



Chapter 6: Planning Projects, Part 3 (Quality, Resource, Communications, Stakeholder, Risk, and Procurement Management)

Note: See the text itself for full citations. Text website is <http://intropm.com>.

Learning Objectives

- ▶ List several planning processes and outputs for project quality, resource, communications, stakeholder, risk, and procurement management when using a predictive approach to project management
- ▶ Discuss the project quality management planning process, and explain the purpose and contents of a quality management plan and quality metrics
- ▶ Explain the project resource management planning and estimate activity resources processes, and create a resource management plan, team charter, resource requirements, and a resource breakdown structure
- ▶ Describe the project communications management planning process, and describe the importance of using a project communications management plan
- ▶ Understand the importance of planning stakeholder engagement, and describe the contents of a stakeholder engagement plan
- ▶ Discuss the project risk management planning processes, and explain how a risk management plan, a risk register, and change requests are used in risk management planning
- ▶ Discuss the project procurement management planning process, and describe several outputs including a procurement management plan, source selection criteria, and make-or-buy decisions
- ▶ Plan for change management for all types of projects
- ▶ Explain how agile/hybrid projects address quality, resource, communications, stakeholder, risk, and procurement management planning



Introduction

- ▶ Some project managers neglect planning in the quality, resource, communications, stakeholder, risk, and procurement management knowledge areas
- ▶ It is important to skillfully plan *all* knowledge areas because they are all crucial to project success



Figure 6-1. Planning Processes and Outputs for Project Quality, Human Resource, Communications, Risk, Procurement, and Stakeholder Management

Knowledge area	Planning process	Outputs
Project quality management	Plan quality management	Quality management plan Quality metrics Project management plan updates Project documents updates
Project resource management	Plan resource management Estimate activity resources	Resource management plan Team charter Project document updates Resource requirements Basis of estimates Resource breakdown structure Project documents updates
Project communications management	Plan communications management	Communications management plan Project management plan updates Project documents updates
Project risk management	Plan risk management Identify risks Perform qualitative risk analysis Perform quantitative risk analysis Plan risk responses	Risk management plan Risk register Risk report Project documents updates Project documents updates Change requests Project management plan updates Project documents updates
Project procurement management	Plan procurement management	Procurement management plan Procurement strategy Bid documents Procurement statement of work Source selection criteria Make or buy decisions Independent cost estimates Change requests Project documents updates Organizational process assets updates
Project stakeholder management	Plan stakeholder engagement	Stakeholder engagement plan



Project Quality Management

- ▶ **Project quality management** ensures that the project will satisfy the stated or implied needs for which it was undertaken
- ▶ Key outputs produced as part of project quality management include a quality management plan, quality metrics, and updates to the project management plan and project documents



What Is Quality?

- ▶ The International Organization for Standardization (ISO) defines **quality** as “the degree to which a set of inherent characteristics fulfill requirements” (ISO9000:2000)
- ▶ Other experts define quality based on conformance to requirements and fitness for use.
 - **Conformance to requirements** means that the project’s processes and products meet written specifications
 - **Fitness for use** means that a product can be used as it was intended
- ▶ The *customer* ultimately decides that the quality level is acceptable



Quality Planning and the Quality Management Plan

- ▶ Quality planning includes identifying which quality standards are relevant to the project and how best to satisfy those standards
- ▶ It also involves designing quality into the products of the project as well as the processes involved in managing the project
- ▶ Like other plans, the size and complexity of quality management plans varies to meet project needs



Figure 6-2. Sample Quality Management Plan

Quality Management Plan

August 20

Project Name: Just-In-Time Training Project

Introduction

The main goal of this project is to develop a new training program that provides just-in-time training to employees on key topics, including supplier management, negotiating skills, project management, and software applications.

Quality Standards

The standards that apply to this project are summarized as follows:

1. Survey standards: See Attachment 1 for corporate standards for developing and administering surveys to employees. Quantitative and qualitative information will be collected. Quantitative data will use a 5-point Likert scale as much as possible. A corporate expert on surveys will review the survey before it is administered.
2. Supplier selection standards: See Attachment 2 for corporate standards regarding supplier selection. Past performance and developing partnerships will be key issues for this project.
3. Training standards: See Attachment 3 for corporate standards regarding training. The training provided as part of this project will be available in several formats, including instructor-led, DVD, and web-based. Employees will have access to DVD, and web-based training at any time to meet individual and business needs on a just-in-time manner.



Figure 6-2. Sample Quality Management Plan (continued)

Metrics

Metrics measure quality performance. Several metrics apply to this project, and more may be developed as the project progresses. The project team will use a few key metrics as follows:

1. Survey response rate: For the survey to be successful, a response rate of at least 30% must be achieved.
2. Course evaluations: All course participants must complete a course evaluation in order for their training to be tracked in our corporate professional development system. In addition to evaluations on more detailed topics, there will be an overall course rating. The average course rating should be at 3.0 or better on a 5.0 scale.

Problem Reporting and Corrective Action Processes

Project plans will include clear roles and responsibilities for all stakeholders. The person responsible for an individual task should report problems to appropriate managers (see the project organizational chart) and work with them to determine and implement corrective actions. Major problems should be brought to the attention of the project manager, who should elevate problems that might affect project success, including meeting scope, time, cost, and quality goals, to the project steering committee and then the project sponsor. It is crucial to address problems as early as possible and develop several alternative solutions.

Supplier Quality and Control

The project manager will closely monitor work performed by suppliers, with assistance from our supplier management department. All contracts must clearly state quality standards, metrics, etc.



Quality Metrics

- ▶ A metric is a standard of measurement
- ▶ Metrics allow organizations to measure their performance in certain areas and to compare them over time or with other organizations
- ▶ Examples of common metrics used by organizations include failure rates of products produced, availability of goods and services, and customer satisfaction ratings



Sample Quality Metrics

- ▶ The Just-In-Time Training project's success criteria, as documented in the scope statement, included metrics based on:
 - *Time*: Completing the project within one year
 - *Customer satisfaction*: Achieving an average course evaluation of at least 3.0 on a 5.0 scale
 - *Cost reduction*: Recouping the cost of the project in reduced training costs within two years after project completion
- ▶ Many organizations use charts to keep track of metrics, such as a **project dashboard**—a graphical screen summarizing key project metrics



Figure 6-3. Sample Project Dashboard for Just-In-Time Training Project

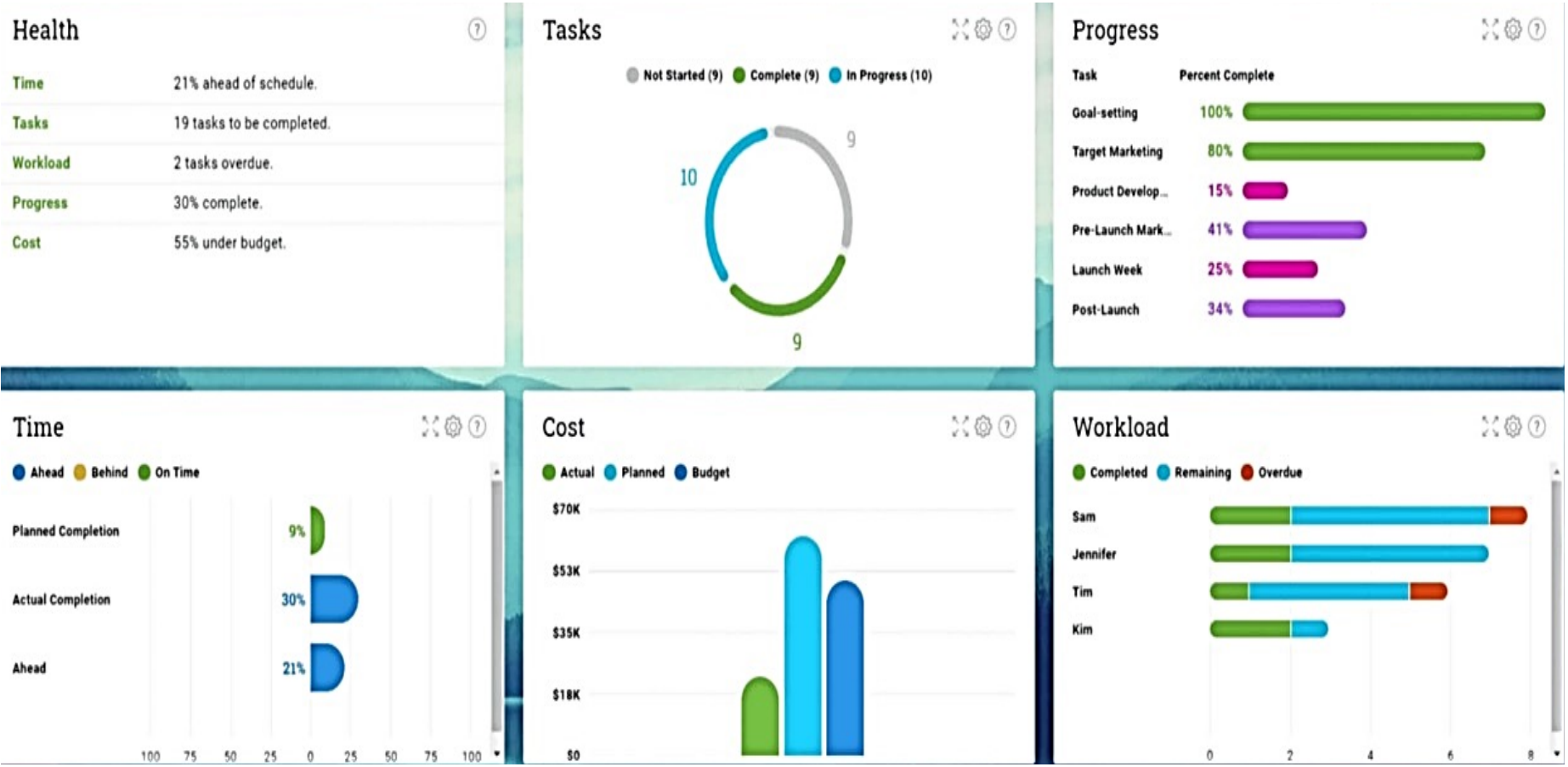
As of January 20

Metric Name	Description	Status	How measured	Explanation
Scope	Meeting project scope goals	●	Earned value chart	On target
Time	Completing the project within one year	●	Earned value chart	On target
Cost	Staying within budget - under \$1 million	●	Earned value chart	A little over budget
Survey response	Must be at least 30%	●	Surveys received/sent	Got 33% response
Customer satisfaction	Average course rating of at least 3.0/5.0	●	Course evaluations	Goal part of success criteria
	- Number of course evaluations received	38	Feed from online system	All course participants must complete
	- Average course rating	2.7	Feed from online system	DVD course had low ratings
Cost reduction	Recoup investment within two years	N/A	Cost/employee for training	Can't measure until project is completed
Courses developed	Meeting milestones for development	●	Milestone dates	Course development on target
Number of people trained	Meeting goals of people trained	●	Filling scheduled classes	Last minute cancellations

- = on target
- = slightly off target/caution
- = off target/problem area



Figure 6-4. Sample Project Dashboards



Source: projectmanager.com (2021)



Figure 6-5. Sample Quality Metrics Description

Project Name: Just-In-Time Training Project

The following quality metrics apply to this project:

- 1. Survey response rate:** For the survey to be successful, a response rate of at least 30% must be achieved. Most surveys will be administered online using the standard corporate survey software, which can track the response rate automatically. If the response rate is less than 30% one week after the survey is sent out, the project manager will alert the project steering committee to determine corrective action.
- 2. Course evaluations:** All course participants must complete a course evaluation so that their training can be tracked in our corporate professional development system. In addition to evaluations on more detailed topics, there will be an overall course rating. The average course rating should be at least 3.0, with 5 being the highest score. Surveys should include questions measured on a Likert scale. For example, a question might be as follows: “My overall evaluation of this course is” Respondents would select 1 for Poor, 2 for Fair, 3 for Average, 4 for Good, or 5 for Excellent.



Project Resource Management

- ▶ Many corporate executives have said, “People are our most important asset.” People determine the success and failure of organizations and projects
- ▶ **Project resource management** is concerned with making effective use of the people involved with a project as well as physical resources (materials, facilities, equipment, and infrastructure)
- ▶ The main outputs produced as part of project resource management planning are:
 - Project resource management plan (can be separated into a team management plan and a physical resource management plan)
 - Team charter



Team Management Plan

- ▶ Key components include:
 - Project organizational chart
 - Responsibility assignment matrix
 - Resource histogram
 - Staffing management plan

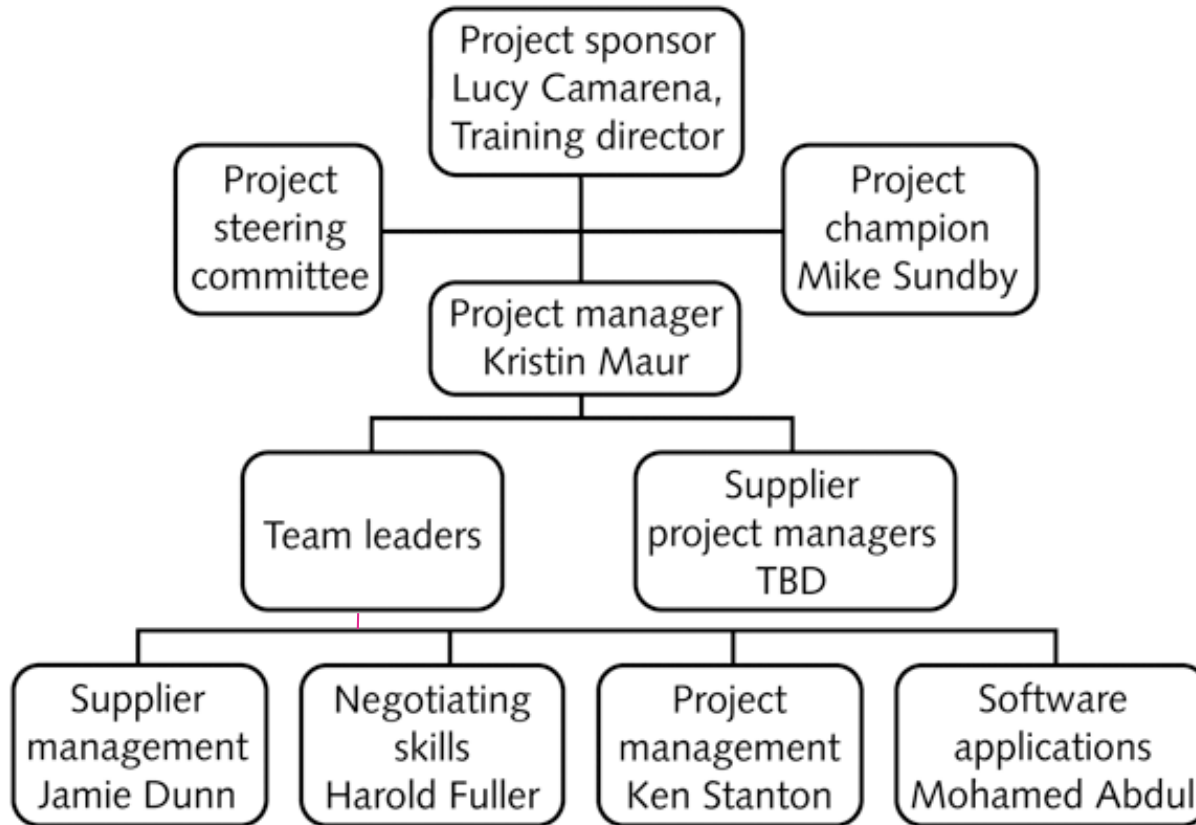


Project Organizational Charts

- ▶ Similar to a company's organizational chart, a **project organizational chart** is a graphical representation of how authority and responsibility is distributed within the project
- ▶ The size and complexity of the project determines how simple or complex the organizational chart is



Figure 6-6. Sample Project Organizational Chart



Responsibility Assignment Matrices

- ▶ A **responsibility assignment matrix (RAM)** is a matrix that maps the work of the project as described in the work breakdown structure (WBS) to the people responsible for performing the work
- ▶ For smaller projects, it is best to assign WBS activities to individuals; for larger projects, it is more effective to assign the work to organizational units or teams
- ▶ **RACI charts** are a type of RAM that show **R**esponsible (who does the task), **A**ccountable (who signs off on the task or has authority for it), **C**onsulted (who has information necessary to complete the task), and **I**nformed (who needs to be notified of task status/results) roles for project stakeholders



Figure 6-7. Sample RACI Chart

Tasks	Kristin	Jamie	Mohamed	Supplier A
Needs assessment	A	R	C	I
Research of existing training	I	R, A	C	I
Partnerships	R, A	I	I	C
Course development	A	C	C	R
Course administration	I	A	R	
Course evaluation	I	A	R	I
Stakeholder communications	R, A	C	C	C

R: Responsible A: Accountable C: Consulted I: Informed



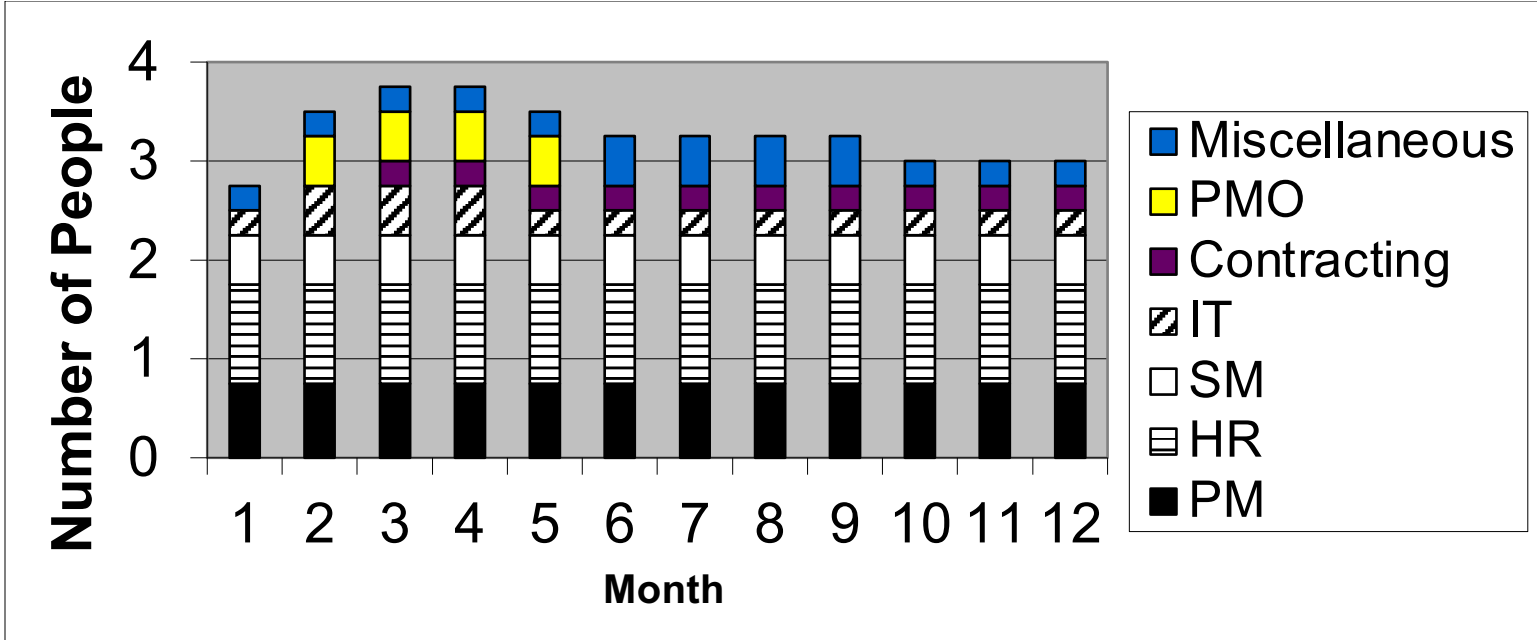
Resource Histograms

- ▶ A **resource histogram** is a column chart that shows the number of resources required for or assigned to a project over time
- ▶ In planning project staffing needs, senior managers often create a resource histogram in which columns represent the number of people needed in each skill category. By stacking the columns, you can see the total number of people needed each month
- ▶ After resources are assigned to a project, you can view a resource histogram for each person to see how his/her time has been allocated



Figure 6-8. Sample Resource Histogram

Type of Resource	Meaning	Month											
		1	2	3	4	5	6	7	8	9	10	11	12
PM	Project Manager	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
HR	Human Resources	1	1	1	1	1	1	1	1	1	1	1	1
SM	Supplier Management	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
IT	Information Technology	0.25	0.5	0.5	0.5	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Contracting	Contracting	0	0	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
PMO	Project Management Office	0	0.5	0.5	0.5	0.5	0	0	0	0	0	0	0
Miscellaneous	Miscellaneous	0.25	0.25	0.25	0.25	0.25	0.5	0.5	0.5	0.5	0.25	0.25	0.25



Staffing Management Plans

- ▶ A staffing management plan describes when and how people will be added to and removed from a project
- ▶ It describes the types of people needed to work on the project, the numbers needed for each type of person each month, and how these resources will be acquired, trained, rewarded, and reassigned after the project



Figure 6-9. Sample Staffing Management Plan

Project Name: Just-In-Time Training Project

Introduction

The main goal of this project is to develop a new training program that provides Just-In-Time training to employees on key topics, including supplier management, negotiating skills, project management, and software applications.

Staffing Requirements

This project will require the following internal staff:

- Project manager (PM) (Kristin was assigned 3/4 time)
- Project team members from the HR department (two people assigned half-time) to help with all the project training
- Project team member from the supplier management (SM) department (assigned half-time) to assist with the supplier management training
- Information technology (IT) department staff to help with technical support and the software applications training
- Project management (PMO) staff to help with the project management training
- Contracting department staff to assist in administering the project contracts. See the resource histogram in Attachment A for projected staffing needs over time.

Staff Assignments

The project manager will work through functional managers to assign individuals to the project. The project manager will interview potential candidates to determine suitability. If particular expertise is required for part of the project, the functional managers will plan to make experts available. Employees will be paid overtime if needed.

Training, Rewards, and Reassignment

Ideally, people assigned to this project will have appropriate experience or be willing to learn quickly on-the-job. The project manager will do his or her best to provide a challenging and enjoyable work environment. Assignment to the project will not affect an individual's salary, but the project manager will write a performance evaluation and recommend appropriate rewards. If an individual is not performing as expected, the project manager will work with him or her and the appropriate functional manager to determine whether corrections can be made or if reassignment is necessary.

Attachment A: Resource histogram



Team Charter

- ▶ Many companies believe in using **team charters** to help promote teamwork and clarify team communications.
- ▶ After core project team members have been selected, they meet to prepare a team charter to guide how the team will function.
- ▶ It is crucial to emphasize the importance of the project team throughout the project's life cycle, and the team charter should be updated as needed.



Figure 6-10. Sample Team Charter (partial)

Code of Conduct/Values: As a project team, we will:

- ▶ Work proactively, anticipating potential problems and preventing their occurrence.
- ▶ Keep other team members informed of information related to the project.
- ▶ Focus on what is best for the entire project team.

Participation: We will:

- ▶ Be honest and open during all project activities.
- ▶ Provide the opportunity for equal participation.
- ▶ Be open to new approaches and consider new ideas.
- ▶ Let the project manager know well in advance if a team member has to miss a meeting or may have trouble meeting a deadline for a given task.

Communication: We will:

- ▶ Keep discussions on track and have one discussion at a time.
- ▶ Use the telephone, e-mail, a project website, instant messaging, texts, and other media to assist in communicating.
- ▶ Have the project manager or designated person facilitate all meetings and arrange for phone and videoconferences, as needed.
- ▶ Work together to create the project schedule and related information and enter actuals, issues, risks, and other information into our enterprise project management system by 4 p.m. every Friday.



Estimating Activity Resources

- ▶ Estimating activity resources involves estimating the type, quantity and characteristics of team resources and physical resources (i.e., materials, equipment, and supplies) required to complete the project.
- ▶ This process is closely related to estimating activity durations and costs.
- ▶ It is important that the people who help determine what resources are necessary include people who have experience and expertise in similar projects and with the organization performing the project.
- ▶ Resource estimates should be updated as needed during the project.



Important Questions to Answer in Activity Resource Estimating

- ▶ How difficult will it be to perform specific activities on this project?
- ▶ Is there anything unique in the project's scope statement that will affect resources?
- ▶ Are there specific resources better suited to perform the activities?
- ▶ What is the organization's history in doing similar activities? Have they done similar activities before? What level of personnel did the work?
- ▶ Does the organization have appropriate people, equipment, and materials available for performing the work? Are there any organizational policies that might affect the availability of resources?
- ▶ Does the organization need to acquire more resources to accomplish the work? Would it make sense to outsource some of the work? Will outsourcing increase or decrease the amount of resources needed and their availability?
- ▶ What assumptions have been made or need to be made?



Figure 6-11: Sample Activity Resource Requirements Information

Activity Resource Requirements August 1

Project Name: Just-In-Time Training Project

WBS Item Number: 3.1.1.1.2

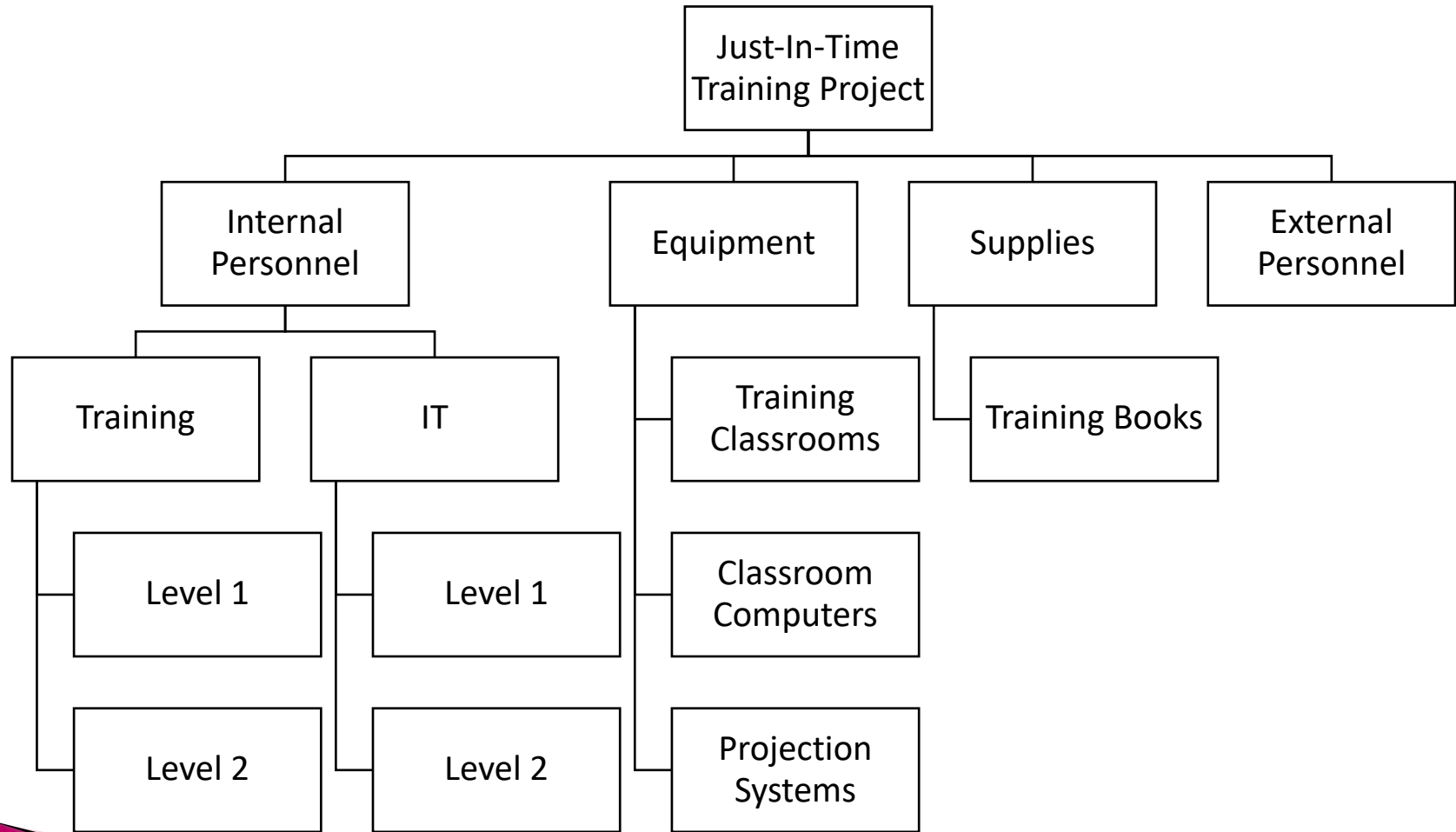
WBS Item Name: Survey administration

Resource Source: Internal staffing, hardware, and software from the IT department

Description: The individuals must be knowledgeable in using our online survey software so they can enter the actual survey into this software. They must also know how to run a query to find the e-mail addresses of employees of grade level 52 or higher in the purchasing, accounting, engineering, information technology, sales, marketing, manufacturing, and human resource departments.



Figure 6-12: Sample Resource Breakdown Structure

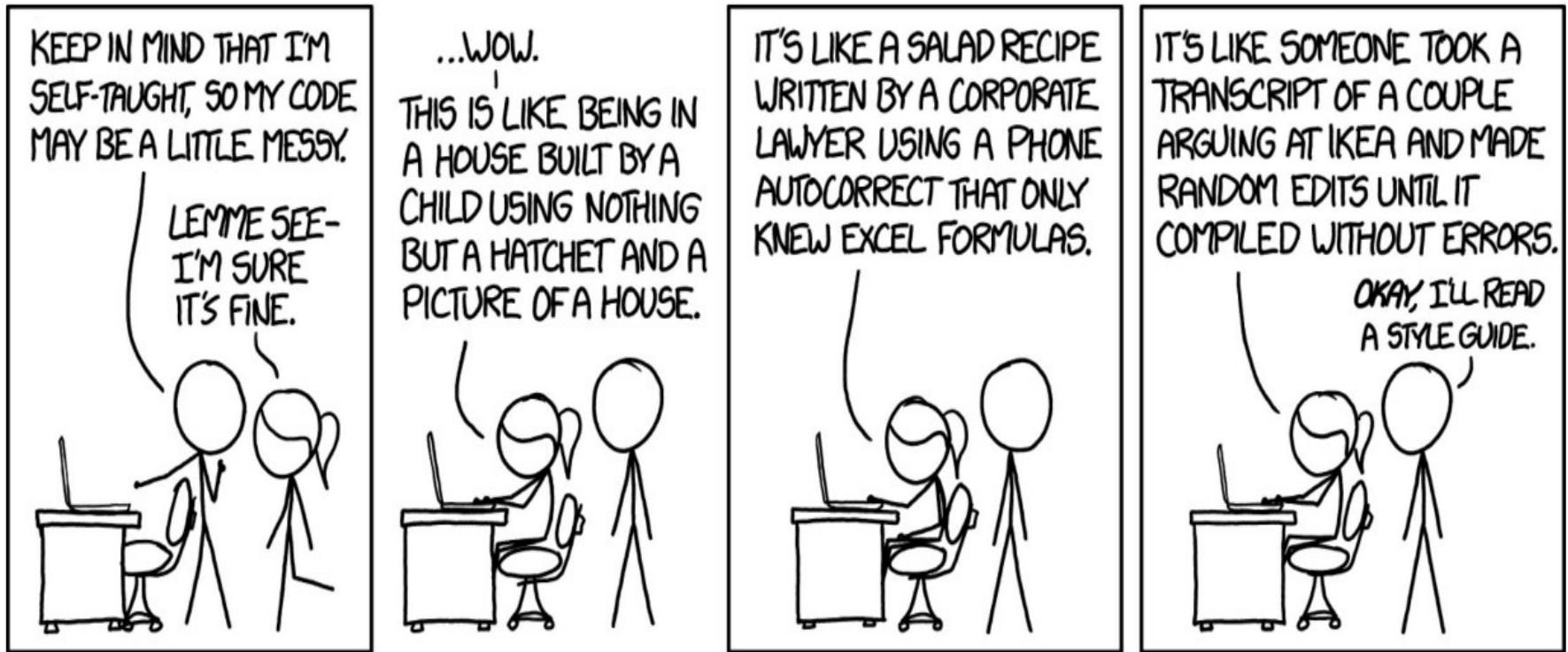


Project Communications Management

- ▶ Many experts agree that the greatest threat to the success of any project is a failure to communicate
- ▶ Many project managers say that 90 percent of their job is communicating, yet many project managers fail to take the time to plan for project communications
- ▶ Project communications management involves generating, collecting, disseminating, and storing project information
- ▶ Key outputs include a communications management plan and a project website



Figure 6-13. Code Quality (www.xkcd.com)



Communications Management Plans

- ▶ Because project communication is so important, every project should include a **communications management plan**—a document that guides project communications
- ▶ The plan will vary with the needs of the project, but some type of written plan should always be prepared and address the following items:
 - Stakeholder communications requirements
 - Information to be communicated, format, content, and level of detail
 - Identification of who will receive the information and who will produce it
 - Suggested methods or guidelines for conveying the information
 - Description of the frequency of communication
 - Escalation procedures for resolving issues
 - Revision procedures for updating the communications management plan
 - A glossary of common terminology used on the project



Figure 6-14. Sample Communications Management Plan (partial)

Project Name: Just-In-Time Training Project

1. Stakeholder Communications Requirements

Because this project involves many people from all over the company as well as outside suppliers, the project team will use surveys, interviews, checklists, and other tools and techniques to determine the communications requirements for various stakeholders. Employees will have specific communications needs in that several training programs are being totally changed, and they will likely be uncomfortable with those changes. Suppliers will have communications needs to ensure that they are developing courses that will meet our organization's needs. Internal experts providing content will have communications needs related to providing useful information and products.

2. Communications Summary

The following table summarizes various stakeholders, communications required, the delivery method or format of the communications, who will produce the communications, and when it will be distributed or the frequency of distribution. All communications produced will be archived and available on the project web site. As more communications items are defined, they will be added to this list. The project team will use various templates and checklists to enhance communications. The team will also be careful to use the appropriate medium (that is, face-to-face meeting, phone, e-mail, hard copy, web site, and so on) and follow corporate guidelines for effective communications. Note the comments/guidelines as well.

3. Guidelines

4. Escalation Procedures for Resolving Issues

5. Revision Procedures for this Document

6. Glossary of Common Terminology

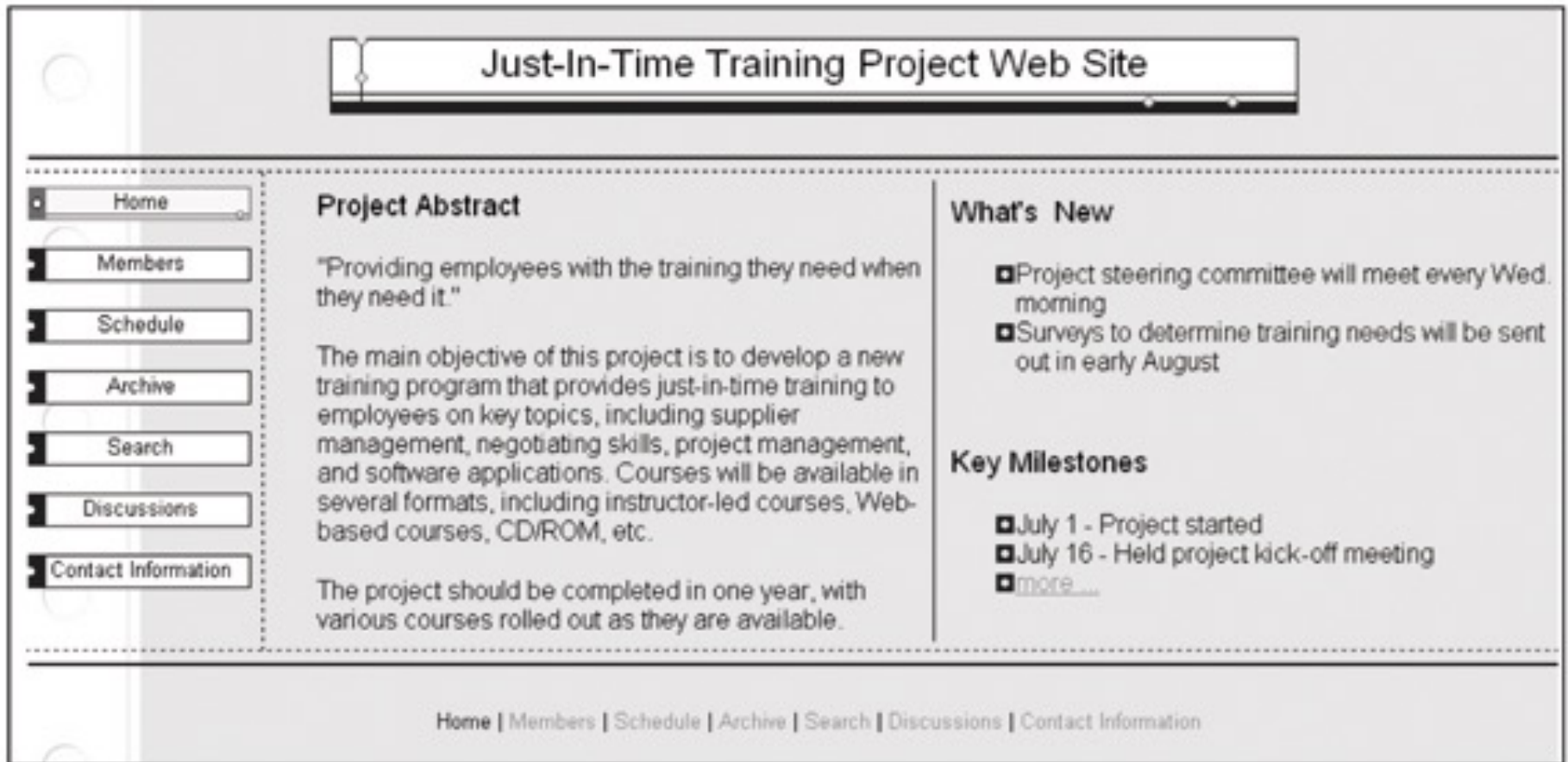


Project Websites

- ▶ Project websites provide a centralized way of delivering project documents and other communications
- ▶ Some project teams also create **blogs**—easy-to-use journals on the Web that allow users to write entries, create links, and upload pictures, while allowing readers to post comments to particular journal entries
- ▶ Part of the Web site might be open to outside users, whereas other parts might be accessible only by certain stakeholders
- ▶ It is important to decide if and how to use a project website to help meet project communications requirements



Figure 6-15. Sample Project Web Site



Project Stakeholder Management

- ▶ Project stakeholder management planning involves determining strategies to effectively engage stakeholders in project decisions and activities based on their needs, interests, and potential impact.
- ▶ The main output of this process is a stakeholder engagement plan.
- ▶ The stakeholder engagement plan, the communications management plan, and the resource management plan are tightly bound and should be in agreement.



Stakeholder Engagement Plan

Contents

- ▶ Current and desired engagement levels of key stakeholders
- ▶ Scope and impact of change to stakeholders
- ▶ Identified interrelationships between stakeholders and potential overlap
- ▶ Potential management strategies for each stakeholder classification
- ▶ Methods for updating the stakeholder management plan

Note: Some information may be confidential, so it should have limited distribution.



Figure 6-16. Sample Stakeholder Engagement Plan

Name	Power/ Interest	Current engagement	Potential Management Strategies
Mike Sundby	High/high	Supportive	Mike is very outgoing and visionary. Great traits for a project champion. He is concerned about financials and has an MBA. Manage closely and ask for his advice as needed. Schedule short face-to-face meetings as needed.
Lucy Camerena	High/high	Leading	Lucy has a Ph.D. in education and knows training at this company. She is very professional and easy to work with, but she can stretch out conversations. Make sure she reviews important work before showing it to other managers.
Ron Ryan	Low/ medium	Resistant	Ron led the Phase I project and is upset that he was not asked to lead this Phase II project. He's been with the company over 20 years and can be a good resource, but he could also sabotage the project. Ask Lucy to talk to him to avoid problems. Perhaps give him a small consulting role on the project.



Project Risk Management

- ▶ PMI defines a project risk as an uncertainty that can have a *negative or positive* effect on meeting project objectives
- ▶ Note that some people only view risks as negative and call positive risks opportunities
- ▶ The main planning processes are planning risk management, identifying risks, performing qualitative risk analysis, performing quantitative risk analysis, and planning risk responses
- ▶ You can also plan to reduce procurement-related risks by making risk-related contract decisions



Project Risk Management

- ▶ A risk management plan documents the procedures for managing risk *throughout the life of a project*
- ▶ The general topics that a risk management plan should address include the methodology for risk management, roles and responsibilities, budget and schedule estimates for risk-related activities, risk categories, probability and impact matrices, and risk documentation



Other Risk Plans

- ▶ **Contingency plans** are predefined actions that the project team will take if an identified risk event occurs
- ▶ **Fallback plans** are developed for risks that have a high impact on meeting project objectives, and are put into effect if attempts to reduce the risk are not effective; sometimes called contingency plans of last resort
- ▶ **Contingency reserves** or **contingency allowances** are funds held by the project sponsor that can be used to mitigate cost or schedule overruns if known risks occur
- ▶ **Management reserves** are funds held for unknown risks that are used for management control purposes – not part of the cost baseline, but are part of the project budget and funding requirements



Figure 6-17. Sample Risk Management Plan

1. Methodology

The project team will review data available from the Phase I project and past training programs within Global Construction. They will also review information related to external projects similar to this one. The team will use several tools and techniques, including brainstorming, surveys, and risk-related checklists to assist in risk management.

2. Roles and Responsibilities

The project manager will be responsible for leading the team and other stakeholders in performing risk-related activities. As detailed risk-related activities and deliverables are determined, the project manager will delegate those tasks to others as appropriate.

3. Funding and Timing

As specific risk-related activities and deliverables are determined, budget and schedule information will be provided. Protocols for the application of contingency and management reserves will be reviewed with the project sponsor.

4. Risk Categories

General categories and subcategories for risk on this project include business risks (suppliers and cash flow), technical risks (course content, hardware, software, and network), organizational risks (executive support, user support, supplier support, and team support), and project management risks (estimates, communication, and resources).

5. Risk Probability and Impact

Risk probability and impact will initially be estimated as high, medium, or low based on expert judgment. High means a 75% -100% probability or impact, low means 0%-25%, and medium is in between. If more advanced scoring is needed, the project team will determine an appropriate approach.

6. Stakeholder Risk Appetite

Measureable risk thresholds for each project objective will be documented for key stakeholders. These thresholds determine the acceptable overall project risk exposure and influence the probability and impact ratings.

7. Risk Documentation

All risk-related information will be summarized in a risk register. Detailed documentation will be available in a secure area on the project website.



Identifying Risks

- ▶ You cannot manage risks until you identify them
- ▶ Identifying risks involves determining which risks are likely to affect a project and documenting the characteristics of each
- ▶ The main outputs of this process are a risk register and a risk report



Risk Events

- ▶ **Risk events** refer to specific, uncertain events that may occur to the detriment or enhancement of the project
 - **Negative risk events** include the performance failure of a product produced as part of a project, delays in completing work as scheduled, increases in estimated costs, supply shortages, litigation against the company, and strikes
 - **Positive risk events** include completing work sooner than planned or at an unexpectedly reduced cost, collaborating with suppliers to produce better products, and obtaining good publicity from the project
 - You can chart the probability and impact of risk events on a matrix



Overall Project Risk

- ▶ Overall project risk is the effect of uncertainty on the project as a whole
- ▶ Contents of a risk report include sources of overall project risk and summary information on risk events, such as number of risks, distribution across risk categories, metrics, and trends
- ▶ The risk report is developed progressively during the entire risk planning processes



What Went Wrong?

- ▶ Not identifying risks or taking the time to perform adequate risk planning can lead to disaster
 - In April 2017, several headlines reported how Fyre—what was supposed to be a luxury vacation/concert in the Bahamas—was being called #DumpsterFyre. “A \$100 million proposed class-action lawsuit was filed Sunday (May 1, 2017) in California against the organizers of the now infamous Fyre Festival on the grounds of fraud, claiming a lack of adequate food, water, shelter, and medical care created a dangerous and panicked situation among attendees.
 - The infamous Woodstock music festival in 1969 had even more problems. Then New York Governor Nelson Rockefeller declared it a disaster area after the site was overrun by over 400,000 people (twice the number expected) due to lack of fencing and ticket booths. Roads were impassable, and the Army had to airlift in food and water. “Two people died: one of a drug overdose, the other run over by a tractor. There were 5,162 medical incidents reported, including eight miscarriages.”



Performing Qualitative Risk Analysis

- ▶ Results in prioritizing risks as high, medium, or low
- ▶ A probability/impact matrix is a good technique to help decide which risks are most important on a project



Figure 6-18. Sample Probability/Impact Matrix

Probability	High	Risk 9 Risk 10	Risk 5	Risk 1 Risk 2
	Medium		Risk 3 Risk 4	
	Low	Risk 6 Risk 7		Risk 8
		Low	Medium	High

Impact



Performing Quantitative Risk Analysis

- ▶ Large, complex projects involving leading-edge technologies often require extensive quantitative risk analysis
- ▶ Data gathering often involves interviewing experts and collecting probability distribution information
- ▶ Quantitative risk analysis and modeling techniques include decision tree analysis, simulation, influence diagrams, and sensitivity analysis. The most commonly used simulation tool is Monte Carlo analysis



Planning Risk Responses

- ▶ Negative risk responses
 - Escalation of the risk
 - Risk avoidance
 - Risk acceptance
 - Risk transference
 - Risk mitigation

- ▶ Positive risk responses
 - Escalation of the risk
 - Risk exploitation
 - Risk sharing
 - Risk enhancement
 - Risk acceptance



Media Snapshot

- ▶ People around the world watched as dredgers worked to dislodge The Ever Given cargo ship which blocked the Suez canal for almost a week in March 2021. Hundreds of ships waited for the canal to open again, creating a traffic jam visible from space! Several ships considered how to respond to this negative risk event. Had this ever happened before? Could they have planned for it? How?
- ▶ The Suez Canal opened for navigation in 1869, and it has closed five times since it opened. In 1956 it was closed for months due to the British-French-Israeli invasion. In 1967 Egypt blocked the canal for eight years over conflict with Israel. Later blockages were all accidents caused by ships. In 2004 an oil tanker blocked the waterway for three days. In 2006 a cargo ship was lodged and removed in only eight hours. In 2017 a container ship was stuck but pushed free within a few hours. Lloyd's List estimated that the 2021 blockage cost \$400 million per hour in delayed goods.



Video Highlights

- ▶ 2021 was an important year for projects related to space travel. The nature of these projects included huge risks, both positive and negative.
- ▶ On March 5, 2021, Elon Musk's SpaceX managed to successfully land one of its Starship prototypes at the end of a high-altitude test flight. Unfortunately, the rocket burst into flames minutes after touch down.
- ▶ On July 12, 2021, Virgin Galactic owner Richard Branson and five crewmates rocketed into space to demonstrate that his company's air-launched spaceplane is ready for customers.
- ▶ On July 20, 2021, Amazon and Blue Origin founder Jeff Bezos successfully completed New Shepard's first human flight with four private citizens onboard, including Jeff Bezos, Mark Bezos (Jeff's brother), Wally Funk (age 82), and Oliver Daemen (age 18).



Risk Registers

- ▶ A **risk register** is a document that contains the results of various risk management processes and is often displayed in a table or spreadsheet format
- ▶ It is a tool for documenting potential risk events and related information, including:
 - An identification number for each risk event
 - A rank for each risk event (usually high, medium, or low)
 - The name of the risk event
 - A description of the risk event
 - The category under which the risk event falls
 - The **root cause**: The real or underlying reason a problem occurs
 - **Triggers**: Indicators or symptoms of actual risk events
 - Potential responses to each risk event
 - The risk owner, or person who will own or take responsibility
 - The probability of the risk event occurring
 - The impact to the project if the risk event occurs
 - The status of the risk event



Figure 6-19. Sample Risk Register

Project Name: Just-In-Time Training Project

ID No.	Rank	Risk	Description	Category	Root Cause	Triggers	Potential Responses	Risk Owner	Probability	Impact	Status
R15	1										
R21	2										
R7	3										

To understand the risk register more fully, imagine that the following data is entered for the first risk in the register.

- ID No.: R15
- Rank: 1
- Risk: Poor survey response.
- Description: Many people dislike surveys and avoid filling them out, or if they do, they don't offer good or honest feedback.
- Category: Organizational/user support risk
- Root cause: People don't want to take the time and think their inputs aren't important.
- Triggers: Low survey response rate the first few days; incomplete surveys.
- Potential Responses: Make sure senior management emphasizes the importance of this project and the survey for designing good courses. Have the functional managers personally mention the survey to their people and stress its importance. Offer a reward to the department with the most responses. Ensure that the survey instructions say it will take 10 minutes or less to complete. Extend the deadline for survey responses.
- Risk owner: Mike Sundby, project champion
- Probability: Medium
- Impact: High
- Status: PM will set up a meeting within a week with a project steering committee to decide which response strategies to implement if the survey response is low.



Risk-Related Contract Decisions

- ▶ Work done by outside suppliers or sellers should be well documented in **contracts**, which are mutually binding agreements that obligate the seller to provide the specified products or services, and obligate the buyer to pay for them
- ▶ Project managers should include clauses in contracts to help manage project risks by using:
 - Incentive or penalty clauses
 - Certain types of contracts, such as fixed-price contracts, to reduce their risk of incurring higher costs than expected
 - Competition for supplying goods and services to help reduce negative risks and enhance positive risks on projects



Figure 6-20. Sample Guidelines for Risk-Related Contractual Agreements

The following guidelines are provided for your consideration as you make decisions develop contracts/agreements between Global Construction (the buyer) and its suppliers (the sellers). Be sure to work with a member of the contracting department to write your specific contracts. All contracts must be reviewed and signed by the legal department, as well.

- Contract termination clauses: These clauses list circumstances under which the buyer and/or seller can terminate a contract and how final payment will be settled. All the contracts must include a termination clause.
- Incentive clauses: These clauses provide incentives for the seller to provide goods or services at certain times, of certain quality, and so on. Incentive clauses can include extra payments or profit sharing, if appropriate.
- Penalty clauses: These clauses specify penalties that will be applied when the seller does not provide goods or services as specified in the contract. For example, if a product is delivered late, the seller might be required to pay a certain dollar amount for each day the product is late.
- Fixed price contracts: To minimize the negative risk of paying more than planned for specific goods or services, Global Construction issues fixed priced contracts, which specify that the seller agrees to a fixed price and bears the risk if it costs more to provide the goods or services than originally assumed.
- Competitive contracts: In many situations Global Construction can use competition to help reduce risks. In addition to reviewing bids from several sellers, a good strategy may be to award two small contracts and then award the following larger contract to the seller that does the best job on the first job.



Project Procurement Management

- ▶ Project procurement management includes acquiring or procuring goods and services for a project from outside the organization
- ▶ As the business world continues to become more competitive and global, more and more projects include procurement, often referred to as outsourcing
- ▶ Key outputs include procurement management plans, procurement strategies, bid documents, procurement statements of work, source selection criteria, make-or-buy decisions, independent cost estimates, change requests, project documents updates, and organizational process assets updates



Make-or-Buy Analysis

- ▶ **Make-or-buy analysis** involves estimating the internal costs of providing a product or service, and comparing that estimate to the cost of outsourcing
- ▶ Many organizations also use make-or-buy analysis, often called a lease-or-buy analysis, to decide if they should purchase or lease items for a particular project
- ▶ **Example:** Assume you can lease an item you need for a project for \$800/day. To purchase the item, the cost is \$12,000 plus a daily operational cost of \$400/day. How long will it take for the purchase cost to be the same as the lease?
- ▶ See the solution in the text, p. 223



Figure 6-21. Comparing the Cost of Leasing Versus Buying

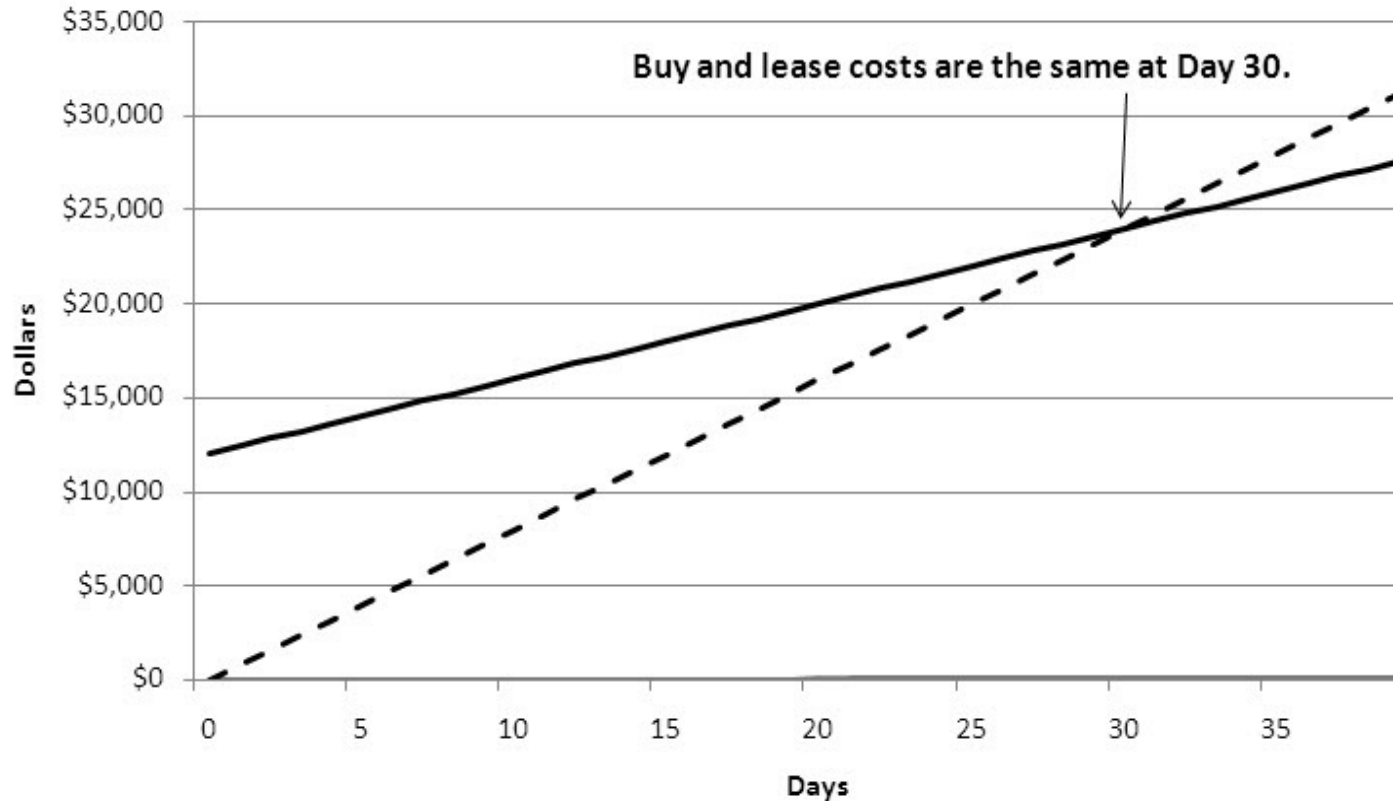


Figure 6-22. Sample Make-or-Buy Analysis

Project Name: Just-In-Time Training Project

Background: Global Construction wants to train 100 employees and will consider having the employees sent to an outside course (Buy option) or provide the education using internal employees (Make option). Assuming 20 participants/class and 2 days average course length, 10 total days of training will be needed. Assume 500 of online facilitation will be needed as well (5 hours per participant).

Decision Being Analyzed: Project management training

Option 1: (Make): Use in-house instructors for the instructor-led basic project management training and facilitation for online materials (includes purchasing course materials)

Estimated cost per hour for in-house trainer (excludes participant time): \$60

Estimated training hours: 80 (10 total days of training X 8 hours per day)

Subtotal: \$4,800 (80 hours X \$60 per hour)

Materials cost: \$7500 (\$75/participant/course, 100 participants total)

Estimated cost per hour for online facilitation (excludes employee time): \$60

Estimated hours: 500

Subtotal: \$30,000 (500 hours X \$60 per hour)

Total: \$42,300 (\$4,800 + \$7,500 + \$30,000)

Option 2: (Buy): Outsource instructor-led basic project management training and facilitation for online materials (includes course materials)

Estimated cost for class per participant = (Estimated Cost X Number of Days) = \$500 X 2 days = \$1,000

Cost of instructor-led classes (\$1,000 X 100 participants)

Subtotal: \$100,000

Estimated cost per hour for online facilitation (excludes student time): \$100

Estimated hours: 500

Subtotal: \$50,000 (500 hours X \$100 per hour)

Total \$150,000 (\$100,000 + \$50,000)

Cost Difference: \$150,000 - \$42,300 = \$107,700

Recommendation: Because we have qualified internal staff and can purchase suitable materials, we recommend Option 1, in which we conduct the basic project management training in-house.



Procurement Management Plans

- ▶ A procurement management plan is a document that describes how the procurement processes will be managed, from developing documentation for making outside purchases or acquisitions to contract closure
- ▶ Some projects must follow government directives, such as the **Federal Acquisition Regulation (FAR)**, which provides uniform policies for acquisition of supplies and services for executive agencies in the U.S.



Types of Contracts

- ▶ **Fixed-price or lump-sum contracts** involve a fixed total price for a well-defined product or service
- ▶ **Cost-reimbursable contracts** involve payment to the seller for direct and indirect actual costs
- ▶ **Time-and-material contracts** are a hybrid of both fixed-price and cost-reimbursable contracts
- ▶ Unit pricing can also be used in various types of contracts to require the buyer to pay the supplier a predetermined amount per unit of service
- ▶ **Indefinite delivery indefinite quantity (IDIQ)** contracts provide for an indefinite quantity of goods or services for a fixed time with a stated upper and lower limit.



Best Practice

- ▶ Contract type and incentives can be extremely effective. On August 1, 2007, tragedy struck Minneapolis, Minnesota, when a bridge on I-35W collapsed, killing 13 motorists, injuring 150 people, and leaving a mass of concrete and steel in the river and on its banks
- ▶ Peter Sanderson, PM for the joint venture of Flatiron-Manson, led his team in completing the project
- ▶ The contractors earned \$25 million in incentive fees on top of their \$234 million contract for completing the bridge three months ahead of schedule
- ▶ MnDOT justified the incentive payment by saying that each day the bridge was closed it cost road users more than \$400,000



Figure 6-23. Sample Procurement Management Plan

Project Name: Just-In-Time Training Project

Guidelines on Types of Contracts: To reduce Global Construction's risk, contracts for the Just-In-Time Training project should be fixed price as often as possible. When goods or services cannot be well defined, cost-reimbursable or time and material contracts may be used. The representative from the contracting department assigned to this project will work with the project manager to determine the appropriate contract type for each contract developed.

Standard procurement documents or templates: Global Construction's intranet site includes many sample documents and templates for project procurement. The project team will review these documents and templates and use them as often as possible.

Guidelines for creating procurement documents: Global Construction's intranet site provides guidelines for creating many procurement documents. The Just-In-Time Training project team should review their current work breakdown structure and scope statement to provide the basis for contract work breakdown structures and statements of work.

Roles and responsibilities: The project manager is the main contact for all procurement matters directly related to the Just-In-Time Training project. The representative from the contracting department assigned to this project will coordinate with other staff in the contracting and legal departments, as needed.

Etc.



Bid Documents

- ▶ A **Request for Information (RFI)** is used when more information about the goods or services is needed. Potential suppliers are asked to provide the information before sending out an RFP or RFQ
- ▶ A **Request for Proposal (RFP)** is a document used to solicit proposals from prospective suppliers
 - A **proposal** is a document in which sellers describe what they will do to meet the requirements of a buyer
- ▶ A **Request for Quote (RFQ)** is a document used to solicit quotes or bids from prospective suppliers
 - A **bid** (also called a quote) is a document prepared by sellers providing pricing for standard items that have been clearly defined by the buyer
- ▶ RFPs are used for procurements where there are a variety of ways to meet a need, while RFQs are used for more standard items



Figure 6-26. Sample RFP (partial)

Purpose of RFP

Global Construction wants to improve training in supplier management, negotiating skills, project management, and software for its employees. In the fast-paced, ever-changing construction market, effectively training employees across a globally dispersed company with different populations is a challenge. By redesigning our current training, Global Construction can reduce training costs and improve productivity. In addition to traditional instructor-led courses provided on-site, we also want to allow our employees to learn about specific topics on a just-in-time basis by having quick access to materials and expert advice. The purpose of this RFP is to hire experts to help us find qualified sellers to develop and deliver these new training courses.

Background Information

Global Construction employs 10,000 full-time employees in ten different counties and fifteen states in the U.S. We want to increase the productivity of our employees, especially in the sales, purchasing, engineering, and information technology departments. The Just-In-Time Training Project, a one-year project, began on July 2. A key part of this project is working with outside firms to develop and provide just-in-time training in supplier management, negotiating skills, project management, and software applications. See Appendix A for detailed information on the project and specific training needs.

Basic Requirements

The basic requirements for this work include the following:

1. Develop a list of qualified sellers to develop and provide the training as described in Appendix A.
2. Provide a summary description and detailed evaluation of each seller. Provide company brochures, web sites, annual reports, and other appropriate information.
3. Work with Global Construction to develop an evaluation system to evaluate each seller.
4. Provide an objective evaluation of each seller using this evaluation system.
5. Develop a list of the top five sellers for each course.
6. Provide recommendations for developing partnerships/relationships with each of the top five sellers.
7. Complete the above work no later than September 9.



Procurement Statements of Work

- ▶ A procurement statement of work (SOW) is a description of the work that is to be purchased
- ▶ It is a type of scope statement that describes the work in sufficient detail to allow prospective suppliers to determine if they are capable of providing the goods and services required and an appropriate price
- ▶ It should be clear, concise, and as complete as possible, describe all services required, and include performance information, such as the location and timing of the work



Figure 6-25. Sample Contract Statement of Work (partial)

Project Name: Just-in-Time Training Project

Contract Name: Qualified Sellers List

Scope of Work:

1. Develop a list of qualified sellers to develop and provide the training as described in Appendix A.
2. Provide a summary description and detailed evaluation of each seller. Provide company brochures, web sites, annual reports, and other appropriate information.
3. Work with Global Construction to develop an evaluation system to evaluate each seller.
4. Provide an objective evaluation of each seller using this evaluation system.
5. Develop a list of the top five sellers for each course.
6. Provide recommendations for developing partnerships/relationships with each of the top five sellers.
7. Complete the above work no later than September 9.

Location of Work:

The seller can perform the work at any location. The seller must physically meet with representatives from Global Construction in our corporate office at least twice during the term of the contract.

Period of Performance:

Deliverables Schedule:

Acceptance Criteria:

Special Requirements:



Source Selection Criteria and the Supplier Evaluation Matrix

- ▶ After doing a thorough evaluation of potential suppliers, many organizations summarize evaluations using a **supplier evaluation matrix**—a type of weighted scoring model
- ▶ Suppliers are often evaluated on criteria related to cost, quality, technology, past performance, and management



Figure 6-26. Sample Supplier Evaluation Matrix

Criteria	Weight	Supplier 1	Supplier 2	Supplier 3
Past performance	30%	70	90	70
Cost	25%	80	75	70
Educational background	25%	70	75	70
Management Approach	20%	85	80	70
Weighted Scores		75.5	80.5	70



Change Management Models

- ▶ Change management focuses on the impact of projects and programs on people in organizations. In fact, some projects include a change manager on the project team.
- ▶ Several change management models:
 - PMI published *Managing Change in Organizations: A Practice Guide* (2013)
 - Jeffrey Hiatt published *ADKAR: A Model for Change in Business, Government and our Community* (2006)
 - Dr. John Kotter developed an 8-step process for leading change
 - Virginia Satir created the Virginia Satir Change Process Model
 - William and Susan Bridges developed the Bridges Transition Model



Figure 6-27. Adkar® Model for Change Management



Awareness

- Announce the project and proposed changes well ahead of time
- Explain the need for the change
- Let people ask questions and make suggestions

Desire

- Identify champions to promote the change
- Gauge reactions to the change
- Address concerns and show people how the change benefits them personally

Knowledge

- Provide training to show people what they need to do related to the change
- Offer resources people can refer to as needed

Ability

- Test the change on a small group before implementing it on a large scale
- Set realistic goals and metrics
- Monitor performance following the change and provide feedback

Reinforcement

- Provide positive feedback, rewards, and recognition to encourage people to keep following the new process
- Monitor the change over time to ensure it provides the desired outcomes

Kotter's 8-Step Process for Leading Change

1. Create a sense of urgency
2. Build a guiding coalition
3. Form a strategic vision and initiatives
4. Enlist a volunteer army
5. Enable action by removing barriers
6. Generate short-term wins
7. Sustain acceleration
8. Institute change



Virginia Satir Change Model

1. Late status quo: Everything is familiar or “business as usual.”
2. The foreign element: A change occurs that shifts the status quo.
3. Chaos: People are in unfamiliar territory, making them feel uncomfortable.
4. The transforming idea: People come up with ideas to find a way out of the chaos.
5. Practice and integration: People try out new ideas, learning what works and what doesn't.
6. New status quo: People get used to the new way of working.



Bridges Transition Model

1. Endings: Every transition begins with one.
2. The Neutral Zone: The second hurdle: a seemingly unproductive time-out when we feel disconnected from people and things in the past, and emotionally unconnected to the present.
3. The New Beginning: We come to beginnings only at the end, when we launch new activities.



Applying Project Management Principles to Change Management and Planning Projects

- ▶ Create a collaborative project team environment
- ▶ Focus on value
- ▶ Build quality into processes and deliverables.
- ▶ Navigate complexity
- ▶ Optimize risk responses
- ▶ Enable change to achieve the envisioned future state



QUALITY, RESOURCE, COMMUNICATIONS, STAKEHOLDER, RISK, AND PROCUREMENT MANAGEMENT PLANNING FOR AN AGILE/HYBRID PROJECT

- ▶ Agile/hybrid teams can use any of the predictive project planning processes, tools, or techniques mentioned earlier.
- ▶ For example, the GCHC project, like the Just-In-Time Training project, included surveys and course evaluations for employees. They could use similar metrics for the GCHC project.
- ▶ The following section focuses on planning approaches more specific to agile teams

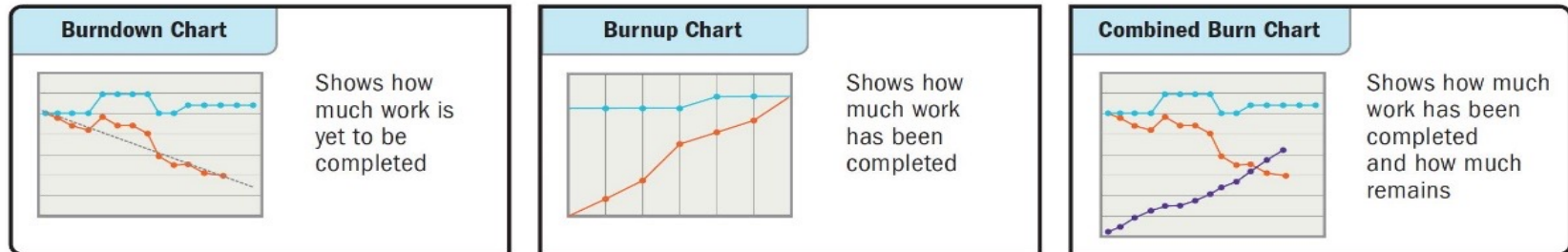


Agile Quality Planning

- ▶ Definition of Done: a list of criteria which must be met before a product increment 'often a user story' is considered 'done.'
- ▶ Big visible charts of **information radiators**, the generic term for any of a number of handwritten, drawn, printed or electronic displays which a team places in a highly visible location, so that all team members as well as passers-by can see the latest information at a glance.



Figure 6-28. Sample information radiators



Reference	Risk Description	Date	Likelihood	Impact	Risk Rating	Response	Owner
1	The main supplier cannot deliver on time because of other commercial commitments	03/21	Likely	High	High	Include financial penalties in contract; build contingency into the schedule; monitor contractor performance	Annie
2	The lead time for the leased line exceeds 90 days	03/21	Unlikely	Medium	Medium	Order leased line earlier than necessary; incur additional rental fees	Jim
3	Release of the new system is delayed because user acceptance testing commences after the planned start	03/21	Very likely	High	High	Employ temporary staff to free up resources for testing; revise project schedule	Mark
4	There is insufficient capacity to create additional database instances for data migration and testing	04/18	Very unlikely	Medium	Low	Prioritize projects; temporarily remove alternative development instance	Jim

Risk Log

Source: Project Management Institute, Inc., *A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Seventh Edition* (2021), Figure 2-28, p. 108.

Figure 6-29. Sample Definition of Done

Definition of Done for Course 1 Release

- Checked against corporate style guide for training classes
- Proofread
- Reviewed by training expert
- Tested online by at least 3 people
- Met acceptance criteria



Agile Resource Planning

- ▶ One of the biggest differences in resource planning between predictive and agile projects is that instead of having a project manager assign people to tasks, agile teams self-manage, meaning they decide who will work on tasks themselves.
- ▶ The team should have all the skills and authority to complete the work in the product backlog. This makes selecting the team very important.
- ▶ Creating resource histograms and cross-training employees can help agile organizations ensure they have adequate and skilled workers.



Agile Communications Planning

- ▶ The Scrum framework includes specific events where a lot of communications takes place.
- ▶ Sprints: The GCHC project had fixed length sprints of one month to create consistency. Each sprint had a clear sprint goal.
- ▶ Sprint planning: Each sprint started with a sprint planning meeting that lasted 8 hours or less.
- ▶ Daily Scrum: These 15-minute or less meetings focused on inspecting progress toward meeting the sprint goal, adapting the sprint backlog as needed, and adjusting the work for the next day.
- ▶ Sprint review: In this 4-hour or less meeting the team presented the results of their work to key stakeholders and held a working session to inspect the outcome of the sprint and determine future adaptations.
- ▶ Sprint retrospective: The purpose of this 3-hour or less meeting with team members only was to plan ways to increase quality and effectiveness.



Agile Stakeholder Planning

- ▶ The sprint review meetings allow key stakeholders to inspect the outcomes of each sprint and determine future adaptations.
- ▶ The Scrum master or project manager works with the appropriate people to remove the impediments.
- ▶ Key stakeholders determine the Definition of Done for each increment.
- ▶ The information radiators provide visibility into work progress for all interested stakeholders.



Agile Risk Planning

- ▶ Emphasizing value to the customer, prioritizing work, and collaborating as a team focused on one sprint goal at a time helps to address potential risks.
- ▶ Teams should openly discuss impediments as part of their daily Scrum meetings, and the Scrum master or project manager should work hard to remove impediments so the teams can focus on accomplish meaningful work.
- ▶ Many agile teams also use risk registers, as described earlier in this chapter.



Agile Procurement Planning

- ▶ For some projects, a master agreement could be used for an overall contract. A **master agreement** allows for some work to be added in an appendix or supplement, allowing changes to occur without impacting the overall contract.
- ▶ Some organizations have streamlined the procurement process by using **lean-agile procurement**, an agile approach for procurements where collaboration between people is a key success factor.
- ▶ Goals of lean-agile procurement include reducing preparation efforts, working faster, simplifying paperwork, evaluating hard and soft skills of potential partners, and preparing agile contracts.



What Went Right?

- ▶ Goals of lean-agile procurement include the following:
 1. Reduce preparation efforts as much as possible (reduce waste)
 2. Improve time to market (days instead of months) so delivering business value starts earlier
 3. Simplify proposals by providing a one-page predefined structure so creation and comparison of multiple proposals is as easy as possible
 4. Evaluate the soft and hard skills of potential partners
 5. Prepare an agile contract, thereby eliminating the need for additional legal work
- ▶ Swiss Casinos Group, the top Swiss gambling and casino company in the market, provides a great example of using a lean-agile approach to procurement. Swiss Casinos Group wanted to invest heavily in digitalization, and the board approved the project “Shakira,” which introduced a new Enterprise Resource Planning (ERP) software system. “They sourced an ERP in just 4 weeks – a new world record! This project has been selected as a finalist at The World Procurement Awards 2020.”



Sample Agile/Hybrid Procurement Planning

- ▶ Instead of using a traditional request for proposal process, they planned to use lean-agile procurement techniques. For example, they would select about five vendors (after researching potential education partners) and invite them to visit with two or three representatives for a couple of days. They would hold a big room meeting, sharing all information and answering questions of all vendors. Each vendor would then create a product roadmap for providing educational opportunities for Global Construction's current and future workers.
- ▶ Debra, several GCHC team members, and a few other managers would attend the event, facilitating and observing how each vendor team worked. They would share some of the ideas with the entire group, providing additional suggestions on what they liked and disliked. They would then let everyone continue working to put together their proposals, which they would present on the second day. This approach would save a lot of time and allow vendors to collaborate on a potential solution.



Chapter Summary

- ▶ This chapter summarizes the planning processes and outputs for quality, resource, communications, stakeholder, risk, and procurement management.
- ▶ Outputs using a predictive approach and an agile/hybrid approach are presented.
- ▶ Change management and applying project management principles are discussed.
- ▶ Samples of several planning documents are provided for the Just-In-Time Training project and the GCHC project.

