

Microsoft

PPM Solution Guide

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Microsoft Project Portfolio Management (PPM) Solution

Over the past century, project management has greatly evolved, better utilizing the latest technologies to meet the organizational requirements of different industries (see Figure 1). Today, Project Portfolio Management(PPM) helps organizations improve visibility and control across varied portfolios, align spend with strategic priorities, and drive team collaboration to deliver projects on time and within budget.

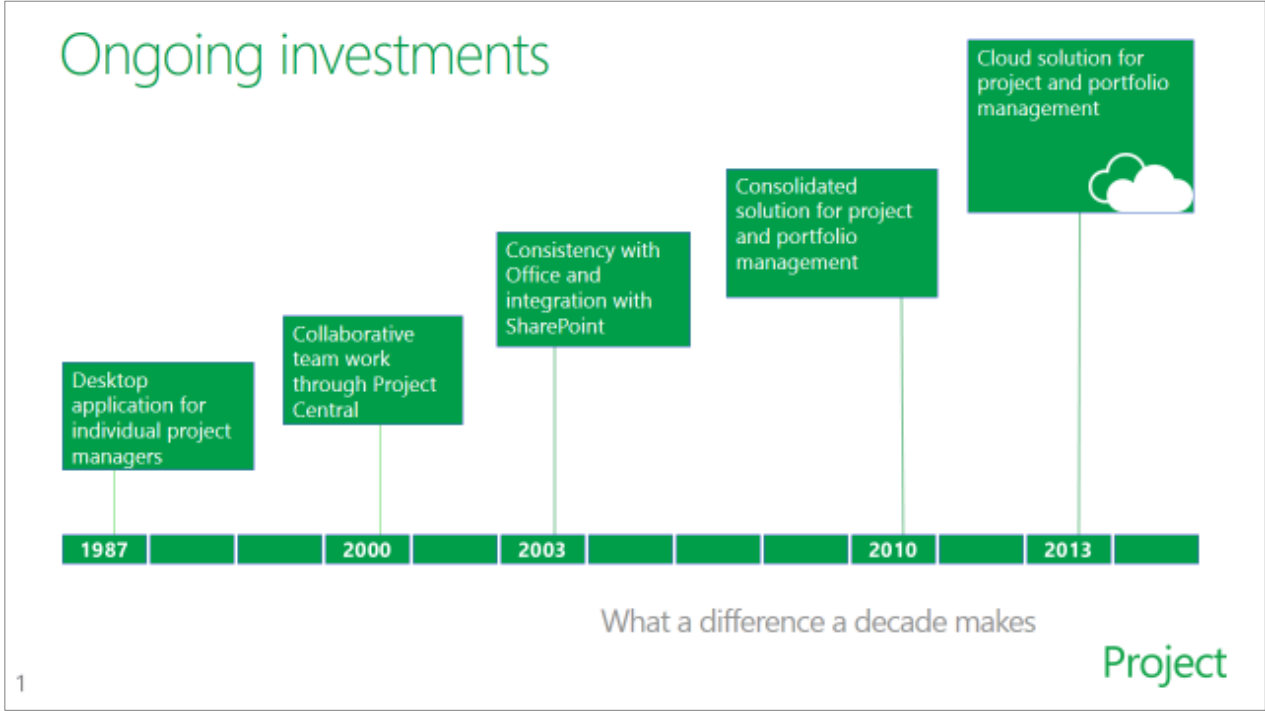


Figure 1: The evolution of project management methodologies

For more than a decade, Microsoft has delivered flexible software for Project Portfolio Management (PPM) through editions of Microsoft Project Server and Microsoft Project Professional. With the latest release of the Project Family, the proven capabilities of Project Server are available as Project Online, a cloud service that offers organizations of all types and sizes increased agility with a smaller IT footprint. Project Online works with the SharePoint Online platform and enjoys the business benefits of Office 365, which modernizes productivity infrastructure without any compromise. Similar to Project Server, Project Online syncs seamlessly with Project Professional, the signature project management software embraced by project managers everywhere.

Utilizing a cloud-based solution offers clear advantages to setting up a customized server environment. You do not have to worry about maintenance or upgrade issues and compatibility issues are uncommon. While traditional Project Server implementations take time and commitment to roll out, you can provision Project Online quickly and easily. In addition, you and your IT staff do not have to deal with inconvenient overhead costs associated with maintaining extra infrastructure, such as applying updates, maintaining security, scaling capacity, and ensuring uptime and availability. Because Microsoft delivers Project Online through Office 365, the solution is always up-to-date and accessible from virtually anywhere.

In terms of security, Office 365 is verified to meet requirements specified in global industry standards, including ISO 27001, EU Model clauses, HIPAA BAA, and FISMA, making it a best fit for sensitive data and mission-critical workloads. Office 365 data is stored in the Microsoft network of data centers, run by Microsoft Global Foundation Services and strategically located around the world.

Both Project Online and Project Server offer flexible and innovative PPM solutions for everyday work, enabling you to effectively execute and achieve your strategic priorities. For the purposes of this guide, the use of Project will refer to Project Server and Project Online except for where otherwise noted.

Built on SharePoint, Project provides new choices for teams, departments, and large organizations to adopt lightweight or rigorous approaches to PPM. This is a secured and reliable service delivered through Office 365 along with enhanced on-premises performance and management options to reduce IT complexity. In addition, it also helps all types of people, including those with limited PPM experience, to get started, define and prioritize project portfolio investments, and deliver results with the intended business value.

Microsoft recognizes that there is no such thing as a one-size-fits-all PPM solution. Effective PPM solutions need to provide organizations of different sizes and maturity levels with the right tools to ensure that their teams can successfully deliver projects on time and realize the anticipated return on investment (ROI). The flexible approach of Project helps ensure that organizations can select the right tools, at the right scale, to meet their current and future business requirements on any level.

Project provides executives, portfolio analysts, managers, and team members with productivity tools that help them effectively manage all work throughout its lifecycle and ensure alignment with their organization's business strategy. In addition, because Project roams with you, you can receive quick access and robust security to your latest plans and personal settings, from virtually anywhere on any device.

The new Project offers enhancements in the following areas (see Figure2):

- Simple and Intuitive User Experience
- Flexible Project Portfolio Management
- Enhanced Collaboration and Reporting
- Increased Agility and Control



Figure 2: Microsoft Project investment areas

Simple and Intuitive User Experience

Organizations use a variety of tools to plan and manage different types of projects. Both Project Online and Project Server offer the flexibility and familiarity you need to quickly start and take action.

With Project, you can complete your work from virtually anywhere on almost any device. You can also support all types of projects with the right blend of power and agility to help the professional project manager or the occasional user.

- **Microsoft Fluent User Interface:** Quickly realize results and work more efficiently with the simple and intuitive Ribbon tab interface that places the tools and functions you need for planning and managing your project right at your fingertips. Contextual menus reveal powerful features, making it easier to start working and reduce training costs. With the improved Backstage, you can automatically discover frequently used files and URLs.
- **Anywhere Access:** Utilize Project Online to stay up-to-date in more places and on more devices such as desktop PCs, laptops, tablets, and smartphones, than ever before. With Project Online, you can also take advantage of Office 365 to stream, when needed, the most up-to-date version of Project to Wintel PCs. For Project Server, your workforce can use web-based project editing on a multitude of Internet browsers to easily build or edit projects when you are on the go.
- **Enhanced Timeline View:** Take advantage of an enhanced timeline in the browser to see and share tasks, milestones, and phases. With the intuitive Timeline view, you can also quickly publish key tasks and milestones and easily copy them into Office applications, such as Microsoft Outlook and Microsoft PowerPoint to improve communication

Enhanced Collaboration and Reporting

Both Project Online and Project Server help you improve team collaboration to deliver projects successfully and enhance reporting to maintain transparency and control across project portfolios.

- **SharePoint Synchronization:** Connect with teams and deliver the information they need, no matter their location, with Project Professional and Project Pro for Office 365.
- **Social Capabilities:** Facilitate discussions and information sharing by utilizing the social and search capabilities of SharePoint such as Yammer to help get projects and everyday work done (Note: Yammer requires a subscription).
- **Enhanced Communications:** Take advantage of presence awareness, Yammer, real-time conversations and instant messaging (IM) from within your Project with Lync.
- **Powerful BI:** Help your organization gain insight, visibility, and control, measure progress and make resource allocation. You can also utilize the search capabilities to execute everyday work and projects more effectively and find the right information in the right context.

Increased Agility and Control

Both Project Online and Project Server offer agility, control, robust security, and reliability as well as enhanced connections with other related Microsoft technologies and solutions.

- **Simplified Administration & High Availability:** Delivered through Office 365 and independently verified to comply with industry standards, Project Online offers 24/7 IT support for critical issues that ensures your business stays more secure and available. You also don't have to worry about applying updates, maintaining security, scaling capacity, or ensuring uptime and availability.
- **An Efficient Work Management Platform:** Project Server and Project Online connect with familiar Microsoft technologies such as Office, Exchange, and SharePoint to provide powerful work management capabilities.
- **Flexible Deployment Options:** Powerful management tools simplify Project implementation, so you can act and respond more quickly to market opportunities. Project Online offers a variety of plans so you can sign up your people for the term of service that best fits your business needs. You can also install Project Pro for Office 365 directly from the web in just moments, without the need to uninstall previous versions, enabling it to run side-by-side with existing Project applications. In addition, with a web-based portal, you can add teams and projects within minutes.
- **An Extensible and Programmable Solution:** Improvements to the Project application programming interface (API), Project Server Interface (PSI), client-side object model (CSOM), and JavaScript object model (JSOM), and integration with SharePoint and Microsoft Visual Studio provides your developers with a platform to design innovative applications that address the unique needs of your business across an entire project or program lifecycle. You can also install applications from the new Office Store and the SharePoint Store, to meet your unique business needs. You can even manage team access to apps through a corporate catalog. In addition, you can develop and deliver apps for Project Online and/or Project Pro for Office 365, helping you shave time off various processes or establish connections to proprietary systems.

Microsoft Project Portfolio Management (PPM) Solution

In the current economic climate, companies must do more with less. As a result, organizations are looking for PPM tools to help reduce costs, drive efficiencies, and ultimately, help set the seeds to grow their business (see Figure 3).



Figure 3: PPM capabilities that the Microsoft PPM Solution addresses

The Microsoft Project Portfolio Management (PPM) Solution offers a flexible, end-to-end PPM platform, used by organizations across a broad variety of industries to automate primary PPM processes. Recognized by industry analysts as a leading PPM solution, The Microsoft PPM Solution has consistently appeared as a leader in Gartner’s IT Project and Portfolio Management Magic Quadrant. IDC has also identified the PPM solution as a leading Product Lifecycle Management (PLM)/New Product Development (NPD) solution.

The PPM Solution helps organizations meet the following business imperatives:

- Intuitively capture all requests within a central repository and manage them using governance workflow – **Demand Management**
- Objectively prioritize, optimize, and select project portfolios that best align with your organization’s business strategy – **Portfolio Selection and Analytics**
- Proactively and reactively manage resources throughout the project lifecycle – **Resource Management**
- Easily create and communicate simple and complex project schedules – **Schedule Management**
- Control and measure project and portfolio financial performance – **Financial Management**
- Simplify the collection of time and task status updates from team members – **Time and Task Management**
- Better connect disparate teams to share information and drive collaboration – **Team Collaboration**

- Identify, mitigate, and communicate issues and risks that could adversely affect project success –**Issues and Risk Management**
- Effectively measure project performance and gain visibility and control across all portfolios –**Business Intelligence and Reporting**
- Initiate, plan, and deliver strategic programs –**Program Management**

The following products from the Project family form the PPM Solution, providing comprehensive PC, web, and Cloud-based resources (see Figure 4).

- **Microsoft Project Server:** Microsoft Project Server is a flexible, on-premises solution for project portfolio management (PPM) and everyday work. Team members, project participants, and business decision makers can get started, prioritize project portfolio investments and deliver the intended business value from virtually anywhere. Project Server also helps organizations align resources and investments with business priorities, gain control across all types of work, and visualize performance using powerful dashboards.
- **Microsoft Project Online:** Project Online, the flexible online solution counterpart to Project Server, enables your organization to quickly start projects, prioritize project portfolio investments, and deliver results with the intended business value. A unified experience with other Microsoft cloud services such as SharePoint Online, Exchange Online, and Lync Online helps you efficiently and effectively act and respond to market opportunities. With 24/7 IT support for critical issues, you can be sure of high availability and reliability.
- **Microsoft Project Professional:** Project Professional delivers powerful, visually enhanced ways to simplify planning, collaboration, and resource management so managers can successfully tackle all types of projects. Connecting Project Professional with Project Server ensures that organizations can realize the added business benefits of unified PPM.
- **Microsoft Project Professional for Office 365:** Delivered as a subscription through Office 365, Project Professional for Office 365 is the Cloud delivered version of Project Professional. With Project Pro for Office 365, software automatically stays up to date (with options for customizable policies). You can access Project Pro for Office 365 from virtually anywhere on any Wintel PC by streaming the complete desktop client with Project on Demand.
- **Project Online with Project Pro for Office 365:** Project Online with Project Pro is an all-in-one subscription that delivers the full spectrum of project management capabilities — from task management for teams to project management to project portfolio planning. With the ability to access Project from virtually anywhere through Office 365 cloud services, team members can manage their tasks as easily as pressing a check box on their smartphone browser and managers can check reports on the go with just a swipe on their wirelessly connected tablet device.



Figure 4: Microsoft PPM Solution spectrum

Demand Management

Demand management offers a unified view of all work in a central location, helping you quickly gain visibility into projects and operational activities, standardize and streamline data collection, enhance decision-making, and subject initiatives to the appropriate governance controls throughout their life cycles.

The Microsoft PPM Solution provides flexible demand management capabilities to help organizations do the following:

- **Capture all requests in a central repository** to enhance visibility.
- **Standardize and streamline data collection** by using configurable forms and business case templates.
- **Build governance workflows** to subject different types of work requests—for example, a help desk ticket or a project proposal—to the appropriate controls throughout the life cycle of the issue or project.

Governance

The generic definition of governance means the rules, processes, and laws under which a business operates, regulates, and controls. In the context of PPM, governance provides a best-practices framework and set of guidelines that help you effectively create, control, and deliver all types of work, enhance accountability, and optimally align spending with your organization's strategic imperatives. Governance processes are continuously refined based on empirical data and lessons learned to improve process velocity and time to market, while assuring the quality of the products, processes, or services delivered.

Establishing effective governance processes help organizations:

- **Effectively communicate and realize business strategy.** Governance processes provide a blueprint for an organization to successfully communicate, implement, and realize their business strategy. Best-practice processes provide a framework for selecting the right initiatives and improving project delivery to maximize ROI.
- **Subject varying initiatives and work to the right level of controls.** Organizations need to define the right processes to effectively control all types of work—project and operational—and related activities, including issues, risks, and change requests, without introducing excessive bureaucracy that can negatively impact time-to-market and employee morale.
- **Drive accountability and traceability.** Establishing formal checkpoints within the governance processes and identifying individuals with the appropriate approval authority helps drive accountability, increase awareness, and provide an auditable record of all investment decisions.
- **Better identify and comply with regulatory requirements.** Governance can help organizations identify, anticipate, and respond to industry standards and regulatory requirements. This reduces the risk of costly fines, negative press, or even criminal proceedings.
- **Unify disparate lines of business by using enterprise processes.** Oftentimes, departments within organizations operate in silos, leading them to in effect, self-govern. Establishing enterprise governance standards breaks down division walls and improves efficiency, communication, and transparency across an organization.
- **Drive governance acceptance and adoption through education and communication.** Effective communication that educates employees and demystifies the process is essential to driving adoption of and satisfaction with governance processes.
- **Refine governance processes to improve business results.** The processes that comprise the governance framework need to undergo regular evaluation and refinement based on empirical data and lessons learned. By analyzing processes, analysts can identify and resolve bottlenecks to improve forward movement without affecting quality or bypassing required organizational controls.

The Microsoft PPM Solution provides rich and flexible tools that help you define, standardize, communicate, and enforce governance processes. With the Microsoft PPM Solution, you can subject all types of work— project and operational—to the appropriate controls throughout the lifecycle of any initiative. You can effectively evaluate ideas or measure the strategic contribution of competing requests to determine alignment and streamline project initiation. Easy workflow creation helps you manage your everyday work or a project’s lifecycle progression with Visio to create and manage visual workflows in SharePoint Designer. You can even promote SharePoint task lists to become enterprise projects with the ability to apply and enforce governance workflows.

Project governance capabilities help Project Management Offices (PMOs) quickly define and automate multiple workflows to manage different types of projects throughout project lifecycles. For example, with business projects as opposed to IT projects, the workflows are event-driven to control activities such as issue and risk management, change management, document approval, and so on. A Project workflow consists primarily of a set of sequential stages that represent the main steps within a project’s life cycle (see Figure 5).

	Stage	State	Entry Date	Completion Date	Status Info
	Workflow Phase: 1. Create				
✓	1. Initiate Gate	Completed	24/09/2013 22:33	24/09/2013 22:35	
✓	3. Define	Completed	24/09/2013 22:35	25/09/2013 13:05	
	2. Rejected (initiate)	Not Started			
	Workflow Phase: 2. Select				
✓	4. Select Gate	Completed	25/09/2013 13:05	25/09/2013 13:10	
	5. Rejected (select)	Not Started			
	Workflow Phase: 3. Plan				
➔	6. Plan	In Progress (Waiting for Input)	25/09/2013 13:10		
	7. Plan Gate	Not Started			
	8. Rejected (plan)	Not Started			
	Workflow Phase: 4. Manage				
	9. Execute	Not Started			
	10. Closure Gate	Not Started			
	Workflow Phase: 5. Measure				
	11. Evaluation	Not Started			

Figure 5: Example of stages in an end-to-end workflow

Each workflow stage includes a list of deliverables that require completion before the project can successfully move forward to the next stage in the workflow. For example, deliverables early in a project’s life cycle could include various web-based forms, called Project Details Page (PDP), which contain metadata that relate to the business case or project charter. This data could include project information, cost estimates, resource estimates, strategic impact assessments, and so on. Workflow and Project Detail Pages are grouped together under PWA Setting (see Figure 6).

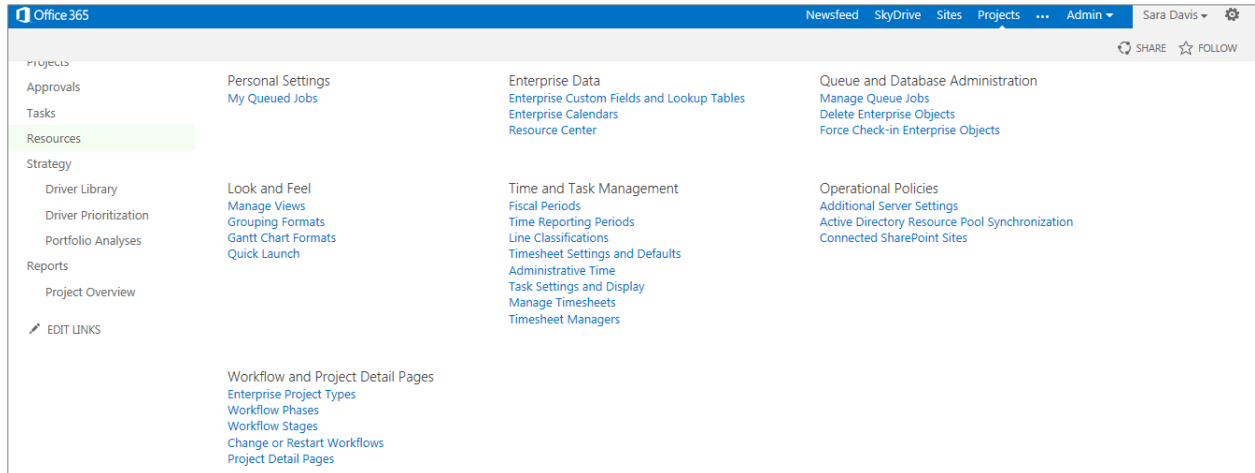


Figure 6: PWA Setting – Workflow and Project Detail Pages

Ultimately, the workflow controls the displayed deliverables at each stage and the necessary actions needed for the project to continue to the next stage. The workflow specifies fields that require completion in the form of PDP's. When a user completes a stage, the workflow performs the necessary data validation to ensure the satisfactory completion of all fields before moving the project to the next stage (see Figure 7).

Figure 7: Project Detail Page – Basic Info

Governance phases in Project provide a common language across projects managed by different workflows that PMOs can use to aggregate data to facilitate enterprise reporting. Project drives accountability, traceability, and control—PMOs can add checkpoints or gates within the workflow— by designating individual approvers or approval groups at key gates in the workflow. This helps to ensure the notification of stakeholders with proper approval authority when an initiative reaches a decision point.

Project accommodates a wide range of process types and scenarios by providing support for different approval techniques such as individual, group, and sequential. Workflow notifications, conveniently published in the Workflow Approvals view in Project, are accessible from the left menu bar. When stakeholders receive an approval notification, they can review the corresponding deliverables and then approve or reject the project and capture comments (see Figure 8).

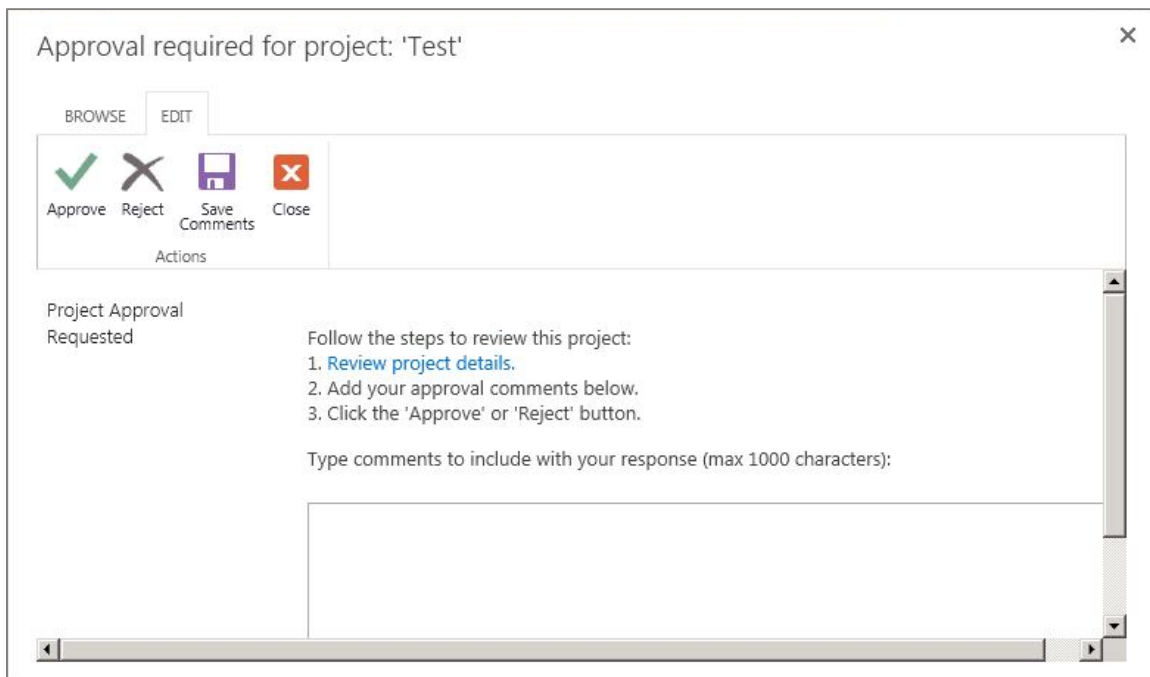


Figure 8: Project – Workflow Approval task

Project maintains a simple log of all approvals to provide an auditable history of investment decisions. Approval gates provide validation steps to help organizations drive accountability, increase awareness, and effectively meet compliance regulations.

In addition to individual notifications, Project dedicates a Proposal Stage Status page to each project. This page provides a single portal for all workflow information that intuitively guides users through the workflow (see Figure 9). By effectively communicating the main stages and deliverables included in the workflow, the Proposal Stage Status page assists with driving adoption and acceptance of the process.

The governance page displays:

- The name of the current workflow stage that the project is in.
- The status of each deliverable required for completion of the current phase.
- At able of all stages in the workflow, with their corresponding deliverables.

- Approval and rejection comments.

The Project Proposal Stage Status page simplifies the workflow process, making it easy for team members to identify the deliverables that they have to complete and easily find the right forms or views.

The screenshot shows the Microsoft Project software interface. The ribbon at the top includes tabs for 'Project', 'Workflow', and 'Page'. The main content area displays the 'Proposal Stage Status' page for a project named 'Biothermal ear heating system for helmets'. The page includes a status bar at the top indicating 'Status: Checked in Last Modified: 5/3/2013 2:02 AM'. Below this, there is a section for 'Workflow Status' with a progress bar for '1. Create'. A message states 'Current Workflow Stage: 9. Execute' and 'An error has occurred in the workflow.' Below this, there is a table of sections to be completed for this stage:

Page Name	Status	Description
Project Details	Complete	
Strategic Impact	No Required Project Fields	
Schedule	No Required Project Fields	

Below this table, there is a section for 'All Workflow Stages' with a table showing the current status of each stage:

Stage	State	Entry Date	Completion Date	Status Info
Workflow Phase: 1. Create				
1. Initiate Gate	Completed		5/2/2013 11:01 PM	
3. Define	Not Started			
2. Rejected (initiate)	Not Started			
Workflow Phase: 2. Select				
4. Select Gate	Not Started			
5. Rejected (select)	Not Started			
Workflow Phase: 3. Plan				
6. Plan	Not Started			
7. Plan Gate	Not Started			
8. Rejected (plan)	Not Started			
Workflow Phase: 4. Manage				
9. Execute	Completed with Errors	5/2/2013 11:01 PM	6/2/2013 1:54 AM	An error has occurred in the workflow.

Figure 9: Project – Proposal Stage Status page (Note: Screenshot includes a custom workflow graphic)

Project workflow capabilities can help PMOs establish, communicate, and enforce an enterprise governance framework to unify disparate lines of business and drive efficiencies and transparency across your organization. Project includes a sample workflow that you can extend or customize using Visual Studio to meet your organization’s unique requirements. The powerful workflow infrastructure in Project gives PMOs the tools to model both simple and complex best-practice processes—for example, Project Management Body of Knowledge (PMBOK), Prince 2, or agile project management methodologies—, integrate with line-of-business (LOB) systems and easily refine workflows to improve performance based on lessons learned and empirical data.

In addition to project lifecycle controls, Project provides support for more granular activities and a variety of planning methodologies such as the following:

- **Annual Planning:** An organization proactively undertakes an extensive analysis to identify, select, and fund all deliverable projects in the next fiscal year.

- **Just-in-Time (JIT) Planning:** An organization convenes recurring portfolio selection meetings, usually quarterly, to analyze new requests and reassess the strategic alignment of projects already underway to maximize the portfolio's ROI.
- **The Hybrid Model:** Combining the best of annual and JIT planning, this methodology lets organizations proactively select projects for the upcoming year as well as hold recurring selection events to refine the portfolio throughout the year.

Work Initiation and Business Case Development

For any organization, demand can include all requests for different types of project and non-project work that could potentially consume organizational funds or resources. Project requests typically flood into an organization through a variety of structured and informal sources: customer requests, hallway conversations, e-mail exchanges, executive decisions, business maintenance activities, and so on. The varied nature and form of project requests can make it difficult for PMOs to gain visibility and control of initiatives across the enterprise. By capturing all requests in an easily accessible, central location and standardizing the collection of metadata and metrics, organizations can quickly gain visibility across all requests and ongoing projects to help improve decision-making and ensure that they are working on the initiatives that are right for the organization.

Formalizing the project initiation process helps organizations achieve the following:

- **Gain visibility by centralizing collection of demand:** Capturing all project requests in a central repository helps PMOs immediately gain visibility across portfolios, making it easy to identify and eliminate duplicate or overlapping initiatives. Analysts can also quickly assess the effect of demand on budget and the resource pool.
- **Standardize metadata and metrics to drive consistency:** One of the most important steps in successfully managing project portfolios is standardizing project metadata and metrics across all types of projects. Inconsistent metadata and metrics make it impossible to drive enterprise reporting and to effectively compare and contrast competing project requests.
- **Streamline data collection and improve cycle times:** Providing a single location and best-practice template for capturing new requests provides an intuitive and repeatable framework that drives efficiency and reduces the time it takes to create and submit both simple and complex requests.
- **Achieve enterprise consistency while providing LOB autonomy:** There is no such thing as a one-size-fits-all project initiation process. In many organizations, different departments operate independently with customized initiation processes and business case forms. A common challenge for a PMO is to define processes and templates that provide enterprise standardization and control, while giving business partners in the organization a feasible level of freedom and autonomy.
- **Interoperate with LOB systems:** Requests can come from anywhere within or outside of the organization and may reside in specialized systems—for example, in a Customer Relationship Management (CRM) or service management system. Integration with LOB systems is critical for consolidating all work in a central repository to enhance awareness, formalize decision-making, and assess the effect of project proposals on scarce resources.

The unified PPM capabilities of Project provide a flexible framework for capturing, selecting, and delivering all types of work, from simple tasks to complex projects and programs. Project offers organizations a dedicated demand management interface that standardizes the collection of all work and provides visibility and control across your organization.

Standardize and Simplify Data Collection across the Enterprise

The enhanced project initiation platform in Project Online and Project Server helps organizations standardize the initiation process, capture all types of requests, and develop simple and complex business cases. The main capabilities that comprise the project initiation platform are Enterprise Project Types (EPTs), or project templates; Project Detail Pages (PDPs), which are online forms; and governance workflows. To appreciate the flexibility of the platform, it is important to understand how these capabilities work together.

- **EPTs** are project templates that represent various types of projects and non-project work within the portfolio. For example, you could create an EPT to represent a software development project or a marketing campaign.
- **PDPs** are configurable online forms used to collect or display project information such as descriptive data, cost estimates, strategic impact assessments, and so on. PDPs are made up of Enterprise Custom Fields (ECF), which help establish consistency across projects by ensuring that fields and associated lookup tables are utilized in the same manner for all projects, tasks, resources, and assignments. ECFs consist of system-mandatory and customer-defined fields, offering maximum flexibility in data acquisition and management.
- **Governance Workflows** subject each project template to the appropriate controls throughout its life cycle and determine which online forms you see displayed at each stage in the life cycle.

Project helps you quickly get started by providing examples of enterprise project types, online forms, and a sample workflow. In addition, Project includes an intuitive administration interface for creating custom project types and online forms to meet your organization's unique needs. The PMO can create a new project type using the administration interface by completing a simple form, which includes the following tasks (see Figure 10):

- **Capture an EPT name and type in a description.**
- **Select a governance workflow:** The workflow will subject the project to the appropriate controls throughout its life cycle).
- **Associate the project type with a custom project site template:** Each EPT can have a custom workspace to enhance team collaboration and communication.
- **Link to the appropriate department:** Each project type can be global or associated with individual departments within the organization.
- **Choose a best-practice project plan template:** You can save time and enforce standards by defining templates based on your organization's best practices including predefined phases, tasks, and resource assignments, with a project template or take advantage of industry best practice templates (such as Business Cases, Projects, and Project sites).
- **Specify an initiation form:** This form appears when a user selects the project type when creating a new work request.
- **Utilize configurable business-case templates:** Project helps you standardize data collection for all types of work (including general information, cost estimates, resource estimates, strategic impact, and more) through configurable business cases and forms.
- **Increase flexibility with business unit-specific templates:** With Project you can increase flexibility by defining business-case templates for different departments within your organization.

The screenshot shows the 'Project - EPT (project template) definition form' in Office 365. The form is divided into several sections:

- Name:** A text input field containing 'Software Development'.
- Description:** A larger text area for a description, with a note '(max: 512 characters)'. It is currently empty.
- SharePoint Tasks List Project:** A checkbox labeled 'Create new projects as SharePoint Tasks List Projects' which is currently unchecked.
- Site Workflow Association:** A dropdown menu showing 'Major Visual Workflow'.
- New Project Page/Project Detail Pages:** A dropdown menu showing 'Project Information'.

There are also 'Save' and 'Cancel' buttons at the top right of the form.

Figure 10: Project – EPT (project template) definition form

After publishing the project type, Project displays the template name in the list of available types, such as when a user clicks the **New** button in Project Center (see Figure 11). As indicated earlier, EPTs can be global—that is, associated with and available to all departments—or linked to specific departments within the organization. This flexibility helps PMOs control the displayed project types for each department, ensuring that employees see only the types that are relevant to their LOB.

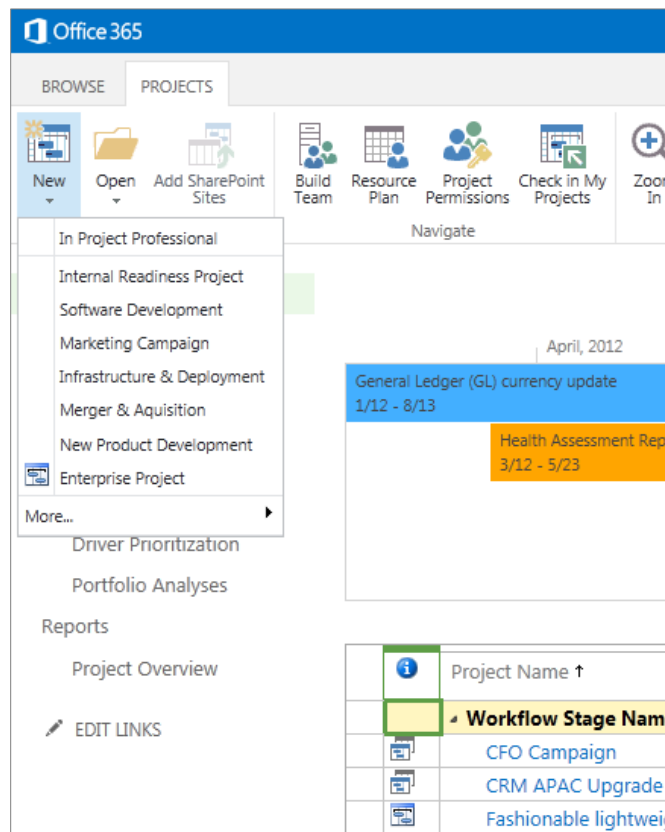


Figure 11: Project – Published project templates

Project integrates the SharePoint extensible Web part infrastructure, simplifying the process of building a library of configurable online forms, or PDPs, that can include ECFs and Web parts. An administrator can simply create a new form by choosing the required custom fields and arranging them within the Web part (see Figure 12).

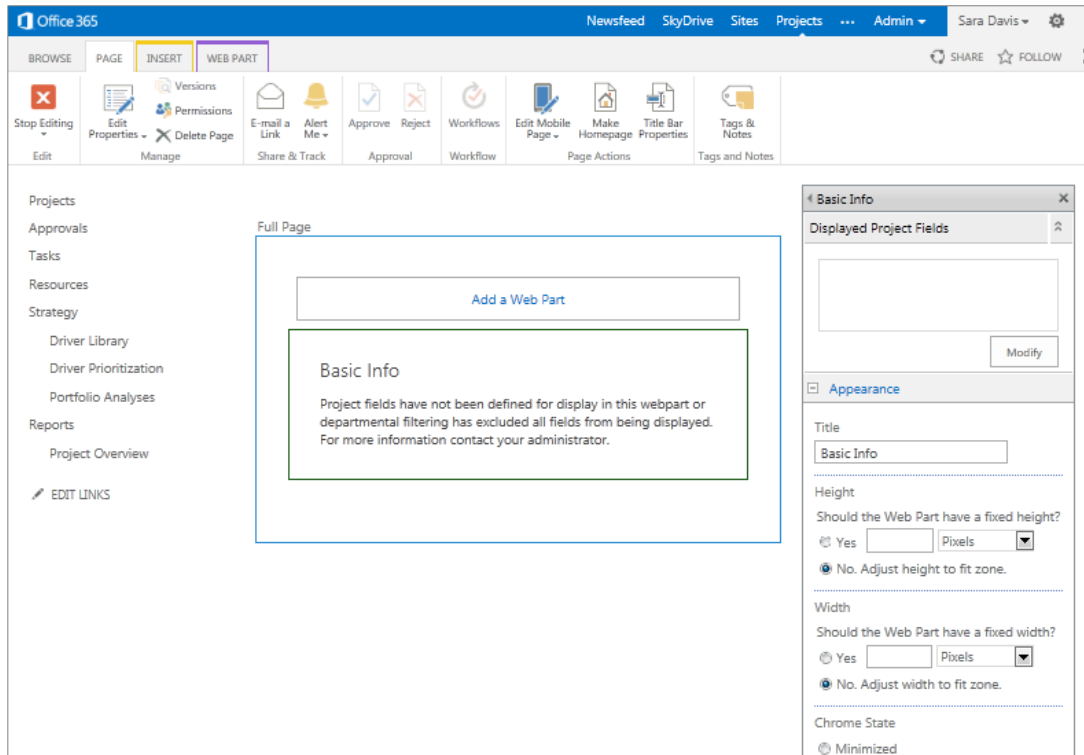


Figure 12: Project– Enterprise custom fields web part

More complex forms, such as risk questionnaires, cost estimate worksheets, and benefit-estimate worksheets, can be built by using Microsoft InfoPath Forms Services or Office Web Applications. You can include them in the project business case. This flexibility helps the PMO define various forms associated with business cases for different types of projects, while ensuring the standardization of key metadata across requests to facilitate enterprise reporting.

After creating the required online forms, an administrator simply links the forms to the stages within the appropriate governance workflow. The workflow accomplishes the following:

- Determines the displayed online forms at each stage in the project lifecycle.
- Dictates the configuration of individual fields within the form such as, for example, specifying whether a field is mandatory or whether a field should be editable or read-only.
- Performs data validation to ensure the correct completion of the form or to assess whether all deliverables have been completed before the request can progress to the next stage in the workflow.

As demonstrated by this overview, project templates, online forms, and governance workflow capabilities work together to control and standardize the project initiation process, while providing the PMO with the flexibility to meet custom LOB requirements and maintain enterprise standards.

PMOs can enter new requests in Project by using any standard or locally-created Project Center view. The Project Center provides a single interface for initiating all types of work, thereby streamlining the project initiation process. Submitting

a new request is easy: simply click the **New** button on the Project tab on the Project Ribbon interface, select the appropriate project template from the list, and the corresponding request form appears.

The screenshot shows the Office 365 Project ribbon interface. The top navigation bar includes 'Office 365', 'Newsfeed', 'SkyDrive', 'Sites', 'Projects', and 'Admin'. The user is identified as 'Sara Davis'. The ribbon has tabs for 'BROWSE', 'PROJECT', and 'PAGE'. The 'PROJECT' tab is active, showing a 'Save' button and a 'Cancel' button. The main content area is titled 'Project Information: New Software Development' and includes a note: '* Indicates a required field'. The form fields are: 'Name *' (text input), 'Description' (text area), 'Start Date *' (date picker showing 7/29/2013), 'Owner' (text input showing Sara Davis with a 'Browse...' button), and 'Project Departments' (text input with a dropdown arrow).

Figure 13: Project – Example Proposal Request Form

After completing the request form, you save and publish the project. If the project template has been associated with a governance workflow, the project is subject to the controls and business logic already associated with the workflow. The workflow dictates what happens next. The request could be routed through an initial approval checkpoint or it could simply move to another stage that includes additional forms and deliverables to be completed by the project team.

On the Proposal Stage Status page in Project, you can clearly see the forms and deliverables required for completion for the current stage in the workflow (see Figure 14).

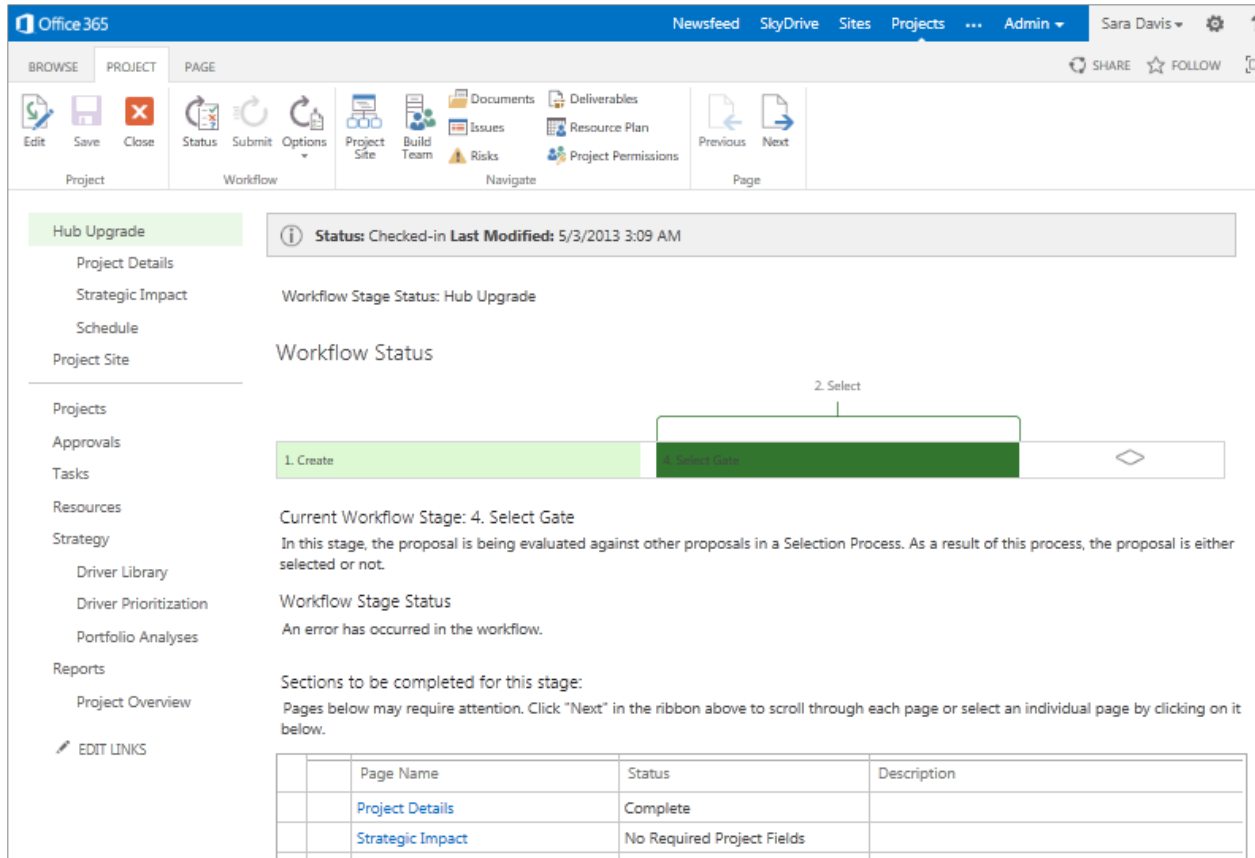


Figure 14: Proposal Stage Status Page

To complete the required forms, simply click a form in the left menu bar or sequentially step through the forms using the wizard-like settings on the Ribbon—that is, using the **Next** and **Previous** buttons (see Figure 15). The intuitive and familiar interface helps effectively communicate the governance process, educate users, simplify data entry, and improve adoption and end-user satisfaction.

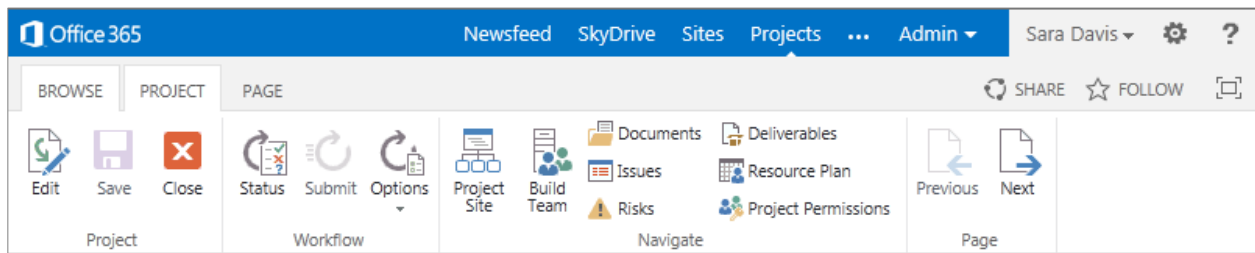


Figure 15: Next and Previous buttons in the Project tab

A Central Repository for Capturing All Requests

Project Online and Project Server offer flexible, new project initiation capabilities to provide visibility across all portfolios by capturing requests—from everyday work tracked in SharePoint tasks lists to complex projects and programs planned and managed in Project—and managing in-flight projects in a central repository. You can also capture and manage non-project work (such as incidents, tickets, and so on) in Project Web App (PWA).

Consolidating all work requests and projects that are already underway in a single location provides executives with transparency across all investments, making it easier to assess the impact on scarce resources and select the right initiatives for your organization to fund and complete. The Project Center view helps to ensure that users can create flexible scorecards to better visualize and report across portfolios and the project life cycle. You can configure Project Center to provide a demand management scorecard (see Figure 16) that reinforces the benefit of capturing all projects and work requests in a central repository. The scorecard shows projects grouped by multiple dimensions—for example, workflow stage and department—and includes relevant metadata—dates, cost, system health, and so on—in columns to convey the status of all initiatives from inception to completion.

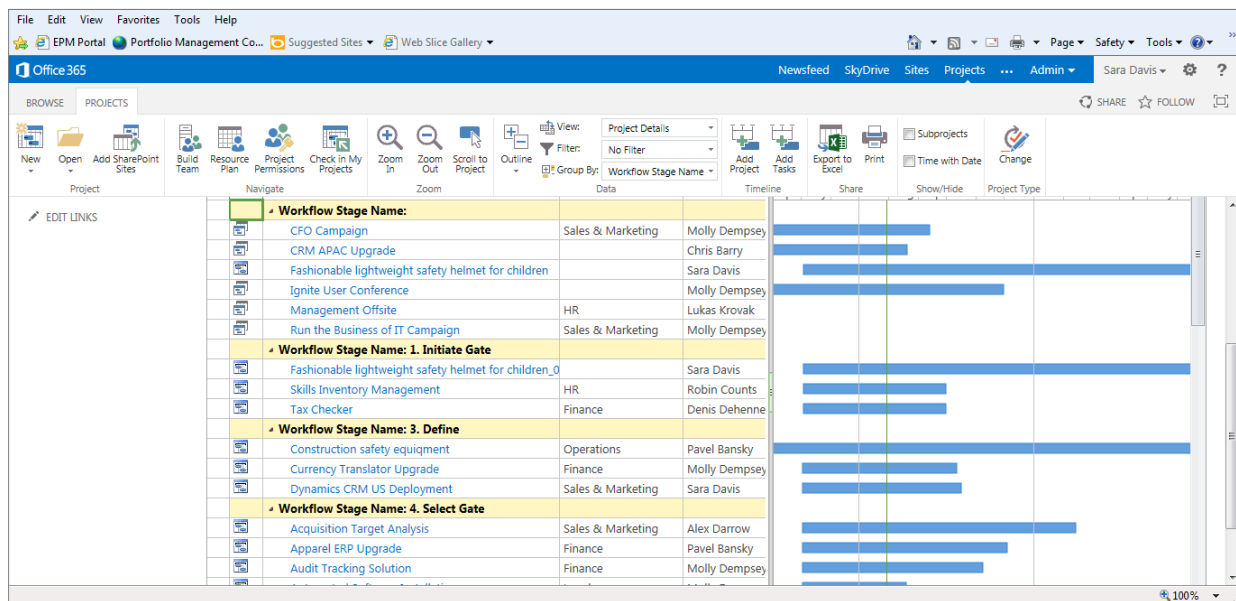


Figure 16: Project Center scorecard

Requests come from a variety of sources and can reside in specialized systems. To support this diversity of input, Project provides a comprehensive API to consolidate requests entered into other productivity tools and LOB systems alongside requests created directly in Project.

Portfolio Selection and Analytics

In these demanding economic times, many executives are facing sharper scrutiny of their discretionary spending. This increases the importance of effectively identifying, selecting, and delivering project portfolios that best align with an organization's business strategy. Best-practice portfolio selection techniques provide a handshake between *value optimization*—that is, alignment with business priorities and maximizing ROI—and *resource utilization*, meaning the understanding of resource capabilities and availability. Together, these techniques help PMOs recommend not only which projects to undertake, but to forecast their delivery.

Aligning spending with business strategy can be very subjective. Organizations can make this less so by adopting structured techniques for defining, prioritizing, and communicating business imperatives, and consistently evaluating each competing initiative that contributes to strategic priorities. Adopting a structured portfolio selection process helps organizations accomplish the following:

- **Define and communicate the business strategy:** Many organizations publish mission statements and high-level strategic objectives. Few of them, however, break down their strategy into actionable, measurable, and unique business drivers. Defining and effectively communicating the business strategy provides a blueprint that organizational departments can understand and implement.
- **Drive executive consensus around business driver priorities:** Objectively prioritizing the business strategy and driving executive consensus can help your organization more effectively assess competing initiatives and select the optimal portfolio.
- **Objectively prioritize competing projects from multiple dimensions:** Prioritizing projects by using a variety of value measurements—for example, strategic value, financial value, and risk—provides a framework for assessing requests from multiple dimensions and for creating a common currency with which to make comparisons.
- **Identify the optimal portfolio under varying budget and portfolio constraints:** Facing budget cuts or requests that exceed the allocated budget creates a daunting task for PMOs. Additional variables, such as inter-project dependencies and regulatory requirements, can further compound the problem, creating a challenge in effectively modeling scenarios that will help identify the right projects for an organization to undertake.
- **Effectively communicate tradeoffs:** Budget, available resources, dependencies, pet projects, and compliance requirements can potentially affect the overall value of selected project portfolios. Being able to identify and to alter the constraints, helps PMOs communicate tradeoffs to the executive team and enhance the potential value gained from the resulting portfolio.
- **Maximize resource utilization:** In an annual planning cycle, people sometimes front-load projects, resulting in an immediate over-allocation of resources in the first half of the year and surplus of resources in the second half. Using capacity planning techniques, analysts can reschedule projects based on resource availability and model headcount scenarios—for example hiring versus outsourcing—to maximize resource utilization and identify the optimal release roadmap.

New portfolio selection and analytical capabilities in Project Online and Project Server build a bridge between value optimization and resource utilization to help organizations select project portfolios based on alignment with business strategy and resource capability.

With Project, your organization can achieve the following:

- Objectively define, communicate, and prioritize business strategy.
- Score and assess competing requests from multiple dimensions.
- Run what-if analysis optimization scenarios under various budgetary constraints.

- Compare and contrast portfolios and gain insight through advanced analysis such as Efficient Frontier Modeling.
- Effectively evaluate ideas or measure the strategic contribution of competing requests to determine alignment and streamline project initiation.
- Assess capacity and adjust project schedules to maximize resource utilization across the planning horizon.
- Run and model headcount scenarios.

Project provides a consistent SharePoint user interface across the solution, including Project Online, which utilizes SharePoint Online through Office 365.

The industry-leading analysis wizard in Project intuitively takes PMOs through embedded portfolio selection methodology systematically, making it even easier to identify and select the right project portfolios. Project supports a logical rather than subjective approach to portfolio selection and provides a structured process for measuring the alignment of spending with strategy, by maximizing resource utilization.

Portfolio Optimization and Capacity Planning

Project Online and Project Server help your organization define and select project portfolios that align with your business strategy by providing best-in-class portfolio techniques to prioritize competing requests, run optimization scenarios under varying budgetary constraints, and maximize resource utilization to manage capacity. Project includes a best practice-based methodology that helps organizations identify and select project portfolios that best align with their business strategy. In the following sections, we walk through four key phases of portfolio optimization and capacity planning:

- **Business driver definition and prioritization**
- **Project portfolio prioritization**
- **Portfolio optimization: cost constraint analysis and optimization**
- **Resource constraint analysis and utilization**

Clearly Define and Prioritize Business Strategy

The first step in aligning spending with business strategy is to define a set of actionable, measurable, and unique business drivers that clearly communicate the intent of the organization's business strategy. PMOs can facilitate a workshop with executives to define business drivers and to translate the organization's objectives into actionable terms. A rough rule of thumb is that an organization should select between six and twelve business drivers. Fewer than six drivers usually results in drivers that are too broad to be effective and more than twelve results in driver overlap and redundancy.

Using the Driver Library in Project, PMOs can capture and communicate business drivers defined by the executive team. With the Business Driver form in Project (see Figure 17), PMOs can easily publish drivers. The form captures the following metadata:

- **Driver name and description:** By capturing a name and description for each business driver, your analysts can better communicate the intent of each driver and reduce ambiguity.
- **Departments:** Because the solution is flexible, your organization can have a single set of business drivers to implement throughout the organization. At the same time, the solution gives you the freedom to associate specific sets of drivers with multiple departments.
- **Project impact statements:** Ultimately, organizations use business drivers to assess the strategic contribution of each competing initiative by deriving a strategic value score during business case development. You can use the values Extreme, Strong, Moderate, Low, or None to indicate the impact that competing requests have on one or

more business drivers. PMOs can use project impact statements to ensure the objectivity of this assessment and to communicate clearly the threshold of each impact rating. Project impact statements come from the key performance indicators (KPIs) used to measure each business driver.

The screenshot shows the 'Add New Business Driver' form in Office 365. The form is titled 'DRIVER' and includes a 'BROWSE' button. The main content area is divided into several sections:

- Name and Description:** A text box for the driver name (e.g., 'Expanding into New Markets and Segments') and a larger text box for the description (e.g., 'Expand revenue growth aggressively by penetrating new markets and expanding reach to segments of penetrated markets').
- Departments:** A text box for selecting departments, with a dropdown arrow.
- Status:** Radio buttons for 'Active (Default)' and 'Inactive'.
- Project Impact Statements:** A list of impact ratings with their corresponding descriptions:
 - None:** Does not grow revenue from any markets and segments
 - Low:** Grows revenue from new markets and segments by up to \$500K
 - Moderate:** Grows revenue from new markets and segments by \$500K to \$1M
 - Strong:** Grows revenue from new markets and segments by \$1M to \$3M
 - Extreme:** (partially visible)

Figure 17: Add New Business Driver form

After defining business drivers and specifying departmental associations, Project displays the driver name, description, and impact statements in the Strategic Impact Assessment form (see Figure 18). Your organization can use this form to collect the impact ratings to derive a common currency—a strategic value score—for competing requests.

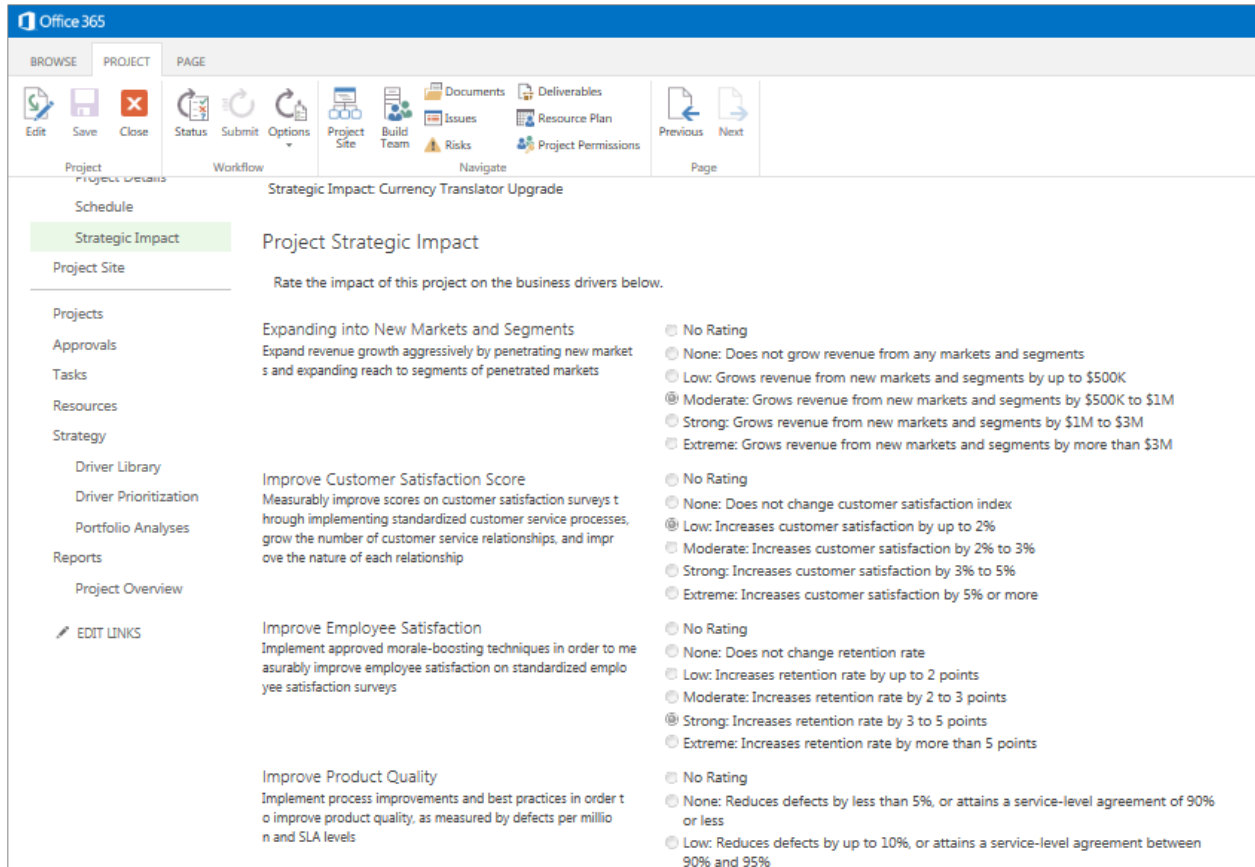


Figure 18: Project Strategic Impact form

After defining strategy, you need to objectively prioritize business drivers and drive consensus within the executive team. PMOs can use the driver prioritization module in Project to support a workshop in which executives openly discuss the importance of each business driver to prioritize strategy. Your organization can prioritize business drivers at any level within the organizational hierarchy. For example, you can define a standard set of business drivers across the enterprise, but also prioritize business drivers independently by line of business or department.

Project includes a pair wise comparison technique for comparing the importance of and prioritizing the business drivers. The Compare Drivers table guides executives through the business-driver prioritization process. The design simplifies completing the assessment by displaying a single business driver in the left column, importance ratings in the center column, and the drivers in the right column (see Figure 19). This intuitive view ensures that executives can openly discuss and assess the importance of each business driver pairing and clearly review driver descriptions to mitigate ambiguity. For example, “Expand into new markets and segments” is more or less important when compared to “Improve product quality.” An analyst can simply step through the pairwise comparison assessment and move to the next driver by clicking the **Next Driver** button.

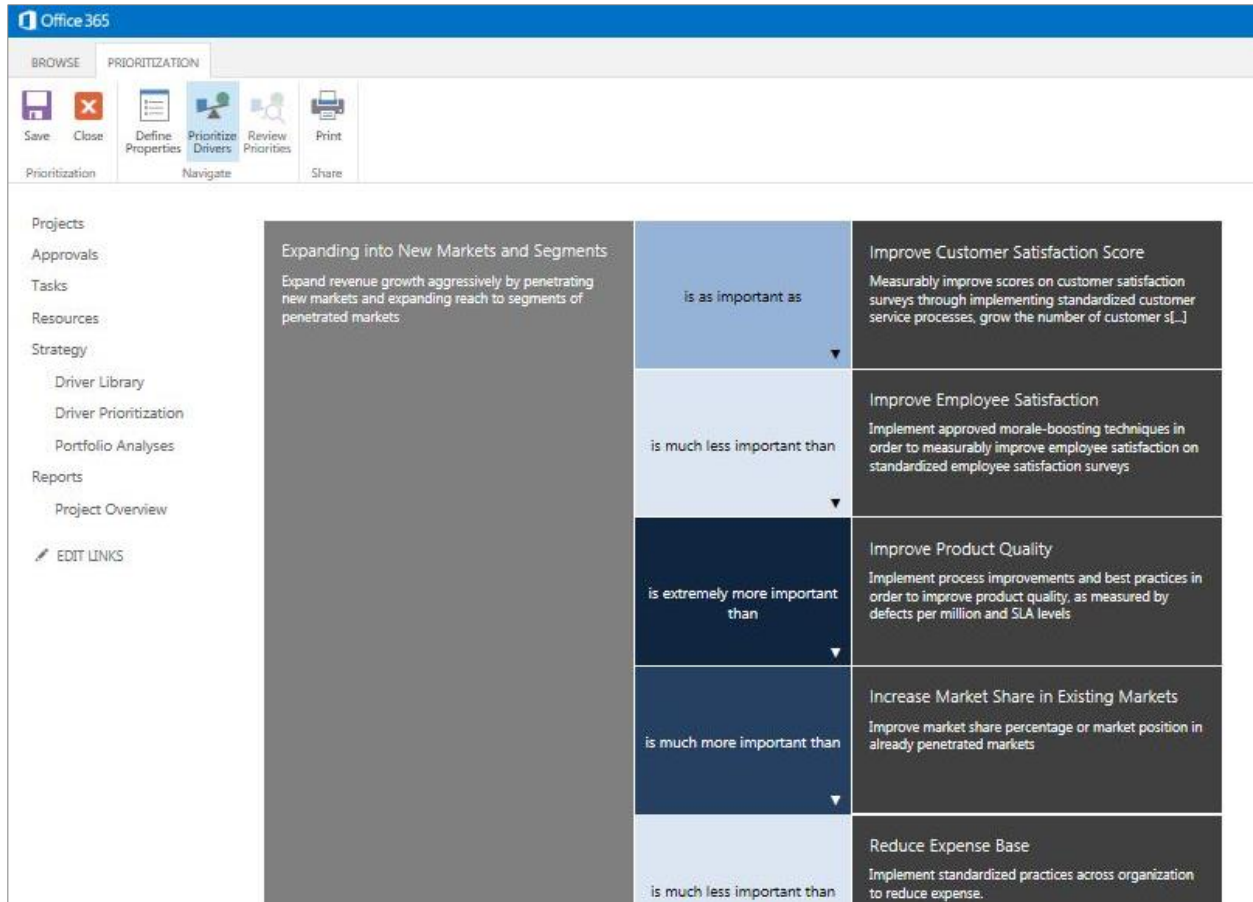


Figure 19: Compare Business Drivers table

Using the input from the pair wise comparison assessment, Project derives a relative priority score for business drivers (see Figure 20). The team can then use the normalized score to assess the relative importance of each business driver. In addition, a normalized score provides the team with a scale to proportionally measure investment alignment with strategic priorities. Objectively deriving this relative score provides a crucial step for being able to accurately measure how closely a resulting project portfolio aligns with your organization’s business strategy.

In addition, Project provides a consistency ratio score that indicates how consistent a team’s responses were in the pairwise assessment (see Figure 20). A score lower than 75 percent indicates inconsistencies, suggesting an analyst should work with the team to refine the assessment to improve the score. The following example demonstrates how inconsistency introduced during the assessment can result in a low consistency ratio:

- Driver 1 is AS IMPORTANT as Driver 2.
- Driver 1 is AS IMPORTANT as Driver 3.
- Driver 2 is MORE IMPORTANT than Driver 3.

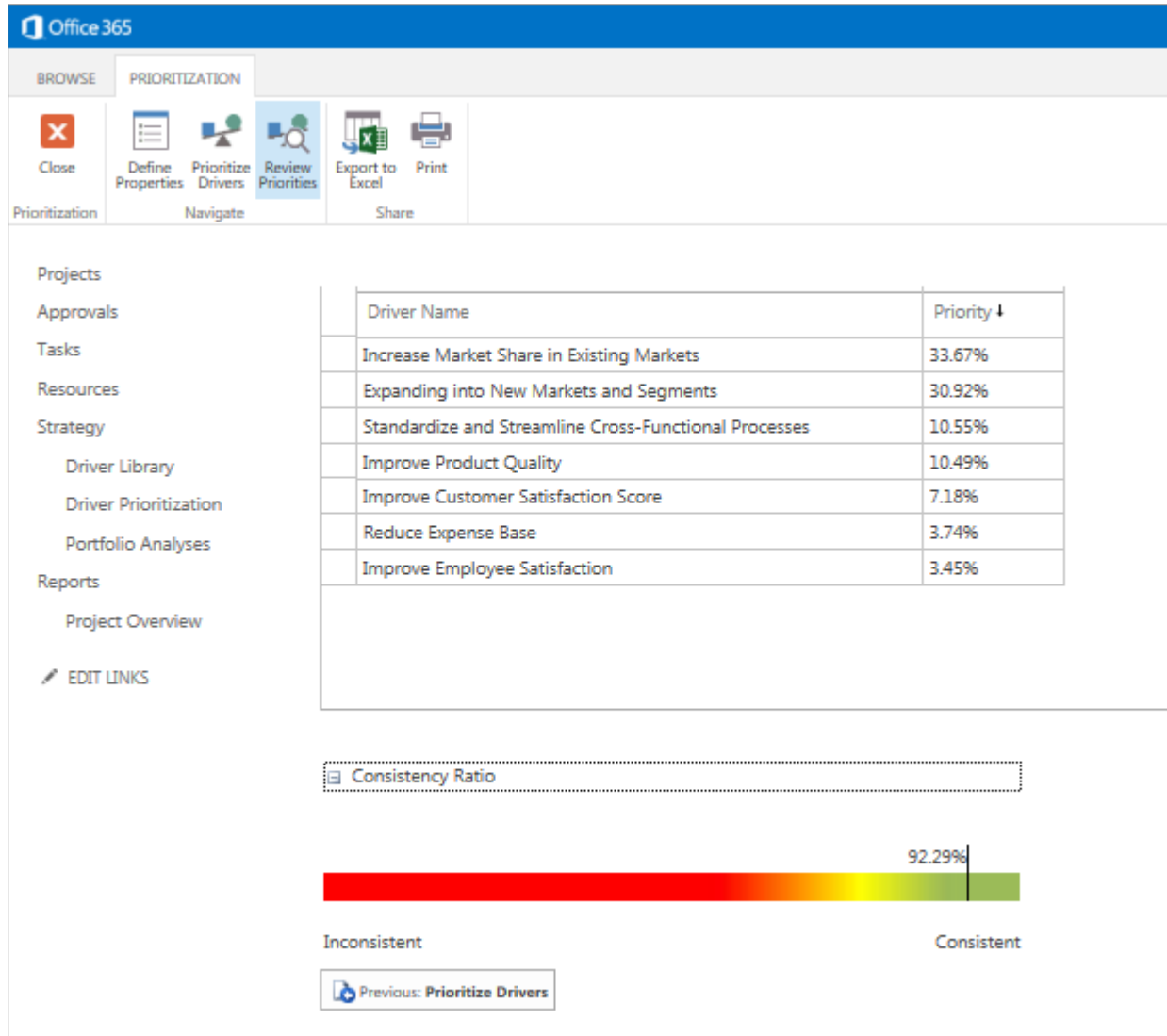


Figure 20: Business Driver Priority Score and Consistency Ratio

The pair wise comparison technique helps organizations objectively prioritize their business strategy. However, Project also offers the flexibility to assign manual priorities to business drivers.

Executives from various functional areas tend to have different opinions about the organization’s strategic priorities. Overcoming this discrepancy and driving consensus helps you more effectively assess competing initiatives and compile the optimal portfolio. The open discussion that occurs when completing the pair wise comparison is an effective way to debate the importance of each business driver pairing and to drive consensus across the executive team. Another useful approach is to prioritize business drivers using the pair wise technique independently with each executive. The PMO can then compare and contrast driver priorities for each executive, identify divergence of opinion ahead of the driver prioritization workshop, and focus on the areas of discrepancy, during the session, to drive consensus across the team.

A Better Experience with the Intuitive Analysis Wizard

After engaging the executive team to better understand and communicate strategic priorities, the next steps are to prioritize competing requests and to select the optimal portfolio of projects under varying cost and resource constraints.

Project includes an intuitive wizard that guides analysts through the Project portfolio selection methodology (see Figure 21). Using the Portfolio Analysis wizard, analysts simply move through the analysis steps by clicking the **Next** button or by selecting a sequential step on the Ribbon interface. The simplicity and intuitive nature of this wizard reduces training costs and ensures that analysts can quickly demonstrate value derived from the solution.

An analyst uses the Portfolio Analysis form to define the properties for a new analysis. The form offers the flexibility to run the analysis at the enterprise level or by department; to filter projects to include in the analysis; and to specify the prioritization criteria, primary cost constraints, and the time horizon for the capacity planning assessment.

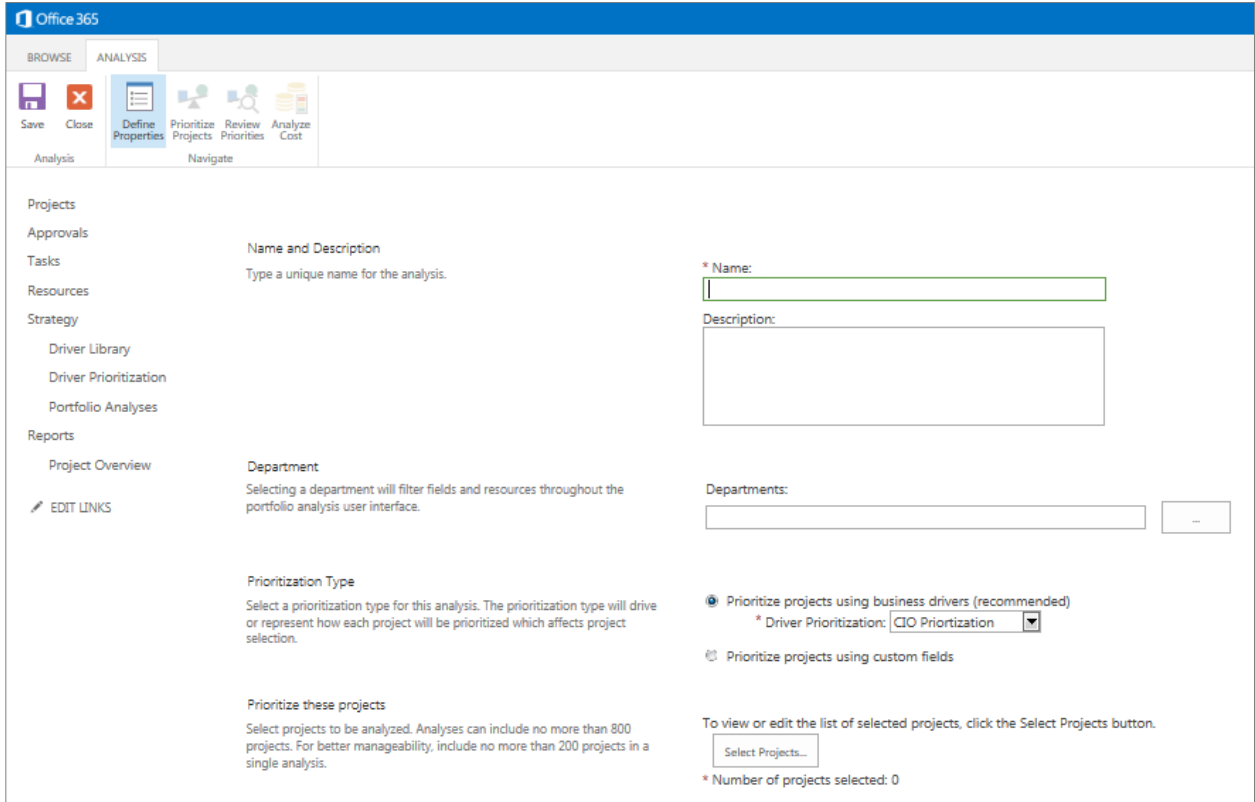


Figure 21: New Portfolio Analysis form

The following sections provide an overview of the project prioritization, cost constraint analysis, and resource-constraint analysis capabilities.

Objectively Prioritize Competing Requests

With potentially hundreds of projects competing for the same limited budget and resources, formulating common scoring criteria become essential to effectively prioritizing and evaluating investment requests.

Using Project, analysts can select the prioritization criteria that will drive portfolio analysis (see Figure 6). An analyst can choose to prioritize requests based on their strategic value or create custom fields that include other prioritization metrics—for example, net present value (NPV), ROI, Risk, and Total Cost. The remainder of this section focuses on deriving a strategic value score to effectively compare and contrast competing investments.

After defining New Portfolio Analysis properties, you need to prioritize projects based on their impact on business drivers. On the Ribbon, click the **Prioritize Projects** button to display the Project Strategic Impact matrix (see Figure 22). This heat map shows how competing projects (in rows) support business drivers (in columns) defined by the executive team. The matrix comes pre populated with the values—for example, Extreme, Strong, Moderate, Low, or None—captured in the Strategic Impact Assessment form (see Figure 22). Because the analyst does this offline, he or she can make changes to the impact matrix by selecting the appropriate rating for each cell.

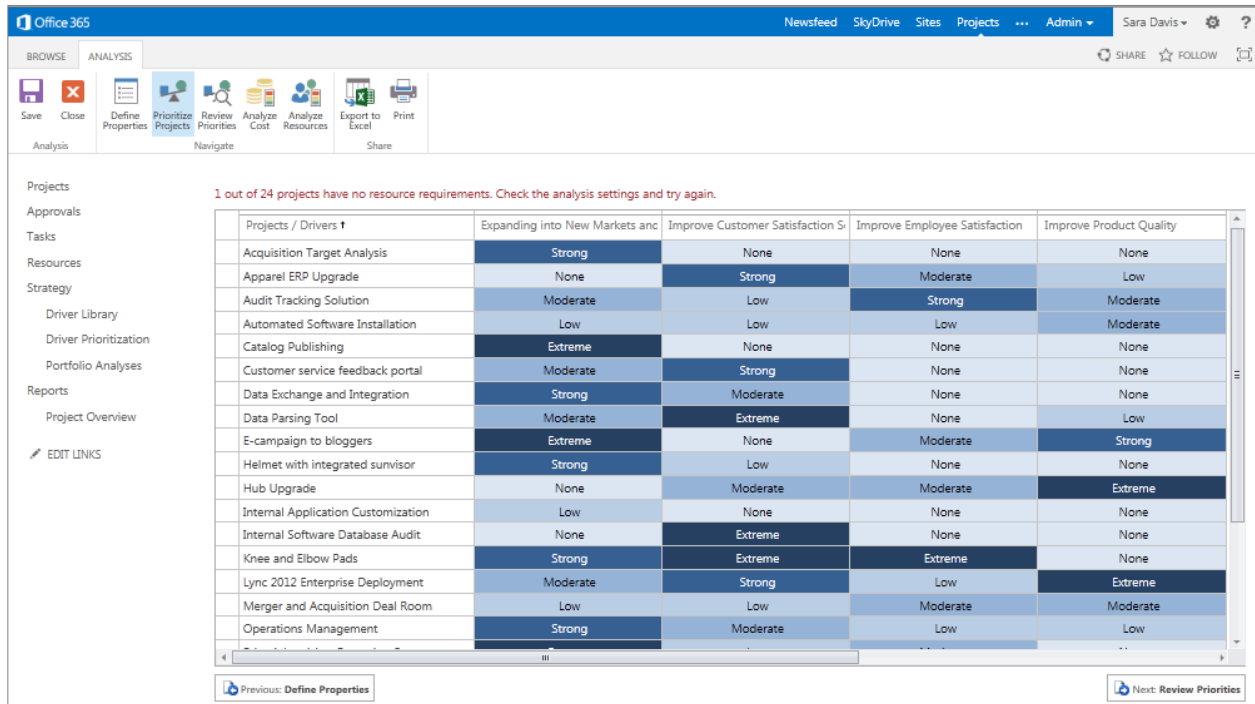


Figure 22: Project Strategic Impact Summary view

The primary purpose of the matrix is to derive a priority score for competing requests.

When you click the **Review Priorities** button, Project automatically derives a normalized priority score for competing projects (see Figure 23). The score measures the strategic value that each project will deliver based on its contribution to prioritized business drivers. The strategic value score provides a common currency for comparing different types of projects. Another important way to interpret this score is that completing all projects in the portfolio would deliver 100 percent of the strategic value of the portfolio. The importance of this perspective will become evident in the following section.

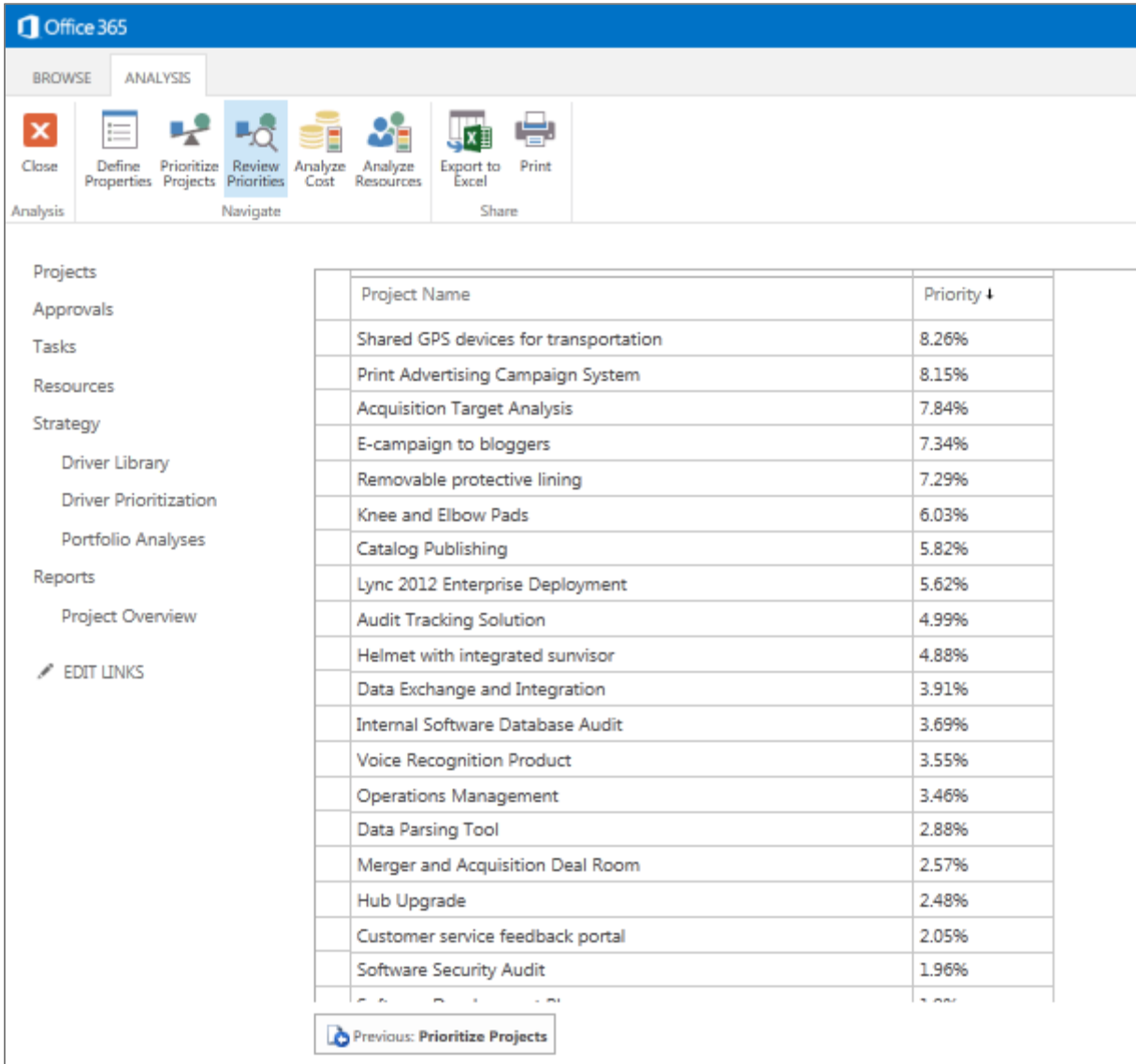


Figure 23: Review Priorities view

Portfolio Optimization and Cost Constraint Analysis

For most organizations, the number of project requests management receives often exceeds their budget and resource constraints. Project includes a portfolio optimization engine that helps your analyst's model different scenarios to identify the optimal project portfolio under various constraints.

After successfully prioritizing competing project requests as outlined in the preceding section, the analyst moves forward in the portfolio selection wizard to the Cost Constraint Analysis view (see Figure 24). This powerful 'what-if' analysis tool uses sophisticated optimization algorithms and embedded best practices to help executives quickly determine the optimal project portfolio under a variety of budget and business constraints. In Project, the Cost Constraint Analysis view provides steering committees with a single decision-making portal. For example, Efficient Frontier and Strategic Alignment charts, embedded in the Cost Constraint Analysis view, provide valuable insights. In addition, the analyst can configure views that include custom fields—type, phase, risk, and soon—to provide additional clarity.

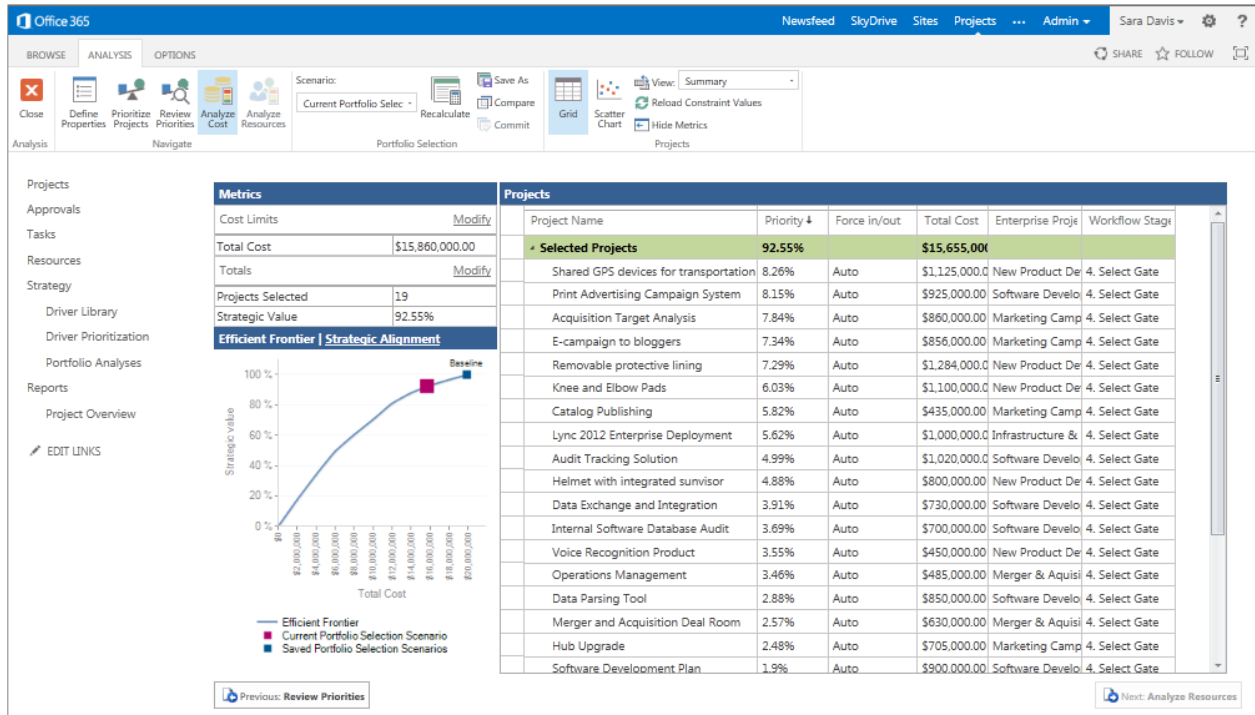


Figure 24: Cost Constraint Analysis view

When configuring a new portfolio analysis, the analyst must specify a primary cost constraint for the scenario. The Cost Constraint Analysis view displays competing project requests in priority order (based on their strategic value), and indicates the total cost estimate to complete all projects in the portfolio. Project automatically creates a baseline scenario that shows the organization can gain 100 percent of the portfolio value if it funds every project in the wish list. Plotted on the Efficient Frontier chart this baseline scenario becomes the benchmark to compare all subsequent scenarios (see Figure 25).

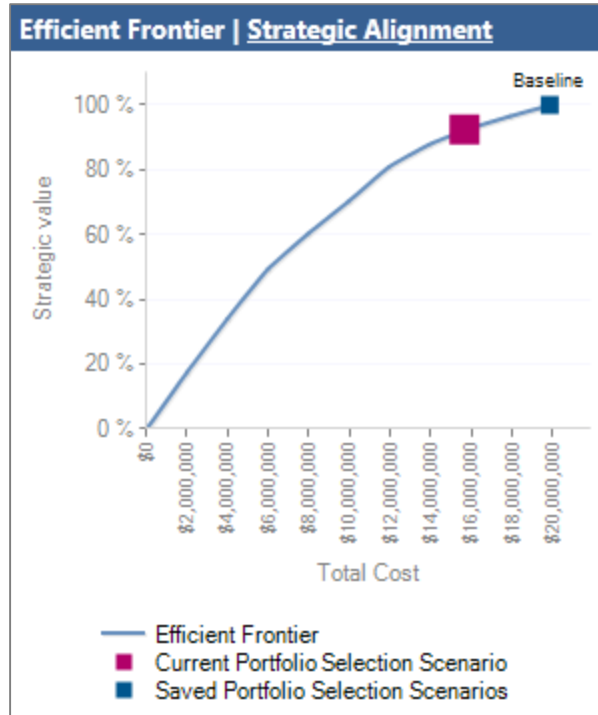


Figure 25: Efficient Frontier chart

The Efficient Frontier chart helps analysts identify the project portfolio that will deliver the maximum value under various constraint thresholds. The Efficient Frontier chart includes value criteria on the y-axis—for example, strategic value—and cost on the x-axis. Each point on the Efficient Frontier line represents a different bundle of projects from the proposed portfolio. The Efficient Frontier line represents the highest ROI. For example, Figure 25 shows that for a \$10 million budget (the x-axis) it can achieve approximately 79 percent of the portfolio’s strategic value (the y-axis).

Organizations can use the Efficient Frontier chart in one of two ways:

1. **Identify the point of diminishing return:** Find the point where the curve begins to flatten, which indicates that you are paying more to achieve a disproportionately lower amount of strategic value.
2. **Benchmark the selected portfolio against the Efficient Frontier:** Compare the position of the selected portfolio in relation to the line that represents the Efficient Frontier.

In reality, because of constraints such as interdependencies, project alternatives, and mandatory investments, most portfolios are sub-optimal and fall beneath the Efficient Frontier. Analysts can identify and work toward removing these constraints to move closer to the Efficient Frontier.

Next, the analyst enters a cost constraint and clicks the **Recalculate** button. Project recommends the optimal project portfolio. The sophisticated Project optimization algorithm maximizes the value gained from the portfolio under the indicated cost constraint, and considers inter-project dependencies. The recommended portfolio of projects is viewable in the Selected Projects group while excluded initiatives are viewable in the Unselected Projects groups (see Figure 26). The analyst can immediately see how much value the selected portfolio will deliver and visually assess the scenario against the Efficient Frontier.

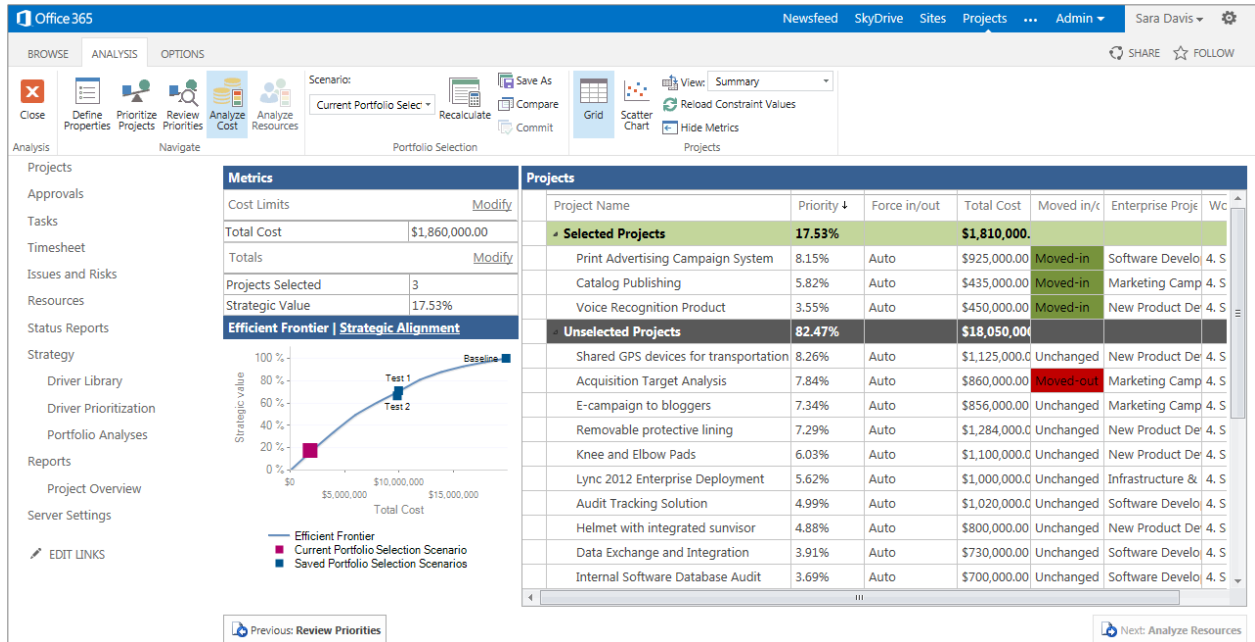


Figure 26: Project– Selected Projects and Unselected Projects

Using Project ‘what-if’ analysis capabilities, analysts can easily model different scenarios by further refining cost constraints or by forcing projects in or out of the portfolio. The Force In and Force Out options help ensure that analysts can override the algorithm and specify projects that should be automatically included in or excluded from the portfolio. Project requests are often “forced into” a portfolio if they represent compliance initiatives or are projects sponsored by a specific executive who wants to see them completed (“pet” projects). Force In and Force Out options have been enhanced in Project so that analysts can select a descriptive value to more effectively communicate why a project is being included in or excluded from the project portfolio (see Figure 27).

Unselected Projects	82.47%		\$18,050,000			
Shared GPS devices for transportation	8.26%	Auto	\$1,125,000.0	Unchanged	New Product De	4. S
Acquisition Target Analysis	7.84%	Forced-in	\$1,000,000.0	Moved-out	Marketing Camp	4. S
E-campaign to bloggers	7.34%	Auto	\$856,000.00	Unchanged	Marketing Camp	4. S
Removable protective lining	7.29%	Auto	\$1,284,000.0	Unchanged	New Product De	4. S

Figure 27: Force In and Force Out options

Analysts can save cost constraint analyses to provide an auditable record of all portfolio scenarios. When needed, they can access the saved scenarios in the Compare Portfolio Selection Scenarios view. This intuitive view displays all saved scenarios side by side, so it easy to compare and contrast, to see which projects were included or excluded, and to review key metrics—for example, the number of projects selected, the overall portfolio value, and the cost constraint applied (see Figure 28).

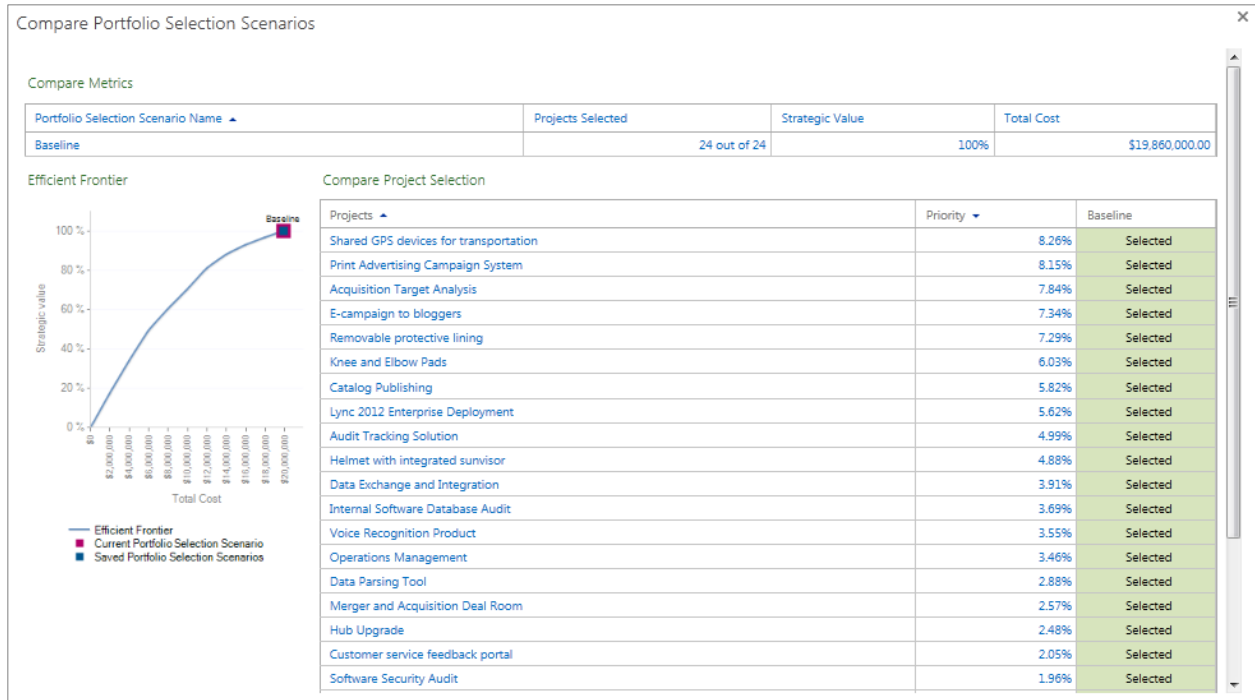


Figure 28: Compare Portfolio Selection Scenarios

The Strategic Alignment chart (see Figure 29) included in the Cost Constraint Analysis view helps organizations dynamically assess how well the selected portfolio aligns with business strategy. Executives can quickly visualize the correlation between business driver priorities and the organization’s investment in a selected project portfolio. The Strategic Alignment chart highlights potential areas of concern, so that executives can assess whether they are overinvesting or under investing in each of the business drivers. This assessment would be almost impossible without objectively defining and prioritizing business drivers.

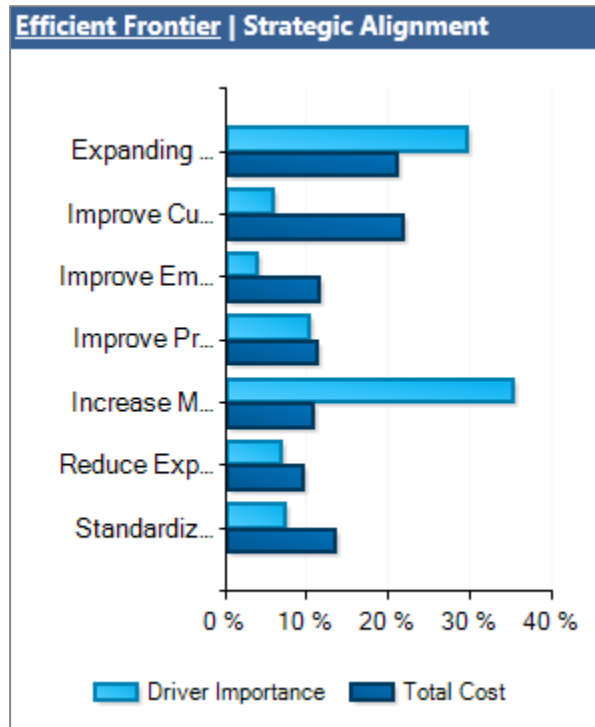


Figure 29: Strategic Alignment chart

After identifying the optimal project portfolio, analysts can either commit the scenario, which automatically updates the governance workflow—for example, the progress of all selected projects in the life cycle—or move forward with resource constraint analysis.

Maximize Resource Utilization with Capacity Planning

Leading portfolio management solutions provide a handshake between value optimization—determined by cost constraint analysis—and resource utilization—determined by resource constraint analysis. Selecting project portfolios based on ROI or value optimization does not guarantee that the organization has the right mix of resources or available resources to deliver projects as planned. Availability and utilization of resources has a direct effect on how and when work is completed. A common problem that many organizations face during an annual planning cycle is front-loading prospective projects on the planning horizon. This can potentially result in over-allocation of resources in the first half of the year and underutilization of resources in the second half of the year. Performing capacity-planning analysis can help PMOs proactively assess supply versus demand and maximize resource utilization across the entire planning period.

Project includes a capacity-planning feature for conducting resource constraint analysis that works in conjunction with cost constraint analysis to connect value optimization with resource utilization. The powerful resource-centric analysis helps PMOs identify the organization’s surplus and deficits at the skill level—for example, the status of all generic resources. This helps the organization schedule projects to better utilize available resources and to model headcount scenarios to ensure the organization can effectively staff, execute, and realize value from the selected portfolio.

After successfully identifying the project portfolio that delivers the maximum value for the available budget, the analyst moves forward in the portfolio selection wizard by clicking the **Analyze Resources** button (see Figure 30). The projects selected in the Cost Constraint Analysis automatically carry forward to the next step in the portfolio selection analysis. The intuitive view displays the projects in priority order and uses a Gantt chart to show a visual depiction of their

proposed start dates. Based on available resources, the system dynamically determines which projects can be fully staffed, displaying them in a grouping of selected projects. Projects that cannot be fully staffed (because of a resource shortfall) move to a **Not selected** section of the project list.

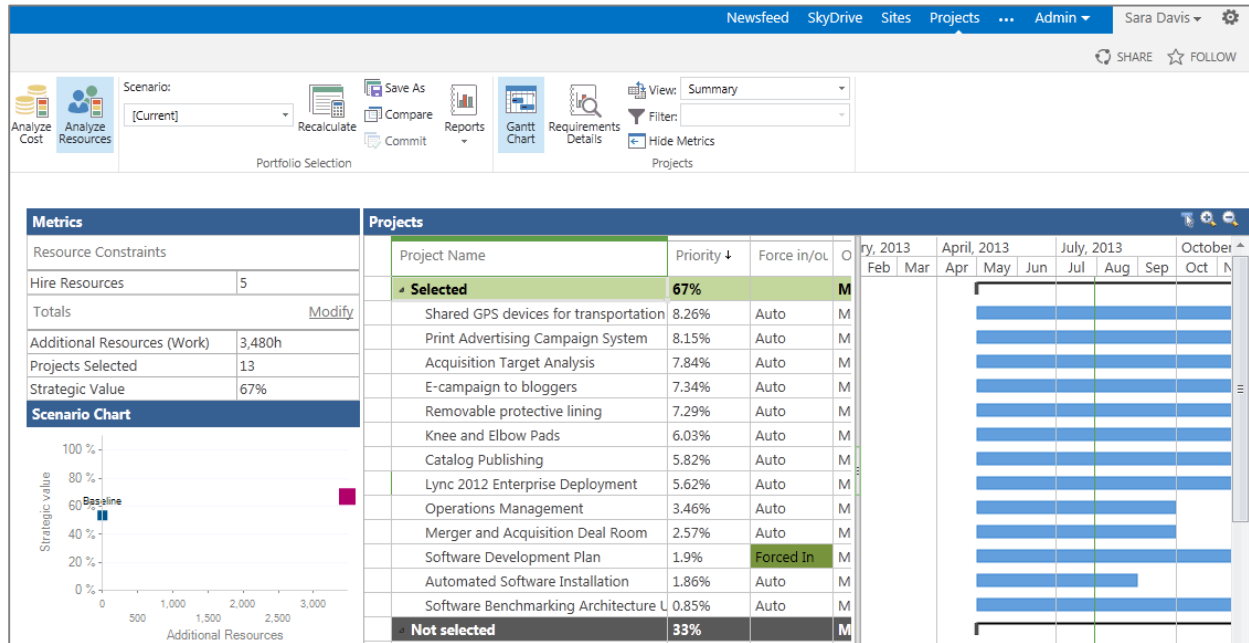


Figure 30: Resource Constraint Analysis view

To avoid front-loading the schedule in the first half of the year, analysts can use the Requirement Details view in Project to compare supply and demand data and better visualize the resource contours across the planning horizon (see Figure 31). The Requirements Details view is broken into two sections: the top section shows generic resource availability by skill for the selected planning horizon; the bottom section displays resource requirements (at the skill level) for each project included in the analysis. The view automatically includes the resource requirements entered during the business-case development phase. The projects then fall into two viewable categories, *selected* and *not selected* to denote whether they can be fully staffed based on resource availability and estimated cost. Analysts can simply compare the resource requirements for the projects not selected with the overall resource availability to see why initiatives cannot be fully staffed.

Resource Availability		Highlight Deficit											
Name ↑		February	March, 2	April, 20	May, 20	June, 20	July, 201	August	Septemt	October	Novemb	Decemb	
Roles		55	55	55	39.79	39.01	42.21	45.92	46.55	46.67	51.7	52.5	
Accounting		5	5	5	5	5	5	3.68	4.62	4.52	5	5	

Project Requirements													
Name	Priority ↓	January	February	March, 2	April, 20	May, 20	June, 20	July, 201	August	Septemt	October	Novemb	Decemb
Selected	59.16%	0	0	0	0	13.26	17.06	17.59	14.11	12.36	13.15	10.54	9.5
Shared GPS devices for transportation	8.26%	0	0	0	0	1.13	1.7	1.65	1.59	1.1	1.22	3.49	2.27
Accounting	8.26%	0	0	0	0	0	0	0	0	0.19	0.48	0	0
Legal	8.26%	0	0	0	0	0	0	0	0.59	0.81	0	0	0
Manufacturing Engineer	8.26%	0	0	0	0	0	0.15	0.74	0	0	0	0	0
Marketing	8.26%	0	0	0	0	0.26	0.6	0	0	0	0	0.91	1.17
Product Engineer	8.26%	0	0	0	0	0.87	0.95	0.65	0.59	0.1	0.74	2.58	1.09
Safety	8.26%	0	0	0	0	0	0	0.26	0.41	0	0	0	0
Print Advertising Campaign System	8.15%	0	0	0	0	0.57	1.38	1	1	1	0.7	0.33	0
Analyst	8.15%	0	0	0	0	0.57	0.53	0	0	0	0	0	0
Developer	8.15%	0	0	0	0	0	0.25	1	1	0	0.48	0.33	0
Trainer	8.15%	0	0	0	0	0	0.6	0	0	1	0.22	0	0

Figure 31: Requirements Details view

If you select the **Highlight Deficit** check box in the right corner of the Resource Availability pane, the view shows time periods for which there are not enough resources to complete all of the proposed projects. This feature helps analysts assess resource availability over the entire planning period to identify quickly resource overutilization and underutilization. In the following example, the analyst can quickly determine the underutilized resources in the second half of the year. As a result, the organization can more fully utilize resources by moving some of the unselected projects to start later in the planning horizon (see Figure 32).

Resource Availability		Highlight Deficit											
Name ↑		February	March, 2	April, 20	May, 20	June, 20	July, 201	August	Septemt	October	Novemb	Decemb	
Analyst		8	8	8	2.7	1.49	4.18	7.77	8	7.13	7.95	7.93	
Consultant		0	0	0	0	0	0	0	0	0	0	0	

Project Requirements													
Name	Priority ↓	January	February	March, 2	April, 20	May, 20	June, 20	July, 201	August	Septemt	October	Novemb	Decemb
Selected	59.16%	0	0	0	0	13.26	17.06	17.59	14.11	12.36	13.15	10.54	9.5
Shared GPS devices for transportation	8.26%	0	0	0	0	1.13	1.7	1.65	1.59	1.1	1.22	3.49	2.27
Accounting	8.26%	0	0	0	0	0	0	0	0	0.19	0.48	0	0
Legal	8.26%	0	0	0	0	0	0	0	0.59	0.81	0	0	0
Manufacturing Engineer	8.26%	0	0	0	0	0	0.15	0.74	0	0	0	0	0
Marketing	8.26%	0	0	0	0	0.26	0.6	0	0	0	0	0.91	1.17
Product Engineer	8.26%	0	0	0	0	0.87	0.95	0.65	0.59	0.1	0.74	2.58	1.09
Safety	8.26%	0	0	0	0	0	0	0.26	0.41	0	0	0	0
Print Advertising Campaign System	8.15%	0	0	0	0	0.57	1.38	1	1	1	0.7	0.33	0
Analyst	8.15%	0	0	0	0	0.57	0.53	0	0	0	0	0	0
Developer	8.15%	0	0	0	0	0	0.25	1	1	0	0.48	0.33	0
Trainer	8.15%	0	0	0	0	0	0.6	0	0	1	0.22	0	0

Figure 32: Highlight Deficit check box selected

By understanding the resource availability contours, analysts can easily move projects around on the planning horizon. First, specify a new start date in the Gantt Chart view for unselected projects (see Figure 33) and then click the **Recalculate** button on the Analysis tab. Project automatically moves the projects and then determines if they can be fully staffed based on their new start dates. If they can, the projects will appear in the group of selected projects. The system maintains scheduling dependencies—for example, Project B cannot start until Project A finishes up—and business dependencies. Moving projects within the schedule helps analysts maximize resource utilization across the organization.

Project Name	Priority ↓	Force in/out	Original Start	New Start	Moved in/c	Has resourc	Enterprise Proj
Merger and Acquisition Deal Room	2.57%	Auto	May, 2013	May, 2013	Unchanged	Yes	Merger & Aquis
Software Development Plan	1.9%	Forced In	May, 2013	May, 2013	Unchanged	Yes	Software Develk
Automated Software Installation	1.86%	Auto	May, 2013	May, 2013	Unchanged	Yes	Merger & Aquis
Software Benchmarking Architecture U	0.85%	Auto	May, 2013	May, 2013	Unchanged	Yes	Software Develk
Not selected	33%		May, 2013	May, 2013		Yes	
Audit Tracking Solution	4.99%	Auto	May, 2013	May, 2013	Unchanged	Yes	Software Develk
Helmet with integrated sunvisor	4.88%	Auto	May, 2013	May, 2013	Unchanged	Yes	New Product De
Data Exchange and Integration	3.91%	Auto	May, 2013	August, 2013	Unchanged	Yes	Software Develk
Internal Software Database Audit	3.69%	Auto	May, 2013	June, 2013	Unchanged	Yes	Software Develk
Voice Recognition Product	3.55%	Auto	May, 2013	July, 2013	Unchanged	Yes	New Product De
Data Parsing Tool	2.88%	Auto	May, 2013	August, 2013	Unchanged	Yes	Software Develk
Hub Upgrade	2.48%	Auto	May, 2013	September, 2013	Unchanged	Yes	Marketing Camj
Customer service feedback portal	2.05%	Auto	May, 2013	October, 2013	Unchanged	Yes	Marketing Camj
Software Security Audit	1.96%	Auto	May, 2013	November, 2013	Unchanged	Yes	Software Develk
Apparel ERP Upgrade	1.64%	Auto	May, 2013	December, 2013	Unchanged	Yes	Infrastructure &
Internal Application Customization	0.95%	Auto	May, 2013		Unchanged	Yes	Software Develk

Figure 33: Modeling changes to project start dates

As in the cost constraint analysis, analysts can override the algorithm and force projects in and out of the analysis. This is especially useful to ensure that you can resource lower-value compliance projects ahead of higher-value discretionary projects.

After identifying an optimal release schedule for the project portfolio based on resource availability, analysts can run head count scenarios to staff the remaining unselected projects. Simply enter a full-time equivalent (FTE) value or a monetary value—for example, two people or \$200,000—in the Metrics pane (see Figure 34), and then click the **Recalculate** button to run the scenario.

Metrics	
Resource Constraints	
Hire Resources	5
Totals	Modify
Additional Resources (Work)	3,480h
Projects Selected	13
Strategic Value	67%

Figure 34: Metrics table

Project automatically recommends the appropriate skills needed, up to the value specified by the analyst, to fully staff as many of the remaining unselected projects as possible. The analyst can immediately assess the impact of the increased head count by seeing which projects moved into the selected group. By running the Hired Resources Report (see Figure 35), the analyst can quickly determine the skills needed for each of the projects, the required start date, and the total cost of each resource.

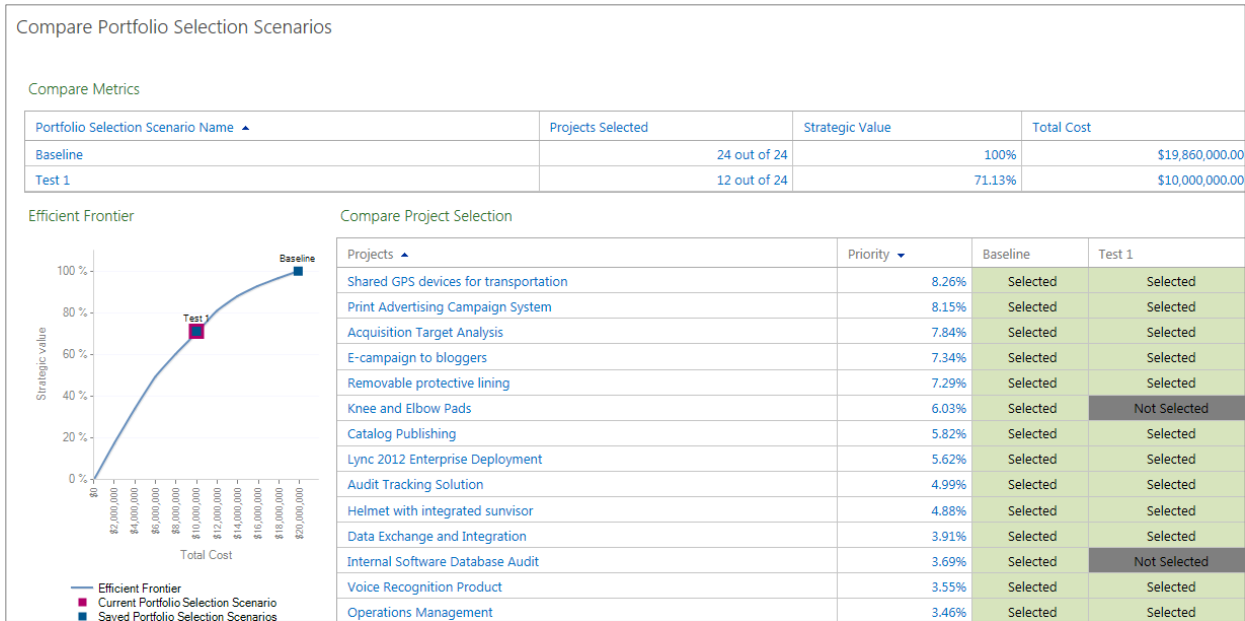


Figure 35: Resource Constraint Analysis – Hired Resources report

The head count modelling feature in Project provides analysts with the flexibility to specify whether to hire additional full-time employees (internal resources) or contract staff (external resources), and to select an appropriate cost rate.

Analysts can easily save the analyses they conduct, which become an auditable record of all portfolio scenarios. The saved scenarios are accessible in the Project Compare Project Selection view. This intuitive view (see Figure 36) displays all saved scenarios side by side, making it easy to compare and contrast, which projects were included or excluded, and to review key metrics such as the number of projects selected, their value, and their cost. After finalizing the portfolio selection, the analyst simply clicks the **Commit** button to move the selected projects to the next phase in the workflow.

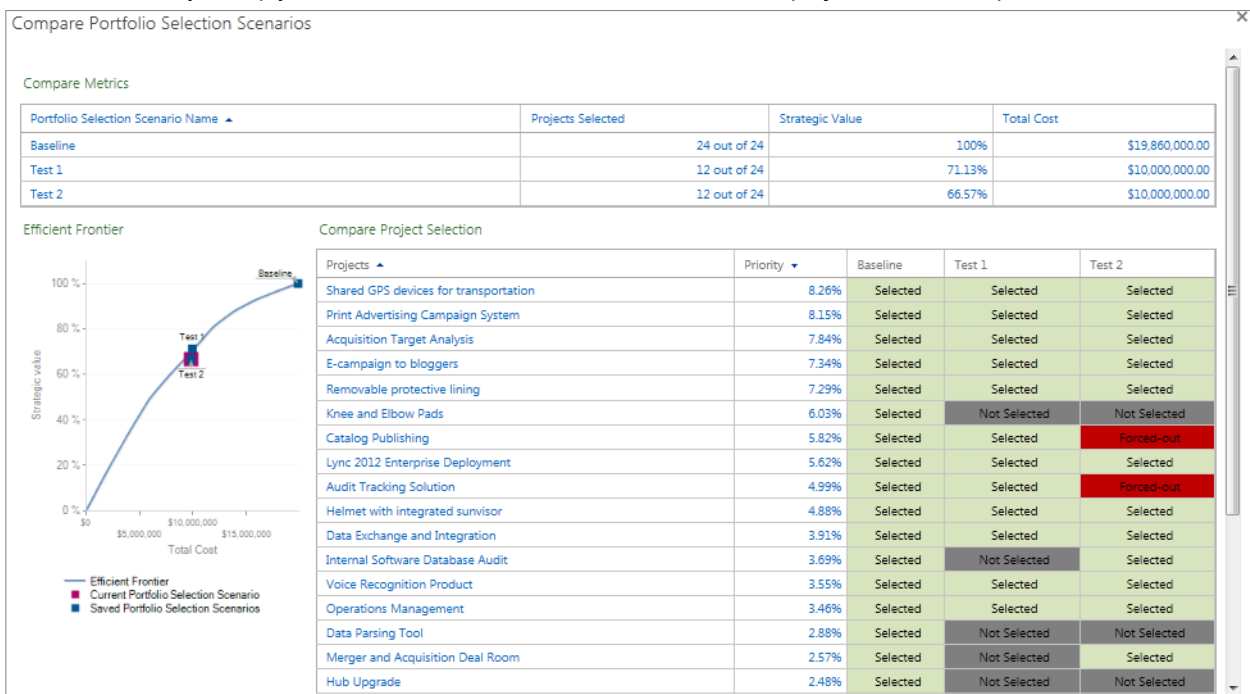


Figure 36: Compare Project Selection view

Resource Management

Resources are often an organization's most valuable asset and potentially its biggest expense. By properly managing and optimally utilizing your resources, your organization can develop and retain its world-class workforce while simultaneously realizing its business strategy.

Adopting best-practice resource management techniques helps organizations accomplish the following:

- **Gain visibility and control using an enterprise resource pool:** With a large number of employees and globally dispersed teams, it can become difficult to keep track of who is available, what they are capable of doing, and where they are located. Centralizing resources and standardizing metadata about the enterprise resource pool is the first step to gaining visibility and control.
- **Proactively compare capacity to demand to maximize resource utilization:** Resource capacity often determines whether organizations are able to complete strategic projects on a specific planning horizon. Capturing resource requirements early in the project life cycle helps analysts anticipate future demand and proactively schedule projects to maximize resource utilization.
- **Find the right people for the project:** Projects often include globally-dispersed teams and require a diverse set of skills. Quickly finding the right people with availability for each project significantly increases the chance of successfully completing the initiative and realizing ROI.
- **Intuitively manage resource assignments and overcome conflicts:** Managers improve project success rates by effectively managing resource assignments. Managers require tools that help them access and manage assignments through the project lifecycle and easily communicate with team members about assignments.

The Microsoft PPM Solution provides a powerful set of capabilities to help analysts and project managers maximize resource utilization and manage capacity across a project's life cycle. Offering a central repository and standardizing enterprise resource metadata, Project Online and Project Server help your PMOs and resource managers search your enterprise resource pool to find the best available people to work on a project. With the new capacity-planning feature, your analysts can compare resource demand to capacity and proactively reschedule new projects to maximize resource utilization. In addition, the Tasks view helps team members conveniently pick up assignments.

The Project Resource Center view consolidates all resources in a central repository and helps PMOs and resource managers standardize the collection of supporting metadata that they can use to analyze the resource pool. Creating an inventory of resources, clearly defining and separating working hours from non-working hours, such as holidays and sick leave, helps analysts determine the organization's overall capacity. The PPM Solution provides a variety of tools—for example, resource plans and project plans—to help organizations capture resource requirements early in the project life cycle.

The Team Planner tool in Project Professional and Project Professional for Office 365 helps project managers visually manage project-level resource assignments, quickly identify and resolve over-allocation, and easily substitute resources to overcome conflicts that could affect project delivery. Team members can conveniently pick up assignments in the Project Tasks view or they can access their tasks through Outlook. Native interoperability with Exchange Server ensures that organizations no longer have to install an Outlook add-in and ensures that team members can stay connected and receive tasks in Outlook or Outlook Web App.

Define Resources Using a Central Enterprise Resource Pool

Project Online and Project Server provide a centralized location for all of your resources and related information, improving and simplifying resource management. Offering enhanced visibility and control, the Resource Center View (see Figure 37) helps your PMOs and resource managers quickly assess overall capacity and better understand employee skills and availability. New Departmental fields enable resources to be associated with a business unit, helping your managers filter and sort resources by department.

With Project, administrators can capture all named resources in a single location and standardize the collection of associated metadata. The metadata represents discrete resource properties—skills, a resource’s level in the resource breakdown structure, geographic location, and billing rates—that managers can effectively use to tap the resource pool. By using the new Departmental fields, resources can be associated with a business unit to ensure that managers can filter and sort resources by department. In addition, administrators can create generic resources for capturing resource requirements at the skill level, such as *developer* or *analyst*, early in the project life cycle. Resources also can be assigned to teams for more flexibility; tasks assigned to a team can be completed by any resource within that team.

Resource Name	ID	Checked Out	Email Address	Generic	Timesheet Man	Position Role	Type	Active	De
Type: Cost									
Building and Facilities	14	No		No			Cost	Yes	
Hardware	34	No		No			Cost	Yes	
Other Capital	64	No		No			Cost	Yes	
Software	96	No		No			Cost	Yes	
Type: Work									
Aaron Painter	3	No		No	Aaron Painter	Product Engineer	Work	Yes	Aar
Accountant	4	No		Yes		Accounting	Work	Yes	
Adam Barr	5	No		No	Adam Barr	SME	Work	Yes	Ads
Alex Darrow	6	No		No	Alex Darrow	Analyst	Work	Yes	Ale:
Alex Simmons	7	No		No	Alex Simmons		Work	Yes	Ale:
Amy Alberts	8	No		No	Amy Alberts		Work	Yes	Am
Analyst	9	No		Yes		Analyst	Work	Yes	
Ari Bixhorn	10	No		No	Ari Bixhorn	Customer	Work	Yes	Ari
Bonnie Kearney	11	No		No	Bonnie Kearney	Analyst	Work	Yes	Bor
Brian Groth	12	No		No	Brian Groth		Work	Yes	Bria
Brian Johnson	13	No		No	Brian Johnson	Marketing	Work	Yes	Bria
Catherine Boeger	15	No		No	Catherine Boege	Customer	Work	Yes	Cat
Chris Barry	2	No		No	Chris Barry	Vendor	Work	Yes	Chr
Christof Sprenger	16	No		No	Christof Sprenge		Work	Yes	Chr
Consultant	17	No		Yes		Consultant	Work	Yes	Chr
Creative Designer	18	No		Yes			Work	Yes	Chr

Figure 37: Resource Center view

Capturing all resources in a central location helps PMOs and resource managers quickly assess overall capacity and better understand the employee skills that are available to them to use in the organization.

In addition to people, Project supports the management of consumable resources such as concrete and lumber. Organizations can also create and manage data for inanimate resources such as machinery, hardware, and facilities. Managers can apply multiple rate tables to these resources to model purchasing versus rental scenarios, helping deliver better cost management.

Using Project Server Interface (PSI) (the API for Project), the PPM Solution can connect with LOB applications to gather up-to-date resource information from the chosen system of record. Enhanced Active Directory synchronization enables

you to add resources quickly and reliably, helping simplify and automate the creation of the resource pool. This level of automation saves time and simplifies resource management to create an integrated work management platform.

Capture Resource Requirements for Capacity Planning

Project Online and Project Server demand management capabilities help you capture resource requirements early in a project's life cycle, providing visibility on future demand that you can access from any device. You can capture requirements at the resource name level, skill level (generically), or team level using Resource Assignments (see Figure 38) or by assigning resources directly to tasks in the Project Web App schedule or in Project Professional. Administrators can also create best-practice project plan templates that include pre-populated resource assignments.

Task Name	Work	Remaining Work	Start	Finish		7/25/2013	7/26/2013	7/27/2013
Resource Name: Accountant	1,848h	1,848h	8/6/2013	10/16/2015	0	Planned		
Project Name: Construction safe	200h	200h	8/15/2013	4/24/2015	0	Actual		
						Overtime		
						Planned		
Perform financial evaluation	80h	80h	8/15/2013	8/28/2013	0	Actual		
						Overtime		
						Planned		
Review financials	40h	40h	4/17/2015	4/24/2015	0	Actual		
						Overtime		
						Planned		
Update financial analysis	80h	80h	7/30/2014	8/13/2014	0	Actual		
						Overtime		
						Planned		
Project Name: Fashionable light	200h	200h	8/16/2013	4/27/2015	0	Actual		
						Overtime		
						Planned		
Project Name: Fashionable light	200h	200h	8/16/2013	4/27/2015	0	Actual		
						Overtime		
						Planned		

Figure 38: Project Resource Plan

PMOs can use the capacity-planning module in Project to proactively manage resources at the skill level and assess whether an organization has the capacity to undertake a proposed project portfolio. Analysts can use the module to compare resource requirements and availability data to help identify resource surpluses and deficits across the planning horizon. They can then reschedule projects to maximize resource use. [For more information, see *Portfolio Selection and Analytics*].

Quickly Find the Right People to Put to Work

With Project Online, Project Server, Project Professional, and Project Pro for Office 365, your managers can use the Resource Center View or Build Team views to create filters to search for the right people based on geography, skill, or other variables (see Figure 39). They can then add resources to their project and specify whether the booking is a proposal or commitment.

Resource Name	Type	Generic	Cost Center	Timesheet Man	Default Assignr	Earliest Avail
Type: Cost						
Building and	Cost	No				
Hardware	Cost	No				
Other Capiti	Cost	No				
Software	Cost	No				
Type: Work						
Aaron Paint	Work	No		Aaron Painter	Aaron Painter	
Accountant	Work	Yes				
Adam Barr	Work	No		Adam Barr	Adam Barr	
Alex Darrow	Work	No		Alex Darrow	Alex Darrow	
Alex Simmo	Work	No		Alex Simmons	Alex Simmons	
Amy Alberts	Work	No		Amy Alberts	Amy Alberts	
Analyst	Work	Yes				
Ari Bixhorn	Work	No		Ari Bixhorn	Ari Bixhorn	
Bonnie Kear	Work	No		Bonnie Kearney	Bonnie Kearney	
Brian Groth	Work	No		Brian Groth	Brian Groth	
Brian Johns	Work	No		Brian Johnson	Brian Johnson	
Catherine B	Work	No		Catherine Boege	Catherine Boege	
Chris Barry	Work	No		Chris Barry	Chris Barry	
Christof Spn	Work	No		Christof Spreng	Christof Spreng	
Consultant	Work	Yes				
Creative Des	Work	Yes				
Customer	Work	Yes				
David Alexal	Work	No		David Alexander	David Alexander	

Figure 39: Build Team view

Using the Resource Assignment and Resource Availability views, they can locate available resources to work on their projects (see Figure 40). These flexible views let managers include multiple resources, change the date range and time granularity, and see other projects that resources are working on during a given time period.

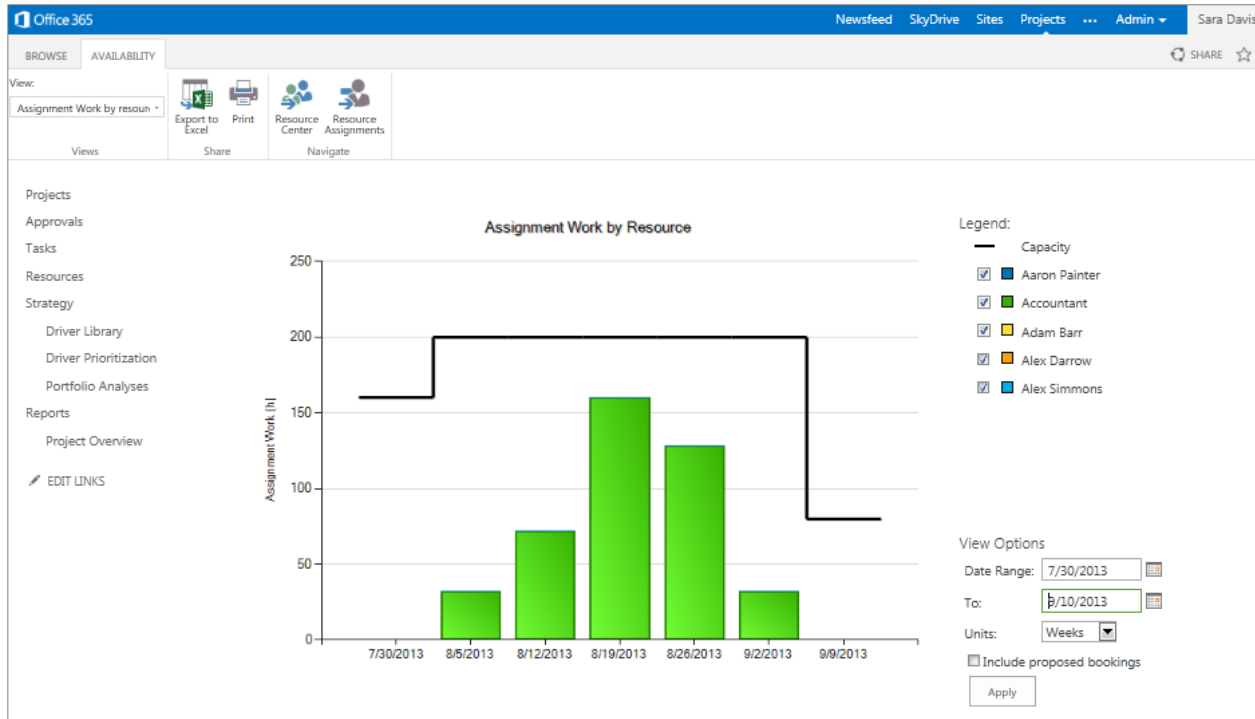


Figure 40: Resource Availability view

With the right resources identified, managers can engage the capabilities of the Build Team view to add resources to their project and specify whether the booking is a proposal or commitment.

Visually Manage Resource Assignments

The new Team Planner view in Project Professional offers a resource-centric view that helps managers visually manage project-level resource assignments (see Figure 41). Team Planner gives managers a complete picture of all assignments for a project. In addition, managers can intuitively drag and drop tasks between resources. With the easy-to-use interface in Team Planner, managers can quickly identify unassigned tasks in the lower half of the view, find resources that have availability, and easily move tasks to the right person. This resource-centric tool visually highlights resource over allocation, indicated by red bars that indicate overlapping tasks (see Figure 41). Managers can manually resolve scheduling conflicts or rely on the levelling capabilities of Project Professional to fix the issue. The Team Planner also visually highlights resources assigned to another project, enabling the project manager to drill into the competing project to receive a better understanding of the impact on the resource's time.

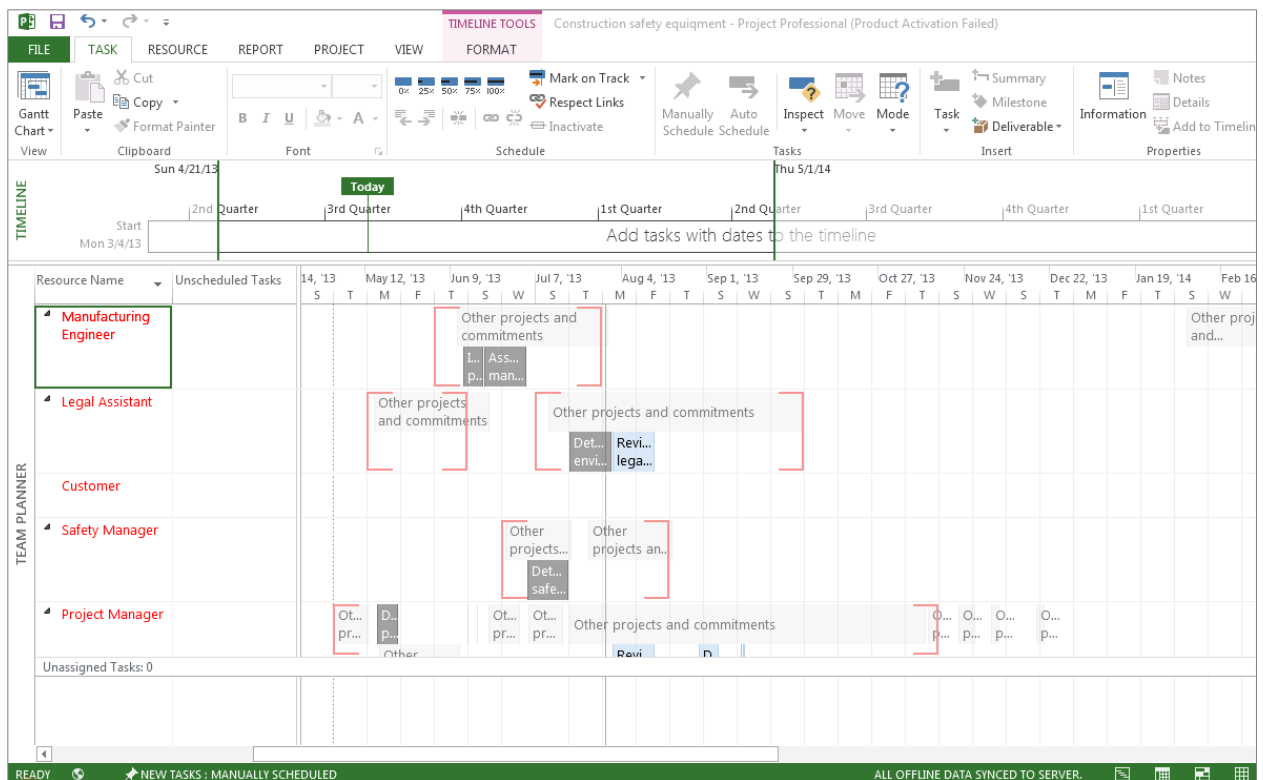


Figure 41: Project Professional – Team Planner view

The Team Planner view also provides mouse-triggered, context-sensitive dialog boxes that display useful information about tasks, including start and end dates, work remaining, and percent complete. Tasks appear in different colors to denote the completed percentage (see Figure 42). The Team Planner View is not available in Project Pro for Office 365.

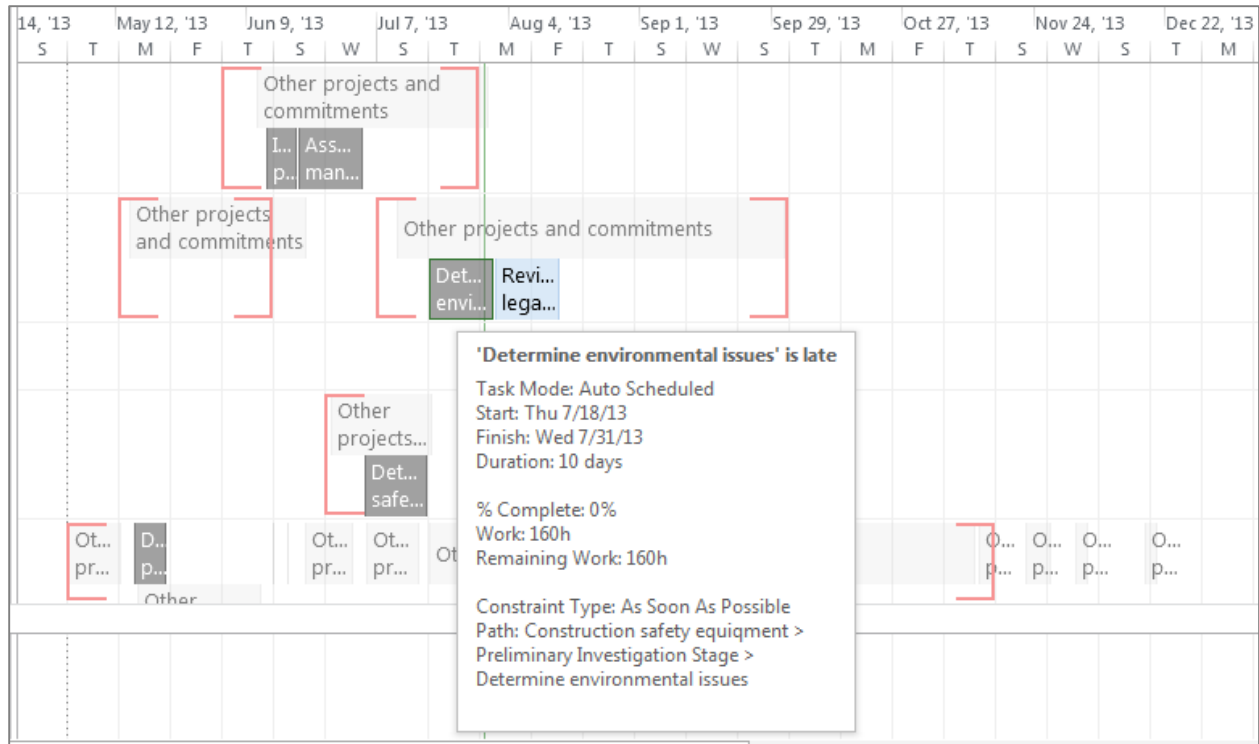


Figure 42: Project Professional/Project Pro for Office 365– Mouse-triggered, contextual dialog boxes appear for any task

With Project Pro for Office 365, you can see what your teams are doing—even when they’re managing everyday work or ad hoc projects in SharePoint Online. Because Project Online provides mobile support for your Project site from virtually anywhere, you can review and edit with the flexibility you need to get work done. An enhanced timeline in the browser enables you to see and share tasks, milestones, and phases. You can arrange the time to show start, finish, or other important dates for a collection of projects related to a particular initiative, portfolio, or department.

The Tasks View in Project provides a one-stop-shopping destination for all assignments for each team member (see Figure 43). This helps simplify communication about resource assignments and ensure that team members are aware of their designated activities. Team members can use this view to provide time and status updates or to reassign tasks if they lack the bandwidth to complete them. Because Project connects with Exchange, team members can also receive and update their project assignments as tasks in Outlook, Outlook Web App, or by using a PC, smartphone, or tablet. Project Pro for Office 365 offers limited functionality in this regards, in comparison to Project Server. [For more information about task assignments, see *Time and Task Management*].

Office 365 Newsfeed SkyDrive Sites Projects ... Admin Sara Davis

Project Web App Tasks

Search this site

Task Name	Start	Finish	Remain	% Wor	Work	Period Total	Mon 7/29	Tue 7/30	Wed 7/31	Th
Planning Window: Distant Future	5/2/2013	5/7/2013	28h	0%	Planned					
					Actual					
					Overtime					
Project Name: Dynamics CRM US De	5/2/2013	5/7/2013	28h	0%	Planned					
					Actual					
					Overtime					
Determine project scope	5/2/2013	5/2/2013	4h	0%	Planned					
					Actual					
					Overtime					
Secure project sponsorship	5/2/2013	5/3/2013	8h	0%	Planned					
					Actual					
					Overtime					
Define preliminary resources	5/3/2013	5/6/2013	8h	0%	Planned					
					Actual					
					Overtime					
Secure core resources	5/6/2013	5/7/2013	8h	0%	Planned					
					Actual					
					Overtime					
Scope complete	5/7/2013	5/7/2013	0h	0%	Planned					
					Actual					
					Overtime					

Figure 43: Project Tasks view

Schedule Management

A project schedule provides your project teams with a blueprint for project execution and a baseline for tracking progress and managing change. In addition, the schedule provides project teams with a map for project execution and delivers a baseline to track progress and manage change.

Most employees in any organization manage projects as part of their day-to-day responsibilities. For example, a marketing manager might lack training or official recognition as a certified project manager, but often ends up simultaneously executing a number of projects. Today, many organizations have both occasional and professionally-certified project managers—Project Management Professionals (PMPs), for example—executing initiatives and using different tools and techniques to build and manage both simple and complex schedules.

Adopting best-practice scheduling methodologies and tools helps organizations:

- **Support both occasional and professional project managers.** Schedules range in complexity from a simple list of activities to project plans with thousands of lines. Organizations require a scheduling solution that is easy to use for occasional project managers, but that can also provide the required rigor to support professional managers.
- **Create and update schedules from the desktop or online.** With geographically dispersed teams and a mobile workforce, project managers need the flexibility to build and edit project schedules on their computer desktop or on the Web.
- **Get started quickly and use best practices.** Creating a schedule can be a time-consuming process. Establishing schedule management standards and using best-practice templates makes it easier for project managers to get started and saves valuable time.
- **Effectively control and analyze schedules.** Complex and lengthy project schedules can be hard to manage and even harder to analyze. Project managers need effective tools to reduce complexity of interrelated tasks, provide early-warning indicators, and make the schedule easier to control.
- **Easily communicate schedule information.** The Gantt chart is the universal symbol of project management, but it might not be the most intuitive view for communicating schedule information to stakeholders. Project managers need an easy way to communicate key phases and milestones with simple timeline views.

With The Microsoft PPM Solution, you can give your occasional and professional project managers the flexibility to build and edit schedules on their computer desktop, their device of choice, or on the web—wherever they are working. Web-based project scheduling helps your managers quickly build simple and complex schedules online and conveniently edit projects in the browser from any location. By extending your PPM experience to smartphones, you can keep up-to-date while you're on the go with an interface suited to small form-factors.

Multi-Level Undo and Change Highlighting helps managers quickly model schedule changes, online or from the desktop, with minimal risk, providing organizations with a comprehensive scheduling system with familiar and flexible capabilities to support both the occasional and the professional project manager. The Ribbon interface in provides a consistent experience with Project Online and Project Server, ensuring that the tools managers need to plan and manage projects are always at their fingertips.

The Microsoft PPM Solution further simplifies managing and controlling schedules with improved analysis and visual tools, so that project managers can focus on deliverables and spend less time manipulating the project schedule. Similar to the spelling checker in Microsoft Word, Project visually identifies potential issues and inefficiencies in the schedule with red and green underlines. Using Project Professional or Project Pro for Office 365, managers can easily generate a

Timeline view that gives high-level view of the major activities in the schedule. Managers can copy this view into other Office applications such as Outlook and PowerPoint to share with stakeholders.

Flexible, Intuitive, and Powerful Scheduling Tools

Project Professional and Project Pro for Office 365 offer improved and innovative scheduling capabilities to help project managers of all levels get started quickly and be more productive.

The Ribbon interface includes task-oriented tabs that make finding and performing activities easier and faster (see Figure 44). Contextual menus reduce training requirements for occasional project managers and better display useful tools that professional project managers regularly use.

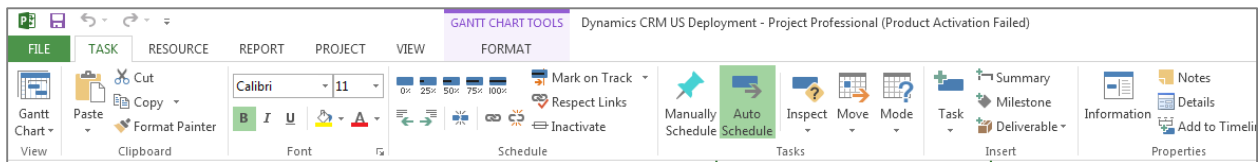


Figure 44: Project Professional/Project Pro for Office 365 – The Ribbon

The PPM Solution supports informal project scheduling in addition to the full rigor of project management best practices and techniques. Today, many occasional project managers choose to use tools such as Excel and SharePoint to build simple schedules. The new user-controlled scheduling in Project Professional and Project Professional for Office 365 makes scheduling simpler for occasional project managers while providing more flexibility and support for top-down and rolling-wave planning for professional project managers.

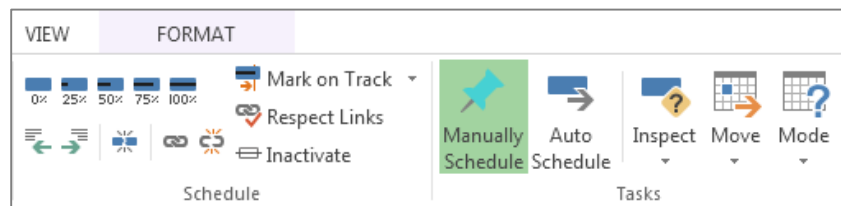


Figure 45: Project Professional/Project Pro for Office 365 – Manually Schedule and Auto Schedule buttons on the Ribbon Task tab

User-controlled scheduling gives project managers the flexibility to schedule tasks using the Manually Scheduled or Automatically Scheduled task modes. By choosing to manually schedule tasks, managers maintain full control of the project schedule, bypassing incoming scheduling effects. They can simply switch back to Automatically Scheduled task mode to use best-practice planning at any time. In Manually Scheduled task mode, Project does not fill in missing information and, as in Excel, managers enter data only when they have it. When you manually add a new scheduled task to a project, corresponding cells for duration and start and end dates remain blank. Managers can add the data for each task when it becomes available (see Figure 46). For example, a manager can add:

- A start date without a duration value: Project displays an open bracket in the Gantt chart view. This is useful when the manager knows when an activity starts but does not have a definitive duration.
- A duration value without a known start and end date: Project displays the tasks in light blue on the Gantt chart to denote that additional information is required. This is useful for tracking task level estimates
- Text reminders: a task's duration might not be known—the manager can add a note (for example, "Ask Bob") in any cell as a reminder to add the right value when it becomes available.

	Task Mode	Task Name	Duration	Start	Finish	Predecessors	
1	★	Scope	3.5d	Thu 5/2/13	Tue 5/7/13		
2	👤	Determine project sco	0.5d	Thu 5/2/13	Thu 5/2/13		P
3	👤	Secure project sponso	1d	Thu 5/2/13	Fri 5/3/13	2	P
4	★	Define preliminary res:	1d	Fri 5/3/13	Mon 5/6/13	3	P
5	★	Secure core resources	1d	Tue 5/14/13	Tue 5/14/13	4	P
6	👤	Scope complete	0d	Tue 5/14/13	Tue 5/14/13	5	P
7	★	Analysis/Software Requi	14d	Tue 5/7/13	Mon 5/27/13		
8	👤	Conduct needs analysi	5d	Wed 5/15/13	Tue 5/21/13	6	A
9	👤	Draft preliminary soft	3d	Wed 5/22/13	Fri 5/24/13	8	A
10	👤	Develop preliminary t	2d	Mon 5/27/13	Tue 5/28/13	9	P

Figure 46: Project Professional/Project Pro for Office 365 – Manually scheduled tasks

Typically, in the early planning stages of a project the manager makes high-level “napkin” estimates. User-controlled scheduling techniques help project managers take control of the schedule. In addition, Manually Scheduled task mode enhances support for top-down planning. Managers can specify duration, and start and end dates for summary tasks, while continuing to add and finalize the details of activities within the phase. This flexibility enables a manager to communicate phase-level estimates while finalizing lower-level activities within the schedule. The manager can also intuitively compare the phase estimate with the sum of the duration of the underlying tasks (see Figure 47).

	Task Mode	Task Name	Duration	Start	Finish	
	★	Scope	3.5d	Thu 5/2/13	Tue 5/7/13	
👤	👤	Determine project sco	0.5d	Thu 5/2/13	Thu 5/2/13	
👤	👤	Secure project sponso	1d	Thu 5/2/13	Fri 5/3/13	2
👤	★	Define preliminary res:	10d	Fri 5/3/13	Fri 5/17/13	3
👤	★	Secure core resources	5d	Tue 5/14/13	Mon 5/20/13	4
	👤	Scope complete	0d	Mon 5/20/13	Mon 5/20/13	5
	★	Analysis/Software Requi	14d	Tue 5/21/13	Fri 6/7/13	
👤	★	Conduct needs analysi	10d	Tue 5/21/13	Mon 6/3/13	6
👤	★	Draft preliminary soft	3d	Tue 5/28/13	Thu 5/30/13	8

Figure 47: Project Professional/Project Pro for Office 365 – Improved top-down scheduling

A manager can choose to revert from Manually Scheduled task mode to Automatically Scheduled task mode at any time by selecting the task and clicking the Auto Schedule button on the **Task** tab of the Ribbon.

Project Professional and Project Pro for Office 365 include a number of usability enhancements designed to make the tool easier to use and to increase the productivity of project and business managers. The Excel-like experience ensures that managers can eliminate laborious formatting by turning on text wrapping. They can enter data faster using auto-complete and easily mine data by filtering and grouping columns. It is also simpler to add a new column to the schedule. For example, the manager can simply start typing values in an undesigned column (see Figure 48). The tool dynamically chooses the correct column format and performs the required data validation.

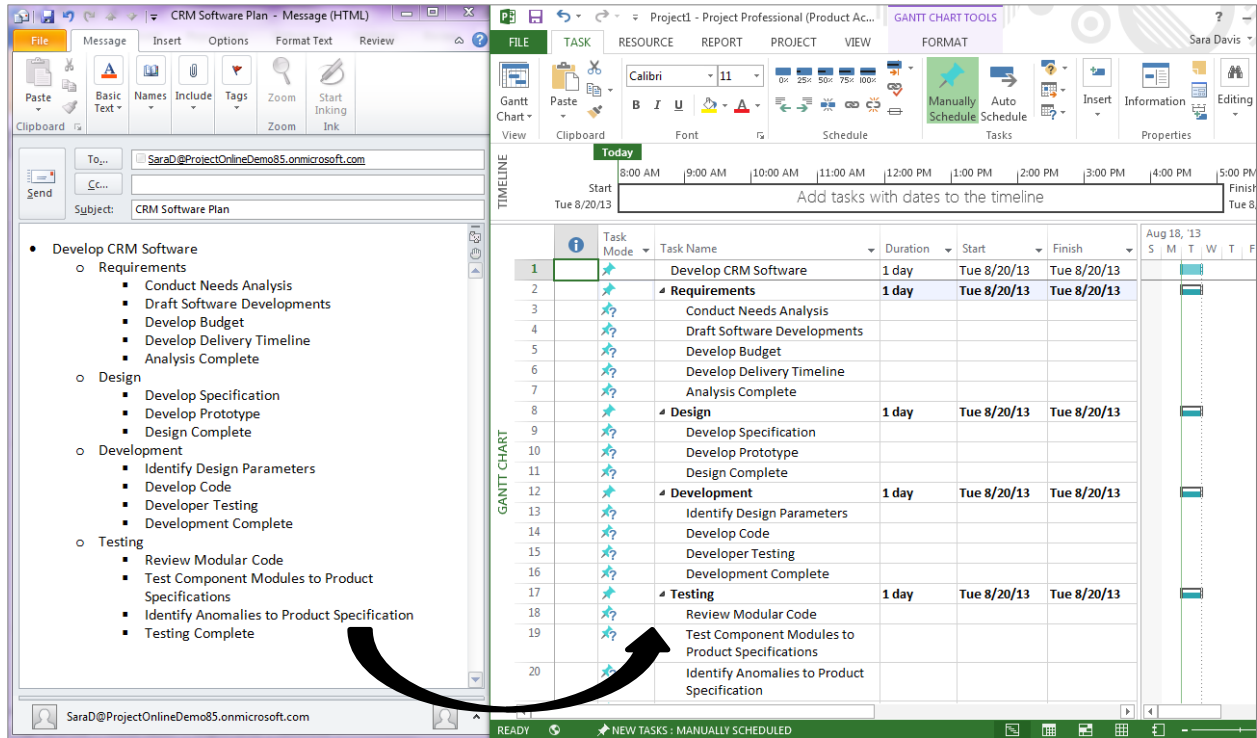


Figure 49: Project Professional/Project Pro for Office 365 – Enhanced copy-and-paste function

PMOs can continue to use project plan templates (See Figure 50) to package best practices and reduce the time it takes to build complex project schedules. Project plan templates provide a best-practice blueprint for a type of project—a new software module or marketing campaign, for example—based on your own empirical data. The templates include all summary tasks, granular-level activities, and generic resource assignments to provide a quick-start framework that the project manager can easily adapt to their specific needs.

A new list template in SharePoint consolidates the Tasks and Project Tasks in previous versions of SharePoint. The new list template has full visualization of the hierarchy (instead of folders), checkmark control of status, formatting of late tasks, a timeline view rendered above the list, and the ability to reorder rows and related items.

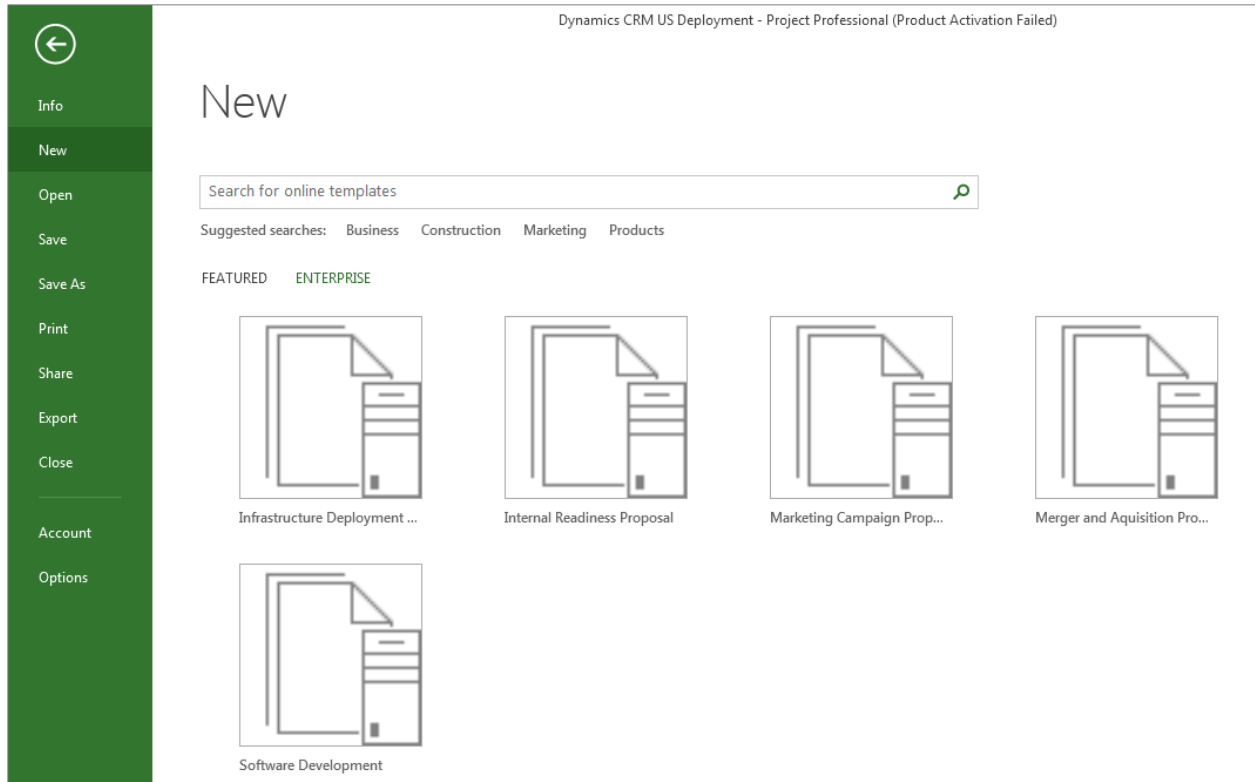


Figure 50: Project Professional/Project Pro for Office 365 – Available Project Plan Templates

Flexible, Web-Based Scheduling

Project Pro with Project Online for Office 366 empowers a mobile workforce by bringing the flexibility of Project Professional to the Cloud. You can also choose to work through a browser such as Internet Explorer, Firefox, Safari, and Chrome to view, edit, submit, and collaborate on project, portfolio, schedules, and everyday work. In either instance, you can stay you up-to-date while you are on the go with an interface suited to small form-factors such as smartphones and tablets.

Using Project Web App, managers can create complex schedules online and assign multiple resources to each task. Project incorporates the Ribbon interface, which provides a familiar and consistent experience regardless of whether the project manager builds the schedule on their desktop, in the Cloud, or on the web(see Figure 51).

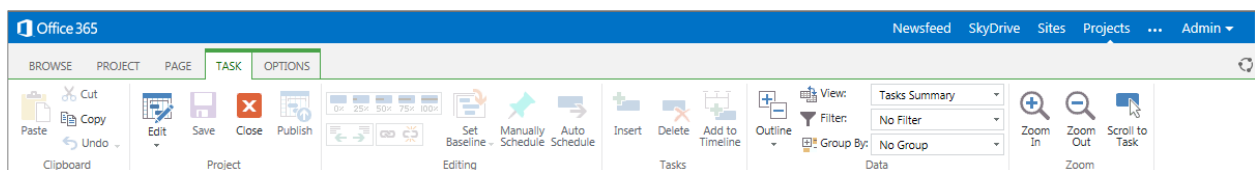


Figure 51: The Ribbon

The schedule view integrates usability improvements, including drag-and-drop functionality for moving columns, support for tabbing between cells, and more (see Figure 52). New user-controlled scheduling capabilities are available in the browser, so project managers have the flexibility to switch between Manually Scheduled and Automatically

Scheduled task mode. Multi-Level Undo and Change Highlighting functions within the browser help managers safely model changes to the schedule and quickly identify all affected tasks.

		Task Mode	Task Name	Duration	Start	Finish	Predecessors
1			Scope	3.5d	Thu 5/2/13	Tue 5/7/13	
2			Determine project scope	0.5d	Thu 5/2/13	Thu 5/2/13	
3			Secure project sponsor	1d	Thu 5/2/13	Fri 5/3/13	2
4			Define preliminary requirements	1d	Fri 5/3/13	Mon 5/6/13	3
5			Secure core resources	1d	Mon 5/6/13	Tue 5/7/13	4
6			Scope complete	0d	Tue 5/7/13	Tue 5/7/13	5
7			Analysis/Software Requirements	14d	Tue 5/7/13	Mon 5/27/13	
8			Conduct needs analysis	5d	Tue 5/7/13	Tue 5/14/13	6
9			Draft preliminary software requirements	3d	Tue 5/14/13	Fri 5/17/13	8
10			Develop preliminary budget	2d	Fri 5/17/13	Tue 5/21/13	9
11			Review software specifications	0.5d	Tue 5/21/13	Tue 5/21/13	10
12			Incorporate feedback	1d	Wed 5/22/13	Wed 5/22/13	11
13			Develop delivery time	1d	Thu 5/23/13	Thu 5/23/13	12
14			Obtain approvals to proceed	0.5d	Fri 5/24/13	Fri 5/24/13	13

		Task Mode	Task Name	Duration	Start	Finish	Column Name
1			Scope	3.5d	Thu 5/2/13	Tue 5/7/13	% Complete
2			Determine project scope	0.5d	Thu 5/2/13	Thu 5/2/13	% Work Complete
3			Secure project sponsor	1d	Thu 5/2/13	Fri 5/3/13	Active
4			Define preliminary requirements	1d	Fri 5/3/13	Mon 5/6/13	Actual Cost
5			Secure core resources	1d	Mon 5/6/13	Tue 5/7/13	Actual Duration
6			Scope complete	0d	Tue 5/7/13	Tue 5/7/13	Actual Finish
7			Analysis/Software Requirements	14d	Tue 5/7/13	Mon 5/27/13	Actual Overtime Cost
8			Conduct needs analysis	5d	Tue 5/7/13	Tue 5/14/13	Actual Overtime Work
9			Draft preliminary software requirements	3d	Tue 5/14/13	Fri 5/17/13	Actual Start
10			Develop preliminary budget	2d	Fri 5/17/13	Tue 5/21/13	Actual Work
11			Review software specifications	0.5d	Tue 5/21/13	Tue 5/21/13	ACWP
12			Incorporate feedback	1d	Wed 5/22/13	Wed 5/22/13	Assignment

Figure 48: Project Professional/Project Pro for Office 365 – Easy column additions

Many schedules begin their life as a hallway or e-mail conversation or a set of bullets captured during a meeting. Project managers need an efficient way to use this information to kick-start a project schedule. Built to work with versions of Office, Visio, Microsoft Lync, Exchange, and SharePoint, Project provides your workforce with a familiar, unified experience that improves participation and helps them get more done. Enhanced copy-and-paste capabilities ensure that managers can conveniently copy formatted lists from other Office applications such as Word or Outlook into a blank project plan, while maintaining formatting and data fidelity (see Figure 49).

Project Online and Project Pro for Office 365 utilize Office 365. Office 365 integrates applications your organization uses every day—Exchange Online, SharePoint Online, and Lync online—with cloud-based versions of Microsoft communication and collaboration services. Moving these productivity tools and services to the cloud as a subscription-based service helps your organization more accurately match cost to usage. Project Online also utilizes Office Web Apps, so that your workforce gains the freedom to write, edit, and share Microsoft Office files from virtually anywhere.

Proactively Analyze and Control the Schedule

Detailed project schedules can be hard to control and even harder to analyze. Project managers need effective tools to reduce the complexity of interrelated tasks, manage inter-project dependencies, provide early-warning indicators, and make the schedule easier to control.

Task Inspector

The Task Inspector in Project Professional and Project Pro for Office 365 helps project managers proactively highlight an issue, quickly identify the root cause, and resolve the problem immediately (see Figure 53).

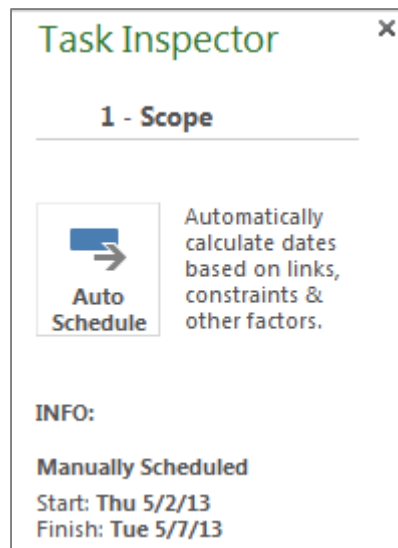


Figure 53: Project Professional/Project Pro for Office 365 – Improved Task Inspector

Used in tandem with Manually Scheduled task mode, Project Task Inspector guides the occasional project manager by visually identifying scheduling concerns and recommending scheduling efficiencies. Similar to the spelling checker in Word, Task Inspector highlights issues using wavy red underlines beneath start or end date fields. A red underline denotes a potential scheduling problem—for example, an underlying task exceeds the duration of a summary task—and a green wavy underline indicates that the schedule can be optimized—for example, a task has slack time and could potentially start earlier in the schedule (See Figure 54). Project managers can choose to ignore these warnings or choose from a number of repair options listed in Task Inspector.

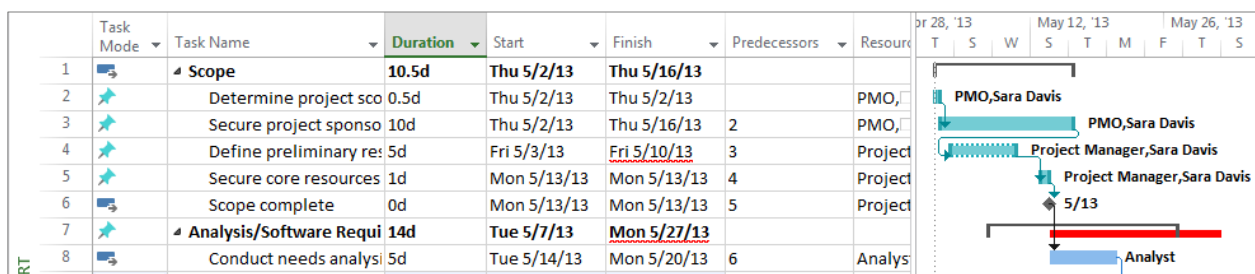


Figure 54: Project Professional/Project Pro for Office 365 – Task Inspector warnings

Multi-Level Undo and Change Highlighting

Performing what-if analysis to model the impact of changes to a complex schedule can be a daunting task. Project provides enhanced tools for 'what if' scenario planning, helping you collaborate with your team on potential problems and make changes to assess impact without recreating your entire plan. The powerful Multi-Level Undo, Change Highlighting, Active and Inactive task mode, and Compare Projects features in Project Professional and Project Pro for Office 365 make it easier than ever to analyze the schedule.

Multi-Level Undo analysis tools (see Figure 55) in Project help ensure that a project manager can quickly make changes to assess impact without recreating your entire plan, enabling you to easily reverse edits to a previous state. In addition, the Change Highlighting function visually identifies all tasks affected by an amendment to the schedule, helping project managers assess the effect on the plan.

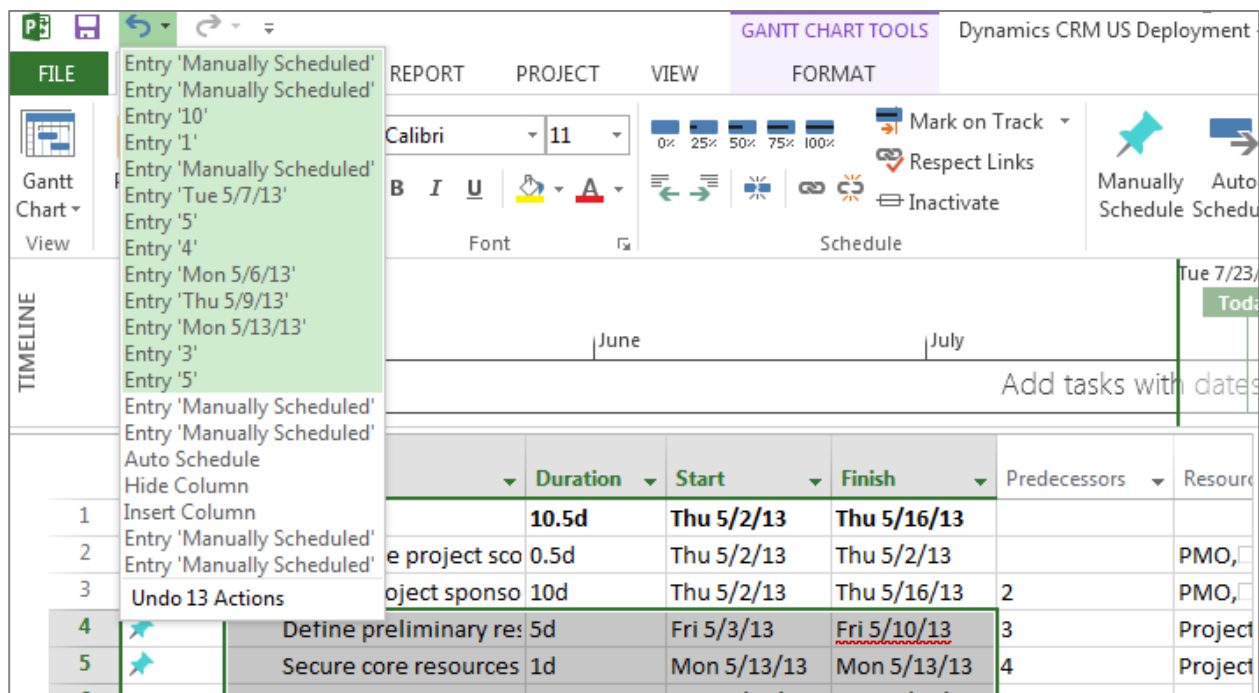


Figure 55: Project–Change Highlighting and Multi-Level Undo

Managing Scope Using Active and Inactive Tasks

Using Inactive task mode in Project Professional and Project Pro for Office 365 (see Figure 56), project managers can easily remove and then restore tasks in the schedule, to see the effect of removing the task on the rest of the project plan. Toggling between Active and Inactive task mode gives managers the flexibility to model changes to scope by simply right-clicking to make a task or group of tasks inactive. If required, the manager can simply restore these tasks later by toggling to make them active tasks.

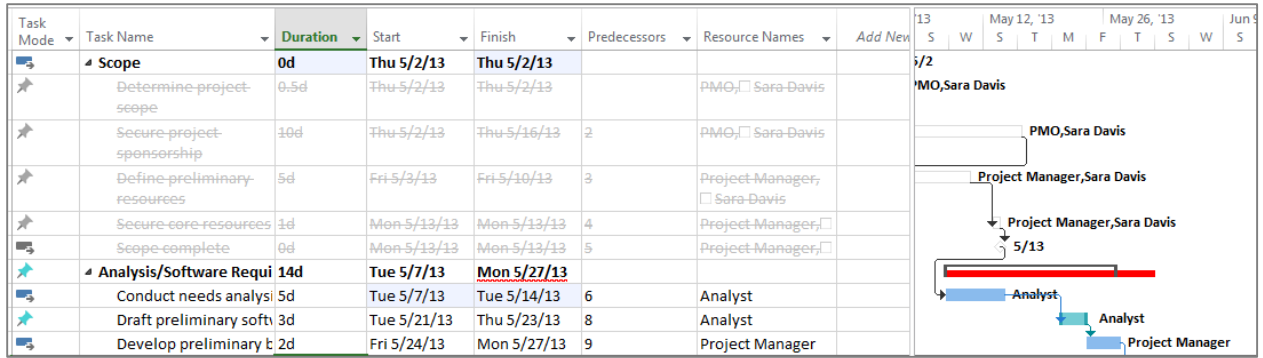


Figure 56: Project Professional/Project Pro for Office 365– Active and Inactive task mode

Compare Projects

Project Professional and Project Pro for Office 365 helps you effectively analyze project plans and highlight differences by using the improved Compare Projects function. With the tool, managers can effectively model changes to the schedule and visually assess the effect of those changes on tasks and resources. Managers simply save a copy of the project plan, then make changes to the plan and use the Compare Projects feature to assess the delta or change. The Comparison Report highlights the differences between different versions of the plan; the manager can simply switch between tasks and resource views (see Figure 57).

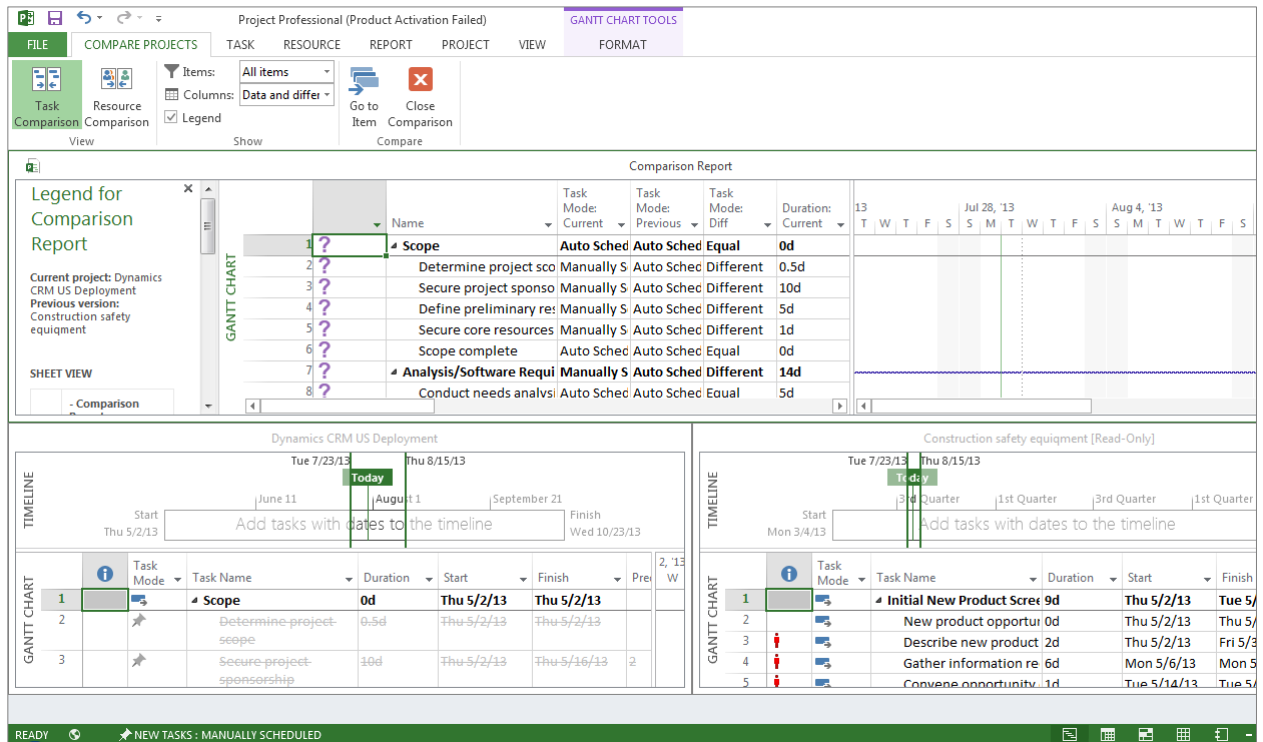


Figure 57: Project Professional/Project Pro for Office 365–Compare Project, Task Comparison Report

Set Baselines and Track Dependencies

In addition to monitoring the relationships between tasks within a project, project managers need to assess the impact of inter-project dependencies that could affect their initiative. Project ensures that project managers can quickly link dependent tasks between projects or publish key deliverables. Managers can publish deliverables to the collaborative project site so that other project managers can be aware of key dates and establish a soft dependency in their own plans. If deliverable dates change, Project notifies affected project managers the next time they open their project.

Effectively Communicate Schedule to Team and Stakeholders

Although the Gantt chart might be the universal symbol of project management, it offers limited effectiveness in communicating schedule information to stakeholders. The Timeline view in Project Professional and Project Pro for Office 365 gives project managers an intuitive and easy way to share key phases and milestones with minimal overhead and effort to stakeholders that require less detail. Project managers select the tasks and milestones they want to include, and with one click, generate a concise Timeline view. The Timeline view provides a manageable overview of the main activities in the schedule (see Figure 58). Using the options available on the Ribbon Format tab, project managers can quickly customize the Timeline by changing the bar colours or rearranging tasks as callouts.

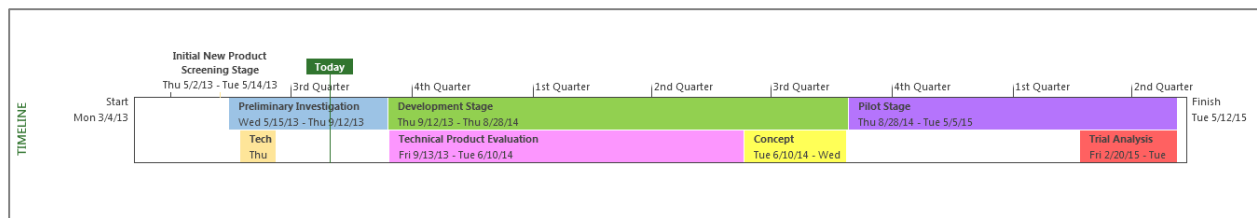


Figure 58: Project Professional/Project Pro for Office 365 – Timeline view

After creating and customizing the Timeline, project managers can simply copy the graphic and paste it into Outlook, PowerPoint, and other Office applications. With a few clicks, project managers can create, customize, and share the powerful Timeline view with team members and key stakeholders.

Financial Management

Pressure to reduce or maintain budgets has led to sharper scrutiny of discretionary spending. Furthermore, providing project accounting views can be a challenge when financial data is spread across multiple LOB systems. Effective financial management processes help improve cost and benefit estimating as well as track cost performance, ensuring that each project finishes within budget and delivers the forecasted benefits.

When organizations try to improve their financial management, they typically encounter key challenges in the following areas:

- **Standardizing cost and benefit estimates:** Accurately capturing realistic cost and benefit estimates for projects early in their lifecycle helps executives effectively select portfolios that maximize ROI under varying budget constraints and measure financial performance during project execution.
- **Project accounting and change management:** Selected projects for a portfolio need to provide accurate cost accounting throughout the entire project life cycle. Changes in scope or in execution of a project have an effect on the overall project cost and related benefits upon completion.
- **Financial visibility and insights:** Executives need reports and views that enable them to assess financial performance across the project lifecycle. Effective analysis of financial data for projects or the entire portfolio requires a powerful, flexible, and easy-to-use reporting system.
- **Integration with LOB systems:** Organizations need to be able to obtain quickly accurate financial data from appropriate LOB systems. Whether that information is payroll or expense data from an accounting system, planning data from a business case, or actual project costs, the ability to integrate the data into one view for management and oversight is critical to ensuring that accurate financial information is available when needed.

The Microsoft PPM Solution delivers flexible and extensible financial management capabilities throughout a project's entire life cycle. PMOs can use custom fields to standardize the collection of cost data or take advantage of Excel Web App or InfoPath Forms Services to embed financial estimate Web parts within the Project Online and Project Server business case infrastructure. Executives can use best-in-class portfolio selection analytics with decision-support tools to effectively allocate funds and optimize the portfolio to align with business strategy. In addition, Project offers a comprehensive API to help ensure that your organization can effectively integrate with financial systems, LOB applications, and industry standards such as OData for data mining, business intelligence, consolidating data, and driving project accounting reports. Organizations can also utilize partner add-in products.

The powerful reporting infrastructure in Project gives PMOs the flexibility they need to easily create project-level reports and quickly configure dashboards to provide executives with manageable views that communicate the complete financial picture. The best-in-class portfolio selection analytics included in Project provide executives with decision-support tools, which help them effectively allocate funds and continuously optimize the portfolio to ensure it delivers the biggest bang for the buck and optimally aligns with business strategy.

Capture Cost and Benefit Estimates

Project Online and Project Server offer a flexible business case infrastructure that helps standardize the collection of cost and benefit data for each request. PMOs simply add custom fields to an online business case form—a Project Detail Page, or PDP [see the *Demand Management* section]—to capture multi-year cost and benefit values. They can also embed detailed cost and benefit templates within the business case using Excel Web App or InfoPath Forms Services Web parts (see Figure 59). After capturing the data, analysts can build formulas to derive metrics—ROI, Internal Rate of Return (IRR), and so on—to better understand and communicate a project's financial value.

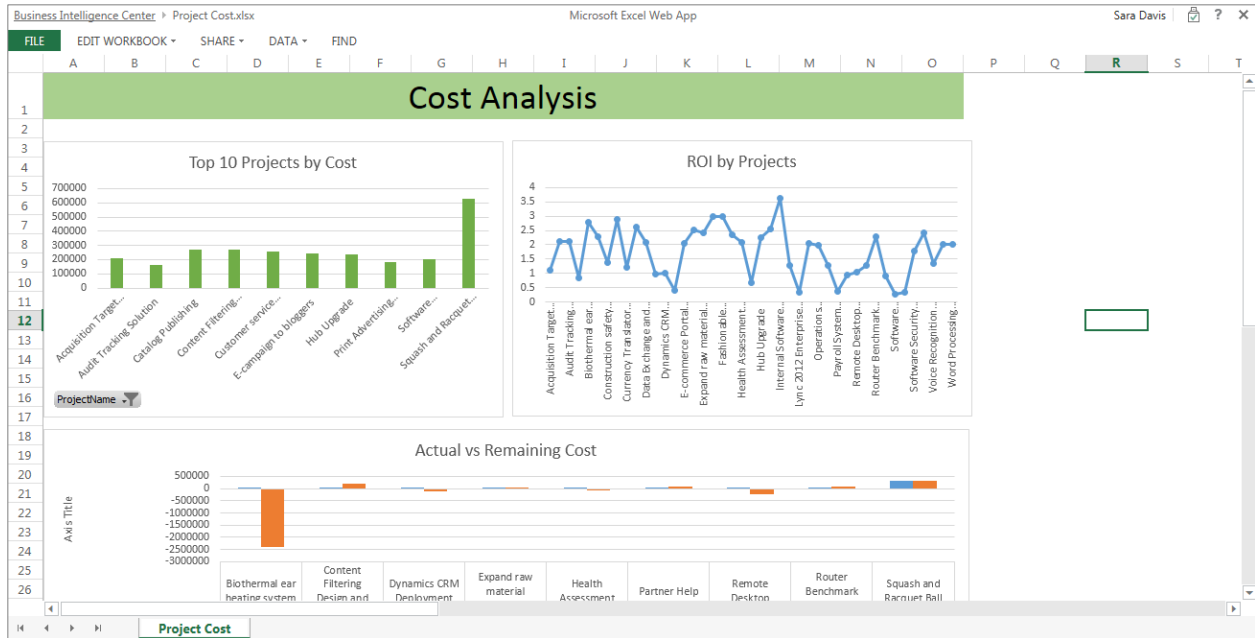


Figure 59: An Excel Web App Web part embedded in a project business case

Accurately capturing cost and benefit estimates is critical, because this data is one of the primary variables used to assess and select competing initiatives, measure financial performance against baseline in the execution phase, and analyze whether the initiative realized the forecasted benefits.

Cost Constraint Analysis and Portfolio Selection

For most organizations, the number of project requests often exceeds the organization's budget and resource constraints. Project Online and Project Server include a portfolio optimization engine that helps analysts model various scenarios and identify the optimal project portfolio. Using portfolio selection techniques, analysts can run what-if analyses under a variety of cost constraints to recommend project portfolios that deliver the maximum ROI and that best align with your organization's business strategy (see Figure 60). [For more information, see *Portfolio Selection and Analytics*]

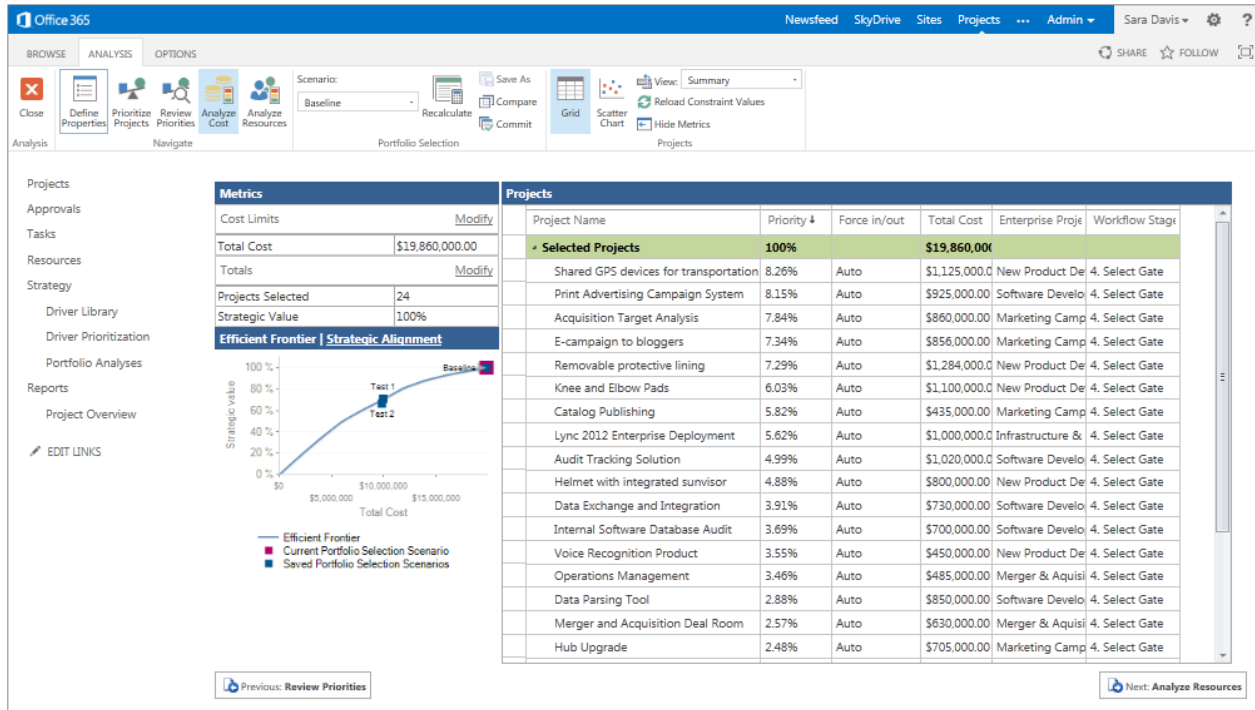


Figure 60: Cost Constraint Analysis view

Track and Report Financial Performance

The Project Online and Project Server governance workflow controls a project throughout its lifecycle, and plays a key role in supporting budget review and approval cycles. Project Professional and Project Pro for Office 365 help organizations manage and effectively track financial data using the following:

- **Budget Resources** helps project managers record the approved project budget at the project-summary level, providing a baseline for comparing and proactively managing actual costs against expenses.
- **Cost Resources** help managers capture non-work costs associated with a project (i.e. equipment, materials, travel, training, contractor costs, and so on).
- **Multiple billing rates** can apply to each resource. Companies can use this technique to calculate the cost of the resource based on the amount of work. In addition, resources can be tied to cost centers.

Project managers can establish project baselines and use Earned Value Management (EVM) metrics to control changes, analyze project performance, and manage expectations. Project Professional and Project Pro for Office 365 includes calculations for standard EVM metrics, such as cost and schedule performance indices, based on planning and actual cost, in addition to schedule fields. These tools help organizations capture the original intent of project costs in a baseline and modify them where necessary using change management techniques.

Built on SharePoint, Project takes advantage of the Microsoft BI platform to provide an easy-to-use and flexible reporting infrastructure that helps your organization gain insight, visibility, and control. Taking advantage of these powerful capabilities, managers can build project-level reports and PMOs can design dashboards to ensure that executives have all the information they need to stay in control of funding decisions (see Figure 61).

You can also find best-of-breed reports such as Burndown, Cashflow and Resource Overview in Project Pro for Office 365. You can share the reports through Office 365 apps in just a few clicks and print them in beautiful detail.

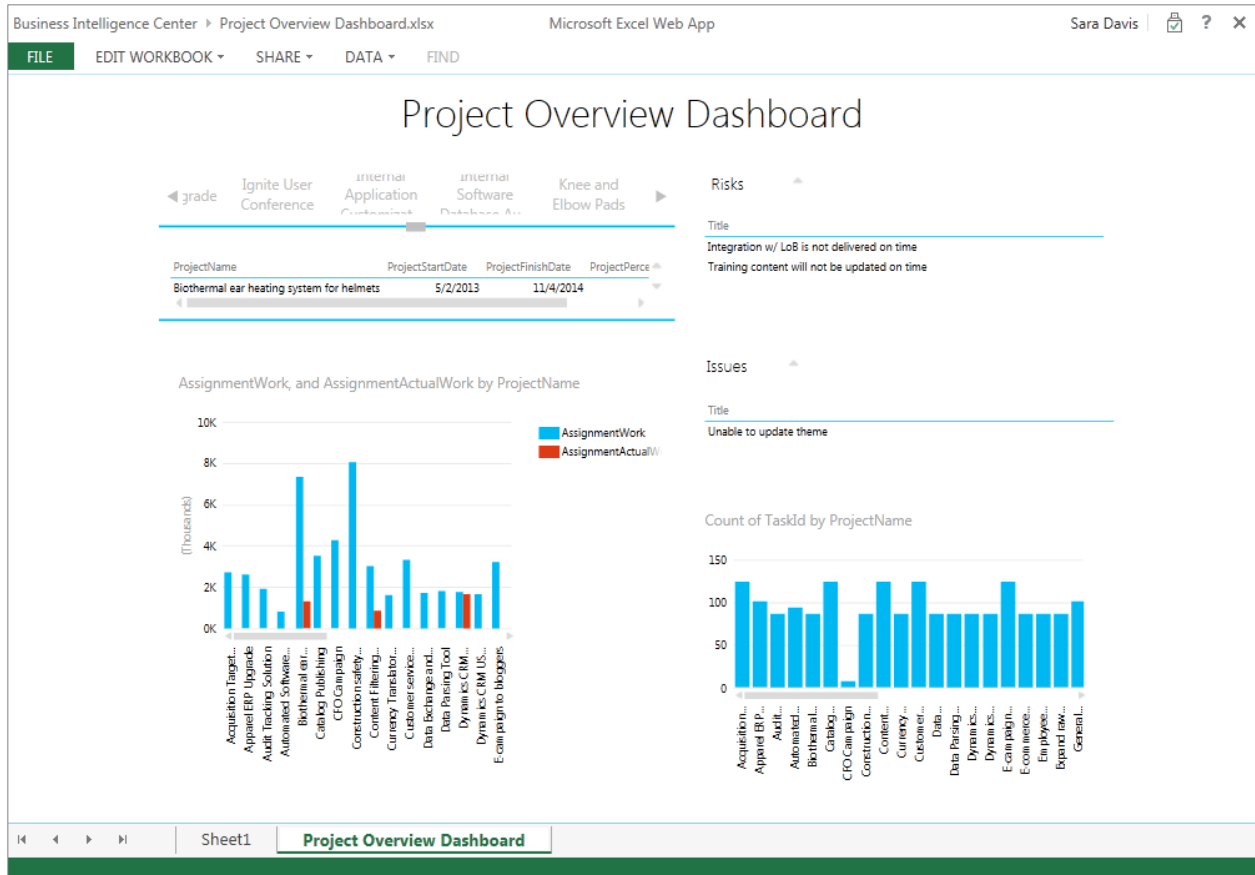


Figure 61: Configurable dashboard

Project also enables you to see summary dashboards, plans, and timelines in PWA, helping you glean insight and make better decisions across a collection of projects, a particular program, or a portfolio. To support performance tracking, users can define KPIs by using custom fields that provide an overview of financial performance, in addition to specific data at various phases of a project life cycle (See Figure 62).

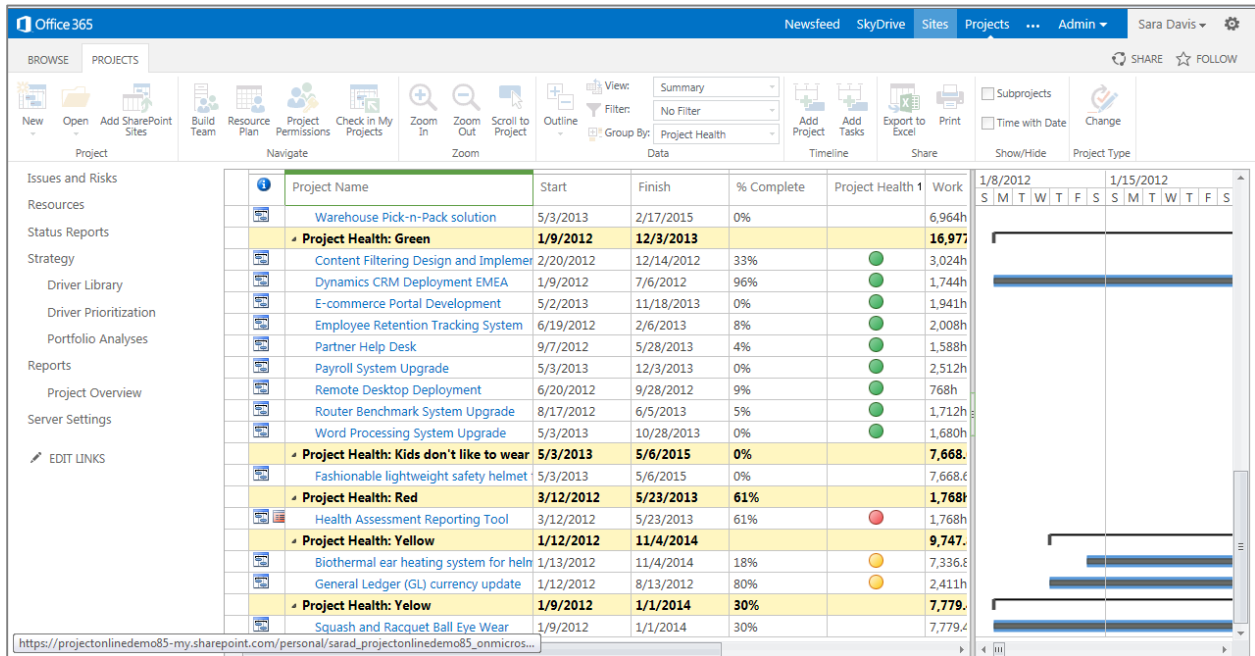


Figure 62: Project Center view with KPIs

Integration with Financial Systems

Organizations need to be able to obtain accurate financial data from different LOB systems. With the comprehensive Project API, PSI, organizations can automate the collection of financial data from LOB applications to drive project accounting views and reports. In addition, organizations can take advantage of Microsoft independent software vendor (ISV) partner add-in solutions that offer certified integration with familiar Enterprise Resource Planning (ERP) systems, such as those offered by SAP. The integration supports bi-directional data transfer, ensuring that project managers and financial analysts or accountants can effectively share data while working in their productivity tool of choice.

Time and Task Management

Good decision making comes from having accurate, up-to-date information. That is why project managers need efficient methods for capturing and communicating status on project work to help gauge progress and anticipate the effect on planned cost and timeframes.

Effective time-capture and project progress reporting need to provide the following characteristics:

- **An easy-to-use interface:** Time-entry systems tend to be widely used across organizations. As a result, they need to be simple, familiar, and intuitive for anyone who regularly enters and approves updates.
- **Single-source, to report working and non-working time:** Organizations want streamlined processes that capture and update information used for operations, analysis, and control. Different business applications can be used for project management, financial reporting, or operational processes that collect time worked by individuals as the basis for reporting and projections.
- **Ability to capture projects, operations, and administrative time:** Project-based organizations need to be able to capture progress and status on tasks at the same time that they are gathering non-project time, such as systems maintenance work and administrative time, including non-working time for vacation, sick leave, or other paid time off (PTO).
- **Support for high use in short, recurring time periods:** Unlike other business processes, time and task status reporting tends to involve a recurring cycle of large numbers of activities performed at periodic intervals. Time-reporting systems need to scale to support high volumes of transactions at the end of the working week or the month.
- **Flexible choices for how you and your organization work:** Time reporting solutions need flexible approaches to support data collection, systems integration, business rules, exception handling, and information reporting requirements.
- **Integration with LOB systems:** Enterprises would prefer one system for capturing time and project task-progress information that they could then integrate with other LOB applications, such as payroll, project cost accounting, and financial management systems.

Project Online and Project Server provide your organization with the flexibility it needs to centralize time capture, streamline processes, automate task management, and increase project forecasting accuracy. Single Entry Mode enhances time-reporting capabilities, helping to unify time and task status updates. Project aggregates multiple lists (tasks, calendar, etc.) into a project summary web part specifically geared toward giving an at-a-glance view of upcoming milestones, a timeline of the entire project, a list of late tasks, and a list of upcoming events/tasks. Project also extends scheduling capabilities in Project Web App (PWA) so your team can plan, schedule, and manage tasks more effectively in the browser—giving them the flexibility they need to get work done.

A standardized web-based user interface for timesheet entry and task management speeds learning. Project also enables integration between captured timesheet and task-management process information and LOB applications that use time and progress information for processing.

Intuitive User Interface for Time and Task Entry

With Project Online and Project Server, intuitive Timesheet and Tasks views help ensure that team members provide task status information and project, non-project, and nonworking time (see Figure 63). An improved interface standardizes the experience between the Timesheet and Tasks views to ensure quick completion of time and task update submissions. An easy-to-use interface is customizable for specific preferences and needs. In addition, simplified time reporting processes help reduce training requirements.

Task Name	Work	Remaining Work	Start	Finish	% Work Compl	Comments	Resource Name	Project Name		7/25/2013	7/26/2013	7/27/2013
Update financial analysis	136h	136h	10/30/2014	11/24/2014	0%		Accountant	Shared GPS devi	Planned			
Project Name: Voice Recognition									Planned			
Actual									Actual			
Overtime									Overtime			
Perform financial evaluation	120h	120h	10/2/2013	10/22/2013	0%		Accountant	Voice Recognitio	Planned			
Review financials	40h	40h	8/25/2015	9/1/2015	0%		Accountant	Voice Recognitio	Actual			
Update financial analysis	88h	88h	11/6/2014	11/21/2014	0%		Accountant	Voice Recognitio	Planned			
Resource Name: Alex Darrow									Actual			
Overtime									Overtime			
Project Name: General Ledger (C									Planned			
Actual									Actual			
Overtime									Overtime			
Align long/short term infrastruc	80h	0h	3/23/2012	4/5/2012	100%		Alex Darrow	General Ledger (Planned			
Create software maintenance te	8h	8h	8/10/2012	8/13/2012	0%		Alex Darrow	General Ledger (Actual			
									Overtime			
									Planned			

Figure 63: Common user interface for time entry and task updates

Efficiently Receive Project Tasks

Your organization needs flexible methods for users to submit time and provide real-time task updates. Project Online and Project Server offer tools for managing and communicating resource assignments and effectively gathering task updates from team member entries. Team members can receive and view their assignments through the web-based Tasks view, through an e-mail notification, or as Outlook tasks grouped by project. Another added benefit for Project is that you can work within familiar applications such as Outlook and SharePoint without having to shuffle back and forth between Project (and the other applications).

After consolidating their assignments in an effective view, team members can choose to update an assignment through the Tasks view or directly in Outlook. In addition, connectivity with Exchange helps ensure that team members can receive and make updates to project tasks in Outlook or in Outlook Web App (without requiring an Outlook add-in) on your PC, smartphone, or tablet(see Figure 64).

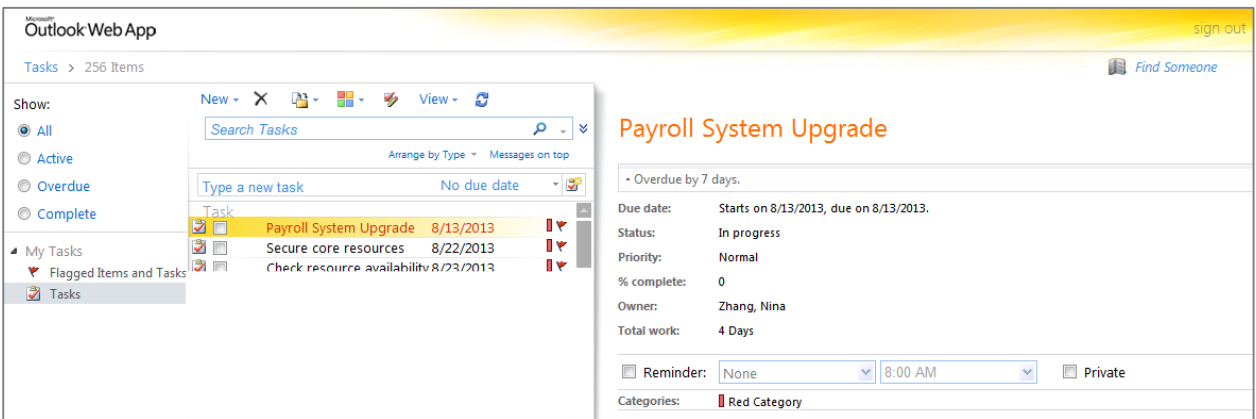


Figure 64: Project tasks displayed in Outlook Web App

The Tasks view displays project and non-project work assigned to individuals. Users can also view tasks assigned to other resources and provide updates, such as contractors or team resource assignments, for their projects (see Figure 65).

Task Name	Start	Finish	Remain	% Wor	Work	Actual	Work	Period Total	Mon 7/29
Project Name: Dynamics CRM US De							Planned		
							Actual		
							Overtime		
Determine project scope	7/31/2013	7/31/2013	4h	0%	4h	0h	Planned	4h	0h
							Actual	0h	0h
							Overtime	0h	0h
Secure project sponsorship	7/29/2013	8/1/2013	32h	0%	32h	0h	Planned	32h	8h
							Actual	0h	0h
							Overtime	0h	0h
Define preliminary resources	7/29/2013	7/31/2013	24h	0%	24h	0h	Planned	24h	8h
							Actual	0h	0h
							Overtime	0h	0h
Secure core resources	7/29/2013	7/30/2013	16h	0%	16h	0h	Planned	16h	8h
							Actual	0h	0h
							Overtime	0h	0h
Scope complete	7/29/2013	7/29/2013	0h	0%		0h	Planned	0h	0h
							Actual	0h	0h
							Overtime	0h	0h

Figure 65: Tasks view

Project organizes assignments by time period, helping you focus on current information and prepare for upcoming activities. Sorting, filtering, and grouping options help you find relevant tasks. Team members also have the option of reassigning tasks or self-assigning tasks made to their team assignment pool.

Single Entry Mode Enhances Time and Task Reporting

The Single Entry Mode in Project Online and Project Server consolidates task progress and time reporting data, helping simplify timesheet submissions, capture and update time and information used for operations, analysis, and control, and unify task status updates.

The Project Timesheet view includes entry lines for assigned project tasks so that you can record your work during the timesheet period. It also includes entry lines to capture work and non-work time for administrative categories. An adjustable vertical bar, between line description information and the time entry area, simplifies entering data. Timesheets support a fixed calendar period, organized with project tasks listed at the top, and administrative items below so users can navigate to relevant time entry lines. Organizations can establish predefined administrative working and non-working time categories for meetings, vacation, sick leave, holidays, and other administrative categories (see Figure 66).

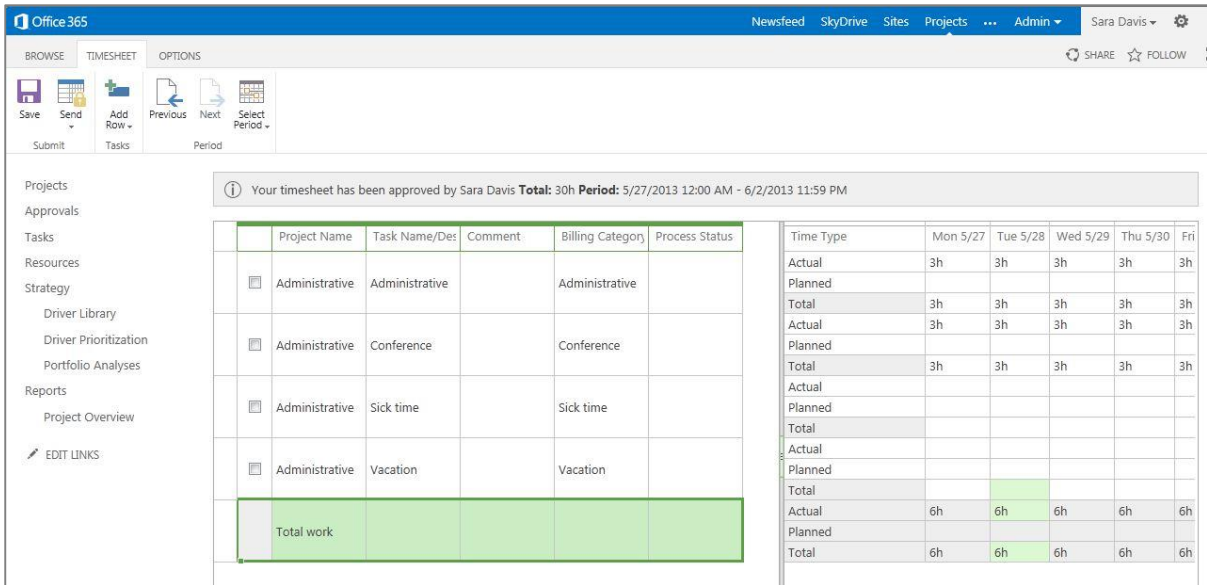


Figure 66: Timesheet view

You can categorize timesheet data for integration with financial systems for payroll, invoicing, project costing, and charge backs. This includes support for regular and overtime pay and billable versus non-billable time. Timesheets provide a variety of administrative controls to enforce time-reporting standards. You can also address additional complex scenarios such as support for users to submit approval for status updates in the middle of a timesheet period without submitting an entire timesheet.

Project also makes it easier to complete and submit timesheets from almost any browser, including Internet Explorer, Firefox, Safari, and Chrome, giving you more flexibility and control to accurately record exceptions and accomplishments.

Flexible Time and Task Approvals

Many organizations have different control and oversight requirements for timesheets and task status updates. To help PMOs select the level of review and control they want, Project Online and Project Server offer configurable approval workflows. A dedicated Approval Center simplifies the review of timesheet, task updates, and administrative time request approvals (see Figure 67). Utilizing the same intuitive interface as the Timesheet and Tasks views, The Approval Center offers options to group, sort, and filter tasks, helping you streamline approval activities.

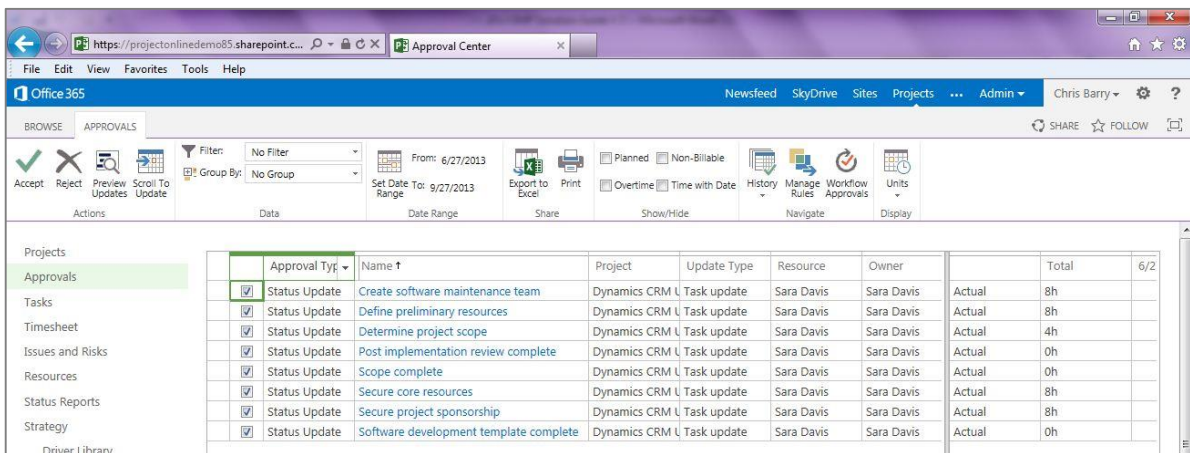


Figure 67: Approval Center View

Project gives managers and PMOs the choice of requiring approval for timesheet submittals, specifying individual approvers, letting users select approvers, or using automatic approval routing. The timesheets go through a multi-level workflow based on organizational hierarchy. In addition, Project can delay sending timesheets for approval until all tasks on the timesheet receive approval from the designated status manager.

With Project, you can also route task updates directly to the project manager or a designated task status manager. Business managers or PMOs can create automatic approval rules for tasks, which can help reduce administrative burden. Using the Web-based Approval Preview feature, managers can visually assess the effect of changes on the schedule before accepting task updates (see Figure 68).

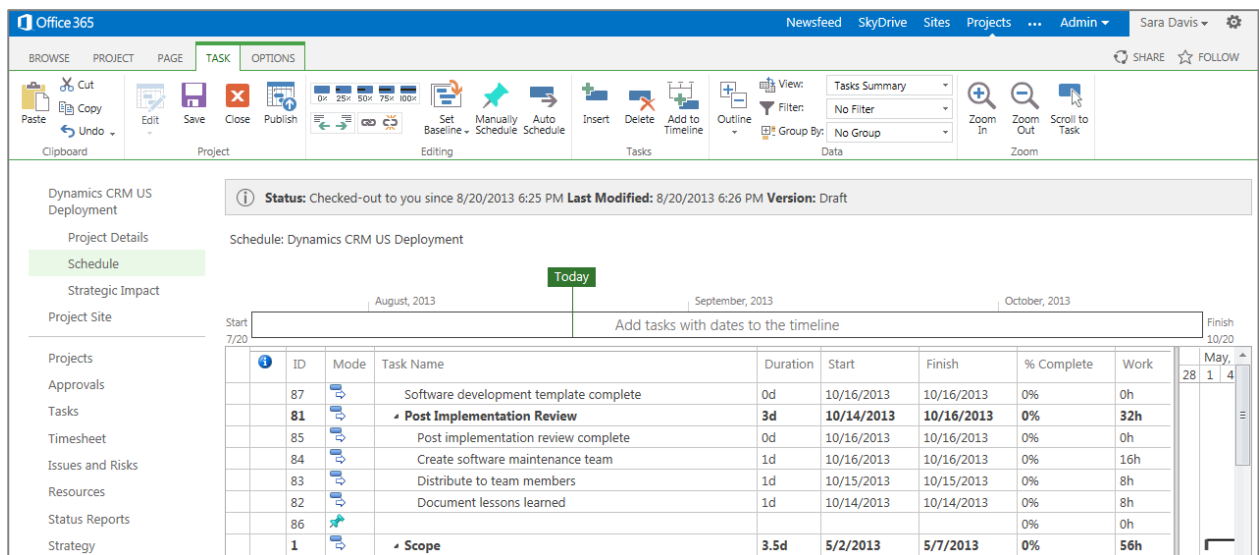


Figure 68: Approval Preview view

Optimized Performance, Administration, and LOB Integration

Time reporting systems need to support high volumes of transactions because most team members complete their timesheets at the same time—at the end of the work week. Project Online and Project Server time and task management capabilities can meet the changing needs of your organization. Administrators can configure server settings to manage intuitively the timesheet process by defining the appropriate fiscal accounting periods, creating timesheet periods, adding timesheet line classifications, configuring administrative time categories, and more. PMOs can easily open and close timesheet periods to facilitate lock-down periods and control time entry in open date ranges. End users can act as delegates on behalf of other users. This is extremely helpful for timesheet and task updates for users with periodic or extended absences.

An expanded reporting database includes comprehensive details about timesheet data. This information helps show the status of timesheet submittals and approvals at a specific point in time, or as overall trends to support management compliance and performance reporting.

Additionally, you can summarize timesheet and task data to use with or integrate into other LOB systems. This ensures that Project will be your hub for collecting and disseminating information with other LOB applications, such as payroll, project cost accounting, and financial management systems.

Team Collaboration

Over the past decade, team collaboration has evolved from informal techniques into a recognized discipline that helps organizations more effectively find and share information. In many ways, team collaboration today forms the

backbone of an organization, supporting and driving overall project success and execution effectiveness. As a result, collaboration tools and techniques are fuelling the next phase of project management evolution.

Organizations that hope to achieve increased efficiency and growth need to deploy effective collaboration techniques within their PPM processes, such as the following:

- **Provide a central location for team collaboration:** With one location for project-related information, team members can quickly review project status, access related artifacts, and more effectively collaborate.
- **Package best-practice templates:** Organizations gain efficiency through standardization and by reusing project-related artifacts and processes that evolve out of best practices and lessons learned.
- **Effectively manage a variety of content:** In most organizations, information grows exponentially. From faster access, enforced security, and improved control to reducing manual processes. Enterprise content management helps organizations address all forms of information needs.
- **Simplify and enhance team communication:** With the growth of Web 2.0 capabilities and the web's intersection with social behavior, individuals and teams are looking for ways to enhance and simplify team communication. Project teams can enhance communication using blogs, wikis, discussion forums, and presence.

Built on SharePoint, Project Online and Project Server combine powerful collaboration services with structured execution capabilities to provide flexible work management solutions.

Project Online and Project Server provide organizations with a powerful framework for team collaboration to create a true work management platform. Building on top of SharePoint ensures that organizations can:

- Take advantage of the Microsoft BI platform to create reports and powerful dashboards.
- Create custom Project Site templates for each type of project that provide a one-stop-shop collaboration workspace for the team.
- Deliver new capabilities for organizations to move from semi-structured to structured project portfolio management or continue to mix their approach
- Control document review and approval throughout the workflow.
- Use enterprise search to make it easy to find people and effectively mine project data
- Connect teams and enhance communication with wikis, blogs, discussion forums, and Yammer.

Collaborate Using Project Sites

Project Online and Project Server take advantage of SharePoint team sites, Enterprise Content Management (ECM), and social computing capabilities to provide teams with a collaborative workspace—a project site—that contains project-related artifacts and helps teams communicate, share information, better manage your project pipeline and more effectively measure your team's ideas throughout the project lifecycle. With each project, you can utilize a project site template in SharePoint that includes documents, tasks and calendars specifically geared towards working on simple projects. The social capabilities of SharePoint work with your project site or “my site,” to facilitate discussions and facilitate information sharing so you can get projects and everyday work done.

With Project, administrators can define custom project site templates and associate them with an enterprise project type (EPT) (see the *Demand Management* section). An IT project might require a different project site template than a business project. With this flexibility, PMOs can standardize project site templates across the organization by embedding and reusing best-practice document templates and techniques to improve project delivery and team collaboration. Project sites are highly configurable and can include preconfigured Web parts—for example, Team Calendar, Project Schedule, or Issues and Risk—and custom Web parts to better disseminate project information. Incorporating social computing techniques, such as blogs, wikis, Yammer, and discussion forums into the project site helps managers and team members collaborate more effectively (see Figure 70).

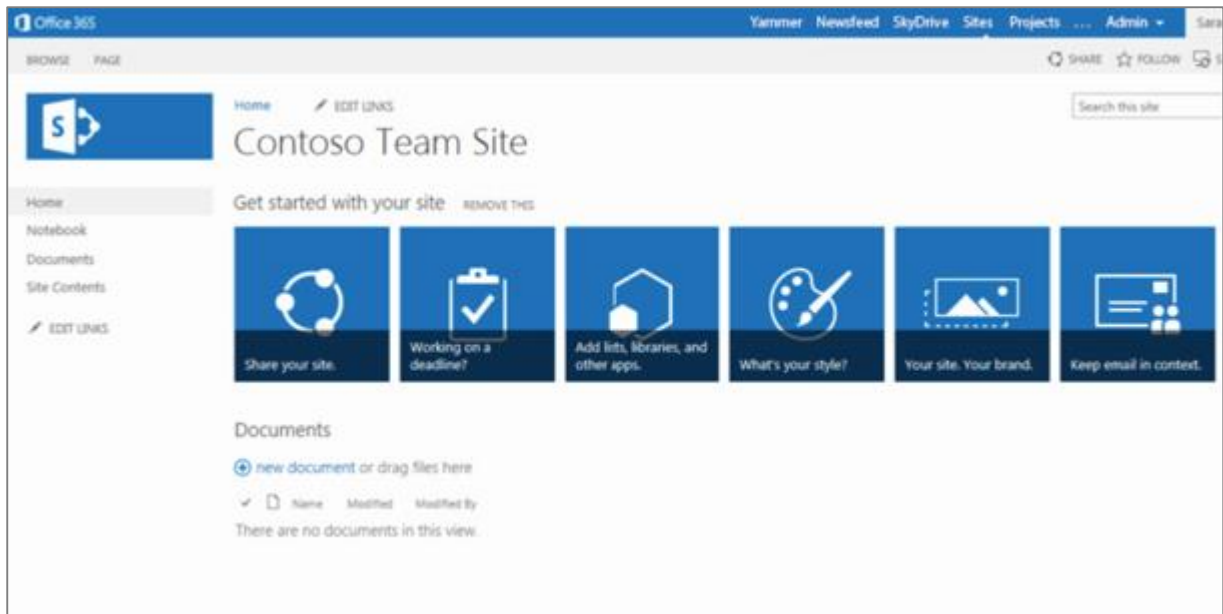


Figure 70: Project Site

The default project site includes the following components:

- **Documents:** A central location for storing and managing project documents throughout the project lifecycle.
- **Project site template:** Each template includes documents, tasks, and calendars specifically geared towards working on simple projects
- **Issues and Risks Log:** A central location for effectively identifying and managing issues and risks. This promotes use of standard processes for definition, impact assessment, escalation, and resolution.
- **Deliverables:** Project managers can publish deliverables to the collaborative project site so that other managers can be aware of key dates and establish a soft dependency for their own plans. If the deliverable dates change, affected project managers receive automatic notifications the next time they open their project.
- **Team Calendar:** The project manager can visually communicate key meetings and recurring governance events, such as a weekly team meeting, to the project team.
- **Announcements:** An easy way to broadcast information to the project team.
- **Team Discussions:** Team members can openly communicate and debate topics within the project site. Project maintains the discussion threads, making them viewable by the project team and stakeholders.
- **Yammer:** Yammer is a social network, available by SharePoint integration, which connects people, conversations, and data across business applications. Team members can collaborate on documents, share knowledge, and improve overall internal communications.

Enterprise Content Management and Search

Project Online and Project Server use SharePoint ECM capabilities to ensure that teams can effectively manage documents and artifacts throughout the project lifecycle. The enhanced ECM capabilities in SharePoint help organizations manage digital assets, documents, records and discovery, enterprise metadata, and Web content. Project provides a central location for storing and sharing project documents that helps reduce the number of manual processes a team uses and eliminates metadata silos within an organization (see Figure 71). PMOs can establish enterprise standards by easily publishing best-practice document templates and artifacts to the libraries to enhance efficiency, productivity, and governance.

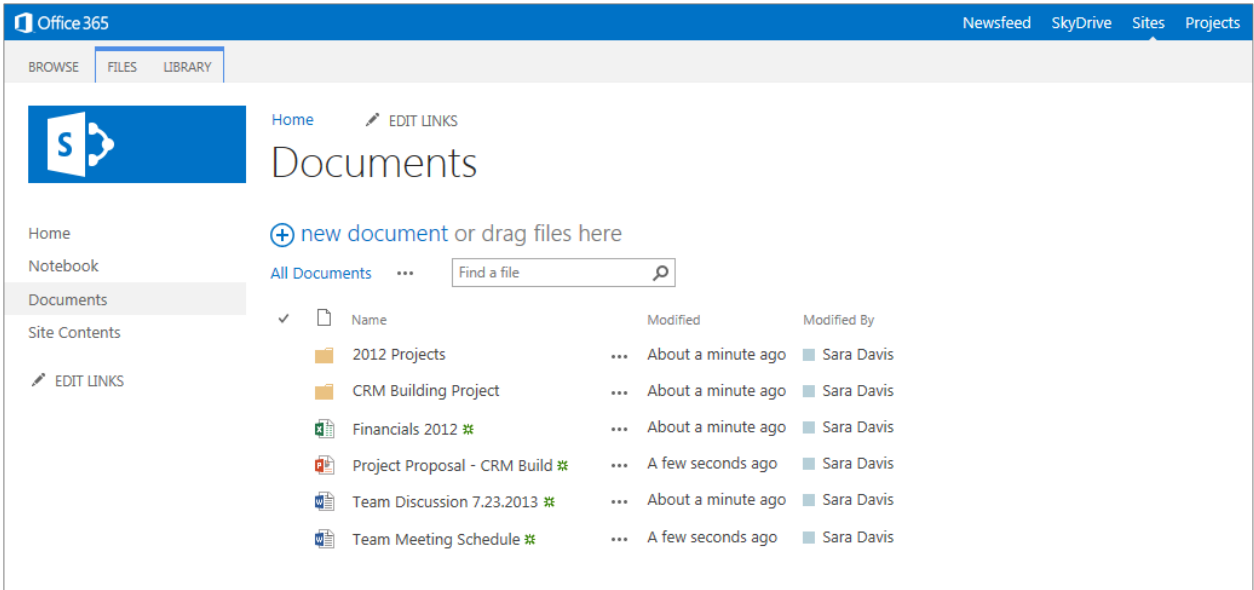


Figure 71: Management of an organization's content and documents

You can link project documents to the corresponding task in the project schedule. You can also make decision using the latest information because team members have a central location for finding the information they need, when they need it. Built-in version control helps manage the document revision process, ensuring quick access to the most recent copy of all documents, while maintaining earlier iterations for reference (see Figure 72). Flexible document workflow capabilities help minimize the typical e-mail routing and review cycles that most project teams experience today and provide a clear history of approvals and reviews on every major deliverable.

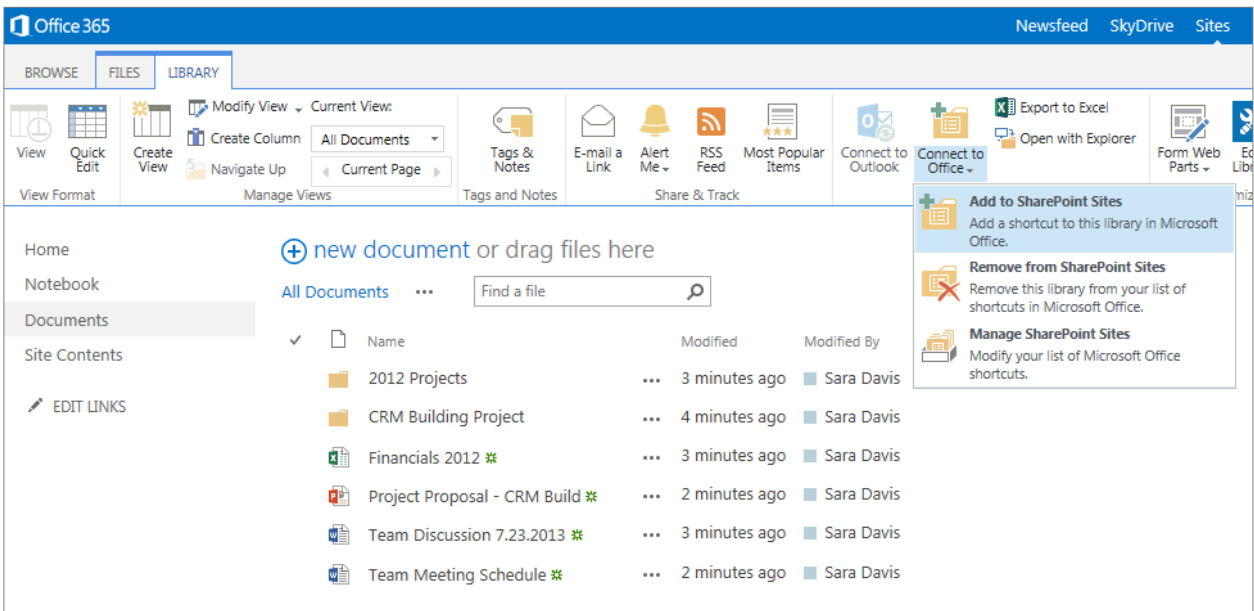


Figure 72: Linking document with project tasks

You can configure Project to take advantage of sophisticated SharePoint search engine capabilities that enable you to find the right information in the right context to execute everyday work and projects effectively. Enterprise search amplifies the impact of knowledge and expertise by delivering a platform for social computing, collaboration, ECM, and BI. Project teams can take advantage of platform search capabilities to mine project data and artifacts.

Enhance Communication and Project Updating

Project Online and Project Server utilize customizable SharePoint apps to help facilitate discussions and information sharing. PMOs can use Web 2.0 techniques to enhance their governance processes and further enhance team communication and collaboration. Project teams have access to powerful customizable apps that drive user participation and interaction that fuel creativity and productivity (see Figure 73).

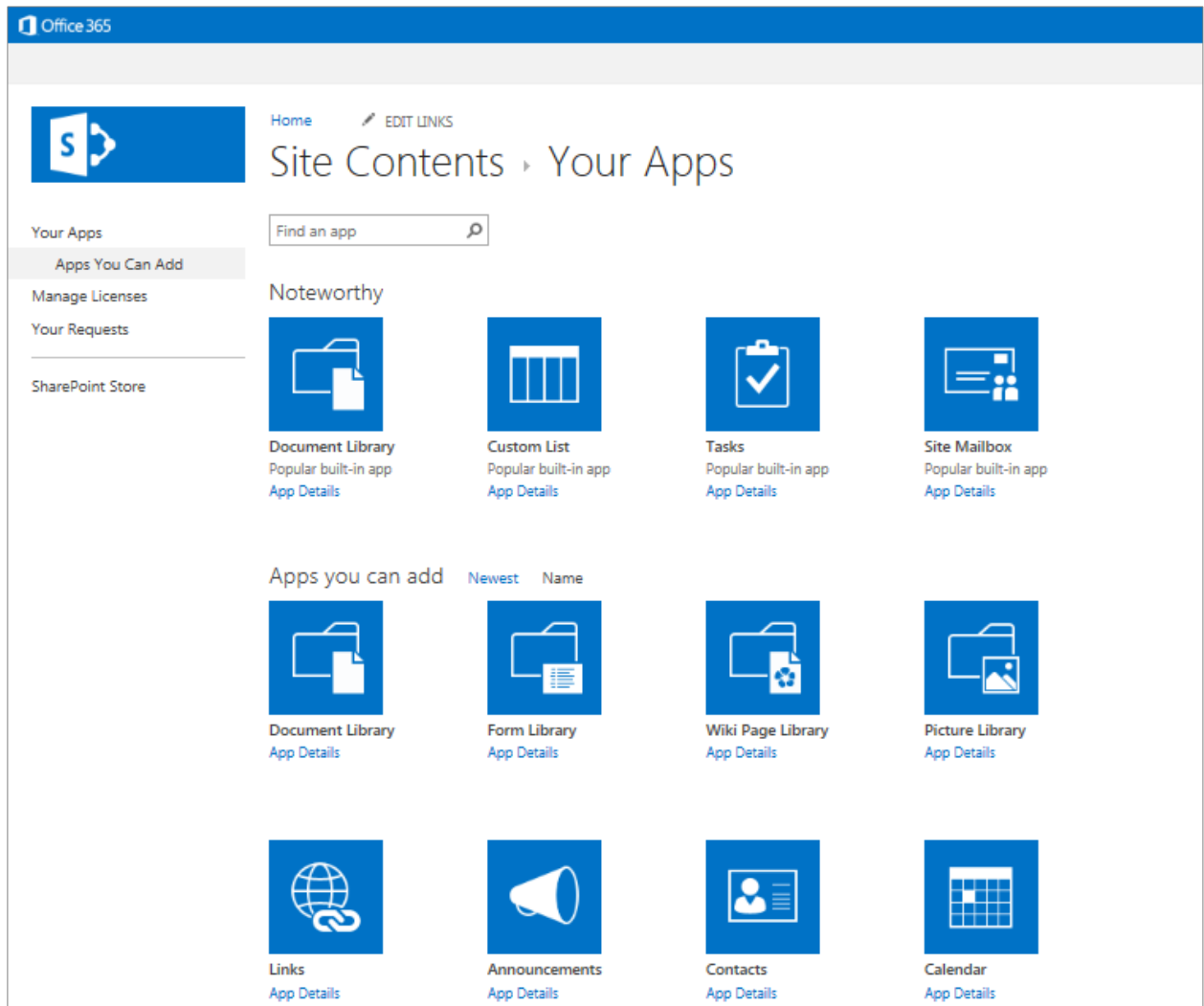


Figure 73: Example of a list of customizable apps used to convey project information

Issues and Risk Management

An important part of any complete project management methodology is prevention, identification, and mitigation of potential business or project-related risks and issues. By using a standard methodology to assess risks, your organization can improve decision making related to your portfolio.

Adopting best-practice methodologies can help your organization:

- **Define a standard way to assess risk for new initiatives.** Risk ratings, along with strategic value and financial value, are the main variables used to assess projects during portfolio selection analysis. Organizations need a consistent approach to deriving risk scores and weights for proposed initiatives.
- **Standardize project risk collection and management.** Successfully managing project risk requires project managers to have centralized and standardized methods for capturing risk information and document mitigation strategies throughout the project lifecycle. A centralized log of all project risks makes risk easier to manage and provides the necessary transparency for leadership and project teams.
- **Establish proper issue resolution and escalation.** No matter how well planned and managed a project is, unexpected events can arise. As with risk management, a centralized and accessible location for capturing all project issues provides the project manager and the team with the necessary tools to manage issues and to reach resolutions.

The Microsoft PPM solution supports risk identification from the earliest stage of portfolio analysis through the final stages of project execution and benefit realization. Project Online and Project Server provide a central location for identifying and managing issues and risks. Offering standard processes for definition, assessment, escalation, and resolution of issues and risks, Project helps define a standard way to assess risk for new initiatives and establish proper issue resolution.

Portfolio Risk Analysis

Project Online and Project Server include flexible tools for standardizing risk definition and measurement. At the portfolio level, risk represents the level of uncertainty involved in the overall success of the endeavour. Each organization has a unique definition of its risk tolerance that it will adapt to specific market conditions and opportunities. By using a standard methodology to assess its risks, the organization will have a solid, credible method for decision making during portfolio selection and in later analysis of the portfolio.

Project provides a variety of standardized ways to capture a risk score and weight for competing projects. PMOs can use custom fields that enable a user to subjectively capture or specify a risk score—for example, between 0 and 100 or High, Medium, or Low. Administrators can use InfoPath Forms Services to define objective online risk assessment questionnaires for inclusion within the business case for each project (see Figure 74). The chosen answers lead to a risk score and weight that stakeholders can use to analyze projects during portfolio selection. Risk metrics are also available to include in a variety of visual reports, like scorecards and bubble charts

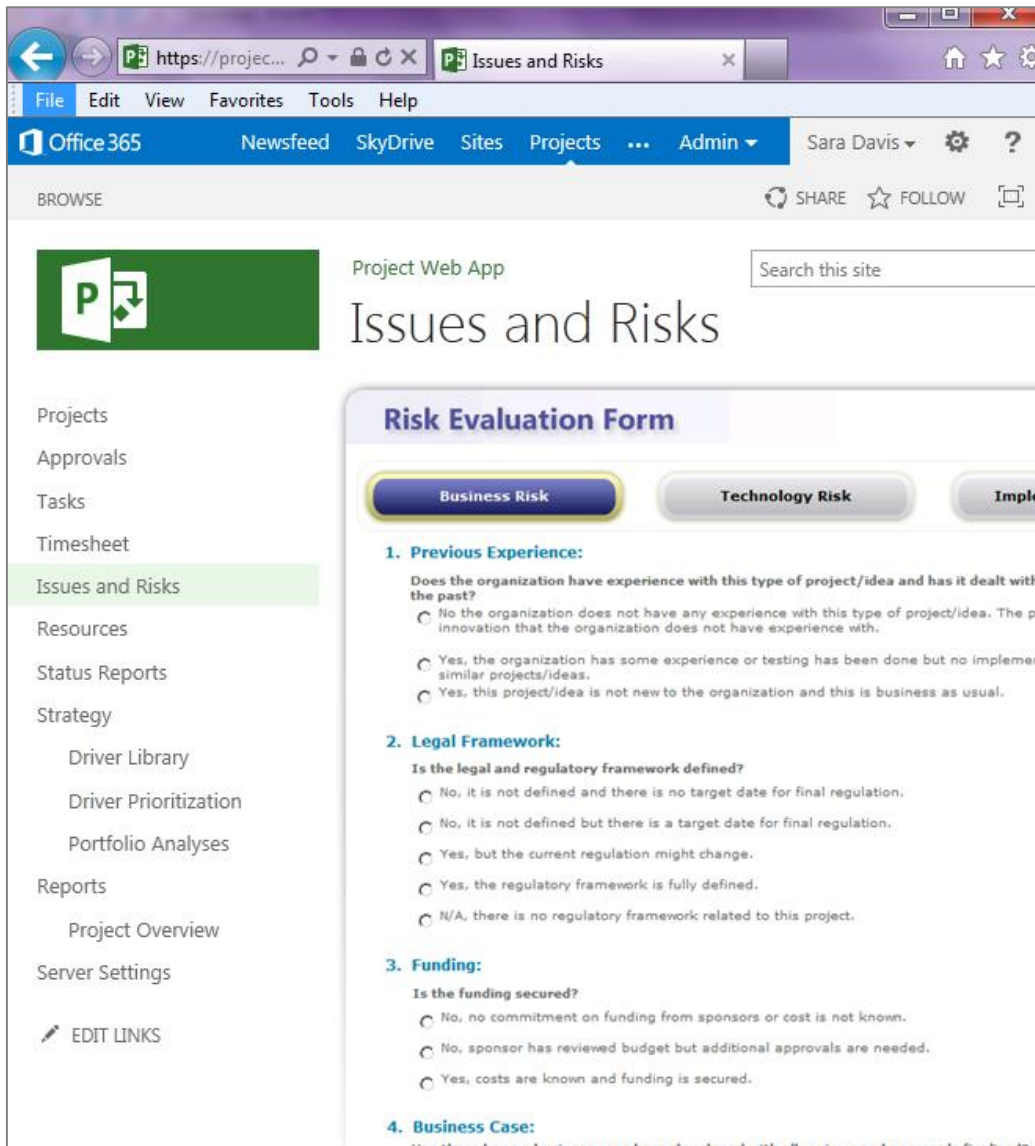


Figure 74: InfoPath Services risk assessment survey

Project Risk Management

Project Online and Project Server help standardize risk identification and management across the enterprise and contributes to the overall successful delivery of projects with less harmful effect from unforeseen or poorly managed events. A standardized risk collection mechanism identifies, manages, tracks, and mitigates risks throughout the project or program lifecycle. A Risk list is included in the project site template.

You can define a project risk as a potential event that, if it occurs, might have a negative impact on a project’s success. Proactive risk management involves identifying and qualifying risks related to a project using industry-standard probability/impact definitions and fields. It is important that organizations identify and manage risks at all appropriate levels: project, program, and portfolio. The Project standardized risk form provides a set of common fields for risk identification and management (see Figure 75).

Figure 75: New Risk form

Project managers and team members can use the Project Risk form to identify project risks and to capture their potential impact and probability of occurrence. After you identify risks, you can document and manage appropriate mitigation plans from the same central location so that all involved stakeholders can be aware of status and next steps. You can use SharePoint workflows and e-mail notifications to escalate risks and to notify essential individuals within the organization to become involved as needed. The establishment of escalation processes makes risk management efficient and effective. It can provide timely notification to leadership when their support and attention is needed while providing project managers with the proper level of autonomy to manage projects. Organizations can easily customize views and create powerful reports to expose high-probability and high-impact risks to executive leadership to help address them early.

Using Project gives an organization the platform to manage proactively its risks. You can reduce the need for time-consuming data collection and reporting because the information is readily accessible.

Issue Management

All scenarios bring with them some level of unpredictability. To this end, Project Online and Project Server provide a standardized issues collection mechanism to help identify, manage, track, and resolve issues throughout a project's or program's lifecycle. Having a centralized log of all project-related issues provides a designated location where everyone can contribute and review. Using a standardized template Issues list, project managers can review these issues, assign individuals to work on resolutions, and set deadlines to decrease the impact on a project's success (see Figure 76).

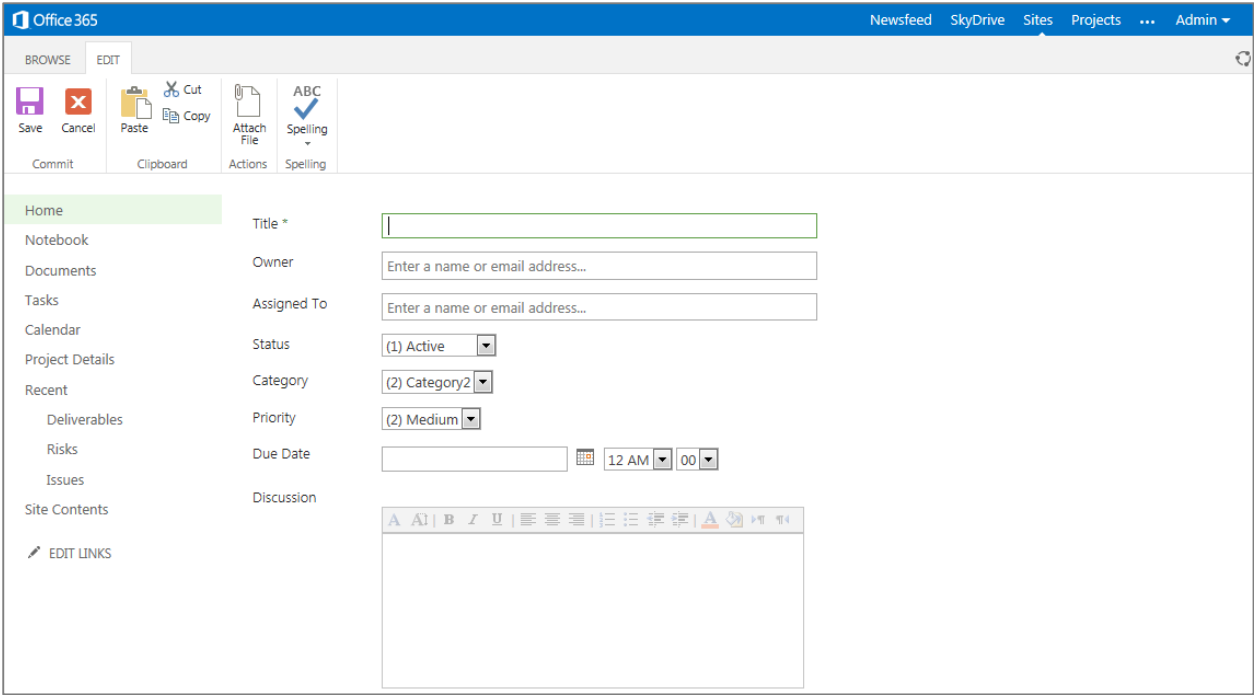


Figure 76: Issues list

Business Intelligence and Reporting

One of the great challenges organizations face is how to collect, categorize, understand, and make decisions about project data. Conventional reporting offers tools and methods to collect, aggregate, display, and communicate data. Business Intelligence (BI) takes that concept to the next level by providing visibility and helping organizations with decision support for proactive work management.

BI is a rapidly evolving discipline. Its effectiveness depends on an organization's ability to pull together accurate information in real time that is standardized and tailored to the needs of the audience. Some of the challenges organizations face in this area includes the following:

- **Lack of standard metrics for measuring performance:** Without standardized metrics, organizations struggle to compare projects, recognize problems, roll up key data to the program or portfolio level, and provide cohesive reporting to executive management.
- **Time-consuming, manual report generation:** Automating the reporting process means that PMOs and project managers will not spend valuable time gathering and assembling up-to-date project progress data and manually preparing project and portfolio reports.
- **Specialized skill sets are required to build reports:** The problem with many reporting solutions is that they are difficult to use and require highly specialized, technical resources. This creates a strong dependency on certain resources being available and requires sufficient planning, which can lead to delays and bottlenecks.
- **It is difficult to create on-demand reports:** PMOs often have to accommodate and react to fire drills. As a result, they need powerful reporting tools to mine data and easily produce and distribute reports.
- **Lack of reusable reports and best practices:** Organizations need to be able to generate, share, and reuse best-practice template reports. Selecting from the same set of best-practice reports promotes efficiency and the ability to adapt common formats into reusable templates at any level—individual, team, department, and enterprise.

By standardizing the collection of data and performance metrics in a central repository, PMOs can more easily facilitate enterprise reporting. Project Online and Project Server include a variety of online views, such as Project Center, Resource Center, and Portfolio Analysis, in addition to powerful BI and reporting services to help organizations gain insight, visibility, and control across all project portfolios. Because Project is built on SharePoint, users can take advantage of almost all of the tools included in the Microsoft BI platform, such as Excel Services, Visio Services, Power Pivot for Excel, and more. On-premises versions of Project can also take advantage of Performance Point Services (PPS) and SQL Server Reporting Services (SSRS). The flexible Microsoft BI solution provides nontechnical resources with familiar tools to easily create reports and configure powerful dashboards, while providing technical resources with more sophisticated capabilities to create complex views.

Project includes a dedicated reporting set of tables that store project and portfolio data to ensure access to up-to-date information. PMOs can satisfy LOB reporting requirements by using departmental cubes, so decision makers can focus on their data, eliminate unnecessary clutter, and ensure faster build times. The improved Business Intelligence Center in Project includes a library of pre-configured best-practice template reports. Nontechnical resources can easily customize the templates in a familiar Excel editor and then simply publish the report using Excel Services to incorporate into dashboard views. PMOs can create intuitive audience-based dashboards to ensure that managers receive relevant and useful information. Resources that are more technical can use more sophisticated tools, such as SQL Server Reporting Services with Project Server, to create complex reports—for example, monthly reporting packs—to meet the organization's unique requirements.

Project Controls and Performance Measurement

Powerful BI solutions quickly become redundant if the required data is not available or if the accuracy of the information is questionable. Automating the collection of accurate status information helps organizations focus on

delivering projects on time and within budget, rather than engaging in manual, time-consuming efforts to gather data to drive status reports.

Project Online and Project Server help organizations standardize data collection and performance metrics across the enterprise and streamlines status reporting through easy-to-use Web-based tools. With Project, PMOs can define consistent KPIs to measure the overall health of initiatives. Colored indicators, such as red, amber, and green, easily convey health, budget, resource, schedule, quality scope, and risk. Performance indicators, displayed in the project schedule or configurable scorecard views, provide an overview of portfolio- and project-level performance (see Figure 77).

Project Name	Project Departments	Total Cost	Total Benefits	Project Health	Over
Software Security Audit	IT	\$725,000.00	\$2,012,500.00		
Acquisition Target Analysis	Sales & Marketing	\$860,000.00	\$1,800,000.00		
Removable protective lining	Operations	\$1,284,000.00	\$2,910,000.00		
Workflow Stage Name: 6. Plan		\$5,452,220.00	\$14,385,000.00		
E-commerce Portal Development	IT	\$950,000.00	\$2,900,000.00		
Router Benchmark System Upgrade	Finance	\$800,000.00	\$2,635,000.00		
Remote Desktop Deployment	Sales & Marketing	\$585,000.00	\$1,200,000.00		
Payroll System Upgrade	IT	\$997,220.00	\$1,351,000.00		
Warehouse Pick-n-Pack solution	HR	\$480,000.00	\$1,450,000.00		
Partner Help Desk	Operations	\$530,000.00	\$1,200,000.00		
Employee Retention Tracking System	IT	\$600,000.00	\$2,105,000.00		
Word Processing System Upgrade	Sales & Marketing	\$510,000.00	\$1,344,000.00		
Workflow Stage Name: 9. Execute		\$5,654,644.00	\$18,284,991.04		
Health Assessment Reporting Tool	Finance	\$1,031,514.00	\$3,194,991.01		
Content Filtering Design and Implementation	Finance	\$839,348.00	\$3,265,005.00		
Dynamics CRM Deployment EMEA	IT	\$900,000.00	\$1,800,000.00		
Biothermal ear heating system for helmets	Finance	\$613,553.00	\$2,320,496.02		
Expand raw material acquisition vendor list	IT	\$860,652.00	\$2,944,752.01		
General Ledger (GL) currency update	IT	\$664,118.00	\$2,220,997.00		
Squash and Racquet Ball Eye Wear	Sales & Marketing	\$745,459.00	\$2,538,750.00		

Figure 77: Configurable Project Center view

Project offers automated methods of time, task, and status reporting so team members can provide project managers with real-time progress data. Project managers can create custom status reports to collect and combine progress updates from team members (see Figure 78).

Title	Due to	Due on
New Status Report <small>NEW</small>	Sara Davis	8/2/2013

Figure 78: Custom Status Report created by project manager

The project manager defines the recurrence of the status report—weekly, monthly, annually, and so on—selects the resources, defines the categories (ex. Major Accomplishments), objectives for Next Period, and Hot Issues that need

to be included in the report. This approach sets clear expectations and responsibilities within the project team, in addition to automating status collection. For more information about time and task reporting, see *Time and Task Management*.

Easily Create Reports and Build Powerful Dashboards

With Project Server, your organization can take advantage of SharePoint tools included in the Microsoft BI platform, such as Excel Services, Performance Point Services, Visio Services, the Power Pivot Excel add-in, and SQL Server Reporting Services. Best of all, you do not have to have deep technical skills to take advantage of them. That is because the flexible BI solution provides familiar tools to intuitively create reports and easily configure powerful audience-based dashboards to monitor performance.

The new Project Business Intelligence Center helps you get started by including a Reports Library with preconfigured best-practice report templates (see Figure 79). The best-practice templates include common reports such as Issues and Risks, Timesheet Actuals, Simple Project List, Resource, Deliverables, and more. Using the Report Library, PMOs can easily add new report templates, and share and reuse best-practice report templates across the enterprise.

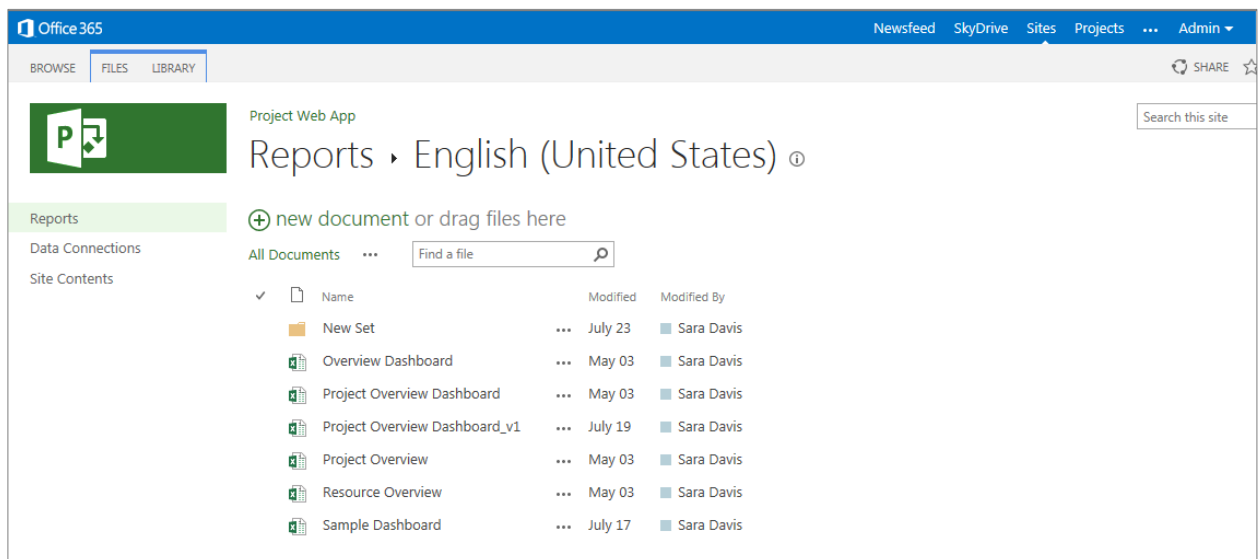


Figure 79: Business Intelligence Center (sample reports)

Using a familiar Excel editor, users simply click and open the required report template in a familiar Excel editor. Because data connections are already established, the user can intuitively customize the report by selecting and arranging the required data and using the PivotTable field list in Excel.

Once Project updates a report, it saves it within the Reports Library. The report, published using Excel Services, becomes available as a Web part for integration with various dashboard views. Users with appropriate permissions can build powerful dashboards by selecting and arranging the required Web parts within configurable dashboard views (see Figure 80).

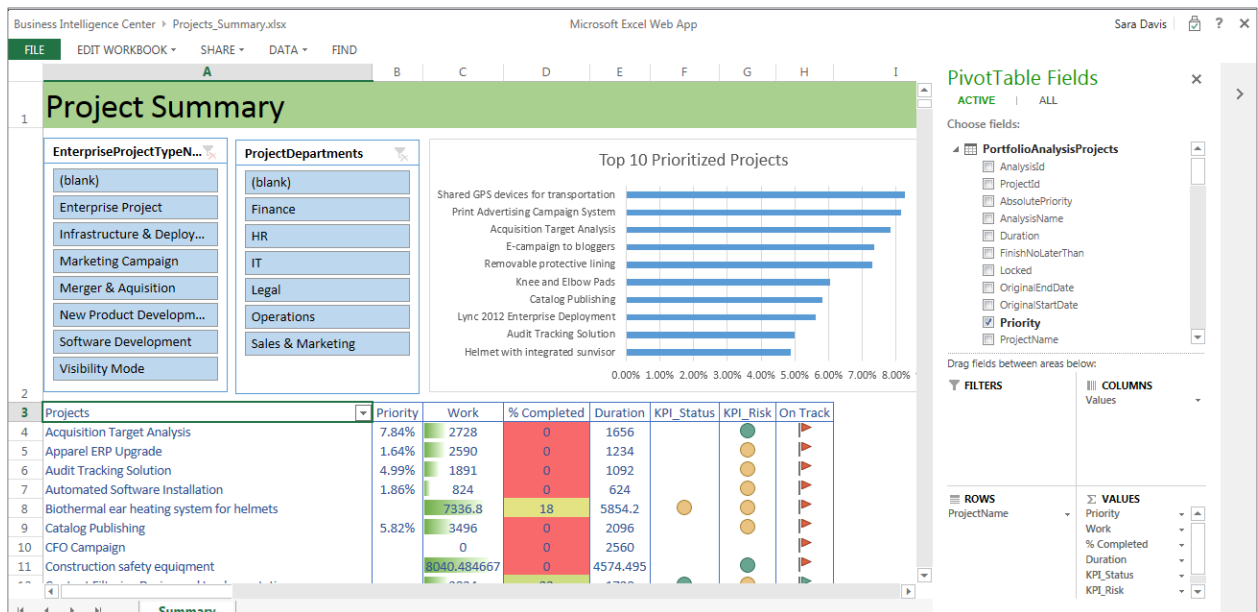


Figure 80: Easily create reports and build powerful dashboards

In addition, Project offers the flexibility to filter content based on a specific user or role. Audience-based Web parts and dynamic content filtering help you easily discover and share relevant information with people based on their role within the organization. For example, a CIO could view IT-specific information by default, whereas departmental managers may want to see a dashboard that displays project metrics for their lines of business.

Effectively Mine Data and Create Sophisticated Reports

Project Online and Project Server BI capabilities provide sophisticated tools to meet custom reporting requirements. Users can access up-to-date data because Project stores project and portfolio information, including business case metrics and custom fields, task, resource, and timesheet data in dedicated reporting tables. Administrators can create Office Data Connections (.doc) files that aggregate data from the reporting tables and LOB systems to ensure the availability of real-time and accurate data.

By simplifying access to the right data, Project makes it easier to generate on-demand reports without engaging specialized and highly technical skill sets to build the right reports. PMOs, department leads, and project managers can rapidly respond to business needs using the Project reporting infrastructure to create a variety of project and portfolio reports.

With Project, you can also immediately derive insight about your portfolio with new point-and-click reporting capabilities. You can also look at sample reports in The Business Intelligence Center in PWA. With Project Pro for Office 365, you can find great looking reports such as Burndown, Cashflow and Resource Overview that you can share through Office 365 apps in just a few clicks and that you can print in beautiful detail.

IT pros can continue to use tools like SQL Server Reporting Services to meet complex reporting requirements. Reporting Services is ideal for creating scheduled reports, such as monthly reporting packs for executives, and for sending e-mail reports to relevant stakeholders.

The departmental cubes in Project help PMOs better satisfy LOB reporting requirements. Managers can use departmental fields to filter project data and resources by LOB so decision makers can focus on their data, eliminate unnecessary clutter, and provide better performance.

Program Management

Each project within a program has its own set of goals that when combined together with each other deliver the forecasted benefits of the overall program. Program management techniques provide visibility and control across underlying in-flight projects and extend across program initiation, selection, and execution framework. However, organizations can derive additional benefit from establishing program mobilization techniques that provide a program initiation and selection framework before breaking down the program into its underlying projects.

Because programs are often misinterpreted and can be difficult to define, they have a unique set of challenges that include the following:

- **Mobilization and selection:** To facilitate the top-down planning process, organizations need to centralize the collection of program requests and standardize the metadata captured in business cases.
- **Clarifying program and project controls to improve efficiency:** Organizations need to adapt best-practice program management methodologies to establish processes, define appropriate levels of control, and effectively manage initiatives. Program management must balance control and oversight with adequate project management authority, so project managers can effectively execute their projects while supporting the overall program goal.

The Microsoft PPM Solution provides your organization with tools to effectively initiate, plan, and manage large programs and their underlying projects to a successful conclusion. The enhanced demand management capabilities and powerful portfolio selection techniques of Project Online and Project Server help ensure that PMOs can centralize the collection of program requests, standardize metadata collected in program-level business cases, and run what-if analyses to help executives finalize funding decisions under various budgetary constraints.

After finalizing funding, managers can use Project to define detailed schedules for the underlying projects within the program and to find resources with the availability to participate on the project team. By using Master Projects, a program manager can quickly consolidate all projects into a single master program plan to maintain visibility and control across the entire schedule identify critical interdependencies, and quickly drill down into each project for more detail.

The enhanced collaboration capabilities of Project help teams communicate more effectively through program-level workspaces, better manage documents throughout their life cycle, and easily escalate issues and risks to program stakeholders

Mobilization: Capture, Prioritize, and Select Programs

Programs often require a unique set of standards due to multi-year commitment and multi-department involvement. PMOs can take advantage of the flexible demand management capabilities of Project Online and Project Server to define project templates, such as Enterprise Project Types (EPTs), for program requests; create the required online forms, such as Project Data Pages (PDPs), to be included in business cases; and build governance workflows to control programs through their initiation and selection stages. Similar to projects, a program-level business case in Project can include custom fields to capture basic information, cost and benefit assessments, resource estimates, risk assessments, strategic impact assessments, and more. For more information about project and portfolio initiation capabilities, see *Demand Management*.

After centralizing the collection of program-level requests, analysts can take advantage of Project portfolio analytical capabilities to finalize funding decisions across the various program requests. The powerful portfolio selection and analytical capabilities in Project help PMOs prioritize programs from multiple dimensions, optimize the portfolio under diverse budget constraints, and objectively finalize funding decisions. For more information about how Project can help organizations select initiatives that best align with their strategic priorities, see *Portfolio Selection and Analytics*.

Execution: Program Delivery

Project Online and Project Server provide powerful scheduling, resource management, team collaboration, and reporting capabilities for planning, managing, and tracking initiatives at the project and program levels. After finalizing funding and selection decisions at the program level, managers can easily break down the program into its underlying projects. Project managers can use Project Professional and Project Pro for Office 365 to construct detailed schedules and identify the project team for each of the underlying initiatives within a program. By using a Master Project (see Figure 81), the program manager can quickly consolidate all projects into a single master program plan. A Master Project can help the program manager maintain visibility and control across the entire program schedule, easily identify critical tasks and interdependencies, and quickly examine each project for additional, specific information.

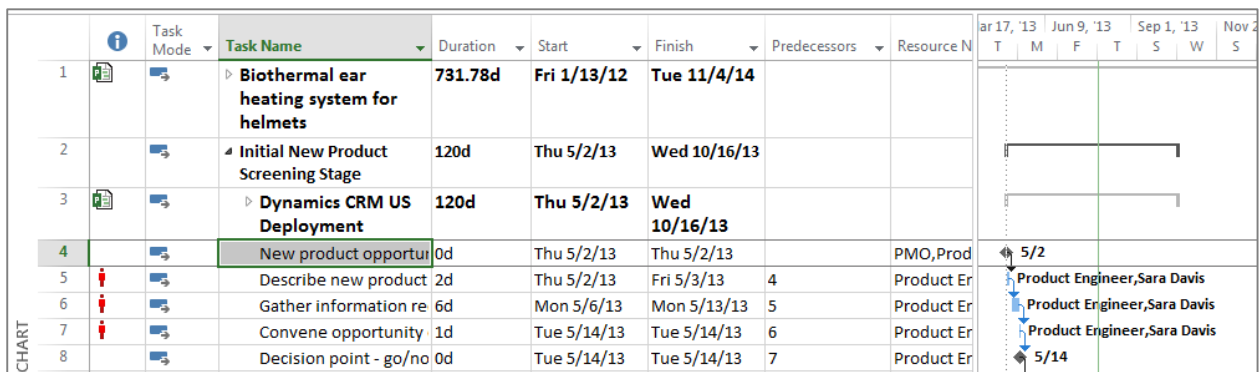


Figure 81: Project Professional/Project Pro for Office 365 – Master Project

PMOs can create project sites, at the program level, to improve team collaboration and communication. Because Project works well with Lync, you can have real-time conversations and instant messaging (IM) from within your project, further aiding in this process. Project sites are highly configurable and can include standard Web parts—for example, Team Calendar, Project Schedule, and Issues and Risk—and custom Web parts to better disseminate program information. Using social computing techniques, such as blogs, wikis, Yammer, and discussion forums within the project site helps managers and teams collaborate more effectively. For more information about project sites, see the Team Collaboration section.

Project BI capabilities help PMOs create powerful dashboards that provide executives with a concise summary across the organization. KPIs help highlight areas of concern and executives can then drill down to the department, program, and project level to identify causes and take corrective action. For more information about reporting, see the *Business Intelligence and Reporting* section.

Scalable, Connected, and Programmable Platform

When vetting PPM solutions, most evaluation committees will assess competing products from a business perspective and through an IT lens. To ensure that a product's functionality meets business requirements, and that it aligns with the organization's IT requirements and enterprise architecture strategy, the evaluators will look for PPM solutions that score well in both categories.

When choosing a comprehensive PPM solution, organizations are looking for:

- **Simplified administration and flexibility:** PPM platforms need to be flexible to ensure that you can easily configure them to automate your organization's unique processes and meet custom reporting requirements.
- **A connected work management platform:** Depending on their role and preferences, employees and teams will use a variety of productivity tools to receive and complete work. Organizations require a PPM solution that can connect with common productivity tools so users can continue working in their preferred and accustomed environment and easily provide updates to facilitate enterprise resource management and reporting.
- **Enterprise scalability and performance:** Organizations require a PPM solution that can scale and support deployments at the departmental and the enterprise level, meet peak use scenarios, handle large volumes of data, perform across wide area networks (WANs), and support and empower the mobile workforce.
- **An extensible and programmable platform:** Often organizations customize their PPM solution to automate their unique requirements or to effectively integrate with third-party or homegrown systems to maintain data integrity. Leading PPM solutions need to provide an open API and developer tools and resources to support custom development activities.

The Microsoft PPM Solution provides a scalable, connected, and extensible platform that has the flexibility to meet most business requirements and align with the organization's enterprise architecture standards. The familiar SharePoint user interface in Project helps enhance productivity, reduce training costs, and drive adoption. The enhanced Project API, PSI, and connection with SharePoint and Visual Studio provide developers with the required tools and resources to integrate with third-party systems and successfully build and deploy custom solutions.

Project Online offers flexible plans that help you quickly and easily sign up for the service that best fits your business needs. With Project Online, you can be up and running with enterprise-grade reliability and zero upfront infrastructure costs in no time at all. You can add teams and projects in minutes with a web-based portal. In addition, you can stream Project Pro for Office 365, your project management desktop application, directly from the web.

Project Online and Project Server also simplify administration through an improved console that provides one-stop-shopping for both project and portfolio management capabilities. Improved administration helps to ensure that PMOs can spend less time managing the system and instead focus on monitoring the PPM process.

Familiar User Interface Improves Adoption and Satisfaction

The Microsoft PPM Solution provides users with a familiar and consistent interface across Project Online, Project Server, Project Professional, and Project Pro for Office 365, helping to enhance productivity, reduce training costs, and drive adoption and satisfaction.

By building Project on top of SharePoint, the portfolio selection and analytical modules have a consistent SharePoint user interface, ensuring a uniform experience across bottom-up *and* top-down PPM capabilities.

The Ribbon interface in Project provides users with a familiar experience, so they can work more efficiently whether they are accessing Project capabilities through the browser (see Figure 7) or by using the powerful desktop scheduling tool (see Figure 84).

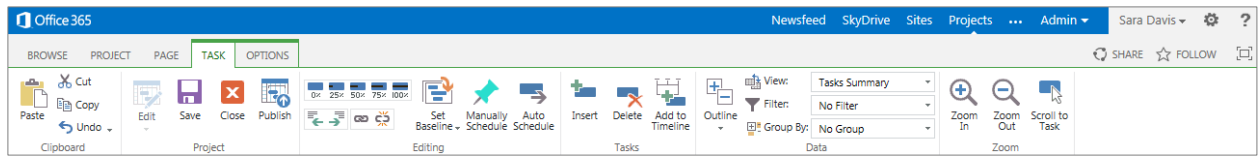


Figure 83: The Ribbon interface for Web-based editing

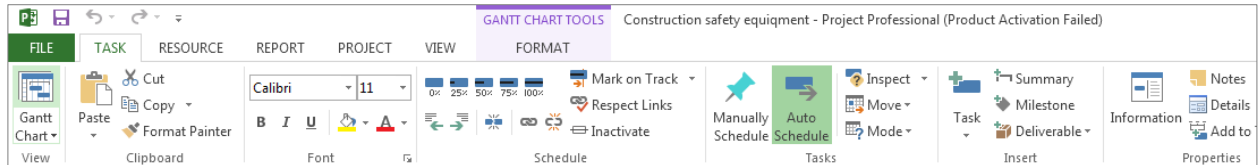


Figure 84: Project Professional/Project Pro for Office 365 – The Ribbon interface

The left navigation bar in Project is designed to better group related capabilities to enhance the user experience (see Figure 85).

Project Professional and Project Pro for Office 365 / PWA do contain distinctions between the user interfaces and variety of views available to visualize and format project data. The web-based interface is ideal for access from virtually anywhere and works in most web browsers. The Project Professional desktop client takes advantage of the extra power of the Windows environment to deliver a rich and immersive interface.

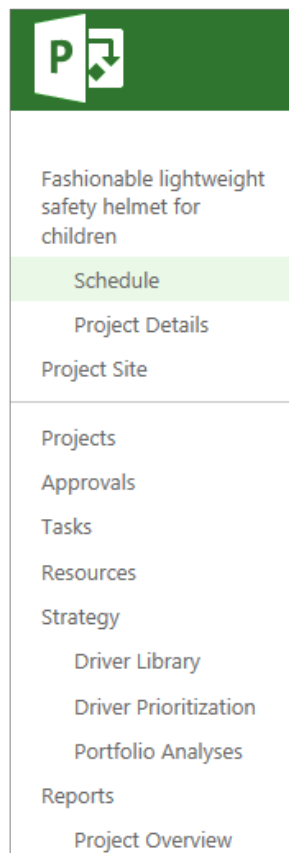


Figure 85: New left navigation bar

Connected Work Management Solution

The connection between Project Online and Project Server with SharePoint provides organizations with all the tools and services they need to automate their PPM processes. It also provides additional benefits for small teams that run lightweight projects. Occasional project managers can use SharePoint task lists to manage simple projects and tasks, without calling on the full rigor of Project. However, a SharePoint task list can easily be imported into Project at any time if the team requires additional capabilities, or the manager can continue to execute the project in SharePoint and sync status updates (with Project) to facilitate enterprise resource management and reporting.

Office 365 utilizes best practices and adds unique innovations to give users the power to mix and match the right set of tools to meet business needs. Project Online brings SharePoint Online capabilities with it, and the experience only gets better when licenses are added for Lync Online communication, Exchange Online email services, and streaming Office applications like Word, Excel, and PowerPoint to personal computers virtually anywhere. Visio Pro for Office 365 is also available as a subscription, enabling integration of business process modelling, zero-code workflow design for demand management, data-connected dashboards, and traditional diagramming.

SharePoint

As mentioned throughout this guide, Project is built on SharePoint, bringing together powerful collaborative platform services and structured execution capabilities to provide flexible work management solutions. This connection provides organizations with all the required tools and services to automate fully their PPM processes. The connection between the products also provides additional benefits for small teams that run lightweight projects. Occasional project managers can use SharePoint task lists to manage simple projects and tasks, without requiring the full rigor of Project (See Figure 86). However, at any time a SharePoint task list can easily be imported into Project if the team requires additional capabilities, or the manager can continue to execute the project in SharePoint and sync status updates (with Project) to facilitate enterprise resource management and reporting.

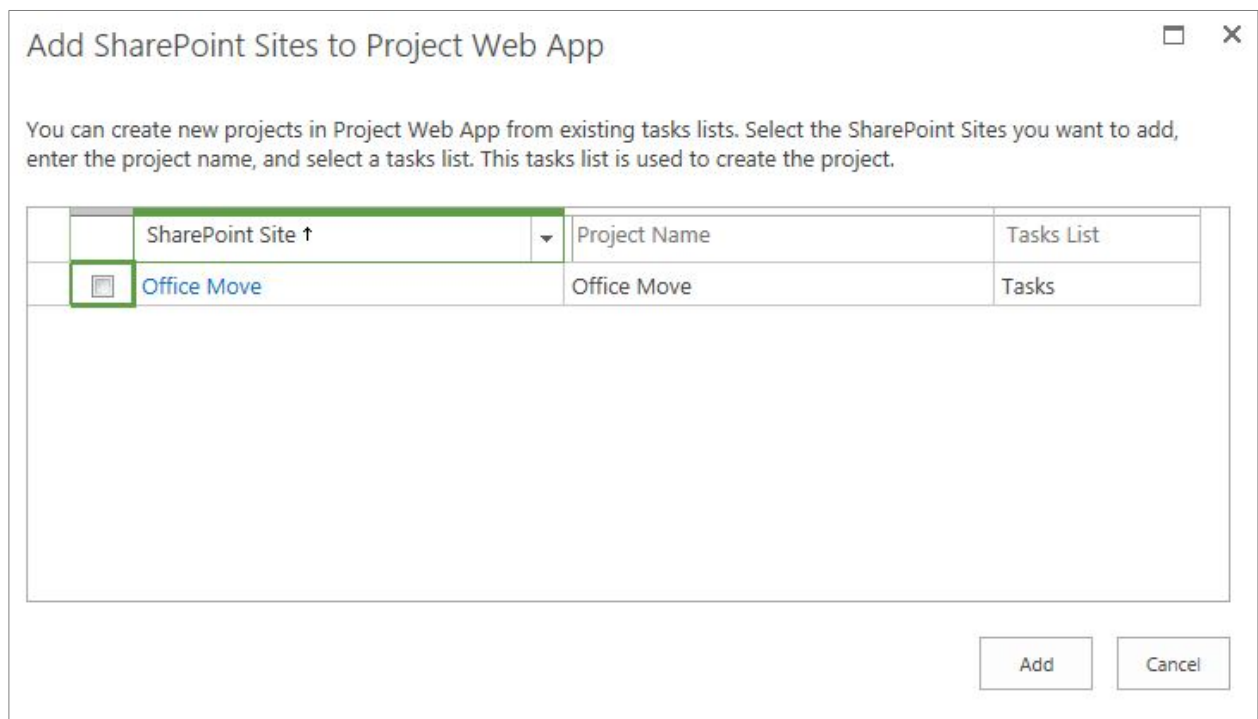


Figure 86: Lightweight project visibility and tracking using a SharePoint task list

Project Professional - SharePoint Sync

Enhanced synchronization between Project Professional and Project Pro for Office 365 with SharePoint (and SharePoint Online) helps effectively connect teams, keep projects on track, and deliver the information they need, no matter their location.

Lync

Whether you have urgent schedule changes or upcoming project milestones, Project seamlessly works with Lync, enabling you to have real-time conversations and instant messaging (IM) from within your project. Presence in Project enables you to see at-a-glance whether or not a team member is available to talk or send an IM to through Lync. Simply hover over the individual's name in your plan to see their status, and then click to send an IM. Your team member can quickly respond so that you can update the plan or learn about changes.

Exchange Server

Project Server includes native interoperability with Exchange Server to ensure that team members can choose to receive and update their tasks in Outlook (see Figure 87) using their PC, smartphone, or tablet. Project displays tasks in Outlook, conveniently grouping them by project name. Team members receive notifications and quickly update the completed percentage, work done, and remaining work values for tasks, and automatically sync the updates with Project. Exchange integration ensures that organizations no longer have to install an Outlook add-in and ensures that team members can stay connected and receive tasks in Outlook or Outlook Web App.

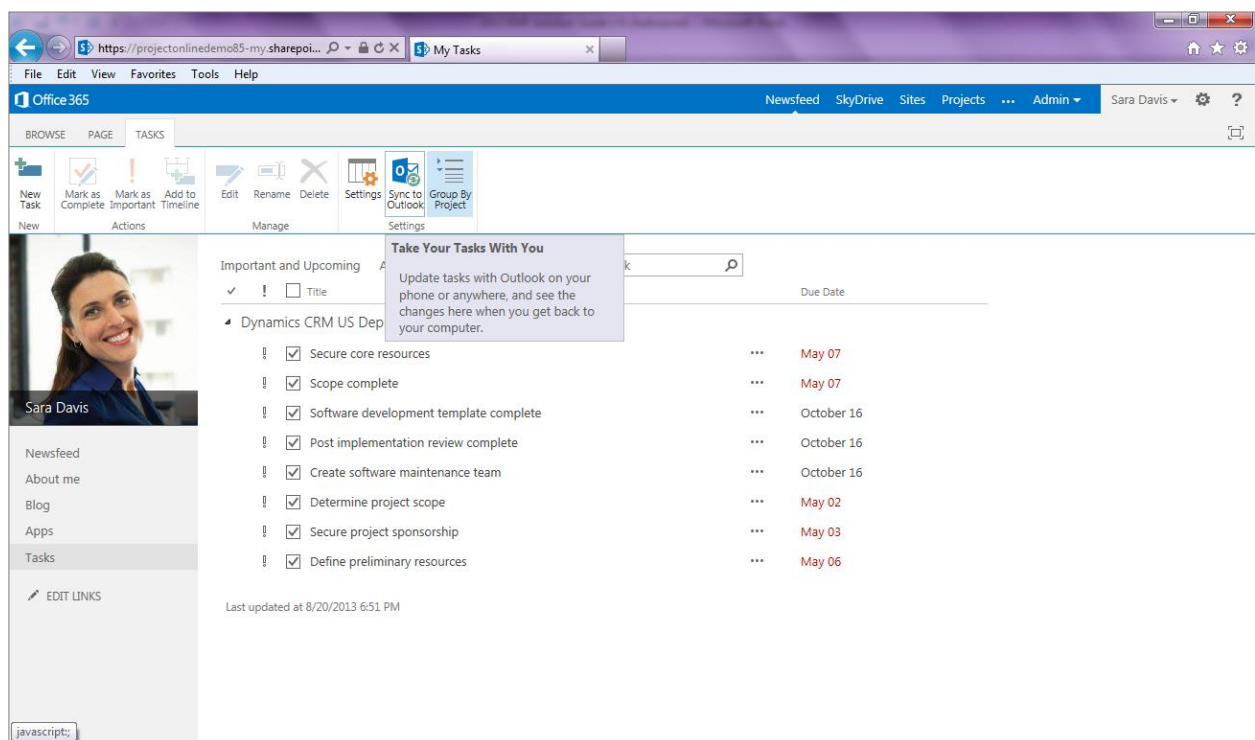


Figure 87: Users can conveniently receive and update their project tasks using Outlook

Visual Studio Team System Team Foundation Server

Unifying Project Online, Project Server, Project Pro for Office 365, and Project Professional with Microsoft Visual Studio Team System Team Foundation Server helps to better connect the worlds of PPM and application development. Connecting these disparate worlds empowers project managers and development teams to follow their own methodologies (for example, agile versus waterfall), select optimal productivity tools, and yet remain seamlessly connected throughout the development lifecycle.

Project Professional and Project Pro for Office 365 provides native connectivity with Team Foundation Server, ensuring that development managers can take advantage of the new user-controlled scheduling and Team Planner features to help plan development sprints and better visualize and amend resource assignments. Managers can simply extract and view all development activities as tasks in Project Profession a land Project Pro for Office 365 and then amend and sync the updates back to Team Foundation Server. Managers control the data exchange through the intuitive Team menu option in the Project Professional Ribbon (see Figure 88).

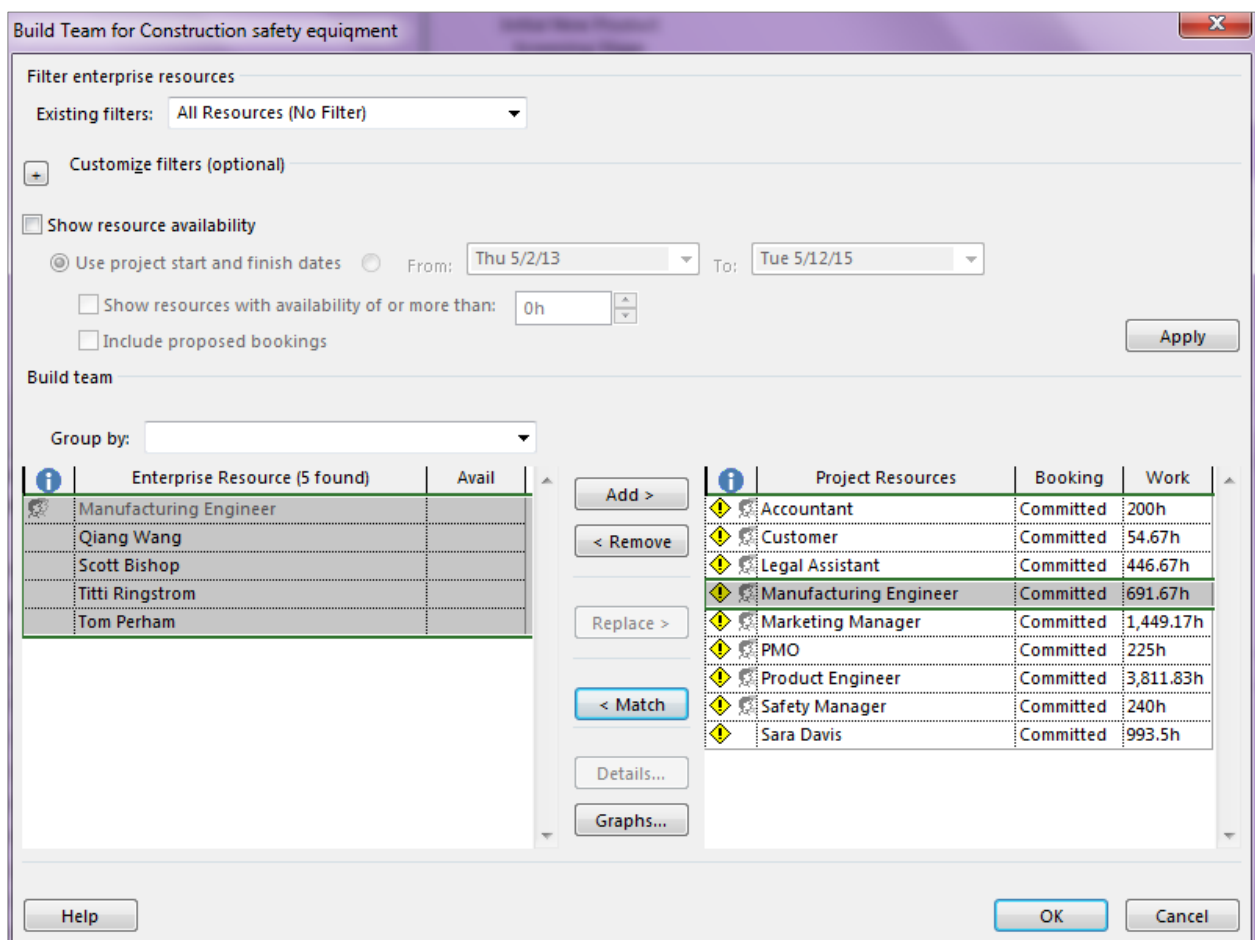


Figure 88: The Team menu option in the Project Professional/Project Pro for Office 365 Ribbon

With all development, activities captured in Project Professional and Project Pro for Office 365 the project manager can simply synchronize with Project to better connect the worlds of project and portfolio management and application development.

Simplified Administration and Ease of Use

Project Online and Project Pro for Office 365 simplify IT management, integrating the admin experience with SharePoint so you can easily set up the service, add resources, and adjust permissions. Project also separates IT and business settings so your Project Management Office (PMO) or business sponsor can manage the PPM aspects without requiring additional assistance from IT. As a result, IT can easily achieve the following:

- Utilize Active Directory (AD) synchronization in PWA to choose which AD group contains the teams that you want to make resources. After entering the name of the AD group, you just click “Save and Synchronize Now.” You still have the flexibility later to add resources that aren’t part of your AD groups.
- Easily give your teams the right level of access through a new SharePoint-integrated security model in PWA. Just click on the “Share your site” tile in PWA, type in the names of those who need access, pick the appropriate permission level, and you’re done.
- Separate IT and business settings—your Project Management Office (PMO) or business sponsor can manage PPM settings without additional assistance from IT.

Project Online and Project Pro for Office 365 offer a series of features and benefits that simplify IT management and improves performance by consolidating databases. Delivered through Office 365 and independently verified to comply with world-class industry standards such as OData (open data protocol) for data mining and business intelligence, Project Online and Project Pro for Office 365 offer Project Online offer enterprise-grade reliability with a 99.9% financially-backed uptime Service Level Agreement. You also receive 24/7 IT support for critical issues that ensure your business stays more secure and available. Other IT benefits include the following:

- **No upfront infrastructure costs** means predictable monthly costs and an easy deployment.
- **Flexible service plans** help you sign up your people for the term of service that best fits your business needs.
- **Continuous data backup, disaster recovery, and globally redundant datacenters** provide high-availability and keep your information secured.
- **Click-to-run**, a streaming technology, quickly installs Project Pro for Office 365 over the Internet, internal networks, local file systems or from offline media.
- **Project for Office 365 installation** comes directly from the web and takes just moments, without the need to uninstall previous versions, enabling it to run side-by-side with existing Project applications.

Project helps PMOs and IT pros more effectively configure, deploy, and manage the PPM Solution with simplified and streamlined administration capabilities. These enhancements ensure that administrators can better meet their organization’s business requirements and spend less time managing the system, and instead focus more on the successful delivery of projects and portfolios. Enhancements include:

Centralized administration: Project unifies top-down portfolio management and bottom-up project management capabilities within a single server. The improved one-stop administration console helps ensure that administrators can effectively manage both top-down and bottom-up capabilities through one intuitive interface.

Departmental fields: The new Departmental fields in Project help ensure that administrators can associate and filter enterprise project types (EPTs), business drivers, resources and custom fields with specific departments within the organization. This new feature helps administrators provide business units with an appreciable level of autonomy, eliminates unnecessary clutter so departments can focus on their data, and simplifies the creation of reporting cubes while ensuring that PMOs maintain enterprise standardization and control.

Administer reporting cubes: Project includes an enhanced administration interface for displaying the status of and managing available cubes. As a result, administrators can now easily manage all cube settings and data including adding, copying, deleting, and refreshing cubes. Organizations can take advantage of improved performance and cube build times by utilizing the on-premises version of Project to build smaller cubes independently.

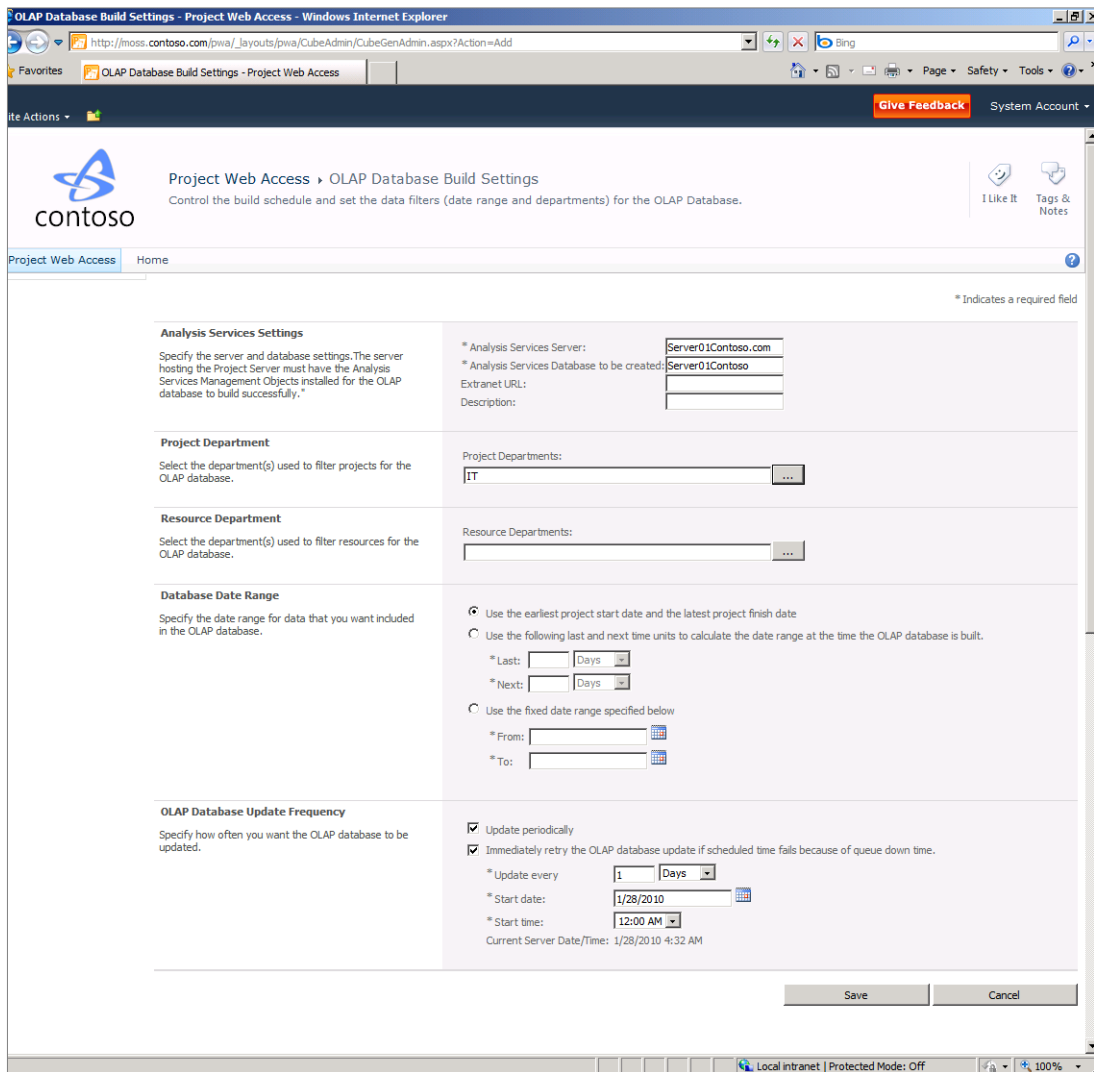


Figure 89: Improved Reporting Administration

Elimination of ActiveX controls: Project simplifies deployment by eliminating ActiveX requirements across the project, portfolio, and reporting capabilities of the solution. The removal of ActiveX controls helps improve security and overcomes deployment complexities for organizations that block client-side controls in their environments.

Project permissions view: Project Permissions view empowers the project manager to control who can view or edit their projects. Project managers no longer need to rely on an IT administrator to establish access rights to their projects.

User Delegation: Project enhanced delegation capabilities empower users to easily name colleagues to act as their delegate when on vacation, without assistance from a PMO officer or system administrator.

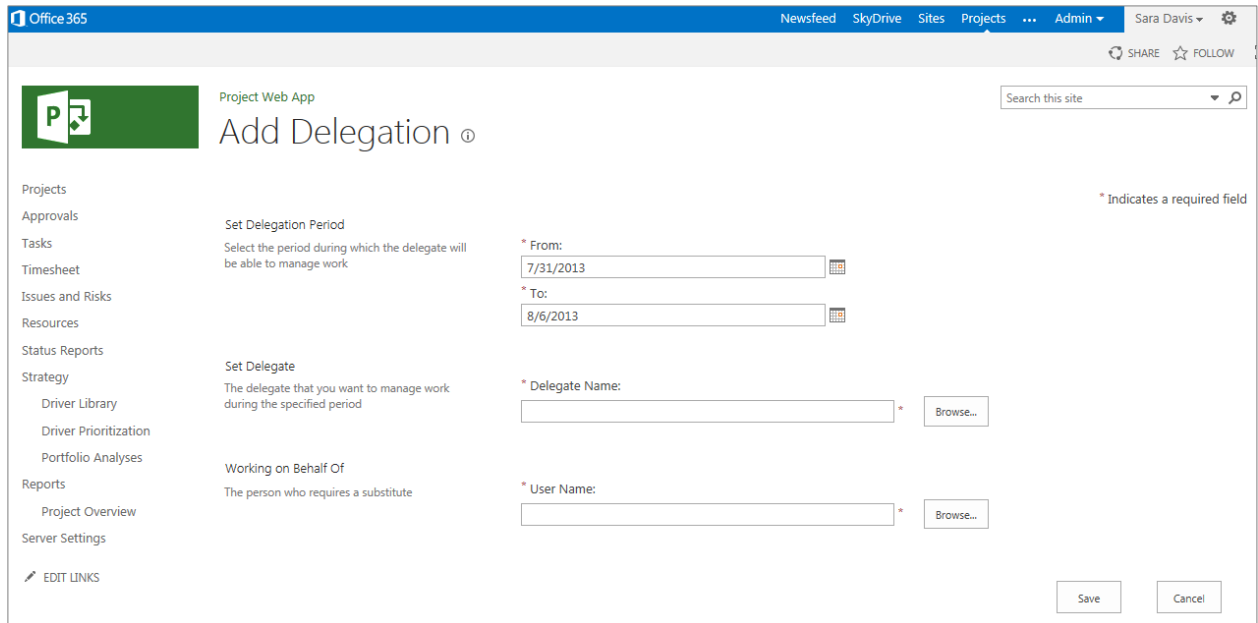


Figure 90: User Delegation Capabilities

Scalable, Extensible, and Programmable Platform

Project Online and Project Server are built on SharePoint and the Shared Service Provider (SSP) design has been updated to a Service Application model that helps to increase scalability by allowing more services to run on the application tier. Project architecture now requires 64-bit capability across all servers in the farm, which inherently provides additional scalability and throughput for project data profiles. Project Professional is also available in 64-bit version and 32-bit version. The 64-bit version ensures project managers can more easily work with larger project plans and master projects that exceed the 2-gigabyte (GB) memory limit on earlier 32-bit versions.

Project Online provides the flexibility to scale up and out with ease. Costs of subscription services are straightforward and make budgeting easier, easing the long-borne pain of complicated expense accruals across businesses or departments. You can quickly update user licenses to reflect demand from an administration console in moments, so the PMO can pilot Project Online without worry and scale out with ease.

With Project Online and Project Pro for Office 365 you can add teams and projects in minutes with a web-based portal. You can also utilize apps from the new Office Store and the SharePoint Store to meet your unique business needs. You can even manage team access to apps through a corporate catalogue.

Leading PPM solutions need to provide an open, extensible, and programmable platform to help ensure that organizations can develop and deploy custom offerings and effectively integrate the toolset with LOB systems. The PPM Solution includes the Project Interface, a flexible API that helps ensure that customers and Microsoft partners can continue to extend Project to meet their unique requirements.

Because Project is built on SharePoint, developers can take advantage of a consistent and robust platform to rapidly build and deploy solutions using familiar tools and services, including Windows Communication Foundation Business Connectivity Services, Visual Studio, and SharePoint Designer.

Project Server is highly customizable, but to make it possible to deploy consistently updates to the cloud service, Project Online has a new extensibility model, which limits some of the ways the environment can be customized. Customers who need capabilities beyond what can be done through platform customizations can use the new app store to plug in modules that have been developed in-house or licensed from third parties. With the app store,

features specific to an industry, methodology, or individual company can be implemented as necessary and controlled on a user-by-user basis.

List of Acronyms	
AMO	Analysis Management Object
API	Application Programming Interface
BI	Business intelligence
CPM	Critical Path Method
CRM	Customer Relationship Management
ECM	Enterprise Content Management
EPT	Enterprise Project Type
ERP	Enterprise Resource Planning
EVM	Earned Value Management
FTE	Full-Time Equivalent
IRR	Internal Rate of Return
ISV	Independent Software Vendor
JIT	Just-In-Time
KPI	Key Performance Indicator
LOB	Line-Of-Business
NPV	Net Present Value
NPD	New Product Development
OLAP	Online Analytical Processing
PDP	Project Detail Page
PLM	Product Lifecycle Management
PMBOK	Project Management Body of Knowledge
PMO	Project Management Office
PMP	Project Management Professional
PPM	project and Portfolio Management
PSI	Project Server Interface
PTO	Paid Time Off
RDB	Reporting Database
ROI	Return On Investment
SSP	Shared Services Provider
WAN	Wide Area Network

PPM Solution System Requirements

Project Server

Software Requirements

Project Server requires SharePoint Server and the SQL Server 2008 Analysis Management Objects (AMOs).

Web Browser	<p>The following browsers are required for a Project Server installation and for client computers that will be using Project Web App:</p> <ul style="list-style-type: none"> • Windows Internet Explorer 10.0, 9.0 or 8.0 • Mozilla Firefox (latest released version) • Apple Safari (latest released version) • Google Chrome (latest released version)
Microsoft Excel	<p>On premises (supported versions):</p> <ul style="list-style-type: none"> • Excel 2013 • Excel 2010 <p>Project Online:</p> <ul style="list-style-type: none"> • Excel 2013 only
Lync presence in Project Web App or Project Professional	<p>One of the following:</p> <ul style="list-style-type: none"> • Lync 2013 with Internet Explorer 10, Internet Explorer 9, Internet Explorer 8, Mozilla Firefox (latest released version), or Google Chrome (latest released version). • Lync 2010 with Internet Explorer 10, Internet Explorer 9 or Internet Explorer 8. • Internet Explorer 9, Internet Explorer 8, Mozilla Firefox (latest released version), and Google Chrome (latest released version) with any Office 2013 application will provide the user a contact card, but no Lync presence.
Workflow Editing	<p>Requires both of the following:</p> <ul style="list-style-type: none"> • SharePoint Designer 2013 • Microsoft Visio 2013
Microsoft Project Professional	<p>2010 or 2007 can be used to preview 2013 files without editing capability</p>
SharePoint Server	<p>2013 Enterprise Edition</p>
SQL Server	<p>SQL Server 2012 (64-bit) or SQL Server 2008 R2 with Service Pack 1 (SP1) (64-bit). The following components of SQL Server are required:</p> <ul style="list-style-type: none"> • Database Engine • Analysis Services • Reporting Services • Management tools

	<ul style="list-style-type: none"> Connectivity components <p>The SQL Server Agent service must be running. If you plan to upgrade from a Project Server 2010 environment, be aware that this version of Project Server does not support SQL Server 2005.</p>
Windows Server	Windows Server 2012(64-bit) or Windows Server 2012 R2(64-bit) or Windows Server 2008 R2(64-bit) with a minimum service-pack level of Service pack 1
Server Roles and Windows PowerShell	<p>Project Server requires the following Windows Server roles on each application server in the farm:</p> <ul style="list-style-type: none"> Application server role Web server role with Internet Information Services (IIS) 6.0 Management compatibility enabled <p>In addition to these server roles, Project Server also requires enabling Windows PowerShell.</p> <p>Both the server roles and Windows PowerShell are configured automatically by the SharePoint Server 2013 prerequisite installation tool (if not already enabled).</p>
SharePoint Server 2013	<p>Project Server runs as a SharePoint Server 2013 service application and therefore requires SharePoint Server 2013 prerequisite for Project Server 2013 installation. The following components of SQL Server are required:</p> <ul style="list-style-type: none"> Database Engine Analysis Services Reporting Services Management tools Connectivity components <p>SharePoint Server 2013 and the latest version of Project Server are available only in 64-bit editions, and they require 64-bit editions of Windows Server 2008 R2 or Windows Server 2012.</p>
Optional	<p>Exchange Server 2007 Service Pack 1 (SP1) or later</p> <p>Visual Studio Team System 2012 Team Foundation Server for Application Lifecycle Management</p>
My Tasks (task synchronization with Exchange Server 2013, Project Server 2013, and SharePoint Server 2013)	<p>Server requirements: Exchange Server 2013</p> <p>Desktop requirements (supported Outlook versions):</p> <ul style="list-style-type: none"> Outlook 2013 Outlook 2010 Microsoft Office Outlook 2007 Microsoft Office Outlook 2003 <p>Mobile requirements (supported mobile operating system versions):</p> <ul style="list-style-type: none"> Windows Phone 7.5 or newer iApple: OS 5 or newer Android 2.3 or newer

Active Directory Synchronization (Resources and security groups)

The domain controller must be one of the following operating systems:

- Windows Server 2012 R2
- Windows Server 2012
- Windows Server 2008 R2
- Windows Server 2008
- Windows Server 2003

Hardware Requirements

When you plan for the hardware that is required for a Project Server deployment, as a starting point, you should determine the usage requirements for your Project Server environment. These variables include the number of projects, tasks, users, average tasks per project, and so on. By using the [How datasets affect performance and capacity in Project Server](#) tables, you can compare the numbers from your environment to the data for small, medium, and large datasets defined in their corresponding table. By selecting the dataset that most resembles the usage requirements in your environment, you can use the recommended topology and associated hardware requirements for your topology as a starting point when you plan for hardware for your Project Server deployment.

This section specifies the hardware requirements for a Project Server 2013 deployment based on the datasets defined in [How datasets affect performance and capacity in Project Server 2013](#).

Note: The minimum hardware requirements in this section are recommended in which only the required services to run Project Server are enabled. Be aware that enabling additional SharePoint Server 2013 features in the farm may require more resources. For more information about hardware and software requirements for SharePoint Server 2013, see [Hardware and software requirements for SharePoint 2013](#).

Small dataset hardware recommendations for Project Server

The following are the recommended hardware requirements for a Project Server small dataset scenario. See [How datasets affect performance and capacity in Project Server 2013](#) for more information about how the small dataset size is defined.

Minimum hardware requirements for a small dataset in Project Server

The minimum hardware topology for a small dataset scenario is a single-server deployment that contains the following three tiers:

- SQL Server
- Application server
- Front-end web server

The minimum recommended hardware requirements for the servers in this dataset are as follows:

Processor	64-bit, four-core, 2.5 GHz minimum per core
RAM	24 GB for developer and evaluation use
Hard Disk	80 GB for installation For production use, you need additional free disk space for day-to-day operations. Add two times as much free space as you have RAM for production environments

Recommended hardware for Project Server for a small dataset

Project Server runs as a service application on SharePoint Server 2013, and usage by other service applications generates additional resource usage (processor, RAM, and hard disk). While the minimum recommended requirements are suitable for a small dataset with light usage, more substantial datasets and usage patterns may

require additional hardware resources. For a single-server deployment with a small dataset, we advise 16 GB of RAM to assure a high level of perceived performance.

We recommend that, if possible, you separate your SQL Server tier from the Application and front-end web tiers by placing your databases onto a dedicated computer that is running SQL Server.

- Server 1: Application and front-end web
- Server 2: SQL Server

For a two-tiered deployment supporting a small dataset, we recommend the following hardware requirements:

Front-end web and Application server hardware recommendations for Project Server

Processor	64-bit, four-core, 2.5 GHz minimum per core
RAM	8 GB for developer or evaluation use 16 GB for production use
Hard Disk	80 GB

SQL Server hardware recommendations for Project Server for a small dataset

Processor	64-bit, four-core, 2.5 GHz minimum per core (If your dataset size is significantly larger than the medium dataset, we recommend 8 cores.)
RAM	16 GB
Hard Disk	80 GB

Medium dataset hardware recommendations for Project Server

The following are the recommended hardware requirements for a Project Server medium dataset scenario. See [How datasets affect performance and capacity in Project Server](#) for more information about how the medium dataset size is defined.

Minimum requirements for hardware for medium datasets for Project Server

The minimum recommended hardware topology for a medium dataset scenario is a three-tier deployment that contains a dedicated server for each of the following:

- Server 1: Front-end web server
- Server 2: Application server
- Server 3: SQL Server

For a three-tier deployment supporting a medium dataset, the following are the hardware minimum requirements:

Minimum hardware requirements for a Front-end web server for a medium dataset deployment of Project Server

Processor	64-bit, four-core, 2.5 GHz minimum per core
RAM	8 GB for developer or evaluation use 16 GB for single server and multiple server farm installation for production use
Hard Disk	80 GB

Minimum hardware requirements for an Application server for a medium dataset deployment of Project Server

Processor	64-bit, four-core, 2.5 GHz minimum per core
RAM	8 GB for developer or evaluation use

	16 GB for single-server and multiple-server farm installation for production use
Hard Disk	80 GB

Minimum hardware requirements for the SQL Server tier for a medium dataset deployment of Project Server

Processor	64-bit, four-core, 2.5 GHz minimum per core (If your dataset size is significantly larger than the medium dataset, we recommend 8 cores.)
RAM	16 GB
Hard Disk	100 GB

Recommended hardware for Project Server for a medium dataset

As a general prescription, you should prepare to handle additional user load and data load by having sufficient computers to add more front-end web servers and Application servers to your topology. The hardware specifications of your front-end web servers and Application servers can remain largely the same. A 4x2x1 topology (four front-end web servers, two Application servers, and one computer that is running SQL Server) should be sufficient for handling the needs of most medium data sets and usage patterns. However, scaling out your Application and front-end web servers will add more load to the SQL Server tier, which you will have to compensate for by adding more memory and CPU resources. The following SQL Server specification should be able to handle the performance needs of most medium datasets.

SQL Server hardware recommendations for Project Server for a medium dataset

Processor	64-bit, eight-core, 2.5 GHz minimum per core (If your dataset size is significantly larger than the medium dataset, we recommend 8 cores.)
RAM	32 GB
Hard Disk	160 GB

Note: Ideally, you should separate and prioritize data among disks. Place your data files and your SQL Server transaction logs on separate physical hard disks.

Note: RAID 5 should provide a good compromise between reliability, and throughput.

Additionally, if the SharePoint Server 2013 instance on which Project Server is coexisting with also experiences heavy usage (for example, you are not using the instance specifically for Project Server functionality), we recommend a separation of the Project Service database and the SharePoint Server 2013 content databases. This requires you to place them on two dedicated computers that are running SQL Server.

Large dataset hardware recommendations in Project Server

The following are the recommended hardware requirements for a Project Server large dataset scenario. See [How datasets affect performance and capacity in Project Server](#) for more information about how the large dataset size is defined.

For large datasets, data load is the biggest concern. At a minimum, for large datasets you will want a 4x2x1 topology. The hardware characteristics of the front-end web and Application servers can generally remain the same as those recommended for the small and medium datasets. However, because the SQL Server tier will be the bottleneck, you may find that this constrains your ability to scale out to additional front-end web and Application servers. If data load is the bottleneck, you may find that additional front-end web and Application servers do not produce an improvement in throughput.

For large datasets, if the SharePoint Server 2013 instance that Project Server is coexisting with is also experiencing heavy usage (that is, you are not using that SharePoint Server 2013 deployment specifically for Project Server

functionality), then we recommend that you separate the Project Server 2013 database from the SharePoint Server 2013 content databases, placing them on their own dedicated computer that is running SQL Server.

For a large data set, we recommend that you invest in additional resources on the SQL Server tier of your topology. You can "scale-up" your SQL Server by adding additional RAM, CPU and hard disk resources.

The following are the minimum and recommended specifications for the SQL Server tier of a large dataset topology.

Minimum hardware requirements for the SQL Server tier for a large dataset deployment of Project Server

Processor	64-bit, four-core, 2.5 GHz minimum per core (If your dataset size is significantly larger than the medium dataset, we recommend 8 cores.)
RAM	32 GB
Hard Disk	250 GB

Note: Ideally, you should separate and prioritize data among disks. Place your data files and your SQL Server transaction logs on separate physical hard disks.

Note: RAID 5 should provide a good compromise between reliability, and throughput.

Recommended hardware for Project Server for a large dataset

SQL Server hardware recommendations for Project Server for a large dataset

Processor	64-bit, eight-core, 2.5 GHz minimum per core (If your dataset size is significantly larger than the medium dataset, we recommend 8 cores.)
RAM	64 GB
Hard Disk	300 GB

Note: Ideally, you should separate and prioritize data among disks. Place your data files and your SQL Server transaction logs on separate physical hard disks.

Note: RAID 5 should provide a good compromise between reliability, and throughput.

Project Professional and Project Pro for Office 365

Project Professional and Project Pro for Office 365 have the following minimum system requirements:

Processor	1 gigahertz (GHz) or faster x86/x64 processor with SSE2 instruction set
Memory	<ul style="list-style-type: none">• 1 GB RAM (32-bit)• 2 GB RAM (64-bit)
Hard Disk	2 GB available
Operating System	Supported versions: <ul style="list-style-type: none">• Windows 8• Windows 7• Windows 7• Windows Server 2008 Release 2 .NET Framework version 3.5 or 4.0 required
Display	Graphics hardware acceleration requires DirectX10 graphics card 1024×576 resolution or higher resolution monitor
Browser	Supported versions: <ul style="list-style-type: none">• Internet Explorer 10• Internet Explorer 9• Internet Explorer 8• Mozilla Firefox (latest released version)• Apple Safari (latest released version)• Google Chrome (latest released version)
Visual Reports Requirements	<ul style="list-style-type: none">• Office Excel 2007, Excel 2010, or Excel 2013• Office Visio 2007, Visio 2010, or Visio 2013

Additional Resources

For expanded help, step-by-step guides, and video training on how to get the most of Project and the Microsoft PPM Solution, visit Microsoft Project.

To learn more about Project and the Microsoft PPM Solution, refer to the following list of related links:

Project Portal - <http://office.microsoft.com/en-us/project>

Project Blog - <http://blogs.office.com/b/project>

Project Developer Center - <http://msdn.microsoft.com/en-US/office/aa905469>

Microsoft Office Project TechNet - <http://technet.microsoft.com/en-us/projectserver>

Project Web Channel - https://www.youtube.com/playlist?list=PLkVbjMOJpo-mIEpYt_07zQgP47pUw-qLx

A partner that specializes in Microsoft Project EPM and PPM Solutions and who can help you with any deployment, configuration, training, or support for your solution is Technology Associates Limited. They are also strategic partners and resellers for many of the most popular add-ins and solutions for Project Server/Online so are perfectly placed to advise you on these and other options that may be open to you.

About Technology Associates Limited

Technology Associates Limited is one of the leading global project management consultancies specializing in Microsoft Project and Project Portfolio Management (PPM) Solutions. Since 1990, Technology Associates has provided deployment, consultancy, development and training services to more than 1,200 organizations including some of the world's leading companies, and has an international presence throughout the world. Technology Associates has deployed hundreds of EPM & PPM solutions and deployed more than 2,000 Microsoft Project solutions. As a Microsoft Gold Competency partner already in Project and Portfolio Management (earned for our Project Server products, services and utilities), and with several other Microsoft Competencies at Silver level, the company has built a solid reputation for delivering high quality services, training and solutions, and providing exceptional value for money. Headquartered in the United Kingdom, with offices in New York, San Francisco, and India, and a strategic partner network covering Asia Pac, Middle East and ROW, Technology Associates work with all sizes of business (with a strong focus on SME's) in delivering PPM and SharePoint solutions. As well as developing solutions, the company also provides full consultancy, support and training for on-premise and cloud-based PPM and SharePoint solutions, as well as Office 365.

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