inside the project teams control
- Sequencing of activities can also be looked at in terms of Leads and Lags
  - Lead – amount of time a successor activity can be advanced
  - Lag – amount of time a successor activity will be delayed

2.3.7 Project Resources

Some tools and techniques for estimating project resources include:

- Expert judgement
- Published data; rates, unit costs, industry standards and practices
- Bottom up estimating
- Project management software
- Meetings with project team and SME's
- Review of prior project artifacts

2.3.8 Durations

Some tools and techniques for estimating project activity durations include:

- Expert judgement
- Analogous estimating – using historical data
- Parametric – use of an algorithm on historical data
- 3 point
  - Most likely
  - Optimistic
  - Pessimistic
- Group decision making

2.3.9 Critical Path

Determining Critical Path is very important when developing a project schedule. PMI's definition is; "The critical path is the sequence of activities that represents the longest path through a project, which determines the shortest possible duration". Understanding the critical path is important as it provides the Project Manager and project team the ability to focus on those tasks that directly impact the project deployment date.

It's also come to mean:

- Most important set of activities
- Sequence of activities that cannot have any delays

To show critical path in a MS project plan:

- Show the critical path in the Gantt Chart view
- The Gantt Chart view will likely be your most used view for showing the critical path.
- Click View > Gantt Chart.
- Click Format, and then select the Critical Tasks check box.
- Tasks on the critical path now have red Gantt bars.

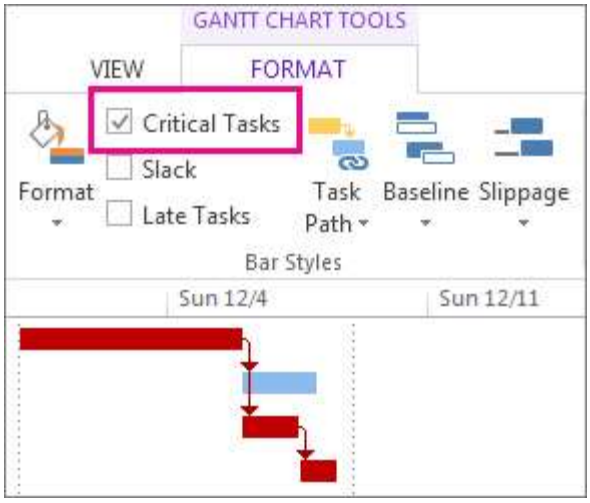


Figure 7 Gant Chart Tools

At times there may be a need to accelerate the project activities in an effort to complete the project sooner than what was originally planned. This is called "Compression", and is defined as shortening the schedule when needed while keeping the same scope.

Tools and techniques commonly used to perform compression are;

- Crashing - Adding resources
- Paying for overtime
- Hiring contractors
- Paying time performance bonuses
- Fast tracking – moving up activities that are normally done in sequence or beginning activities earlier

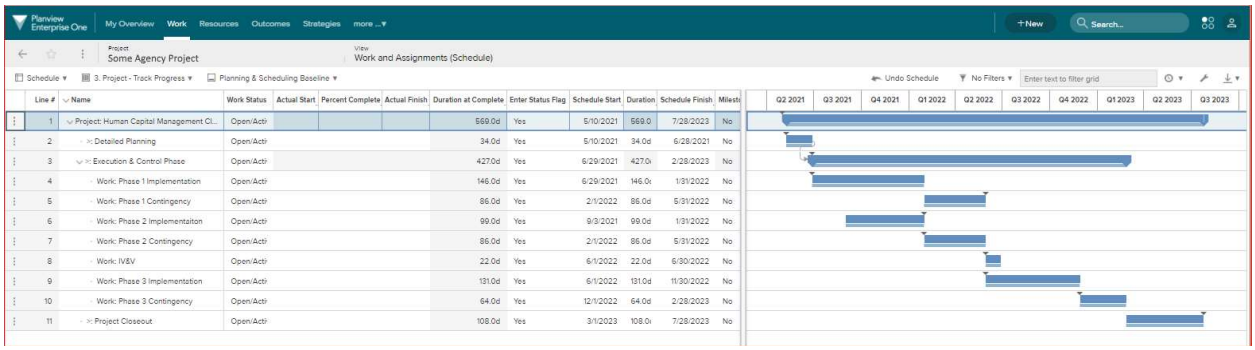
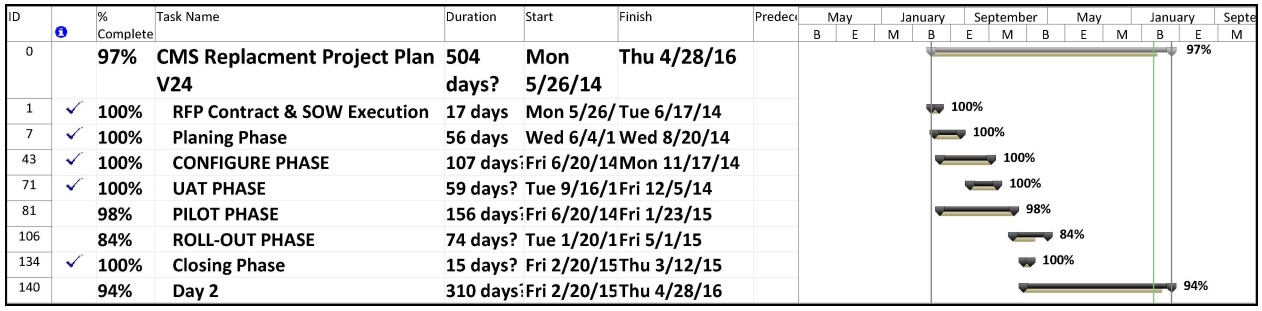
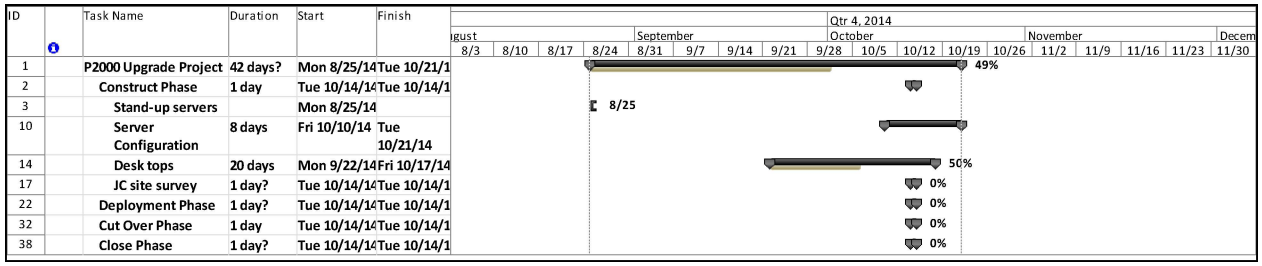


Figure 8 Project Schedule (Planview) Example 1



ID		% Complete	Task Name	Duration	Start	Finish	Predec
0		97%	CMS Replacment Project Plan V24	504 days?	Mon 5/26/14	Thu 4/28/16	
1	✓	100%	RFP Contract & SOW Execution	17 days	Mon 5/26/	Tue 6/17/14	
7	✓	100%	Planing Phase	56 days	Wed 6/4/1	Wed 8/20/14	
43	✓	100%	CONFIGURE PHASE	107 days	Fri 6/20/14	Mon 11/17/14	
71	✓	100%	UAT PHASE	59 days?	Tue 9/16/1	Fri 12/5/14	
81		98%	PILOT PHASE	156 days	Fri 6/20/14	Fri 1/23/15	
106		84%	ROLL-OUT PHASE	74 days?	Tue 1/20/1	Fri 5/1/15	
134	✓	100%	Closing Phase	15 days?	Fri 2/20/15	Thu 3/12/15	
140		94%	Day 2	310 days	Fri 2/20/15	Thu 4/28/16	

Figure 9 Project Schedule (Microsoft) Example 2



ID		Task Name	Duration	Start	Finish
1		P2000 Upgrade Project	42 days?	Mon 8/25/14	Tue 10/21/1
2		Construct Phase	1 day	Tue 10/14/14	Tue 10/14/1
3		Stand-up servers		Mon 8/25/14	
10		Server Configuration	8 days	Fri 10/10/14	Tue 10/21/14
14		Desk tops	20 days	Mon 9/22/14	Fri 10/17/14
17		JC site survey	1 day?	Tue 10/14/14	Tue 10/14/1
22		Deployment Phase	1 day?	Tue 10/14/14	Tue 10/14/1
32		Cut Over Phase	1 day	Tue 10/14/14	Tue 10/14/1
38		Close Phase	1 day?	Tue 10/14/14	Tue 10/14/1

Figure 10 Project Schedule (Microsoft) Example 3

2.3.10 Performance Planning

The project performance plan defines how project success or failure is measured. Project success is achieved by meeting the stated business objectives for the project and by satisfying customer needs. The performance plan identifies the relationship of the agency's business objectives to performance goals and specifies: who will measure the performance; how and when performance is measured, and how performance is reported. The performance plan also identifies and defines the project deliverables and acceptance criteria for each deliverable.

2.3.11 Risk Management Planning

Risk management planning identifies how the project team responds to and manages risk throughout the execution and control phase of the project. Risk management is an ongoing process. Risk management planning identifies foreseeable risks, quantifies the threat posed by the risks, develops mitigation alternatives for the risks, and identifies responsible person(s) to manage or mitigate the risks.

The risk management plan provides input to the budget and schedule plans. Risk management is performed to ensure the project's success. If risks are not identified and dealt with they will derail the project, and could cause it to fail.

Risk identification and quantification require the project team to identify risks associated with execution of the project as well as external risks to the project. Risks are identified throughout detailed planning and project execution. Risks are frequently associated with resource and schedule constraints.

Components of a Risk Management Plan:

- Risk Management Strategy
- Risk Identification and Quantification
- Risk Response and Monitoring
- Risk Mitigation Cost Estimation

Managing risks, developing avoidance or mitigation strategies come at a cost. These costs need to be understood and built into the project budget.

2.3.11.1Technique for Expressing Risk

One useful technique for expressing risk is to use an if —and —then statement, for example, —If X thing happens —then the result will be Y.

A risk is quantified by estimating the likelihood of occurrence of the risk event and, the effect the risk will have on the project. Probability of occurrence is the expression used to describe the likelihood of occurrence of the risk event. The probability of occurrence is expressed as a percentage. The higher the percentage, the more likely a particular risk event will occur.

The impact of the risk event on the project is expressed as a numeric score of one (1) to five (5), with five identifying the highest level of impact.

2.3.11.2 Common Approaches to Managing Risk

1. Avoiding:
   The purpose of risk avoidance is to eliminate the likelihood that a risk event will occur. In some cases, the Project Manger may decide to take risk avoidance steps. Risk avoidance may add extra tasks, schedule and/or costs to the project.
2. Mitigation:
   Risk mitigation actions are taken to reduce the likelihood that a risk event will occur and/or to reduce the impact of the event, should it occur. These actions may also add tasks, schedule and or costs to the project.
3. Acceptance:
   Risk acceptance is a risk strategy, in which the project takes no avoidance or mitigation steps in advance, but may respond to the event if/when it occurs or may choose to accept the consequences of that event.
4. Transfer:
   The project team shifts the risk impact and ownership to a third party. The management of the risk does go to the 3rd party however the ownership of that risk remains with the original project; it does not also transfer to the 3rd party.

2.3.12 Communications Planning & Development

Communications planning involves identifying and meeting the information needs of the project stakeholders. Specifically, identifying which people need what information, when the information is needed, and how the information is collected and communicated. Communications planning strives to simplify and document effective communications within the project organization. The Communications Plan documents the information requirements of stakeholders and defines the procedures to meet those requirements. The plan details what, when, and how information is collected and reported.

By planning your approach for communication in advance, you can provide the right information to the right people, at the right time, in the right format, and with the right emphasis. Your road map is the project communication plan. This section will cover components of a communication plan, how you choose the communication methods appropriate for your project, and how to create a communication plan.

The first step to creating a communication plan is identifying who needs to know something about the project. Stakeholders are obvious audiences for project communications, but other groups often need or want project information. Performing interviews and having conversations with the project stakeholders and team will help to provide clarity and definition around communications, timing, and formats. As you build your communication plan, ask stakeholders and other groups you've identified as audiences if there's anyone else who needs to know something about your project.

Here are some typical audiences, both stakeholders and ancillary groups, you might include in a communication plan:

- The project team
  - Team members work on the project every day. They need to know what's going on with the project, but they also contribute a lot of the information that you communicate to others.
- Management stakeholders
  - Management stakeholders share similar needs for project communication and can include customers, the project sponsor, a steering committee or leadership team, members of the change management board, functional managers, and so on.
- The customer
- The project sponsor
- Supporting groups
- External audiences

Information required in the communications plan includes:

- Identification of stakeholders with information needs
- Stakeholder information requirements
- Time frame or period the stakeholder needs the information
- Detailed description of the information need
- Description of when and how information is collected and who collects it
- Description of document distribution methods and frequency of distribution
- Definition of the handling procedures for temporary storage and final disposition of project documents
- Is the basis for Organizational Change Management (Category 1,2,3)

2.3.12.1. Types of Project Information & Means of Communication

The information that you communicate varies depending on whether you're planning, executing, or closing the project, and your intended audience.

Here are some types of project information that you should be distributing and socializing:

- Project Charter
- The project plan
- Project schedule
- Project status reports
- Budget
- Change requests
- Requirements
- Contracts
- Meeting notes
- Decisions made
- Risks
- Issues
- Meeting invites
- Lessons learned
- Testing results & metrics
- Deployment plans & results

2.3.13 Change Management

Change management is the process that identifies and manages change. Management of changes to the project deliverables include: the administrative management (tracking, review, and assessment) of the proposed changes, the organized timely review and decision on recommended changes, and the administrative process to ensure that the project team is informed of changes once they are approved.

Change control is the process used to facilitate the change and requires that all project plan items are baselined and once the project plan items are baselined the changes to the baseline are managed through a formal change process. Changes are coordinated among all knowledge areas of the project. For example, a proposed schedule change may also impact the cost, risk, quality, and staffing of the project. The change control process also includes controlling, documenting, and storing the changes to the control items. This includes proposing the change, evaluating it, approving or rejecting it, scheduling it and tracking it.

Managing change within a project is important because it helps to contain scope, schedule and budget while not permitting unwanted changes that would cause the project to fail. A project needs to maintain a fixed scope, schedule, and budget in order to be successful.

2.3.14 Independent Verification and Validation (IV&V)

The Quality Management and IV&V Plan defines how the project management team will implement the organization's quality policy. If the organization does not have a formal quality policy then the project management team will develop a quality policy for the project. The quality plan documents the processes, procedures, activities, and tasks necessary to implement the quality policy. The plan also assigns responsibilities and allocates resources for completion of the activities and tasks. The project performance plan is linked to the quality management plan. The performance plan documents project goals and project deliverables as well as the acceptance criteria for the project deliverables.

Product testing, project auditing, and IV&V will focus on evaluation of the deliverables, project processes and achievement of project performance goals. The IV&V effort will provide a thorough and independent review of the project processes and specified deliverables. In addition to the performance plan, the quality plan must be synchronized with the resource, schedule, budget, and risk management, plans.

The overall approach vendors should be taking with the IV&V is not as a strict project auditor, but more of a project consultant there to assist the Agency and the project team in identifying areas for improvement, and then helping to provide recommendation to act on them. Sometimes project teams are reluctant to have a 3rd party evaluate their project. The project team take a positive cooperative approach to the process. An IV&V vendor should be selected based on their competence and value that will be added by having them perform the independent evaluation.

2.4 Execution & Control Phase

The Project Execution and Control Phase is the part of the project and product lifecycle where the tasks that build the deliverables are executed. The Project Execution and Control Phase begin when the project plan is approved and the resources necessary for executing the starting task are assembled. Project execution should be in accordance with the approved project plan.

During execution, the project team must continuously monitor its performance in relation to the baselined project plan. By measuring and evaluating the actual execution of project activities against the baseline plan, the project team and stakeholders can gauge the progress of the project.

2.4.1 Monitoring and Controlling

Monitoring performance involves the collecting, analyzing, and reporting project performance information to provide the project team and stakeholders with information on the status of project execution. Measurements, or metrics are used to monitor project progress and are based on information or data collected about the status of project activities or tasks.

2.4.2 Common Project Execution Metrics

Various metrics can be gathered to monitor project progress. Processes to monitor typically include project schedule, work effort, costs, issues resolution, and changes to the project. Other metrics may be requested and defined by project or organizational management. Some common metrics, which may be utilized during project execution, are provided below.

2.4.2.1 Project Schedule Deviation

Reporting around project schedule can be done at the milestone level when discussing with senior leadership, or an audience that's looking to understand a very high level picture of your project. However, it's also important to be able to report on the more detailed aspects of your project schedule, with a focus on the most current set of activities along with the most recent activities that have concluded, and then the very next set of activities. Whenever reporting around your project schedule it's a best practice to focus on what's finished, what's being worked on, and then what's upcoming. Monitoring the critical path is also very essential. By definition, the critical path of a project has little or no slack time that

contains the most constraints. An associated delay in the critical path will directly relate to a delay in the overall project. All schedule changes must therefore be analyzed for impact to the project's critical path since such changes will result in deviation from the project schedule.

The Monitoring of the planned versus actual start dates and completion dates provides a gap analysis and leads to identification of overall trends.

Metrics to capture for reporting and to include in a dash board;

- % completion of overall project
- % completion by project phase
- Time period of ahead or behind schedule
- Perceived slack in schedule, if any
- # of tasks completed
- # of tasks in flight but not yet completed
- Upcoming milestone

Status of all tasks are reported in the following way:

- Not Started -%
- Started/In Process - %
- Late started - #
- Completed - %
- Completed late - #

2.4.2.2 Project Costs

The budget plan developed during planning represents the basis for measurement of deviation during execution. If projects costs are not tracked against the baselined budget the project will be subject to cost overruns and could run out of money.

Budgets Metrics to capture

- Internal Staff Labor
- Services
- Development Tools
- Software
- Hardware
- Maintenance Facilities
- Telecommunications
- Training
- Contingency
- Other

Calculations should be the difference between actual expenditures and planned budget, increase or decrease to total project budget cost, percentage deviation from spending plan for the period measured.

2.4.2.3 Project Issues & Risks

Issues are often the manifestation or occurrence of an item that was identified as a risk. Once realized, assertively execute your response plans, measure the results of your execution, and make refinements as needed. Lastly, ensure that the valuable lessons

learned on your projects become organizational assets, and share them with openly with your PM colleagues.

One indicator of project health is the number of open issues/risks and their impact on the project. Proactive risk/issue management aims to track and analyze all risk & issues, specifically focusing on those that have remained unresolved.

Metrics To Capture – For the reporting period and for planned to date:

- Number of new issues and risks
- Number of closed issues and risks
- Number of outstanding issues & risks
- Discussion of outstanding risks, those that are likely and impending
- Risk and issue severity and impact

#	Risk	Type	Open/Closed	Owner	Date Opened	Date of Possible Impact	Issue	Resolution/Risk Plan
6	R	Accept	Open	Interact			Dinwidde deployment done, 3 months of data for the state NIBR's	
46	R	Mitigate	Open	Intercat			Intercat wants to perform an upgrade on 1/12 for tst and 1/19 to prod 1 week prior to state rollout	
48			Open	Liz, Bill			Provide data form that translates rms to datbase fields	
49			Open	Liz			Provide form for the use of VA Scribe	
50			Open	Johnny			Mark wants to know from Johnny - Would it be possible to have interact produce a "forms" code list that has all jurisdictions for the	
47			Closed	Frank			Obtain train the trainer names & send them the invite for Jan 20 - 22	
41			Closed	Johnny			clearing of notifications for forms Johnny	David responded this is not an issue anymore
43			Closed	Liz			Need a tech resoiurce for David C to create an expense report	Bill Chapman is Interact resource
46			Closed	Frank			Should I send invitees an invite to pilot training or does Frank want to send it out?	Frank will send invite
44			Closed	Liz			Need a tech resource for Mark s he can understand form transfer from test to prod	Mike is resource
45			Closed	Liz, Bill			Reports created were unacessible in RMS, they are in Jasper	Fixed
42			Closed	Frank			Provide date for pilot training, week of 12/15 or 1/12	Going with week of 12/15, 12/16 & 12/17, 2 days, tech training room, Frank to send list to me
8			Closed	Jama			Jama:	
39			Closed	Tom Kr			Obtain API documentation for David	
35			Closed	Johnny			Agent Daily Log - Time Category, Misc Time - Try to have it show down time associated with inactivity over a shift, agent logs	Johnny to look into calc and advize in an email back to us 10/20 - sent reminder email to Johnny

Figure 11 Risk log example

2.4.2.4 Change Requests (CR's)

Any change to the configuration of a deliverable or to the baseline elements of the project plan must be managed through a change control process. CTP provides for a change request form to be submitted to VITA for review and approvals. The change control process for Commonwealth level projects is dependent on the project category and can involve agency level approvals, Secretariat Oversight Committee approvals and the Commonwealth CIO approval as well. Activities involved in change and configuration management include controlling changes to the scope, schedule, and budget.

There will usually be changes to a project. The challenge is to identify and manage them. The Change and Configuration Management Plan provide a process and guidance for managing change during project execution. A change management log and change request documents are used as tools to monitor, track, and approve request to change items under change control or configuration management.

CAB or IAOC (Change Advisory Board or Internal Agency Oversight Committee) Metrics to Capture – For the reporting period and for plan to date:

- Number of new requests by impact type, by requestor type
- Number of closed requests by impact type

- Number of outstanding requests by impact type
- Number of accepted change requests by impact type
- Number of rejected change requests by impact type
- Number of undecided change requests by impact type

For greater details on scope, schedule, and budget change control Refer to the PM Standard

2.4.2.5 Project Status Reporting

A standard requirement of all projects is to provide information to both executive management and the project team members on the status of the project. Although the frequency of the reports may sometimes vary, the frequency should correspond with information requirements identified in the project Communications Plan. Status reporting occurs most frequently and has the highest level of value and need during the Execution phase.

For greater details on status reporting please see Status Reporting section 14.3.

2.4.2.6 Project Schedule

- See 2.3.6 Project Schedule

2.4.2.7 Issue & Risk Management

– See 2.3.11.1Technique for Expressing Risk

2.4.2.8 User Acceptance Criteria

Acceptance criteria for project deliverables establishes in advance an agreed upon standard of performance or capability that the user will accept in a specific deliverable. Acceptance criteria then become the fundamental guideline for the design team to build a solution that the user will find acceptable. During testing, User Acceptance Testing (UAT) is based in each requirement and the user's perspective of what it means for that requirement to be satisfied. The user will also identify any issues that remain outstanding and the agreed to plan for resolution of any outstanding issues.

2.5 Closeout Phase

The Execution Phase ends and the Closeout Phase begins when the user has agreed to accept the deliverable(s) in the state that they exist.

The Project Closeout Phase is the last phase in the project lifecycle. Closeout begins when the user accepts the project deliverables and the project oversight authority concludes that the project has met the goals established.

Project closeout includes the following key elements:

- Turnover of project deliverables to operations
- Releasing resources—staff, facilities, equipment, and automated systems
- Closing out financial accounts, including Contract Administration
- Completing, collecting, and archiving project records
- Documenting the successes of the project
- Documenting lessons learned and best practices
- Planning for Post Implementation Review

2.5.1 Turnover to Operations

The most important aspect of project closeout is the physical turnover of control of the product, good, or service delivered by the project. This traditionally occurs only after the project sponsors and agency leadership team have accepted the project deliverables and have agreed to support the new system post deployment. An operational unit of the organization (for which the deliverable is developed) assumes responsibility for the support of the deliverable. Procedures for this turnover and acceptance by the operational unit must be determined.

Turnover and acceptance activities include, but are not limited to, knowledge transfer, documentation transfer, and physical transfer of the deliverable. A formal acknowledgement of receipt (acceptance) of the project deliverable is executed by the operations and project managers.

2.5.2 Archiving Project Data

Historic project data is an important source of information and will need to be archived for future reference. CTP is the system of record for Commonwealth projects. Project data such as the following should be managed in accordance with agency records retention criteria.

- Risks and Issues, Activities, Decisions made logs
- Project Charter (CTP)
- WBS (CTP)
- Communications Plan (CTP)
- Project Plan & Schedules (CTP)
- Activity Logs
- Testing plan, UAT results, Test Cases
- VITA approvals; BRT, IBC, PBA, PGR, PIA (CTP)
- IV&V's
- Contracts, RFI's, RFP's
- Project budget estimates
- Correspondence
- Meeting notes
- Status reports (CTP)
- Contract file
- Technical documents, files, program, tools, etc.,

2.5.3 Lessons Learned

Lessons learned are the documentation of the positive and negative experiences gained during a project. It provides for a retrospective for the team to document what they would do differently for the next project, plus it provides for a jumping off point for the next project team. These lessons come from working with or solving real-world problems. Lessons learned document identified problems and how to solve them. Lessons learned can be gathered throughout the lifecycle of the project to help eliminate the occurrence of the same problems in future projects. It's important when conducting lessons learned sessions that the group not become personal and direct their comments to anyone individual or group. The lessons learned should be fact based and not partisan in nature. The project manager will need to set meeting standards as part of the run-up to the lessons learned sessions and remind participants of these at the beginning of the sessions.

2.5.3.1 Lessons Learned Sessions

Lessons learned sessions are valuable closure and release mechanisms for team members, regardless of the project's success. The lessons learned session is typically a meeting or a series of meetings that may include the following:

- Project team
- Stakeholder representation—including external project oversight
- Executive management
- Maintenance and operation staff

For a lessons learned session to be successful the problems encountered by the project team must be - fact based and helpful. It is important, however, that the problem discussions do not merely point a finger at some target other than the project team; responsibility and ownership for problem areas are critical to developing useful recommendations for future processes.

Problems that were encountered should be prioritized with focus on the top five to ten problems and/or issues. It is not necessary to document every small thing that happened. However, all legitimate problems and issues should be discussed as requested by customers or management.

2.5.3.2 Lessons Learned Format

It's best to document lessons learned in an excel format or a word format with multiple columns. The document should contain in its heading the name of the project, date, and point of contact for the lesson learned. Please note that lessons learned information for each Category 1 – 4 projects is maintained by PMD and should be provided to PMD as part of the close out phase.

The following sections should be included in a lessons learned document:

- Statement of the Problem or What Worked Well, describe the problem or what went well, provide sufficient detail to establish what happened.
- What phase in the project this occurred
- Discussion, describe in detail the cause and impact of the problem.
- Corrective Action
- Desired Result

2.5.4 Project Closeout Report

A Project Closeout Report documents the completion of closeout tasks and project performance. The report provides a historical summary of the projects deliverables and baseline activities over the course of the project. Additionally, the project closeout report documents the user acceptance, identifies variances from the baseline plan, lessons learned, and disposition of project resources. The project closeout report is intended to provide a concise evaluation of the project.

The project manager typically has responsibility for preparing the report. The project manager gets input from the entire project team, the customers, and other major stakeholders. People performing different functions on the project will have different outlooks on the successes and failures of the project and on possible solutions. The Project Closeout Transition Checklist is used to guide the development of the report. Lessons learned sessions are also used.

3. Common Product Development Methodologies

There are numerous types of project management and software development methodologies that project teams can use to manage through and organize their project activities, deliverables, scope, budget, schedule, and risks and issues.

3.1 Waterfall

The most traditional methodology is Waterfall and it is essentially a literal meaning from what we think of when using this term. Waterfall projects have a logical set direction of events that start from the top and work towards the bottom, there are set phases, milestones, governance processes, reporting, communications, and budget controls. Traditional PMI provides for a good structure within a waterfall methodology.

Critics of this approach find fault in it not being very flexible and its inability to account for changes quickly. Plus some organizations find waterfall very process, form, and governance heavy. A basic assumption of Waterfall is that all requirements can be gathered at the same time and at the very beginning of the project. However this often proves to not always be the case. Waterfall does provide for mid-stream scope changes, but it can be a challenge implementing those changes.

Project phases within Waterfall traditionally include:

- Initiation
- Discover/Design
- Build/Execution
- Testing (System, Regression, UAT)
- Rollout/Deployment/Pilot
- Close

3.2 Agile

Agile is built around the following approach:

- Best products are created by collaborative empowered teams, adaptive planning, and with continuous improvement practices.
- Processes are iterative and use a specific project management structure that is time boxed around the delivery of user stories (requirements).
- Uses frequent business inspection and reviews
- Relies on self-organizing teams, that strive to achieve superior results through collaboration

There are multiple Agile development methods in addition to Scrum, Feature Driven Development (FDD), Extreme Programing (XP), Dynamic Systems Development Methods (DSDM), Agile UP, and SAFe.

Agile's primary focus is around performing continual development and deployment of functionality so as to build upon a working system. Through these series of construct and deployments the application gains higher user functionality.

3.2.1 Agile Manifesto for Software Development

The creators of Agile came up with the following manifesto:

- Individuals and interactions over processes and tools
- Working software over comprehensive documentations
- Customer collaboration over contract negotiation
- Responding to change over following a plan

It's these 4 thoughts that underline every process and approach to Agile, if you understand them and apply them during the project you will be truly Agile.

The Agile manifesto principles are:

- Highest priority is to satisfy the customer through early and continual delivery of valuable software
- Welcome changes in requirements
- Working software is the primary measure of progress
- Business and developers must work together daily through the project
- Face to face conversations is the best
- Attention to technical excellence and design enhance quality
- Simplicity is best

At regular intervals the team reflects on how to become more efficient

3.2.2 Scrum

Scrum is an Agile software development process that: has only 3 roles, seeks to create usable code within each sprint, packages multiple sprints into a single release, performs multiple releases to create a complete application, manages through requirements using stories and product backlog, and has a series of ceremonies designed to create self-empowered teams.

3.2.2.1 Roles of Scrum

Product Owner:
Has the business knowledge, empowered to make decisions on behalf of the business unit, keeps other stakeholders updated on the progress, and develops requirements and user stories.

Scrum Master:
Facilitator, removes impediments, supports development team, provides metrics and statistics, maintains product backlog/burn down chart, and runs daily stand ups/demos/sprint planning sessions/release planning sessions/retrospectives.

Development Team:
Cross functional technical team, self-empowered, delivers quality product, follows agreed upon team rules and norms and participates in ceremonies.

3.2.2.2 Agile Scrum Ceremonies (Processes)

Standup:
15 minutes, entire team participates, topics of discussion are: what's been completed,

what's upcoming, and are there any impediments. Also provides a forum to interact with product owner, Q&A.

Sprint:

Usually 2 – 3 weeks, time box for accepted user stories, planned for with development team, ends with a product review and retrospective.

Sprint Review:

Team demos functionality created within sprint, receives feedback from the product owner, product owner may accept/reject stories as completed or ask for changes.

Retrospective:

Team discusses "what worked well, and "what did not work well", action plans are made around what did not work well and what should be changed going forward.

Product Backlog:

Lists the requirements, functionality and items to complete to reach the desired state for end user functionality. Should be maintained, visible, prioritized, and greater detail added for more important items.

Sprint Backlog:

List the stories that have been accepted by the team and approved by the product owner to be worked during the sprint.

Stories:

A very specific requirement that is written in the first person from the end users perspective "As a <user> I want the ability to ……."

Epic:

Large requirement that when decomposed into a story actually turns out to be multiple stories.

Acceptance Criteria:

States what you would expect to see within the application, provides for the end result, and can also list what test would need to be performed to validate the story has been executed correctly within the application.

Velocity:

Point system used to identify the relative complexity of each story that is then added to other story points to determine the work load for each sprint, and assists the team in to measure their sprint work load. Velocity then becomes a measurement of functionality that is completed in each sprint and release.

Burndown Chart:

A graphical representation of work left to do versus time. That is, it is a run chart of outstanding work. It is useful for predicting when all of the work will be completed. This can be used for each sprint or a release that would show the burndown for sprints within a release.

3.2.3 Reasons Why Agile Works

- Teams do their best work when they are interrupted less and dedicated to a specific task
- Teams improve most when they solve their own problems
- Face-to-face communication works best
- Having predefined team interaction points and an agreed upon structure provides for consistency and understanding within the team
- Teams are more productive than individuals
- The optimum size of a team is 7 – 9
- Changes in a team's composition ruins productivity

3.2.4 Common Problems to Avoid In Agile

- The product owner misses a lot of meetings or is not engaged
- The product owner lacks vision or an authority level to make decisions
- The product owner does not maintain a product backlog
- The product backlog is not sized, estimated or prioritized
- The team drops meetings
- Team accepts backlog items not ready
- Team poorly plans for each sprint or does not plan for releases
- No burn down chart
- Team does not perform retrospectives regularly or does not make changes based on retrospective findings
- The scrum master does not regularly participate in daily stand ups
- The scrum master does not remove impediments for the team
- The team has a member that does not participate well within a team environment

3.2.5 Aligning Agile With Traditional Waterfall

So at this point you maybe a little confused and asking yourself, "what PM methodology should I use for my project". Agile works really well for pure software development projects, its strength is having the business work closely with the technical team. Waterfall works really well when the project has both technical and business deliverables that need to be supported by a robust governance process with strong reporting requirements. If the project is mostly business deliverables with a small amount of technical deliverables waterfall would most likely be best.

Agile seems to break down slightly when there are large numbers of Agile teams that need to be coordinated within large organizations. SAFe (Scaled Agile Framework) provides for a methodology to scale up Agile.

If your project contains both software development and business deliverables that are immersed in a robust governance structure you can actually use both. This is also recommended when running commonwealth level projects. The Project Management Standard outlined governance process, required reviews, and approvals all can be managed effectively within a waterfall environment.

The actual software development activities can then be managed effectively within an Agile environment. A humorous term has been created that describes the merging of both Agile and Waterfall, WAgile.

The hybrid approach to take would be to list all waterfall and agile activities within a traditional project plan and schedule, with the governance process listed first to ensure all the required approvals are received.

The Agile (Scrum) releases and sprints can be also included in a traditional MS schedule to provide for planning, status reporting, and transparency. User stories and Epics can also be documented using waterfall requirements document templates.

Agile does provide for some reporting and recording tools like user stories, epics, burn down charts, packaging sprints into releases, and project management applications to supplement these that support Agile.

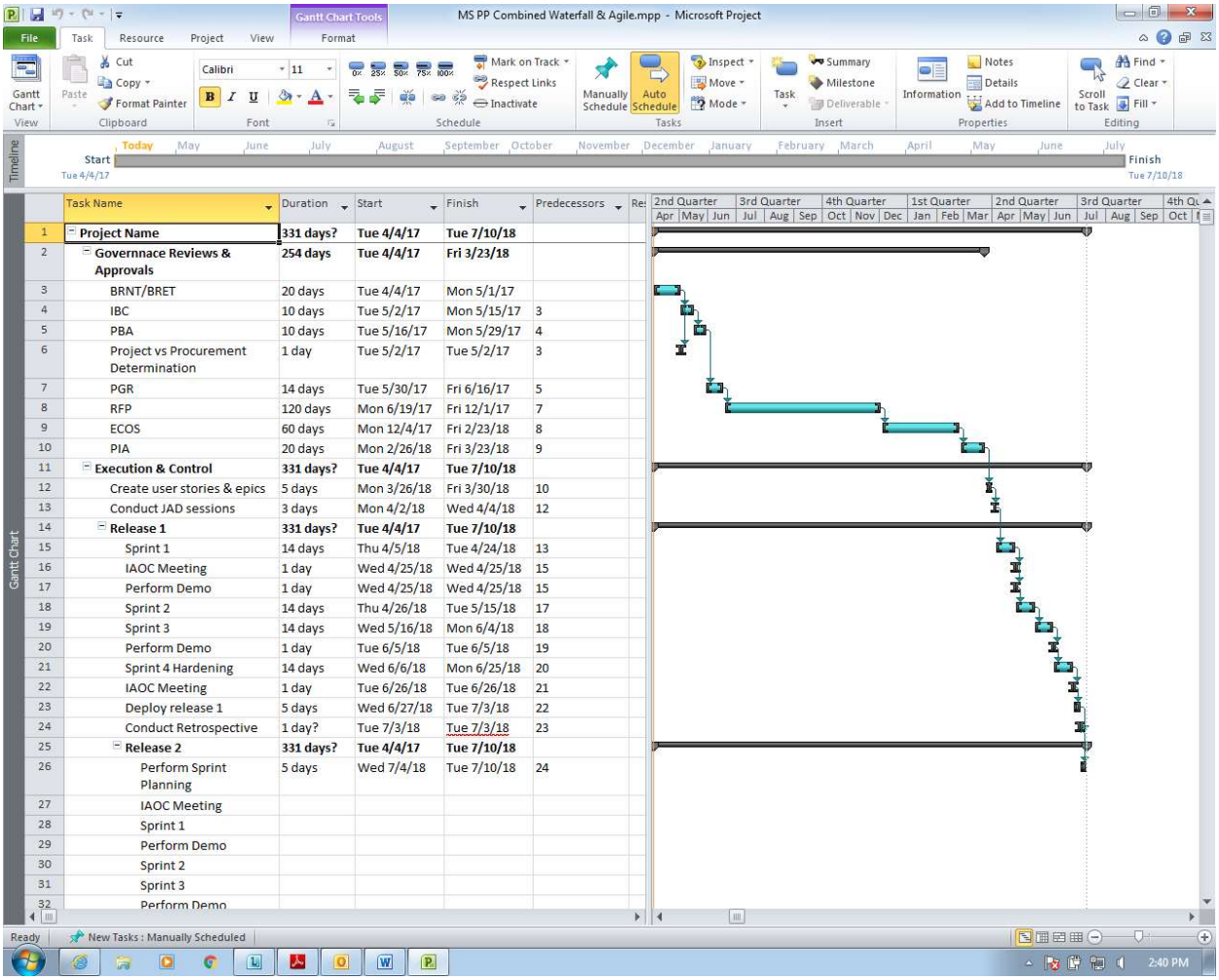


Figure 12 MS Project Schedule that combines both Agile (Scrum) & Waterfall example

3.2.6 Project Attributes for Using Agile

Please note that the Commonwealth of Virginia Program and Project Management Standards are required to be followed and that no other project management methodologies usurp these or replace them.

- Most often used for Software development project for agency and commonwealth level projects
- Technical resources are co-located with business
- Project resources involve small teams of diverse specialization
- Project budget, initiation, resources, and approvals have all been obtained and identified
- Agency has discussed adopting Agile, laid out an approach, discussed with business units this new approach having set expectations
- Agency has obtained Agile training for team members or has brought in experienced Scrum Master or Agile Coach
- Full functionality and end result of the system is not fully known upfront
- If using Agile for the 1st time recommend starting with development projects for existing application where new or expanded functionality is being added (start small)

- Project requires high flexibility

3.2.7 Project Attributes for Using Waterfall

- Project deliverables include a significant number of business deliverables or is considered an organizational change effort
- Complies well with the planning, reviews, approvals, and governance process
- Agency requires traditional documentation and project status reporting
- Project budget is high and would require more formal project controls and planning around the effort
- The need to create a more secure process due to using contract labor or technical resources floating in and out of the project
- If business involvement in the project is not there and business cannot commit dedicated resources to the effort than waterfall is a better approach
- Works best for static projects where most everything is well known
- A hybrid type of project management process can also be followed that combines styles from multiple methodologies

4 Project Management Organizational Structure

Project management organizational structure can have a significant impact on the success of any project. A clear description of the project management organization, coupled with well-defined stakeholder roles and responsibilities, is a prerequisite for project success. The most well-known organizational structures within the Commonwealth are projectized, functional, matrix, and mixed.

4.1 Projectized Organization Structure

The projectized organization typically includes dedicated, full time team members with different skill sets that stay together, as a cohesive unit, for the life of the project. The project manager has the most authority in the projectized organization.

Advantages of the Projectized Organization

- Clear lines of authority, the project manager has full authority
- Response to customer and stakeholder issues are faster and clearer
- Skilled project team can support several successive projects of the same type
- Timely decision-making
- Organizational structure is simple, flexible, and easy to understand.
- Project is managed holistically

Disadvantages of the Projectized Organization

- Expensive approach because of the duplication of personnel
- Equipment and personnel may be horded to ensure access to those resources
- Team members lose access to a repository of functional or technical expertise
- Team members may be anxious about post-project work not yet defined

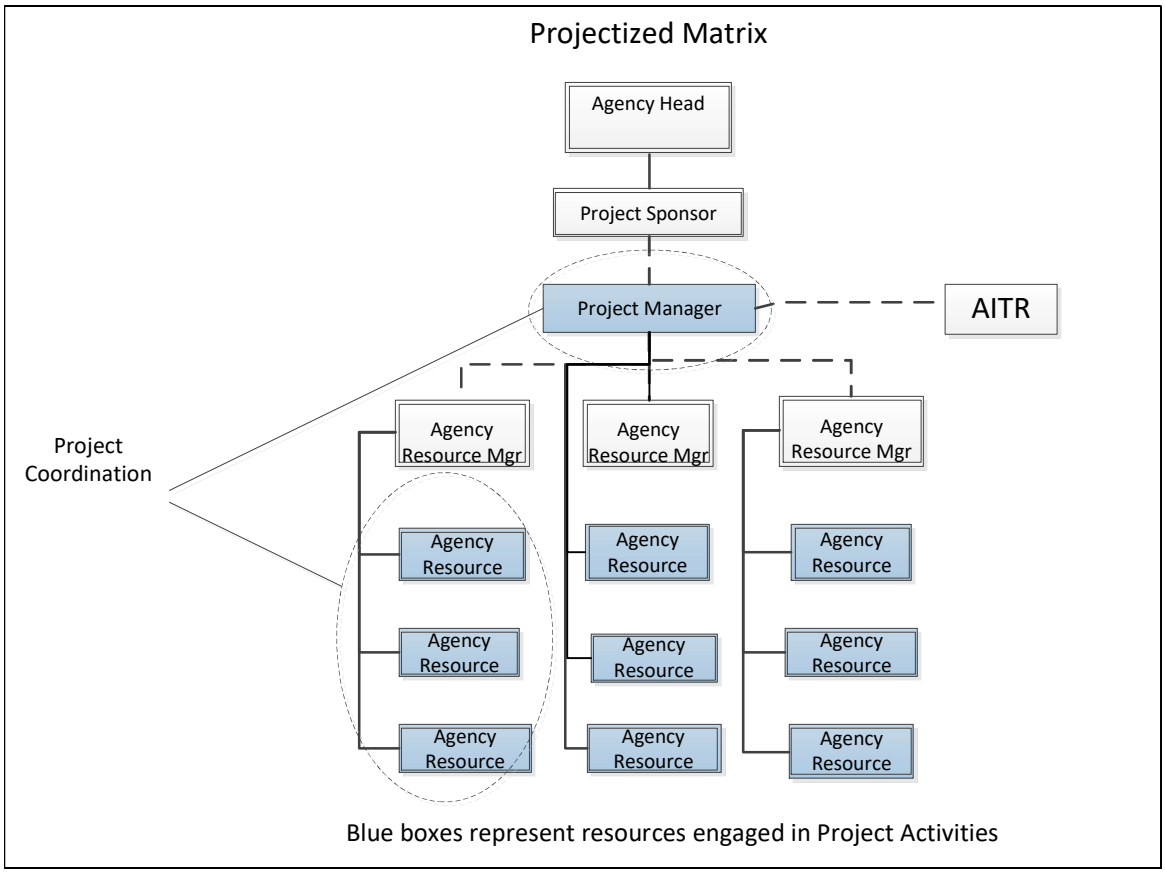


Figure 13 Projectized Matrix

4.2 Functional Organization Structure

The functional organization is a hierarchal organizational structure where project team members are grouped by specialty (i.e. marketing, accounting, etc.): have a clear line of authority, and have one superior within their functional organization.

In a functional organization, the line of authority normally goes from the project manager, through a functional manager, to the project team member. The project manager's direct authority over the project team is limited.

Advantages of the Functional Organization

- Flexibility in the use of staff
- Subject Matter Experts (SME) available to work on multiple projects
- Knowledge and experience readily shared between functional specialists
- Technical continuity exists within the organization
- Clearly defined professional growth and career paths for the staff

Disadvantages of the Functional Organization

- Project customer is not the only focus
- Organization does not focus on solving project business issues
- Project does not have a single individual responsible for all aspects of the project
- Response to customer needs is slow and difficult

- Project issues are not all given the same level of attention
- Project is not managed holistically

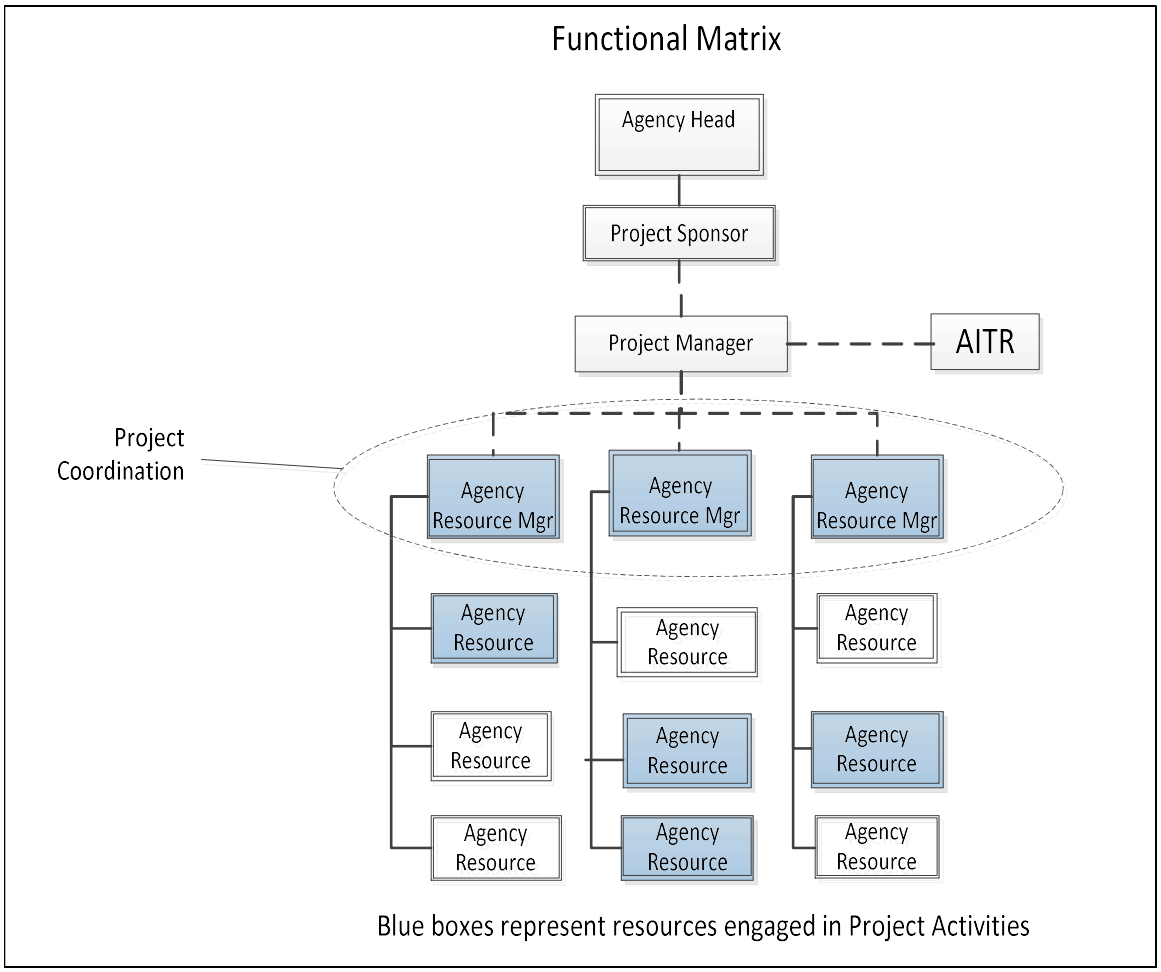


Figure 14 Functional Matrix

4.3 Matrix Organization Structure

Matrix organizations are a combination of projectized and functional organizations. It is an organization in which project team members are —borrowed from their functional organizations to work on a specific project and then returned once their part of the project has been completed or their skills are no longer needed.

There are three different types of matrix organizations:

Weak Matrix

- Similar to functional hierarchies in which a project manager borrows an employee from a functional discipline to do work on a project.
- The project manager‘s responsibilities are more coordination and expedition than actual management.

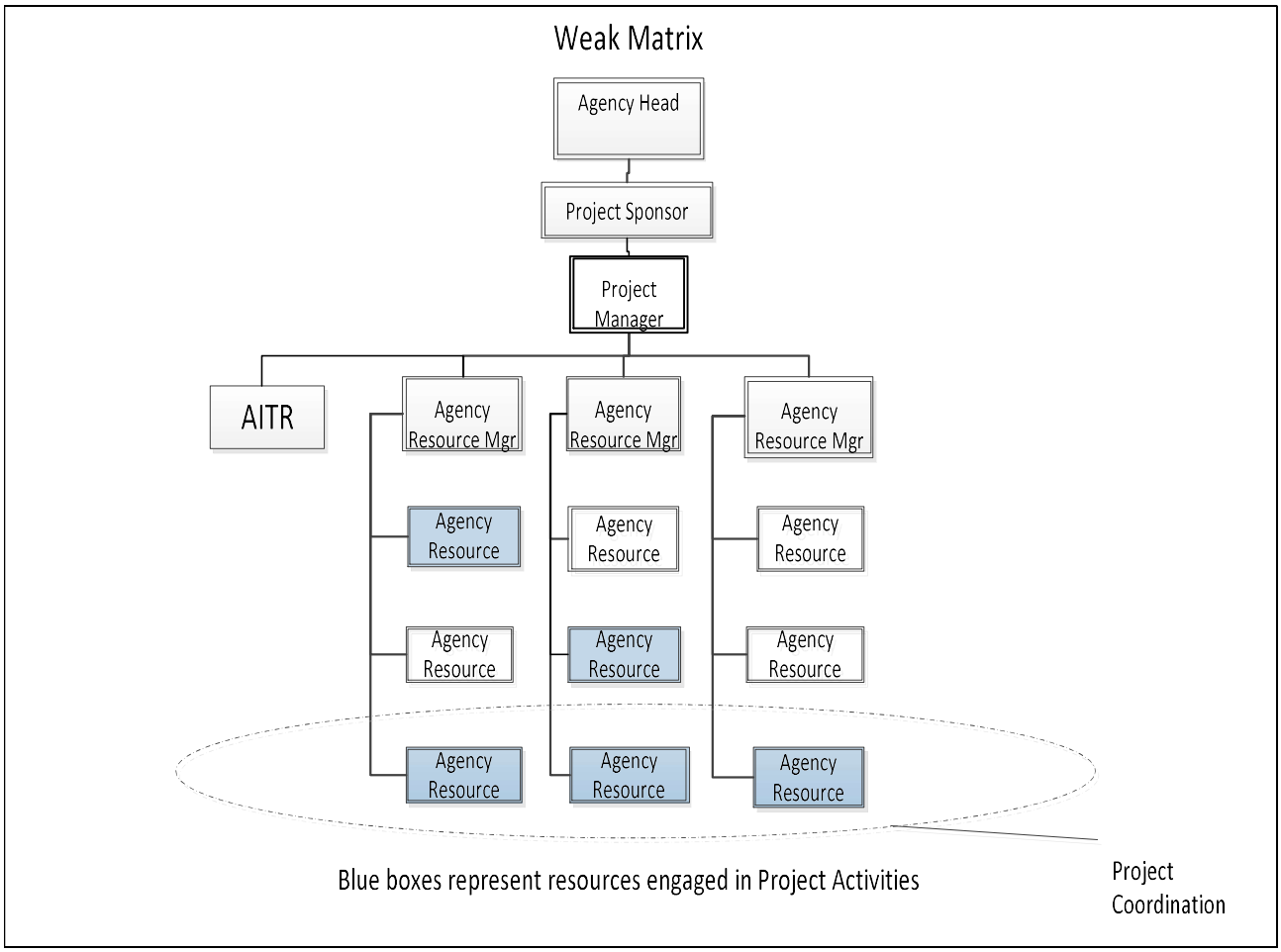


Figure 15 Weak Matrix

Balanced Matrix

- A combination of weak and strong matrix organizations.
- In a balanced matrix, the project manager borrows staff from a functional organization on an as needed basis.
- The borrowed staff works directly for the project manager until their project tasks are completed.
- In this model, the project manager has authoritative power over management of the project effort.

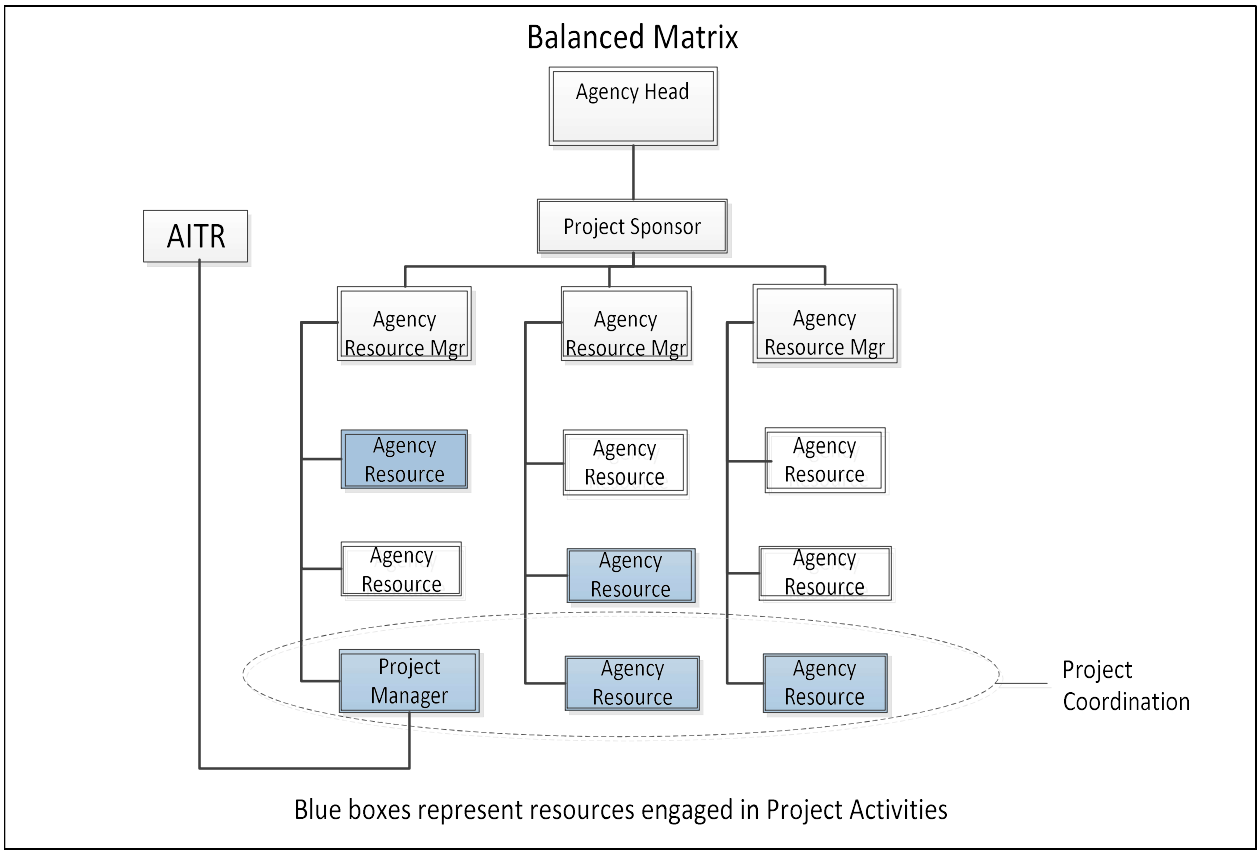


Figure 16 Balanced Matrix

Strong Matrix

- Similar to projectized organizations.
- In the strong matrix organization, a project manager has a full time staff borrowed from functional disciplines for the duration of the project.
- In this model, the project manager has full authoritative power over management of the project effort and the people assigned to the project.

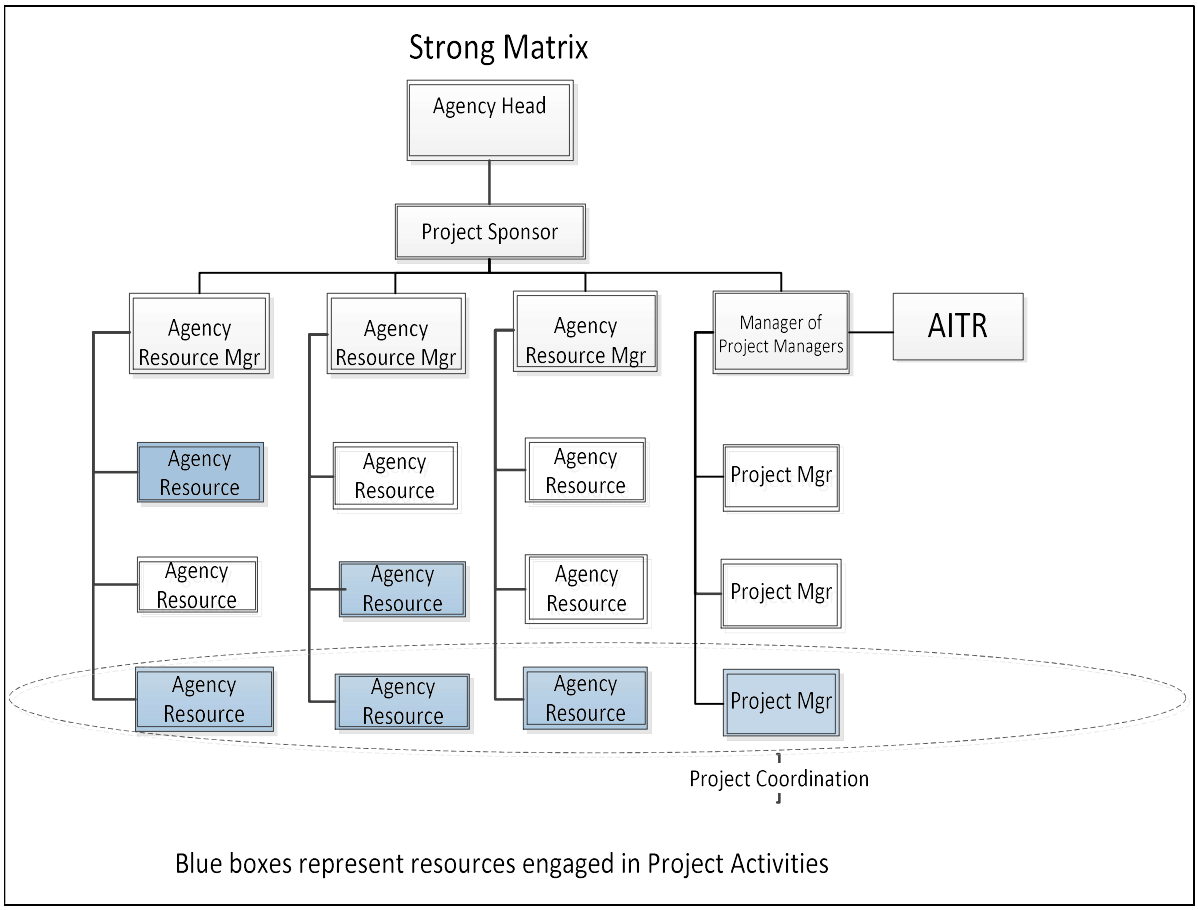


Figure 17 Strong Matrix

Advantages of the Matrix Organization

- Central focus is the project
- Project managers have access to a large reservoir of technically skilled people
- Project team members have less anxiety about the future
- Customer issues are responded to quickly.
- Administrative personnel are not duplicated in each project team
- Resource balancing between projects is simpler and more efficient
- Project team organization is more flexible

Disadvantages of the Matrix Organization

- Person with decision making power is not always clearly identified
- Resource balancing between projects can lead to friction
- Project closeout tasks are often difficult in strong matrix organizations
- Division of authority and responsibility is complex

5 PMOs (Project Management Office)

PMOs come in all sorts of different configurations, makeups, and areas of focus. PMOs generally provide for a center of excellence in project management along with a governance process that supports project efforts. According to PMI a PMO is a management structure that standardizes the project related governance process and facilitates the sharing of resources, methodologies, tools, and techniques. In most organizations PMOs roles range from: directly managing project managers and their projects, to providing training, tools and templates, and a governance structure.

Here are some of the more significant reasons why organizations will form a PMO:

- To improve the management of all projects
- To standardize business & IT processes
- Improve project timelines and delivery quality
- Help the organizations pick the right projects, programs, and investments
- Help IT business alignment
- Manage IT components of one or more large programs

5.1 Types of PMOs

Supportive

Provides for a consultative role to projects by supplying mentoring, best practices, training, access to information, templates, and project guidance. Supportive PMO's do not directly manage projects or the project managers.

Controlling

Provides for support plus requires compliance. This compliance involves adopting a specific project management framework, the use of specific templates/forms and tools, and a compliance to a specific governance process.

Directive

Takes control of the projects by directly managing the projects.

However, organizations have morphed standard PMOs and their characteristics to their individual needs changing things like; roles, responsibilities, titles, and areas of focus. The latest trend in PMOs are for organizations to have multiple PMOs both in IT and business with an enterprise level PMO that can manage the smaller PMOs along with the larger organizational change projects.

Gartner also provides for a frame work of different types of PMOs. This frame work has 4 PMO types:

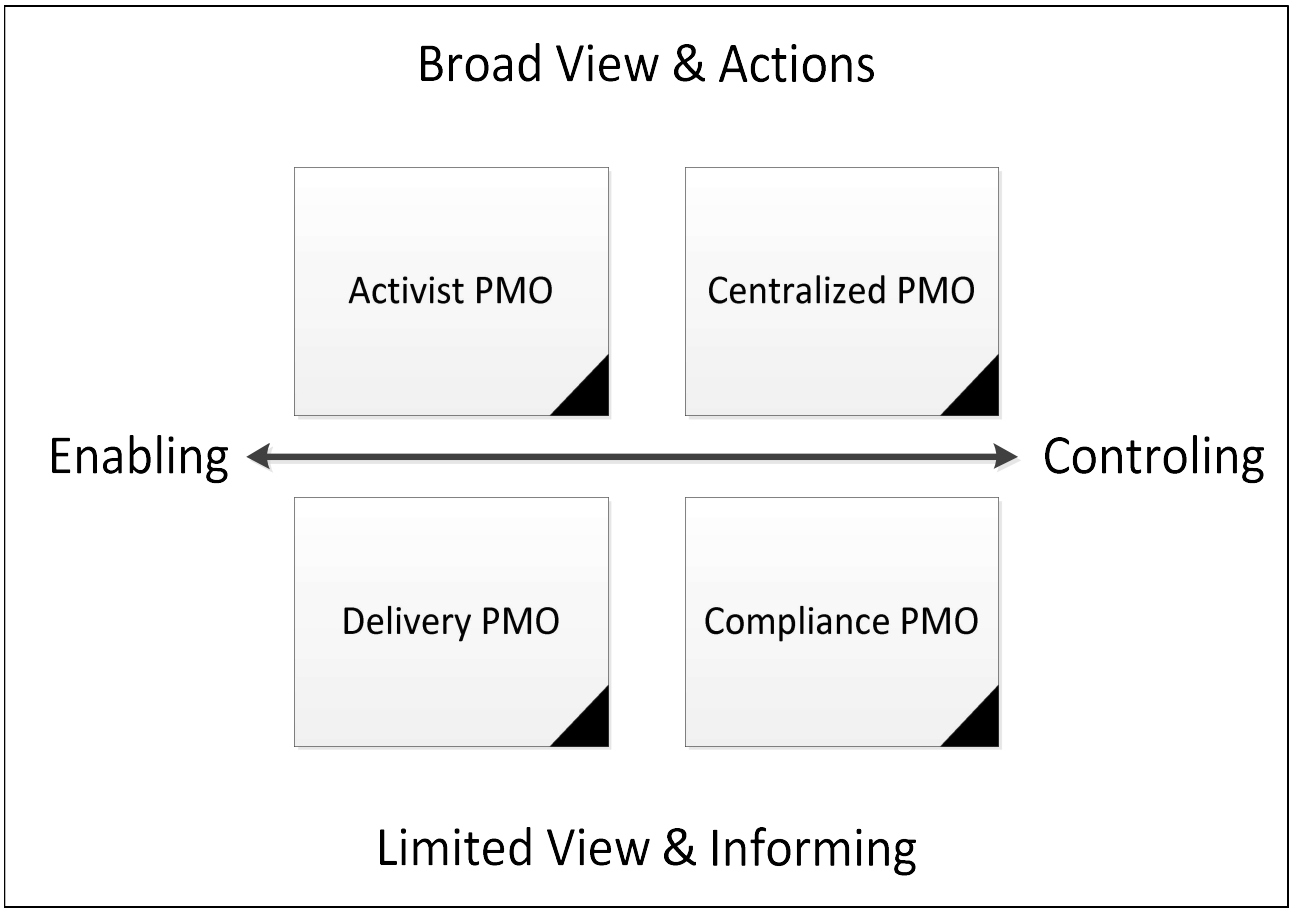


Figure 18 Gartner frame work of different types of PMOs

5.2 Characteristics of a Successful PMO

- Supports project managers
- Manage shared resources across all projects administered by the PMO
- Develop project management methodology, best practices, templates, and standards
- Provides for coaching, mentoring, training and oversight
- Perform monitoring and controlling associated with the standards, policies, procedures, and template use
- Coordinate communications between projects
- Provide for a change control process
- Provide for a project governance and approval process, tollgates, and project reporting
- PMO focuses on managing the portfolio of project and programs while the project manager focuses on individual projects
- Works with the project managers to understand organizational risk, major issues, and project interdependencies
- Works directly with the organizations leadership team understanding the list of desired projects, prioritizing them, and road mapping future projects
- Performs feasibility studies for the organization around what the effort would be to perform a prospective project
- Provides for reoccurring project updates rationalizing the health of the portfolio to the leadership team

5.3 Why PMOs Fail

According to PMI in 2000, 47% of organizations surveyed had a PMO, by 2012 that number had risen to 87%. PMI also shares that 3 out of 4 PMOs will partially fail or even be dissolved altogether. It's interesting to see that contradiction between organizations understanding the benefit of a PMO vs being able to create a sustainable project structure.

Once stood up PMOs come under immediate pressure from within their own organization with a constant push to do more with less, an ever increasing need for the PMO to increase their scope and responsibility, along with PMOs struggle to meet initial very high expectations of quick successes and instant resolution of all things project related. According to PMI, 25% of PMOs fail within their 1st year and 50% within their 2nd year.

PMOs are created for a variety of reasons and purposes so there is no one single list of all the reasons a PMO may fail, however here is a list of possible points of failure:

- Inexperienced PMO staff
- Inexperienced project managers
- Unrealistic stakeholder expectations
- Mismanaged stakeholder expectations
- PMO is perceived as offering no real value or even part of the problem, whatever that "problem" maybe
- PMO is perceived to having red tape or is inflexible
- PMO scope and boundaries are not articulated nor understood within the organization
- PMO process are complicated, dense with layers of governance, and is confusing to both the project management staff and user community
- PMO lacks a senior level support or is managed by a level that is too low within the organization to garner recognition
- PMO lacks the ability to manage project resources or to understand organizational capacity limits for effectively executing projects successfully
- PMOs that focus more on self-preservation than on organizational value
- PMO has no voice in project and portfolio rationalization decisions
- PMO was established for the wrong reason
- PMO becomes a victim of having to "do more with less", project teams become stressed and overwhelmed
- Lack of transparency, communication, leadership, and interpersonal skills within the PMO

5.4 Steps to Follow to Establishing a Successful PMO

- The PMO's structure, funding, and processes need to be based on its mission, scope, areas supported, and number of projects it intends to support
- Create a PMO charter; resources, budget, in scope, out of scope
- Have the PMO report to a senior leader
- PMO manager should be of sufficient level as to ensure the group is represented in the senior ranks
- ID short term objectives
- ID long term objectives
- Establish a project management structure, governance process, and communications plan that is vetted within the organizational and approved by its senior leadership
- PMO should establish project performance metrics to identify the value of the PMO provide to the organization

- The PMO should lead the portfolio planning process and establish a project pipeline
- The PMO needs to quickly understand the organizational capacities to staff projects and endure those are well known and followed
- PMO needs to establish simple project management processes that are easily followed and understood
- Each project manager needs to adhere to the project management process allowing for each project team to become familiar with it and expect it for each project going forward
- PMO needs to be flexible and allow for more simplified process for small projects
- The PMO should help the organization decision through if a failing project should be canceled

Overall an effective PMO needs to have a clear vision, strong competent leadership, a consistent approach, well defined roles and responsibilities, strong risk management, and great professional (non-emotional) communications with transparency.

6 Project Roles and Responsibilities

Clearly defined project roles and responsibilities provide each individual, associated with the project, with a clear understanding of their specific role in the project and the other project team member's roles and responsibilities.

6.1 Stakeholders

Stakeholders include all individuals and organizations having a vested interest in the success of a project. Stakeholder participation helps to define, clarify, drive, change, and, ultimately, ensure the success of the project. To ensure project success, the project management team must identify stakeholders early in the project, determine their needs and expectations, and manage and influence those expectations over the course of the project.

6.2 Agency Management

Agency management includes those individuals responsible for the core business activities of the agency. Within the context of the agency strategic plan, agency management identifies the need for a project, assess project risk, and request approval of the project from the appropriate investment management authority.

6.3 Customers

Customers are the ultimate users of the product or service the project will deliver. They could be, for example, Commonwealth employees, businesses, or citizens.

6.4 Internal Agency Oversight Committee (IAOC)

The Internal Agency Oversight Committee provides recommendations to executive management regarding project initiation or continuance, management, baselines (performance, cost, schedule and scope), periodic reviews, and any additional follow-up actions required to ensure the success of the project. Members should be defined within the project Charter within Commonwealth Technology Portfolio system (CTP). Sample tools & templates can be found on the VITA PMD site for sample IAOC project status update meetings. Oversight board members have different roles and responsibilities as well as authority levels. An IAOC member's authority may vary and this could mean that not all members have voting rights.

6.5 Program Manager

Established by business leaders, program managers are responsible for oversight, coordination, and integration of a group of related projects. Program managers manage resources across projects within a program and review projects for compliance with established standards. Additionally, the program manager provides guidance and supports the development of an enhanced project management capability.

6.6 Project Manager

The project manager is the person assigned by the performing organization to achieve the project objectives. The project manager facilitates the change process ensuring the project delivers the documented scope, on time, and within budget. The Project Manager is the person responsible for ensuring that the Project Team completes the project. The Project Manager develops the Project Plan with the team and manages the team's performance of project tasks. It is also the responsibility of the Project Manager to secure acceptance and approval of deliverables from the Project Sponsor and Stakeholders. The Project Manager is responsible for communication, including status reporting, risk management, escalation of issues that cannot be resolved in the team, and, in general, making sure the project is delivered in budget, on schedule, and within scope.

6.7 Project Sponsor

The Project Sponsor is part of the agency management team, makes the business case for the project, and works directly with the project team during the project. There may be multiple project sponsors from different agency departments and areas of responsibility. This individual usually has the authority to define project goals, secure resources, and resolve organizational and priority conflicts. The Project Sponsor needs to be someone who has the authority to secure resources and resolve organizational and priority conflicts. However, you may need a business owner, who will ensure availability of resources at critical points in the project plan and ensures that tasks are completed on time. The business owner ensures achievement of what is defined in the business case and ensures the solution meets the needs of the business.

The Executive Sponsor is a stakeholder with interest in project deliverable(s) and is ultimately responsible for securing spending authority and resources for the project. The Project Sponsor and/or Project Director is a manager with demonstrable interest in the outcome of the project who is responsible for securing spending authority and resources for the project. The Project Sponsor acts as a vocal and visible organizational change champion, legitimizes the project's goals and objectives, keeps abreast of major project activities, and is a decision-maker.

Examples of people that might be sponsors:

- Agency Executive Team, or Senior Managers
- Agency Board Members
- Agency Heads/Presidents
- Controller
- Department Managers

Sponsors are accountable for the project success, for this reason, the Sponsor selection process is an important component within the project. Therefore, when selecting a Sponsor/s, the following attributes are suggested to achieve the project objectives and its goals:

- Understanding with the company's business processes
- Human resource commitment
- Project expenditures
- Executive reporting
- Ability to provide the needed time commitment

- Has the authority level to make the needed decisions
- Can work with the other leaders when needed for key decisions
- Has the ability to work within the team to achieve the projects goals

An effective Sponsor/s must be able to commit the time required for the life of the project and establish realistic goals for time and effort. This includes participating actively and being visible within the project. It also includes declining new initiatives that may reduce committed time for the current project. A Sponsors key objective is to ensure that IT projects deliver on business requirements. They must understand that a coalition of leaders from other areas of the organization will aid in communicating change throughout the organization. With this, developing unambiguous reporting and communicating through a formal channel of communication is an essential part of the Sponsor's role.

6.8 Project Team

The Project Team is the group of people that work together to plan, execute, and deliver the project scope. The Project Team Members are responsible for executing tasks and producing deliverables as outlined in the Project Plan and directed by the Project Manager, at whatever level of effort or participation has been defined for them. On larger projects, some Project Team members may serve as Team Leads, providing task and technical leadership, and sometimes maintaining a portion of the project plan.

7 Project Management Light

The project manager is responsible for management of all aspects of the project. From an overall perspective, the project manager ensures the project is on time, within budget, and delivers a product or service at an acceptable level of quality. Below are guidelines to assist with the project management of Agency level projects ≤ $250,000.

Although formal VITA reporting and oversight aren't mandatory at this level, it's beneficial for tracking and documentation purposes to view/print/complete Project Management forms from CTP or the VITA website e.g.; Project Charter, Schedule, and Budget and Scope Statement (For each project).

Best practices to follow while performing smaller size projects with low complexity and costs:

- Identify participants and their roles.
- Identify potential project team members as well as Stakeholders (Users that will be affected by the final product or service) and Sponsor (senior executive responsible for completion).
- Ensure Sponsor is engaged and has signed the Project Charter
- Assess qualifications and experience of the planned project team members (Resource Plan).
- Assess qualifications and experience of each team member as they pertain to the specifics of the project.
- Keep in mind the importance of team players, and the ability to get along with others.
- Conduct a project kick-off meeting.

Officially start the project with a meeting of all parties involved.

- The project team should be introduced, the milestones reviewed with estimated completion dates and expectations for level of participation should be outlined.
- Complete a detailed project schedule along with milestones, activities, resources, start and end dates.
- Identify Risks associated with the project.
- Also create a plan of action for all Risks identified; avoid, mitigate, or accept.
- Establish an issues control tracking system.

Establish a method by which all issues pertaining to the project are recorded and can be reviewed regularly and tracked by the project team.

- All issues should be assigned an owner and eventually have documented a resolution.
- Establish reoccurring project team meetings and a stakeholder update meeting schedule.

Periodic participant update meetings should be incorporated into the work plan, to present current progress to Sponsors and Stakeholders.

- Follow your project schedule.
- Track, Manage and Obtain Approval for ALL Changes.
- Document lessons learned and feedback THROUGHOUT the entire process.

- Lessons learned are documented and distributed so that they become part of the historical database for both the project and performing organization.
- Establish testing (system, regression, performance, UAT) and possibly a pilot prior to actual full rollout.
- Work with the business sponsor in developing a rollout plan along with user training, communications, and a deployment plan with the technical team.

8 Additional PM Tools, Techniques & Best Practices

8.1 Requirements

Defining and documenting requirements is one of the most significant functions of a program, project or standalone procurement. If the requirements are not properly identified, the project has failed before the official start. To ensure that all requirements are captured the team must take the necessary steps to accurately collect the requirements. Gathering requirements are accomplished through a set of formal and informal meetings designed to extract information from key stakeholders and SME's.

Facilitated works shops, interviews, focus groups, and questionnaires are a few proven methods to documenting and managing stakeholder's needs.

The stakeholder's, their needs, and desired functionality are the driving reason for the Requirements can fall within different areas and can include:

- Legal requirements
- Government regulations
- Environmental factors
- Business requirements
- Current and future technical needs, and future scalability

When first approaching the gathering of requirements a Project Manager should develop a Requirement Management Plan. This is a best practice and should describe how requirements will be analyzed, documented, and managed. The Requirement Management Plan components include configuration management activities, requirements prioritization, product metrics, and the traceability structure. The development of this plan will support the creation of the critical remaining project artifacts and documentation (acceptance criteria, test cases, QA plan, schedule, and budget).

The process of developing requirement documentation consists of categorizing each need into different types of components (e.g., business, project, solution, technical, etc.). By categorizing the individual requirements into groups it makes it easier for the team to understand them, communicate them, seek approvals, and ultimately provide them to the technical team for coding and delivery within a technical solution.

A helpful tool for documenting and organizing requirements is a Requirements Traceability Matrix. This is a grid that links product requirements with their origin to the deliverable that satisfies the acceptance criteria.

ID	Assoc ID	Technical Assumption(s) and/or Customer Need(s)	Functional Requirement	Status	Architectural /Design Document	Technical Specification
001	1.1.1					
002	2.2.2					
003	3.3.3					

Figure 19 Requirements Traceability Matrix Example

9 Project Communications

A large part of what a Project Manager does can be wrapped up into "Communications", and the more effective a Project Manager can be in performing communications will help to ensure a successful project. In a previous section this document covered Communication Planning and throughout this document there are references to different forms and types of communication.

Project communications usually focus on; scope, schedule, budget, risks, issues, and resource management.

Types of project communications include:

- Meetings & meeting minutes
- Conference calls
- E-mails
- Status reports
- Planning documents
- Requirements
- Schedules
- Tollgates
- Forms
- Templates
- Governance processes
- RFP's
- Contracts
- Planning sessions
- Team meetings
- Retrospectives
- Lessons learned

9.1 Conference Call Best Practices

Managing a project team of resources typically involves conducting many conference calls and meetings. To keep everyone engaged and focused, project managers should include one of these 10 great ideas for conference call activities to encourage team building and motivation.

To optimize the experience for all participants, project managers should establish some meeting rules at the beginning of each project, such as keeping phones on mute when not speaking, using a headset rather than a speaker phone, and calling in promptly to every call to avoid wasting valuable time.

Project managers need to set an agenda, send review documents or other project information in advance, and verify attendance at the beginning of each call. Limiting the agenda to one or two topics for a one hour call ensures all input can be accommodated. Acknowledging that the call may occur at an inconvenient time in some time zones creates an atmosphere of respect.

Here are some suggestions to keep conference calls interesting and engaging:

- Using Icebreakers
- Making Introductions Interesting
- Conducting Breakout Sessions

- Running a Poll, asking for feedback during the meeting
- Playing a Trivia Game
- Using Brain Teasers

9.2 Meeting Minutes

The point of having a meeting is to move forward, whether in trying to gain understanding, get buy-in, or develop an action plan. Meeting minutes play a critical role in helping team members remember what was said and what's next. They describe specify what was discussed and decided in a meeting, providing a permanent record of the meeting for future reference. They tend to include an overview of the structure of the meeting. Meeting Minutes are generally distributed shortly after the meeting ends.

When taking minutes you should record the following:

- The start and end time of the meeting
- Attendees
- Amendments to previous minutes
- Actions items and next steps
- Decisions made
- Summarize discussion
- Items to be held over for further discussion

9.3 Status Reporting

The project status report is a means of communicating regularly the ongoing progress and status of a project. The overall project status is communicated to all team members using the project status report. The same report may be used to communicate the project status to managers and other stakeholders. Key project team members generally produce the project team‘s status reports on a weekly, or biweekly, basis.

The information shared in the Status Report should be in a consistent format throughout the project. The types of reports a particular project uses may vary in detail and metrics required but the basic format remains consistent across all projects.

Types of project metrics that can be found on a status report include:

- Overall budget; spent, complete, in process, not funded
- Schedule by project phase; % complete and in process
- Milestones completed, upcoming milestones, and those that are currently in flight
- Activities completed, major upcoming activities being planned for
- Scope delivered and scope being worked on
- If in testing, testing metrics – test cases planed for, test cases completed, test cases remaining, # of defects (major, minor), defects that cannot be fixed
- Risks, categorized by priority, avoidable, mitigated, accepted
- Issues, those that are major, open, and closed. Who owns them
- Status indicator for the project and if possible other areas of focus; budget, risks, scope, schedule
- Change requests, total # to date, # approved, list those currently inflight, rejected
- Project resources
- Total % complete of the overall project

9.3.1 How & When to Report on Project Status

Reporting methodology and group contact information should be referenced in the Communication Plan.

- Email updates to the project team on a recurring basis, preferably weekly
- Email updates included in meeting notes to remind the team of the projects status
- Verbal interactions with the project team during the normal course of project activities
- Using a standard template during reoccurring project meetings so that the team gets to familiarize themselves with the artifact and become used to it and expects that level of detail
- Project sponsor update meetings
- Project planning meetings to help the team orient on the project
- It's a best practice to establish and maintain a recurring project meeting with the larger project team that's devoted to project status updates, reviewing dependencies, risks, issues, and planning for upcoming activities

9.3.2 Measuring Progress

When looking to measure progress within a project environment, its best to establish a baseline. The baseline is a target for scope, schedule, and budget that provides for a measurement of progress and success.

The base lines need to be agreed upon by the project team to ensure they take ownership of them. Project baselines are the same list as outlined above in "Types of Project Metrics".

The organizations PMO should establish a % deviation that is acceptable for the baselines so the project teams understand when they have reached critical points of failure.

9.3.4 Examples of Project Status Reports

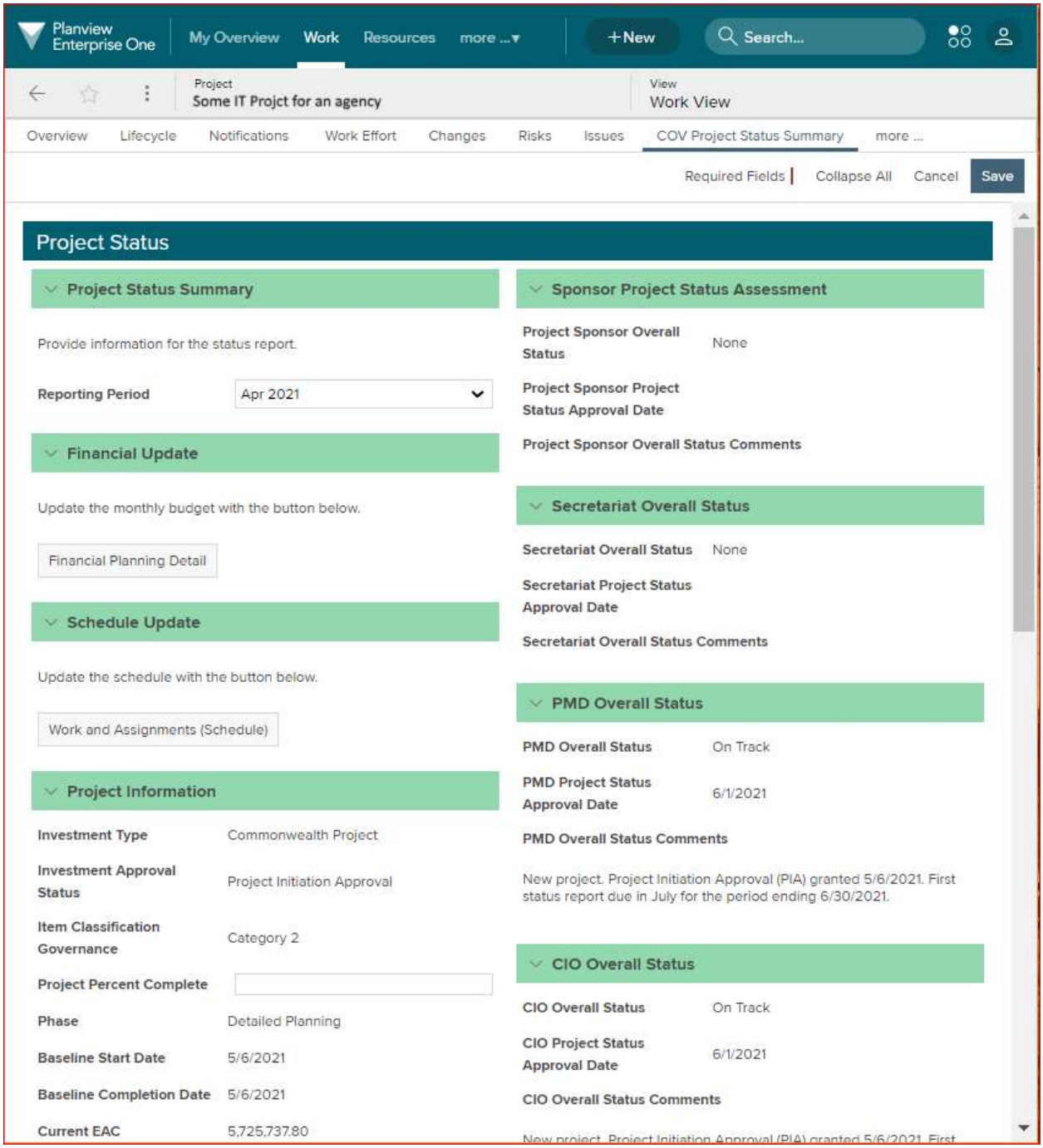


Figure 20 Project Status Report Example 1 in CTP

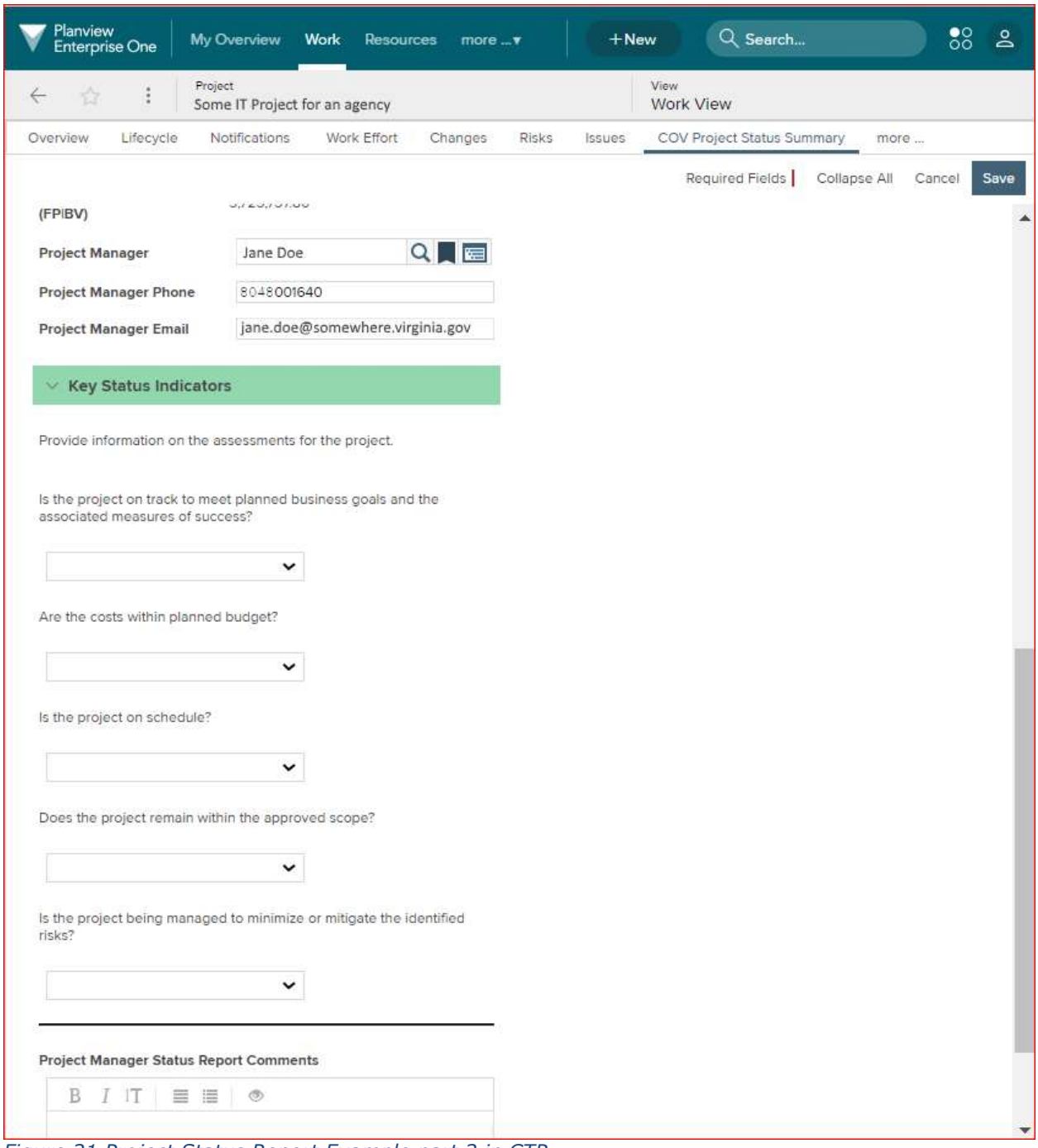


Figure 21 Project Status Report Example part 2 in CTP

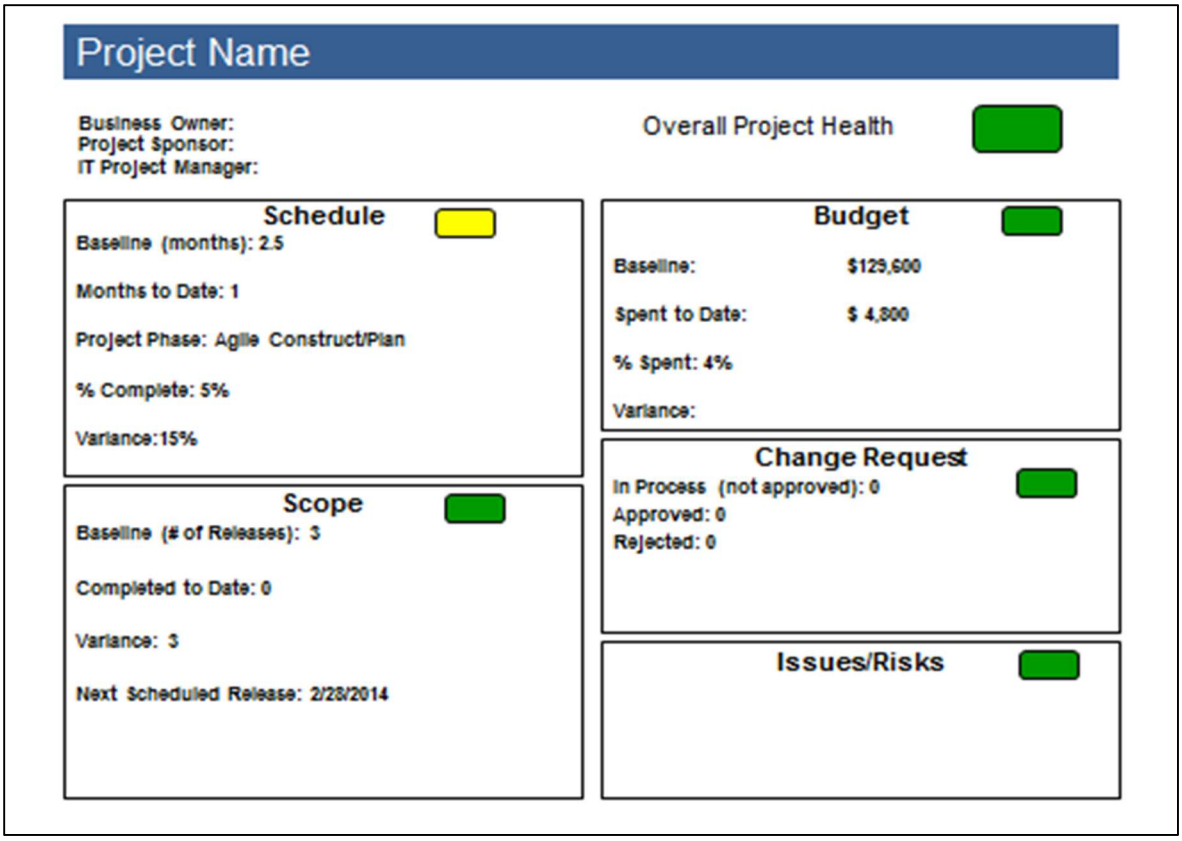


Figure 22 Example of Blocker Style Status Report

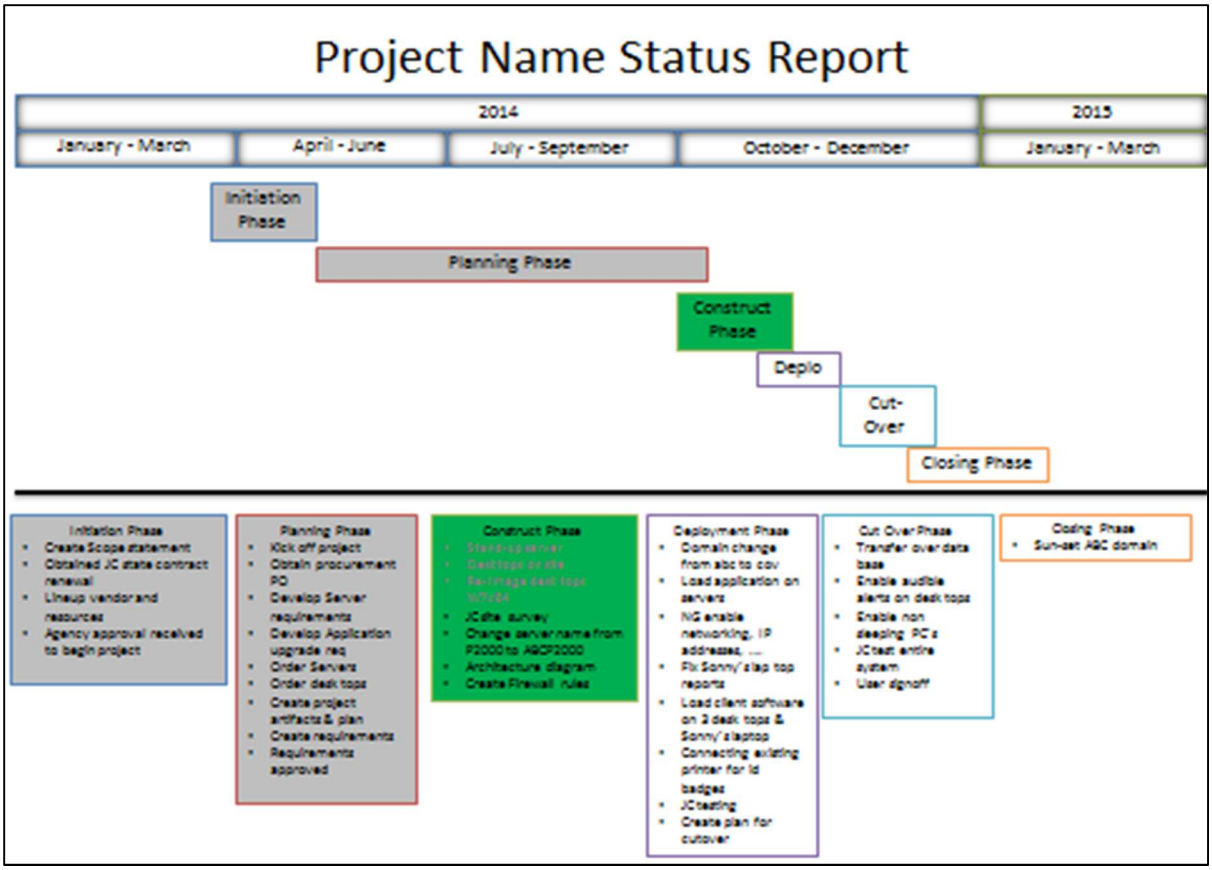
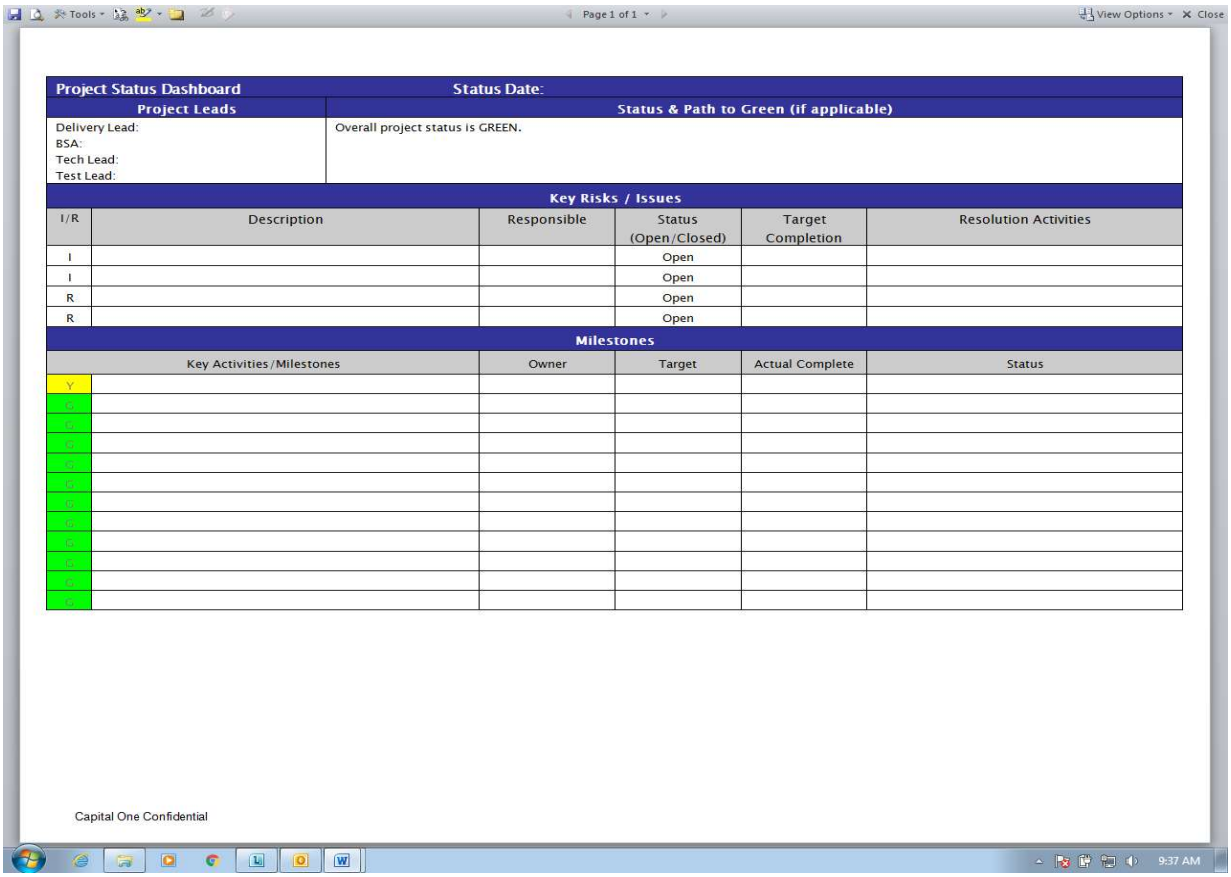


Figure 23 Example of a Timeline Style Project Status Report



Project Status Dashboard	Status Date:
Project Leads	**Status & Path to Green (if applicable)**
Delivery Lead: BSA: Tech Lead: Test Lead:	Overall project status is GREEN.

Key Risks / Issues

I/R	Description	Responsible	Status (Open/Closed)	Target Completion	Resolution Activities
I			Open		
I			Open		
R			Open		
R			Open		

Milestones

	Key Activities/Milestones	Owner	Target	Actual Complete	Status
Y					
G					
G					
G					
G					
G					
G					
G					
G					
G					
G					

Capital One Confidential

Figure 24 Example of a Condensed List style Project Status Report

10 Team Collaboration Tools

The following applications listed below are available to you to better enable collaboration among your project teams.

Table 2 Team Collaboration Tools

Application	Scope	Positive	Negative
Commonwealth Technology Portfolio (CTP)	The Commonwealth application that is used for project governance, reviews, approvals, IT strategic planning, and procurements over $250,000.	Mostly a governance application used for IT portfolio management Creates a gateway for IT teams to initiate and complete reviews, approvals, and governance processes	Not a tactical day-to-day project management tool Requires a license and training
SharePoint	Allows groups to set up a centralized, password protected space for document sharing. Documents can be stored, downloaded and edited, then uploaded for continued sharing. Provides for risks, issues tracking, status reporting, and other project tools.	Easily learned Provides for collaboration	Does not replace a robust project management application
MS Project	Used for project planning, creating tasks, milestones, tracking progress, and resources.	Almost universally used for project scheduling	Can become so detailed only the Project Manager can decipher it. Some project teams don't like using them due to their complexity
MS Word	Great for creating charters, scope statements, and other project artifacts that are narrative in nature.	Everyone recognizes Word Great for creating simple templates	No direct connectivity with a formal project management application
MS Excel	Common platform for spreadsheets, creating lists, and	Common platform and very well	Standalone application not

Application	Scope	Positive	Negative
	performing financial calculations.	accepted in both IT and business Very flexible for reporting, gathering requirement's, making lists, creating graphs and charts Common format for exporting and importing of data	directly link to any other systems
MS One Note	Gather, organize, find, and share meetings notes and information. Linked to Outlook	Provides for an organized way to store and retrieve meeting notes within outlook	
MS Visio	Used to create simple or complicated diagrams and process flows	Easy to use and learn quickly	Not everyone has the application so sharing Visio documents can become cumbersome
MS Lync	Used for instant messaging, conferencing, sharing of desk tops, and voice communication.	Simple to use Easy one step connectivity	Basic functioning
MS Outlook	Provides for email, calendar organization, sharing of calendars, and meeting scheduling	Very common platform	
Live Meeting	Provides for remote web based conferencing capabilities. Content can be shared amongst users	Effective collaboration tool for non-co-located teams.	Software has to be downloaded to host or attend with this software

10.1 Kanban Project Management for Virtual Teams

If you are managing projects and tasks across a virtual team, you need a more sophisticated approach to project management than just a to-do list. Kanban project management for virtual teams is a powerful, flexible, and collaborative solution that systematically helps teams work smarter, not harder.

Kanban is a remarkable tool to use because of the productivity increase it yields after a small effort to centralize and streamline the work. In a matter of minutes, your team can turn a mess of projects and tasks into an actionable, shared view of what's recently completed, currently in progress, and coming up next.

Figure 25 Kanban Board example

Kanban project management can increase delivery speed and program success for virtual teams.

If you've been looking for a better way to align around work with your distributed team, there isn't a better tool than a robust digital Kanban board. In this guide to Kanban project management for virtual teams, we'll share tips, tricks, and examples to help you get your team "on board" with Kanban!

10.1.2 Pain Points Kanban Addresses for Virtual Teams

Working on a virtual team has many upsides. As an employer, it expands your talent pool to practically the entire globe, enabling you to draft a talented team without the limitation of needing to be physically co-located to apply.

For employees, working on a virtual team means that they can live anywhere and do a job they love, with the flexibility and autonomy of working from home.

Working closely with people who live in different states, or even countries, is made possible by technologies like video conferencing software, company communication platforms like Slack, and other tools. But that doesn't mean it's easy: We have all seen the pain of team members using disparate tools and ways of working, without the necessary collaboration and synchronization to complete their work.

Virtual or not, project management is a weakness for companies around the globe. According to the PMI Pulse of the Profession annual report:

- 48% of projects are not finished within the scheduled time
- 43% of the projects are not finished within their original budget
- 31% of projects don't meet the original goals and business intent

Kanban project management is the answer to several pain points all distributed teams experience at some point, which include:

- Working in silos
- Hidden work (tasks that creep up on us)
- Unclear priorities
- Staying on strategy
- Lack of accountability or clarity on ownership
- Absence of real-time tracking
- Bottlenecks
- Hidden blockers
- Lack of accurate predictability and estimation for new work
- Managing and including unplanned work

By adopting electronic Kanban boards, virtual teams can easily gain the visibility that can solve these problems in just a few weeks.

10.1.3 Introducing Kanban Project Management

The editor on the virtual team had used a Kanban board solution at a previous company and recommended they try it. Her hope was that it could lead to:

- Increased visibility of all tasks
- Clear focus on the status of each campaign
- Improved ability to predict estimates and meet deadlines

The marketing team entered all the tasks associated with their campaigns and parsed them out into cards on the Kanban board. They also started a daily 10-minute standup meeting in which each team member updated the group about:

- What tasks they had completed the day before
- What they planned to work on that day
- Whether they had any blockers that might interfere with task completion
- Within a matter of weeks, the entire team began to understand their flow, and began collaborating in deeper, more productive ways.

The virtual marketing team saw a 40% improvement in their productivity one month after implementing Kanban project management.

Additionally, they discovered hidden bottlenecks and began to brainstorm solutions. Their daily standups became more efficient in that they could focus on immediate needs.

The virtual team also realized that they needed to break down their functional silos to be a truly cross-functional team. In other words, the social media manager might update web pages now and then and the web designer might update social media accounts from time to time, depending on the need and the workload. They discovered how to pair work and learned to do a few new things, including some editing and peer reviews.

Over time, every team member became more cross-functional. They found that empowering everyone to pull new work from the board worked much better than pre-assigning work by functional silo, which resulted in an uneven distribution of labor. When someone on the team had capacity, that person could start work on the highest-priority item in the backlog immediately.

Kanban project management worked so well for this virtual marketing team that they found themselves improving marketing campaigns and completing them well ahead of deadlines. This led to greater client retention and profitability.

10.1.4 Kanban for Hardware, Software, and Other Technology Teams

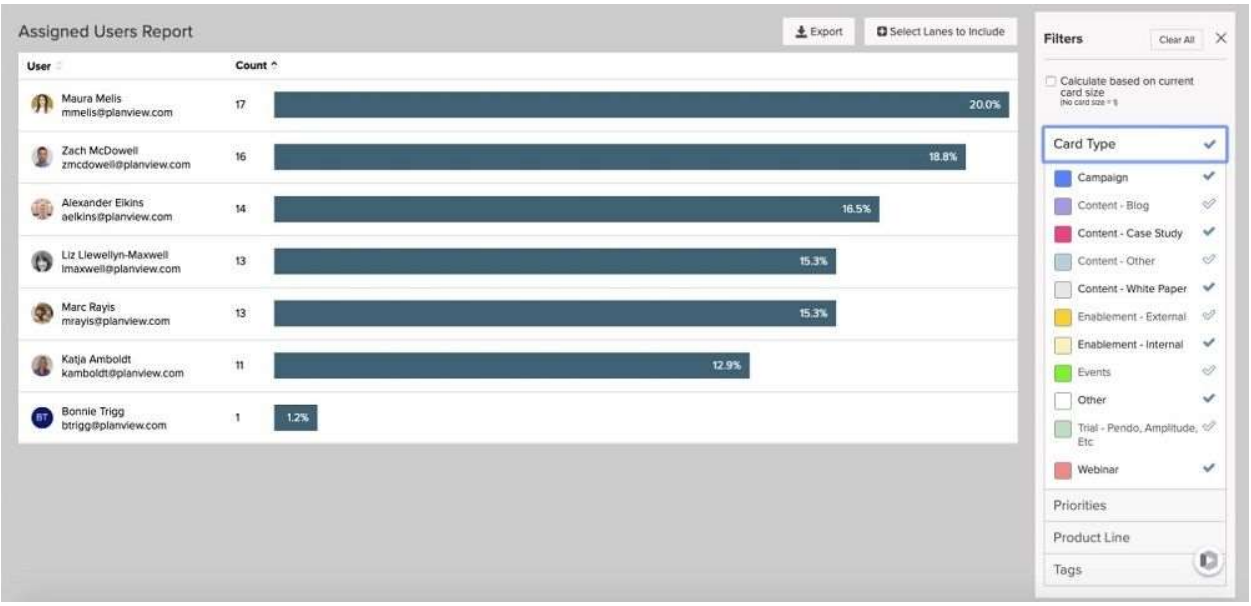


Figure 26 Kanban project management reports

With a wide range of reports – like workload distribution, shown above – Kanban project management enables virtual teams to continuously improve.

Of course, Kanban project management is not just for marketing teams. Highly technical software, hardware, and integration teams, as well as other technology teams, can use a Kanban tool for greater productivity, throughput, and quality.

One hardware organization that built next-generation servers was in decline as the company coped with the threat of a reorganization and potentially losing valuable team members. They had reached a turning point, and the status quo was no longer tolerable.

They were late (months, even years) in delivering client orders. They had stale critical projects in the queue; management gave ultimatums, yet nothing changed.

The teams' inaccurate estimates for time of delivery were embarrassing the product leaders who had to interact with customers. Their backlog had grown larger and larger, with very little accomplished over a period of several months.

Some projects had grown so stale that several team members who had not been with the company years earlier when the teams had taken on the work had no idea what they were about. There was no solution in sight.

That's when a senior manager might hire an Agile coach to come in and share ideas on Kanban and Scrum. After a few days of training and discussion, the hardware teams decided

to adopt Kanban project management with some Scrum events, such as a daily Scrum and a monthly retrospective (adapting the Kanban tool for their own version of "Scrumban"). They also utilized the idea of having a team product owner, the person who owns, ranks, reorders and prioritizes the backlog based on business value.

With these small changes, the team was able to uncover the root causes of their inefficiency. It turned out that their backlog was their biggest challenge. There were two hundred items in the backlog, and at least 150 of those items no longer had business value or were so low on the list that the newly elected product owner was able to eliminate them, freeing up 75% of capacity to work on the top fifty backlog items.

After limiting their work in progress (WIP) and practicing more effective board maintenance, the results were phenomenal. In less than a month, the team's output improved from completing one to five items per week to completing thirty. Lead time from client order to client delivery was reduced from months to weeks.

The teams used the Kanban board to better visualize the flow of work and began to self-organize around two types of work:

- Continuous flow simple tickets (order fulfillment)
- More complex next-generation server projects that took longer to develop

This approach to project management accommodated the continuous and haphazard flow of work.

With the daily standup, the teams now had a good inspect-and-adapt process to ensure they were always starting with the highest priority cards. This turned out to be an incredibly effective and somewhat familiar approach for the hardware team.

Additionally, in the retrospectives, the teams were able to identify and remedy many of the age-old broken processes that had been blocking progress before.

10.1.5 Kanban for Manufacturing and Engineering Teams

Manufacturing, engineering, and other teams have great success in implementing electronic Kanban boards as well. In fact, the manufacturing floors of Toyota are where Kanban first originated. Although modern-day implementations of Kanban vary from the original practices used, many manufacturing and engineering teams still find Kanban project management principles to ring true.

One commercial bus manufacturer was falling behind every month in completing all the engineering tasks that were needed for production. The backlog of engineering tasks was becoming larger every month and threatening bus delivery and customer satisfaction. Kanban project management was a last-ditch effort to restore the backlog to a normal level.

Various engineering groups also had created a problem by working in functional silos; everything was organized by either mechanical or electrical engineering tasks and no one was allowed to work across that line.

No one worked together and the inefficient handovers back and forth were killing their throughput.

Everyone focused on their engineering tasks without pairing up, swarming, or collaborating with dependent teams or groups as needed. Their list of blockers grew as big as their ungroomed backlog.

Initially, a physical Kanban board was implemented because their process was so convoluted. It took a few weeks to iron out who did what, and where the Kanban cards went after that. One group spent a day with a Kanban project management trainer who went through their process with them and helped them design steps in their flow that made sense.

The teams began holding a daily standup where they worked to identify and resolve blockers, and pair up and tackle the most critical work together, rather than only working on tasks that had been pre-assigned to them.

The gentle pull system of Kanban began to do its magic! Engineers spoke up and asked for help; others offered help when they had capacity. The workload started to balance out between team members.

Soon, engineers had cleaned up their backlogs, prioritized their board by the most urgent and critical work, and delayed the trivial, non-urgent work by handing it over to the offshore team.

Kanban project management allowed key engineers to focus on urgent, critical work immediately and reduce their cycle time from about eighteen days to nine days.

The engineers also were able to improve their throughput so dramatically that they created bottlenecks at the review and processing stage, leading to even more collaboration. They learned to create war room reviews where all the required reviewers met in an Agile open work area and time-boxed each review to twenty minutes, so they could break through a big bottleneck of twenty reviews in less than a day; prior to this, work commonly stayed in the queue for review for two to three weeks.

Soon, their success was touted across the entire engineering organization. This led to cross-pollination of other teams, who went through the same process, until all the engineering teams had implemented electronic Kanban boards to better monitor and track their work, reduce bottlenecks and cycle time, and improve throughput.

In conclusion, Kanban project management is a proven, effective way to encourage your team to collaborate more deeply, operate more efficiently, and complete work with a greater sense of clarity and purpose. For virtual teams, it provides the transparency, accountability, and structure necessary to keep progress moving, even if everyone is in a different time zone.

Kanban project management leads teams to a better understanding of their process, which in turn drives the process improvement necessary to maintain agility in an ever-changing world. Kanban helps virtual teams stay focused on delivering what really matters, by helping them visualize their work every step of the way.

10.2 Projectplace toolset

All your work and project management tools in one place, Projectplace offers a wide range of powerful work and project management tools that enable traditional and accidental project managers to plan and execute work with their teams, track progress in real time, and ultimately achieve goals. Getting work done is easy when your team has the best project management tools.

- Collaborative Project Planning & Workstreams -
  Create your project plan and connect project work-stream items to activities and milestones using integrated Kanban boards and Gantt charts.

- Project Tracking -
  Increase project team efficiency by providing a digest of upcoming, ongoing, and overdue work for yourself, your teams, and your workspaces.
- Online Kanban Boards -
  Visualize the flow of work and progress across all your team's projects and commitments.
- Integrated Zoom Online Meetings -
  Start a Zoom meeting directly from Projectplace and hold daily stand-ups, team syncs, and ad hoc meetings all within the Projectplace environment where your team's work actually happens.
- Collaborative Project Planning & Workstreams -
  Provide team leads and managers with a complete picture of task assignments and commitments across all projects.
- File Sharing & Document Management -
  Share files and collaborate on project documents and enable team members to attach relevant files directly to Kanban boards from varied sources.
- Project Roadmaps -
  Project managers can view, manage, and execute on a high-level roadmap plan, covering their long-term work strategy.
- Online Gantt Charts -
  Stay on top of project progress by visualizing your goals and plans, with all major steps, in modernized classic Gantt charts.
- Project Dashboards & Reporting Templates -
  Use project dashboards and reports to visualize progress, help track how close the team is to meeting deadlines and identify where bottlenecks may be occurring.
- Mobile Project Management Apps -
  Use project management apps for iOS and Android to access your work, update status of assignments, review documents, and collaborate with your team members.
- Project Plan Templates -
  Quickly set up new workspaces and projects using pre-defined project management templates based on best practices.
- Project Portfolios -
  Provide stakeholders with the means to track performance across the projects that matter to them and to identify and address projects that may need attention.
- Requests -
  Capture ideas for new workspaces executed in Projectplace.
- Time Tracking -
  Make it easy for your users to track and manage their time, with time reporting capabilities against all tasks and activities.
- Real-Time Team Communication -
  Engage your team members by enabling them to instantly share feedback, ideas, and questions.
- Integrations/API -
  Build custom applications and add-ons and enable integration into other systems – such as your company intranet or a mobile app.

11 Net Present Value (NPV)

The net present value (NPV) of an investment is the present (discounted) value of future cash inflows minus the present value of the investment and any associated future cash outflows. By considering the time value of money, it allows consideration of such things as cost of capital, interest rates, and investment opportunity costs. NPV allows managers to compare, on purely financial factors, investment alternatives with widely disparate cash flows. NPV facilitates objective evaluation of projects regardless of scale differences or the existence of capital rationing, and can be used to compare independent or mutually exclusive projects. NPV does have its greatest value when interest rates are high and times of high inflation.

For each year of the analysis period, cash inflows (benefits) and cash outflows (costs) are totaled and then summed to arrive at the net impact on cash. The net cash flow is then multiplied by an appropriate discount factor to arrive at a discounted cash flow for each year. NPV is the total of these discounted cash flows over the period of analysis.

Generating a meaningful NPV requires sound estimates of the costs and benefits of a project, use of the appropriate discount rate, and the identification of the timing of cash receipts and disbursements. NPV focuses on an investment‘s impact on cash flow rather than net profit, or savings in the case of non-revenue generating entities. Thus, only an investment‘s effects on cash are considered.

12 Earned Value

Earned value (EV) is a very simple concept in project management associated with providing for a measure of project performance and progress. EV is measure of work performed in a project expressed in terms of the budget established for that project. So it's the sum of the planned value of the work completed to date.

To better understand EV and any associated performance calculation there are a total of 4 calculations you should become familiar with, these are:

- Planned Value (PV) = The authorized budget assigned to work that is scheduled
- Actual Cost (AC) = The realized cost incurred for the work performed on an activity during a specific period of time
- Budget At Completion (BAC) = The sum of all projects budgets for planned work
- Earned Value (EV) = The sum of the budgets for work performed

From these 4 calculations you can also measure:

- Cost Variation (CV) = difference between earned value and actual cost, CV=EV-AC
- Schedule Variation = difference between the work completed and the work planned to be completed, SV=EV-PV

There are 6 additional calculations that can be made, for additional details go to PMBOK, PMI.

13 Project Management Certifications

The Commonwealth of Virginia aligns its 'Project Management Standards" and "Project Management Guidelines" with PMI's Project Management Body of Knowledge (PMBOK). It's important for a Project Manager to pursue formal educational opportunities and professional certifications. The formal education and training provides a PM with the most current set of guidelines, best practices, tools, techniques, and project frameworks. The professional certifications do all this but also provide for an industry standard of recognition and with PMI's certifications come with recertification requirements.

Here are the eight certifications offered by PMI:

- PMP - Project Management Professional
- PgMP - Program Management Professional
- PfMP - Portfolio Management Professional
- CAPM - Certified Associate in Project Management
- PMI-PBA - PMI Professional in Business Analysis
- PMI-ACP - PMI Agile Certified Practitioner
- PMI-RMP - PMI Risk Management Professional
- PMI-SP - PMI Scheduling Professional

Table 3 Pre-requisites to becoming PMP certified.

Secondary degree (high school diploma, associate's degree or the global equivalent)	**OR**	Four-year degree
7,500 hours leading and directing projects		4,500 hours leading and directing projects
35 hours of project management education		35 hours of project management education

For a complete and up to date list of PMI's pre-requisites please go to PMI's website.

In addition to the PMI certifications the Project Management Division (PMD) of the Commonwealth of Virginia offers training, continuing education to maintain the certification, as well as the Commonwealth Project Management Qualification (CPM) exam. This two-part exam is administered by the COV and qualifies the Project Manager (PM) to manage Commonwealth projects.

Here is a more expanded list of other notable certifications:

- CSM - Certified Scrum Master
- CBAP - Certified Business Analysis Professional
- CBP - Certified Business Professional
- ITIL – (IT Infrastructure Library) Continual Service Management
- ITIL – (IT Infrastructure Library) Service Design
- ITIL – (IT Infrastructure Library) Service Strategy
- ITIL (IT Infrastructure Library) v2 (Indicate specific designation in comments section)
- ITIL (IT Infrastructure Library) v2 Foundations
- ITIL (IT Infrastructure Library) v2 Foundations Advanced
- ITIL (IT Infrastructure Library) v2 Service Manager
- ITIL (IT Infrastructure Library) v3 (Indicate specific designation in comments section)
- ITIL (IT Infrastructure Library) v3 Expert

- ITIL (IT Infrastructure Library) v3 Foundations

14 Managing Vendors

Vendor management is a set of activities ensuring vendors provide the contracted procurement items according to your delivery schedule and appropriate levels of quality.

Meetings should be held to review each item's development progress and ensure compliance with specifications and requirements and should follow the listed actions and roles:

- Seek the needed Procurement reviews and approvals.
- Work with your Business Sponsor and the Agency Procurement Group in negotiating a contract that clearly identifies what the vendor is providing, the schedule for the products/services, a payment schedule based on the delivery schedule, and an acceptance criteria for the vendor so all parties fully understand when the contract has been satisfied.
- Arrange regular (weekly) meetings and conferences with the vendors to make sure the timely delivery and high quality of the products/services.
- Discuss current delivery progress for each ordered product.
- Ensure that each procured product complies with the specifications and requirements established in procurement documentation.
- Prevent delays in delivery schedules by making changes and modifications to the contract.
- In case of any changes in the procurement strategy or project management methodology, discuss ways to modify the existing purchasing contract in order to generate a new, more appropriate agreement that meets new conditions.
- Integrate the vendors schedule with the larger project schedule to understand dependencies and unforeseen risks.

15 Guidelines for Managing Contract Labor

- Create Clear Goals-In the job description, be clear about what you want.
- Ensure tasks and activities handed off to each contractor are related to their abilities and experience levels.
- Get current staff on Board, working with contract labor can be very successful for the business.
- Conduct training.
- Provide clear and concise roles and responsibilities.
- Ensure that the type of responsibilities given to the contractor is aligned with the contract. Activities assigned to a contractor should be aligned with the contract terms.
- Provide the how, when, and the why when handing off assignments.
- Identify who they should be reporting to and contacting for issues
- Providing regular feedback.
- Avoid performing regular HR style performance evaluations with the contractor so as not to create the appearance that they are directly employed by your Agency.
- In the event of issues it is recommended that you provide feedback directly to the staffing firm's service coordinator. Request that he or she, in turn, resolve the issue by counseling and/or replacing the temporary employee.
- Communicate often.
- Make yourself available.
- Ensure that the funds allocated on the contract labor is managed and productive.
- Ensure that their roles and responsibilities are clearly defined and understood by the contractor.
- If the contract resource is a Project Manager you should ensure that this person is qualified.

16 Creating Effective Project Teams

The development of project team can be viewed as the process of improving competencies, team members' interactions, and the overall team environment. Creating an effective project team is an essential process. The project team must have the skills and experience necessary to manage the tasks, meet the goals, and collaborate to ensure the project's success.

When developing a project teams here are some items to consider:

- Strong Leadership
  - Provides direction, navigate through conflict, and capitalize off of individual team member's strength.
- Communication
  - How well does each team member communicate with co-workers, supervisors, clients and other stakeholders? These factors reduce the chances of misunderstandings and misinformation.
- Learning and Performance
  - Acquire new skills, team building activities, mentoring, and set goals.
- Organizational Commitment and Objectives
  - Acquire dedicated team members that are self-starters, influential, motivational, committed to project success, and are collaborative.
- Organization Chart
  - Graphic display of project team members and their reporting relationship.
- RACI
  - "Responsibility Assignment Matrix' which describes the participation by various roles in completing tasks or deliverables for a project.
- Resource Calendar
  - A calendar that identifies working day and shifts on which each specific resource is available.

17 Project Managing Virtual (Distributed) Project Teams

Project teams with remote team members rely heavily on collaborative tools such as shared online workspaces, video conference calls, web meetings, traditional conference calls, detailed meetings notes, on line collaboration tools, and frequent project updates to coordinate their activities and exchange information about the project.

A virtual team can exist with any type of organizational structure and team composition. A project manager who is leading a virtual team needs to potentially accommodate differences in culture, working hours, time zones, local conditions, and languages.

In order to effectively manage virtual project team members the project manager needs to understand how to set-up the virtual worker to avoid isolation, provide for self-managing and integration with the larger co-located project team members.

Virtual project structures can sometimes create a loss of control over some project activities. To prevent a loss of control requires good communication, effective coordination, instilling trust among the various partners, and employing a new set of managerial skills. Distributed team members are potentially exposed to increased ambiguity about organizational membership, job roles and responsibilities, career paths, and superior-subordinate relationships.

17.1 Communications in Distributed Project Teams

Project managers need to understand the specific communication needs of the virtual team members. Apart from perhaps an initial face-to-face meeting (highly recommend, if it is feasible), virtual team members are connected to each other through electronic forms of communication (email, instant messaging, conference calls, video conferences).

The constraint of having to use virtual communication methods places a risk on project performance that needs to be managed. In order to mitigate this risk, the project manager needs to understand the importance of selecting the appropriate communication medium for each message.

Here are some helpful hints around creating effective virtual team communications:

- Be highly perceptive of cultural differences if your team is multi-national, and how different cultures may prefer different communication mediums.
- Is something during your project significant enough to warrant a video conference (e.g. the achievement of a Milestone)?
- Video conferencing can help you detect positive or negative body language.
- On phone calls pay attention to the tone of voice being used; be perceptive to any signs of discontent or frustration.
- Check that people are paying attention by making any conference call interactive.
- You can also hear if anyone is "tapping on a keyboard" during a conference call.
- Try to keep the team motivated, feelings of isolation and disconnection from the team have a direct effect on the motivation of the virtual team member.
- Regularly assess the effectiveness of the remote communications
- Use Collaboration Tools
- Be available and be in regular contact
- Encourage informal conversations
- Treat time zones fairly, rotate every week the times for meetings

17.2 Roles & Responsibilities in Distributed Project Teams

It is important that every member of a virtual team have a full understanding of the capabilities and roles of the other individual team members. Each must know his or her role, the role of others, and to who they may look for resources and support. Without this knowledge, the team will not achieve its performance potential.

If the responsibilities of team members are clearly defined and documented, each team member will be accountable to each other and to the group for the fulfilling of their responsibilities.

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