



Chapter 1: An Introduction to Project, Program, and Portfolio Management

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

Learning Objectives

- ▶ Understand the growing need for better project, program, and portfolio management
- ▶ Explain what a project is, provide examples of projects, list various attributes of projects, and describe project constraints
- ▶ Define project management and discuss key elements of project management using a process-oriented approach and a principle-based approach



Learning Objectives (continued)

- ▶ Discuss the relationship between project, program, and portfolio management and their contributions to enterprise success
- ▶ Understand important agile concepts
- ▶ Explain the differences between predictive, agile, and hybrid approaches to project management
- ▶ Describe the project management profession, including the role of project managers and suggested skills, the role of professional organizations, the importance of certification and ethics, project management careers, and the growth of project and portfolio management software



Introduction

Many organizations today have a new or renewed interest in project management (PM). Why?

- ▶ Demand for projects continues to increase. GDP contributions from project-oriented industries are forecasted to reach US\$34.5 trillion by 2030. Employers will need 25 million new individuals working in project management-oriented roles by 2030.
- ▶ 2020 proved that projects matter now more than ever. Agile organizations respond better to change.
- ▶ Good project management helps the bottom line. An average 11.4 percent of investment is wasted due to poor project performance.



More Motivation to Study PM

- ▶ Project management salaries continue to grow. The average total compensation for project management workers in the U.S. in 2019 was \$124,000.
- ▶ Certification is a good investment. People with the PMP® credential reported salaries 22% higher on average than those without it.
- ▶ Project management is also a vital skill for personal success.

Note: See citations in the text. Read the references for more details.



What Went Wrong?

- ▶ A 1995 Standish Group study (The CHAOS Report) found that only **16.2** percent of information technology (IT) application development projects were successful in meeting scope, time, and cost goals. **Over 31 percent of the projects were canceled** before completion, costing over \$81 billion in the U.S. alone.
- ▶ In a 2019 study by three global associations (KPMG, AIPM, and IPMA) only 19% of organizations delivered successful projects (defined as meeting scope, time, cost, and stakeholder satisfaction goals) most of the time.



Advantages of Using Formal Project Management

- ▶ Better control of financial, physical, and human resources
- ▶ Improved customer relations
- ▶ Shorter development times
- ▶ Lower costs
- ▶ Higher quality and increased reliability
- ▶ Higher profit margins
- ▶ Improved productivity
- ▶ Better internal coordination
- ▶ Higher worker morale



What Is a Project?

- ▶ A project is “a temporary endeavor undertaken to create a unique product, service, or result”*
- ▶ Operations is work done to sustain the business
- ▶ Projects end when their objectives have been reached, or the project has been terminated

Project Management Institute, Inc., *The Standard for Project Management, Seventh Edition* (2021), p. 4.



Examples of Projects

- ▶ A young couple hires a firm to design and build them a new house
- ▶ A retail store manager works with employees to display a new clothing line in the store and online to attract new customers
- ▶ A school district upgrades its technology infrastructure to provide wireless Internet access for all students in school and from home
- ▶ A medical technology firm develops a device that connects to smart phones
- ▶ A pharmaceutical company launches a new drug or vaccine
- ▶ A television network develops a system to allow viewers to vote for contestants and provide other feedback on programs via several devices



Video Highlights

- ▶ The Project Management Institute (PMI) recognizes outstanding performance in project management by announcing a [Project of the Year Award](#) winner. You can watch videos of several projects, including:
 - 2020: The Trans Anatolian Natural Gas Pipeline (TANAP) Project
 - 2019: Embraer E190-E2 Program Development
 - 2018: Project Legacy – Southeast Louisiana Veterans Health Care System Replacement



History of PM Video

- [History of Project Management \(music only\)](#) (5 minutes 26 seconds)
- [Author's Perspective](#) by Mark Kozak-Holland (5 minutes 5 seconds)
- Note: You can find links to all Video Highlights from the companion website under 7e Resources



Project Attributes

- ▶ A project:
 - Has a unique purpose
 - Is temporary
 - Drives change and enables value creation
 - Is developed using progressive elaboration or in an iterative fashion
 - Requires resources, often from various areas
 - Should have a primary customer or sponsor
 - The **project sponsor** usually provides the direction and funding for the project
 - Involves uncertainty

Project managers work with the project sponsors, the project team, and the other people involved in a project to define, communicate, and meet project goals.

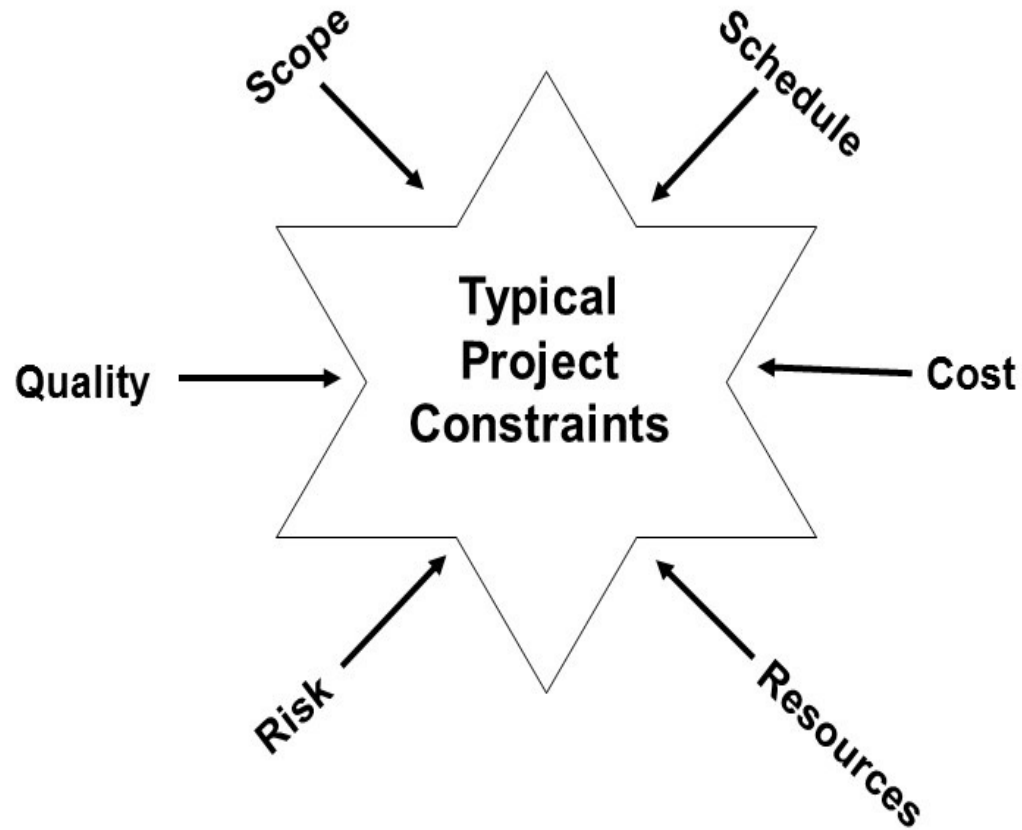


Project Constraints

- ▶ Every project is constrained in different ways. Some project managers focus on the **triple constraint** (meeting scope, time, and cost goals)
 - *Scope*: What work will be done as part of the project? What unique product, service, or result does the customer or sponsor expect from the project?
 - *Time*: How long should it take to complete the project? What is the timeline?
 - *Cost*: What should it cost to complete the project? What is the project's budget? What resources are needed?
- ▶ Other constraints include quality, risk, and resources



Figure 1-1. Typical Project Constraints



What is Project Management?

- ▶ **Project management** is “the application of knowledge, skills, tools and techniques to project activities to meet project requirements.”*

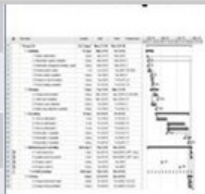

*Project Management Institute, Inc., *The Standard for Project Management, Seventh Edition* (2021), p. 4.



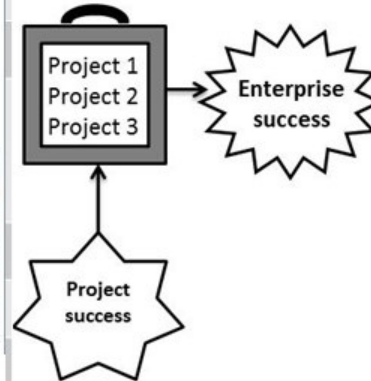
Figure 1-2. Project Management

Stakeholder needs and expectations



Process groups	Knowledge areas	Tools and techniques
1. Initiating	1. Integration	
2. Planning	2. Scope	
3. Executing	3. Schedule	
4. Monitoring and controlling	4. Cost	
5. Closing	5. Quality	
	6. Resource	
	7. Communication	
	8. Risk	
	9. Procurement	
	10. Stakeholder	

Project portfolio



Project Stakeholders

- ▶ **Stakeholders** are the people involved in or affected by project activities
- ▶ **Stakeholders include:**
 - The project sponsor
 - The project manager
 - The project team
 - Support staff
 - Customers
 - Suppliers
 - Opponents to the project



Project Management Knowledge Areas

- ▶ Project integration management is an overarching function that coordinates the work of all other knowledge areas. It affects and is affected by all of the other knowledge areas.
- ▶ Project scope management involves working with all appropriate stakeholders to define, gain written agreement for, and manage all the work required to complete the project successfully.
- ▶ Project time management includes estimating how long it will take to complete the work, developing an acceptable project schedule given cost-effective use of available resources, and ensuring timely completion of the project.
- ▶ Project cost management consists of preparing and managing the budget for the project.
- ▶ Project quality management ensures that the project will satisfy the stated or implied needs for which it was undertaken.



Project Management Knowledge Areas (continued)

- ▶ Project resource management is concerned with making effective use of the people and physical resources needed for the project.
- ▶ Project communications management involves generating, collecting, disseminating, and storing project information.
- ▶ Project risk management includes identifying, analyzing, and responding to risks related to the project.
- ▶ Project procurement management involves acquiring or procuring goods and services for a project from outside the performing organization.
- ▶ Project stakeholder management focuses on identifying project stakeholders, understanding their needs and expectations, and engaging them appropriately throughout the project.



Project Management Tools and Techniques

- ▶ Project management tools and techniques assist project managers and their teams in various aspects of project management.
- ▶ Note that a tool or technique is more than just a software package.
- ▶ Specific tools and techniques include:
 - Project charters, scope statements, and WBS (scope)
 - Gantt charts, network diagrams, critical path analyses (time)
 - Net present value, cost estimates, and earned value management (cost)
 - Agile projects often require product roadmaps, backlogs, burndown charts, retrospectives, etc.



Project Success

- ▶ There are different ways to define project success:
 - The project provided value. Value is “the worth, importance, or usefulness of something.”*
 - The project met scope, time, and cost goals.
 - The project satisfied the customer/sponsor.
 - One method used to measure customer satisfaction is a **net promoter score**, a number that represents the customer’s willingness to recommend a product or service to others.
 - The project produced the desired results.

*Project Management Institute, Inc., *The Standard for Project Management, Seventh Edition* (2021), p. 5.



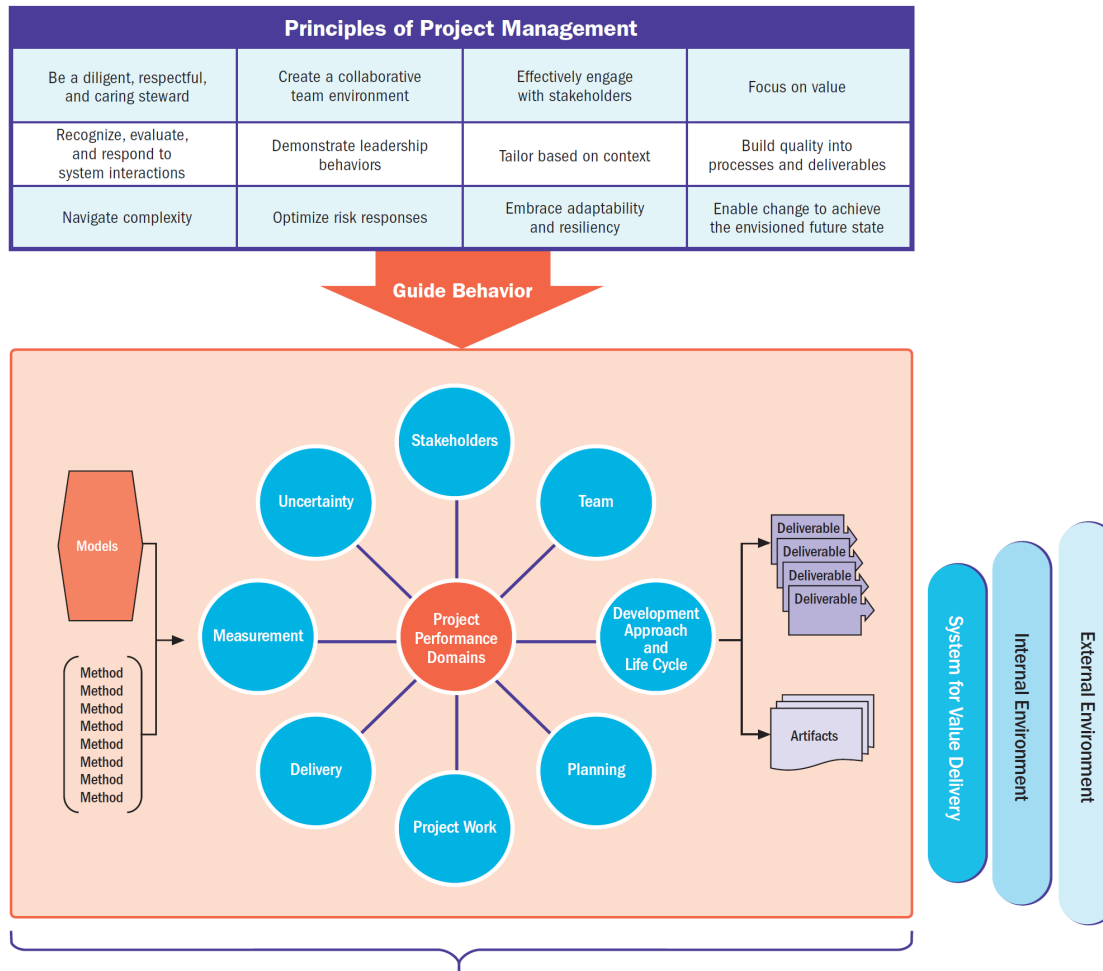
What Went Right? Improved Project Performance

Follow-up studies by the Standish Group showed some improvement in the statistics for IT projects:

- ▶ The number of successful projects has increased, from 16 percent in 1994 to 29 percent in 2015
- ▶ The number of failed projects decreased from 31 percent in 1994 to 19 percent in 2015
- ▶ 62% of small projects were successful from 2011-2015 compared to only 2% of grand, 6% of large, 9% of medium, and 21% of moderate size projects
- ▶ 39% of all agile projects were successful compared to 11% of waterfall projects.
- ▶ In 2021 the Standish Group website states that 31% of software projects are successful (an increase from the 29% reported in 2015). They also say that 46% of the successful projects returned high value to the organization.



Figure 1-3. Project Management Framework based on the PMBOK® Guide - Seventh Edition



Source: Project Management Institute, Inc., *A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Seventh Edition* (2021), Figure 4-1, p. 154.



New Terminology in Seventh Edition Framework

- ▶ **Principles** for a profession serve as foundational guidelines for strategy, decision making, and problem solving.
- ▶ A **project performance domain** is a group of related activities that are critical for the effective delivery of project outcomes.
- ▶ **Tailoring** is the deliberate adaptation of the project management approach, governance, and processes to make them more suitable for the given environment and the work at hand.



Models, Methods, and Artifacts

- ▶ A **model** is a thinking strategy to explain a process, framework, or phenomenon (for example, leadership models, change models, etc.)
- ▶ A **method** is the means for achieving an outcome, output, result, or project deliverable (like tools and techniques – methods for estimating, meeting, etc.)
- ▶ An **artifact** can be a template, document, output, or project deliverable (for example a project charter, product backlog, contract, etc.)



Programs and Megaprojects

- ▶ A program is a group of related projects, subsidiary programs, and program activities managed in a coordinated manner to obtain benefits not available from managing them individually.
- ▶ A megaproject is a very large project that typically costs over US \$1 billion, affects over one million people, and lasts several years.



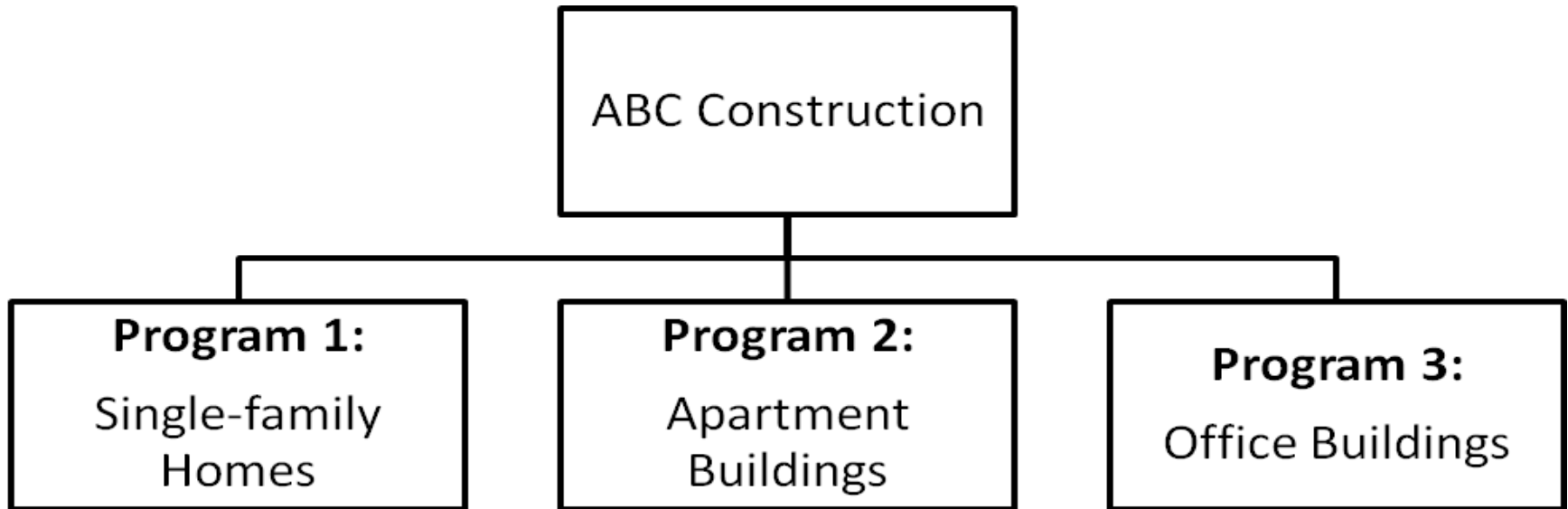
Media Snapshot

Popular Mechanics provides a list (including photos) of the 25 most impressive megaprojects throughout the world. Several are listed below, showing the time and cost required to complete them (US\$):

- ▶ Panama Canal Expansion Project, Panama, Central America: 11 years, \$5.25 billion. The original canal was built in 1914. The expansion project widened and deepened the canal to allow for larger ships.
- ▶ Port Mann Bridge, Vancouver, British Columbia, Canada: 6 years, \$1.92 billion. Port Mann Bridge is the second largest bridge in North America, spanning 6,866 feet.
- ▶ Three Gorges Dam, China: 17 years, \$22 billion. This dam on the Yangtze River is 595 feet tall, 131 feet wide, and over 7,600 feet long, with 32 main turbines producing electricity.



Figure 1-4. Example Programs



Project Portfolio Management

- ▶ A **portfolio** is defined as projects, programs, subsidiary portfolios, and operations managed as a group to achieve strategic objectives.
- ▶ Many organizations support an emerging business strategy of **project portfolio management** by continuously selecting and managing the optimum set of projects and programs to deliver maximum business value.
- ▶ The main distinction between project or program management and portfolio management is a focus on meeting *tactical* versus *strategic* goals.



Project and Program Management Compared to Project Portfolio Management

- ▶ Project and program management address questions like:
 - Are we carrying out projects well?
 - Are projects on time and budget?
 - Do project stakeholders know what they should be doing?
- ▶ Portfolio management addresses questions like:
 - Are we working on the right projects?
 - Are we investing in the right areas?
 - Do we have the right resources to be competitive?



What Is Agile?

- ▶ There are several different definitions of agile.
 - The Agile Alliance (2021) defines **agile** as “the ability to create and respond to change.”
 - Merriam-Webster dictionary (2021) defines agile as “marked by ready ability to move with quick easy grace,” like an agile dancer.
 - PMI’s *Agile Practice Guide* (2017) defines agile as “a term used to describe a mindset of values and principles as set forth in the Agile Manifesto.”
- ▶ Why wouldn’t you manage all projects using agile?
- ▶ Of course, it’s not that simple. There were over 80 different frameworks for agile by 2021!
- ▶ **Scrum**, the most popular framework, is a lightweight framework that helps people, teams and organizations generate value through adaptive solutions for complex problems.



Figure 1-5: How Agile Frameworks Proliferated, Adapted from xkcd.com

HOW AGILE FRAMEWORKS PROLIFERATED

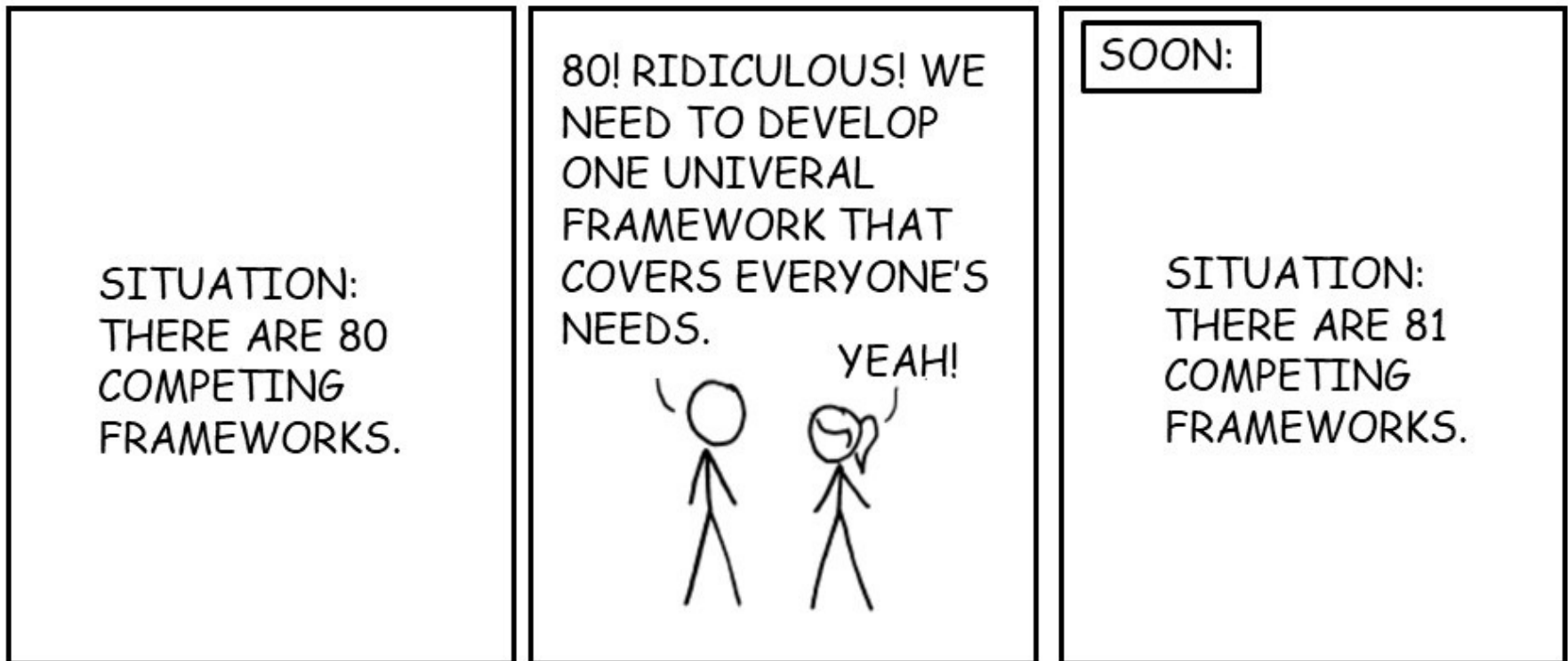


Figure 1-6. Manifesto for Agile Software Development and Principles behind the Agile Manifesto

Manifesto for Agile Software Development

We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

Individuals and interactions over processes and tools

Working software over comprehensive documentation

Customer collaboration over contract negotiation

Responding to change over following a plan

That is, while there is value in the items on the right, we value the items on the left more

Note: You can replace the word software with products or solutions.



Figure 1-6. Manifesto for Agile Software Development and Principles behind the Agile Manifesto

Principles behind the Agile Manifesto

We follow these principles:

1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
2. Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
4. Business people and developers must work together daily throughout the project.
5. Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.
6. The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
7. Working software is the primary measure of progress.
8. Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
9. Continuous attention to technical excellence and good design enhances agility.
10. Simplicity--the art of maximizing the amount of work not done--is essential.
11. The best architectures, requirements, and designs emerge from self-organizing teams.
12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.



What Is an Agile Mindset?

- ▶ Gil Broza, author of “The Agile Mind-Set” (2015), emphasizes the need to focus on values, beliefs, and principles before following specific frameworks or processes.
- ▶ Organizations with an agile mindset, in contrast to a bureaucratic one, use a network of teams focused on the goal of delivering value to their customers. Work is best accomplished through small, self-organizing teams working in short cycles to deliver something of value to the customer.



What Is the Difference Between Predictive, Agile, and Hybrid Project Management?

- ▶ **Agile project management**, also called **adaptive project management**, is used to describe an approach where the project scope cannot be well-defined upfront, incremental releases are desired, and changes are expected.
- ▶ **Predictive project management**, also called **waterfall** or **traditional project management**, are terms used to describe an approach where most of the project planning is done upfront, there is a single final product, service, or result delivered at the end of the project, change is constrained, costs and risks are controlled, and stakeholders are involved at specific milestones.
- ▶ The term **hybrid project management** is used to describe a mixture or combination of and predictive and agile approaches.



Study Finds Most Projects are Hybrid

- ▶ A 2021 research report based on 477 projects in various industries found that 52% of the projects could be categorized as using a hybrid project management approach.
 - Project management approach was not associated with project performance in terms of meeting traditional scope, time, cost, and quality goals.
 - Projects managed using agile and hybrid approaches significantly outperformed predictive approaches when it came to stakeholder success, measured as a combination of sponsor, client, and team satisfaction with the project.
 - “Hybrid approaches were found to be similar in effectiveness to fully agile approaches. Results validate decisions by practitioners to combine agile and traditional practices and suggest that hybrid is a leading project management approach.”



The Project Management Profession

- ▶ Project, program, and portfolio managers need to develop specific skills
- ▶ Certification is available for project managers
- ▶ There are many software tools to assist in project, program, and portfolio management



Suggested Skills for Project Managers

Knowledge of the following:

- All ten project management knowledge areas and the eight project performance domains, tools, and techniques
- The application area (domain, industry, market, etc.)
- The project environment (politics, culture, change management, etc.)
- General business (financial management, strategic planning, etc.)
- Human relations (leadership, motivation, communication, etc.)



PMI Talent Triangle

1. *Technical project management skills:* Understanding the knowledge areas, process groups, and project management tools and techniques fall into this category.
2. *Strategic and business management skills:* Topics include strategic planning, financial management, accounting, marketing, and other topics.
3. *Leadership skills:* Providing vision and inspiration to people.

A **leader** focuses on long-term goals and big-picture objectives while inspiring people to reach those goals. A **manager** deals with the day-to-day details of meeting specific goals; Project managers often take on both roles!



Additional Skills for Program and Portfolio Managers

- ▶ Program managers normally have experience as project managers. They often rely on their past experience, strong business knowledge, leadership capability, and communication skills to manage programs
- ▶ Portfolio managers must have strong financial and analytical skills and understand how projects and programs can contribute to meeting strategic goals



Best Practice

A **best practice** is “an optimal way recognized by industry to achieve a stated goal or objective.”* Robert Butrick suggests that organizations need to follow basic principles of project management, including these two mentioned earlier in this chapter:

- Make sure your projects are driven by your strategy. Be able to demonstrate how each project you undertake fits your business strategy, and screen out unwanted projects as soon as possible.
- Engage your stakeholders. Ignoring stakeholders often leads to project failure. Be sure to engage stakeholders at all stages of a project, and encourage teamwork and commitment at all times. Use leadership and open communications to make things happen.**

*Project Management Institute, Inc., *Organizational Project Management Maturity Model (OPM3) Knowledge Foundation (2003)*, p. 13.

**Ultimate Business Library, *Best Practice: Ideas and Insights from the World's Foremost Business Thinkers*, Perseus Publishing (2003).



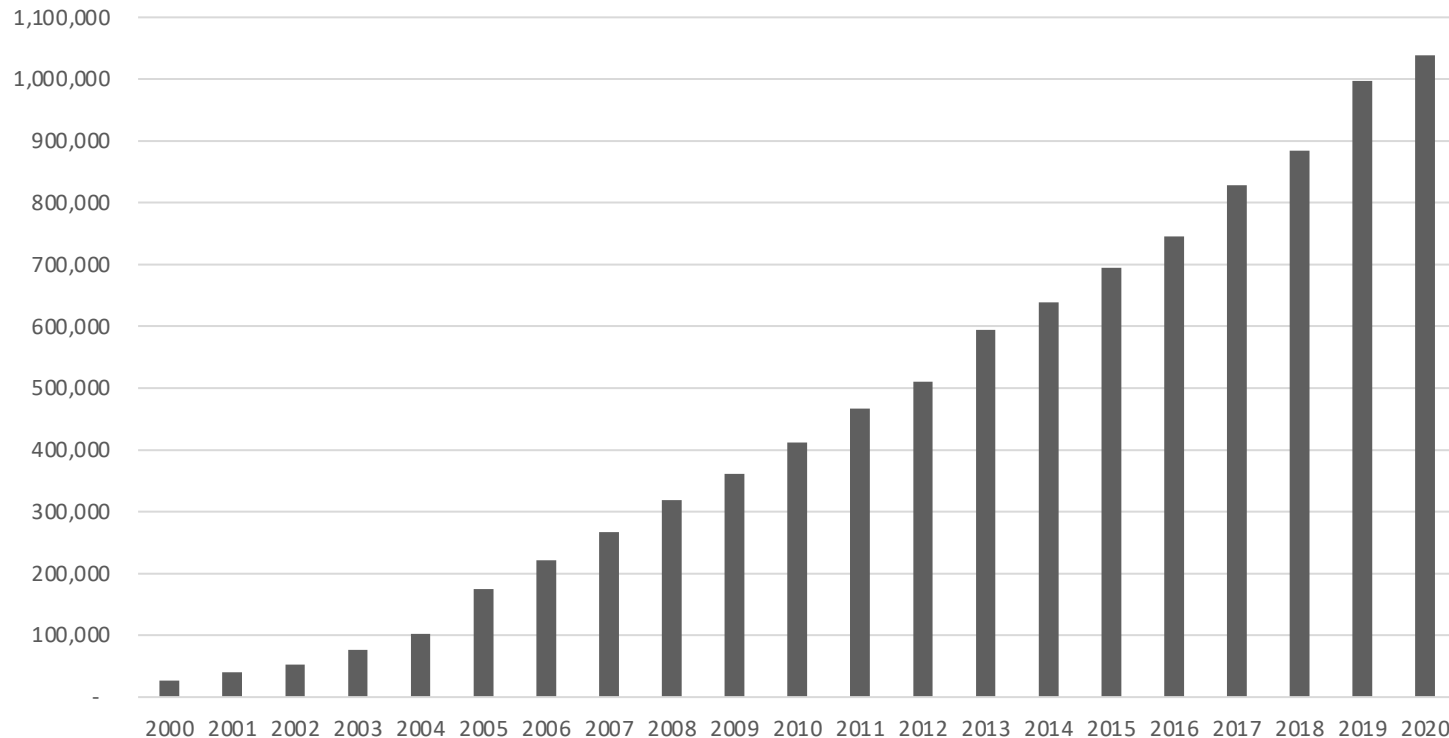
Project Management Certification

- ▶ PMI provides certification as a Project Management Professional (**PMP**)
- ▶ A PMP has documented sufficient project experience, agreed to follow a code of ethics, and passed the PMP exam
- ▶ The number of people earning PMP certification is increasing quickly



Figure 1-7. Growth in PMP Certification, 1993-2020

Growth in PMP Certification 2000-2020*



*2020 data is through September 30, 2020, the last data reported in *PMI Today*.



Other Certifications

- ▶ See Chapter 10, PMP and Other Certifications, for more details
- ▶ PMI provides several other certifications
- ▶ In 2021, Google launched a project management certification as part of their “Grow with Google” program.
- ▶ PRINCE2, or Projects in Controlled Environments, is a process-based method for effective project management known across the world. Over 1 million people have their certification.
- ▶ In 2021 Scrum.org announced that there were over 557,000 professional scrum certifications held throughout the world.
- ▶ The International Project Management Association (IPMA) provides several levels of certification based on successful experience in managing projects. In 2021 they announced that they had over 320,000 certified project professionals.
- ▶ CompTIA offers the Project+ focused on business professionals managing small- to medium-sized projects.



PMI Student Membership and Certification Information

- ▶ As a student, you can join PMI for a reduced fee (\$32 vs. \$139 in 2021)
- ▶ Also consider earning the Certified Associate in Project Management (CAPM) credential from PMI
- ▶ If you complete a bachelor's degree, you do not need any work experience to earn the CAPM
- ▶ However, if you have enough work experience, the PMP is more marketable



Ethics in Project Management

- ▶ **Ethics** — a set of principles that guide our decision making based on personal values of what is “right” and “wrong” — is an important part of all professions
- ▶ Project managers often face ethical dilemmas.
- ▶ PMI has a Code of Ethics and Professional Conduct which applies not only to PMP®s, but to all PMI members and individuals who hold a PMI certification, apply for a PMI certification, or serve PMI in a volunteer capacity.



Project Management Careers

- ▶ By 2027, employers will need 87.7 million individuals working in project management-oriented roles.”
- ▶ In June 2020, LinkedIn listed project management jobs as #3 in the top 10 jobs identified as having the greatest number of openings, steady growth, and a livable wage.
- ▶ Sixty percent of hiring managers say interest in project management careers among younger job applicants has grown over the past decade.



Project Management Career Path

- ▶ Many people start off leading a small project related to their current job, part-time, to make sure they are cut out for and enjoy the work.
- ▶ Some organizations require their people to have a few years of experience before they let them lead any projects. Others hire entry-level people with the title of project coordinator or project manager.
- ▶ Many organizations realize that they need to provide a structured career path to develop and maintain their talent pipeline for project managers. Some organizations have different levels of project managers, often based on knowledge and experience.



Project Management Software

- ▶ There are hundreds of different products available today
- ▶ A 2020 report estimates that the global project portfolio management (PPM) market size will reach USD 11.4 billion by 2027, a compound annual growth rate of 13.4% from 2020 to 2027.
 - “Project-intensive organizations across different industry verticals have recognized the advantages of the PPM solution and have employed it to automate and simplify several operations and efficiently manage project lifespan.
 - The PPM solution offers managers and organizations with the capability to see the big picture, confirming the use of best practices, principles, solutions, and standards during the project lifespan... the benefits offered by PPM solutions are propelling the growth of this market.”



Software for Agile Project Management

- ▶ Demand for software to help manage agile projects has also increased.
- ▶ 95% of people reported their organizations practiced some agile development methods, even though about half said that most of their teams were not agile.
- ▶ They reported using a wide variety of software tools.



Figure 1-8. Use of Agile Project Management Tools

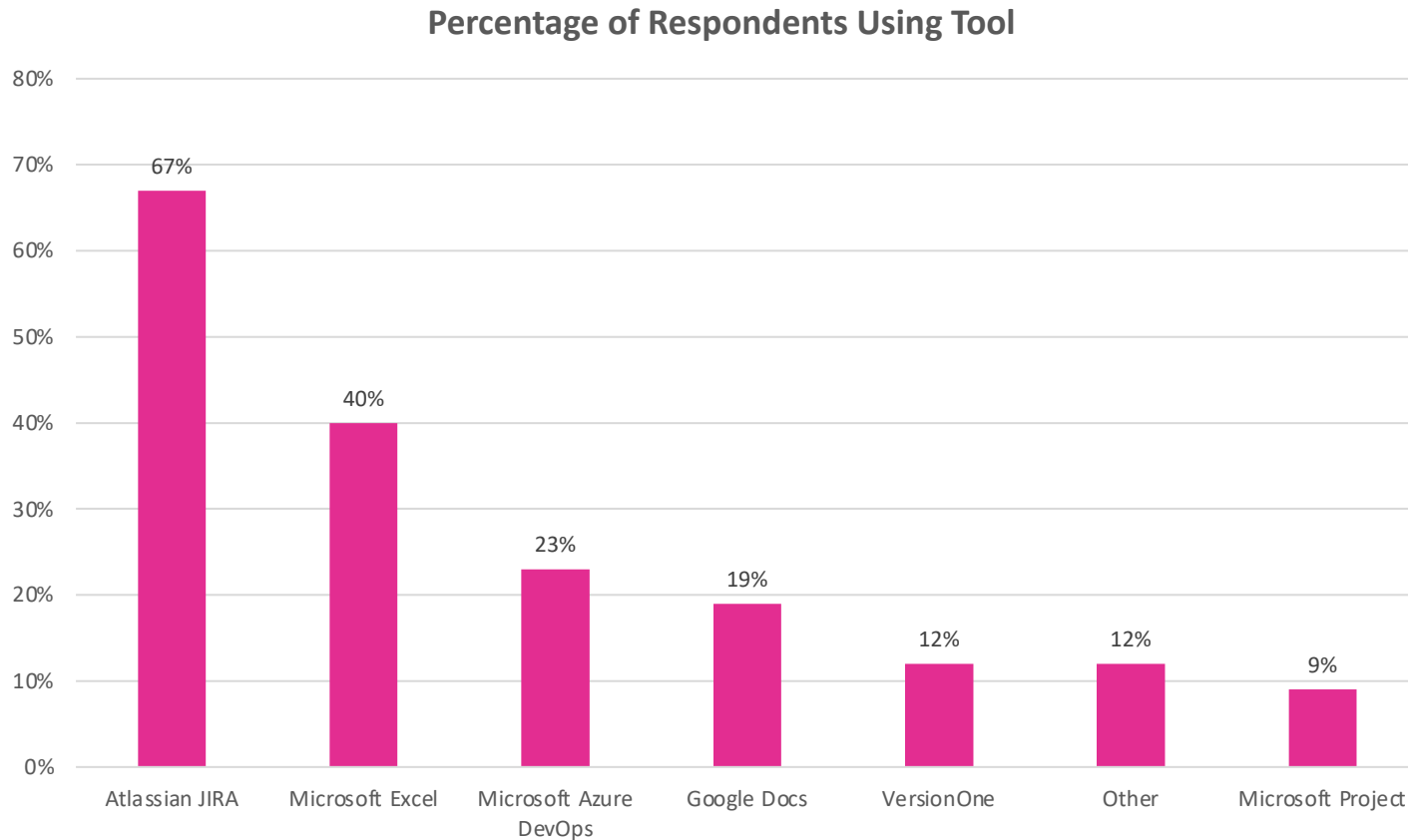


Figure 1-9. Using Microsoft Project to manage your agile projects

Using Project to Manage your Agile Projects

Sprints

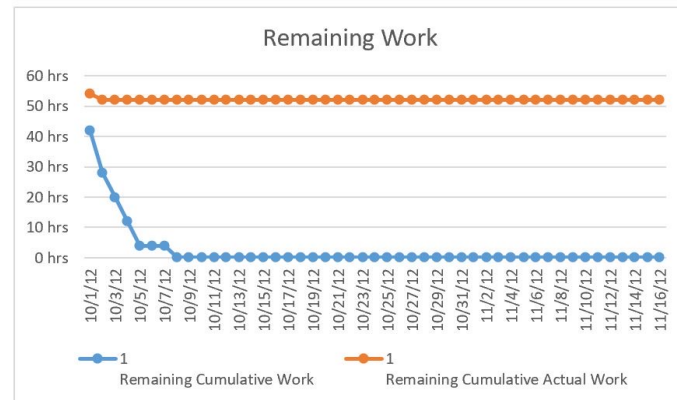
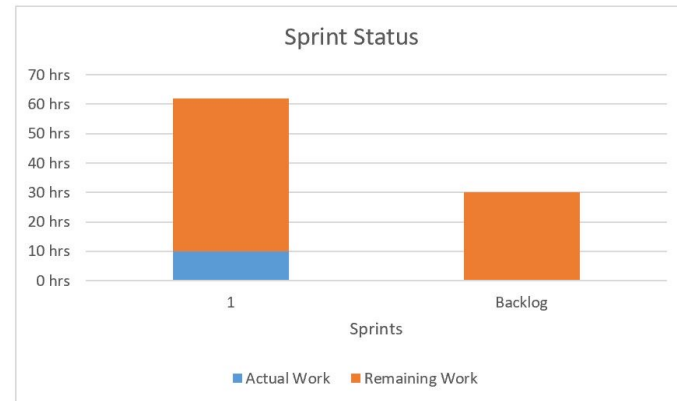
In this view, add each sprint that your team is going to work on. Make sure to give the sprint a unique sprint number and set the Item type to Sprint

Product Backlog

In this view, add all the work items that you may complete. To add them to a sprint, update the sprint number. Make sure to set the Item type to Work Item.

Sprint Backlog

In this view, manage the individual sprint. You can assign the task to a resource and then update remaining and actual work as work progresses.



Filter these charts to the current sprint you are working on by clicking on the chart and then the filter icon.



Figure 1-10. Sample Gantt chart in Microsoft Project

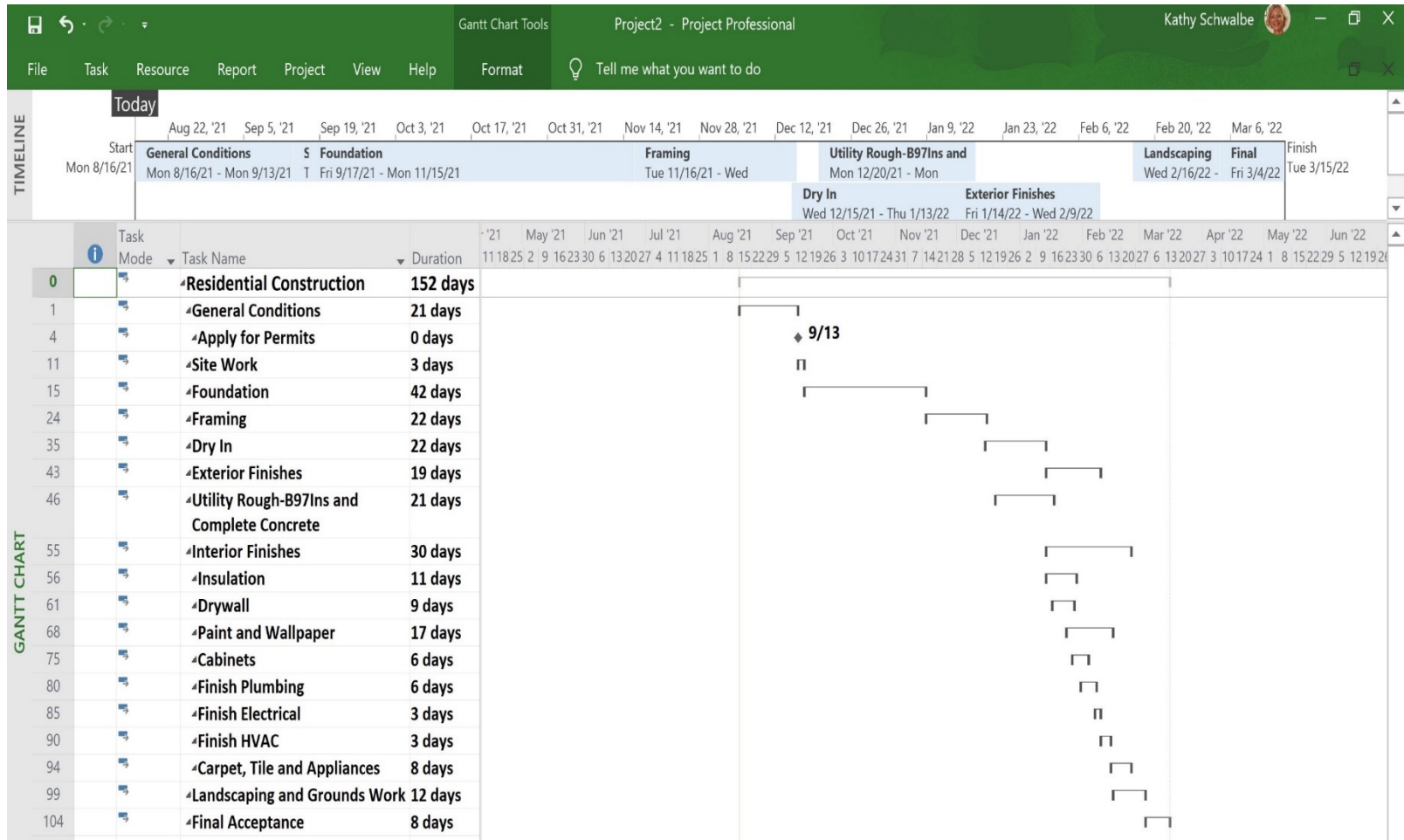
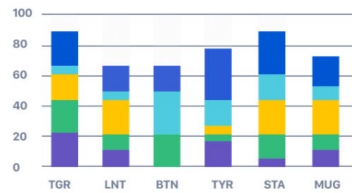


Figure 1-11. Sample product backlog in Jira

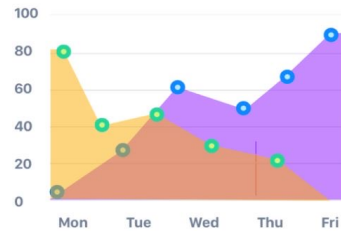
The screenshot shows the Jira interface for a project named 'Schwalbe Agile Resources'. The top navigation bar includes 'Jira Software', 'Your work', 'Projects', 'Filters', 'Dashboards', 'People', 'Apps', and a 'Create' button. A search bar is located on the right. The left sidebar contains navigation options: 'Schwalbe Agile Resources' (Next-gen software project), 'Roadmap', 'Backlog' (selected), 'Board', 'Pages', 'Add item', and 'Project settings'. The main content area displays the 'Backlog' for the project. It features a search bar, a user profile icon, and a filter set to 'Epic'. The backlog is organized into two sections: 'SAR Sprint 1' (26 Oct – 9 Nov) and 'Backlog'. The 'SAR Sprint 1' section shows 3 issues: 'SAR-1 Create Agile tab on book site' (DONE), 'SAR-2 Create guidelines for agile exercises' (IN PROGRESS), and 'SAR-3 Write a draft of exercises' (TO DO). The 'Backlog' section shows two issues: 'SAR-4 Provide feedback on the exercises' and 'SAR-5 Update the exercises'. A 'Quickstart' button is visible at the bottom right of the backlog section.

Figure 1-12. Sample agile reporting charts in Jira



Burndown chart

Track the total work remaining and project the likelihood of achieving the sprint goal. This helps your team manage its progress and respond accordingly.



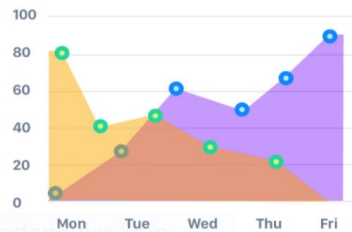
Burnup chart

Track the total scope independently from the total work done. This helps your team manage its progress and better understand the effect of scope change.



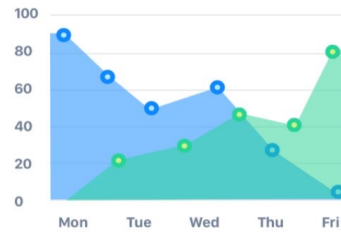
Sprint report

Understand the work completed or pushed back to the backlog in each sprint. This helps you determine if your team is overcommitting or if there is excessive scope creep.



Cumulative flow diagram

Track the total scope independently from the total work done. This helps your team manage its progress and better understand the effect of scope change.



Velocity chart

Track the total work remaining and project the likelihood of achieving the sprint goal. This helps your team manage its progress and respond accordingly.



Version report

Understand the work completed or pushed back to the backlog in each sprint. This helps you determine if your team is overcommitting or if there is excessive scope creep.

Free Trials and Information on Using Microsoft Project, Jira, Asana, MindView, Basecamp, and Other Software

- ▶ A 30-day evaluation copy of many tools, such as Microsoft Project and MindView, are available from their company websites.
- ▶ Other tools, including Jira, Asana, and Basecamp, provide trial versions of their software for unlimited timeframes.
- ▶ See Appendix A, Resources, for more information on these and other tools. Also see this book's companion website for links to updated information on project management software at <http://intropm.com/>.



Chapter Summary

- ▶ A project is a temporary endeavor undertaken to create a unique product, service, or result
- ▶ Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements
- ▶ Many organizations today are using an agile/adaptive or a hybrid approach instead of a predictive/waterfall/traditional approach to managing projects. It is important to use an agile mindset first to help agile projects succeed. The terms agile or adaptive project management describes an approach where the project scope cannot be well-defined upfront, incremental releases are desired, and changes are expected.
- ▶ A program is a group of related projects, subsidiary programs, and program activities managed in a coordinated manner to obtain benefits not available from managing them individually
- ▶ Project portfolio management involves organizing and managing projects and programs as a portfolio of investments that contribute to the entire enterprise's success
- ▶ The project management profession continues to grow and mature, and demand for project managers is high

